STAGECOACH MOUNTAIN RANCH

CONCEPTUAL DRAINAGE STUDY

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Prepared: December 2024

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CERTIFICATION STATEMENT

"I hereby affirm that this Conceptual Drainage Study for the preliminary design of Stagecoach Mountain Ranch was prepared by me (or under my direct supervision) for the owners thereof and is, to the best of my knowledge, in accordance with the provisions of the Routt County Drainage Criteria which references the City of Steamboat Springs Drainage Criteria and approved variances. I understand that Routt County does not and will not assume liability for drainage facilities designed by others.

_____

Brice Hammersland, PE

State of Colorado No. 56012

SCOPE AND PURPOSE

The purpose of this Conceptual Drainage Study (the "Report") is to support the Preliminary Plan Application by outlining the preliminary drainage design for the proposed Stagecoach Mountain Ranch ("SMR") Project (the "Project"). This Report presents an overview for the proposed drainage infrastructure design to be constructed as part of the Project. The drainage design has been informed by the current drainage criteria set forth by Routt County, the City of Steamboat Springs Engineering Standards Manual and from the Mile High Flood District Urban Storm Drainage Criteria Manual.

I. INTRODUCTION

A. Location

The SMR Project will be separated into several phases. The general Project location is southwest of Stagecoach State Park and Reservoir, approximately 16 miles south of Steamboat Springs (the "Site") within unincorporated Routt County, Colorado (see **Appendix A** for a Vicinity Map). This Conceptual Drainage Study outlines the preliminary drainage design of all phases of the Project.

Final drainage studies and associated final stormwater infrastructure design will be completed for each individual phase and filing during subsequent final subdivision applications.

B. Description of the Project

SMR consists of a master planned residential community having 613 residential homes to be constructed on a portion of approximately 5,059 acres of privately-owned property in the Stagecoach area. An additional component of the development is the recreational amenities that will be offered to the residents of SMR. The SMR plan also proposes development of public amenities and services for the Stagecoach community such as a public neighborhood commercial center, recreational trails and parks, housing, as well as upgrades to roads and infrastructure.

Implementing this plan is expected to be a major contributor to the fiscal health of South Routt County, replacing lost property tax base and jobs as the area transitions from the coal-based economy that has been the primary economic driver for the past 100 years. The plan respects and incorporates land use directives of the 2017 Stagecoach Community Plan and 2022 Routt County Master Plan and provides an economically viable framework for the Stagecoach community to realize the goals and objectives for this Tier 2 growth area within Routt County.

SMR consists of the existing Stagecoach ski mountain property and Stetson Ranch property. These parcels are currently zoned Commercial (C), Planned Unit Development (PUD), High Density Residential (HDR), and Agricultural / Forestry (AF). Two parcels associated with the mountain property totaling approximately 2.14 acres are zoned PUD, which permits the construction of 10,000 square feet of commercial space, and a gas station. Two other parcels on the mountain property totaling approximately 16.75

acres are zoned Commercial which is approved for the construction of a 13,300 sqft ski lodge with a 178 space parking lot, and the existing maintenance facilities for the existing private ski mountain, respectively. The area zoned HDR represents 14.7 acres of the ski mountain property, which permits residential development at one dwelling unit per 3,000 sq. ft. of land area. The balance of the mountain properties, approximately 4,134 acres, is zoned Agricultural / Forestry, which permits residential development at one dwelling unit per 35 acres. The potential residential development yield, under these existing zoning designations is 640 dwelling units.

The total area of the Stetson Ranch property is approximately 891 acres, which is all zoned AF. The 652 acres located south of County Road 14 is the subject to an existing conservation easement held by the Colorado Cattlemen's Agricultural Land Trust, leaving the 239 acres located north of Couty Road 14 for further development, which represents an additional 7 residential dwelling units.

Property taxes from the project will generate significant revenue for Routt County and other local agencies providing additional funding for these agencies to provide a higher level of services to the community residents. At full build out, the project alone is anticipated to generate $33 million in annual property tax revenue, roughly 1.2 times the County's current property tax revenue of $28 million.

The following describes the proposed land use mix for the project:

Residential Development

A thorough site analysis was conducted to have the attributes of the land inform where development should be located. Routt County values rural character and agricultural land uses and encourages conservation of large acreage through their Land Preservation Subdivision (LPS) regulations. In response, residential development plan for Stagecoach Mountain Ranch voluntarily proposes creating 67 single-family 5 to 7 acre lots in two LPS subdivisions, resulting in 1,383 acres in remainder parcels. The remaining 546 homes will be a mix of single detached homes, duplex, multi-family townhomes and condominiums all discreetly placed on the subject properties to manage the impacts and be compatible with the existing Routt character. All the development located on the Ski Mountain Property will be served by the Morrison Creek Metropolitan Water and Sanitation District (MCMWSD). Approximately 99% of the residential development is anticipated to be located on the mountain property and 1% at Stetson Ranch property.

Of the total developable area of 4,407 acres, excluding the existing 652-acre conservation easement located in Stetson, approximately 3,285 acres or 75% will be considered open space consisting of both active and passive uses.

In 2024, Routt County created a Unified Development Code (UDC). Section 3.21 defines the requirement for essential housing and employee housing. SMR's plan exceeds the requirements by providing, 95 essential dwelling units where 90 units are required and housing for 90 employees where only providing housing of 85 employees is required. This results in a total of 137 workforce housing units being provided, and when combined with the 613 housing units proposed, a total of 750 dwelling units will be constructed.

Residential Amenities

SMR will offer a variety of recreational activities for its residents that will be owned and operated by the homeowner's association. These activities are expected to include Nordic and alpine skiing, trails for hiking, biking, and horseback riding, racquet sports, a fitness center with swimming pool, and other recreational amenities, as well as accessory support facilities including a ski lodge and maintenance support facilities. SMR will also continue to maintain agricultural operations on a large portion of the Stetson Ranch property.

The expansion of the existing ski mountain is the primary recreational facilities. Currently, the existing private ski mountain operates under an existing Special Use Permit (SUP) 94-228. Since the SUP was first permitted, the mountain property holdings have increased, and the proposal plan is to provide additional ski lifts, terrain, and snowmaking as well as enhanced lodging and other amenities to the ski mountain.

The development plan seeks to create a forward-thinking model for residential and recreational development with a focus on sustainability, conservation, wildlife protection, and protection of sky lines and night skies.

C. Description of the Property

According to the Natural Resources Conservation Service (NRCS), the Site consists of various soil types with Hydrologic Soil Group (HSG) classifications ranging from HSG A to HSG D. HSG D was conservatively utilized for all hydrologic calculations for the Site. A Custom Soil Resource Report from the NRCS Web Soil Survey website for the Site is included in **Appendix B**.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panels 08107C1050D, 08107C1075D, 08107C1225D, and 08107C1250D for Routt County and incorporated areas (effective February 4, 2005), the majority of the Project is located within Zone X, which is classified as areas determined to be outside the 0.2% annual change floodplain. There is a portion of the Project located within regulatory floodplain (Zone A) associated with Yampa River and its tributaries. The FEMA FIRM for the Project area is included in **Appendix A**.

