

**Master Development Drainage Plan for
ENCLAVES AT MOUNTAIN VISTA**
Barnes Road and Marksheffel Road
Colorado Springs, Colorado

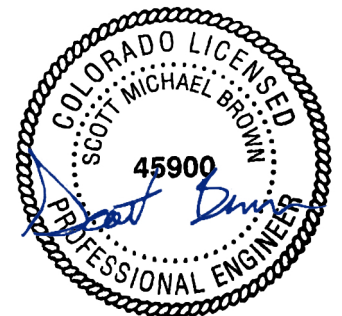
Developer:

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Revised: May 12, 2016



06/29/2017

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CERTIFICATION STATEMENTS

This report and plan for the preliminary master development drainage plan for the Enclaves at Mountain Vista was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Colorado Springs Drainage Design and Technical Criteria for the owners thereof. I understand that the City of Colorado Springs does not intend to assume liability for drainage facilities designed by others.



Scott Brown PE
Registered Professional Engineer
State of Colorado No. 45900
Date
06/29/2017

Developer's Statement:

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

Challenger Homes

By: Roger L. Miller

Title: U.P. Land Development

Address: 13530 Northgate Estates Drive, Suite 200
COLORADO Springs, CO 80921

CITY OF COLORADO SPRINGS:

Filed in accordance with Section 7.7.906 of the Code of the City of Colorado Springs, 2001, as amended.

For City Engineer

8/3/17
Date

Conditions:

I. INTRODUCTION

A. Scope of Study

This document is the Master Development Drainage Plan (MDDP) for the Enclaves at Mountain Vista Project. The purpose of this MDDP is to analyze both the existing and the developed drainage patterns and to evaluate the improvements proposed with the project.

B. Existing Studies

The proposed project site is located within the Sand Creek Drainage Basin as described in the Drainage Basin Planning Study (DBPS) prepared by the Kiowa Engineering Corporation. Additionally, this particular portion of the Sand Creek Drainage Basin was studied further by the 2008 Master Development Drainage Plan prepared by M & S Civil Consultants for the Mountain Vista Ranch project. The improvements proposed by the M & S Mountain Vista Ranch project are not applicable, however, due to the project not entering construction.

The 2008 study does provide insight into various other reports that help establish the existing drainage characteristics. The Mountain Vista Ranch MDDP specifically references four other reports for the area. The runoff for the western side of the site, adjacent to Marksheffel Rd, was studied in the Master Development Drainage Plan for the Hilltop Subdivision and the Final Drainage report and Erosion Control for Chateau at Antelope Ridge; both prepared by the URS Corporation. The area to the north of the project site was studied previously in the Master Development Drainage Plan for Banning Lewis Ranch Phase I and II and the Final Drainage Report for Banning Lewis Ranch Filing No. 2; both reports prepared by Turner Collie and Braden, Inc.

C. Description of Property

The Enclaves at Mountain Vista project property is located in Sections 21, 22, 27 and 28 Township 13 South, Range 65 West of the 6th Principal Meridian, in the City of Colorado Springs, El Paso County, Colorado. The development site is located on the southeast corner of Barnes Road and Marksheffel Road in Colorado Springs, Colorado. This site is bounded by Marksheffel Road to the west and the proposed Barnes Road extension to the North. The site itself is undeveloped and surrounded by undeveloped land to North, East and South with residential properties located to the West, across Marksheffel Road.

The site covers an area of approximately 153.335 acres in size, encompassing part of the previously identified Industrial area of the Banning Lewis Ranch Master Plan. The proposed development is intended to be zoned "PUD," Planned Unit Development, for the construction of single-family residential units and commercial for the parcel fronting Marksheffel Rd. The project is intended to be phased, with the first two filings focusing on the southwestern portion of the property and extending east and north with future phases. The accompanying collector and residential roadways along with the necessary utilities will be constructed concurrently with the associated filing. See the Concept Plan exhibit in Appendix A for more information about the proposed phasing.

D. Criteria and Standards

The analysis and design of the stormwater management system for this project was prepared in accordance with the criteria set forth in the City of Colorado Springs Drainage Criteria Manual (DCM) Volumes 1 & 2, dated May 2014. The minor stormwater system has been designed to convey runoff from a storm event with a return period of 5 years (20% annual exceedance probability) and the major storm drain system has been designed to convey runoff events up to a return period of 100 years (1% annual exceedance probability), per the DCM. There are no requested variances from these criteria. A water quality storm was also analyzed to review the effects of the LID facilities on the overall drainage pattern. The one hour point rainfall values used are 0.60 (WQ), 1.19 (5-yr), and 2.52 (100-yr). The distribution given in Table 6-3 for the 2-Hour Design Storm Distribution was utilized to create the rainfall data for the SWMM model.

II. EXISTING DRAINAGE CONDITIONS

A. Existing Conditions

The overall project site is approximately 153.335 acres in size, and bordered on the west by Marksheffel Rd and by primarily undeveloped land to the North, South and East. There is an existing water storage tank located just to the north of the western portion of the project, owned by the Cherokee Water and Sanitation District. The existing site is primarily open space with mostly gradually sloping terrain covered with native grass vegetation. The site is not forested and contains only a minor amount of trees randomly scattered throughout the property.

The topography of the site varies significantly across the property with the highest point of the site located in the northwest corner of the property. This high point, located approximately 1500' northeast of the intersection of Marksheffel Rd and Barnes Rd provides a ridge with roughly 6% slopes in each direction. East of the ridge the slopes start to become more gradual, 1% - 4%, falling primarily north to south and west to east, ultimately terminating at the Sand Creek East Tributary located along the eastern boundary of the property. The Sand Creek East Tributary flows from north to south with grades ranging from 1% to 3%. There is a low point located at the south/center of the property, approximately 2100' east of Marksheffel Rd.

The site appears to contain a number of encumbrances, including high voltage electric lines which cross the property from east to west along the northern edge of the project site as well as north to south, approximately 3500' to 4450' east of Marksheffel Road. There are also various right-of-way dedications in addition to utility, ingress and egress easements. Most of the current encumbrances, with the exception of the electric lines, appear to be vacant and have been established for future roadway and utility expansions. A copy of the preliminary ALTA/ACSM Land Title Survey has been included in Appendix A for more detailed information regarding the existing encumbrances.

In order to understand the existing hydrology, the project site was modeled in its current, predevelopment condition. The proposed project site comprises of portions of Basins 33 and 34 as identified in the Drainage Basin Planning Study prepared by the Kiowa Engineering Corporation. For the purposes of the proposed project, Basins 33 and 34 were further

subdivided as documented below. Outfall 33 corresponds to the Sand Creek East Fork Tributary while Outfall 34 represents to a smaller tributary located at the southern boundary of the site which eventually reconnects with the Sand Creek East Fork Tributary. A copy of the drainage map from the DBPS prepared by Kiowa Engineering Corporation has been included for reference in Appendix A.

BASIN 33a is a 74.86 acre watershed which discharges via sheet flow to Outfall_33 ($Q_5 = 7.85$ cfs, $Q_{100} = 18.42$ cfs)

BASIN 33b is a 46.69 acre watershed which discharges via sheet flow to Outfall_33 ($Q_5 = 4.85$ cfs, $Q_{100} = 10.69$ cfs)

BASIN 33c is a 56.95 acre watershed which discharges via sheet flow to Outfall_33 ($Q_5 = 5.88$ cfs, $Q_{100} = 12.68$ cfs)

BASIN 34a is a 47.97 acre watershed which discharges via sheet flow to Outfall_34 ($Q_5 = 5.06$ cfs, $Q_{100} = 9.58$ cfs)

BASIN 34b is a 8.61 acre watershed which discharges via sheet flow to Outfall_34 ($Q_5 = 0.91$ cfs, $Q_{100} = 1.79$ cfs)

The total combined discharge from the project site (Outfall_33 and Outfall_34) is $Q_5 = 24.55$ cfs, $Q_{100} = 53.16$ cfs

The detailed SWMM calculations have been provided in Appendix B.

B. Floodplain Statement

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM Number 08041C0543G), the project site contains the Sand Creek East Fork Tributary located along the eastern edge of the property which has been designated a Special Flood Hazard Area (SFHAS) Zone AE as well as a floodway. The majority of the project site, however, lies within Zone X, determined to be outside the 100-year floodplain. For the purposes of the initial Filings, the proposed project will be located outside of the SFHAS. When the subsequent phases of the project are proposed, a Conditional Letter of Map Revision (CLOMR) will be applied for prior to the commencement of construction. Additionally, a Letter of Map Revision (LOMR) will be required once the project is complete and the floodplain has been modified. A copy of the FIRM map is included for reference in the Appendix A.

C. Soils

According to the U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey of El Paso County, Colorado the primary (62.1%) soil found is Truckton sandy loam (Soil No. 97); the remaining soils are Blendon sandy loam (37.3%, Soil No. 10) and Blakeland loamy sand (0.6%, Soil No. 8). Both Truckton sandy loam and Blakeland loamy sand are classified as Soil Conservation Service (SCS) hydrologic soil group "A" while Blendon sandy loam is classified as SCS hydrologic soil group "B". For the purpose of this report, the drainage calculations assumed Type "B" in order to provide a more conservative estimate of the

proposed runoff. A copy of the soil map as well as more detailed information regarding the individual soil properties can be found in Appendix A.

III. PROPOSED DRAINAGE CONDITIONS

A. Major Basin Descriptions

The original DBPS prepared by Kiowa Engineering Corporation identified two Basins for our project site, 33 and 34, as described previously. For the proposed drainage design, new basin designations were required as a result of the proposed improvements. The basins and their proposed size, shape and orientation can be seen on the proposed drainage map found in Appendix C. Additionally, a nodal diagram depicting how the basins were modeled in the EPA's Storm Water Management Model (SWMM) software has been provided in Appendix B.

Basin A contains a combined total of 21.55 acres and is located at the southwestern corner of the project site, adjacent to the area identified future commercial, and is identified as the Enclaves at Mountain Vista Filing II. Included within this basin are the western sections of the two new collector streets proposed and the southern part of the new north/south principal arterial. There are also local residential streets and single-family attached lots included within the basin. The roadways will be inverted crown roads, a roadway section has been included with the drainage maps. Water quality for the majority of this basin will provided in Pond 300. Another portion of this basin drains to Pond 301 which will provide detention for the tributary basins.

Basin B, located just east of **Basin A** along the southern property border, contains a combined total of 11.85 acres and is identified as the Enclaves at Mountain Vista Filing III. Included in this basin are residential streets and single-family residential lots.

Basin C is in the northwest section of the project site, located adjacent to the area identified as agriculture. This basin is a part of the future phase of the project which is preliminary intended for single-family attached residential units. The combined 16.74 acre basin also includes the northern half of the proposed north/south principal arterial which bisects the property. This basin is tributary to Pond 301 which will provide detention for the tributary basins.

Basin D is located east of **Basin C** contains a combined total of 14.96 acres. This basin encompasses an area identified for future single-family residential homes, but also includes a portion of the proposed east/west collector roadway located in the central region of the project site.

Basin E is located just west of the East Fork Sand Creek Tributary and north of the proposed central east/west collector roadway. This 14.48 acre basin is comprised of single-family residential lots and local residential roadways, but also includes the northern half of the east/west central collector roadway.

Basin F is a combined 18.91 acres located at the southeastern portion of the project site. Residential single-family lots and roadways make up the majority of the basin while also

including the remainder of the east/west central collector roadway. The largest detention pond, 302, is located within Basin F. This pond will provide detention for the entire development.

Basin OS1 is located west of Basin C. This area is identified as agricultural but is anticipated to be commercial in the future. Runoff from this basin will enter the proposed Stormwater system for the project. The basin has been modeled as a historic basin for all storms. This historic runoff will be the allowable release from the property into the proposed storm sewer system.

Basin OS2 is identified as the future park site. It is anticipated that the park site will be able to drain independently of the proposed residential area. Runoff from this basin will not enter the proposed storm sewer system.

Basin OS3 is identified as the future school. Due to its proximity to the East Fork Sand Creek Tributary it is anticipated that this basin will not drain to the proposed storm sewer system. It will handle all runoff independently of the proposed residential area.

Basin OS4 is identified as the East Fork Sand Creek Tributary. This basin will remain in a historic state and will not be developed.

B. Drainage Model

The major basins described above have been further subdivided in order to analyze the project within the EPA's Stormwater Management Model (SWMM) software. Brief descriptions of the proposed subbasins, runoff rates and discharge locations have been provided in this section. The model design points (100 series), links (200 series), and ponds (300 series) have been labeled for consistency. The SWMM calculations have been provided in Appendix B for further detail.

Basins A1 ($Q_5=12.62$ cfs, $Q_{100}=23.72$ cfs) and **A2** ($Q_5=21.65$ cfs, $Q_{100}=41.19$ cfs) are connected to **Design Point (DP)100** which discharge via **Conveyance (C)200** (36" RCP) to **Pond (P)300**. **Basin A3a** ($Q_5=4.90$ cfs, $Q_{100}=9.17$ cfs) discharges directly into **Pond (P)300**.

Both pond **P300** and Basin **A3b** ($Q_5=7.21$ cfs, $Q_{100}=13.80$ cfs) are connected to **DP101** which discharges via **C201** (36" RCP) to **DP102**.

DP102, which also has Basin **B1** ($Q_5=2.4$ cfs, $Q_{100}=6.80$ cfs) connected, discharge via **C202** (36" RCP) to **DP103**.

DP103 is a large node which has a network of basins connected to it in addition to **B4** ($Q_5=3.80$ cfs, $Q_{100}=8.06$ cfs). The connections to **DP103** are further described below:

Basins **C1** ($Q_5=3.24$ cfs, $Q_{100}=12.12$ cfs), **C2** ($Q_5=1.65$ cfs, $Q_{100}=5.02$ cfs), **A4** ($Q_5=4.65$ cfs, $Q_{100}=8.70$ cfs), and **A5** ($Q_5=6.05$ cfs, $Q_{100}=11.29$ cfs) are all connected to Pond **P301**.

P301 and Basin **OS1** ($Q_5=1.85$ cfs, $Q_{100}=11.45$ cfs) are connected via **DP104** which discharges via **C203** (18" RCP) to **DP105**, which has both Basins **C5** ($Q_5=2.41$ cfs, $Q_{100}=10.11$ cfs) and **C6** ($Q_5=3.09$ cfs, $Q_{100}=8.58$ cfs) attached as well.

DP105 connects via **C204** (24" RCP) to **DP106**. **DP106** is also a smaller tree of nodes which has Basins **D1** ($Q_5=2.73$ cfs, $Q_{100}=8.33$ cfs), **D2** ($Q_5=3.78$ cfs, $Q_{100}=14.29$ cfs), **D3** ($Q_5=1.83$ cfs,

$Q_{100}=5.16$ cfs) and **E3** ($Q_5=2.86$ cfs, $Q_{100}=8.80$ cfs) connected. The tree begins with **E1** ($Q_5=1.66$ cfs, $Q_{100}=5.02$ cfs) connecting to **DP107** and **E2** ($Q_5=2.26$ cfs, $Q_{100}=6.80$ cfs) connecting to **DP108**. Both **DP107** and **DP108** connect to **DP109** via **C205** (18" RCP) and **C206** (18" RCP) respectively. **DP109** ultimately connects with **DP106** via **C207** (24" RCP).

DP106 connects to **DP110** via **C208** (48" RCP). **DP110** has Basins **B2** ($Q_5=1.70$ cfs, $Q_{100}=5.10$ cfs) and **B3** ($Q_5=1.36$ cfs, $Q_{100}=4.42$ cfs) attached and discharges via **C209** (54" RCP) to ultimately connect back with **DP103** described earlier. **DP103** connects to Pond **P302** which also has a small network of nodes attached in addition to Basins **F6** ($Q_5=1.78$ cfs, $Q_{100}=5.28$ cfs) **F7** ($Q_5=0.11$ cfs, $Q_{100}=1.13$ cfs).

The smaller network attached to **P302** begins with **DP111** which has Basins **F1** ($Q_5=3.00$ cfs, $Q_{100}=8.39$ cfs) and **F2** ($Q_5=2.45$ cfs, $Q_{100}=6.50$ cfs) attached. **C211** (24" RCP) connects to **DP112** which is comprised of Basins **F3** ($Q_5=2.83$ cfs, $Q_{100}=8.48$ cfs), **F4** ($Q_5=1.48$ cfs, $Q_{100}=4.48$ cfs), and **F5** ($Q_5=1.04$ cfs, $Q_{100}=2.87$ cfs). **DP112** is the final connection to **P302** via **C212** (30"RCP).

The offsite Basins **OS2** ($Q_5=1.25$ cfs, $Q_{100}=2.63$ cfs), **OS3** ($Q_5=1.32$ cfs, $Q_{100}=2.52$ cfs), **OS4** ($Q_5=19.78$ cfs, $Q_{100}=41.45$ cfs) as well as **E4** ($Q_5=3.19$ cfs, $Q_{100}=6.25$ cfs) are self-contained basins which discharge directly to Outfall_33c, which is the Sand Creek East Fork Tributary.

The total combined peak flow from the project site (Outfall_33b and Outfall_33c) is $Q_5=23.03$ cfs, $Q_{100}=56.38$ cfs.

C. Drainage Facility Design

There are four steps to minimizing the adverse impacts of urbanization. They are: 1) Reduce Runoff LID/MDCIA, 2) Treat & Slowly Release WQCV, 3) Stabilizing Drainageways, and 4) Long Term Source Controls. All of these steps have been achieved in the Enclaves at Mountain Vista. Step 1 (reducing runoff) has been accomplished on this site in multiple ways. By removing all curb and gutter from the single-family detached roadways the majority of the impervious areas have been disconnected. This is known as minimizing directly connected impervious areas (MDCIA). The roof of the houses has been disconnected entirely while the roadway and driveway will be directly connected to a Low Impact Development (LID) feature. The LID feature utilized on this project is a bio-retention cell. The bio-retention cells are located on both sides of the road in the single-family detached areas. The LID that has been utilized is a storage based WQ feature as opposed to a conveyance based WQ feature. The WQ storm event will be captured by the bio-retention cells and will slowly infiltrate in the basin. This will allow sediment to fall out and be captured within the bio-retention cell rather than be conveyed downstream. The LID features on this site serve in Steps 1, 2, and 4. They reduce runoff, they treat and slowly release WQCV and they are source controls since they are located adjacent to each single-family detached lot. All of these steps work together to reduce runoff and to elongate runoff times, allowing them to peak closer to historic times, but they still do not fully reduce the runoff to historic rates. Therefore, to achieve Step 3, stabilizing drainageways, detention ponds have been introduced to the site. Ponds 301 and 302 provide detention for the minor and major storm events. Pond 302 will provide the largest amount of detention and

reduces the release from the site to the historic value. By reducing to the historic runoff rate we will preserve downstream offsite drainage ways. Additionally to preserve the East Fork Sand Creek Tributary through the site channel improvements will be implemented. To aide in understanding the LID cross sections of the roads and the bio-retention cells have been included on the drainage maps.

The bio-retention cells will visually appear as swales when constructed. They will have a bottom that slopes equivalent to the adjacent road. However, they will be blocked at the driveway to the downstream lot providing a retained volume. The driveways will be slightly depressed creating a Texas crossing at each driveway. Additionally the depression in the drive way (coupled with the ROW elevated above the EOP) will provide adequate flow area for the 100-year event maintaining all 100-year flows within the ROW. A slotted underdrain will be provided under the entire length of the bio-retention cell. It has been assumed that gravel will be placed around the entire underdrain and will be able to add underground storage in the voids. The void area has been assumed to be 25% of the entire underground volume to be conservative. An infiltration rate of 0.6 inches/hour has been assumed based on the standard values for Type B soils and the Horton infiltration method. This underdrain is connected to the main storm sewer system and will direct infiltrated flows through the system to the main outfall at Pond 302.

The SWMM 5.1 software provides extensive LID tools built into the program. Within each subcatchment the LID controls were defined. The LID type was chosen as Bio-Retention Cell because of its ability to pond water in a fashion similar to what is being proposed for the development. The berm height or depth of ponding was assumed to be 10". All runoff from the subcatchments was routed into the LID associated with the basin. This resulted in a significant decrease in runoff volumes for each of the storm events. In the WQ storm event all runoff from a basin with LID is captured within the bio-retention cell. The 5 and 100-year storm events also see a large reduction in volume and an increase time of concentration allowing for a lower detention volume at the outfall from the property. The bio-retention cells will be located within Public ROW, but will be maintained by the Enclaves at Mountain Vista Metro District.

In addition to the formal volume LID, it was assumed that 75% of the basin is disconnected impervious area. The roadway in front of the lots along with the driveway were identified as directly connected impervious areas (DCIA) while remainder of the area (the roof of the house) was identified as unconnected impervious area (UIA). By changing the routing method in SWMM to pervious, and the percent routed to 75%, the result of the UIA being routed through receiving pervious area (RPA) was achieved leaving the DCIA directly connected the bio-retention cell.

As documented in this report, the project does implement traditional stormwater conveyance (reinforced concrete pipe or RCP) to connect to the water quality and detention ponds. However, due to the extensive use of LID techniques, the quantity and size of the stormwater detention ponds has been significantly reduced. The hydraulic analysis for the stormwater pipe network will be provided once the design phase for the project has been completed and prior to the finalization of the Master Development Drainage Plan.

As previously discussed basins A and C are single-family attached filings. These single-family attached areas will not incorporate LID techniques. The residential roadways in these areas will have inverted crown sections. All runoff will be directly connected. Therefore, in order to provide water quality Ponds 300 and 301 have incorporated water quality for the onsite tributary basins. In Pond 300 a small amount of detention above the WQCV has been provided, but it is not significant. In Pond 301 a large amount of detention has been provided above the WQCV. Both ponds WQCV have been designed to drain in 40 hours.

Pond 300 was sized utilizing the SWMM Model for the entire development. Since the SWMM model incorporates all the MDCIA and LID improvements it has the most accurate depiction of the runoff from the site. Pond 300 was sized such that the release from the pond was at or below the historic rate from the site. The outlet was adjusted within the model until the release met that criteria. With the development of Filings II and III an interim pond will be constructed. With the later filings the pond will be modified or constructed into its ultimate shape at that time. A preliminary design for the pond is included within this report, but final design will be performed at the time the individual filings are constructed.

D. Sand Creek East Fork Tributary

The existing Sand Creek East Fork Tributary is a naturally formed wide sandy channel which is comprised of mostly native vegetation. The existing flows through the channel are $Q_5=151$ cfs $Q_{100} = 869$ cfs as described in the Master Development Drainage Plan for the East Half of Mountain Vista Ranch dated March 2008. However, an online facility that was located north of Barnes was not approved thus the DBPS flow rates will dictate the design of the channel. The DBPS identifies the existing flows as $Q_{10}=1,470$ cfs and $Q_{100} = 3,470$ cfs. The DBPS prepared by Kiowa Engineering identified riprap side slope lining 2' deep for the 10-year event and check and drop structures for grade control within the channel. In addition to these improvements the channel was proposed to be regraded to standardize the bottom width of the channel. This work will require a CLOMR. It is proposed that a 155' bottom width be used on the channel through this stretch of the East Fork Tributary. The intent is to utilize the proposed improvements suggested in the DBPS however the scope of the improvements will be confirmed once the final design for the Enclaves at Mountain Vista project has been completed. The approximate locations of the drop structures and check structures have been included on the drainage map. Excerpts from the DBPS have been included in the Appendices.

E. Drainage Basin Fees

The project is located within the Sand Creek Drainage Basin. The "2015 Drainage, Bridge, and Pond Fees-City of Colorado Springs", effective March 10, 2015 table identifies the following fees associated with the basin. These fees have been applied and summarized here for this 153.335 acre site.

Basin: Sand Creek

| Basin Fees- 2015 | Total Area (Acres) | Basin Fee (per Acre) | Total Cost Basin Fee |
|-----------------------------|-------------------------------|---------------------------------|---------------------------------|
| Drainage Fee | 153.335 | \$ 10,247 | \$ 1,571,223 |
| Bridge Fee | 153.335 | \$ 622 | \$ 95,374 |
| Pond Fee-Land | 153.335 | \$ 1,070 | \$ 164,068 |
| Pond Fee- Facility | 153.335 | \$ 3,005 | \$ 460,771 |
| Total | | | \$ 2,291,436 |

IV. SUMMARY

The Enclaves at Mountain Vista, a 153.335 acre project located within the Sand Creek Drainage Basin, has been designed to primarily utilize Low Impact Development (LID) techniques in order to comply with the methodologies and criteria established in the City of Colorado Springs *Drainage Criteria Manual* and the Urban Drainage Flood Control District's *Urban Storm Drainage Criteria Manual*. This development will not adversely affect any adjacent and/or downstream developments, irrigation ditches and/or property owners. All drainage facilities described within this Master Development Drainage Plan and depicted in the attached Appendices are subject to change as a result of the final design.

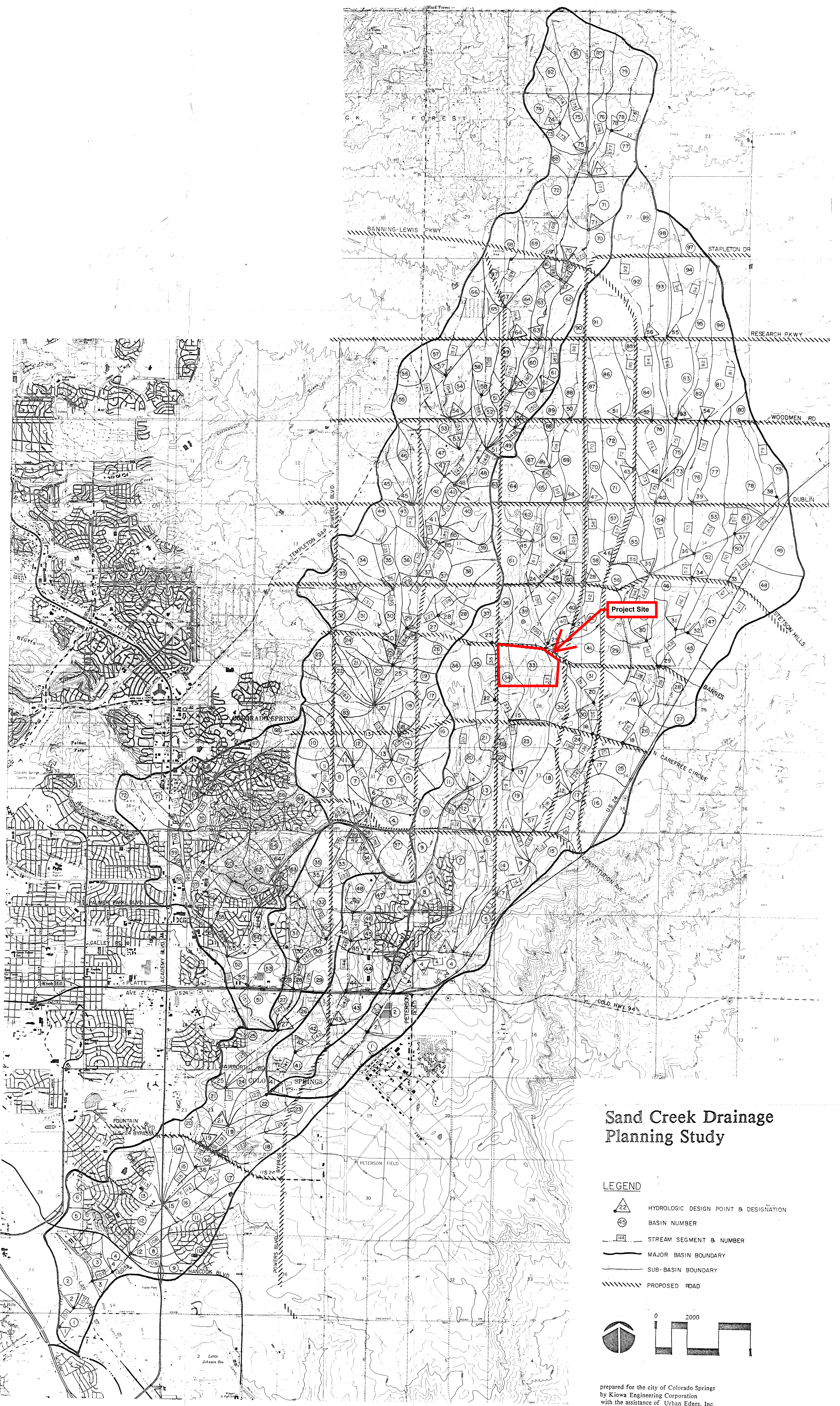
V. REFERENCES

1. *Drainage Criteria Manual Volumes 1 & 2*, City of Colorado Springs, dated May 2014.
2. *Urban Storm Drainage Criteria Manual*, Urban Drainage and Flood Control District, latest revision.
3. "Sand Creek Drainage Basin Planning Study (DBPS)", Revised March 1996, Kiowa Engineering Corporation
4. "Master Development Drainage Plan for the East Half of Mountain Vista Ranch", March 2008, M&S Civil Consultants, Inc.
5. Flood Insurance Rate Map (FIRM), El Paso County, Colorado and Incorporated Areas. Map Number 08041C0543G, Preliminary July 29, 2015 (Federal Emergency Management Agency)
6. Soil Survey of El Paso County, Colorado, Natural Resource Conservation Service, Sept 22, 2015

Appendix A



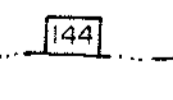
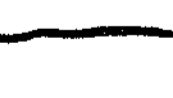

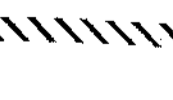
Figure and Exhibits

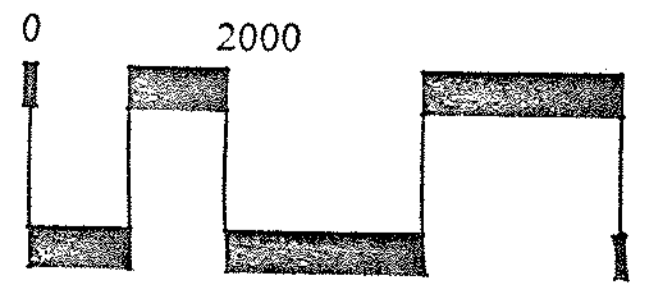
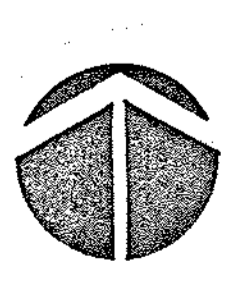
DRAINAGE BASIN DATA AND PEAK FLOW RATES SHOWN ON THIS DRAWING REPRESENTS THE BASELINE HYDROLOGIC CONDITION, AND DOES NOT REFLECT CHANGES TO THE HYDROLOGY BECAUSE OF THE CHANNEL AND DETENTION BASIN FACILITIES PRESENTED ON THE PRELIMINARY DESIGN PLANS. FOR PEAK DISCHARGE DATA ASSOCIATED WITH THE RECOMMENDED ALTERNATIVE PLAN, REEF TO SECTION VII OF THIS REPORT. PEAK DISCHARGE DATA FOR THE PROPOSED DRAINAGEWAY IMPROVEMENTS WILL HAVE TO BE VERIFIED DURING FINAL DESIGN STAGES.



Sand Creek Drainage Planning Study

LEGEND

-  HYDROLOGIC DESIGN POINT & DESIGNATION
-  BASIN NUMBER
-  STREAM SEGMENT & NUMBER
-  MAJOR BASIN BOUNDARY
-  SUB-BASIN BOUNDARY
-  PROPOSED ROAD



prepared for the city of Colorado Springs
by Kiowa Engineering Corporation
with the assistance of Urban Edges, Inc.

NOTES TO USERS

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

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

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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

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

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

NGS Information Services
NOAA, NINCS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

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

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

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

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

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

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

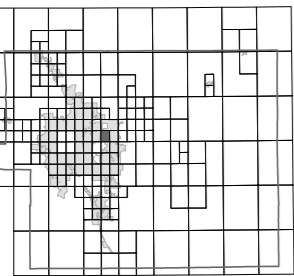
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip>.

