

Because this drainage report is associated with both the PUD/Preliminary Plan and final plat application, rename the report to:

Preliminary Drainage Report for Winding Walk Filings 1 & 2 and Final Drainage Report for Windingwalk Filing 1 at Meridian Ranch.

Final Drainage Report
for
Windingwalk Filing 1
at
Meridian Ranch

The report must include preliminary drainage report analysis for Filing 2.

REVISED



EL PASO COUNTY, COLORADO

December 2017

Prepared For:

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

FYI: A Final drainage report will be required with the final plat application for Filing 2.

NOTED

Prepared By:
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PCD File No.'s PUDSP-18-002 and SF-18-002

REVISED

PCD Project No. ESQ-17-XXX

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
GTL Development, Inc.
P.O. Box 80036
San Diego, CA 92138

Date

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.
County Engineer / ECM Administrator

Date

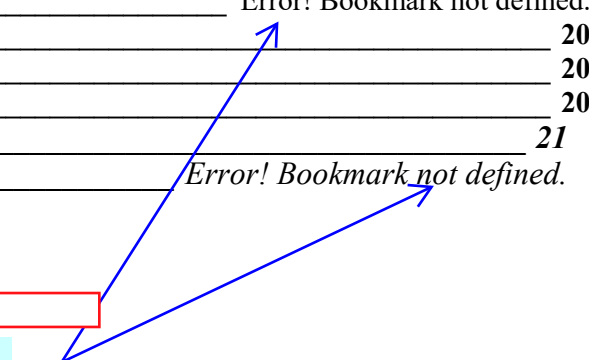
Windingwalk Filing 1 at Meridian Ranch Preliminary Drainage Plan

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Fix reference



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EXECUTIVE SUMMARY

The purpose of the following Final Drainage Report (FDR) is to present proposed changes for Windingwalk Filing 1 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 Filing 1 at Meridian Ranch grading encompasses 114± 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 at Meridian Ranch is located within two separate drainage basins; the Bennett Ranch Basin and the Haegler Ranch Basin. Each have been studied as part of the respective Drainage Basin and have final approval from the 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 for Windingwalk Filing 1 at Meridian Ranch due to grading operations with 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

Windingwalk Filing 1 at Meridian Ranch grading encompasses 114+ 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.

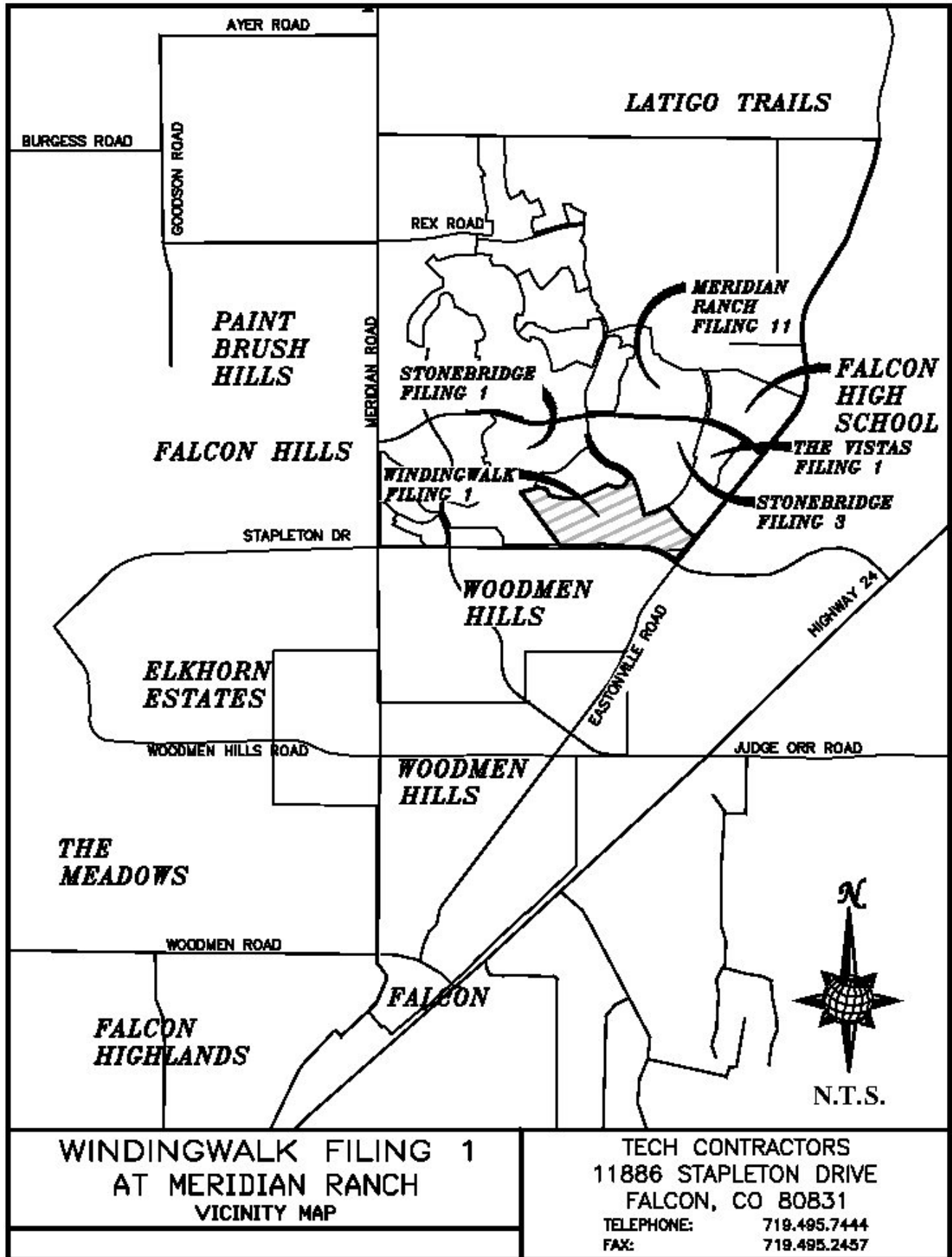
The Flood Insurance Rate Maps (FIRM No. 08041C0575-F dated 3/17/1997) indicates that the Windingwalk Filing 1 at Meridian Ranch development is outside of any designated flood plain. Letter of Map Revision (LOMR), Case No. 14-08-1121P was approved by FEMA on November 6, 2014 with an effective date of 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.

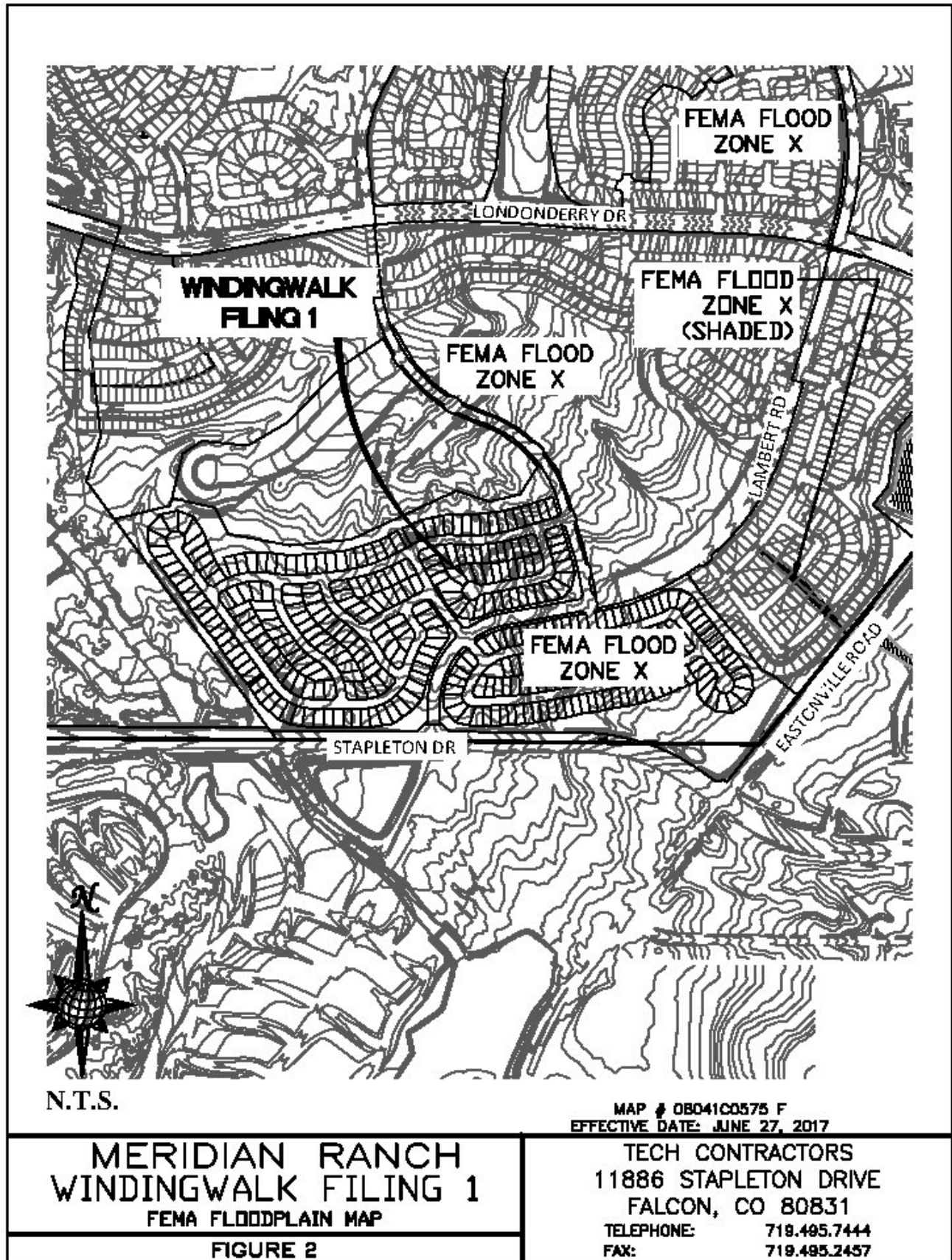
WINDINGWALK FILING 1 AT MERIDIAN RANCH

Figure 1: Vicinity Map



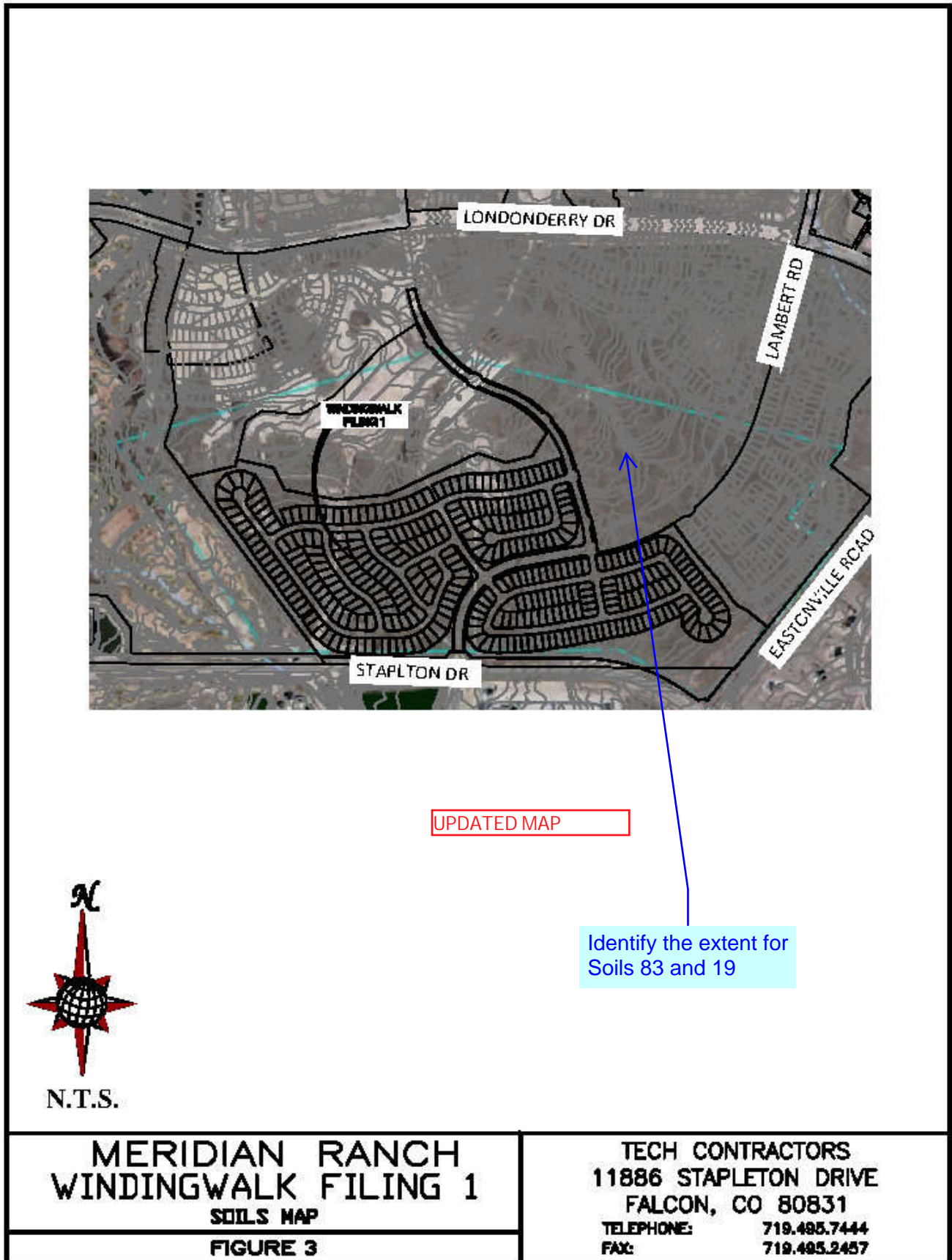
WINDINGWALK FILING 1 AT MERIDIAN RANCH

Figure 2: FEMA Floodplain Map



WINDINGWALK FILING 1 AT MERIDIAN RANCH

Figure 3: Soils Map



MERIDIAN RANCH
WINDINGWALK FILING 1
SOILS MAP
FIGURE 3

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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 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 condition for the Windingwalk Filing 1 at Meridian Ranch grading.

The first scenario analyzes the historic conditions for Windingwalk Filing 1 at 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 Filing 1 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 Filing 1 is completed.

The final scenario analyzes the future build out conditions 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 | School | 80 |
| Residential Lots (5 acre) | 63 | Parks/Open Space | 62 |
| Residential Lots (2.5 acre) | 66 | Commercial | 85 |
| Residential Lots (1 acre) | 68 | Roadways | 98 |
| Residential Lots (1/2 acre) | 70 | Graded | 67 |
| Residential Lots (1/3 acre) | 72 | Golf Course | 62 |
| Residential Lots (1/4 acre) | 75 | Latigo Undeveloped | 65 |
| Residential Lots (1/5 acre) | 78 | Undeveloped | 61 |
| Residential Lots (1/6 acre) | 80 | | |

*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:

| 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 | 20 | 3 | 3.4 | 2.8 | 1.6 | 6971.2 |
| 10-YEAR STORM | 35 | 5 | 5.3 | 4.0 | 2.6 | 6971.7 |
| 25-YEAR STORM | 61 | 13 | 8.7 | 6.7 | 4.1 | 6972.2 |
| 50-YEAR STORM | 86 | 22 | 11.9 | 9.7 | 5.3 | 6972.7 |
| 100-YEAR STORM | 116 | 38 | 15.7 | 13.3 | 6.7 | 6973.1 |
| FUTURE CONDITIONS | | | | | | |
| 5-YEAR STORM | 52 | 4 | 4.5 | 3.5 | 2.3 | 6971.5 |
| 10-YEAR STORM | 81 | 8 | 6.7 | 5.2 | 3.3 | 6971.9 |
| 25-YEAR STORM | 129 | 19 | 10.5 | 10.5 | 4.9 | 6972.5 |
| 50-YEAR STORM | 174 | 32 | 14.0 | 11.8 | 6.4 | 6973.0 |
| 100-YEAR STORM | 226 | 60 | | | | |

revise the verbiage. This report is associated with the subdivision development, not the early grading operation associated with EGP-17-001. Review the rest of the narrative and update accordingly.

DRAINAGE CALCULATIONS

General Concept

The grading operations associated with Windingwalk Filing 1 are located within portions of the Bennett Ranch and the Haegler Ranch Basins. Storm water runoff will be conveyed across the site overland to proposed temporary sedimentation ponds. Those portions of the site tributary to the Bennett Ranch Basin will be directed to an existing sedimentation pond prior to being released into the adjacent channel then conveyed downstream to an existing Bennett Ranch Regional Detention facility. Those portions of the Haegler Ranch Basin will be directed overland to a series of sedimentation ponds. Storm water released the proposed Pond H detention. The proposed detention system is a combination sedimentation/detention pond until such time as sufficient ground cover or development in the area is complete.

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Identify when these temporary ponds, which were installed as part of the early grading, be removed.

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 adopted by the El Paso County. Existing facilities located downstream of the project include the Bennett Ranch Regional Detention Pond and Meridian Ranch.

For clarity, reference the specific SCS Model ID

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The portion of the site located within the Bennett Ranch Basin 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

Reference the basin ID

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Is this a different basin from the previous paragraph? For clarity, reference the specific SCS Model ID.

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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.

A portion of the site is tributary to a channel Detention Pond located within the Bennett criteria hydrologic methods and with a release rate for the 5-year and the 100-year storm releasing the developed peak flows below the historic flow rates for the full spectrum of design storms.

Categorically state whether or not the existing Bennett Regional Pond has the capacity to provide detention for the proposed Winding Walk and Enclaves.

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regional the old ic peak e pond

A portion of the site is tributary to the proposed Pond H located within the Haegler Ranch Basin, the pond was designed with this report using the new criteria hydrologic methods and with a release rate approximating the historic peak flow rates for the full spectrum of storm events. 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 CFS.

Figure 4: Meridian Ranch SCS Calculations – Historic Conditions Map, Figure 5: Meridian Ranch SCS Calculations – Interim Conditions and Figure 6: Meridian Ranch SCS Calculations – Future Conditions Map depict the historic, graded and future development patterns for Windingwalk Filing 1 portion of Meridian Ranch.

development of Windingwalk Filing 1 & 2.

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The purpose of this report is to show that the grading of Windingwalk Filing 1 at Meridian Ranch will not adversely impact the existing drainage facilities adjacent and downstream of the graded area and the proposed Pond H is properly sized for the anticipated future development of the area tributary to the pond. Further evaluation will be necessary at each stage of future development within the Meridian Ranch and the anticipated build-out is reached.

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Specify the specific basin where future development will occur.

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 | 148 | 102 | 65 | 30 | 13 | 3.0 |
| B01 | 0.2219 | 148 | 102 | 65 | 30 | 13 | 3.0 |
| B01-B07 | 0.2219 | 148 | 102 | 65 | 30 | 13 | 3.0 |
| OS03 | 0.1984 | 130 | 88 | 55 | 23 | 9 | 2.0 |
| B02-B03 | 0.1984 | 129 | 88 | 55 | 23 | 9 | 2.0 |
| HB01 | 0.0234 | 19 | 13 | 8 | 3 | 1 | 0.0 |
| B03 | 0.2218 | 140 | 95 | 59 | 25 | 10 | 2.0 |
| B03-B07 | 0.2218 | 140 | 94 | 59 | 25 | 10 | 2.0 |
| OS04 | 0.1359 | 83 | 54 | 32 | 12 | 4 | 1.0 |
| B04-B05 | 0.1359 | 82 | 54 | 32 | 12 | 4 | 1.0 |
| HB03 | 0.1266 | 103 | 68 | 41 | 15 | 5 | 1.0 |
| B05 | 0.2625 | 144 | 91 | 52 | 20 | 7 | 1.0 |
| B05-B07 | 0.2625 | 144 | 91 | 52 | 20 | 7 | 1.0 |
| HB02 | 0.1063 | 77 | 51 | 30 | 11 | 4 | 0.0 |
| HB04 | 0.0609 | 47 | 31 | 19 | 7 | 2 | 0.0 |
| B07 | 0.8734 | 519 | 344 | 207 | 86 | 33 | 6.0 |
| B07-B12 | 0.8734 | 518 | 343 | 207 | 86 | 33 | 6.0 |
| HB05 | 0.1375 | 102 | 67 | 40 | 15 | 5 | 1.0 |
| HB06 | 0.1641 | 111 | 73 | 43 | 16 | 5 | 1.0 |
| B12 | 1.175 | 679 | 440 | 259 | 103 | 40 | 7.0 |
| B12-PB | 1.175 | 677 | 440 | 259 | 103 | 39 | 7.0 |
| HB07 | 0.0313 | 29 | 19 | 12 | 4 | 1 | 0.0 |
| POND B | 1.2063 | 688 | 446 | 262 | 105 | 40 | 7.0 |
| PB-19 | 1.2063 | 687 | 444 | 261 | 104 | 40 | 7.0 |
| OS01 | 1.5594 | 757 | 510 | 316 | 136 | 55 | 11 |
| OS01-B19 | 1.5594 | 756 | 509 | 315 | 136 | 55 | 11 |
| HB08 | 0.1344 | 81 | 53 | 32 | 12 | 4 | 1.0 |
| HB09 | 0.3047 | 138 | 90 | 54 | 21 | 7 | 1.0 |
| B19 | 3.2048 | 1563 | 1041 | 635 | 266 | 105 | 20 |
| B19-B26 | 3.2048 | 1563 | 1039 | 634 | 266 | 105 | 20 |
| HB10 | 0.3047 | 172 | 113 | 67 | 26 | 9 | 1.0 |
| HB12 | 0.0797 | 54 | 36 | 21 | 8 | 3 | 0.0 |
| HB12-B26 | 0.0797 | 54 | 35 | 21 | 8 | 3 | 0.0 |
| B26 | 3.5892 | 1737 | 1147 | 693 | 288 | 113 | 21 |
| 26-32 | 3.5892 | 1734 | 1146 | 693 | 287 | 113 | 21 |
| HB11 | 0.1125 | 60 | 40 | 23 | 9 | 3 | 0.0 |
| 32 | 3.7017 | 1782 | 1177 | 709 | 293 | 115 | 22 |
| 32-37 | 3.7017 | 1782 | 1175 | 708 | 293 | 115 | 22 |
| B-14 | 0.4039 | 178 | 117 | 70 | 27 | 10 | 2.0 |
| B-13 | 0.2813 | 127 | 83 | 50 | 19 | 7 | 1.0 |
| 36 | 0.6852 | 306 | 200 | 119 | 47 | 17 | 3.0 |
| 36-37 | 0.6852 | 305 | 200 | 119 | 47 | 17 | 3.0 |
| B-15 | 0.075 | 39 | 26 | 15 | 6 | 2 | 0.0 |
| 37 | 4.4619 | 2117 | 1391 | 834 | 338 | 131 | 25 |
| HH01 | 0.0984 | REVISED MAPS TO SHOW DRAINAGE AREAS FROM STAPLETON NORTH | | | 0 | 3 | 0.0 |
| H12 | 0.0984 | | | | 0 | 3 | 0.0 |

Since the drainage map only shows a portion of the SCS Hydrologic Element shown on this table, add a footnote referencing the MDDP (include the PCD Project No. if know) that provides the complete analysis.

Clearly identify the pertinent hydrologic element.

HIGHLIGHTED BASIN LINES WHERE DEVELOPMENT CAUSES CHANGES TO BASIN ELEMENTS

Similar comment applies to the subsequent Tables.

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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 | 757 | 510 | 316 | 136 | 55 | 11 |
| DB16 | 0.0578 | 92 | 72 | 54 | 35 | 23 | 13 |
| B10 | 1.6172 | 794 | 537 | 335 | 147 | 62 | 13 |
| B10-B11 | 1.6172 | 793 | 537 | 335 | 147 | 62 | 13 |
| DB17 | 0.0048 | 16 | 13 | 11 | 9 | 7 | 6 |
| B11 | 1.622 | 795 | 538 | 336 | 148 | 63 | 15 |
| B11-POND C | 1.622 | 795 | 538 | 336 | 148 | 63 | 15 |
| DB21 | 0.0519 | 54 | 38 | 25 | 12 | 5 | 1 |
| DB18 | 0.0346 | 64 | 50 | 39 | 26 | 18 | 10 |
| DB19 | 0.0281 | 36 | 27 | 20 | 11 | 7 | 3 |
| DB20 | 0.0147 | 25 | 19 | 15 | 9 | 6 | 3 |
| POND C | 1.7513 | 749 | 507 | 310 | 129 | 50 | 11 |
| POND C-B16 | 1.7513 | 749 | 507 | 310 | 128 | 50 | 11 |
| DB25 | 0.0211 | 45 | 35 | 27 | 18 | 12 | 7 |
| B16 | 1.7724 | 754 | 511 | 313 | 130 | 51 | 11 |
| B16-B17 | 1.7724 | 754 | 510 | 312 | 130 | 51 | 11 |
| DB26 | 0.0682 | 136 | 110 | 88 | 62 | 46 | 29 |
| B17 | 1.8406 | 778 | 529 | 326 | 138 | 56 | 34 |
| B17-B18 | 1.8406 | 778 | 529 | 326 | 138 | 56 | 34 |
| OS03 | 0.1984 | 130 | 88 | 55 | 24 | 9 | 2 |
| DB01 | 0.0719 | 90 | 66 | 46 | 25 | 14 | 5 |
| B01 | 0.2703 | 199 | 139 | 89 | 42 | 19 | 5 |
| B01-B02 | 0.2703 | 199 | 138 | 89 | 42 | 19 | 5 |
| OS02 | 0.2219 | 148 | 102 | 65 | 30 | 13 | 3 |
| DB02 | 0.0516 | 71 | 52 | 36 | 20 | 10 | 3 |
| B02 | 0.5438 | 380 | 263 | 169 | 79 | 36 | 9 |
| B02-POND A | 0.5438 | 379 | 263 | 169 | 79 | 36 | 9 |
| OS04 | 0.1359 | 83 | 54 | 32 | 12 | 4 | 1 |
| DB03 | 0.0703 | 70 | 49 | 32 | 16 | 7 | 2 |
| B03 | 0.2062 | 145 | 98 | 61 | 26 | 10 | 2 |
| B03-B04 | 0.2062 | 145 | 98 | 60 | 26 | 10 | 2 |
| DB04 | 0.0422 | 44 | 31 | 21 | 10 | 5 | 1 |
| DB05 | 0.0384 | 37 | 27 | 18 | 9 | 5 | 1 |
| B04 | 0.2868 | 218 | 150 | 94 | 42 | 18 | 4 |
| B04-B05 | 0.2868 | 218 | 149 | 94 | 42 | 18 | 4 |
| DB06 | 0.0219 | 44 | 35 | 28 | 19 | 14 | 9 |
| B05 | 0.3087 | 253 | 176 | 115 | 55 | 26 | 10 |
| B05-POND A | 0.3087 | 252 | 176 | 114 | 55 | 26 | 10 |
| DB07 | 0.0254 | 35 | 26 | 18 | 10 | 6 | 2 |
| DB08 | 0.0297 | 32 | 22 | 15 | 7 | 3 | 1 |
| POND A | 0.9076 | 557 | 401 | 244 | 98 | 34 | 6 |
| POND A-B06 | 0.9076 | 557 | 400 | 244 | 98 | 34 | 6 |
| DB09 | 0.0189 | 34 | 26 | 19 | 12 | 8 | 4 |
| B06 | 0.9265 | 565 | 407 | 248 | 100 | 35 | 6 |
| B06-B07 | 0.9265 | 564 | 406 | 248 | 99 | 35 | 6 |
| DB11 | 0.0969 | 114 | 85 | 60 | 35 | 20 | 8 |
| DB10 | 0.0364 | 56 | 43 | 32 | 19 | 12 | 6 |
| B07 | 1.0598 | 652 | 469 | 286 | 116 | 42 | 15 |
| B07-B09 | 1.0598 | 651 | 468 | 285 | 116 | 42 | 14 |
| DB12 | 0.0453 | 81 | 63 | 48 | 31 | 21 | 11 |
| B09 | 1.1051 | 677 | 486 | 296 | 121 | 45 | 19 |
| B09-POND B | 1.1051 | 676 | 485 | 296 | 121 | 45 | 19 |
| DB15 | 0.1234 | 105 | 75 | 50 | 25 | 12 | 3 |
| DB13 | 0.0703 | 89 | 67 | 49 | 29 | 18 | 8 |
| DB14 | 0.0556 | 93 | 72 | 54 | 35 | 23 | 12 |
| POND B | 1.3544 | 688 | 539 | 337 | 140 | 69 | 30 |
| POND B-B12 | 1.3544 | 688 | 539 | 336 | 140 | 69 | 30 |
| DB22 | 0.0516 | 91 | 72 | 55 | 36 | 25 | 14 |
| DB23 | 0.0172 | 45 | 38 | 31 | 23 | 18 | 13 |
| B12 | 1.4232 | 714 | 562 | 353 | 148 | 83 | 38 |

| 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) |
| B12-B14 | 1.4232 | 714 | 562 | 352 | 148 | 83 | 38 |
| DB24 | 0.0531 | 94 | 73 | 56 | 36 | 24 | 13 |
| B14 | 1.4763 | 743 | 577 | 363 | 162 | 92 | 46 |
| B14-B15 | 1.4763 | 742 | 576 | 362 | 162 | 92 | 46 |
| DB28 | 0.0741 | 67 | 49 | 34 | 18 | 10 | 4 |
| B15 | 1.5504 | 800 | 605 | 380 | 179 | 102 | 49 |
| B15-B18 | 1.5504 | 798 | 605 | 379 | 178 | 102 | 49 |
| DB29 | 0.1697 | 146 | 105 | 71 | 37 | 19 | 6 |
| DB27 | 0.0508 | 68 | 53 | 40 | 25 | 17 | 9 |
| B26 | 3.6115 | 1623 | 1178 | 735 | 315 | 174 | 87 |
| B26-27 | 3.6115 | 1622 | 1178 | 735 | 315 | 173 | 87 |
| FB-02 | 0.05 | 86 | 68 | 51 | 33 | 23 | 13 |
| FB-01 | 0.0373 | 41 | 29 | 20 | 10 | 5 | 1 |
| FB01-27a | 0.0373 | 41 | 29 | 20 | 10 | 5 | 1 |
| B19 | 0.0873 | 127 | 97 | 71 | 43 | 27 | 13 |
| B19-27 | 0.0873 | 126 | 96 | 70 | 43 | 27 | 13 |
| FB-03 | 0.0078 | 23 | 19 | 15 | 11 | 9 | 6 |
| 27 | 3.7066 | 1648 | 1197 | 749 | 322 | 189 | 94 |
| 27-32 | 3.7066 | 1648 | 1196 | 748 | 322 | 188 | 93 |
| WH-24 | 0.1325 | 218 | 171 | 129 | 84 | 57 | 31 |
| WH-26 | 0.0839 | 49 | 33 | 20 | 8 | 3 | 1 |
| WH-27 | 0.0217 | 23 | 16 | 10 | 4 | 1 | 0 |
| 30 | 0.2381 | 271 | 205 | 150 | 91 | 59 | 31 |
| 30-31 | 0.2381 | 270 | 205 | 149 | 91 | 59 | 31 |
| WH-28 | 0.0398 | 60 | 47 | 36 | 23 | 15 | 8 |
| 31 | 0.2779 | 330 | 252 | 185 | 114 | 74 | 39 |
| 31-32 | 0.2779 | 329 | 251 | 185 | 113 | 74 | 39 |
| WH-29 | 0.0495 | 77 | 60 | 45 | 29 | 19 | 10 |
| WH-31 | 0.0406 | 75 | 60 | 46 | 30 | 21 | 12 |
| WH-30 | 0.0159 | 26 | 19 | 13 | 7 | 4 | 1 |
| 32 | 4.0905 | 1790 | 1290 | 809 | 419 | 257 | 123 |
| WH32 | 0.0458 | 55 | 38 | 24 | 10 | 4 | 0 |
| BEN POND | 4.1363 | 1393 | 984 | 595 | 252 | 99 | 44 |
| WH-33 | 0.0064 | 12 | 9 | 7 | 5 | 3 | 2 |
| 33 | 4.1427 | 1394 | 985 | 596 | 252 | 100 | 44 |
| 33-37 | 4.1427 | 1394 | 984 | 595 | 252 | 100 | 44 |
| WH35 | 0.155 | 171 | 124 | 84 | 44 | 22 | 6 |
| WH34 | 0.045 | 68 | 52 | 38 | 23 | 15 | 7 |
| B34-36 | 0.045 | 68 | 52 | 38 | 23 | 15 | 7 |
| 36 | 0.2 | 239 | 176 | 122 | 67 | 37 | 13 |
| 36-37 | 0.2 | 238 | 174 | 121 | 66 | 37 | 13 |
| WH36 | 0.075 | 63 | 43 | 27 | 11 | 4 | 1 |
| 37 | 4.4177 | 1432 | 1014 | 615 | 262 | 104 | 47 |
| FH01 | 0.1344 | 196 | 147 | 106 | 62 | 37 | 15 |
| POND H | 0.1344 | 43 | 23 | 13 | 5 | 3 | 2 |
| FH02 | 0.0138 | 19 | 14 | 10 | 6 | 4 | 1 |
| H12 | 0.1482 | 48 | 26 | 15 | 8 | 5 | 2 |

A comparison of the peak flow rates at Eastonville Road for the design storms may be found in Table 6 – Key Design Point Comparison (below). As a result of the grading of the Windingwalk Filing 1, the calculations show that the project does not adversely affect the existing drainage facilities.

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 | 757 | 510 | 316 | 136 | 55 | 11 |
| DB16 | 0.0578 | 92 | 72 | 54 | 35 | 23 | 13 |
| B10 | 1.6172 | 794 | 537 | 335 | 147 | 62 | 13 |
| B10-B11 | 1.6172 | 793 | 537 | 335 | 147 | 62 | 13 |
| DB17 | 0.0048 | 16 | 13 | 11 | 9 | 7 | 6 |
| B11 | 1.6220 | 795 | 538 | 336 | 148 | 63 | 15 |
| B11-POND C | 1.6220 | 795 | 538 | 336 | 148 | 63 | 15 |
| DB21 | 0.0519 | 54 | 38 | 25 | 12 | 5 | 1 |
| DB18 | 0.0346 | 64 | 50 | 39 | 26 | 18 | 10 |
| DB19 | 0.0281 | 36 | 27 | 20 | 11 | 7 | 3 |
| DB20 | 0.0147 | 25 | 19 | 15 | 9 | 6 | 3 |
| POND C | 1.7513 | 749 | 507 | 310 | 129 | 50 | 11 |
| POND C-B16 | 1.7513 | 749 | 507 | 310 | 128 | 50 | 11 |
| DB25 | 0.0211 | 45 | 35 | 27 | 18 | 12 | 7 |
| B16 | 1.7724 | 754 | 511 | 313 | 130 | 51 | 11 |
| B16-B17 | 1.7724 | 754 | 510 | 312 | 130 | 51 | 11 |
| DB26 | 0.0682 | 136 | 110 | 88 | 62 | 46 | 29 |
| B17 | 1.8406 | 778 | 529 | 326 | 138 | 56 | 34 |
| B17-B18 | 1.8406 | 778 | 529 | 326 | 138 | 56 | 34 |
| OS03 | 0.1984 | 130 | 88 | 55 | 24 | 9 | 2 |
| DB01 | 0.0719 | 90 | 66 | 46 | 25 | 14 | 5 |
| B01 | 0.2703 | 199 | 139 | 89 | 42 | 19 | 5 |
| B01-B02 | 0.2703 | 199 | 138 | 89 | 42 | 19 | 5 |
| OS02 | 0.2219 | 148 | 102 | 65 | 30 | 13 | 3 |
| DB02 | 0.0516 | 71 | 52 | 36 | 20 | 10 | 3 |
| B02 | 0.5438 | 380 | 263 | 169 | 79 | 36 | 9 |
| B02-POND A | 0.5438 | 379 | 263 | 169 | 79 | 36 | 9 |
| OS04 | 0.1359 | 83 | 53 | 32 | 12 | 4 | 1 |
| DB03 | 0.0703 | 70 | 49 | 32 | 16 | 7 | 2 |
| B03 | 0.2062 | 145 | 98 | 61 | 26 | 10 | 2 |
| B03-B04 | 0.2062 | 145 | 98 | 60 | 26 | 10 | 2 |
| DB04 | 0.0422 | 44 | 31 | 21 | 10 | 5 | 1 |
| DB05 | 0.0384 | 37 | 27 | 18 | 9 | 5 | 1 |
| B04 | 0.2868 | 218 | 150 | 94 | 42 | 18 | 4 |
| B04-B05 | 0.2868 | 218 | 149 | 94 | 42 | 18 | 4 |
| DB06 | 0.0219 | 44 | 35 | 28 | 19 | 14 | 9 |
| B05 | 0.3087 | 253 | 176 | 115 | 55 | 26 | 10 |
| B05-POND A | 0.3087 | 252 | 176 | 114 | 55 | 26 | 10 |
| DB07 | 0.0254 | 35 | 26 | 18 | 10 | 6 | 2 |
| DB08 | 0.0297 | 32 | 22 | 15 | 7 | 3 | 1 |
| POND A | 0.9076 | 557 | 401 | 244 | 98 | 34 | 6 |
| POND A-B06 | 0.9076 | 557 | 400 | 244 | 98 | 34 | 6 |
| DB09 | 0.0189 | 34 | 26 | 19 | 12 | 8 | 4 |
| B06 | 0.9265 | 565 | 407 | 248 | 100 | 35 | 6 |
| B06-B07 | 0.9265 | 564 | 406 | 248 | 99 | 35 | 6 |
| DB11 | 0.0969 | 114 | 85 | 60 | 35 | 20 | 8 |
| DB10 | 0.0364 | 56 | 43 | 32 | 19 | 12 | 6 |
| B07 | 1.0598 | 652 | 469 | 286 | 116 | 42 | 15 |
| B07-B09 | 1.0598 | 651 | 468 | 285 | 116 | 42 | 14 |
| DB12 | 0.0453 | 81 | 63 | 48 | 31 | 21 | 11 |
| B09 | 1.1051 | 677 | 486 | 296 | 121 | 45 | 19 |
| B09-POND B | 1.1051 | 676 | 485 | 296 | 121 | 45 | 19 |

| 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) |
| DB15 | 0.1234 | 105 | 75 | 50 | 25 | 12 | 3 |
| DB13 | 0.0703 | 89 | 67 | 49 | 29 | 18 | 8 |
| DB14 | 0.0556 | 93 | 72 | 54 | 35 | 23 | 12 |
| POND B | 1.3544 | 688 | 539 | 337 | 140 | 69 | 30 |
| POND B-B12 | 1.3544 | 688 | 539 | 336 | 140 | 69 | 30 |
| DB22 | 0.0516 | 91 | 72 | 55 | 36 | 25 | 14 |
| DB23 | 0.0172 | 45 | 38 | 31 | 23 | 18 | 13 |
| B12 | 1.4232 | 714 | 562 | 353 | 148 | 83 | 38 |
| B12-B14 | 1.4232 | 714 | 562 | 352 | 148 | 83 | 38 |
| DB24 | 0.0531 | 94 | 73 | 56 | 36 | 24 | 13 |
| B14 | 1.4763 | 743 | 577 | 363 | 162 | 92 | 46 |
| B14-B15 | 1.4763 | 742 | 576 | 362 | 162 | 92 | 46 |
| DB28 | 0.0741 | 82 | 60 | 42 | 23 | 13 | 4 |
| B15 | 1.5504 | 787 | 597 | 375 | 176 | 102 | 50 |
| B15-B18 | 1.5504 | 785 | 596 | 375 | 176 | 102 | 50 |
| DB29 | 0.1697 | 146 | 105 | 71 | 37 | 19 | 6 |
| DB27 | 0.0508 | 68 | 53 | 40 | 25 | 17 | 9 |
| B26 | 3.6115 | 1612 | 1171 | 731 | 314 | 179 | 89 |
| B26-27 | 3.6115 | 1612 | 1170 | 731 | 314 | 179 | 89 |
| FB-02 | 0.0500 | 67 | 53 | 40 | 26 | 17 | 10 |
| FB-01 | 0.0373 | 40 | 28 | 19 | 9 | 5 | 1 |
| FB01-27a | 0.0373 | 40 | 28 | 19 | 9 | 5 | 1 |
| B19 | 0.0873 | 103 | 78 | 57 | 34 | 22 | 11 |
| B19-27 | 0.0873 | 103 | 78 | 57 | 34 | 22 | 11 |
| FB-03 | 0.0078 | 22 | 18 | 15 | 11 | 8 | 6 |
| 27 | 3.7066 | 1647 | 1197 | 748 | 322 | 199 | 98 |
| 27-32 | 3.7066 | 1647 | 1196 | 748 | 322 | 198 | 98 |
| WH-24 | 0.1325 | 218 | 171 | 129 | 84 | 57 | 31 |
| WH-26 | 0.0839 | 49 | 33 | 20 | 8 | 3 | 1 |
| WH-27 | 0.0217 | 23 | 16 | 10 | 4 | 1 | 0 |
| 30 | 0.2381 | 271 | 205 | 150 | 91 | 59 | 31 |
| 30-31 | 0.2381 | 270 | 205 | 149 | 91 | 59 | 31 |
| WH-28 | 0.0398 | 60 | 47 | 36 | 23 | 15 | 8 |
| 31 | 0.2779 | 330 | 252 | 185 | 114 | 74 | 39 |
| 31-32 | 0.2779 | 329 | 251 | 185 | 113 | 74 | 39 |
| WH-29 | 0.0495 | 77 | 60 | 45 | 29 | 19 | 10 |
| WH-31 | 0.0406 | 75 | 60 | 46 | 30 | 21 | 12 |
| WH-30 | 0.0159 | 26 | 19 | 13 | 7 | 4 | 1 |
| 32 | 4.0905 | 1792 | 1290 | 809 | 435 | 269 | 128 |
| WH32 | 0.0458 | 55 | 38 | 24 | 10 | 4 | 0 |
| BEN POND | 4.1363 | 1394 | 985 | 595 | 252 | 100 | 44 |
| WH-33 | 0.0064 | 12 | 9 | 7 | 5 | 3 | 2 |
| 33 | 4.1427 | 1395 | 986 | 596 | 253 | 100 | 44 |
| 33-37 | 4.1427 | 1395 | 985 | 596 | 253 | 100 | 44 |
| WH35 | 0.1550 | 171 | 124 | 84 | 44 | 22 | 6 |
| WH34 | 0.0450 | 68 | 52 | 38 | 23 | 15 | 7 |
| B34-36 | 0.0450 | 68 | 52 | 38 | 23 | 15 | 7 |
| 36 | 0.2000 | 239 | 176 | 122 | 67 | 37 | 13 |
| 36-37 | 0.2000 | 238 | 174 | 121 | 66 | 37 | 13 |
| WH36 | 0.0750 | 63 | 43 | 27 | 11 | 4 | 1 |
| 37 | 4.4177 | 1433 | 1015 | 616 | 262 | 104 | 47 |
| 4W4-1-4W4 | 1.2304 | 279 | 194 | 130 | 67 | 35 | 14 |
| 4W-D | 0.0560 | 56 | 39 | 25 | 11 | 5 | 1 |
| 4W4 | 1.2864 | 321 | 228 | 152 | 76 | 38 | 15 |
| FG34 | 0.0922 | 64 | 43 | 27 | 12 | 5 | 1 |

A comparison of the peak flow rates at Eastonville Road for the design storms may be found in Table 6 – Key Design Point Comparison (below). As a result of the future development of the Windingwalk Filing 1, the calculations show that the project does not adversely affect the existing drainage facilities.

Table 6: Key Design Point Comparison - SCS

| KEY DESIGN POINT FLOW RATES | | | | | |
|----------------------------------|-----------------|-----------------|---------------------|-----------------|---------------------|
| EVENT | HISTORIC | INTERIM | PERCENT OF HISTORIC | FUTURE | PERCENT OF HISTORIC |
| | PEAK FLOW (CFS) | PEAK FLOW (CFS) | | PEAK FLOW (CFS) | |
| POND H (H12) | | | | | |
| 5-YEAR | 3.0 | 2.9 | 97% | 3.7 | 123% |
| 10-YEAR | 10 | 5.2 | 52% | 8.1 | 81% |
| 25-YEAR | 27 | 13 | 48% | 18 | 67% |
| 50-YEAR | 46 | 23 | 50% | 31 | 67% |
| 100-YEAR | 70 | 43 | 61% | 55 | 79% |
| BENNETT POND OUTLET (B32) | | | | | |
| 5-YEAR | 115 | 99 | 86% | 100 | 87% |
| 10-YEAR | 293 | 252 | 86% | 252 | 86% |
| 25-YEAR | 709 | 595 | 84% | 595 | 84% |
| 50-YEAR | 1177 | 984 | 84% | 985 | 84% |
| 100-YEAR | 1782 | 1393 | 78% | 1394 | 78% |
| JUDGE ORR ROAD (B37) | | | | | |
| 5-YEAR | 131 | 104 | 79% | 104 | 79% |
| 10-YEAR | 338 | 262 | 78% | 262 | 78% |
| 25-YEAR | 834 | 615 | 74% | 616 | 74% |
| 50-YEAR | 1391 | 1014 | 73% | 1015 | 73% |
| 100-YEAR | 2117 | 1432 | 68% | 1432 | 68% |

Windingwalk Filing 1 final plat application (PCD File No. SF-18-002)

Pond H Detention Storage Criteria

Detention Pond H is to be constructed as a part of the Windingwalk Filing 1 in anticipation of future development in accordance with the approved Sketch Plan within the tributary area. The proposed pond is located within the Haegler Ranch Drainage Basin near 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 grading package. Pond H is shown in the Haegler Ranch Drainage Basin Planning Study as a reimbursable Sulphur Creek. The DBPS estimated the construction and engineering costs to be \$899,000 in 2009 at the time of publication of the study. The drainage fees associated with this development as a result of this single family subdivision.

REVISED

Provide a detailed comparison analysis between the proposed design and the DBPS analysis. Are the analysis between this report and the DBPS comparable or significantly different? What is the difference in the detention volume and release rates? Provide a statement identifying whether or not this FDR is in conformance to the DBPS.

The SCS calculation method was used with the aid of the HydroCAD program to determine inflow and outflow from the detention pond to be constructed as a result of the grading and the future development will not adversely impact drainage patterns downslope.

REVISED

SEE APPENDIX G, INCLUDES NOTES, ORIGINAL LAYOUTS AND OVERLAYS

The pond is designed to accommodate the final inflow from Windingwalk Filing 1 at Meridian Ranch near the intersection of Eastonville Road and Stapleton Drive. Permanent

Include some pertinent sheets from the DBPS within the Appendix for reference. Staff recommends Table 7-4 (highlight the relevant pond), Sheet SR01, Sheet M-25 (Figure 5-4). You may want to overlay Windingwalk and Stapleton to show that it is at the approximate location as Pond H since the DBPS does not have any readily identifiable reference points.

