DRAINAGE LETTER TO AMEND; MASTER DEVELOPMENT DRAINAGE PLAN UPDATE FOR WOODMEN HEIGHTS AND FINAL DRAINAGE REPORT FOR FOREST MEADOWS FILING NO. 1 AND NO. 4

(ALLEY VACATION)

November 2008

Prepared for:

Morley Companies
20 Boulder Crescent, 2nd Floor
Colorado Springs, CO 80903
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Prepared by:

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Project #08-001

DRAINAGE LETTER TO AMEND; MASTER DEVELOPMENT DRAINAGE PLAN UPDATE FOR WOODMEN HEIGHTS AND FINAL DRAINAGE REPORT FOR FOREST MEADOWS FILING NO. 1 AND NO. 4

(ALLEY VACATION)

DRAINAGE PLAN STATEMENTS

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 acceptable to the City of Colorado Springs. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Virgil A. Sanchez, P.E. #37190
For and on Behalf of Pinnacle 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.

Morley Companies

BY: _____ DATE: 11/19/08
James F. Morley

TITLE: Owner

ADDRESS: 20 Boulder Crescent, 2nd Floor
Colorado Springs, CO 80903

CITY OF COLORADO SPRINGS

Filed in accordance with Section 7-7-906 of the Code of the City of Colorado Springs, 2001, as amended.

BY: _____ DATE: 12/03/08
For The City Engineer

CONDITIONS:

DRAINAGE LETTER TO AMEND; MASTER DEVELOPMENT DRAINAGE PLAN UPDATE FOR WOODMEN HEIGHTS AND FINAL DRAINAGE REPORT FOR FOREST MEADOWS FILING NO. 1 AND NO. 4

(ALLEY VACATION)

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DRAINAGE LETTER TO AMEND; MASTER DEVELOPMENT DRAINAGE PLAN UPDATE FOR WOODMEN HEIGHTS AND FINAL DRAINAGE REPORT FOR FOREST MEADOWS FILING NO. 1 AND NO. 4 (ALLEY VACATION)

PURPOSE

This purpose of this drainage letter is to quantify the revised drainage flows as a result of the vacation of right-of-way of three public alley ways within the platted Forest Meadows Filing No. 1. The vacation of Public Alleys in Blocks 14, 21, 22 of the platted Forest Meadows Filing No. 1 subdivision are necessary to remove the alley ways to revise the single-family lots into more standard lots for building. The subdivision streets, utilities, and storm sewer facilities have already been constructed and preliminarily accepted by the City of Colorado Springs. These public improvements are currently in the warranty stage for final acceptance, to be finalized within the next 12 months. A replat, and amendment to the Forest Meadows Development Plan are also included as a part of this proposed revision.

GENERAL LOCATION AND DESCRIPTION

The Forest Meadows Subdivision site is located in Section 5, Township 13 South, Range 65 West of the 6th P.M. in the City of Colorado Springs, El Paso County, Colorado. The site is bounded on the north by the El Paso County land (not annexed into the City), on the south by proposed Forest Meadows Avenue, on the west by Black Forest Road and on the east by grass land, approximately 1200 feet shy of Sand Creek. The site lies within the Sand Creek Drainage Basin.

The existing site terrain generally slopes from north to south at grades of approximately 2.5% to 2.9%. Vegetation consists of native grasses, shrubs and a few trees.

The proposed site consists of approximately 133 acres (Filing No. 1) and 155 acres (Filing No. 4), for a total of 288 acres and is currently zoned "PUD", Planned Unit Development. The development is proposed for the construction of single family and multi-family homes. Construction of the site, in this report, is anticipated to be completed in two phases, and multiple filings.

FLOODPLAIN STATEMENT

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel No.'s 08041C0529 F and 08041C0535 F, effective dates March 17, 1997, no portion of the of the site (defined as the 289 acres of the ~800 total acres of the Woodmen Heights Master Planned Community) currently lies within a designated 100-year floodplain.

DRAINAGE CRITERIA

The 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 during the 5-

year and 100-year frequency storms for developed conditions using the Rational Method as required for basins having less than 100 acres.

PROPOSED DRAINAGE CHARACTERISTICS

VACATION OF PUBLIC RIGHT-OF-WAY, BLOCK 14, FOREST MEADOWS FILING NO. 1.

The vacation of the public alley within Basin I will revise the drainage patterns slightly. This revision only effects Basin I and Basin J. The new areas and flows for these two basins are; Basin I, 1.78 acres (Q5=4.2cfs, Q100=8.70), Basin J, 2.57 acres (Q5=6.70cfs, Q100=13.80). Since Basin I and Basin J are contiguous basins, they also contribute to the same design points. The summation of the net acreage of these two basins remains the same, so does the flow.

The following information updates the drainage flows at Design Point 1B and Design Point 2 & 2A. The new design flows are highlighted in "**Bold**".

AREA 2 (Filing No. 1)

Design Point Flows

Design Point 1B *(DP1B) flows (Q5=**14.4cfs**, Q100=**29.9cfs**) are generated by basins E (Q5=5.1cfs, Q100=10.7cfs), basin F (Q5=2.3cfs, Q100=4.7cfs), basin G (Q5=2.8cfs, Q100=5.8cfs), basin H (Q5=3.7cfs, Q100=7.7cfs) and 1/2I (Q5=**2.10cfs**, Q100=**4.35cfs**).*

Basin Runoff Description
Basins A-C, E-I consist of single-family residential development, streets, rooftops and landscaping areas.

Surface Routing
*All unconcentrated sheet flow from uphill lots will be conveyed through the lower lots via side lot swales ("B", "Garden" and "Walkout" lots), and via rear & side lot swales ("A" lot) to the front of the lot intercepted by street curb and gutter. Basins A-C, E-I flows combine and are conveyed to DP1A & DP1B via type 5 curb and gutter. Initial storm flows necessitated placing inlets at this location to maintain the use of type 5 curb and gutter. Refer to "Area 2" Street Capacity Summary in the Hydraulic Calculations of the appendix for street capacity information. Curb and gutter flows will be conveyed across intersections with cross pans. The DP1A 18' D-10-R at-grade inlet on the west side of Chasewood Loop intercepts (Q5=7.5cfs, Q100=13.2cfs) while the DP1B 18' D-10-R at-grade inlet on the east side of Chasewood Loop intercepts (Q5=**8.5cfs**, Q100=**16.6cfs**). DP1A flowby is Q5=3.9cfs, Q100=10.6cfs while the DP1B flowby is Q5=**5.9cfs**, Q100=**13.3cfs**. This flow proceeds southerly and easterly in Chasewood Loop towards design points 2 & 2A.*

Clogging Statement
In the event of clogging or inlet failure, the runoff will proceed southerly in Chasewood Loop towards design points 2 & 2A (DP2 & DP2A).

Pipe Routing/Pipe Capacity
*The intercepted flow at DP1A and DP1B is conveyed via two an 18" RCP's (pipes 100A & 100B) into a manhole, then southerly via pipe 100C, a 24" RCP. These flows combine with those from pipe 100 and proceed southerly towards design points 2 & 2A (DP2 & DP2A) in a 54" RCP (pipe 101). The flow in pipe 100A is Q5=**7.5cfs** and Q100=**13.2cfs** & 100B is Q5=**8.5cfs** and Q100=**16.6cfs** in each with a full flow*

*capacity of 23.0cfs assuming a 4.8% slope. The flow in pipe 100C is Q5=**13.4cfs** and Q100=**29.7cfs** with a full flow capacity of 56.8cfs assuming a 6.3% slope. The flow in pipe 101 is Q5=**54.4cfs** and Q100=**125.7cfs** with a full flow capacity of 132.4cfs assuming a 0.5% slope.*

Design Point Flows
***Design Points 2 & 2A** (DP2 & DP2A) flows (Q5=**25.7cfs**, Q100=**56.7cfs**) are generated by basins A (Q5=4.8cfs, Q100=10.03cfs), basin B (Q5=3.7cfs, Q100=7.8cfs), basin C (Q5=7.4cfs, Q100=15.4cfs), basin D (Q5=1.4cfs, Q100=2.9cfs), basin E (Q5=5.1cfs, Q100=10.7cfs), basin F (Q5=2.3cfs, Q100=4.7cfs), basin G (Q5=2.8cfs, Q100=5.8cfs), basin H (Q5=3.7cfs, Q100=7.7cfs), basin I (Q5=**4.2cfs**, Q100=**8.70cfs**), basin J (Q5=**6.7cfs**, Q100=**13.8cfs**) and basin K (Q5=6.7cfs, Q100=14.0cfs).*

Basin Runoff Description
Basins C, D, I-K consist of single-family residential development, streets, rooftops and landscaping areas.

Surface Routing
*All unconcentrated sheet flow from uphill lots will be conveyed through the lower lots via side lot swales ("B", "Garden" and "Walkout" lots), and via rear & side lot swales ("A" lot) to the front of the lot intercepted by street curb and gutter. Basins C, D, I-K flows combine and are conveyed to DP2 & DP2A via type 5 curb and gutter. ~~The alleys convey surface flow like the other roadway classifications except within a narrower section.~~ Refer to "Area 2" Street Capacity Summary in the Hydraulic Calculations of the appendix for street capacity information. Curb and gutter flows will be conveyed across intersections with cross pans. Two 8' D-10-R sump inlets intercept (Q5=**12.8cfs**, Q100=**28.3cfs**) each.*

Clogging Statement
In the event of clogging or inlet failure, the runoff will Overtop the high point to the east and proceed to design points 6 & 6A (DP6 & DP6A).

Pipe Routing/Pipe Capacity
*The flows are then conveyed via 24" & 30" RCP's (pipes 102 and 103, respectively) into a manhole combining with flow from pipe 101, then towards design points 6 & 6A via pipe 104, a 72" RCP in Chasewood Loop. The flow in pipes 102 and 103 is Q5=**12.8cfs** and Q100=**28.3cfs** in each with a full flow capacity of 40.1cfs assuming a 3.1% slope. The flow in pipe 104 is Q5=**80.1cfs** and Q100=**182.4cfs** with a full flow capacity of 430.76cfs assuming a 1.0% slope.*

(AREA 3)

VACATION OF PUBLIC RIGHT-OF-WAY, BLOCK 21, FOREST MEADOWS FILING NO. 1

The vacation of the public alley within Basin E will revise the drainage patterns slightly. This revision only effects Basin D, Basin E and Basin F. The proposed vacation eliminates the need for Basin E, Therefore, Basin E's area will be transferred into Basin D, and Basin F. The new areas and flows for these basins are; Basin D, 5.66 acres (Q5=12.8cfs, Q100=26.5), Basin E, 0.00 acres (Q5=0.00cfs, Q100=0.00), Basin F, 6.08 acres (Q5=15.70cfs, Q100=32.6). Since Basin D, and Basin F are contiguous basins, they also contribute to the same design points. The summation of the net acreage of these two basins remains the same, and generally so does the flow.

The following information updates the drainage flows at Design Point 1, 1A & 1B. The new design flows are highlighted in "**Bold**".

AREA 3 (Filing No. 1 & No. 4)

This area has been divided into 28 developed drainage basins which are described by each design point. Off-site flows from basin MDDP OS-2 enter the site from the north via piping under Cowpoke Road proceeding southerly towards design points 3 & 3A. No off-site flows shall enter the Forest Meadows development via overland flow. Refer to the Design Point 2 narrative for further discussion.

Unconcentrated sheet flow and shallow swale flow from basins A (Q5=1.8cfs, Q100=3.9cfs) enters Vollmer Road, basin AA (Q5=3.9cfs, Q100=8.1cfs) enters Forest Meadows Avenue and basin BB (Q5=1.8cfs, Q100=4.7cfs) enters "Offsite and Roadways" basin GG from the rear of the lots, conveyed via side lot swales and overland flow until intercepted by street curb and gutter. Refer to the "Offsite and Roadways" design point narratives for surface routing information.