El Paso County Vertical Datum Offset Table

| Flooding Source | Vertical Datum Offset (ft) |
|-----------------|----------------------------|
|-----------------|----------------------------|

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

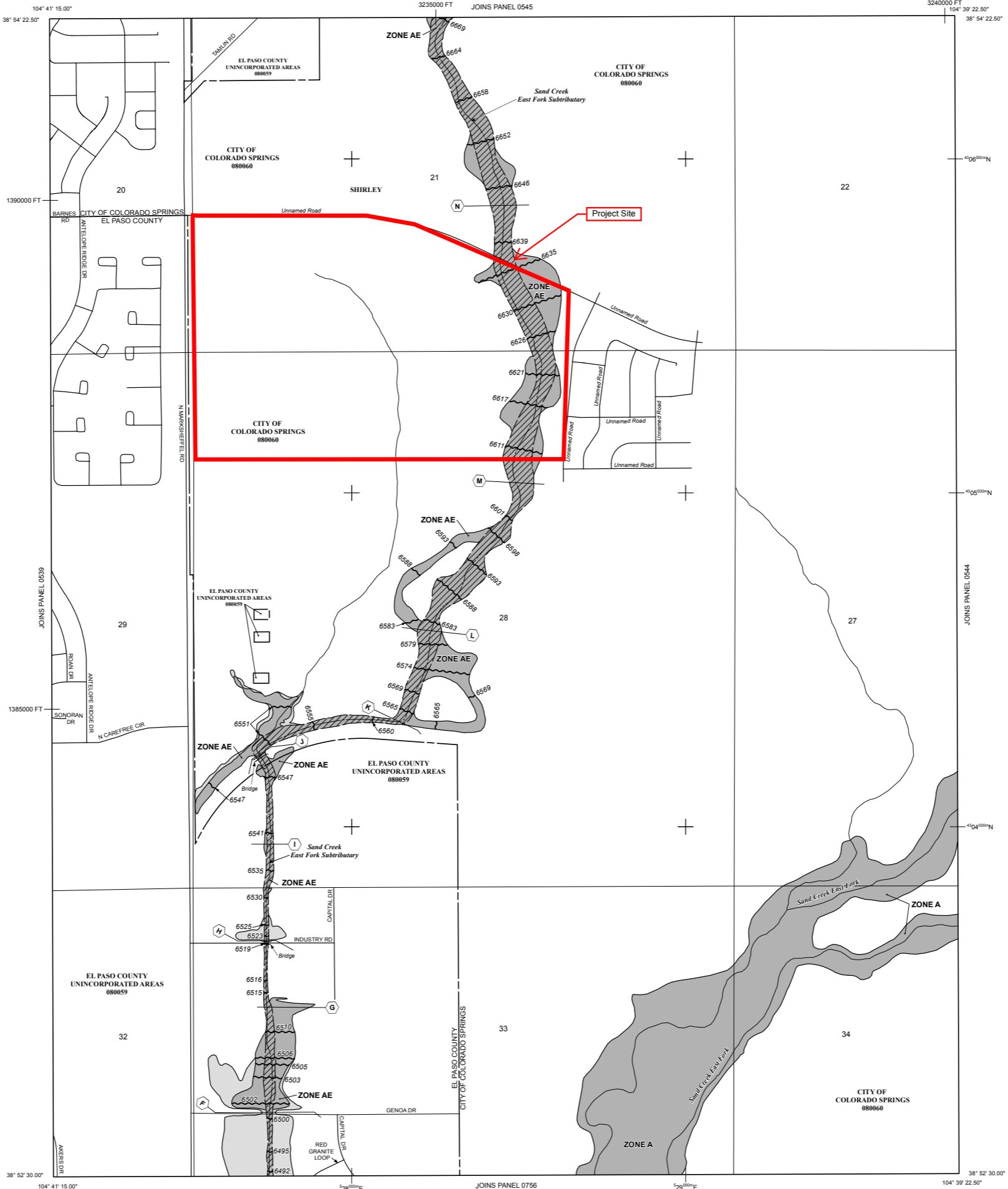
Panel Location Map



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



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



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 13 SOUTH, RANGE 65 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

Base Flood Elevation line and value; elevation in feet* (EL 987)

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Cross section line

Transsect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

1000-meter Universal Transverse Mercator grid ticks, zone 13

5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection

Bench mark (see explanation in Notes to Users section of this FIRM panel)

River Mile

MAP REPOSITORIES: Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

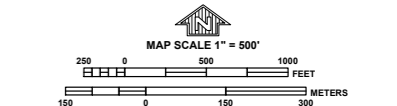
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

[MAP REVISED DATE] - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



PANEL 0543G

FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 543 OF 1300
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---------------------------|--------|-------|--------|
| COLORADO SPRINGS, CITY OF | 080060 | 0543 | G |
| EL PASO COUNTY | 080059 | 0543 | G |

PRELIMINARY
JULY 29, 2015

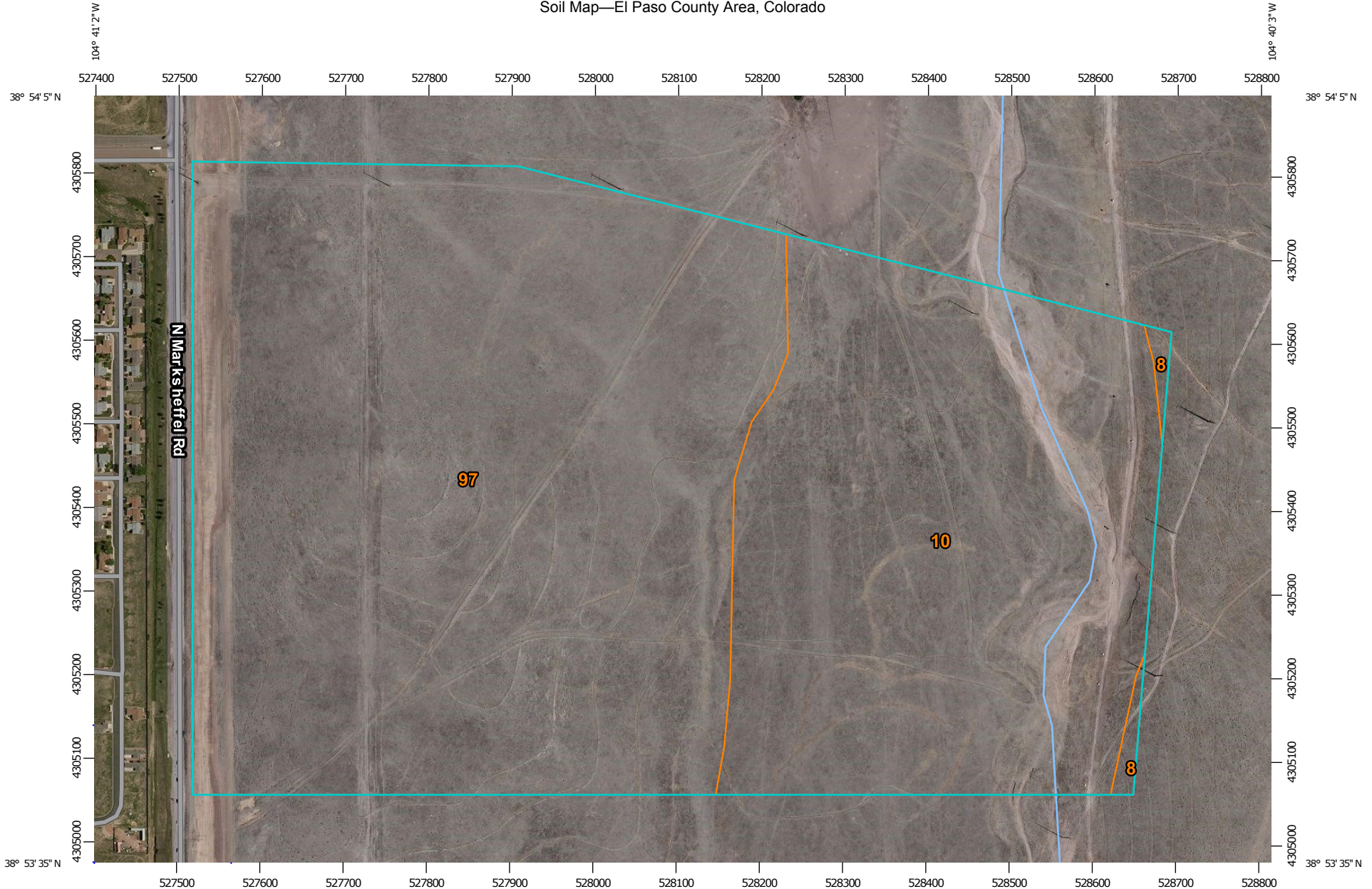
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
08041C0543G

MAP REVISED

Federal Emergency Management Agency

Soil Map—El Paso County Area, Colorado



Map Scale: 1:6,470 if printed on A landscape (11" x 8.5") sheet.




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: <http://websoilsurvey.nrcs.usda.gov>
 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 13, Sep 22, 2015

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

Date(s) aerial images were photographed: Apr 15, 2011—Jun 17, 2014

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

| El Paso County Area, Colorado (CO625) | | | |
|---------------------------------------|---|--------------|----------------|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| 8 | Blakeland loamy sand, 1 to 9 percent slopes | 1.1 | 0.6% |
| 10 | Blendon sandy loam, 0 to 3 percent slopes | 73.6 | 37.3% |
| 97 | Truckton sandy loam, 3 to 9 percent slopes | 122.5 | 62.1% |
| Totals for Area of Interest | | 197.2 | 100.0% |

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v

Elevation: 4,600 to 5,800 feet

Mean annual precipitation: 14 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 125 to 145 days

Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Flats, hills

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

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from sedimentary rock and/or
eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand

AC - 11 to 27 inches: loamy sand

C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to
very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: Sandy Foothill (R049BY210CO)

Minor Components

Other soils

Percent of map unit:

Pleasant

Percent of map unit:

Landform: Depressions

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 13, Sep 22, 2015

El Paso County Area, Colorado

10—Blendon sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3671

Elevation: 6,000 to 6,800 feet

Mean annual precipitation: 14 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 125 to 145 days

Farmland classification: Not prime farmland

Map Unit Composition

Blendon and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blendon

Setting

Landform: Terraces, alluvial fans

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium derived from arkose

Typical profile

A - 0 to 10 inches: sandy loam

Bw - 10 to 36 inches: sandy loam

C - 36 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 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):

Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 2 percent

Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: Sandy Foothill (R049BY210CO)

Minor Components

Other soils

Percent of map unit:

Pleasant

Percent of map unit:

Landform: Depressions

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 13, Sep 22, 2015

El Paso County Area, Colorado

97—Truckton sandy loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 36bg
Elevation: 6,000 to 7,000 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

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

Description of Truckton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock and/or arkosic residuum weathered from sedimentary rock

Typical profile

A - 0 to 8 inches: sandy loam
Bt - 8 to 24 inches: sandy loam
C - 24 to 60 inches: coarse sandy loam

Properties and qualities

Slope: 3 to 9 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 (1.98 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 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: Sandy Foothill (R049BY210CO)

Minor Components

Haplaquolls

Percent of map unit:

Landform: Marshes

Other soils

Percent of map unit:

Pleasant

Percent of map unit:

Landform: Depressions

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

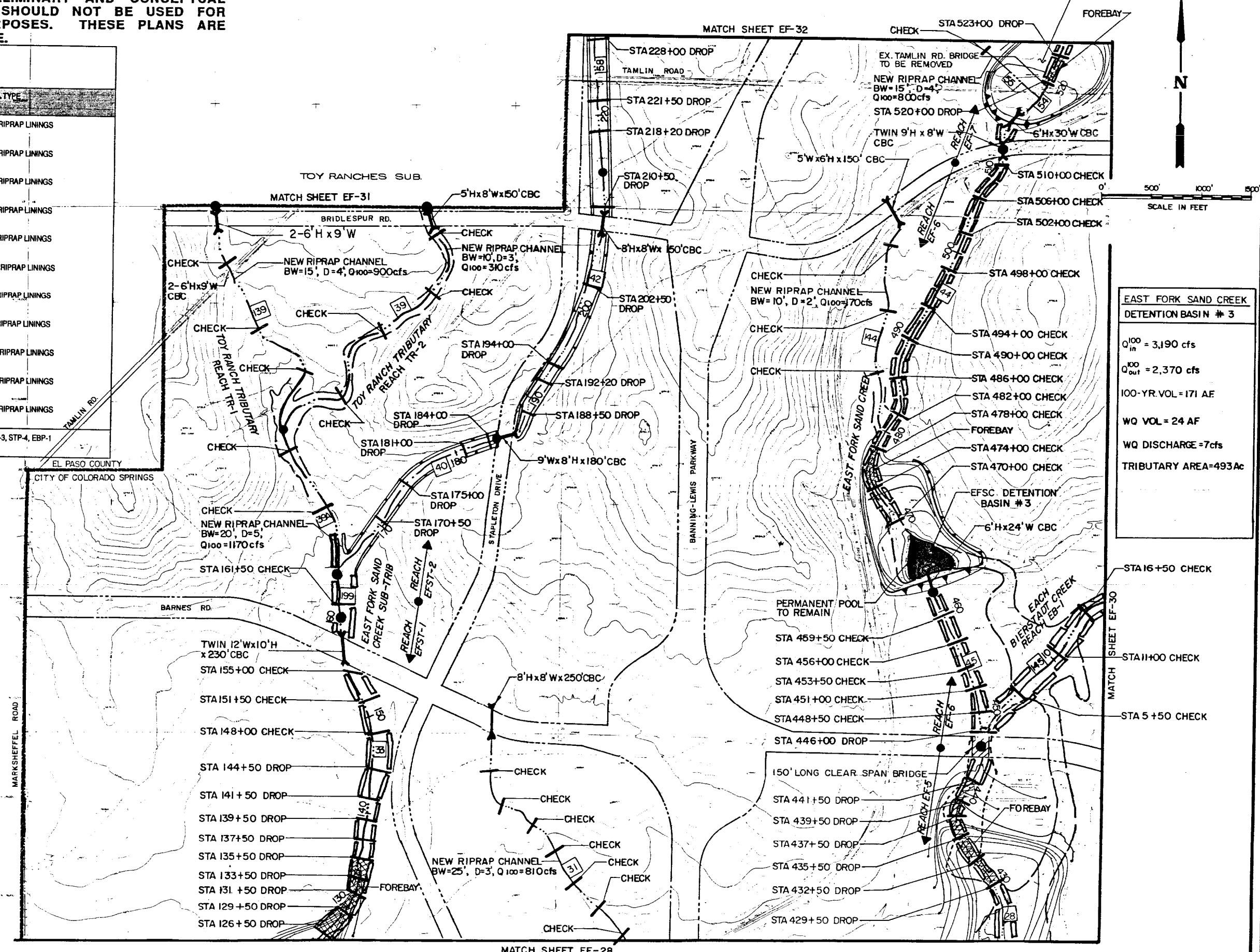
Survey Area Data: Version 13, Sep 22, 2015

THIS DRAWING IS A MASTER PLANNING SHEET REPRESENTING PRELIMINARY AND CONCEPTUAL ENGINEERING. IT SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES. THESE PLANS ARE SUBJECT TO CHANGE.

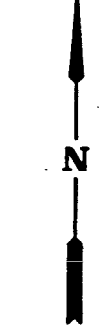
EAST FORK SAND CREEK POND #4
SEE SHT. 5 FOR POND DATA

| SEGMENT NO. | BOTTOM WIDTH (FT) | CHANNEL TYPE |
|-------------|-------------------|-------------------------------------|
| 26 | 65 | 10-YEAR RIPRAP LININGS 2' DEPTH |
| 45 | 70 | 10-YEAR RIPRAP LININGS 2' DEPTH |
| 44 | 80 | 10-YEAR RIPRAP LININGS 2' DEPTH |
| 54 | 110 | 10-YEAR RIPRAP LININGS 4' DEPTH |
| 145 | 195 | 10-YEAR RIPRAP LININGS 2' DEPTH |
| 31 | 25 | 100-YEAR RIPRAP LININGS 3' DEPTH |
| 33 | 155 | 10-YEAR RIPRAP LININGS 2' DEPTH |
| 199 | 80 | 10-YEAR RIPRAP LININGS 2' DEPTH |
| 40 | 30 | 100-YEAR RIPRAP LININGS 3' DEPTH |
| 42 | 30 | 100-YEAR RIPRAP LININGS 3' DEPTH |
| 58 | 10 | 100-YEAR RIPRAP LININGS 5' DEPTH |

FOR PROFILE SEE SHEETS EFP-8, EFP-9, EFP-10, STP-3, STP-4, EBP-1



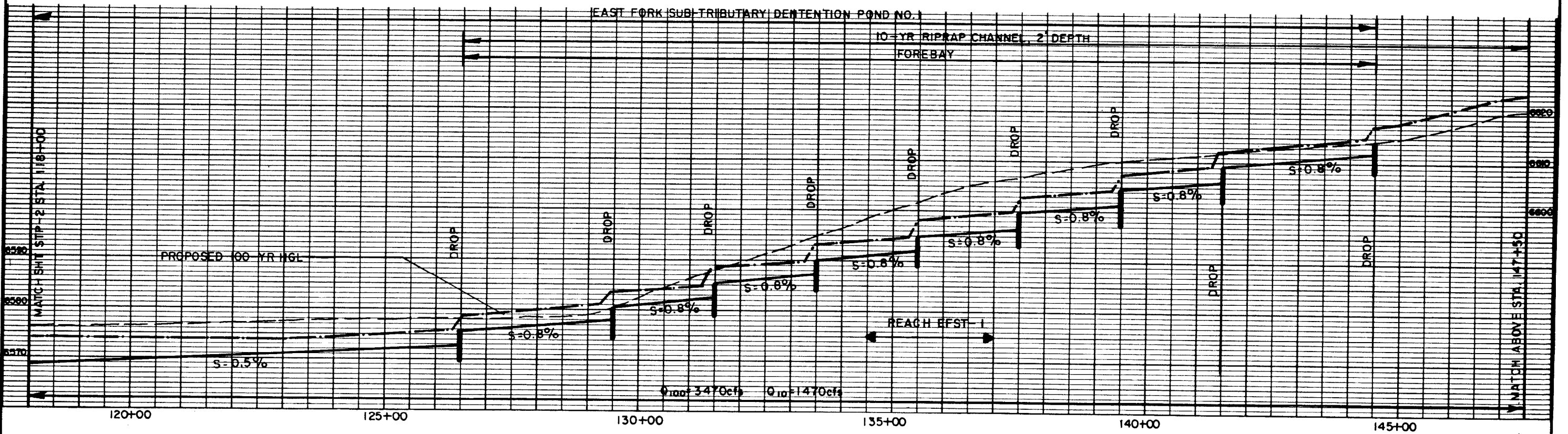
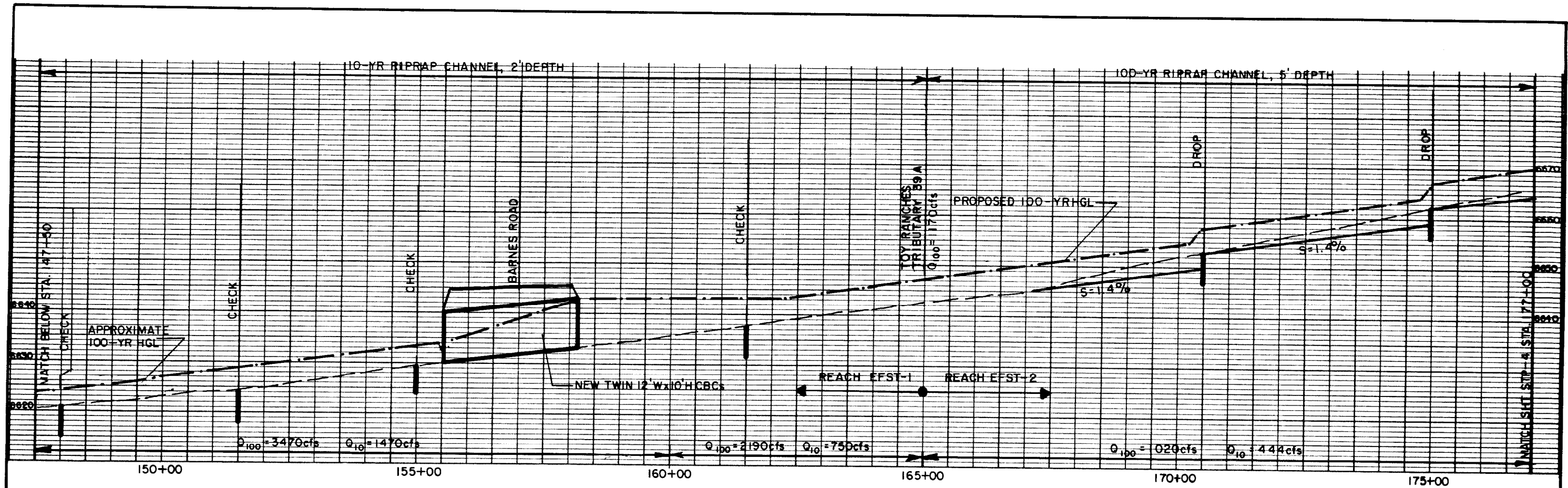
| EAST FORK SAND CREEK DETENTION BASIN # 3 | |
|---|-------------|
| Q_{in}^{100} | = 3,190 cfs |
| Q_{out}^{100} | = 2,370 cfs |
| 100-YR. VOL. | = 171 AF |
| WQ VOL. | = 24 AF |
| WQ DISCHARGE | = 7cfs |
| TRIBUTARY AREA | = 493Ac |



Kiowa Engineering Corporation
419 W. Bijou Street
Colorado Springs, Colorado
80905-1308

EAST FORK SAND CREEK
DRAINAGE BASIN PLANNING STUDY
PRELIMINARY PLANS

| | |
|-------------|----------|
| Project No. | 88.11.23 |
| Date: | 6/89 |
| Design: | JYC |
| Drawn: | EAK |
| Check: | |
| Revisions: | |



Kiowa Engineering Corporation

DESIGNED RNW DATE
 CHECKED DATE
 DRAWN EAK DATE
 REVISED DATE

SAND CREEK DRAINAGE BASIN PLANNING STUDY
 PRELIMINARY DESIGN PROFILES

CITY OF COLORADO SPRINGS
 EL PASO COUNTY, COLORADO

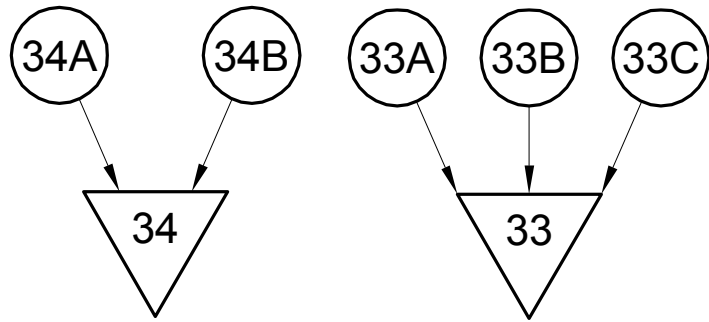
EAST FORK SUB-TRIBUTARY
 Station 118+00 to 177+00

STP-3

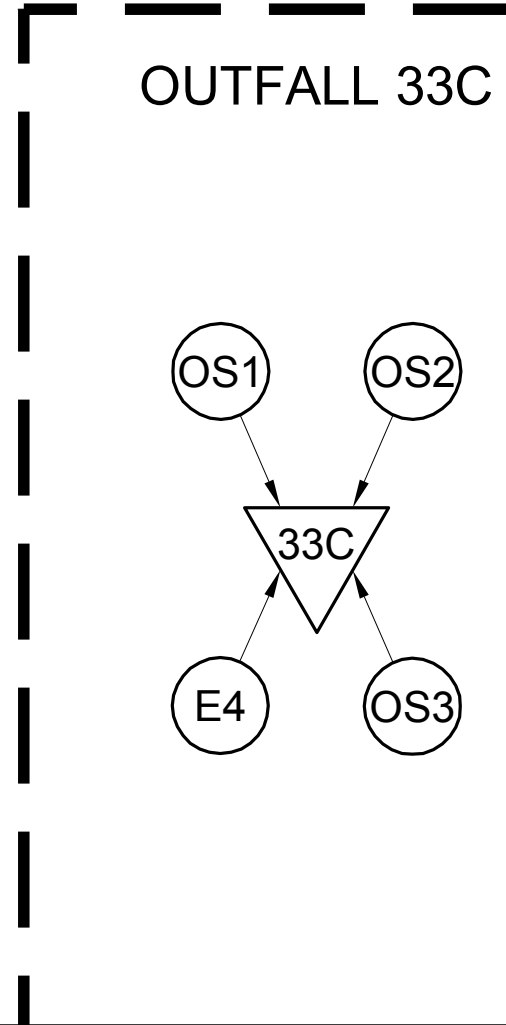
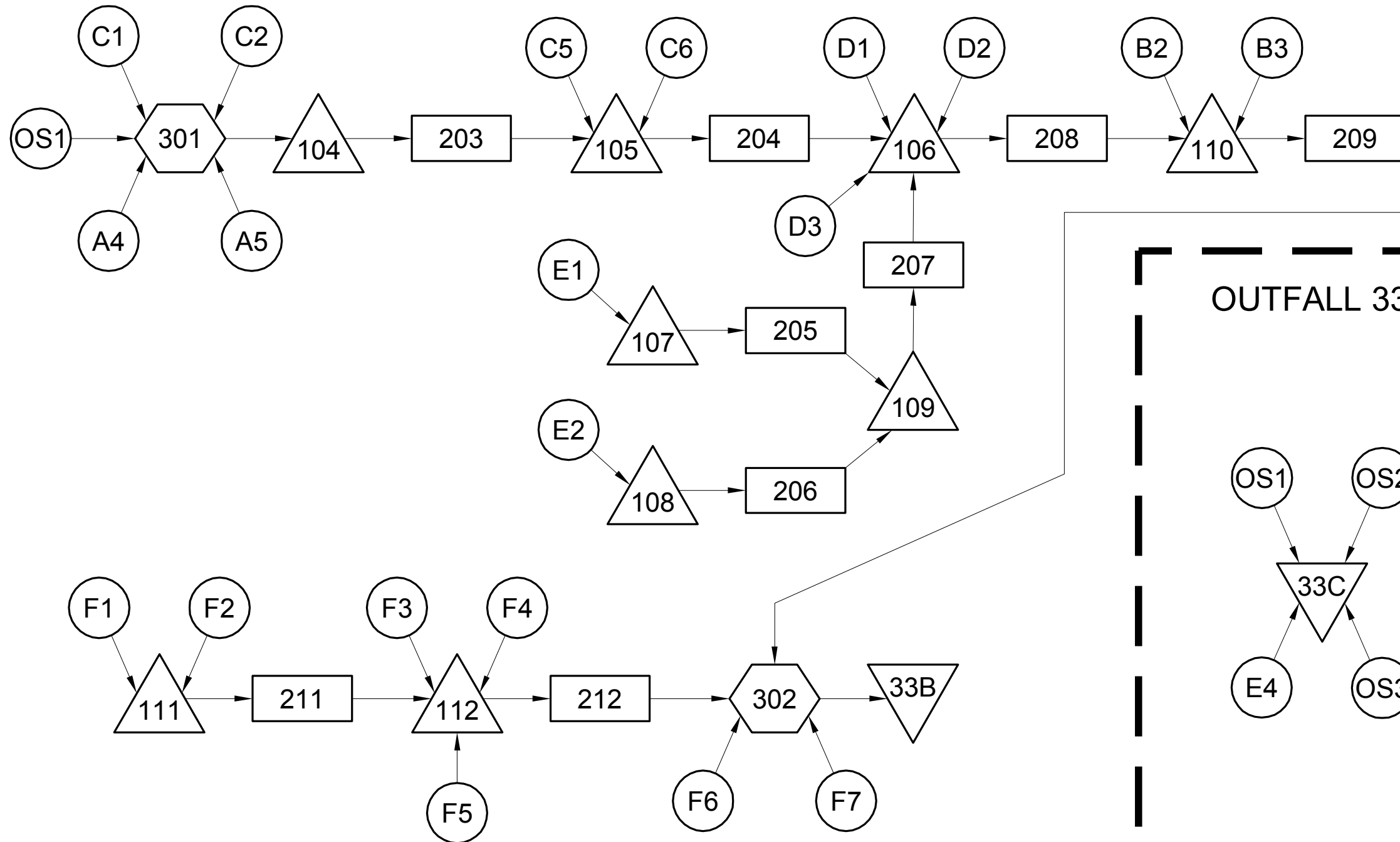
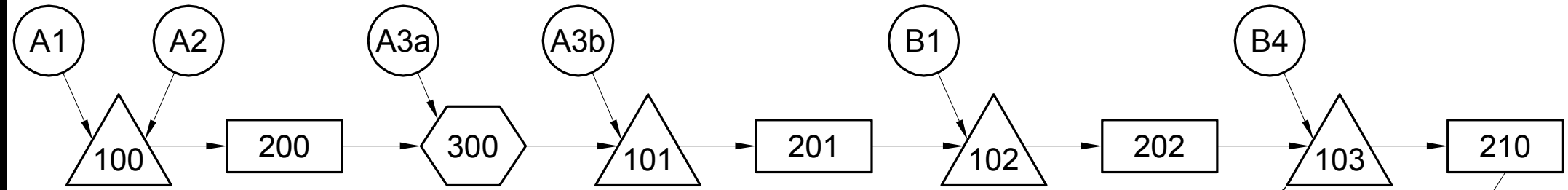
Appendix B

SWMM Models


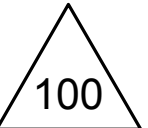
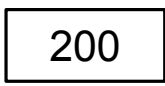

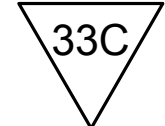
HISTORIC MODEL



OUTFALL 33B



LEGEND

-  SUBCATCHMENT
-  DESIGN POINT
-  CONVEYANCE
-  POND
-  OUTFALL

Historic SWMM Model

Historic SWMM Input

[TITLE]
 ;;Project Title/Notes
 Enclaves at Mountain Vista
 MDDP Existing Conditions

[OPTIONS]
 ;;Option value
 FLOW_UNITS CFS
 INFILTRATION HORTON
 FLOW_ROUTING KINWAVE
 LINK_OFFSETS DEPTH
 MIN_SLOPE 0
 ALLOW_PONDING NO
 SKIP_STEADY_STATE NO

 START_DATE 01/26/2016
 START_TIME 00:00:00
 REPORT_START_DATE 01/26/2016
 REPORT_START_TIME 00:00:00
 END_DATE 01/26/2016
 END_TIME 06:00:00
 SWEEP_START 01/01
 SWEEP_END 12/31
 DRY_DAYS 0
 REPORT_STEP 00:05:00
 WET_STEP 00:05:00
 DRY_STEP 00:05:00
 ROUTING_STEP 0:00:30

INERTIAL_DAMPING PARTIAL
 NORMAL_FLOW_LIMITED BOTH
 FORCE_MAIN_EQUATION H-W
 VARIABLE_STEP 0.75
 LENGTHENING_STEP 0
 MIN_SURFAREA 12.557
 MAX_TRIALS 8
 HEAD_TOLERANCE 0.005
 SYS_FLOW_TOL 5
 LAT_FLOW_TOL 5

[EVAPORATION]
 ;;Evap Data Parameters
 ;;-----
 CONSTANT 0.0
 DRY_ONLY NO

[RAINGAGES]
 ;;Gage Format Interval SCF Source
 ;;-----
 1 CUMULATIVE 0:05 1.0 TIMESERIES CS_100-yr

| [SUBCATCHMENTS] | | Rain Gage | Outlet | Area | %Imperv | width | %Slope |
|-----------------|---------|-----------|--------|-------|---------|-------|--------|
| Subcatchment | CurbLen | Snow Pack | | | | | |
| ;;----- | | | | | | | |
| 34a | | 1 | 1 | 47.97 | 2 | 300 | 7.6 0 |
| 34b | | 1 | 2 | 8.61 | 2 | 100 | 3.5 0 |
| 33a | | 1 | 3 | 74.86 | 2 | 300 | 3.8 0 |
| 33b | | 1 | 4 | 46.69 | 2 | 250 | 1.6 0 |
| 33c | | 1 | 5 | 56.95 | 2 | 300 | 1.3 0 |