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 0.3 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 10” water quality control riser with a trash grate having a top elevation of 6970.0 to achieve the required 0.3 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 7 provides summary data for the various design storms in both the interim graded condition and future developed condition.

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 | 20 | 3 | 3.4 | 2.8 | 1.6 | 6971.2 |
| 10-YEAR STORM | 35 | 5 | 5.3 | 4.0 | 2.6 | 6971.7 |
| 25-YEAR STORM | 61 | 13 | 8.7 | 6.7 | 4.1 | 6972.2 |
| 50-YEAR STORM | 86 | 22 | 11.9 | 9.7 | 5.3 | 6972.7 |
| 100-YEAR STORM | 116 | 38 | 15.7 | 13.3 | 6.7 | 6973.1 |
| FUTURE CONDITIONS | | | | | | |
| 5-YEAR STORM | 52 | 4 | 4.5 | 3.5 | 2.3 | 6971.5 |
| 10-YEAR STORM | 81 | 8 | 6.7 | 5.2 | 3.3 | 6971.9 |
| 25-YEAR STORM | 129 | 19 | 10.5 | 10.5 | 4.9 | 6972.5 |
| 50-YEAR STORM | 174 | 32 | 14.0 | 11.8 | 6.4 | 6973.0 |
| 100-YEAR STORM | 226 | 60 | 18.1 | 15.7 | 7.8 | 6973.5 |

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 Filing 1 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 eastern portion of the site is located within the Haegler Ranch Drainage Basin and the western portion 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.

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 (64 CFS) will be released into an existing storm drainage system below historic flow rates and significantly below the anticipated design flow (87 CFS) when the system was designed and constructed. Flanked on either side will be lateral storm drain pipes with inlets of various sized to collect the developed runoff from the proposed and future single family development within the Haegler Basin.

Include the existing pipe capacity calculation.

The Bennett Ranch portion will discharge the collected surface flow into the main Bennett Ranch channel or into an existing 48" RCP located at the intersection of Stapleton Drive and Lambert Road. A storm drain pipe ranging in size from 18" to 30" with several inlets flanked on either side is located along the middle portion of the subdivision will collect the surface runoff into a sedimentation basin. The flow will combine with the flow from the Haegler Basin 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.

DOWNSTREAM ANALYSIS APPENDIX INCLUDED SHOWING DOWNSTREAM CAPACITIES, INCLUDING THIS STORM SYSTEM

Hydraulic analyses were completed on the three storm drain sections, the two detention ponds, and the existing downstream facilities; the analyses show the existing facilities are sized adequately to accept, convey and discharge the design flow without adversely affecting downstream properties.

Under the Rational Calculation section of the report provide a narrative for all the sub-basins. Attached are examples. Review of the subbasins will be done with the resubmittal once the sub-basin descriptions are provided.

UPDATED



EROSION CONTROL DESIGN

replace with "temporary sediment basins"

General Concept

REVISED

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 detention 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.

Detention Pond

The existing detention ponds will act as the primary sedimentation control facility for the areas upstream. Runoff will be 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.

REVISED, ADDED SECTION ON EX.
TEMP SEDIMENTATION PONDS

Silt Fence

Silt fence will be placed 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

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

Discrepancy with PCD's drainage tracker which shows available credit of \$543,531.93

REVISED

Update to the 2018 drainage fee = \$10,832/imp ac.

REVISED

Bennett Ranch

Drainage Basin Fees: 52.97 ac*\$ 9,901/Ac*0.504 Imp Area = \$ 264,516.00

Meridian Ranch holds Bridge Fee credits for the construction of the Stapleton Drive bridge constructed in 200X, these credits are to be applied against the bridge fee requirements associated with this project.

Bridge Fees: 52.97 ac*\$ 3,798/Ac*0.504 Imp Area = \$ 101,467.00

Update year

REVISED

Existing Credits:

\$ -521,531.63

Remaining Credits

REVISED

\$ -442,064.63

Update to the 2018 bridge fee = \$4,155/imp ac.

HAEGLER RANCH

| | <u>Acres</u> | <u>Assumed Imperviousness</u> | <u>Impervious Acres</u> |
|------------------|--------------|-------------------------------|-------------------------|
| 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 a regional detention pond and is reimbursable to developer after construction. The estimated cost of construction of the pond found in the approved May 2009 planning study is \$430,217.

By applying the Denver Area Consumer Price Index to the original 2009 estimate, the estimated cost of the pond in 2017 will be \$521,423 (see data below)

| Denver CPI | | |
|------------|--------------------------------|---------------------|
| Year | CPI-U all items 1982-84=100 | Rate of Increase |
| 2009 | 208.548 | |
| 2017 | 252.760 | 1.212 |

Add a section for Engineer's Cost Estimate for the sub-regional pond. **REVISED**

FYI: The lower cost between the Engineer's Cost Estimate and the DBPS cost estimate brought forward will be used as the cap that is creditable towards drainage basin fees in the event that additional filings are submitted prior to construction/completion of the pond.

Final credit will be based on actual construction cost. Construction will be submitted to the County for review and approval prior to commencement of construction. Upon completion of construction, the contractor will submit a certification from a Colorado Profession Engineer stating the project was constructed in accordance with the approved plans along with the records of the actual construction cost. **NOTED AND REVISED**

Update to 2018 drainage fee = \$9,676

REVISED

Drainage Basin Fees: 61.09 ac*\$ 8,844/Ac*0.460 Imp Area = \$ 248,530.00

Estimated Credits: \$ -521,423.00

Remaining Credits \$ -272,893.00

Bridge Fees: 61.09 ac*\$ 1,305/Ac*0.460 Imp Area = \$ 36,672.00

REVISED

Update to 2018 bridge fee = \$1,428

Revise to "Sub-regional Pond SR-01 construction cost estimate"

REVISED

Revise to "Estimated drainage reimbursement"

REVISED

Add a 4th row identifying drainage basin fee at plat recording = 0

REVISED

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.

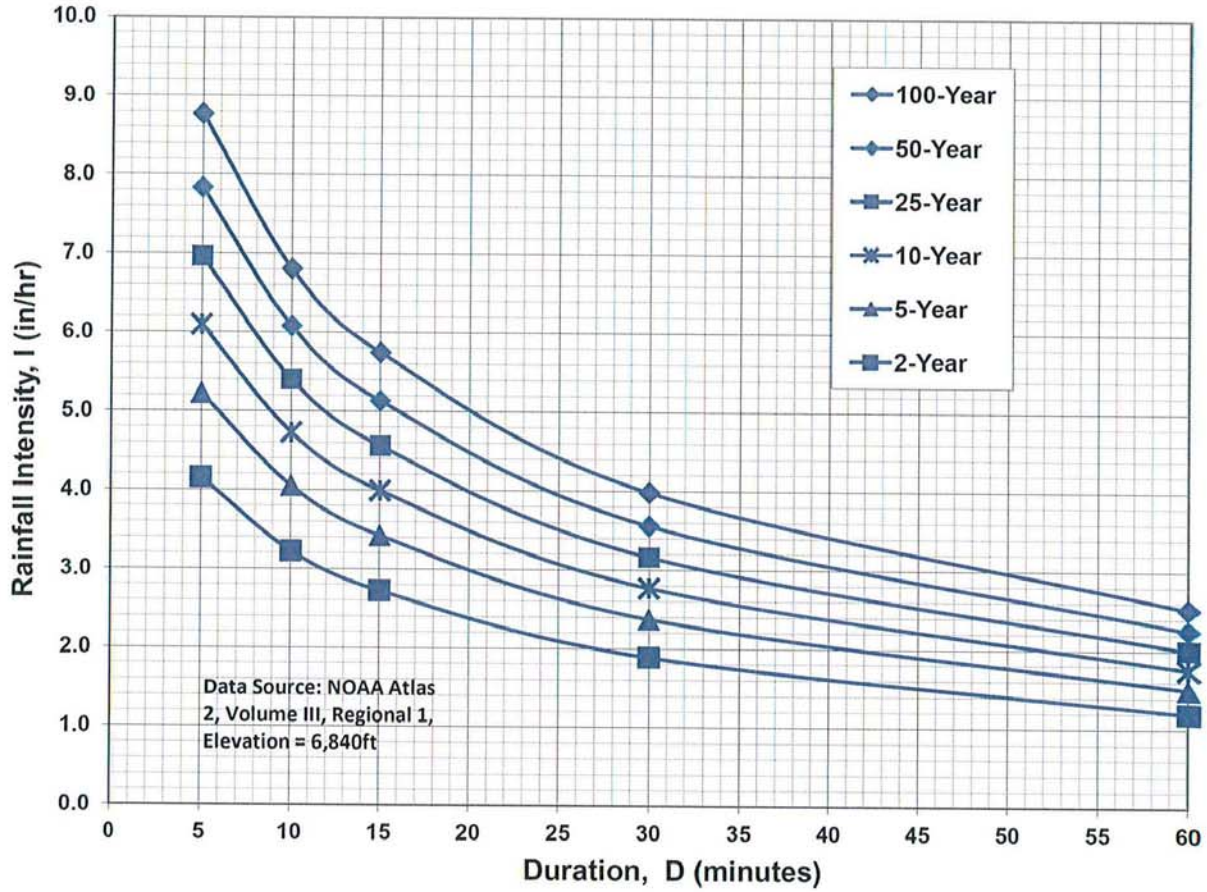
Appendices

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 | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | |
| 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 Filing 1**

12/11/2017

| BASIN DESIGNATION | AREA (AC.) | | | | | COMPOSITE FACTOR | | Percent Impervious | |
|-------------------|------------|---------|---------|------------|---------------------|------------------|-------------------|--------------------|--------------|
| | UNDEV | 6 DU/AC | STREETS | REC CENTER | OPEN SPACE PARKS/GC | TOTAL | 5-year | | 100-year |
| B01 | | 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 | | 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 | | 1.6 | | | 4.6 | 6.1 | 0.28 | 0.44 | 14.8% |
| B19 | | 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 | | 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 | | 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 | | 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% |
| H10 | | 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% |
| | | | | | | | Composite: | | 42.9% |

TIME OF CONCENTRATION

SCS Calculations

PROJECT: **Windingwalk Filing 1**

DATE: 12/11/

| TIME OF CONCENTRATION | | | | | | | | | | | | | | | | |
|-----------------------|----------------|-----------|--------------------------------------|-----|---------|------------------------|-------------------------------|----|---------|------------|-------|------------|-------------------------|---|---------|-------------------------------|
| SUBBASIN DATA | | | INIT/OVERLAND TIME (T _i) | | | | TRAVEL TIME (T _t) | | | | | | TOTAL | T _c Check (Urbanized Basins) | | |
| BASIN DESIGNATION | C _s | AREA (AC) | LENGTH (FT) | ΔH | SLOPE % | T _i (Min.)* | LENGTH (FT) | ΔH | SLOPE % | CONVEYANCE | | VEL. (FPS) | T _t (Min.)** | T _i +T _t (Min.) | L (FT) | T _c = (L/180) + 10 |
| | | | | | | | | | | TYPE | COEF. | | | | | |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| B06 | 0.32 | 5.8 | 210 | 0.8 | 4.3% | 12.8 | 580 | 6 | 1.0% | B | 10 | 1.0 | 9.5 | 22.3 | 790.00 | 14.4 |
| B07 | 0.40 | 3.3 | 145 | 0.8 | 2.1% | 12.1 | 745 | 8 | 1.1% | P | 20 | 2.1 | 6.0 | 18.1 | 890.00 | 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 |
| 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 |
| B10 | 0.40 | 4.1 | 170 | 0.8 | 2.0% | 13.3 | 775 | 13 | 1.7% | P | 20 | 2.6 | 5.0 | 18.3 | 945.00 | 15.3 |
| B11 | 0.40 | 3.3 | 150 | 0.8 | 2.0% | 12.5 | 687 | 19 | 2.8% | P | 20 | 3.3 | 3.4 | 15.9 | 837.00 | 14.7 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| B18 | 0.28 | 6.1 | 170 | 1.0 | 8.2% | 9.7 | 594 | 15 | 2.5% | B | 10 | 1.6 | 6.2 | 15.9 | 764.00 | 14.2 |
| B19 | 0.40 | 4.1 | 145 | 0.8 | 2.0% | 12.3 | 556 | 3 | 0.5% | P | 20 | 1.5 | 6.3 | 18.6 | 701.00 | 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 |
| B21 | 0.40 | 2.0 | 150 | 0.8 | 2.0% | 12.5 | 1110 | 13 | 1.2% | P | 20 | 2.2 | 8.5 | 21.0 | 1260.00 | 17.0 |
| B22 | 0.34 | 11.6 | 195 | 0.8 | 4.6% | 11.7 | 1043 | 18 | 1.7% | G | 15 | 2.0 | 8.8 | 20.5 | 1238.00 | 16.9 |
| B23 | 0.30 | 9.8 | 300 | 1.0 | 5.0% | 14.8 | 884 | 10 | 1.1% | G | 15 | 1.6 | 9.2 | 24.0 | 1184.00 | 16.6 |
| B24 | 0.30 | 9.1 | 300 | 1.0 | 5.3% | 14.6 | 1700 | 26 | 1.5% | G | 15 | 1.9 | 15.3 | 29.9 | 2000.00 | 21.1 |
| B25 | 0.32 | 1.5 | 100 | 0.8 | 2.0% | 11.3 | 125 | 1 | 1.0% | B | 10 | 1.0 | 2.1 | 13.4 | 225.00 | 11.3 |
| H01 | 0.40 | 1.0 | 150 | 0.8 | 2.0% | 12.5 | 320 | 13 | 4.1% | P | 20 | 4.0 | 1.3 | 13.8 | 470.00 | 12.6 |
| H02 | 0.45 | 3.5 | 140 | 0.8 | 2.0% | 11.2 | 476 | 15 | 3.2% | P | 20 | 3.6 | 2.2 | 13.4 | 616.00 | 13.4 |
| H03 | 0.54 | 3.0 | 140 | 0.8 | 2.0% | 9.6 | 810 | 12 | 1.5% | P | 20 | 2.4 | 5.5 | 15.2 | 950.00 | 15.3 |
| 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 |
| 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 |
| 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 |
| 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 |
| H08 | 0.29 | 4.4 | 300 | 1.0 | 4.7% | 15.3 | 600 | 15 | 2.5% | B | 10 | 1.6 | 6.3 | 21.6 | 900.00 | 15.0 |
| H09 | 0.30 | 2.8 | 100 | 0.8 | 2.0% | 11.6 | 455 | 8 | 1.8% | B | 10 | 1.3 | 5.7 | 17.3 | 555.00 | 13.1 |
| H10 | 0.46 | 5.0 | 140 | 0.8 | 2.0% | 11.0 | 752 | 16 | 2.1% | P | 20 | 2.9 | 4.3 | 15.3 | 892.00 | 15.0 |
| 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 |
| H12 | 0.40 | 4.9 | 300 | 0.8 | 2.0% | 17.6 | 561 | 18 | 3.2% | P | 20 | 3.6 | 2.6 | 20.3 | 861.00 | 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 |
| 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 |
| 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 |
| H16 | 0.50 | 4.1 | 150 | 0.8 | 2.0% | 10.7 | 671 | 12 | 1.8% | P | 20 | 2.7 | 4.2 | 14.9 | 821.00 | 14.6 |
| H17 | 0.48 | 3.4 | 135 | 0.7 | 2.0% | 10.5 | 562 | 13 | 2.3% | P | 20 | 3.0 | 3.1 | 13.6 | 697.00 | 13.9 |
| H18 | 0.40 | 6.0 | 241 | 0.8 | 2.0% | 15.8 | 605 | 11 | 1.8% | P | 20 | 2.7 | 3.7 | 19.6 | 846.00 | 14.7 |

Revise to 100 ft maximum length for urban land uses. (COSDCM Ch. 6 Section 3.2.1)

REVISED

Revise the minor storm to be based on 5yr.

STORM DRAINAGE SYSTEM DESIGN

CHANGED LABEL IN COLUMN HEADING, PROPER EQUATION FOR 5-YR INTENSITY WAS ALREADY IN USE.

(CEDURE)
G

PROJECT: **Windingwalk Filing 1**

Date: 12/11/2017

| DESIGN POINT | DIRECT RUN | | | | | | | | | | | NONFLOW | | | | | | OVERLAND TRAVEL | | | | |
|--------------|------------|-----------|-----------|---------------------|----------------------|------------------|-------------------|------------|-------------|-----------|------------|---------------|---------------------|----------------------|------------|-------------|-----------|-----------------|----------------|-----------------|----------------|---------|
| | BASIN | AREA (AC) | Tc (Min.) | I (in./hr.) (10 YR) | I (in./hr.) (100 YR) | COEFF. @ (10 YR) | COEFF. @ (100 YR) | CA (10 YR) | CA (100 YR) | Q (10 YR) | Q (100 YR) | Sum Tc (min.) | I (in./hr.) (10 YR) | I (in./hr.) (100 YR) | CA (10 YR) | CA (100 YR) | Q (10 YR) | Q (100 YR) | DESTINATION DP | CONVEYANCE TYPE | COEFFICIENT Cv | SLOPE % |
| 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% |
| 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% |
| 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 | 6.02 | 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% |
| 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 | 3.50 | 5.87 | 0.40 | 0.55 | 1.63 | 2.22 | 5.7 | 13 | | | | | | 5.7 | 13 | | | | |
| I10 | B11 | 3.3 | 14.7 | 3.56 | 5.97 | 0.40 | 0.55 | 1.30 | 1.77 | 4.6 | 11 | | | | | | 4.6 | 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% |
| 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% |
| 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% |
| 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% |
| 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% |
| 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 | 12.6 | 3.78 | 6.35 | 0.40 | 0.55 | 0.40 | 0.54 | 1.5 | 3.4 | | | | | | 1.5 | 3.4 | I20 | P | 20.0 | 1.20% |
| I20 | H02 | 3.5 | 13.4 | 3.69 | 6.20 | 0.45 | 0.59 | 1.57 | 2.04 | 5.8 | 13 | 13.7 | 3.66 | 6.14 | 1.97 | 2.58 | 7.2 | 16 | I23 | P | 20.0 | 3.10% |
| DP06 | H03 | 3.0 | 15.2 | 3.50 | 5.88 | 0.54 | 0.66 | 1.60 | 1.96 | 5.6 | 12 | | | | | | 5.6 | 12 | I21 | P | 20.0 | 2.75% |
| I21 | H04 | 2.4 | 8.7 | 4.34 | 7.29 | 0.46 | 0.60 | 1.10 | 1.42 | 4.8 | 10 | 18.3 | 3.22 | 5.41 | 2.70 | 3.38 | 8.7 | 18 | | | | |
| 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% |
| I23 | H07 | 3.1 | 8.8 | 4.33 | 7.27 | 0.46 | 0.60 | 1.45 | 1.87 | 6.3 | 14 | 16.8 | 3.36 | 5.63 | 2.46 | 3.40 | 8.2 | 19 | I25 | P | 20.0 | 3.30% |
| 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 | 15.0 | 3.53 | 5.92 | 0.46 | 0.59 | 2.29 | 2.96 | 8.1 | 18 | | | | | | 8.1 | 18 | I29 | P | 20.0 | 2.50% |
| I25 | H11 | 2.0 | 10.8 | 4.01 | 6.73 | 0.48 | 0.61 | 0.95 | 1.21 | 3.8 | 8.1 | 19.1 | 3.16 | 5.30 | 0.95 | 1.95 | 3.8 | 10 | | | | |
| I26 | H12 | 4.9 | 14.8 | 3.54 | 5.95 | 0.40 | 0.55 | 1.95 | 2.66 | 6.9 | 16 | | | | | | 6.9 | 16 | I27 | P | 20.0 | 2.00% |
| 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 | 5.93 | 0.52 | 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% |
| 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 | 14.6 | 3.57 | 5.99 | 0.50 | 0.63 | 2.07 | 2.60 | 7.4 | 16 | 17.7 | 3.27 | 5.49 | 2.07 | 3.72 | 7.4 | 20 | I35 | P | 20.0 | 1.20% |
| I30 | H17 | 3.4 | 13.6 | 3.67 | 6.16 | 0.48 | 0.61 | 1.65 | 2.10 | 6.0 | 13 | | | | | | 6.0 | 13 | I31 | P | 20.0 | 2.30% |
| I31 | H18 | 6.0 | 14.7 | 3.55 | 5.96 | 0.40 | 0.55 | 2.40 | 3.27 | 8.5 | 19 | 15.2 | 3.50 | 5.87 | 2.40 | 3.59 | 8.5 | 21 | I33 | p | 20.0 | 1.00% |
| I32 | H19 | 3.8 | 15.2 | 3.51 | 5.88 | 0.40 | 0.55 | 1.53 | 2.09 | 5.4 | 12 | | | | | | 5.4 | 12 | I34 | P | 20.0 | 1.00% |
| I33 | H20 | 4.6 | 12.3 | 3.82 | 6.42 | 0.40 | 0.55 | 1.84 | 2.50 | 7.0 | 16 | 18.6 | 3.19 | 5.36 | 1.84 | 2.87 | 7.0 | 16 | I34 | P | 20.0 | 2.00% |
| I34 | H21 | 4.0 | 20.1 | 3.09 | 5.18 | 0.40 | 0.55 | 1.60 | 2.19 | 4.9 | 11 | 20.1 | 3.09 | 5.18 | 1.64 | 3.32 | 5.1 | 17 | | | | |

| DESIGN POINT | DIRECT RUNOFF | | | | | | | | | | | TOTAL RUNOFF | | | | | | OVERLAND TRAVEL | | | | | |
|--------------|---------------|-----------|-----------|-------------|----------|----------|----------|---------|----------|---------|----------|---------------|-------------|----------|---------|----------|---|-----------------|----------------|-----------------|----------------|---------|-------|
| | BASIN | AREA (AC) | Tc (Min.) | I (in./hr.) | | COEFF. © | | CA | | Q | | Sum Tc (min.) | I (in./hr.) | | CA | | Q | | DESTINATION DP | CONVEYANCE TYPE | COEFFICIENT Cv | SLOPE % | |
| | | | | (10 YR) | (100 YR) | (10 YR) | (100 YR) | (10 YR) | (100 YR) | (10 YR) | (100 YR) | | (10 YR) | (100 YR) | (10 YR) | (100 YR) | | | | | | | |
| 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 | 3.64 | 6.10 | 0.40 | 0.55 | 1.63 | 2.22 | 5.9 | 14 | | | | | | | 5.9 | 14 | I18 | P | 20.0 | 0.94% |
| 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 | 5.27 | 1.30 | 2.20 | | 4.6 | 12 | I19 | P | 20.0 | 2.00% |
| 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% |
| 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% |
| 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 | 22.3 | 2.93 | 4.91 | 1.55 | 2.20 | | 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 | 13.6 | 3.02 | 6.16 | 0.34 | 0.49 | 1.11 | 1.62 | 3.4 | 10 | | | | | | | 3.4 | 10 | POND | G | 15.0 | 1.20% |
| POND | H25 | 11.3 | 13.9 | 2.98 | 6.11 | 0.29 | 0.45 | 3.30 | 5.13 | 10 | 31 | 17.9 | 3.26 | 5.46 | 4.42 | 6.76 | | 14 | 37 | | | | |

| TYPE OF SURFACE | | Cv |
|-------------------------|---|----|
| 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**

Date: 12/11/2017

| DP | Inlet size L(i) | Proposed or Existing | INLET TYPE | CROSS SLOPE | STREET SLOPE | T _c | Q _{Total} | | Q _{Capture} | | | | Q _{Flow-by} | | | | DEPTH (max) | | SPREAD | |
|------|--------------------|-------------------------|-------------------|----------------|-----------------|----------------|--------------------------|---------------------------|--------------------------|---------------------------|-------------------------------|--------------------------------|--------------------------|---------------------------|-------------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | | | | | | Q ₁₀ (cfs) | Q ₁₀₀ (cfs) | Q ₁₀ (cfs) | Q ₁₀₀ (cfs) | CA _{eqv.} (10-yr) | CA _{eqv.} (100-yr) | Q ₁₀ (cfs) | Q ₁₀₀ (cfs) | CA _{eqv.} (10-yr) | CA _{eqv.} (100-yr) | Q ₁₀ (cfs) | Q ₁₀₀ (ft) | Q ₁₀ (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% | | 14.7 | 4.6 | 11 | 4.6 | 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 | | |

| DP | Inlet size L(i) | Proposed or Existing | INLET TYPE | CROSS SLOPE | STREET SLOPE | T _c | Q _{Total} | | Q _{Capture} | | | | Q _{Flow-by} | | | | DEPTH (max) | | SPREAD | |
|------|--------------------|-------------------------|-------------------|----------------|-----------------|----------------|--------------------------|---------------------------|--------------------------|---------------------------|-------------------------------|--------------------------------|--------------------------|---------------------------|-------------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | | | | | | Q ₁₀ (cfs) | Q ₁₀₀ (cfs) | Q ₁₀ (cfs) | Q ₁₀₀ (cfs) | CA _{eqv.} (10-yr) | CA _{eqv.} (100-yr) | Q ₁₀ (cfs) | Q ₁₀₀ (cfs) | CA _{eqv.} (10-yr) | CA _{eqv.} (100-yr) | Q ₁₀ (cfs) | Q ₁₀₀ (ft) | Q ₁₀ (cfs) | Q ₁₀₀ (ft) |
| I20 | 15 | PROP | SUMP ¹ | 2.0% | | 13.7 | 7.2 | 16 | 7.2 | 15 | 1.97 | 2.43 | - | 0.9 | - | 0.15 | 0.50 | 0.50 | | |
| I21 | 20 | PROP | SUMP ¹ | 2.0% | | 18.3 | 8.7 | 18 | 8.7 | 18 | 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% | | 16.8 | 8.2 | 19 | 8.2 | 15 | 2.46 | 2.65 | - | 4.2 | - | 0.75 | 0.50 | 0.50 | | |
| 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% | | 15.0 | 8.1 | 18 | 8.1 | 11 | 2.29 | 1.85 | - | 6.6 | - | 1.12 | 0.50 | 0.50 | | |
| I25 | 10 | PROP | SUMP ¹ | 2.0% | | 19.1 | 3.8 | 10 | 3.8 | 10 | 1.21 | 1.95 | - | - | - | - | 0.50 | 0.50 | | |
| I26 | 5 | PROP | SUMP | 2.0% | | 14.8 | 6.9 | 16 | 6.9 | 11 | 1.95 | 1.89 | 0.0 | 4.6 | 0.00 | 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% | | 17.7 | 7.4 | 20 | 7.4 | 19 | 2.26 | 3.45 | - | 1.5 | - | 0.27 | 0.50 | 0.50 | | |
| I30 | 10 | PROP | SUMP ¹ | 2.0% | | 13.6 | 6.0 | 13 | 6.0 | 11 | 1.65 | 1.77 | - | 2.0 | - | 0.33 | 0.50 | 0.50 | | |
| I31 | 20 | PROP | SUMP ¹ | 2.0% | | 15.2 | 8.5 | 21 | 8.5 | 19 | 2.43 | 3.23 | - | 2.1 | - | 0.37 | 0.50 | 0.50 | | |
| I32 | 10 | PROP | SUMP ¹ | 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% | | 18.6 | 7.0 | 16 | 6.9 | 11 | 2.16 | 2.09 | 0.1 | 4.8 | 0.04 | 0.90 | 0.50 | 0.70 | | |
| I34 | 10 | PROP | SUMP | 2.0% | | 20.1 | 5.1 | 17 | 5.1 | 17 | 1.64 | 3.32 | - | - | - | - | 0.50 | 0.70 | | |

¹ Forced sump at intersection

**STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)
PIPE ROUTING**

PROJECT: **Windingwalk Filing 1**

Date: 12/11/2017

| 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 |
| | | | (10 YR) | (100 YR) | (10 YR) | (100 YR) | (10 YR) | (100 YR) | | (10 YR) | (100 YR) | (10 YR) | (100 YR) | (10 YR) | (100 YR) | | | | | | | |
| 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 | 2.79 | 5.84 | 1.34 | 1.72 | 3.7 | 10 | 18 | 0.013 | J02 | 3.34% | 297 | 11 | 0.5 |
| J02 | | | | | | | | | 15.9 | 2.74 | 5.77 | 1.34 | 1.72 | 3.7 | 10 | 18 | 0.013 | J02 | 0.81% | 285 | 5 | 0.9 |
| J03 | | | | | | | | | 16.8 | 2.65 | 5.63 | 1.34 | 1.72 | 3.6 | 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 | 3.47 | 6.82 | 1.76 | 2.18 | 6.1 | 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 | 2.18 | 4.95 | 6.24 | 8.50 | 14 | 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 | | | | | | 16 | 49 | 24 | 0.013 | J06 | 5.71% | 147 | 17 | 0.1 |
| J06 | | | | | | | | | 22.1 | 2.16 | 4.93 | 7.24 | 9.86 | 16 | 49 | 30 | 0.013 | CB01 | 1.08% | 102 | 9 | 0.2 |
| CB01 | B06 | 14.4 | 3.58 | 6.02 | 1.85 | 2.76 | 6.6 | 17 | | | | | | 20 | 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 | 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 | 2.11 | 4.85 | 11.69 | 16.18 | 25 | 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 | 2.07 | 4.79 | 12.66 | 17.50 | 26 | 84 | 42 | 0.013 | J09 | 1.06% | 57 | 11 | 0.1 |
| J09 | | | | | | | | | 23.5 | 2.06 | 4.78 | 12.66 | 17.50 | 26 | 84 | 42 | 0.013 | J10 | 2.81% | 306 | 18 | 0.3 |
| J10 | | | | | | | | | 23.7 | 2.04 | 4.75 | 12.66 | 17.50 | 26 | 83 | 42 | 0.013 | J15 | 1.85% | 205 | 14 | 0.2 |
| I09 | B10 | 15.3 | 3.50 | 5.87 | 1.63 | 2.22 | 5.7 | 13 | | | | | | 5.7 | 13 | 18 | 0.013 | J11 | 1.04% | 48 | 6 | 0.1 |
| J11 | | | | | | | | | 15.4 | 2.80 | 5.85 | 1.63 | 2.22 | 4.6 | 13 | 18 | 0.013 | J13 | 1.62% | 334 | 8 | 0.7 |
| I10 | B11 | 14.7 | 3.56 | 5.97 | 1.30 | 1.77 | 4.6 | 11 | | | | | | 4.6 | 11 | 18 | 0.013 | J12 | 1.04% | 58 | 6 | 0.2 |
| J12 | | | | | | | | | 14.8 | 2.87 | 5.94 | 1.30 | 1.77 | 3.7 | 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 | 2.72 | 5.73 | 5.76 | 7.11 | 16 | 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 | | | | | | 18 | 52 | 30 | 0.013 | J14 | 4.17% | 166 | 17 | 0.2 |
| J14 | | | | | | | | | 16.3 | 2.70 | 5.70 | 6.74 | 9.08 | 18 | 52 | 36 | 0.013 | J15 | 0.88% | 113 | 9 | 0.2 |
| J15 | | | | | | | | | 24.0 | 2.02 | 4.73 | 19.40 | 26.59 | 39 | 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 | 2.02 | 4.73 | 23.52 | 31.20 | 48 | 148 | 48 | 0.013 | EJ16 | 1.00% | 153 | 11 | 0.2 |
| E115 | B16 | 12.6 | 3.78 | 6.34 | 1.54 | 1.58 | 5.8 | 10 | | | | | | 5.8 | 10 | 24 | 0.013 | E16 | 1.10% | 108 | 8 | 0.2 |
| E116 | B17 | 12.7 | 3.77 | 6.34 | 1.17 | 1.13 | 4.4 | 7.2 | | | | | | 8 | 17 | 30 | 0.013 | EJ16 | 1.60% | 100 | 11 | 0.2 |
| EJ16 | | | | | | | | | 24.2 | 2.01 | 4.70 | 26.23 | 33.91 | 53 | 160 | 48 | 0.013 | EJ17 | 1.30% | 343 | 13 | 0.4 |
| EJ17 | | | | | | | | | 24.6 | 1.97 | 4.66 | 26.23 | 33.91 | 52 | 158 | 48 | 0.013 | EJ18 | 0.50% | 120 | 8 | 0.2 |
| E117 | 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 |
| E118 | 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 | 1.96 | 4.63 | 28.80 | 36.94 | 56 | 171 | 54 | 0.013 | EJ19 | 0.50% | 342 | 9 | 0.7 |
| EJ19 | | | | | | | | | 25.5 | 1.91 | 4.57 | 28.80 | 36.94 | 55 | 169 | 54 | 0.013 | EJ19 | 2.10% | 96 | 18 | 0.1 |

| 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 |
| | | | (10 YR) | (100 YR) | (10 YR) | (100 YR) | (10 YR) | (100 YR) | | (10 YR) | (100 YR) | (10 YR) | (100 YR) | | | | | | | | | |
| 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 | | | | | | | | | 14.7 | 2.88 | 5.97 | 1.72 | 2.72 | 5.0 | 16 | 24 | 0.013 | J18 | 0.99% | 116 | 7 | 0.3 |
| I17 | B19 | 13.9 | 3.64 | 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 | 2.85 | 5.92 | 3.35 | 4.51 | 10 | 27 | 30 | 0.013 | J19 | 1.05% | 38 | 9 | 0.1 |
| J19 | | | | | | | | | 15.0 | 2.84 | 5.91 | 3.35 | 4.51 | 10 | 27 | 30 | 0.013 | J20 | 1.03% | 107 | 9 | 0.2 |
| J20 | | | | | | | | | 15.2 | 2.82 | 5.88 | 3.35 | 4.51 | 9 | 27 | 30 | 0.013 | J21 | 0.71% | 489 | 7 | 1.2 |
| I18 | B20 | 19.4 | 3.14 | 5.27 | 1.47 | 2.13 | 4.6 | 11 | | | | | | 4.6 | 11 | 18 | 0.013 | J21 | 9.64% | 5 | 19 | 0.0 |
| J21 | | | | | | | | | 19.4 | 2.40 | 5.26 | 4.82 | 6.64 | 12 | 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 | 2.39 | 5.25 | 5.67 | 7.81 | 14 | 41 | 30 | 0.013 | OS2 | 2.20% | 159 | 12 | 0.2 |
| I20 | H02 | 13.7 | 3.66 | 6.14 | 1.97 | 2.43 | 7.2 | 15 | | | | | | 7.2 | 15 | 18 | 0.013 | J22 | 1.00% | 65 | 6.0 | 0.2 |
| J22 | | | | | | | | | 13.9 | 2.98 | 6.11 | 1.97 | 2.43 | 5.9 | 15 | 18 | 0.013 | J23 | 3.69% | 330 | 11.4 | 0.5 |
| J23 | | | | | | | | | 14.3 | 2.92 | 6.02 | 1.97 | 2.43 | 5.8 | 15 | 18 | 0.013 | J24 | 3.82% | 234 | 11.6 | 0.3 |
| I23 | H07 | 16.8 | 3.36 | 5.63 | 2.46 | 2.65 | 8.2 | 15 | | | | | | 8.2 | 15 | 24 | 0.013 | J24 | 1.08% | 32 | 7.5 | 0.1 |
| J24 | | | | | | | | | 16.8 | 2.64 | 5.62 | 4.43 | 5.08 | 12 | 29 | 24 | 0.013 | J26 | 2.91% | 105 | 12.3 | 0.1 |
| I21 | H04 | 18.3 | 3.22 | 5.41 | 2.70 | 3.38 | 8.7 | 18 | | | | | | 8.7 | 18 | 24 | 0.013 | J25A | 1.03% | 183 | 7.3 | 0.4 |
| J25A | | | | | | | | | 18.7 | 2.46 | 5.36 | 2.70 | 3.38 | 6.6 | 18 | 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 | 19.1 | 2.42 | 5.30 | 3.52 | 4.49 | 9 | 24 | 24 | 0.013 | J25B | 4.97% | 178 | 16 | 0.2 |
| J25B | | | | | | | | | 19.3 | 2.40 | 5.28 | 3.52 | 4.49 | 8 | 24 | 24 | 0.013 | J26 | 1.00% | 100 | 7 | 0.2 |
| J26 | | | | | | | | | 19.5 | 2.38 | 5.25 | 7.94 | 9.57 | 19 | 50 | 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 | | | | | | | | | 19.7 | 2.36 | 5.22 | 10.08 | 12.86 | 24 | 67 | 42 | 0.013 | J28 | 3.10% | 158 | 18 | 0.1 |
| I24 | H10 | 15.0 | 3.53 | 5.92 | 2.29 | 1.85 | 8.1 | 11 | | | | | | 8.1 | 11 | 18 | 0.013 | J28 | 1.04% | 53 | 6 | 0.1 |
| I25 | H11 | 19.1 | 3.16 | 5.30 | 1.21 | 1.95 | 3.8 | 10 | | | | | | 3.8 | 10 | 18 | 0.013 | J28 | 1.68% | 33 | 8 | 0.1 |
| J28 | | | | | | | | | 19.9 | 2.35 | 5.20 | 13.58 | 16.66 | 32 | 87 | 42 | 0.013 | J29 | 3.43% | 264 | 19 | 0.2 |
| I26 | H12 | 14.8 | 3.54 | 5.95 | 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 | 5.93 | 0.58 | 1.47 | 2.1 | 8.7 | 14.9 | 2.86 | 5.93 | 2.53 | 3.36 | 7.2 | 20 | 24 | 0.013 | J29 | 3.07% | 192 | 13 | 0.3 |
| J29 | | | | | | | | | 20.1 | 2.33 | 5.17 | 13.58 | 20.02 | 32 | 104 | 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 | | | | | | | | | 20.2 | 2.32 | 5.16 | 14.94 | 21.88 | 35 | 113 | 42 | 0.013 | J31 | 1.95% | 169 | 15 | 0.2 |
| I29 | H16 | 17.7 | 3.27 | 5.49 | 2.26 | 3.45 | 7.4 | 19 | | | | | | 7.4 | 19 | 24 | 0.013 | J31 | 5.91% | 28 | 18 | 0.0 |
| J31 | | | | | | | | | 20.4 | 2.30 | 5.13 | 17.20 | 25.33 | 40 | 130 | 48 | 0.013 | J32 | 1.43% | 249 | 14 | 0.3 |
| I30 | H17 | 13.6 | 3.67 | 6.16 | 1.65 | 1.77 | 6.0 | 11 | | | | | | 6.0 | 11 | 18 | 0.013 | J32 | 2.45% | 45 | 9 | 0.1 |
| J32 | | | | | | | | | 20.7 | 2.28 | 5.10 | 18.85 | 27.10 | 43 | 138 | 48 | 0.013 | J33 | 3.06% | 303 | 20 | 0.3 |
| I31 | H18 | 15.2 | 3.50 | 5.87 | 2.43 | 3.23 | 8.5 | 19 | | | | | | 8.5 | 19 | 24 | 0.013 | J33 | 6.82% | 25 | 19 | 0.0 |
| J33 | | | | | | | | | 21.0 | 2.26 | 5.07 | 21.28 | 30.33 | 48 | 154 | 48 | 0.013 | J34 | 1.04% | 48 | 12 | 0.1 |
| J34 | | | | | | | | | 21.0 | 2.25 | 5.06 | 21.28 | 30.33 | 48 | 153 | 48 | 0.013 | J35 | 2.55% | 387 | 18 | 0.4 |
| I32 | H19 | 15.2 | 3.51 | 5.88 | 1.53 | 1.86 | 5.4 | 11 | | | | | | 5.4 | 11 | 24 | 0.013 | J35 | 1.62% | 312 | 9 | 0.6 |
| I33 | H20 | 18.6 | 3.19 | 5.36 | 2.16 | 2.09 | 6.9 | 11 | | | | | | 6.9 | 11 | 18 | 0.013 | J35 | 9.90% | 24 | 19 | 0.0 |
| J32 | | | | | | | | | 21.4 | 2.22 | 5.02 | 24.97 | 34.28 | 56 | 172 | 48 | 0.013 | I34 | 3.05% | 5 | 20 | 0.0 |
| I34 | H21 | 20.1 | 3.09 | 5.18 | 1.64 | 3.32 | 5.1 | 17 | 21.4 | 2.22 | 5.02 | 26.61 | 37.60 | 59 | 189 | 48 | 0.013 | OS3 | 1.01% | 248 | 12 | 0.4 |

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

STORM DRAINAGE SYSTEM DESIGN
HYDRAULICS

PROJECT: **Windingwalk Filing 1**

Date: 12/11/2017

| Label | Upstrm Node | Dnstrm Node | Inlet 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 | 5.9 | 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 | 6 | 7061.76 | 7058.3 | 7057.25 | 7061.16 | 7058.3 | 7056.90 |
| P03 | J01 | J02 | | | | 1.73 | 15.4 | 5.85 | 297 | 18 | 3.40% | 19 | 10 | 11.1 | 7061.16 | 7058.1 | 7056.90 | 7051.06 | 7048.3 | 7046.90 |
| P04 | J02 | J03 | | | | 1.73 | 15.8 | 5.77 | 285 | 18 | 0.80% | 9 | 10 | 6 | 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 | 6 | 7048.74 | 7045.2 | 7044.10 | 7046.29 | 7043.8 | 7041.40 |
| P06 | I03 | J04 | 2.18 | 10.3 | 15 | 2.18 | 10.3 | 6.86 | 48.1 | 18 | 1.00% | 11 | 15 | 8.5 | 7049.27 | 7046.7 | 7044.75 | 7048.77 | 7045.7 | 7044.25 |
| P07 | J04 | J05 | | | | 2.18 | 10.4 | 6.84 | 127 | 24 | 1.90% | 31 | 15 | 10 | 7048.77 | 7045.2 | 7043.75 | 7046.29 | 7044.0 | 7041.40 |
| P08 | I04 | J05 | 4.59 | 22.0 | 23 | 4.59 | 22.0 | 4.95 | 5 | 18 | 1.90% | 15 | 23 | 13 | 7046.52 | 7044.3 | 7042.00 | 7046.29 | 7044.0 | 7041.90 |
| P08A | J05 | I05 | | | | 8.50 | 22.0 | 4.95 | 25 | 24 | 7.50% | 62 | 42 | 21.3 | 7046.29 | 7043.4 | 7041.40 | 7046.52 | 7042.5 | 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 | 7041.7 | 7039.50 | 7038.50 | 7034.8 | 7031.10 |
| P10 | J06 | CB01 | | | | 9.86 | 22.2 | 4.93 | 102 | 30 | 1.10% | 43 | 49 | 10 | 7038.50 | 7033.8 | 7030.60 | 7033.00 | 7032.3 | 7029.50 |
| P11 | CB01 | I06 | 2.76 | 14.4 | 17 | 12.62 | 22.4 | 4.91 | 160 | 36 | 1.60% | 85 | 62 | 13 | 7033.00 | 7031.5 | 7029.00 | 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 | 7 | 17 | 7032.48 | 7029.1 | 7026.40 | 7024.03 | 7020.6 | 7017.15 |
| P13 | I07 | J07 | 1.73 | 10.5 | 12 | 1.73 | 10.5 | 6.81 | 45 | 18 | 1.00% | 10 | 12 | 7 | 7023.64 | 7021.3 | 7019.10 | 7024.03 | 7020.7 | 7018.65 |
| P14 | J07 | J08 | | | | 16.17 | 22.8 | 4.85 | 332 | 36 | 1.20% | 73 | 79 | 11.2 | 7024.03 | 7020.5 | 7017.15 | 7019.13 | 7016.0 | 7013.20 |
| P15 | I08 | J08 | 1.32 | 10.6 | 9 | 1.32 | 10.6 | 6.85 | 25 | 18 | 1.00% | 15 | 9 | 5.1 | 7019.34 | 7016.6 | 7014.80 | 7019.13 | 7016.6 | 7014.70 |
| P16 | J08 | J09 | | | | 17.49 | 23.3 | 4.85 | 25 | 36 | 1.00% | 103 | 85 | 12.0 | 7019.13 | 7015.6 | 7012.70 | 7018.80 | 7015.3 | 7012.10 |
| P17 | J09 | J10 | | | | 17.49 | 23.4 | 4.85 | 25 | 36 | 1.00% | 168 | 84 | 17.6 | 7018.80 | 7015.0 | 7012.10 | 7019.71 | 7006.5 | 7003.50 |
| P18 | J10 | J15 | | | | 17.49 | 23.7 | 4.85 | 25 | 36 | 1.00% | 137 | 84 | 15 | 7009.71 | 7006.4 | 7003.50 | 7006.80 | 7004.7 | 6999.70 |
| P19 | I09 | J11 | 2.22 | 15.3 | 13 | 2.22 | 15.3 | 6.85 | 127 | 36 | 1.00% | 11 | 13 | 7 | 7020.73 | 7019.7 | 7016.20 | 7020.34 | 7018.9 | 7015.70 |
| P20 | J11 | J13 | | | | 2.22 | 15.4 | 6.85 | 127 | 36 | 1.00% | 13 | 13 | 7 | 7020.34 | 7018.1 | 7015.70 | 7015.22 | 7012.9 | 7010.30 |
| P21 | I10 | J12 | 1.77 | 14.7 | 11 | 1.77 | 14.7 | 5.90 | 50 | 18 | 1.00% | 11 | 11 | 6 | 7016.22 | 7014.5 | 7011.70 | 7015.90 | 7013.9 | 7011.10 |
| P22 | J12 | J13 | | | | 1.77 | 14.9 | 5.93 | 76 | 18 | 1.10% | 11 | 11 | 6.0 | 7015.90 | 7013.5 | 7011.10 | 7015.22 | 7012.7 | 7010.30 |
| P23 | I11 | J13 | 3.12 | 13.4 | 19 | 3.12 | 13.4 | 6.85 | 10 | 18 | 1.00% | 11 | 11 | 6.0 | 7015.46 | 7013.1 | 7010.40 | 7015.22 | 7012.9 | 7010.30 |
| P24 | J13 | I12 | | | | 7.11 | 16.2 | 5.93 | 33 | 36 | 1.00% | 6 | 6 | 11.0 | 7015.46 | 7013.1 | 7010.40 | 7015.22 | 7012.9 | 7010.30 |
| P25 | I12 | J14 | 1.97 | 13.5 | 12 | 9.08 | 16.2 | 5.93 | 33 | 36 | 1.00% | 5 | 5 | 13.1 | 7015.22 | 7012.2 | 7009.80 | 7015.46 | 7011.4 | 7009.10 |
| P26 | J14 | J15 | | | | 9.08 | 16.3 | 5.93 | 33 | 36 | 1.00% | 5 | 5 | 18 | 7015.46 | 7010.9 | 7008.60 | 7009.00 | 7005.7 | 7001.70 |
| P26 | J14 | J15 | | | | 9.08 | 16.3 | 5.93 | 33 | 36 | 1.00% | 5 | 5 | 7 | 7009.00 | 7005.6 | 7001.20 | 7006.80 | 7004.9 | 7000.20 |
| P27 | J15 | J16 | | | | 26.57 | 23.9 | 4.73 | 85 | 48 | 1.00% | 143 | 127 | 10.1 | 7006.80 | 7004.6 | 6999.20 | 7005.99 | 7004.0 | 6998.36 |
| P28 | I13 | J16 | 3.04 | 13.2 | 19 | 3.04 | 13.2 | 6.23 | 13 | 24 | 4.90% | 50 | 19 | 6.1 | 7006.01 | 7004.4 | 7001.00 | 7005.99 | 7004.3 | 7000.36 |
| P29 | I14 | J16 | 1.57 | 13.4 | 10 | 1.57 | 13.4 | 6.20 | 33 | 18 | 1.90% | 15 | 10 | 5.6 | 7006.01 | 7004.6 | 7001.50 | 7005.99 | 7004.3 | 7000.86 |
| P30 | J16 | EJ16 | | | | 31.18 | 24.1 | 4.72 | 153 | 48 | 1.00% | 145 | 148 | 11.8 | 7005.99 | 7003.9 | 6998.36 | 7006.30 | 7002.3 | 6996.80 |
| P31 | EI15 | EI16 | 1.58 | 12.6 | 10 | 1.58 | 12.6 | 6.35 | 108 | 24 | 1.10% | 24 | 10 | 7.2 | 7009.20 | 7005.5 | 7004.37 | 7009.12 | 7004.6 | 7003.20 |
| P32 | EI16 | EJ16 | 1.13 | 12.7 | 7 | 2.71 | 12.9 | 6.30 | 100 | 30 | 1.60% | 52 | 17 | 9.5 | 7009.12 | 7004.4 | 7002.70 | 7006.30 | 7004.4 | 7001.10 |
| P33 | EJ16 | EJ17 | | | | 33.89 | 24.3 | 4.70 | 343 | 48 | 1.30% | 161 | 160 | 12.8 | 7006.30 | 7002.0 | 6996.50 | 6999.14 | 6997.8 | 6992.20 |
| P34 | EJ17 | EJ18 | | | | 33.89 | 24.7 | 4.65 | 120 | 48 | 0.50% | 102 | 159 | 12.6 | 6999.14 | 6997.4 | 6992.00 | 6997.94 | 6996.0 | 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 | 6996.2 | 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 | 8 | 2.5 | 6998.25 | 6996.2 | 6992.91 | 6997.94 | 6996.1 | 6992.75 |
| P37 | EJ18 | EJ19 | | | | 36.91 | 24.9 | 4.63 | 342 | 54 | 0.50% | 139 | 172 | 10.8 | 6997.94 | 6995.9 | 6990.40 | 6999.33 | 6993.3 | 6988.69 |
| P38 | EJ19 | OS1 | | | | 36.91 | 25.4 | 4.58 | 96 | 54 | 2.10% | 287 | 170 | 18.8 | 6999.33 | 6992.2 | 6988.40 | 6999.00 | 6989.2 | 6986.36 |
| P39 | CB02 | J17 | 2.72 | 14.2 | 17 | 2.72 | 14.2 | 6.05 | 180 | 24 | 1.00% | 23 | 17 | 7.9 | 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 | 7.8 | 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 | 9.1 | 7036.22 | 7031.2 | 7029.90 | 7036.00 | 7030.9 | 7029.80 |
| P42 | J18 | J19 | | | | 4.51 | 14.8 | 5.94 | 38 | 30 | 1.00% | 42 | 27 | 8.0 | 7036.22 | 7031.2 | 7029.90 | 7036.00 | 7030.9 | 7029.80 |
| P43 | J19 | J20 | | | | 4.51 | 14.9 | 5.93 | 107 | 30 | 1.00% | 42 | 27 | 8.0 | 7036.22 | 7031.2 | 7029.90 | 7036.00 | 7030.9 | 7029.80 |
| P44 | J20 | J21 | | | | 4.51 | 15.1 | 5.90 | 489 | 30 | 0.70% | 35 | 27 | 7.8 | 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 | 16.8 | 7029.79 | 7026.5 | 7025.25 | 7029.57 | 7025.7 | 7024.80 |
| P46 | J21 | I19 | | | | 6.64 | 19.4 | 5.26 | 25 | 18 | 9.60% | 33 | 11 | 16.8 | 7029.79 | 7026.5 | 7025.25 | 7029.57 | 7025.7 | 7024.80 |
| P47 | I19 | OS2 | 1.16 | 19.5 | 6 | 7.80 | 19.5 | 5.25 | 159 | 36 | 1.00% | 33 | 11 | 16.8 | 7029.79 | 7026.5 | 7025.25 | 7029.57 | 7025.7 | 7024.80 |
| P47 | I19 | OS2 | 1.16 | 19.5 | 6 | 7.80 | 19.5 | 5.25 | 159 | 36 | 1.00% | 33 | 11 | 16.8 | 7029.79 | 7026.5 | 7025.25 | 7029.57 | 7025.7 | 7024.80 |

Maximum storm sewer velocity is 18 fps. Update the system design accordingly.