Design Point Flows

***Design Point 1** (DP1) flows (identified as 1 West in the Surface Routing Summary in the appendix). (Q5=**16.1cfs**, Q100=**33.4cfs**) are generated by basins C (Q5=3.8cfs, Q100=7.9cfs) and basin D (Q5=**12.8cfs**, Q100=**26.5cfs**).*

Basin Runoff Description

Basins C & D consist of single-family residential development, streets, rooftops and landscaping areas.

Surface Routing

*All unconcentrated sheet flow from uphill lots will be conveyed through the lower lots via side lot swales ("B", "Garden" and "Walkout" lots), and via rear & side lot swales ("A" lot) to the front of the lot intercepted by street curb and gutter. Basin C & D flows combine and are conveyed to DP1 via type 5 curb and gutter. Initial storm flows necessitated placing an inlet at this location to maintain the use of type 5 curb and gutter. Refer to "Area 3" Street Capacity Summary in the Hydraulic Calculations of the appendix for street capacity information. Curb and gutter flows will be conveyed across intersections with cross pans. The DP1 16' D-10-R at-grade inlet intercepts (Q5=**10.5cfs**, Q100=**19.4cfs**). DP1 flowby is Q5=**5.6cfs**, Q100=**14.0cfs**. This flow proceeds southerly and easterly in Red Cardinal Loop towards design points 1A & 1B*

Clogging Statement

In the event of clogging or inlet failure, the runoff will proceed towards design points 1A & 1B (DP1A & DP1B).

Pipe Routing/Pipe Capacity

*The collected flows are then conveyed via an 18" RCP (pipe 100) southerly towards design points 1A & 1B (DP1A & DP1B) in Red Cardinal Loop. The flow in pipe 100 is Q5=**10.5cfs** and Q100=**19.4cfs** with a full flow capacity of 21.0cfs assuming a 4.0% slope.*

Design Point Flows

***Design Point 1A & 1B** (DP1A & DP1B) flows (Q5=**19.3cfs**, Q100=**42.3cfs**) are generated by DP1 flowby from basins C & D (Q5=**5.6cfs**, Q100=**14.0cfs**), basin E (Q5=**0.0cfs**, Q100=**0.0cfs**) and basin F (Q5=**13.7cfs**, Q100=**28.5cfs**).*

Basin Runoff Description

DP1 flowby basins and basin F consist of single-family residential development, streets, rooftops and landscaping areas.

Surface Routing

*All unconcentrated sheet flow from uphill lots will be conveyed through the lower lots via side lot swales ("B", "Garden" and "Walkout" lots), and via rear & side lot swales ("A" lot) to the front of the lot intercepted by street curb and gutter. Basins E & F flows combine and are conveyed to DP1A & DP1B via type 5 curb and gutter. ~~The alleys convey surface flow like the other roadway classifications except within a narrower section.~~ Refer to "Area 3" Street Capacity Summary in the Hydraulic Calculations of the appendix for street capacity information. Curb and gutter flows will be conveyed across intersections with cross pans. Two 4' D-10-R sump inlets intercept (Q5=**19.3cfs**, Q100=**42.3cfs**).*

Clogging Statement
In the event of clogging or inlet failure, the runoff will overtop the roadway high point at the intersection of Red Cardinal Loop and Morning Dew Road to the south and proceed southerly to design points 5 and 5A (DP5 and DP5A).

Pipe Routing/Pipe Capacity
*The flows are then conveyed via 24" & 30" RCP's (pipes 101 and 102, respectively) into a manhole, then south and westerly towards Red Cardinal Loop via pipe 103, a 36" RCP in Morning Dew Road. Flow in pipe 103 combines with pipe 100 and proceeds in pipe 104, a 36" RCP toward design points 5 & 5A The flow in pipes 101 and 102 is Q5=**9.6cfs**, Q100=**21.2cfs** in each with a full flow capacity of 23.2cfs assuming a 1.1% slope. The flow in pipe 103 is Q5=**19.3cfs** and Q100=**42.3cfs** with a full flow capacity of 47.1cfs assuming a 0.5% slope. The flow in pipe 104 is Q5=**27.1cfs** and Q100=**61.7cfs** with a full flow capacity of 66.6cfs assuming a 1.0% slope.*

Vacation of Public Right-of-Way, Block 22, Forest Meadows Filing No. 1.

The vacation of the public alley within Basin G will revise the drainage patterns slightly. This revision only effects Basin F, Basin G and Basin J. The proposed vacation eliminates the need for Basin G, Therefore, Basin G's area will be transferred into Basin F, and Basin J. The new areas and flows for these basins are; Basin J, 3.71 acres (Q5=9.40 cfs, Q100=19.5), Basin G, 0.00 acres (Q5=0.00cfs, Q100=0.00), Basin F, 6.08 acres (Q5=15.70cfs, Q100=32.6). Since Basin J, and Basin F are contiguous basins, they also contribute to the same design points. The summation of the net acreage of these two basins remains the same, and generally so does the flow.

The following information updates the drainage flows at Design Points; 3, 3A, 5 & 5A. The new design flows are highlighted in "**Bold**".

Design Point Flows
***Design Points 3 & 3A** (DP3 & DP3A) flows (Q5=**30.0cfs**, Q100=**63.9cfs**) are generated by basins I (Q5=4.8cfs, Q100=10.0cfs), basin J (Q5=**9.40cfs**, Q100=**19.5cfs**), basin K (Q5=3.9cfs, Q100=8.2cfs), basin L (Q5=4.9cfs, Q100=10.3cfs), basin M (Q5=3.0cfs, Q100=7.6cfs), basin N (Q5=3.3cfs, Q100=6.8cfs) and basin O (Q5=4.6cfs, Q100=9.6cfs).*

Basin Runoff Description
Basins I-O consists of single-family residential development, streets, rooftops and landscaping areas.

Surface Routing
All unconcentrated sheet flow from uphill lots will be conveyed through the lower lots via side lot swales ("B", "Garden" and "Walkout" lots), and via rear & side lot swales ("A" lot) to the front of the lot intercepted by street curb and gutter. Basins I-O flows combine and are conveyed to DP3 & DP3A via type 5 curb and gutter. Refer to "Area 3" Street Capacity Summary in the Hydraulic Calculations of the

appendix for street capacity information. Curb and gutter flows will be conveyed across intersections with cross pans. Two 8' D-10-R sump inlets intercept (Q5=26.5cfs, Q100=56.5cfs).

Clogging Statement
In the event of clogging or inlet failure, the runoff will overtop the roadway high point in at the intersection of Smokewood Drive and Pearly Heath Road to the south and proceed west towards Red Cardinal Loop to design points 5 and 5A (DP5 and DP5A).

Pipe Routing/Pipe Capacity
*The flows are then conveyed via 24" RCP's (pipes 106 and 107) into a manhole, then south towards Pearly Heath Road via pipe 108, a 48" RCP in Smokewood Drive. Flow in pipe 111 combines with pipe 108 and proceeds towards Pearly Heath Road. The flow in pipes 106 and 107 is Q5=**15.0cfs** and Q100=**32.0cfs** in each with a full flow capacity of 32.8cfs assuming a 2.1% slope. The flow in pipe 108 is Q5=**58.5cfs** and Q100=**121.6cfs** with a full flow capacity of 215.1cfs assuming a 2.2% slope.*

Design Point Flows
***Design Points 5 & 5A** (DP5 & DP5A) flows (Q5=**33.0cfs**, Q100=**69.1.1cfs**) are generated by basins B (Q5=8.9cfs, Q100=18.7cfs), basin G (Q5=**0.0cfs**, Q100=**0.0cfs**), 1/3 basin T (Q5=2.4cfs, Q100=5.0cfs), basin U (Q5=2.6cfs, Q100=5.4cfs), basin V (Q5=2.8cfs, Q100=5.8cfs), basin W (Q5=6.3cfs, Q100=13.2cfs), basin X (Q5=5.6cfs, Q100=11.7cfs) basin Y (Q5=9.2cfs, Q100=19.2cfs) and basin Z (Q5=1.8cfs, Q100=3.8cfs).*

Basin Runoff Description
Basins B, G, 1/3T and U-Z consist of single-family residential development, streets, rooftops and landscaping areas. It has been assumed that 2/3 of basin T's flow is directed westerly onto Pearly Heath Road towards design points 4 & 4A while the remaining flow continues southerly in Red Cardinal Loop ultimately routing to design points 5 & 5A.

Surface Routing
All unconcentrated sheet flow from uphill lots will be conveyed through the lower lots via side lot swales ("B", "Garden" and "Walkout" lots), and via rear & side lot swales ("A" lot) to the front of the lot intercepted by street curb and gutter. Basin B, G, 1/3T and U-Z flows combine and are conveyed to DP5 & DP5A via type 5 curb and gutter. ~~*The alleys convey surface flow like the other roadway classifications except within a narrower section.*~~ *Refer to "Area 3" Street Capacity Summary in the Hydraulic Calculations of the appendix for street capacity information. Curb and gutter flows will be conveyed across intersections with cross pans. Two 14' D-10-R sump inlets intercept (Q5=**33.0cfs**, Q100=**69.1cfs**).*

Clogging Statement
In the event of clogging or inlet failure, the runoff will overtop the curb and gutter and proceed to Forest Meadows Avenue within a drainage tract (see Area 3 map). The tract shall be graded to provide a trapezoidal channel with an 8' minimum bottom width, 3:1 side slopes, 3.2' minimum depth and a minimum slope of 2%. The capacity of which will be the 100 yr overflow value 267.2cfs with a freeboard value of ~1.0'. Refer to Hydraulic Calculations in the appendix for computations. Surface maintenance for the drainage tract shall be provided by the Woodmen Heights Metropolitan District.

Pipe Routing/Pipe Capacity
Flow in pipes 111 and 108 combine and proceed west combining with flow from pipe 104. These flows are conveyed via a 54" RCP (pipe 113) south towards design points 5 & 5A (DP5 & DP5A). The intercepted flow at DP5 is conveyed via a 30" RCP (pipe 114) into a manhole. The intercepted flow at DP5A is conveyed via a 30" RCP (pipe 115) into a manhole combining with flow from pipe 114. Flows then proceed to another manhole via 36" RCP, (pipe 116) to the west and combine with flows from pipe 113, a 54" RCP.