[SUBAREAS]
 ;;Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo
 PctRouted
 ;;-----

Historic SWMM Input

| | | | | | | |
|-----|-------|------|------|-----|----|--------|
| 34a | 0.011 | 0.13 | 0.05 | 0.4 | 25 | OUTLET |
| 34b | 0.011 | 0.12 | 0.05 | 0.4 | 25 | OUTLET |
| 33a | 0.011 | 0.13 | 0.05 | 0.4 | 25 | OUTLET |
| 33b | 0.011 | 0.13 | 0.05 | 0.4 | 25 | OUTLET |
| 33c | 0.011 | 0.13 | 0.05 | 0.4 | 25 | OUTLET |

[INFILTRATION]

| Subcatchment | MaxRate | MinRate | Decay | DryTime | MaxInfil |
|--------------|---------|---------|-------|---------|----------|
| 34a | 5 | 1 | 2.52 | 7 | 0 |
| 34b | 5 | 1 | 2.52 | 7 | 0 |
| 33a | 4 | .6 | 6.48 | 7 | 0 |
| 33b | 4.5 | 0.6 | 6.48 | 7 | 0 |
| 33c | 4.5 | 0.6 | 6.48 | 7 | 0 |

[JUNCTIONS]

| Junction | Invert | MaxDepth | InitDepth | SurDepth | Aponded |
|----------|--------|----------|-----------|----------|---------|
| 1 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 |

[OUTFALLS]

| Outfall | Invert | Type | Stage Data | Gated |
|------------|--------|------|------------|-------|
| Outfall_34 | 0 | FREE | | NO |
| Outfall_33 | 0 | FREE | | NO |

[CONDUITS]

| Conduit | From Node | To Node | Length | Roughness | InOffset |
|-----------|-----------|------------|--------|-----------|----------|
| OutOffset | InitFlow | MaxFlow | | | |
| 1 | 1 | outfall_34 | 400 | 0.01 | 0 |
| 2 | 2 | outfall_34 | 400 | 0.01 | 0 |
| 3 | 3 | outfall_33 | 400 | 0.01 | 0 |
| 4 | 4 | outfall_33 | 400 | 0.01 | 0 |
| 5 | 5 | outfall_33 | 400 | 0.01 | 0 |

[XSECTIONS]

| Link | Shape | Geom1 | Geom2 | Geom3 | Geom4 | Barrels |
|------|-------|-------|-------|-------|-------|---------|
| 1 | DUMMY | 0 | 0 | 0 | 0 | 1 |
| 2 | DUMMY | 0 | 0 | 0 | 0 | 1 |
| 3 | DUMMY | 0 | 0 | 0 | 0 | 1 |
| 4 | DUMMY | 0 | 0 | 0 | 0 | 1 |
| 5 | DUMMY | 0 | 0 | 0 | 0 | 1 |

[TIMESERIES]

| Time Series | Date | Time | Value |
|-----------------|------|------|---------|
| 100-yr Rainfall | | | |
| CS_100-yr | | 0 | 0 |
| CS_100-yr | | 0:05 | 0.03528 |
| CS_100-yr | | 0:10 | 0.11592 |
| CS_100-yr | | 0:15 | 0.19908 |
| CS_100-yr | | 0:20 | 0.3024 |
| CS_100-yr | | 0:25 | 0.45108 |

Historic SWMM Input

| | | |
|-----------|------|---------|
| CS_100-yr | 0:30 | 0.65016 |
| CS_100-yr | 0:35 | 1.06092 |
| CS_100-yr | 0:40 | 1.79424 |
| CS_100-yr | 0:45 | 2.07648 |
| CS_100-yr | 0:50 | 2.24784 |
| CS_100-yr | 0:55 | 2.3562 |
| CS_100-yr | 1:00 | 2.44944 |
| CS_100-yr | 1:05 | 2.53008 |
| CS_100-yr | 1:10 | 2.56536 |
| CS_100-yr | 1:15 | 2.5956 |
| CS_100-yr | 1:20 | 2.62332 |
| CS_100-yr | 1:25 | 2.65104 |
| CS_100-yr | 1:30 | 2.67876 |
| CS_100-yr | 1:35 | 2.70144 |
| CS_100-yr | 1:40 | 2.72664 |
| CS_100-yr | 1:45 | 2.74932 |
| CS_100-yr | 1:50 | 2.772 |
| CS_100-yr | 1:55 | 2.79468 |
| CS_100-yr | 2:00 | 2.81988 |
| ; | | |
| CS_5yr | 0 | 0 |
| CS_5yr | 0:05 | 0.021 |
| CS_5yr | 0:10 | 0.069 |
| CS_5yr | 0:15 | 0.1185 |
| CS_5yr | 0:20 | 0.18 |
| CS_5yr | 0:25 | 0.2685 |
| CS_5yr | 0:30 | 0.387 |
| CS_5yr | 0:35 | 0.6315 |
| CS_5yr | 0:40 | 1.068 |
| CS_5yr | 0:45 | 1.236 |
| CS_5yr | 0:50 | 1.338 |
| CS_5yr | 0:55 | 1.4025 |
| CS_5yr | 1:00 | 1.458 |
| CS_5yr | 1:05 | 1.506 |
| CS_5yr | 1:10 | 1.527 |
| CS_5yr | 1:15 | 1.545 |
| CS_5yr | 1:20 | 1.5615 |
| CS_5yr | 1:25 | 1.578 |
| CS_5yr | 1:30 | 1.5945 |
| CS_5yr | 1:35 | 1.608 |
| CS_5yr | 1:40 | 1.623 |
| CS_5yr | 1:45 | 1.6365 |
| CS_5yr | 1:50 | 1.65 |
| CS_5yr | 1:55 | 1.6635 |
| CS_5yr | 2:00 | 1.6785 |
| ; | | |
| CS_WQ | 0 | 0 |
| CS_WQ | 0:05 | 0.0084 |
| CS_WQ | 0:10 | 0.0276 |
| CS_WQ | 0:15 | 0.0474 |
| CS_WQ | 0:20 | 0.072 |
| CS_WQ | 0:25 | 0.1074 |
| CS_WQ | 0:30 | 0.1548 |
| CS_WQ | 0:35 | 0.2526 |
| CS_WQ | 0:40 | 0.4272 |
| CS_WQ | 0:45 | 0.4944 |
| CS_WQ | 0:50 | 0.5352 |
| CS_WQ | 0:55 | 0.561 |
| CS_WQ | 1:00 | 0.5832 |
| CS_WQ | 1:05 | 0.6024 |
| CS_WQ | 1:10 | 0.6108 |
| CS_WQ | 1:15 | 0.618 |
| CS_WQ | 1:20 | 0.6246 |
| CS_WQ | 1:25 | 0.6312 |
| CS_WQ | 1:30 | 0.6378 |
| CS_WQ | 1:35 | 0.6432 |
| CS_WQ | 1:40 | 0.6492 |
| CS_WQ | 1:45 | 0.6546 |
| CS_WQ | 1:50 | 0.66 |
| CS_WQ | 1:55 | 0.6654 |
| CS_WQ | 2:00 | 0.6714 |

Historic SWMM Input

```
[REPORT]
;;Reporting Options
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
```

```
[TAGS]
```

```
[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None
```

```
[COORDINATES]
```

| ;;Node | X-Coord | Y-Coord |
|------------|-----------|----------|
| 1 | -1455.056 | 7741.573 |
| 2 | 2837.079 | 3505.618 |
| 3 | 6151.685 | 4707.865 |
| 4 | 9376.404 | 4719.101 |
| 5 | 11994.382 | 4842.697 |
| Outfall_34 | -1422.619 | 4809.524 |
| Outfall_33 | 9376.430 | 3546.911 |

```
[VERTICES]
```

| ;;Link | X-Coord | Y-Coord |
|--------|---------|---------|
|--------|---------|---------|

```
[Polygons]
```

| ;;Subcatchment | X-Coord | Y-Coord |
|----------------|-----------|----------|
| 34a | 1196.629 | 8764.045 |
| 34a | 1185.393 | 7168.539 |
| 34a | -275.281 | 7202.247 |
| 34a | -297.753 | 8775.281 |
| 34b | 3646.067 | 6325.843 |
| 34b | 3612.360 | 4853.933 |
| 34b | 2117.978 | 4887.640 |
| 34b | 2117.978 | 6393.258 |
| 33a | 6915.730 | 7786.517 |
| 33a | 6960.674 | 6337.079 |
| 33a | 5320.225 | 6337.079 |
| 33a | 5331.461 | 7797.753 |
| 33b | 10039.326 | 7752.809 |
| 33b | 10073.034 | 6269.663 |
| 33b | 8589.888 | 6247.191 |
| 33b | 8578.652 | 7775.281 |
| 33c | 12432.584 | 7640.449 |
| 33c | 12556.180 | 6224.719 |
| 33c | 11106.742 | 6247.191 |
| 33c | 11129.213 | 7741.573 |

```
[SYMBOLS]
```

| ;;Gage | X-Coord | Y-Coord |
|--------|----------|----------|
| 1 | 4151.685 | 9573.034 |

Historic SWMM Results 5-Year

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.007)

Enclaves at Mountain Vista

MDDP Existing Conditions

WARNING 04: minimum elevation drop used for Conduit 1
 WARNING 04: minimum elevation drop used for Conduit 2
 WARNING 04: minimum elevation drop used for Conduit 3
 WARNING 04: minimum elevation drop used for Conduit 4
 WARNING 04: minimum elevation drop used for Conduit 5

 NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

 Analysis Options

Flow Units CFS
 Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed NO
 Water Quality NO
 Infiltration Method HORTON
 Flow Routing Method KINWAVE
 Starting Date JAN-26-2016 00:00:00
 Ending Date JAN-26-2016 06:00:00
 Antecedent Dry Days 0.0
 Report Time Step 00:05:00
 Wet Time Step 00:05:00
 Dry Time Step 00:05:00
 Routing Time Step 30.00 sec

 Element Count

Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 7
 Number of links 5
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

| Name | Data Source | Data Type | Recording Interval |
|------|-------------|------------|--------------------|
| 1 | CS_5yr | CUMULATIVE | 5 min. |

 Subcatchment Summary

| Name | Area | width | %Imperv | %Slope | Rain Gage |
|--------|-------|--------|---------|--------|-----------|
| outlet | | | | | |
| ----- | | | | | |
| 34a | 47.97 | 300.00 | 2.00 | 7.6000 | 1 |

Historic SWMM Results 5-Year

| | | | | | | |
|-----|-------|--------|------|--------|---|---|
| 34b | 8.61 | 100.00 | 2.00 | 3.5000 | 1 | 2 |
| 33a | 74.86 | 300.00 | 2.00 | 3.8000 | 1 | 3 |
| 33b | 46.69 | 250.00 | 2.00 | 1.6000 | 1 | 4 |
| 33c | 56.95 | 300.00 | 2.00 | 1.3000 | 1 | 5 |

Node Summary

| Name | Type | Invert Elev. | Max. Depth | Ponded Area | External Inflow |
|------------|----------|--------------|------------|-------------|-----------------|
| 1 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 2 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 3 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 4 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 5 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| Outfall_34 | OUTFALL | 0.00 | 0.00 | 0.0 | |
| Outfall_33 | OUTFALL | 0.00 | 0.00 | 0.0 | |

Link Summary

| Name | From Node | To Node | Type | Length | %Slope |
|------|-----------|------------|---------|--------|--------|
| 1 | 1 | Outfall_34 | CONDUIT | 400.0 | 0.0003 |
| 2 | 2 | Outfall_34 | CONDUIT | 400.0 | 0.0003 |
| 3 | 3 | Outfall_33 | CONDUIT | 400.0 | 0.0003 |
| 4 | 4 | Outfall_33 | CONDUIT | 400.0 | 0.0003 |
| 5 | 5 | Outfall_33 | CONDUIT | 400.0 | 0.0003 |

Cross Section Summary

| Conduit | Shape | Full Depth | Full Area | Hyd. Rad. | Max. Width | No. of Barrels | Full Flow |
|---------|-------|------------|-----------|-----------|------------|----------------|-----------|
| 1 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 2 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 3 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 4 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 5 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |

Control Actions Taken

| | Volume acre-feet | Depth inches |
|----------------------------|---------------------|-----------------|
| Runoff Quantity Continuity | 32.882 | 1.679 |
| Evaporation Loss | 0.000 | 0.000 |
| Infiltration Loss | 32.196 | 1.643 |
| Surface Runoff | 0.676 | 0.035 |

Historic SWMM Results 5-Year

Final Surface Storage 0.015 0.001
 Continuity Error (%) -0.016

```

*****
Flow Routing Continuity
*****
Volume      Volume
acre-feet   10^6 gal
-----
Dry Weather Inflow ..... 0.000 0.000
Wet Weather Inflow ..... 0.676 0.220
Groundwater Inflow ..... 0.000 0.000
RDII Inflow ..... 0.000 0.000
External Inflow ..... 0.000 0.000
External Outflow ..... 0.676 0.220
Internal Outflow ..... 0.000 0.000
Evaporation Loss ..... 0.000 0.000
Exfiltration Loss ..... 0.000 0.000
Initial Stored Volume .... 0.000 0.000
Final Stored Volume ..... 0.000 0.000
Continuity Error (%) ..... 0.000
    
```

```

*****
Highest Flow Instability Indexes
*****
All links are stable.
    
```

```

*****
Routing Time Step Summary
*****
Minimum Time Step      : 30.00 sec
Average Time Step      : 30.00 sec
Maximum Time Step      : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging  : 0.00
    
```

```

*****
Subcatchment Runoff Summary
*****
    
```

| Peak Runoff | Runoff Coeff | Total Precip | Total Runon | Total Evap | Total Infil | Total Runoff | Total Runoff |
|--------------|--------------|--------------|-------------|------------|-------------|--------------|--------------|
| Subcatchment | CFS | in | in | in | in | in | 10^6 gal |
| 34a | 5.06 | 1.68 | 0.00 | 0.00 | 1.64 | 0.03 | 0.04 |
| 34b | 0.91 | 1.68 | 0.00 | 0.00 | 1.64 | 0.03 | 0.01 |
| 33a | 7.85 | 1.68 | 0.00 | 0.00 | 1.64 | 0.04 | 0.07 |
| 33b | 4.85 | 1.68 | 0.00 | 0.00 | 1.64 | 0.03 | 0.04 |
| 33c | 5.88 | 1.68 | 0.00 | 0.00 | 1.64 | 0.03 | 0.05 |

```

*****
Node Depth Summary
*****
    
```

Historic SWMM Results 5-Year

| Node | Type | Average Depth Feet | Maximum Depth Feet | Maximum HGL Feet | Time of Max Occurrence days hr:min |
|------------|----------|--------------------|--------------------|------------------|------------------------------------|
| 1 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 2 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 3 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 4 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 5 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| Outfall_34 | OUTFALL | 0.00 | 0.00 | 0.00 | 0 00:00 |
| Outfall_33 | OUTFALL | 0.00 | 0.00 | 0.00 | 0 00:00 |

Node Inflow Summary

| Flow Balance Error Node Percent | Type | Maximum Lateral Inflow CFS | Maximum Total Inflow CFS | Time of Max Occurrence days hr:min | Lateral Inflow Volume 10^6 gal | Total Inflow Volume 10^6 gal |
|---------------------------------|----------|----------------------------|--------------------------|------------------------------------|--------------------------------|------------------------------|
| 1 0.000 | JUNCTION | 5.06 | 5.06 | 0 00:45 | 0.043 | 0.043 |
| 2 0.000 | JUNCTION | 0.91 | 0.91 | 0 00:45 | 0.00772 | 0.00772 |
| 3 0.000 | JUNCTION | 7.85 | 7.85 | 0 00:45 | 0.0737 | 0.0737 |
| 4 0.000 | JUNCTION | 4.85 | 4.85 | 0 00:45 | 0.0433 | 0.0433 |
| 5 0.000 | JUNCTION | 5.88 | 5.88 | 0 00:45 | 0.0526 | 0.0526 |
| Outfall_34 0.000 | OUTFALL | 0.00 | 5.97 | 0 00:45 | 0 | 0.0507 |
| Outfall_33 0.000 | OUTFALL | 0.00 | 18.58 | 0 00:45 | 0 | 0.17 |

Node Surcharge Summary

Surcharging occurs when water rises above the top of the highest conduit.

| Node | Type | Hours Surcharged | Max. Height Above Crown Feet | Min. Depth Below Rim Feet |
|------|----------|------------------|------------------------------|---------------------------|
| 1 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 2 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 3 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 4 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 5 | JUNCTION | 6.01 | 0.000 | 0.000 |

Node Flooding Summary

No nodes were flooded.

Historic SWMM Results 5-Year

 Outfall Loading Summary

| Outfall Node | Flow Freq Pcnt | Avg Flow CFS | Max Flow CFS | Total volume 10 ⁶ gal |
|--------------|----------------|--------------|--------------|----------------------------------|
| Outfall_34 | 48.96 | 0.64 | 5.97 | 0.051 |
| Outfall_33 | 79.61 | 1.32 | 18.58 | 0.170 |
| System | 64.29 | 1.96 | 24.55 | 0.220 |

 Link Flow Summary

| Link | Type | Maximum Flow CFS | Time of Max Occurrence days hr:min | Maximum Veloc ft/sec | Max/ Full Flow | Max/ Full Depth |
|------|-------|--------------------|------------------------------------|------------------------|----------------|-----------------|
| 1 | DUMMY | 5.06 | 0 00:45 | | | |
| 2 | DUMMY | 0.91 | 0 00:45 | | | |
| 3 | DUMMY | 7.85 | 0 00:45 | | | |
| 4 | DUMMY | 4.85 | 0 00:45 | | | |
| 5 | DUMMY | 5.88 | 0 00:45 | | | |

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Thu Jan 28 19:58:29 2016
 Analysis ended on: Thu Jan 28 19:58:29 2016
 Total elapsed time: < 1 sec

Historic SWMM Results 100-Year

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.007)

Enclaves at Mountain Vista

MDDP Existing Conditions

WARNING 04: minimum elevation drop used for Conduit 1
 WARNING 04: minimum elevation drop used for Conduit 2
 WARNING 04: minimum elevation drop used for Conduit 3
 WARNING 04: minimum elevation drop used for Conduit 4
 WARNING 04: minimum elevation drop used for Conduit 5

 NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

 Analysis Options

Flow Units CFS
 Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed NO
 Water Quality NO
 Infiltration Method HORTON
 Flow Routing Method KINWAVE
 Starting Date JAN-26-2016 00:00:00
 Ending Date JAN-26-2016 06:00:00
 Antecedent Dry Days 0.0
 Report Time Step 00:05:00
 Wet Time Step 00:05:00
 Dry Time Step 00:05:00
 Routing Time Step 30.00 sec

 Element Count

Number of rain gages 1
 Number of subcatchments ... 5
 Number of nodes 7
 Number of links 5
 Number of pollutants 0
 Number of land uses 0

 Raingage Summary

| Name | Data Source | Data Type | Recording Interval |
|------|-------------|------------|--------------------|
| 1 | CS_100-yr | CUMULATIVE | 5 min. |

 Subcatchment Summary

| Name | Area | width | %Imperv | %Slope | Rain Gage |
|------|------|-------|---------|--------|-----------|
|------|------|-------|---------|--------|-----------|

| | | | | | |
|-----|-------|--------|------|--------|---|
| 34a | 47.97 | 300.00 | 2.00 | 7.6000 | 1 |
|-----|-------|--------|------|--------|---|

Historic SWMM Results 100-Year

| | | | | | | |
|-----|-------|--------|------|--------|---|---|
| 34b | 8.61 | 100.00 | 2.00 | 3.5000 | 1 | 2 |
| 33a | 74.86 | 300.00 | 2.00 | 3.8000 | 1 | 3 |
| 33b | 46.69 | 250.00 | 2.00 | 1.6000 | 1 | 4 |
| 33c | 56.95 | 300.00 | 2.00 | 1.3000 | 1 | 5 |

Node Summary

| Name | Type | Invert Elev. | Max. Depth | Ponded Area | External Inflow |
|------------|----------|--------------|------------|-------------|-----------------|
| 1 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 2 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 3 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 4 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| 5 | JUNCTION | 0.00 | 0.00 | 0.0 | |
| Outfall_34 | OUTFALL | 0.00 | 0.00 | 0.0 | |
| Outfall_33 | OUTFALL | 0.00 | 0.00 | 0.0 | |

Link Summary

| Name | From Node | To Node | Type | Length | %Slope |
|------|-----------|------------|---------|--------|--------|
| 1 | 1 | Outfall_34 | CONDUIT | 400.0 | 0.0003 |
| 2 | 2 | Outfall_34 | CONDUIT | 400.0 | 0.0003 |
| 3 | 3 | Outfall_33 | CONDUIT | 400.0 | 0.0003 |
| 4 | 4 | Outfall_33 | CONDUIT | 400.0 | 0.0003 |
| 5 | 5 | Outfall_33 | CONDUIT | 400.0 | 0.0003 |

Cross Section Summary

| Conduit | Shape | Full Depth | Full Area | Hyd. Rad. | Max. Width | No. of Barrels | Full Flow |
|---------|-------|------------|-----------|-----------|------------|----------------|-----------|
| 1 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 2 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 3 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 4 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |
| 5 | DUMMY | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 |

Control Actions Taken

| | Volume acre-feet | Depth inches |
|----------------------------|---------------------|-----------------|
| Runoff Quantity Continuity | 55.241 | 2.820 |
| Evaporation Loss | 0.000 | 0.000 |
| Infiltration Loss | 51.691 | 2.639 |
| Surface Runoff | 3.559 | 0.182 |

Historic SWMM Results 100-Year

Final Surface Storage 0.015 0.001
 Continuity Error (%) -0.042

```

*****
Flow Routing Continuity
*****
Volume      Volume
acre-feet   10^6 gal
-----
Dry Weather Inflow ..... 0.000 0.000
Wet Weather Inflow ..... 3.559 1.160
Groundwater Inflow ..... 0.000 0.000
RDII Inflow ..... 0.000 0.000
External Inflow ..... 0.000 0.000
External Outflow ..... 3.559 1.160
Internal Outflow ..... 0.000 0.000
Evaporation Loss ..... 0.000 0.000
Exfiltration Loss ..... 0.000 0.000
Initial Stored Volume .... 0.000 0.000
Final Stored Volume ..... 0.000 0.000
Continuity Error (%) ..... 0.000
    
```

```

*****
Highest Flow Instability Indexes
*****
All links are stable.
    
```

```

*****
Routing Time Step Summary
*****
Minimum Time Step      : 30.00 sec
Average Time Step      : 30.00 sec
Maximum Time Step      : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging  : 0.00
    
```

```

*****
Subcatchment Runoff Summary
*****
    
```

| Peak Runoff | Runoff Coeff | Total Precip | Total Runon | Total Evap | Total Infil | Total Runoff | Total Runoff |
|--------------|--------------|--------------|-------------|------------|-------------|--------------|--------------|
| Subcatchment | CFS | in | in | in | in | in | 10^6 gal |
| 34a | 9.58 | 2.82 | 0.00 | 0.00 | 2.75 | 0.07 | 0.09 |
| 34b | 1.79 | 2.82 | 0.00 | 0.00 | 2.75 | 0.07 | 0.02 |
| 33a | 18.42 | 2.82 | 0.00 | 0.00 | 2.58 | 0.25 | 0.50 |
| 33b | 10.69 | 2.82 | 0.00 | 0.00 | 2.61 | 0.21 | 0.26 |
| 33c | 12.68 | 2.82 | 0.00 | 0.00 | 2.63 | 0.19 | 0.30 |

```

*****
Node Depth Summary
*****
    
```

Historic SWMM Results 100-Year

| Node | Type | Average Depth Feet | Maximum Depth Feet | Maximum HGL Feet | Time of Max Occurrence days hr:min |
|------------|----------|--------------------|--------------------|------------------|------------------------------------|
| 1 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 2 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 3 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 4 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| 5 | JUNCTION | 0.00 | 0.00 | 0.00 | 0 00:00 |
| Outfall_34 | OUTFALL | 0.00 | 0.00 | 0.00 | 0 00:00 |
| Outfall_33 | OUTFALL | 0.00 | 0.00 | 0.00 | 0 00:00 |

Node Inflow Summary

| Flow Balance Error Node Percent | Type | Maximum Lateral Inflow CFS | Maximum Total Inflow CFS | Time of Max Occurrence days hr:min | Lateral Inflow Volume 10^6 gal | Total Inflow Volume 10^6 gal |
|---------------------------------|----------|----------------------------|--------------------------|------------------------------------|--------------------------------|------------------------------|
| 1 0.000 | JUNCTION | 9.58 | 9.58 | 0 00:45 | 0.0851 | 0.0851 |
| 2 0.000 | JUNCTION | 1.79 | 1.79 | 0 00:45 | 0.016 | 0.016 |
| 3 0.000 | JUNCTION | 18.42 | 18.42 | 0 00:45 | 0.499 | 0.499 |
| 4 0.000 | JUNCTION | 10.69 | 10.69 | 0 00:45 | 0.262 | 0.262 |
| 5 0.000 | JUNCTION | 12.68 | 12.68 | 0 00:45 | 0.298 | 0.298 |
| Outfall_34 0.000 | OUTFALL | 0.00 | 11.37 | 0 00:45 | 0 | 0.101 |
| Outfall_33 0.000 | OUTFALL | 0.00 | 41.79 | 0 00:45 | 0 | 1.06 |

Node Surcharge Summary

Surcharging occurs when water rises above the top of the highest conduit.

| Node | Type | Hours Surcharged | Max. Height Above Crown Feet | Min. Depth Below Rim Feet |
|------|----------|------------------|------------------------------|---------------------------|
| 1 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 2 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 3 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 4 | JUNCTION | 6.01 | 0.000 | 0.000 |
| 5 | JUNCTION | 6.01 | 0.000 | 0.000 |

Node Flooding Summary

No nodes were flooded.

Historic SWMM Results 100-Year

 Outfall Loading Summary

| Outfall Node | Flow Freq Pcnt | Avg Flow CFS | Max Flow CFS | Total volume 10^6 gal |
|--------------|----------------|--------------|--------------|-----------------------|
| Outfall_34 | 49.38 | 1.27 | 11.37 | 0.101 |
| Outfall_33 | 80.31 | 8.15 | 41.79 | 1.058 |
| System | 64.84 | 9.41 | 53.16 | 1.160 |

 Link Flow Summary

| Link | Type | Maximum Flow CFS | Time of Max Occurrence days hr:min | Maximum Veloc ft/sec | Max/ Full Flow | Max/ Full Depth |
|------|-------|--------------------|------------------------------------|------------------------|----------------|-----------------|
| 1 | DUMMY | 9.58 | 0 00:45 | | | |
| 2 | DUMMY | 1.79 | 0 00:45 | | | |
| 3 | DUMMY | 18.42 | 0 00:45 | | | |
| 4 | DUMMY | 10.69 | 0 00:45 | | | |
| 5 | DUMMY | 12.68 | 0 00:45 | | | |

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Thu Jan 28 19:57:20 2016
 Analysis ended on: Thu Jan 28 19:57:20 2016
 Total elapsed time: < 1 sec

Proposed SWMM Model

Proposed SWMM Input

[TITLE]
 ;;Project Title/Notes
 Enclaves at Mountain Vista
 MDDP Proposed Conditions

[OPTIONS]
 ;;Option value
 FLOW_UNITS CFS
 INFILTRATION HORTON
 FLOW_ROUTING KINWAVE
 LINK_OFFSETS DEPTH
 MIN_SLOPE 0
 ALLOW_PONDING NO
 SKIP_STEADY_STATE NO

 START_DATE 01/26/2016
 START_TIME 00:00:00
 REPORT_START_DATE 01/26/2016
 REPORT_START_TIME 00:00:00
 END_DATE 01/27/2016
 END_TIME 16:00:00
 SWEEP_START 01/01
 SWEEP_END 12/31
 DRY_DAYS 0
 REPORT_STEP 00:15:00
 WET_STEP 00:05:00
 DRY_STEP 01:00:00
 ROUTING_STEP 0:00:30

INERTIAL_DAMPING PARTIAL
 NORMAL_FLOW_LIMITED BOTH
 FORCE_MAIN_EQUATION H-W
 VARIABLE_STEP 0.75
 LENGTHENING_STEP 0
 MIN_SURFAREA 12.557
 MAX_TRIALS 8
 HEAD_TOLERANCE 0.005
 SYS_FLOW_TOL 5
 LAT_FLOW_TOL 5

