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Draft Drainage Letter
for
Development Plan
at
Riverfront Park
1900 & 1920 Bridge Lane
Steamboat Springs, Colorado

Draft Drainage Letter: February 8, 2024

**Prepared by: Matthew McLeod, P.E.
Four Points Surveying & Engineering**

**P.O. Box 775966
Steamboat Springs, Colorado 80477
(970) 819-1161**

City of Steamboat Springs plan review and approval is only for general conformance with City design criteria and the City code. The City is not responsible for the accuracy and adequacy of the design, dimensions, and elevations that shall be confirmed and correlated at the job site. The City of Steamboat Springs assumes no responsibility for the completeness or accuracy of this document.

Introduction

This drainage letter presents an analysis of the existing drainage facilities proposed as Riverfront Industrial Park development that was approved in the summer of 2005. The site was constructed and has been in use for over 15 years. The site received a use violation and resulting in the need for multiple applications to ratify those violations.

The project location is at 1900, 1920 and 1955 (undeveloped) Bridge Lane in Steamboat Springs, Colorado. Steamboat Engineering and Design, Inc. The parcels total 4.5 acres with approximately 2.4 acres developed. (SEAD) and Four Points Engineering and Surveying (Four Points) are submitting the PUD documents to improve the current property in accordance with the CDC, and to begin the process of bringing the property back into code compliance per the direction of the planning department, building department, and code compliance officer.

Drainage reports reviewed as a part of this letter include the Riverfront Industrial Park (Lot 2 Petrillo Subdivision) dated October 13th, 2005 and prepared by Civil Design Consultants (CDC). There will be no new development proposed so this report will evaluate the proposed drainage facilities in the CDC report and corresponding development plans for Riverfront Park and alter or maintain as needed.

Drainage Criteria, Design Criteria, and Methodology Used

Design rainfall: NOAA Atlas 14, Volume 8, Version 2 for Steamboat Springs, CO.

- Minor Event (5-year) 24-hour rainfall depth: 1.59 inches
- Major Event (100-year) 24-hour rainfall depth: 2.91 inches

This report was prepared in accordance with the most recent version of the City of Steamboat Springs Drainage Criteria. Effects of the proposed development on storm runoff were determined for the 5- year (minor) and 100-year (major) storm events using the Rational Method, $Q = CiA$, where Q is the design flow rate, i is the storm intensity, A is the basin area, and C is the runoff coefficient. Stormwater detention volume and release rate calculations were performed per City of Steamboat Springs Drainage Criteria Section 5.11.

Existing Conditions

The Riverfront Park (RFP) project consists of two, three-story mixed-use buildings that are approximately 25,000 square feet each with an additional 28,700 square foot building (1955 Bridge Lane) that is dedicated to commercial use only. Originally, this development was approved through a development plan submittal (DP-05-13) in October of 2005. The original mixed used buildings (1900 & 1920 Bridge Lane) were approved as “live-work” units with commercial warehouse space on the ground level and residential units on the uppermost level. Each of the mixed used buildings consists of seven units, bringing a total of 14 “live-work” units for this development. The effective year built per the Routt County Assessor’s website for both of the “live-work” buildings is 2007, with the effective year built for the commercial building as 2009. Only about 60% of the original development has been constructed and is in use. Any future development of the site will require a development plan application after the resolution of this PUD. The current property is zoned as Industrial (I). A drainage exhibit is included in the Appendix.

The existing storm system consists of two inlets (inlet #1 design point 1 (DP1), inlet #2 at DP2) per DP-05-13) located central to the parking lot and connected by a 15" HDPE culvert. Those inlets collect surface flow from the parking area and other impervious surfaces on site and directs them to a water quality treatment pond (Pond, DP4) near the southern property line by way of 18" HDPE culverts, passing through a storm manhole (DP3). The outfall is an 18" invert with no flared end section (FES) into the Pond. The Pond is controlled by overflow inlet (DP5) on the west side. Another 18" HDPE culvert leaves that inlet west to a riprap armored swale and eventually out to the Yampa River (DP6), of which this site borders. The capacities of the existing drainage infrastructure were designed by CDC and look to be functioning very well. NRCS soils are primarily Lintum, Routt and Elkhead clay loam. FEMA flood map 08107C0876D was reviewed and the majority of the site is located in Zone AE with undetermined base flood elevations. The southern portion with the detention pond is in the floodway.

Current and Proposed Conditions

The development will add six (6) new heated parking spaces to the existing development consisting of approximately 1,100 square feet. The current conditions of the storm system, Pond and swales for the site were evaluated including surveying completed in July 2023 and intermittent site visits to observe the system in varying situations. The Pond and downstream swales appeared fairly well maintained (pictures in Appendix). Drainage calculations were run with current intensity numbers to determine impacts to flow and therefore the Pond. Basin 1 (B1) analyses the full site as-built and Subbasin 1 is focus to the development, in both pre- and post-construction condition. Calculations are included in the Appendix. Any items that require attention are addressed in the *Recommendations* section of this letter. The updated basin characteristic summery is outlined below:

Please mention the proposed change in zoning from Industrial to Commercial Services. Drainage Letter, Current and Proposed Conditions, Page 3.

Riverfront Park % Impervious Existing and Proposed

Sub-basin 1 (SB1) - Developed			
BASIN CHARACTERISTICS			
	Area, ac	% imp	Soil Type
Landscape	0.43	2%	C
Asphalt Parking & Walkways	1.07	100%	
Roof	1.00	90%	P2
Gravel	0.00	80%	1.4
Other	0.00	0%	
	2.50	79%	

Table 1: Summary Table for the 5- and 100-year storms

Basin	Area (acres)	% Imperviousness	Q5 (cfs)	Q100 (cfs)
B1	4.5	49%	6.58	22.03
SB1 EX	2.5	78%	5.66	14.90
SB1 DEV	2.5	79%	5.73	15.02

Detention and Water Quality

The purpose of detention is to store runoff and control its release to minimize any impacts to stormwater systems downstream, which are generally not designed to receive increases to upstream runoff. However, this project is adjacent to the ultimate destination of all water in Steamboat Springs so detention is not impacting any downstream properties. The previous drainage report completed by CDC, designed the existing pond for the water quality capture volume (WQCV). New WQCV was completed as part of this report and is included in the Appendix. The existing pond volume is approximately 1,795 cubic feet based on survey date from July 2023. The required WQCV is 1,787 cubic feet. The 2023 surveyed volume is less than the total required and is sufficient for the addition of the parking area. It is the opinion of Four Points that additional volume can be achieved through sediment cleanup as outlined in the Recommendations as well.

In addition, there is a riprap armored swale that runs from the pond to the Yampa River, reducing runoff velocities further. Any development on the east side of Riverfront Park will need additional treatment and possible detention in the future, ensuring more sediment removal upstream.

Temporary erosion and sediment control during construction is the responsibility of the general contractor. This responsibility includes acquisition of any required permits. All BMPs shall be constructed according to the City of Steamboat Spring standards.

Recommendations

As previously stated, the existing storm system was observed to be in good condition and functioning as proposed in DP-05-13. A few items need attention listed below, some of which are outlined with pictures in the Appendix. Those include:

- Hand removal of sediment, weeds, and debris that that accumulated in the pond, outfalls, and inlets. Do not expose or damage existing perforated PVC in the pond.
- Adjust and embed any loose riprap and rock as needed.
- Attach new grate to pond inlet.
- Remove all sediment from inlet sumps in pavement.

Conclusions

In conclusion, the existing storm system and water quality pond designed, proposed, and constructed as part of the Riverfront Park project appear to be running efficiently and are sized appropriately for the site. The recommendations made in this letter need to be completed to ensure the system continues to operate as it was designed. Any further development on the site will require an additional drainage study for any updates to the permanent stormwater BMPs. This development complies with the City of Steamboat Springs drainage criteria and needs no variances.

References

WRC, Engineering, Inc., September 2007, Updated July 2019. *City of Steamboat Springs Engineering Standards, Section 5.0 Drainage Criteria*. Prepared for City of Steamboat Springs, Department of Public Works. September.

Urban Storm Drainage Criteria Manual, Volume 3 Urban Drainage and Flood Control District, November 2010

The City of Steamboat Springs Stormwater Master Plan, June 2013

Riverfront Industrial Park (Lot 2 Petrillo Subdivision Drainage Report Civil Design Consultants, Inc, October 13, 2005

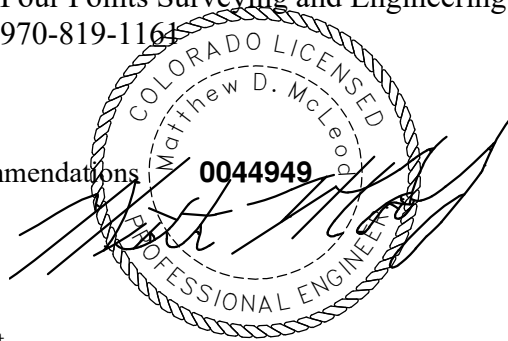
Certification Statement

I, hereby affirm that this drainage letter and plan for Revierfont Park PUD was prepared by me (or under my direct supervision) for the owners thereof and is, the best of my knowledge, in accordance with the provisions of the City of Steamboat Springs Drainage Criteria and approved variances. I understand that the City of Steamboat Springs does not and will not assume liability for drainage facilities designed by others.