II. DRAINAGE DESIGN CRITERIA

A. Criteria Reference

Routt County has limited drainage criteria and defers to the City of Steamboat Springs and Mile High Flood District (MHFD) for their drainage criteria; therefore, Chapter 5 of the City of Steamboat Springs Engineering Standards Manual (ESM) and the MHFD Urban Storm Drainage Criteria Manual (USDCM) were used as a reference and guide for applicable criteria for this Project.

B. Hydrologic Criteria

Runoff Method

The Colorado Urban Hydrograph Procedure (CUHP) and the EPA Stormwater Management Model (EPA-SWMM) (version 5.2.4) were used for hydrologic analysis to estimate the peak runoff discharge and characteristics of each basin.

Supporting hydrologic calculations for the existing and proposed analysis of the Site are included in **Appendix B**.

Rainfall and Storm Frequencies

The 1-hour rainfall depths used for the hydrologic analysis of the Site were obtained from NOAA Atlas 14 for the Site. The following storm frequencies and rainfall depths were used throughout the hydrologic analysis:

- Minor Storm Event: 5-year: 0.68 inches
- Major Storm Event: 100-year: 1.42 inches

For the hydrograph analysis, the recommended 2-hour design storm duration generated by CUHP was utilized within the EPA-SWMM. Peak discharges for the 5-year and 100-year storm events were analyzed using CUHP to generate hydrographs for each sub-basin. Hydrographs for the sub-basins were routed using EPA-SWMM to determine peak discharge rates at select design points. Snowmelt runoff impacts were not evaluated as part of this report.

Runoff Coefficients/Imperviousness

The imperviousness and associated runoff coefficient were calculated for each subbasin utilizing the Steamboat Springs ESM. The imperviousness and composite runoff coefficients are calculated for each subbasin based on HSG D soils and utilizing Tables 5.6.1 and 5.6.3 from the Steamboat Springs ESM.

C. Hydraulic Criteria

Street Capacity

The majority of the proposed roadways are anticipated to have roadway edge conditions with no curb and gutter due to the topographic constraints within the mountainous terrain. Where curb and gutter is to be installed, street/gutter capacity will be designed with inlets and culverts spaced such that the stormwater does not exceed 6-inches at the gutter flow line for the minor event and does not exceed the allowable spread as described in the Steamboat Springs ESM (Sections 5.7.6 and 5.8.3) for the major event.

For arterial and collector roadways:

- At least one (1) 12-foot lane of traffic remains open in each direction during the major event.
- The major storm shall not encroach upon any drive lane.

For local roadways, primary commercial, and multifamily access drives:

- Stormwater will not exceed 12-inches at the gutter flow line during the major event.
- The major storm will not inundate the outside edge of the outside drive lane by more than 6 inches.

Street/gutter capacity will be evaluated utilizing MHFD-Inlet with the Final Drainage Report.

Roadside Swales

Most of the proposed roadways are anticipated to have roadside swales. Roadside swales will be designed to convey the minor storm event (5-year) within the swale, meet street capacity criteria for the 100-year storm event, and meet applicable criteria as outlined in the Steamboat Springs ESM (Section 5.7.6):

- Maximum longitudinal slopes driven by a maximum allowable Froude number of 0.80 and a maximum allowable velocity of seven (7) feet per second (fps).
- Side slopes shall be no steeper than 2H:1V.
- Flow depth shall not be greater than 3-feet.
- Minimum velocity of two (2) fps

Due to the natural steep topography within the site ditch slopes will exceed 3% which will increase the erosion potential at these locations. Ditch checks will be proposed at these locations as a method to slow down the ditch flow velocities and prevent unnecessary erosion.

Roadside swales will be evaluated utilizing Bentley's Flowmaster with the Final Drainage Report.

Culverts

Existing and proposed culverts will be analyzed utilizing the procedures outlined in the Steamboat Springs ESM (Section 5.10). All culverts will be sized to maintain velocities between two (2) fps and fifteen (15) fps. The minimum culvert size placed in a public drainageway is 18-inches. Private culverts will have a minimum culvert size of 8-inches. Additionally several bridges will be proposed specifically where roadways cross wetlands and streams. A detailed analysis of the bridges will be completed during final design.

For arterial and collector roadways:

- The major storm event will be used to design culvert crossings.
- The major storm shall not cause headwater at any culvert to encroach on any drive lane.
- HW/D for the major storm shall not exceed 1.5.

For local roadways, primary commercial, and multifamily access drives:

- The minor storm event will be used to design culvert crossings (unless the local roadway is the only road providing access to an area, in which case the major storm event will be used).

- The minor storm shall not inundate the outside edge of the outside drive lane by more than 6-inches.
- HW/D for the minor storm shall not exceed 1.5.

Culverts will be analyzed utilizing the Federal Highway Administration's (FWA) HY-8 culvert hydraulic program with the Final Drainage Report.

Storm Sewer System

The proposed storm sewer system will be designed as outlined in the Steamboat Springs ESM (Section 5.9). The proposed storm sewer system will be designed with inlets and culverts to capture and convey the 5-year storm event without surcharging. A minimum pipe size of 12-inches will be utilized. The storm sewer system must maintain velocities between two (2) fps and ten (10) fps. Manhole spacing throughout the Project will be such that pipes less than or equal to 24-inches will not exceed 300 feet and for pipes greater than 24-inches the manhole spacing will not exceed 400 feet.

Bentley StormCAD will be used to size the proposed storm sewer system throughout the Project. Hydraulic calculations for the storm sewer system will be provided with the Final Drainage Report.

Detention

Detention will be provided such that peak flows from the developed basins are less than or equal to pre-development flows for the 5-year and 100-year storm events as outlined in Section 5.11 of the Steamboat Springs ESM. SWMM was utilized to analyze the increased runoff from the proposed improvements for the project. Preliminary locations of detention ponds are shown on the proposed drainage maps provided in **Appendix D**. Preliminary detention volume required is provided in **Appendix C.** Refer to section IV.C.in this report for additional information regarding detention.

Water Quality

Water quality will be implemented holistically throughout the project site per Steamboat Springs ESM. The Project will utilize Best Management Practices ("BMPs") to mitigate the increase in stormwater runoff pollutant loads resulting from the development.

Examples of potential BMPs to be utilized and sized with the Final Drainage Report are provided in **Appendix E.**

BMPs will also be used to control site runoff during construction utilizing temporary control measures such as silt fence, vehicle tracking control, check dams, and inlet/outlet protection. The placement and design of the temporary control measures will be provided with the Final Drainage Report. Refer to section IV.C.in this report for additional information regarding the water quality approach.

III. DRAINAGE BASINS AND SUB-BASINS

A. Existing Major Basin Description

Existing storm runoff within the Site generally flows down the mountain slope to the Yampa River and Stagecoach Reservoir.

Existing major drainage basins were delineated based on existing drainageways that convey flow down the mountain toward the Yampa River and Stagecoach Reservoir. Each major drainage basin was delineated into sub-basins based on existing roadway crossings. Topographic information obtained from Lidar was utilized to delineate each subbasin.

Appendix B includes hydrologic calculations for the existing sub-basins. **Appendix D** includes the existing drainage maps.

Major Basin 100

Basin 100 consists of a total of 1,743 acres at 2.5% impervious in the existing condition. Basin 100 is subdivided into four (4) sub-basins based on existing roadway crossings. Runoff within Basin 100 is conveyed north to south via Jack Creek and its tributaries and eventually discharges directly to the Yampa River.

