FINAL DRAINAGE REPORT

FOR

LOT 2 PADMARK BUSINESS PARK FILING NO. 1

(LOT 44 OF CLAREMONT BUSINESS PARK FILING NO. 2)
EL PASO COUNTY, COLORADO

February 2018

Prepared for:

Hammers Construction, Inc.
1411 Woolsey Heights
Colorado Springs, CO 80915

Prepared by:

CIVIL CONSULTANTS, INC.

20 Boulder Crescent, Suite 110
Colorado Springs, CO 80903
(719) 955-5485

Project #44-031
DSD Project #PPR-17-004

PPR-18-020

PCD

FINAL DRAINAGE REPORT
FOR
LOT 2 PADMARK BUSINESS PARK FILING NO. 1
(Lot 44 of Claremont Business Park Filing No. 2)

DRAINAGE PLAN STATEMENTS

ENGINEERS STATEMENT

The attached drainage plan and report was prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria acceptable to the City of Colorado Springs. I accept responsibility for any liability caused by any negligent acts, errors of omission on my part in preparing this report.

Use the County standard signature block

_____
Virgil A. Sanchez, P.E. #37160
For and on Behalf of M&S Civil Consultants, Inc

DEVELOPER'S STATEMENT

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

BY:_____

TITLE:_____
DATE:_____

ADDRESS: Hammers Construction, LLC
1411 Woolsey Heights
Colorado Springs, CO80915

EL PASO COUNTY'S STATEMENT

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

BY:_____ DATE:_____
Jennifer Irvine, P.E.
County Engineer

CONDITIONS:

FINAL DRAINAGE REPORT
FOR
LOT 2 PADMARK BUSINESS PARK FILING NO. 1
(Lot 44 of Claremont Business Park Filing No. 2)

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APPENDIX

FINAL DRAINAGE REPORT
FOR
LOT 2 PADMARK BUSINESS PARK FILING NO. 1
(Lot 44 of Claremont Business Park Filing No. 2)

PURPOSE

This document is intended to serve as the Final Drainage Report for Lot 2 PADMARK BUSINESS PARK FILING NO. 1 formerly (Lot 44 of Claremont Business Park Filing No. 2). The purpose of this document is to identify and analyze the on and offsite drainage patterns and to ensure that post development runoff is routed through the site safely and in a manner that satisfies the requirements set forth by the El Paso County Drainage Criteria Manual. The proposed principal use for Lot 2 consists of all infrastructures typically associated with commercial building structures. The majority of the site will consist of asphalt, curb, lighting, a storm water quality facility and landscaping. The proposed use is a permissible use within the Commercial Service zoning criteria.

GENERAL LOCATION AND DESCRIPTION

PADMARK BUSINESS PARK FILING NO. 1 is located in the northeast quarter of the northeast quarter of Section 8, Township 14 South, Range 65 West of the 6th P.M. in El Paso County, Colorado. The site is bound on the northeast by a vacant parcel of land (Lot 3 Padmark Business Park) that is anticipated to be developed in the near future as the Claremont Business Park continues to build out. The site is bound on the northwest by the East Fork Sand Creek Channel. The property is bound to the southwest by an existing development of an office/warehouse/storage yard (Lot 1 Padmark Business Park). An existing access road runs along the eastern property boundary, adjacent to Meadowbrook Parkway, and currently provides access to Lot 1of Padmark Business Park and will also function to provide access to the proposed development of Lot 2. The site lies within the Sand Creek Drainage Basin. Flows from this site are tributary to Sand Creek.

Lot 2 of Padmark Business Park is presently undeveloped, with an exception to the access road, and consists of 1.691 acres. Vegetation is sparse, consisting of native grasses. The site had experienced overlot grading activities within the last ten years. Existing site terrain generally slopes from north to south at grade rates that vary between 2% and 12%.

The PADMARK BUSINESS PARK FILING NO. 1 site is currently zoned "CS" and the proposed principal uses for Lot 2 will be an office/warehouse/light manufacturing. The majority of Lot 2 shall consist of warehouse building, asphalt, curb, lighting, a storm water quality facility and landscaping. A sand filter basin is located within the southwest portion of the lot and will function to provide water quality treatment for the site. Flows discharge from the sand filter basin through an outlet structure and eventually outfall directly to East Fork Sand Creek.

SOILS

Soils for this project are delineated by the map in the appendix as Ellicott Loamy Course Sand (28) and characterized as Hydrologic Soil Types "A". Soils in the study area are shown as mapped by S.C.S. in the "Soils Survey of El Paso County Area". Vegetation is sparse, consisting of native grasses and weeds.

HYDROLOGIC CALCULATIONS

Hydrologic calculations were performed using the El Paso County and City of Colorado Springs Storm Drainage Design Criteria manual and where applicable the Urban Storm Drainage Criteria Manual. The Rational Method was used to estimate stormwater runoff anticipated from design storms with 5-year and 100-year recurrence intervals.

HYDRAULIC CALCULATIONS

Hydraulic calculations were estimated using the Manning's Formula and the methods described in the El Paso County and City of Colorado Springs Storm Drainage Design Criteria manual. The relevant data sheets are included in the appendix of this report.

FLOODPLAIN STATEMENT

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel No. 08041C0756 F and Panel No. 08041C0752 F, effective date March 17, 1997 and revised to reflect LOMR, 06-08-B137P, dated December 13, 2006, the site lies adjacent to and is NOT impacted by a Zone "AE". An annotated FIRM Panel is included in the Appendix. The approximate BFE of the East Fork Creek adjacent to the proposed pond is approximately 6354 to 6355. The proposed sand filter pond and emergency spillway is designed above the East Sand Creek BFE.

DRAINAGE CRITERIA

This drainage analysis has been prepared in accordance with the current City of Colorado Springs/El Paso County Drainage Criteria Manual. Calculations were performed to determine runoff quantities for the 5-year and 100-year frequency storms for developed conditions using the Rational Method as required for basins having areas less than 100 acres.

FOUR STEP PROCESS

Step1 Employ Runoff Reduction Practices – Approx. 0.17 ac of the proposed developed 1.691 ac of ground within the project is being set aside for Open Space/WQ facility. Roof drains will be directed to landscaped areas to minimize direct connection of impervious surfaces.

Step 2 Stabilize Drainageways – The site is directly adjacent to the Sand Creek Channel. The "Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, by Matrix Design Group, Inc. (hence for referred to as "MDDP") has been designed to discharge developed flows via an existing public 48" RCP directly to the East Fork Sand Creek. The existing public 48" RCP is located south of Lot 44 Claremont Business Park Filing No. 2 as highlighted on the existing drainage map. Lot 2 proposes a Sand Filter Water Quality Facility before ultimately discharging to the existing public 48" RCP pipe. The outlet underdrain has been designed to drain the pond in a peak event within 12 hours, therefore is not anticipated to have negative effects on downstream drainageways.

Step 3 Provide Water Quality Capture Volume – A Sand Filter Basin water quality facility is proposed to provide WQCV.

Step4 Consider Need for Industrial and Commercial BMP's – This submittal provides a final grading and erosion control plans with BMPs in place. The proposed project will use silt fence, a vehicle tracking control pad, concrete washout area, mulching and reseeding to mitigate the potential for erosion across the site.

EXISTING DRAINAGE CONDITIONS

The Lot 2 PADMARK BUSINESS PARK FILING NO. 1 site consists of 1.691 acres and is situated east of the East Fork Reach of the Sand Creek Watershed. This area was previously studied in the "Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, by Matrix Design Group, Inc. (hence for referred to as "MDDP") and was included within Sub-basin B5 (Lot 44). The MDDP calculations indicate that the total tributary area of Sub-basin B5 (4.0acres) would produce runoff of approximately Q5=12.0 cfs and Q100=24.1cfs. The MDDP illustrated that the basin watershed would drain and be collected by a10' Type R sump inlet which was proposed to be located at the southwest corner of the Lot 44. Flows from the sump inlet would be carried to the existing public 48" storm sewer before outfalling into East Fork Sand Creek.

In the existing condition, Lot 1 of Padmark Business Park is currently developed. The "Final Drainage Report for Padmark Business Park Filing No. 1", dated June 2017, by M & S Civil Consultants, Inc (hence for referred to as "FDR") details the subdivision of Lot 44 of Claremont Business Park Filing No. 2 into three lots and the development of Lot 1 within that subdivision. An existing access road runs along the eastern property boundary of Lot 2, adjacent to Meadowbrook Parkway, and currently provides access to Lot 1of Padmark Business Park. Flows are collected from Lot 1, treated and discharged into an existing 30" RCP pipe that connects to the existing public 48" storm sewer, outfalling into East Fork Sand Creek as determined by the MDDP and implemented in the FDR. During development of Lot 1, the existing 30" RCP pipe was installed northeast through Lot 1 and capped at the intersecting boundary to Lot 2. This provides a drainage connection upon the development of Lot 2. The runoff from the adjacent existing Meadowbrook Parkway roadway is collected via curb inlets and outfalls to Sand Creek via the existing public 48" storm sewer.

PROPOSED DRAINAGE CHARACTERISTICS

General Concept Drainage Discussion

Runoff tributary to the southwestern boundary and sand filter basin of Lot 2 PADMARK BUSINESS PARK FILING NO. 1 site is produced within Basin A and offsite Basin OS1 (See Proposed Drainage Map in the appendix). The sand filter basin is designed to treat the offsite tributary area of Basin OS1 during the interim condition while Lot 3 is undeveloped. Upon development, Lot 3 shall be responsible for its own water quality treatment. The tributary basins consists of approximately (Lot 2) 1.61 commercial developed acres and (offsite) 0.42 undeveloped acres.

Runoff collected and conveyed to the water quality facility (Design Point 1) is discharged from a proposed sand filter basin via a 2.91' X 2.91' CDOT outlet box & an 18" RCP. The proposed 18" RCP outlet pipe from the sand filter forms a junction with another proposed 18" RCP coming in, and a proposed 30" RCP discharging out. A Type II manhole is proposed at the junction. The 30" RCP storm sewer discharging out is proposed to tie into an existing 30" RCP stub located at the southwest property boundary. Beyond the stub, the existing 30" RCP storm sewer currently ties into and conveys flows to the existing public 48" storm sewer. The northeast (NE) proposed 18" RCP pipe shall be extended northeast towards Lot 3 and capped at the property boundary between Lot 2 and Lot 3 to be available upon future development of Lot 3. Pipe Run calculations for the proposed 18" RCP extending northeast are based upon anticipated future commercial development of Lot 3. An emergency overflow spillway section has been proposed in the event of blockage of the 2.91' X 2.91' CDOT inlet. All flows generated by Lot 2 Padmark Business Park will eventually be discharged to the existing public 48" storm sewer, outfalling into East Fork Sand Creek as determined by the MDDP. A detailed drainage discussion of each basin is presented below.

Detailed Drainage Discussion

Basin A, 1.61 acres, (Q_5=6.7 cfs, Q_{100}=12.3 cfs), consists of office/warehouse/light manufacturing building, asphalt paving, crushed asphalt, curb and gutter, and landscaping. Flows produced within the watershed are routed as surface runoff to DP1 where they are conveyed to the onsite sand filter basin for water quality.

Basin B, 0.10 acre,(Q_5=0.3 cfs, Q_{100}=0.6 cfs), consists of an existing concrete access drive and a proposed strip of landscaping. Nominal flows from Basin B travel southwest into Lot 1 and are treated by the existing sand filter basin within Lot 1.

Basin OS1, 0.42 acres, (Q_5=0.2 cfs, Q_{100}=1.0 cfs), consists of existing offsite flows that are tributary to the proposed sand filter basin during the interim condition when the Lot 2 is developed and the remaining land north, within Lot 3, is undeveloped.

There are no planned or required improvements to the Sand Creek Drainage Channel with the development of the Lot 2 PADMARK BUSINESS PARK FILING NO. 1.

WATER QUALITY PROVISIONS AND MAINTENANCE

The proposed Sand Filter Basin functions to provide water quality for runoff produced on the LOT 2 PADMARK BUSINESS PARK FILING NO. 1 site and by offsite Basin OS1 located north of the site (see Proposed Drainage Map). Lot 44 of Claremont Business Park Filing No. 2 has been replatted in to (3) lots. Each of the 3 lots shall be and has been responsible for each respective generated runoff. This water quality pond is designed to treat approx 2.03 (Basin A and Basin OS1) ac up to the 100 yr event, and provide 1,851cubic-feet of water quality storage. The water quality basin will be private and shall be maintained by the property owner. Access shall be granted to the owner and El Paso County for access and maintenance of the private WQCV facility. A private maintenance agreement document shall accompany the submittal.

The water quality volume required for the site has been determined using the guidelines set forth in the City of Colorado Springs/El Paso County Drainage Criteria Manual - Volume II. Refer to the water quality facility sizing calculations (UD-Detention Version 3.07 & UD-BMP Version 3.06) located within the appendix of this report.

EROSION CONTROL

It is the policy of the El Paso County that we submit a grading and erosion control plan with the drainage report. Proposed silt fence, vehicle traffic control, and concrete washout area are proposed as erosion control measures.