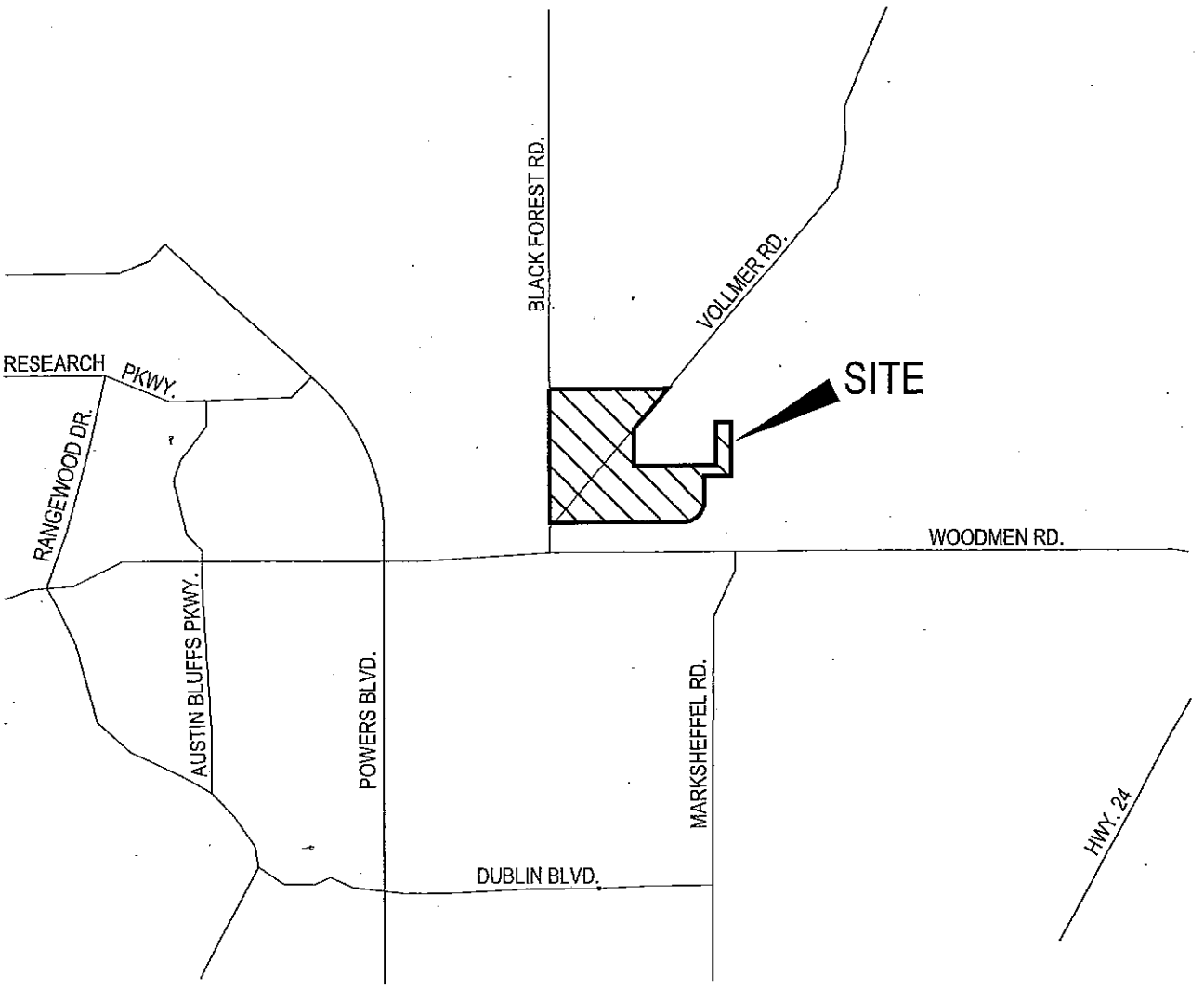
*The combined flows then proceed southwesterly via pipe 117, a 66" RCP within a drainage tract (see Area 3 map). Refer to the "Offsite and Roadways" design point narratives for pipe routing information. The flow in pipe 113 is Q5=**98.5cfs** and Q100=**209.9cfs** with a full flow capacity of 240.3cfs assuming a 1.5% slope. The flow in pipe 114 is Q5=**16.5cfs** and Q100=**34.6cfs** with a full flow capacity of 86.4cfs assuming a 4.4% slope. The flow in pipe 115 is Q5=**16.5cfs** and Q100=**34.6cfs** with a full flow capacity of 122.8cfs assuming a 9.0% slope. The flow in pipe 116 is Q5=**33.0cfs** and Q100=**69.1cfs** with a full flow capacity of 176.2cfs assuming a 7.0% slope. The flow in pipe 117 is Q5=**123.7cfs** and Q100=**262.4cfs** with a full flow capacity of 475cfs assuming a 2.0% slope.*

SUMMARY

Forest Meadows Filing No. 1 & No. 4 contains 288 acres within the Sand Creek Drainage Basin with approximately 133 acres already constructed in the first filing. In this first phase of development, a total of ~532 units and associated site improvements have been constructed, with ~1220 remaining units to be constructed in Filing No. 4 and future filings. The vacation of the previously approved and platted public alley ways, alter the drainage patterns as previously designed. The above analysis shows that there are minor changes in the flow rates due to the re-direction of the flows. Even though some of the design points, and pipe sizes no longer will receive the previously intended amount of flow, the overall systems drainage improvements in Area 2 and Area 3 will adequately handle the flows. Therefore, the elimination of the public alley ways do not adversely effect the existing improvements as constructed. No alterations, or amendments to the existing constructed storm sewer facilities will be necessary.

APPENDIX

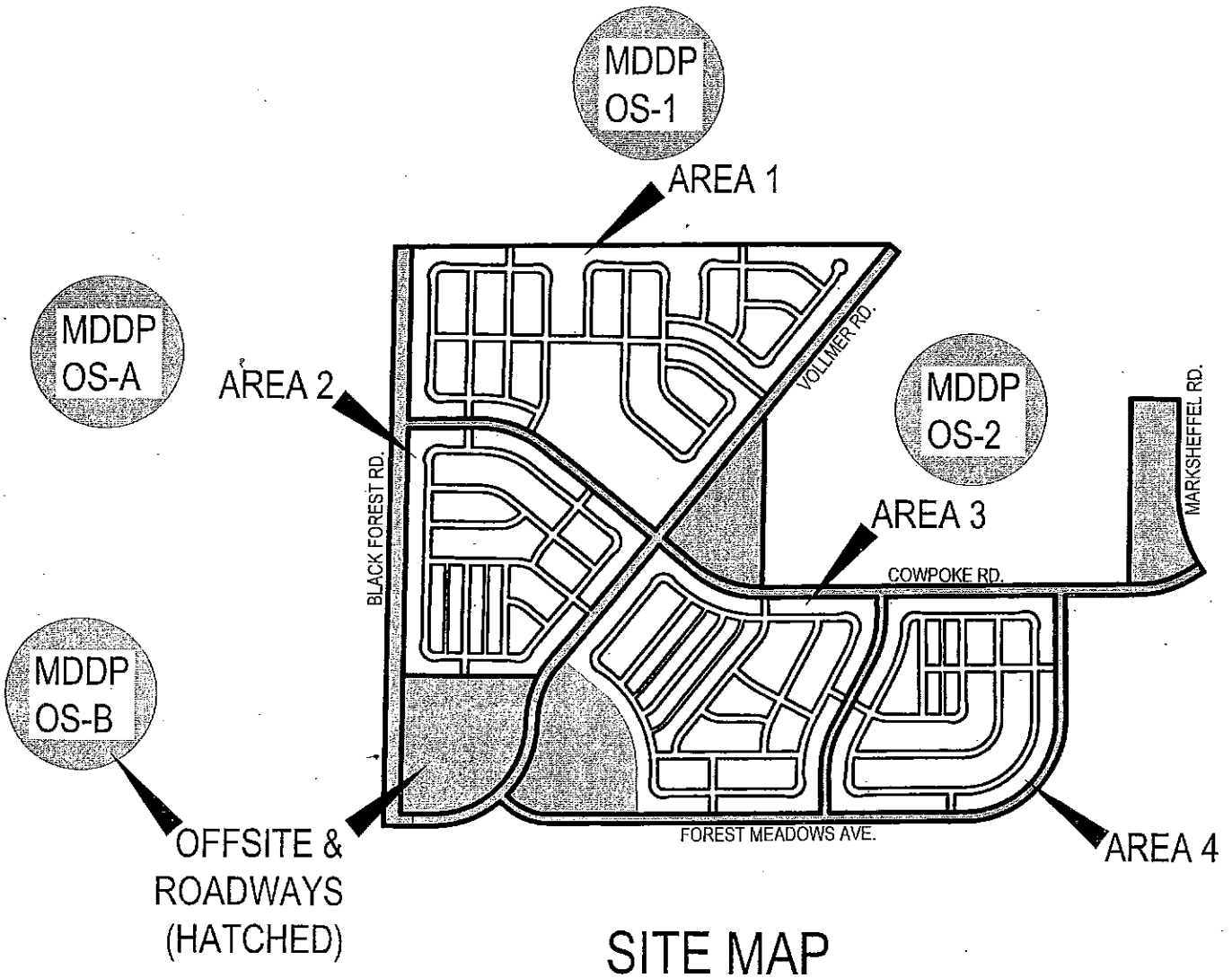
VICINITY MAP



VICINITY MAP

N.T.S.

SITE MAP


MDDP
OS-1
AREA 1
MDDP
OS-A
AREA 2
VOLLMER RD.
MDDP
OS-2
MARKSHEFFEL RD.
AREA 3
BLACK FOREST RD.
COWPOKE RD.
MDDP
OS-B
OFFSITE &
ROADWAYS
(HATCHED)
FOREST MEADOWS AVE.
AREA 4

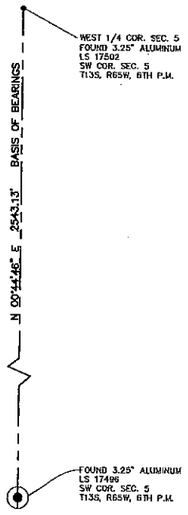
SITE MAP

N.T.S.

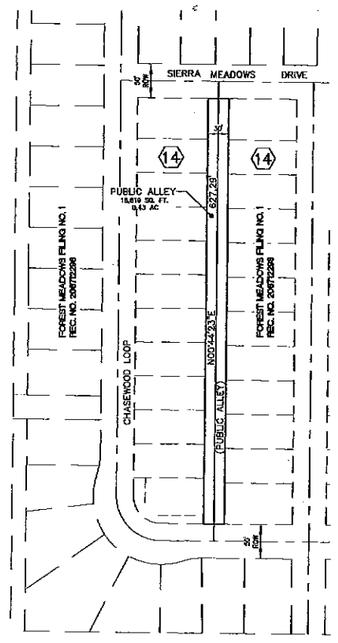
VACATION PLAT

VACATION OF PUBLIC ALLEYS IN BLOCKS 14, 21 & 22

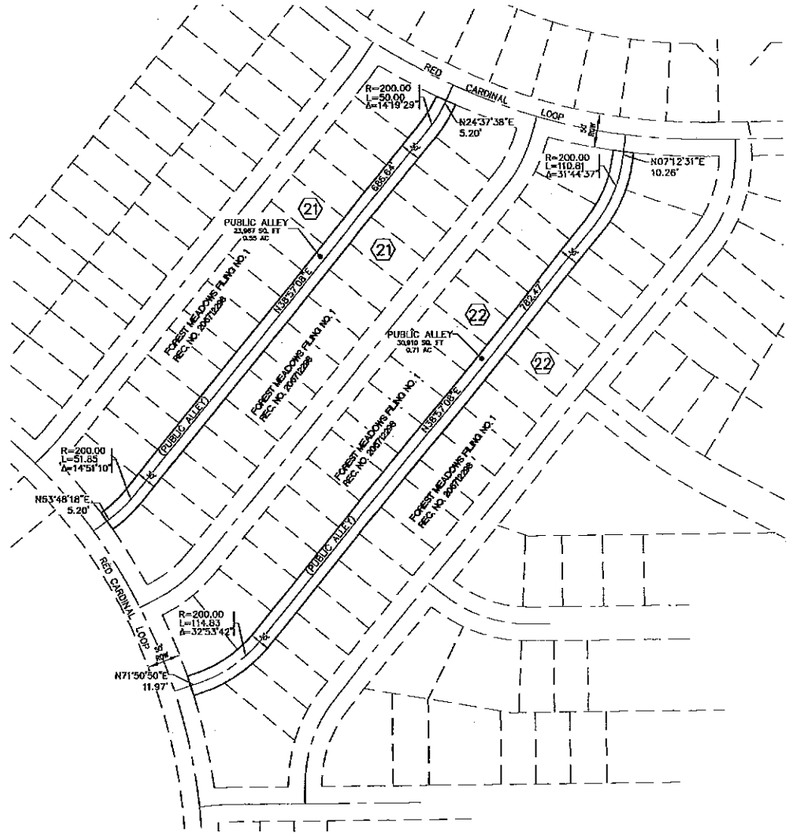
A VACATION PLAT OF A PORTION OF FOREST MEADOWS FILING NO. 1, BEING A PORTION OF SECTION 5, TOWNSHIP 13 SOUTH, RANGE 65 WEST OF THE 6TH P.M., CITY OF COLORADO SPRINGS, EL PASO COUNTY, STATE OF COLORADO.



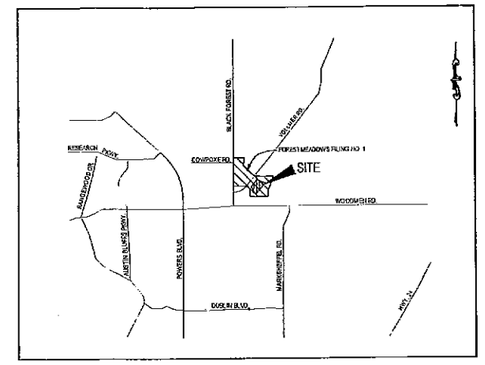
BASIS OF BEARINGS



PUBLIC ALLEY
BLOCK 14



PUBLIC ALLEY
BLOCK 21 & 22



VICINITY MAP
N.T.S.

