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ENGINEERS SURVEYORS
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Final Drainage Letter

Holy Rosary Chapel – 4435 Holliday Terrace

Project No. 61230

August 28, 2026

EDARP File No.:

Final Drainage Letter

for
Holy Rosary Chapel – 4435 Holliday Terrace

Project No. 61230

August 28, 2026

Owner
Diocese of Colorado Springs
228 N. Cascade Ave
Colorado Springs, CO 80903-1313

Developer
Holy Rosary Chapel
4435 Holliday Terrace
Cascade, CO 80809
(719) 633-8711

prepared by
MVE, Inc.
1903 Lelaray Street, Suite 200
Colorado Springs, CO 80909
719.635.5736

Statements and Acknowledgments

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 El Paso County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

David R. Gorman, P.E.
Colorado No. 31672
For and on Behalf of MVE, Inc.

Developer's Statement

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

_____ _____

_____, _____ of Date
Holy Rosary Chapel for
Diocese of Colorado Springs
228 N. Cascade Ave
Colorado Springs, CO 80903-1313

El Paso County

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

_____ _____

Joshua J. Palmer, P.E. Date
County Engineer / ECM Administrator

Conditions:

Contents

Final Drainage Letter

This Final Drainage Letter for Holy Rosary Chapel, has been prepared in accordance with the Drainage Report Format of the Drainage Criteria Manual for the City of Colorado Springs & El Paso County, Colorado. Said Report is in support of the proposed Site Development Plan for 4435 Holliday Terrace which is Section 26, Township 13 South, Range 68 West of the 6th Principal Meridian in El Paso County, Colorado. The report and included maps present results of hydrologic and drainage facilities analyses. The report will discuss the recommended drainage improvements to the site and identify drainage requirements relative to the proposed project. This report has been prepared and submitted in accordance with the requirements of the El Paso County development approval process.

1 General Location and Description

1.1 Location

The project site consists of approximately 2.64± acres and is located within Section 26, Township 13 South, Range 68 West of the 6th Principal Meridian, in unincorporated El Paso County, Colorado. The property is identified by El Paso County Tax ID No. 8326208002 and is addressed as 4435 Holliday Terrace, Cascade, Colorado. The property is currently owned by the Diocese of Colorado Springs, is zoned Residential-Topographic (R-T), and is situated generally west of U.S. Highway 24, with access from Holliday Terrace.

The Vicinity Map is included in the **Appendix**.

1.2 Description of Property

The Holy Rosary Chapel – 4435 Holliday Terrace site encompasses approximately 2.64± acres in El Paso County, Colorado. The site is currently developed with the existing chapel and associated access, sidewalks, gravel parking, landscaped areas, and surrounding open space. The proposed project will consist primarily of paving the existing gravel parking and sidewalk improvements. Existing vegetation consists of a mixture of grasses, shrubs, mature trees, and other established vegetation throughout the property.

According to the Natural Resources Conservation Service (NRCS) Custom Soil Resource Report, Holy Rosary Chapel – 4435 Holliday Terrace contains two mapped soil types: Aquolls, 1 to 10 percent slopes (Map Unit 2), and Tecolote very gravelly sandy loam, 15% to 40% slopes, very stony (Map Unit 48). Map Unit 48 encompasses approximately 2.6 acres, or 96.9% of the project site. While Map Unit 2 encompasses approximately 0.1 acre, or 3.1%. The Tecolote soil is well drained, has a medium runoff classification, and is classified as Hydrologic Soil Group B. The Aquolls soil is poorly drained, has a low runoff classification, and is classified as Hydrologic Soil Group A/D. A portion of the Soil Map and supporting data tables from the NRCS Custom Soil Resource Report are included in the **Appendix.**

2 Drainage Basins and Sub-Basins

2.1 Major Basin Descriptions

The site is located within the Manitou Reservoir Drainage Basin, El Paso County Basin No. FOFO7400. Drainage from the site ultimately discharges to Fountain Creek, which is located immediately east of the property. No drainage reports have been found for this property.

The current Federal Emergency Management Agency (FEMA) flood hazard mapping for the site is shown on Flood Insurance Rate Map (FIRM) Panel No. 08041C0488G, effective December 7, 2018. The project site is located within Zone X, Area of Minimal Flood Hazard, and no portion of the delineated project site is shown within a FEMA-designated Special Flood Hazard Area, or Regulatory Floodway. The mapped Zone AE floodplain associated with Fountain Creek is located immediately east of the project site. An excerpt of the current FIRMette with the project site delineated is included in the **Appendix.**

2.2 Sub-Basin Description

The existing drainage patterns of the Holy Rosary Chapel – 4435 Holliday Terrace project site are divided into three (3) drainage areas of different outfall directions consisting of five (5) drainage basins. Martindale Ave along the northern boundary of the site is paved and a berm along the southern edge of the road directs flows to the south and preventing them from entering the site. All of these basins are previously undisturbed or disturbed to a degree as described below. All existing basin delineations and data are depicted on the attached Existing Drainage Map.

3 Drainage Design Criteria

3.1 Development Criteria Reference

This Final Drainage Letter for Holy Rosary Chapel – 4435 Holliday Terrace has been prepared according to the report guidelines presented in the latest edition of *El Paso County Drainage Criteria Manual* (DCM)[1]. The County has also adopted portions of the City of Colorado Springs Drainage Criteria Manual Volumes 1 and 2, especially concerning the calculation of rainfall runoff flow rates.[2] [3] The hydrologic analysis is based on a collection of data from the DCM, the NRCS Web Soil Survey[4], and existing topographic data.

3.2 Hydrologic Criteria

For this Final Drainage Letter, the Rational Method as described in the D*rainage Criteria Manual* has been used for all Storm Runoff calculations, as the development and all sub-basins are less than 130 acres in area. “Colorado Springs Rainfall Intensity Duration Frequency” curves, Figure 6-5 in the DCM, was used to obtain the design rainfall values; a copy is included in the **Appendix**. The “Overland (Initial) Flow Equation” (Eq. 6-8) in the DCM, and Manning's equation with estimated depths were used in time of concentration calculations. “Runoff Coefficients for Rational Method”, Table 6-6 in the DCM, was utilized as a guide in estimating runoff coefficient and Percent Impervious values; a copy is included in the **Appendix**. Peak runoff discharges were calculated for each drainage sub-basin for both the 5-year storm event and the 100-year storm event with the Rational Method formula, (Eq. 6-5) in the DCM.[5]

1 DCM Section 4.3 and Section 4.4
2 CS DCM Vol 1
3 CS DCM Vol 2
4 WSS
5 DCM

4 Drainage Facility Design

4.1 General Concept

As mentioned above, only minimal improvements to the existing sidewalks as well as pavement of the existing gravel parking is being performed. The direction of existing flows onto, through and off the site shall be unchanged by these improvements. There are five (5) drainage basins associated with the areas upstream of the improvements and for the remainder of the site. Approximately 0.37 acres of the site is expected to be disturbed.