REVISED HYDRAULIC ANALYSIS USING MORE ACCURATE "WEIGHTED AVERAGE VELOCITY"

NOTED

Identify in the sub-basin/DP narrative. Provide findings/solution/recommendation since this is an existing box culvert. What is the condition downstream? Is there potential issues?

| Label | Upstrm Node | Dnstrm Node | Inlet CA (acres) | Inlet Tc (min) | Inlet Flow (ft³/s) | System CA (acres) | System Flow Time (min) | System Intensity (in/hr) | Length (ft) | Section Size (in) | Slope (%) | Capacity (Full Flow) (ft³/s) | System Flow (ft³/s) | Velocity (Ave) (ft/s) | Elevation Ground (Upstrm) (ft) | Hydraulic Grade Line (Upstrm) (ft) | Invert (Upstrm) (ft) |
|-------|-------------|-------------|------------------|----------------|--------------------|-------------------|------------------------|--------------------------|-------------|-------------------|-----------|------------------------------|---------------------|-----------------------|--------------------------------|------------------------------------|----------------------|
| P48 | I20 | J22 | 2.43 | 13.7 | 15 | 2.43 | 13.7 | 6.14 | 65 | 18 | 1.00% | 11 | 15 | 8.5 | 7057.79 | 7055.9 | 7053.25 |
| P49 | J22 | J23 | | | | 2.43 | 13.8 | 6.12 | 330 | 18 | 3.70% | 20 | 15 | 12.5 | 7057.29 | 7054.0 | 7052.60 |
| P50 | J23 | J24 | | | | 2.43 | 14.3 | 6.04 | 234 | 18 | 3.80% | 21 | 15 | 12.7 | 7044.71 | 7041.9 | 7040.45 |
| P51 | I23 | J24 | 2.65 | 16.8 | 15 | 2.65 | 16.8 | 5.63 | 32 | 24 | 1.10% | 24 | 15 | 4.8 | 7036.38 | 7033.4 | 7031.35 |
| P52 | J24 | J26 | | | | 5.08 | 16.9 | 5.61 | 105 | 24 | 2.90% | 39 | 29 | 13.5 | 7036.79 | 7032.8 | 7031.00 |
| P53 | I21 | J25A | 3.38 | 18.3 | 18 | 3.38 | 18.3 | 5.41 | 183 | 24 | 1.00% | 23 | 18 | 8.1 | 7056.10 | 7052.7 | 7051.10 |
| P54 | J25A | I22 | | | | 3.38 | 18.7 | 5.36 | 344 | 24 | 3.30% | 41 | 18 | 12.7 | 7054.38 | 7050.7 | 7049.20 |
| P55 | I22 | J25B | 1.11 | 9.1 | 8 | 4.49 | 19.1 | 5.30 | 178 | 24 | 5.00% | 50 | 24 | 15.9 | 7045.74 | 7039.5 | 7037.80 |
| P56 | J25B | J26 | | | | 4.49 | 19.3 | 5.27 | 100 | 24 | 1.00% | 23 | 24 | 7.6 | 7035.00 | 7031.4 | 7028.95 |
| P57 | J26 | J27 | | | | 9.57 | 19.5 | 5.25 | 216 | 30 | 4.10% | 83 | 51 | 17.8 | 7034.44 | 7029.8 | 7027.45 |
| P58 | CB03 | J27 | 2.01 | 15.0 | 12 | 2.01 | 15.0 | 5.01 | 71 | 18 | 1.00% | 10 | 12 | 6.8 | 7023.00 | 7021.8 | 7020.25 |
| P59 | CB04 | J27 | 1.28 | 13.1 | 8 | 1.28 | 13.1 | 5.01 | 71 | 18 | 1.40% | 12 | 8 | 7.5 | 7023.00 | 7021.4 | 7020.25 |
| P60 | J27 | J28 | | | | 12.86 | 19.5 | 5.01 | 71 | 18 | 5.50% | 237 | 68 | 21.2 | 7024.54 | 7020.1 | 7017.55 |
| P61 | I24 | J28 | 1.85 | 15.0 | 11 | 1.85 | 15.0 | 5.01 | 71 | 18 | 1.00% | 11 | 11 | 6.2 | 7019.71 | 7017.3 | 7015.20 |
| P62 | I25 | J28 | 1.95 | 19.1 | 10 | 1.95 | 19.1 | 5.01 | 71 | 18 | 1.70% | 14 | 10 | 5.9 | 7019.71 | 7017.0 | 7015.20 |
| P63 | J28 | J29 | | | | 16.66 | 19.5 | 5.01 | 71 | 18 | 3.40% | 186 | 88 | 19.1 | 7020.13 | 7015.6 | 7012.65 |
| P64 | I26 | I27 | 1.89 | 14.8 | 11 | 1.89 | 14.8 | 5.95 | 35 | 18 | 4.20% | 22 | 11 | 12.4 | 7017.49 | 7014.3 | 7013.00 |
| P65 | I27 | J29 | 1.47 | 14.9 | 9 | 3.36 | 14.9 | 5.93 | 192 | 24 | 3.10% | 40 | 20 | 12.7 | 7017.49 | 7012.6 | 7011.00 |
| P66 | J29 | J30 | | | | 20.02 | 20.3 | 5.15 | 249 | 48 | 1.40% | 172 | 131 | 15.1 | 7011.65 | 7006.7 | 7003.60 |
| P67 | I28 | J30 | 1.86 | 9.5 | 13 | 1.86 | 9.5 | 5.15 | 249 | 48 | 1.40% | 172 | 131 | 15.1 | 7011.65 | 7006.7 | 7003.60 |
| P68 | J30 | J31 | | | | 21.88 | 20.8 | 5.08 | 48 | 48 | 3.10% | 254 | 155 | 12.4 | 6993.93 | 6989.9 | 6985.40 |
| P69 | I29 | J31 | 3.45 | 17.7 | 19 | 3.45 | 17.7 | 5.08 | 387 | 48 | 2.60% | 230 | 155 | 19.6 | 6994.04 | 6987.5 | 6983.90 |
| P70 | J31 | J32 | | | | 25.33 | 21.2 | 5.04 | 5 | 48 | 3.00% | 251 | 174 | 13.9 | 6984.19 | 6980.1 | 6974.00 |
| P71 | I30 | J32 | 1.77 | 13.6 | 11 | 1.77 | 13.6 | 6.16 | 45 | 18 | 2.40% | 16 | 11 | 6.2 | 7002.77 | 7000.2 | 6998.25 |
| P72 | J32 | J33 | | | | 27.10 | 20.6 | 5.11 | 303 | 48 | 3.10% | 251 | 140 | 20.5 | 7003.17 | 6998.2 | 6994.65 |
| P73 | I31 | J33 | 3.23 | 15.2 | 19 | 3.23 | 15.2 | 5.88 | 25 | 24 | 6.80% | 59 | 19 | 6.1 | 6994.14 | 6992.0 | 6989.10 |
| P74 | J33 | J34 | | | | 30.33 | 20.8 | 5.08 | 48 | 48 | 3.10% | 254 | 155 | 12.4 | 6993.93 | 6989.9 | 6985.40 |
| P75 | J34 | J35 | | | | 30.33 | 20.9 | 5.08 | 387 | 48 | 2.60% | 230 | 155 | 19.6 | 6994.04 | 6987.5 | 6983.90 |
| P76 | I32 | J35 | 1.86 | 15.2 | 11 | 1.86 | 15.2 | 5.88 | 312 | 24 | 1.60% | 29 | 11 | 3.5 | 6986.06 | 6983.7 | 6981.05 |
| P77 | I33 | J35 | 2.09 | 18.6 | 11 | 2.09 | 18.6 | 5.37 | 24 | 18 | 9.90% | 33 | 11 | 6.4 | 6984.42 | 6980.8 | 6978.90 |
| P78 | J35 | I34 | | | | 34.28 | 21.2 | 5.04 | 5 | 48 | 3.00% | 251 | 174 | 13.9 | 6984.19 | 6980.1 | 6974.00 |
| P79 | I34 | OS3 | 3.32 | 20.1 | 17 | 37.60 | 21.2 | 5.04 | 209 | 48 | 0.90% | 135 | 191 | 15.2 | 6984.42 | 6979.6 | 6973.85 |

Maximum storm sewer velocity is 18 fps. Update the system design accordingly.

REVISED HYDRAULIC ANALYSIS USING MORE ACCURATE "WEIGHTED AVERAGE VELOCITY"

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 | ft ³ /s |
| Elevation Range | -0.75 to 0.00 ft | | |
| Flow Area | | 19.32 | ft ² |
| 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

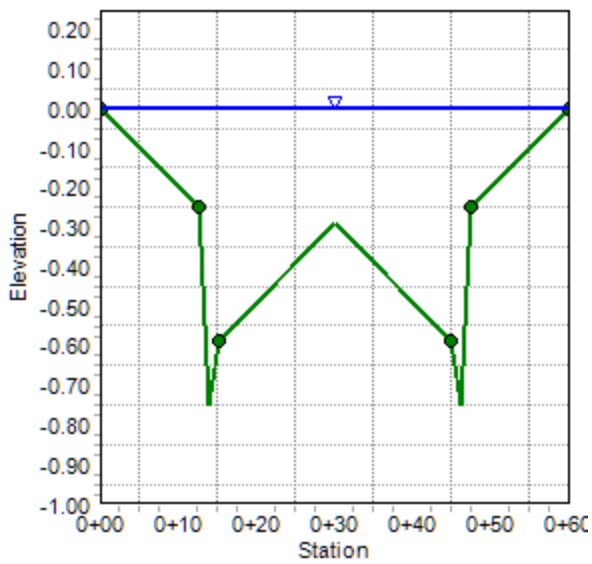
Project Description

| | |
|-----------------|-----------------|
| Friction Method | Manning Formula |
| Solve For | Discharge |

Input Data

| | | |
|---------------|---------|--------------------|
| Channel Slope | 0.00500 | ft/ft |
| Normal Depth | 0.75 | ft |
| Discharge | 42.54 | ft ³ /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 (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 | 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 (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 | 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 Pavlovskii's Method
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

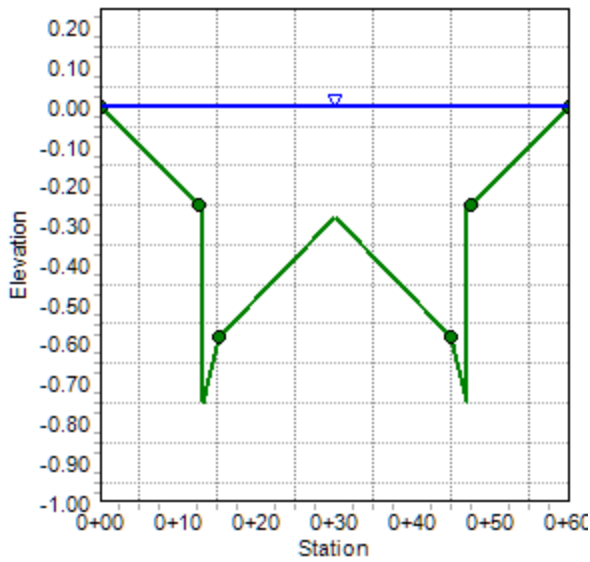
Project Description

Friction Method Manning Formula
Solve For Discharge

Input Data

| | | |
|---------------|---------|--------------------|
| Channel Slope | 0.00500 | ft/ft |
| Normal Depth | 0.75 | ft |
| Discharge | 41.33 | ft ³ /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 Vertical 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 | 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

| BASIN | AREA | | CURVE NO. | PERCENT IMPERV. | LAG TIME (min) | |
|----------|--------|--------------------|-----------|-----------------|----------------|----|
| | (acre) | (mi ²) | | | | |
| HISTORIC | | | | | | |
| OS01 | 998 | 1.5594 | 62.9 | 6.5% | 35.5 | ♦♦ |
| OS02 | 142 | 0.2219 | 64.5 | 7.7% | 25.5 | ♦♦ |
| OS03 | 127 | 0.1984 | 63.2 | 4.8% | 23.6 | ♦♦ |
| OS04 | 87 | 0.1359 | 61.0 | 0.0% | 21.4 | ♦♦ |
| HB01 | 15 | 0.0234 | 61.0 | 0.0% | 12.6 | ♦♦ |
| HB02 | 68 | 0.1063 | 61.0 | 0.0% | 16.2 | ♦♦ |
| HB03 | 81 | 0.1266 | 61.0 | 0.0% | 13.2 | ♦♦ |
| HB04 | 39 | 0.0609 | 61.0 | 0.0% | 14.4 | ♦♦ |
| HB05 | 88 | 0.1375 | 61.0 | 0.0% | 15.6 | ♦♦ |
| HB06 | 105 | 0.1641 | 61.0 | 0.0% | 18.0 | ♦♦ |
| HB07 | 20 | 0.0313 | 61.0 | 0.0% | 10.2 | ♦♦ |
| HB08 | 86 | 0.1344 | 61.0 | 0.0% | 21.6 | ♦♦ |
| HB09 | 195 | 0.3047 | 61.0 | 0.0% | 33.0 | ♦♦ |
| HB10 | 195 | 0.3047 | 61.0 | 0.0% | 24.0 | ♦♦ |
| HB12 | 51 | 0.0797 | 61.0 | 0.0% | 18.0 | ♦♦ |
| B-11 | 72 | 0.1125 | 61.0 | 0.0% | 25.8 | ♦♦ |
| B-13 | 180 | 0.2813 | 61.0 | 0.0% | 33.0 | ♦♦ |
| B-14 | 259 | 0.4039 | 61.0 | 0.0% | 34.2 | ♦♦ |
| B-15 | 48 | 0.0750 | 61.0 | 0.0% | 27.0 | ♦♦ |
| HG07 | 63 | 0.0984 | 61.0 | 0.0% | 28.3 | ♦♦ |
| HG08 | 85 | 0.1328 | 61.0 | 0.0% | 22.9 | ♦♦ |
| HG09 | 114 | 0.1781 | 61.0 | 0.0% | 35.6 | ♦♦ |
| HG10 | 88 | 0.1375 | 61.0 | 0.0% | 61.4 | ♦♦ |
| HG11 | 131 | 0.2047 | 61.0 | 0.0% | 40.4 | ♦♦ |
| HG12 | 83 | 0.1297 | 61.0 | 0.0% | 32.0 | ♦♦ |
| HH01 | 63 | 0.0984 | 61.0 | 0.0% | 16.6 | ♦♦ |
| INTERIM | | | | | | |
| OS01 | 998 | 1.5594 | 62.9 | 6.5% | 35.5 | ♦♦ |
| OS02 | 142 | 0.2219 | 64.5 | 7.7% | 25.5 | ♦♦ |
| OS03 | 127 | 0.1984 | 63.2 | 4.8% | 23.6 | ♦♦ |
| OS04 | 87 | 0.1359 | 61.0 | 0.0% | 21.4 | ♦♦ |
| DB01 | 46 | 0.0719 | 69.7 | 23.8% | 13.7 | ♦♦ |
| DB02 | 33 | 0.0516 | 69.0 | 21.8% | 10.5 | ♦♦ |
| DB03 | 45 | 0.0703 | 65.8 | 12.9% | 15.0 | ♦♦ |
| DB04 | 27 | 0.0422 | 66.8 | 16.5% | 15.3 | ♦♦ |
| DB05 | 25 | 0.0384 | 68.0 | 20.0% | 19.1 | ♦♦ |
| DB06 | 14 | 0.0219 | 84.0 | 62.6% | 14.6 | ♦♦ |
| DB07 | 16 | 0.0254 | 70.0 | 25.0% | 11.7 | ♦♦ |
| DB08 | 19 | 0.0297 | 64.9 | 10.5% | 11.9 | ♦♦ |
| DB09 | 12 | 0.0189 | 75.0 | 40.0% | 9.6 | ♦♦ |
| DB10 | 23 | 0.0364 | 75.0 | 40.0% | 13.7 | ♦♦ |
| DB11 | 62 | 0.0969 | 72.0 | 31.3% | 18.4 | ♦♦ |
| DB12 | 29 | 0.0453 | 78.2 | 42.5% | 12.7 | ♦♦ |

| BASIN | AREA | | CURVE NO. | PERCENT IMPERV. | LAG TIME (min) | |
|---------|--------|--------------------|-----------|-----------------|----------------|----|
| | (acre) | (mi ²) | | | | |
| INTERIM | | | | | | |
| DB13 | 45 | 0.0703 | 73.9 | 33.0% | 18.6 | ◆◆ |
| DB14 | 36 | 0.0556 | 78.0 | 43.0% | 14.6 | ◆◆ |
| DB15 | 79 | 0.1234 | 67.1 | 16.8% | 21.8 | ◆◆ |
| DB16 | 37 | 0.0578 | 78.5 | 47.3% | 16.4 | ◆◆ |
| DB17 | 3 | 0.0048 | 98.0 | 100.0% | 7.4 | ◆◆ |
| DB18 | 22 | 0.0346 | 80.0 | 47.0% | 13.4 | ◆◆ |
| DB19 | 18 | 0.0281 | 72.6 | 28.5% | 16.2 | ◆◆ |
| DB20 | 9 | 0.0147 | 78.7 | 46.1% | 15.2 | ◆◆ |
| DB21 | 33 | 0.0519 | 65.6 | 10.9% | 13.6 | ◆◆ |
| DB22 | 33 | 0.0516 | 80.0 | 48.2% | 14.8 | ◆◆ |
| DB23 | 11 | 0.0172 | 91.6 | 81.2% | 11.3 | ◆◆ |
| DB24 | 34 | 0.0531 | 78.5 | 43.3% | 13.3 | ◆◆ |
| DB25 | 14 | 0.0211 | 80.0 | 47.0% | 9.7 | ◆◆ |
| DB26 | 44 | 0.0692 | 85.8 | 71.5% | 16.1 | ◇◇ |
| DB27 | 33 | 0.0508 | 78.1 | 42.2% | 21.9 | ◇◇ |
| DB28 | 47 | 0.0741 | 70.0 | 19.6% | 17.6 | ◇◇ |
| DB29 | 109 | 0.1697 | 68.5 | 21.6% | 23.9 | ◇◇ |
| FB01 | 24 | 0.0373 | 66.6 | 0.2% | 14.2 | |
| FB02 | 32 | 0.0500 | 79.1 | 44.8% | 22.8 | |
| FB03 | 5 | 0.0078 | 90.1 | 77.6% | 9.0 | |
| WH-24 | 85 | 0.1325 | 79.0 | 46.0% | 16.0 | ◆ |
| WH-26 | 54 | 0.0839 | 62.0 | 2.0% | 25.1 | ◆ |
| WH-27 | 14 | 0.0217 | 62.0 | 2.0% | 8.6 | ◆ |
| WH-28 | 26 | 0.0398 | 78.3 | 43.9% | 17.7 | ◆ |
| WH-29 | 32 | 0.0495 | 78.0 | 43.0% | 16.6 | ◆ |
| WH-30 | 10 | 0.0159 | 68.6 | 18.9% | 6.0 | ◆ |
| WH-31 | 26 | 0.0406 | 80.0 | 47.0% | 13.2 | ◆ |
| WH-32 | 29 | 0.0458 | 62.0 | 2.0% | 6.0 | ◆ |
| WH-33 | 4 | 0.0064 | 80.0 | 47.0% | 13.0 | ◆ |
| WH-34 | 29 | 0.0453 | 75.0 | N/A | 14.4 | ◆ |
| WH-35 | 99 | 0.1547 | 68.0 | N/A | 15.0 | ◆ |
| WH-36 | 48 | 0.0750 | 63.0 | N/A | 15.6 | ◆ |
| FG08A | 48 | 0.0750 | 76.8 | 42.6% | 13.3 | ✓ |
| FG08B | 40 | 0.0630 | 76.7 | 39.8% | 16.6 | ✓ |
| FG09 | 31 | 0.0484 | 71.7 | 26.9% | 20.8 | ●● |
| HG10 | 30 | 0.0467 | 63.2 | 6.1% | 23.1 | |
| FG11 | 40 | 0.0625 | 78.2 | 44.1% | 23.2 | ● |
| FG12 | 21 | 0.0328 | 80.0 | 47.0% | 16.1 | ❖❖ |
| FG13 | 42 | 0.0661 | 66.9 | 14.2% | 29.6 | |
| HG15 | 19 | 0.0297 | 62.1 | 2.6% | 35.0 | |
| FG15a | 10 | 0.0156 | 78.7 | 43.9% | 11.2 | ❖ |
| FG16 | 50 | 0.0773 | 78.8 | 44.8% | 13.0 | ❖ |
| FG17a | 44 | 0.0694 | 76.5 | 39.3% | 14.4 | ✓✓ |
| FG17b | 14 | 0.0214 | 79.9 | 47.1% | 11.4 | ✓✓ |
| FG17c | 20 | 0.0313 | 65.2 | 9.9% | 11.8 | ✓✓ |
| FG18 | 41 | 0.0644 | 64.9 | 0.8% | 29.9 | ◇ |
| FG19 | 34 | 0.0527 | 76.8 | 38.4% | 15.3 | ✓✓ |
| FG19a | 5 | 0.0077 | 75.2 | 36.3% | 16.4 | |
| FG20 | 7 | 0.0109 | 92.9 | 86.0% | 10.1 | |

| BASIN | AREA | | CURVE NO. | PERCENT IMPERV. | LAG TIME (min) | |
|---------|--------|--------------------|-----------|-----------------|----------------|----|
| | (acre) | (mi ²) | | | | |
| INTERIM | | | | | | |
| FG21 | 42 | 0.0656 | 66.9 | 16.8% | 22.0 | |
| FG22 | 41 | 0.0641 | 66.9 | 16.2% | 27.4 | |
| FG23 | 52 | 0.0813 | 66.5 | 15.7% | 26.5 | |
| FG24 | 67 | 0.1041 | 64.9 | 11.2% | 22.7 | |
| FG25 | 14 | 0.0219 | 70.8 | 26.4% | 26.6 | |
| FG26 | 52 | 0.0813 | 72.5 | 28.8% | 24.8 | |
| FG27a | 17 | 0.0259 | 65.5 | 12.2% | 31.4 | |
| FG27b | 33 | 0.0508 | 77.2 | 40.9% | 24.3 | |
| FG28 | 13 | 0.0203 | 65.6 | 11.1% | 17.5 | |
| FG29 | 66 | 0.1031 | 61.3 | 0.8% | 23.3 | |
| HG30 | 118 | 0.1844 | 61.0 | 0.0% | 65.1 | |
| FG31 | 59 | 0.0922 | 80.0 | 52.0% | 24.0 | ◆◆ |
| FH01 | 86 | 0.1344 | 72.4 | 23.8% | 30.9 | |
| FH02 | 6 | 0.0091 | 71.3 | 25.3% | 14.6 | |
| FH03 | 5 | 0.0081 | 80.7 | 52.4% | 14.4 | |
| FUTURE | | | | | | |
| OS01 | 998 | 1.5594 | 62.9 | 6.5% | 35.5 | ◆◆ |
| OS02 | 142 | 0.2219 | 64.5 | 7.7% | 25.5 | ◆◆ |
| OS03 | 127 | 0.1984 | 63.2 | 4.8% | 23.6 | ◆◆ |
| OS04 | 87 | 0.1359 | 61.0 | 0.0% | 21.4 | ◆◆ |
| DB01 | 46 | 0.0719 | 69.7 | 23.8% | 13.7 | ◆◆ |
| DB02 | 33 | 0.0516 | 69.0 | 21.8% | 10.5 | ◆◆ |
| DB03 | 45 | 0.0703 | 65.8 | 12.9% | 15.0 | ◆◆ |
| DB04 | 27 | 0.0422 | 66.8 | 16.5% | 15.3 | ◆◆ |
| DB05 | 25 | 0.0384 | 68.0 | 20.0% | 19.1 | ◆◆ |
| DB06 | 14 | 0.0219 | 84.0 | 62.6% | 14.6 | ◆◆ |
| DB07 | 16 | 0.0254 | 70.0 | 25.0% | 11.7 | ◆◆ |
| DB08 | 19 | 0.0297 | 64.9 | 10.5% | 11.9 | ◆◆ |
| DB09 | 12 | 0.0189 | 75.0 | 40.0% | 9.6 | ◆◆ |
| DB10 | 23 | 0.0364 | 75.0 | 40.0% | 13.7 | ◆◆ |
| DB11 | 62 | 0.0969 | 72.0 | 31.3% | 18.4 | ◆◆ |
| DB12 | 29 | 0.0453 | 78.2 | 42.5% | 12.7 | ◆◆ |
| DB13 | 45 | 0.0703 | 73.9 | 33.0% | 18.6 | ◆◆ |
| DB14 | 36 | 0.0556 | 78.0 | 43.0% | 14.6 | ◆◆ |
| DB15 | 79 | 0.1234 | 67.1 | 16.8% | 21.8 | ◆◆ |
| DB16 | 37 | 0.0578 | 78.5 | 47.3% | 16.4 | ◆◆ |
| DB17 | 3 | 0.0048 | 98.0 | 100.0% | 7.4 | ◆◆ |
| DB18 | 22 | 0.0346 | 80.0 | 47.0% | 13.4 | ◆◆ |
| DB19 | 18 | 0.0281 | 72.6 | 28.5% | 16.2 | ◆◆ |
| DB20 | 9 | 0.0147 | 78.7 | 46.1% | 15.2 | ◆◆ |
| DB21 | 33 | 0.0519 | 65.6 | 10.9% | 13.6 | ◆◆ |
| DB22 | 33 | 0.0516 | 80.0 | 48.2% | 14.8 | ◆◆ |
| DB23 | 11 | 0.0172 | 91.6 | 81.2% | 11.3 | ◆◆ |
| DB24 | 34 | 0.0531 | 78.5 | 43.3% | 13.3 | ◆◆ |
| DB25 | 14 | 0.0211 | 80.0 | 47.0% | 9.7 | ◆◆ |
| DB26 | 44 | 0.0692 | 85.8 | 71.5% | 16.1 | ◆◆ |
| DB27 | 33 | 0.0508 | 78.1 | 42.2% | 21.9 | ◆◆ |
| DB28 | 47 | 0.0741 | 70.7 | 23.8% | 17.6 | ◆◆ |
| DB29 | 109 | 0.1697 | 68.5 | 21.6% | 23.9 | ◆◆ |

| BASIN | AREA | | CURVE NO. | PERCENT IMPERV. | LAG TIME (min) | |
|--------|--------|--------------------|-----------|-----------------|----------------|-----|
| | (acre) | (mi ²) | | | | |
| FUTURE | | | | | | |
| FB01 | 24 | 0.0373 | 77.7 | 41.4% | 14.2 | ◆◆◆ |
| FB02 | 32 | 0.0500 | 79.1 | 44.8% | 22.8 | ◆◆◆ |
| FB03 | 5 | 0.0078 | 90.1 | 77.6% | 9.0 | ◆◆◆ |
| WH-24 | 85 | 0.1325 | 79.0 | 46.0% | 16.0 | ◆ |
| WH-26 | 54 | 0.0839 | 62.0 | 2.0% | 25.1 | ◆ |
| WH-27 | 14 | 0.0217 | 62.0 | 2.0% | 8.6 | ◆ |
| WH-28 | 26 | 0.0398 | 78.3 | 43.9% | 17.7 | ◆ |
| WH-29 | 32 | 0.0495 | 78.0 | 43.0% | 16.6 | ◆ |
| WH-30 | 10 | 0.0159 | 68.6 | 18.9% | 6.0 | ◆ |
| WH-31 | 26 | 0.0406 | 80.0 | 47.0% | 13.2 | ◆ |
| WH-32 | 29 | 0.0458 | 62.0 | 2.0% | 6.0 | ◆ |
| WH-33 | 4 | 0.0064 | 80.0 | 47.0% | 13.0 | ◆ |
| WH-34 | 29 | 0.0453 | 75.0 | N/A | 14.4 | ◆ |
| FG04 | 11 | 0.0172 | 68.0 | 20.0% | 7.6 | ■ ■ |
| FG05 | 59 | 0.0922 | 66.9 | 16.9% | 28.7 | ■ |
| FG06 | 12 | 0.0188 | 68.0 | 20.0% | 15.3 | |
| FG08A | 48 | 0.0750 | 76.8 | 42.6% | 13.3 | ✓ |
| FG08B | 40 | 0.0630 | 76.7 | 39.8% | 16.6 | ✓ |
| FG09 | 31 | 0.0484 | 71.7 | 26.9% | 20.8 | ● ● |
| FG10 | 43 | 0.0669 | 72.7 | 29.5% | 41.8 | |
| FG11 | 40 | 0.0625 | 78.2 | 44.1% | 23.2 | ● |
| FG12 | 21 | 0.0328 | 80.0 | 47.0% | 16.1 | ❖ ❖ |
| FG13 | 42 | 0.0661 | 66.9 | 14.3% | 29.6 | |
| FG14 | 21 | 0.0331 | 77.5 | 41.8% | 20.9 | |
| FG15 | 65 | 0.1017 | 72.9 | 29.9% | 25.9 | |
| FG15a | 10 | 0.0156 | 78.7 | 43.9% | 11.2 | ❖ |
| FG16 | 50 | 0.0773 | 78.8 | 44.8% | 13.0 | ❖ |
| FG17a | 44 | 0.0694 | 76.5 | 39.3% | 14.4 | ✓ ✓ |
| FG17b | 14 | 0.0214 | 79.9 | 47.1% | 11.4 | ✓ ✓ |
| FG17c | 20 | 0.0313 | 65.2 | 9.9% | 11.8 | ✓ ✓ |
| FG18 | 41 | 0.0644 | 73.5 | 30.8% | 29.9 | ❖ |
| FG35 | 36 | 0.0566 | 62.7 | 4.8% | 20.7 | |
| FG36 | 18 | 0.0281 | 61.0 | 0.0% | 24.9 | |
| FG37 | 51 | 0.0797 | 61.0 | 0.0% | 21.8 | |
| FH01 | 86 | 0.1344 | 76.2 | 37.6% | 23.4 | ◆◆◆ |
| FH02 | 6 | 0.0091 | 71.3 | 25.3% | 14.6 | ◆◆◆ |

| | |
|-----|--|
| ◇ | 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 Filing MDDP, Aug 2015 |
| ◆◆◆ | From Approved Meridian Ranch Filing MDDP, Dec 2017 |
| ◇◇ | 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 |



NOAA Atlas 14, Volume 6, Version 2
 Location name: Peyton, Colorado, USA*
 Latitude: 38.9783°, Longitude: -104.8842°
 Elevation: 7054.14 ft*



* source: ERI Maps
 ** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Benja Petras, Deborah Meath, Sandra Perovich, Ishant Roy, Michael Di Laurent, Carl Tysalluk,
 Dale Urruth, Michael Yelton, Geoffrey Bannin

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

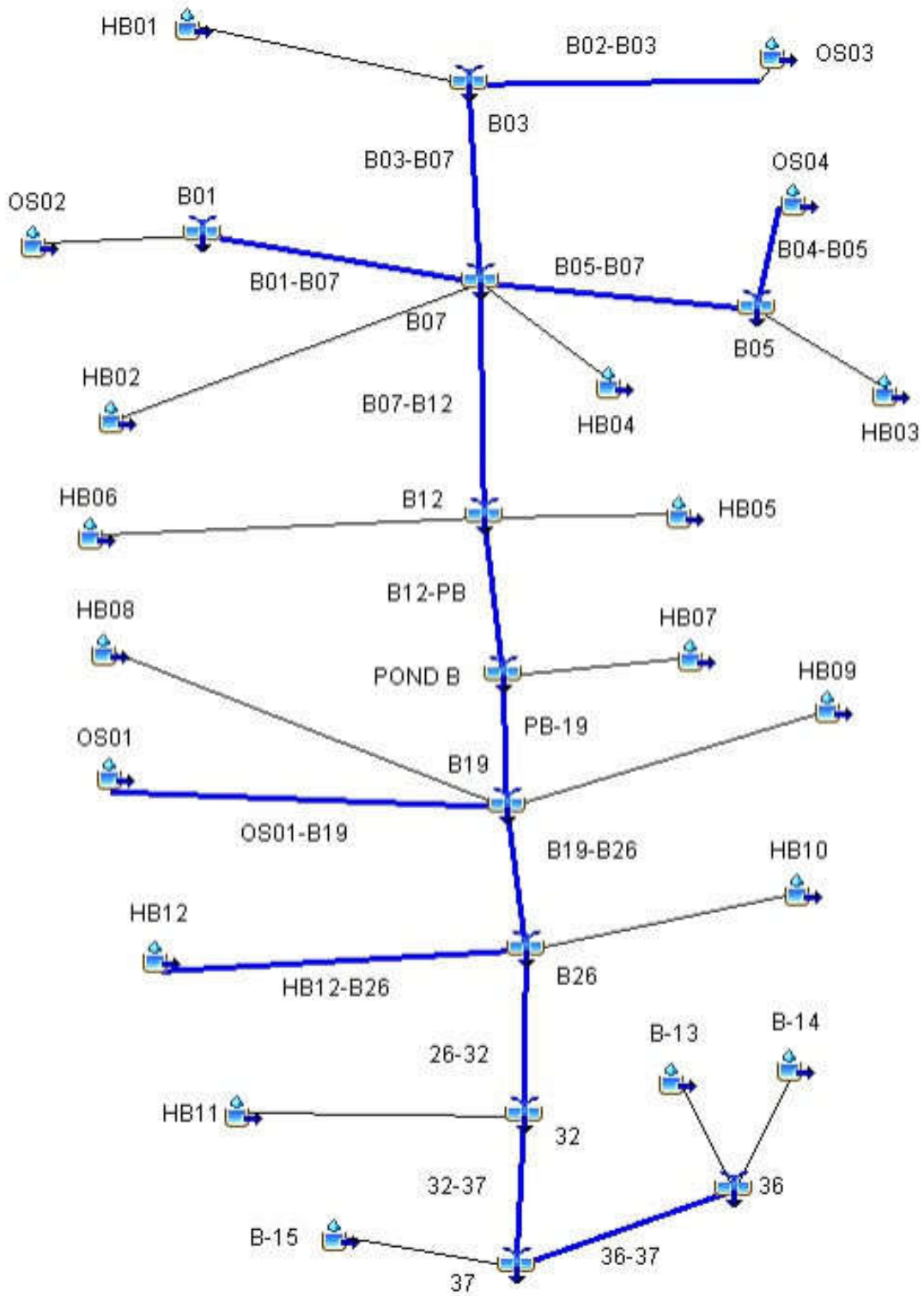
PF tabular

PDF-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) | 0.281 (0.232-0.327) | 0.341 (0.302-0.482) | 0.400 (0.353-0.595) | 0.576 (0.442-0.764) | 0.870 (0.501-0.929) | 0.770 (0.508-1.05) | 0.870 (0.508-1.23) | 1.02 (0.590-1.45) | 1.14 (0.737-1.65) |
| 10-min | 0.348 (0.278-0.441) | 0.426 (0.338-0.538) | 0.558 (0.443-0.705) | 0.874 (0.632-0.957) | 0.843 (0.647-1.12) | 0.882 (0.734-1.32) | 1.13 (0.814-1.55) | 1.28 (0.888-1.80) | 1.50 (0.908-2.16) | 1.67 (1.08-2.44) |
| 15-min | 0.426 (0.340-0.538) | 0.518 (0.413-0.660) | 0.680 (0.540-0.801) | 0.822 (0.648-1.04) | 1.03 (0.788-1.38) | 1.20 (0.885-1.81) | 1.37 (0.989-1.89) | 1.58 (1.08-2.20) | 1.82 (1.22-2.54) | 2.03 (1.31-2.87) |
| 30-min | 0.568 (0.486-0.768) | 0.741 (0.630-0.938) | 0.969 (0.788-1.23) | 1.17 (0.923-1.48) | 1.46 (1.12-1.94) | 1.70 (1.27-2.25) | 1.93 (1.41-2.68) | 2.31 (1.53-3.12) | 2.58 (1.72-3.73) | 2.87 (1.88-4.20) |
| 60-min | 0.778 (0.620-0.982) | 0.934 (0.744-1.18) | 1.21 (0.982-1.54) | 1.47 (1.16-1.88) | 1.84 (1.42-2.48) | 2.18 (1.62-2.81) | 2.50 (1.81-3.44) | 2.87 (1.88-4.05) | 3.38 (2.25-4.81) | 3.80 (2.48-5.58) |
| 2-hr | 0.948 (0.782-1.18) | 1.13 (0.905-1.41) | 1.46 (1.16-1.83) | 1.78 (1.40-2.22) | 2.23 (1.73-2.88) | 2.82 (1.98-3.91) | 3.08 (2.23-4.18) | 3.82 (2.47-4.88) | 4.18 (2.82-5.04) | 4.73 (3.08-6.87) |
| 3-hr | 1.04 (0.839-1.28) | 1.22 (0.985-1.52) | 1.57 (1.26-1.86) | 1.90 (1.51-2.38) | 2.41 (1.90-3.21) | 2.96 (2.18-3.83) | 3.35 (2.47-4.58) | 3.90 (2.75-5.47) | 4.68 (3.18-6.75) | 5.33 (3.50-7.71) |
| 6-hr | 1.21 (0.980-1.48) | 1.48 (1.14-1.73) | 1.78 (1.44-2.21) | 2.18 (1.74-2.88) | 2.78 (2.19-3.85) | 3.29 (2.53-4.38) | 3.88 (2.88-5.28) | 4.83 (3.23-6.84) | 5.48 (3.76-7.88) | 6.28 (4.17-8.84) |
| 12-hr | 1.38 (1.14-1.70) | 1.62 (1.23-1.98) | 2.08 (1.68-2.68) | 2.48 (2.02-3.08) | 3.18 (2.63-4.14) | 3.78 (2.92-4.98) | 4.42 (3.31-5.87) | 5.18 (3.70-7.14) | 6.22 (4.30-8.88) | 7.10 (4.76-10.1) |
| 24-hr | 1.81 (1.33-1.95) | 1.88 (1.65-2.28) | 2.38 (1.97-2.92) | 2.88 (2.35-3.52) | 3.53 (2.91-4.88) | 4.27 (3.34-5.68) | 4.98 (3.76-6.88) | 5.78 (4.17-7.88) | 6.87 (4.78-9.70) | 7.78 (5.25-11.1) |

| HISTORIC 100-YEAR | | | | |
|---------------------------|--------------------------------|---|-------------------------|---|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q₁₀₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q₁₀₀ (AC. FT.) |
| OS02 | 0.2219 | 148 | 01Jul2015, 12:20 | 19 |
| B01 | 0.2219 | 148 | 01Jul2015, 12:20 | 19 |
| B01-B07 | 0.2219 | 148 | 01Jul2015, 12:24 | 19 |
| OS03 | 0.1984 | 130 | 01Jul2015, 12:18 | 16 |
| B02-B03 | 0.1984 | 129 | 01Jul2015, 12:20 | 16 |
| HB01 | 0.0234 | 19 | 01Jul2015, 12:08 | 2 |
| B03 | 0.2218 | 140 | 01Jul2015, 12:20 | 17 |
| B03-B07 | 0.2218 | 140 | 01Jul2015, 12:22 | 17 |
| OS04 | 0.1359 | 83 | 01Jul2015, 12:16 | 10 |
| B04-B05 | 0.1359 | 82 | 01Jul2015, 12:24 | 10 |
| HB03 | 0.1266 | 103 | 01Jul2015, 12:08 | 9 |
| B05 | 0.2625 | 144 | 01Jul2015, 12:16 | 19 |
| B05-B07 | 0.2625 | 144 | 01Jul2015, 12:16 | 19 |
| HB02 | 0.1063 | 77 | 01Jul2015, 12:12 | 8 |
| HB04 | 0.0609 | 47 | 01Jul2015, 12:10 | 4 |
| B07 | 0.8734 | 519 | 01Jul2015, 12:18 | 67 |
| B07-B12 | 0.8734 | 518 | 01Jul2015, 12:24 | 66 |
| HB05 | 0.1375 | 102 | 01Jul2015, 12:10 | 10 |
| HB06 | 0.1641 | 111 | 01Jul2015, 12:14 | 12 |
| B12 | 1.1750 | 679 | 01Jul2015, 12:20 | 88 |
| B12-PB | 1.1750 | 677 | 01Jul2015, 12:22 | 88 |
| HB07 | 0.0313 | 29 | 01Jul2015, 12:06 | 2 |
| POND B | 1.2063 | 688 | 01Jul2015, 12:22 | 90 |
| PB-19 | 1.2063 | 687 | 01Jul2015, 12:26 | 89 |
| OS01 | 1.5594 | 757 | 01Jul2015, 12:32 | 122 |
| OS01-B19 | 1.5594 | 756 | 01Jul2015, 12:38 | 121 |
| HB08 | 0.1344 | 81 | 01Jul2015, 12:16 | 10 |
| HB09 | 0.3047 | 138 | 01Jul2015, 12:30 | 22 |
| B19 | 3.2048 | 1563 | 01Jul2015, 12:30 | 241 |
| B19-B26 | 3.2048 | 1563 | 01Jul2015, 12:32 | 241 |
| HB10 | 0.3047 | 172 | 01Jul2015, 12:20 | 22 |
| HB12 | 0.0797 | 54 | 01Jul2015, 12:14 | 6 |
| HB12-B26 | 0.0797 | 54 | 01Jul2015, 12:16 | 6 |
| B26 | 3.5892 | 1737 | 01Jul2015, 12:30 | 268 |
| 26-32 | 3.5892 | 1734 | 01Jul2015, 12:34 | 267 |
| HB11 | 0.1125 | 60 | 01Jul2015, 12:22 | 8 |
| 32 | 3.7017 | 1782 | 01Jul2015, 12:34 | 275 |
| 32-37 | 3.7017 | 1782 | 01Jul2015, 12:36 | 273 |
| B-14 | 0.4039 | 178 | 01Jul2015, 12:32 | 29 |
| B-13 | 0.2813 | 127 | 01Jul2015, 12:30 | 20 |
| 36 | 0.6852 | 306 | 01Jul2015, 12:30 | 49 |
| 36-37 | 0.6852 | 305 | 01Jul2015, 12:34 | 49 |
| B-15 | 0.0750 | 39 | 01Jul2015, 12:22 | 5 |
| 37 | 4.4619 | 2117 | 01Jul2015, 12:36 | 327 |
| HH01 | 0.0984 | 70 | 01Jul2015, 12:12 | 7 |
| H12 | 0.0984 | 70 | 01Jul2015, 12:12 | 7 |