LEGAL DESCRIPTION:

THAT PORTION OF FOREST MEADOWS FILING NO. 1 AS RECORDED AT RECEPTION NUMBER 206712298 OF THE RECORDS OF EL PASO COUNTY, COLORADO, DESCRIBED AS FOLLOWS:

PUBLIC ALLEY IN BLOCK 14; PUBLIC ALLEY IN BLOCK 21; PUBLIC ALLEY IN BLOCK 22: CONTAINING 1.69 ACRES, MORE OR LESS.

PLAT NOTES:

1. THE DATE OF PREPARATION IS AUGUST 04, 2008.
2. THE SUBJECT PROPERTY IS TO BE INCLUDED IN THE WOODMEN HEIGHTS METROPOLITAN DISTRICT.
3. THE BASIS OF BEARINGS AND ALL OTHERS OTHERS ON THIS PLAT ARE RELATIVE TO THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 5 WHICH WAS ASSUMED TO BEAR N 00°44'46"E.
4. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY M & S CIVIL CONSULTANTS, INC., TO DETERMINE THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF ADJACENT TRACTS OF LAND, OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS-OF-WAY OR TITLE OF RECORD, M & S CIVIL CONSULTANTS, INC., RELIED UPON TITLE COMMITMENT NO. SC55001058-2 PREPARED BY LAND TITLE GURANTEE COMPANY DATED OCTOBER 21, 2004 AT 5:00 PM, AND SC166478 PREPARED BY LAND TITLE GUARANTEE COMPANY DATED MARCH 29, 2004 AT 5:00 PM.
5. IT IS THE INTENT OF THIS VACATION PLAT TO VACATE ANY AND ALL UNDER LYING EASEMENTS.

BE IT KNOWN BY THESE PRESENTS:

THAT THE CITY OF COLORADO SPRINGS, COLORADO, AUTHORIZED THE VACATION OF THE ATTACHED PARCEL OF LAND, AS SET FORTH IN THIS PLAT, AND AT THE SAME TIME AUTHORIZED THE UNDERSIGNED TO ACKNOWLEDGE THE SAME WHICH IS DONE ACCORDINGLY ON BEHALF OF THE CITY OF COLORADO SPRINGS, THIS _____ DAY OF _____, 20___ A.D.

BY _____ ATTEST: _____
MAYOR OF COLORADO SPRINGS CITY CLERK

NOTARIAL:

STATE OF COLORADO)
) SS
COUNTY OF EL PASO)

THE ABOVE AND AFOREMENTIONED WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___ A.D.,

BY _____, MAYOR OF COLORADO SPRINGS, AS ATTESTED BY _____, CITY CLERK

RECORDING:

STATE OF COLORADO)
) SS
COUNTY OF EL PASO)

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD IN MY OFFICE AT _____ O'CLOCK _____M, THIS DAY OF _____, 20____A.D., AND DULY RECORDED AT RECEPTION NO._____OF THE RECORDS OF EL PASO COUNTY, COLORADO

ROBERT C. BALINK, RECORDER

SURCHARGE: _____
FEE: _____

BY: _____
DEPUTY

SURVEYOR'S STATEMENT:

THE UNDERSIGNED REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, HEREBY STATES THAT THE ACCOMPANYING PLAT WAS SURVEYED AND DRAWN UNDER HIS SUPERVISION AND ACCURATELY SHOWS THE DESCRIBED TRACT OF LAND AND SUBDIVISION THEREOF, AND THAT THE REQUIREMENTS OF TITLE 38 OF THE COLORADO REVISED STATUTES, 1973 AS AMENDED, HAVE BEEN MET TO THE BEST OF MY KNOWLEDGE AND BELIEF.

_____
G. LAWRENCE BURNETT
COLORADO REGISTERED PROFESSIONAL
LAND SURVEYOR NO. 10376

NOTICE:

ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

LIMITATION OF ACTIONS AGAINST LAND SURVEYORS:

ALL ACTIONS AGAINST ANY LAND SURVEYOR BROUGHT TO RECOVER DAMAGES RESULTING FROM ANY ALLEGED NEGLIGENT OR DEFECTIVE LAND SURVEY SHALL BE BROUGHT WITHIN THREE YEARS AFTER THE PERSON BRINGING THE ACTION DISCOVERS OR IN THE EXERCISE OF REASONABLE DILIGENCE AND CONCERN SHOULD HAVE DISCOVERED THE NEGLIGENCE OR DEFECT WHICH GAVE RISE TO SUCH ACTION, AND NOT THEREAFTER, BUT IN NO CASE SHALL SUCH ACTION BE BROUGHT MORE THAN TEN YEARS AFTER COMPLETION OF THE SURVEY UPON WHICH SUCH ACTION IS BASED.

1" = 100'

0 25 50 100 200
Scale in Feet

APPROVALS:

_____ _____
MANAGER OF CITY PLANNING DATE

_____ _____
CITY ENGINEER DATE

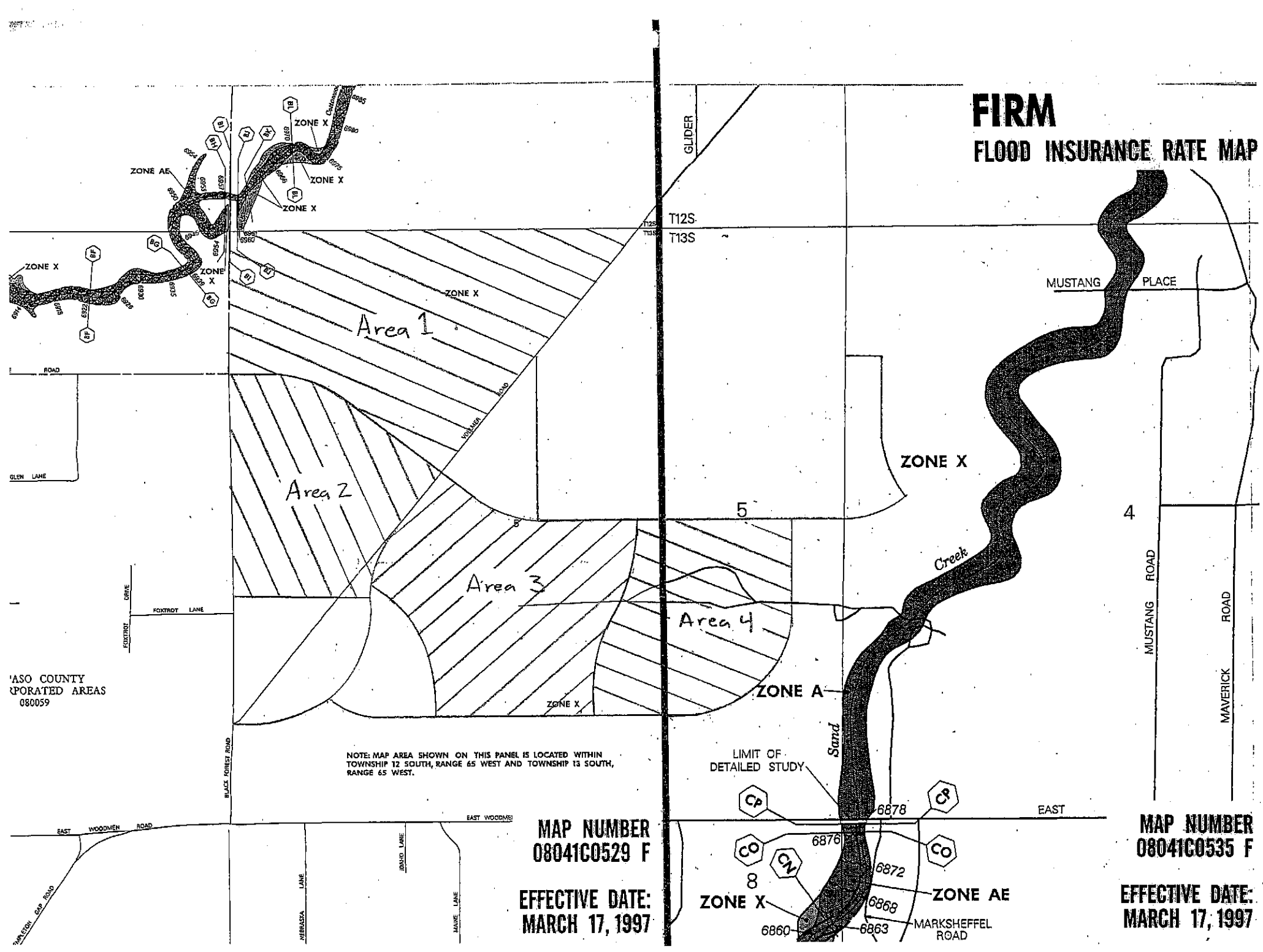
_____ _____
COLORADO SPRINGS UTILITIES EXECUTIVE DIRECTOR DATE

VACATION PLAT
FOREST MEADOWS FILING NO. 1
JOB NO. 08-001
DATE PREPARED: 08/04/08
DATE REVISED:

M&S CIVIL CONSULTANTS, INC.
15 NORTH NEVADA AVENUE
COLORADO SPRINGS,
COLORADO 80903
V 719.955.5485
F 719.466.6627

SHEET 1 OF 1

FLOODPLAIN MAP


FIRM
FLOOD INSURANCE RATE MAP
ZONE AE
ZONE X
Area 1
Area 2
Area 3
Area 4
ZONE A
GLIDER
T12S
T13S
MUSTANG PLACE
MUSTANG ROAD
MAVERICK ROAD
Sand Creek
LIMIT OF DETAILED STUDY
MARKSHEFFEL ROAD
EAST WOODMEN ROAD
BLACK FOREST ROAD
FOXTROT LANE
GLEN LANE
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 65 WEST AND TOWNSHIP 13 SOUTH, RANGE 65 WEST.
'ASO COUNTY
CPORATED AREAS
080059
MAP NUMBER
08041C0529 F
EFFECTIVE DATE:
MARCH 17, 1997
MAP NUMBER
08041C0535 F
EFFECTIVE DATE:
MARCH 17, 1997

AREA 2 - CALCULATIONS

Forest Meadows - Area No. 2
FINAL DRAINAGE REPORT
(Area Drainage Summary)

From *Composite Runoff Coefficient Summary*				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*		CA_5	Basin	CA_{100}
BASIN	AREA TOTAL (Acres)	C_5	C_{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.)			
		From DCM Table 5-1																	
A	2.17	0.57	0.67	0.25	70	1.4	10.6	70 250	2.0% 2.0%	4.9 4.9	0.2 0.8	11.7	3.9	6.9	*4.8*	*10.0*	1.23	A	1.45
B	1.67	0.57	0.67	0.25	50	1	8.9	70 500	2.0% 1.3%	4.9 4.0	0.2 2.1	11.3	3.9	7.0	*3.7*	*7.8*	0.96	B	1.12
C	3.43	0.57	0.67	0.25	50	1	8.9	70 960	2.0% 1.8%	4.9 4.7	0.2 3.4	12.6	3.7	6.7	*7.4*	*15.4*	1.97	C	2.31
D	0.53	0.58	0.68	0.25	30	0.6	6.9	180	1.3%	4.0	0.8	7.7	4.5	8.0	*1.4*	*2.9*	0.31	D	0.36
E	2.24	0.58	0.68	0.25	50	1	8.9	70 570	2.0% 2.0%	4.9 4.9	0.2 1.9	11.1	3.9	7.0	*5.1*	*10.7*	1.30	E	1.52
F	0.95	0.60	0.70	0.25	50	1	8.9	70 280	2.0% 1.0%	4.9 3.5	0.2 1.3	10.5	4.0	7.2	*2.3*	*4.7*	0.57	F	0.66
G	1.15	0.60	0.70	0.25	50	1	8.9	70 280	2.0% 1.4%	4.9 4.1	0.2 1.1	10.3	4.1	7.2	*2.8*	*5.8*	0.69	G	0.80
H	1.58	0.60	0.70	0.25	50	1	8.9	70 530	2.0% 1.4%	4.9 4.1	0.2 2.1	11.3	3.9	7.0	*3.7*	*7.7*	0.94	H	1.10
I	1.78	0.60	0.70	0.25	50	1	8.9	70 630	2.0% 2.5%	4.9 5.5	0.2 1.9	11.1	3.9	7.0	*4.2*	*8.7*	1.07	I	1.25
J	2.57	0.60	0.70	0.25	30	0.6	6.9	580	2.5%	5.5	1.7	8.7	4.3	7.7	*6.7*	*13.8*	1.54	J	1.80
K	2.84	0.60	0.70	0.25	50	1	8.9	70 630	2.0% 2.6%	4.9 5.6	0.2 1.9	11.0	3.9	7.0	*6.7*	*14.0*	1.70	K	1.99