[EVAPORATION]
 ;;Evap Data Parameters
 ;;-----
 CONSTANT 0.0
 DRY_ONLY NO

[RAINGAGES]
 ;;Gage Format Interval SCF Source
 ;;-----
 1 CUMULATIVE 0:05 1.2 TIMESERIES CS_WQ

| [SUBCATCHMENTS] ;;Subcatchment Snow Pack ;; ----- | Rain Gage | Outlet | Area | %Imperv | width | %Slope | CurbLen |
|---|-----------|--------|------|---------|-------|--------|---------|
| A1 | 1 | 100 | 4.42 | 65 | 145 | 2.5 | 0 |
| A2 | 1 | 100 | 8.15 | 65 | 270 | 1.4 | 0 |
| C1 | 1 | 301 | 5.86 | 65 | 150 | 2 | 0 |
| C2 | 1 | 301 | 3.21 | 65 | 75 | 2 | 0 |
| A4 | 1 | 301 | 1.57 | 65 | 60 | 2.6 | 0 |
| A3b | 1 | 101 | 2.80 | 65 | 140 | 0.5 | 0 |
| B1 | 1 | 102 | 2.07 | 65 | 150 | 2 | 0 |
| A5 | 1 | 301 | 1.96 | 65 | 140 | 1.2 | 0 |
| B2 | 1 | 110 | 2.54 | 65 | 75 | 2.5 | 0 |

| | | | Proposed SWMM Input | | | | |
|-----|---|-----|---------------------|------|-----|-----|---|
| B3 | 1 | 110 | 5.42 | 65 | 100 | 0.5 | 0 |
| C5 | 1 | 105 | 5.35 | 65 | 100 | 2.2 | 0 |
| C6 | 1 | 105 | 5 | 65 | 85 | 2.2 | 0 |
| D1 | 1 | 106 | 5.38 | 65 | 130 | 1.8 | 0 |
| D2 | 1 | 106 | 8.02 | 65 | 160 | 1.8 | 0 |
| D3 | 1 | 106 | 1.88 | 65 | 100 | 2.2 | 0 |
| E1 | 1 | 107 | 3.24 | 65 | 75 | 2 | 0 |
| E2 | 1 | 108 | 4.06 | 65 | 130 | 1.3 | 0 |
| E3 | 1 | 106 | 3.68 | 65 | 140 | 2 | 0 |
| E4 | 1 | 33c | 3.5 | 25 | 500 | 0.5 | 0 |
| F4 | 1 | 112 | 3.34 | 65 | 70 | 1.5 | 0 |
| F1 | 1 | 111 | 2.06 | 65 | 200 | 2 | 0 |
| F2 | 1 | 111 | 1.68 | 65 | 150 | 2.4 | 0 |
| F3 | 1 | 112 | 5.55 | 65 | 140 | 1.5 | 0 |
| F5 | 1 | 112 | 0.92 | 65 | 70 | 1.5 | 0 |
| F7 | 1 | 302 | 2.37 | 5 | 100 | 1 | 0 |
| F6 | 1 | 302 | 2.99 | 65 | 80 | 2 | 0 |
| B4 | 1 | 103 | 1.82 | 65 | 130 | 2 | 0 |
| OS1 | 1 | 301 | 17 | 2 | 300 | 5 | 0 |
| OS2 | 1 | 33c | 4.73 | 5 | 100 | 1 | 0 |
| OS3 | 1 | 33c | 13.04 | 2 | 50 | 1 | 0 |
| OS4 | 1 | 33c | 55.64 | 20 | 100 | 1.3 | 0 |
| A3a | 1 | 300 | 1.91 | 55.8 | 75 | 2 | 0 |

| [SUBAREAS] ;;Subcatchment | N-Imperv | N-Perv | S-Imperv | S-Perv | PctZero | RouteTo | PctRouted |
|------------------------------|----------|--------|----------|--------|---------|----------|-----------|
| A1 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |
| A2 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |
| C1 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |
| C2 | 0.011 | 0.24 | 0.1 | .35 | 25 | OUTLET | |
| A4 | 0.011 | 0.24 | 0.1 | .35 | 25 | OUTLET | |
| A3b | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |
| B1 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| A5 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |
| B2 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| B3 | 0.011 | 0.24 | 0.1 | 0.24 | 25 | PERVIOUS | 75 |
| C5 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| C6 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| D1 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| D2 | 0.011 | 0.24 | 0.1 | 0.24 | 25 | PERVIOUS | 75 |
| D3 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| E1 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| E2 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| E3 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| E4 | 0.01 | 0.1 | 0.05 | 0.05 | 25 | PERVIOUS | 75 |
| F4 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| F1 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| F2 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| F3 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |
| F5 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 75 |

| | | | Proposed SWMM Input | | | | |
|-----|-------|------|---------------------|------|----|----------|-----|
| F7 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 100 |
| F6 | 0.011 | 0.24 | 0.1 | .35 | 25 | PERVIOUS | 75 |
| B4 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | PERVIOUS | 100 |
| OS1 | 0.011 | 0.12 | 0.05 | 0.4 | 25 | OUTLET | |
| OS2 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |
| OS3 | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |
| OS4 | 0.011 | 0.13 | 0.05 | 0.4 | 25 | OUTLET | |
| A3a | 0.011 | 0.24 | 0.1 | 0.35 | 25 | OUTLET | |

| [INFILTRATION] | | | | | | | |
|----------------|---------|---------|-------|---------|----------|--|--|
| ;;Subcatchment | MaxRate | MinRate | Decay | DryTime | MaxInfil | | |
| A1 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| A2 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| C1 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| C2 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| A4 | 4.5 | .6 | 6.48 | 7 | 0 | | |
| A3b | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| B1 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| A5 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| B2 | 4.5 | .6 | 6.48 | 7 | 0 | | |
| B3 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| C5 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| C6 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| D1 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| D2 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| D3 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| E1 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| E2 | 4.5 | 0.6 | 6.48 | 7 | 0 | | |
| E3 | 4 | .6 | 6.48 | 7 | 0 | | |
| E4 | 3.0 | 0.5 | 4 | 7 | 0 | | |
| F4 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| F1 | 4 | .6 | 6.48 | 7 | 0 | | |
| F2 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| F3 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| F5 | 4 | .6 | 6.48 | 7 | 0 | | |
| F7 | 4 | .6 | 6.48 | 7 | 0 | | |
| F6 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| B4 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| OS1 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| OS2 | 4 | .6 | 6.48 | 7 | 0 | | |
| OS3 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| OS4 | 4 | 0.6 | 6.48 | 7 | 0 | | |
| A3a | 4.5 | 0.6 | 6.48 | 7 | 0 | | |

| [LID_CONTROLS] | | | | | | | |
|----------------|------------|------------|------|-------|-----|-----|----|
| ;; | Type/Layer | Parameters | | | | | |
| MinorStreet | BC | | | | | | |
| MinorStreet | SURFACE | 10 | 0.0 | 0.035 | 2 | 5 | |
| MinorStreet | SOIL | 4 | 0.5 | 0.2 | 0.1 | 0.5 | 10 |
| 3.5 | | | | | | | |
| MinorStreet | STORAGE | 12 | 0.25 | 0.6 | 0 | | |
| MinorStreet | DRAIN | 0.6 | 0.5 | 0 | 6 | | |

| [LID_USAGE] | | | | | | | |
|----------------|-------------|--------|-------|-------|-----------|-----------|--------|
| ;;Subcatchment | LID Process | Number | Area | width | InitSatur | FromImprv | ToPerv |
| B1 | MinorStreet | 1 | 2750 | 5 | 0 | 100 | 0 |
| B2 | MinorStreet | 1 | 3750 | 5 | 0 | 100 | 0 |
| B3 | MinorStreet | 1 | 11500 | 5 | 0 | 100 | 0 |
| C5 | MinorStreet | 1 | 4950 | 5 | 0 | 100 | 0 |
| D1 | MinorStreet | 1 | 8000 | 5 | 0 | 100 | 0 |
| D2 | MinorStreet | 1 | 7650 | 5 | 0 | 100 | 0 |
| D3 | MinorStreet | 1 | 5800 | 5 | 0 | 100 | 0 |
| E1 | MinorStreet | 1 | 7500 | 5 | 0 | 100 | 0 |
| E2 | MinorStreet | 1 | 7650 | 5 | 0 | 100 | 0 |
| E3 | MinorStreet | 1 | 4300 | 5 | 0 | 100 | 0 |
| E4 | MinorStreet | 1 | 10950 | 5 | 0 | 100 | 0 |
| F4 | MinorStreet | 1 | 5550 | 5 | 0 | 100 | 0 |
| F1 | MinorStreet | 1 | 2200 | 5 | 0 | 100 | 0 |
| F2 | MinorStreet | 1 | 2450 | 5 | 0 | 100 | 0 |

| | | | Proposed | SWMM | Input | | | |
|----|-------------|---|----------|------|-------|-----|---|--|
| F3 | MinorStreet | 1 | 10250 | 5 | 0 | 100 | 0 | |
| F5 | MinorStreet | 1 | 2650 | 5 | 0 | 100 | 0 | |
| F6 | MinorStreet | 1 | 4200 | 5 | 0 | 100 | 0 | |

[JUNCTIONS]

| ;;Junction | Invert | MaxDepth | InitDepth | SurDepth | Aponded |
|------------|--------|----------|-----------|----------|---------|
| 100 | 6623 | 5 | 0 | 0 | 0 |
| 101 | 6617 | 5 | 0 | 0 | 0 |
| 102 | 6613 | 5 | 0 | 0 | 0 |
| 105 | 6623 | 5 | 0 | 0 | 0 |
| 110 | 6608.5 | 5 | 0 | 0 | 0 |
| 104 | 6629 | 5 | 0 | 0 | 0 |
| 106 | 6610 | 3 | 0 | 0 | 0 |
| 107 | 6623 | 5 | 0 | 0 | 0 |
| 109 | 6613 | 5 | 0 | 0 | 0 |
| 108 | 6615 | 5 | 0 | 0 | 0 |
| 112 | 6595 | 5 | 0 | 0 | 0 |
| 111 | 6600 | 4 | 0 | 0 | 0 |
| 103 | 6606 | 8 | 0 | 0 | 0 |

[OUTFALLS]

| ;;Outfall | Invert | Type | Stage Data | Gated |
|-----------|--------|------|------------|-------|
| 33c | 6610 | FREE | | NO |
| 33B | 6590 | FREE | | NO |

[STORAGE]

| ;;Storage Node | Invert | MaxDepth | InitDepth | Shape | Curve Name/Params | |
|----------------|--------|----------|-----------|---------|-------------------|---|
| Fevap Seepage | ----- | | | | | |
| 302 | 6590 | 6 | 0 | TABULAR | 302_Volume | 0 |
| 300 | 6619 | 6 | 0 | TABULAR | 300_Volume | 0 |
| 301 | 6629 | 7 | 0 | TABULAR | 301_Volume | 0 |

[CONDUITS]

| ;;Conduit | From Node | To Node | Length | Roughness | InOffset | OutOffset |
|------------------|-----------|---------|--------|-----------|----------|-----------|
| InitFlow MaxFlow | ----- | | | | | |
| 201 | 101 | 102 | 190 | 0.013 | 0 | 0 |
| 202 | 102 | 103 | 360 | 0.013 | 0 | 0 |
| 209 | 110 | 103 | 520 | 0.013 | 0 | 0 |
| 203 | 104 | 105 | 310 | 0.01 | 0 | 0 |
| 204 | 105 | 106 | 700 | 0.013 | 0 | 0 |
| 208 | 106 | 110 | 225 | 0.013 | 0 | 0 |
| 205 | 107 | 109 | 350 | 0.013 | 0 | 0 |
| 207 | 109 | 106 | 230 | 0.013 | 0 | 0 |
| 206 | 108 | 109 | 150 | 0.013 | 0 | 0 |
| 11 | 111 | 112 | 280 | 0.013 | 0 | 0 |
| 212 | 112 | 302 | 290 | 0.013 | 0 | 0 |
| 200 | 100 | 300 | 500 | 0.013 | 0 | 0 |
| 210 | 103 | 302 | 400 | 0.01 | 0 | 0 |

[ORIFICES]

| ;;Orifice | From Node | To Node | Type | CrestHt | Qcoeff | Gated |
|-----------|-----------|---------|------|---------|--------|-------|
| CloseTime | ----- | | | | | |

Proposed SWMM Input

```
;;-----
302_outlet      302          33B          SIDE          0          0.65          NO          0
```

```
[OUTLETS]
;;Outlet      From Node      To Node      CrestHt      Type          QTable/Qcoeff
Qexpon      Gated
;;-----
```

```
300_outlet      300          101          0          TABULAR/DEPTH      300_outlet
NO
301_outlet      301          104          0          TABULAR/DEPTH      Pond301_outlet
NO
```

```
[XSECTIONS]
;;Link      Shape      Geom1      Geom2      Geom3      Geom4      Barrels
;;-----
```

```
201      CIRCULAR      3          0          0          0          1
202      CIRCULAR      3          0          0          0          1
209      CIRCULAR      4.5        0          0          0          1
203      CIRCULAR      1.5        0          0          0          1
204      CIRCULAR      2          0          0          0          1
208      CIRCULAR      4          0          0          0          1
205      CIRCULAR      1.5        0          0          0          1
207      CIRCULAR      2          0          0          0          1
206      CIRCULAR      1.5        0          0          0          1
11       CIRCULAR      2          0          0          0          1
212      CIRCULAR      2.5        0          0          0          1
200      CIRCULAR      3          0          0          0          1
210      CIRCULAR      4.5        0          0          0          1
302_outlet      CIRCULAR      1.94       0          0          0
```

```
[LOSSES]
;;Link      Kinlet      Koutlet      Kavg      Flap Gate      SeepRate
;;-----
```

```
201      0.5          1          0          NO          0
202      .5          1          0          NO          0
209      0.5          1          0          NO          0
203      0.5          1          0          NO          0
204      0.5          1          0          NO          0
208      0.5          1          0          NO          0
205      0.5          1          0          NO          0
207      0.5          1          0          NO          0
206      0.5          1          0          NO          0
11       0.5          1          0          NO          0
212      0.5          1          0          NO          0
```

```
[CURVES]
;;Curve      Type      X-Value      Y-Value
;;-----
```

```
300_outlet      Rating      0.00          0.00
300_outlet      1.00          0.04
300_outlet      2.00          0.11
300_outlet      3.00          0.20
300_outlet      4.00          0.30
300_outlet      4.90          0.39
300_outlet      5.00          2.17
300_outlet      6.00          64.38
;
Pond301_outlet      Rating      0.00          0.00
```

Proposed SWMM Input

| | | | |
|----------------|--|------|------|
| Pond301_Outlet | | 0.33 | 0.01 |
| Pond301_Outlet | | 0.67 | 0.03 |
| Pond301_Outlet | | 1.00 | 0.05 |
| Pond301_Outlet | | 1.33 | 0.08 |
| Pond301_Outlet | | 1.67 | 0.11 |
| Pond301_Outlet | | 2.00 | 0.14 |
| Pond301_Outlet | | 2.33 | 0.17 |
| Pond301_Outlet | | 2.50 | 0.19 |
| Pond301_Outlet | | 3.00 | 5.49 |
| Pond301_Outlet | | 4.00 | 6.48 |
| Pond301_Outlet | | 5.00 | 7.34 |
| Pond301_Outlet | | 6.00 | 8.10 |
| Pond301_Outlet | | 7.00 | 8.80 |

| | | | |
|------------|---------|------|-------|
| ; | | | |
| 302_Volume | Storage | 0.00 | 43377 |
| 302_Volume | | 1.00 | 47490 |
| 302_Volume | | 2.00 | 51710 |
| 302_Volume | | 3.00 | 56041 |
| 302_Volume | | 4.00 | 60484 |
| 302_Volume | | 5.00 | 65042 |
| 302_Volume | | 6 | 69600 |

| | | | |
|------------|---------|------|------|
| ; | | | |
| 300_Volume | Storage | 0 | 0 |
| 300_Volume | | 1.00 | 2525 |
| 300_Volume | | 2.00 | 3427 |
| 300_Volume | | 3.00 | 4375 |
| 300_Volume | | 4.00 | 5494 |
| 300_Volume | | 5.00 | 6737 |
| 300_Volume | | 6.00 | 8120 |

| | | | |
|------------|---------|------|-------|
| ; | | | |
| 301_Volume | Storage | 0.00 | 0 |
| 301_Volume | | 1.00 | 5281 |
| 301_Volume | | 2.00 | 10507 |
| 301_Volume | | 3.00 | 13012 |
| 301_Volume | | 4.00 | 14902 |
| 301_Volume | | 5.00 | 17121 |
| 301_Volume | | 6.00 | 19467 |
| 301_Volume | | 7.00 | 21986 |

| | | | |
|---------------|-------|-------|---------|
| [TIMESERIES] | | | |
| ;;Time Series | Date | Time | Value |
| ;; | ----- | ----- | ----- |
| CS_100-yr | | 0 | 0 |
| CS_100-yr | | 0:05 | 0.03528 |
| CS_100-yr | | 0:10 | 0.11592 |
| CS_100-yr | | 0:15 | 0.19908 |
| CS_100-yr | | 0:20 | 0.3024 |
| CS_100-yr | | 0:25 | 0.45108 |
| CS_100-yr | | 0:30 | 0.65016 |
| CS_100-yr | | 0:35 | 1.06092 |
| CS_100-yr | | 0:40 | 1.79424 |
| CS_100-yr | | 0:45 | 2.07648 |
| CS_100-yr | | 0:50 | 2.24784 |
| CS_100-yr | | 0:55 | 2.3562 |
| CS_100-yr | | 1:00 | 2.44944 |
| CS_100-yr | | 1:05 | 2.53008 |
| CS_100-yr | | 1:10 | 2.56536 |
| CS_100-yr | | 1:15 | 2.5956 |
| CS_100-yr | | 1:20 | 2.62332 |
| CS_100-yr | | 1:25 | 2.65104 |
| CS_100-yr | | 1:30 | 2.67876 |
| CS_100-yr | | 1:35 | 2.70144 |
| CS_100-yr | | 1:40 | 2.72664 |
| CS_100-yr | | 1:45 | 2.74932 |
| CS_100-yr | | 1:50 | 2.772 |
| CS_100-yr | | 1:55 | 2.79468 |
| CS_100-yr | | 2:00 | 2.81988 |

| | | | |
|-------|--|------|--------|
| ; | | | |
| ; | Colorado Springs WQ rainfall P1=0.6 in | | |
| CS_WQ | | 0 | 0 |
| CS_WQ | | 0:05 | 0.0084 |
| CS_WQ | | 0:10 | 0.0276 |
| CS_WQ | | 0:15 | 0.0474 |
| CS_WQ | | 0:20 | 0.072 |

Proposed SWMM Input

| | | |
|-------|------|--------|
| CS_WQ | 0:25 | 0.1074 |
| CS_WQ | 0:30 | 0.1548 |
| CS_WQ | 0:35 | 0.2526 |
| CS_WQ | 0:40 | 0.4272 |
| CS_WQ | 0:45 | 0.4944 |
| CS_WQ | 0:50 | 0.5352 |
| CS_WQ | 0:55 | 0.561 |
| CS_WQ | 1:00 | 0.5832 |
| CS_WQ | 1:05 | 0.6024 |
| CS_WQ | 1:10 | 0.6108 |
| CS_WQ | 1:15 | 0.618 |
| CS_WQ | 1:20 | 0.6246 |
| CS_WQ | 1:25 | 0.6312 |
| CS_WQ | 1:30 | 0.6378 |
| CS_WQ | 1:35 | 0.6432 |
| CS_WQ | 1:40 | 0.6492 |
| CS_WQ | 1:45 | 0.6546 |
| CS_WQ | 1:50 | 0.66 |
| CS_WQ | 1:55 | 0.6654 |
| CS_WQ | 2:00 | 0.6714 |

```

;
CS_5-yr      0      0
CS_5-yr      0:05   0.021
CS_5-yr      0:10   0.069
CS_5-yr      0:15   0.1185
CS_5-yr      0:20   0.18
CS_5-yr      0:25   0.2685
CS_5-yr      0:30   0.387
CS_5-yr      0:35   0.6315
CS_5-yr      0:40   1.068
CS_5-yr      0:45   1.236
CS_5-yr      0:50   1.338
CS_5-yr      0:55   1.4025
CS_5-yr      1:00   1.458
CS_5-yr      1:05   1.506
CS_5-yr      1:10   1.527
CS_5-yr      1:15   1.545
CS_5-yr      1:20   1.5615
CS_5-yr      1:25   1.578
CS_5-yr      1:30   1.5945
CS_5-yr      1:35   1.608
CS_5-yr      1:40   1.623
CS_5-yr      1:45   1.6365
CS_5-yr      1:50   1.65
CS_5-yr      1:55   1.6635
CS_5-yr      2:00   1.6785
    
```

```

[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   YES
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

```

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None
    
```

```

[COORDINATES]
;;Node      X-Coord      Y-Coord
;-----
100         -212.379     7160.194
101         3185.680     7184.466
102         5200.243     7172.330
105         1947.816     13968.447
110         6425.971     11444.175
104         -54.152      14175.692
106         6656.553     13082.524
107         7493.932     15570.388
109         7433.252     14259.709
108         8828.883     14514.563
    