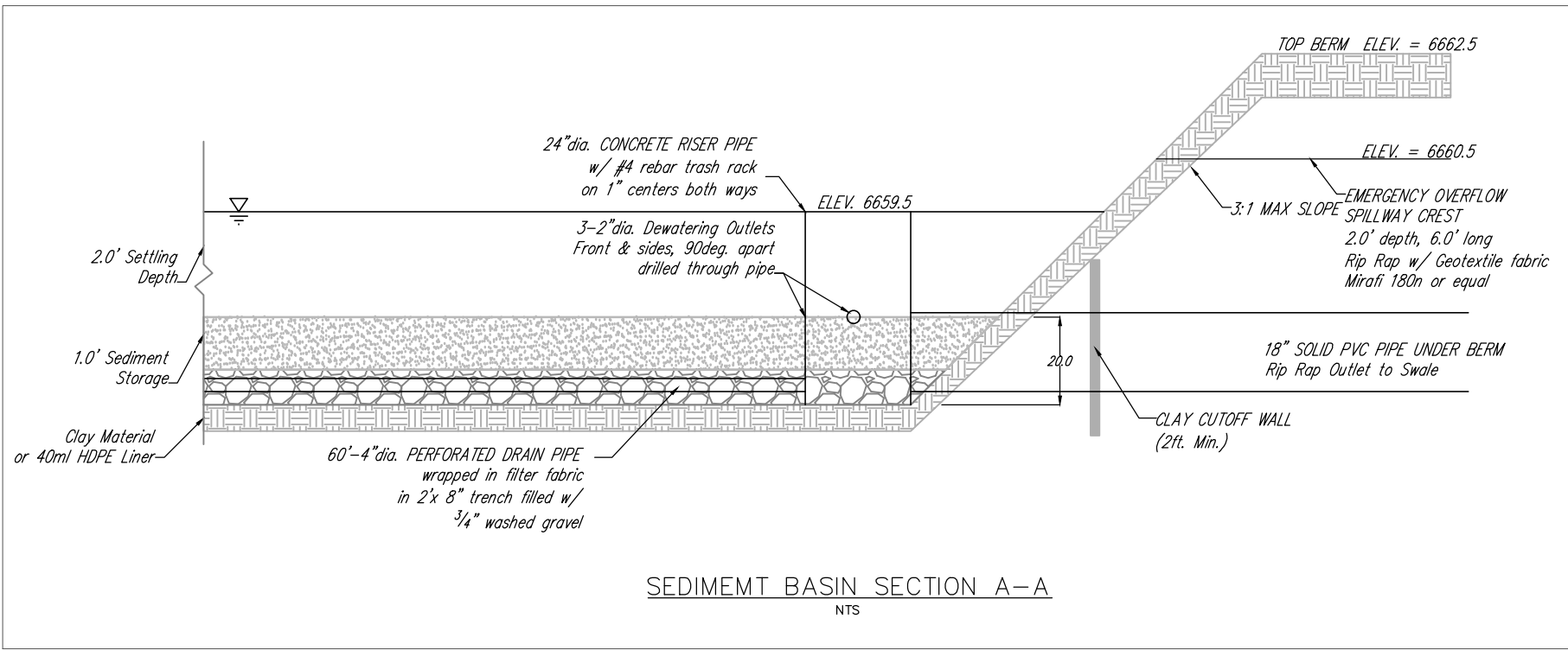
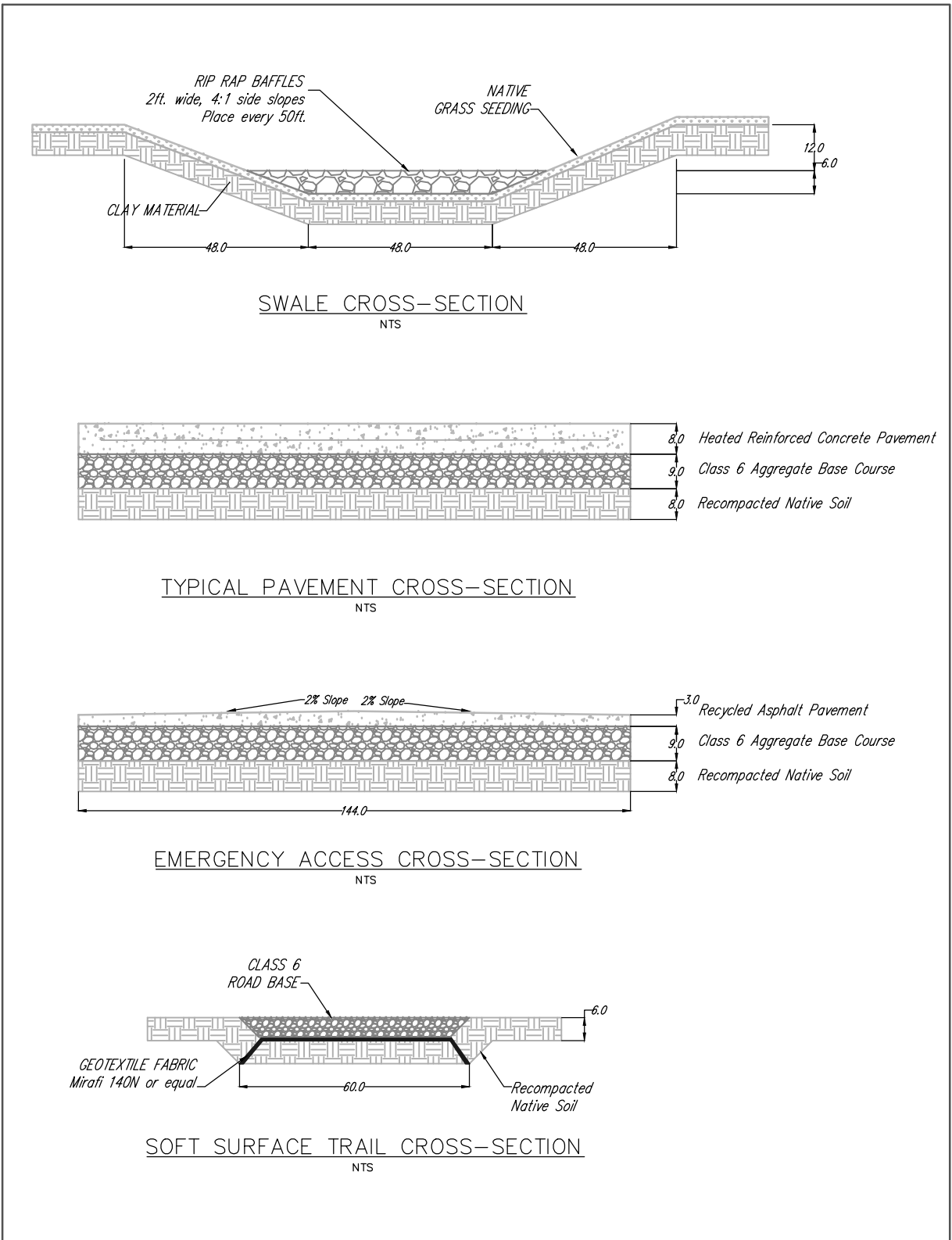
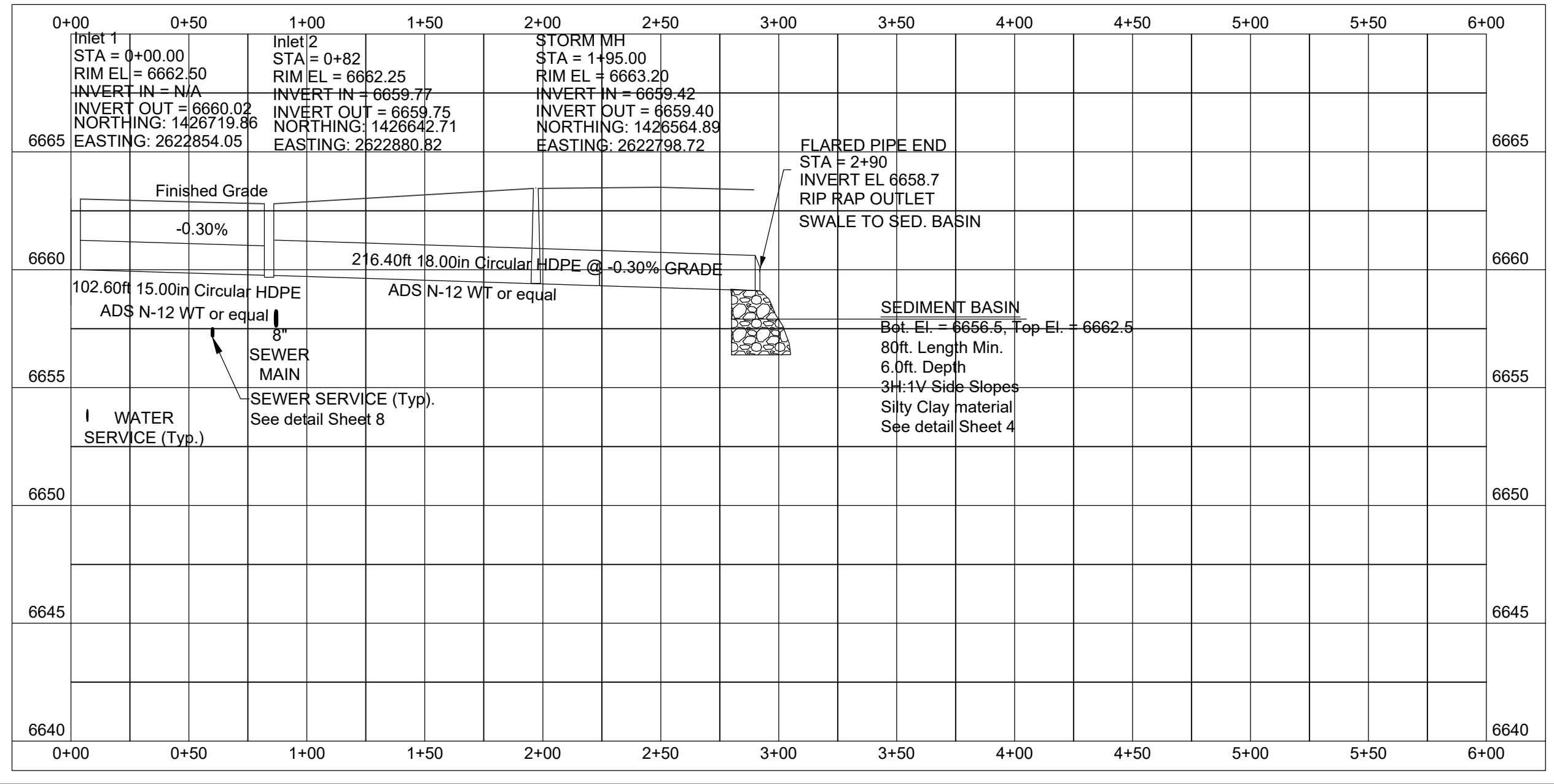
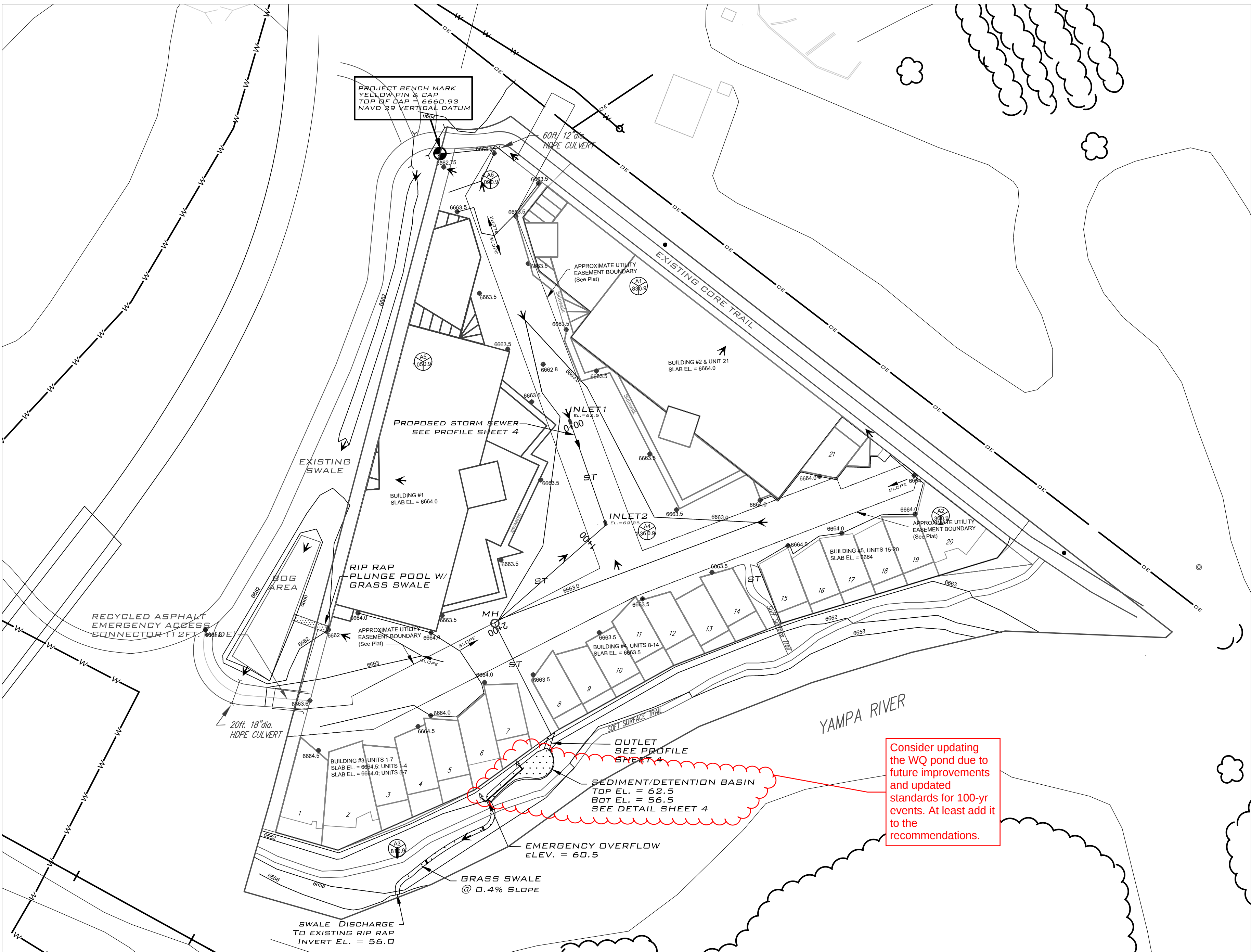
Matthew McLeod, P.E.
Four Points Surveying and Engineering
970-819-1161