From *Composite Runoff Coefficient Summary*				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*		CA_5	Basin	CA_{100}
BASIN	**AREA TOTAL** *(Acres)*	C_5 *From DCM Table 5-1*	C_{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.)*			
L	3.32	0.57	0.67	0.25	50	1	8.9	70 750	2.0% 1.5%	4.9 4.3	0.2 2.9	12.1	3.8	6.8	***7.2***	***15.1***	1.90	L	2.24
M	2.33	0.58	0.68	0.25	50	1	8.9	70 710	2.0% 1.5%	4.9 4.3	0.2 2.8	11.9	3.8	6.8	***5.2***	***10.8***	1.35	M	1.58
N	2.15	0.58	0.68	0.25	50	1	8.9	70 610	2.0% 1.3%	4.9 4.0	0.2 2.5	11.7	3.9	6.9	***4.8***	***10.0***	1.24	N	1.46
O	0.96	0.58	0.68	0.25	50	1	8.9	70 370	2.0% 1.3%	4.9 4.0	0.2 1.5	10.7	4.0	7.1	***2.2***	***4.7***	0.56	O	0.66
P	0.53	0.56	0.66	0.25	50	1	8.9	70 100	2.0% 1.0%	4.9 3.5	0.2 0.5	9.7	4.2	7.4	***1.2***	***2.6***	0.30	P	0.35
Q	1.37	0.49	0.65	0.25	50	1	8.9	70 520	2.0% 1.0%	4.9 3.5	0.2 2.5	11.7	3.9	6.9	***2.6***	***6.1***	0.67	Q	0.89
R	2.28	0.60	0.70	0.25	50	1	8.9	70 560	2.0% 0.6%	4.9 2.7	0.2 3.4	12.6	3.7	6.6	***5.1***	***10.7***	1.38	R	1.60
S	1.47	0.60	0.70	0.25	50	1	8.9	70 420	2.0% 2.5%	4.9 5.5	0.2 1.3	10.4	4.0	7.2	***3.6***	***7.4***	0.89	S	1.03
T	1.00	0.58	0.68	0.25	50	1	8.9	70 350	2.0% 2.5%	4.9 5.5	0.2 1.1	10.2	4.1	7.2	***2.4***	***4.9***	0.58	T	0.68
U	2.37	0.59	0.69	0.25	50	1	8.9	70 390	2.0% 2.5%	4.9 5.5	0.2 1.2	10.4	4.0	7.2	***5.6***	***11.8***	1.40	U	1.63
V	1.26	0.60	0.70	0.25	50	1	8.9	70 300	2.0% 2.5%	4.9 5.5	0.2 0.9	10.1	4.1	7.3	***3.1***	***6.5***	0.76	V	0.89
W	2.10	0.44	0.62	0.25	50	1	8.9	70 620	2.0% 1.6%	4.9 4.4	0.2 2.3	11.5	3.9	6.9	***3.6***	***9.0***	0.92	W	1.30
X	1.09	0.60	0.70	0.25	30	0.6	6.9	580	2.4%	5.4	1.8	8.7	4.3	7.7	***2.8***	***5.9***	0.65	X	0.76

From *Composite 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)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
Y	1.18	0.60	0.70	0.25	50	1	8.9	70 400	2.0% 3.5%	4.9 6.5	0.2 1.0	10.2	4.1	7.2	***2.9***	***6.0***
Z	0.30	0.62	0.72	0.25	30	0.6	6.9	80	1.0%	3.5	0.4	7.3	4.6	8.2	***0.9***	***1.8***
AA	3.27	0.58	0.68	0.25	50	1	8.9	70 880	2.0% 1.6%	4.9 4.4	0.2 3.3	12.5	3.8	6.7	***7.1***	***14.8***
BB	1.77	0.57	0.67	0.25	50	1	8.9	70 440	2.0% 2.2%	4.9 5.2	0.2 1.4	10.6	4.0	7.1	***4.1***	***8.5***
CC	1.33	0.58	0.68	0.25	30	0.6	6.9	0	0.0%	0.0	0.0	6.9	4.7	8.3	***3.6***	***7.5***

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

Calculated by: VAS
Date:
Checked by: VAS

CA_5	Basin	CA_{100}
0.70	Y	0.82
0.19	Z	0.22
1.89	AA	2.22
1.01	BB	1.19
0.77	CC	0.90

Forest Meadows - Area No. 2
FINAL DRAINAGE REPORT
(Surface Routing Summary)

Design Point(s)	*Contributing Basins/Design Points*	*Equivalent CA_5*	*Equivalent CA_{100}*	*Maximum T_C*	*Intensity*		*Flow*		*Comments*
					I_5	*I_{100}*	*Q_5*	*Q_{100}*	
1A North	A,B,1/2C	3.17	3.73	13.9	3.6	6.4	*11.4*	*23.8*	*2-18' D-10-R At-Grade Inlets*
1B North	E,F,G,H, 1/2 I	4.03	4.71	14.0	3.6	6.4	*14.4*	*29.9*	
Design Point 1A flowby Q5=3.9 cfs, Q100=10.6 cfs, DP1B flowby Q5=5.9 cfs, Q100=13.3 cfs									
2 West	DP(1A) flowby,1/2C,D	2.37	3.17	16.8	3.3	5.9	*7.8*	*18.6*	*2-8' D-10-R Sump Inlets*
2A West	DP(1B) flowby,1/2 I,J,K	5.44	6.51	14.1	3.6	6.3	*19.4*	*41.2*	
2 & 2A	DP(1A & 1B) flowby,1/2 C,D,1/2 I,J,K	7.81	9.68	16.8	3.3	5.9	*25.7*	*56.7*	
Design Point 2 & 2A flows from each direction have been split equally due to overtopping at the low point, SPLIT: Q5 = 12.85cfs, Q100 = 28.35cfs									
3	L,M,N,O,P,Q	6.02	7.17	13.8	3.6	6.4	*21.7*	*45.9*	*1-20' D-10-R At-Grade Inlet*
DP3 flowby Q5=12.1 cfs, Q100=36.3 cfs									
4	DP(4) flowby,R	4.73	7.28	14.3	3.5	6.3	*16.7*	*45.8*	*1-12' D-10-R At-Grade Inlet*
DP3 flowby Q5=10.8 cfs, Q100=39.9 cfs									
5 North	DP(4) flowby,S,T,U,V	8.35	11.51	15.3	3.4	6.1	*28.7*	*70.3*	*2-12' D-10-R At-Grade Inlets*
5A North	AA	1.89	2.22	12.5	3.8	6.7	*7.1*	*14.8*	
5 & 5A	DP(4) flowby,S,T,U,V,AA SPLIT FLOWS	10.25	13.73	15.3	3.4	6.1	*35.2*	*83.9*	
Design Point 5 & 5A flows from each direction have been split, SPLIT: Q5 = 17.6cfs, Q100 = 42.0cfs									
DP5 & 5A flowby Q5=11.7 cfs, Q100=24.6 cfs									
6 West	X,Y	1.36	1.58	10.2	4.1	7.2	*5.5*	*11.5*	*2-12' D-10-R Sump Inlets*
6 East	DP(5) flowby,W	4.33	5.33	16.9	3.3	5.8	*14.2*	*31.1*	
6A West	Z	0.19	0.22	7.3	4.6	8.2	*0.9*	*1.8*	
6A East	DP(5A) flowby,BB	4.42	5.22	16.9	3.3	5.8	*14.5*	*30.4*	
6 & 6A	DP(5&5A) flowby,W,X,Y,Z,BB	10.29	12.35	16.9	3.3	5.8	*33.7*	*72.0*	
Design Point 6 & 6A flows from each direction have been split equally due to overtopping at the low point, SPLIT: Q5 = 16.9cfs, Q100 = 36.0cfs									

Calculated by: VAS

Date:

Checked by: VAS

Forest Meadows - Area No. 2
FINAL DRAINAGE REPORT
(Storm Sewer Routing Summary)

Pipe Run	*Contributing Design Points/Pipe Runs*	*Equivalent CA_5*	*Equivalent CA_{100}*	*Maximum T_C*	*Intensity*		*Flow*		*Comments*
					I_5	*I_{100}*	*Q_5*	*Q_{100}*	
100	**INT(DP1) - MDDP OS-B flows**						*41.0*	*96.0*	54" RCP
100A	**INT(DP1A)**	2.09	2.07	13.9	3.6	6.4	*7.5*	*13.2*	18" RCP
100B	**INT(DP1B)**	1.66	2.61	14.0	3.6	6.4	*8.5*	*16.6*	18" RCP
100C	**Pipe runs 100A,100B**	3.75	4.68	14.0	3.6	6.4	*13.4*	*29.7*	24" RCP
101	**Pipe run 100C added directly to 100**						*54.4*	*125.7*	54" RCP
102	**INT(DP2)**	3.91	4.84	16.8	3.3	5.9	*12.8*	*28.3*	24" RCP
103	**INT(DP2A)**	3.91	4.84	16.8	3.3	5.9	*12.8*	*28.3*	30" RCP
104	**Pipe runs 102,103 added directly to 101**						*80.1*	*182.4*	72" RCP
105	**INT(DP3)**	2.67	1.50	13.8	3.6	6.4	*9.6*	*9.6*	18" RCP
106	**INT(DP4)**	1.67	0.94	14.3	3.5	6.3	*5.9*	*5.9*	18" RCP
107	**Pipe runs 105,106**	4.34	2.44	14.3	3.5	6.3	*15.3*	*15.3*	24" RCP
108	**INT(DP5)**	1.72	2.84	15.3	3.4	6.1	*5.9*	*17.3*	18" RCP
109	**INT(DP5A)**	1.72	2.84	15.3	3.4	6.1	*5.9*	*17.3*	18" RCP
109A	**Pipe runs 107,108,109**	7.78	8.11	15.3	3.4	6.1	*26.7*	*49.6*	36" RCP

Pipe Run	*Contributing Design Points/Pipe Runs*	*Equivalent* CA_5	*Equivalent* CA_{100}	*Maximum* T_C	*Intensity*		*Flow*		*Comments*
					I_5	I_{100}	Q_5	Q_{100}	
110	**INT(DP6)**	5.14	6.17	16.9	3.3	5.8	***16.8***	***36.0***	30" RCP
111	**Pipe runs 109A,110 added directly to 104**						***123.6***	***268.0***	84" RCP
112	**Pipe run 111 added directly to INT(DP6A)**						***140.5***	***304.0***	84" RCP

NOTES:

1. Pipe sizes per preliminary design and StormCad hydraulic model (see Hydraulic Computations in appendix).
2. MDDP OS-1 Tc unknown, therefore direct addition of Q and use known basins Tc (conservative).
3. Q, Tc and CA values tabulated for sump laterals reflect SPLIT conditions (i.e. - equal).