Major Basin 200

Basin 200 consists of a total of approximately 2,683 acres at 2.3% impervious in the existing condition. Basin 200 is subdivided into seven (7) sub-basins based on existing roadway crossings. Runoff within Basin 200 is conveyed south to north via Raspberry Creek and its tributaries and eventually discharges directly to the Yampa River.

Major Basin 300

Basin 300 consists of a total of 709 acres at 8.9% impervious in the existing condition. Basin 300 is subdivided into twelve (12) sub-basins based on existing roadway crossings. Runoff within Basin 300 is conveyed south to north via Middle Creek and its tributaries and eventually discharges directly to the Stagecoach Reservoir.

Major Basin 400

Basin 400 consists of a total of 2,285 acres at 6.0% impervious in the existing condition. Basin 400 is subdivided into twenty (20) sub-basins based on existing roadway crossings. Runoff within Basin 400 is conveyed south to north via natural drainageways and eventually discharges directly to the Stagecoach Reservoir.

Major Basin 500

Basin 500 consists of a total of 526 acres at 6.5% impervious in the existing condition. Basin 500 is subdivided into five (5) sub-basins based on existing roadway crossings. Runoff within Basin 500 is conveyed south to north via natural drainageways and discharges to Little Morrison Creek, where runoff eventually discharges to the Stagecoach Reservoir.

Major Basin 600

Basin 600 consists of a total of 359 acres at 2.1% impervious in the existing condition. Basin 600 includes one (1) sub-basin based on existing roadway crossings. Runoff within Basin 600 is conveyed south to north via natural drainageways and discharges to Little Morrison Creek, where runoff eventually discharges to the Stagecoach Reservoir.

Major Basin 700

Basin 700 consists of a total of 1,520 acres at 2.3% impervious in the existing condition. Basin 700 is subdivided into two (2) sub-basins based on existing roadway crossings. Runoff within Basin 700 is conveyed west to east via Whipple Creek and its tributaries and eventually discharges to the Yampa River.

Major Basin 800

Basin 800 consists of a total of 6,621 acres at 2.4% impervious in the existing condition. Basin 800 is subdivided into six (6) sub-basins based on existing roadway crossings. Runoff within Basin 800 is conveyed west to east via natural drainageways and eventually discharges to the Yampa River.

B. Proposed Major Basin Description

The proposed major drainage basins are the same as the existing drainage basins. The only change in the proposed hydrology is the imperviousness that is increased due to the development and the delineation of subbasins based on the proposed roadways within the Project limits.

Appendix B includes hydrologic calculations for the proposed sub-basins. **Appendix D** includes the proposed drainage maps.

Major Basin 100

Basin 100 consists of a total of 1,743 acres at 3.1% impervious in the proposed condition. Basin 100 is subdivided into four (4) sub-basins based on existing and proposed roadway crossings. Runoff within Basin 100 is conveyed north to south via Jack Creek and its tributaries and eventually discharges directly to the Yampa River.

Major Basin 200

Basin 200 consists of a total of 2,683 acres at 5.3% impervious in the proposed condition. Basin 200 is subdivided into nine (9) sub-basins based on existing and proposed roadway crossings. Runoff within Basin 200 is conveyed south to north via Raspberry Creek and its tributaries and eventually discharges directly to the Yampa River.

Major Basin 300

Basin 300 consists of a total of 709 acres at 8.9% impervious in the proposed condition. Basin 300 is subdivided into twelve (12) sub-basins based on existing and proposed roadway crossings. Runoff within Basin 300 is conveyed south to north via Middle Creek and its tributaries and eventually discharges directly to the Stagecoach Reservoir.

Major Basin 400

Basin 400 consists of a total of 2,285 acres at 9.7% impervious in the proposed condition. Basin 400 is subdivided into twenty-three (23) sub-basins based on existing and proposed roadway crossings. Runoff within Basin 400 is conveyed south to north via natural drainageways and eventually discharges directly to the Stagecoach Reservoir.

Major Basin 500

Basin 500 consists of a total of 526 acres at 13.9% impervious in the proposed condition. Basin 500 is subdivided into seven (7) sub-basins based on existing and proposed roadway crossings. Runoff within Basin 500 is conveyed south to north via natural drainageways and discharges to Little Morrison Creek, where runoff eventually discharges to the Stagecoach Reservoir.

Major Basin 600

Basin 600 consists of a total of 359 acres at 2.8% impervious in the proposed condition. Basin 600 is subdivided into one (1) sub-basin based on existing and proposed roadway crossings. Runoff within Basin 600 is conveyed south to north via natural drainageways and discharges to Little Morrison Creek, where runoff eventually discharges to the Stagecoach Reservoir.

Major Basin 700

Basin 700 consists of a total of 1,520 acres at 4.9% impervious in the proposed condition. Basin 700 is subdivided into eight (8) sub-basins based on existing and proposed roadway crossings. Runoff within Basin 700 is conveyed west to east via Whipple Creek and its tributaries and eventually discharges to the Yampa River.

Major Basin 800

Basin 800 consists of a total of 6,621 acres at 2.8% impervious in the proposed condition. Basin 800 is subdivided into eight (8) sub-basins based on existing and proposed roadway crossings. Runoff within Basin 800 is conveyed west to east via natural drainageways and eventually discharges to the Yampa River.

IV. PROPOSED DRAINAGE PLAN

A. Proposed Drainage Plan Summary

The overall SMR project will provide and incorporate full spectrum detention ponds and enhanced grass swales/channels, as well as grass lined roadside ditches to safely convey surface water runoff and promote water quality. Detention ponds will be placed throughout the project to collect and store excess stormwater, helping to mitigate the impact of increased runoff. These ponds will allow for gradual release of the storm water, reducing the risk of flooding downstream. Additionally, the Project will implement enhanced grass swales and channels, which are designed to slow down and filter stormwater runoff, promoting water quality. The swales and channels will be grass lined, which will act as a natural filter, removing pollutants and sediments from the water as it

flows through the grass. Similarly, the grass lined roadside ditches will further aid in filtering runoff and improving water quality throughout the project. In areas with steep slopes or that are adjacent to creeks, it may not be possible to direct runoff to a detention pond or grass line swales/channels. For these areas, enhancements to the soils and vegetation may be required to manage runoff prior to discharging into creeks, drainageways, and the reservoir. This may include enhancing the existing plantings and re-working the surface to promote infiltration and water quality in these areas

B. Surface Water Conveyance

The conveyance of the runoff from the proposed internal roadways will be conveyed with grass lined swales/ditches and where Froude numbers are greater than 0.8, ditch checks will be implemented into the swales/ditches to assist with reducing velocities and stabilizing the swales/channels. Where flows will be concentrated and cross under roadways within the SMR project via culverts, erosion mitigation measures will be implemented on the downstream end to assist with slowing the runoff. Erosion mitigation measures such as soil riprap protection, low water stilling basins, and level spreaders will be utilized to slow runoff especially at areas with high velocities and erosive forces such as on the downstream side of culverts. These mitigation measures will be designed with the Final Drainage Report.