Appendix

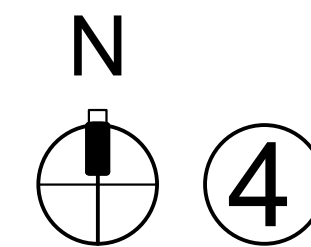
- Proposed grading plan from DP-05-13
- Drainage Exhibit - DR1
- Current Conditions of Storm System with Recommendations
- FEMA Map
- USDA NRCS Web Soil Survey
- Drainage Calculations
- Water Quality Capture Volume Calculations
- Standard Form No. 1 – Drainage Letter Checklist
- Standard Form No. 4 – Stormwater Quality Plan Checklist
- O&M Plan
- Project Sheet – Base Design Standards
- Approved Scope Approval Form



Appendix



LEGEND	
BENCHMARK	
EX. SANITARY SEWER	
EX. SANITARY MANHOLE	
EX. WATER	
EX. OVERHEAD POWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY MANHOLE (See City Std. Detail)	
SANITARY SERVICE (See City Std. Detail)	
PROPOSED WATER	
WATER SERVICE/CURB STOP (See City Std. Detail)	
FIRE HYDRANT (See City Std. Detail)	
HIGH PRESSURE VALVE	
THRUST BLOCK (See City Std. Details)	
CONCRETE ENCASEMENT (See City Std. Details)	
PROPOSED STORM SEWER	
PROPOSED STORM MANHOLE (See City Std. Detail)	
PROPOSED ELECTRIC	
PROPOSED GAS	
PROPOSED TELEPHONE	
PROPERTY LINE	
BASIN BOUNDARY	
BASIN DESIGNATION	A=Basin Id. B=Area (acres) C=Runoff Coefficient
PAVEMENT ELEVATION	
FLOW ARROW	
PROPOSED CONTOUR	



GRADING PLAN & DRAINAGE

PLAN SCALE: 1" = 50' PROFILE SCALE: 1" = 50' Horizontal; 1" = 5' Vertical

NOTE: See drainage plan submitted by Civil Design Consultants, Inc., October 13, 2005.

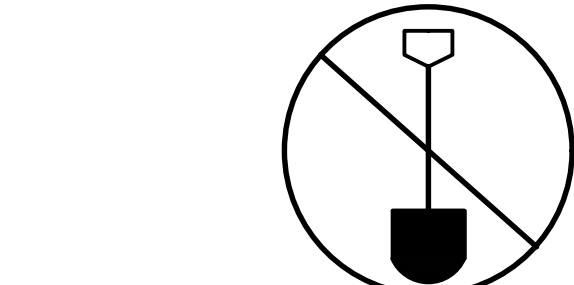
BENCHMARK

Top of yellow cap.

Northing 1426922.4 Easting 2622755.5

NAD 1983 State Plane North Zone

Elevation: 6660.93 ft. NAVD 29



CONTRACTOR SHALL VERIFY THE LOCATION
AND ELEVATION OF ALL EXISTING UTILITIES.