CONSTRUCTION COST OPINION

Private Drainage Facilities NON-Reimbursable:

Item	Description	Quantity		Unit Cost		Cost
1.	18" RCP	200	LF	$40	/LF	$8,000.00
2.	30" RCP	26	LF	$65	/LF	$1,690.00
3.	Type II Manhole (4' DIA)	1	EA	$6,000	/EA	$6,000.00
4.	WQ Sand Filter Basin	1	EA	$6,000	/EA	$6,000.00
5.	Spillway Protection (SC250 Mat)	76	SY	$10	/SY	$760.00
6.	Pond Outlet Structure	1	EA	$5,000	/EA	$5,000.00
					Total $	**$27,450.00**

DRAINAGE & BRIDGE FEES

The proposed replat of the Claremont Business Park Filing No. 2, Lot 1 into 3 commercial lots does not proposed a change to the zoning designation nor the impervious acreage, therefore no drainage fees are due.

M &S Civil Consultants, Inc. (M &S) cannot and does not guarantee the construction cost will not vary from these opinions of probable costs. These opinions represent our best judgment as design professionals familiar with the construction industry and this development in particular. The above is only an estimate of the facility cost and drainage basin fee amounts in 2018.

SUMMARY

Development of Lot 2 PADMARK BUSINESS PARK FILING NO. 1 site will not adversely affect the surrounding development per this final drainage report with no negative impacts on surrounding developments and the East Fork Sand Creek channel. The proposed drainage facilities will adequately convey, detain and route runoff from the tributary onsite and existing offsite flows to the Sand Creek Drainage channel. All drainage facilities described herein and shown on the included drainage map are subject to change due to formal design considerations during the construction document preparation stage. Care will be taken to accommodate overland emergency flow routes on site and temporary drainage conditions. The development of Lot 2 PADMARK BUSINESS PARK FILING NO. 1, project shall not adversely affect adjacent or downstream property.

REFERENCES

1.) "El Paso County and City of Colorado Springs Drainage Criteria Manual".

2.) "Urban Storm Drainage Criteria Manual"

3.) SCS Soils Map for El Paso County.

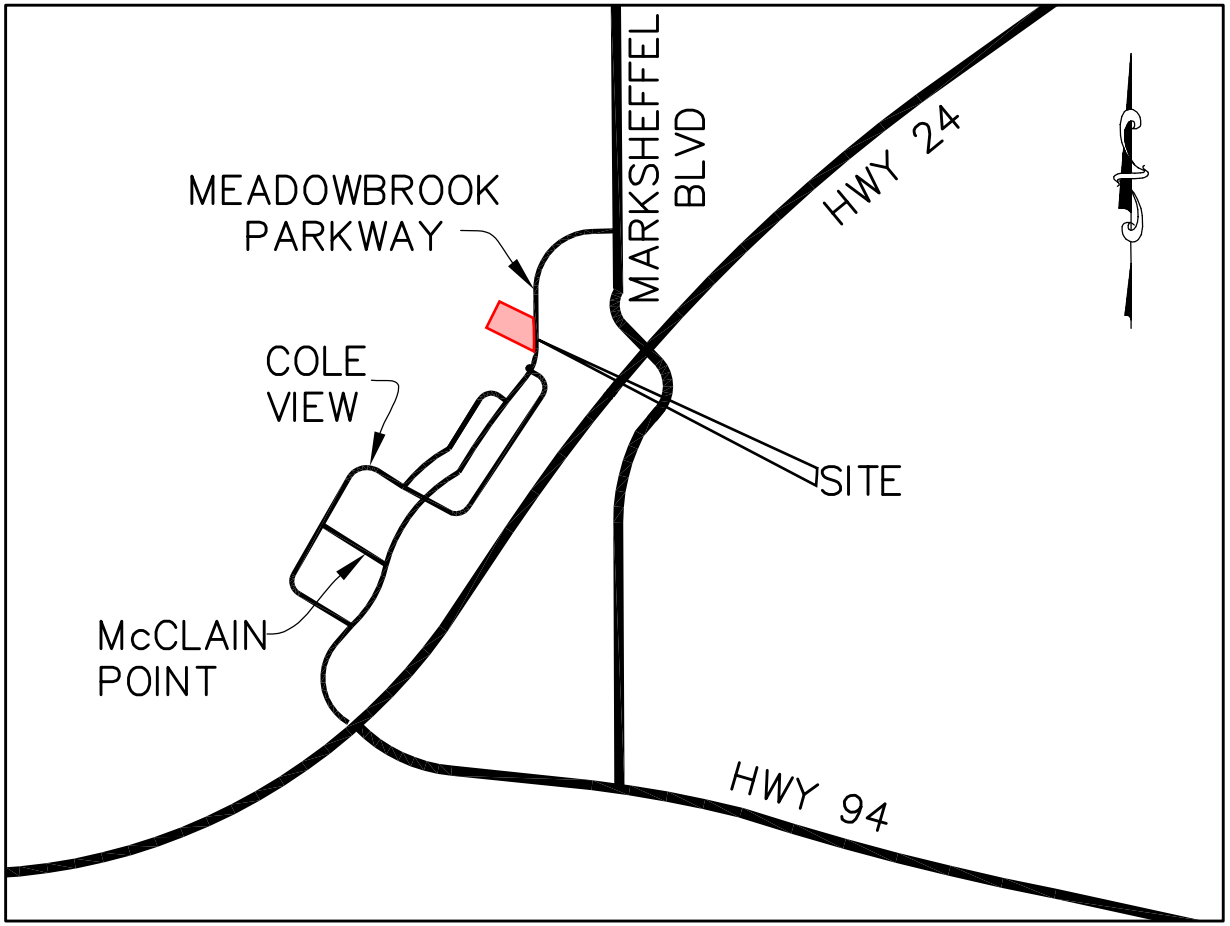
4.) Flood Insurance Rate Map (FIRM), Federal Emergency Management Agency, Effective date March 17, 1997.

5.) "Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, by Matrix Design Group, Inc.

6.) "Final Drainage Report for Padmark Business Park Filing No. 1", dated June 2017, by M & S Civil Consultants, Inc

APPENDIX

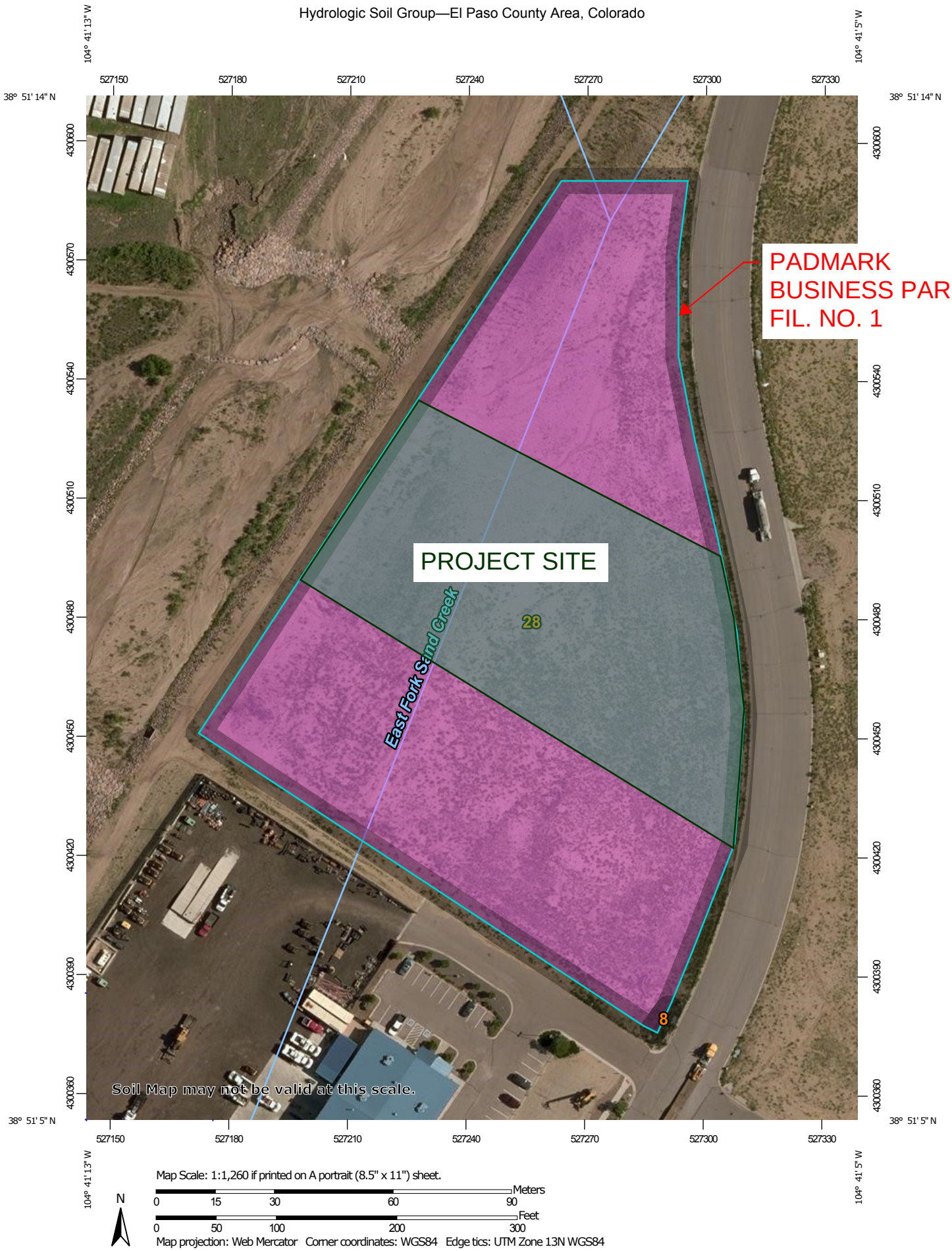
VICINITY MAP



VICINITY MAP

N.T.S.

SOILS MAP



Map Scale: 1:1,260 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

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 Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

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

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

Date(s) aerial images were photographed: Jun 3, 2014—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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	A	0.0	0.0%
28	Ellicott loamy coarse sand, 0 to 5 percent slopes	A	4.2	100.0%
Totals for Area of Interest			**4.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FIRM PANEL W/ REVISED LOMR

Federal Emergency Management Agency

Washington, D.C. 20472

NOV 13 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Sallie Clark
Chair, El Paso County
Board of Commissioners
27 East Vermijo Avenue
Colorado Springs, CO 80903

IN REPLY REFER TO:
Case No.: 06-08-B137P
Follows Conditional
Case No.: 04-08-0469R
Community Name: El Paso County, CO
Community No.: 080059
Effective Date of
This Revision: DEC 13 2006

Dear Ms. Clark:

The Flood Insurance Study Report and Flood Insurance Rate Map for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed which provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Denver, Colorado, at (303) 235-4830, or the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Kevin C Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

For: William R. Blanton Jr., CFM, Chief
Engineering Management Section
Mitigation Division

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map
Annotated Flood Insurance Study Report

cc: Mr. Kevin Stilson, P.E., CFM
Regional Floodplain Administrator

[redacted]
Central Marksheffel Business District

[redacted]
Matrix Design Group

 | Issue Date: NOV 13 2006 | Effective Date: NOV 13 2006 | Case No.: 06-08-B137P | LOMR-APP

Follows Conditional Case No.: 04-08-0469R

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	El Paso County Colorado (Unincorporated Areas)	CHANNELIZATION	FLOODWAY HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 080059		
IDENTIFIER	Marksheffel Business District	APPROXIMATE LATITUDE & LONGITUDE: 38.863, -104.674 SOURCE: USGS QUADRANGLE DATUM: NAD 27	

ANNOTATED MAPPING ENCLOSURES			ANNOTATED STUDY ENCLOSURES
TYPE: FIRM*	NO.: 08041C0752F	DATE: March 17, 1997	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 23, 1999 PROFILE: 212P FLOODWAY DATA TABLE 5
TYPE: FIRM*	NO.: 08041C0756F	DATE: March 17, 1997	

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

East Fork Sand Creek - from approximately 5,250 feet downstream to just upstream of Marksheffel Road

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
East Fork Sand Creek	Floodway	Floodway	YES	YES
	Zone AE	Zone AE	YES	YES
	BFEs	BFEs	NONE	YES
	Zone X (Shaded)	Zone X (Unshaded)	NONE	YES

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Jeanine D. Petterson
Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267
(303) 235-4830

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD 29)		MAP PANEL NUMBER(S)
		EFFECTIVE	REVISED	
East Fork Sand Creek	Approximately 5,150 feet downstream of Marksheffel Road	6,316	6,315	08041C0752F
	Approximately 210 feet downstream of Marksheffel Road	6,381	6,379	08041C0756F

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. This revision will become effective 30 days from the date of this letter. However, until the 90-day period has elapsed, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below.