4.2 Existing / Developed Hydrologic Conditions

Basin A, situated on the western edge of the site contains Holliday Terrace and portions of residential property to the northwest having an area of 0.52 acres and a current imperviousness of 39.4%. Basin A drains through the western edge of the site to the south and into Emporia Ave. The portion of the gravel drive at the end of the paved Holliday Terrace will be paved as part of this project thus increasing the percent imperviousness 2.3% to 41.7%. Runoff discharges for Basin A for the existing conditions are Q_5 = 1.1 cfs and Q_{100} = 2.6 cfs. The proposed paving of the gravel drive will have no effect on the Q_5 and the Q_{100} will increase 0.1 cfs to 2.7 cfs. The pavement of the drive will not change the drainage patterns from the historic.

Basin B1, situated on the north central edge of the site contains the western half of the existing gravel parking area having an area of 0.28 acres and a current imperviousness of 35.4%. Basin B1 drains southerly across the parking to a low point along the southern edge and south into basin B2. The gravel parking will be paved as part of this project thus increasing the percent imperviousness 4.6% to 40.0%. Runoff discharges for Basin B1 for the existing conditions are Q_5 = 0.4 cfs and Q_{100} = 1.2 cfs. The proposed paving of the gravel parking will have discharges of Q_5 = 0.6 cfs and Q_{100} = 1.5 cfs, an increase of Q_5 = 0.2 cfs and Q_{100} = 0.3 cfs that drains to basin B2. The pavement of the parking will not change the drainage patterns from the historic.

Basin B2 / Design Point B, situated central in the site contains primarily forested open space with a small gravel parking area having an area of 0.76 acres and a percent imperviousness of 6.9% that will remain unchanged. Basin B2 drains to the south east to a localized depression. Overflow from this depression travels southerly to Emporia Ave. Runoff discharges for Basin B2 for the existing and developed conditions are Q_5 = 0.5 cfs and Q_{100} = 2.5 cfs. When combined with basin B1, the existing overflow, not taking into account any storage for the depression, has discharges of Q_5 = 0.9 cfs and Q_{100} = 3.5 cfs. Once the parking area is paved in basin B1, a negligible increase of Q_5 = 0.1 cfs and Q_{100} = 0.2 cfs potentially overflows into Emporia Ave. The pavement of the parking will not change the drainage patterns from the historic.

Basin C1, situated on the north edge of the site contains the eastern half of the existing gravel parking area having an area of 0.35 acres and a current imperviousness of 38.9%. Basin C1 drains easterly across the parking to a low point along the eastern edge and east into basin C2. The gravel parking will be paved as part of this project thus increasing the percent imperviousness 10.5% to 49.2%. Runoff discharges for Basin C1 for the existing conditions are Q_5 = 0.6 cfs and Q_{100} = 1.6 cfs. The proposed paving of the gravel parking will have discharges of Q_5 = 0.9 cfs and Q_{100} = 2.0 cfs, an increase of Q_5 = 0.3 cfs and Q_{100} = 0.4 cfs that drains to basin C2. The pavement of the parking will not change the drainage patterns from the historic.

Basin C2 / Design Point C, situated east in the site contains the church building, adjacent sidewalks and primarily forested open space having an area of 1.15 acres and a percent imperviousness of 7.8% that will remain unchanged. Proposed sidewalk improvements around the building have a negligible change to the imperviousness. Basin C2 drains to the east to Fountain Ave. Runoff discharges for Basin C2 for the existing and developed conditions are Q_5 = 0.8 cfs and Q_{100} = 3.6 cfs. When combined with basin C1, the basin has discharges of Q_5 = 1.2 cfs and Q_{100} = 4.7 cfs. Once the parking area is paved in basin C1, the basin has discharges of Q_5 = 1.5 cfs and Q_{100} = 5.0 cfs an increase of Q_5 = 0.3 cfs and Q_{100} = 0.3 cfs that flow easterly to Fountain Ave. The pavement of the parking will not change the drainage patterns from the historic.

The Proposed Conditions Drainage Map shows the limits of proposed disturbance.

Existing and Proposed drainage maps are included in the **Appendix.**

4.2.1 Flow Comparison

The overall percent imperviousness is increasing from 19.0% to 21.1%, an overall increase of 2.1% The overall Q_5 being generated by the site is increasing 0.4 cfs, from 2.9 cfs to 3.3 cfs and the overall Q_{100} is increasing by 0.6 cfs, from 10.1 cfs to 10.7 cfs. The increased flows are not leaving the site as concentrated flows. The aforementioned increase leaves the site along the south and east edges having a negligible increase at any one location and no negative impacts on the adjacent properties.

4.3 Four Step Process

The El Paso County Engineering Criteria Manual (Appendix I, Section I.7.2) requires the consideration of a "Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainageways, and implementing long term source controls". The Four Step Process is incorporated in this project and the elements are discussed below.

The entire site consists of previously developed area. There is no public roadway being dedicated or constructed as part of this project. The site has met the Post Construction Stormwater Treatment requirements in the previous development.

Step 1: Employ Runoff Reduction Practices: Runoff Reduction Practices are employed in this project. Impervious surfaces have been reduced as much as practically possible. There is only minimal concrete or other hard surfaces proposed. Minimized Directly Connected Impervious Areas (MDCIA) is employed on the project because runoff passes through an open space meadow / forest area before leaving the site.

Step 2: Stabilize Drainageways: There are no drainage paths on the site that are required to be stabilized. There is no visual erosion occurring in the area being developed.

Step 3: Provide Water Quality Capture Volume (WQCV): The development will disturb 0.37 acres. The proposed disturbance is less than one acre. No water quality treatment with WQCV is required and no stormwater control measures are required for this Lot as the disturbance area is less than one acre.

Step 4: Consider Need for Industrial and Commercial CMs: The recycling facility is not anticipated to contain storage of potentially harmful substances or use of potentially harmful substances. No site specific or other source control CMs are required.

5 Drainage and Bridge Fees

The Holy Rosary Chapel – 4435 Holliday Terrace contains 2.64 acres and is located within the Manitou Reservoir Drainage Basin, El Paso Basin Number FOFO7400, an unstudied Basin. No Drainage or Bridge Fees are listed.

6 Conclusion

This Final Drainage Letter presents existing and proposed drainage conditions for the proposed Holy Rosary Chapel – 4435 Holliday Terrace project. The development presents a drainage concept that includes recommendations for proposed site improvements that will direct, control, and treat storm drainage runoff. The proposed development of said project and this Final Drainage Report is in general conformance with all previously filed drainage reports which include this area. Site runoff and storm drain appurtenances will not adversely affect the downstream and surrounding developments.