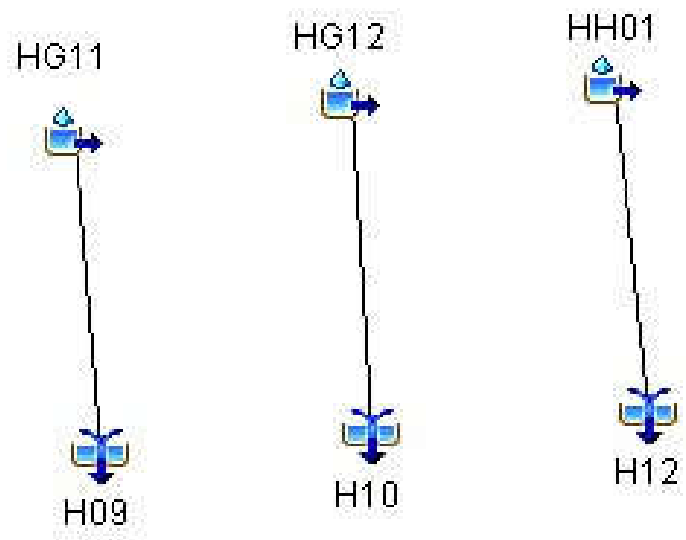
BENNETT HISTORIC



| 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 | 102 | 01Jul2015, 12:22 | 14 |
| B01 | 0.2219 | 102 | 01Jul2015, 12:22 | 14 |
| B01-B07 | 0.2219 | 102 | 01Jul2015, 12:24 | 14 |
| OS03 | 0.1984 | 88 | 01Jul2015, 12:20 | 11 |
| B02-B03 | 0.1984 | 88 | 01Jul2015, 12:22 | 11 |
| HB01 | 0.0234 | 13 | 01Jul2015, 12:08 | 1 |
| B03 | 0.2218 | 95 | 01Jul2015, 12:20 | 12 |
| B03-B07 | 0.2218 | 94 | 01Jul2015, 12:24 | 12 |
| OS04 | 0.1359 | 54 | 01Jul2015, 12:18 | 7 |
| B04-B05 | 0.1359 | 54 | 01Jul2015, 12:26 | 7 |
| HB03 | 0.1266 | 68 | 01Jul2015, 12:08 | 6 |
| B05 | 0.2625 | 91 | 01Jul2015, 12:18 | 13 |
| B05-B07 | 0.2625 | 91 | 01Jul2015, 12:20 | 13 |
| HB02 | 0.1063 | 51 | 01Jul2015, 12:12 | 5 |
| HB04 | 0.0609 | 31 | 01Jul2015, 12:10 | 3 |
| B07 | 0.8734 | 344 | 01Jul2015, 12:20 | 47 |
| B07-B12 | 0.8734 | 343 | 01Jul2015, 12:26 | 47 |
| HB05 | 0.1375 | 67 | 01Jul2015, 12:12 | 7 |
| HB06 | 0.1641 | 73 | 01Jul2015, 12:14 | 8 |
| B12 | 1.1750 | 440 | 01Jul2015, 12:22 | 62 |
| B12-PB | 1.1750 | 440 | 01Jul2015, 12:24 | 62 |
| HB07 | 0.0313 | 19 | 01Jul2015, 12:06 | 2 |
| POND B | 1.2063 | 446 | 01Jul2015, 12:24 | 64 |
| PB-19 | 1.2063 | 444 | 01Jul2015, 12:28 | 63 |
| OS01 | 1.5594 | 510 | 01Jul2015, 12:34 | 87 |
| OS01-B19 | 1.5594 | 509 | 01Jul2015, 12:40 | 86 |
| HB08 | 0.1344 | 53 | 01Jul2015, 12:18 | 7 |
| HB09 | 0.3047 | 90 | 01Jul2015, 12:32 | 15 |
| B19 | 3.2048 | 1041 | 01Jul2015, 12:34 | 171 |
| B19-B26 | 3.2048 | 1039 | 01Jul2015, 12:34 | 171 |
| HB10 | 0.3047 | 113 | 01Jul2015, 12:20 | 15 |
| HB12 | 0.0797 | 36 | 01Jul2015, 12:14 | 4 |
| HB12-B26 | 0.0797 | 35 | 01Jul2015, 12:18 | 4 |
| B26 | 3.5892 | 1147 | 01Jul2015, 12:34 | 190 |
| 26-32 | 3.5892 | 1146 | 01Jul2015, 12:36 | 189 |
| HB11 | 0.1125 | 40 | 01Jul2015, 12:22 | 6 |
| 32 | 3.7017 | 1177 | 01Jul2015, 12:36 | 194 |
| 32-37 | 3.7017 | 1175 | 01Jul2015, 12:40 | 193 |
| B-14 | 0.4039 | 117 | 01Jul2015, 12:32 | 20 |
| B-13 | 0.2813 | 83 | 01Jul2015, 12:32 | 14 |
| 36 | 0.6852 | 200 | 01Jul2015, 12:32 | 34 |
| 36-37 | 0.6852 | 200 | 01Jul2015, 12:36 | 34 |
| B-15 | 0.0750 | 26 | 01Jul2015, 12:24 | 4 |
| 37 | 4.4619 | 1391 | 01Jul2015, 12:38 | 231 |
| HH01 | 0.0984 | 46 | 01Jul2015, 12:12 | 5 |
| H12 | 0.0984 | 46 | 01Jul2015, 12:12 | 5 |

| 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 | 65 | 01Jul2015, 12:22 | 9.3 |
| B01 | 0.2219 | 65 | 01Jul2015, 12:22 | 9.3 |
| B01-B07 | 0.2219 | 65 | 01Jul2015, 12:26 | 9.2 |
| OS03 | 0.1984 | 55 | 01Jul2015, 12:20 | 7.7 |
| B02-B03 | 0.1984 | 55 | 01Jul2015, 12:24 | 7.6 |
| HB01 | 0.0234 | 8 | 01Jul2015, 12:08 | 0.8 |
| B03 | 0.2218 | 59 | 01Jul2015, 12:22 | 8.4 |
| B03-B07 | 0.2218 | 59 | 01Jul2015, 12:26 | 8.4 |
| OS04 | 0.1359 | 32 | 01Jul2015, 12:18 | 4.5 |
| B04-B05 | 0.1359 | 32 | 01Jul2015, 12:28 | 4.4 |
| HB03 | 0.1266 | 41 | 01Jul2015, 12:10 | 4.2 |
| B05 | 0.2625 | 52 | 01Jul2015, 12:24 | 8.7 |
| B05-B07 | 0.2625 | 52 | 01Jul2015, 12:26 | 8.7 |
| HB02 | 0.1063 | 30 | 01Jul2015, 12:12 | 3.6 |
| HB04 | 0.0609 | 19 | 01Jul2015, 12:10 | 2.0 |
| B07 | 0.8734 | 207 | 01Jul2015, 12:24 | 31.9 |
| B07-B12 | 0.8734 | 207 | 01Jul2015, 12:30 | 31.5 |
| HB05 | 0.1375 | 40 | 01Jul2015, 12:12 | 4.6 |
| HB06 | 0.1641 | 43 | 01Jul2015, 12:14 | 5.5 |
| B12 | 1.1750 | 259 | 01Jul2015, 12:26 | 41.6 |
| B12-PB | 1.1750 | 259 | 01Jul2015, 12:28 | 41.5 |
| HB07 | 0.0313 | 12 | 01Jul2015, 12:06 | 1.0 |
| POND B | 1.2063 | 262 | 01Jul2015, 12:28 | 42.6 |
| PB-19 | 1.2063 | 261 | 01Jul2015, 12:34 | 42.1 |
| OS01 | 1.5594 | 316 | 01Jul2015, 12:36 | 58.6 |
| OS01-B19 | 1.5594 | 315 | 01Jul2015, 12:44 | 57.8 |
| HB08 | 0.1344 | 32 | 01Jul2015, 12:20 | 4.5 |
| HB09 | 0.3047 | 54 | 01Jul2015, 12:34 | 10.1 |
| B19 | 3.2048 | 635 | 01Jul2015, 12:38 | 114.5 |
| B19-B26 | 3.2048 | 634 | 01Jul2015, 12:38 | 114.3 |
| HB10 | 0.3047 | 67 | 01Jul2015, 12:22 | 10.1 |
| HB12 | 0.0797 | 21 | 01Jul2015, 12:14 | 2.7 |
| HB12-B26 | 0.0797 | 21 | 01Jul2015, 12:20 | 2.6 |
| B26 | 3.5892 | 693 | 01Jul2015, 12:38 | 127.0 |
| 26-32 | 3.5892 | 693 | 01Jul2015, 12:42 | 126.0 |
| HB11 | 0.1125 | 23 | 01Jul2015, 12:24 | 3.7 |
| 32 | 3.7017 | 709 | 01Jul2015, 12:42 | 129.8 |
| 32-37 | 3.7017 | 708 | 01Jul2015, 12:44 | 128.7 |
| B-14 | 0.4039 | 70 | 01Jul2015, 12:34 | 13.3 |
| B-13 | 0.2813 | 50 | 01Jul2015, 12:34 | 9.3 |
| 36 | 0.6852 | 119 | 01Jul2015, 12:34 | 22.6 |
| 36-37 | 0.6852 | 119 | 01Jul2015, 12:38 | 22.5 |
| B-15 | 0.0750 | 15 | 01Jul2015, 12:26 | 2.5 |
| 37 | 4.4619 | 834 | 01Jul2015, 12:44 | 153.7 |
| HH01 | 0.0984 | 27 | 01Jul2015, 12:14 | 3.3 |
| H12 | 0.0984 | 27 | 01Jul2015, 12:14 | 3.3 |

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 | 30 | 01 Jul2015, 12:26 | 5.1 |
| B01 | 0.2219 | 30 | 01 Jul2015, 12:26 | 5.1 |
| B01-B07 | 0.2219 | 30 | 01 Jul2015, 12:30 | 5.0 |
| OS03 | 0.1984 | 23 | 01 Jul2015, 12:24 | 4.1 |
| B02-B03 | 0.1984 | 23 | 01 Jul2015, 12:26 | 4.0 |
| HB01 | 0.0234 | 3 | 01 Jul2015, 12:10 | 0.4 |
| B03 | 0.2218 | 25 | 01 Jul2015, 12:26 | 4.4 |
| B03-B07 | 0.2218 | 25 | 01 Jul2015, 12:30 | 4.4 |
| OS04 | 0.1359 | 12 | 01 Jul2015, 12:22 | 2.3 |
| B04-B05 | 0.1359 | 12 | 01 Jul2015, 12:34 | 2.2 |
| HB03 | 0.1266 | 15 | 01 Jul2015, 12:12 | 2.1 |
| B05 | 0.2625 | 20 | 01 Jul2015, 12:30 | 4.4 |
| B05-B07 | 0.2625 | 20 | 01 Jul2015, 12:32 | 4.4 |
| HB02 | 0.1063 | 11 | 01 Jul2015, 12:16 | 1.8 |
| HB04 | 0.0609 | 7 | 01 Jul2015, 12:12 | 1.0 |
| B07 | 0.8734 | 86 | 01 Jul2015, 12:30 | 16.6 |
| B07-B12 | 0.8734 | 86 | 01 Jul2015, 12:38 | 16.4 |
| HB05 | 0.1375 | 15 | 01 Jul2015, 12:14 | 2.3 |
| HB06 | 0.1641 | 16 | 01 Jul2015, 12:18 | 2.8 |
| B12 | 1.1750 | 103 | 01 Jul2015, 12:36 | 21.5 |
| B12-PB | 1.1750 | 103 | 01 Jul2015, 12:38 | 21.4 |
| HB07 | 0.0313 | 4 | 01 Jul2015, 12:08 | 0.5 |
| POND B | 1.2063 | 105 | 01 Jul2015, 12:38 | 22.0 |
| PB-19 | 1.2063 | 104 | 01 Jul2015, 12:46 | 21.7 |
| OS01 | 1.5594 | 136 | 01 Jul2015, 12:38 | 30.9 |
| OS01-B19 | 1.5594 | 136 | 01 Jul2015, 12:48 | 30.4 |
| HB08 | 0.1344 | 12 | 01 Jul2015, 12:22 | 2.3 |
| HB09 | 0.3047 | 21 | 01 Jul2015, 12:38 | 5.1 |
| B19 | 3.2048 | 266 | 01 Jul2015, 12:46 | 59.4 |
| B19-B26 | 3.2048 | 266 | 01 Jul2015, 12:48 | 59.2 |
| HB10 | 0.3047 | 26 | 01 Jul2015, 12:26 | 5.1 |
| HB12 | 0.0797 | 8 | 01 Jul2015, 12:18 | 1.3 |
| HB12-B26 | 0.0797 | 8 | 01 Jul2015, 12:24 | 1.3 |
| B26 | 3.5892 | 288 | 01 Jul2015, 12:48 | 65.7 |
| 26-32 | 3.5892 | 287 | 01 Jul2015, 12:52 | 65.0 |
| HB11 | 0.1125 | 9 | 01 Jul2015, 12:28 | 1.9 |
| 32 | 3.7017 | 293 | 01 Jul2015, 12:52 | 66.9 |
| 32-37 | 3.7017 | 293 | 01 Jul2015, 12:58 | 66.1 |
| B-14 | 0.4039 | 27 | 01 Jul2015, 12:38 | 6.7 |
| B-13 | 0.2813 | 19 | 01 Jul2015, 12:38 | 4.7 |
| 36 | 0.6852 | 47 | 01 Jul2015, 12:38 | 11.4 |
| 36-37 | 0.6852 | 47 | 01 Jul2015, 12:42 | 11.3 |
| B-15 | 0.0750 | 6 | 01 Jul2015, 12:30 | 1.3 |
| 37 | 4.4619 | 338 | 01 Jul2015, 12:56 | 78.7 |
| HH01 | 0.0984 | 10 | 01 Jul2015, 12:16 | 1.7 |
| H12 | 0.0984 | 10 | 01 Jul2015, 12:16 | 1.7 |

| 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 | 13 | 01Jul2015, 12:28 | 2.8 |
| B01 | 0.2219 | 13 | 01Jul2015, 12:28 | 2.8 |
| B01-B07 | 0.2219 | 13 | 01Jul2015, 12:34 | 2.8 |
| OS03 | 0.1984 | 9 | 01Jul2015, 12:28 | 2.2 |
| B02-B03 | 0.1984 | 9 | 01Jul2015, 12:32 | 2.2 |
| HB01 | 0.0234 | 1 | 01Jul2015, 12:14 | 0.2 |
| B03 | 0.2218 | 10 | 01Jul2015, 12:32 | 2.4 |
| B03-B07 | 0.2218 | 10 | 01Jul2015, 12:36 | 2.4 |
| OS04 | 0.1359 | 4 | 01Jul2015, 12:28 | 1.2 |
| B04-B05 | 0.1359 | 4 | 01Jul2015, 12:44 | 1.1 |
| HB03 | 0.1266 | 5 | 01Jul2015, 12:14 | 1.1 |
| B05 | 0.2625 | 7 | 01Jul2015, 12:42 | 2.2 |
| B05-B07 | 0.2625 | 7 | 01Jul2015, 12:44 | 2.2 |
| HB02 | 0.1063 | 4 | 01Jul2015, 12:20 | 0.9 |
| HB04 | 0.0609 | 2 | 01Jul2015, 12:16 | 0.5 |
| B07 | 0.8734 | 33 | 01Jul2015, 12:38 | 8.9 |
| B07-B12 | 0.8734 | 33 | 01Jul2015, 12:48 | 8.7 |
| HB05 | 0.1375 | 5 | 01Jul2015, 12:18 | 1.2 |
| HB06 | 0.1641 | 5 | 01Jul2015, 12:22 | 1.4 |
| B12 | 1.175 | 40 | 01Jul2015, 12:48 | 11.3 |
| B12-PB | 1.175 | 39 | 01Jul2015, 12:52 | 11.3 |
| HB07 | 0.0313 | 1 | 01Jul2015, 12:10 | 0.3 |
| POND B | 1.2063 | 40 | 01Jul2015, 12:52 | 11.5 |
| PB-19 | 1.2063 | 40 | 01Jul2015, 13:00 | 11.3 |
| OS01 | 1.5594 | 55 | 01Jul2015, 12:46 | 16.6 |
| OS01-B19 | 1.5594 | 55 | 01Jul2015, 12:58 | 16.3 |
| HB08 | 0.1344 | 4 | 01Jul2015, 12:28 | 1.2 |
| HB09 | 0.3047 | 7 | 01Jul2015, 12:46 | 2.6 |
| B19 | 3.2048 | 105 | 01Jul2015, 13:00 | 31.4 |
| B19-B26 | 3.2048 | 105 | 01Jul2015, 13:02 | 31.3 |
| HB10 | 0.3047 | 9 | 01Jul2015, 12:32 | 2.6 |
| HB12 | 0.0797 | 3 | 01Jul2015, 12:22 | 0.7 |
| HB12-B26 | 0.0797 | 3 | 01Jul2015, 12:30 | 0.7 |
| B26 | 3.5892 | 113 | 01Jul2015, 13:02 | 34.6 |
| 26-32 | 3.5892 | 113 | 01Jul2015, 13:08 | 34 |
| HB11 | 0.1125 | 3 | 01Jul2015, 12:34 | 1 |
| 32 | 3.7017 | 115 | 01Jul2015, 13:08 | 35 |
| 32-37 | 3.7017 | 115 | 01Jul2015, 13:14 | 34.5 |
| B-14 | 0.4039 | 10 | 01Jul2015, 12:48 | 3.4 |
| B-13 | 0.2813 | 7 | 01Jul2015, 12:46 | 2.4 |
| 36 | 0.6852 | 17 | 01Jul2015, 12:46 | 5.8 |
| 36-37 | 0.6852 | 17 | 01Jul2015, 12:54 | 5.8 |
| B-15 | 0.075 | 2 | 01Jul2015, 12:36 | 0.6 |
| 37 | 4.4619 | 131 | 01Jul2015, 13:14 | 40.9 |
| HH01 | 0.0984 | 3 | 01Jul2015, 12:20 | 0.9 |
| H12 | 0.0984 | 3 | 01Jul2015, 12:20 | 0.9 |

| 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 | 3.00 | 01 Jul 2015, 12:46 | 1.1 |
| B01 | 0.2219 | 3.00 | 01 Jul 2015, 12:46 | 1.1 |
| B01-B07 | 0.2219 | 3.00 | 01 Jul 2015, 12:56 | 1.1 |
| OS03 | 0.1984 | 2.00 | 01 Jul 2015, 13:02 | 0.8 |
| B02-B03 | 0.1984 | 2.00 | 01 Jul 2015, 13:08 | 0.8 |
| HB01 | 0.0234 | 0.00 | 01 Jul 2015, 13:08 | 0.1 |
| B03 | 0.2218 | 2.00 | 01 Jul 2015, 13:08 | 0.9 |
| B03-B07 | 0.2218 | 2.00 | 01 Jul 2015, 13:16 | 0.8 |
| OS04 | 0.1359 | 1.00 | 01 Jul 2015, 13:30 | 0.4 |
| B04-B05 | 0.1359 | 1.00 | 01 Jul 2015, 13:58 | 0.3 |
| HB03 | 0.1266 | 1.00 | 01 Jul 2015, 13:10 | 0.3 |
| B05 | 0.2625 | 1.00 | 01 Jul 2015, 13:42 | 0.7 |
| B05-B07 | 0.2625 | 1.00 | 01 Jul 2015, 13:46 | 0.7 |
| HB02 | 0.1063 | 0.00 | 01 Jul 2015, 13:22 | 0.3 |
| HB04 | 0.0609 | 0.00 | 01 Jul 2015, 13:16 | 0.2 |
| B07 | 0.8734 | 6.00 | 01 Jul 2015, 13:26 | 3.1 |
| B07-B12 | 0.8734 | 6.00 | 01 Jul 2015, 13:44 | 3.0 |
| HB05 | 0.1375 | 1.00 | 01 Jul 2015, 13:20 | 0.4 |
| HB06 | 0.1641 | 1.00 | 01 Jul 2015, 13:24 | 0.4 |
| B12 | 1.1750 | 7.00 | 01 Jul 2015, 13:42 | 3.8 |
| B12-PB | 1.1750 | 7.00 | 01 Jul 2015, 13:46 | 3.8 |
| HB07 | 0.0313 | 0.00 | 01 Jul 2015, 13:06 | 0.1 |
| POND B | 1.2063 | 7.00 | 01 Jul 2015, 13:46 | 3.9 |
| PB-19 | 1.2063 | 7.00 | 01 Jul 2015, 14:02 | 3.7 |
| OS01 | 1.5594 | 11.00 | 01 Jul 2015, 13:24 | 5.9 |
| OS01-B19 | 1.5594 | 11.00 | 01 Jul 2015, 13:44 | 5.7 |
| HB08 | 0.1344 | 1.00 | 01 Jul 2015, 13:30 | 0.4 |
| HB09 | 0.3047 | 1.00 | 01 Jul 2015, 13:50 | 0.8 |
| B19 | 3.2048 | 20.00 | 01 Jul 2015, 13:44 | 10.6 |
| B19-B26 | 3.2048 | 20.00 | 01 Jul 2015, 13:48 | 10.6 |
| HB10 | 0.3047 | 1.00 | 01 Jul 2015, 13:34 | 0.8 |
| HB12 | 0.0797 | 0.00 | 01 Jul 2015, 13:24 | 0.2 |
| HB12-B26 | 0.0797 | 0.00 | 01 Jul 2015, 13:38 | 0.2 |
| B26 | 3.5892 | 21.00 | 01 Jul 2015, 13:46 | 11.6 |
| 26-32 | 3.5892 | 21.00 | 01 Jul 2015, 13:58 | 11.3 |
| HB11 | 0.1125 | 0.00 | 01 Jul 2015, 13:38 | 0.3 |
| 32 | 3.7017 | 22.00 | 01 Jul 2015, 13:58 | 11.6 |
| 32-37 | 3.7017 | 22.00 | 01 Jul 2015, 14:10 | 11.3 |
| B-14 | 0.4039 | 2.00 | 01 Jul 2015, 13:52 | 1.1 |
| B-13 | 0.2813 | 1.00 | 01 Jul 2015, 13:50 | 0.7 |
| 36 | 0.6852 | 3.00 | 01 Jul 2015, 13:50 | 1.8 |
| 36-37 | 0.6852 | 3.00 | 01 Jul 2015, 14:02 | 1.8 |
| B-15 | 0.0750 | 0.00 | 01 Jul 2015, 13:40 | 0.2 |
| 37 | 4.4619 | 25.00 | 01 Jul 2015, 14:10 | 13.2 |
| HH01 | 0.0984 | 0.00 | 01 Jul 2015, 13:22 | 0.3 |
| H12 | 0.0984 | 0.00 | 01 Jul 2015, 13:22 | 0.3 |

| FILING 1 100-YEAR | | | | |
|--------------------|-------------------------|---------------------------------------|-------------------|---|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₁₀₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₁₀₀ (AC. FT.) |
| OS01 | 1.5594 | 757 | 01 Jul2015, 12:32 | 122 |
| DB16 | 0.0578 | 92 | 01 Jul2015, 12:10 | 8 |
| B10 | 1.6172 | 794 | 01 Jul2015, 12:30 | 130 |
| B10-B11 | 1.6172 | 793 | 01 Jul2015, 12:32 | 130 |
| DB17 | 0.0048 | 16 | 01 Jul2015, 12:02 | 1 |
| B11 | 1.6220 | 795 | 01 Jul2015, 12:32 | 131 |
| B11-POND C | 1.6220 | 795 | 01 Jul2015, 12:34 | 131 |
| DB21 | 0.0519 | 54 | 01 Jul2015, 12:08 | 5 |
| DB18 | 0.0346 | 64 | 01 Jul2015, 12:08 | 5 |
| DB19 | 0.0281 | 36 | 01 Jul2015, 12:10 | 3 |
| DB20 | 0.0147 | 25 | 01 Jul2015, 12:08 | 2 |
| POND C | 1.7513 | 749 | 01 Jul2015, 12:46 | 141 |
| POND C-B16 | 1.7513 | 749 | 01 Jul2015, 12:48 | 141 |
| DB25 | 0.0211 | 45 | 01 Jul2015, 12:04 | 3 |
| B16 | 1.7724 | 754 | 01 Jul2015, 12:48 | 144 |
| B16-B17 | 1.7724 | 754 | 01 Jul2015, 12:50 | 144 |
| DB26 | 0.0682 | 136 | 01 Jul2015, 12:10 | 12 |
| B17 | 1.8406 | 778 | 01 Jul2015, 12:50 | 156 |
| B17-B18 | 1.8406 | 778 | 01 Jul2015, 12:52 | 156 |
| OS03 | 0.1984 | 130 | 01 Jul2015, 12:18 | 16 |
| DB01 | 0.0719 | 90 | 01 Jul2015, 12:08 | 8 |
| B01 | 0.2703 | 199 | 01 Jul2015, 12:14 | 23 |
| B01-B02 | 0.2703 | 199 | 01 Jul2015, 12:14 | 23 |
| OS02 | 0.2219 | 148 | 01 Jul2015, 12:20 | 19 |
| DB02 | 0.0516 | 71 | 01 Jul2015, 12:06 | 5 |
| B02 | 0.5438 | 380 | 01 Jul2015, 12:14 | 48 |
| B02-POND A | 0.5438 | 379 | 01 Jul2015, 12:16 | 47 |
| OS04 | 0.1359 | 83 | 01 Jul2015, 12:16 | 10 |
| DB03 | 0.0703 | 70 | 01 Jul2015, 12:10 | 6 |
| B03 | 0.2062 | 145 | 01 Jul2015, 12:12 | 16 |
| B03-B04 | 0.2062 | 145 | 01 Jul2015, 12:18 | 16 |
| DB04 | 0.0422 | 44 | 01 Jul2015, 12:10 | 4 |
| DB05 | 0.0384 | 37 | 01 Jul2015, 12:14 | 4 |
| B04 | 0.2868 | 218 | 01 Jul2015, 12:16 | 24 |
| B04-B05 | 0.2868 | 218 | 01 Jul2015, 12:16 | 24 |
| DB06 | 0.0219 | 44 | 01 Jul2015, 12:08 | 4 |
| B05 | 0.3087 | 253 | 01 Jul2015, 12:14 | 28 |
| B05-POND A | 0.3087 | 252 | 01 Jul2015, 12:16 | 27 |
| DB07 | 0.0254 | 35 | 01 Jul2015, 12:06 | 3 |
| DB08 | 0.0297 | 32 | 01 Jul2015, 12:06 | 3 |
| POND A | 0.9076 | 557 | 01 Jul2015, 12:26 | 77 |
| POND A-B06 | 0.9076 | 557 | 01 Jul2015, 12:26 | 77 |
| DB09 | 0.0189 | 34 | 01 Jul2015, 12:04 | 2 |
| B06 | 0.9265 | 565 | 01 Jul2015, 12:26 | 80 |

| FILING 1 100-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 | 564 | 01 Jul2015, 12:30 | 79 |
| DB11 | 0.0969 | 114 | 01 Jul2015, 12:12 | 11 |
| DB10 | 0.0364 | 56 | 01 Jul2015, 12:08 | 5 |
| B07 | 1.0598 | 652 | 01 Jul2015, 12:26 | 95 |
| B07-B09 | 1.0598 | 651 | 01 Jul2015, 12:28 | 95 |
| DB12 | 0.0453 | 81 | 01 Jul2015, 12:06 | 7 |
| B09 | 1.1051 | 677 | 01 Jul2015, 12:26 | 101 |
| B09-POND B | 1.1051 | 676 | 01 Jul2015, 12:28 | 101 |
| DB15 | 0.1234 | 105 | 01 Jul2015, 12:16 | 12 |
| DB13 | 0.0703 | 89 | 01 Jul2015, 12:12 | 9 |
| DB14 | 0.0556 | 93 | 01 Jul2015, 12:08 | 8 |
| POND B | 1.3544 | 688 | 01 Jul2015, 12:42 | 129 |
| POND B-B12 | 1.3544 | 688 | 01 Jul2015, 12:44 | 128 |
| DB22 | 0.0516 | 91 | 01 Jul2015, 12:08 | 8 |
| DB23 | 0.0172 | 45 | 01 Jul2015, 12:04 | 4 |
| B12 | 1.4232 | 714 | 01 Jul2015, 12:36 | 140 |
| B12-B14 | 1.4232 | 714 | 01 Jul2015, 12:38 | 140 |
| DB24 | 0.0531 | 94 | 01 Jul2015, 12:08 | 8 |
| B14 | 1.4763 | 743 | 01 Jul2015, 12:28 | 147 |
| B14-B15 | 1.4763 | 742 | 01 Jul2015, 12:28 | 147 |
| DB28 | 0.0741 | 67 | 01 Jul2015, 12:18 | 8 |
| B15 | 1.5504 | 800 | 01 Jul2015, 12:28 | 155 |
| B15-B18 | 1.5504 | 798 | 01 Jul2015, 12:34 | 154 |
| DB29 | 0.1697 | 146 | 01 Jul2015, 12:18 | 17 |
| DB27 | 0.0508 | 68 | 01 Jul2015, 12:16 | 7 |
| B26 | 3.6115 | 1623 | 01 Jul2015, 12:46 | 334 |
| B26-27 | 3.6115 | 1622 | 01 Jul2015, 12:48 | 333 |
| FB-02 | 0.0500 | 86 | 01 Jul2015, 12:08 | 7 |
| FB-01 | 0.0373 | 41 | 01 Jul2015, 12:08 | 4 |
| FB01-27a | 0.0373 | 41 | 01 Jul2015, 12:08 | 4 |
| B19 | 0.0873 | 127 | 01 Jul2015, 12:08 | 11 |
| B19-27 | 0.0873 | 126 | 01 Jul2015, 12:10 | 11 |
| FB-03 | 0.0078 | 23 | 01 Jul2015, 12:02 | 2 |
| 27 | 3.7066 | 1648 | 01 Jul2015, 12:48 | 345 |
| 27-32 | 3.7066 | 1648 | 01 Jul2015, 12:48 | 345 |
| WH-24 | 0.1325 | 218 | 01 Jul2015, 12:10 | 20 |
| WH-26 | 0.0839 | 49 | 01 Jul2015, 12:20 | 6 |
| WH-27 | 0.0217 | 23 | 01 Jul2015, 12:04 | 2 |
| 30 | 0.2381 | 271 | 01 Jul2015, 12:10 | 28 |
| 30-31 | 0.2381 | 270 | 01 Jul2015, 12:12 | 28 |
| WH-28 | 0.0398 | 60 | 01 Jul2015, 12:12 | 6 |
| 31 | 0.2779 | 330 | 01 Jul2015, 12:12 | 33 |
| 31-32 | 0.2779 | 329 | 01 Jul2015, 12:14 | 33 |
| WH-29 | 0.0495 | 77 | 01 Jul2015, 12:10 | 7 |

| FILING 1 100-YEAR | | | | |
|--------------------|-------------------------|---------------------------------------|--------------------|---|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₁₀₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₁₀₀ (AC. FT.) |
| WH-31 | 0.0406 | 75 | 01 Jul 2015, 12:06 | 6 |
| WH-30 | 0.0159 | 26 | 01 Jul 2015, 12:02 | 2 |
| 32 | 4.0905 | 1790 | 01 Jul 2015, 12:40 | 393 |
| WH32 | 0.0458 | 55 | 01 Jul 2015, 12:02 | 4 |
| BEN POND | 4.1363 | 1393 | 01 Jul 2015, 13:18 | 377 |
| WH-33 | 0.0064 | 12 | 01 Jul 2015, 12:06 | 1 |
| 33 | 4.1427 | 1394 | 01 Jul 2015, 13:18 | 377 |
| 33-37 | 4.1427 | 1394 | 01 Jul 2015, 13:20 | 376 |
| WH35 | 0.1550 | 171 | 01 Jul 2015, 12:10 | 15 |
| WH34 | 0.0450 | 68 | 01 Jul 2015, 12:08 | 6 |
| B34-36 | 0.0450 | 68 | 01 Jul 2015, 12:10 | 6 |
| 36 | 0.2000 | 239 | 01 Jul 2015, 12:10 | 21 |
| 36-37 | 0.2000 | 238 | 01 Jul 2015, 12:12 | 21 |
| WH36 | 0.0750 | 63 | 01 Jul 2015, 12:10 | 6 |
| 37 | 4.4177 | 1432 | 01 Jul 2015, 13:20 | 403 |
| FH01 | 0.1344 | 196 | 01 Jul 2015, 12:06 | 16 |
| POND H | 0.1344 | 43 | 01 Jul 2015, 12:36 | 13 |
| FH02 | 0.0138 | 19 | 01 Jul 2015, 12:08 | 2 |
| H12 | 0.1482 | 48 | 01 Jul 2015, 12:32 | 15 |

| FILING 1 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 | 510 | 01Jul2015, 12:34 | 87 |
| DB16 | 0.0578 | 72 | 01Jul2015, 12:10 | 7 |
| B10 | 1.6172 | 537 | 01Jul2015, 12:32 | 93 |
| B10-B11 | 1.6172 | 537 | 01Jul2015, 12:32 | 93 |
| DB17 | 0.0048 | 13 | 01Jul2015, 12:02 | 1 |
| B11 | 1.6220 | 538 | 01Jul2015, 12:32 | 94 |
| B11-POND C | 1.6220 | 538 | 01Jul2015, 12:36 | 94 |
| DB21 | 0.0519 | 38 | 01Jul2015, 12:08 | 3 |
| DB18 | 0.0346 | 50 | 01Jul2015, 12:08 | 4 |
| DB19 | 0.0281 | 27 | 01Jul2015, 12:10 | 3 |
| DB20 | 0.0147 | 19 | 01Jul2015, 12:08 | 2 |
| POND C | 1.7513 | 507 | 01Jul2015, 12:48 | 101 |
| POND C-B16 | 1.7513 | 507 | 01Jul2015, 12:50 | 101 |
| DB25 | 0.0211 | 35 | 01Jul2015, 12:04 | 3 |
| B16 | 1.7724 | 511 | 01Jul2015, 12:50 | 103 |
| B16-B17 | 1.7724 | 510 | 01Jul2015, 12:54 | 103 |
| DB26 | 0.0682 | 110 | 01Jul2015, 12:10 | 10 |
| B17 | 1.8406 | 529 | 01Jul2015, 12:52 | 113 |
| B17-B18 | 1.8406 | 529 | 01Jul2015, 12:54 | 113 |
| OS03 | 0.1984 | 88 | 01Jul2015, 12:20 | 11 |
| DB01 | 0.0719 | 66 | 01Jul2015, 12:08 | 6 |
| B01 | 0.2703 | 139 | 01Jul2015, 12:14 | 17 |
| B01-B02 | 0.2703 | 138 | 01Jul2015, 12:16 | 17 |
| OS02 | 0.2219 | 102 | 01Jul2015, 12:22 | 14 |
| DB02 | 0.0516 | 52 | 01Jul2015, 12:06 | 4 |
| B02 | 0.5438 | 263 | 01Jul2015, 12:16 | 34 |
| B02-POND A | 0.5438 | 263 | 01Jul2015, 12:16 | 34 |
| OS04 | 0.1359 | 54 | 01Jul2015, 12:18 | 7 |
| DB03 | 0.0703 | 49 | 01Jul2015, 12:10 | 5 |
| B03 | 0.2062 | 98 | 01Jul2015, 12:14 | 11 |
| B03-B04 | 0.2062 | 98 | 01Jul2015, 12:18 | 11 |
| DB04 | 0.0422 | 31 | 01Jul2015, 12:10 | 3 |
| DB05 | 0.0384 | 27 | 01Jul2015, 12:14 | 3 |
| B04 | 0.2868 | 150 | 01Jul2015, 12:16 | 17 |
| B04-B05 | 0.2868 | 149 | 01Jul2015, 12:16 | 17 |
| DB06 | 0.0219 | 35 | 01Jul2015, 12:08 | 3 |
| B05 | 0.3087 | 176 | 01Jul2015, 12:16 | 20 |
| B05-POND A | 0.3087 | 176 | 01Jul2015, 12:16 | 20 |
| DB07 | 0.0254 | 26 | 01Jul2015, 12:06 | 2 |
| DB08 | 0.0297 | 22 | 01Jul2015, 12:06 | 2 |
| POND A | 0.9076 | 401 | 01Jul2015, 12:26 | 56 |
| POND A-B06 | 0.9076 | 400 | 01Jul2015, 12:26 | 55 |
| DB09 | 0.0189 | 26 | 01Jul2015, 12:04 | 2 |
| B06 | 0.9265 | 407 | 01Jul2015, 12:26 | 57 |

| FILING 1 50-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|-------------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅₀ (AC. FT.) |
| B06-B07 | 0.9265 | 406 | 01Jul2015, 12:30 | 57 |
| DB11 | 0.0969 | 85 | 01Jul2015, 12:12 | 9 |
| DB10 | 0.0364 | 43 | 01Jul2015, 12:08 | 4 |
| B07 | 1.0598 | 469 | 01Jul2015, 12:28 | 69 |
| B07-B09 | 1.0598 | 468 | 01Jul2015, 12:30 | 69 |
| DB12 | 0.0453 | 63 | 01Jul2015, 12:06 | 5 |
| B09 | 1.1051 | 486 | 01Jul2015, 12:30 | 74 |
| B09-POND B | 1.1051 | 485 | 01Jul2015, 12:30 | 74 |
| DB15 | 0.1234 | 75 | 01Jul2015, 12:16 | 9 |
| DB13 | 0.0703 | 67 | 01Jul2015, 12:12 | 7 |
| DB14 | 0.0556 | 72 | 01Jul2015, 12:08 | 6 |
| POND B | 1.3544 | 539 | 01Jul2015, 12:38 | 95 |
| POND B-B12 | 1.3544 | 539 | 01Jul2015, 12:40 | 94 |
| DB22 | 0.0516 | 72 | 01Jul2015, 12:08 | 6 |
| DB23 | 0.0172 | 38 | 01Jul2015, 12:04 | 3 |
| B12 | 1.4232 | 562 | 01Jul2015, 12:38 | 104 |
| B12-B14 | 1.4232 | 562 | 01Jul2015, 12:40 | 103 |
| DB24 | 0.0531 | 73 | 01Jul2015, 12:08 | 6 |
| B14 | 1.4763 | 577 | 01Jul2015, 12:40 | 109 |
| B14-B15 | 1.4763 | 576 | 01Jul2015, 12:40 | 109 |
| DB28 | 0.0741 | 49 | 01Jul2015, 12:20 | 6 |
| B15 | 1.5504 | 605 | 01Jul2015, 12:38 | 115 |
| B15-B18 | 1.5504 | 605 | 01Jul2015, 12:44 | 114 |
| DB29 | 0.1697 | 105 | 01Jul2015, 12:18 | 13 |
| DB27 | 0.0508 | 53 | 01Jul2015, 12:16 | 6 |
| B26 | 3.6115 | 1178 | 01Jul2015, 12:48 | 245 |
| B26-27 | 3.6115 | 1178 | 01Jul2015, 12:50 | 244 |
| FB-02 | 0.0500 | 68 | 01Jul2015, 12:08 | 6 |
| FB-01 | 0.0373 | 29 | 01Jul2015, 12:08 | 3 |
| FB01-27a | 0.0373 | 29 | 01Jul2015, 12:10 | 3 |
| B19 | 0.0873 | 97 | 01Jul2015, 12:08 | 8 |
| B19-27 | 0.0873 | 96 | 01Jul2015, 12:10 | 8 |
| FB-03 | 0.0078 | 19 | 01Jul2015, 12:02 | 1 |
| 27 | 3.7066 | 1197 | 01Jul2015, 12:50 | 254 |
| 27-32 | 3.7066 | 1196 | 01Jul2015, 12:52 | 253 |
| WH-24 | 0.1325 | 171 | 01Jul2015, 12:10 | 15 |
| WH-26 | 0.0839 | 33 | 01Jul2015, 12:22 | 5 |
| WH-27 | 0.0217 | 16 | 01Jul2015, 12:04 | 1 |
| 30 | 0.2381 | 205 | 01Jul2015, 12:10 | 21 |
| 30-31 | 0.2381 | 205 | 01Jul2015, 12:12 | 21 |
| WH-28 | 0.0398 | 47 | 01Jul2015, 12:12 | 5 |
| 31 | 0.2779 | 252 | 01Jul2015, 12:12 | 25 |
| 31-32 | 0.2779 | 251 | 01Jul2015, 12:14 | 25 |
| WH-29 | 0.0495 | 60 | 01Jul2015, 12:10 | 6 |

| FILING 1 50-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅₀ (AC. FT.) |
| WH-31 | 0.0406 | 60 | 01Jul2015, 12:08 | 5 |
| WH-30 | 0.0159 | 19 | 01Jul2015, 12:02 | 1 |
| 32 | 4.0905 | 1290 | 01Jul2015, 12:50 | 290 |
| WH32 | 0.0458 | 38 | 01Jul2015, 12:02 | 3 |
| BEN POND | 4.1363 | 984 | 01Jul2015, 13:16 | 276 |
| WH-33 | 0.0064 | 9 | 01Jul2015, 12:06 | 1 |
| 33 | 4.1427 | 985 | 01Jul2015, 13:16 | 276 |
| 33-37 | 4.1427 | 984 | 01Jul2015, 13:20 | 275 |
| WH35 | 0.1550 | 124 | 01Jul2015, 12:10 | 11 |
| WH34 | 0.0450 | 52 | 01Jul2015, 12:08 | 5 |
| B34-36 | 0.0450 | 52 | 01Jul2015, 12:10 | 5 |
| 36 | 0.2000 | 176 | 01Jul2015, 12:10 | 16 |
| 36-37 | 0.2000 | 174 | 01Jul2015, 12:14 | 16 |
| WH36 | 0.0750 | 43 | 01Jul2015, 12:10 | 4 |
| 37 | 4.4177 | 1014 | 01Jul2015, 13:20 | 295 |
| FH01 | 0.1344 | 147 | 01Jul2015, 12:06 | 12 |
| POND H | 0.1344 | 23 | 01Jul2015, 12:52 | 10 |
| FH02 | 0.0138 | 14 | 01Jul2015, 12:08 | 1 |
| H12 | 0.1482 | 26 | 01Jul2015, 12:34 | 11 |

| FILING 1 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 | 316 | 01Jul2015, 12:36 | 58.6 |
| DB16 | 0.0578 | 54 | 01Jul2015, 12:10 | 5.0 |
| B10 | 1.6172 | 335 | 01Jul2015, 12:34 | 63.6 |
| B10-B11 | 1.6172 | 335 | 01Jul2015, 12:34 | 63.5 |
| DB17 | 0.0048 | 11 | 01Jul2015, 12:02 | 0.9 |
| B11 | 1.6220 | 336 | 01Jul2015, 12:34 | 64.4 |
| B11-POND C | 1.6220 | 336 | 01Jul2015, 12:38 | 64.0 |
| DB21 | 0.0519 | 25 | 01Jul2015, 12:08 | 2.3 |
| DB18 | 0.0346 | 39 | 01Jul2015, 12:08 | 3.2 |
| DB19 | 0.0281 | 20 | 01Jul2015, 12:10 | 1.9 |
| DB20 | 0.0147 | 15 | 01Jul2015, 12:10 | 1.3 |
| POND C | 1.7513 | 310 | 01Jul2015, 12:52 | 68.6 |
| POND C-B16 | 1.7513 | 310 | 01Jul2015, 12:54 | 68.4 |
| DB25 | 0.0211 | 27 | 01Jul2015, 12:04 | 2.0 |
| B16 | 1.7724 | 313 | 01Jul2015, 12:54 | 70.3 |
| B16-B17 | 1.7724 | 312 | 01Jul2015, 12:58 | 69.9 |
| DB26 | 0.0682 | 88 | 01Jul2015, 12:10 | 8.0 |
| B17 | 1.8406 | 326 | 01Jul2015, 12:58 | 77.9 |
| B17-B18 | 1.8406 | 326 | 01Jul2015, 13:00 | 77.5 |
| OS03 | 0.1984 | 55 | 01Jul2015, 12:20 | 7.7 |
| DB01 | 0.0719 | 46 | 01Jul2015, 12:08 | 4.1 |
| B01 | 0.2703 | 89 | 01Jul2015, 12:14 | 11.7 |
| B01-B02 | 0.2703 | 89 | 01Jul2015, 12:16 | 11.7 |
| OS02 | 0.2219 | 65 | 01Jul2015, 12:22 | 9.3 |
| DB02 | 0.0516 | 36 | 01Jul2015, 12:06 | 2.8 |
| B02 | 0.5438 | 169 | 01Jul2015, 12:16 | 23.8 |
| B02-POND A | 0.5438 | 169 | 01Jul2015, 12:18 | 23.8 |
| OS04 | 0.1359 | 32 | 01Jul2015, 12:18 | 4.5 |
| DB03 | 0.0703 | 32 | 01Jul2015, 12:10 | 3.2 |
| B03 | 0.2062 | 61 | 01Jul2015, 12:14 | 7.7 |
| B03-B04 | 0.2062 | 60 | 01Jul2015, 12:20 | 7.6 |
| DB04 | 0.0422 | 21 | 01Jul2015, 12:10 | 2.0 |
| DB05 | 0.0384 | 18 | 01Jul2015, 12:14 | 2.0 |
| B04 | 0.2868 | 94 | 01Jul2015, 12:18 | 11.7 |
| B04-B05 | 0.2868 | 94 | 01Jul2015, 12:18 | 11.7 |
| DB06 | 0.0219 | 28 | 01Jul2015, 12:08 | 2.4 |
| B05 | 0.3087 | 115 | 01Jul2015, 12:16 | 14.0 |
| B05-POND A | 0.3087 | 114 | 01Jul2015, 12:18 | 14.0 |
| DB07 | 0.0254 | 18 | 01Jul2015, 12:06 | 1.5 |
| DB08 | 0.0297 | 15 | 01Jul2015, 12:08 | 1.3 |
| POND A | 0.9076 | 244 | 01Jul2015, 12:28 | 37.8 |
| POND A-B06 | 0.9076 | 244 | 01Jul2015, 12:30 | 37.8 |
| DB09 | 0.0189 | 19 | 01Jul2015, 12:04 | 1.4 |
| B06 | 0.9265 | 248 | 01Jul2015, 12:30 | 39.2 |