CALL
1-800-922-1987
UTILITY NOTIFICATION CENTER OF COLORADO

REVISIONS		
DATE	APPROVED	DESCRIPTION
6-6-05		FDP Submittal
9-19-05		FDP Revisions
10-6-05		Preliminary Review
2-10-06	RWM	Draft Submittal
3-29-06	RWM	Final Draft Submittal
5-2-06	RWM	Final Submittal
5-12-06	RWM	Final Stamped Submittal
6-1-06	RWM	Final Stamped Submittal 2

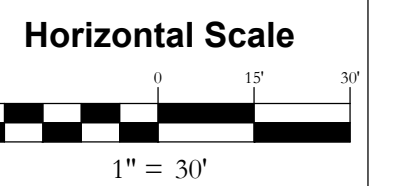
ROBERT W. MOLACEK
REGISTERED PROFESSIONAL ENGINEER
P.E. NO. 35399

Date
Designed: RWM Dec. 2005
Drawn: RWM Dec. 2005
Checked: RWM May 2006
Approved: RWM Jun 2006

Project No.
05004
Drawing Name:
Riverfront.dwg

[illegible]

**RIVERFRONT PARK
BRIDGE LANE
STEAMBOAT SPRINGS, CO 80487**



Contour Interval = 1 ft

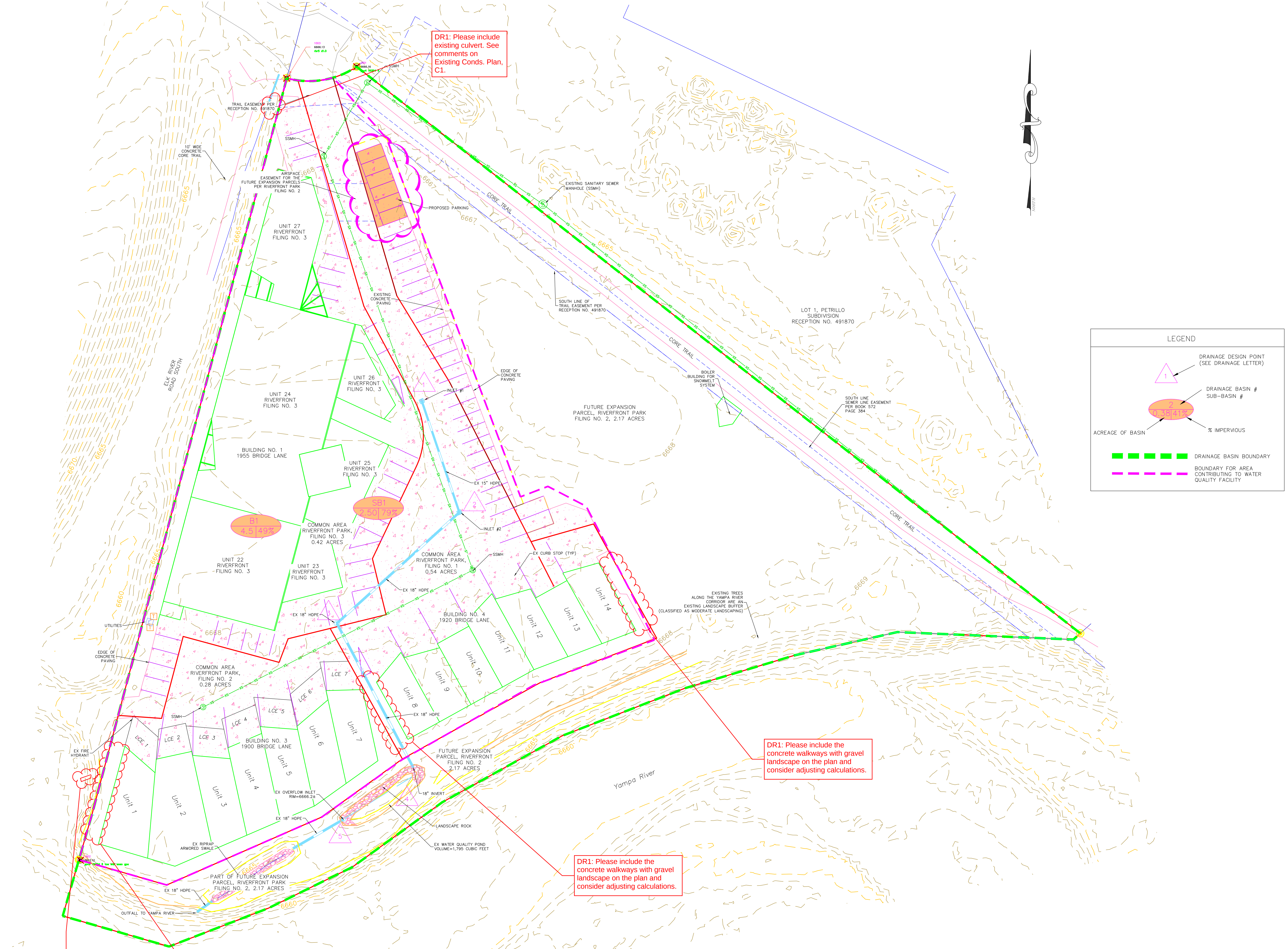
DATE: 2-8-2024
3 #: 2349-001
AWN BY: MDM
SIGN BY: MDM
VIEW BY: RL

THIS DRAWING IS PRESENTED IN A
FORMAT OTHER THAN 24" X 36", THE
GRAPHIC SCALE SHOULD BE UTILIZED.

DRAINAGE EXHIBIT

SHEET #

DR1



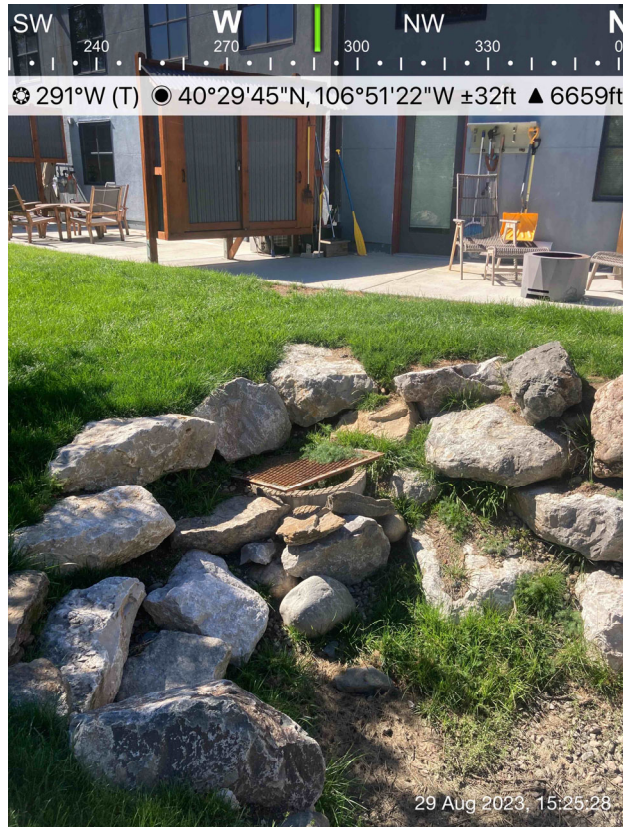
Current Conditions of Storm System with Recommendations



Water Quality Pond
Remove Sediment and Weeds
Adjust any loose rock as needed



Existing 18" HDPE Outfall to Pond

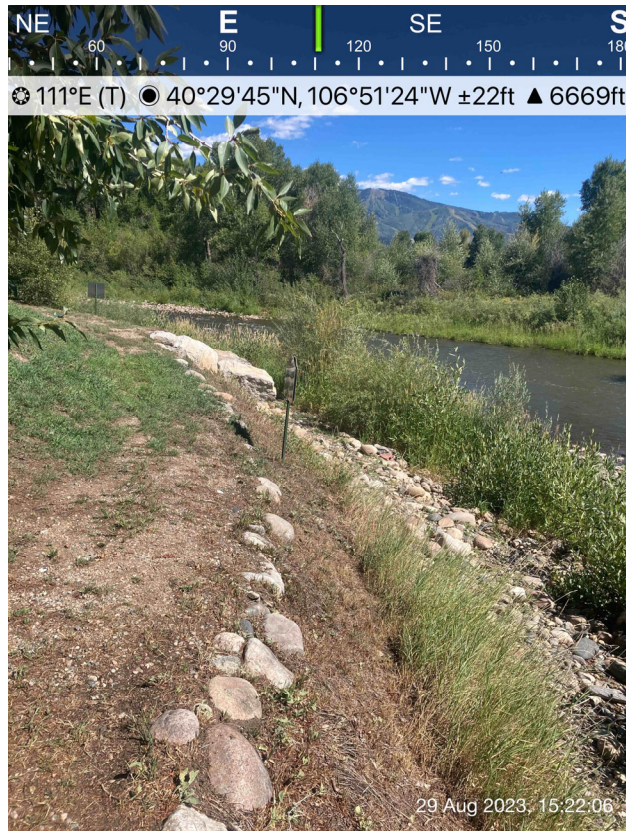


Existing Inlet Control for Pond
Remove sediment from inlet

Remove Loose Grate and Install Attached Grate



Existing Armored Swale
Hand Remove Sediment



Outfall to Yampa River

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 Transverse 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.

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

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.