C. Detention and Water Quality

Detention ponds will be placed throughout the project, generally downstream of higher impervious areas and located on flatter terrain areas. As previously mentioned, the site was analyzed for both the 5-year and 100-year storm events and each basin area (i.e. basins 100's, 200's, 300's, etc.) was analyzed using SWMM. The inflow volumes at specific design points were compared between the existing condition and proposed condition models to determine preliminary storage volumes needed to reduce the runoff for each basin to pre-development release rates. Refer to **Appendix C** for the preliminary calculations for the required pond volumes for each basin area.

Water quality BMPs will be implemented throughout the site to provide a holistic water quality approach to the site to ensure sufficient water quality treatment is provided. The water quality capture volume (WQCV) was determined for each basin area utilizing the percent impervious for each of the basin areas and adding that to the required pond storage area.

In areas where full spectrum detention ponds are unable to be implemented to assist with treating water quality, additional water quality measures will be utilized to promote water quality treatment. Potential water quality measures to be utilized in these areas include but are not limited to: water quality ponds, rain gardens, enhanced grass swales/channels, terraced filter strips, vegetated filter strips, and permeable pavement. Refer to **Appendix C** for preliminary calculations for required WQCV for each basin area.

Final locations and sizing of detention ponds and water quality BMPs will be determined with the Final Drainage Report.

V. NWCCOG REGIONAL WATER QUALITY MANAGEMENT PLAN COMPLIANCE

The Project is not located within any specific watershed plan associated with the Northwest Colorado Council of Governments (NWCCOG) water quality management plan ("208 Plan"); however, the Project is subject to the policies outlined in Volume 1 of the 208 Plan. Compliance with these six (6) polices are outlined below:

Policy 1. Protect and Enhance Water Quality

The surface and ground waters of the region shall be protected to minimize degradation of existing water quality and maintain existing and designated uses of those waters; waters not currently supporting designated uses shall be restored as soon as is financially and technically feasible.

Policy 1 is being addressed by the implementation of the proposed water quality features on site. Water quality BMPs will be strategically implemented throughout the site providing a holistic water quality approach to the site to ensure sufficient water quality treatment is provided. Final design of water quality facilities will be detailed in the Final Drainage Report and Final Construction Documents at the time of Final Subdivision application.

Policy 2. Water Use and Development

The project developer shall mitigate the impacts to water quality and the aquatic environment caused by water supply projects.

The SMR development is not a surface water supply project. Domestic water supply will be provided by the adjacent water and sewer district via existing wells and underground water distribution mains.

Policy 3. Land Use and Disturbance

Water quality, including wetlands, floodplains, shorelines and riparian areas, must be protected from land use and development so that significant degradation of water quality is prevented.

50-ft wetland buffers will be respected with all planned development with the only exception being roadway crossings of existing wetlands. To the extent practical, raised crossing including open bottomed box culverts or traditional bridges will be used to reduce wetland impacts at these locations.

All proposed disturbance will be located outside regulatory floodplain. Sufficient erosion control will be implemented during construction adjacent to these areas to ensure protection.

Snow storage requirements include storage area for 30% of area to be plowed on individual lots. Snow storage area of 50-ft x 120-ft for every 400 LF of roadway will be provided. Runoff from snow storage areas will be directed through a detention or infiltration facility or other best management practice that removes pollutants, including vegetated areas.

Maintaining Hydrological Characteristics

Developers should maintain the hydrological characteristics of the development site similar to pre-development conditions. Drainage plans should be designed and implemented, including calculation of storm runoff volumes and velocities (before and after development), using accepted hydrologic calculation procedures.

Historic drainage patterns will be maintained with the proposed development. The calculation of stormwater runoff volumes and velocities are documented in the Preliminary Drainage Report. Final drainage design for the development will follow Routt County Engineering standards and latest MHFD criteria.

Minimizing Impervious Surfaces

Development should minimize impervious surfaces and break up large connected impervious areas.

Connected impervious areas are limited to proposed roadway infrastructure. All roads are planned to be paved with asphalt with roadside drainage swales.

Stormwater Discharges

Stormwater discharges should not result in any significant increase in total pollutant loads and should not result in the direct discharge of stormwater to a waterbody or drainage way. Efforts should be taken to practice "green infrastructure."

The implementation of the proposed WQ features on site will address the potential increase in total pollutant loads prior to discharging to historic outfall points and drainageways.

Mountain Driveways

Design and maintenance of mountain driveways will follow the "Mountain Driveway Best Management Practices", prepared for the Colorado Nonpoint Source Task Force, 1999.

The implementation of the 5 step process outlined in the "Mountain Driveway Best Management Practices will be used as part of the sites driveway designs to mitigate the erosion potential at all proposed driveways.

Policy 4. Domestic, Municipal, and Industrial Water/Wastewater Treatment Facilities

Decisions to locate water supplies, wastewater treatment systems, and other water and wastewater facilities shall be made in a manner which protects water quality and the aquatic environment. Where growth and development require the need for additional facility capacity, existing facilities should be expanded instead of developing new facilities, unless expansion is not feasible because of technical, legal or political reasons.

Domestic water supply and wastewater treatment is anticipated to be provided by the adjacent Morrison Creek Metropolitan Water and Sewer District. Expansion of their district boundary and infrastructure is planned to serve the development. Construction of new wastewater treatment facilities is not proposed as part of the project. Construction of additional domestic water supply wells will be planned in

conjunction with MCMWSD and will be located outside of all County required water body setbacks.

Only 7 of the planned residential units will utilize individual private domestic wells and septic fields for wastewater treatment.

Policy 5. Chemical Management

The uses of pesticides, fertilizers, algaecides, road deicing and friction materials, and other chemicals which would temporarily or permanently cause a significant degradation of water quality or impair the current or designated uses of these waters should be regulated to the extent allowed by law in a manner that minimizes potential for degradation of water quality.

Chemical management will be implemented as part of the future O&M plan for the Site. Impacts of any chemical use will be mitigated by the implementation of the proposed water quality features on site.

Policy 6. Management System

Management agencies are designated to best reflect their legal and jurisdictional authorities. The waters of the region shall be protected by a management agency structure within the existing governmental and regulatory framework that allows decisions to be made at the most appropriate level of control. For nonpoint source pollution control the recommended level of management is at the watershed level.

The proposed development will be analyzed to ensure all water quality requirements are being met. Compliance with all water quality requirements will be documented in the drainage report. The drainage report will be reviewed and approved by the proper management authority prior to construction. The primary management agencies and authorities have jurisdiction include Routt County, USACE, and FEMA.

VI. CONCLUSION

The drainage facilities for the Stagecoach Mountain Ranch Project have been preliminarily designed to conform to the current drainage criteria set forth by the County Standards, City of Steamboat Springs Engineering Standards Manual, and the Mile High Flood District Urban Storm Drainage Criteria Manual.

Based on the preliminary analysis, the SMR project aims to manage peak flows from the development from the developed basins to pre-development levels for both 5-year and 100-year storm events as much as possible. To address the increase in stormwater runoff and pollutant loads resulting from the development, the project will include detention ponds, enhanced grass swales/channels, grass-lined roadside swales, rain gardens, permeable pavement, and other BMPs identified in the Final Drainage Report for each phase of the development. The detention ponds will help collect and store excess stormwater, ensuring gradual release and reducing the risk of downstream flooding. Water quality BMPs will slow down and filter stormwater runoff, improving water quality by removing pollutants and sediments. These measures are intended to minimize the negative impacts of increased runoff and ensure that the development maintains a high standard of water quality.