References

City of Colorado Springs/El Paso County Drainage Criteria Manual. City of Colorado Springs, Department of Public Works, Engineering Division; HDR Infrastructure, Inc.; El Paso County, Department of Public Works, Engineering Division (Colorado Springs: City of Colorado Springs, Revised November 1991).

NCSS Web Soil Survey. United States Department of Agriculture, Natural Resources Conservation Service ("http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx", accessed May, 2017).

Drainage Criteria Manual Volume 2, Stormwater Quality Policies, Procedures and Best Management Practices (BMPs). City of Colorado Spring Engineering Division (Colorado Springs: , May 2014).

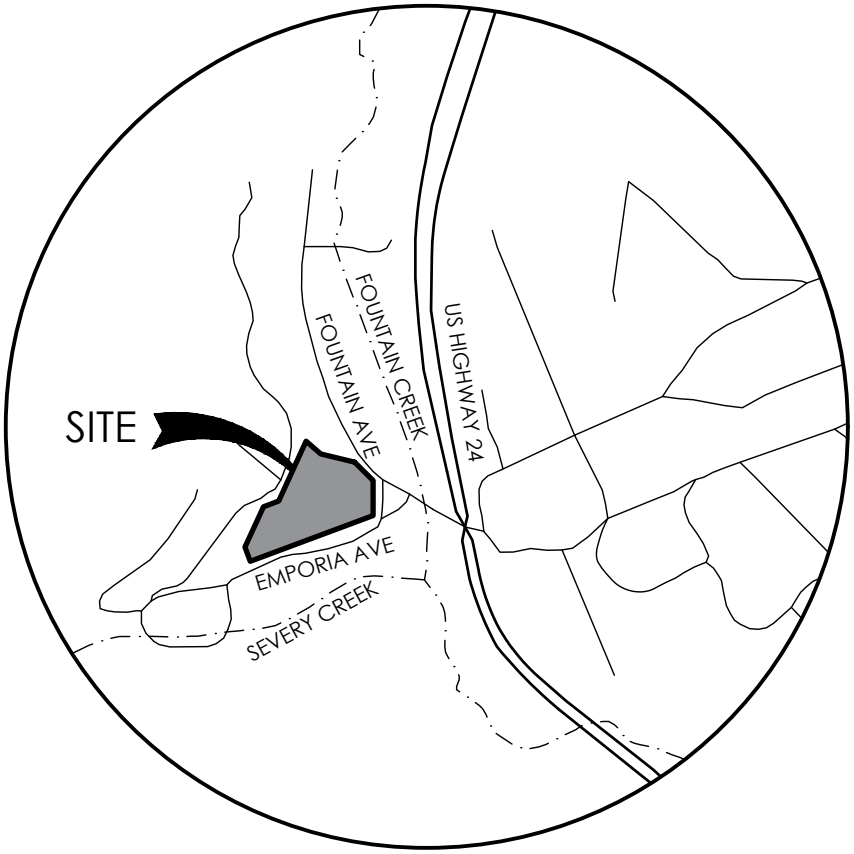
City of Colorado Springs Drainage Criterial Manual, Volume 1. City of Colorado Springs Engineering Division Staff, Matrix Desgin Group/Wright Water Engineers (Colorado Springs: , May 2014).

City of Colorado Springs Drainage Criteria Manual Volume 1. City of Colorado Springs Engineering Division with Matrix Design Group and Wright Water Engineers (Colorado Springs, Colorado: , May 2014).

Appendices

1 General Maps and Supporting Data

Vicinity Map
Portions of Flood Insurance Rate Map
NRCS Soil Map and Tables
SCS Soil Type Descriptions
Hydrologic Soil Group Map and Tables



VICINITY MAP

NOT TO SCALE

National Flood Hazard Layer FIRMette

FEMA

104°58'41"W 38°54'N

104°58'4"W 38°53'32"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/19/2026 at 9:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Pike National Forest, Eastern Part, Colorado, Parts of Douglas, El Paso, Jefferson, and Teller Counties

August 19, 2026

Preface

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

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

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

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

How Soil Surveys Are Made

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

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

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

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

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

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

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

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

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

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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,110 if printed on A landscape (11" x 8.5") 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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Pike National Forest, Eastern Part, Colorado, Parts of Douglas, El Paso, Jefferson, and Teller Counties
Survey Area Data: Version 12, Aug 29, 2025

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

Date(s) aerial images were photographed: May 27, 2024—Jul 28, 2024

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Aquolls, 1 to 10 percent slopes	0.1	3.1%
48	Tecolote very gravelly sandy loam, 15 to 40 percent slopes, very stony	2.6	96.9%
Totals for Area of Interest		**2.7**	**100.0%**

Map Unit Descriptions

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

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

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

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

onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Pike National Forest, Eastern Part, Colorado, Parts of Douglas, El Paso, Jefferson, and Teller Counties

2—Aquolls, 1 to 10 percent slopes

Map Unit Setting

National map unit symbol: jpj0
Landscape: Mountains
Elevation: 6,000 to 13,280 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 28 to 48 degrees F
Frost-free period: 20 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Aquolls and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aquolls

Setting

Landscape: Mountains
Landform: Flood plains, Drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite and/or gneiss and/or schist and/or sandstone

Typical profile

A1 - 0 to 12 inches: fine sandy loam
A2 - 12 to 25 inches: loamy fine sand
2Agb - 25 to 50 inches: very fine sandy loam
3C - 50 to 60 inches: coarse sand

Properties and qualities

Slope: 1 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 6.02 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Garber

Percent of map unit: 10 percent
Landscape: Mountains
Landform: Drainageways, Lower mountain slopes
Landform position (three-dimensional): Mountainbase
Down-slope shape: Concave, convex, linear
Across-slope shape: Concave, convex, linear
Hydric soil rating: No

48—Tecolote very gravelly sandy loam, 15 to 40 percent slopes, very stony

Map Unit Setting

National map unit symbol: jpk0
Landscape: Mountains
Elevation: 7,500 to 9,000 feet
Mean annual precipitation: 20 to 25 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 65 to 75 days
Farmland classification: Not prime farmland

Map Unit Composition

Tecolote, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tecolote, Very Stony

Setting

Landscape: Mountains
Landform: Mountain slopes
Landform position (three-dimensional): Mountainbase, lower third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Cobbly or stony colluvium over weathered granite

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: very gravelly sandy loam
E - 3 to 21 inches: very cobbly sandy loam
B/E - 21 to 31 inches: very cobbly sandy clay loam
Bt - 31 to 46 inches: very cobbly sandy clay loam
Cr - 46 to 61 inches: bedrock

Properties and qualities

Slope: 15 to 40 percent
Surface area covered with cobbles, stones or boulders: 3.0 percent

Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F048AY924CO - Douglas Fir/Gambel Oak
Other vegetative classification: Douglas-fir/Gambel oak (PSME/QUGA) (C1214)
Hydric soil rating: No

Minor Components

Tecolote, mollic

Percent of map unit: 5 percent
Landscape: Mountains
Landform: Mountain slopes
Landform position (three-dimensional): Mountainbase, lower third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Other vegetative classification: Douglas-fir/Gambel oak (PSME/QUGA) (C1214)
Hydric soil rating: No

Tecolote, very deep

Percent of map unit: 5 percent
Landscape: Mountains
Landform: Mountain slopes
Landform position (three-dimensional): Mountainbase, lower third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Other vegetative classification: Douglas-fir/Gambel oak (PSME/QUGA) (C1214)
Hydric soil rating: No

Tecolote, non-skeletal

Percent of map unit: 5 percent
Landscape: Mountains
Landform: Mountain slopes
Landform position (three-dimensional): Mountainbase, lower third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Other vegetative classification: Douglas-fir/Gambel oak (PSME/QUGA) (C1214)
Hydric soil rating: No

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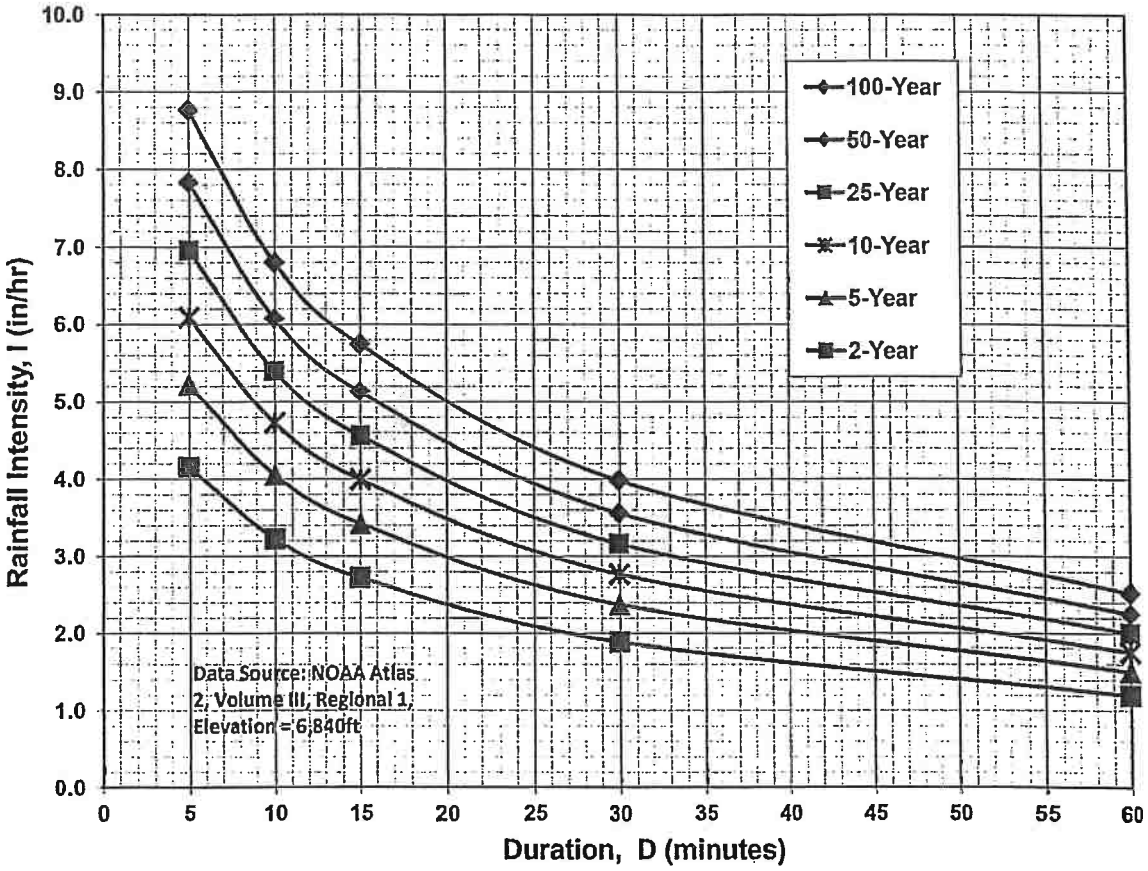
2 Hydrologic Calculations

Runoff Coefficients and Percent Imperviousness Table 6-6
Colorado Springs Rainfall Intensity Duration Frequency Table 6-5
Hydrologic Calculations Summary Form SF-1 for Existing & Developed Conditions
Hydrologic Calculations Summary 5-yr Form SF-2 for Existing & Developed Conditions
Hydrologic Calculations Summary 100-yr Form SF-2 for Existing & Developed Conditions

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

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

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

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

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

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

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

$I_5 = -1.50 \ln(D) + 7.583$

$I_2 = -1.19 \ln(D) + 6.035$

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

Job No.: **61230** Date: **8/28/2026 8:43**

Project: **Holy Rosary Chapel** Calcs By: **TJW**

Checked By:

Time of Concentration (Modified from Standard Form SF-1)

Sub-Basin	Sub-Basin Data				Overland			Shallow Channel				Channelized				t_c Check		t_c
	Area (Acres)	C_5	C_{100}/CN	% Imp.	L_0 (ft)	S_0 (%)	t_i (min)	L_{0t} (ft)	S_{0t} (ft/ft)	v_{0sc} (ft/s)	t_t (min)	L_{0c} (ft)	S_{0c} (ft/ft)	v_{0c} (ft/s)	t_c (min)	L (min)	$t_{c,alt}$ (min)	(min)
EX-A	0.52	0.39	0.58	39%	76	26%	3.8	196	0.102	6.4	0.5	0	0.000	0.0	0.0	272	11.5	5.0
EX-B1	0.28	0.31	0.50	35%	54	41%	3.1	100	0.010	2.0	0.8	0	0.000	0.0	0.0	154	10.9	5.0
EX-B2	0.76	0.12	0.38	7%	32	53%	2.7	48	0.188	2.2	0.4	0	0.000	0.0	0.0	80	10.4	5.0
EX-C1	0.35	0.33	0.53	39%	55	40%	3.0	124	0.016	2.5	0.8	0	0.000	0.0	0.0	179	11.0	5.0
EX-C2	1.15	0.14	0.39	8%	100	30%	5.6	120	0.150	1.9	1.0	0	0.000	0.0	0.0	220	11.2	6.7
PP-A	0.52	0.42	0.60	42%	76	26%	3.6	196	0.102	6.4	0.5	0	0.000	0.0	0.0	272	11.5	5.0
PP-B1	0.28	0.41	0.59	40%	54	41%	2.7	100	0.010	2.0	0.8	0	0.000	0.0	0.0	154	10.9	5.0
PP-B2	0.76	0.12	0.38	7%	32	53%	2.7	48	0.188	2.2	0.4	0	0.000	0.0	0.0	80	10.4	5.0
PP-C1	0.35	0.48	0.65	49%	55	40%	2.4	124	0.016	2.5	0.8	0	0.000	0.0	0.0	179	11.0	5.0
PP-C2	1.15	0.14	0.39	8%	100	30%	5.6	120	0.150	1.9	1.0	0	0.000	0.0	0.0	220	11.2	6.7