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, 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.
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

Cross Section Line
Transect Line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
1000-meter Universal Transverse Mercator grid values, zone 13
5000-foot grid ticks
Bench mark (see explanation in Notes to Users section of this FIRM panel).
River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
FEBRUARY 4, 2006

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.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

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

PANEL 876 OF 1475
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY: ROUTT COUNTY UNINCORPORATED AREAS
NUMBER: 080156
PANEL: 0876
SUFFIX: 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 08107C0876D
EFFECTIVE DATE: FEBRUARY 4, 2006

Federal Emergency Management Agency

National Flood Hazard Layer FIRMette



106°51'39"W 40°30'1"N



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

1:6,000

106°51'2"W 40°29'34"N

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
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



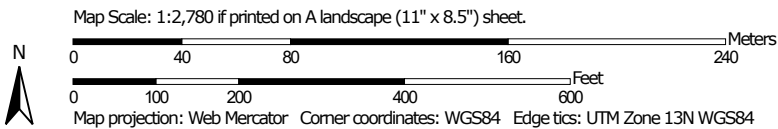
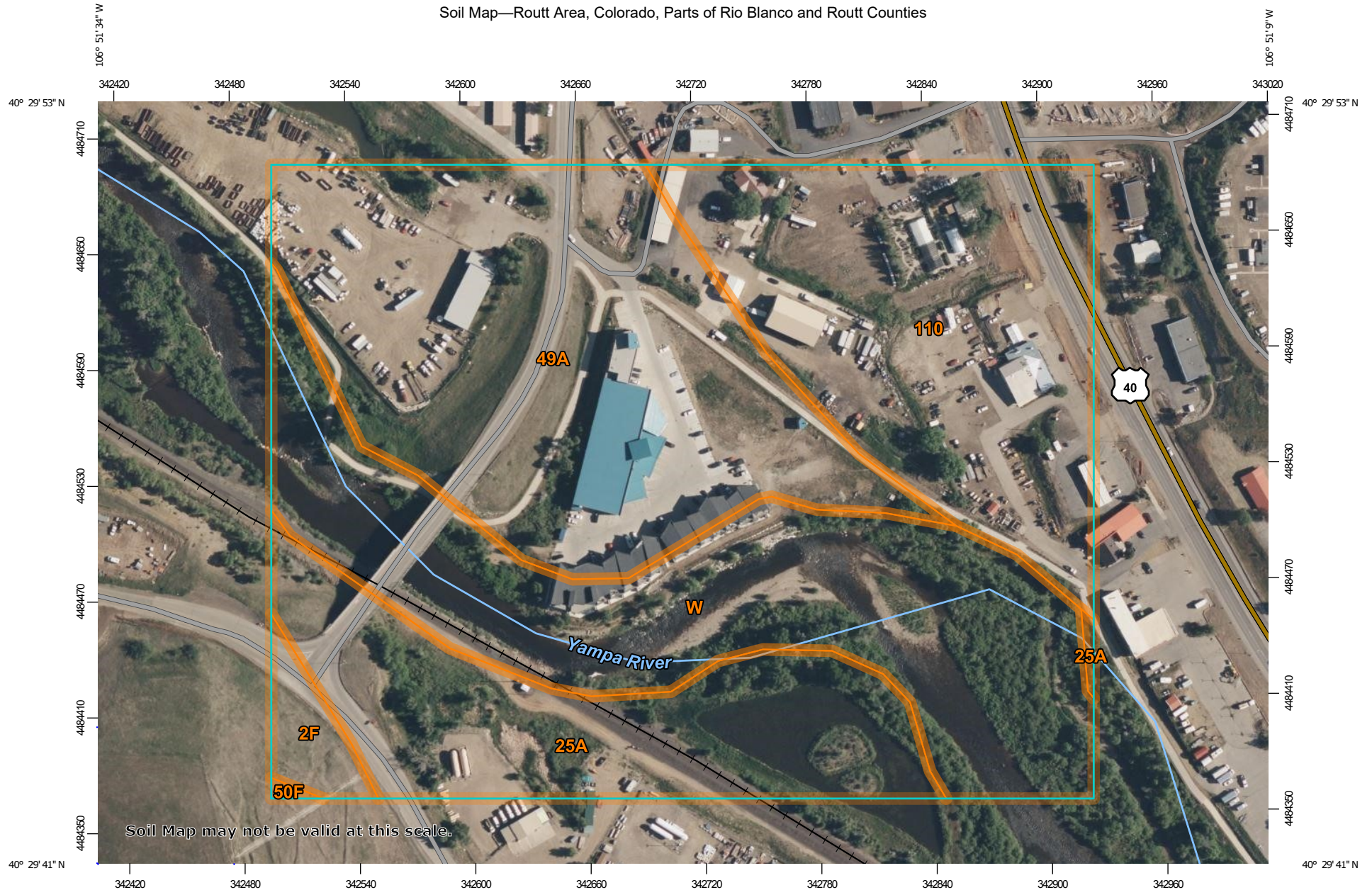
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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 8/30/2023 at 12:48 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.

Soil Map—Routt Area, Colorado, Parts of Rio Blanco and Routt Counties



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/30/2023
Page 1 of 3

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: Routt Area, Colorado, Parts of Rio Blanco and Routt Counties

Survey Area Data: Version 12, Sep 7, 2022

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

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2F	Lintim loam, 25 to 65 percent slopes	0.7	1.9%
25A	Toponas loam, 0 to 3 percent slopes	5.9	16.9%
49A	Slocum loam, gravelly substratum, 0 to 3 percent slopes	11.1	31.8%
50F	Routt loam, 25 to 65 percent slopes, very stony	0.0	0.1%
110	Elkhead clay loam, 0 to 3 percent slopes	8.1	23.1%
W	Water	9.1	26.2%
Totals for Area of Interest		34.9	100.0%

RATIONAL METHOD RUNOFF ANALYSIS

Job # 2349-001
Job Name Riverfront Parrk
Designed by: MDM

Date: February 8, 2024
Revised:

Basin 1 (B1) - Full Site

BASIN CHARACTERISTICS				TIME OF CONCENTRATION							RESULTS				
	Area, ac	% imp	Soil Type	Overland Flow - Surface Type 1		Overland Flow - Surface Type 2		Channel Flow		Tc, min	Event	C	i, in/hr	A, acres	Q, cfs
Landscape	2.20	2%	C	Surface Imperviousness	1	Surface Imperviousness	0	Land Surface	Paved Areas and Shallow Swales	Minimum	1.25 YR	0.33	1.7	4.50	2.59
Asphalt Parking & Walkways	1.05	100%		Length, ft	150	Length, ft	0	Length, ft	0	Tc, min	2-YR	0.33	2.5	4.50	3.73
Roof	1.15	90%	P2	Slope, percent	1.0000	Slope, percent	1.0000	Slope, ft/ft	1.0000	5.0	5-YR	0.39	3.7	4.50	6.58
Gravel	0.10	80%	1.4	Runoff Coefficient	0.9	Runoff Coefficient	0.15	Conveyance Coefficient	20	Final	10-YR	0.45	4.7	4.50	9.66
Other	0.00	0%						Velocity, ft/s	20.0	Tc, min	25-YR	0.52	6.1	4.50	14.41
4.50 49%				Ti, min= 4.4		Ti, min= 0.0		Tt, min= 0.0		5.0	100-YR	0.60	8.2	4.50	22.03

Sub-basin 1 (SB1) - Existing

BASIN CHARACTERISTICS				TIME OF CONCENTRATION							RESULTS				
	Area, ac	% imp	Soil Type	Overland Flow - Surface Type 1		Overland Flow - Surface Type 2		Channel Flow		Tc, min	Event	C	i, in/hr	A, acres	Q, cfs
Landscape	0.45	2%	C	Surface Imperviousness	1	Surface Imperviousness	0	Land Surface	Paved Areas and Shallow Swales	Minimum	1.25 YR	0.58	1.7	2.50	2.50
Asphalt Parking & Walkways	1.05	100%		Length, ft	150	Length, ft	0	Length, ft	0	Tc, min	2-YR	0.58	2.5	2.50	3.60
Roof	1.00	90%	P2	Slope, percent	1.0000	Slope, percent	1.0000	Slope, ft/ft	1.0000	5.0	5-YR	0.61	3.7	2.50	5.66
Gravel	0.00	80%	1.4	Runoff Coefficient	0.9	Runoff Coefficient	0.15	Conveyance Coefficient	20	Final	10-YR	0.65	4.7	2.50	7.64
Other	0.00	0%						Velocity, ft/s	20.0	Tc, min	25-YR	0.69	6.1	2.50	10.49
2.50 78%				Ti, min= 4.4		Ti, min= 0.0		Tt, min= 0.0		5.0	100-YR	0.73	8.2	2.50	14.90

Sub-basin 1 (SB1) - Developed

BASIN CHARACTERISTICS				TIME OF CONCENTRATION							RESULTS				
	Area, ac	% imp	Soil Type	Overland Flow - Surface Type 1		Overland Flow - Surface Type 2		Channel Flow		Tc, min	Event	C	i, in/hr	A, acres	Q, cfs
Landscape	0.43	2%	C	Surface Imperviousness	1	Surface Imperviousness	0	Land Surface	Paved Areas and Shallow Swales	Minimum	1.25 YR	0.59	1.7	2.50	2.54
Asphalt Parking & Walkways	1.07	100%		Length, ft	150	Length, ft	0	Length, ft	0	Tc, min	2-YR	0.59	2.5	2.50	3.65
Roof	1.00	90%	P2	Slope, percent	1.0000	Slope, percent	1.0000	Slope, ft/ft	1.0000	5.0	5-YR	0.62	3.7	2.50	5.73
Gravel	0.00	80%	1.4	Runoff Coefficient	0.9	Runoff Coefficient	0.15	Conveyance Coefficient	20	Final	10-YR	0.65	4.7	2.50	7.73
Other	0.00	0%						Velocity, ft/s	20.0	Tc, min	25-YR	0.69	6.1	2.50	10.59
	2.50	79%		Ti, min=	4.4	Ti, min=	0.0	Tt, min=	0.0	5.0	100-YR	0.74	8.2	2.50	15.02

Design Procedure Form: Sand Filter (SF)

UD-BMP (Version 3.07, March 2018)

Sheet 1 of 2

Designer: Matthew McLeod, P.E.
 Company: Four Points Surveying and Engineering
 Date: February 8, 2024
 Project: Riverfront Park
 Location: Steamboat Springs, CO

1. Basin Storage Volume

- A) Effective Imperviousness of Tributary Area, I_a
 (100% if all paved and roofed areas upstream of sand filter)
- B) Tributary Area's Imperviousness Ratio ($i = I_a/100$)
- C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time
 $WQCV = 0.8 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i)$
- D) Contributing Watershed Area (including sand filter area)
- E) Water Quality Capture Volume (WQCV) Design Volume
 $V_{WQCV} = WQCV / 12 * \text{Area}$
- F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm
- G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
- H) User Input of Water Quality Capture Volume (WQCV) Design Volume
 (Only if a different WQCV Design Volume is desired)