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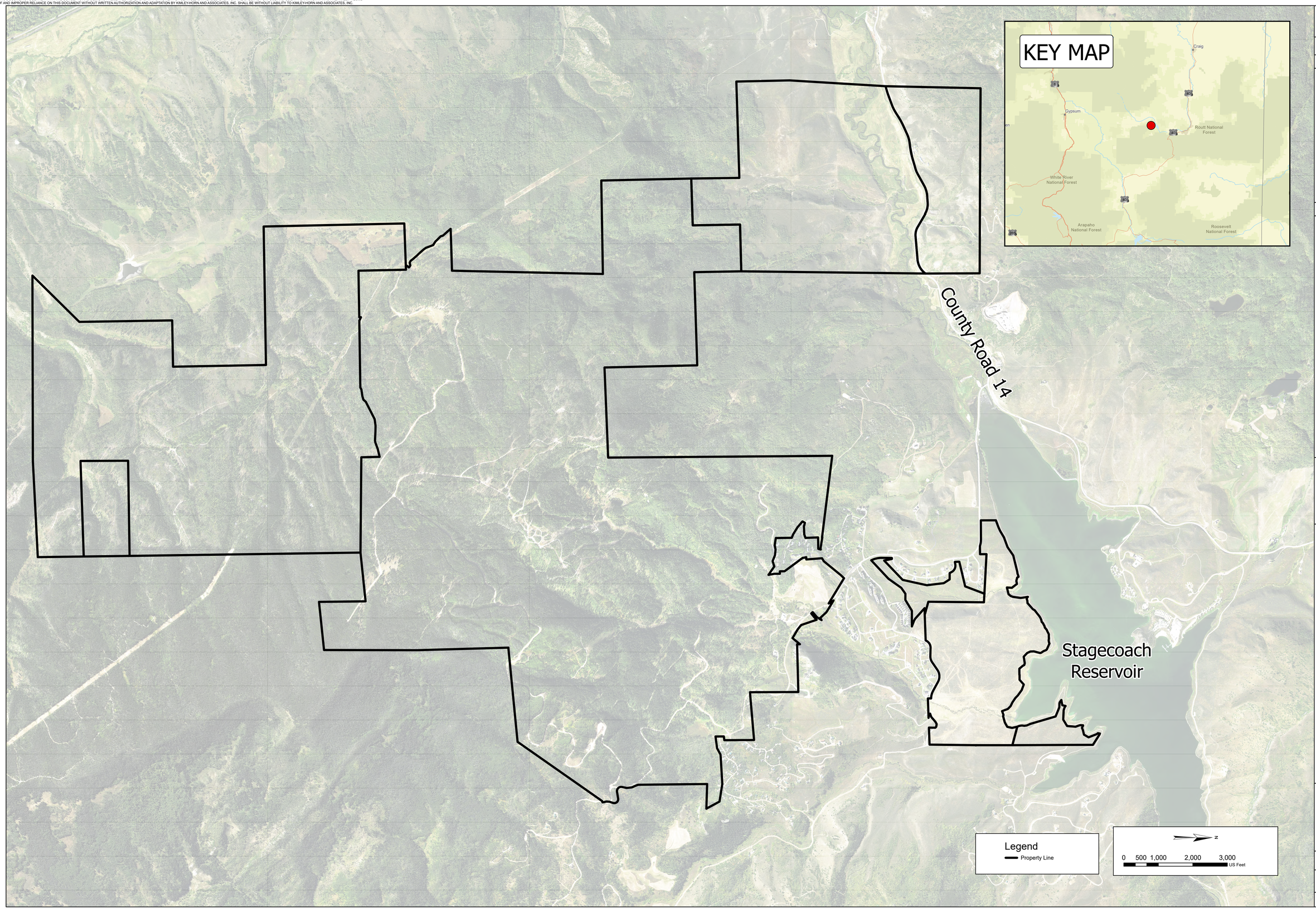
APPENDIX A – GENERAL MAPS



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DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE:

STAGECOACH DRAINAGE BASIN STUDY

VINICITY MAP

PROJECT NO.

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Sheet:

NOTES TO USERS

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

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

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

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

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

The **projection** used in the preparation of this map is Universal Tranverse Mercator (UTM) zone 13. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

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

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

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

Base map information shown on this FIRM was provided in digital format by Routt County GIS Department.

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

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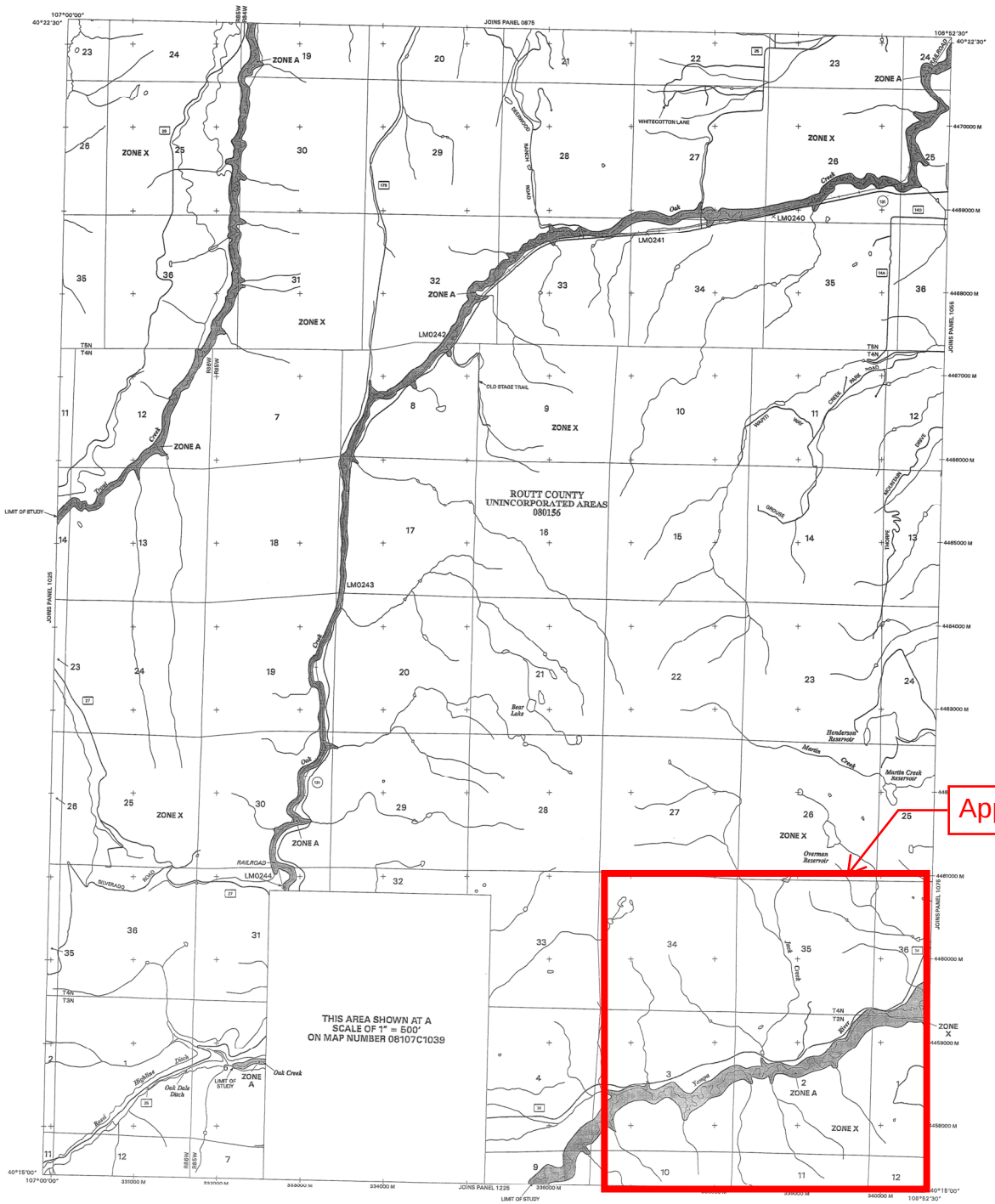
An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616
FAX: 800-358-9620
www.fema.gov/msc

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

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.