| FILING 1 25-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|-------------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂₅ (AC. FT.) |
| B06-B07 | 0.9265 | 248 | 01Jul2015, 12:34 | 38.8 |
| DB11 | 0.0969 | 60 | 01Jul2015, 12:12 | 6.2 |
| DB10 | 0.0364 | 32 | 01Jul2015, 12:08 | 2.7 |
| B07 | 1.0598 | 286 | 01Jul2015, 12:32 | 47.7 |
| B07-B09 | 1.0598 | 285 | 01Jul2015, 12:36 | 47.4 |
| DB12 | 0.0453 | 48 | 01Jul2015, 12:06 | 3.9 |
| B09 | 1.1051 | 296 | 01Jul2015, 12:36 | 51.3 |
| B09-POND B | 1.1051 | 296 | 01Jul2015, 12:36 | 51.2 |
| DB15 | 0.1234 | 50 | 01Jul2015, 12:18 | 6.1 |
| DB13 | 0.0703 | 49 | 01Jul2015, 12:12 | 4.9 |
| DB14 | 0.0556 | 54 | 01Jul2015, 12:08 | 4.7 |
| POND B | 1.3544 | 337 | 01Jul2015, 12:42 | 66.5 |
| POND B-B12 | 1.3544 | 336 | 01Jul2015, 12:44 | 66.3 |
| DB22 | 0.0516 | 55 | 01Jul2015, 12:08 | 4.8 |
| DB23 | 0.0172 | 31 | 01Jul2015, 12:04 | 2.5 |
| B12 | 1.4232 | 353 | 01Jul2015, 12:42 | 73.6 |
| B12-B14 | 1.4232 | 352 | 01Jul2015, 12:44 | 73.4 |
| DB24 | 0.0531 | 56 | 01Jul2015, 12:08 | 4.6 |
| B14 | 1.4763 | 363 | 01Jul2015, 12:44 | 78.0 |
| B14-B15 | 1.4763 | 362 | 01Jul2015, 12:46 | 77.9 |
| DB28 | 0.0741 | 34 | 01Jul2015, 12:20 | 4.3 |
| B15 | 1.5504 | 380 | 01Jul2015, 12:44 | 82.1 |
| B15-B18 | 1.5504 | 379 | 01Jul2015, 12:50 | 81.2 |
| DB29 | 0.1697 | 71 | 01Jul2015, 12:20 | 9.0 |
| DB27 | 0.0508 | 40 | 01Jul2015, 12:16 | 4.3 |
| B26 | 3.6115 | 735 | 01Jul2015, 12:54 | 172.0 |
| B26-27 | 3.6115 | 735 | 01Jul2015, 12:56 | 171.3 |
| FB-02 | 0.0500 | 51 | 01Jul2015, 12:08 | 4.4 |
| FB-01 | 0.0373 | 20 | 01Jul2015, 12:08 | 1.8 |
| FB01-27a | 0.0373 | 20 | 01Jul2015, 12:10 | 1.8 |
| B19 | 0.0873 | 71 | 01Jul2015, 12:08 | 6.2 |
| B19-27 | 0.0873 | 70 | 01Jul2015, 12:10 | 6.2 |
| FB-03 | 0.0078 | 15 | 01Jul2015, 12:02 | 1.1 |
| 27 | 3.7066 | 749 | 01Jul2015, 12:56 | 178.6 |
| 27-32 | 3.7066 | 748 | 01Jul2015, 12:58 | 178.2 |
| WH-24 | 0.1325 | 129 | 01Jul2015, 12:10 | 11.7 |
| WH-26 | 0.0839 | 20 | 01Jul2015, 12:22 | 3.0 |
| WH-27 | 0.0217 | 10 | 01Jul2015, 12:04 | 0.8 |
| 30 | 0.2381 | 150 | 01Jul2015, 12:10 | 15.5 |
| 30-31 | 0.2381 | 149 | 01Jul2015, 12:12 | 15.5 |
| WH-28 | 0.0398 | 36 | 01Jul2015, 12:12 | 3.4 |
| 31 | 0.2779 | 185 | 01Jul2015, 12:12 | 18.9 |
| 31-32 | 0.2779 | 185 | 01Jul2015, 12:14 | 18.8 |
| WH-29 | 0.0495 | 45 | 01Jul2015, 12:10 | 4.2 |

| FILING 1 25-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂₅ (AC. FT.) |
| WH-31 | 0.0406 | 46 | 01Jul2015, 12:08 | 3.8 |
| WH-30 | 0.0159 | 13 | 01Jul2015, 12:02 | 0.9 |
| 32 | 4.0905 | 809 | 01Jul2015, 12:56 | 205.8 |
| WH32 | 0.0458 | 24 | 01Jul2015, 12:02 | 1.6 |
| BEN POND | 4.1363 | 595 | 01Jul2015, 13:26 | 194.5 |
| WH-33 | 0.0064 | 7 | 01Jul2015, 12:08 | 0.6 |
| 33 | 4.1427 | 596 | 01Jul2015, 13:26 | 195.1 |
| 33-37 | 4.1427 | 595 | 01Jul2015, 13:32 | 193.6 |
| WH35 | 0.1550 | 84 | 01Jul2015, 12:10 | 8.0 |
| WH34 | 0.0450 | 38 | 01Jul2015, 12:08 | 3.3 |
| B34-36 | 0.0450 | 38 | 01Jul2015, 12:10 | 3.3 |
| 36 | 0.2000 | 122 | 01Jul2015, 12:10 | 11.4 |
| 36-37 | 0.2000 | 121 | 01Jul2015, 12:14 | 11.3 |
| WH36 | 0.0750 | 27 | 01Jul2015, 12:12 | 2.9 |
| 37 | 4.4177 | 615 | 01Jul2015, 13:30 | 207.8 |
| FH01 | 0.1344 | 106 | 01Jul2015, 12:08 | 8.8 |
| POND H | 0.1344 | 13 | 01Jul2015, 13:12 | 7.0 |
| FH02 | 0.0138 | 10 | 01Jul2015, 12:10 | 0.9 |
| H12 | 0.1482 | 15 | 01Jul2015, 12:16 | 7.9 |

| FILING 1 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 | 136 | 01 Jul 2015, 12:38 | 30.9 |
| DB16 | 0.0578 | 35 | 01 Jul 2015, 12:10 | 3.3 |
| B10 | 1.6172 | 147 | 01 Jul 2015, 12:36 | 34.2 |
| B10-B11 | 1.6172 | 147 | 01 Jul 2015, 12:38 | 34.1 |
| DB17 | 0.0048 | 9 | 01 Jul 2015, 12:02 | 0.7 |
| B11 | 1.6220 | 148 | 01 Jul 2015, 12:38 | 34.8 |
| B11-POND C | 1.6220 | 148 | 01 Jul 2015, 12:42 | 34.5 |
| DB21 | 0.0519 | 12 | 01 Jul 2015, 12:10 | 1.3 |
| DB18 | 0.0346 | 26 | 01 Jul 2015, 12:08 | 2.1 |
| DB19 | 0.0281 | 11 | 01 Jul 2015, 12:12 | 1.1 |
| DB20 | 0.0147 | 9 | 01 Jul 2015, 12:10 | 0.8 |
| POND C | 1.7513 | 129 | 01 Jul 2015, 13:02 | 36.3 |
| POND C-B16 | 1.7513 | 128 | 01 Jul 2015, 13:06 | 36.1 |
| DB25 | 0.0211 | 18 | 01 Jul 2015, 12:04 | 1.3 |
| B16 | 1.7724 | 130 | 01 Jul 2015, 13:06 | 37.4 |
| B16-B17 | 1.7724 | 130 | 01 Jul 2015, 13:10 | 37.1 |
| DB26 | 0.0682 | 62 | 01 Jul 2015, 12:10 | 5.6 |
| B17 | 1.8406 | 138 | 01 Jul 2015, 13:08 | 42.7 |
| B17-B18 | 1.8406 | 138 | 01 Jul 2015, 13:12 | 42.4 |
| OS03 | 0.1984 | 24 | 01 Jul 2015, 12:24 | 4.1 |
| DB01 | 0.0719 | 25 | 01 Jul 2015, 12:10 | 2.4 |
| B01 | 0.2703 | 42 | 01 Jul 2015, 12:14 | 6.5 |
| B01-B02 | 0.2703 | 42 | 01 Jul 2015, 12:16 | 6.5 |
| OS02 | 0.2219 | 30 | 01 Jul 2015, 12:26 | 5.1 |
| DB02 | 0.0516 | 20 | 01 Jul 2015, 12:06 | 1.7 |
| B02 | 0.5438 | 79 | 01 Jul 2015, 12:18 | 13.2 |
| B02-POND A | 0.5438 | 79 | 01 Jul 2015, 12:20 | 13.1 |
| OS04 | 0.1359 | 12 | 01 Jul 2015, 12:22 | 2.3 |
| DB03 | 0.0703 | 16 | 01 Jul 2015, 12:12 | 1.8 |
| B03 | 0.2062 | 26 | 01 Jul 2015, 12:16 | 4.1 |
| B03-B04 | 0.2062 | 26 | 01 Jul 2015, 12:22 | 4.0 |
| DB04 | 0.0422 | 10 | 01 Jul 2015, 12:12 | 1.2 |
| DB05 | 0.0384 | 9 | 01 Jul 2015, 12:16 | 1.1 |
| B04 | 0.2868 | 42 | 01 Jul 2015, 12:20 | 6.3 |
| B04-B05 | 0.2868 | 42 | 01 Jul 2015, 12:20 | 6.3 |
| DB06 | 0.0219 | 19 | 01 Jul 2015, 12:08 | 1.6 |
| B05 | 0.3087 | 55 | 01 Jul 2015, 12:18 | 8.0 |
| B05-POND A | 0.3087 | 55 | 01 Jul 2015, 12:20 | 8.0 |
| DB07 | 0.0254 | 10 | 01 Jul 2015, 12:08 | 0.9 |
| DB08 | 0.0297 | 7 | 01 Jul 2015, 12:08 | 0.7 |
| POND A | 0.9076 | 98 | 01 Jul 2015, 12:38 | 20.1 |
| POND A-B06 | 0.9076 | 98 | 01 Jul 2015, 12:38 | 20.1 |
| DB09 | 0.0189 | 12 | 01 Jul 2015, 12:04 | 0.9 |
| B06 | 0.9265 | 100 | 01 Jul 2015, 12:38 | 21.0 |

| FILING 1 10-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|---------------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₁₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₁₀ (AC. FT.) |
| B06-B07 | 0.9265 | 99 | 01 Jul 2015, 12:46 | 20.7 |
| DB11 | 0.0969 | 35 | 01 Jul 2015, 12:14 | 3.8 |
| DB10 | 0.0364 | 19 | 01 Jul 2015, 12:08 | 1.7 |
| B07 | 1.0598 | 116 | 01 Jul 2015, 12:44 | 26.2 |
| B07-B09 | 1.0598 | 116 | 01 Jul 2015, 12:48 | 26.0 |
| DB12 | 0.0453 | 31 | 01 Jul 2015, 12:08 | 2.5 |
| B09 | 1.1051 | 121 | 01 Jul 2015, 12:48 | 28.5 |
| B09-POND B | 1.1051 | 121 | 01 Jul 2015, 12:48 | 28.5 |
| DB15 | 0.1234 | 25 | 01 Jul 2015, 12:20 | 3.4 |
| DB13 | 0.0703 | 29 | 01 Jul 2015, 12:14 | 3.1 |
| DB14 | 0.0556 | 35 | 01 Jul 2015, 12:08 | 3.1 |
| POND B | 1.3544 | 140 | 01 Jul 2015, 12:56 | 37.8 |
| POND B-B12 | 1.3544 | 140 | 01 Jul 2015, 12:58 | 37.7 |
| DB22 | 0.0516 | 36 | 01 Jul 2015, 12:08 | 3.2 |
| DB23 | 0.0172 | 23 | 01 Jul 2015, 12:06 | 1.8 |
| B12 | 1.4232 | 148 | 01 Jul 2015, 12:26 | 42.7 |
| B12-B14 | 1.4232 | 148 | 01 Jul 2015, 12:28 | 42.5 |
| DB24 | 0.0531 | 36 | 01 Jul 2015, 12:08 | 3.0 |
| B14 | 1.4763 | 162 | 01 Jul 2015, 12:26 | 45.6 |
| B14-B15 | 1.4763 | 162 | 01 Jul 2015, 12:28 | 45.5 |
| DB28 | 0.0741 | 18 | 01 Jul 2015, 12:22 | 2.5 |
| B15 | 1.5504 | 179 | 01 Jul 2015, 12:28 | 48.0 |
| B15-B18 | 1.5504 | 178 | 01 Jul 2015, 12:36 | 47.3 |
| DB29 | 0.1697 | 37 | 01 Jul 2015, 12:20 | 5.2 |
| DB27 | 0.0508 | 25 | 01 Jul 2015, 12:16 | 2.8 |
| B26 | 3.6115 | 315 | 01 Jul 2015, 13:08 | 97.8 |
| B26-27 | 3.6115 | 315 | 01 Jul 2015, 13:12 | 97.2 |
| FB-02 | 0.0500 | 33 | 01 Jul 2015, 12:08 | 2.9 |
| FB-01 | 0.0373 | 10 | 01 Jul 2015, 12:10 | 1.0 |
| FB01-27a | 0.0373 | 10 | 01 Jul 2015, 12:10 | 1.0 |
| B19 | 0.0873 | 43 | 01 Jul 2015, 12:10 | 3.9 |
| B19-27 | 0.0873 | 43 | 01 Jul 2015, 12:10 | 3.9 |
| FB-03 | 0.0078 | 11 | 01 Jul 2015, 12:02 | 0.8 |
| 27 | 3.7066 | 322 | 01 Jul 2015, 13:12 | 101.9 |
| 27-32 | 3.7066 | 322 | 01 Jul 2015, 13:14 | 101.6 |
| WH-24 | 0.1325 | 84 | 01 Jul 2015, 12:10 | 7.7 |
| WH-26 | 0.0839 | 8 | 01 Jul 2015, 12:26 | 1.5 |
| WH-27 | 0.0217 | 4 | 01 Jul 2015, 12:06 | 0.4 |
| 30 | 0.2381 | 91 | 01 Jul 2015, 12:10 | 9.7 |
| 30-31 | 0.2381 | 91 | 01 Jul 2015, 12:12 | 9.7 |
| WH-28 | 0.0398 | 23 | 01 Jul 2015, 12:12 | 2.2 |
| 31 | 0.2779 | 114 | 01 Jul 2015, 12:12 | 11.9 |
| 31-32 | 0.2779 | 113 | 01 Jul 2015, 12:14 | 11.9 |
| WH-29 | 0.0495 | 29 | 01 Jul 2015, 12:10 | 2.7 |

| FILING 1 10-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|--------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₁₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₁₀ (AC. FT.) |
| WH-31 | 0.0406 | 30 | 01 Jul 2015, 12:08 | 2.5 |
| WH-30 | 0.0159 | 7 | 01 Jul 2015, 12:02 | 0.5 |
| 32 | 4.0905 | 419 | 01 Jul 2015, 12:24 | 119.2 |
| WH32 | 0.0458 | 10 | 01 Jul 2015, 12:04 | 0.9 |
| BEN POND | 4.1363 | 252 | 01 Jul 2015, 13:52 | 111.9 |
| WH-33 | 0.0064 | 5 | 01 Jul 2015, 12:08 | 0.4 |
| 33 | 4.1427 | 252 | 01 Jul 2015, 13:52 | 112.3 |
| 33-37 | 4.1427 | 252 | 01 Jul 2015, 13:58 | 111.2 |
| WH35 | 0.1550 | 44 | 01 Jul 2015, 12:10 | 4.6 |
| WH34 | 0.0450 | 23 | 01 Jul 2015, 12:10 | 2.1 |
| B34-36 | 0.0450 | 23 | 01 Jul 2015, 12:12 | 2.1 |
| 36 | 0.2000 | 67 | 01 Jul 2015, 12:12 | 6.7 |
| 36-37 | 0.2000 | 66 | 01 Jul 2015, 12:16 | 6.7 |
| WH36 | 0.0750 | 11 | 01 Jul 2015, 12:14 | 1.5 |
| 37 | 4.4177 | 262 | 01 Jul 2015, 13:58 | 119.4 |
| FH01 | 0.1344 | 62 | 01 Jul 2015, 12:08 | 5.4 |
| POND H | 0.1344 | 5 | 01 Jul 2015, 14:02 | 4.1 |
| FH02 | 0.0138 | 6 | 01 Jul 2015, 12:10 | 0.6 |
| H12 | 0.1482 | 8 | 01 Jul 2015, 12:12 | 4.6 |

| FILING 1 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 | 55 | 01 Jul 2015, 12:46 | 16.6 |
| DB16 | 0.0578 | 23 | 01 Jul 2015, 12:12 | 2.3 |
| B10 | 1.6172 | 62 | 01 Jul 2015, 12:42 | 18.9 |
| B10-B11 | 1.6172 | 62 | 01 Jul 2015, 12:42 | 18.9 |
| DB17 | 0.0048 | 7 | 01 Jul 2015, 12:02 | 0.6 |
| B11 | 1.6220 | 63 | 01 Jul 2015, 12:42 | 19.4 |
| B11-POND C | 1.6220 | 63 | 01 Jul 2015, 12:48 | 19.2 |
| DB21 | 0.0519 | 5 | 01 Jul 2015, 12:12 | 0.7 |
| DB18 | 0.0346 | 18 | 01 Jul 2015, 12:08 | 1.5 |
| DB19 | 0.0281 | 7 | 01 Jul 2015, 12:12 | 0.7 |
| DB20 | 0.0147 | 6 | 01 Jul 2015, 12:10 | 0.6 |
| POND C | 1.7513 | 50 | 01 Jul 2015, 13:28 | 19.4 |
| POND C-B16 | 1.7513 | 50 | 01 Jul 2015, 13:32 | 19.2 |
| DB25 | 0.0211 | 12 | 01 Jul 2015, 12:04 | 0.9 |
| B16 | 1.7724 | 51 | 01 Jul 2015, 13:32 | 20.1 |
| B16-B17 | 1.7724 | 51 | 01 Jul 2015, 13:36 | 19.9 |
| DB26 | 0.0682 | 46 | 01 Jul 2015, 12:10 | 4.1 |
| B17 | 1.8406 | 56 | 01 Jul 2015, 12:12 | 24.0 |
| B17-B18 | 1.8406 | 56 | 01 Jul 2015, 12:16 | 23.8 |
| OS03 | 0.1984 | 9 | 01 Jul 2015, 12:28 | 2.2 |
| DB01 | 0.0719 | 14 | 01 Jul 2015, 12:10 | 1.5 |
| B01 | 0.2703 | 19 | 01 Jul 2015, 12:14 | 3.7 |
| B01-B02 | 0.2703 | 19 | 01 Jul 2015, 12:18 | 3.7 |
| OS02 | 0.2219 | 13 | 01 Jul 2015, 12:28 | 2.8 |
| DB02 | 0.0516 | 10 | 01 Jul 2015, 12:06 | 1.0 |
| B02 | 0.5438 | 36 | 01 Jul 2015, 12:18 | 7.6 |
| B02-POND A | 0.5438 | 36 | 01 Jul 2015, 12:22 | 7.5 |
| OS04 | 0.1359 | 4 | 01 Jul 2015, 12:28 | 1.2 |
| DB03 | 0.0703 | 7 | 01 Jul 2015, 12:14 | 1.0 |
| B03 | 0.2062 | 10 | 01 Jul 2015, 12:16 | 2.2 |
| B03-B04 | 0.2062 | 10 | 01 Jul 2015, 12:26 | 2.2 |
| DB04 | 0.0422 | 5 | 01 Jul 2015, 12:14 | 0.7 |
| DB05 | 0.0384 | 5 | 01 Jul 2015, 12:18 | 0.7 |
| B04 | 0.2868 | 18 | 01 Jul 2015, 12:22 | 3.5 |
| B04-B05 | 0.2868 | 18 | 01 Jul 2015, 12:24 | 3.5 |
| DB06 | 0.0219 | 14 | 01 Jul 2015, 12:08 | 1.2 |
| B05 | 0.3087 | 26 | 01 Jul 2015, 12:22 | 4.7 |
| B05-POND A | 0.3087 | 26 | 01 Jul 2015, 12:22 | 4.7 |
| DB07 | 0.0254 | 6 | 01 Jul 2015, 12:08 | 0.5 |
| DB08 | 0.0297 | 3 | 01 Jul 2015, 12:10 | 0.4 |
| POND A | 0.9076 | 34 | 01 Jul 2015, 12:58 | 10.7 |
| POND A-B06 | 0.9076 | 34 | 01 Jul 2015, 13:00 | 10.7 |
| DB09 | 0.0189 | 8 | 01 Jul 2015, 12:06 | 0.6 |
| B06 | 0.9265 | 35 | 01 Jul 2015, 13:00 | 11.3 |

| FILING 1 5-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|-------------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅ (AC. FT.) |
| B06-B07 | 0.9265 | 35 | 01Jul2015, 13:08 | 11.1 |
| DB11 | 0.0969 | 20 | 01Jul2015, 12:14 | 2.4 |
| DB10 | 0.0364 | 12 | 01Jul2015, 12:08 | 1.1 |
| B07 | 1.0598 | 42 | 01Jul2015, 13:06 | 14.7 |
| B07-B09 | 1.0598 | 42 | 01Jul2015, 13:12 | 14.5 |
| DB12 | 0.0453 | 21 | 01Jul2015, 12:08 | 1.7 |
| B09 | 1.1051 | 45 | 01Jul2015, 12:16 | 16.2 |
| B09-POND B | 1.1051 | 45 | 01Jul2015, 12:18 | 16.2 |
| DB15 | 0.1234 | 12 | 01Jul2015, 12:22 | 2.0 |
| DB13 | 0.0703 | 18 | 01Jul2015, 12:14 | 2.0 |
| DB14 | 0.0556 | 23 | 01Jul2015, 12:10 | 2.1 |
| POND B | 1.3544 | 69 | 01Jul2015, 12:30 | 22.2 |
| POND B-B12 | 1.3544 | 69 | 01Jul2015, 12:32 | 22.1 |
| DB22 | 0.0516 | 25 | 01Jul2015, 12:10 | 2.2 |
| DB23 | 0.0172 | 18 | 01Jul2015, 12:06 | 1.4 |
| B12 | 1.4232 | 83 | 01Jul2015, 12:28 | 25.7 |
| B12-B14 | 1.4232 | 83 | 01Jul2015, 12:30 | 25.6 |
| DB24 | 0.0531 | 24 | 01Jul2015, 12:08 | 2.1 |
| B14 | 1.4763 | 92 | 01Jul2015, 12:26 | 27.7 |
| B14-B15 | 1.4763 | 92 | 01Jul2015, 12:28 | 27.6 |
| DB28 | 0.0741 | 10 | 01Jul2015, 12:24 | 1.6 |
| B15 | 1.5504 | 102 | 01Jul2015, 12:26 | 29.2 |
| B15-B18 | 1.5504 | 102 | 01Jul2015, 12:36 | 28.7 |
| DB29 | 0.1697 | 19 | 01Jul2015, 12:24 | 3.2 |
| DB27 | 0.0508 | 17 | 01Jul2015, 12:16 | 1.9 |
| B26 | 3.6115 | 174 | 01Jul2015, 12:24 | 57.6 |
| B26-27 | 3.6115 | 173 | 01Jul2015, 12:28 | 57.2 |
| FB-02 | 0.0500 | 23 | 01Jul2015, 12:10 | 2.0 |
| FB-01 | 0.0373 | 5 | 01Jul2015, 12:10 | 0.6 |
| FB01-27a | 0.0373 | 5 | 01Jul2015, 12:12 | 0.6 |
| B19 | 0.0873 | 27 | 01Jul2015, 12:10 | 2.6 |
| B19-27 | 0.0873 | 27 | 01Jul2015, 12:12 | 2.6 |
| FB-03 | 0.0078 | 9 | 01Jul2015, 12:02 | 0.6 |
| 27 | 3.7066 | 189 | 01Jul2015, 12:26 | 60.4 |
| 27-32 | 3.7066 | 188 | 01Jul2015, 12:28 | 60.1 |
| WH-24 | 0.1325 | 57 | 01Jul2015, 12:10 | 5.4 |
| WH-26 | 0.0839 | 3 | 01Jul2015, 12:32 | 0.8 |
| WH-27 | 0.0217 | 1 | 01Jul2015, 12:08 | 0.2 |
| 30 | 0.2381 | 59 | 01Jul2015, 12:10 | 6.4 |
| 30-31 | 0.2381 | 59 | 01Jul2015, 12:12 | 6.4 |
| WH-28 | 0.0398 | 15 | 01Jul2015, 12:12 | 1.5 |
| 31 | 0.2779 | 74 | 01Jul2015, 12:12 | 7.9 |
| 31-32 | 0.2779 | 74 | 01Jul2015, 12:16 | 7.9 |
| WH-29 | 0.0495 | 19 | 01Jul2015, 12:12 | 1.9 |

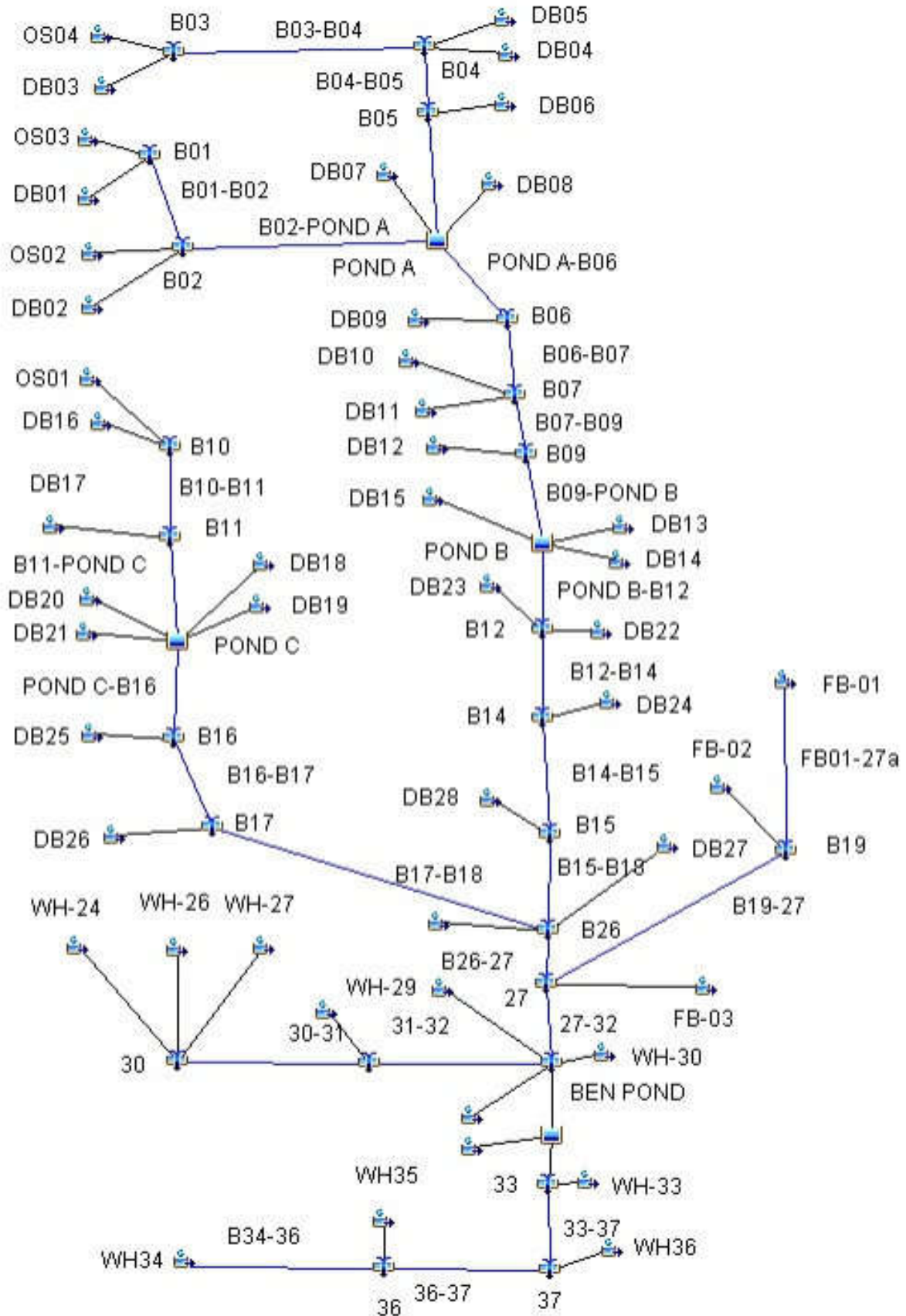
| FILING 1 5-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|--------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅ (AC. FT.) |
| WH-31 | 0.0406 | 21 | 01 Jul 2015, 12:08 | 1.8 |
| WH-30 | 0.0159 | 4 | 01 Jul 2015, 12:02 | 0.3 |
| 32 | 4.0905 | 257 | 01 Jul 2015, 12:28 | 72.0 |
| WH32 | 0.0458 | 4 | 01 Jul 2015, 12:04 | 0.5 |
| BEN POND | 4.1363 | 99 | 01 Jul 2015, 14:52 | 66.1 |
| WH-33 | 0.0064 | 3 | 01 Jul 2015, 12:08 | 0.3 |
| 33 | 4.1427 | 100 | 01 Jul 2015, 14:52 | 66.4 |
| 33-37 | 4.1427 | 100 | 01 Jul 2015, 15:00 | 65.6 |
| WH35 | 0.1550 | 22 | 01 Jul 2015, 12:12 | 2.8 |
| WH34 | 0.0450 | 15 | 01 Jul 2015, 12:10 | 1.4 |
| B34-36 | 0.0450 | 15 | 01 Jul 2015, 12:12 | 1.4 |
| 36 | 0.2000 | 37 | 01 Jul 2015, 12:12 | 4.2 |
| 36-37 | 0.2000 | 37 | 01 Jul 2015, 12:18 | 4.1 |
| WH36 | 0.0750 | 4 | 01 Jul 2015, 12:16 | 0.8 |
| 37 | 4.4177 | 104 | 01 Jul 2015, 14:50 | 70.6 |
| FH01 | 0.1344 | 37 | 01 Jul 2015, 12:08 | 3.5 |
| POND H | 0.1344 | 3 | 01 Jul 2015, 14:36 | 2.9 |
| FH02 | 0.0138 | 4 | 01 Jul 2015, 12:10 | 0.4 |
| H12 | 0.1482 | 5 | 01 Jul 2015, 12:14 | 3.3 |

| FILING 1 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 | 11.0 | 01Jul2015, 13:24 | 5.9 |
| DB16 | 0.0578 | 12.7 | 01Jul2015, 12:12 | 1.3 |
| B10 | 1.6172 | 13.2 | 01Jul2015, 12:12 | 7.3 |
| B10-B11 | 1.6172 | 13.2 | 01Jul2015, 12:14 | 7.2 |
| DB17 | 0.0048 | 5.7 | 01Jul2015, 12:02 | 0.4 |
| B11 | 1.6220 | 15.3 | 01Jul2015, 12:12 | 7.7 |
| B11-POND C | 1.6220 | 15.2 | 01Jul2015, 12:20 | 7.5 |
| DB21 | 0.0519 | 1.1 | 01Jul2015, 12:18 | 0.3 |
| DB18 | 0.0346 | 10.0 | 01Jul2015, 12:08 | 0.9 |
| DB19 | 0.0281 | 2.8 | 01Jul2015, 12:14 | 0.4 |
| DB20 | 0.0147 | 3.4 | 01Jul2015, 12:10 | 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 | 7.1 | 01Jul2015, 12:06 | 0.6 |
| B16 | 1.7724 | 11.3 | 01Jul2015, 15:06 | 6.7 |
| B16-B17 | 1.7724 | 11.3 | 01Jul2015, 15:16 | 6.6 |
| DB26 | 0.0682 | 29.4 | 01Jul2015, 12:10 | 2.7 |
| B17 | 1.8406 | 34.4 | 01Jul2015, 12:14 | 9.3 |
| B17-B18 | 1.8406 | 34.0 | 01Jul2015, 12:20 | 9.1 |
| OS03 | 0.1984 | 1.6 | 01Jul2015, 13:02 | 0.8 |
| DB01 | 0.0719 | 4.7 | 01Jul2015, 12:12 | 0.7 |
| B01 | 0.2703 | 5.0 | 01Jul2015, 12:14 | 1.5 |
| B01-B02 | 0.2703 | 5.0 | 01Jul2015, 12:18 | 1.5 |
| OS02 | 0.2219 | 2.6 | 01Jul2015, 12:46 | 1.1 |
| DB02 | 0.0516 | 3.4 | 01Jul2015, 12:08 | 0.5 |
| B02 | 0.5438 | 8.6 | 01Jul2015, 12:18 | 3.1 |
| B02-POND A | 0.5438 | 8.6 | 01Jul2015, 12:22 | 3.1 |
| OS04 | 0.1359 | 0.6 | 01Jul2015, 13:30 | 0.4 |
| DB03 | 0.0703 | 1.5 | 01Jul2015, 12:20 | 0.4 |
| B03 | 0.2062 | 1.5 | 01Jul2015, 12:20 | 0.8 |
| B03-B04 | 0.2062 | 1.5 | 01Jul2015, 12:36 | 0.8 |
| DB04 | 0.0422 | 1.2 | 01Jul2015, 12:18 | 0.3 |
| DB05 | 0.0384 | 1.4 | 01Jul2015, 12:22 | 0.3 |
| B04 | 0.2868 | 3.6 | 01Jul2015, 12:32 | 1.4 |
| B04-B05 | 0.2868 | 3.6 | 01Jul2015, 12:34 | 1.4 |
| DB06 | 0.0219 | 8.6 | 01Jul2015, 12:10 | 0.8 |
| B05 | 0.3087 | 10.3 | 01Jul2015, 12:12 | 2.2 |
| B05-POND A | 0.3087 | 10.2 | 01Jul2015, 12:14 | 2.1 |
| DB07 | 0.0254 | 1.9 | 01Jul2015, 12:10 | 0.3 |
| DB08 | 0.0297 | 0.5 | 01Jul2015, 12:16 | 0.2 |
| POND A | 0.9076 | 5.5 | 01Jul2015, 15:32 | 3.3 |
| POND A-B06 | 0.9076 | 5.5 | 01Jul2015, 15:34 | 3.3 |
| DB09 | 0.0189 | 3.7 | 01Jul2015, 12:06 | 0.3 |
| B06 | 0.9265 | 5.7 | 01Jul2015, 15:32 | 3.6 |

| FILING 1 2-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|-------------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂ (AC. FT.) |
| B06-B07 | 0.9265 | 5.7 | 01Jul2015, 15:48 | 3.5 |
| DB11 | 0.0969 | 8.1 | 01Jul2015, 12:16 | 1.2 |
| DB10 | 0.0364 | 5.8 | 01Jul2015, 12:10 | 0.6 |
| B07 | 1.0598 | 14.7 | 01Jul2015, 12:22 | 5.4 |
| B07-B09 | 1.0598 | 14.4 | 01Jul2015, 12:30 | 5.3 |
| DB12 | 0.0453 | 11.2 | 01Jul2015, 12:08 | 1.0 |
| B09 | 1.1051 | 19.4 | 01Jul2015, 12:20 | 6.3 |
| B09-POND B | 1.1051 | 19.3 | 01Jul2015, 12:22 | 6.3 |
| DB15 | 0.1234 | 3.3 | 01Jul2015, 12:28 | 0.9 |
| DB13 | 0.0703 | 7.9 | 01Jul2015, 12:16 | 1.1 |
| DB14 | 0.0556 | 12.4 | 01Jul2015, 12:10 | 1.2 |
| POND B | 1.3544 | 29.7 | 01Jul2015, 12:34 | 9.4 |
| POND B-B12 | 1.3544 | 29.7 | 01Jul2015, 12:38 | 9.3 |
| DB22 | 0.0516 | 14.1 | 01Jul2015, 12:10 | 1.3 |
| DB23 | 0.0172 | 13.1 | 01Jul2015, 12:06 | 1.0 |
| B12 | 1.4232 | 37.5 | 01Jul2015, 12:28 | 11.7 |
| B12-B14 | 1.4232 | 37.5 | 01Jul2015, 12:32 | 11.6 |
| DB24 | 0.0531 | 13.2 | 01Jul2015, 12:08 | 1.2 |
| B14 | 1.4763 | 45.9 | 01Jul2015, 12:16 | 12.8 |
| B14-B15 | 1.4763 | 45.9 | 01Jul2015, 12:18 | 12.8 |
| DB28 | 0.0741 | 3.6 | 01Jul2015, 12:26 | 0.8 |
| B15 | 1.5504 | 49.0 | 01Jul2015, 12:18 | 13.5 |
| B15-B18 | 1.5504 | 48.8 | 01Jul2015, 12:30 | 13.2 |
| DB29 | 0.1697 | 6.1 | 01Jul2015, 12:28 | 1.5 |
| DB27 | 0.0508 | 8.9 | 01Jul2015, 12:18 | 1.1 |
| B26 | 3.6115 | 86.9 | 01Jul2015, 12:28 | 24.9 |
| B26-27 | 3.6115 | 86.6 | 01Jul2015, 12:32 | 24.6 |
| FB-02 | 0.0500 | 12.5 | 01Jul2015, 12:10 | 1.2 |
| FB-01 | 0.0373 | 1.1 | 01Jul2015, 12:14 | 0.3 |
| FB01-27a | 0.0373 | 1.1 | 01Jul2015, 12:16 | 0.3 |
| B19 | 0.0873 | 13.3 | 01Jul2015, 12:10 | 1.5 |
| B19-27 | 0.0873 | 13.2 | 01Jul2015, 12:12 | 1.5 |
| FB-03 | 0.0078 | 6.2 | 01Jul2015, 12:02 | 0.4 |
| 27 | 3.7066 | 93.5 | 01Jul2015, 12:32 | 26.5 |
| 27-32 | 3.7066 | 92.7 | 01Jul2015, 12:36 | 26.3 |
| WH-24 | 0.1325 | 31.1 | 01Jul2015, 12:12 | 3.2 |
| WH-26 | 0.0839 | 0.5 | 01Jul2015, 13:18 | 0.3 |
| WH-27 | 0.0217 | 0.1 | 01Jul2015, 12:50 | 0.1 |
| 30 | 0.2381 | 31.1 | 01Jul2015, 12:12 | 3.5 |
| 30-31 | 0.2381 | 31.1 | 01Jul2015, 12:14 | 3.5 |
| WH-28 | 0.0398 | 8.1 | 01Jul2015, 12:14 | 0.9 |
| 31 | 0.2779 | 39.2 | 01Jul2015, 12:14 | 4.4 |
| 31-32 | 0.2779 | 38.9 | 01Jul2015, 12:16 | 4.4 |
| WH-29 | 0.0495 | 10.2 | 01Jul2015, 12:12 | 1.1 |

| FILING 1 2-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂ (AC. FT.) |
| WH-31 | 0.0406 | 11.8 | 01Jul2015, 12:08 | 1.1 |
| WH-30 | 0.0159 | 1.3 | 01Jul2015, 12:04 | 0.1 |
| 32 | 4.0905 | 122.8 | 01Jul2015, 12:34 | 33.0 |
| WH32 | 0.0458 | 0.3 | 01Jul2015, 12:48 | 0.2 |
| BEN POND | 4.1363 | 43.8 | 01Jul2015, 13:48 | 28.4 |
| WH-33 | 0.0064 | 1.9 | 01Jul2015, 12:08 | 0.2 |
| 33 | 4.1427 | 43.9 | 01Jul2015, 13:48 | 28.6 |
| 33-37 | 4.1427 | 43.9 | 01Jul2015, 14:00 | 28.1 |
| WH35 | 0.1550 | 6.4 | 01Jul2015, 12:16 | 1.3 |
| WH34 | 0.0450 | 7.0 | 01Jul2015, 12:10 | 0.8 |
| B34-36 | 0.0450 | 6.9 | 01Jul2015, 12:14 | 0.8 |
| 36 | 0.2000 | 13.3 | 01Jul2015, 12:14 | 2.0 |
| 36-37 | 0.2000 | 13.2 | 01Jul2015, 12:22 | 2.0 |
| WH36 | 0.0750 | 0.6 | 01Jul2015, 12:52 | 0.3 |
| 37 | 4.4177 | 47.3 | 01Jul2015, 13:56 | 30.4 |
| FH01 | 0.1344 | 15.4 | 01Jul2015, 12:10 | 1.8 |
| POND H | 0.1344 | 1.8 | 01Jul2015, 14:30 | 1.7 |
| FH02 | 0.0138 | 1.4 | 01Jul2015, 12:12 | 0.2 |
| H12 | 0.1482 | 2.3 | 01Jul2015, 12:16 | 1.9 |