LOCAL NEWSPAPER Name: *El Paso County News*
Dates: 11/29/2006 and 12/06/2006

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE UNINCORPORATED AREAS OF EL PASO COUNTY, COLORADO, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On March 17, 1997, the Department of Homeland Security's Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the unincorporated areas of El Paso County, Colorado, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Division has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified Base Flood Elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

A hydraulic analysis was performed to incorporate the effects of channel improvements along Sand Creek East Fork from approximately 5,250 feet downstream to just upstream of Marksheffel Road, and has resulted in a revised delineation of the regulatory floodway, an increase in SFHA width, a decrease in SFHA width, and decreased BFEs for Sand Creek East Fork. The aforementioned channelized portion of Sand Creek East Fork contains the base flood. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Sand Creek East Fork		
Approximately 5,150 feet downstream of Marksheffel Road	6,316	6,315
Approximately 210 feet downstream of Marksheffel Road	6,381	6,379

*National Geodetic Vertical Datum, rounded to nearest whole foot

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Division must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Division reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Division's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Sallie Clark
Chair, El Paso County
Board of Commissioners
27 East Vermijo Avenue
Colorado Springs, CO 80903

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						FEET (NGVD)		
Sand Creek East Fork					REVISED BY LOMR DATED OCTOBER 07, 2004			
A	1,100	100	455	11.9	6,038.7	6,038.7	6,038.7	0.0
B	2,400	100	446	12.2	6,054.3	6,054.3	6,054.3	0.0
C	3,330	100	450	12.0	6,069.9	6,069.9	6,069.9	0.0
D	4,240	100	449	12.1	6,085.1	6,085.1	6,085.1	0.0
E	4,870	100	451	12.0	6,095.2	6,095.2	6,095.2	0.0
F	5,820	250	602	8.9	6,118.4	6,118.4	6,118.9	0.5
G	6,690	150	518	10.3	6,128.1	6,128.1	6,129.1	1.0
H	7,795	125	477	11.2	6,155.2	6,155.2	6,155.2	0.0
I	8,665	150	505	10.6	6,168.8	6,168.8	6,168.8	0.0
J	9,675	100	443	12.0	6,188.4	6,188.4	6,188.4	0.0
K	10,565	115	465	11.5	6,196.2	6,196.2	6,196.2	0.0
L	11,325	166	525	10.2	6,207.3	6,207.3	6,207.3	0.0
M	11,375	173	632	8.4	6,207.9	6,207.9	6,207.9	0.0
N	12,610	367	699	7.6	6,228.8	6,228.8	6,228.8	0.1
O	13,720	188	570	10.0	6,241.7	6,241.7	6,241.7	0.0
P	14,805	125	479	11.1	6,257.9	6,257.9	6,257.9	0.0
Q	14,885	125	601	8.9	6,259.9	6,259.9	6,259.9	1.0
R	15,850	228	582	9.2	6,268.7	6,268.7	6,268.7	0.0
S	16,325	300	678	7.9	6,277.3	6,277.3	6,277.5	0.2
T	16,995	321	690	7.7	6,291.4	6,291.4	6,292.0	0.6
U	17,065	326	667	8.0	6,291.4	6,291.4	6,292.1	0.7
V	17,915	388	1,598	3.3	6,293.4	6,293.4	6,294.0	0.6
W	18,995	367	683	7.8	6,307.2	6,307.2	6,307.6	0.4
X	20,730	103	575	11.7	6,327.8	6,327.8	6,328.4	0.6
Y	22,560	142	506	11.0	6,348.8	6,348.8	6,349.4	0.6
Z	23,060	145	503	11.0	6,358.0	6,358.0	6,358.0	0.0
AA	24,835	418	3,156	7.0	6,383.5	6,383.5	6,383.5	0.0
AB	26,470	132	452	10.0	6,402.7	6,402.7	6,402.7	0.0
AC	27,715	112	419	10.8	6,416.6	6,416.6	6,416.6	0.0

REVISED AREA

[1]Feet Above Confluence With Sand Creek

REVISED BY LOMR DATED OCTOBER 30, 2006

REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO

AND INCORPORATED AREAS

FLOODWAY DATA

SAND CREEK EAST FORK

REVISED REACH

REACH REVISED BY LOMR DATED OCTOBER 30, 2006

APPROXIMATE SFB SPILWAY LOCATION

1% Annual Chance Flood EL=6354

MARKSHEFFEL ROAD

ELEVATION IN FEET (NGVD 29)

6400
6380
6360
6340
6320
6300
6280

19500 20000 20500 21000 21500 22000 22500 23000 23500 24000 24500 25000 25500 26000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH SAND CREEK

X Y Z AA

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006

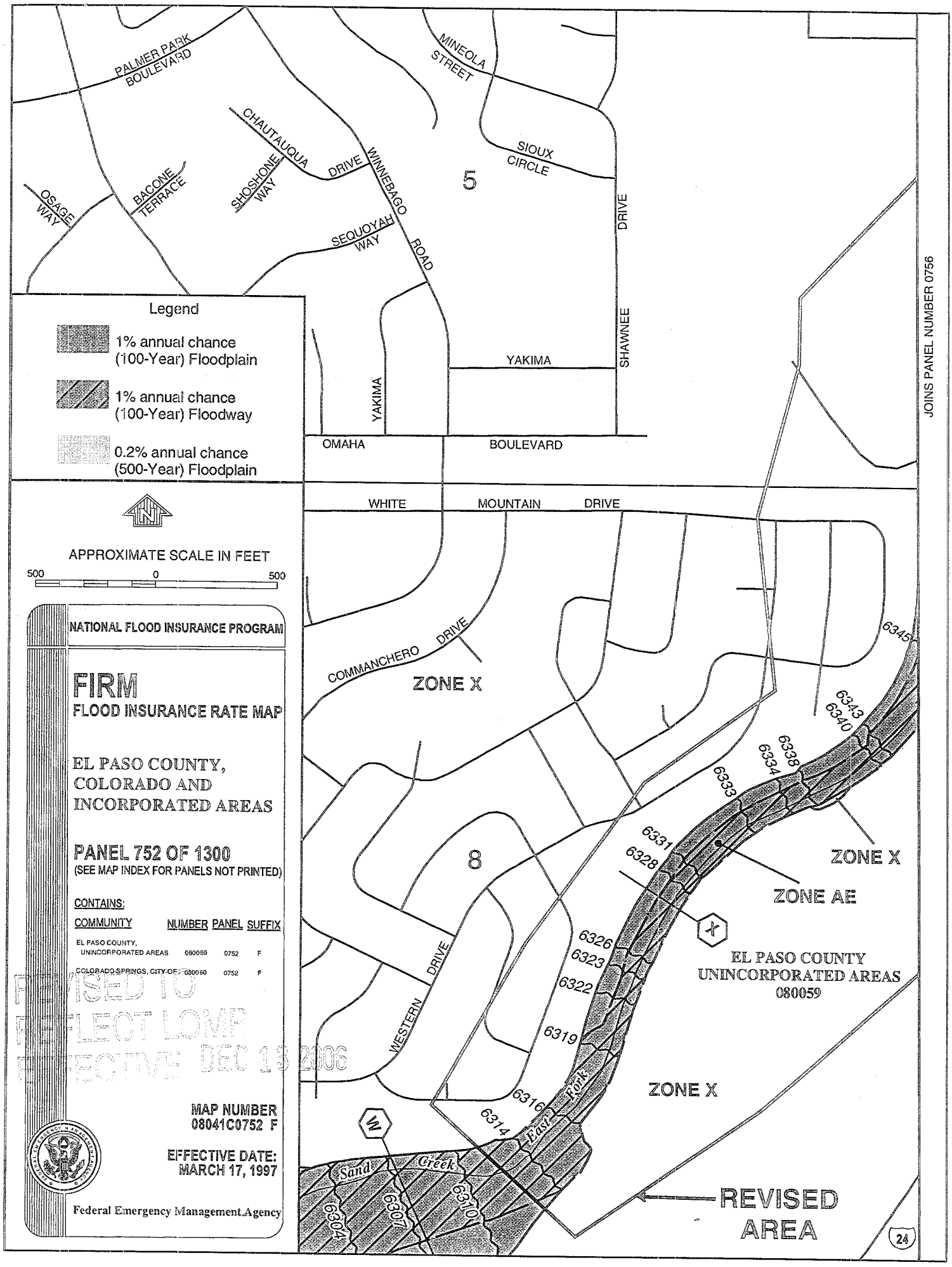
FLOOD PROFILES

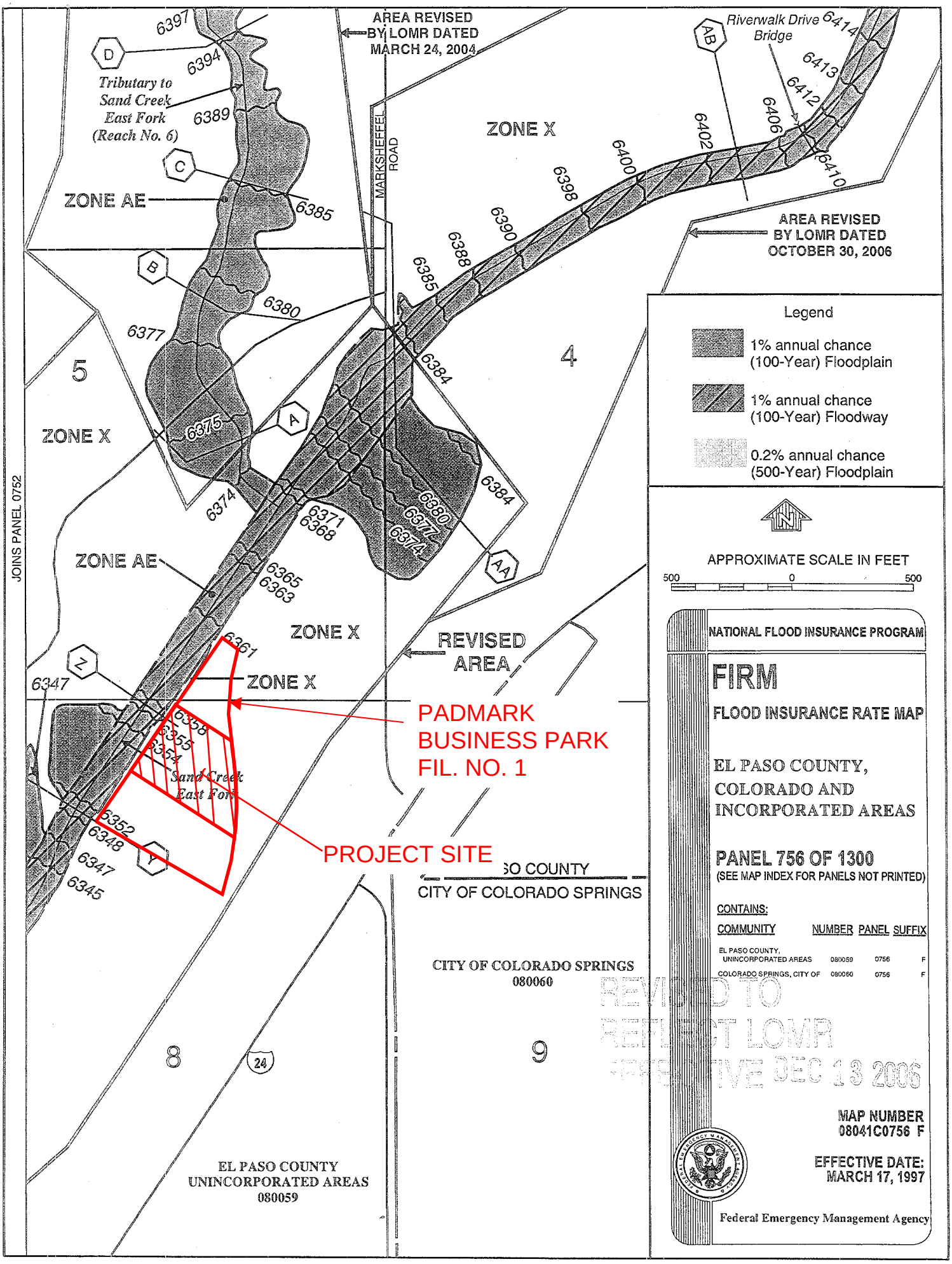
SAND CREEK EAST FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

212P


PALMER PARK BOULEVARD
MINEOLA STREET
CHAUTAUQUA DRIVE
WINNEBAGO ROAD
SIOUX CIRCLE
OSAGE WAY
BACONE TERRACE
SHOSHONE WAY
SEQUOYAH WAY
5
DRIVE
SHAWNEE
YAKIMA
YAKIMA
OMAHA
BOULEVARD
JOINS PANEL NUMBER 0756
Legend
1% annual chance (100-Year) Floodplain
1% annual chance (100-Year) Floodway
0.2% annual chance (500-Year) Floodplain
WHITE MOUNTAIN DRIVE
APPROXIMATE SCALE IN FEET
500 0 500
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS
PANEL 752 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS 080059 0752 F
COLORADO SPRINGS, CITY OF 080060 0752 F
REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006
MAP NUMBER 08041C0752 F
EFFECTIVE DATE: MARCH 17, 1997
Federal Emergency Management Agency
COMMANCHERO DRIVE
ZONE X
6345
6343
6340
6338
6334
6333
6331
6328
8
ZONE X
ZONE AE
EL PASO COUNTY UNINCORPORATED AREAS 080059
6326
6323
6322
6319
WESTERN DRIVE
6316
6314
East Fork
ZONE X
Sand Creek
6310
6307
6304
REVISED AREA
24


AREA REVISED BY LOMR DATED MARCH 24, 2004
AREA REVISED BY LOMR DATED OCTOBER 30, 2006
Riverwalk Drive Bridge
Tributary to Sand Creek East Fork (Reach No. 6)
MARKSHEFFEL ROAD
ZONE X
ZONE AE
ZONE AE
ZONE X
ZONE X
ZONE X
JOINS PANEL 0752
REVISED AREA
PADMARK BUSINESS PARK FIL. NO. 1
PROJECT SITE
Sand Creek East Fork
CITY OF COLORADO SPRINGS
CITY OF COLORADO SPRINGS 080060
EL PASO COUNTY UNINCORPORATED AREAS 080059
Legend
1% annual chance (100-Year) Floodplain
1% annual chance (100-Year) Floodway
0.2% annual chance (500-Year) Floodplain
APPROXIMATE SCALE IN FEET
500 0 500
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS
PANEL 756 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS 080059 0756 F
COLORADO SPRINGS, CITY OF 080060 0756 F
REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006
MAP NUMBER 08041C0756 F
EFFECTIVE DATE: MARCH 17, 1997
Federal Emergency Management Agency