Approximate Site Area

Note: Panel 1225 Not Printed via FEMA - Zone X

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross Section Line
- 23 — 23 — Transect Line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000M — 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT — 5000-foot grid ticks
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel).
- M1.5 — River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
FEBRUARY 4, 2005

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

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

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

1" = 2000'
2000 4000 FEET
600 1200 METERS

PANEL 1050D

FIRM
FLOOD INSURANCE RATE MAP
ROUTT COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 1050 OF 1475
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ROUTT COUNTY, UNINCORPORATED AREAS	080158	1050	D

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

MAP NUMBER
08107C1050D

EFFECTIVE DATE:
FEBRUARY 4, 2005

Federal Emergency Management Agency

NOTES TO USERS

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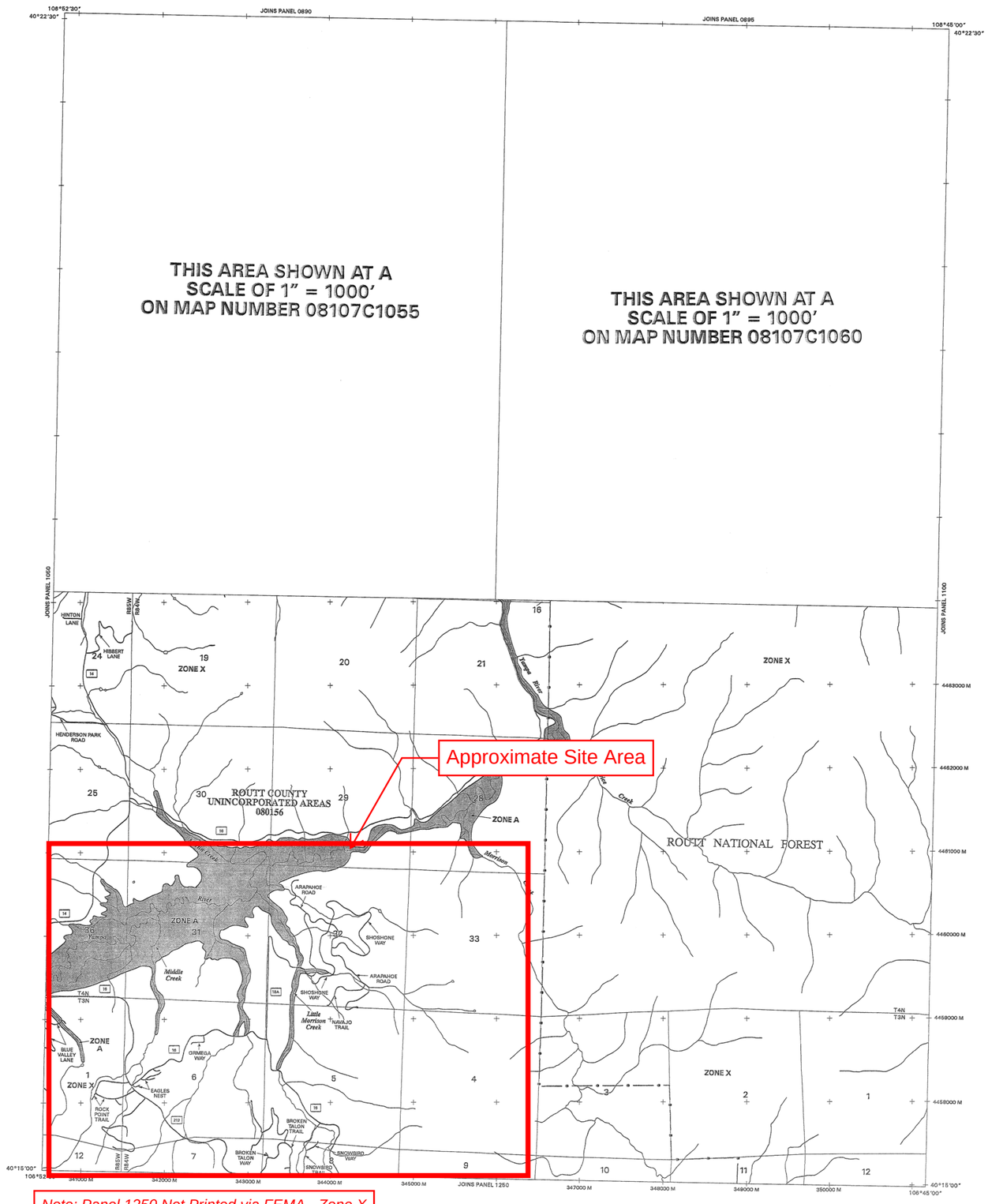

Note: Panel 1250 Not Printed via FEMA - Zone X

LEGEND

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ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

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*Referenced to the North American Vertical Datum of 1988

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MAP REPOSITORY
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FEBRUARY 4, 2005

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MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1075D

FIRM
FLOOD INSURANCE RATE MAP
ROUTT COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 1075 OF 1475
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ROUTT COUNTY, UNINCORPORATED AREAS	080156	1075	D