```

Proposed SWMM Input

| | | |
|-----|-----------|-----------|
| 112 | 10831.311 | 10121.359 |
| 111 | 8756.068 | 10097.087 |
| 103 | 5867.718 | 8021.845 |
| 33c | 12578.883 | 13531.553 |
| 33B | 9884.361 | 5770.925 |
| 302 | 9836.165 | 7123.786 |
| 300 | 1492.291 | 7158.590 |
| 301 | -30.084 | 15018.051 |

[VERTICES]

| ;;Link | X-Coord | Y-Coord |
|--------|---------|---------|
|--------|---------|---------|

[Polygons]

| ;;Subcatchment | X-Coord | Y-Coord |
|----------------|-----------|-----------|
| A1 | -904.126 | 8834.951 |
| A1 | -819.175 | 7864.078 |
| A1 | -1474.515 | 7864.078 |
| A1 | -1547.330 | 8834.951 |
| A2 | 831.311 | 8907.767 |
| A2 | 952.670 | 7997.573 |
| A2 | 260.922 | 7936.893 |
| A2 | 175.971 | 8919.903 |
| C1 | -314.599 | 16749.128 |
| C1 | -387.414 | 15778.254 |
| C1 | -1309.745 | 15778.254 |
| C1 | -1285.473 | 16676.312 |
| C2 | 909.395 | 16758.230 |
| C2 | 885.123 | 15811.628 |
| C2 | -25.071 | 15714.541 |
| C2 | 35.609 | 16697.551 |
| A4 | -490.844 | 13572.846 |
| A4 | -418.028 | 12577.701 |
| A4 | -1825.795 | 12492.749 |
| A4 | -1862.203 | 13342.264 |
| A3b | 2770.024 | 8916.869 |
| A3b | 2830.704 | 8030.947 |
| A3b | 1774.879 | 7958.131 |
| A3b | 1774.879 | 8880.461 |
| B1 | 4629.854 | 9186.893 |
| B1 | 4726.942 | 8179.612 |
| B1 | 3950.243 | 8094.660 |
| B1 | 3901.699 | 9247.573 |
| A5 | 1204.169 | 13423.499 |
| A5 | 1252.713 | 12052.139 |
| A5 | 281.839 | 11967.188 |
| A5 | 269.703 | 13435.635 |
| B2 | 4542.952 | 11707.048 |
| B2 | 4620.044 | 11002.203 |
| B2 | 3893.172 | 10958.150 |
| B2 | 3849.119 | 11707.048 |
| B3 | 4653.084 | 10814.978 |
| B3 | 4741.189 | 9966.960 |
| B3 | 4003.304 | 9922.907 |
| B3 | 3948.238 | 10759.912 |
| C5 | 2797.330 | 16189.320 |
| C5 | 2591.019 | 14660.194 |
| C5 | 1571.602 | 14672.330 |
| C5 | 1741.505 | 16225.728 |
| C6 | 4010.922 | 16116.505 |
| C6 | 3780.340 | 14648.058 |
| C6 | 3027.913 | 14684.466 |
| C6 | 3246.359 | 16225.728 |
| D1 | 5540.049 | 15418.689 |
| D1 | 5442.961 | 14083.738 |
| D1 | 4265.777 | 14192.961 |
| D1 | 4387.136 | 15430.825 |
| D2 | 6780.947 | 15206.311 |
| D2 | 6708.131 | 13919.903 |
| D2 | 5688.714 | 13968.447 |
| D2 | 5749.393 | 15303.398 |
| D3 | 5455.097 | 12936.893 |
| D3 | 5479.369 | 12063.107 |

Proposed SWMM Input

| | | |
|-----|-----------|-----------|
| D3 | 4059.466 | 12135.922 |
| D3 | 4047.330 | 13131.068 |
| E1 | 7348.301 | 17469.660 |
| E1 | 7166.262 | 16110.437 |
| E1 | 5503.641 | 16413.835 |
| E1 | 5588.592 | 17724.515 |
| E2 | 10006.068 | 16589.806 |
| E2 | 9969.660 | 15436.893 |
| E2 | 8719.660 | 15461.165 |
| E2 | 8743.932 | 16626.214 |
| E3 | 8367.718 | 13980.583 |
| E3 | 8379.854 | 13252.427 |
| E3 | 7639.563 | 13264.563 |
| E3 | 7663.835 | 13919.903 |
| E4 | 10959.031 | 14659.710 |
| E4 | 10959.031 | 13567.477 |
| E4 | 10012.429 | 13531.069 |
| E4 | 10024.565 | 14781.069 |
| F4 | 13774.272 | 11953.883 |
| F4 | 13871.359 | 10570.388 |
| F4 | 12633.495 | 10546.117 |
| F4 | 12560.680 | 11978.155 |
| F1 | 8574.029 | 11480.583 |
| F1 | 8586.165 | 10582.524 |
| F1 | 7712.379 | 10558.252 |
| F1 | 7736.650 | 11553.398 |
| F2 | 10030.340 | 11516.990 |
| F2 | 10054.612 | 10582.524 |
| F2 | 9168.689 | 10533.981 |
| F2 | 9168.689 | 11541.262 |
| F3 | 11881.068 | 11938.714 |
| F3 | 12002.427 | 10858.617 |
| F3 | 11043.689 | 10761.529 |
| F3 | 11019.417 | 11926.578 |
| F5 | 12296.723 | 9563.107 |
| F5 | 12272.451 | 8507.282 |
| F5 | 11095.267 | 8483.010 |
| F5 | 11107.403 | 9563.107 |
| F7 | 10442.961 | 9623.786 |
| F7 | 9945.388 | 8495.146 |
| F7 | 9168.689 | 8483.010 |
| F7 | 9205.097 | 9708.738 |
| F6 | 8367.718 | 9490.291 |
| F6 | 8404.126 | 8240.291 |
| F6 | 7275.485 | 8240.291 |
| F6 | 7263.350 | 9599.515 |
| B4 | 5684.524 | 9630.952 |
| B4 | 5744.048 | 8750.000 |
| B4 | 5125.000 | 8702.381 |
| B4 | 5065.476 | 9488.095 |
| OS1 | -1895.307 | 15764.140 |
| OS1 | -1907.341 | 14283.995 |
| OS1 | -2918.171 | 14283.995 |
| OS1 | -2930.205 | 15752.106 |
| OS2 | 10587.079 | 19679.775 |
| OS2 | 10497.191 | 18028.090 |
| OS2 | 8699.438 | 18207.865 |
| OS2 | 8710.674 | 19814.607 |
| OS3 | 12646.067 | 19651.685 |
| OS3 | 12735.955 | 17707.865 |
| OS3 | 10926.966 | 17685.393 |
| OS3 | 10904.494 | 19606.742 |
| OS4 | 16365.169 | 16292.135 |
| OS4 | 16308.989 | 14584.270 |
| OS4 | 14634.831 | 14606.742 |
| OS4 | 14679.775 | 16393.258 |
| A3a | 1875.000 | 6723.301 |
| A3a | 1875.000 | 5861.650 |
| A3a | 782.767 | 5849.515 |
| A3a | 807.039 | 6711.165 |

[SYMBOLS]

;;Gage X-Coord Y-Coord
 ;;

1

2252.203

Proposed SWMM Input
10704.846

Proposed SWMM Results WQ Event

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.007)

Enclaves at Mountain Vista

MDDP Proposed Conditions

WARNING 02: maximum depth increased for Node 106

 NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

 Analysis Options

 Flow Units CFS
 Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed NO
 Water Quality NO
 Infiltration Method HORTON
 Flow Routing Method KINWAVE
 Starting Date JAN-26-2016 00:00:00
 Ending Date JAN-27-2016 16:00:00
 Antecedent Dry Days 0.0
 Report Time Step 00:15:00
 Wet Time Step 00:05:00
 Dry Time Step 01:00:00
 Routing Time Step 30.00 sec

Element Count

 Number of rain gages 1
 Number of subcatchments ... 32
 Number of nodes 18
 Number of links 16
 Number of pollutants 0
 Number of land uses 0

Raingage Summary

| Name | Data Source | Data Type | Recording Interval |
|------|-------------|------------|--------------------|
| 1 | CS_WQ | CUMULATIVE | 5 min. |

Subcatchment Summary

| Name | Area | width | %Imperv | %Slope | Rain Gage | Outlet |
|------|------|--------|---------|--------|-----------|--------|
| A1 | 4.42 | 145.00 | 65.00 | 2.5000 | 1 | 100 |
| A2 | 8.15 | 270.00 | 65.00 | 1.4000 | 1 | 100 |
| C1 | 5.86 | 150.00 | 65.00 | 2.0000 | 1 | 301 |
| C2 | 3.21 | 75.00 | 65.00 | 2.0000 | 1 | 301 |
| A4 | 1.57 | 60.00 | 65.00 | 2.6000 | 1 | 301 |

Proposed SWMM Results WQ Event

| | | | | | | |
|-----|-------|--------|-------|--------|---|-----|
| A3b | 2.80 | 140.00 | 65.00 | 0.5000 | 1 | 101 |
| B1 | 2.07 | 150.00 | 65.00 | 2.0000 | 1 | 102 |
| A5 | 1.96 | 140.00 | 65.00 | 1.2000 | 1 | 301 |
| B2 | 2.54 | 75.00 | 65.00 | 2.5000 | 1 | 110 |
| B3 | 5.42 | 100.00 | 65.00 | 0.5000 | 1 | 110 |
| C5 | 5.35 | 100.00 | 65.00 | 2.2000 | 1 | 105 |
| C6 | 5.00 | 85.00 | 65.00 | 2.2000 | 1 | 105 |
| D1 | 5.38 | 130.00 | 65.00 | 1.8000 | 1 | 106 |
| D2 | 8.02 | 160.00 | 65.00 | 1.8000 | 1 | 106 |
| D3 | 1.88 | 100.00 | 65.00 | 2.2000 | 1 | 106 |
| E1 | 3.24 | 75.00 | 65.00 | 2.0000 | 1 | 107 |
| E2 | 4.06 | 130.00 | 65.00 | 1.3000 | 1 | 108 |
| E3 | 3.68 | 140.00 | 65.00 | 2.0000 | 1 | 106 |
| E4 | 3.50 | 500.00 | 25.00 | 0.5000 | 1 | 33c |
| F4 | 3.34 | 70.00 | 65.00 | 1.5000 | 1 | 112 |
| F1 | 2.06 | 200.00 | 65.00 | 2.0000 | 1 | 111 |
| F2 | 1.68 | 150.00 | 65.00 | 2.4000 | 1 | 111 |
| F3 | 5.55 | 140.00 | 65.00 | 1.5000 | 1 | 112 |
| F5 | 0.92 | 70.00 | 65.00 | 1.5000 | 1 | 112 |
| F7 | 2.37 | 100.00 | 5.00 | 1.0000 | 1 | 302 |
| F6 | 2.99 | 80.00 | 65.00 | 2.0000 | 1 | 302 |
| B4 | 1.82 | 130.00 | 65.00 | 2.0000 | 1 | 103 |
| OS1 | 17.00 | 300.00 | 2.00 | 5.0000 | 1 | 301 |
| OS2 | 4.73 | 100.00 | 5.00 | 1.0000 | 1 | 33c |
| OS3 | 13.04 | 50.00 | 2.00 | 1.0000 | 1 | 33c |
| OS4 | 55.64 | 100.00 | 20.00 | 1.3000 | 1 | 33c |
| A3a | 1.91 | 75.00 | 55.80 | 2.0000 | 1 | 300 |

LID Control Summary

| Subcatchment | LID Control | No. of Units | Unit Area | Unit Width | % Area Covered | % Imperv Treated |
|--------------|-------------|--------------|-----------|------------|----------------|------------------|
| B1 | MinorStreet | 1 | 2750.00 | 5.00 | 3.05 | 100.00 |
| B2 | MinorStreet | 1 | 3750.00 | 5.00 | 3.39 | 100.00 |
| B3 | MinorStreet | 1 | 11500.00 | 5.00 | 4.87 | 100.00 |
| C5 | MinorStreet | 1 | 4950.00 | 5.00 | 2.12 | 100.00 |
| D1 | MinorStreet | 1 | 8000.00 | 5.00 | 3.41 | 100.00 |
| D2 | MinorStreet | 1 | 7650.00 | 5.00 | 2.19 | 100.00 |
| D3 | MinorStreet | 1 | 5800.00 | 5.00 | 7.08 | 100.00 |
| E1 | MinorStreet | 1 | 7500.00 | 5.00 | 5.31 | 100.00 |
| E2 | MinorStreet | 1 | 7650.00 | 5.00 | 4.33 | 100.00 |
| E3 | MinorStreet | 1 | 4300.00 | 5.00 | 2.68 | 100.00 |
| E4 | MinorStreet | 1 | 10950.00 | 5.00 | 7.18 | 100.00 |

| | | Proposed | SWMM Results | WQ Event | | |
|----|-------------|----------|--------------|----------|------|--------|
| F4 | MinorStreet | 1 | 5550.00 | 5.00 | 3.81 | 100.00 |
| F1 | MinorStreet | 1 | 2200.00 | 5.00 | 2.45 | 100.00 |
| F2 | MinorStreet | 1 | 2450.00 | 5.00 | 3.35 | 100.00 |
| F3 | MinorStreet | 1 | 10250.00 | 5.00 | 4.24 | 100.00 |
| F5 | MinorStreet | 1 | 2650.00 | 5.00 | 6.61 | 100.00 |
| F6 | MinorStreet | 1 | 4200.00 | 5.00 | 3.22 | 100.00 |

Node Summary

| Name | Type | Invert Elev. | Max. Depth | Ponded Area | External Inflow |
|------|----------|--------------|------------|-------------|-----------------|
| 100 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 101 | JUNCTION | 6617.00 | 5.00 | 0.0 | |
| 102 | JUNCTION | 6613.00 | 5.00 | 0.0 | |
| 105 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 110 | JUNCTION | 6608.50 | 5.00 | 0.0 | |
| 104 | JUNCTION | 6629.00 | 5.00 | 0.0 | |
| 106 | JUNCTION | 6610.00 | 4.00 | 0.0 | |
| 107 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 109 | JUNCTION | 6613.00 | 5.00 | 0.0 | |
| 108 | JUNCTION | 6615.00 | 5.00 | 0.0 | |
| 112 | JUNCTION | 6595.00 | 5.00 | 0.0 | |
| 111 | JUNCTION | 6600.00 | 4.00 | 0.0 | |
| 103 | JUNCTION | 6606.00 | 8.00 | 0.0 | |
| 33c | OUTFALL | 6610.00 | 0.00 | 0.0 | |
| 33B | OUTFALL | 6590.00 | 0.00 | 0.0 | |
| 302 | STORAGE | 6590.00 | 6.00 | 0.0 | |
| 300 | STORAGE | 6619.00 | 6.00 | 0.0 | |
| 301 | STORAGE | 6629.00 | 7.00 | 0.0 | |

Link Summary

| Name | From Node | To Node | Type | Length | %Slope | Roughness |
|------------|-----------|---------|---------|--------|--------|-----------|
| 201 | 101 | 102 | CONDUIT | 190.0 | 2.1057 | 0.0130 |
| 202 | 102 | 103 | CONDUIT | 360.0 | 1.9448 | 0.0130 |
| 209 | 110 | 103 | CONDUIT | 520.0 | 0.4808 | 0.0130 |
| 203 | 104 | 105 | CONDUIT | 310.0 | 1.9358 | 0.0100 |
| 204 | 105 | 106 | CONDUIT | 700.0 | 1.8575 | 0.0130 |
| 208 | 106 | 110 | CONDUIT | 225.0 | 0.6667 | 0.0130 |
| 205 | 107 | 109 | CONDUIT | 350.0 | 2.8583 | 0.0130 |
| 207 | 109 | 106 | CONDUIT | 230.0 | 1.3045 | 0.0130 |
| 206 | 108 | 109 | CONDUIT | 150.0 | 1.3335 | 0.0130 |
| 11 | 111 | 112 | CONDUIT | 280.0 | 1.7860 | 0.0130 |
| 212 | 112 | 302 | CONDUIT | 290.0 | 1.7244 | 0.0130 |
| 200 | 100 | 300 | CONDUIT | 500.0 | 0.8000 | 0.0130 |
| 210 | 103 | 302 | CONDUIT | 400.0 | 4.0032 | 0.0100 |
| 302_outlet | 302 | 33B | ORIFICE | | | |
| 300_outlet | 300 | 101 | OUTLET | | | |
| 301_outlet | 301 | 104 | OUTLET | | | |

Cross Section Summary

| Conduit | Shape | Full Depth | Full Area | Hyd. Rad. | Max. Width | No. of Barrels | Full Flow |
|---------|----------|------------|-----------|-----------|------------|----------------|-----------|
| 201 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 96.79 |
| 202 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 93.02 |
| 209 | CIRCULAR | 4.50 | 15.90 | 1.13 | 4.50 | 1 | 136.35 |
| 203 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 19.00 |
| 204 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 30.83 |
| 208 | CIRCULAR | 4.00 | 12.57 | 1.00 | 4.00 | 1 | 117.29 |
| 205 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 17.76 |
| 207 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 25.84 |
| 206 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 12.13 |
| 11 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 30.23 |
| 212 | CIRCULAR | 2.50 | 4.91 | 0.63 | 2.50 | 1 | 53.86 |

| | | Proposed SWMM | Results | WQ | Event | | | |
|-----|----------|---------------|---------|------|-------|---|--------|--|
| 200 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 59.66 | |
| 210 | CIRCULAR | 4.50 | 15.90 | 1.13 | 4.50 | 1 | 511.49 | |

Control Actions Taken

| | Volume acre-feet | Depth inches |
|--|---------------------|-----------------|
| ***** Runoff Quantity Continuity ***** | | |
| Initial LID Storage | 0.078 | 0.005 |
| Total Precipitation | 10.695 | 0.671 |
| Evaporation Loss | 0.000 | 0.000 |
| Infiltration Loss | 8.206 | 0.515 |
| Surface Runoff | 2.014 | 0.126 |
| Final Surface Storage | 0.577 | 0.036 |
| Continuity Error (%) | -0.225 | |

| | Volume acre-feet | Volume 10 ⁶ gal |
|---|---------------------|-------------------------------|
| ***** Flow Routing Continuity ***** | | |
| Dry Weather Inflow | 0.000 | 0.000 |
| Wet Weather Inflow | 2.014 | 0.656 |
| Groundwater Inflow | 0.000 | 0.000 |
| RDII Inflow | 0.000 | 0.000 |
| External Inflow | 0.000 | 0.000 |
| External Outflow | 1.890 | 0.616 |
| Internal Outflow | 0.000 | 0.000 |
| Evaporation Loss | 0.000 | 0.000 |
| Exfiltration Loss | 0.000 | 0.000 |
| Initial Stored Volume | 0.000 | 0.000 |
| Final Stored Volume | 0.122 | 0.040 |
| Continuity Error (%) | 0.102 | |

Highest Flow Instability Indexes

All links are stable.

Routing Time Step Summary

| | | |
|-----------------------------|---|-----------|
| Minimum Time Step | : | 30.00 sec |
| Average Time Step | : | 30.00 sec |
| Maximum Time Step | : | 30.00 sec |
| Percent in Steady State | : | 0.00 |
| Average Iterations per Step | : | 1.01 |
| Percent Not Converging | : | 0.00 |

Subcatchment Runoff Summary

| | | Total Precip | Total Runon | Total Evap | Total Infil | Total Runoff | Total Runoff |
|------|-------|-----------------|----------------|---------------|----------------|-----------------|---------------------|
| CFS | | in | in | in | in | in | 10 ⁶ gal |
| A1 | | 0.67 | 0.00 | 0.00 | 0.23 | 0.39 | 0.05 |
| 3.98 | 0.582 | | | | | | |

Proposed SWMM Results WQ Event

| | | | | | | | |
|------|-------|------|------|------|------|------|------|
| A2 | | 0.67 | 0.00 | 0.00 | 0.23 | 0.39 | 0.09 |
| 6.43 | 0.582 | | | | | | |
| C1 | | 0.67 | 0.00 | 0.00 | 0.23 | 0.39 | 0.06 |
| 4.43 | 0.581 | | | | | | |
| C2 | | 0.67 | 0.00 | 0.00 | 0.23 | 0.39 | 0.03 |
| 2.31 | 0.581 | | | | | | |
| A4 | | 0.67 | 0.00 | 0.00 | 0.23 | 0.39 | 0.02 |
| 1.52 | 0.583 | | | | | | |
| A3b | | 0.67 | 0.00 | 0.00 | 0.23 | 0.39 | 0.03 |
| 2.09 | 0.581 | | | | | | |
| B1 | | 0.67 | 0.00 | 0.00 | 0.55 | 0.07 | 0.00 |
| 0.02 | 0.105 | | | | | | |
| A5 | | 0.67 | 0.00 | 0.00 | 0.23 | 0.39 | 0.02 |
| 2.06 | 0.583 | | | | | | |
| B2 | | 0.67 | 0.00 | 0.00 | 0.54 | 0.07 | 0.00 |
| 0.02 | 0.108 | | | | | | |
| B3 | | 0.67 | 0.00 | 0.00 | 0.52 | 0.08 | 0.01 |
| 0.07 | 0.123 | | | | | | |
| C5 | | 0.67 | 0.00 | 0.00 | 0.55 | 0.07 | 0.01 |
| 0.03 | 0.097 | | | | | | |
| C6 | | 0.67 | 0.00 | 0.00 | 0.53 | 0.10 | 0.01 |
| 0.77 | 0.145 | | | | | | |
| D1 | | 0.67 | 0.00 | 0.00 | 0.54 | 0.07 | 0.01 |
| 0.05 | 0.108 | | | | | | |
| D2 | | 0.67 | 0.00 | 0.00 | 0.55 | 0.07 | 0.01 |
| 0.05 | 0.098 | | | | | | |
| D3 | | 0.67 | 0.00 | 0.00 | 0.51 | 0.09 | 0.00 |
| 0.04 | 0.140 | | | | | | |
| E1 | | 0.67 | 0.00 | 0.00 | 0.52 | 0.08 | 0.01 |
| 0.05 | 0.125 | | | | | | |
| E2 | | 0.67 | 0.00 | 0.00 | 0.53 | 0.08 | 0.01 |
| 0.05 | 0.116 | | | | | | |
| E3 | | 0.67 | 0.00 | 0.00 | 0.55 | 0.07 | 0.01 |
| 0.03 | 0.102 | | | | | | |
| E4 | | 0.67 | 0.00 | 0.00 | 0.58 | 0.06 | 0.01 |
| 0.03 | 0.084 | | | | | | |
| F4 | | 0.67 | 0.00 | 0.00 | 0.54 | 0.08 | 0.01 |
| 0.04 | 0.112 | | | | | | |
| F1 | | 0.67 | 0.00 | 0.00 | 0.55 | 0.07 | 0.00 |
| 0.02 | 0.102 | | | | | | |
| F2 | | 0.67 | 0.00 | 0.00 | 0.54 | 0.07 | 0.00 |
| 0.02 | 0.110 | | | | | | |
| F3 | | 0.67 | 0.00 | 0.00 | 0.53 | 0.08 | 0.01 |
| 0.06 | 0.115 | | | | | | |
| F5 | | 0.67 | 0.00 | 0.00 | 0.51 | 0.09 | 0.00 |
| 0.02 | 0.136 | | | | | | |
| F7 | | 0.67 | 0.00 | 0.00 | 0.67 | 0.00 | 0.00 |
| 0.00 | 0.000 | | | | | | |
| F6 | | 0.67 | 0.00 | 0.00 | 0.54 | 0.07 | 0.01 |
| 0.03 | 0.107 | | | | | | |
| B4 | | 0.67 | 0.00 | 0.00 | 0.60 | 0.03 | 0.00 |
| 0.12 | 0.045 | | | | | | |
| OS1 | | 0.67 | 0.00 | 0.00 | 0.66 | 0.01 | 0.01 |
| 0.72 | 0.019 | | | | | | |
| OS2 | | 0.67 | 0.00 | 0.00 | 0.64 | 0.03 | 0.00 |
| 0.48 | 0.045 | | | | | | |
| OS3 | | 0.67 | 0.00 | 0.00 | 0.66 | 0.01 | 0.00 |
| 0.48 | 0.018 | | | | | | |
| OS4 | | 0.67 | 0.00 | 0.00 | 0.54 | 0.13 | 0.19 |
| 5.10 | 0.189 | | | | | | |
| A3a | | 0.67 | 0.00 | 0.00 | 0.30 | 0.34 | 0.02 |
| 1.62 | 0.500 | | | | | | |

 LID Performance Summary

 Final Percent Total Evap Infil Surface Drain Initial
 Inflow Loss Loss Outflow Outflow Storage

Proposed SWMM Results WQ Event

| Storage Subcatchment | Error | LID Control | in | in | in | in | in | in | |
|----------------------|-------|-------------|-------------|------|------|------|------|------|------|
| B1 | 0.80 | -0.00 | MinorStreet | 3.79 | 0.00 | 1.08 | 0.00 | 2.31 | 0.40 |
| B2 | 0.80 | -0.00 | MinorStreet | 3.46 | 0.00 | 0.92 | 0.00 | 2.14 | 0.40 |
| B3 | 0.80 | -0.00 | MinorStreet | 2.57 | 0.00 | 0.47 | 0.00 | 1.70 | 0.40 |
| C5 | 0.80 | -0.00 | MinorStreet | 5.16 | 0.00 | 1.69 | 0.00 | 3.07 | 0.40 |
| D1 | 0.80 | -0.00 | MinorStreet | 3.43 | 0.00 | 0.90 | 0.00 | 2.13 | 0.40 |
| D2 | 0.80 | -0.00 | MinorStreet | 5.02 | 0.00 | 1.63 | 0.00 | 3.00 | 0.40 |
| D3 | 0.80 | -0.00 | MinorStreet | 1.96 | 0.00 | 0.23 | 0.00 | 1.33 | 0.40 |
| E1 | 0.80 | -0.00 | MinorStreet | 2.41 | 0.00 | 0.43 | 0.00 | 1.58 | 0.40 |
| E2 | 0.80 | -0.00 | MinorStreet | 2.83 | 0.00 | 0.63 | 0.00 | 1.80 | 0.40 |
| E3 | 0.80 | -0.00 | MinorStreet | 4.22 | 0.00 | 1.27 | 0.00 | 2.55 | 0.40 |
| E4 | 0.80 | 0.00 | MinorStreet | 1.19 | 0.00 | 0.00 | 0.00 | 0.79 | 0.40 |
| F4 | 0.80 | -0.00 | MinorStreet | 3.13 | 0.00 | 0.76 | 0.00 | 1.97 | 0.40 |
| F1 | 0.80 | -0.00 | MinorStreet | 4.57 | 0.00 | 1.43 | 0.00 | 2.74 | 0.40 |
| F2 | 0.80 | -0.00 | MinorStreet | 3.50 | 0.00 | 0.95 | 0.00 | 2.16 | 0.40 |
| F3 | 0.80 | -0.00 | MinorStreet | 2.87 | 0.00 | 0.65 | 0.00 | 1.83 | 0.40 |
| F5 | 0.80 | -0.00 | MinorStreet | 2.05 | 0.00 | 0.28 | 0.00 | 1.38 | 0.40 |
| F6 | 0.80 | -0.00 | MinorStreet | 3.60 | 0.00 | 0.98 | 0.00 | 2.22 | 0.40 |

Node Depth Summary

| Node | Type | Average Depth Feet | Maximum Depth Feet | Maximum HGL Feet | Time of Max Occurrence days hr:min |
|------|----------|--------------------|--------------------|------------------|------------------------------------|
| 100 | JUNCTION | 0.03 | 0.85 | 6623.85 | 0 00:45 |
| 101 | JUNCTION | 0.08 | 0.31 | 6617.31 | 0 00:45 |
| 102 | JUNCTION | 0.08 | 0.31 | 6613.31 | 0 00:46 |
| 105 | JUNCTION | 0.09 | 0.22 | 6623.22 | 0 00:48 |
| 110 | JUNCTION | 0.12 | 0.26 | 6608.76 | 0 02:15 |
| 104 | JUNCTION | 0.08 | 0.16 | 6629.16 | 0 02:13 |
| 106 | JUNCTION | 0.11 | 0.24 | 6610.24 | 0 00:51 |
| 107 | JUNCTION | 0.01 | 0.06 | 6623.06 | 0 02:01 |
| 109 | JUNCTION | 0.02 | 0.09 | 6613.09 | 0 03:00 |
| 108 | JUNCTION | 0.02 | 0.07 | 6615.07 | 0 01:55 |
| 112 | JUNCTION | 0.03 | 0.10 | 6595.10 | 0 02:20 |
| 111 | JUNCTION | 0.02 | 0.05 | 6600.05 | 0 01:10 |
| 103 | JUNCTION | 0.12 | 0.31 | 6606.31 | 0 00:47 |
| 33c | OUTFALL | 0.00 | 0.00 | 6610.00 | 0 00:00 |
| 33B | OUTFALL | 0.00 | 0.00 | 6590.00 | 0 00:00 |
| 302 | STORAGE | 0.16 | 0.29 | 6590.29 | 0 05:46 |
| 300 | STORAGE | 2.14 | 4.69 | 6623.69 | 0 02:23 |
| 301 | STORAGE | 1.66 | 2.53 | 6631.53 | 0 02:13 |

Node Inflow Summary

Proposed SWMM Results WQ Event

| Flow Balance Error Node Percent | Type | Maximum Lateral Inflow CFS | Maximum Total Inflow CFS | Time of Max Occurrence days hr:min | Lateral Inflow Volume 10^6 gal | Total Inflow Volume 10^6 gal |
|---------------------------------|----------|----------------------------|--------------------------|------------------------------------|--------------------------------|------------------------------|
| - | | | | | | |
| 100 | JUNCTION | 10.41 | 10.41 | 0 00:45 | 0.133 | 0.133 |
| 0.000 | | | | | | |
| 101 | JUNCTION | 2.09 | 2.18 | 0 00:45 | 0.0297 | 0.178 |
| 0.000 | | | | | | |
| 102 | JUNCTION | 0.02 | 2.15 | 0 00:46 | 0.00396 | 0.182 |
| 0.000 | | | | | | |
| 105 | JUNCTION | 0.77 | 0.83 | 0 00:48 | 0.0227 | 0.146 |
| 0.000 | | | | | | |
| 110 | JUNCTION | 0.10 | 0.92 | 0 02:15 | 0.0172 | 0.216 |
| 0.000 | | | | | | |
| 104 | JUNCTION | 0.00 | 0.48 | 0 02:13 | 0 | 0.124 |
| -0.000 | | | | | | |
| 106 | JUNCTION | 0.16 | 0.84 | 0 00:51 | 0.0365 | 0.199 |
| 0.000 | | | | | | |
| 107 | JUNCTION | 0.05 | 0.05 | 0 02:06 | 0.00738 | 0.00738 |
| 0.000 | | | | | | |
| 109 | JUNCTION | 0.00 | 0.10 | 0 03:00 | 0 | 0.016 |
| 0.000 | | | | | | |
| 108 | JUNCTION | 0.05 | 0.05 | 0 02:04 | 0.00859 | 0.00859 |
| 0.000 | | | | | | |
| 112 | JUNCTION | 0.12 | 0.15 | 0 02:20 | 0.0208 | 0.028 |
| 0.000 | | | | | | |
| 111 | JUNCTION | 0.04 | 0.04 | 0 01:10 | 0.0072 | 0.0072 |
| 0.000 | | | | | | |
| 103 | JUNCTION | 0.12 | 2.73 | 0 00:51 | 0.00151 | 0.399 |
| 0.000 | | | | | | |