Job No.: **61230**
Project: **Holy Rosary Chapel**
Design Storm: **5-Year Storm** *(20% Probability)*
Jurisdiction: **DCM**

Date: **8/28/2026 8:43**
Calcs By: **TJW**
Checked By:

Sub-Basin and Combined Flows (Modified from Standard Form SF-2)

				Direct Runoff				Combined Runoff				Streetflow			Pipe Flow					Travel Time		
DP	Sub-Basin	Area (Acres)	C5	t_c (min)	CA (Acres)	I5 (in/hr)	Q5 (cfs)	t_c (min)	CA (Acres)	I5 (in/hr)	Q5 (cfs)	Slope (%)	Length (ft)	Q (cfs)	Q (cfs)	Slope (%)	Mnngs n	Length (ft)	D_{Pipe} (in)	Length (ft)	v_{0sc} (ft/s)	t_t (min)
	EX-A	0.52	0.39	5.0	0.20	5.17	1.05															
	EX-B1	0.28	0.31	5.0	0.09	5.17	0.44															
	EX-B2	0.76	0.12	5.0	0.09	5.17	0.49															
EX DP-B		1.04	0.17					6.2	0.18	4.85	0.9											
	EX-C1	0.35	0.33	5.0	0.12	5.17	0.60															
	EX-C2	1.15	0.14	6.7	0.16	4.73	0.76															
EX DP-C		1.50	0.18					8.3	0.28	4.41	1.2											
	PP-A	0.52	0.42	5.0	0.22	5.17	1.13															
	PP-B1	0.28	0.41	5.0	0.11	5.17	0.59															
	PP-B2	0.76	0.12	5.0	0.09	5.17	0.49															
PP DP-B		1.04	0.20					6.2	0.21	4.85	1.0											
	PP-C1	0.35	0.48	5.0	0.17	5.17	0.87															
	PP-C2	1.15	0.14	6.7	0.16	4.73	0.76															
PP DP-C		1.50	0.22					8.3	0.33	4.41	1.5											

DCM: I = C1 * ln (tc) + C2
C1: 1.5
C1: 7.583

Job No.: **61230**
Project: **Holy Rosary Chapel**
Design Storm: **100-Year Storm** *(1% Probability)*
Jurisdiction: **DCM**

Date: **8/28/2026 8:43**
Calcs By: **TJW**
Checked By:

Sub-Basin and Combined Flows (Modified from Standard Form SF-2)

				Direct Runoff				Combined Runoff				Streetflow			Pipe Flow					Travel Time		
DP	Sub-Basin	Area (Acres)	C100	t_c (min)	CA (Acres)	I100 (in/hr)	Q100 (cfs)	t_c (min)	CA (Acres)	I100 (in/hr)	Q100 (cfs)	Slope (%)	Length (ft)	Q (cfs)	Q (cfs)	Slope (%)	Mnngs n	Length (ft)	D_{Pipe} (in)	Length (ft)	v_{0sc} (ft/s)	t_t (min)
	EX-A	0.52	0.58	5.0	0.30	8.68	2.62															
	EX-B1	0.28	0.50	5.0	0.14	8.68	1.23															
	EX-B2	0.76	0.38	5.0	0.29	8.68	2.51															
EX DP-B		1.04	0.41					6.2	0.43	8.15	3.5											
	EX-C1	0.35	0.53	5.0	0.18	8.68	1.59															
	EX-C2	1.15	0.39	6.7	0.45	7.95	3.59															
EX DP-C		1.50	0.42					8.3	0.64	7.40	4.7											
	PP-A	0.52	0.60	5.0	0.31	8.68	2.72															
	PP-B1	0.28	0.59	5.0	0.17	8.68	1.45															
	PP-B2	0.76	0.38	5.0	0.29	8.68	2.51															
PP DP-B		1.04	0.44					6.2	0.46	8.15	3.7											
	PP-C1	0.35	0.65	5.0	0.23	8.68	1.97															
	PP-C2	1.15	0.39	6.7	0.45	7.95	3.59															
PP DP-C		1.50	0.45					8.3	0.68	7.40	5.0											

DCM: $I = C1 * \ln(tc) + C2$
C1: 2.52
C1: 12.735

Sub-Basin Ex-A Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	957	0.02	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	7,070	0.16	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	1,279	0.03	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	13,408	0.31	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**22,714**	**0.52**	**0.35**	**0.39**	**0.44**	**0.51**	**0.54**	**0.58**	**39.4%**
	22714								

Basin Travel Time

Shallow Channel Ground Cover: Paved areas/shallow paved swales

$L_{max,Overland}$: 100 ft C_v: 20

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	272	40	-	-	-	-	
Initial Time	76	20	0.263	-	3.8	11.5	DCM Eq. 6-8
Shallow Channel	196	20	0.102	6.4	0.5	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.8	**1.1**	1.4	1.8	2.2	**2.6**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.8	**1.1**	1.4	1.8	2.2	**2.6**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin Ex-B1 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs			0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved			0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	5,420	0.12	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	6,838	0.16	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**12,258**	**0.28**	**0.26**	**0.31**	**0.36**	**0.43**	**0.47**	**0.50**	**35.4%**
	12258								

Basin Travel Time

Shallow Channel Ground Cover: Paved areas/shallow paved swales

$L_{max,Overland}$: 100 ft C_v: 20

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	154	23	-	-	-	-	
Initial Time	54	22	0.407	-	3.1	10.9	DCM Eq. 6-8
Shallow Channel	100	1	0.010	2.0	0.8	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.3	**0.4**	0.6	0.8	1.0	**1.2**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.3	**0.4**	0.6	0.8	1.0	**1.2**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin Ex-B2 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs			0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved			0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	2,859	0.07	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	30,218	0.69	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**33,077**	**0.76**	**0.07**	**0.12**	**0.19**	**0.29**	**0.33**	**0.38**	**6.9%**
	33077								

Basin Travel Time

Shallow Channel Ground Cover: Forest

$L_{max,Overland}$: 100 ft C_v: 5

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	80	26	-	-	-	-	
Initial Time	32	17	0.531	-	2.7	10.4	DCM Eq. 6-8
Shallow Channel	48	9	0.188	2.2	0.4	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.2	**0.5**	0.9	1.5	2.0	**2.5**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.2	**0.5**	0.9	1.5	2.0	**2.5**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin Ex-C1 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs			0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	500	0.01	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	6,741	0.15	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	7,975	0.18	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**15,216**	**0.35**	**0.29**	**0.33**	**0.39**	**0.45**	**0.49**	**0.53**	**38.7%**
	15216								