DP - Design Point
INT- Intercepted Flow from Design Point

Calculated by: VAS
Date:
Checked by: VAS

Forest Meadows - Area No. 2
FINAL DRAINAGE REPORT
(Inlet Calculations - At-Grade)

Proposed 18' Inlet at DP1A

5-YR FLOW				
Q(5)	11.4 cfs	I(5)	3.6	Inlet size (Li) = 18 feet
Q overtop	15.9 cfs			
				Li >= L(2) then Qi = 7.5 cfs
Depth	0.36 '	Fw	2.09	Qi- CA(eqv.) = 2.09
Spread	14.8 '	L(1)	27.6	Flow-by = 3.9 cfs
				FB- CA(eqv.) = 1.08
CROSS SLOPE	2.0%	L(2)	16.6	
				Overtop Flow-By = 0
STREET SLOPE	2.5%	L(3)	51.1	Overtop FB- CA(eqv.) = 0.00

100-YR FLOW				
Q(100)	23.8 cfs	I(100)	6.4	Inlet size (Li) = 18 feet
Q overtop	15.9 cfs			
				Li < L(2) then Qi = 13.2 cfs
Depth	0.46 '	Fw	2.15	Qi- CA(eqv.)= 2.07
Spread	17.0 '	L(1)	32.5	Flow-by = 10.6 cfs
				FB- CA(eqv.) = 1.66
CROSS SLOPE	2.0%	L(2)	19.5	
				Overtop Flow-By = 0
STREET SLOPE	2.5%	L(3)	60.2	Overtop FB- CA(eqv.) = 0.00

Calculated by: VAS
Date:
Checked by: VAS

Forest Meadows - Area No. 2
FINAL DRAINAGE REPORT
(Inlet Calculations - At-Grade)

Proposed 18' Inlet at DP1B

5-YR FLOW

Q(5)	14.4 cfs	I(5)	3.6	Inlet size (Li) =	18 feet
Q overtop	15.9 cfs				
				Li < L(2) then Qi =	8.5 cfs
Depth	0.39 '	Fw	2.13	Qi- CA(eqv.) =	2.37
Spread	16.2 '	L(1)	30.6	Flow-by =	5.9 cfs
				FB- CA(eqv.) =	1.66
CROSS SLOPE	2.0%	L(2)	18.4		
				Overtop Flow-By =	0
STREET SLOPE	2.5%	L(3)	56.8	Overtop FB- CA(eqv.) =	0.00

100-YR FLOW

Q(100)	29.9 cfs	I(100)	6.4	Inlet size (Li) =	18 feet
Q overtop	15.9 cfs				
				Li < L(2) then Qi =	16.6 cfs
Depth	0.50 '	Fw	2.15	Qi- CA(eqv.)=	2.61
Spread	17.0 '	L(1)	32.5	Flow-by =	13.3 cfs
				FB- CA(eqv.) =	2.10
CROSS SLOPE	2.0%	L(2)	19.5		
				Overtop Flow-By =	0
STREET SLOPE	2.5%	L(3)	60.2	Overtop FB- CA(eqv.) =	0.00

Calculated by: VAS
Date:
Checked by: VAS

Forest Meadows - Area No. 2
FINAL DRAINAGE REPORT
(Inlet Calculations - Sump Condition)

DP2 & 2A

Total Flow: Q_5 = **12.8** cfs

Q_{100} = **28.3** cfs

Maximum allowable ponding depth at sump:

$Dmax_5$ = 0.50'

$Dmax_{100}$ = 0.93'

For d <= 0.67 feet : $Qi = 1.7(Li+1.8(W))(Dmax + w/12)^{1.85}$

For d >= 0.94 feet : $Qi = 3.6 * Li * (Dmax - 0.33 + w/12)^{0.5}$

where: W = 3 feet

w = 4 inches

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: **8** foot inlet required

100-Year Event: **8** foot inlet required

(Install a Public 8' D-10-R inlet to accept both 5 yr. & 100 yr. developed flows at this design point.)

Calculated by: VAS

Date: _____

Checked by: VAS

AREA 3 - CALCULATIONS

Forest Meadows - Area No. 3
FINAL DRAINAGE REPORT
(Area Drainage Summary)

From *Composite Runoff Coefficient Summary*				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*		CA_5	Basin	CA_{100}
BASIN	AREA TOTAL *(Acres)*	C_5 *From DCM Table 5-1*	C_{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.)*			
A	0.75	0.57	0.67	0.25	40	0.8	8.0	270	2.2%	5.2	0.9	8.9	4.3	7.6	*1.8*	*3.9*	0.43	A	0.50
B	4.27	0.57	0.67	0.25	50	1	8.9	70 1600	2.0% 4.0%	4.9 7.0	0.2 3.8	13.0	3.7	6.6	*8.9*	*18.7*	2.42	B	2.85
C	1.48	0.60	0.70	0.25	30	0.6	6.9	810	4.0%	7.0	1.9	8.9	4.3	7.6	*3.8*	*7.9*	0.89	C	1.03
D	5.66	0.60	0.70	0.25	70	1.4	10.6	70 840	2.0% 5.0%	4.9 7.8	0.2 1.8	12.6	3.7	6.7	*12.8*	*26.5*	3.42	D	3.98
E	0.00	0.60	0.70	0.25	30	0.6	6.9	830	4.3%	7.3	1.9	8.8	4.3	7.6	*0.0*	*0.0*	0.00	E	0.00
F	6.08	0.60	0.70	0.25	50	0.6	10.6	800	4.2%	7.2	1.9	12.4	3.8	6.7	*13.7*	*28.5*	3.65	F	4.26
G	0.00	0.60	0.70	0.25	30	0.6	6.9	980	3.9%	6.9	2.4	9.3	4.2	7.5	*0.0*	*0.0*	0.00	G	0.00
H	4.10	0.15	0.20	0.25	30	0.6	6.9	730	1.3%	4.0	3.0	10.0	4.1	7.3	*2.5*	*6.0*	0.62	H	0.82
I	2.18	0.57	0.67	0.25	50	1	8.9	70 550	2.0% 0.9%	4.9 3.3	0.2 2.8	11.9	3.8	6.8	*4.8*	*10.0*	1.25	I	1.47
J	3.71	0.60	0.70	0.25	30	0.6	6.9	900	3.4%	6.5	2.3	9.3	4.2	7.5	*9.4*	*19.5*	2.23	J	2.60
K	1.74	0.57	0.67	0.25	50	1	8.9	70 490	2.0% 1.4%	4.9 4.1	0.2 2.0	11.1	3.9	7.0	*3.9*	*8.2*	1.00	K	1.17

From *Composite Runoff Coefficient Summary*				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*				
BASIN	**AREA TOTAL** *(Acres)*	**C_5**	**C_{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.)*	**CA_5**	**Basin**	**CA_{100}**
		From DCM Table 5-1																	
L	2.08	0.58	0.68	0.25	50	1	8.9	70 350	2.0% 3.3%	4.9 6.4	0.2 0.9	10.1	4.1	7.3	***4.9***	***10.3***	1.21	L	1.42
M	1.91	0.43	0.62	0.25	170	7.5	12.7	70 180	2.0% 1.7%	4.9 4.6	0.2 0.7	13.6	3.6	6.4	***3.0***	***7.6***	0.82	M	1.18
N	1.36	0.60	0.70	0.25	50	1	8.9	70 460	2.0% 1.9%	4.9 4.8	0.2 1.6	10.8	4.0	7.1	***3.3***	***6.8***	0.82	N	0.96
O	1.97	0.60	0.70	0.25	50	1	8.9	70 530	2.0% 1.7%	4.9 4.6	0.2 1.9	11.1	3.9	7.0	***4.6***	***9.6***	1.18	O	1.38
P	2.43	0.57	0.67	0.25	50	1	8.9	70 480	2.0% 1.7%	4.9 4.6	0.2 1.8	10.9	4.0	7.1	***5.5***	***11.5***	1.39	P	1.63
Q	0.75	0.57	0.67	0.25	100	5	9.3	70 80	2.0% 2.0%	4.9 4.9	0.2 0.3	9.9	4.1	7.3	***1.8***	***3.7***	0.43	Q	0.50
R	0.30	0.55	0.65	0.25	50	1	8.9	70 90	2.0% 2.9%	4.9 6.0	0.2 0.3	9.4	4.2	7.5	***0.7***	***1.4***	0.16	R	0.19
S	2.87	0.57	0.67	0.25	70	1.4	10.6	70 310	2.0% 1.7%	4.9	0.2	10.8	4.0	7.1	***6.6***	***13.7***	1.65	S	1.94
T	3.56	0.57	0.67	0.25	70	1.4	10.6	70 920	2.0% 1.5%	4.9 4.3	0.2 3.6	14.4	3.5	6.3	***7.1***	***14.9***	2.02	T	2.38
U	1.04	0.60	0.70	0.25	30	0.6	6.9	490	0.7%	2.9	2.8	9.7	4.1	7.4	***2.6***	***5.4***	0.63	U	0.73
V	1.17	0.53	0.63	0.25	30	0.6	6.9	330	1.7%	4.6	1.2	8.1	4.4	7.9	***2.8***	***5.8***	0.63	V	0.74
W	2.88	0.56	0.66	0.25	80	1.6	11.3	70 550	2.0% 2.9%	4.9	0.2	11.5	3.9	6.9	***6.3***	***13.2***	1.62	W	1.91
X	2.70	0.58	0.68	0.25	50	1	8.9	70 1320	2.0% 1.7%	4.9 4.6	0.2 4.8	14.0	3.6	6.4	***5.6***	***11.7***	1.56	X	1.83

From *Composite Runoff Coefficient Summary*				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*		CA_5	Basin	CA_{100}
BASIN	**AREA TOTAL** *(Acres)*	C_5 *From DCM Table 5-1*	C_{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.)*			
Y	4.47	0.57	0.67	0.25	70	1.4	10.6	70 870	2.0% 2.0%	4.9 4.9	0.2 2.9	13.7	3.6	6.4	***9.2***	***19.2***	2.54	Y	2.99
Z	0.71	0.57	0.67	0.25	30	0.6	6.9	280	2.1%	5.1	0.9	7.8	4.5	8.0	***1.8***	***3.8***	0.40	Z	0.47
AA	1.67	0.57	0.67	0.25	30	0.6	6.9	960	2.0%	4.9	3.2	10.2	4.1	7.3	***3.9***	***8.1***	0.95	AA	1.12
BB	2.65	0.44	0.63	0.25	30	0.6	6.9	0	0.0%	0.0	0.0	6.9	4.7	8.3	***5.4***	***13.8***	1.17	BB	1.67

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

Calculated by: VAS
Date:
Checked by: VAS

Forest Meadows - Area No. 3
FINAL DRAINAGE REPORT
(Surface Routing Summary)

Design Points	*Contributing Basins/ Design Points*	*Equivalent CA_5*	*Equivalent CA_{100}*	*Maximum T_C*	*Intensity **		*Flow*		*Comments*
					I_5	*I_{100}*	*Q_5*	*Q_{100}*	
1 West	C,D	4.30	5.02	12.6	3.7	6.7	***16.1***	***33.4***	***1-16' D-10-R At-Grade Inlet***
1A West	DP(1) flowby,E	1.50	2.10	12.6	3.7	6.7	***5.6***	***14.0***	***2-4' D-10-R Sump Inlets***
1A East	1/2F	1.82	2.13	12.4	3.8	6.7	***6.9***	***14.2***	
1B East	1/2F	1.82	2.13	12.4	3.8	6.7	***6.9***	***14.2***	
1A & 1B	DP(1) flowby,E,F	5.15	6.36	12.6	3.7	6.7	***19.3***	***42.3***	
Design Point 1A & 1B flows from each direction have been split equally due to overtopping at the low point, SPLIT: Q5 = 9.6cfs, Q100 = 21.2cfs									
3 North	I,J	3.48	4.06	14.3	3.5	6.3	***12.3***	***25.6***	***2-8' D-10-R Sump Inlets***
3A North	K,L,M,N	3.85	4.73	14.4	3.5	6.3	***13.6***	***29.7***	
3A South	O	1.18	1.38	11.1	3.9	7.0	***4.6***	***9.6***	
3 & 3A	I,J,K,L,M,N,O	8.50	10.17	14.4	3.5	6.3	***30.0***	***63.9***	
Design Point 3 & 3A flows from each direction have been split equally due to overtopping at the low point, SPLIT: Q5 = 15.0cfs, Q100 =32.0cfs									
4 North	P,Q,R	1.98	2.33	11.7	3.9	6.9	***7.6***	***16.0***	***2-4' D-10-R Sump Inlets***
4A North	S	1.65	1.94	10.8	4.0	7.1	***6.6***	***13.7***	
4A East	2/3T	1.34	1.57	14.4	3.5	6.3	***4.7***	***9.9***	
4 & 4A	P,Q,R,S,2/3T	4.96	5.83	15.4	3.4	6.1	***17.0***	***35.5***	
Design Point 4 & 4A flows from each direction have been split equally due to overtopping at the low point, SPLIT: Q5 =8.5cfs, Q100 = 17.8cfs									
5 North	G,V,U	1.25	1.47	12.5	3.7	6.7	***4.7***	***9.8***	***2-14' D-10-R Sump Inlets***
5 East	1/3T,Y	3.22	3.78	18.3	3.2	5.6	***10.1***	***21.2***	
5A North	B	2.42	2.85	15.9	3.4	6.0	***8.2***	***17.1***	
5A East	W,X,Z	3.59	4.22	15.3	3.4	6.1	***12.3***	***25.7***	
5 & 5A	B,H,G,1/3T,U,V,W,X,Y,Z	10.48	12.32	18.3	3.2	5.6	***33.0***	***69.1***	
Design Point 5 & 5A flows from each direction have been split equally due to overtopping at the low point, SPLIT: Q5 = 16.5cfs, Q100 = 34.6cfs									