| 33c | OUTFALL | 5.53 | 5.53 | 0 00:50 | 0.205 | 0.205 |
| 0.000 | | | | | | |
| 33B | OUTFALL | 0.00 | 0.89 | 0 05:46 | 0 | 0.411 |
| 0.000 | | | | | | |
| 302 | STORAGE | 0.03 | 2.74 | 0 00:52 | 0.00581 | 0.432 |
| -0.002 | | | | | | |
| 300 | STORAGE | 1.62 | 11.56 | 0 00:46 | 0.0174 | 0.15 |
| 0.021 | | | | | | |
| 301 | STORAGE | 11.04 | 11.04 | 0 00:45 | 0.14 | 0.14 |
| 0.007 | | | | | | |

Node Surcharge Summary

Surcharging occurs when water rises above the top of the highest conduit.

| Node | Type | Hours Surcharged | Max. Height Above Crown Feet | Min. Depth Below Rim Feet |
|------|---------|------------------|------------------------------|---------------------------|
| 300 | STORAGE | 11.18 | 1.692 | 1.308 |
| 301 | STORAGE | 40.01 | 2.527 | 4.473 |

Node Flooding Summary

No nodes were flooded.

Proposed SWMM Results WQ Event

Storage Volume Summary

| Maximum Outflow Storage Unit CFS | Average Volume 1000 ft3 | Avg Pcnt Full | Evap Loss | Exfil Pcnt Loss | Maximum Volume 1000 ft3 | Max Pcnt Full | Time of Max Occurrence days hr:min |
|----------------------------------|-------------------------|---------------|-----------|-----------------|-------------------------|---------------|------------------------------------|
| 302 0.89 | 6.886 | 2 | 0 | 0 | 12.825 | 4 | 0 05:46 |
| 300 0.37 | 5.585 | 21 | 0 | 0 | 17.175 | 65 | 0 02:23 |
| 301 0.48 | 7.928 | 9 | 0 | 0 | 16.421 | 18 | 0 02:13 |

Outfall Loading Summary

| Outfall Node | Flow Freq Pcnt | Avg Flow CFS | Max Flow CFS | Total Volume 10^6 gal |
|--------------|----------------|--------------|--------------|-----------------------|
| 33c | 97.69 | 0.19 | 5.53 | 0.205 |
| 33B | 98.31 | 0.39 | 0.89 | 0.411 |
| System | 98.00 | 0.58 | 5.55 | 0.616 |

Link Flow Summary

| Link | Type | Maximum Flow CFS | Time of Max Occurrence days hr:min | Maximum Veloc ft/sec | Max/ Full Flow | Max/ Full Depth |
|------------|---------|--------------------|------------------------------------|------------------------|----------------|-----------------|
| 201 | CONDUIT | 2.15 | 0 00:46 | 5.65 | 0.02 | 0.10 |
| 202 | CONDUIT | 2.12 | 0 00:47 | 5.48 | 0.02 | 0.10 |
| 209 | CONDUIT | 0.92 | 0 02:18 | 2.44 | 0.01 | 0.06 |
| 203 | CONDUIT | 0.48 | 0 02:14 | 4.55 | 0.03 | 0.11 |
| 204 | CONDUIT | 0.82 | 0 00:51 | 4.27 | 0.03 | 0.11 |
| 208 | CONDUIT | 0.84 | 0 00:52 | 2.72 | 0.01 | 0.06 |
| 205 | CONDUIT | 0.05 | 0 03:00 | 2.17 | 0.00 | 0.04 |
| 207 | CONDUIT | 0.10 | 0 03:01 | 1.94 | 0.00 | 0.04 |
| 206 | CONDUIT | 0.05 | 0 03:50 | 1.65 | 0.00 | 0.05 |
| 11 | CONDUIT | 0.04 | 0 01:11 | 1.65 | 0.00 | 0.03 |
| 212 | CONDUIT | 0.15 | 0 02:20 | 2.37 | 0.00 | 0.04 |
| 200 | CONDUIT | 10.04 | 0 00:46 | 6.32 | 0.17 | 0.28 |
| 210 | CONDUIT | 2.73 | 0 00:52 | 8.45 | 0.01 | 0.05 |
| 302_outlet | ORIFICE | 0.89 | 0 05:46 | | | 0.00 |
| 300_outlet | DUMMY | 0.37 | 0 02:23 | | | |
| 301_outlet | DUMMY | 0.48 | 0 02:13 | | | |

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Mar 18 09:05:00 2016
Analysis ended on: Fri Mar 18 09:05:00 2016

Total elapsed time: < 1 sec

Proposed SWMM Results WQ Event

Enclaves at Mountain Vista
MDDP Proposed Conditions
WARNING 02: maximum depth increased for Node 106

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

Analysis Options

Flow Units CFS
Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed NO
 Water Quality NO
Infiltration Method HORTON
Flow Routing Method KINWAVE
Starting Date JAN-26-2016 00:00:00
Ending Date JAN-27-2016 16:00:00
Antecedent Dry Days 0.0
Report Time Step 00:15:00
Wet Time Step 00:05:00
Dry Time Step 01:00:00
Routing Time Step 30.00 sec

Element Count

Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 18
Number of links 16
Number of pollutants 0
Number of land uses 0

Raingage Summary

| Name | Data Source | Data Type | Recording Interval |
|------|-------------|------------|--------------------|
| 1 | CS_5-yr | CUMULATIVE | 5 min. |

Subcatchment Summary

| Name | Area | width | %Imperv | %Slope | Rain Gage | Outlet |
|------|------|--------|---------|--------|-----------|--------|
| A1 | 4.42 | 145.00 | 65.00 | 2.5000 | 1 | 100 |
| A2 | 8.15 | 270.00 | 65.00 | 1.4000 | 1 | 100 |
| C1 | 5.86 | 150.00 | 65.00 | 2.0000 | 1 | 301 |
| C2 | 3.21 | 75.00 | 65.00 | 2.0000 | 1 | 301 |
| A4 | 1.57 | 60.00 | 65.00 | 2.6000 | 1 | 301 |

Proposed SWMM Results 5-Year

| | | | | | | |
|-----|-------|--------|-------|--------|---|-----|
| A3b | 2.80 | 140.00 | 65.00 | 0.5000 | 1 | 101 |
| B1 | 2.07 | 150.00 | 65.00 | 2.0000 | 1 | 102 |
| A5 | 1.96 | 140.00 | 65.00 | 1.2000 | 1 | 301 |
| B2 | 2.54 | 75.00 | 65.00 | 2.5000 | 1 | 110 |
| B3 | 5.42 | 100.00 | 65.00 | 0.5000 | 1 | 110 |
| C5 | 5.35 | 100.00 | 65.00 | 2.2000 | 1 | 105 |
| C6 | 5.00 | 85.00 | 65.00 | 2.2000 | 1 | 105 |
| D1 | 5.38 | 130.00 | 65.00 | 1.8000 | 1 | 106 |
| D2 | 8.02 | 160.00 | 65.00 | 1.8000 | 1 | 106 |
| D3 | 1.88 | 100.00 | 65.00 | 2.2000 | 1 | 106 |
| E1 | 3.24 | 75.00 | 65.00 | 2.0000 | 1 | 107 |
| E2 | 4.06 | 130.00 | 65.00 | 1.3000 | 1 | 108 |
| E3 | 3.68 | 140.00 | 65.00 | 2.0000 | 1 | 106 |
| E4 | 3.50 | 500.00 | 25.00 | 0.5000 | 1 | 33c |
| F4 | 3.34 | 70.00 | 65.00 | 1.5000 | 1 | 112 |
| F1 | 2.06 | 200.00 | 65.00 | 2.0000 | 1 | 111 |
| F2 | 1.68 | 150.00 | 65.00 | 2.4000 | 1 | 111 |
| F3 | 5.55 | 140.00 | 65.00 | 1.5000 | 1 | 112 |
| F5 | 0.92 | 70.00 | 65.00 | 1.5000 | 1 | 112 |
| F7 | 2.37 | 100.00 | 5.00 | 1.0000 | 1 | 302 |
| F6 | 2.99 | 80.00 | 65.00 | 2.0000 | 1 | 302 |
| B4 | 1.82 | 130.00 | 65.00 | 2.0000 | 1 | 103 |
| OS1 | 17.00 | 300.00 | 2.00 | 5.0000 | 1 | 301 |
| OS2 | 4.73 | 100.00 | 5.00 | 1.0000 | 1 | 33c |
| OS3 | 13.04 | 50.00 | 2.00 | 1.0000 | 1 | 33c |
| OS4 | 55.64 | 100.00 | 20.00 | 1.3000 | 1 | 33c |
| A3a | 1.91 | 75.00 | 55.80 | 2.0000 | 1 | 300 |

LID Control Summary

| Subcatchment | LID Control | No. of Units | Unit Area | Unit Width | % Area Covered | % Imperv Treated |
|--------------|-------------|--------------|-----------|------------|----------------|------------------|
| B1 | MinorStreet | 1 | 2750.00 | 5.00 | 3.05 | 100.00 |
| B2 | MinorStreet | 1 | 3750.00 | 5.00 | 3.39 | 100.00 |
| B3 | MinorStreet | 1 | 11500.00 | 5.00 | 4.87 | 100.00 |
| C5 | MinorStreet | 1 | 4950.00 | 5.00 | 2.12 | 100.00 |
| D1 | MinorStreet | 1 | 8000.00 | 5.00 | 3.41 | 100.00 |
| D2 | MinorStreet | 1 | 7650.00 | 5.00 | 2.19 | 100.00 |
| D3 | MinorStreet | 1 | 5800.00 | 5.00 | 7.08 | 100.00 |
| E1 | MinorStreet | 1 | 7500.00 | 5.00 | 5.31 | 100.00 |
| E2 | MinorStreet | 1 | 7650.00 | 5.00 | 4.33 | 100.00 |
| E3 | MinorStreet | 1 | 4300.00 | 5.00 | 2.68 | 100.00 |
| E4 | MinorStreet | 1 | 10950.00 | 5.00 | 7.18 | 100.00 |

Proposed SWMM Results 5-Year

| | | | | | | |
|----|-------------|---|----------|------|------|--------|
| F4 | MinorStreet | 1 | 5550.00 | 5.00 | 3.81 | 100.00 |
| F1 | MinorStreet | 1 | 2200.00 | 5.00 | 2.45 | 100.00 |
| F2 | MinorStreet | 1 | 2450.00 | 5.00 | 3.35 | 100.00 |
| F3 | MinorStreet | 1 | 10250.00 | 5.00 | 4.24 | 100.00 |
| F5 | MinorStreet | 1 | 2650.00 | 5.00 | 6.61 | 100.00 |
| F6 | MinorStreet | 1 | 4200.00 | 5.00 | 3.22 | 100.00 |

Node Summary

| Name | Type | Invert Elev. | Max. Depth | Ponded Area | External Inflow |
|------|----------|--------------|------------|-------------|-----------------|
| 100 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 101 | JUNCTION | 6617.00 | 5.00 | 0.0 | |
| 102 | JUNCTION | 6613.00 | 5.00 | 0.0 | |
| 105 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 110 | JUNCTION | 6608.50 | 5.00 | 0.0 | |
| 104 | JUNCTION | 6629.00 | 5.00 | 0.0 | |
| 106 | JUNCTION | 6610.00 | 4.00 | 0.0 | |
| 107 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 109 | JUNCTION | 6613.00 | 5.00 | 0.0 | |
| 108 | JUNCTION | 6615.00 | 5.00 | 0.0 | |
| 112 | JUNCTION | 6595.00 | 5.00 | 0.0 | |
| 111 | JUNCTION | 6600.00 | 4.00 | 0.0 | |
| 103 | JUNCTION | 6606.00 | 8.00 | 0.0 | |
| 33c | OUTFALL | 6610.00 | 0.00 | 0.0 | |
| 33B | OUTFALL | 6590.00 | 0.00 | 0.0 | |
| 302 | STORAGE | 6590.00 | 6.00 | 0.0 | |
| 300 | STORAGE | 6619.00 | 6.00 | 0.0 | |
| 301 | STORAGE | 6629.00 | 7.00 | 0.0 | |

Link Summary

| Name | From Node | To Node | Type | Length | %Slope | Roughness |
|------------|-----------|---------|---------|--------|--------|-----------|
| 201 | 101 | 102 | CONDUIT | 190.0 | 2.1057 | 0.0130 |
| 202 | 102 | 103 | CONDUIT | 360.0 | 1.9448 | 0.0130 |
| 209 | 110 | 103 | CONDUIT | 520.0 | 0.4808 | 0.0130 |
| 203 | 104 | 105 | CONDUIT | 310.0 | 1.9358 | 0.0100 |
| 204 | 105 | 106 | CONDUIT | 700.0 | 1.8575 | 0.0130 |
| 208 | 106 | 110 | CONDUIT | 225.0 | 0.6667 | 0.0130 |
| 205 | 107 | 109 | CONDUIT | 350.0 | 2.8583 | 0.0130 |
| 207 | 109 | 106 | CONDUIT | 230.0 | 1.3045 | 0.0130 |
| 206 | 108 | 109 | CONDUIT | 150.0 | 1.3335 | 0.0130 |
| 11 | 111 | 112 | CONDUIT | 280.0 | 1.7860 | 0.0130 |
| 212 | 112 | 302 | CONDUIT | 290.0 | 1.7244 | 0.0130 |
| 200 | 100 | 300 | CONDUIT | 500.0 | 0.8000 | 0.0130 |
| 210 | 103 | 302 | CONDUIT | 400.0 | 4.0032 | 0.0100 |
| 302_outlet | 302 | 33B | ORIFICE | | | |
| 300_outlet | 300 | 101 | OUTLET | | | |
| 301_outlet | 301 | 104 | OUTLET | | | |

Cross Section Summary

| Conduit | Shape | Full Depth | Full Area | Hyd. Rad. | Max. Width | No. of Barrels | Full Flow |
|---------|----------|------------|-----------|-----------|------------|----------------|-----------|
| 201 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 96.79 |
| 202 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 93.02 |
| 209 | CIRCULAR | 4.50 | 15.90 | 1.13 | 4.50 | 1 | 136.35 |
| 203 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 19.00 |
| 204 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 30.83 |
| 208 | CIRCULAR | 4.00 | 12.57 | 1.00 | 4.00 | 1 | 117.29 |
| 205 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 17.76 |
| 207 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 25.84 |
| 206 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 12.13 |
| 11 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 30.23 |
| 212 | CIRCULAR | 2.50 | 4.91 | 0.63 | 2.50 | 1 | 53.86 |

| | | Proposed SWMM Results 5-Year | | | | | | |
|-----|----------|------------------------------|-------|------|------|---|--------|--|
| 200 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 59.66 | |
| 210 | CIRCULAR | 4.50 | 15.90 | 1.13 | 4.50 | 1 | 511.49 | |

Control Actions Taken

| | Volume acre-feet | Depth inches |
|--|---------------------|-----------------|
| ***** Runoff Quantity Continuity ***** | ----- | ----- |
| Initial LID Storage | 0.078 | 0.005 |
| Total Precipitation | 26.739 | 1.679 |
| Evaporation Loss | 0.000 | 0.000 |
| Infiltration Loss | 18.189 | 1.142 |
| Surface Runoff | 8.136 | 0.511 |
| Final Surface Storage | 0.578 | 0.036 |
| Continuity Error (%) | -0.319 | |

| | Volume acre-feet | Volume 10^6 gal |
|---|---------------------|--------------------|
| ***** Flow Routing Continuity ***** | ----- | ----- |
| Dry Weather Inflow | 0.000 | 0.000 |
| Wet Weather Inflow | 8.136 | 2.651 |
| Groundwater Inflow | 0.000 | 0.000 |
| RDII Inflow | 0.000 | 0.000 |
| External Inflow | 0.000 | 0.000 |
| External Outflow | 7.968 | 2.596 |
| Internal Outflow | 0.000 | 0.000 |
| Evaporation Loss | 0.000 | 0.000 |
| Exfiltration Loss | 0.000 | 0.000 |
| Initial Stored Volume | 0.000 | 0.000 |
| Final Stored Volume | 0.135 | 0.044 |
| Continuity Error (%) | 0.410 | |

Highest Flow Instability Indexes

All links are stable.

Routing Time Step Summary

| | | |
|-----------------------------|---|-----------|
| Minimum Time Step | : | 30.00 sec |
| Average Time Step | : | 30.00 sec |
| Maximum Time Step | : | 30.00 sec |
| Percent in Steady State | : | 0.00 |
| Average Iterations per Step | : | 1.08 |
| Percent Not Converging | : | 0.00 |

Subcatchment Runoff Summary

| | | Total Precip | Total Runon | Total Evap | Total Infil | Total Runoff | Total Runoff |
|-------|-------|-----------------|----------------|---------------|----------------|-----------------|-----------------|
| CFS | | in | in | in | in | in | 10^6 gal |
| A1 | | 1.68 | 0.00 | 0.00 | 0.58 | 1.06 | 0.13 |
| 12.62 | 0.631 | | | | | | |

Proposed SWMM Results 5-Year

| | | | | | | | |
|-------|-------|------|------|------|------|------|------|
| A2 | | 1.68 | 0.00 | 0.00 | 0.58 | 1.06 | 0.23 |
| 21.65 | 0.630 | | | | | | |
| C1 | | 1.68 | 0.00 | 0.00 | 0.58 | 1.06 | 0.17 |
| 15.20 | 0.629 | | | | | | |
| C2 | | 1.68 | 0.00 | 0.00 | 0.58 | 1.06 | 0.09 |
| 8.09 | 0.629 | | | | | | |
| A4 | | 1.68 | 0.00 | 0.00 | 0.58 | 1.06 | 0.05 |
| 4.65 | 0.632 | | | | | | |
| A3b | | 1.68 | 0.00 | 0.00 | 0.58 | 1.06 | 0.08 |
| 7.21 | 0.629 | | | | | | |
| B1 | | 1.68 | 0.00 | 0.00 | 0.85 | 0.79 | 0.04 |
| 2.40 | 0.468 | | | | | | |
| A5 | | 1.68 | 0.00 | 0.00 | 0.58 | 1.06 | 0.06 |
| 6.05 | 0.633 | | | | | | |
| B2 | | 1.68 | 0.00 | 0.00 | 0.93 | 0.70 | 0.05 |
| 1.70 | 0.418 | | | | | | |
| B3 | | 1.68 | 0.00 | 0.00 | 1.09 | 0.53 | 0.08 |
| 1.36 | 0.317 | | | | | | |
| C5 | | 1.68 | 0.00 | 0.00 | 1.01 | 0.62 | 0.09 |
| 2.41 | 0.372 | | | | | | |
| C6 | | 1.68 | 0.00 | 0.00 | 0.94 | 0.70 | 0.10 |
| 3.09 | 0.418 | | | | | | |
| D1 | | 1.68 | 0.00 | 0.00 | 0.98 | 0.65 | 0.09 |
| 2.73 | 0.387 | | | | | | |
| D2 | | 1.68 | 0.00 | 0.00 | 0.98 | 0.65 | 0.14 |
| 3.78 | 0.387 | | | | | | |
| D3 | | 1.68 | 0.00 | 0.00 | 0.84 | 0.78 | 0.04 |
| 1.83 | 0.466 | | | | | | |
| E1 | | 1.68 | 0.00 | 0.00 | 0.96 | 0.66 | 0.06 |
| 1.66 | 0.396 | | | | | | |
| E2 | | 1.68 | 0.00 | 0.00 | 0.95 | 0.67 | 0.07 |
| 2.26 | 0.401 | | | | | | |
| E3 | | 1.68 | 0.00 | 0.00 | 0.90 | 0.74 | 0.07 |
| 2.86 | 0.440 | | | | | | |
| E4 | | 1.68 | 0.00 | 0.00 | 1.09 | 0.56 | 0.05 |
| 3.19 | 0.332 | | | | | | |
| F4 | | 1.68 | 0.00 | 0.00 | 0.99 | 0.63 | 0.06 |
| 1.48 | 0.377 | | | | | | |
| F1 | | 1.68 | 0.00 | 0.00 | 0.81 | 0.83 | 0.05 |
| 3.00 | 0.493 | | | | | | |
| F2 | | 1.68 | 0.00 | 0.00 | 0.81 | 0.83 | 0.04 |
| 2.45 | 0.495 | | | | | | |
| F3 | | 1.68 | 0.00 | 0.00 | 0.96 | 0.67 | 0.10 |
| 2.83 | 0.397 | | | | | | |
| F5 | | 1.68 | 0.00 | 0.00 | 0.81 | 0.82 | 0.02 |
| 1.04 | 0.486 | | | | | | |
| F7 | | 1.68 | 0.00 | 0.00 | 1.65 | 0.03 | 0.00 |
| 0.11 | 0.016 | | | | | | |
| F6 | | 1.68 | 0.00 | 0.00 | 0.94 | 0.69 | 0.06 |
| 1.78 | 0.412 | | | | | | |
| B4 | | 1.68 | 0.00 | 0.00 | 0.76 | 0.89 | 0.04 |
| 3.08 | 0.530 | | | | | | |
| OS1 | | 1.68 | 0.00 | 0.00 | 1.63 | 0.05 | 0.02 |
| 1.85 | 0.029 | | | | | | |
| OS2 | | 1.68 | 0.00 | 0.00 | 1.59 | 0.09 | 0.01 |
| 1.25 | 0.053 | | | | | | |
| OS3 | | 1.68 | 0.00 | 0.00 | 1.64 | 0.03 | 0.01 |
| 1.32 | 0.020 | | | | | | |
| OS4 | | 1.68 | 0.00 | 0.00 | 1.34 | 0.33 | 0.50 |
| 19.78 | 0.196 | | | | | | |
| A3a | | 1.68 | 0.00 | 0.00 | 0.73 | 0.91 | 0.05 |
| 4.90 | 0.543 | | | | | | |

 LID Performance Summary

 Final Percent Total Evap Infil Surface Drain Initial
 Inflow Loss Loss Outflow Outflow Storage

Proposed SWMM Results 5-Year

| Storage Subcatchment | Error | LID Control | in | in | in | in | in | in | |
|----------------------|-------|-------------|-------------|-------|------|------|------|------|------|
| B1 | 0.80 | -0.00 | MinorStreet | 10.04 | 0.00 | 3.91 | 0.00 | 5.72 | 0.40 |
| B2 | 0.80 | -0.00 | MinorStreet | 9.17 | 0.00 | 3.52 | 0.00 | 5.25 | 0.40 |
| B3 | 0.80 | -0.00 | MinorStreet | 6.79 | 0.00 | 2.43 | 0.00 | 3.96 | 0.40 |
| C5 | 0.80 | -0.00 | MinorStreet | 13.76 | 0.00 | 5.20 | 0.89 | 7.28 | 0.40 |
| D1 | 0.80 | -0.00 | MinorStreet | 9.10 | 0.00 | 3.49 | 0.00 | 5.21 | 0.40 |
| D2 | 0.80 | -0.00 | MinorStreet | 13.39 | 0.00 | 5.22 | 0.47 | 7.30 | 0.40 |
| D3 | 0.80 | -0.00 | MinorStreet | 5.13 | 0.00 | 1.69 | 0.00 | 3.04 | 0.40 |
| E1 | 0.80 | -0.00 | MinorStreet | 6.35 | 0.00 | 2.24 | 0.00 | 3.71 | 0.40 |
| E2 | 0.80 | -0.00 | MinorStreet | 7.48 | 0.00 | 2.76 | 0.00 | 4.33 | 0.40 |
| E3 | 0.80 | -0.00 | MinorStreet | 11.21 | 0.00 | 4.45 | 0.00 | 6.36 | 0.40 |
| E4 | 0.80 | 0.00 | MinorStreet | 3.01 | 0.00 | 0.72 | 0.00 | 1.89 | 0.40 |
| F4 | 0.80 | -0.00 | MinorStreet | 8.29 | 0.00 | 3.12 | 0.00 | 4.77 | 0.40 |
| F1 | 0.80 | -0.00 | MinorStreet | 12.14 | 0.00 | 4.87 | 0.00 | 6.87 | 0.40 |
| F2 | 0.80 | -0.00 | MinorStreet | 9.27 | 0.00 | 3.56 | 0.00 | 5.30 | 0.40 |
| F3 | 0.80 | -0.00 | MinorStreet | 7.60 | 0.00 | 2.81 | 0.00 | 4.40 | 0.40 |
| F5 | 0.80 | -0.00 | MinorStreet | 5.39 | 0.00 | 1.81 | 0.00 | 3.18 | 0.40 |
| F6 | 0.80 | -0.00 | MinorStreet | 9.56 | 0.00 | 3.70 | 0.00 | 5.46 | 0.40 |

Node Depth Summary

| Node | Type | Average Depth Feet | Maximum Depth Feet | Maximum HGL Feet | Time of Max Occurrence days hr:min |
|------|----------|--------------------|--------------------|------------------|------------------------------------|
| 100 | JUNCTION | 0.04 | 1.63 | 6624.63 | 0 00:45 |
| 101 | JUNCTION | 0.10 | 1.15 | 6618.15 | 0 00:50 |
| 102 | JUNCTION | 0.10 | 1.22 | 6614.22 | 0 00:51 |
| 105 | JUNCTION | 0.12 | 0.84 | 6623.84 | 0 01:05 |
| 110 | JUNCTION | 0.19 | 1.40 | 6609.90 | 0 01:05 |
| 104 | JUNCTION | 0.10 | 0.59 | 6629.59 | 0 01:13 |
| 106 | JUNCTION | 0.17 | 1.28 | 6611.28 | 0 01:05 |
| 107 | JUNCTION | 0.03 | 0.31 | 6623.31 | 0 01:05 |
| 109 | JUNCTION | 0.05 | 0.53 | 6613.53 | 0 01:05 |
| 108 | JUNCTION | 0.04 | 0.44 | 6615.44 | 0 01:05 |
| 112 | JUNCTION | 0.07 | 0.72 | 6595.72 | 0 00:55 |
| 111 | JUNCTION | 0.04 | 0.58 | 6600.58 | 0 00:50 |
| 103 | JUNCTION | 0.19 | 1.40 | 6607.40 | 0 01:06 |
| 33c | OUTFALL | 0.00 | 0.00 | 6610.00 | 0 00:00 |
| 33B | OUTFALL | 0.00 | 0.00 | 6590.00 | 0 00:00 |
| 302 | STORAGE | 0.38 | 2.42 | 6592.42 | 0 01:59 |
| 300 | STORAGE | 2.32 | 5.37 | 6624.37 | 0 00:51 |
| 301 | STORAGE | 1.72 | 3.71 | 6632.71 | 0 01:13 |

Node Inflow Summary

Proposed SWMM Results 5-Year

| Flow Balance Error Node Percent | Type | Maximum Lateral Inflow CFS | Maximum Total Inflow CFS | Time of Max Occurrence days hr:min | Lateral Inflow Volume 10^6 gal | Total Inflow Volume 10^6 gal |
|---------------------------------|----------|----------------------------|--------------------------|------------------------------------|--------------------------------|------------------------------|
| - | | | | | | |
| 100 0.000 | JUNCTION | 34.28 | 34.28 | 0 00:45 | 0.361 | 0.361 |
| 101 0.000 | JUNCTION | 7.21 | 30.23 | 0 00:50 | 0.0803 | 0.483 |
| 102 0.000 | JUNCTION | 2.40 | 32.48 | 0 00:51 | 0.0441 | 0.527 |
| 105 0.000 | JUNCTION | 5.28 | 11.41 | 0 01:05 | 0.186 | 0.554 |
| 110 0.000 | JUNCTION | 2.84 | 28.72 | 0 01:05 | 0.127 | 1.16 |
| 104 -0.000 | JUNCTION | 0.00 | 6.19 | 0 01:13 | 0 | 0.368 |
| 106 0.000 | JUNCTION | 10.67 | 25.91 | 0 01:05 | 0.35 | 1.03 |
| 107 0.000 | JUNCTION | 1.66 | 1.66 | 0 01:05 | 0.0584 | 0.0584 |
| 109 0.000 | JUNCTION | 0.00 | 3.91 | 0 01:05 | 0 | 0.133 |
| 108 0.000 | JUNCTION | 2.26 | 2.26 | 0 01:05 | 0.0742 | 0.0742 |
| 112 0.000 | JUNCTION | 5.05 | 9.66 | 0 00:55 | 0.178 | 0.262 |
| 111 0.000 | JUNCTION | 5.45 | 5.45 | 0 00:50 | 0.0841 | 0.0841 |
| 103 0.000 | JUNCTION | 3.08 | 55.84 | 0 00:53 | 0.044 | 1.73 |
| 33c 0.000 | OUTFALL | 24.19 | 24.19 | 0 00:50 | 0.574 | 0.574 |
| 33B 0.000 | OUTFALL | 0.00 | 18.58 | 0 01:59 | 0 | 2.02 |
| 302 0.062 | STORAGE | 1.89 | 66.58 | 0 00:54 | 0.0579 | 2.05 |
| 300 0.378 | STORAGE | 4.90 | 38.13 | 0 00:45 | 0.0473 | 0.408 |
| 301 0.110 | STORAGE | 35.84 | 35.84 | 0 00:45 | 0.385 | 0.385 |

Node Surcharge Summary

Surcharging occurs when water rises above the top of the highest conduit.

| Node | Type | Hours Surcharged | Max. Height Above Crown Feet | Min. Depth Below Rim Feet |
|------|---------|------------------|------------------------------|---------------------------|
| 300 | STORAGE | 12.57 | 2.374 | 0.626 |
| 301 | STORAGE | 40.01 | 3.708 | 3.292 |

Node Flooding Summary

No nodes were flooded.

Proposed SWMM Results 5-Year

Storage Volume Summary

| Storage Unit | Average Volume 1000 ft3 | Avg Pcnt Full | Evap Loss | Exfil Pcnt Loss | Maximum Volume 1000 ft3 | Max Pcnt Full | Time of Max Occurrence days hr:min |
|--------------|----------------------------|---------------|-----------|-----------------|----------------------------|---------------|---------------------------------------|
| 302 | 17.262 | 5 | 0 | 0 | 117.242 | 35 | 0 01:58 |
| 18.58 | | | | | | | |
| 300 | 6.373 | 24 | 0 | 0 | 21.812 | 82 | 0 00:51 |
| 25.42 | | | | | | | |
| 301 | 8.605 | 9 | 0 | 0 | 31.984 | 35 | 0 01:12 |
| 6.19 | | | | | | | |

Outfall Loading Summary

| Outfall Node | Flow Freq Pcnt | Avg Flow CFS | Max Flow CFS | Total Volume 10^6 gal |
|--------------|----------------|--------------|--------------|--------------------------|
| 33c | 99.00 | 0.54 | 24.19 | 0.574 |
| 33B | 98.77 | 1.90 | 18.58 | 2.022 |
| System | 98.89 | 2.44 | 26.43 | 2.596 |

Link Flow Summary