Basin Travel Time

Shallow Channel Ground Cover: Paved areas/shallow paved swales

$L_{max,Overland}$: 100 ft C_v: 20

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	179	24	-	-	-	-	
Initial Time	55	22	0.400	-	3.0	11.0	DCM Eq. 6-8
Shallow Channel	124	2	0.016	2.5	0.8	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.4	**0.6**	0.8	1.1	1.3	**1.6**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.4	**0.6**	0.8	1.1	1.3	**1.6**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin Ex-C2 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	2,878	0.07	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	1,340	0.03	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel			0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	45,874	1.05	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**50,092**	**1.15**	**0.08**	**0.14**	**0.21**	**0.30**	**0.35**	**0.39**	**7.8%**
	50092								

Basin Travel Time

Shallow Channel Ground Cover: Forest

$L_{max,Overland}$: 100 ft C_v: 5

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	220	48	-	-	-	-	
Initial Time	100	30	0.300	-	5.6	11.2	DCM Eq. 6-8
Shallow Channel	120	18	0.150	1.9	1.0	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**6.7 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.78	4.73	5.52	6.31	7.10	7.95
Runoff (cfs)	0.4	**0.8**	1.3	2.2	2.8	**3.6**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.4	**0.8**	1.3	2.2	2.8	**3.6**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin PP-A Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	957	0.02	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	8,614	0.20	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	-	0.00	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	13,143	0.30	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**22,714**	**0.52**	**0.38**	**0.42**	**0.47**	**0.53**	**0.57**	**0.60**	**41.7%**
	22714								

Basin Travel Time

Shallow Channel Ground Cover: Paved areas/shallow paved swales

$L_{max,Overland}$: 100 ft C_v: 20

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	272	40	-	-	-	-	
Initial Time	76	20	0.263	-	3.6	11.5	DCM Eq. 6-8
Shallow Channel	196	20	0.102	6.4	0.5	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.8	**1.1**	1.5	1.9	2.3	**2.7**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.8	**1.1**	1.5	1.9	2.3	**2.7**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin PP-B1 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs			0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	4,903	0.11	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel			0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	7,355	0.17	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**12,258**	**0.28**	**0.37**	**0.41**	**0.46**	**0.53**	**0.56**	**0.59**	**40.0%**

12258

Basin Travel Time

Shallow Channel Ground Cover: Paved areas/shallow paved swales

$L_{max,Overland}$: 100 ft C_v: 20

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	154	23	-	-	-	-	
Initial Time	54	22	0.407	-	2.7	10.9	DCM Eq. 6-8
Shallow Channel	100	1	0.010	2.0	0.8	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.4	**0.6**	0.8	1.0	1.2	**1.5**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.4	**0.6**	0.8	1.0	1.2	**1.5**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin PP-B2 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs			0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved			0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	2,859	0.07	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	30,218	0.69	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**33,077**	**0.76**	**0.07**	**0.12**	**0.19**	**0.29**	**0.33**	**0.38**	**6.9%**

33077

Basin Travel Time

Shallow Channel Ground Cover: Forest

$L_{max,Overland}$: 100 ft C_v: 5

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	80	26	-	-	-	-	
Initial Time	32	17	0.531	-	2.7	10.4	DCM Eq. 6-8
Shallow Channel	48	9	0.188	2.2	0.4	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.2	**0.5**	0.9	1.5	2.0	**2.5**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.2	**0.5**	0.9	1.5	2.0	**2.5**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin PP-C1 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs			0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	7,485	0.17	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel			0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	7,731	0.18	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**15,216**	**0.35**	**0.45**	**0.48**	**0.53**	**0.59**	**0.62**	**0.65**	**49.2%**
	15216								

Basin Travel Time

Shallow Channel Ground Cover: Paved areas/shallow paved swales

$L_{max,Overland}$: 100 ft C_v: 20

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	179	24	-	-	-	-	
Initial Time	55	22	0.400	-	2.4	11.0	DCM Eq. 6-8
Shallow Channel	124	2	0.016	2.5	0.8	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**5.0 min.**		

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	4.12	5.17	6.03	6.89	7.75	8.68
Runoff (cfs)	0.6	**0.9**	1.1	1.4	1.7	**2.0**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.6	**0.9**	1.1	1.4	1.7	**2.0**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Sub-Basin PP-C2 Runoff Calculations

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	2,878	0.07	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	1,340	0.03	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel			0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	45,874	1.05	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**50,092**	**1.15**	**0.08**	**0.14**	**0.21**	**0.30**	**0.35**	**0.39**	**7.8%**
	50092								

Basin Travel Time

Shallow Channel Ground Cover: Forest

$L_{max,Overland}$: 100 ft C_v: 5

	L (ft)	ΔZ_0 (ft)	S_0 (ft/ft)	v (ft/s)	t (min)	t_{Alt} (min)	
Total	220	48	-	-	-	-	
Initial Time	100	30	0.300	-	5.6	11.2	DCM Eq. 6-8
Shallow Channel	120	18	0.150	1.9	1.0	-	DCM Eq. 6-9
Channelized			0.000	0.0	0.0	-	V-Ditch
				t_c	**6.7**	**min.**	

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.78	4.73	5.52	6.31	7.10	7.95
Runoff (cfs)	0.4	**0.8**	1.3	2.2	2.8	**3.6**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	0.4	**0.8**	1.3	2.2	2.8	**3.6**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Combined Sub-Basin Runoff Calculations (EX DP-B)

Includes Basins EX-B1 EX-B2

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	-	0.00	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	-	0.00	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	8,279	0.19	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	37,056	0.85	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**45,335**	**1.04**	**0.12**	**0.17**	**0.24**	**0.32**	**0.37**	**0.41**	**14.6%**

Basin Travel Time

	Sub-basin or Channel Type	Material Type	L (ft)	Elev. ΔZ_0 (ft)	Q_i (cfs)	Base or Dia (ft)	Sides z:1 (ft/ft)	v (ft/s)	t (min)
Furthest Reach	EX-B1	-	154	23	-	-	-	-	5.0
Channelized-1	Trap Ditch	3	80	26	1	10	10	1.1	1.2
Channelized-2									
Channelized-3									
Total			234	49					

3 = Natural, Winding, significant vegetation

t_c (min) **6.2**

Contributing Offsite Flows (Added to Runoff and Allowed Release, below.)