BENNETT INTERIM CONDITIONS



HAEGLER 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 | 757 | 01Jul2015, 12:32 | 122 |
| DB16 | 0.0578 | 92 | 01Jul2015, 12:10 | 8 |
| B10 | 1.6172 | 794 | 01Jul2015, 12:30 | 130 |
| B10-B11 | 1.6172 | 793 | 01Jul2015, 12:32 | 130 |
| DB17 | 0.0048 | 16 | 01Jul2015, 12:02 | 1 |
| B11 | 1.6220 | 795 | 01Jul2015, 12:32 | 131 |
| B11-POND C | 1.6220 | 795 | 01Jul2015, 12:34 | 131 |
| DB21 | 0.0519 | 54 | 01Jul2015, 12:08 | 5 |
| DB18 | 0.0346 | 64 | 01Jul2015, 12:08 | 5 |
| DB19 | 0.0281 | 36 | 01Jul2015, 12:10 | 3 |
| DB20 | 0.0147 | 25 | 01Jul2015, 12:08 | 2 |
| POND C | 1.7513 | 749 | 01Jul2015, 12:46 | 141 |
| POND C-B16 | 1.7513 | 749 | 01Jul2015, 12:48 | 141 |
| DB25 | 0.0211 | 45 | 01Jul2015, 12:04 | 3 |
| B16 | 1.7724 | 754 | 01Jul2015, 12:48 | 144 |
| B16-B17 | 1.7724 | 754 | 01Jul2015, 12:50 | 144 |
| DB26 | 0.0682 | 136 | 01Jul2015, 12:10 | 12 |
| B17 | 1.8406 | 778 | 01Jul2015, 12:50 | 156 |
| B17-B18 | 1.8406 | 778 | 01Jul2015, 12:52 | 156 |
| OS03 | 0.1984 | 130 | 01Jul2015, 12:18 | 16 |
| DB01 | 0.0719 | 90 | 01Jul2015, 12:08 | 8 |
| B01 | 0.2703 | 199 | 01Jul2015, 12:14 | 23 |
| B01-B02 | 0.2703 | 199 | 01Jul2015, 12:14 | 23 |
| OS02 | 0.2219 | 148 | 01Jul2015, 12:20 | 19 |
| DB02 | 0.0516 | 71 | 01Jul2015, 12:06 | 5 |
| B02 | 0.5438 | 380 | 01Jul2015, 12:14 | 48 |
| B02-POND A | 0.5438 | 379 | 01Jul2015, 12:16 | 47 |
| OS04 | 0.1359 | 83 | 01Jul2015, 12:16 | 10 |
| DB03 | 0.0703 | 70 | 01Jul2015, 12:10 | 6 |
| B03 | 0.2062 | 145 | 01Jul2015, 12:12 | 16 |
| B03-B04 | 0.2062 | 145 | 01Jul2015, 12:18 | 16 |
| DB04 | 0.0422 | 44 | 01Jul2015, 12:10 | 4 |
| DB05 | 0.0384 | 37 | 01Jul2015, 12:14 | 4 |
| B04 | 0.2868 | 218 | 01Jul2015, 12:16 | 24 |
| B04-B05 | 0.2868 | 218 | 01Jul2015, 12:16 | 24 |
| DB06 | 0.0219 | 44 | 01Jul2015, 12:08 | 4 |
| B05 | 0.3087 | 253 | 01Jul2015, 12:14 | 28 |
| B05-POND A | 0.3087 | 252 | 01Jul2015, 12:16 | 27 |
| DB07 | 0.0254 | 35 | 01Jul2015, 12:06 | 3 |
| DB08 | 0.0297 | 32 | 01Jul2015, 12:06 | 3 |
| POND A | 0.9076 | 557 | 01Jul2015, 12:26 | 77 |
| POND A-B06 | 0.9076 | 557 | 01Jul2015, 12:26 | 77 |
| DB09 | 0.0189 | 34 | 01Jul2015, 12:04 | 2 |
| B06 | 0.9265 | 565 | 01Jul2015, 12:26 | 80 |

| FUTURE 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 | 564 | 01Jul2015, 12:30 | 79 |
| DB11 | 0.0969 | 114 | 01Jul2015, 12:12 | 11 |
| DB10 | 0.0364 | 56 | 01Jul2015, 12:08 | 5 |
| B07 | 1.0598 | 652 | 01Jul2015, 12:26 | 95 |
| B07-B09 | 1.0598 | 651 | 01Jul2015, 12:28 | 95 |
| DB12 | 0.0453 | 81 | 01Jul2015, 12:06 | 7 |
| B09 | 1.1051 | 677 | 01Jul2015, 12:26 | 101 |
| B09-POND B | 1.1051 | 676 | 01Jul2015, 12:28 | 101 |
| DB15 | 0.1234 | 105 | 01Jul2015, 12:16 | 12 |
| DB13 | 0.0703 | 89 | 01Jul2015, 12:12 | 9 |
| DB14 | 0.0556 | 93 | 01Jul2015, 12:08 | 8 |
| POND B | 1.3544 | 688 | 01Jul2015, 12:42 | 129 |
| POND B-B12 | 1.3544 | 688 | 01Jul2015, 12:44 | 128 |
| DB22 | 0.0516 | 91 | 01Jul2015, 12:08 | 8 |
| DB23 | 0.0172 | 45 | 01Jul2015, 12:04 | 4 |
| B12 | 1.4232 | 714 | 01Jul2015, 12:36 | 140 |
| B12-B14 | 1.4232 | 714 | 01Jul2015, 12:38 | 140 |
| DB24 | 0.0531 | 94 | 01Jul2015, 12:08 | 8 |
| B14 | 1.4763 | 743 | 01Jul2015, 12:28 | 147 |
| B14-B15 | 1.4763 | 742 | 01Jul2015, 12:28 | 147 |
| DB28 | 0.0741 | 82 | 01Jul2015, 12:12 | 8 |
| B15 | 1.5504 | 787 | 01Jul2015, 12:28 | 155 |
| B15-B18 | 1.5504 | 785 | 01Jul2015, 12:34 | 154 |
| DB29 | 0.1697 | 146 | 01Jul2015, 12:18 | 17 |
| DB27 | 0.0508 | 68 | 01Jul2015, 12:16 | 7 |
| B26 | 3.6115 | 1612 | 01Jul2015, 12:46 | 334 |
| B26-27 | 3.6115 | 1612 | 01Jul2015, 12:48 | 333 |
| FB-02 | 0.0500 | 67 | 01Jul2015, 12:16 | 7 |
| FB-01 | 0.0373 | 40 | 01Jul2015, 12:08 | 4 |
| FB01-27a | 0.0373 | 40 | 01Jul2015, 12:10 | 4 |
| B19 | 0.0873 | 103 | 01Jul2015, 12:12 | 11 |
| B19-27 | 0.0873 | 103 | 01Jul2015, 12:14 | 11 |
| FB-03 | 0.0078 | 22 | 01Jul2015, 12:04 | 2 |
| 27 | 3.7066 | 1647 | 01Jul2015, 12:48 | 345 |
| 27-32 | 3.7066 | 1647 | 01Jul2015, 12:48 | 345 |
| WH-24 | 0.1325 | 218 | 01Jul2015, 12:10 | 20 |
| WH-26 | 0.0839 | 49 | 01Jul2015, 12:20 | 6 |
| WH-27 | 0.0217 | 23 | 01Jul2015, 12:04 | 2 |
| 30 | 0.2381 | 271 | 01Jul2015, 12:10 | 28 |
| 30-31 | 0.2381 | 270 | 01Jul2015, 12:12 | 28 |
| WH-28 | 0.0398 | 60 | 01Jul2015, 12:12 | 6 |
| 31 | 0.2779 | 330 | 01Jul2015, 12:12 | 33 |
| 31-32 | 0.2779 | 329 | 01Jul2015, 12:14 | 33 |
| WH-29 | 0.0495 | 77 | 01Jul2015, 12:10 | 7 |

| FUTURE 100-YEAR | | | | |
|--------------------|-------------------------|---------------------------------------|------------------|---|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₁₀₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₁₀₀ (AC. FT.) |
| WH-31 | 0.0406 | 75 | 01Jul2015, 12:06 | 6 |
| WH-30 | 0.0159 | 26 | 01Jul2015, 12:02 | 2 |
| 32 | 4.0905 | 1792 | 01Jul2015, 12:38 | 393 |
| WH32 | 0.0458 | 55 | 01Jul2015, 12:02 | 4 |
| BEN POND | 4.1363 | 1394 | 01Jul2015, 13:18 | 377 |
| WH-33 | 0.0064 | 12 | 01Jul2015, 12:06 | 1 |
| 33 | 4.1427 | 1395 | 01Jul2015, 13:18 | 378 |
| 33-37 | 4.1427 | 1395 | 01Jul2015, 13:20 | 376 |
| WH35 | 0.1550 | 171 | 01Jul2015, 12:10 | 15 |
| WH34 | 0.0450 | 68 | 01Jul2015, 12:08 | 6 |
| B34-36 | 0.0450 | 68 | 01Jul2015, 12:10 | 6 |
| 36 | 0.2000 | 239 | 01Jul2015, 12:10 | 21 |
| 36-37 | 0.2000 | 238 | 01Jul2015, 12:12 | 21 |
| WH36 | 0.0750 | 63 | 01Jul2015, 12:10 | 6 |
| 37 | 4.4177 | 1433 | 01Jul2015, 13:20 | 403 |
| FH01 | 0.1344 | 161 | 01Jul2015, 12:16 | 18 |
| POND H | 0.1344 | 55 | 01Jul2015, 12:52 | 16 |
| FH02 | 0.0091 | 12 | 01Jul2015, 12:08 | 1 |
| FH03 | 0.0081 | 15 | 01Jul2015, 12:08 | 1 |
| H12 | 0.1516 | 60 | 01Jul2015, 12:50 | 18 |

| 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 | 510 | 01 Jul2015, 12:34 | 87 |
| DB16 | 0.0578 | 72 | 01 Jul2015, 12:10 | 7 |
| B10 | 1.6172 | 537 | 01 Jul2015, 12:32 | 93 |
| B10-B11 | 1.6172 | 537 | 01 Jul2015, 12:32 | 93 |
| DB17 | 0.0048 | 13 | 01 Jul2015, 12:02 | 1 |
| B11 | 1.6220 | 538 | 01 Jul2015, 12:32 | 94 |
| B11-POND C | 1.6220 | 538 | 01 Jul2015, 12:36 | 94 |
| DB21 | 0.0519 | 38 | 01 Jul2015, 12:08 | 3 |
| DB18 | 0.0346 | 50 | 01 Jul2015, 12:08 | 4 |
| DB19 | 0.0281 | 27 | 01 Jul2015, 12:10 | 3 |
| DB20 | 0.0147 | 19 | 01 Jul2015, 12:08 | 2 |
| POND C | 1.7513 | 507 | 01 Jul2015, 12:48 | 101 |
| POND C-B16 | 1.7513 | 507 | 01 Jul2015, 12:50 | 101 |
| DB25 | 0.0211 | 35 | 01 Jul2015, 12:04 | 3 |
| B16 | 1.7724 | 511 | 01 Jul2015, 12:50 | 103 |
| B16-B17 | 1.7724 | 510 | 01 Jul2015, 12:54 | 103 |
| DB26 | 0.0682 | 110 | 01 Jul2015, 12:10 | 10 |
| B17 | 1.8406 | 529 | 01 Jul2015, 12:52 | 113 |
| B17-B18 | 1.8406 | 529 | 01 Jul2015, 12:54 | 113 |
| OS03 | 0.1984 | 88 | 01 Jul2015, 12:20 | 11 |
| DB01 | 0.0719 | 66 | 01 Jul2015, 12:08 | 6 |
| B01 | 0.2703 | 139 | 01 Jul2015, 12:14 | 17 |
| B01-B02 | 0.2703 | 138 | 01 Jul2015, 12:16 | 17 |
| OS02 | 0.2219 | 102 | 01 Jul2015, 12:22 | 14 |
| DB02 | 0.0516 | 52 | 01 Jul2015, 12:06 | 4 |
| B02 | 0.5438 | 263 | 01 Jul2015, 12:16 | 34 |
| B02-POND A | 0.5438 | 263 | 01 Jul2015, 12:16 | 34 |
| OS04 | 0.1359 | 54 | 01 Jul2015, 12:18 | 7 |
| DB03 | 0.0703 | 49 | 01 Jul2015, 12:10 | 5 |
| B03 | 0.2062 | 98 | 01 Jul2015, 12:14 | 11 |
| B03-B04 | 0.2062 | 98 | 01 Jul2015, 12:18 | 11 |
| DB04 | 0.0422 | 31 | 01 Jul2015, 12:10 | 3 |
| DB05 | 0.0384 | 27 | 01 Jul2015, 12:14 | 3 |
| B04 | 0.2868 | 150 | 01 Jul2015, 12:16 | 17 |
| B04-B05 | 0.2868 | 149 | 01 Jul2015, 12:16 | 17 |
| DB06 | 0.0219 | 35 | 01 Jul2015, 12:08 | 3 |
| B05 | 0.3087 | 176 | 01 Jul2015, 12:16 | 20 |
| B05-POND A | 0.3087 | 176 | 01 Jul2015, 12:16 | 20 |
| DB07 | 0.0254 | 26 | 01 Jul2015, 12:06 | 2 |
| DB08 | 0.0297 | 22 | 01 Jul2015, 12:06 | 2 |
| POND A | 0.9076 | 401 | 01 Jul2015, 12:26 | 56 |
| POND A-B06 | 0.9076 | 400 | 01 Jul2015, 12:26 | 55 |
| DB09 | 0.0189 | 26 | 01 Jul2015, 12:04 | 2 |
| B06 | 0.9265 | 407 | 01 Jul2015, 12:26 | 57 |

| FUTURE 50-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|--------------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅₀ (AC. FT.) |
| B06-B07 | 0.9265 | 406 | 01 Jul2015, 12:30 | 57 |
| DB11 | 0.0969 | 85 | 01 Jul2015, 12:12 | 9 |
| DB10 | 0.0364 | 43 | 01 Jul2015, 12:08 | 4 |
| B07 | 1.0598 | 469 | 01 Jul2015, 12:28 | 69 |
| B07-B09 | 1.0598 | 468 | 01 Jul2015, 12:30 | 69 |
| DB12 | 0.0453 | 63 | 01 Jul2015, 12:06 | 5 |
| B09 | 1.1051 | 486 | 01 Jul2015, 12:30 | 74 |
| B09-POND B | 1.1051 | 485 | 01 Jul2015, 12:30 | 74 |
| DB15 | 0.1234 | 75 | 01 Jul2015, 12:16 | 9 |
| DB13 | 0.0703 | 67 | 01 Jul2015, 12:12 | 7 |
| DB14 | 0.0556 | 72 | 01 Jul2015, 12:08 | 6 |
| POND B | 1.3544 | 539 | 01 Jul2015, 12:38 | 95 |
| POND B-B12 | 1.3544 | 539 | 01 Jul2015, 12:40 | 94 |
| DB22 | 0.0516 | 72 | 01 Jul2015, 12:08 | 6 |
| DB23 | 0.0172 | 38 | 01 Jul2015, 12:04 | 3 |
| B12 | 1.4232 | 562 | 01 Jul2015, 12:38 | 104 |
| B12-B14 | 1.4232 | 562 | 01 Jul2015, 12:40 | 103 |
| DB24 | 0.0531 | 73 | 01 Jul2015, 12:08 | 6 |
| B14 | 1.4763 | 577 | 01 Jul2015, 12:40 | 109 |
| B14-B15 | 1.4763 | 576 | 01 Jul2015, 12:40 | 109 |
| DB28 | 0.0741 | 60 | 01 Jul2015, 12:12 | 6 |
| B15 | 1.5504 | 597 | 01 Jul2015, 12:40 | 115 |
| B15-B18 | 1.5504 | 596 | 01 Jul2015, 12:46 | 114 |
| DB29 | 0.1697 | 105 | 01 Jul2015, 12:18 | 13 |
| DB27 | 0.0508 | 53 | 01 Jul2015, 12:16 | 6 |
| B26 | 3.6115 | 1171 | 01 Jul2015, 12:48 | 245 |
| B26-27 | 3.6115 | 1170 | 01 Jul2015, 12:50 | 244 |
| FB-02 | 0.0500 | 53 | 01 Jul2015, 12:16 | 6 |
| FB-01 | 0.0373 | 28 | 01 Jul2015, 12:08 | 3 |
| FB01-27a | 0.0373 | 28 | 01 Jul2015, 12:10 | 3 |
| B19 | 0.0873 | 78 | 01 Jul2015, 12:14 | 8 |
| B19-27 | 0.0873 | 78 | 01 Jul2015, 12:14 | 8 |
| FB-03 | 0.0078 | 18 | 01 Jul2015, 12:04 | 1 |
| 27 | 3.7066 | 1197 | 01 Jul2015, 12:50 | 254 |
| 27-32 | 3.7066 | 1196 | 01 Jul2015, 12:52 | 253 |
| WH-24 | 0.1325 | 171 | 01 Jul2015, 12:10 | 15 |
| WH-26 | 0.0839 | 33 | 01 Jul2015, 12:22 | 5 |
| WH-27 | 0.0217 | 16 | 01 Jul2015, 12:04 | 1 |
| 30 | 0.2381 | 205 | 01 Jul2015, 12:10 | 21 |
| 30-31 | 0.2381 | 205 | 01 Jul2015, 12:12 | 21 |
| WH-28 | 0.0398 | 47 | 01 Jul2015, 12:12 | 5 |
| 31 | 0.2779 | 252 | 01 Jul2015, 12:12 | 25 |
| 31-32 | 0.2779 | 251 | 01 Jul2015, 12:14 | 25 |
| WH-29 | 0.0495 | 60 | 01 Jul2015, 12:10 | 6 |

| FUTURE 50-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅₀ (AC. FT.) |
| WH-31 | 0.0406 | 60 | 01Jul2015, 12:08 | 5 |
| WH-30 | 0.0159 | 19 | 01Jul2015, 12:02 | 1 |
| 32 | 4.0905 | 1290 | 01Jul2015, 12:50 | 290 |
| WH32 | 0.0458 | 38 | 01Jul2015, 12:02 | 3 |
| BEN POND | 4.1363 | 985 | 01Jul2015, 13:16 | 276 |
| WH-33 | 0.0064 | 9 | 01Jul2015, 12:06 | 1 |
| 33 | 4.1427 | 986 | 01Jul2015, 13:16 | 276 |
| 33-37 | 4.1427 | 985 | 01Jul2015, 13:20 | 275 |
| WH35 | 0.1550 | 124 | 01Jul2015, 12:10 | 11 |
| WH34 | 0.0450 | 52 | 01Jul2015, 12:08 | 5 |
| B34-36 | 0.0450 | 52 | 01Jul2015, 12:10 | 5 |
| 36 | 0.2000 | 176 | 01Jul2015, 12:10 | 16 |
| 36-37 | 0.2000 | 174 | 01Jul2015, 12:14 | 16 |
| WH36 | 0.0750 | 43 | 01Jul2015, 12:10 | 4 |
| 37 | 4.4177 | 1015 | 01Jul2015, 13:20 | 295 |
| FH01 | 0.1344 | 123 | 01Jul2015, 12:18 | 14 |
| POND H | 0.1344 | 31 | 01Jul2015, 13:04 | 12 |
| FH02 | 0.0091 | 9 | 01Jul2015, 12:08 | 1 |
| FH03 | 0.0081 | 12 | 01Jul2015, 12:08 | 1 |
| H12 | 0.1516 | 34 | 01Jul2015, 13:00 | 14 |

| 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 | 316 | 01Jul2015, 12:36 | 58.6 |
| DB16 | 0.0578 | 54 | 01Jul2015, 12:10 | 5.0 |
| B10 | 1.6172 | 335 | 01Jul2015, 12:34 | 63.6 |
| B10-B11 | 1.6172 | 335 | 01Jul2015, 12:34 | 63.5 |
| DB17 | 0.0048 | 11 | 01Jul2015, 12:02 | 0.9 |
| B11 | 1.6220 | 336 | 01Jul2015, 12:34 | 64.4 |
| B11-POND C | 1.6220 | 336 | 01Jul2015, 12:38 | 64.0 |
| DB21 | 0.0519 | 25 | 01Jul2015, 12:08 | 2.3 |
| DB18 | 0.0346 | 39 | 01Jul2015, 12:08 | 3.2 |
| DB19 | 0.0281 | 20 | 01Jul2015, 12:10 | 1.9 |
| DB20 | 0.0147 | 15 | 01Jul2015, 12:10 | 1.3 |
| POND C | 1.7513 | 310 | 01Jul2015, 12:52 | 68.6 |
| POND C-B16 | 1.7513 | 310 | 01Jul2015, 12:54 | 68.4 |
| DB25 | 0.0211 | 27 | 01Jul2015, 12:04 | 2.0 |
| B16 | 1.7724 | 313 | 01Jul2015, 12:54 | 70.3 |
| B16-B17 | 1.7724 | 312 | 01Jul2015, 12:58 | 69.9 |
| DB26 | 0.0682 | 88 | 01Jul2015, 12:10 | 8.0 |
| B17 | 1.8406 | 326 | 01Jul2015, 12:58 | 77.9 |
| B17-B18 | 1.8406 | 326 | 01Jul2015, 13:00 | 77.5 |
| OS03 | 0.1984 | 55 | 01Jul2015, 12:20 | 7.7 |
| DB01 | 0.0719 | 46 | 01Jul2015, 12:08 | 4.1 |
| B01 | 0.2703 | 89 | 01Jul2015, 12:14 | 11.7 |
| B01-B02 | 0.2703 | 89 | 01Jul2015, 12:16 | 11.7 |
| OS02 | 0.2219 | 65 | 01Jul2015, 12:22 | 9.3 |
| DB02 | 0.0516 | 36 | 01Jul2015, 12:06 | 2.8 |
| B02 | 0.5438 | 169 | 01Jul2015, 12:16 | 23.8 |
| B02-POND A | 0.5438 | 169 | 01Jul2015, 12:18 | 23.8 |
| OS04 | 0.1359 | 32 | 01Jul2015, 12:18 | 4.5 |
| DB03 | 0.0703 | 32 | 01Jul2015, 12:10 | 3.2 |
| B03 | 0.2062 | 61 | 01Jul2015, 12:14 | 7.7 |
| B03-B04 | 0.2062 | 60 | 01Jul2015, 12:20 | 7.6 |
| DB04 | 0.0422 | 21 | 01Jul2015, 12:10 | 2.0 |
| DB05 | 0.0384 | 18 | 01Jul2015, 12:14 | 2.0 |
| B04 | 0.2868 | 94 | 01Jul2015, 12:18 | 11.7 |
| B04-B05 | 0.2868 | 94 | 01Jul2015, 12:18 | 11.7 |
| DB06 | 0.0219 | 28 | 01Jul2015, 12:08 | 2.4 |
| B05 | 0.3087 | 115 | 01Jul2015, 12:16 | 14.0 |
| B05-POND A | 0.3087 | 114 | 01Jul2015, 12:18 | 14.0 |
| DB07 | 0.0254 | 18 | 01Jul2015, 12:06 | 1.5 |
| DB08 | 0.0297 | 15 | 01Jul2015, 12:08 | 1.3 |
| POND A | 0.9076 | 244 | 01Jul2015, 12:28 | 37.8 |
| POND A-B06 | 0.9076 | 244 | 01Jul2015, 12:30 | 37.8 |
| DB09 | 0.0189 | 19 | 01Jul2015, 12:04 | 1.4 |
| B06 | 0.9265 | 248 | 01Jul2015, 12:30 | 39.2 |

| FUTURE 25-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|-------------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂₅ (AC. FT.) |
| B06-B07 | 0.9265 | 248 | 01Jul2015, 12:34 | 38.8 |
| DB11 | 0.0969 | 60 | 01Jul2015, 12:12 | 6.2 |
| DB10 | 0.0364 | 32 | 01Jul2015, 12:08 | 2.7 |
| B07 | 1.0598 | 286 | 01Jul2015, 12:32 | 47.7 |
| B07-B09 | 1.0598 | 285 | 01Jul2015, 12:36 | 47.4 |
| DB12 | 0.0453 | 48 | 01Jul2015, 12:06 | 3.9 |
| B09 | 1.1051 | 296 | 01Jul2015, 12:36 | 51.3 |
| B09-POND B | 1.1051 | 296 | 01Jul2015, 12:36 | 51.2 |
| DB15 | 0.1234 | 50 | 01Jul2015, 12:18 | 6.1 |
| DB13 | 0.0703 | 49 | 01Jul2015, 12:12 | 4.9 |
| DB14 | 0.0556 | 54 | 01Jul2015, 12:08 | 4.7 |
| POND B | 1.3544 | 337 | 01Jul2015, 12:42 | 66.5 |
| POND B-B12 | 1.3544 | 336 | 01Jul2015, 12:44 | 66.3 |
| DB22 | 0.0516 | 55 | 01Jul2015, 12:08 | 4.8 |
| DB23 | 0.0172 | 31 | 01Jul2015, 12:04 | 2.5 |
| B12 | 1.4232 | 353 | 01Jul2015, 12:42 | 73.6 |
| B12-B14 | 1.4232 | 352 | 01Jul2015, 12:44 | 73.4 |
| DB24 | 0.0531 | 56 | 01Jul2015, 12:08 | 4.6 |
| B14 | 1.4763 | 363 | 01Jul2015, 12:44 | 78.0 |
| B14-B15 | 1.4763 | 362 | 01Jul2015, 12:46 | 77.9 |
| DB28 | 0.0741 | 42 | 01Jul2015, 12:12 | 4.3 |
| B15 | 1.5504 | 375 | 01Jul2015, 12:44 | 82.1 |
| B15-B18 | 1.5504 | 375 | 01Jul2015, 12:52 | 81.2 |
| DB29 | 0.1697 | 71 | 01Jul2015, 12:20 | 9.0 |
| DB27 | 0.0508 | 40 | 01Jul2015, 12:16 | 4.3 |
| B26 | 3.6115 | 731 | 01Jul2015, 12:54 | 172.0 |
| B26-27 | 3.6115 | 731 | 01Jul2015, 12:56 | 171.3 |
| FB-02 | 0.0500 | 40 | 01Jul2015, 12:16 | 4.4 |
| FB-01 | 0.0373 | 19 | 01Jul2015, 12:10 | 1.8 |
| FB01-27a | 0.0373 | 19 | 01Jul2015, 12:10 | 1.8 |
| B19 | 0.0873 | 57 | 01Jul2015, 12:14 | 6.2 |
| B19-27 | 0.0873 | 57 | 01Jul2015, 12:16 | 6.2 |
| FB-03 | 0.0078 | 15 | 01Jul2015, 12:04 | 1.1 |
| 27 | 3.7066 | 748 | 01Jul2015, 12:56 | 178.6 |
| 27-32 | 3.7066 | 748 | 01Jul2015, 12:58 | 178.2 |
| WH-24 | 0.1325 | 129 | 01Jul2015, 12:10 | 11.7 |
| WH-26 | 0.0839 | 20 | 01Jul2015, 12:22 | 3.0 |
| WH-27 | 0.0217 | 10 | 01Jul2015, 12:04 | 0.8 |
| 30 | 0.2381 | 150 | 01Jul2015, 12:10 | 15.5 |
| 30-31 | 0.2381 | 149 | 01Jul2015, 12:12 | 15.5 |
| WH-28 | 0.0398 | 36 | 01Jul2015, 12:12 | 3.4 |
| 31 | 0.2779 | 185 | 01Jul2015, 12:12 | 18.9 |
| 31-32 | 0.2779 | 185 | 01Jul2015, 12:14 | 18.8 |
| WH-29 | 0.0495 | 45 | 01Jul2015, 12:10 | 4.2 |

| FUTURE 25-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂₅ (AC. FT.) |
| WH-31 | 0.0406 | 46 | 01Jul2015, 12:08 | 3.8 |
| WH-30 | 0.0159 | 13 | 01Jul2015, 12:02 | 0.9 |
| 32 | 4.0905 | 809 | 01Jul2015, 12:56 | 205.8 |
| WH32 | 0.0458 | 24 | 01Jul2015, 12:02 | 1.6 |
| BEN POND | 4.1363 | 595 | 01Jul2015, 13:26 | 194.6 |
| WH-33 | 0.0064 | 7 | 01Jul2015, 12:08 | 0.6 |
| 33 | 4.1427 | 596 | 01Jul2015, 13:26 | 195.2 |
| 33-37 | 4.1427 | 596 | 01Jul2015, 13:32 | 193.6 |
| WH35 | 0.1550 | 84 | 01Jul2015, 12:10 | 8.0 |
| WH34 | 0.0450 | 38 | 01Jul2015, 12:08 | 3.3 |
| B34-36 | 0.0450 | 38 | 01Jul2015, 12:10 | 3.3 |
| 36 | 0.2000 | 122 | 01Jul2015, 12:10 | 11.4 |
| 36-37 | 0.2000 | 121 | 01Jul2015, 12:14 | 11.3 |
| WH36 | 0.0750 | 27 | 01Jul2015, 12:12 | 2.9 |
| 37 | 4.4177 | 616 | 01Jul2015, 13:30 | 207.8 |
| FH01 | 0.1344 | 91 | 01Jul2015, 12:18 | 10.5 |
| POND H | 0.1344 | 18 | 01Jul2015, 13:18 | 8.4 |
| FH02 | 0.0091 | 6 | 01Jul2015, 12:10 | 0.6 |
| FH03 | 0.0081 | 9 | 01Jul2015, 12:08 | 0.8 |
| H12 | 0.1516 | 20 | 01Jul2015, 13:12 | 9.7 |

| 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 | 136 | 01 Jul 2015, 12:38 | 30.9 |
| DB16 | 0.0578 | 35 | 01 Jul 2015, 12:10 | 3.3 |
| B10 | 1.6172 | 147 | 01 Jul 2015, 12:36 | 34.2 |
| B10-B11 | 1.6172 | 147 | 01 Jul 2015, 12:38 | 34.1 |
| DB17 | 0.0048 | 9 | 01 Jul 2015, 12:02 | 0.7 |
| B11 | 1.6220 | 148 | 01 Jul 2015, 12:38 | 34.8 |
| B11-POND C | 1.6220 | 148 | 01 Jul 2015, 12:42 | 34.5 |
| DB21 | 0.0519 | 12 | 01 Jul 2015, 12:10 | 1.3 |
| DB18 | 0.0346 | 26 | 01 Jul 2015, 12:08 | 2.1 |
| DB19 | 0.0281 | 11 | 01 Jul 2015, 12:12 | 1.1 |
| DB20 | 0.0147 | 9 | 01 Jul 2015, 12:10 | 0.8 |
| POND C | 1.7513 | 129 | 01 Jul 2015, 13:02 | 36.3 |
| POND C-B16 | 1.7513 | 128 | 01 Jul 2015, 13:06 | 36.1 |
| DB25 | 0.0211 | 18 | 01 Jul 2015, 12:04 | 1.3 |
| B16 | 1.7724 | 130 | 01 Jul 2015, 13:06 | 37.4 |
| B16-B17 | 1.7724 | 130 | 01 Jul 2015, 13:10 | 37.1 |
| DB26 | 0.0682 | 62 | 01 Jul 2015, 12:10 | 5.6 |
| B17 | 1.8406 | 138 | 01 Jul 2015, 13:08 | 42.7 |
| B17-B18 | 1.8406 | 138 | 01 Jul 2015, 13:12 | 42.4 |
| OS03 | 0.1984 | 24 | 01 Jul 2015, 12:24 | 4.1 |
| DB01 | 0.0719 | 25 | 01 Jul 2015, 12:10 | 2.4 |
| B01 | 0.2703 | 42 | 01 Jul 2015, 12:14 | 6.5 |
| B01-B02 | 0.2703 | 42 | 01 Jul 2015, 12:16 | 6.5 |
| OS02 | 0.2219 | 30 | 01 Jul 2015, 12:26 | 5.1 |
| DB02 | 0.0516 | 20 | 01 Jul 2015, 12:06 | 1.7 |
| B02 | 0.5438 | 79 | 01 Jul 2015, 12:18 | 13.2 |
| B02-POND A | 0.5438 | 79 | 01 Jul 2015, 12:20 | 13.1 |
| OS04 | 0.1359 | 12 | 01 Jul 2015, 12:22 | 2.3 |
| DB03 | 0.0703 | 16 | 01 Jul 2015, 12:12 | 1.8 |
| B03 | 0.2062 | 26 | 01 Jul 2015, 12:16 | 4.1 |
| B03-B04 | 0.2062 | 26 | 01 Jul 2015, 12:22 | 4.0 |
| DB04 | 0.0422 | 10 | 01 Jul 2015, 12:12 | 1.2 |
| DB05 | 0.0384 | 9 | 01 Jul 2015, 12:16 | 1.1 |
| B04 | 0.2868 | 42 | 01 Jul 2015, 12:20 | 6.3 |
| B04-B05 | 0.2868 | 42 | 01 Jul 2015, 12:20 | 6.3 |
| DB06 | 0.0219 | 19 | 01 Jul 2015, 12:08 | 1.6 |
| B05 | 0.3087 | 55 | 01 Jul 2015, 12:18 | 8.0 |
| B05-POND A | 0.3087 | 55 | 01 Jul 2015, 12:20 | 8.0 |
| DB07 | 0.0254 | 10 | 01 Jul 2015, 12:08 | 0.9 |
| DB08 | 0.0297 | 7 | 01 Jul 2015, 12:08 | 0.7 |
| POND A | 0.9076 | 98 | 01 Jul 2015, 12:38 | 20.1 |
| POND A-B06 | 0.9076 | 98 | 01 Jul 2015, 12:38 | 20.1 |
| DB09 | 0.0189 | 12 | 01 Jul 2015, 12:04 | 0.9 |
| B06 | 0.9265 | 100 | 01 Jul 2015, 12:38 | 21.0 |

| FUTURE 10-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|---------------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₁₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₁₀ (AC. FT.) |
| B06-B07 | 0.9265 | 99 | 01 Jul 2015, 12:46 | 20.7 |
| DB11 | 0.0969 | 35 | 01 Jul 2015, 12:14 | 3.8 |
| DB10 | 0.0364 | 19 | 01 Jul 2015, 12:08 | 1.7 |
| B07 | 1.0598 | 116 | 01 Jul 2015, 12:44 | 26.2 |
| B07-B09 | 1.0598 | 116 | 01 Jul 2015, 12:48 | 26.0 |
| DB12 | 0.0453 | 31 | 01 Jul 2015, 12:08 | 2.5 |
| B09 | 1.1051 | 121 | 01 Jul 2015, 12:48 | 28.5 |
| B09-POND B | 1.1051 | 121 | 01 Jul 2015, 12:48 | 28.5 |
| DB15 | 0.1234 | 25 | 01 Jul 2015, 12:20 | 3.4 |
| DB13 | 0.0703 | 29 | 01 Jul 2015, 12:14 | 3.1 |
| DB14 | 0.0556 | 35 | 01 Jul 2015, 12:08 | 3.1 |
| POND B | 1.3544 | 140 | 01 Jul 2015, 12:56 | 37.8 |
| POND B-B12 | 1.3544 | 140 | 01 Jul 2015, 12:58 | 37.7 |
| DB22 | 0.0516 | 36 | 01 Jul 2015, 12:08 | 3.2 |
| DB23 | 0.0172 | 23 | 01 Jul 2015, 12:06 | 1.8 |
| B12 | 1.4232 | 148 | 01 Jul 2015, 12:26 | 42.7 |
| B12-B14 | 1.4232 | 148 | 01 Jul 2015, 12:28 | 42.5 |
| DB24 | 0.0531 | 36 | 01 Jul 2015, 12:08 | 3.0 |
| B14 | 1.4763 | 162 | 01 Jul 2015, 12:26 | 45.6 |
| B14-B15 | 1.4763 | 162 | 01 Jul 2015, 12:28 | 45.5 |
| DB28 | 0.0741 | 23 | 01 Jul 2015, 12:14 | 2.5 |
| B15 | 1.5504 | 176 | 01 Jul 2015, 12:26 | 48.0 |
| B15-B18 | 1.5504 | 176 | 01 Jul 2015, 12:34 | 47.3 |
| DB29 | 0.1697 | 37 | 01 Jul 2015, 12:20 | 5.2 |
| DB27 | 0.0508 | 25 | 01 Jul 2015, 12:16 | 2.8 |
| B26 | 3.6115 | 314 | 01 Jul 2015, 13:08 | 97.8 |
| B26-27 | 3.6115 | 314 | 01 Jul 2015, 13:12 | 97.2 |
| FB-02 | 0.0500 | 26 | 01 Jul 2015, 12:18 | 2.9 |
| FB-01 | 0.0373 | 9 | 01 Jul 2015, 12:10 | 1.0 |
| FB01-27a | 0.0373 | 9 | 01 Jul 2015, 12:12 | 1.0 |
| B19 | 0.0873 | 34 | 01 Jul 2015, 12:16 | 3.9 |
| B19-27 | 0.0873 | 34 | 01 Jul 2015, 12:16 | 3.9 |
| FB-03 | 0.0078 | 11 | 01 Jul 2015, 12:04 | 0.8 |
| 27 | 3.7066 | 322 | 01 Jul 2015, 13:12 | 101.9 |
| 27-32 | 3.7066 | 322 | 01 Jul 2015, 13:14 | 101.6 |
| WH-24 | 0.1325 | 84 | 01 Jul 2015, 12:10 | 7.7 |
| WH-26 | 0.0839 | 8 | 01 Jul 2015, 12:26 | 1.5 |
| WH-27 | 0.0217 | 4 | 01 Jul 2015, 12:06 | 0.4 |
| 30 | 0.2381 | 91 | 01 Jul 2015, 12:10 | 9.7 |
| 30-31 | 0.2381 | 91 | 01 Jul 2015, 12:12 | 9.7 |
| WH-28 | 0.0398 | 23 | 01 Jul 2015, 12:12 | 2.2 |
| 31 | 0.2779 | 114 | 01 Jul 2015, 12:12 | 11.9 |
| 31-32 | 0.2779 | 113 | 01 Jul 2015, 12:14 | 11.9 |
| WH-29 | 0.0495 | 29 | 01 Jul 2015, 12:10 | 2.7 |

| FUTURE 10-YEAR | | | | |
|--------------------|-------------------------|--------------------------------------|------------------|--|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₁₀ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₁₀ (AC. FT.) |
| WH-31 | 0.0406 | 30 | 01Jul2015, 12:08 | 2.5 |
| WH-30 | 0.0159 | 7 | 01Jul2015, 12:02 | 0.5 |
| 32 | 4.0905 | 435 | 01Jul2015, 12:24 | 119.2 |
| WH32 | 0.0458 | 10 | 01Jul2015, 12:04 | 0.9 |
| BEN POND | 4.1363 | 252 | 01Jul2015, 13:52 | 111.9 |
| WH-33 | 0.0064 | 5 | 01Jul2015, 12:08 | 0.4 |
| 33 | 4.1427 | 253 | 01Jul2015, 13:52 | 112.3 |
| 33-37 | 4.1427 | 253 | 01Jul2015, 13:58 | 111.2 |
| WH35 | 0.1550 | 44 | 01Jul2015, 12:10 | 4.6 |
| WH34 | 0.0450 | 23 | 01Jul2015, 12:10 | 2.1 |
| B34-36 | 0.0450 | 23 | 01Jul2015, 12:12 | 2.1 |
| 36 | 0.2000 | 67 | 01Jul2015, 12:12 | 6.7 |
| 36-37 | 0.2000 | 66 | 01Jul2015, 12:16 | 6.7 |
| WH36 | 0.0750 | 11 | 01Jul2015, 12:14 | 1.5 |
| 37 | 4.4177 | 262 | 01Jul2015, 13:58 | 119.4 |
| FH01 | 0.1344 | 56 | 01Jul2015, 12:18 | 6.7 |
| POND H | 0.1344 | 8 | 01Jul2015, 13:48 | 5.1 |
| FH02 | 0.0091 | 4 | 01Jul2015, 12:10 | 0.3 |
| FH03 | 0.0081 | 6 | 01Jul2015, 12:08 | 0.5 |
| H12 | 0.1516 | 11 | 01Jul2015, 12:10 | 6.0 |

| 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 | 55 | 01Jul2015, 12:46 | 16.6 |
| DB16 | 0.0578 | 23 | 01Jul2015, 12:12 | 2.3 |
| B10 | 1.6172 | 62 | 01Jul2015, 12:42 | 18.9 |
| B10-B11 | 1.6172 | 62 | 01Jul2015, 12:42 | 18.9 |
| DB17 | 0.0048 | 7 | 01Jul2015, 12:02 | 0.6 |
| B11 | 1.6220 | 63 | 01Jul2015, 12:42 | 19.4 |
| B11-POND C | 1.6220 | 63 | 01Jul2015, 12:48 | 19.2 |
| DB21 | 0.0519 | 5 | 01Jul2015, 12:12 | 0.7 |
| DB18 | 0.0346 | 18 | 01Jul2015, 12:08 | 1.5 |
| DB19 | 0.0281 | 7 | 01Jul2015, 12:12 | 0.7 |
| DB20 | 0.0147 | 6 | 01Jul2015, 12:10 | 0.6 |
| POND C | 1.7513 | 50 | 01Jul2015, 13:28 | 19.4 |
| POND C-B16 | 1.7513 | 50 | 01Jul2015, 13:32 | 19.2 |
| DB25 | 0.0211 | 12 | 01Jul2015, 12:04 | 0.9 |
| B16 | 1.7724 | 51 | 01Jul2015, 13:32 | 20.1 |
| B16-B17 | 1.7724 | 51 | 01Jul2015, 13:36 | 19.9 |
| DB26 | 0.0682 | 46 | 01Jul2015, 12:10 | 4.1 |
| B17 | 1.8406 | 56 | 01Jul2015, 12:12 | 24.0 |
| B17-B18 | 1.8406 | 56 | 01Jul2015, 12:16 | 23.8 |
| OS03 | 0.1984 | 9 | 01Jul2015, 12:28 | 2.2 |
| DB01 | 0.0719 | 14 | 01Jul2015, 12:10 | 1.5 |
| B01 | 0.2703 | 19 | 01Jul2015, 12:14 | 3.7 |
| B01-B02 | 0.2703 | 19 | 01Jul2015, 12:18 | 3.7 |
| OS02 | 0.2219 | 13 | 01Jul2015, 12:28 | 2.8 |
| DB02 | 0.0516 | 10 | 01Jul2015, 12:06 | 1.0 |
| B02 | 0.5438 | 36 | 01Jul2015, 12:18 | 7.6 |
| B02-POND A | 0.5438 | 36 | 01Jul2015, 12:22 | 7.5 |
| OS04 | 0.1359 | 4 | 01Jul2015, 12:28 | 1.2 |
| DB03 | 0.0703 | 7 | 01Jul2015, 12:14 | 1.0 |
| B03 | 0.2062 | 10 | 01Jul2015, 12:16 | 2.2 |
| B03-B04 | 0.2062 | 10 | 01Jul2015, 12:26 | 2.2 |
| DB04 | 0.0422 | 5 | 01Jul2015, 12:14 | 0.7 |
| DB05 | 0.0384 | 5 | 01Jul2015, 12:18 | 0.7 |
| B04 | 0.2868 | 18 | 01Jul2015, 12:22 | 3.5 |
| B04-B05 | 0.2868 | 18 | 01Jul2015, 12:24 | 3.5 |
| DB06 | 0.0219 | 14 | 01Jul2015, 12:08 | 1.2 |
| B05 | 0.3087 | 26 | 01Jul2015, 12:22 | 4.7 |
| B05-POND A | 0.3087 | 26 | 01Jul2015, 12:22 | 4.7 |
| DB07 | 0.0254 | 6 | 01Jul2015, 12:08 | 0.5 |
| DB08 | 0.0297 | 3 | 01Jul2015, 12:10 | 0.4 |
| POND A | 0.9076 | 34 | 01Jul2015, 12:58 | 10.7 |
| POND A-B06 | 0.9076 | 34 | 01Jul2015, 13:00 | 10.7 |
| DB09 | 0.0189 | 8 | 01Jul2015, 12:06 | 0.6 |
| B06 | 0.9265 | 35 | 01Jul2015, 13:00 | 11.3 |

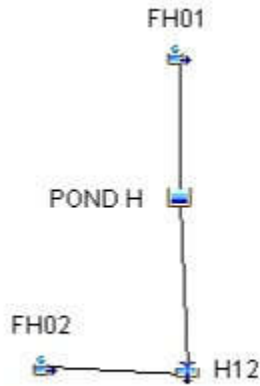
| FUTURE 5-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|-------------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅ (AC. FT.) |
| B06-B07 | 0.9265 | 35 | 01Jul2015, 13:08 | 11.1 |
| DB11 | 0.0969 | 20 | 01Jul2015, 12:14 | 2.4 |
| DB10 | 0.0364 | 12 | 01Jul2015, 12:08 | 1.1 |
| B07 | 1.0598 | 42 | 01Jul2015, 13:06 | 14.7 |
| B07-B09 | 1.0598 | 42 | 01Jul2015, 13:12 | 14.5 |
| DB12 | 0.0453 | 21 | 01Jul2015, 12:08 | 1.7 |
| B09 | 1.1051 | 45 | 01Jul2015, 12:16 | 16.2 |
| B09-POND B | 1.1051 | 45 | 01Jul2015, 12:18 | 16.2 |
| DB15 | 0.1234 | 12 | 01Jul2015, 12:22 | 2.0 |
| DB13 | 0.0703 | 18 | 01Jul2015, 12:14 | 2.0 |
| DB14 | 0.0556 | 23 | 01Jul2015, 12:10 | 2.1 |
| POND B | 1.3544 | 69 | 01Jul2015, 12:30 | 22.2 |
| POND B-B12 | 1.3544 | 69 | 01Jul2015, 12:32 | 22.1 |
| DB22 | 0.0516 | 25 | 01Jul2015, 12:10 | 2.2 |
| DB23 | 0.0172 | 18 | 01Jul2015, 12:06 | 1.4 |
| B12 | 1.4232 | 83 | 01Jul2015, 12:28 | 25.7 |
| B12-B14 | 1.4232 | 83 | 01Jul2015, 12:30 | 25.6 |
| DB24 | 0.0531 | 24 | 01Jul2015, 12:08 | 2.1 |
| B14 | 1.4763 | 92 | 01Jul2015, 12:26 | 27.7 |
| B14-B15 | 1.4763 | 92 | 01Jul2015, 12:28 | 27.6 |
| DB28 | 0.0741 | 13 | 01Jul2015, 12:14 | 1.6 |
| B15 | 1.5504 | 102 | 01Jul2015, 12:20 | 29.2 |
| B15-B18 | 1.5504 | 102 | 01Jul2015, 12:30 | 28.7 |
| DB29 | 0.1697 | 19 | 01Jul2015, 12:24 | 3.2 |
| DB27 | 0.0508 | 17 | 01Jul2015, 12:16 | 1.9 |
| B26 | 3.6115 | 179 | 01Jul2015, 12:22 | 57.6 |
| B26-27 | 3.6115 | 179 | 01Jul2015, 12:26 | 57.2 |
| FB-02 | 0.0500 | 17 | 01Jul2015, 12:18 | 2.0 |
| FB-01 | 0.0373 | 5 | 01Jul2015, 12:12 | 0.6 |
| FB01-27a | 0.0373 | 5 | 01Jul2015, 12:14 | 0.6 |
| B19 | 0.0873 | 22 | 01Jul2015, 12:16 | 2.6 |
| B19-27 | 0.0873 | 22 | 01Jul2015, 12:18 | 2.6 |
| FB-03 | 0.0078 | 8 | 01Jul2015, 12:04 | 0.6 |
| 27 | 3.7066 | 199 | 01Jul2015, 12:26 | 60.4 |
| 27-32 | 3.7066 | 198 | 01Jul2015, 12:28 | 60.2 |
| WH-24 | 0.1325 | 57 | 01Jul2015, 12:10 | 5.4 |
| WH-26 | 0.0839 | 3 | 01Jul2015, 12:32 | 0.8 |
| WH-27 | 0.0217 | 1 | 01Jul2015, 12:08 | 0.2 |
| 30 | 0.2381 | 59 | 01Jul2015, 12:10 | 6.4 |
| 30-31 | 0.2381 | 59 | 01Jul2015, 12:12 | 6.4 |
| WH-28 | 0.0398 | 15 | 01Jul2015, 12:12 | 1.5 |
| 31 | 0.2779 | 74 | 01Jul2015, 12:12 | 7.9 |
| 31-32 | 0.2779 | 74 | 01Jul2015, 12:16 | 7.9 |
| WH-29 | 0.0495 | 19 | 01Jul2015, 12:12 | 1.9 |