| Link | Type | Maximum Flow CFS | Time of Max Occurrence days hr:min | Maximum Veloc ft/sec | Max/ Full Flow | Max/ Full Depth |
|------------|---------|--------------------|---------------------------------------|------------------------|----------------|-----------------|
| 201 | CONDUIT | 30.22 | 0 00:51 | 12.11 | 0.31 | 0.38 |
| 202 | CONDUIT | 32.42 | 0 00:51 | 11.99 | 0.35 | 0.41 |
| 209 | CONDUIT | 28.71 | 0 01:06 | 6.79 | 0.21 | 0.31 |
| 203 | CONDUIT | 6.19 | 0 01:13 | 9.61 | 0.33 | 0.39 |
| 204 | CONDUIT | 11.41 | 0 01:07 | 9.08 | 0.37 | 0.42 |
| 208 | CONDUIT | 25.90 | 0 01:05 | 7.49 | 0.22 | 0.32 |
| 205 | CONDUIT | 1.66 | 0 01:06 | 6.30 | 0.09 | 0.21 |
| 207 | CONDUIT | 3.91 | 0 01:06 | 5.93 | 0.15 | 0.26 |
| 206 | CONDUIT | 2.25 | 0 01:05 | 5.25 | 0.19 | 0.29 |
| 11 | CONDUIT | 5.41 | 0 00:51 | 7.29 | 0.18 | 0.29 |
| 212 | CONDUIT | 9.64 | 0 00:56 | 8.31 | 0.18 | 0.29 |
| 200 | CONDUIT | 33.43 | 0 00:45 | 8.79 | 0.56 | 0.53 |
| 210 | CONDUIT | 55.81 | 0 00:53 | 21.12 | 0.11 | 0.22 |
| 302_outlet | ORIFICE | 18.58 | 0 01:59 | | | 0.00 |
| 300_outlet | DUMMY | 25.42 | 0 00:51 | | | |
| 301_outlet | DUMMY | 6.19 | 0 01:13 | | | |

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Mar 18 09:05:18 2016
Analysis ended on: Fri Mar 18 09:05:18 2016

Total elapsed time: < 1 sec

Proposed SWMM Results 5-Year

Enclaves at Mountain Vista
MDDP Proposed Conditions
WARNING 02: maximum depth increased for Node 106

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

Analysis Options

Flow Units CFS
Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed NO
 Water Quality NO
Infiltration Method HORTON
Flow Routing Method KINWAVE
Starting Date JAN-26-2016 00:00:00
Ending Date JAN-27-2016 16:00:00
Antecedent Dry Days 0.0
Report Time Step 00:15:00
Wet Time Step 00:05:00
Dry Time Step 01:00:00
Routing Time Step 30.00 sec

Element Count

Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 18
Number of links 16
Number of pollutants 0
Number of land uses 0

Raingage Summary

| Name | Data Source | Data Type | Recording Interval |
|------|-------------|------------|--------------------|
| 1 | CS_100-yr | CUMULATIVE | 5 min. |

Subcatchment Summary

| Name | Area | Width | %Imperv | %Slope | Rain Gage | Outlet |
|------|------|--------|---------|--------|-----------|--------|
| A1 | 4.42 | 145.00 | 65.00 | 2.5000 | 1 | 100 |
| A2 | 8.15 | 270.00 | 65.00 | 1.4000 | 1 | 100 |
| C1 | 5.86 | 150.00 | 65.00 | 2.0000 | 1 | 301 |
| C2 | 3.21 | 75.00 | 65.00 | 2.0000 | 1 | 301 |
| A4 | 1.57 | 60.00 | 65.00 | 2.6000 | 1 | 301 |

Proposed SWMM Results 100-Year

| | | | | | | |
|-----|-------|--------|-------|--------|---|-----|
| A3b | 2.80 | 140.00 | 65.00 | 0.5000 | 1 | 101 |
| B1 | 2.07 | 150.00 | 65.00 | 2.0000 | 1 | 102 |
| A5 | 1.96 | 140.00 | 65.00 | 1.2000 | 1 | 301 |
| B2 | 2.54 | 75.00 | 65.00 | 2.5000 | 1 | 110 |
| B3 | 5.42 | 100.00 | 65.00 | 0.5000 | 1 | 110 |
| C5 | 5.35 | 100.00 | 65.00 | 2.2000 | 1 | 105 |
| C6 | 5.00 | 85.00 | 65.00 | 2.2000 | 1 | 105 |
| D1 | 5.38 | 130.00 | 65.00 | 1.8000 | 1 | 106 |
| D2 | 8.02 | 160.00 | 65.00 | 1.8000 | 1 | 106 |
| D3 | 1.88 | 100.00 | 65.00 | 2.2000 | 1 | 106 |
| E1 | 3.24 | 75.00 | 65.00 | 2.0000 | 1 | 107 |
| E2 | 4.06 | 130.00 | 65.00 | 1.3000 | 1 | 108 |
| E3 | 3.68 | 140.00 | 65.00 | 2.0000 | 1 | 106 |
| E4 | 3.50 | 500.00 | 25.00 | 0.5000 | 1 | 33c |
| F4 | 3.34 | 70.00 | 65.00 | 1.5000 | 1 | 112 |
| F1 | 2.06 | 200.00 | 65.00 | 2.0000 | 1 | 111 |
| F2 | 1.68 | 150.00 | 65.00 | 2.4000 | 1 | 111 |
| F3 | 5.55 | 140.00 | 65.00 | 1.5000 | 1 | 112 |
| F5 | 0.92 | 70.00 | 65.00 | 1.5000 | 1 | 112 |
| F7 | 2.37 | 100.00 | 5.00 | 1.0000 | 1 | 302 |
| F6 | 2.99 | 80.00 | 65.00 | 2.0000 | 1 | 302 |
| B4 | 1.82 | 130.00 | 65.00 | 2.0000 | 1 | 103 |
| OS1 | 17.00 | 300.00 | 2.00 | 5.0000 | 1 | 301 |
| OS2 | 4.73 | 100.00 | 5.00 | 1.0000 | 1 | 33c |
| OS3 | 13.04 | 50.00 | 2.00 | 1.0000 | 1 | 33c |
| OS4 | 55.64 | 100.00 | 20.00 | 1.3000 | 1 | 33c |
| A3a | 1.91 | 75.00 | 55.80 | 2.0000 | 1 | 300 |

LID Control Summary

| Subcatchment | LID Control | No. of Units | Unit Area | Unit Width | % Area Covered | % Imperv Treated |
|--------------|-------------|--------------|-----------|------------|----------------|------------------|
| B1 | MinorStreet | 1 | 2750.00 | 5.00 | 3.05 | 100.00 |
| B2 | MinorStreet | 1 | 3750.00 | 5.00 | 3.39 | 100.00 |
| B3 | MinorStreet | 1 | 11500.00 | 5.00 | 4.87 | 100.00 |
| C5 | MinorStreet | 1 | 4950.00 | 5.00 | 2.12 | 100.00 |
| D1 | MinorStreet | 1 | 8000.00 | 5.00 | 3.41 | 100.00 |
| D2 | MinorStreet | 1 | 7650.00 | 5.00 | 2.19 | 100.00 |
| D3 | MinorStreet | 1 | 5800.00 | 5.00 | 7.08 | 100.00 |
| E1 | MinorStreet | 1 | 7500.00 | 5.00 | 5.31 | 100.00 |
| E2 | MinorStreet | 1 | 7650.00 | 5.00 | 4.33 | 100.00 |
| E3 | MinorStreet | 1 | 4300.00 | 5.00 | 2.68 | 100.00 |
| E4 | MinorStreet | 1 | 10950.00 | 5.00 | 7.18 | 100.00 |

Proposed SWMM Results 100-Year

| | | | | | | |
|----|-------------|---|----------|------|------|--------|
| F4 | MinorStreet | 1 | 5550.00 | 5.00 | 3.81 | 100.00 |
| F1 | MinorStreet | 1 | 2200.00 | 5.00 | 2.45 | 100.00 |
| F2 | MinorStreet | 1 | 2450.00 | 5.00 | 3.35 | 100.00 |
| F3 | MinorStreet | 1 | 10250.00 | 5.00 | 4.24 | 100.00 |
| F5 | MinorStreet | 1 | 2650.00 | 5.00 | 6.61 | 100.00 |
| F6 | MinorStreet | 1 | 4200.00 | 5.00 | 3.22 | 100.00 |

Node Summary

| Name | Type | Invert Elev. | Max. Depth | Ponded Area | External Inflow |
|------|----------|--------------|------------|-------------|-----------------|
| 100 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 101 | JUNCTION | 6617.00 | 5.00 | 0.0 | |
| 102 | JUNCTION | 6613.00 | 5.00 | 0.0 | |
| 105 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 110 | JUNCTION | 6608.50 | 5.00 | 0.0 | |
| 104 | JUNCTION | 6629.00 | 5.00 | 0.0 | |
| 106 | JUNCTION | 6610.00 | 4.00 | 0.0 | |
| 107 | JUNCTION | 6623.00 | 5.00 | 0.0 | |
| 109 | JUNCTION | 6613.00 | 5.00 | 0.0 | |
| 108 | JUNCTION | 6615.00 | 5.00 | 0.0 | |
| 112 | JUNCTION | 6595.00 | 5.00 | 0.0 | |
| 111 | JUNCTION | 6600.00 | 4.00 | 0.0 | |
| 103 | JUNCTION | 6606.00 | 8.00 | 0.0 | |
| 33c | OUTFALL | 6610.00 | 0.00 | 0.0 | |
| 33B | OUTFALL | 6590.00 | 0.00 | 0.0 | |
| 302 | STORAGE | 6590.00 | 6.00 | 0.0 | |
| 300 | STORAGE | 6619.00 | 6.00 | 0.0 | |
| 301 | STORAGE | 6629.00 | 7.00 | 0.0 | |

Link Summary

| Name | From Node | To Node | Type | Length | %Slope | Roughness |
|------------|-----------|---------|---------|--------|--------|-----------|
| 201 | 101 | 102 | CONDUIT | 190.0 | 2.1057 | 0.0130 |
| 202 | 102 | 103 | CONDUIT | 360.0 | 1.9448 | 0.0130 |
| 209 | 110 | 103 | CONDUIT | 520.0 | 0.4808 | 0.0130 |
| 203 | 104 | 105 | CONDUIT | 310.0 | 1.9358 | 0.0100 |
| 204 | 105 | 106 | CONDUIT | 700.0 | 1.8575 | 0.0130 |
| 208 | 106 | 110 | CONDUIT | 225.0 | 0.6667 | 0.0130 |
| 205 | 107 | 109 | CONDUIT | 350.0 | 2.8583 | 0.0130 |
| 207 | 109 | 106 | CONDUIT | 230.0 | 1.3045 | 0.0130 |
| 206 | 108 | 109 | CONDUIT | 150.0 | 1.3335 | 0.0130 |
| 11 | 111 | 112 | CONDUIT | 280.0 | 1.7860 | 0.0130 |
| 212 | 112 | 302 | CONDUIT | 290.0 | 1.7244 | 0.0130 |
| 200 | 100 | 300 | CONDUIT | 500.0 | 0.8000 | 0.0130 |
| 210 | 103 | 302 | CONDUIT | 400.0 | 4.0032 | 0.0100 |
| 302_outlet | 302 | 33B | ORIFICE | | | |
| 300_outlet | 300 | 101 | OUTLET | | | |
| 301_outlet | 301 | 104 | OUTLET | | | |

Cross Section Summary

| Conduit | Shape | Full Depth | Full Area | Hyd. Rad. | Max. Width | No. of Barrels | Full Flow |
|---------|----------|------------|-----------|-----------|------------|----------------|-----------|
| 201 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 96.79 |
| 202 | CIRCULAR | 3.00 | 7.07 | 0.75 | 3.00 | 1 | 93.02 |
| 209 | CIRCULAR | 4.50 | 15.90 | 1.13 | 4.50 | 1 | 136.35 |
| 203 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 19.00 |
| 204 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 30.83 |
| 208 | CIRCULAR | 4.00 | 12.57 | 1.00 | 4.00 | 1 | 117.29 |
| 205 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 17.76 |
| 207 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 25.84 |
| 206 | CIRCULAR | 1.50 | 1.77 | 0.38 | 1.50 | 1 | 12.13 |
| 11 | CIRCULAR | 2.00 | 3.14 | 0.50 | 2.00 | 1 | 30.23 |
| 212 | CIRCULAR | 2.50 | 4.91 | 0.63 | 2.50 | 1 | 53.86 |

| | | Proposed | SWMM | Results | 100-Year | | | |
|-----|----------|----------|------|---------|----------|------|---|--------|
| 200 | CIRCULAR | 3.00 | | 7.07 | 0.75 | 3.00 | 1 | 59.66 |
| 210 | CIRCULAR | 4.50 | | 15.90 | 1.13 | 4.50 | 1 | 511.49 |

Control Actions Taken

| | Volume acre-feet | Depth inches |
|--|---------------------|-----------------|
| ***** Runoff Quantity Continuity ***** | | |
| Initial LID Storage | 0.078 | 0.005 |
| Total Precipitation | 44.921 | 2.820 |
| Evaporation Loss | 0.000 | 0.000 |
| Infiltration Loss | 25.871 | 1.624 |
| Surface Runoff | 18.721 | 1.175 |
| Final Surface Storage | 0.578 | 0.036 |
| Continuity Error (%) | -0.381 | |

| | Volume acre-feet | Volume 10^6 gal |
|---|---------------------|--------------------|
| ***** Flow Routing Continuity ***** | | |
| Dry Weather Inflow | 0.000 | 0.000 |
| Wet Weather Inflow | 18.721 | 6.101 |
| Groundwater Inflow | 0.000 | 0.000 |
| RDII Inflow | 0.000 | 0.000 |
| External Inflow | 0.000 | 0.000 |
| External Outflow | 18.509 | 6.031 |
| Internal Outflow | 0.007 | 0.002 |
| Evaporation Loss | 0.000 | 0.000 |
| Exfiltration Loss | 0.000 | 0.000 |
| Initial Stored Volume | 0.000 | 0.000 |
| Final Stored Volume | 0.157 | 0.051 |
| Continuity Error (%) | 0.260 | |

Highest Flow Instability Indexes

All links are stable.

Routing Time Step Summary

| | | |
|-----------------------------|---|-----------|
| Minimum Time Step | : | 30.00 sec |
| Average Time Step | : | 30.00 sec |
| Maximum Time Step | : | 30.00 sec |
| Percent in Steady State | : | 0.00 |
| Average Iterations per Step | : | 1.14 |
| Percent Not Converging | : | 0.00 |

Subcatchment Runoff Summary

| Peak Runoff | | Total Precip | Total Runon | Total Evap | Total Infil | Total Runoff | Total Runoff |
|--------------|--------------|-----------------|----------------|---------------|----------------|-----------------|-----------------|
| Runoff Coeff | Subcatchment | in | in | in | in | in | 10^6 gal |
| CFS | | | | | | | |
| A1 | | 2.82 | 0.00 | 0.00 | 0.75 | 2.04 | 0.25 |
| 23.72 | 0.725 | | | | | | |

Proposed SWMM Results 100-Year

| | | | | | | | |
|-------|-------|------|------|------|------|------|------|
| A2 | | 2.82 | 0.00 | 0.00 | 0.77 | 2.02 | 0.45 |
| 41.19 | 0.716 | | | | | | |
| C1 | | 2.82 | 0.00 | 0.00 | 0.77 | 2.01 | 0.32 |
| 29.05 | 0.714 | | | | | | |
| C2 | | 2.82 | 0.00 | 0.00 | 0.78 | 2.00 | 0.17 |
| 15.55 | 0.711 | | | | | | |
| A4 | | 2.82 | 0.00 | 0.00 | 0.73 | 2.06 | 0.09 |
| 8.70 | 0.729 | | | | | | |
| A3b | | 2.82 | 0.00 | 0.00 | 0.78 | 2.01 | 0.15 |
| 13.80 | 0.713 | | | | | | |
| B1 | | 2.82 | 0.00 | 0.00 | 0.95 | 1.84 | 0.10 |
| 6.80 | 0.653 | | | | | | |
| A5 | | 2.82 | 0.00 | 0.00 | 0.72 | 2.07 | 0.11 |
| 11.29 | 0.736 | | | | | | |
| B2 | | 2.82 | 0.00 | 0.00 | 1.05 | 1.73 | 0.12 |
| 5.10 | 0.613 | | | | | | |
| B3 | | 2.82 | 0.00 | 0.00 | 1.34 | 1.42 | 0.21 |
| 4.42 | 0.504 | | | | | | |
| C5 | | 2.82 | 0.00 | 0.00 | 1.11 | 1.68 | 0.24 |
| 10.11 | 0.594 | | | | | | |
| C6 | | 2.82 | 0.00 | 0.00 | 1.04 | 1.75 | 0.24 |
| 8.58 | 0.619 | | | | | | |
| D1 | | 2.82 | 0.00 | 0.00 | 1.12 | 1.66 | 0.24 |
| 8.33 | 0.587 | | | | | | |
| D2 | | 2.82 | 0.00 | 0.00 | 1.08 | 1.70 | 0.37 |
| 14.29 | 0.603 | | | | | | |
| D3 | | 2.82 | 0.00 | 0.00 | 1.01 | 1.76 | 0.09 |
| 5.16 | 0.624 | | | | | | |
| E1 | | 2.82 | 0.00 | 0.00 | 1.15 | 1.62 | 0.14 |
| 5.02 | 0.576 | | | | | | |
| E2 | | 2.82 | 0.00 | 0.00 | 1.13 | 1.64 | 0.18 |
| 6.80 | 0.583 | | | | | | |
| E3 | | 2.82 | 0.00 | 0.00 | 0.98 | 1.80 | 0.18 |
| 8.80 | 0.639 | | | | | | |
| E4 | | 2.82 | 0.00 | 0.00 | 1.29 | 1.51 | 0.14 |
| 9.78 | 0.535 | | | | | | |
| F4 | | 2.82 | 0.00 | 0.00 | 1.16 | 1.61 | 0.15 |
| 4.48 | 0.571 | | | | | | |
| F1 | | 2.82 | 0.00 | 0.00 | 0.88 | 1.91 | 0.11 |
| 8.39 | 0.679 | | | | | | |
| F2 | | 2.82 | 0.00 | 0.00 | 0.91 | 1.87 | 0.09 |
| 6.50 | 0.665 | | | | | | |
| F3 | | 2.82 | 0.00 | 0.00 | 1.14 | 1.63 | 0.25 |
| 8.48 | 0.579 | | | | | | |
| F5 | | 2.82 | 0.00 | 0.00 | 0.98 | 1.80 | 0.04 |
| 2.87 | 0.637 | | | | | | |
| F7 | | 2.82 | 0.00 | 0.00 | 2.32 | 0.50 | 0.03 |
| 1.13 | 0.179 | | | | | | |
| F6 | | 2.82 | 0.00 | 0.00 | 1.06 | 1.72 | 0.14 |
| 5.28 | 0.609 | | | | | | |
| B4 | | 2.82 | 0.00 | 0.00 | 0.82 | 1.98 | 0.10 |
| 8.06 | 0.704 | | | | | | |
| OS1 | | 2.82 | 0.00 | 0.00 | 2.22 | 0.61 | 0.28 |
| 11.45 | 0.215 | | | | | | |
| OS2 | | 2.82 | 0.00 | 0.00 | 2.41 | 0.41 | 0.05 |
| 2.63 | 0.146 | | | | | | |
| OS3 | | 2.82 | 0.00 | 0.00 | 2.70 | 0.12 | 0.04 |
| 2.52 | 0.043 | | | | | | |
| OS4 | | 2.82 | 0.00 | 0.00 | 2.20 | 0.62 | 0.93 |
| 41.45 | 0.218 | | | | | | |
| A3a | | 2.82 | 0.00 | 0.00 | 0.96 | 1.84 | 0.10 |
| 9.17 | 0.651 | | | | | | |

 LID Performance Summary

 Final Percent

Total Evap Infil Surface Drain Initial
 Inflow Loss Loss Outflow Outflow Storage

Proposed SWMM Results 100-Year

| Storage Subcatchment | Error | LID Control | in | in | in | in | in | in | |
|----------------------|-------|-------------|-------------|-------|------|------|-------|------|------|
| B1 | 0.80 | -0.00 | MinorStreet | 17.11 | 0.00 | 5.06 | 4.55 | 7.10 | 0.40 |
| B2 | 0.80 | -0.00 | MinorStreet | 15.64 | 0.00 | 5.11 | 2.96 | 7.17 | 0.40 |
| B3 | 0.80 | -0.00 | MinorStreet | 11.58 | 0.00 | 4.61 | 0.00 | 6.57 | 0.40 |
| C5 | 0.80 | -0.00 | MinorStreet | 23.52 | 0.00 | 5.26 | 10.51 | 7.35 | 0.40 |
| D1 | 0.80 | -0.00 | MinorStreet | 15.53 | 0.00 | 5.19 | 2.67 | 7.27 | 0.40 |
| D2 | 0.80 | -0.00 | MinorStreet | 22.88 | 0.00 | 5.29 | 9.81 | 7.38 | 0.40 |
| D3 | 0.80 | -0.00 | MinorStreet | 8.72 | 0.00 | 3.32 | 0.00 | 5.00 | 0.40 |
| E1 | 0.80 | -0.00 | MinorStreet | 10.83 | 0.00 | 4.27 | 0.00 | 6.16 | 0.40 |
| E2 | 0.80 | -0.00 | MinorStreet | 12.76 | 0.00 | 5.10 | 0.10 | 7.16 | 0.40 |
| E3 | 0.80 | -0.00 | MinorStreet | 19.13 | 0.00 | 5.14 | 6.40 | 7.20 | 0.40 |
| E4 | 0.80 | 0.00 | MinorStreet | 5.08 | 0.00 | 1.67 | 0.00 | 3.02 | 0.40 |
| F4 | 0.80 | -0.00 | MinorStreet | 14.14 | 0.00 | 5.17 | 1.34 | 7.24 | 0.40 |
| F1 | 0.80 | -0.00 | MinorStreet | 20.70 | 0.00 | 5.06 | 8.15 | 7.10 | 0.40 |
| F2 | 0.80 | -0.00 | MinorStreet | 15.79 | 0.00 | 5.03 | 3.29 | 7.07 | 0.40 |
| F3 | 0.80 | -0.00 | MinorStreet | 12.97 | 0.00 | 5.15 | 0.20 | 7.22 | 0.40 |
| F5 | 0.80 | -0.00 | MinorStreet | 9.17 | 0.00 | 3.52 | 0.00 | 5.25 | 0.40 |
| F6 | 0.80 | -0.00 | MinorStreet | 16.31 | 0.00 | 5.14 | 3.57 | 7.20 | 0.40 |

Node Depth Summary

| Node | Type | Average Depth Feet | Maximum Depth Feet | Maximum HGL Feet | Time of Max Occurrence days hr:min |
|------|----------|--------------------|--------------------|------------------|------------------------------------|
| 100 | JUNCTION | 0.06 | 5.00 | 6628.00 | 0 00:44 |
| 101 | JUNCTION | 0.11 | 1.96 | 6618.96 | 0 00:47 |
| 102 | JUNCTION | 0.12 | 2.13 | 6615.13 | 0 00:48 |
| 105 | JUNCTION | 0.17 | 1.42 | 6624.42 | 0 01:00 |
| 110 | JUNCTION | 0.26 | 2.51 | 6611.01 | 0 01:00 |
| 104 | JUNCTION | 0.14 | 0.71 | 6629.71 | 0 01:39 |
| 106 | JUNCTION | 0.24 | 2.29 | 6612.29 | 0 01:00 |
| 107 | JUNCTION | 0.05 | 0.55 | 6623.55 | 0 01:00 |
| 109 | JUNCTION | 0.09 | 0.95 | 6613.95 | 0 00:56 |
| 108 | JUNCTION | 0.07 | 0.80 | 6615.80 | 0 00:55 |
| 112 | JUNCTION | 0.10 | 1.27 | 6596.27 | 0 00:52 |
| 111 | JUNCTION | 0.05 | 0.99 | 6600.99 | 0 00:50 |
| 103 | JUNCTION | 0.27 | 2.51 | 6608.51 | 0 01:01 |
| 33c | OUTFALL | 0.00 | 0.00 | 6610.00 | 0 00:00 |
| 33B | OUTFALL | 0.00 | 0.00 | 6590.00 | 0 00:00 |
| 302 | STORAGE | 0.81 | 5.81 | 6595.81 | 0 02:06 |
| 300 | STORAGE | 2.35 | 5.97 | 6624.97 | 0 00:48 |
| 301 | STORAGE | 2.05 | 6.84 | 6635.84 | 0 01:39 |

Node Inflow Summary

Proposed SWMM Results 100-Year

| Flow Balance Error Node Percent | Type | Maximum Lateral Inflow CFS | Maximum Total Inflow CFS | Time of Max Occurrence days hr:min | Lateral Inflow Volume 10^6 gal | Total Inflow Volume 10^6 gal |
|---------------------------------|----------|----------------------------|--------------------------|------------------------------------|--------------------------------|------------------------------|
| - | | | | | | |
| 100 -0.000 | JUNCTION | 64.92 | 64.92 | 0 00:45 | 0.692 | 0.692 |
| 101 0.000 | JUNCTION | 13.80 | 73.74 | 0 00:47 | 0.153 | 0.933 |
| 102 0.000 | JUNCTION | 6.80 | 79.24 | 0 00:48 | 0.104 | 1.04 |
| 105 0.000 | JUNCTION | 18.40 | 26.33 | 0 01:00 | 0.48 | 1.43 |
| 110 0.000 | JUNCTION | 8.67 | 81.77 | 0 01:00 | 0.328 | 2.96 |
| 104 -0.000 | JUNCTION | 0.00 | 8.69 | 0 01:39 | 0 | 0.953 |
| 106 0.000 | JUNCTION | 35.33 | 73.17 | 0 01:00 | 0.882 | 2.64 |
| 107 0.000 | JUNCTION | 5.02 | 5.02 | 0 01:00 | 0.143 | 0.143 |
| 109 0.000 | JUNCTION | 0.00 | 11.76 | 0 00:56 | 0 | 0.324 |
| 108 0.000 | JUNCTION | 6.80 | 6.80 | 0 00:55 | 0.181 | 0.181 |
| 112 0.000 | JUNCTION | 15.00 | 27.82 | 0 00:52 | 0.437 | 0.629 |
| 111 0.000 | JUNCTION | 14.89 | 14.89 | 0 00:50 | 0.193 | 0.193 |
| 103 0.000 | JUNCTION | 8.06 | 141.74 | 0 00:50 | 0.098 | 4.09 |
| 33c 0.000 | OUTFALL | 55.16 | 55.16 | 0 00:45 | 1.17 | 1.17 |
| 33B 0.000 | OUTFALL | 0.00 | 33.93 | 0 02:06 | 0 | 4.86 |
| 302 0.036 | STORAGE | 6.37 | 175.15 | 0 00:51 | 0.172 | 4.89 |
| 300 0.282 | STORAGE | 9.17 | 71.14 | 0 00:46 | 0.0952 | 0.786 |
| 301 0.046 | STORAGE | 73.92 | 73.92 | 0 00:45 | 0.972 | 0.972 |

Node Surcharge Summary

Surcharging occurs when water rises above the top of the highest conduit.

| Node | Type | Hours Surcharged | Max. Height Above Crown Feet | Min. Depth Below Rim Feet |
|------|----------|------------------|------------------------------|---------------------------|
| 100 | JUNCTION | 0.04 | 2.000 | 0.000 |
| 302 | STORAGE | 2.34 | 1.313 | 0.187 |
| 300 | STORAGE | 12.79 | 2.969 | 0.031 |
| 301 | STORAGE | 40.01 | 6.843 | 0.157 |

Node Flooding Summary

Flooding refers to all water that overflows a node, whether it ponds or not.

Proposed SWMM Results 100-Year

| Node | Hours Flooded | Maximum Rate CFS | Time of Max Occurrence days hr:min | Total Flood Volume 10^6 gal | Maximum Poned Volume 1000 ft3 |
|------|---------------|------------------|------------------------------------|-----------------------------|-------------------------------|
| 100 | 0.04 | 4.03 | 0 00:45 | 0.002 | 0.000 |

Storage Volume Summary

| Maximum Outflow Storage Unit CFS | Average volume 1000 ft3 | Avg Pcnt Full | Evap Loss | Exfil Loss | Maximum volume 1000 ft3 | Max Pcnt Full | Time of Max Occurrence days hr:min |
|----------------------------------|-------------------------|---------------|-----------|------------|-------------------------|---------------|------------------------------------|
| 302 | 40.414 | 12 | 0 | 0 | 324.324 | 96 | 0 02:06 |
| 33.93 | 6.510 | 24 | 0 | 0 | 26.385 | 99 | 0 00:48 |
| 62.47 | 13.280 | 15 | 0 | 0 | 87.871 | 96 | 0 01:39 |
| 301 | | | | | | | |
| 8.69 | | | | | | | |

Outfall Loading Summary

| Outfall Node | Flow Freq Pcnt | Avg Flow CFS | Max Flow CFS | Total Volume 10^6 gal |
|--------------|----------------|--------------|--------------|-----------------------|
| 33c | 99.52 | 1.09 | 55.16 | 1.170 |
| 33B | 99.00 | 4.56 | 33.93 | 4.861 |
| System | 99.26 | 5.65 | 64.93 | 6.031 |

Link Flow Summary

| Link | Type | Maximum Flow CFS | Time of Max Occurrence days hr:min | Maximum Veloc ft/sec | Max/Full Flow | Max/Full Depth |
|------------|---------|--------------------|------------------------------------|------------------------|---------------|----------------|
| 201 | CONDUIT | 73.67 | 0 00:47 | 15.08 | 0.76 | 0.65 |
| 202 | CONDUIT | 79.09 | 0 00:48 | 14.80 | 0.85 | 0.71 |
| 209 | CONDUIT | 81.64 | 0 01:01 | 8.97 | 0.60 | 0.56 |
| 203 | CONDUIT | 8.69 | 0 01:40 | 10.51 | 0.46 | 0.47 |
| 204 | CONDUIT | 26.24 | 0 01:00 | 11.04 | 0.85 | 0.71 |
| 208 | CONDUIT | 73.11 | 0 01:00 | 9.84 | 0.62 | 0.57 |
| 205 | CONDUIT | 5.01 | 0 01:00 | 8.65 | 0.28 | 0.36 |
| 207 | CONDUIT | 11.76 | 0 00:57 | 8.03 | 0.45 | 0.47 |
| 206 | CONDUIT | 6.81 | 0 00:55 | 7.06 | 0.56 | 0.54 |
| 11 | CONDUIT | 14.81 | 0 00:50 | 9.61 | 0.49 | 0.49 |
| 212 | CONDUIT | 27.82 | 0 00:52 | 11.06 | 0.52 | 0.51 |
| 200 | CONDUIT | 63.14 | 0 00:46 | 10.00 | 1.06 | 0.92 |
| 210 | CONDUIT | 141.74 | 0 00:51 | 27.51 | 0.28 | 0.36 |
| 302_outlet | ORIFICE | 33.93 | 0 02:06 | | | 0.00 |
| 300_outlet | DUMMY | 62.47 | 0 00:48 | | | |
| 301_outlet | DUMMY | 8.69 | 0 01:39 | | | |

Proposed SWMM Results 100-Year

 Conduit Surcharge Summary

| Conduit | ----- Both Ends | Hours Full Upstream | ----- Dnstream | Hours Above Full Normal Flow | Hours Capacity Limited |