Calculated by: VAS

Date: _____

Checked by: VAS

Forest Meadows - Area No. 3
FINAL DRAINAGE REPORT
(Storm Sewer Routing Summary)

Pipe Run	*Contributing Basins/Design Points*	*Equivalent* CA_5	*Equivalent* CA_{100}	*Maximum* T_C	*Intensity*		*Flow*		*Comments*
					I_5	I_{100}	Q_5	Q_{100}	
100	**INT(DP1)**	2.11	2.91	12.6	3.7	6.7	*10.5*	*19.4*	18" RCP
101	**INT(DP1A)**	2.58	3.18	12.6	3.7	6.7	*9.6*	*21.2*	24" RCP
102	**INT(DP1B)**	2.58	3.18	12.6	3.7	6.7	*9.6*	*21.2*	30" RCP
103	**Pipe runs 101,102**	5.15	6.36	12.6	3.7	6.7	*19.3*	*42.3*	36" RCP
104	**Pipe runs 100,103**	7.26	9.27	12.6	3.7	6.7	*27.1*	*61.7*	36" RCP
105	***Offsite and Roadway Basins (O.R.B.)*** **INT(DP11) & INT(DP11A) flows (pipe run 126) = Area 2 DP2**	8.06	9.18	9.2	4.2	7.5	*34.1*	*69.1*	36" RCP
106	**INT(DP3)**	4.25	5.09	14.4	3.5	6.3	*15.0*	*32.0*	24" RCP
107	**INT(DP3A)**	4.25	5.09	14.4	3.5	6.3	*15.0*	*32.0*	24" RCP
108	**Pipe Runs 105,106,107**	16.56	19.35	14.4	3.5	6.3	*58.5*	*121.6*	48" RCP
109	**INT(DP4)**	2.48	2.92	15.4	3.4	6.1	*8.5*	*17.8*	24" RCP
110	**INT(DP4A)**	2.48	2.92	15.4	3.4	6.1	*8.5*	*17.8*	30" RCP
111	**Pipe runs 109,110**	4.96	5.83	15.4	3.4	6.1	*17.0*	*35.5*	30" RCP
112	**Pipe runs 108,111**	21.53	25.18	15.4	3.4	6.1	*73.7*	*153.4*	48" RCP
113	**Pipe runs 104,112**	28.79	34.46	15.4	3.4	6.1	*98.5*	*209.9*	54" RCP
114	**INT(DP5)**	5.24	6.16	18.3	3.2	5.6	*16.5*	*34.6*	30" RCP
115	**INT(DP5A)**	5.24	6.16	18.3	3.2	5.6	*16.5*	*34.6*	30" RCP
116	**Pipe runs 114,115**	10.48	12.32	18.3	3.2	5.6	*33.0*	*69.1*	36" RCP
117	**Pipe runs 113,116**	39.27	46.78	18.3	3.2	5.6	*123.7*	*262.4*	66" RCP

NOTES:
1. Pipe sizes per preliminary design and StormCad hydraulic model (see Hydraulic Computations in appendix).
2. MDDP OS-1 Tc unknown, therefore direct addition of Q and use known basins Tc (conservative).
3. Q, Tc and CA values tabulated for sump laterals reflect SPLIT conditions (i.e. - equal).

DP - Design Point
INT- Intercepted Flow from Design Point

Calculated by: VAS
Date:
Checked by: VAS

Forest Meadows - Area No. 3
FINAL DRAINAGE REPORT
(Street Capacity Summary - Initial Storm)

Street Name	*Contributing Basins*	*Street Side (Cardinal Directions) at max Q5*	*Street Class*	*Curb Type*	*Street Slope (ft/ft)*	*Actual Q5 (cfs)*	*Max. Q5 (cfs) (10/12/94 Eq's)*	*Depth At Curb Face (ft) (Fig 7-12 Eq.)*	*Q5 Max. Check Max>Actual<20cfs (res ramp), 34cfs(other)*	*Q5 Depth Check*
Red Cardinal Lp	B	S	Residential	Ramp	0.014	8.9	13.3	0.31	*OK*	*OK*
Red Cardinal Lp	C	E	Residential	Ramp	0.014	3.8	13.3	0.22	*OK*	*OK*
Lightwood Wy	D	W	Residential	Ramp	0.050	12.8	25.2	0.28	*OK*	*OK*
(Public Alley)	E	E & W	Residential	Ramp	0.043	0.0	23.3	0.00	*OK*	*OK*
Red Cardinal Lp	C,D	N	Residential	Vertical	0.014	16.1	20.1	0.38	*OK*	*OK*
ADD INLET TO PICK UP ~7.8cfs TO AVOID VERTICAL CURB CONSTRUCTION										
Red Cardinal Lp	C,D,E	N	Residential	Ramp	0.014	5.6	13.3	0.26	*OK*	*OK*
Morning Dew Rd	F	E & W	Residential	Ramp	0.042	6.9	23.1	0.23	*OK*	*OK*
(Public Alley)	G	E & W	Residential	Ramp	0.039	0.0	22.2	0.00	*OK*	*OK*
Red Cardinal Lp	B,H	W	Residential	Ramp	0.013	8.2	12.8	0.30	*OK*	*OK*
Red Cardinal Lp	G,V,U	E	Residential	Ramp	0.014	5.4	13.3	0.25	*OK*	*OK*
Smokewoord Dr	I,J	W	Residential	Ramp	0.034	12.3	20.8	0.29	*OK*	*OK*
Smokewoord Dr	K,L,M,N	E	Residential	Ramp	0.034	13.6	20.8	0.30	*OK*	*OK*
Pearly Heath Rd	O	N	Residential	Ramp	0.017	4.6	14.7	0.23	*OK*	*OK*
Superior Hill Pl	P,Q,R	W	Residential	Ramp	0.017	7.6	14.7	0.28	*OK*	*OK*
Superior Hill Pl	S	E	Residential	Ramp	0.017	6.6	14.7	0.26	*OK*	*OK*
Red Cardinal Lp	T	W	Residential	Ramp	0.015	7.1	13.8	0.28	*OK*	*OK*
Red Cardinal Lp	1/3T,Y	N	Residential	Ramp	0.020	10.1	15.9	0.30	*OK*	*OK*
Red Cardinal Lp	W,X,Z	S	Residential	Ramp	0.020	12.3	15.9	0.32	*OK*	*OK*

Notes:
1. Cross slope of 2% assumed for all streets.
2. Data shown for critical location within basin.
3. Basin Q's for streets not determined by surface routing have been added together (conservative).

Calculated by: VAS

Date:

Checked by: VAS

Forest Meadows - Area No. 3
FINAL DRAINAGE REPORT
(Inlet Calculations - At-Grade)

Proposed 16' Inlet at DP1

5-YR FLOW

Q(5)	16.1 cfs	I(5)	3.7	Inlet size (Li) = 16 feet
Q overtop	13.5 cfs			
				Li < L(2) then Qi = 7.9 cfs
Depth	0.41 '	Fw	1.82	Qi- CA(eqv.) = 2.11
Spread	16.9 '	L(1)	27.4	Flow-by = 5.6 cfs
				FB- CA(eqv.) = 1.50
CROSS SLOPE	2.0%	L(2)	16.5	
				Overtop Flow-By = 2.6 cfs
STREET SLOPE	1.8%	L(3)	50.8	Overtop FB- CA(eqv.) = 0.69

Flow overtopping crown: Assuming 2.6 cfs is crossing the crown and a spread of 16.9 feet.
Depth and Qi based on a street capacity prior to overtopping the crown. (Qovertop)

100-YR FLOW

Q(100)	33.4 cfs	I(100)	6.7	Inlet size (Li) = 16 feet
Q overtop	13.5 cfs			
				Li < L(2) then Qi = 19.4 cfs
Depth	0.55 '	Fw	1.82	Qi- CA(eqv.)= 2.91
Spread	17.0 '	L(1)	27.5	Flow-by = 14.0 cfs
				FB- CA(eqv.) = 2.10
CROSS SLOPE	2.0%	L(2)	16.6	
				Overtop Flow-By = 0
STREET SLOPE	1.8%	L(3)	51.1	Overtop FB- CA(eqv.) = 0.00

Flow overtopping crown: Assuming Q(100) contained from flowline to crown and a spread of 17 feet.
Depth and Qi based on a symmetrical section carrying the same flow on the other side of the crown.

Calculated by: VAS
Date: _____
Checked by: VAS

Forest Meadows - Area No. 3
FINAL DRAINAGE REPORT
(Inlet Calculations - Sump Condition)

DP1 & 1A

Total Flow: Q_5 = **9.6** cfs

Q_{100} = **21.2** cfs

Maximum allowable ponding depth at sump:

$Dmax_5$ = 0.50'

$Dmax_{100}$ = 0.93'

For d <= 0.67 feet : Qi = $1.7(Li+1.8(W))(Dmax + w/12)^{1.85}$

For d >= 0.94 feet : Qi = 3.6 * Li * (Dmax - 0.33 + w/12)^0.5

where: W = 3 feet

w = 4 inches

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: **4** foot inlet required

100-Year Event: **4** foot inlet required

(Install a Public 4' D-10-R inlet to accept both 5 yr. & 100 yr. developed flows at this design point.)