HYDROLOGIC CALCULATIONS

LOT 2 PADMARK BUSINESS PARK FILING NO. 1
PROPOSED DRAINAGE CALCULATIONS
(Area Runoff Coefficient Summary)

			STREETS / DEVELOPED			*OVERLAND / DEVELOPED*			*OVERLAND / UNDEVELOPED*			*WEIGHTED*	
BASIN	**TOTAL AREA** *(SF)*	**TOTAL AREA** *(Acres)*	**AREA** *(Acres)*	**C_5**	**C_{100}**	**AREA** *(Acres)*	**C_5**	**C_{100}**	**AREA** *(Acres)*	**C_5**	**C_{100}**	**C_5**	**C_{100}**
A	***70030.82***	1.61	1.61	0.81	0.88	0.00	0.81	0.88	0.00			***0.81***	***0.88***
B	***4194.241***	0.10	0.06	0.81	0.88	0.04	0.16	0.41	0.00			***0.54***	***0.68***
OS1	***18329.62***	0.42	0.00			0.00			0.42	0.09	0.36	***0.09***	***0.36***

LOT 2 PADMARK BUSINESS PARK FILING NO. 1
FINAL DRAINAGE REPORT
(Area Drainage Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*		*INTENSITY **		*TOTAL FLOWS*	
BASIN	**AREA TOTAL** *(Acres)*	**C_5** *From DCM Table 5-1*	**C_{100}** *From DCM Table 5-1*	**C_5**	**Length** *(ft)*	**Height** *(ft)*	**T_C** *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	**T_t** *(min)*	**TOTAL** *(min)*	**CHECK** *(min)*	**I_5** *(in/hr)*	**I_{100}** *(in/hr)*	**Q_5** *(c.f.s.)*	**Q_{100}** *(c.f.s.)*
A	1.61	0.81	0.88	0.81	45	2.0	2.1	145	5.7%	4.8	0.5	2.7	11.1	5.2	8.7	***6.7***	***12.3***
B	0.10	0.54	0.68	0.54	40	2.2	3.6	100	3.2%	3.6	0.5	4.1	10.8	5.2	8.7	***0.3***	***0.6***
OS1	0.42	0.09	0.36	0.09	45	1.0	9.4	100	6.0%	2.4	0.7	10.1	10.8	4.1	6.9	***0.2***	***1.0***

* Intensity equations assume a minimum travel time of 5 minutes.

Calculated by: CMN
Date: 2/6/2018
Checked by: VAS

LOT 2 PADMARK BUSINESS PARK FILING NO. 1
FINAL DRAINAGE REPORT
(Basin Routing Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*PIPE / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*		
DESIGN POINT	**CONTRIBUTING BASINS**	**CA_5**	**CA_{100}**	**C_5**	**Length** *(ft)*	**Height** *(ft)*	**T_C** *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	**T_t** *(min)*	**TOTAL** *(min)*	**I_5** *(in/hr)*	**I_{100}** *(in/hr)*	**Q_5** *(c.f.s.)*	**Q_{100}** *(c.f.s.)*	COMMENTS
1	**A, OS1**	1.34	1.57	0.45	50	1	6.6	210	5.7%	4.8	0.7	7.3	4.6	7.7	***6.2***	***12.1***	SAND FILTER BASIN AND CDOT TYPE C OUTLET STRUCTURE

Calculated by: CMN
Date: 2/6/2018
Checked by: VAS

LOT 2 PADMARK BUSINESS PARK FILING NO. 1
FINAL DRAINAGE REPORT
(Storm Sewer Routing Summary)

PIPE	*Contributing Pipes/Design Points*	*Equivalent CA_5*	*Equivalent CA_{100}*	*Maximum T_C*	*Intensity**		*Flow*	
					I_5	*I_{100}*	*Q_5*	*Q_{100}*
1	**DP1**	1.34	1.57	7.3	4.6	7.7	***6.2***	***12.1***
2	**Anticipated Commercial Development of Lot 3 Padmark Business Park Fil. No. 1**	0.70	0.77	5.0	5.2	8.7	***3.6***	***6.6***
3	**PR1, PR2**	2.05	2.33	8.5	4.4	7.3	***8.9***	***17.1***

* Intensity equations assume a minimum travel time of 5 minutes.

DP - Design Point
EX - Existing Design Point
FB- Flow By from Design Point
INT- Intercepted Flow from Design Point

Calculated by: CMN
Date: 2/6/2018
Checked by: VAS

HYDRAULIC CALCULATIONS / SFB WQCV CALCULATIONS

Check the input. The number is off by two decimal places.

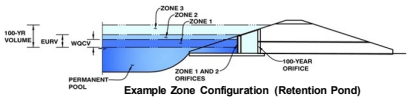
Weighted Percent Imperviousness of WQ SFB				
Contributing Basins	*Area (Acres)*	*C_5*	*Impervious % (I)*	*(Acres)*(I)*
A	1.61	0.81	95	152.73
OS1	0.42	0.09	2	0.84
Totals	***2.03***			***153.57***
Imperviousness of WQ Pond 1	***75.7***			

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: Lot 2 Padmark Business Park Filing No. 1

Basin ID: Basin A and Basin OS1



Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	SF		
Watershed Area =	2.03	acres	Note: L / W Ratio < 1
Watershed Length =	158	ft	L / W Ratio = 0.3
Watershed Slope =	0.046	ft/ft	
Watershed Imperviousness =	75.70%	percent	
Percentage Hydrologic Soil Group A =	100.0%	percent	
Percentage Hydrologic Soil Group B =	0.0%	percent	
Percentage Hydrologic Soil Groups C/D =	0.0%	percent	
Desired WQCV Drain Time =	12.0	hours	
Location for 1-hr Rainfall Depths =	Denver - Capitol Building		
Water Quality Capture Volume (WQCV) =	0.041	acre-feet	Optional User Override 1-hr Precipitation
Excess Urban Runoff Volume (EURV) =	0.199	acre-feet	
2-yr Runoff Volume (P1 = 1.19 in.) =	0.138	acre-feet	1.19 inches
5-yr Runoff Volume (P1 = 1.5 in.) =	0.179	acre-feet	1.50 inches
10-yr Runoff Volume (P1 = 1.75 in.) =	0.216	acre-feet	1.75 inches
25-yr Runoff Volume (P1 = 2 in.) =	0.258	acre-feet	2.00 inches
50-yr Runoff Volume (P1 = 2.25 in.) =	0.300	acre-feet	2.25 inches
100-yr Runoff Volume (P1 = 2.52 in.) =	0.349	acre-feet	2.52 inches
500-yr Runoff Volume (P1 = 3.14 in.) =	0.462	acre-feet	inches
Approximate 2-yr Detention Volume =	0.130	acre-feet	
Approximate 5-yr Detention Volume =	0.170	acre-feet	
Approximate 10-yr Detention Volume =	0.203	acre-feet	
Approximate 25-yr Detention Volume =	0.242	acre-feet	
Approximate 50-yr Detention Volume =	0.265	acre-feet	
Approximate 100-yr Detention Volume =	0.287	acre-feet	

Stage-Storage Calculation

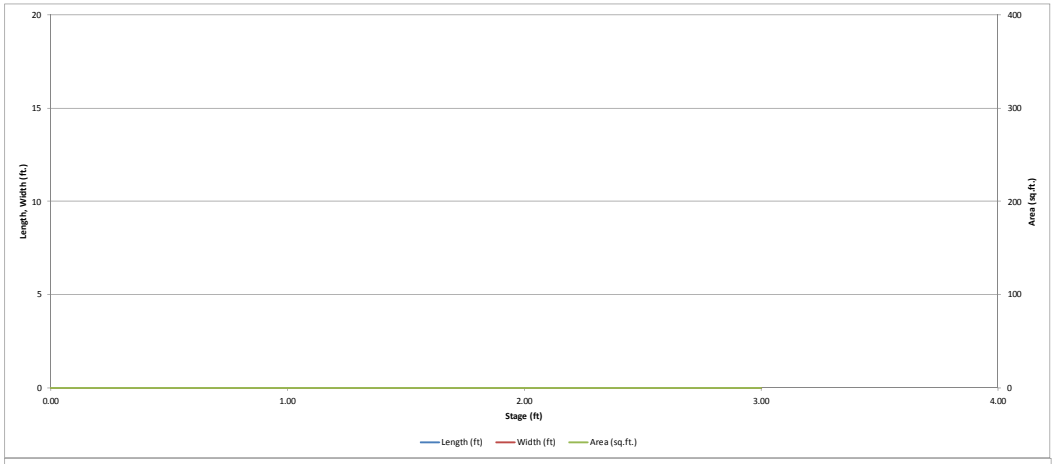
Zone 1 Volume (WQCV) =	0.041	acre-feet	
Select Zone 2 Storage Volume (Optional) =		acre-feet	Total detention volume is less than 100-year volume.
Select Zone 3 Storage Volume (Optional) =		acre-feet	
Total Detention Basin Volume =	0.041	acre-feet	
Initial Surcharge Volume (ISV) =	N/A	ft^3	
Initial Surcharge Depth (ISD) =	N/A	ft	
Total Available Detention Depth (H_{total}) =	user	ft	
Depth of Trickle Channel (H_{TC}) =	N/A	ft	
Slope of Trickle Channel (S_{TC}) =	N/A	ft/ft	
Slopes of Main Basin Sides (S_{main}) =	user	H:V	
Basin Length-to-Width Ratio ($R_{L/W}$) =	user		
Initial Surcharge Area (A_{ISV}) =	user	ft^2	
Surcharge Volume Length (L_{ISV}) =	user	ft	
Surcharge Volume Width (W_{ISV}) =	user	ft	
Depth of Basin Floor (H_{FLOOR}) =	user	ft	
Length of Basin Floor (L_{FLOOR}) =	user	ft	
Width of Basin Floor (W_{FLOOR}) =	user	ft	
Area of Basin Floor (A_{FLOOR}) =	user	ft^2	
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3	
Depth of Main Basin (H_{MAIN}) =	user	ft	
Length of Main Basin (L_{MAIN}) =	user	ft	
Width of Main Basin (W_{MAIN}) =	user	ft	
Area of Main Basin (A_{MAIN}) =	user	ft^2	
Volume of Main Basin (V_{MAIN}) =	user	ft^3	
Calculated Total Basin Volume (V_{total}) =	user	acre-feet	

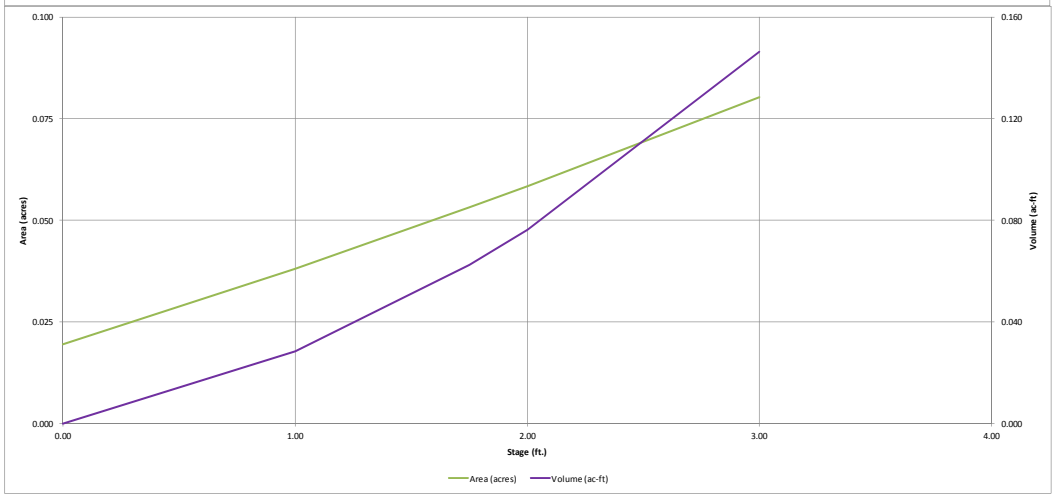
Depth Increment = ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
6358									
Media Surface	--	0.00	--	--	--	851	0.020		
6359	--	1.00	--	--	--	1,661	0.038	1,239	0.028
6359.75 EM SPILL	--	1.75	--	--	--	2,315	0.053	2,723	0.063
6360	--	2.00	--	--	--	2,543	0.058	3,328	0.076
6361	--	3.00	--	--	--	3,497	0.080	6,373	0.146

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



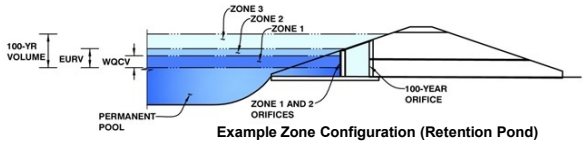


Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Lot 2 Padmark Business Park Filing No. 1

Basin ID: Basin A and Basin OS1



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.30	0.041	Filtration Media
Zone 2			
Zone 3			
		0.041	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	1.89	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	1.00	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	0.0	ft^2
Underdrain Orifice Centroid =	0.04	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =		ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =		ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =		inches
Orifice Plate: Orifice Area per Row =		inches

Calculated Parameters for Plate

WQ Orifice Area per Row =	N/A	ft^2
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft^2

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (optional)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =			inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =			ft^2
Vertical Orifice Centroid =			feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Not Selected	Not Selected	
Overflow Weir Front Edge Height, Ho =	1.30		ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	2.91		feet
Overflow Weir Slope =	0.00		H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	2.91		feet
Overflow Grate Open Area % =	70%		%, grate open area/total area
Debris Clogging % =	50%		%