Contributing Basins/Areas

Q_{Minor} (cfs) - 5-year Storm

Q_{Major} (cfs) - 100-year Storm

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.87	4.85	5.66	6.47	7.28	8.15
Site Runoff (cfs)	0.48	**0.87**	1.40	2.19	2.80	**3.51**
OffSite Runoff (cfs)	-	**0.00**	-	-	-	**0.00**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	-	**0.9**	-	-	-	**3.5**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Runoff from Offsite basins have been assumed constant, despite additional times of concentration.

Combined Sub-Basin Runoff Calculations (PP DP-B)

Includes Basins PP-B1 PP-B2

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	-	0.00	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	4,903	0.11	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	2,859	0.07	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	37,573	0.86	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**45,335**	**1.04**	**0.15**	**0.20**	**0.26**	**0.35**	**0.39**	**0.44**	**15.9%**

Basin Travel Time

	Sub-basin or Channel Type	Material Type	L (ft)	Elev. ΔZ_0 (ft)	Q_i (cfs)	Base or Dia (ft)	Sides z:1 (ft/ft)	v (ft/s)	t (min)
Furthest Reach	EX-B1	-	154	23	-	-	-	-	5.0
Channelized-1	Trap Ditch	3	80	26	1	10	10	1.1	1.2
Channelized-2									
Channelized-3									
Total			234	49					

3 = Natural, Winding, significant vegetation

t_c (min) **6.2**

Contributing Offsite Flows (Added to Runoff and Allowed Release, below.)

Contributing Basins/Areas

Q_{Minor} (cfs) - 5-year Storm

Q_{Major} (cfs) - 100-year Storm

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.87	4.85	5.66	6.47	7.28	8.15
Site Runoff (cfs)	0.60	**1.01**	1.55	2.36	2.99	**3.71**
OffSite Runoff (cfs)	-	**0.00**	-	-	-	**0.00**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	-	**1.0**	-	-	-	**3.7**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Runoff from Offsite basins have been assumed constant, despite additional times of concentration.

Combined Sub-Basin Runoff Calculations (EX DP-C)

Includes Basins EX-C1 EX-C2

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	2,878	0.07	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	1,840	0.04	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	6,741	0.15	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	53,849	1.24	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**65,308**	**1.50**	**0.13**	**0.18**	**0.25**	**0.34**	**0.38**	**0.42**	**15.0%**

Basin Travel Time

	Sub-basin or Channel Type	Material Type	L (ft)	Elev. ΔZ_0 (ft)	Q_i (cfs)	Base or Dia (ft)	Sides z:1 (ft/ft)	v (ft/s)	t (min)
Furthest Reach	EX-C1	-	179	24	-	-	-	-	5.0
Channelized-1	Trap Ditch	3	220	48	2	10	10	1.1	3.3
Channelized-2									
Channelized-3									
Total			399	72					

3 = Natural, Winding, significant vegetation

t_c (min) **8.3**

Contributing Offsite Flows (Added to Runoff and Allowed Release, below.)

Contributing Basins/Areas

Q_{Minor} (cfs) - 5-year Storm

Q_{Major} (cfs) - 100-year Storm

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.52	4.41	5.15	5.88	6.62	7.40
Site Runoff (cfs)	0.69	**1.22**	1.91	2.95	3.76	**4.70**
OffSite Runoff (cfs)	-	**0.00**	-	-	-	**0.00**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	-	**1.2**	-	-	-	**4.7**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Runoff from Offsite basins have been assumed constant, despite additional times of concentration.

Combined Sub-Basin Runoff Calculations (PP DP-C)

Includes Basins PP-C1 PP-C2

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	2,878	0.07	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	8,825	0.20	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	-	0.00	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	53,605	1.23	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**65,308**	**1.50**	**0.17**	**0.22**	**0.28**	**0.37**	**0.41**	**0.45**	**17.5%**

Basin Travel Time

	Sub-basin or Channel Type	Material Type	L (ft)	Elev. ΔZ_0 (ft)	Q_i (cfs)	Base or Dia (ft)	Sides z:1 (ft/ft)	v (ft/s)	t (min)
Furthest Reach	PP-C1	-	179	24	-	-	-	-	5.0
Channelized-1	Trap Ditch	3	220	48	2	10	10	1.1	3.3
Channelized-2									
Channelized-3									
Total			399	72					

3 = Natural, Winding, significant vegetation

t_c (min) **8.3**

Contributing Offsite Flows (Added to Runoff and Allowed Release, below.)

Contributing Basins/Areas

Q_{Minor} (cfs) - 5-year Storm

Q_{Major} (cfs) - 100-year Storm

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.52	4.41	5.15	5.88	6.62	7.40
Site Runoff (cfs)	0.89	**1.45**	2.16	3.23	4.07	**5.03**
OffSite Runoff (cfs)	-	**0.00**	-	-	-	**0.00**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	-	**1.5**	-	-	-	**5.0**

DCM: I = C1 * ln (tc) + C2

C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Runoff from Offsite basins have been assumed constant, despite additional times of concentration.

Combined Sub-Basin Runoff Calculations (Existing)

Includes Basins EX-A EX-B1 EX-B2 EX-C1 EX-C2

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	3,835	0.09	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	8,910	0.20	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	16,299	0.37	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	104,313	2.39	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**133,357**	**3.06**	**0.17**	**0.22**	**0.28**	**0.36**	**0.40**	**0.45**	**19.0%**

Basin Travel Time

	Sub-basin or Channel Type	Material Type	L (ft)	Elev. ΔZ_0 (ft)	Q_i (cfs)	Base or Dia (ft)	Sides z:1 (ft/ft)	v (ft/s)	t (min)
Furthest Reach	PP-C1	-	179	24	-	-	-	-	5.0
Channelized-1	Trap Ditch	3	220	48	2	10	10	1.1	3.3
Channelized-2									
Channelized-3									
Total			399	72					

3 = Natural, Winding, significant vegetation

t_c (min) **8.3**

Contributing Offsite Flows (Added to Runoff and Allowed Release, below.)

Contributing Basins/Areas

Q_{Minor} (cfs) - 5-year Storm

Q_{Major} (cfs) - 100-year Storm

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.52	4.41	5.15	5.88	6.62	7.40
Site Runoff (cfs)	1.78	**2.91**	4.37	6.51	8.19	**10.13**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	-	**2.9**	-	-	-	**10.1**
DCM: I = C1 * ln (tc) + C2						
C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Runoff from Offsite basins have been assumed constant, despite additional times of concentration.