Calculated by: VAS

Date: _____

Checked by: VAS

Forest Meadows - Area No. 3
FINAL DRAINAGE REPORT
(Inlet Calculations - Sump Condition)

DP3 & 3A

Total Flow:

Q_5 = **15.0** cfs

Q_{100} = **32.0** cfs

Maximum allowable ponding depth at sump:

$Dmax_5$ = 0.50'

$Dmax_{100}$ = 0.93'

For d <= 0.67 feet : $Qi = 1.7(Li+1.8(W))(Dmax + w/12)^{1.85}$

For d >= 0.94 feet : Qi = 3.6 * Li * (Dmax - 0.33 + w/12)^0.5

where: W = 3 feet

w = 4 inches

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: **8** foot inlet required

100-Year Event: **8** foot inlet required

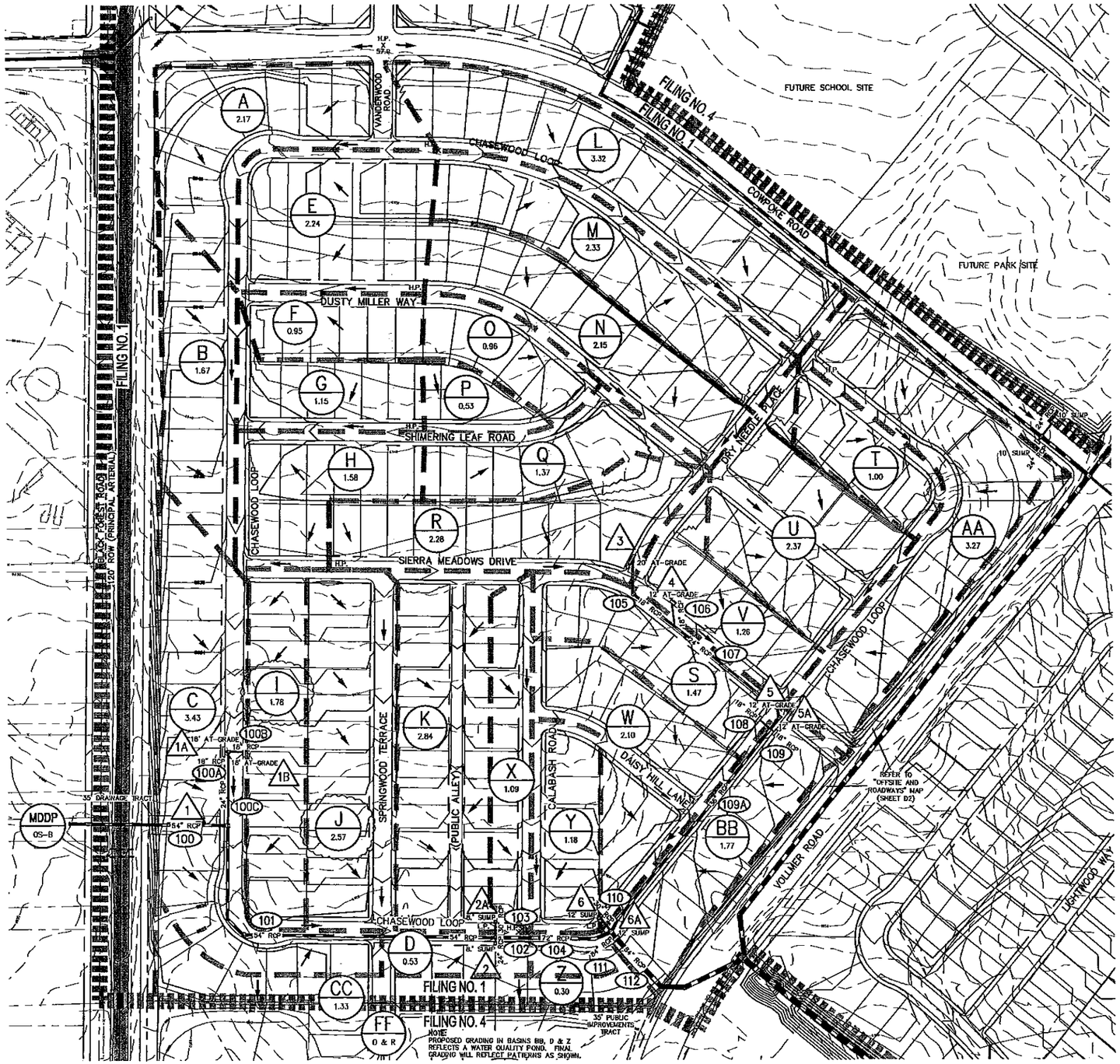
(Install a Public 8' D-10-R inlet to accept both 5 yr. & 100 yr. developed flows at this design point.)

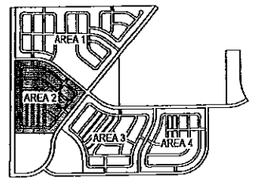
Calculated by: VAS

Date: _____

Checked by: VAS

DRAINAGE MAP





KEY MAP
N.T.S.

DESIGN POINT SUMMARY

Design Point	Q_5 (c.f.s.)	Q_{100} (c.f.s.)	STRUCTURE
1A	11.4	23.8	18' D-10-R AT GRADE INLET
1B	15.5	32.3	18' D-10-R AT GRADE INLET
2	7.8	18.8	6' D-10-R SUMP INLET
2A	25.4	55.5	6' D-10-R SUMP INLET
3	21.7	48.3	20' D-10-R AT GRADE INLET
4	19.7	45.6	12' D-10-R AT GRADE INLET
5	28.7	70.5	12' D-10-R AT GRADE INLET
5A	7.1	14.8	12' D-10-R AT GRADE INLET
6	19.7	42.8	12' D-10-R SUMP INLET
6A	16.4	32.2	12' D-10-R SUMP INLET

STORM SEWER SUMMARY

PIPE RUN	Q_5 (c.f.s.)	Q_{100} (c.f.s.)	PIPE SIZE
100	41.0	98.0	54" RCP
100A	7.5	13.2	18" RCP
100B	6.7	17.9	18" RCP
100C	14.2	31.0	24" RCP
101	55.2	127.0	54" RCP
102	12.7	27.7	24" RCP
103	12.7	27.7	30" RCP
104	13.2	28.3	72" RCP
105	54.9	114.2	18" RCP
106	8.5	17.8	18" RCP
107	8.5	17.8	24" RCP
108	17.0	35.5	18" RCP
109	70.2	146.2	18" RCP
109A	94.2	198.7	36" RCP
110	16.8	36.0	30" RCP
111	124.1	212.6	84" RCP
112	140.9	248.6	84" RCP

LEGEND

- A / 2.00 — BASIN LABEL ACREAGE
- 200 — PIPE REFERENCE LABEL
- 2A — SURFACE DESIGN POINT
- FLOW DIRECTION
- BASIN BOUNDARY
- 6920 — EXISTING CONTOUR
- 6920 — PROPOSED CONTOUR
- STORM SEWER PIPE
- CROSSPAN
- INLET
- MANHOLE
- FLARED END SECTION
- FILING LINE
- A / 2.00 — BASIN LABEL (REVISED) ACREAGE

1" = 100' NTS

0 25 50 100 200
Scale in Feet

BASIN SUMMARY

BASIN	AREA (Acres)	Q_5 (c.f.s.)	Q_{100} (c.f.s.)
A	2.2	4.8	10.0
B	1.7	3.7	7.8
C	3.4	7.4	15.4
D	0.5	1.4	2.9
E	2.2	5.1	10.7
F	1.0	2.3	4.7
G	1.2	2.8	5.8
H	1.6	3.7	7.7
I	2.0	6.7	13.9
J	1.0	3.0	6.2
K	2.8	6.7	14.0
L	3.3	7.2	15.1
M	2.3	5.2	10.8
N	2.2	4.8	10.0
O	1.0	2.2	4.7
P	0.5	1.2	2.8
Q	1.4	2.8	6.1
R	2.3	5.1	10.7
S	1.5	3.8	7.4
T	1.0	2.4	4.9
U	2.4	5.6	11.8
V	1.3	3.1	6.5
W	2.1	3.6	9.0
X	1.1	2.8	5.9
Y	1.2	2.9	6.0
Z	0.3	0.9	1.8
AA	3.3	7.1	14.8
BB	1.8	4.1	8.5
CC	1.3	3.6	7.5

AMENDED (SEE MAP)
AMENDED (SEE MAP)

AMENDED NOVEMBER – 2008 TO VACATE ALLEYS IN BLOCKS 14, 21, 22 SEE DP AMENDMENT CPC PUD 05-040-A2MN08

NOTE: PROPOSED CONTOURS PROVIDED BY NOLTE AND ASSOCIATES DATED 11/7/05

CIVIL CONSULTANTS, INC.

FOREST MEADOWS – AREA 2

DRAINAGE MAP

PROJECT NO. 08-001	FILE: *\dwg\Dev. Plan\08001 – Drainage Plan		
DESIGNED BY: BES	SCALE	DATE: 1/5/06	
DRAWN BY: BVDP	HORIZ: 1"=100'	SHEET 3 OF 6	D3
CHECKED BY: VAS	VERT: N/A		

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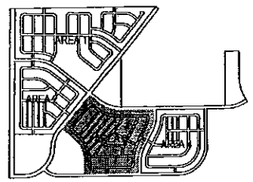

KEY MAP
N.T.S.

DESIGN POINT SUMMARY

Design Point	Q_5 (c.f.s.)	Q_{100} (c.f.s.)	STRUCTURE
1	13.8	28.8	18' D-10-R AT GRADE INLET
1A	15.5	32.1	4' D-10-R SUMP INLET
1B	4.0	8.2	4' D-10-R SUMP INLET
3	8.7	18.2	8' D-10-R SUMP INLET
3A	18.2	38.3	8' D-10-R SUMP INLET
4	7.6	18.0	4' D-10-R SUMP INLET
4A	11.3	23.6	4' D-10-R SUMP INLET
5	21.7	45.5	14' D-10-R SUMP INLET
5A	20.5	42.8	14' D-10-R SUMP INLET

STORM SEWER SUMMARY

PIPE RUN	Q_5 (c.f.s.)	Q_{100} (c.f.s.)	PIPE SIZE
100	7.9	16.8	18" RCP
101	9.2	19.2	24" RCP
102	9.2	19.2	30" RCP
103	18.4	38.5	36" RCP
104	26.3	55.1	36" RCP
105	34.1	69.1	36" RCP
106	13.2	28.3	24" RCP
107	13.2	28.3	24" RCP
108	54.9	114.2	48" RCP
109	8.5	17.8	24" RCP
110	8.5	17.8	30" RCP
111	17.0	35.5	30" RCP
112	70.2	145.2	48" RCP
113	94.2	195.7	54" RCP
114	19.4	40.6	30" RCP
115	19.4	40.6	30" RCP
116	38.9	81.3	36" RCP
117	125.7	262.4	66" RCP

LEGEND

- A / 2.00 — BASIN LABEL ACREAGE
- 200 — PIPE REFERENCE LABEL
- 2A — SURFACE DESIGN POINT
- FLOW DIRECTION
- BASIN BOUNDARY
- 6920 — EXISTING CONTOUR
- 6920 — PROPOSED CONTOUR
- STORM SEWER PIPE
- CROSSPAN
- INLET
- MANHOLE
- FLARED END SECTION
- FILING LINE
- A / 2.00 — BASIN LABEL (REVISED) ACREAGE

BASIN SUMMARY

BASIN	AREA (Acres)	Q_5 (c.f.s.)	Q_{100} (c.f.s.)
A	0.8	1.8	3.9
B	4.3	8.9	18.7
C	1.5	3.8	7.9
~~B~~	~~4.0~~	~~10.5~~	~~21.7~~
~~E~~	~~2.0~~	~~0.0~~	~~14.0~~
~~F~~	~~3.1~~	~~7.9~~	~~16.6~~
~~C~~	~~3.1~~	~~7.8~~	~~16.2~~
H	4.1	2.5	5.0
I	2.2	4.8	10.0
~~J~~	~~2.0~~	~~5.1~~	~~10.7~~
K	1.7	3.9	8.2
L	2.1	4.9	10.3
M	1.9	3.0	7.6
N	1.4	3.3	6.8
O	2.0	4.0	9.6
P	2.4	5.5	11.5
Q	0.8	1.8	3.7
R	0.3	0.7	1.4
S	2.9	6.6	13.7
T	3.6	7.1	14.9
U	1.0	2.8	5.4
V	1.2	2.8	5.8
W	2.9	6.3	13.2
X	4.1	5.6	11.7
Y	4.5	9.2	18.2
Z	0.7	1.8	3.6
AA	1.7	3.9	8.1
BB	0.0	1.8	4.7

AMENDED (SEE MAP)
(OMITTED) AMENDED (SEE MAP)
AMENDED (SEE MAP)
(OMITTED) AMENDED (SEE MAP)
AMENDED (SEE MAP)

1" = 100' NTS
0 25 50 100 200
Scale in Feet

NOTE: PROPOSED CONTOURS PROVIDED BY NOLTE AND ASSOCIATES DATED 11/7/05

AMENDED NOVEMBER – 2008 TO VACATE ALLEYS IN BLOCKS 14, 21, 22 SEE DP AMENDMENT CPC PUD 05-040-A2MN08

CIVIL CONSULTANTS, INC.

FOREST MEADOWS – AREA 3

DRAINAGE MAP

PROJECT NO. 08-001		FILE: *\dwg\Dev. Plan\08001 – Drainage Plan	
DESIGNED BY:	BES	SCALE	DATE: 1/5/06
DRAWN BY:	BVDP	HORIZ: 1"=100'	SHEET 4 OF 6 — D4
CHECKED BY:	VAS	VERT: N/A	

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