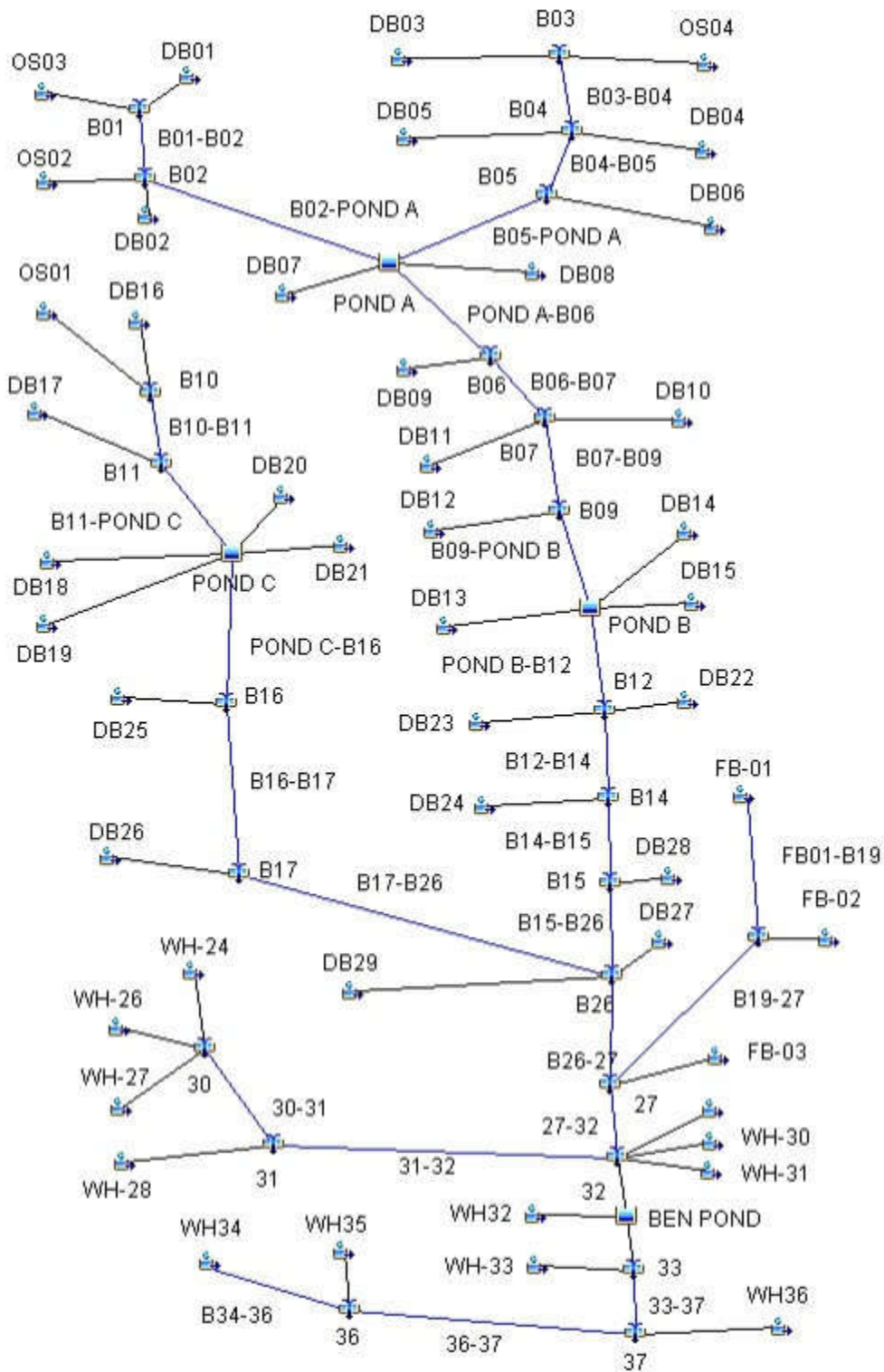
| FUTURE 5-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₅ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₅ (AC. FT.) |
| WH-31 | 0.0406 | 21 | 01Jul2015, 12:08 | 1.8 |
| WH-30 | 0.0159 | 4 | 01Jul2015, 12:02 | 0.3 |
| 32 | 4.0905 | 269 | 01Jul2015, 12:26 | 72.0 |
| WH32 | 0.0458 | 4 | 01Jul2015, 12:04 | 0.5 |
| BEN POND | 4.1363 | 100 | 01Jul2015, 14:52 | 66.2 |
| WH-33 | 0.0064 | 3 | 01Jul2015, 12:08 | 0.3 |
| 33 | 4.1427 | 100 | 01Jul2015, 14:52 | 66.4 |
| 33-37 | 4.1427 | 100 | 01Jul2015, 15:00 | 65.6 |
| WH35 | 0.1550 | 22 | 01Jul2015, 12:12 | 2.8 |
| WH34 | 0.0450 | 15 | 01Jul2015, 12:10 | 1.4 |
| B34-36 | 0.0450 | 15 | 01Jul2015, 12:12 | 1.4 |
| 36 | 0.2000 | 37 | 01Jul2015, 12:12 | 4.2 |
| 36-37 | 0.2000 | 37 | 01Jul2015, 12:18 | 4.1 |
| WH36 | 0.0750 | 4 | 01Jul2015, 12:16 | 0.8 |
| 37 | 4.4177 | 104 | 01Jul2015, 14:50 | 70.6 |
| FH01 | 0.1344 | 36 | 01Jul2015, 12:20 | 4.5 |
| POND H | 0.1344 | 4 | 01Jul2015, 14:42 | 3.4 |
| FH02 | 0.0091 | 2 | 01Jul2015, 12:10 | 0.2 |
| FH03 | 0.0081 | 4 | 01Jul2015, 12:08 | 0.4 |
| H12 | 0.1516 | 7 | 01Jul2015, 12:10 | 4.0 |

| 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 | 11.0 | 01Jul2015, 13:24 | 5.9 |
| DB16 | 0.0578 | 12.7 | 01Jul2015, 12:12 | 1.3 |
| B10 | 1.6172 | 13.2 | 01Jul2015, 12:12 | 7.3 |
| B10-B11 | 1.6172 | 13.2 | 01Jul2015, 12:14 | 7.2 |
| DB17 | 0.0048 | 5.7 | 01Jul2015, 12:02 | 0.4 |
| B11 | 1.6220 | 15.3 | 01Jul2015, 12:12 | 7.7 |
| B11-POND C | 1.6220 | 15.2 | 01Jul2015, 12:20 | 7.5 |
| DB21 | 0.0519 | 1.1 | 01Jul2015, 12:18 | 0.3 |
| DB18 | 0.0346 | 10.0 | 01Jul2015, 12:08 | 0.9 |
| DB19 | 0.0281 | 2.8 | 01Jul2015, 12:14 | 0.4 |
| DB20 | 0.0147 | 3.4 | 01Jul2015, 12:10 | 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 | 7.1 | 01Jul2015, 12:06 | 0.6 |
| B16 | 1.7724 | 11.3 | 01Jul2015, 15:06 | 6.7 |
| B16-B17 | 1.7724 | 11.3 | 01Jul2015, 15:16 | 6.6 |
| DB26 | 0.0682 | 29.4 | 01Jul2015, 12:10 | 2.7 |
| B17 | 1.8406 | 34.4 | 01Jul2015, 12:14 | 9.3 |
| B17-B18 | 1.8406 | 34.0 | 01Jul2015, 12:20 | 9.1 |
| OS03 | 0.1984 | 1.6 | 01Jul2015, 13:02 | 0.8 |
| DB01 | 0.0719 | 4.7 | 01Jul2015, 12:12 | 0.7 |
| B01 | 0.2703 | 5.0 | 01Jul2015, 12:14 | 1.5 |
| B01-B02 | 0.2703 | 5.0 | 01Jul2015, 12:18 | 1.5 |
| OS02 | 0.2219 | 2.6 | 01Jul2015, 12:46 | 1.1 |
| DB02 | 0.0516 | 3.4 | 01Jul2015, 12:08 | 0.5 |
| B02 | 0.5438 | 8.6 | 01Jul2015, 12:18 | 3.1 |
| B02-POND A | 0.5438 | 8.6 | 01Jul2015, 12:22 | 3.1 |
| OS04 | 0.1359 | 0.6 | 01Jul2015, 13:30 | 0.4 |
| DB03 | 0.0703 | 1.5 | 01Jul2015, 12:20 | 0.4 |
| B03 | 0.2062 | 1.5 | 01Jul2015, 12:20 | 0.8 |
| B03-B04 | 0.2062 | 1.5 | 01Jul2015, 12:36 | 0.8 |
| DB04 | 0.0422 | 1.2 | 01Jul2015, 12:18 | 0.3 |
| DB05 | 0.0384 | 1.4 | 01Jul2015, 12:22 | 0.3 |
| B04 | 0.2868 | 3.6 | 01Jul2015, 12:32 | 1.4 |
| B04-B05 | 0.2868 | 3.6 | 01Jul2015, 12:34 | 1.4 |
| DB06 | 0.0219 | 8.6 | 01Jul2015, 12:10 | 0.8 |
| B05 | 0.3087 | 10.3 | 01Jul2015, 12:12 | 2.2 |
| B05-POND A | 0.3087 | 10.2 | 01Jul2015, 12:14 | 2.1 |
| DB07 | 0.0254 | 1.9 | 01Jul2015, 12:10 | 0.3 |
| DB08 | 0.0297 | 0.5 | 01Jul2015, 12:16 | 0.2 |
| POND A | 0.9076 | 5.5 | 01Jul2015, 15:32 | 3.3 |
| POND A-B06 | 0.9076 | 5.5 | 01Jul2015, 15:34 | 3.3 |
| DB09 | 0.0189 | 3.7 | 01Jul2015, 12:06 | 0.3 |
| B06 | 0.9265 | 5.7 | 01Jul2015, 15:32 | 3.6 |

| FUTURE 2-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|-------------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂ (AC. FT.) |
| B06-B07 | 0.9265 | 5.7 | 01Jul2015, 15:48 | 3.5 |
| DB11 | 0.0969 | 8.1 | 01Jul2015, 12:16 | 1.2 |
| DB10 | 0.0364 | 5.8 | 01Jul2015, 12:10 | 0.6 |
| B07 | 1.0598 | 14.7 | 01Jul2015, 12:22 | 5.4 |
| B07-B09 | 1.0598 | 14.4 | 01Jul2015, 12:30 | 5.3 |
| DB12 | 0.0453 | 11.2 | 01Jul2015, 12:08 | 1.0 |
| B09 | 1.1051 | 19.4 | 01Jul2015, 12:20 | 6.3 |
| B09-POND B | 1.1051 | 19.3 | 01Jul2015, 12:22 | 6.3 |
| DB15 | 0.1234 | 3.3 | 01Jul2015, 12:28 | 0.9 |
| DB13 | 0.0703 | 7.9 | 01Jul2015, 12:16 | 1.1 |
| DB14 | 0.0556 | 12.4 | 01Jul2015, 12:10 | 1.2 |
| POND B | 1.3544 | 29.7 | 01Jul2015, 12:34 | 9.4 |
| POND B-B12 | 1.3544 | 29.7 | 01Jul2015, 12:38 | 9.3 |
| DB22 | 0.0516 | 14.1 | 01Jul2015, 12:10 | 1.3 |
| DB23 | 0.0172 | 13.1 | 01Jul2015, 12:06 | 1.0 |
| B12 | 1.4232 | 37.5 | 01Jul2015, 12:28 | 11.7 |
| B12-B14 | 1.4232 | 37.5 | 01Jul2015, 12:32 | 11.6 |
| DB24 | 0.0531 | 13.2 | 01Jul2015, 12:08 | 1.2 |
| B14 | 1.4763 | 45.9 | 01Jul2015, 12:16 | 12.8 |
| B14-B15 | 1.4763 | 45.9 | 01Jul2015, 12:18 | 12.8 |
| DB28 | 0.0741 | 4.4 | 01Jul2015, 12:18 | 0.8 |
| B15 | 1.5504 | 50.3 | 01Jul2015, 12:18 | 13.5 |
| B15-B18 | 1.5504 | 50.2 | 01Jul2015, 12:30 | 13.2 |
| DB29 | 0.1697 | 6.1 | 01Jul2015, 12:28 | 1.5 |
| DB27 | 0.0508 | 8.9 | 01Jul2015, 12:18 | 1.1 |
| B26 | 3.6115 | 89.0 | 01Jul2015, 12:26 | 24.9 |
| B26-27 | 3.6115 | 88.8 | 01Jul2015, 12:32 | 24.6 |
| FB-02 | 0.0500 | 9.5 | 01Jul2015, 12:18 | 1.2 |
| FB-01 | 0.0373 | 1.1 | 01Jul2015, 12:16 | 0.3 |
| FB01-27a | 0.0373 | 1.1 | 01Jul2015, 12:18 | 0.3 |
| B19 | 0.0873 | 10.5 | 01Jul2015, 12:18 | 1.5 |
| B19-27 | 0.0873 | 10.5 | 01Jul2015, 12:20 | 1.5 |
| FB-03 | 0.0078 | 5.9 | 01Jul2015, 12:04 | 0.4 |
| 27 | 3.7066 | 98.1 | 01Jul2015, 12:32 | 26.5 |
| 27-32 | 3.7066 | 97.6 | 01Jul2015, 12:34 | 26.3 |
| WH-24 | 0.1325 | 31.1 | 01Jul2015, 12:12 | 3.2 |
| WH-26 | 0.0839 | 0.5 | 01Jul2015, 13:18 | 0.3 |
| WH-27 | 0.0217 | 0.1 | 01Jul2015, 12:50 | 0.1 |
| 30 | 0.2381 | 31.1 | 01Jul2015, 12:12 | 3.5 |
| 30-31 | 0.2381 | 31.1 | 01Jul2015, 12:14 | 3.5 |
| WH-28 | 0.0398 | 8.1 | 01Jul2015, 12:14 | 0.9 |
| 31 | 0.2779 | 39.2 | 01Jul2015, 12:14 | 4.4 |
| 31-32 | 0.2779 | 38.9 | 01Jul2015, 12:16 | 4.4 |
| WH-29 | 0.0495 | 10.2 | 01Jul2015, 12:12 | 1.1 |

| FUTURE 2-YEAR | | | | |
|--------------------|-------------------------|-------------------------------------|------------------|---------------------------------------|
| HYDROLOGIC ELEMENT | DRAINAGE AREA (SQ. MI.) | DISCHARGE PEAK Q ₂ (CFS) | TIME OF PEAK | TOTAL VOLUME Q ₂ (AC. FT.) |
| WH-31 | 0.0406 | 11.8 | 01Jul2015, 12:08 | 1.1 |
| WH-30 | 0.0159 | 1.3 | 01Jul2015, 12:04 | 0.1 |
| 32 | 4.0905 | 127.8 | 01Jul2015, 12:34 | 33.0 |
| WH32 | 0.0458 | 0.3 | 01Jul2015, 12:48 | 0.2 |
| BEN POND | 4.1363 | 43.9 | 01Jul2015, 13:48 | 28.4 |
| WH-33 | 0.0064 | 1.9 | 01Jul2015, 12:08 | 0.2 |
| 33 | 4.1427 | 44.0 | 01Jul2015, 13:48 | 28.6 |
| 33-37 | 4.1427 | 44.0 | 01Jul2015, 14:00 | 28.1 |
| WH35 | 0.1550 | 6.4 | 01Jul2015, 12:16 | 1.3 |
| WH34 | 0.0450 | 7.0 | 01Jul2015, 12:10 | 0.8 |
| B34-36 | 0.0450 | 6.9 | 01Jul2015, 12:14 | 0.8 |
| 36 | 0.2000 | 13.3 | 01Jul2015, 12:14 | 2.0 |
| 36-37 | 0.2000 | 13.2 | 01Jul2015, 12:22 | 2.0 |
| WH36 | 0.0750 | 0.6 | 01Jul2015, 12:52 | 0.3 |
| 37 | 4.4177 | 47.4 | 01Jul2015, 13:56 | 30.4 |
| FH01 | 0.1344 | 17.8 | 01Jul2015, 12:20 | 2.5 |
| POND H | 0.1344 | 2.5 | 01Jul2015, 14:34 | 2.3 |
| FH02 | 0.0091 | 0.8 | 01Jul2015, 12:12 | 0.1 |
| FH03 | 0.0081 | 2.4 | 01Jul2015, 12:10 | 0.2 |
| H12 | 0.1516 | 3.7 | 01Jul2015, 12:12 | 2.6 |





Appendix D - Detention Pond Information

WQCV CORRECTED TO 40 HR FOR BOTH PONDS (E & H)

Replace the pond design calculations with the UD-Detention Worksheet. The WQCV seems small. Also drain time should be at 40hrs.

USED HEC-HMS FOR HYDROGRAPH ROUTING METHOD. PROVIDED SDI DESIGN DATA WORKSHEET IN APPENDIX FOR REFERENCE.

Table 12-5. Applicability of full spectrum sizing methods based on watershed area

| Watershed Properties | Sizing Method | | |
|---|----------------------|---------------------------|------------------------------|
| | Simplified Equations | UD-Detention ¹ | CUHP/SWMM Hydrograph Routing |
| Less than 10 acre | X | X | |
| 10 to 50 acres | | X | X |
| 50 to 130 acres | | X | X |
| 130 acres to 1 mile ² | | X | X |
| Greater than 1 mile ² | | X | X |
| Multiple detention facilities in parallel or series | | | X |

¹See Section 4.2 for additional discussion on the use of UD-Detention for the preliminary design and final design of a full spectrum facility.

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.= | 6973.19 |
| 100 year storage vol.= | 6.9 |
| 100 year discharge= | 43 |
| 5 year storage elev.= | 6971.1 |
| 5 year storage vol.= | 1.6 |
| 5 year discharge= | 2.9 |
| WQCV storage elev.= | 6970.0 |
| WQCV storage vol.= | 0.3 |
| 1/2 WQCV storage elev.= | 6969.6 |
| 1/2 WQCV storage vol.= | 0.15 |

Data for outlet pipe and grate:

| Type | Orifice | H or V | Dimensions | | Dia.(in) | Area = | (sqft) | |
|---------------|------------|--------|-------------|----------------|----------|--------|--------------|---------|
| | | | Width (ft.) | X Height (ft.) | | | Elev to cl = | |
| Rectangular | Orifice 1: | V | 0.0167 | 1.50 | | 0.025 | Elev to cl = | 6969.25 |
| Rectangular | Orifice 2: | V | 4.5000 | 1.40 | | 6.300 | Elev to cl = | 6972.20 |
| None Selected | Orifice 3: | H | | | | 0.000 | Elev to cl = | |
| Circular | Orifice 4: | H | | | 10 | 0.545 | Elev to cl = | 6970.00 |

Stand Pipe Dimensions

| | | | | | | | |
|-------------|---|------|-----|--------|---------|------------------------|---------|
| Rec Grate | 9 | x | 4.5 | Elev = | 6972.90 | 50 year storage elev.= | 6972.70 |
| Circ. Grate | | dia. | | Elev = | 6972.90 | 50 year discharge= | 23 |

Outlet Culvert Dimensions

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

| | |
|------------------------|---------|
| 50 year storage elev.= | 6972.70 |
| 50 year discharge= | 23 |
| 25 year storage elev.= | 6972.2 |
| 25 year discharge= | 13 |
| 10 year storage elev.= | 6971.7 |
| 10 year discharge= | 5.2 |
| 2 year storage elev.= | 6970.4 |
| 2 year discharge= | 1.8 |

| STAGE | | STORAGE | | | | DISCHARGE | | | | | | | | | | REALIZED CULVERT OUTFLOW | TOTAL FLOW | |
|--------|--------|---------|------|--------|----------|-------------|----------|-----------------------|------|------|---|---------------------|-----|------|---|--------------------------|------------|------|
| ELEV | HEIGHT | AREA | | VOLUME | | TOP OF BANK | SPILLWAY | ORIFICE (max outflow) | | | | GRATE (max outflow) | | PIPE | | | | |
| | | sqft | acre | acft | cum acft | | | 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 |
| 6970 | 1.5 | 22422 | 0.51 | 0.26 | 0.27 | - | - | 0.02 | - | - | - | 0.8 | - | 9 | | 0.9 | 0.87 | |
| 6970.5 | 2 | 44606 | 1.02 | 0.78 | 0.78 | - | - | 0.09 | - | - | - | 1.9 | - | 24 | | 1.9 | 1.9 | |
| 6971 | 2.5 | 67898 | 1.56 | 1.04 | 1.30 | - | - | 0.09 | - | - | - | 2.6 | - | 24 | | 2.7 | 2.7 | |
| 6971.5 | 3 | 92319 | 2.12 | 0.92 | 2.22 | - | - | 0.16 | - | - | - | 3.2 | - | 32 | | 3.4 | 3.4 | |
| 6972 | 3.5 | 116739 | 2.68 | 1.20 | 3.42 | - | - | 0.18 | 4.8 | - | - | 3.7 | - | 41 | | 8.7 | 8.7 | |
| 6972.5 | 4 | 125636 | 2.88 | 1.39 | 4.81 | - | - | 0.20 | 13.5 | 4.81 | - | 4.2 | - | 50 | | 18 | 18 | |
| 6973 | 4.5 | 134533 | 3.09 | 1.49 | 6.31 | - | - | 0.22 | 24.8 | - | - | 4.5 | 2 | 56 | | 31 | 31 | |
| 6973.5 | 5 | 141972 | 3.26 | 1.59 | 7.89 | - | - | 0.23 | 34.6 | - | - | 4.9 | 25 | 61 | | 61 | 61 | |
| 6974 | 5.5 | 149410 | 3.43 | 1.67 | 9.57 | - | - | 0.25 | 40.7 | - | - | 5.3 | 62 | 66 | | 66 | 66 | |
| 6975 | 6.5 | 165140 | 3.79 | 3.61 | 13.18 | 53.0 | 53.0 | 0.26 | 50.8 | - | - | 5.9 | 164 | 75 | | 75 | 128 | |
| 6976 | 7.5 | 192114 | 4.41 | 4.10 | 17.28 | 275.6 | 275.6 | 0.29 | 59.1 | - | - | 6.4 | 295 | 83 | | 83 | 359 | |

- 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.= | 7.6 |
| 100 year discharge= | 55 |
| 5 year storage elev.= | 6971.5 |
| 5 year storage vol.= | 2.3 |
| 5 year discharge= | 4 |
| WQCV storage elev.= | 6970.0 |
| WQCV storage vol.= | 0.3 |
| 1/2 WQCV storage elev.= | 6969.6 |
| 1/2 WQCV storage vol.= | 0.15 |

Data for outlet pipe and grate:

| Type | Orifice | H or V | Dimensions | | Dia.(in) | Area = | Area (sqft) | |
|---------------|------------|--------|-------------|--------------|----------|--------|--------------|---------|
| | | | Width (ft.) | Height (ft.) | | | Elev to cl = | Area = |
| Rectangular | Orifice 1: | V | 0.0167 | 1.50 | | 0.025 | Elev to cl = | 6969.25 |
| Rectangular | Orifice 2: | V | 4.5000 | 1.40 | | 6.300 | Elev to cl = | 6972.20 |
| None Selected | Orifice 3: | H | | | | 0.000 | Elev to cl = | |
| Circular | Orifice 4: | H | | | 10 | 0.545 | Elev to cl = | 6970.00 |

| Stand Pipe Dimensions | |
|-----------------------|------------------------|
| Rec Grate | 9 x 4.5 Elev = 6972.90 |
| Circ. Grate | dia. Elev = 6972.90 |

| | |
|------------------------|--------|
| 50 year storage elev.= | 6973.0 |
| 50 year discharge= | 31 |
| 25 year storage elev.= | 6972.5 |
| 25 year discharge= | 18 |
| 10 year storage elev.= | 6971.9 |
| 10 year discharge= | 8 |
| 2 year storage elev.= | 6970.9 |
| 2 year discharge= | 2.5 |

Outlet Culvert Dimensions

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

| STAGE | | STORAGE | | | | DISCHARGE | | | | | | | | | | REALIZED CULVERT OUTFLOW | TOTAL FLOW | |
|--------|--------|---------|------|--------|----------|-------------|----------|-----------------------|------|---|---|---------------------|-------------|---|----|--------------------------|------------|---------|
| ELEV | HEIGHT | AREA | | VOLUME | | TOP OF BANK | SPILLWAY | ORIFICE (max outflow) | | | | GRATE (max outflow) | PIPE | | | | | |
| | | sqft | acre | acft | cum acft | | | 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 | 0.018 |
| 6970 | 1.5 | 22422 | 0.51 | 0.26 | 0.27 | - | - | 0.02 | - | - | - | 0.8 | - | - | 9 | - | 0.9 | 0.865 |
| 6970.5 | 2 | 44606 | 1.02 | 0.78 | 0.78 | - | - | 0.09 | - | - | - | 1.9 | - | - | 24 | - | 1.9 | 1.949 |
| 6971 | 2.5 | 67898 | 1.56 | 1.04 | 1.30 | - | - | 0.09 | - | - | - | 2.6 | - | - | 24 | - | 2.7 | 2.718 |
| 6971.5 | 3 | 92319 | 2.12 | 0.92 | 2.22 | - | - | 0.16 | - | - | - | 3.2 | - | - | 32 | - | 3.4 | 3.376 |
| 6972 | 3.5 | 116739 | 2.68 | 1.20 | 3.42 | - | - | 0.18 | 4.8 | - | - | 3.7 | - | - | 41 | - | 8.7 | 8.668 |
| 6972.5 | 4 | 125636 | 2.88 | 1.39 | 4.81 | - | - | 0.20 | 13.5 | - | - | 4.2 | - | - | 50 | - | 17.9 | 17.852 |
| 6973 | 4.5 | 134533 | 3.09 | 1.49 | 6.31 | - | - | 0.22 | 24.8 | - | - | 4.5 | - | 2 | 56 | - | 31.3 | 31.274 |
| 6973.5 | 5 | 141972 | 3.26 | 1.59 | 7.89 | - | - | 0.23 | 34.6 | - | - | 4.9 | 25 | - | 61 | - | 61 | 61.340 |
| 6974 | 5.5 | 149410 | 3.43 | 1.67 | 9.57 | - | - | 0.25 | 40.7 | - | - | 5.3 | 62 | - | 66 | - | 66 | 66.260 |
| 6975 | 6.5 | 165140 | 3.79 | 3.61 | 13.18 | 53.0 | 53.0 | 0.26 | 50.8 | - | - | 5.9 | 164 | - | 75 | - | 75 | 128.173 |
| 6976 | 7.5 | 192114 | 4.41 | 4.10 | 17.28 | 275.6 | 275.6 | 0.29 | 59.1 | - | - | 6.4 | 295 | - | 83 | - | 83 | 358.648 |

- 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. $Q=CA(2gH)^{0.5}$ (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 | | 6 | hr | | |
| | <i>a</i> | 0.7 | | | |
| IMPERVIOUSNESS RATIO | | 0.38 | | | |
| | <i>i</i> | | | | |
| DEPTH OF OUTLET | | 1.6 | | | |
| WQCV | | | 0.12 inches | | |
| WQCV DESIGN VOL | | | 0.3 ac-ft | | |
| | <i>K₄₀</i> | | 0.29 | | |
| AREA PER ROW ¹ | <i>a</i> | | 0.57 in ² | | |
| No. of columns | | 2 | per riser | | |
| Hole size | | | 5/8 in | | |
| Steel Plate Thickness | | | 5/16 in | | |
| | | | 6 rows of holes per riser | | |
| ¹ AREA PER ROW PER RISER | | | | | |
| Actual area per row per riser: | | | 0.61 in ² | | |
| Actual area per riser: | | | 3.7 in ² | | |
| Actual area per riser: | | | 0.025 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: WW1-100 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: 05Sep2017 13:11:34 Control Specifications: 24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

| | |
|-----------------------------|---|
| Peak Inflow: 116(CFS) | Date/Time of Peak Inflow: 01Jul2015, 06:12 |
| Peak Outflow: 38 (CFS) | Date/Time of Peak Outflow: 01Jul2015, 07:24 |
| Total Inflow : 15.7 (AC-FT) | Peak Storage: 6.7 (AC-FT) |
| Total Outflow: 13.3 (AC-FT) | Peak Elevation: 6973.1 (FT) |

Simulation Run: WW1-005 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: 11Sep2017 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: 3 (CFS) | Date/Time of Peak Outflow: 01Jul2015, 08:24 |
| Total Inflow : 3.4 (AC-FT) | Peak Storage: 1.6 (AC-FT) |
| Total Outflow: 2.8 (AC-FT) | Peak Elevation: 6971.2 (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: 11Sep2017 13:11:34 Control Specifications: 24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

| | |
|-----------------------------|---|
| Peak Inflow: 161(CFS) | Date/Time of Peak Inflow: 01Jul2015, 12:06 |
| Peak Outflow: 55 (CFS) | Date/Time of Peak Outflow: 01Jul2015, 12:32 |
| Total Inflow : 18.0 (AC-FT) | Peak Storage: 7.6 (AC-FT) |
| Total Outflow: 15.7 (AC-FT) | Peak Elevation: 6973.4 (FT) |

Simulation Run: F-005 YR Reservoir: POND H

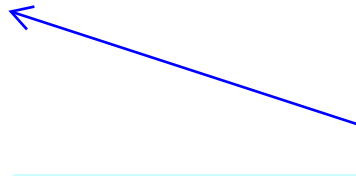
Start of Run: 01Jul2015, 00:00 Basin Model: Future SCS
End of Run: 02Jul2015, 00:00 Meteorologic Model: SCS TYPE IIA 005YR
Compute Time: 11Sep2017 13:26:34 Control Specifications: 24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

| | |
|----------------------------|---|
| Peak Inflow: 36 (CFS) | Date/Time of Peak Inflow: 01Jul2015, 06:14 |
| Peak Outflow: 4 (CFS) | Date/Time of Peak Outflow: 01Jul2015, 08:24 |
| Total Inflow : 4.5 (AC-FT) | Peak Storage: 2.3 (AC-FT) |
| Total Outflow: 3.4 (AC-FT) | Peak Elevation: 6971.5 (FT) |

Appendix E – Temporary Sedimentation



Are these the same temporary sediment ponds approved with the early grading drainage report? If so, remove from this report. Adding a section in the narrative that notes that temporary sediment have been designed per the approved [name of the early grading FDR] and installed with the early grading permit should be sufficient.

If these are new sediment ponds, then show the locations on the drainage map.

TEMP SED BASINS ARE A FROM THE EARLY GRADING AND NOTED IN THE NARRATIVE. TEMP SED APPENDIX REMOVED

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

TEMP POND 1

Tributary Area: 12.6 ac. Required Volume: 0.5 ac-ft Depth at Outlet: 1.9 ft.

Area required
per Row
1.9 in²

WS Elev: 7020.9

No. of
columns

4

Hole size

3/4 in

| STAGE | | | STORAGE | | | |
|-------|------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 7019 | 0 | 629 | 0.014 | 0.000 | 0.00 |
| 2 | 7020 | 1 | 14341 | 0.33 | 0.17 | 0.17 |
| 3 | 7021 | 2 | 19014 | 0.44 | 0.38 | 0.55 |
| 4 | 7022 | 3 | 25889 | 0.59 | 0.52 | 1.07 |
| 5 | 7023 | 4 | 32619 | 0.75 | 0.67 | 1.74 |
| 6 | 7024 | 5 | 40586 | 0.93 | 0.84 | 2.58 |

TABLE SB-2

| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|--------|------|------|------|-------------|------|------|
| | | 1/4 | 5/16 | 3/8 | 3/8 | 3/8 | 1/2 |
| 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 |
| 13/16 | 0.8125 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |
| 7/8 | 0.8750 | 0.60 | 1.20 | 1.80 | 2.41 | 3.01 | 3.61 |
| 15/16 | 0.9375 | 0.69 | 1.38 | 2.07 | 2.76 | 3.45 | 4.14 |
| 1 | 1.0000 | 0.79 | 1.57 | 2.36 | 3.14 | 3.93 | 4.71 |
| 1 1/16 | 1.0625 | 0.89 | 1.77 | 2.66 | 3.55 | 4.43 | 5.32 |

* 4 Columns of 13/16 holes existing.

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

TEMP POND 2

Tributary Area: Required Volume Depth at Outlet
16.4 ac. 0.7 ac-ft 6.0 ft.

Area required
 per Row
 0.6 in²

WS Elev: 7045.8

No. of
 columns
3

Hole size
 1/2 in

| STAGE | | | STORAGE | | | |
|-------|--------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 7039.8 | 0 | 0 | 0.000 | 0.000 | 0.00 |
| 2 | 7040 | 0.2 | 664 | 0.015 | 0.002 | 0.00 |
| 3 | 7041 | 1.2 | 3342 | 0.08 | 0.05 | 0.05 |
| 4 | 7042 | 2.2 | 4357 | 0.10 | 0.09 | 0.14 |
| 5 | 7043 | 3.2 | 5416 | 0.12 | 0.11 | 0.25 |
| 5 | 7044 | 4.2 | 6551 | 0.15 | 0.14 | 0.39 |
| 6 | 7045 | 5.2 | 7750 | 0.18 | 0.16 | 0.55 |
| 7 | 7046 | 6.2 | 9003 | 0.21 | 0.19 | 0.74 |

| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|--------|------|------|-------------|------|------|------|
| | | 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 |
| 13/16 | 0.8125 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

TEMP POND 3

Tributary Area: Required Volume Depth at Outlet
6.5 ac. 0.3 ac-ft 2.6 ft.

Area required
per Row
0.4 in²

WS Elev: 7036.8

No. of columns
2
Hole size
1/2 in

| STAGE | | | STORAGE | | | |
|-------|--------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 7034.2 | 0 | 0 | 0.000 | 0.000 | 0.00 |
| 2 | 7034.5 | 0.3 | 1336 | 0.031 | 0.005 | 0.00 |
| 3 | 7035 | 0.8 | 3750 | 0.09 | 0.03 | 0.03 |
| 4 | 7036 | 1.8 | 6389 | 0.15 | 0.12 | 0.15 |
| 5 | 7037 | 2.8 | 10332 | 0.24 | 0.19 | 0.34 |

| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|--------|------|------|------|------|------|------|
| | | 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 |
| 13/16 | 0.8125 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

TEMP POND 4

Tributary Area: Required Volume Depth at Outlet
32.0 ac. 1.3 ac-ft 6.3 ft.

Area required
 per Row
 1.1 in²

WS Elev: 7004.8

No. of
 columns
3

Hole size
 5/8 in

| STAGE | | | STORAGE | | | |
|-------|--------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 6998.5 | 0 | 0 | 0.000 | 0.000 | 0.00 |
| 2 | 6999 | 0.5 | 1701 | 0.04 | 0.01 | 0.01 |
| 3 | 7000 | 1.5 | 5758 | 0.13 | 0.09 | 0.10 |
| 4 | 7001 | 2.5 | 8748 | 0.20 | 0.17 | 0.26 |
| 5 | 7002 | 3.5 | 10282 | 0.24 | 0.22 | 0.48 |
| 6 | 7003 | 4.5 | 11887 | 0.27 | 0.25 | 0.73 |
| 7 | 7004 | 5.5 | 13562 | 0.31 | 0.29 | 1.03 |
| 8 | 7005 | 6.5 | 15307 | 0.35 | 0.33 | 1.36 |

| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|--------|------|------|-------------|------|------|------|
| | | 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 |
| 13/16 | 0.8125 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

TEMP POND 5

Tributary Area: Required Volume Depth at Outlet
4.4 ac. 0.2 ac-ft 3.7 ft.

Area required
per Row
0.2 in²

WS Elev: 7044.7

No. of
columns Hole size
1 1/2 in

| STAGE | | | STORAGE | | | |
|-------|------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 7041 | 0 | 0 | 0.000 | 0.000 | 0.00 |
| 2 | 7042 | 1 | 2030 | 0.05 | 0.02 | 0.02 |
| 3 | 7043 | 2 | 2607 | 0.06 | 0.05 | 0.08 |
| 4 | 7044 | 3 | 3247 | 0.07 | 0.07 | 0.14 |
| 5 | 7045 | 4 | 3950 | 0.09 | 0.08 | 0.23 |

| TABLE SB-2 | | | | | | | |
|-------------------------|--------|-------------|------|------|------|------|------|
| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
| | | 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 |
| 13/16 | 0.8125 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

TEMP POND 6

Tributary Area: Required Volume Depth at Outlet
8.2 ac. 0.3 ac-ft 3.4 ft.

Area required
 per Row
 0.3 in²

WS Elev: 7033.4

No. of
 columns

Hole size

2

7/16 in

| STAGE | | | STORAGE | | | |
|-------|--------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 7030 | 0 | 0 | 0.000 | 0.000 | 0.00 |
| 2 | 7031 | 1 | 3890 | 0.09 | 0.04 | 0.04 |
| 3 | 7032 | 2 | 4705 | 0.11 | 0.10 | 0.14 |
| 4 | 7033 | 3 | 5582 | 0.13 | 0.12 | 0.26 |
| 5 | 7033.7 | 3.7 | 6043 | 0.14 | 0.09 | 0.35 |

TABLE SB-2

| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|------|------|-------------|------|------|------|------|
| | | 1/4 | 5/16 | 3/8 | 3/8 | 3/8 | 1/2 |
| 1/4 | 0.25 | 0.05 | 0.10 | 0.15 | 0.20 | 0.25 | 0.29 |
| 5/16 | 0.31 | 0.08 | 0.15 | 0.23 | 0.31 | 0.38 | 0.46 |
| 3/8 | 0.38 | 0.11 | 0.22 | 0.33 | 0.44 | 0.55 | 0.66 |
| 7/16 | 0.44 | 0.15 | 0.30 | 0.45 | 0.60 | 0.75 | 0.90 |
| 1/2 | 0.50 | 0.20 | 0.39 | 0.59 | 0.79 | 0.98 | 1.18 |
| 9/16 | 0.56 | 0.25 | 0.50 | 0.75 | 0.99 | 1.24 | 1.49 |
| 5/8 | 0.63 | 0.31 | 0.61 | 0.92 | 1.23 | 1.53 | 1.84 |
| 11/16 | 0.69 | 0.37 | 0.74 | 1.11 | 1.48 | 1.86 | 2.23 |
| 3/4 | 0.75 | 0.44 | 0.88 | 1.33 | 1.77 | 2.21 | 2.65 |
| 13/16 | 0.81 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

TEMP POND 7

Tributary Area: Required Volume Depth at Outlet
8.4 ac. 0.3 ac-ft 6.6 ft.

Area required
per Row
0.2 in²

WS Elev: 7006.6

No. of columns
1
Hole size
1/2 in

| STAGE | | | STORAGE | | | |
|-------|---------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 7000 | 0 | 0 | 0.000 | 0.000 | 0.00 |
| 2 | 7001 | 1 | 910 | 0.02 | 0.01 | 0.01 |
| 3 | 7002 | 2 | 1301 | 0.03 | 0.03 | 0.04 |
| 4 | 7003 | 3 | 1754 | 0.04 | 0.04 | 0.07 |
| 5 | 7004 | 4 | 2265 | 0.05 | 0.05 | 0.12 |
| 6 | 7005 | 5 | 2835 | 0.07 | 0.06 | 0.18 |
| 7 | 7006 | 6 | 3462 | 0.08 | 0.07 | 0.25 |
| 8 | 7006.95 | 6.95 | 4104 | 0.09 | 0.08 | 0.33 |

TABLE SB-2

| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|--------|-------------|------|------|------|------|------|
| | | 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 |
| 13/16 | 0.8125 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

LAMBERT POND

Tributary Area: Required Volume Depth at Outlet
8.1 ac. 0.3 ac-ft 4.1 ft.

Area required
per Row
0.2 in²

WS Elev: 6988.6

No. of columns Hole size
2 5/16 in

| STAGE | | | STORAGE | | | |
|-------|--------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 6984.5 | 0 | 32 | 0.001 | 0.000 | 0.00 |
| 2 | 6985 | 0.5 | 884 | 0.02 | 0.01 | 0.01 |
| 3 | 6986 | 1.5 | 2594 | 0.06 | 0.04 | 0.05 |
| 4 | 6987 | 2.5 | 3881 | 0.09 | 0.07 | 0.12 |
| 5 | 6988 | 3.5 | 5238 | 0.12 | 0.10 | 0.22 |
| 6 | 6989 | 4.5 | 6669 | 0.15 | 0.14 | 0.36 |
| 7 | 6990 | 5.5 | 8172 | 0.19 | 0.17 | 0.53 |
| 8 | 6991 | 6.5 | 9748 | 0.22 | 0.21 | 0.74 |

| Minimum steel thickness | | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|--------|------|------|------|-------------|------|------|
| | | 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 |
| 13/16 | 0.8125 | 0.52 | 1.04 | 1.56 | 2.07 | 2.59 | 3.11 |

**WINDING WALK GRADING
TEMPORARY SEDIMENTATION SIZING**

POND H TEMP POND

Tributary Area: Required Volume Depth at Outlet
76.0 ac. 3.1 ac-ft 3.1 ft.

Area required
per Row
3.0 in²

WS Elev: 6971.6

No. of columns
6
Hole size
3/4 in

| STAGE | | | STORAGE | | | |
|-------|--------|--------|---------|-------|--------|----------|
| STAGE | ELEV | HEIGHT | AREA | | VOLUME | |
| | | | sqft | acre | acft | cum acft |
| 1 | 6968.5 | 0 | 0 | 0.000 | 0.000 | 0.00 |
| 2 | 6969 | 0.5 | 4127 | 0.095 | 0.024 | 0.02 |
| 3 | 6970 | 1.5 | 37142 | 0.85 | 0.47 | 0.50 |
| 4 | 6971 | 2.5 | 82122 | 1.89 | 1.37 | 1.87 |
| 5 | 6972 | 3.5 | 110378 | 2.53 | 2.21 | 4.08 |
| 6 | 6973 | 4.5 | 125282 | 2.88 | 2.71 | 6.78 |
| 7 | 6974 | 5.5 | 138866 | 3.19 | 3.03 | 9.81 |
| 8 | 6975 | 6.5 | 153432 | 3.52 | 3.36 | 13.17 |

| Minimum steel thickness | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|------|------|------|------|------|-------------|
| | 1/4 | 5/16 | 3/8 | 3/8 | 3/8 | 1/2 |
| 3/8 | 0.38 | 0.11 | 0.22 | 0.33 | 0.44 | 0.66 |
| 7/16 | 0.44 | 0.15 | 0.30 | 0.45 | 0.60 | 0.90 |
| 1/2 | 0.50 | 0.20 | 0.39 | 0.59 | 0.79 | 1.18 |
| 9/16 | 0.56 | 0.25 | 0.50 | 0.75 | 0.99 | 1.49 |
| 5/8 | 0.63 | 0.31 | 0.61 | 0.92 | 1.23 | 1.84 |
| 11/16 | 0.69 | 0.37 | 0.74 | 1.11 | 1.48 | 2.23 |
| 3/4 | 0.75 | 0.44 | 0.88 | 1.33 | 1.77 | 2.65 |
| 13/16 | 0.81 | 0.52 | 1.04 | 1.56 | 2.07 | 3.11 |
| 7/8 | 0.88 | 0.60 | 1.20 | 1.80 | 2.41 | 3.61 |
| 15/16 | 0.94 | 0.69 | 1.38 | 2.07 | 2.76 | 4.14 |

Appendix F – 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



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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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

Custom Soil Resource Report

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

Custom Soil Resource Report

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.