Calculated Parameters for Overflow Weir

	Not Selected	Not Selected	
Height of Grate Upper Edge, H_t =	1.30		feet
Over Flow Weir Slope Length =	2.91		feet
Grate Open Area / 100-yr Orifice Area =			should be ≥ 4
Overflow Grate Open Area w/o Debris =	5.93		ft^2
Overflow Grate Open Area w/ Debris =	2.96		ft^2

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Not Selected	Not Selected	
Depth to Invert of Outlet Pipe =			ft (distance below basin bottom at Stage = 0 ft)
Circular Orifice Diameter =			inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Not Selected	Not Selected	
Outlet Orifice Area =			ft^2
Outlet Orifice Centroid =			feet
Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	6359.75	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	21.50	feet
Spillway End Slopes =	3.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

Spillway Design Flow Depth=	0.32	feet
Stage at Top of Freeboard =	6361.07	feet
Basin Area at Top of Freeboard =	0.08	acres

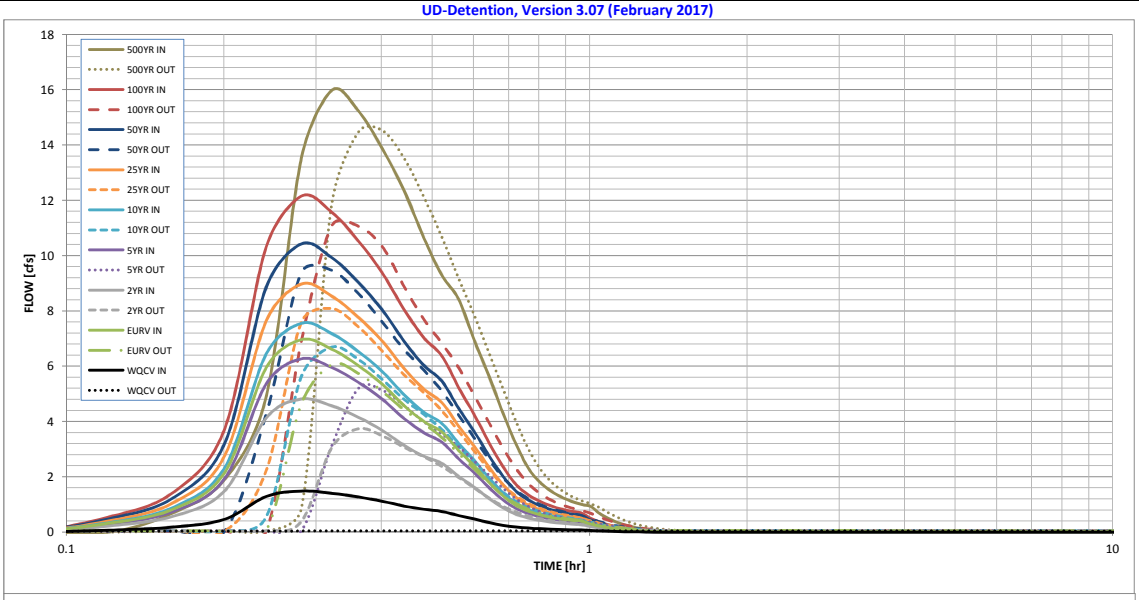
Routed Hydrograph Results

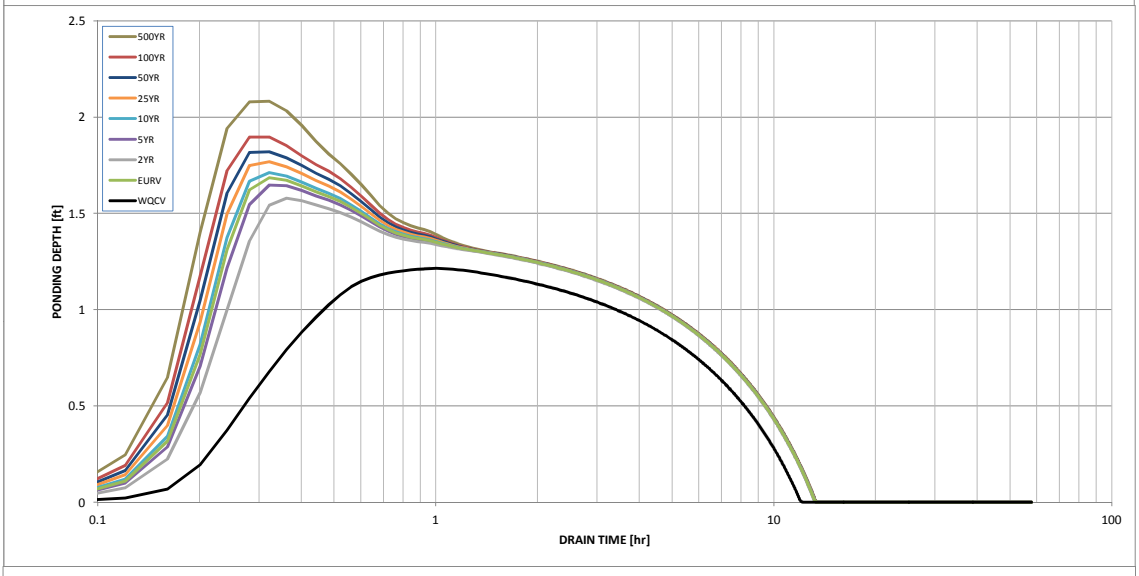
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	0.53	1.07	1.19	1.50	1.75	2.00	2.25	2.52	3.14
Calculated Runoff Volume (acre-ft) =	0.041	0.199	0.138	0.179	0.216	0.258	0.300	0.349	0.462
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.041	0.199	0.137	0.179	0.216	0.258	0.300	0.350	0.462
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.00	0.01	0.02	0.04	0.31	0.74	1.61
Predevelopment Peak Q (cfs) =	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.5	3.3
Peak Inflow Q (cfs) =	1.5	7.0	4.8	6.3	7.6	9.0	10.4	12.1	16.0
Peak Outflow Q (cfs) =	0.0	6.0	3.7	5.2	6.7	8.1	9.5	11.1	14.5
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	318.6	176.1	92.9	15.2	7.4	4.4
Structure Controlling Flow =	Filtration Media	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1
Max Velocity through Grate 1 (fps) =	N/A	-0.01	-0.01	0.0	0.0	0.0	0.0	0.0	0.0
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	12	11	12	12	11	11	10	10	9
Time to Drain 99% of Inflow Volume (hours) =	**12**	13	13	13	13	13	12	12	12
Maximum Ponding Depth (ft) =	1.21	1.69	1.58	1.65	1.71	1.77	1.82	1.90	2.08
Area at Maximum Ponding Depth (acres) =	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06
Maximum Volume Stored (acre-ft) =	0.037	0.059	0.054	0.057	0.061	0.064	0.067	0.071	0.082

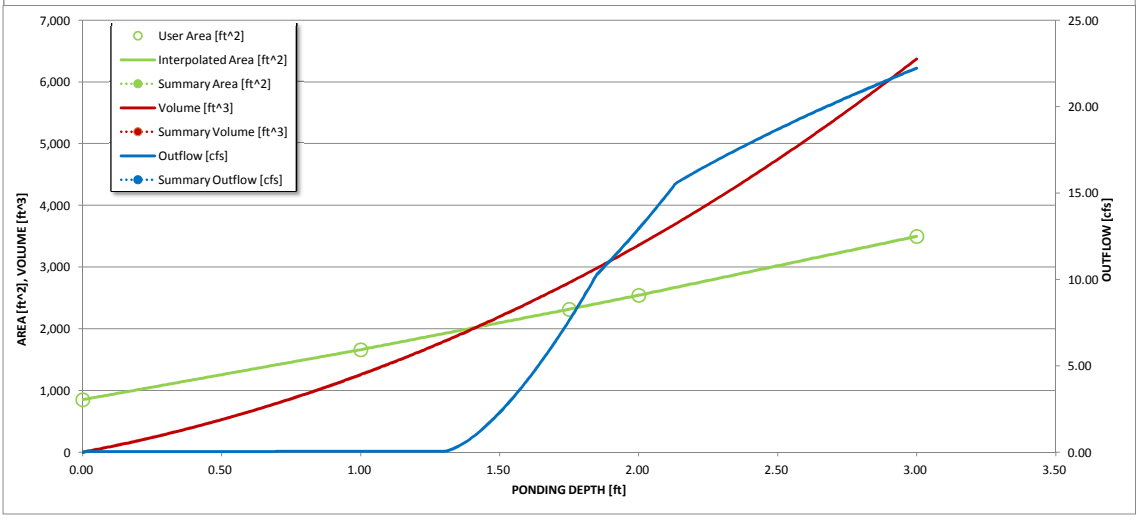
Per the GEC the depth from the spillway crest to bottom of the SF is 1.75' which is less than the calculated 100 yr ponding depth which means portion of the 100yr developed flow is overtopping the emergency spillway. Revise the spillway elevation.

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Detention Basin Outlet Structure Design

Outflow Hydrograph Workbook Filename:

Storm Inflow Hydrographs **UD-Detention, Version 3.07 (February 2017)**

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

Time Interval	SOURCE	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK
	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
2.41 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:02:25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrograph	0:04:49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	0:07:14	0.07	0.32	0.22	0.29	0.34	0.41	0.47	0.55	0.71
2.078	0:09:38	0.18	0.84	0.58	0.76	0.91	1.08	1.26	1.46	1.91
	0:12:03	0.47	2.16	1.50	1.95	2.35	2.78	3.23	3.75	4.92
	0:14:28	1.28	5.95	4.13	5.36	6.45	7.65	8.87	10.31	13.52
	0:16:52	1.48	6.96	4.81	6.26	7.55	8.97	10.43	12.14	15.98
	0:19:17	1.39	6.62	4.57	5.95	7.18	8.54	9.93	11.57	15.23
	0:21:41	1.26	6.02	4.15	5.41	6.53	7.77	9.03	10.53	13.87
	0:24:06	1.11	5.34	3.68	4.80	5.80	6.90	8.03	9.37	12.36
	0:26:31	0.94	4.57	3.14	4.11	4.97	5.92	6.90	8.06	10.65
	0:28:55	0.82	4.00	2.75	3.59	4.34	5.17	6.03	7.03	9.29
	0:31:20	0.74	3.61	2.48	3.25	3.93	4.68	5.45	6.37	8.41
	0:33:44	0.59	2.95	2.02	2.64	3.21	3.83	4.46	5.22	6.92
	0:36:09	0.47	2.38	1.62	2.13	2.59	3.10	3.62	4.24	5.63
	0:38:34	0.34	1.79	1.21	1.61	1.96	2.35	2.75	3.23	4.31
	0:40:58	0.24	1.31	0.88	1.17	1.43	1.72	2.02	2.38	3.19
	0:43:23	0.18	0.96	0.65	0.86	1.05	1.26	1.48	1.74	2.32
	0:45:47	0.15	0.75	0.51	0.67	0.82	0.99	1.15	1.35	1.81
	0:48:12	0.12	0.62	0.42	0.56	0.68	0.81	0.95	1.12	1.49
	0:50:37	0.10	0.53	0.36	0.48	0.58	0.69	0.81	0.95	1.26
	0:53:01	0.09	0.47	0.32	0.42	0.51	0.61	0.71	0.83	1.11
	0:55:26	0.08	0.42	0.29	0.38	0.46	0.55	0.64	0.75	1.00
	0:57:50	0.08	0.39	0.27	0.35	0.43	0.51	0.60	0.70	0.93
	1:00:15	0.06	0.29	0.20	0.26	0.31	0.37	0.44	0.51	0.68
	1:02:40	0.04	0.21	0.14	0.19	0.23	0.27	0.32	0.37	0.50
	1:05:04	0.03	0.15	0.10	0.14	0.17	0.20	0.23	0.27	0.36
	1:07:29	0.02	0.11	0.08	0.10	0.12	0.15	0.17	0.20	0.27
	1:09:53	0.01	0.08	0.05	0.07	0.09	0.10	0.12	0.14	0.19
	1:12:18	0.01	0.06	0.04	0.05	0.06	0.07	0.09	0.10	0.13
	1:14:43	0.01	0.04	0.03	0.03	0.04	0.05	0.06	0.07	0.09
	1:17:07	0.00	0.02	0.02	0.02	0.03	0.03	0.04	0.05	0.06
	1:19:32	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04
	1:21:56	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.02
	1:24:21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	1:26:46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:29:10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:31:35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:33:59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:36:24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:38:49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:41:13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:43:38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:46:02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:48:27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:50:52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:53:16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:55:41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1:58:05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:00:30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:02:55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:05:19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:07:44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:10:08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:12:33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:14:58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:17:22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:19:47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:22:11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:24:36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:27:01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:29:25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:31:50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:34:14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:36:39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:39:04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:41:28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:43:53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:46:17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:48:42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:51:07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:53:31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Area [ft^2]	Area [acres]	Volume [ft^3]	Volume [ac-ft]	Total Outflow [cfs]

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

Design Procedure Form: Sand Filter (SF)

UD-BMP (Version 3.06, November 2016)

Designer: Chase M. Neises
Company: M&S Civil Consultants Inc.
Date: February 6, 2018
Project: Lot 2 Padmark Business Park Filing No. 1
Location: Meadowbrook Parkway