Combined Sub-Basin Runoff Calculations (Developed)

Includes Basins PP-A PP-B1 PP-B2 PP-C1 PP-C2

Job No.:	**61230**	Date:	**8/28/2026 8:43**
Project:	**Holy Rosary Chapel**	Calcs by:	**TJW**
		Checked by:	
Jurisdiction	**DCM**	Soil Type	**B**
Runoff Coefficient	**Surface Type**	Urbanization	**Urban**

Basin Land Use Characteristics

	Area		Runoff Coefficient						%
Surface	**(SF)**	**(Acres)**	**C2**	**C5**	**C10**	**C25**	**C50**	**C100**	**Imperv.**
Roofs	3,835	0.09	0.71	0.73	0.75	0.78	0.8	0.81	90%
Paved	22,342	0.51	0.89	0.9	0.92	0.94	0.95	0.96	100%
Gravel	2,859	0.07	0.57	0.59	0.63	0.66	0.68	0.7	80%
Pasture/Meadow	104,321	2.39	0.02	0.08	0.15	0.25	0.3	0.35	0%
Combined	**133,357**	**3.06**	**0.20**	**0.25**	**0.31**	**0.39**	**0.43**	**0.47**	**21.1%**

Basin Travel Time

	Sub-basin or Channel Type	Material Type	L (ft)	Elev. ΔZ_0 (ft)	Q_i (cfs)	Base or Dia (ft)	Sides z:1 (ft/ft)	v (ft/s)	t (min)
Furthest Reach	PP-C1	-	179	24	-	-	-	-	5.0
Channelized-1	Trap Ditch	3	220	48	2	10	10	1.1	3.3
Channelized-2									
Channelized-3									
Total			399	72					

3 = Natural, Winding, significant vegetation

t_c (min) **8.3**

Contributing Offsite Flows (Added to Runoff and Allowed Release, below.)

Contributing Basins/Areas

Q_{Minor} (cfs) - 5-year Storm

Q_{Major} (cfs) - 100-year Storm

Rainfall Intensity & Runoff

	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
Intensity (in/hr)	3.52	4.41	5.15	5.88	6.62	7.40
Site Runoff (cfs)	2.13	**3.33**	4.83	7.01	8.74	**10.72**
Release Rates (cfs/ac)	-	-	-	-	-	-
Allowed Release (cfs)	-	**3.3**	-	-	-	**10.7**
DCM: I = C1 * ln (tc) + C2						
C1	1.19	1.5	1.75	2	2.25	2.52
C2	6.035	7.583	8.847	10.111	11.375	12.735

Notes

Runoff from Offsite basins have been assumed constant, despite additional times of concentration.

3 Letter Maps

Existing Conditions Drainage Map
Proposed Conditions Drainage Map

LEGEND

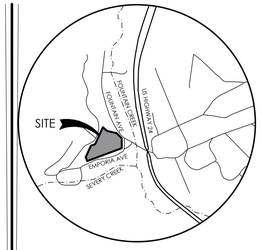
- PROPERTY LINE
- EASEMENT LINE
- LOT LINE

EXISTING

- INDEX CONTOUR
- INTERMEDIATE CONTOUR

PROPOSED

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- CURB INLET
- BASIN BOUNDARY
- Q_5 = 6.4 cfs, Q_{100} = 21.3 cfs — GENERAL FLOW DIRECTION
- 1.50% — SLOPE DIRECTION AND GRADE
- A1 (1.0 AC, 50% IMP) — BASIN LABEL, AREA IN ACRES, PERCENT IMPERVIOUS
- 1 — DESIGN POINT
- TIME OF CONCENTRATION LINE
- EXISTING CONDITIONS FLOW ARROW



VICINITY MAP

NOT TO SCALE

BENCHMARK

N

5 0 10 30 60

1" = 30' 1:360

DRAINAGE SUMMARY TABLE

DESIGN POINT	INCLUDED BASIN(S)	AREA (AC)	Tc (MIN.)	RUNOFF Q5 (CFS)	RUNOFF Q100 (CFS)
	EX-A	0.52	5.0	1.1	2.6
	EX-B1	0.28	5.0	0.4	1.2
	EX-B2	0.76	5.0	0.5	2.5
DP-B	EX-B1 & EX-B2	1.04	6.2	0.9	3.5
	EX-C1	0.35	5.0	0.6	1.6
	EX-C2	1.15	6.7	0.8	3.6
DP-C	EX-C1 & EX-C2	1.50	8.3	1.2	4.7

MVE, INC
ENGINEERS, SURVEYORS
1903 lelaray street, suite 200 colorado springs co 80909 719.635.5736

REVISIONS

DESIGNED BY
DRAWN BY
CHECKED BY
AS-BUILTS BY
CHECKED BY

HOLY ROSARY CHAPEL
4435 HOLLIDAY TERRACE

DRAINAGE MAP

EXISTING CONDITIONS

MVE PROJECT 61230
MVE DRAWING EX-DRAINMAP

AUGUST 28, 2026
SHEET 1 **OF** 1

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- LOT LINE

EXISTING

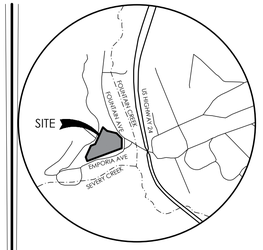
- 5985 INDEX CONTOUR
- 84 INTERMEDIATE CONTOUR

PROPOSED

- 5985 INDEX CONTOUR
- 84 INTERMEDIATE CONTOUR
- CURB INLET
- BASIN BOUNDARY
- Q_5 = 6.4 cfs, Q_{100} = 21.3 cfs — GENERAL FLOW DIRECTION
- 1.50% — SLOPE DIRECTION AND GRADE
- A1 / 1.0 AC / 50% IMP — BASIN LABEL: AREA IN ACRES, PERCENT IMPERVIOUS
- 1 — DESIGN POINT
- TIME OF CONCENTRATION LINE
- EXISTING CONDITIONS FLOW ARROW

DRAINAGE SUMMARY TABLE

DESIGN POINT	INCLUDED BASIN(S)	AREA (AC)	Tc (MIN.)	RUNOFF Q5 (CFS)	RUNOFF Q100 (CFS)
	PP-A	0.52	5.0	1.1	2.7
	PP-B1	0.28	5.0	0.6	1.5
	PP-B2	0.76	5.0	0.5	2.5
DP-B	PP-B1 & PP-B2	1.04	6.2	1.0	3.7
	PP-C1	0.35	5.0	0.9	2.0
	PP-C2	1.15	6.7	0.8	3.6
DP-C	PP-C1 & PP-C2	1.50	8.3	1.5	5.0



VICINITY MAP

NOT TO SCALE

BENCHMARK

N

5 0 10 30 60

1" = 30' 1:360

MVE, INC
ENGINEERS, SURVEYORS
1903 lelaray street, suite 200 colorado springs co 80909 719.635.5736

REVISIONS

DESIGNED BY
DRAWN BY
CHECKED BY
AS-BUILTS BY
CHECKED BY

HOLY ROSARY CHAPEL
4435 HOLLIDAY TERRACE

DRAINAGE MAP

DEVELOPED CONDITIONS

MVE PROJECT 61230
MVE DRAWING PP-DRAINMAP

AUGUST 28, 2026
SHEET 1 **OF** 1