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

MAP NUMBER
08107C1075D

EFFECTIVE DATE:
FEBRUARY 4, 2005

Federal Emergency Management Agency

APPENDIX B – HYDROLOGIC CALCULATIONS

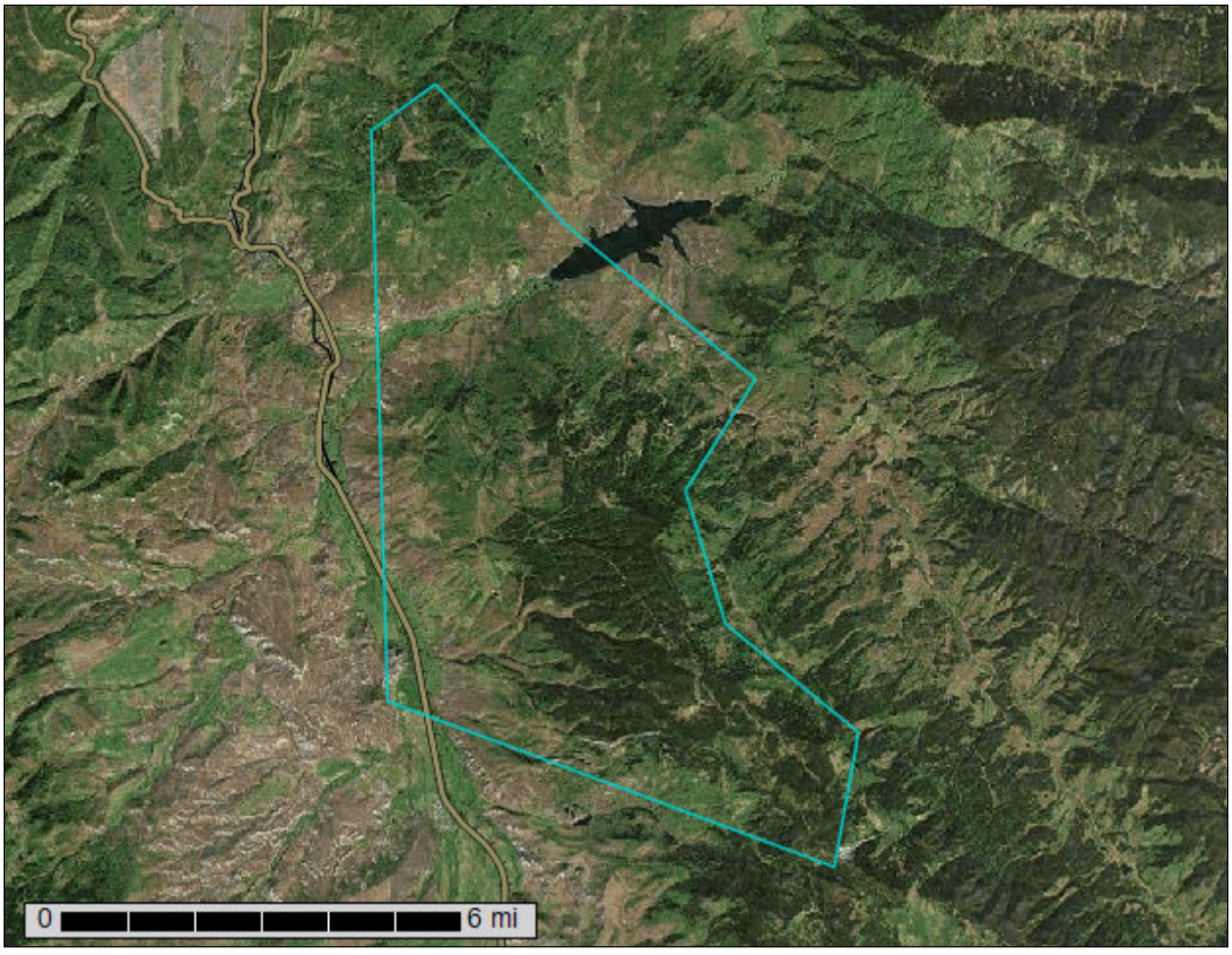
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

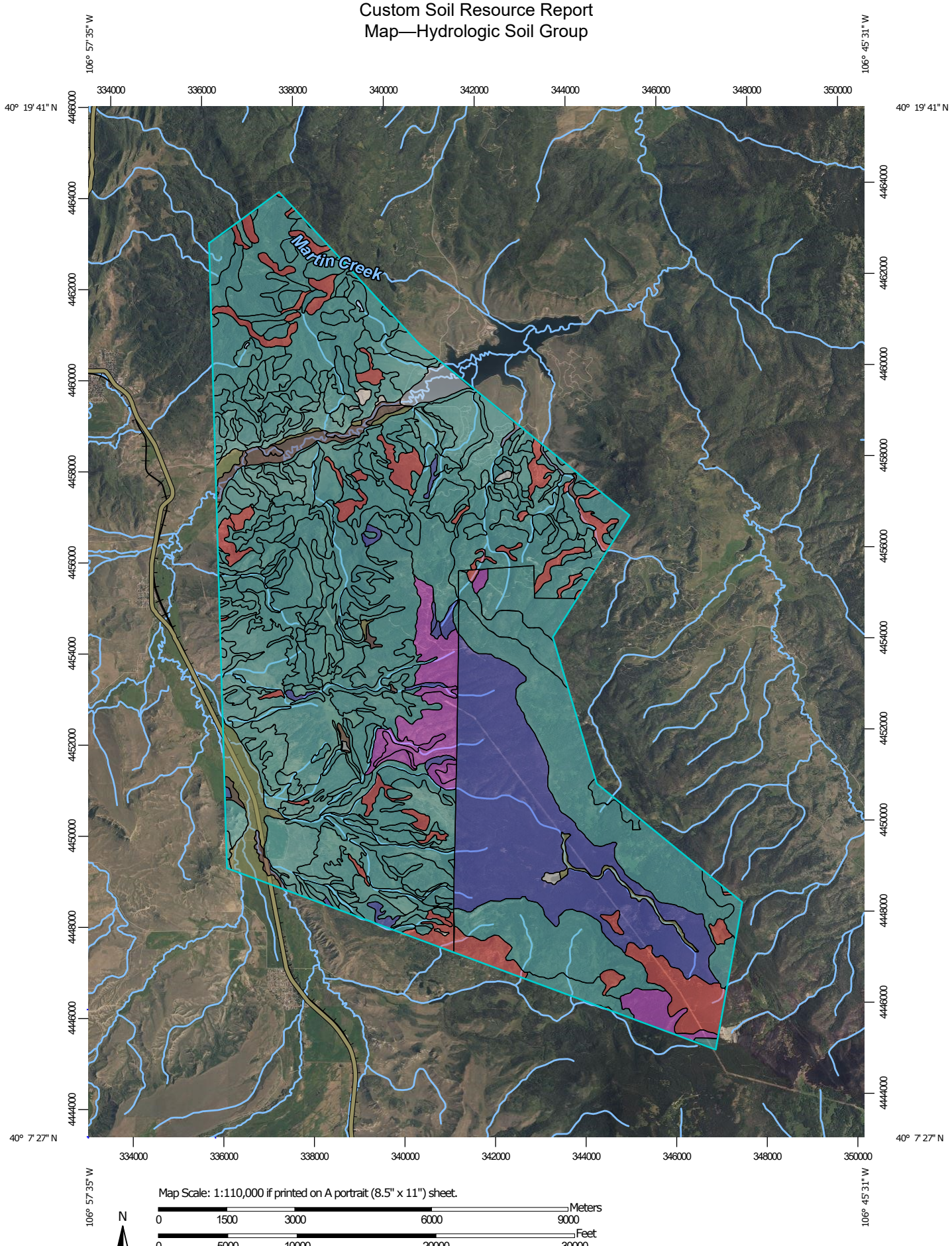
A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Routt Area, Colorado, Parts of Rio Blanco and Routt Counties; and Routt National Forest Area, Colorado, Parts of Grand, Jackson, Moffat, and Routt Counties



March 7, 2024

Map—Hydrologic Soil Group



Map Scale: 1:110,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 1500 3000 6000 9000

Feet
0 5000 10000 20000 30000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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: Routt Area, Colorado, Parts of Rio Blanco and Routt Counties
Survey Area Data: Version 13, Aug 23, 2023

Soil Survey Area: Routt National Forest Area, Colorado, Parts of Grand, Jackson, Moffat, and Routt Counties
Survey Area Data: Version 7, Aug 23, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jul 2, 2021—Aug 25, 2021