1. Basin Storage Volume	
A) Effective Imperviousness of Tributary Area, I_a (100% if all paved and roofed areas upstream of sand filter)	I_a = 75.7 %
B) Tributary Area's Imperviousness Ratio (i = I_a/100)	i = 0.757
C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time WQCV= 0.8 * (0.91* i^3 - 1.19 * i^2 + 0.78 * i)	WQCV = 0.24 watershed inches
D) Contributing Watershed Area (including sand filter area)	Area = 88,360 sq ft
E) Water Quality Capture Volume (WQCV) Design Volume V_{WQCV} = WQCV / 12 * Area	V_{WQCV} = 1,787 cu ft
F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm	d_6 = in
G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume	$V_{WQCV\ OTHER}$ = cu ft
H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired)	$V_{WQCV\ USER}$ = cu ft
2. Basin Geometry	
A) WQCV Depth	D_{WQCV} = 1.5 ft
B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.	Z = 4.00 ft / ft
C) Minimum Filter Area (Flat Surface Area)	A_{Min} = 836 sq ft
D) Actual Filter Area	A_{Actual} = 850 sq ft
E) Volume Provided	V_T = 1851 cu ft
3. Filter Material	Choose One: ○ 18" CDOT Class B or C Filter Material ○ Other (Explain):
4. Underdrain System	
A) Are underdrains provided?	Choose One: ◉ YES ○ NO
B) Underdrain system orifice diameter for 12 hour drain time	
i) Distance From Lowest Elevation of the Storage Volume to the Center of the Orifice	y = 1.9 ft
ii) Volume to Drain in 12 Hours	Vol_{12} = 1,787 cu ft
iii) Orifice Diameter, 3/8" Minimum	D_O = 15 / 16 in

Design Procedure Form: Sand Filter (SF)

Designer: Chase M. Neises
Company: M&S Civil Consultants Inc.
Date: February 6, 2018
Project: Lot 2 Padmark Business Park Filing No. 1
Location: Meadowbrook Parkway

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric A) Is an impermeable liner provided due to proximity of structures or groundwater contamination?	Choose One ○ YES ◉ NO
6-7. Inlet / Outlet Works A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet	

Notes:

Lot 2 Padmark Business Park
DRAINAGE REPORT DRAINAGE CALCULATIONS
(Pond Volume/Storage Calculation)

SAND FILTER BASIN

Elevation	SF	CF	Storage AF	Storage Sum
6358.00	851.00			0
6359.00	1,660.00	1,255.50	0.03	0.03
6359.75	2,315.00	1,490.63	0.03	0.06

Total = 2,746 CF

Total = 0.1 Ac-ft

At top of Outlet Box Elevation = 6359.30 , the Volume is 1851 CF

100 Year Spillway Crest Elevation = 6359.75

Calculated by: CMN

Date: 2/2/2018

Checked by:

PROPOSED DRAINAGE MAP

LOT 2 PADMARK BUSINESS PARK FILING NO. 1

COUNTY OF EL PASO, STATE OF COLORADO

PROPOSED DRAINAGE MAP

FEBRUARY 2018

MEADOWBROOK PARKWAY

EAST FORK SAND CREEK

EX. CHECK STRUCTURE

LOT 3 PADMARK BUSINESS PARK FILING NO. 1

PROP. 18" RCP STORM SEWER STUB. INV=55.69

PROPERTY BOUNDARY

OS1 | 0.42 | 0.09 | 0.36

PROP. FENCE

H.P.

EX. CONCRETE ACCESS DRIVE

PROP. LANDSCAPE AREA

PROP. BUILDING BNDY.

OHD DOOR

PROPOSED INDUSTRIAL BUILDING F.F.=6368.60

PROP. PARKING

EX. SIDEWALK

EX. GAS LINE

EX. SAN. SEWER

EX. WATER LINE

EX. RCP STORM SEWER

100 YR BASE FLOOD ELEV=6354 TO 6355

PROP CRUSHED ASPHALT

A | 1.61 | 0.81 | 0.88

B | 0.10 | 0.54 | 0.68

77 SY SC250 PERM EROSION CONTROL MAT

EMERGENCY SPILLWAY CREST EL=6359.75

PROP. 18" RCP

PROP. TYPE II MH (4' DIA) RIM=6360.83' INV IN(18")=6351.08' (NE) INV IN(18")=6351.23' (SE) INV OUT(30")=6350.93' (SW)

PROP. 30" RCP

EX. 30" STORM SEWER STUB INV=6350.81

WQ SAND FILTER BASIN

4" UNDERDRAIN

TYPE "C" CDOT OUTLET STRUCTURE 2.91'X2.91' TOB EL=6359.30 4" UNDERDRAIN INV=55.61 18" OUTLET PIPE INV=54.61

6' TO 8' W 1' D TRAPIZIOD-SHAPED RIPRAP RUNDOWN TYPE VL OR L ATOP MIRAFI 140N FILTER FABRIC OR EQUIVALENT

EX. FENCE

EXISTING PARKING

EXISTING SAND FILTER BASIN

EX. 30" RCP STORM SEWER

LOT 1 PADMARK BUSINESS PARK FILING NO. 1

LEGEND

BASIN DESIGNATION: Z | 25 | .25 | .35 | C5 | C100 | ACRES

- PIPE RUN REFERENCE LABEL
- SURFACE DESIGN POINT
- BASIN BOUNDARY
- EXISTING CONTOUR
- PROP CONTOUR
- EXISTING GAS LINE
- PROPOSED STORM SEWER PIPE
- EXISTING STORM SEWER PIPE
- CROSSPAN
- INLET
- EXISTING FLOW DIRECTION ARROW
- EMERGENCY OVERFLOW DIRECTION
- FLOW DIRECTION
- HIGH POINT
- LOW POINT
- SC250 PERM. EROSION CONTROL MAT

1" = 20'

0 10' 20' 40'

Scale in Feet

BASIN SUMMARY

BASIN	AREA (ACRES)	Q_5	Q_{100}
A	1.61	6.7	12.3
B	0.10	0.3	0.6
OS1	0.42	0.2	1.0

DESIGN POINT SUMMARY

DESIGN POINT	Q_5	Q_{100}	BASIN	STRUCTURE
1	6.2	12.1	A, OS1	WQ SAND FILTER BASIN & OUTLET STRUCTURE

STORM SEWER SUMMARY

PIPE RUN	Q_5	Q_{100}	PIPE SIZE	CONTRIBUTING PIPES
1	6.2	12.1	18" RCP	DP1/SFB
2	3.6	6.6	18" RCP	ANTICIPATED COMM. DEV. OF LOT 3
3	8.9	17.1	30" RCP	PR1, PR2

WQCV SUMMARY

EPC/URBAN DRAINAGE SAND FILTER BASIN–SEE STD. DET.	
WQCV REQUIRED	1,787 CF
WQCV PROVIDED	1,851 CF
AREA REQUIRED	836 SF
AREA PROVIDED	850 SF
EMERGENCY SPILLWAY CREST ELEVATION	6359.75 FT
SPILLWAY DESIGN FLOW DEPTH	0.32 FT
CDOT TYPE C OUTLET STRUCTURE TOB ELEVATION	6359.30 FT

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES

FOR BURIED UTILITY INFORMATION 48 HRS BEFORE YOU DIG CALL 1-800-922-1987

M&S CIVIL CONSULTANTS, INC.

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

LOT 2 PADMARK BUSINESS PARK FIL. NO. 1

PROPOSED DRAINAGE MAP

PROJECT NO. 44-031	SCALE: HORIZONTAL: 1"=20' VERTICAL: N/A	DATE: 2/19/2018	
DESIGNED BY: CMN		SHEET 1 OF 1	PDM
DRAWN BY: CMN			
CHECKED BY: VAS			

File: G:\44031A Padmark Lots 2-3\Name\dwg\Eng Exhibits\Proposed Drainage Map.dwg Plotstamp: 2/19/2018 2:24 PM

EXISTING DRAINAGE MAP

NEW DOC

FINAL DRAINAGE REPORT

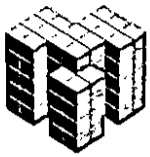
For

"Claremont Business Park Filing No. 2"

Prepared for:
El Paso County
Department of Public Works
Engineering Division

On Behalf of:
Claremont Development, Inc.

Prepared by:



Matrix Design Group, Inc.
Integrated Design Solutions
Infrastructure Engineering
Community Development
Program Management

2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
(719) 575-0100
fax (719) 572-0208

Revised November 2006

05.151.006

Engineer's Statement:

The *revisions* (changes made to the base Final Drainage Report since July, 2006) to the attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. The revisions encompassed adding additional right of way to the study area at the County's request, the handling of offsite drainage due to the additional right of way, a breakdown of private drainage within lot numbers 10 through 25 of Filing No. 2 due to cross-lot drainage (contrary to note # 25 on the recorded plat), profiling additional inlets along the channel edge, and rip-rap sizing for outlet structures along the channel. The Final Drainage Report dated July, 2006 was prepared under the direct supervision of Richard G. Gallegos, Jr. in July, 2006 and stamped (see next sheet).

The Final Drainage Report was prepared according to the criteria established by the County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing the *revisions* to this report.

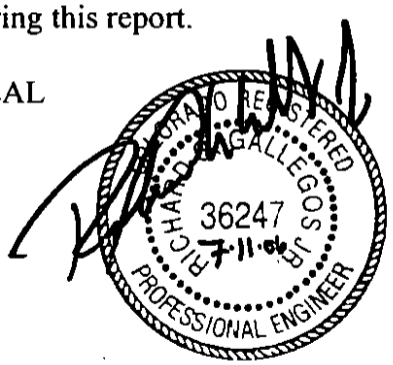
SEAL

Brady A. Shyrock
Registered Professional Engineer
State of Colorado
No. 38164

Engineer's Statement:

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

SEAL



Richard G. Gallegos, Jr.
Registered Professional Engineer
State of Colorado
No. 36247

Developer's Statement:

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

Claremont Development, Inc.
Business Name

By: _____

Title: _____

Address: 3460 Capital Drive
Colorado Springs, CO 80915

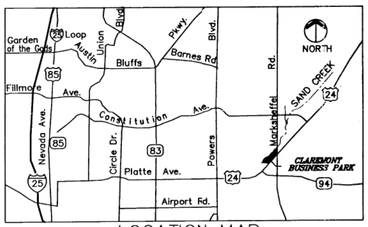
El Paso County:

Filed in accordance with Section 51.1 of the El Paso Land Development Code, as amended.

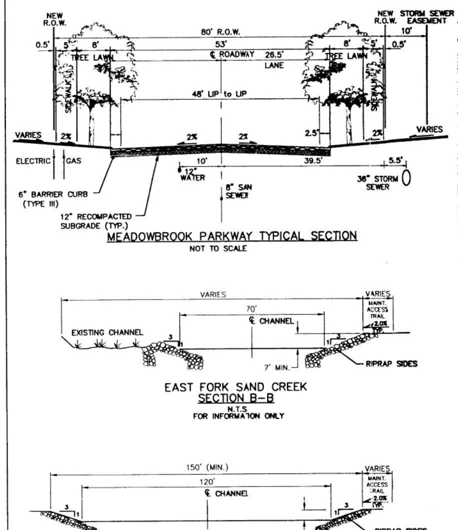
For Mr. John McCarty, County Engineer/Director — Date 4/23/07

Conditions:

DRAINAGE PLAN
CLAREMONT BUSINESS PARK FILING NO. 2



LOCATION MAP
NTS

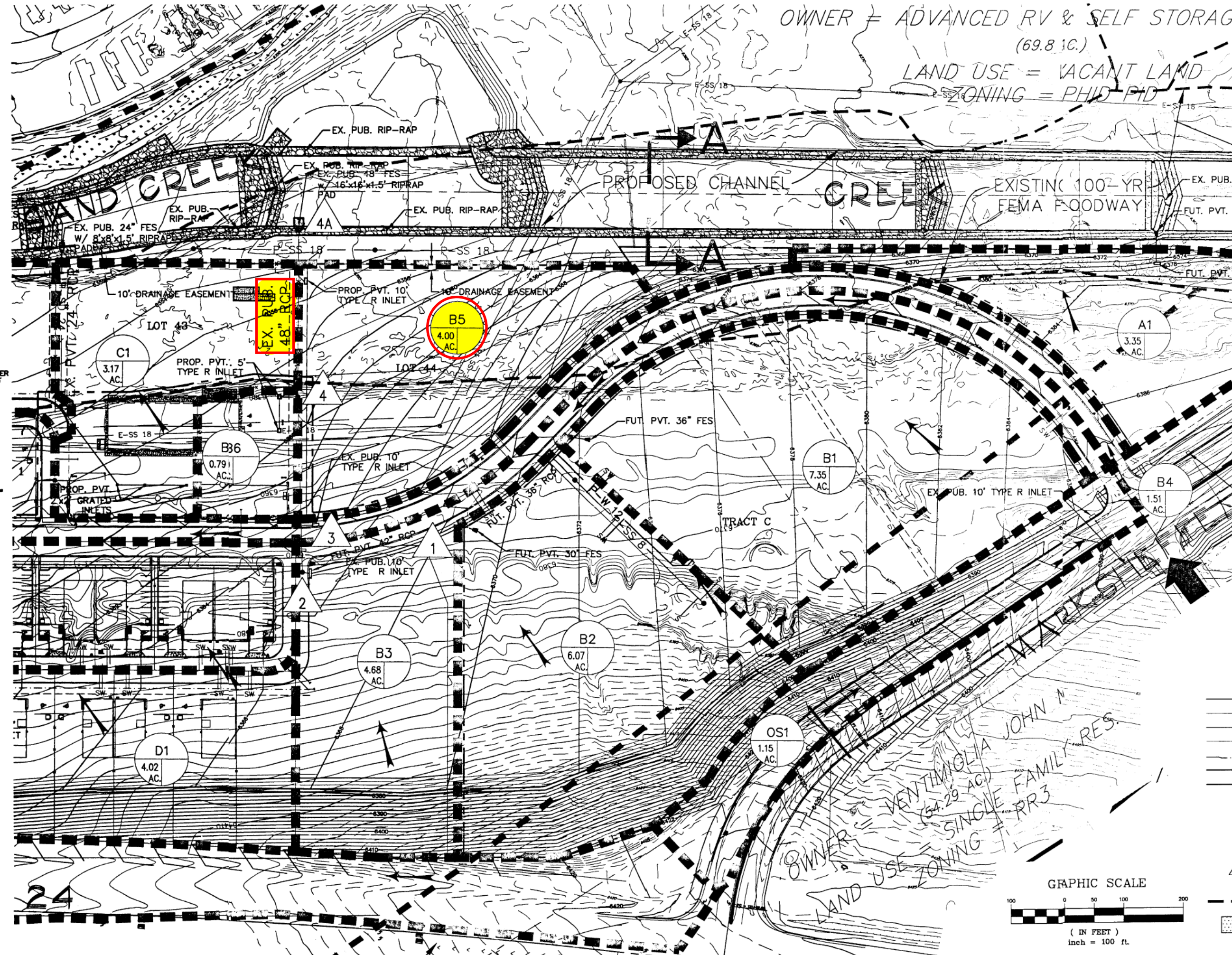


MEADOWBROOK PARKWAY TYPICAL SECTION
NOT TO SCALE

EAST FORK SAND CREEK
SECTION B-B
N.T.S.
FOR INFORMATION ONLY

EAST FORK SAND CREEK
SECTION A-A
N.T.S.
FOR INFORMATION ONLY

NOTE:
CONSTRUCTION OF THE EAST FORK SAND CREEK CHANNEL IMPROVEMENTS WILL BE REQUIRED TO REMOVE A PORTION OF CLAREMONT BUSINESS PARK FILING No. 1 FROM THE EXISTING 100-YEAR FLOODPLAIN (PER FEMA FLOOD INSURANCE RATE MAPS 752F AND 756F)



EX. PUP

DESIGN POINT SUMMARY			
D.P.	SUB-BASINS	Q(5)	Q(100)
1	B1, B2	31.5	63.6
2	1, B3, OS1(flow by)	42.6	86.6
3	2(sewer), B4(flow by)	43.1	88.2
4	3, B6	44.1	90.1
4A	4, B5	52.8	107.5
5	D1(flow by), D3	13.5	25.9
6	5, D4	24.1	48.9
7	6, D5	40.8	82.5
8	7, D6, B4(flow by)	53.1	107.6
9	8, D7	61.6	124.5
10	D1(flow by), D2, E1, E2	19.4	40.6
11	10, E4	27.7	57.1
12	11, E5	36.3	74.3
13	12, E6	41.8	85.3

LEGEND

- 6520 — PROPOSED CONTOUR
- 6520 — EXISTING CONTOUR
- PROPOSED STORM DRAIN PIPE
- EXISTING STORM DRAIN PIPE
- DRAINAGE CHANNEL
- PROPOSED TYPE 'R' INLET
- PROPOSED TYPE I OR II MANHOLE
- FLOW ARROW
- BASIN DESIGNATION
- "C" COEFFICIENT (100 YR)
- BASIN AREA (ACRES)
- FILING 1 LIMITS
- DRAINAGE BASIN BOUNDARY
- FILING NO. 2

REFERENCE DRAWINGS
X-BASE-04 052.001
x-util
X-TOPO
X-ROAD
X-BASE
X-TOPO-09-01-05-bas

NO.	DATE	DESCRIPTION	BY

REVISIONS

BENCHMARK DATA(ELEV.)
(DATUM)
(DESCRIPTION/LOCATION)

C:\Documents and Settings\rich_gallegos\My Documents\05.151.006(FILING2)\Resources\302-FDR\DR01-02.dwg
PLOT DATE: Mar 02, 2007 9:21am

SUBDIVIDER
HAMMERS CONSTRUCTION INC.
3460 CAPITAL DRIVE
COLORADO SPRINGS, CO 80915-9710

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.

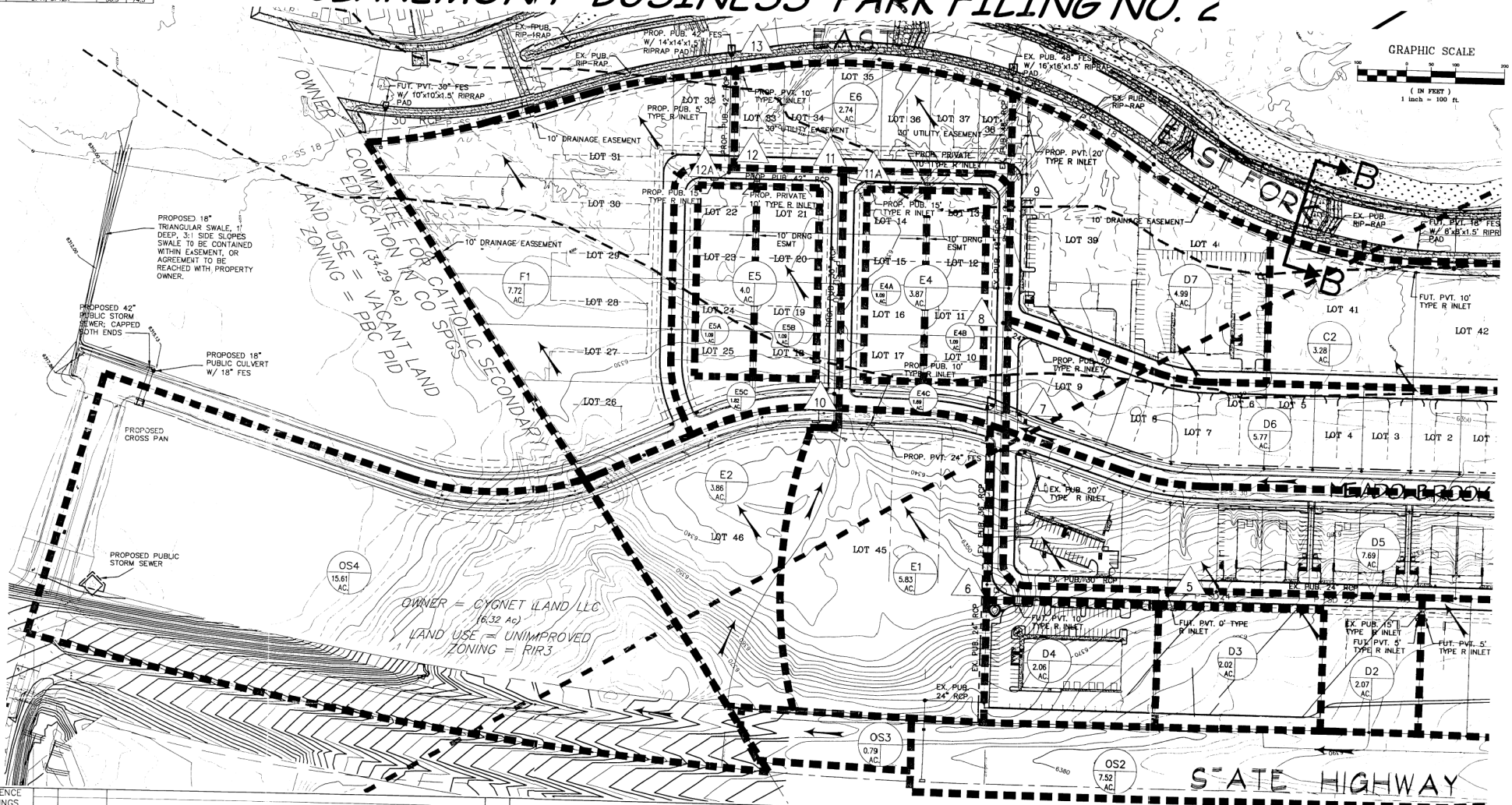
Matrix Design Group, Inc.
Integrated Design Solutions 2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
Phone 719-575-0100
Fax 719-575-0208

CLAREMONT BUSINESS PARK
FINAL DRAINAGE PLAN
MASTER DEVELOPMENT DRAINAGE PLAN
FINAL DRAINAGE PLAN
FILING NO. 2

DESIGNED BY: RGG	SCALE	DATE ISSUED: SEPTEMBER 2006	DR01
DRAWN BY: GES	HORIZ: 1"= 100'	SHEET NO. 1 OF 2 SHEETS	
CHECKED BY: JPL	VERT: N/A		

DRAINAGE PLAN
CLAREMONT BUSINESS PARK FILING NO. 2

DESIGN POINT SUMMARY			
D.P.	SUB-BASINS	Q(5)	Q(100)
11A	E4A, E4B, E4C	11.5	23.0
11	DP10, DP11A	27.7	57.1
12A	E5A, E5B, E5C	11.7	23.5
12	DP11, DP12A	36.3	74.3



REFERENCE DRAWINGS

X-BASE-04.052.001
x-util
X-TOPO
X-ROAD
X-BASE
X-TOPO-09-01-05-bas

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

BENCHMARK DATA(ELEV.) _____
(DATUM) _____
(DESCRIPTION/LOCATION) _____

C:\Documents and Settings\rich_gallegos\My Documents\05.151.006(FILIN~2\DR02-revised-02-19-07.dwg
PLOT DATE: Mar 02, 2007 8:44am

SUBDIVIDER

HAMMERS CONSTRUCTION INC.
3460 CAPITAL DRIVE
COLORADO SPRINGS, CO 80915-9710

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.

Matrix Design Group, Inc.
Integrated Design Solutions 2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
Phone 719-575-0100
Fax 719-575-0208

CLAREMONT BUSINESS PARK

REVISED FINAL DRAINAGE PLAN

MASTER DEVELOPMENT DRAINAGE PLAN
REVISED FINAL DRAINAGE PLAN
FILING NO. 2

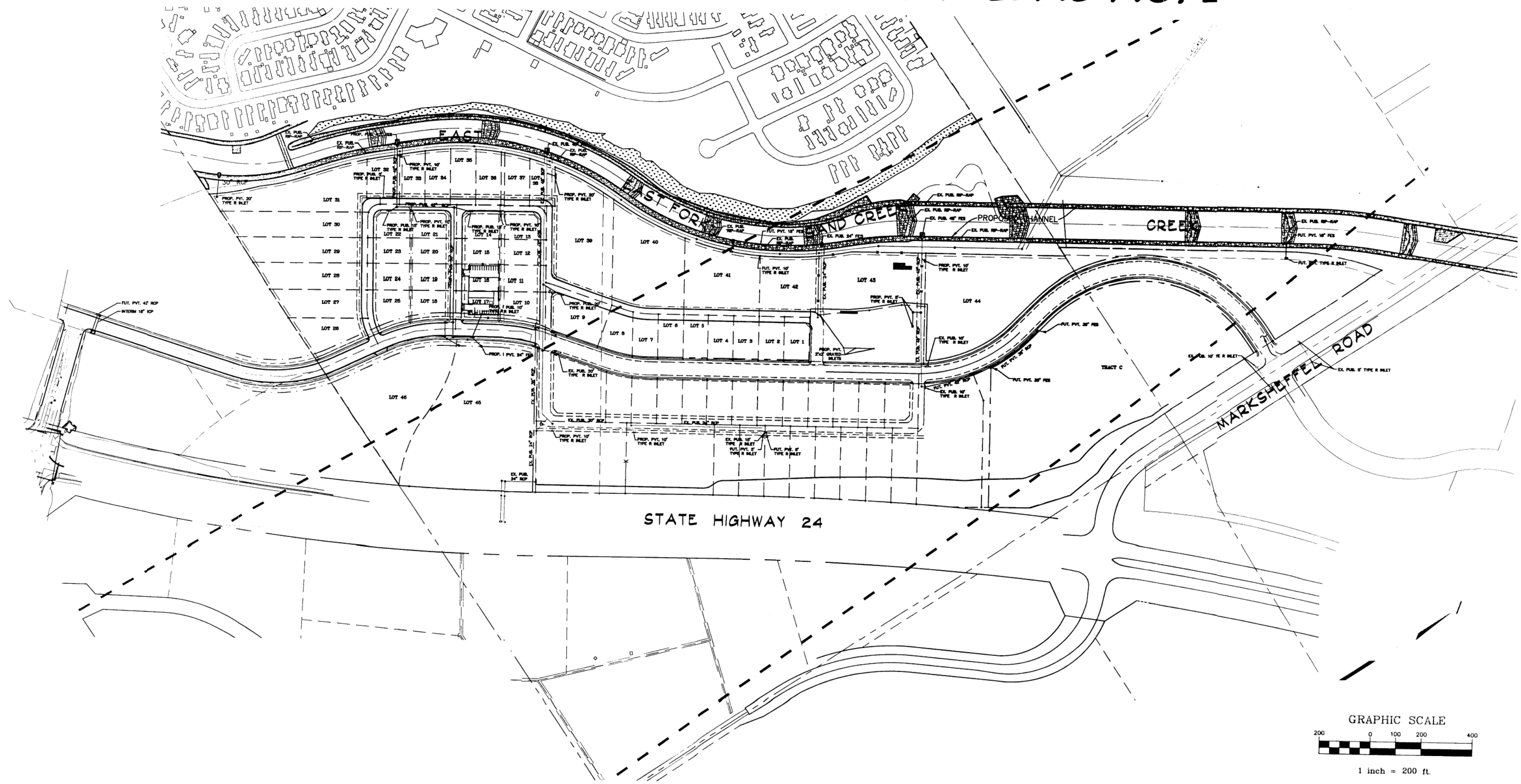
DESIGNED BY:	RGG	SCALE	
DRAWN BY:	BAS	HORIZ:	1"= 100'
CHECKED BY:	JPL	VERT:	N/A

DATE ISSUED: FEBRUARY 2007
SHEET NO. 1 OF 1 SHEETS

DR02

STORM DRAINAGE DESIGNATION PLAN
CLAREMONT BUSINESS PARK FILING NO. 2

1



REFERENCE DRAWINGS
x-title
x-util
X-BASE

NO.	DATE	DESCRIPTION	BY

REVISIONS

NAME: C:\Documents and Settings\rich_gallegos\My Documents\05.151.006(T-INCS)\100 Water Resources\302-FDR\SD-EXHIBIT.dwg
PCP: Matrix.ctb
PLOT DATE: Mar 02, 2007 8:19am

BENCHMARK DATA(ELEV.)
(DATUM)
(DESCRIPTION/LOCATION)

SUBDIVIDER:
HAMMERS CONSTRUCTION, INC.
3460 CAPITIAL DRIVE
COLORADO SPRINGS, CO 80915

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.