$I_a =$ %

$i =$

WQCV = watershed inches

Area = sq ft

$V_{WQCV} =$ cu ft

$d_e =$ in

$V_{WQCV \text{ OTHER}} =$ cu ft

$V_{WQCV \text{ USER}} =$ cu ft

2. Basin Geometry

- A) WQCV Depth
- B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.
- C) Minimum Filter Area (Flat Surface Area)
- D) Actual Filter Area
- E) Volume Provided

$D_{WQCV} =$ ft

$Z =$ ft / ft
 DIFFICULT TO MAINTAIN, INCREASE WHERE POSSIBLE

$A_{Min} =$ sq ft

$A_{Actual} =$ sq ft **ACTUAL FLAT AREA < MINIMUM FLAT AREA**

$V_T =$ cu ft **TOTAL VOLUME < DESIGN VOLUME IN 1.G**

3. Filter Material

Choose One

☐ 18" CDOT Class B or C Filter Material

☒ Other (Explain):
12" provided based on site constraints

4. Underdrain System

- A) Are underdrains provided?
- B) Underdrain system orifice diameter for 12 hour drain time
- i) Distance From Lowest Elevation of the Storage Volume to the Center of the Orifice
- ii) Volume to Drain in 12 Hours
- iii) Orifice Diameter, 3/8" Minimum

Choose One

☒ YES

☐ NO

$y =$ ft

$Vol_{12} =$ cu ft

$D_o =$ in

Design Procedure Form: Sand Filter (SF)

Sheet 2 of 2

Designer: Matthew McLeod, P.E.
Company: Four Points Surveying and Engineering
Date: February 8, 2024
Project: Riverfront Park
Location: Steamboat Springs, CO

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

A) Is an impermeable liner provided due to proximity of structures or groundwater contamination?

Choose One

☐ YES

☒ NO

6. Inlet / Outlet Works

A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet

Notes:

City of Steamboat Springs Engineering Standards

Standard Form No. 1 Drainage Letter Checklist

Instructions:

1. The applicant shall identify with a "check mark" if information is provided with letter. If applicant believes information is not required, indicate with "N/A" and attach separate sheet with explanation.
2. The reviewer will determine if information labeled "N/A" is required and whether additional information must be submitted.

I. General

- ☒ A. Typed and legible in 8½ x 11" format.
- ☒ B. Drawings that are 8½" x 11" or 11 x 17 bound within letter, larger drawings (up to 24 x 36) included in a pocket attached to the letter. Drawings shall be at an appropriate size and scale to be legible and include project area.

II. Title Page

- ☒ A. Type of Letter.
- ☒ B. Project Name, Subdivision, Original Date, Revision Date.
- ☒ C. Preparer's name, firm, address, and phone number.
- ☒ D. Certifications, PE stamp, signature and date from licensed Colorado PE (for FINAL letter).
- ☒ E. "DRAFT" for 1st Submittal and revisions; "FINAL" once approved.
- ☒ F. Note: City of Steamboat Springs plan review and approval is only for general conformance with City design criteria and the City code. The City is not responsible for the accuracy and adequacy of the design, dimensions, and elevations that shall be confirmed and correlated at the job site. The City of Steamboat Springs assumes no responsibility for the completeness or accuracy of this document.

III. Introduction

- ☒ A. Description of site location, size in acres, existing and proposed land use, and any pertinent background info.
- ☒ B. Identify drainage reports for adjacent development.

IV. Drainage Criteria and Methodology Used

- ☒ A. Identify design rainfall and storm frequency.
- ☒ B. Identify runoff calculation method used.

V. Existing Conditions (Pre-Development/Historic)

- ☒ A. Indicate ground cover, imperviousness, topography, and size of site (acres).
- ☒ B. Describe existing stormwater system (sizes, materials, etc.).
- ☒ C. Describe other notable features (canals, major utilities, etc.).
- ☒ D. Note site outfall locations and ultimate outfall location (typically Yampa River).
- ☒ E. Note capacity of existing system and identify any constraints.
- ☒ F. Identify NRCS soil type.
- ☒ G. Identify the FEMA Map reviewed, if site is in floodplain/way, and zone designation.

City of Steamboat Springs Engineering Standards

VI. Proposed Conditions

- ☒ A. Indicate ground cover, imperviousness, topography, and disturbed area (acres).
- ☒ B. Describe proposed stormwater system (sizes, materials, etc.).
- ☒ C. Describe proposed outlets, and indicate historic and proposed flow for each.
- ☒ D. Include calculations for all pipes, inlets, culverts, ditches, ponds, etc. in appendix.
- ☒ E. Include a summary table for the 5- and 100-year events showing historic flow and proposed flow for total site and each basin.
- ☒ F. Include a summary of proposed water quality measures to be constructed.

VII. Conclusions

- ☒ A. Provide general summary.
- ☒ B. Note if site does or does not comply with criteria and any variances to criteria.
- ☒ C. Indicate if peak proposed flow is less than, equal to, or greater than peak historic flow for each outfall, design point, and for the total site.
- ☒ D. Indicate proposed stormwater quality system.

VIII. References

- ☒ A. Provide a reference list of all criteria, master plans, drainage reports and technical information used.

IX. Figures

- ☒ A. Vicinity Map.
- ☒ B. Site Plan (include the horizontal and vertical datum used and all benchmarks).
- ☒ C. Existing conditions.
 - ☒ 1. Delineate existing basin boundaries.
 - ☒ 2. Show existing runoff flow arrows.
 - ☒ 3. Show existing topography.
 - ☒ 4. Show existing stormwater features (structures, sizes, materials, etc.).
 - ☐ 5. Show floodplain limits and information.
 - ☒ 6. For each basin, show bubble with basin number, acreage and percent impervious or provide information in summary table or figure.
 - ☐ 7. For each outlet show bubble with acreage and historic flow and proposed flow or provide information in summary table on figure.
- ☐ D. Proposed Conditions
 - ☒ 1. Delineate proposed basin boundaries.
 - ☒ 2. Show proposed runoff flow arrows.
 - ☒ 3. Show existing and proposed topography at an interval of at least 5-ft.
 - ☒ 4. For each basin show bubble with basin number, acreage and percent impervious or provide a summary table or figure.
 - ☐ 5. For each outlet show bubble with acreage, historic flow, and proposed flow or provide a summary table or figure.
 - ☐ 6. Show floodplain limits and information.
 - ☒ 7. Show proposed stormwater system (components, sizes, materials, & slopes).
 - ☒ 8. Show property lines and easements.
 - ☒ 9. Show any new easements required.

City of Steamboat Springs Engineering Standards

X. Appendices

- ☒ A. Runoff Calculations
- ☐ B. Culvert Calculations
- ☒ C. Pond Calculations.
- ☒ D. Other Calculations

Acknowledgements:

Standard Form No. 1 was prepared by: Matthew McLeod, P.E.

6/21/2022
Date

CITY OF STEAMBOAT SPRINGS ENGINEERING STANDARDS

Standard Form No. 4 Stormwater Quality Plan Checklist

This list is not an exhaustive list of every possible item that may be required or requested in a Stormwater Quality Plan but provides a general guideline for preparation of the Stormwater Quality Plan.

Instructions:

1. The applicant shall identify with a “check mark” if information is provided within the Stormwater Quality Plan. If applicant believes information is not required, indicate with “N/A” and attach separate sheet with explanation. If information is included with the associated drainage letter or study, indicated with a “D.”
2. The reviewer will determine if information labeled “N/A” is required and whether additional information must be submitted.

I. General

- ☐ A. Report typed and legible in 8½” x 11” format.
- ☐ B. Report bound (comb, spiral, or staple – no notebook) and in digital PDF format.
- ☐ C. Drawings that are 11” x 17” bound within letter, larger drawings (up to 24” x 36”) included in a pocket attached to the letter, and a digital PDF copy. Drawings shall be at an appropriate size and scale to be legible and include project area.

II. Cover

- ☐ A. Report Type – Stormwater Quality Plan.
- ☐ B. Project Name, Subdivision or Development, Original Date, Revision Date.
- ☐ C. Preparer’s name, firm, address, and phone number.
- ☐ D. “DRAFT” for 1st submittal and revisions; “FINAL” once approved.

III. Title Sheet

- ☐ A. Table of Contents.
- ☐ B. Certification, PE Stamp, signature and date from licensed Colorado PE (for Final).
- ☐ C. Note: City of Steamboat Springs plan review and approval is only for general conformance with City design criteria and City code. The City is not responsible for the accuracy and adequacy of the design, dimensions, and elevations that shall be confirmed and correlated at the job site. The City of Steamboat Springs assumes no responsibility for the completeness or accuracy of this document.

IV. Introduction and Background

- ☐ A. Description of site location, study limits, size in acres, existing and proposed land use, soil data, permeability of the site, drainage patterns, and any pertinent background info.
- ☐ B. State purpose and goal of Stormwater Quality Plan and report along with any special requirements of the desired outcome.
- ☐ C. List any project stakeholders and/or requestors.
- ☐ D. Describe the background of the flooding source and any previous studies.