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2E	Routtskin loam, 12 to 25 percent slopes	C	483.1	1.6%
2F	Lintim loam, 25 to 65 percent slopes	C	278.8	0.9%
8F	Dunckley-Skyway complex, 15 to 65 percent slopes	C	87.0	0.3%
27A	Middlecreek loam, 1 to 5 percent slopes	C/D	96.2	0.3%
34E	Coutis fine sandy loam, 3 to 25 percent slopes	A	33.4	0.1%
34F	Coutis fine sandy loam, 25 to 65 percent slopes	A	7.1	0.0%
41C	Jerry loam, 1 to 12 percent slopes	C	231.5	0.8%
49A	Slocum loam, gravelly substratum, 0 to 3 percent slopes	B/D	64.9	0.2%
50C	Lintim loam, 3 to 12 percent slopes	C	702.5	2.3%
50E	Lintim loam, 12 to 25 percent slopes	C	135.0	0.4%
50F	Routt loam, 25 to 65 percent slopes, very stony	C	376.7	1.2%
57A	Mooseflat sandy clay loam, 0 to 5 percent slopes	B/D	177.4	0.6%
66D	Foidel loam, 15 to 25 percent slopes	C	102.7	0.3%
66F	Foidel loam, 25 to 65 percent slopes	C	36.8	0.1%
68C	Rabbitears loam, 3 to 12 percent slopes	C	193.1	0.6%
68D	Rabbitears loam, 12 to 25 percent slopes	C	406.9	1.3%
70F	Skyway sandy loam, 25 to 65 percent slopes	B	22.9	0.1%
78D	Frisco, very stony-Dorpat complex, 3 to 25 percent slopes	C	90.8	0.3%
78F	Fulvance very gravelly sandy loam, 25 to 65 percent slopes, very stony	C	1,027.8	3.4%
80D	Foidel loam, 5 to 25 percent slopes	C	940.2	3.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
80F	Foidel loam, 20 to 50 percent slopes, cool	C	143.3	0.5%
83D	Routt loam, 3 to 25 percent slopes, very stony	C	793.3	2.6%
83F	Routt loam, 25 to 65 percent slopes, cool, very stony	C	813.1	2.7%
94	Dorpat-Reddles complex, 30 to 65 percent slopes	C	424.9	1.4%
97	Rogert, extremely stony-Foidel complex, 25 to 65 percent slopes	D	316.0	1.0%
103	Foidel-Rock outcrop complex, 20 to 60 percent slopes	C	1,183.3	3.9%
104	Foidel loam, 25 to 50 percent slopes	C	249.6	0.8%
109	Dorpat loam, 3 to 20 percent slopes	C	672.4	2.2%
110	Elkhead clay loam, 0 to 3 percent slopes	D	0.0	0.0%
111	Evna, very stony-Lintim complex, 5 to 25 percent slopes	C	1,747.5	5.8%
111C	Slater-Routt complex, 5 to 25 percent slopes, very stony	C	814.1	2.7%
111D	Slater-Routt complex, 25 to 65 percent slopes, very stony	D	381.3	1.3%
111F	Evna, very stony-Lintim complex, 25 to 65 percent slopes	C	90.5	0.3%
115	Gateview cobbly loam, 30 to 75 percent slopes, very bouldery	B	93.3	0.3%
116	Gateview loam, 10 to 30 percent slopes, extremely stony	B	49.6	0.2%
117	Handran, extremely bouldery-Venable complex, 0 to 5 percent slopes	B/D	3.6	0.0%
120	Eckmanpark clay loam, 25 to 65 percent slopes	D	123.1	0.4%
124	Vabem-Rabbitears complex, 25 to 65 percent slopes	D	301.7	1.0%
125	Reddles loam, 3 to 20 percent slopes	C	213.2	0.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
126	Sanford very fine sandy loam, 25 to 65 percent slopes	C	807.5	2.7%
133	Lintim loam, 3 to 25 percent slopes	C	324.5	1.1%
139	Maciver stony loam, 3 to 25 percent slopes, extremely stony	C	783.1	2.6%
145	Mine-Reddles complex, 3 to 25 percent slopes	C	1,359.9	4.5%
146	Perfecto very stony sandy loam, 3 to 25 percent slopes	A	732.0	2.4%
149	Rabbitears-Inchau complex, 3 to 25 percent slopes	C	16.4	0.1%
150	Wander bouldery fine sandy loam, 25 to 65 percent slopes, very stony	B	42.5	0.1%
151	Fulvance-Merino complex, 10 to 50 percent slopes, very stony	C	5.7	0.0%
156	Egeria clay, 0 to 3 percent slopes	C/D	487.7	1.6%
158	Tanella loam, 0 to 3 percent slopes	B	7.3	0.0%
160	Northwater loam, 25 to 75 percent slopes	C	733.9	2.4%
165	Northwater loam, 3 to 25 percent slopes	C	660.0	2.2%
191	Perfecto very stony sandy loam, 25 to 65 percent slopes	A	173.2	0.6%
206	Domepeak very gravelly loam, 15 to 50 percent slopes, very stony	C	330.2	1.1%
AW	Venable, mucky peat, 0 to 3 percent slopes, frequently flooded	B/D	189.9	0.6%
C10	Impass silty clay loam, 3 to 12 percent slopes	C	41.4	0.1%
GP	Pits, gravel		30.7	0.1%
MS	Teedown clay loam, 5 to 70 percent slopes	D	128.8	0.4%
RRS	Rock outcrop-Rubble land complex		12.8	0.0%
W	Water		200.8	0.7%
Subtotals for Soil Survey Area			**20,977.0**	**69.4%**
Totals for Area of Interest			**30,220.9**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
11	Mord family stony loam, 5 to 20 percent slopes, very stony	C	0.0	0.0%
28	Haviland-Hollandlake families, complex, 10 to 40 percent slopes, landslides	C	0.4	0.0%
47	Grenadier taxadjunct cobbly loam, 10 to 40 percent slopes	B	3,826.5	12.7%
101A	Finn and Tepete families, 0 to 15 percent slopes	C/D	94.0	0.3%
155A	Libeg-Youga-Bywell families, association, 0 to 20 percent slopes	C	70.6	0.2%
210B	Gateway-Cowood families, association, 10 to 40 percent slopes, extremely stony	D	2.6	0.0%
232C	Mord family stony loam, 15 to 40 percent slopes	C	184.5	0.6%
249B	Frisco-Tamarron complex, 10 to 40 percent slopes	C	423.9	1.4%
255C	Waybe family-Gothic association, 20 to 50 percent slopes	D	277.5	0.9%
270C	Agneston family gravelly sandy loam, landslide, 30 to 60 percent slopes, very stony	C	1.1	0.0%
609B	Hollandlake-Jumpstart families, complex, 15 to 40 percent slopes, landslides	C	3,121.0	10.3%
700C	Como-Agneston family-Legault family association, 30 to 60 percent slopes, extremely stony	A	258.6	0.9%
710B	Agneston-Legault families, association, 10 to 40 percent slopes, extremely stony	C	460.3	1.5%
712C	Rogert-Bowen association, 20 to 55 percent slopes, extremely stony	D	15.2	0.1%
740A	Gorpas gravelly loam, 1 to 15 percent slopes	D	486.8	1.6%
W	Water		19.7	0.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Subtotals for Soil Survey Area			**9,242.7**	**30.6%**
Totals for Area of Interest			**30,220.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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