Matrix Design Group, Inc.
Integrated Design Solutions 2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
Phone 719-575-0100
Fax 719-575-0208

CLAREMONT BUSINESS PARK FILING NO. 2

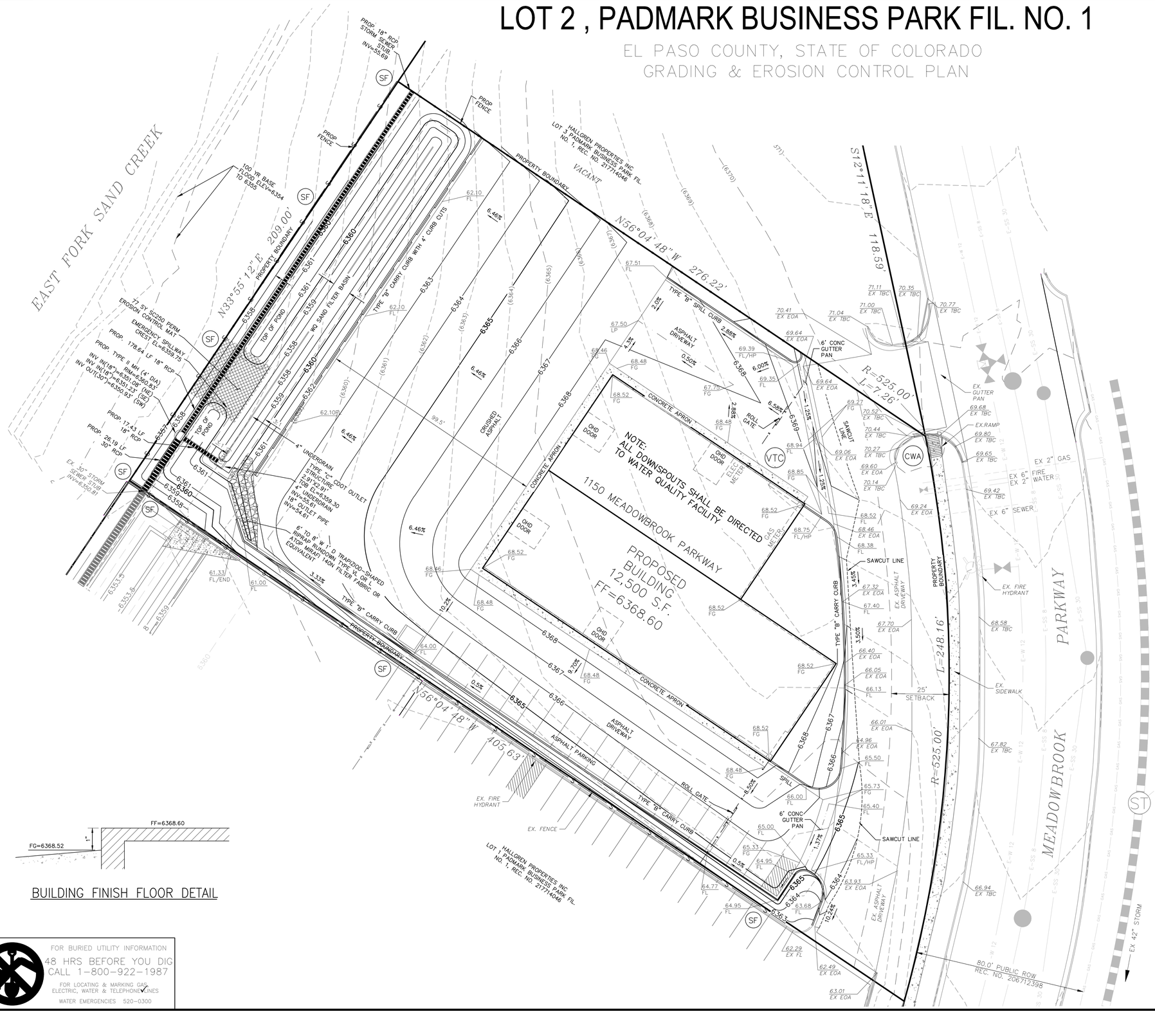
STORM DRAINAGE DESIGNATION PLAN
FILING NO. 2

DESIGNED BY: BAS
DRAWN BY: BAS
CHECKED BY: RGG
SCALE HORIZ 1" = 200' VERT N/A
DATE ISSUED: JANUARY, 2007
SHEET NO. 1 OF 1 SHEETS
EXH01

GRADING EROSION CONTROL PLAN

LOT 2 , PADMARK BUSINESS PARK FIL. NO. 1

EL PASO COUNTY, STATE OF COLORADO
GRADING & EROSION CONTROL PLAN



BUILDING FINISH FLOOR DETAIL

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48 HRS BEFORE YOU DIG
CALL 1-800-922-1987
FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
WATER EMERGENCIES 520-0300

DESIGN ENGINEER'S STATEMENT

THIS GRADING AND EROSION CONTROL PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SAID PLAN HAS BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR GRADING AND EROSION CONTROL PLANS. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLAN.

VIRGIL A. SANCHEZ, COLORADO P.E. #37160 DATE
FOR AND ON BEHALF OF M & S CIVIL CONSULTANTS, INC.

OWNER/DEVELOPER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

NAME: DATE

DBA: HAMMERS CONSTRUCTION

ADDRESS: 1411 WOOLSEY HEIGHTS COLORADO SPRINGS, 80915

EL PASO COUNTY:

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

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR'S DISCRETION.

JENNIFER IRVINE, P.E. DATE
COUNTY ENGINER / ECM ADMINISTRATOR

LEGEND

	EX MAJ CONT
	EX MIN CONT
	PROP MAJ CONT
	PROP MIN CONT
LP	LOW POINT
HP	HIGH POINT
EX	EXISTING
FL	FLOWLINE
TC	TOP OF CURB
FG	FINISH GRADE
FF	FINISH FLOOR
TOF	TOP OF FOOTING
SF — S —	SILT FENCE
VTC	VEHICLE TRACKING CONTROL
CWA	CONCRETE WASH-OUT BASIN

1" = 20'
0 10 20 40
Scale in Feet

GRADING & EROSION CONTROL PLAN
LOT 2, PADMARK BUSINESS PARK FIL. NO. 1
JOB NO. 44-031
DATE PREPARED: FEBRUARY 19, 2018
DATE REVISED:

EL PASO COUNTY FILE NO. PPR 18-000

20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL CONSULTANTS, INC.

GRADING AND EROSION CONTROL NOTES:

1. CONSTRUCTION MAY NOT COMMENCE UNTIL A CONSTRUCTION PERMIT IS OBTAINED FROM DEVELOPMENT SERVICES AND A PRECONSTRUCTION CONFERENCE IS HELD WITH DEVELOPMENT SERVICES INSPECTIONS.

2. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF SITE WATERS, INCLUDING WETLANDS.

3. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.

4. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED STORMWATER MANAGER, SHALL BE LOCATED ON SITE AT ALL TIMES AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.

5. ONCE THE ESQCP HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL BMPS AS INDICATED ON THE GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY DSD INSPECTIONS STAFF.

6. SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 21 CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE, HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMPS SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED.

7. TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO STANDARDS AND SPECIFICATION PRESCRIBED IN THE DCM VOLUME II AND THE ENGINEERING CRITERIA MANUAL (ECM) APPENDIX I.

8. ALL PERSONS ENGAGED IN EARTH DISTURBANCE SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BMPS IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS OF THE DRAINAGE CRITERIA MANUAL (DCM) VOLUME II AND IN ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN (SWMP).

9. ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMPS AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS, SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS, THE SWMP AND THE DCM VOLUME II AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION.

10. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME.

11. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE DISCHARGE TO A NON-EROSIVE VELOCITY.

12. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.

13. EROSION CONTROL BLANKETING IS TO BE USED ON SLOPES STEEPER THAN 3:1.

14. BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.

15. VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFFSITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.

17. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.

18. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.

19. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.

20. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.

21. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCHLINE.

22. INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

23. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.

24. PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.

25. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.

26. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY TERRACON # 23055071 MAY 30, 2006. AND SHALL BE CONSIDERED A PART OF THESE PLANS.

27. AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

T-6 **Sand Filter**

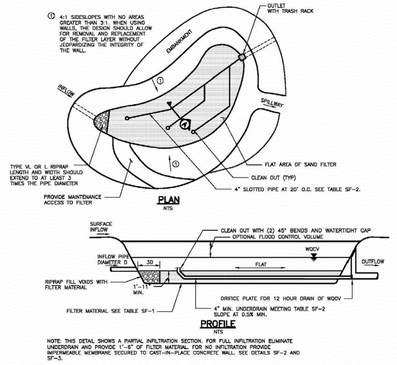
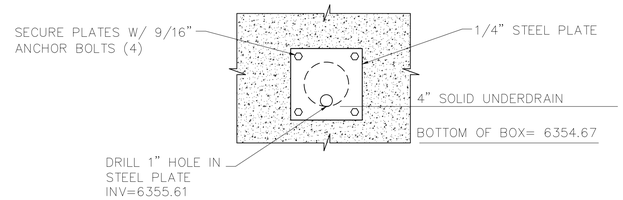
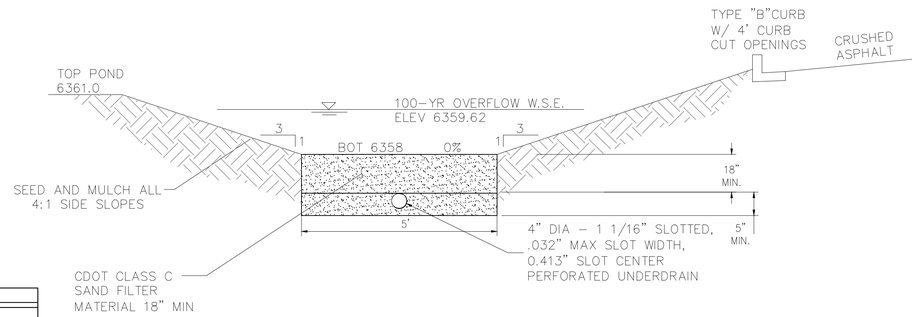


Figure SF-1. Sand Filter Plan and Sections

WQCV SUMMARY
EPC/URBAN DRAINAGE SAND FILTER BASIN-SEE STD DET.
WQCV REQUIRED = 1787 CF
WQCV PROVIDED = 1851 CF
AREA REQUIRED = 836 SF
AREA PROVIDED = 850 SF
100 YR OUTLET - CDOT TYPE C INLET TOP OF BOX=6359.30 100 YR WSE = 6359.62 EMERGENCY SPILLWAY EL = 6359.75



4" UNDERDRAIN
ORIFICE PLATE DETAIL



SAND FILTER POND/SPILLWAY
DETAIL

GRADING & EROSION CONTROL PLAN DETAILS
LOT 2, PADMARK BUSINESS PARK FIL. NO. 1
JOB NO. 44-031
DATE PREPARED: FEBRUARY 19, 2018
DATE REVISED:

EL PASO COUNTY FILE NO. PPR 18-000

M&S CIVIL CONSULTANTS, INC.
20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903
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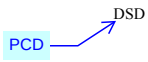
Markup Summary

dsdlaforce (5)

Subject: Callout
Page Label: 1
Author: dsdlaforce
Date: 6/5/2018 2:59:29 PM
Color:

PPR-18-020



Subject: Callout
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Author: dsdlaforce
Date: 6/5/2018 2:59:41 PM
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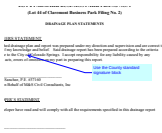
PCD



Subject: Callout
Page Label: 2
Author: dsdlaforce
Date: 6/5/2018 3:06:17 PM
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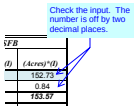
Use the County standard signature block



Subject: Callout
Page Label: 27
Author: dsdlaforce
Date: 6/5/2018 3:33:49 PM
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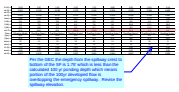

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Page Label: 30
Author: dsdlaforce
Date: 6/5/2018 3:55:11 PM
Color:

Per the GEC the depth from the spillway crest to bottom of the SF is 1.75' which is less than the calculated 100 yr ponding depth which means portion of the 100yr developed flow is overtopping the emergency spillway. Revise the spillway elevation.