CITY OF STEAMBOAT SPRINGS ENGINEERING STANDARDS

V. Design Criteria and Methodology Used

- _____ A. Identify design rainfall and storm frequency used to design permanent stormwater treatment facilities.
- _____ B. Identify the runoff calculation method used to design permanent stormwater treatment facilities.
- _____ C. Identify the standard the design will meet and the means and methodologies by which it will use to meet the standard.
- _____ D. Provide all details supporting the use of the selected design standard.

VI. Proposed Conditions

- _____ A. Identify total site area, total site imperviousness, area to be treated, and impervious area to be treated. Include justification for treating less than the total site area.
- _____ B. Describe potential site contaminant sources including sediment.
- _____ C. Identify source and quantity of on-site and off-site stormwater flows that need to be managed and how they will be managed.
- _____ D. For each permanent treatment facility, identify the design standard, MDCIA level (if applicable), area treated (& percentage of total), imperviousness of area treated, C values of area treated, soil types, and all pertinent data for design.
- _____ E. Volume based facilities: Provide total storage pond volume, WQCV, drain time, release rate, sediment storage, outlet & overflow structures, area and depth of pond, micropool, forebays, etc. (include all calculations in the appendix).
- _____ F. Flow based facilities: Provide design flow rate and all treatment calculations and how flows larger than the water quality design flow rate will be handled. If proprietary facilities are proposed, provide the justification and sizing requirements from manufacturer.
- _____ G. If stormwater detention is provided, discuss how water quality is provided within the detention facility. No underground detention is allowed.

VII. Operation and Maintenance Plan Requirements

See template O&M plan and guidance document.

- _____ A. Describe general project information, facility description, ROW and access information, vegetation management, hydraulic design parameters, environmental permitting, snow and ice control, and additional pertinent information in the notes.
- _____ B. Indicate, describe, and detail the permanent stormwater treatment facilities.
- _____ C. Include section details where necessary of the permanent treatment facilities.
- _____ D. Provide an inspection and maintenance schedule and procedure of permanent treatment facilities and who is responsible for them.
- _____ E. Identify design specifications for construction.

Acknowledgements

Standard Form No. 4 prepared by: _____

Date

Include appropriate Project Sheet(s) and Design Checklist(s) (See Section 5.12)
Include this form as part of the Stormwater Quality Plan.

1. GENERAL PROJECT INFORMATION

A. RIVERFRONT PARK, BRIDGE LANE, STEAMBOAT SPRINGS, ROUTT COUNTY, COLORADO.

2. GENERAL FACILITY DESCRIPTION

THIS FACILITY IS AN EXISTING POROUS LANDSCAPE DETENTION POND WATER QUALITY (WQ) FEATURES THAT ARE CAPABLE OF TREATING RUNOFF AND OTHER POLLUTANTS THAT COMMONLY ORIGINATE FROM VEHICLES AND MOTORIZED EQUIPMENT.

3. INSPECTION & MAINTENANCE FREQUENCY & PROCEDURE

THE FOLLOWING TABLE PROVIDES A MAINTENANCE SCHEDULE FOR THE EXISTING POROUS LANDSCAPE DETENTION POND:

REQUIRED ACTION	MAINTENANCE OBJECTIVE	FREQUENCY OF ACTION
DEBRIS & LITTER REMOVAL	REMOVE DEBRIS AND LITTER FROM THE FOREBAY AND POND TO MINIMIZE OUTLET CLOGGING AND IMPROVE AESTHETICS	ROUTINE — INCLUDING JUST BEFORE ANNUAL STORM SEASONS (THAT IS APRIL AND MAY) AND FOLLOWING SIGNIFICANT RAINFALL EVENTS
SEDIMENT REMOVAL	REMOVE ACCUMULATED SEDIMENT FROM THE FOREBAY AND POND	ROUTINE — THE SEDIMENT ACCUMULATIONS WILL NEED TO E CLEANED OUT EVERY ONE TO THREE YEARS
NUISANCE CONTROL	ADDRESS ODOR, INSECTS, AND OVERGROWTH ISSUES ASSOCIATED WITH STAGNANT OR STANDING WATER IN THE BOTTOM ZONE	NONROUTINE — HANDLE AS NECESSARY PER INSPECTION OR LOCAL COMPLAINTS
EROSION & SEDIMENT CONTROL	REPAIR AND REVEGETATE ERODED AREAS IN THE BASIN AND CHANNELS	NONROUTINE — PERIODIC AND REPAIR AS NECESSARY BASED ON INSPECTION
STRUCTURAL	REPAIR POND INLETS, OUTLETS, FOREBAYS, LOW FLOW CHANNEL LINERS AND ENERGY DISSIPATERS	NONROUTINE — REPAIR AS NEEDED BASED ON REGULAR INSPECTIONS
INSPECTIONS	INSPECT BASINS TO ENSURE THAT THE BASIN CONTINUES TO FUNCTION AS INITIALLY INTENDED. EXAMINE THE OUTLET FOR CLOGGING, EROSION, SLUMPING, EXCESSIVE SEDIMENTATION LEVELS, OVERGROWTH, EMBANKMENT AND SPILLWAY INTEGRITY AND DAMAGE TO ANY STRUCTURAL ELEMENT	ROUTINE — ANNUAL INSPECTION OF HYDRAULIC AND STRUCTURAL FACILITIES. ALSO CHECK FOR OBVIOUS PROBLEMS DURING ROUTINE MAINTENANCE VISITS, ESPECIALLY FOR PLUGGING OF OUTLETS

4. EQUIPMENT, STAFFING AND VEGETATION MANAGEMENT

A. GENERAL LANDSCAPING TOOLS SUCH AS LAWNMOWER, WEED WHACKER

B. STAFFING: TBD BY OWNER

C. SEEDING: TBD

D. MOWING: VEGETATION HEALTH SHOULD BE MAINTAINED IN THE BUFFER AREA WITH REGULAR MOWING AND/OR WEEDEATING. THE REQUIRED MOW AREA POST-CONSTRUCTION WAS ESTIMATED TO BE 0.01 ACRES.

E. UNDESIRABLE VEGETATION AND WEEDS: UNDESIRABLE VEGETATION AND NOXIOUS WEEDS SHOULD BE REMOVED REGULARLY BY THE LANDSCAPING STAFF. WEEDS SHOULD BE MOWED OR REMOVED.

5. SNOW AND ICE CONTROL

THE POROUS LANDSCAPE DETENTION POND AND GRASS SWALE MAY SERVE AS A SNOW STORAGE AREA DURING THE WINTER MONTHS. SNOW CAN BE PLOWED INTO THE WQ FEATURES. PLOW OPERATORS SHALL TAKE CARE NOT TO DAMAGE THE POND.

6. RIGHT-OF-WAY, ADJACENT OWNERSHIP & ACCESS

A. ACCESS INFORMATION AND DETAILS: CORE TRAIL AND BRIDGE LANE

B. A RIGHT-OF-WAY PERMIT SHOULD NOT BE REQUIRED FOR TEMPORARY OBSTRUCTIONS. MAINTENANCE CREWS SHOULD PLACE MUTCD APPROVED TRAFFIC CONTROL DEVICES (ORANGE CONES AND/OR BARRICADES) AROUND ALL VEHICLES AND EQUIPMENT THAT ARE TEMPORARILY WITHIN THE RIGHT OF WAY.

7. HYDRAULIC DESIGN

A. FLOWRATES (CFS)		
A.A. DESIGN EVENT (1.25 YEAR)	2.59	CFS
A.B. MINOR EVENT (5-YEAR)	6.58	CFS
A.C. MAJOR EVENT (100-YEAR)	22.03	CFS

8. SENSITIVE AREA, WETLANDS & PERMITS

A. WETLANDS ARE NOT PRESENT AT THE SITE AND OFFSITE.

9. MISCELLANEOUS INFORMATION

A. WATER QUALITY FEATURES ARE LOCATED IN THE FLOODWAY.

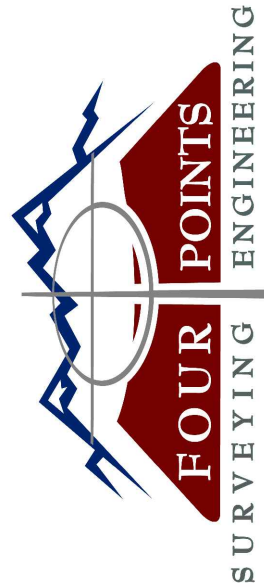
MAINTENANCE NOTES

PROTECTION

SUGGESTED O&M: PROTECT POND FROM FUTURE CONSTRUCTION ACTIVITIES. KEEP FREE OF OBSTRUCTIONS AND EXCESSIVE USE.

NOTE:

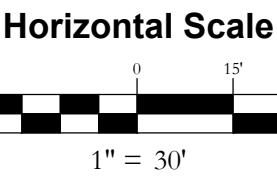
THE PROPERTY OWNER OR MANAGER SHALL BE RESPONSIBLE FOR OPERATION AND MAINTENANCE ACTIVITIES.



440 S. Lincoln Ave, Suite 4A
P.O. Box 775966
Steamboat Springs, CO 80487
(970)-871-6772
www.fourpointse.com

INT									
REVISIONS									
DATE									
No.									