|---------|--------------------|------------------------|-------------------|------------------------------------|------------------------------|
| 200 | 0.01 | 0.03 | 0.01 | 0.03 | 0.03 |

Analysis begun on: Fri Mar 18 09:05:33 2016
 Analysis ended on: Fri Mar 18 09:05:33 2016
 Total elapsed time: < 1 sec

Appendix C

Pond Calculations

POND VOLUME CALCULATIONS

Subdivision Enclaves at Mountain Vistas
Location CO, Colorado Springs

Project Name: Filing II
Project No. CLH07.01
By: SMB
Checked By: _____
Date: 3/18/16

Volume=1/3 x Depth x (A+B+(A*B)^0.5)
A - Upper Surface
B - Lower Surface

Pond 300

| Stage | Stage Elevation | Stage Surface Area (square feet) | Stage Volume (cubic feet) | Cumulative Volume (cubic feet) | Cumulative Volume (acre feet) |
|-------|-----------------|-------------------------------------|------------------------------|-----------------------------------|----------------------------------|
| 0.00 | 6616.00 | 0 | 0 | 0 | 0.00 |
| 1.00 | 6617.00 | 2,525 | 842 | 842 | 0.02 |
| 2.00 | 6618.00 | 3,427 | 2,965 | 3,807 | 0.09 |
| 3.00 | 6619.00 | 4,375 | 3,891 | 7,698 | 0.18 |
| 4.00 | 6620.00 | 5,494 | 4,924 | 12,622 | 0.29 |
| 5.00 | 6621.00 | 6,737 | 6,105 | 18,727 | 0.43 |
| 6.00 | 6622.00 | 8,120 | 7,418 | 26,145 | 0.60 |
| | | | | | |
| | | | | | |
| | | | | | |

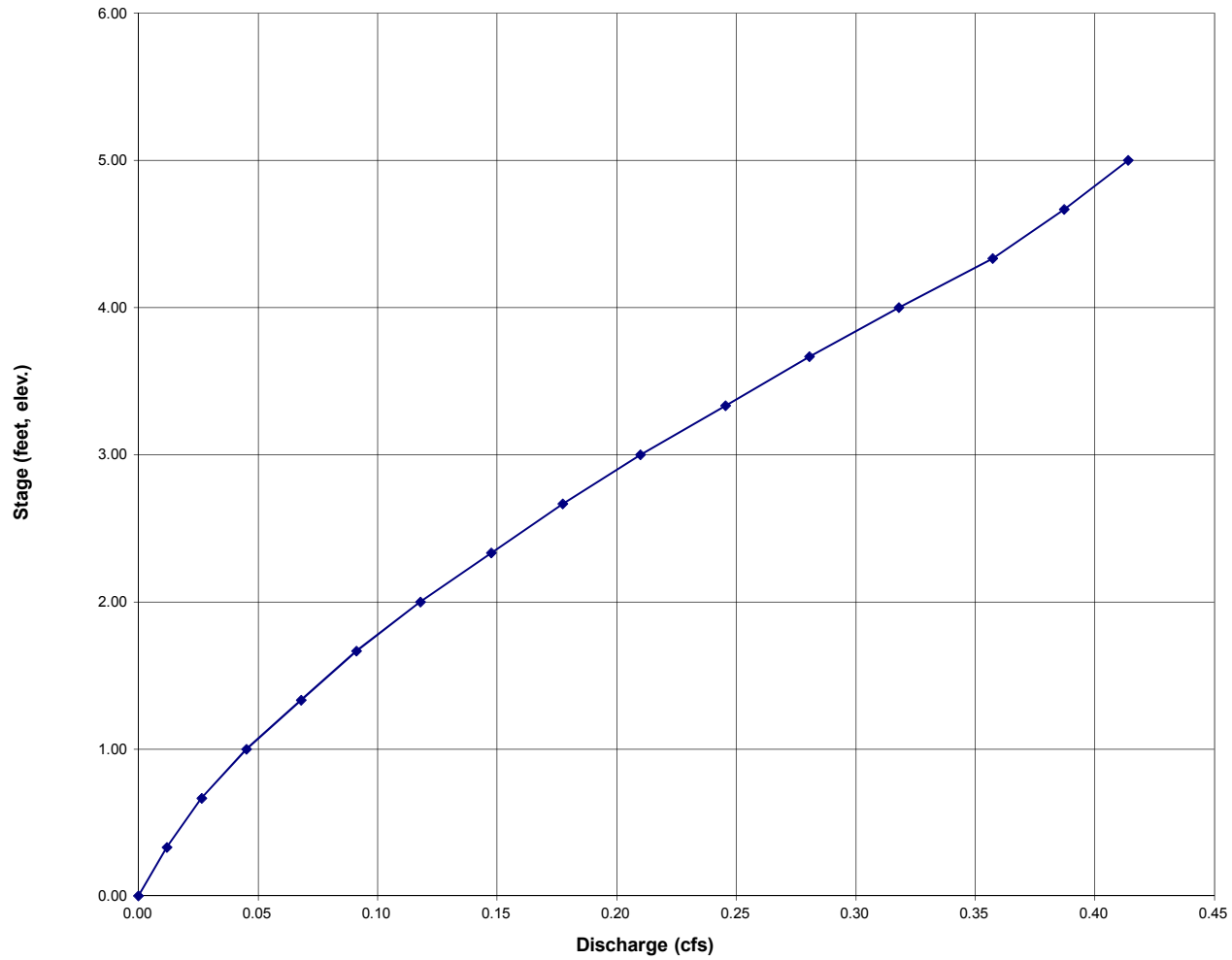
| Volume (acre feet) | Volume | Water Surface Elevation |
|-------------------------------------|--------|-------------------------|
| EURV Required | 0.415 | 6620.90 |
| EURV Provided 100-Year Detention | 0.420 | 6620.90 |

STAGE-DISCHARGE SIZING OF THE WATER QUALITY CAPTURE VOLUME (WQCV) OUTLET

Worksheet Protected

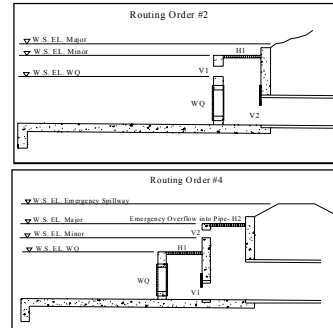
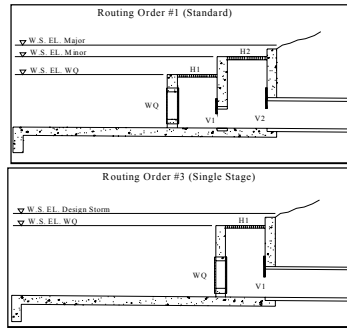
Project: **Enclaves at Mountain Vista Filing II**
Basin ID: **Pond 300**

STAGE-DISCHARGE CURVE FOR THE WQCV OUTLET STRUCTURE



STAGE-DISCHARGE SIZING OF THE WEIRS AND ORIFICES (INLET CONTROL)

Project: Enclaves at Mountain Vista Filing II
Basin ID: Pond 300



Current Routing Order is #3

Design Information (Input):

Circular Opening: Diameter in Inches
 OR
 Rectangular Opening: Width in Feet
 Length (Height for Vertical)

Percentage of Open Area After Trash Rack Reduction
 Orifice Coefficient
 Weir Coefficient
 Orifice Elevation (Bottom for Vertical)

| | #1 Horiz. | #2 Horiz. | #1 Vert. | #2 Vert. | |
|------------------|-----------|-----------|----------|----------|--------|
| Dia. = | | | 32.00 | | inches |
| W = | 5.83 | | | | ft. |
| L or H = | 2.92 | | | | ft. |
| % open = | 70 | | 100 | | % |
| C _o = | 0.65 | | 0.65 | | |
| C _w = | 3.00 | | | | |
| E _o = | 6620.40 | | 6,616.00 | | ft. |

Calculation of Collection Capacity:

Net Opening Area (after Trash Rack Reduction)
 OPTIONAL: User-Override Net Opening Area
 Perimeter as Weir Length
 OPTIONAL: User-Override Weir Length

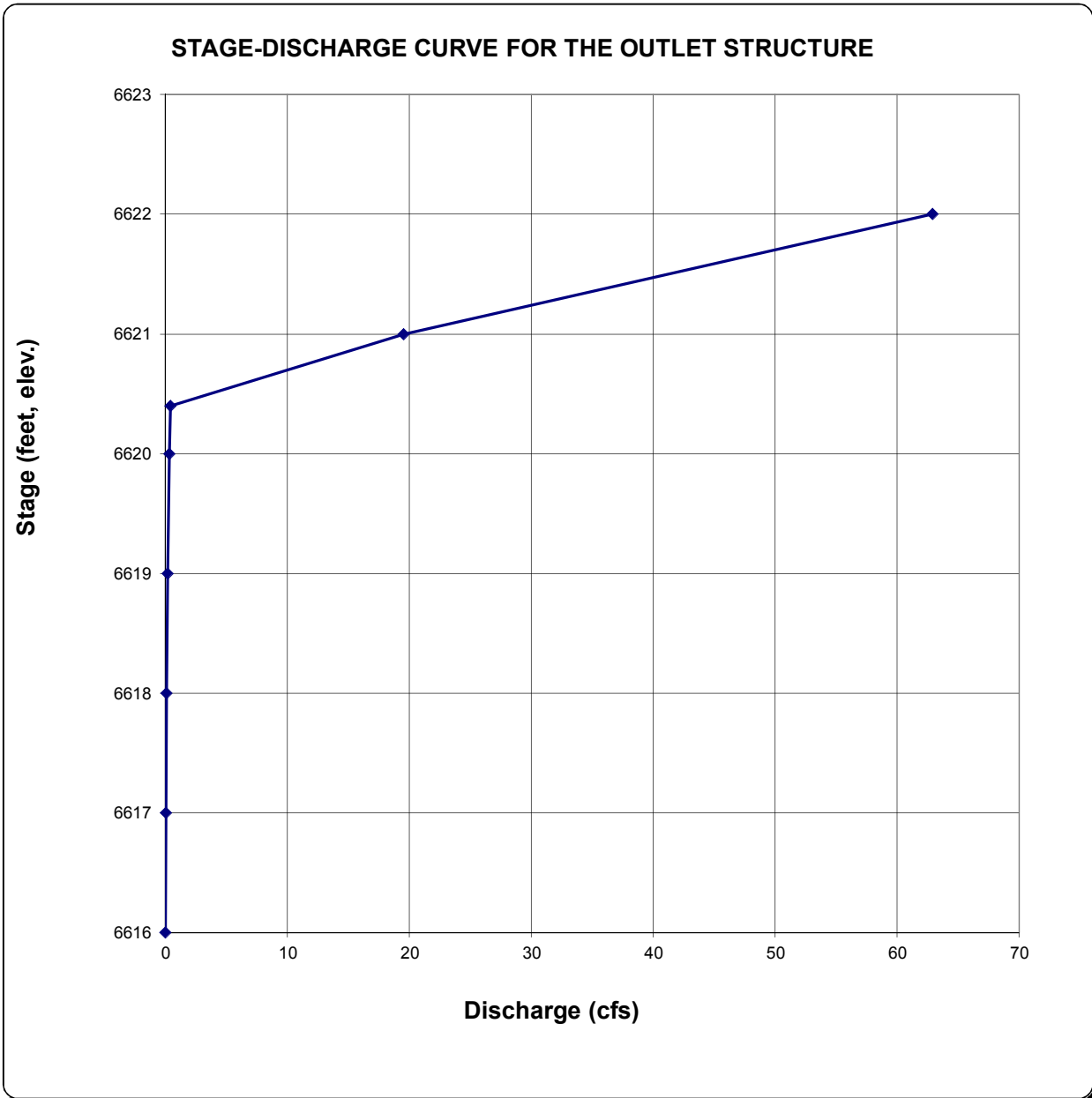
| | | | | | |
|---|-------|--|---------|--|---------|
| A _o = | 11.91 | | 5.59 | | sq. ft. |
| A _w = | | | | | sq. ft. |
| L _w = | 14.00 | | | | ft. |
| L _w = | | | | | ft. |
| Top Elevation of Vertical Orifice Opening, Top = | | | 6618.67 | | ft. |
| Center Elevation of Vertical Orifice Opening, Cen = | | | 6617.33 | | ft. |

Routing 3: Single Stage - Water flows through WQCV plate and #1 horizontal opening into #1 vertical opening. This flow will be applied to culvert sheet (#2 vertical & horizontal openings is not used).

| Labels for WQCV, Minor, & Major Storage W.S. Elevations (input) | Water Surface Elevation ft (linked) | WQCV Plate/Riser Flow cfs (User-linked) | Horizontal Orifices | | | | Vertical Orifices | | Total Collection Capacity cfs (output) | Target Volumes for WQCV, Minor, & Major Storage Volumes (link for goal seek) |
|---|-------------------------------------|---|----------------------------------|-------------------------------------|----------------------------------|-------------------------------------|---|---|--|--|
| | | | #1 Horiz. Weir Flow cfs (output) | #1 Horiz. Orifice Flow cfs (output) | #2 Horiz. Weir Flow cfs (output) | #2 Horiz. Orifice Flow cfs (output) | #1 Vert. Collection Capacity cfs (output) | #2 Vert. Collection Capacity cfs (output) | | |
| 6616.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6617.00 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 7.73 | 0.00 | 0.05 | |
| 6618.00 | 0.12 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 21.85 | 0.00 | 0.12 | |
| 6619.00 | 0.21 | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 37.61 | 0.00 | 0.21 | |
| 6620.00 | 0.32 | 0.32 | 0.00 | 0.00 | 0.00 | 0.00 | 47.57 | 0.00 | 0.32 | |
| 6620.40 | 0.41 | 0.41 | 0.00 | 0.00 | 0.00 | 0.00 | 51.02 | 0.00 | 0.41 | |
| 6621.00 | | | 19.52 | 48.12 | 0.00 | 0.00 | 55.79 | 0.00 | 19.52 | |
| 6622.00 | | | 85.00 | 78.58 | 0.00 | 0.00 | 62.93 | 0.00 | 62.93 | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A | |

STAGE-DISCHARGE SIZING OF THE WEIRS AND ORIFICES (INLET CONTROL)

Project: Enclaves at Mountain Vista Filing II
Basin ID: Pond 300



POND VOLUME CALCULATIONS

Subdivision Enclaves at Mountain Vistas
Location CO, Colorado Springs

Project Name: Filing II
Project No. CLH07.01
By: SMB
Checked By: _____
Date: 3/18/16

Volume=1/3 x Depth x (A+B+(A*B)^0.5)
A - Upper Surface
B - Lower Surface

Pond 301

| Stage | Stage Elevation | Stage Surface Area (square feet) | Stage Volume (cubic feet) | Cumulative Volume (cubic feet) | Cumulative Volume (acre feet) |
|-------|-----------------|-------------------------------------|------------------------------|-----------------------------------|----------------------------------|
| 0.00 | 6621.00 | 0 | 0 | 0 | 0.00 |
| 1.00 | 6622.00 | 5,281 | 1,760 | 1,760 | 0.04 |
| 2.00 | 6623.00 | 10,507 | 7,746 | 9,506 | 0.22 |
| 3.00 | 6624.00 | 13,012 | 11,737 | 21,243 | 0.49 |
| 4.00 | 6625.00 | 14,902 | 13,946 | 35,189 | 0.81 |
| 5.00 | 6626.00 | 17,121 | 15,999 | 51,188 | 1.18 |
| 6.00 | 6627.00 | 19,467 | 18,281 | 69,469 | 1.59 |
| 7.00 | 6628.00 | 21,986 | 20,714 | 90,183 | 2.07 |
| | | | | | |
| | | | | | |

| Volume (acre feet) | Volume | Water Surface Elevation |
|---------------------------|--------|-------------------------|
| WQ Volume Required | 0.348 | 6623.49 |
| WQ Volume Provided | 0.350 | 6623.50 |
| 5-Year Detention | 0.734 | 6624.78 |
| 100-Year Detention | 2.017 | 6627.89 |

STAGE-DISCHARGE SIZING OF THE WATER QUALITY CAPTURE VOLUME (WQCV) OUTLET

Project: **Enclaves at Mountain Vista Filing II**

Basin ID: **Pond 301**

WQCV Design Volume (Input):

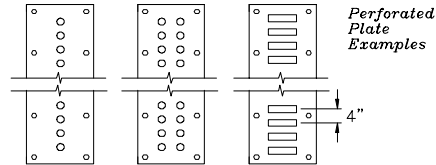
| | | | | | |
|--|-------|---------|------------------------------|-------|--------|
| Catchment Imperviousness, I_p = | 62.0 | percent | Diameter of holes, D = | 0.886 | inches |
| Catchment Area, A = | 12.47 | acres | Number of holes per row, N = | 1 | |
| Depth at WQCV outlet above lowest perforation, H = | 3 | feet | OR | | |
| Vertical distance between rows, h = | 4.00 | inches | Height of slot, H = | | inches |
| Number of rows, N_L = | 7.00 | | Width of slot, W = | | inches |
| Orifice discharge coefficient, C_d = | 0.65 | | | | |
| Slope of Basin Trickle Channel, S = | 0.010 | ft / ft | | | |
| Time to Drain the Pond = | 40 | hours | | | |

Watershed Design Information (Input):

| | |
|-------------------------|-----|
| Percent Soil Type A = | % |
| Percent Soil Type B = | 100 |
| Percent Soil Type C/D = | % |

Outlet Design Information (Output):

Water Quality Capture Volume, WQCV = 0.279 watershed inches
 Water Quality Capture Volume (WQCV) = 0.290 acre-feet
Design Volume (WQCV / 12 * Area * 1.2) Vol = 0.348 acre-feet
 Outlet area per row, A_o = 0.62 square inches
 Total opening area at each row based on user-input above, A_o = 0.62 square inches
 Total opening area at each row based on user-input above, A_o = 0.004 square feet



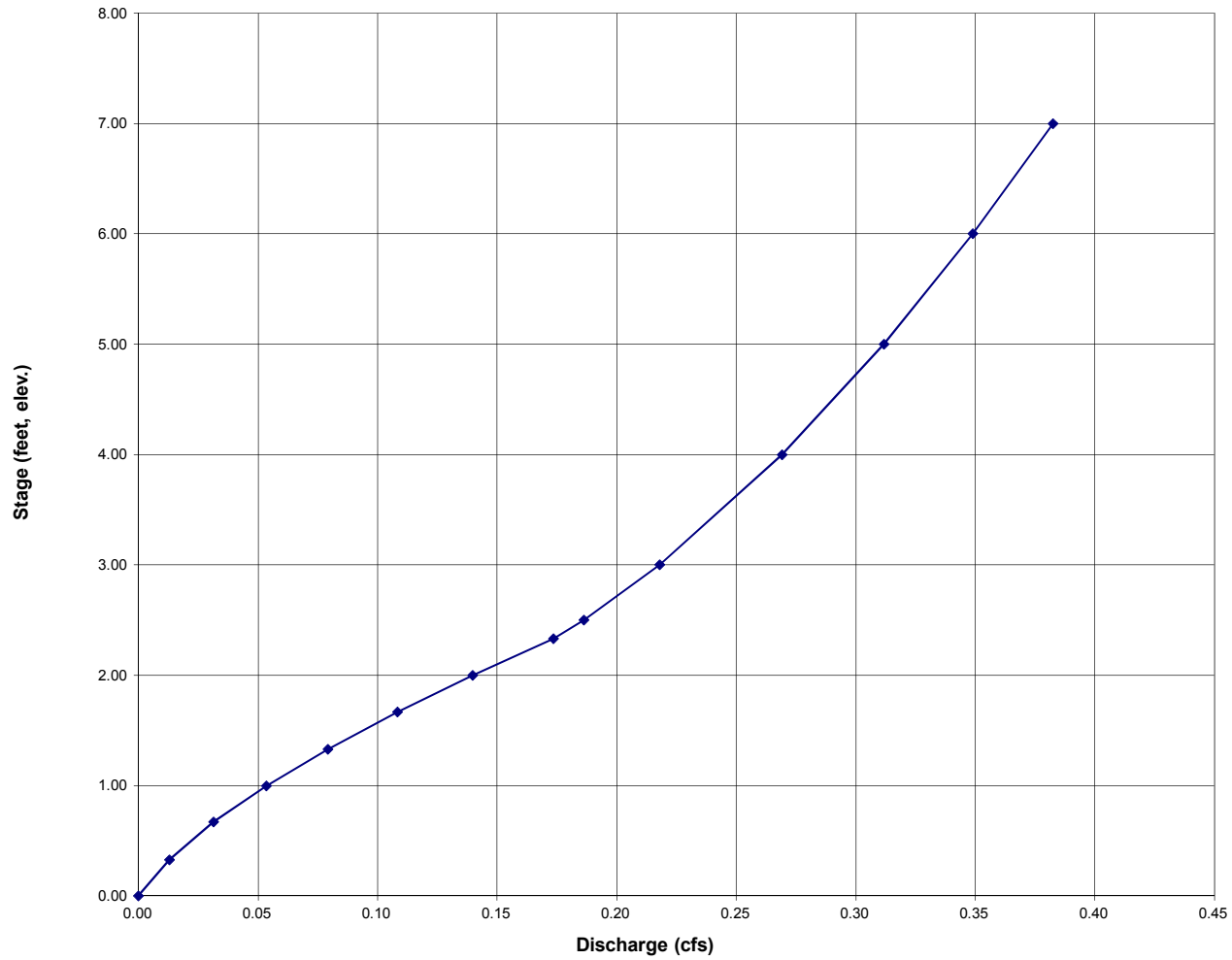
| | Central Elevations of Rows of Holes in feet | | | | | | | | | | | | | | | | | | | | | | | Σ Flow | |
|--|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------|--------|
| | Row 1 | Row 2 | Row 3 | Row 4 | Row 5 | Row 6 | Row 7 | Row 8 | Row 9 | Row 10 | Row 11 | Row 12 | Row 13 | Row 14 | Row 15 | Row 16 | Row 17 | Row 18 | Row 19 | Row 20 | Row 21 | Row 22 | Row 23 | | Row 23 |
| | 0.00 | 0.00 | 0.33 | 0.67 | 1.00 | 1.33 | 1.67 | 2.00 | | | | | | | | | | | | | | | | | |
| Collection Capacity for Each Row of Holes in cfs | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | | | | | | | | | | | | | | | | 0.00 |
| 0.33 | 0.0128 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | | | | | | | | | | | | | | | | 0.01 |
| 0.67 | 0.0183 | 0.0130 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | | | | | | | | | | | | | | | | 0.03 |
| 1.00 | 0.0223 | 0.0183 | 0.0128 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | | | | | | | | | | | | | | | | 0.05 |
| 1.33 | 0.0258 | 0.0223 | 0.0182 | 0.0128 | 0.0000 | 0.0000 | 0.0000 | | | | | | | | | | | | | | | | | | 0.08 |
| 1.67 | 0.0289 | 0.0259 | 0.0223 | 0.0183 | 0.0130 | 0.0000 | 0.0000 | | | | | | | | | | | | | | | | | | 0.11 |
| 2.00 | 0.0316 | 0.0289 | 0.0258 | 0.0223 | 0.0183 | 0.0128 | 0.0000 | | | | | | | | | | | | | | | | | | 0.14 |
| 2.33 | 0.0341 | 0.0316 | 0.0288 | 0.0258 | 0.0223 | 0.0182 | 0.0128 | | | | | | | | | | | | | | | | | | 0.17 |
| 2.50 | 0.0353 | 0.0329 | 0.0302 | 0.0274 | 0.0242 | 0.0204 | 0.0158 | | | | | | | | | | | | | | | | | | 0.19 |
| 3.00 | 0.0387 | 0.0365 | 0.0341 | 0.0316 | 0.0289 | 0.0258 | 0.0223 | | | | | | | | | | | | | | | | | | 0.22 |
| 4.00 | 0.0447 | 0.0428 | 0.0408 | 0.0387 | 0.0365 | 0.0341 | 0.0316 | | | | | | | | | | | | | | | | | | 0.27 |
| 5.00 | 0.0500 | 0.0483 | 0.0465 | 0.0447 | 0.0428 | 0.0408 | 0.0387 | | | | | | | | | | | | | | | | | | 0.31 |
| 6.00 | 0.0547 | 0.0532 | 0.0516 | 0.0500 | 0.0483 | 0.0465 | 0.0447 | | | | | | | | | | | | | | | | | | 0.35 |
| 7.00 | 0.0591 | 0.0577 | 0.0562 | 0.0547 | 0.0532 | 0.0516 | 0.0500 | | | | | | | | | | | | | | | | | | 0.38 |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
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| #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | | | | | | | | | | | | | | | | | #N/A |
| Override Area Row 1 | Override Area Row 2 | Override Area Row 3 | Override Area Row 4 | Override Area Row 5 | Override Area Row 6 | Override Area Row 7 | Override Area Row 8 | Override Area Row 9 | Override Area Row 10 | Override Area Row 11 | Override Area Row 12 | Override Area Row 13 | Override Area Row 14 | Override Area Row 15 | Override Area Row 16 | Override Area Row 17 | Override Area Row 18 | Override Area Row 19 | Override Area Row 20 | Override Area Row 21 | Override Area Row 22 | Override Area Row 23 | Override Area Row 24 | | |

STAGE-DISCHARGE SIZING OF THE WATER QUALITY CAPTURE VOLUME (WQCV) OUTLET

Worksheet Protected

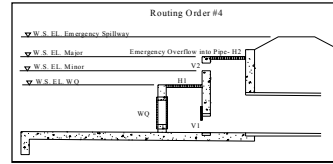
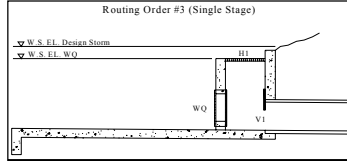
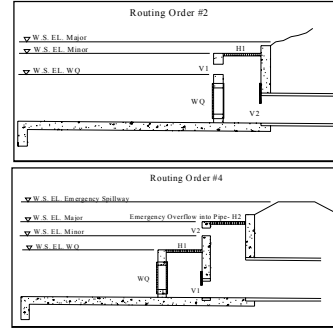
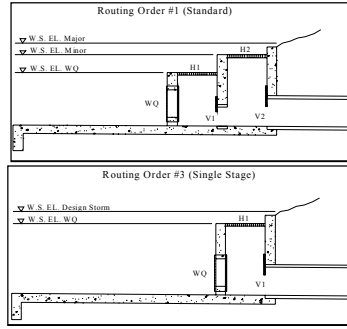
Project: **Enclaves at Mountain Vista Filing II**
Basin ID: **Pond 301**

STAGE-DISCHARGE CURVE FOR THE WQCV OUTLET STRUCTURE



STAGE-DISCHARGE SIZING OF THE WEIRS AND ORIFICES (INLET CONTROL)

Project: Enclaves at Mountain Vista Filing II
Basin ID: Pond 301



Current Routing Order is #3

Design Information (Input):

Circular Opening:

OR

Rectangular Opening:

Diameter in Inches

Width in Feet
Length (Height for Vertical)

Percentage of Open Area After Trash Rack Reduction
Orifice Coefficient
Weir Coefficient
Orifice Elevation (Bottom for Vertical)

Dia. =

| | | | |
|-----------|-----------|----------|----------|
| #1 Horiz. | #2 Horiz. | #1 Vert. | #2 Vert. |
| | | 11.00 | |

 inches

W =

| | | | |
|------|--|--|--|
| 2.92 | | | |
|------|--|--|--|

 ft.
L or H =

| | | | |
|------|--|--|--|
| 2.92 | | | |
|------|--|--|--|

 ft.

% open =

| | | | |
|----|-----|--|--|
| 70 | 100 | | |
|----|-----|--|--|

 %
C_o =

| | | | |
|------|------|--|--|
| 0.65 | 0.65 | | |
|------|------|--|--|

C_w =

| | | | |
|------|--|--|--|
| 3.33 | | | |
|------|--|--|--|

E_o =

| | | | |
|---------|----------|--|--|
| 6623.50 | 6.621.00 | | |
|---------|----------|--|--|

 ft.

Calculation of Collection Capacity:

Net Opening Area (after Trash Rack Reduction)
OPTIONAL: User-Override Net Opening Area
Perimeter as Weir Length
OPTIONAL: User-Override Weir Length

A_o =

| | |
|------|------|
| 5.97 | 0.66 |
|------|------|

 sq. ft.
A_w =

| | |
|--|--|
| | |
|--|--|

 sq. ft.
L_w =

| |
|------|
| 9.93 |
|------|

 ft.
L_w =

| |
|--|
| |
|--|

 ft.

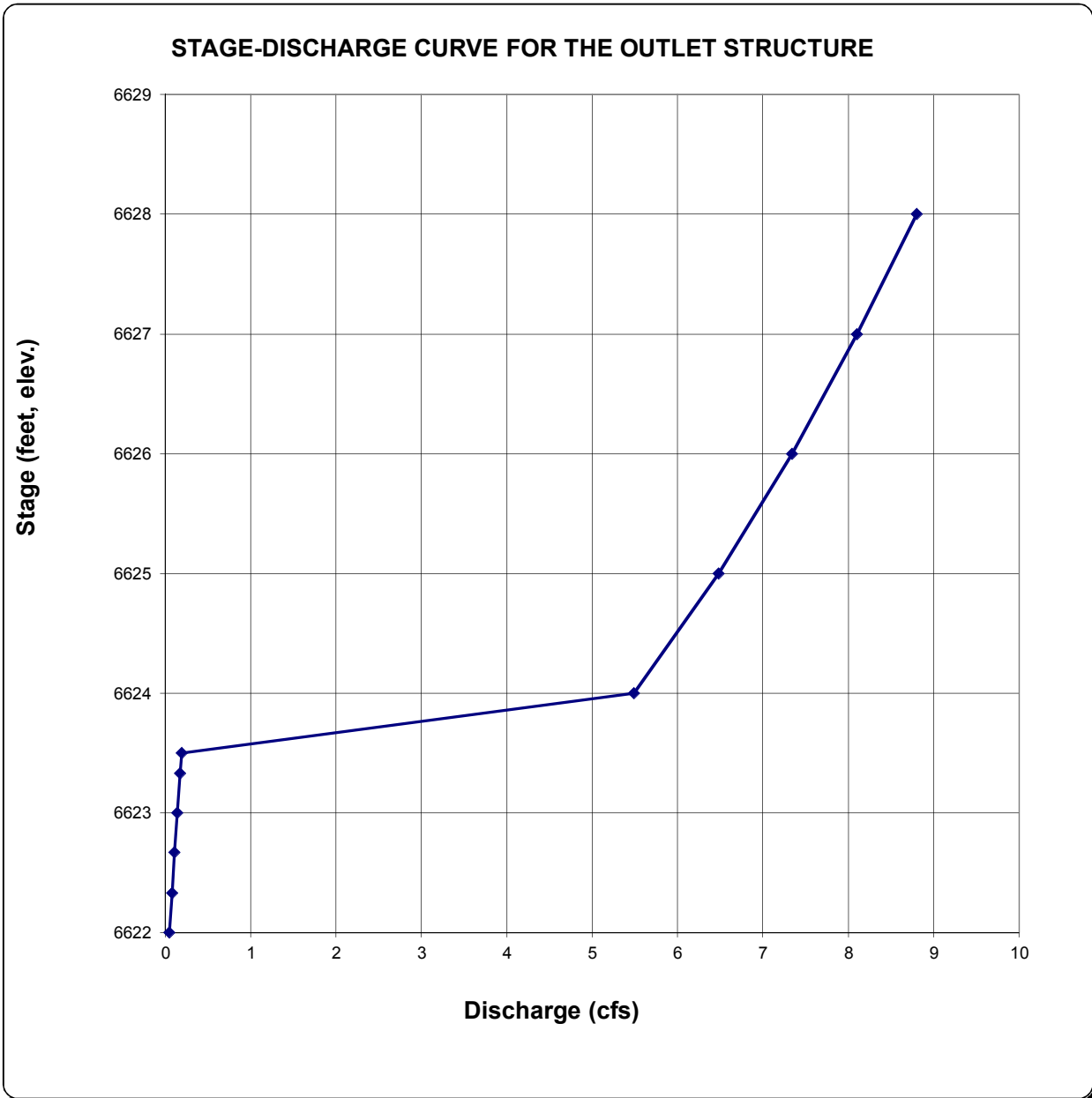
Top Elevation of Vertical Orifice Opening, Top = 6621.92 ft.
Center Elevation of Vertical Orifice Opening, Cen = 6621.46 ft.

Routing 3: Single Stage - Water flows through WQCV plate and #1 horizontal opening into #1 vertical opening. This flow will be applied to culvert sheet (#2 vertical & horizontal openings is not used).

| Labels for WQCV, Minor, & Major Storage W.S. Elevations (input) | Water Surface Elevation ft (linked) | WQCV Plate/Riser Flow cfs (User-linked) | Horizontal Orifices | | | | Vertical Orifices | | Total Collection Capacity cfs (output) | Target Volumes for WQCV, Minor, & Major Storage Volumes (link for goal seek) |
|---|-------------------------------------|---|----------------------------------|-------------------------------------|----------------------------------|-------------------------------------|---|---|--|--|
| | | | #1 Horiz. Weir Flow cfs (output) | #1 Horiz. Orifice Flow cfs (output) | #2 Horiz. Weir Flow cfs (output) | #2 Horiz. Orifice Flow cfs (output) | #1 Vert. Collection Capacity cfs (output) | #2 Vert. Collection Capacity cfs (output) | | |
| 0.00 | 6621.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 0.33 | 6621.33 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.01 |
| 0.67 | 6621.67 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.46 | 0.00 | 0.03 |
| 1.00 | 6622.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.53 | 0.00 | 0.05 |
| 1.33 | 6622.33 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.21 | 0.00 | 0.08 |
| 1.67 | 6622.67 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.79 | 0.00 | 0.11 |
| 2.00 | 6623.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.27 | 0.00 | 0.14 |
| 2.33 | 6623.33 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.71 | 0.00 | 0.17 |
| 2.50 | 6623.50 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.92 | 0.00 | 0.19 |
| 3.00 | 6624.00 | 0.22 | 11.69 | 22.01 | 0.00 | 0.00 | 0.00 | 5.49 | 0.00 | 5.49 |
| 4.00 | 6625.00 | 0.27 | 60.74 | 38.13 | 0.00 | 0.00 | 0.00 | 6.48 | 0.00 | 6.48 |
| 5.00 | 6626.00 | 0.31 | 130.68 | 49.23 | 0.00 | 0.00 | 0.00 | 7.34 | 0.00 | 7.34 |
| 6.00 | 6627.00 | 0.35 | 216.48 | 58.24 | 0.00 | 0.00 | 0.00 | 8.10 | 0.00 | 8.10 |
| 7.00 | 6628.00 | 0.38 | 315.59 | 66.04 | 0.00 | 0.00 | 0.00 | 8.80 | 0.00 | 8.80 |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |

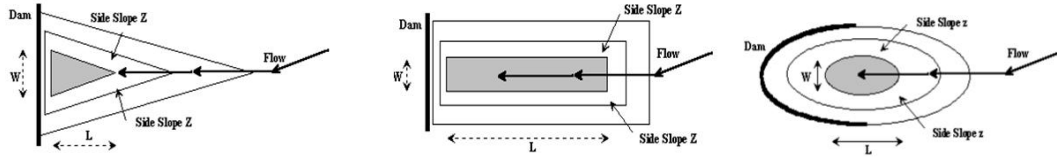
STAGE-DISCHARGE SIZING OF THE WEIRS AND ORIFICES (INLET CONTROL)

Project: Enclaves at Mountain Vista Filing II
Basin ID: Pond 301



STAGE-STORAGE SIZING FOR DETENTION BASINS

Project: Enclaves at Mountain Vista MDDP
Basin ID: Pond 302



Design Information (Input):

Width of Basin Bottom, W = ft
 Length of Basin Bottom, L = ft
 Dam Side-slope (H:V), Z_d = ft/ft

Check Basin Shape

Right Triangle OR...
 Isosceles Triangle OR...
 Rectangle OR...
 Circle / Ellipse OR...
 Irregular (Use Override values in cells G32:G52)

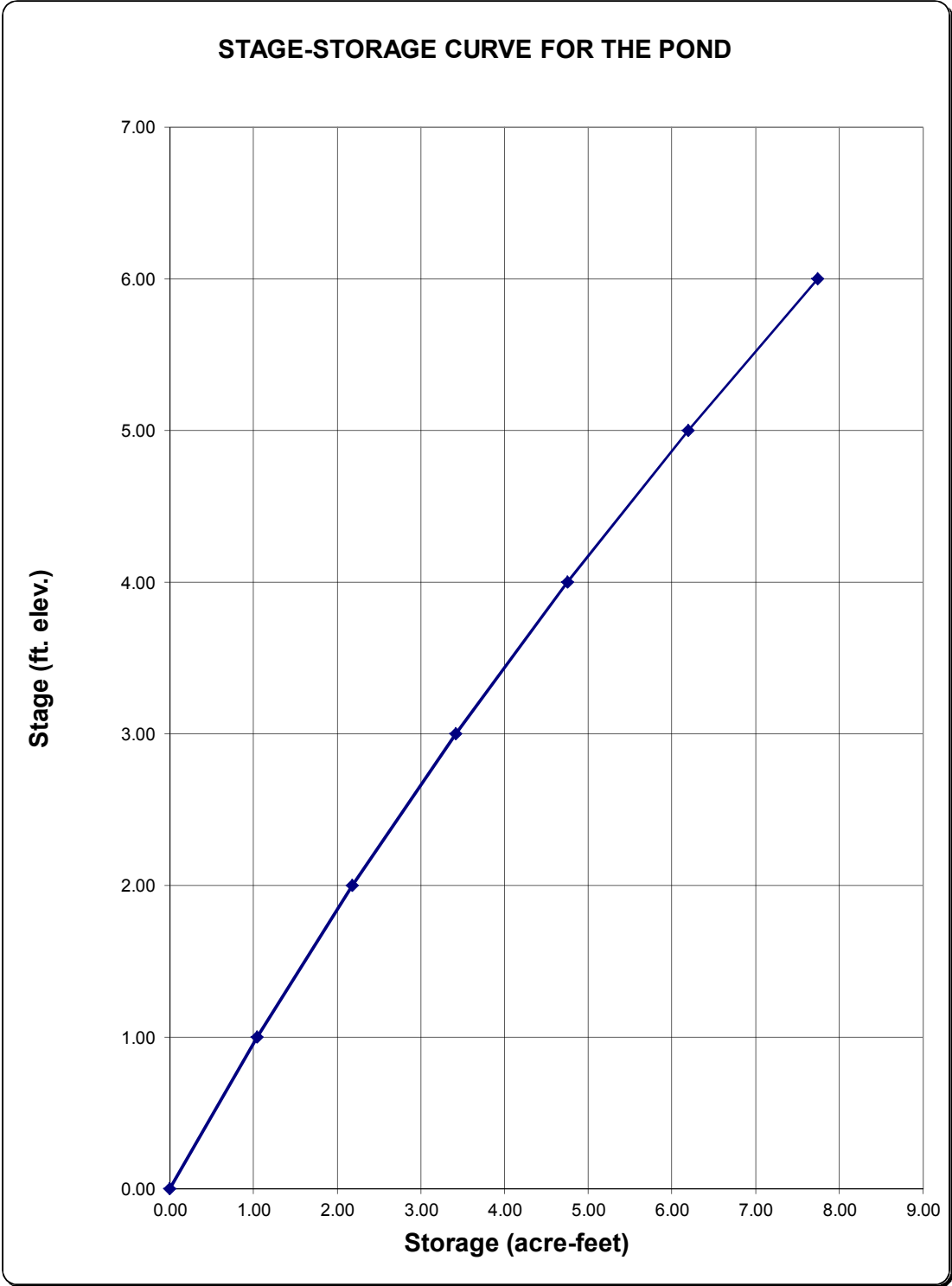
Stage-Storage Relationship:

Storage Requirement from Sheet 'Modified FAA': acre-ft.
 Storage Requirement from Sheet 'Hydrograph': acre-ft.
 Storage Requirement from Sheet 'Full-Spectrum': acre-ft.

| Labels for WQCV, Minor, & Major Storage Stages (input) | Water Surface Elevation (input) ft | Side Slope (H:V) (input) ft/ft Below El. | Basin Width at Stage (output) ft | Basin Length at Stage (output) ft | Surface Area at Stage (output) ft ² | Surface Area at Stage (output) ft ² User Override | Volume Below Stage (output) ft ³ | Surface Area at Stage (output) acres | Volume Below Stage (output) acre-ft | Target Volumes for WQCV, Minor, & Major Storage Volumes (for goal seek) |
|--|---------------------------------------|--|-------------------------------------|--------------------------------------|---|---|--|---|--|---|
| | 0.00 | (input) | | | | 43,377 | | 0.996 | 0.000 | |
| | 1.00 | | 0.00 | 0.00 | | 47,490 | 45,434 | 1.090 | 1.043 | |
| | 2.00 | | 0.00 | 0.00 | | 51,710 | 95,034 | 1.187 | 2.182 | |
| | 3.00 | | 0.00 | 0.00 | | 56,041 | 148,909 | 1.287 | 3.418 | |
| | 4.00 | | 0.00 | 0.00 | | 60,484 | 207,172 | 1.389 | 4.756 | |
| | 5.00 | | 0.00 | 0.00 | | 65,042 | 269,935 | 1.493 | 6.197 | |
| | 6.00 | | 0.00 | 0.00 | | 69,600 | 337,256 | 1.598 | 7.742 | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
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| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
| | | | | | | | #N/A | | #N/A | |
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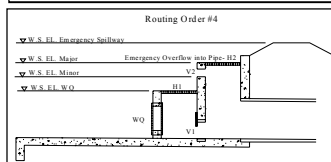
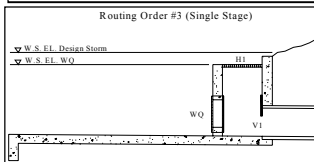
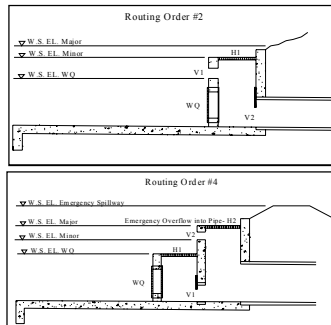
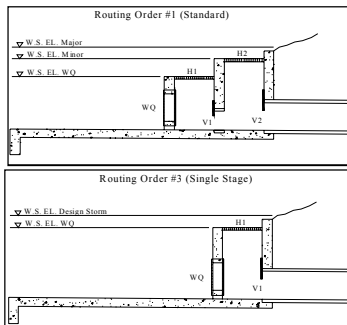
STAGE-STORAGE SIZING FOR DETENTION BASINS

Project: _____
Basin ID: _____



STAGE-DISCHARGE SIZING OF THE WEIRS AND ORIFICES (INLET CONTROL)

Project: Enclaves at Mountain Vista MDDP
Basin ID: Pond 302



Current Routing Order is #5

Design Information (Input):

Circular Opening: Diameter in Inches
OR
 Rectangular Opening: Width in Feet
 Length (Height for Vertical)
 Percentage of Open Area After Trash Rack Reduction
 Orifice Coefficient
 Weir Coefficient
 Orifice Elevation (Bottom for Vertical)

| | #1 Horiz. | #2 Horiz. | #1 Vert. | #2 Vert. | |
|------------------|-----------|-----------|----------|----------|--------|
| Dia. = | | | 23.28 | | inches |
| W = | | | | | ft. |
| L or H = | | | | | ft. |
| % open = | | | 100 | | % |
| C _o = | | | 0.65 | | |
| C _w = | | | | | |
| E _o = | | | 0.00 | | ft. |

Calculation of Collection Capacity:

Net Opening Area (after Trash Rack Reduction)
 OPTIONAL: User-Override Net Opening Area
 Perimeter as Weir Length
 OPTIONAL: User-Override Weir Length

| | | |
|------------------|------|---------|
| A _o = | 2.96 | sq. ft. |
| A _w = | | sq. ft. |
| L _w = | | ft. |
| L _w = | | ft. |

Top Elevation of Vertical Orifice Opening, Top = 1.94 ft.
 Center Elevation of Vertical Orifice Opening, Cen = 0.97 ft.

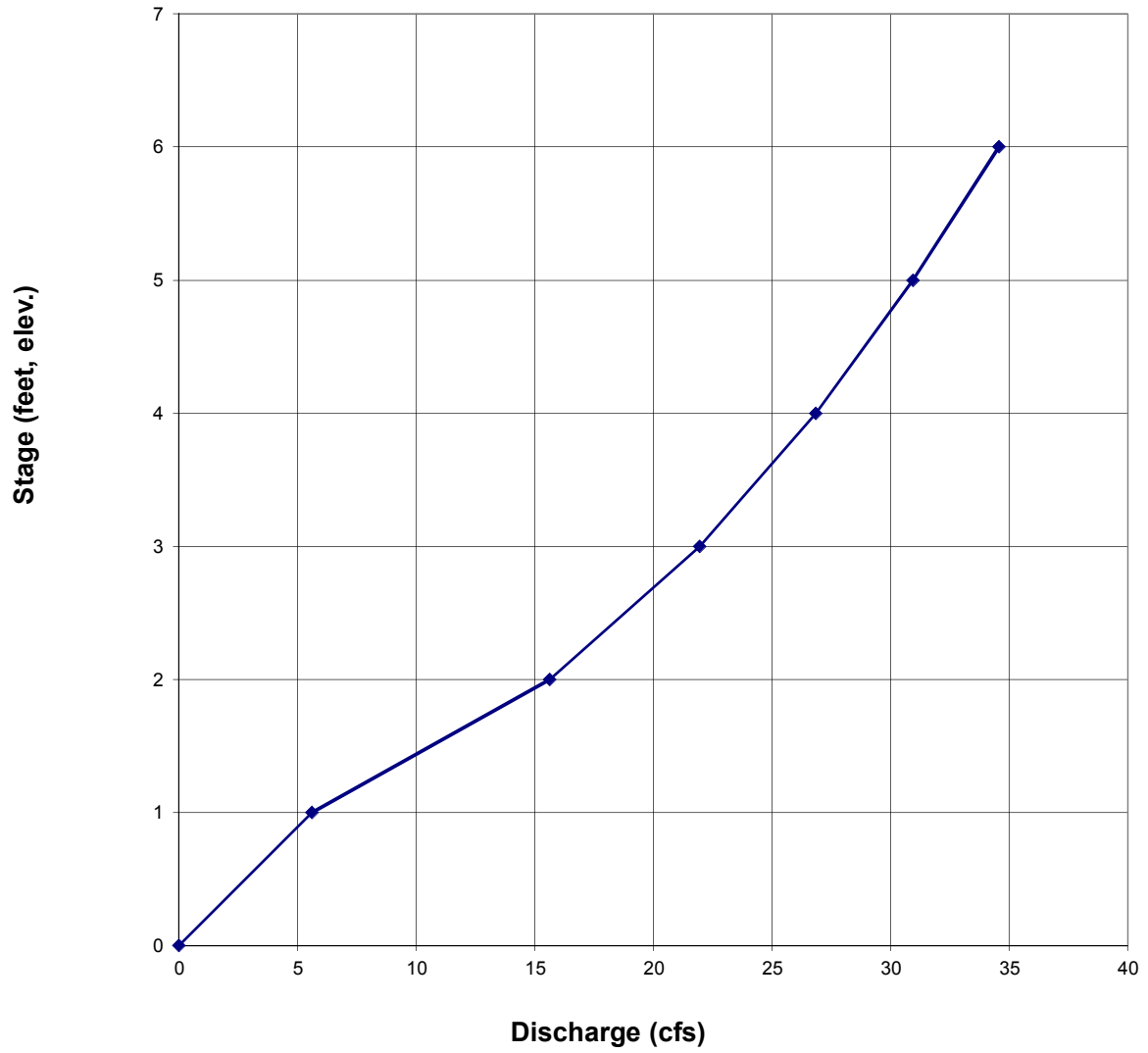
Routing 5: Water flows separately through WQCV plate, #1 horizontal opening, #2 horizontal opening, #1 vertical opening, and #2 vertical opening. The sum of all four will be applied to culvert sheet.

| Labels for WQCV, Minor, & Major Storage W.S. Elevations (input) | Water Surface Elevation ft (linked) | WQCV Plate/Riser Flow cfs (User-linked) | Horizontal Orifices | | | | Vertical Orifices | | Total Collection Capacity cfs (output) | Target Volumes for WQCV, Minor, & Major Storage Volumes (link for goal seek) |
|---|-------------------------------------|---|----------------------------------|-------------------------------------|----------------------------------|-------------------------------------|---|---|--|--|
| | | | #1 Horiz. Weir Flow cfs (output) | #1 Horiz. Orifice Flow cfs (output) | #2 Horiz. Weir Flow cfs (output) | #2 Horiz. Orifice Flow cfs (output) | #1 Vert. Collection Capacity cfs (output) | #2 Vert. Collection Capacity cfs (output) | | |
| | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| | 1.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.62 | 0.00 | 5.62 |
| | 2.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.65 | 0.00 | 15.65 |
| | 3.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 21.97 | 0.00 | 21.97 |
| | 4.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 26.84 | 0.00 | 26.84 |
| | 5.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 30.95 | 0.00 | 30.95 |
| | 6.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 34.58 | 0.00 | 34.58 |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
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| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
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| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |
| | | | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00 | #N/A |

STAGE-DISCHARGE SIZING OF THE WEIRS AND ORIFICES (INLET CONTROL)

Project: Enclaves at Mountain Vista MDDP
Basin ID: Pond 302

STAGE-DISCHARGE CURVE FOR THE OUTLET STRUCTURE



Appendix D

Drainage Maps