Custom Soil Resource Report Soil Map



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

0 100 200 400 600 Meters


0 450 900 1800 2700 Feet

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,

Custom Soil Resource Report

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:

Custom Soil Resource Report

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

Custom Soil Resource Report

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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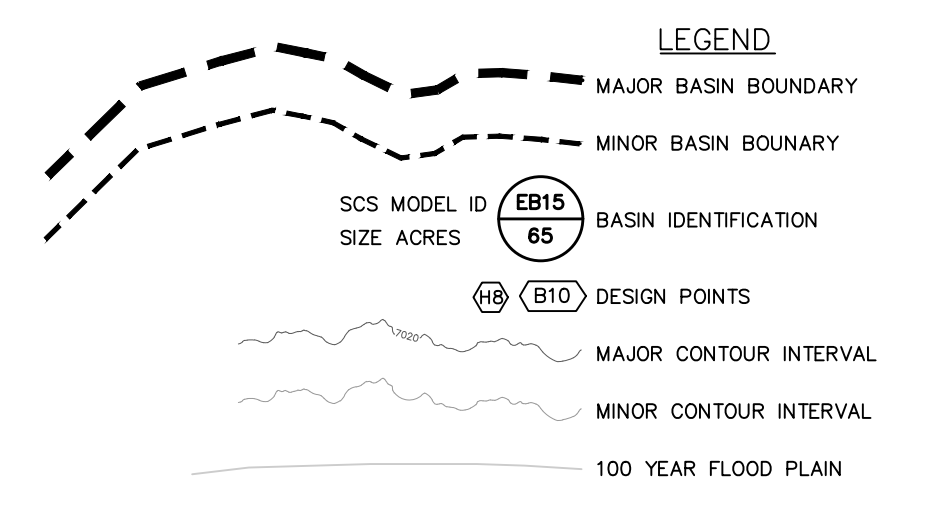
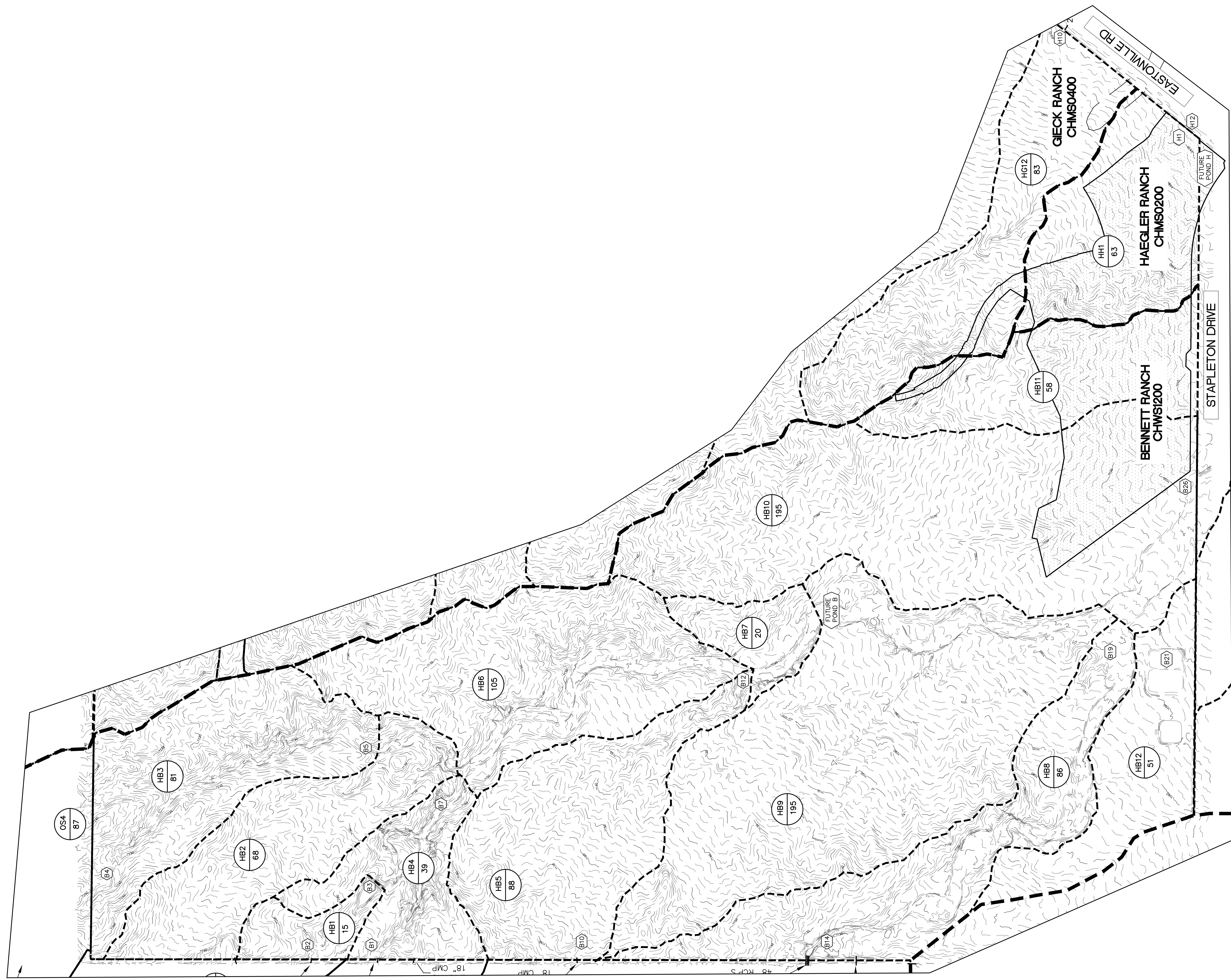
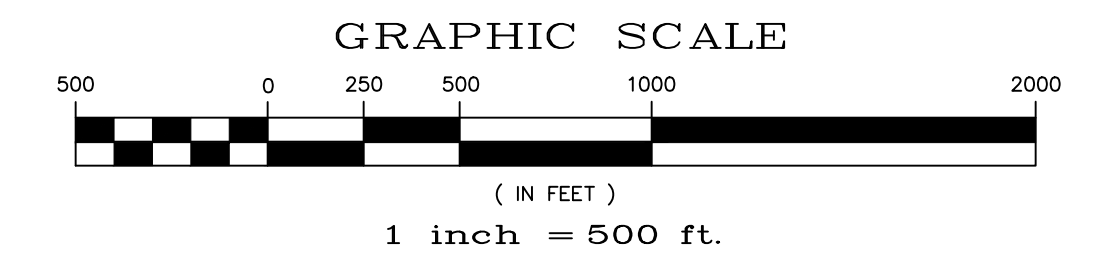
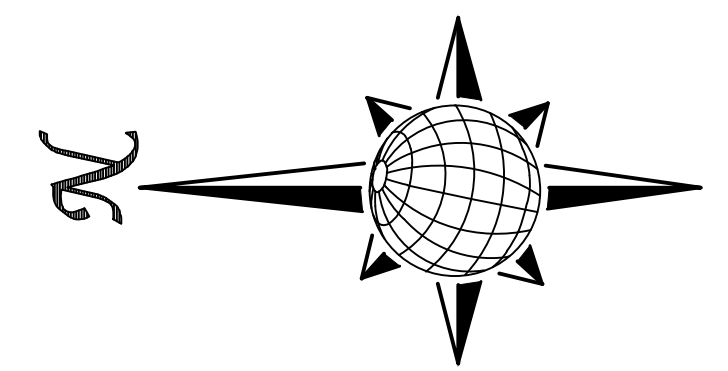
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SCS DRAINAGE MAP MERIDIAN RANCH WINDINGWALK FILING 1



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11886 STAPLETON DR
FALCON, CO 80831
TELEPHONE: 719.495.7444

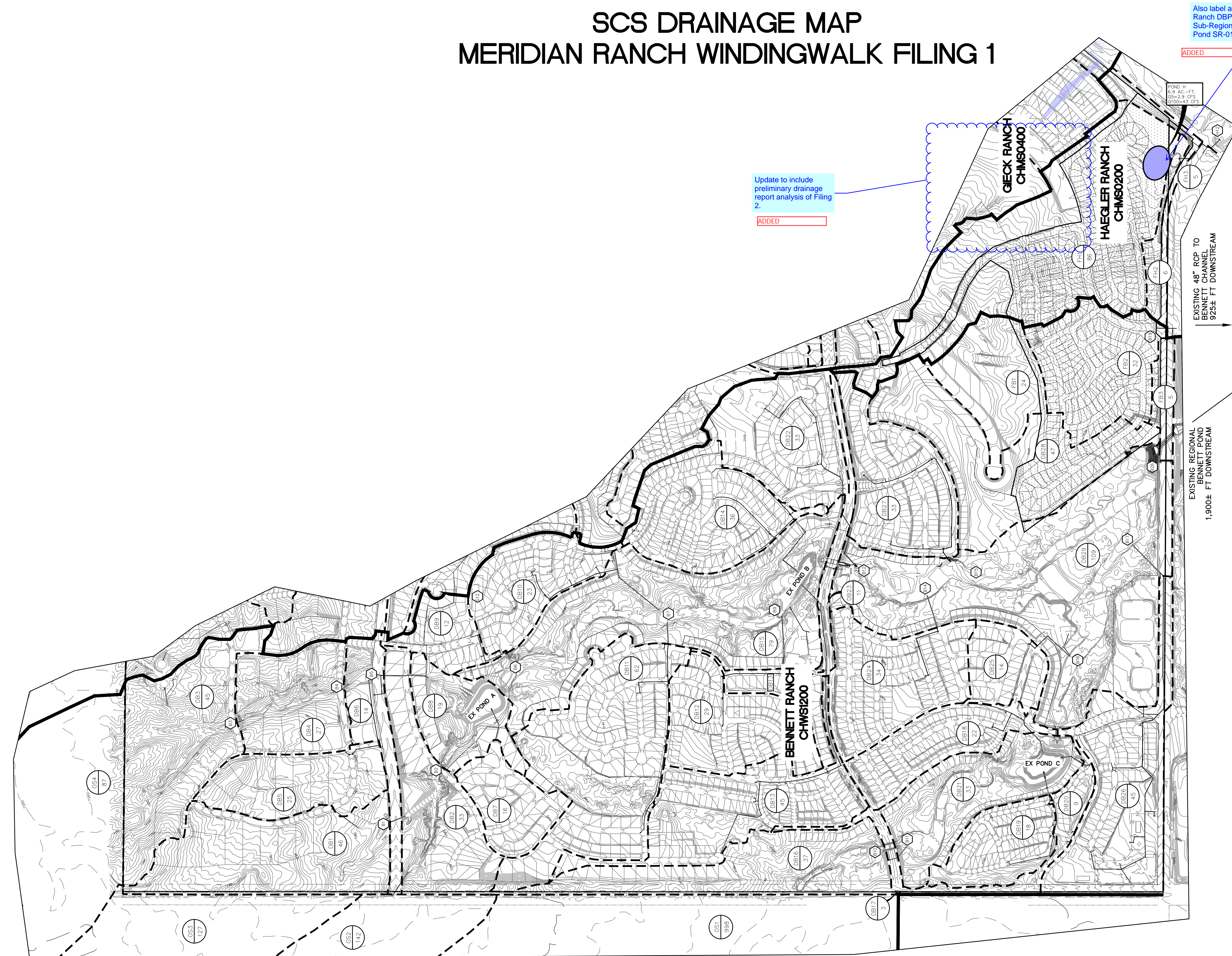
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FIGURE 4

DEC 2017

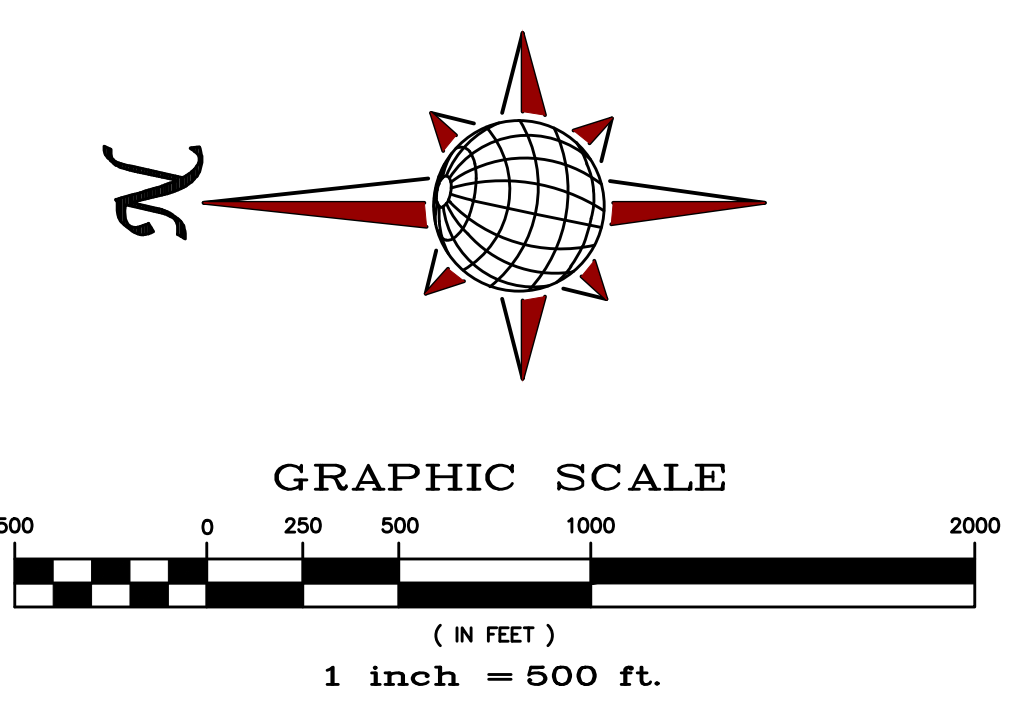
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SCS DRAINAGE MAP MERIDIAN RANCH WINDINGWALK FILING 1



LEGEND

- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY
- SCS MODEL ID (EB15) BASIN IDENTIFICATION
- SIZE ACRES (65)
- DESIGN POINTS (DB10)
- MAJOR CONTOUR INTERVAL
- MINOR CONTOUR INTERVAL
- 100 YEAR FLOOD PLAN






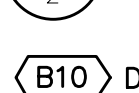
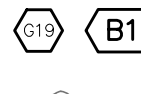



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INTERIM CONDITIONS

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SCS DRAINAGE MAP MERIDIAN RANCH WINDINGWALK FILING 1

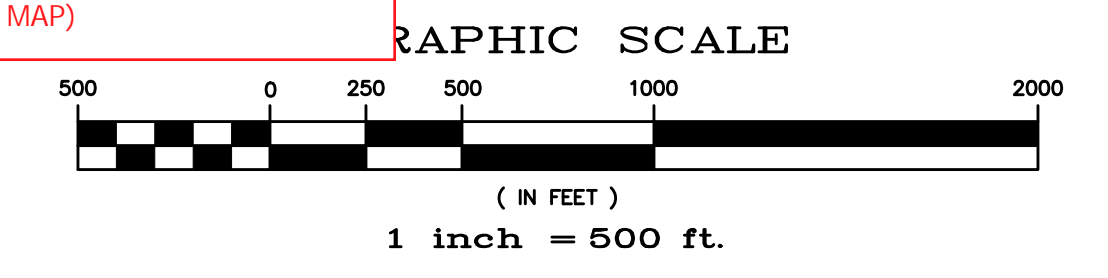
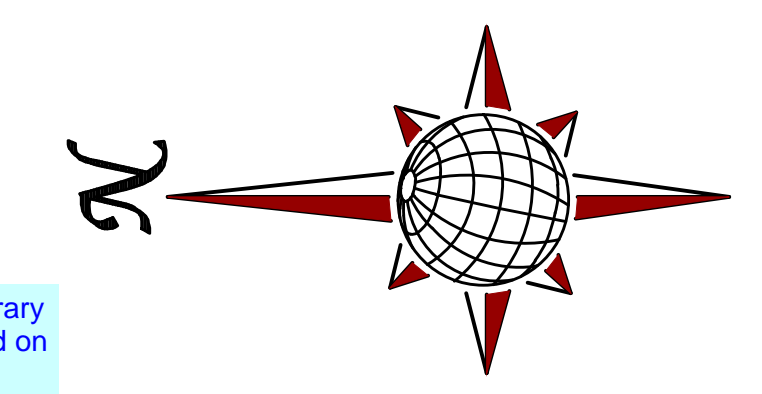
LEGEND

-  MAJOR BASIN BOUNDARY
-  MINOR BASIN BOUNDARY
- SCS MODEL ID  BASIN IDENTIFICATION
- SIZE ACRES 
-  DESIGN POINTS
-  MAJOR CONTOUR INTERVAL
-  MINOR CONTOUR INTERVAL
-  100 YEAR FLOOD PLAN

Drainage maps shall provide a summary of all minor and major flow rates at design points.
PROVIDED

Show and label the temporary sedimentation ponds noted on page 8

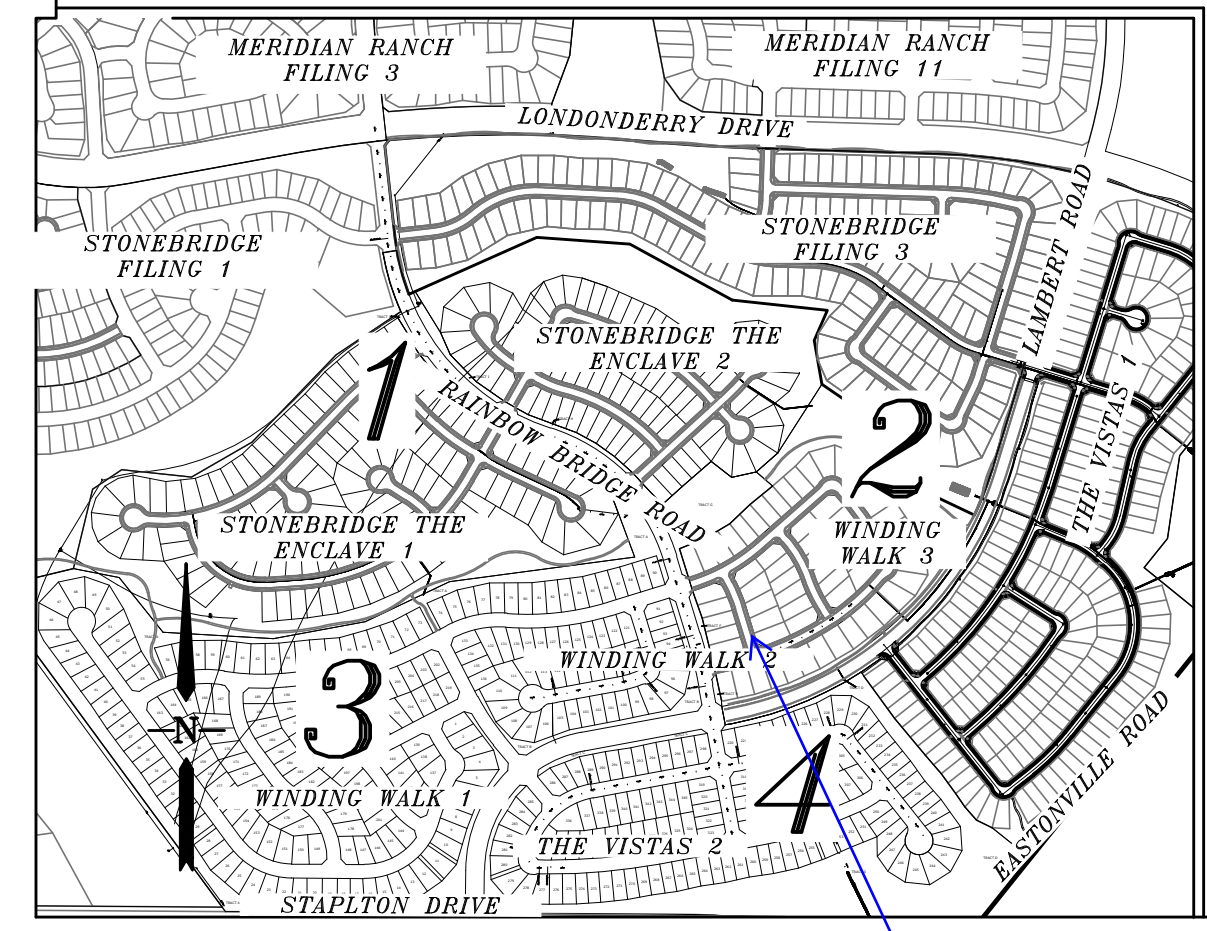
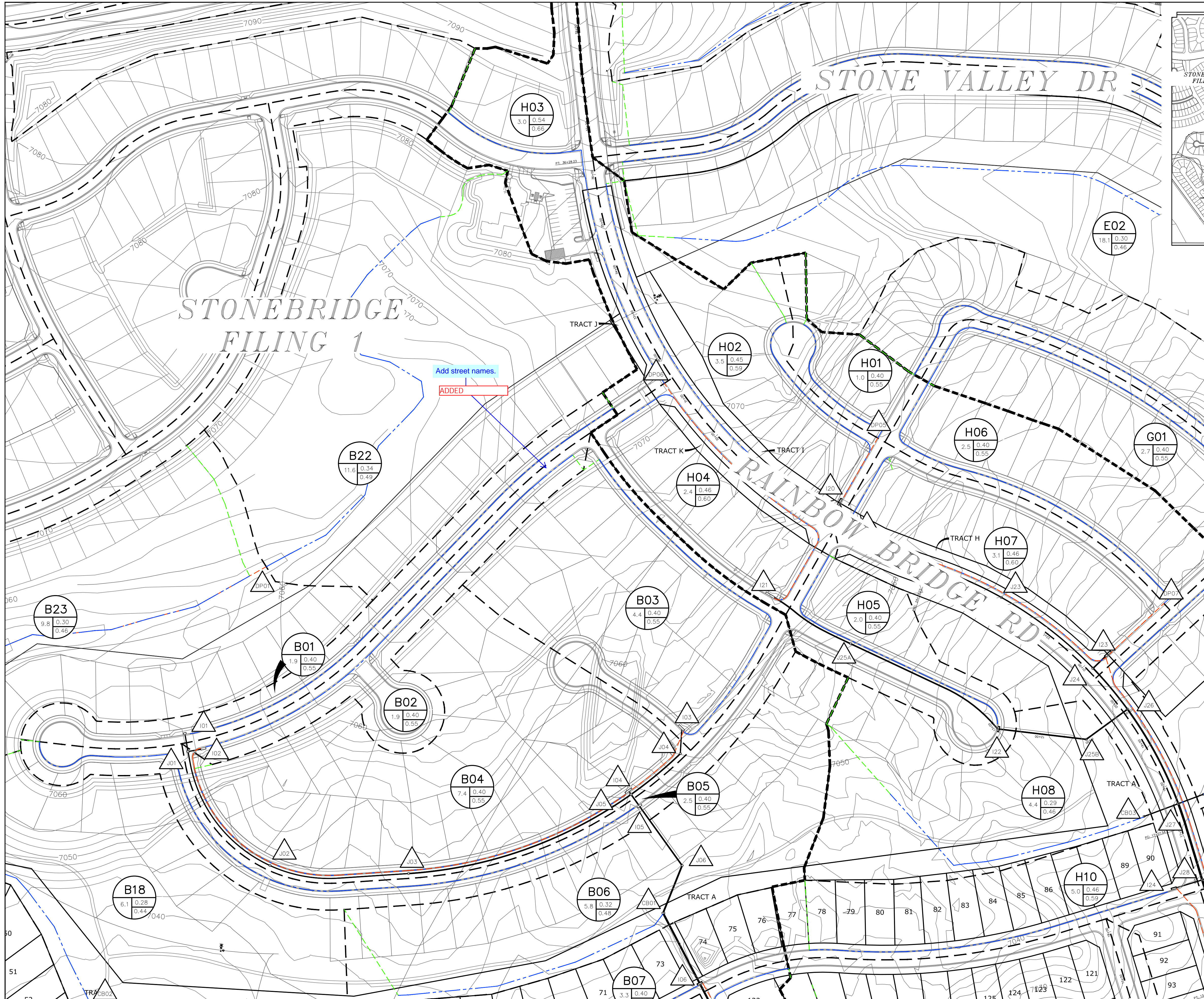
SHOWN AND LABELED ON EXHIBIT 6 (INTERIM CONDITIONS) AND EXHIBIT 4 (RATIONAL MAP)



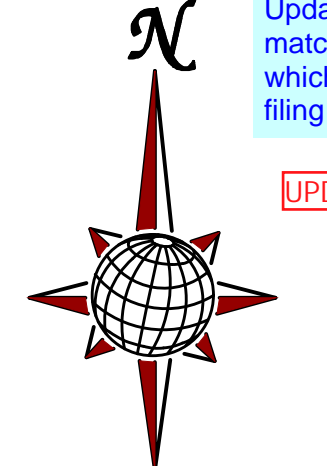
FUTURE CONDITIONS

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

S:\C:\p\proj\Winding Walk Filing 1\DWG\PLAN SHEETS\BASIN MAPS\FDR\FDR-MW1-SCS-FUTURE.dwg, Fig 6, 12/12/2017, 10:03:46 AM



INDEX MAP
N.T.S.



Update keymap to match the PUD which only shows filing 1 & 2
UPDATED

GRAPHIC SCALE



1 inch = 100 ft.

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

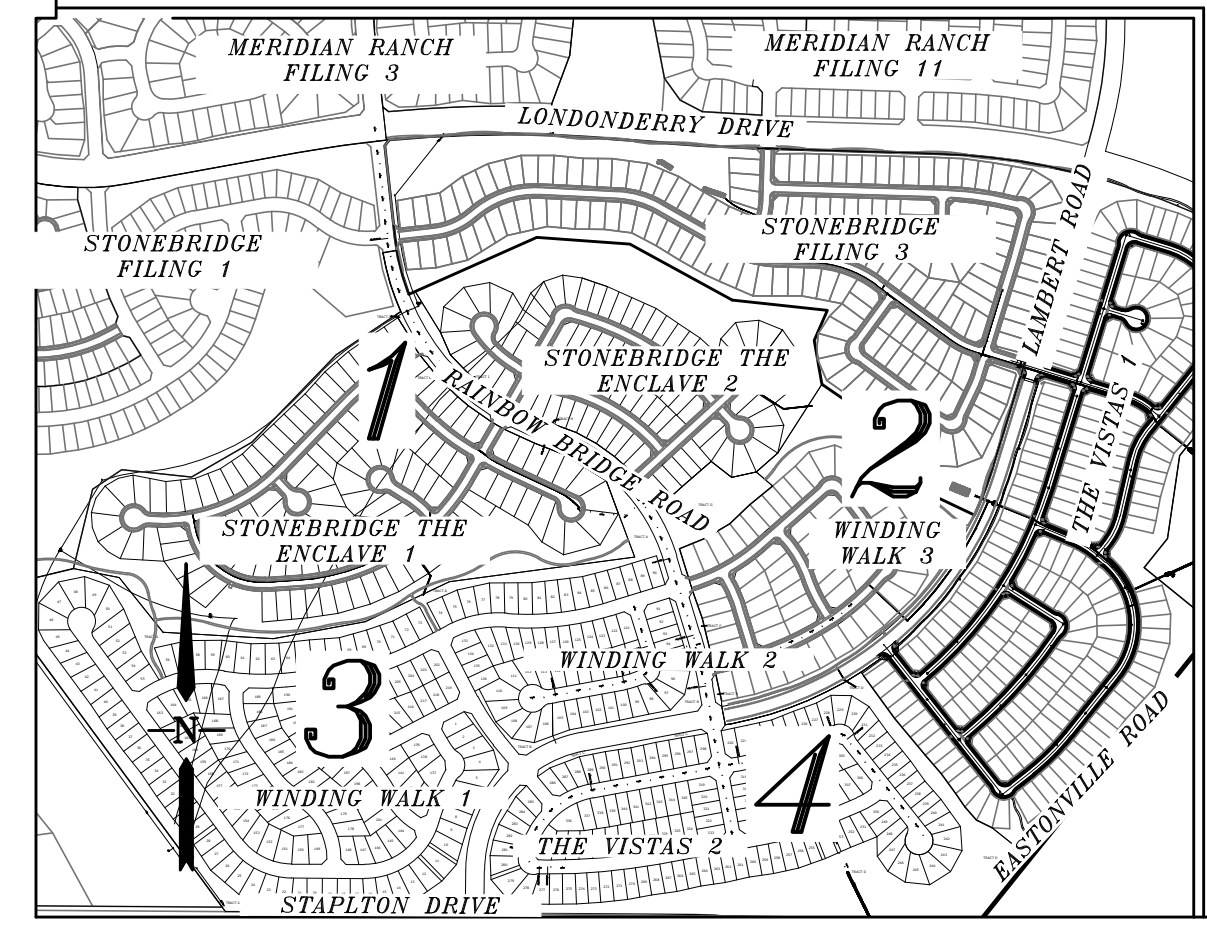
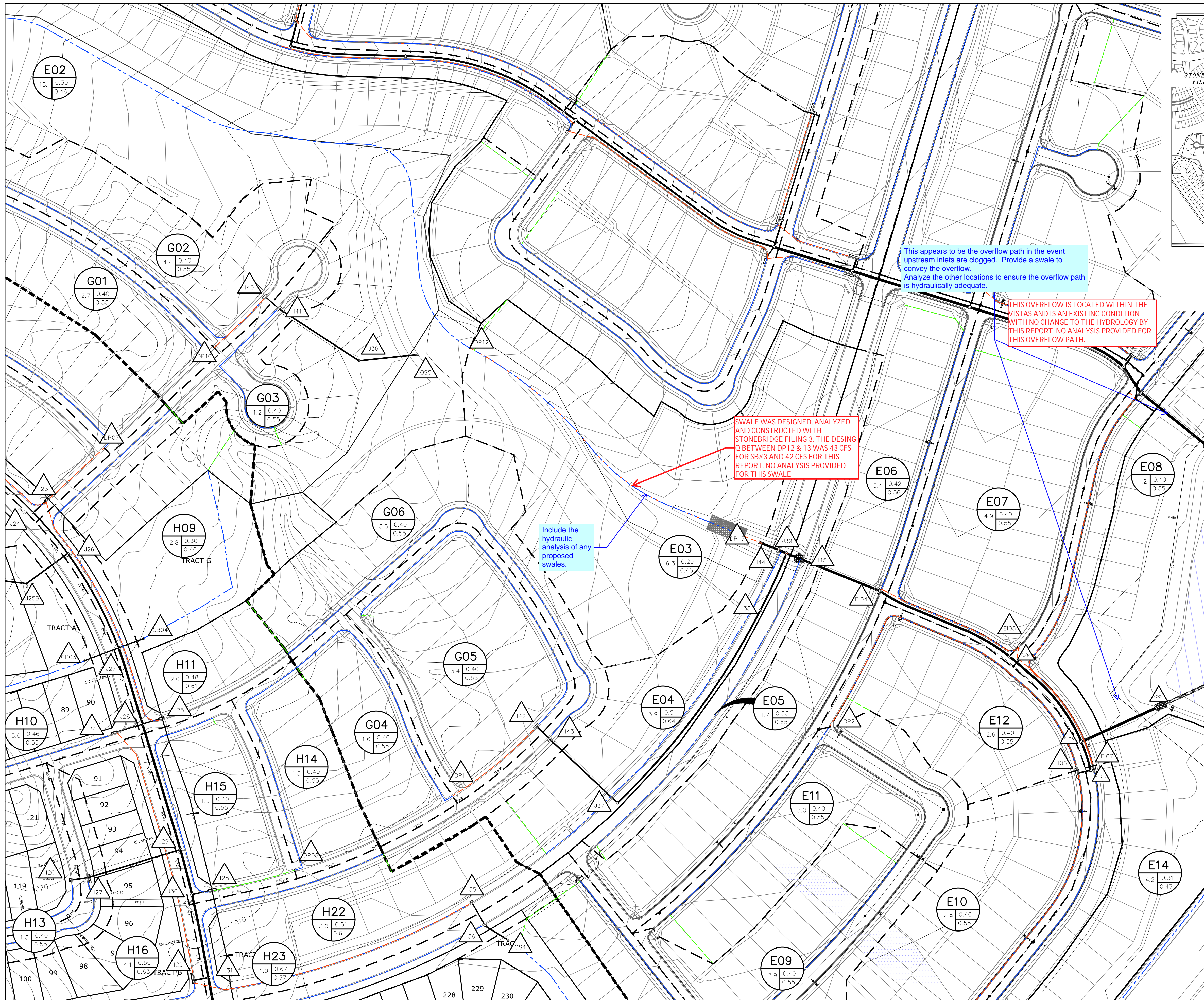
INTERSECTION OF WOODMEN RD AND MERIDIAN ROAD AT SW CORNER (BRASS CAP W/ NO. GF-9)
ELEVATION = 6874.00

NOTE:
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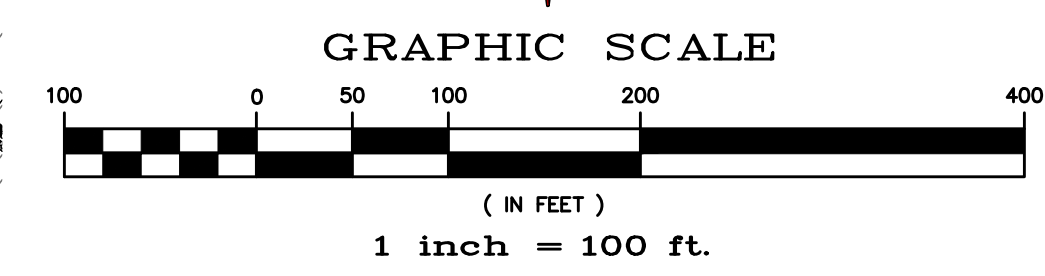
Add a summary of the minor/major flowrates at design points.
ADDED

| | | | | |
|--|----------|-----------|------------|------|
| Scale | AS SHOWN | 1 | of | 4 |
| | Drawn by | LOA | Checked by | TAK |
| | | Date | DEC. 2007 | |
| MERIDIAN RANCH | | | | |
| RATIONAL DRAINAGE MAP FINAL DRAINAGE REPORT WINDING WALK FILING 3 | | | | |
| TECH CONTRACTORS 12311 REX ROAD FALCON, CO 80831 TELEPHONE: 719.495.7444 FAX: 719.495.2457 | | | | |
| | | No. | | |
| | | Revisions | | |
| | | Date | Init. | Date |

S:\CIP\Proj\Winding Walk Filing 1\DWG\PLAN SHEETS\BASIN MAPS\FDR\DR-WW1-RATIONAL-FUTURE-FUTURE.dwg DRI, 12/12/2017 10:39:25 AM



INDEX MAP
N.T.S.

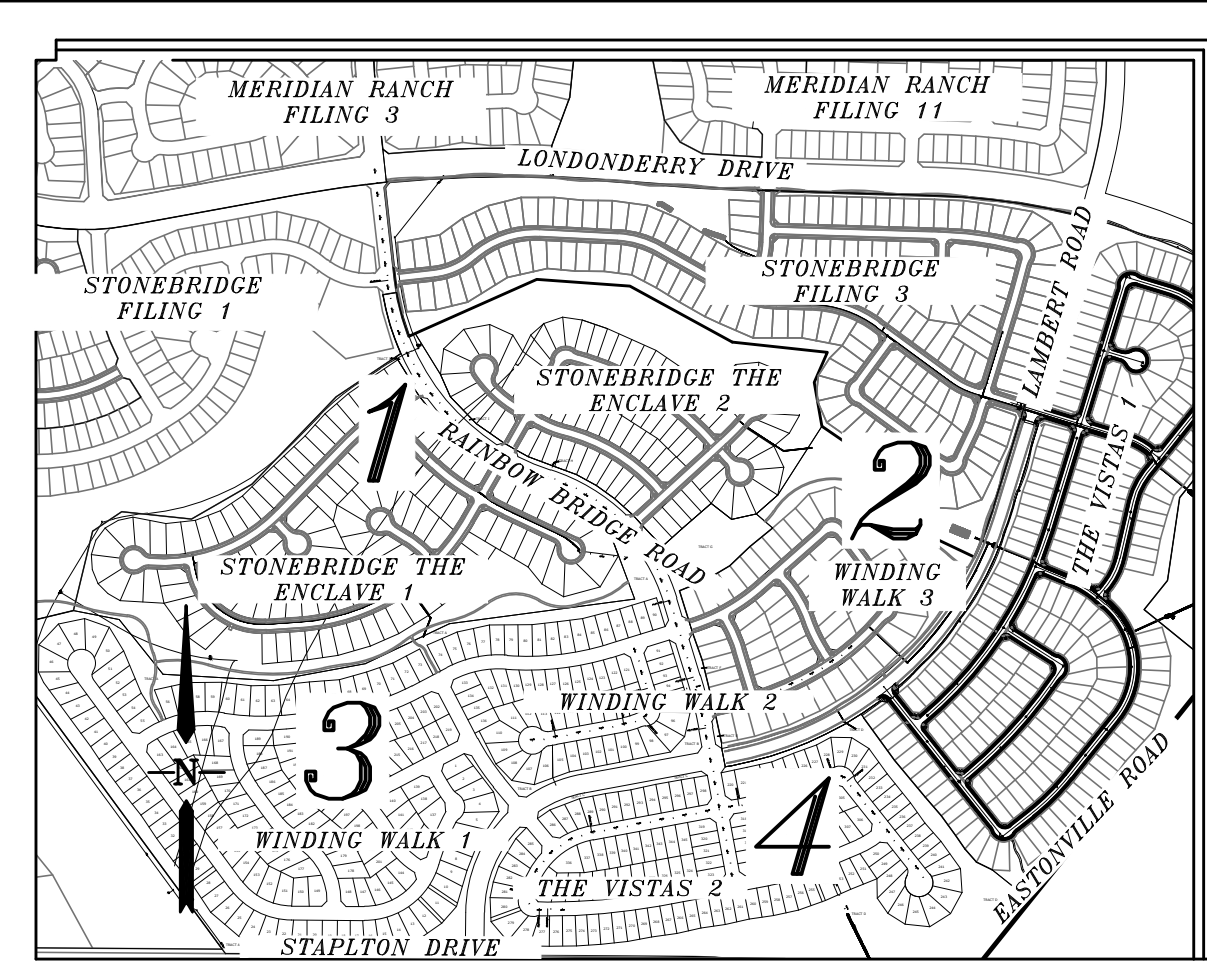
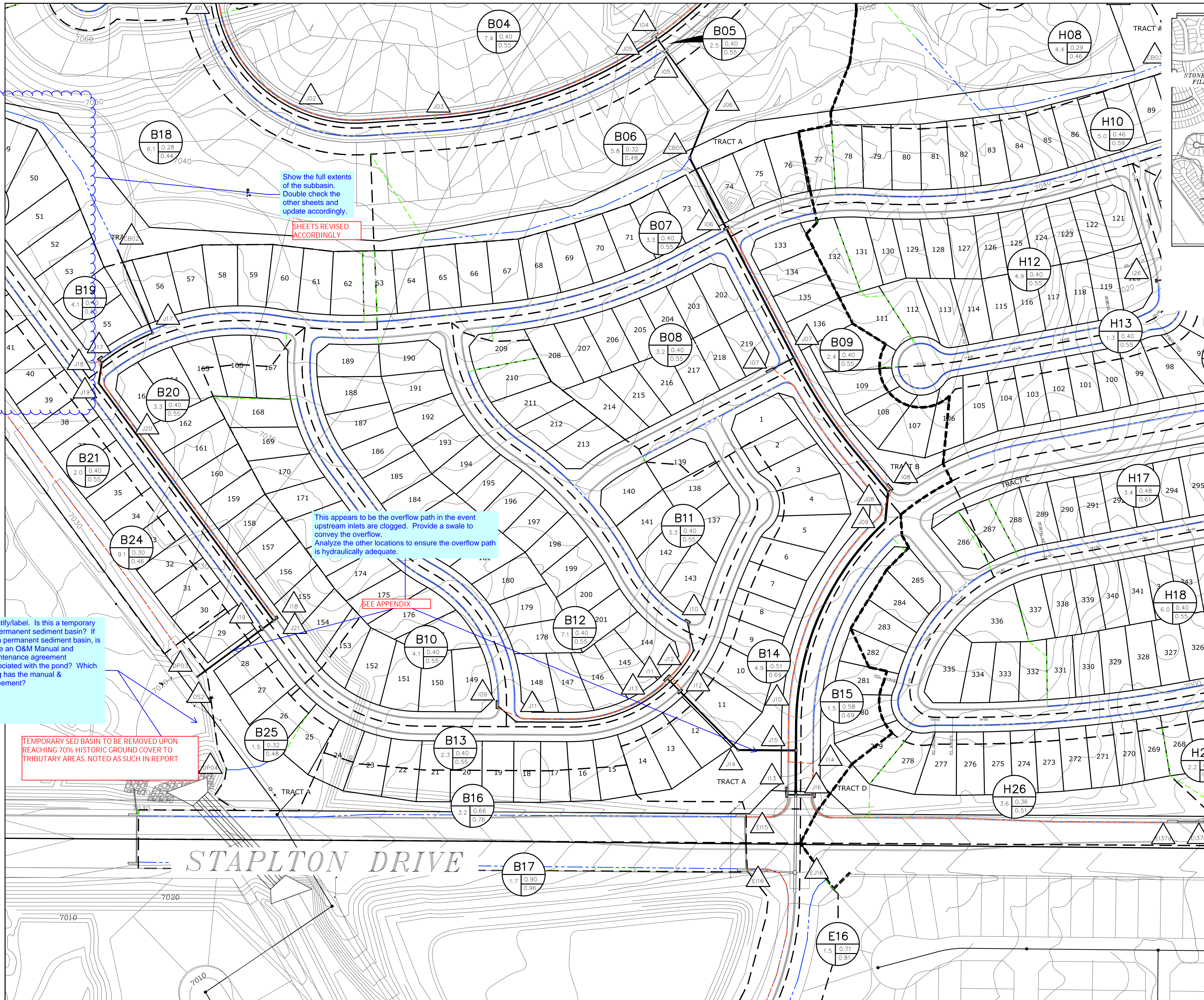


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- BASIN AREA IN ACRES
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- MAJOR BASIN BOUNDARY
- SUB-BASIN BOUNDARY
- 6130 EXISTING CONTOUR
- 6130 PROPOSED CONTOUR
- PROPOSED STORM SEWER
- INITIAL OVERLAND TIME (Ti)
- TRAVEL TIME (Tt)
- OVERLAND TIME (To)

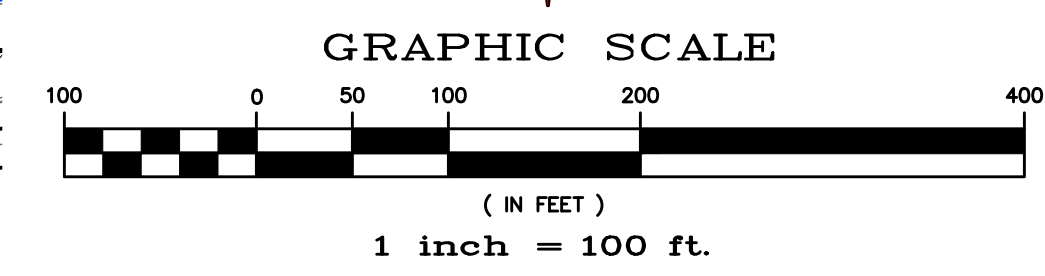
INTERSECTION OF WOODMEN RD AND MERIDIAN ROAD AT SW CORNER (BRASS CAP W/ NO. GF-9)
ELEVATION = 6874.00

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|--|----------|---|------------|------|----------|------|
| TECH CONTRACTORS 12311 REX ROAD FALCON, CO 80831 TELEPHONE: 719.495.7444 FAX: 719.495.2457 | | No. | Revisions | Date | Appr. | Date |
| MERIDIAN RANCH | | RATIONAL DRAINAGE MAP FINAL DRAINAGE REPORT WINDING WALK FILING 1 | | | | |
| Scale | AS SHOWN | Drawn by | Checked by | Date | DEC 2007 | |
| | 2 of 4 | LOA | TAK | 4 | | |



INDEX MAP
N.T.S.



- BASIN DESIGNATION
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Show the full extents of the subbasin. Double check the other sheets and update accordingly.

SHEETS REVISED ACCORDINGLY

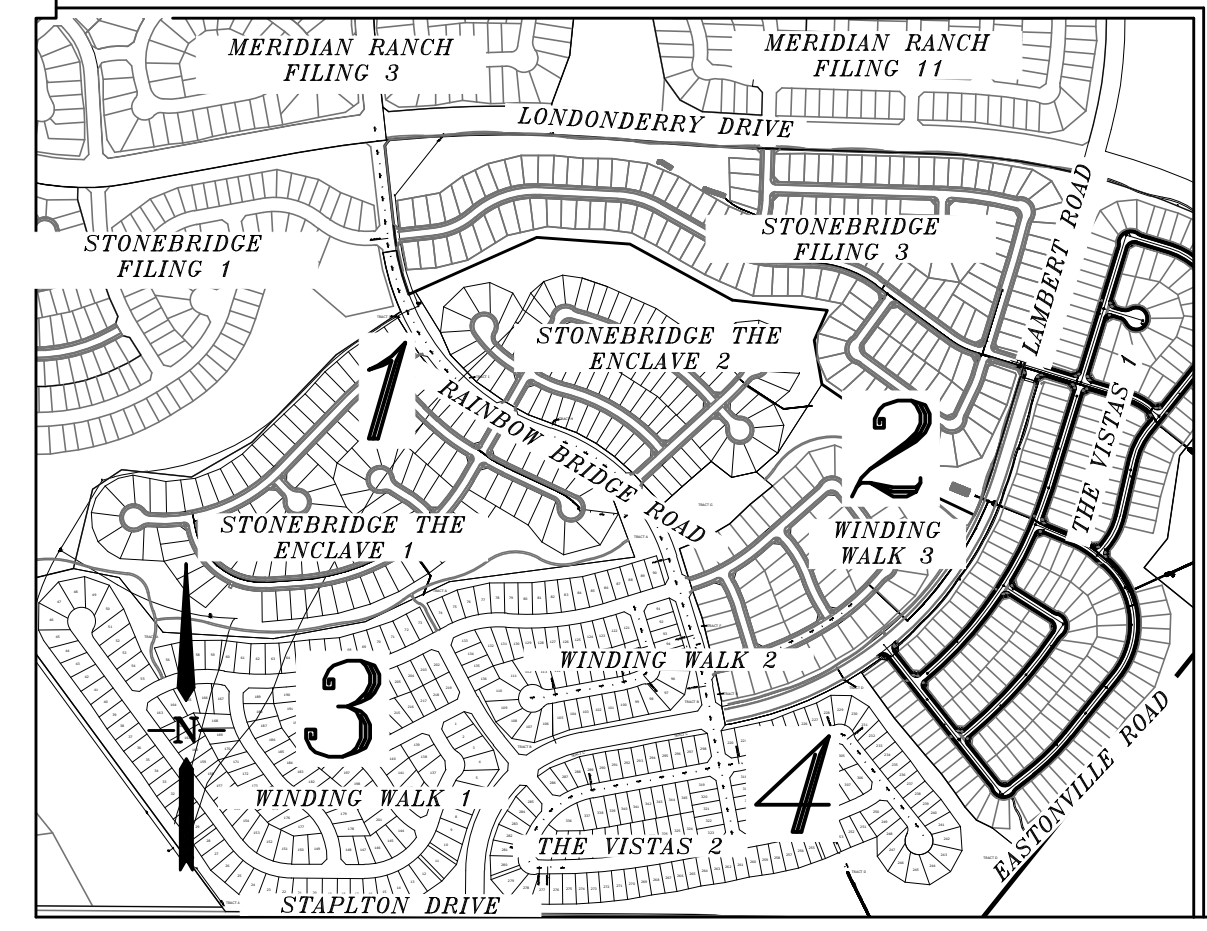
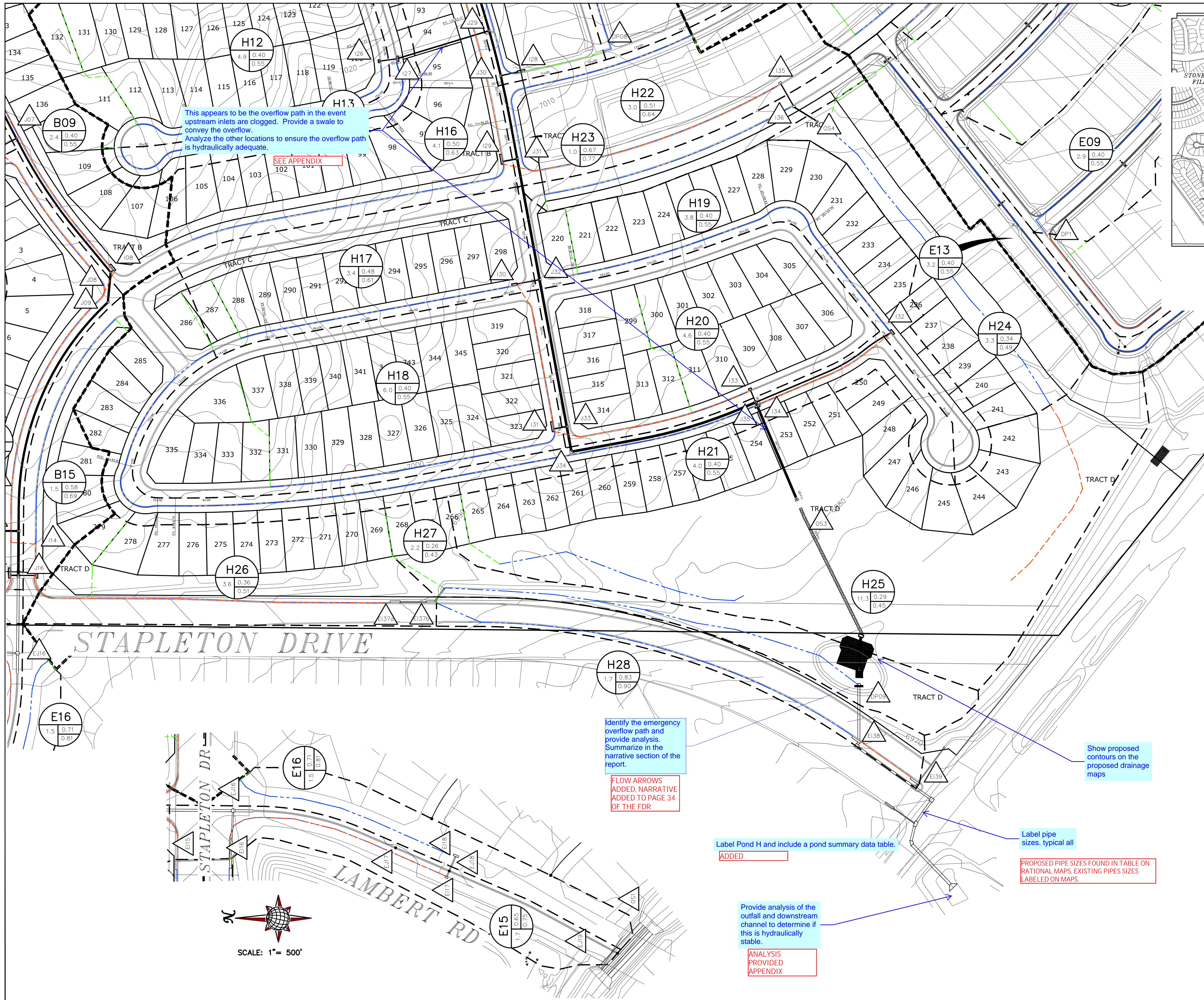
This appears to be the overflow path in the event upstream inlets are clogged. Provide a swale to convey the overflow. Analyze the other locations to ensure the overflow path is hydraulically adequate.

SEE APPENDIX

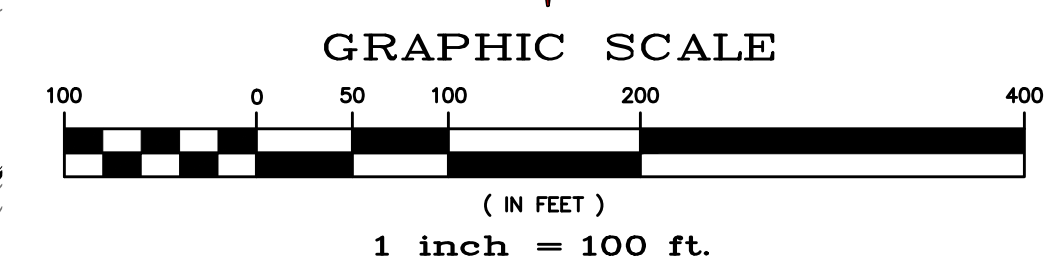
Identify/label. Is this a temporary or permanent sediment basin? If it's a permanent sediment basin, is there an O&M Manual and Maintenance agreement associated with the pond? Which filing has the manual & agreement?

TEMPORARY SED BASIN TO BE REMOVED UPON REACHING 70% HISTORIC GROUND COVER TO TRIBUTARY AREAS. NOTED AS SUCH IN REPORT

| | |
|--|-----------|
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| MERIDIAN RANCH | |
| RATIONAL DRAINAGE MAP FINAL DRAINAGE REPORT WINDINGWALK FILING 1 | |
| Scale | AS SHOWN |
| Drawn by | LOA |
| Checked by | TAK |
| Date | DEC. 2007 |
| 3 of 4 | |
| No. | |
| Revisions | |
| Date | |
| Invt. | |
| Appr. | |
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| 4 of 4 | 4 |
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