RIVERFRONT PARK
BRIDGE LANE
STEAMBOAT SPRINGS , CO 80487



Contour Interval = 1 ft

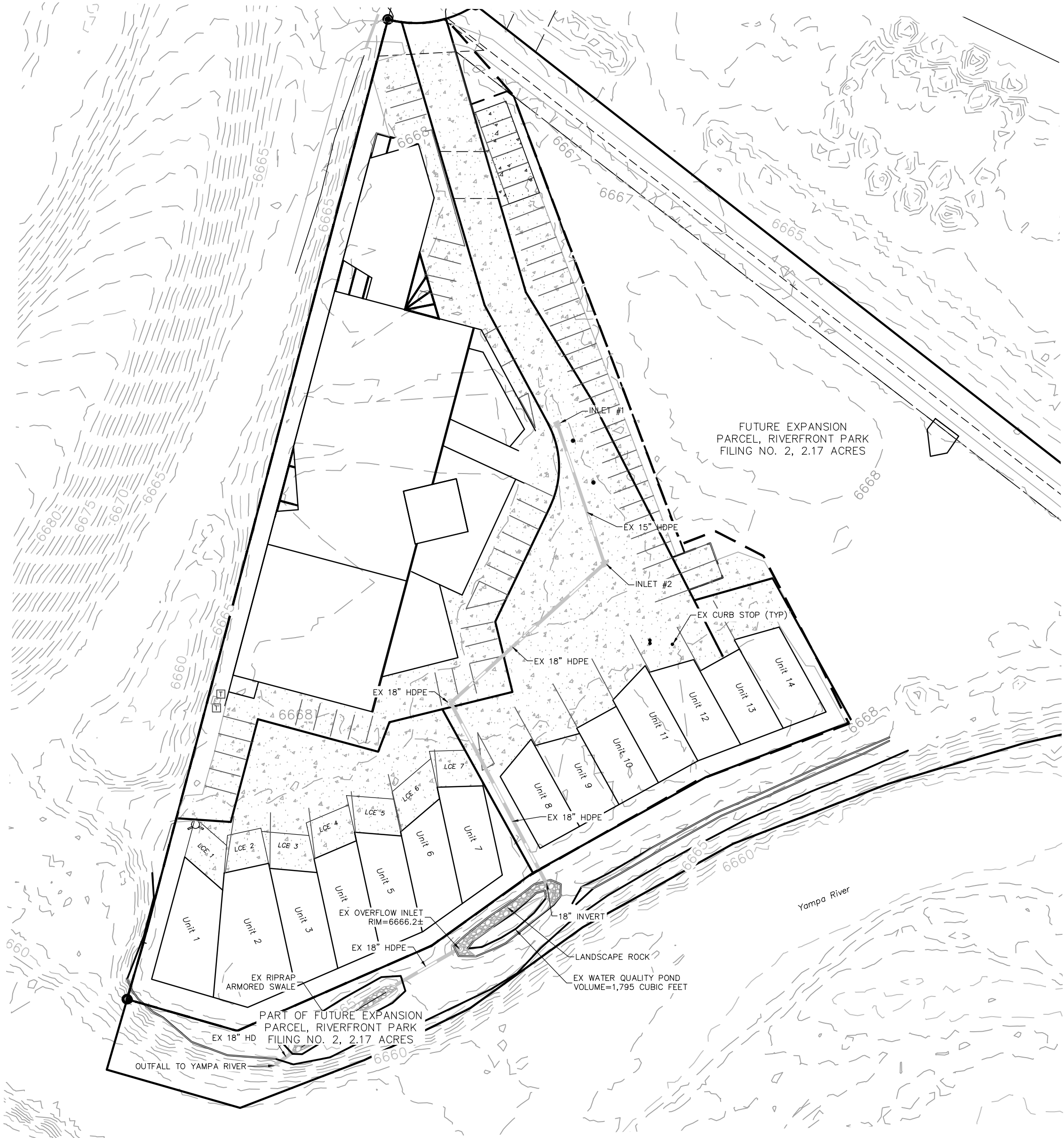
DATE: 2-8-2024
JOB #: 2349-001
DRAWN BY: MDM
DESIGN BY: MDM
REVIEW BY: WNM

IF THIS DRAWING IS PRESENTED IN A
FORMAT OTHER THAN 24" X 36", THE
GRAPHIC SCALE SHOULD BE UTILIZED.

DRAWING:
OPERATION AND
MAINTENANCE PLAN

SHEET #

OM



CITY OF STEAMBOAT SPRINGS ENGINEERING STANDARDS

PROJECT SHEET – BASE DESIGN STANDARDS (Site is not constrained)

Complete a Project Sheet for each project that includes Permanent Stormwater Treatment Facilities.

SITE INFORMATION

Project Name:		
Project Location:		
Submitted Date:	Submitted By:	
Acreage Disturbed:		
Existing Impervious:	New Net Impervious:	
Review Date:	Reviewed By:	
Preparer	City	Requirements
		Design Details are included for all Treatment Facilities
		List or include a description of any source controls or other non-structural practices:

DESIGN STANDARDS

Multiple Design Standards may be used on a site, as necessary, to meet the requirements, but only one Design Standard may be used for each treatment facility's tributary area. Evaluation of suitability of permanent stormwater treatment facilities is based on meeting the specified Design Standard and ease of long-term maintenance. Facilities must be designed in accordance with the most current versions of the City's Engineering Standards and Volume 3 of the USDCM and meet the specific requirements for each Design Standard used.

1. Indicate below, which Design Standard(s) will be used for the project, and
2. Complete a separate, corresponding Design Standards checklist for each facility (e.g., WQCV)

<i>Design Standard</i>	<i>Quantity</i>	<i>Tributary Area</i>	<i>Location/Identifying information</i>
WQCV			
Pollutant Removal			
Runoff Reduction			

CITY OF STEAMBOAT SPRINGS ENGINEERING STANDARDS

Standard Form No. 5 Drainage and Stormwater Treatment Scope Approval Form

Prior to starting a development plan and before the first drainage submittal, a Drainage and Stormwater Treatment Scope Approval Form must be submitted for review and signed by the City Engineer. A signed form shall also be included in every drainage submittal as Attachment A. This Scope Approval Form is for City requirements only. Values may be approximate. The City encourages supporting calculations and figures to be attached.

Project Information	
Project name:	River Front Park PUD
Project location:	1900 & 1920 Bridge Lane, Steamboat Springs, CO
Developer name/contact info:	SEAD, 970-871-9101
Drainage engineer name/contact info:	Matthew McLeod, PE 248-444-3268
Application Type:	PUD
Proposed Land Use:	Mixed Use (Commercial & Residential)
Project Site Parameters	
Total parcel area (acres):	4.5
Disturbed area (acres):	0
Existing impervious area (acres, if applicable):	~2
Proposed new impervious area (acres):	0
Proposed total impervious area (acres):	0
Proposed number of project outfalls:	0
Number of additional parking spaces:	0
Description and site percentage of existing cover/land use(s):	The site has multiple live/work units and work spaces.
Description and site percentage of proposed cover/land use(s):	There will be an application for PUD on the site. No new construction is anticipated as of the date of this letter.
Expected maximum proposed conveyance gradient (%):	Existing slopes to be maintained.
Description of size (acres) and cover/land use(s) of offsite areas draining to the site	No offsite areas appear to drain to the site.

CITY OF STEAMBOAT SPRINGS ENGINEERING STANDARDS

Type of Study Required:

- ☒ Drainage Letter
 ☐ Conceptual Drainage Study
☐ Final Drainage Study
 ☐ Stormwater Quality Plan

Hydrologic Evaluation:

- ☒ Rational Method
 ☐ CUHP/SWMM
 ☐ HEC-HMS
 ☐ Other _____

Project Drainage	
Number of subbasins to be evaluated:	1-2
Presence of pass through flow (circle):	YES <u>NO</u>
Description of proposed stormwater conveyance on site:	No new conveyance proposed. All existing conveyance will be evaluated and updated as needed.
Project includes roadway conveyance as part of design evaluation (circle):	YES <u>NO</u>
Description of conveyance of site runoff downstream of site, identify any infrastructure noted in Stormwater Master Plan noted as lacking capacity for minor or major storm event:	Various grass swales and culvert, eventually out to Yampa River, which is in close proximity.
Detention expected onsite (circle):	YES <u>NO</u> no additional detention proposed
Presence of Floodway or Floodplain on site (circle):	<u>YES</u> NO
Anticipated modification of Floodway or Floodplain proposed (circle):	YES <u>NO</u>
Describe culvert or storm sewer conveyance evaluative method:	mannings

Permanent Stormwater Treatment Facility Design Standard (check all that apply with only one standard per tributary basin):

- ☒ WQCV Standard
 ☐ TSS Standard
 ☐ Infiltration Standard
☐ Constrained Redevelopment WQCV Standard
☐ Constrained Redevelopment TSS Standard
☐ Constrained Redevelopment Infiltration Standard
☐ Does not Require Permanent Stormwater Treatment (attach Exclusion Tracking Form)

CITY OF STEAMBOAT SPRINGS ENGINEERING STANDARDS

Project Permanent Stormwater Treatment	
Justification of choice of proposed design standard, including how the site meets the constrained redevelopment standard, infiltration test results, etc.:	The existing water quality will be evaluated and maintained as needed.
Concept-level permanent stormwater treatment facility design details (type, location of facilities, proprietary structure selection, treatment train concept, etc.):	To be determined with final report.
Proposed LID measures to reduce runoff volume:	None
Will treatment evaluation include off-site, pass through flow (circle):	YES NO N/A

Approvals

Matthew McLeod, PE Four Points Engineering **8/2/2023** **248-444-3268**

Prepared By: _____ Date _____ Phone number _____
 (Insert drainage engineer name & firm)

Approved By: _____

Printed Name: _____ Date _____
 City Engineer

