

# APPENDIX A

## SUBMITTALS CHECKLIST



## CONSTRUCTION DRAWINGS CHECKLIST

	PROJECT IN	IFORMATION		
1. Project Name/Applicant Name	2:	2. Prepared by:		
3. Location/Address:				
4. Submittal Date:	(1)	(2)	(3)	(4)
5. Submitted by:	Firm:			
	Contact (name an	id email):		
	Phone:			
ITEM			Submittee to complete: Included (I), not included (NI), or not applicable (N/A)	Reviewer to complete: I, NI, or N/A
	GENERAL SUBMIT	TAL REQUIREMENTS		•
Overall submittal typed, bound stu	idy or PDF equivalent	t		
Signed and sealed P.E. certification on reports and plans	n statement and stam	nps and signatures		
I. General Information				
Title block (lower right-hand corne	er)			
North arrow				

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
Date and revisions		
Name of professional engineer or firm		
Professional engineer's seal and signature		
Certification statement (see below)		
Street names and easements with width descriptions		
Existing or planned utilities and structures (water, gas, telephone, storm drain, irrigation ditches, sanitary sewers)		
II. Plan Drawings		
North arrow		
Property lines and ownership or subdivision information		
III. Profile Drawings		
Vertical and horizontal grids with scales		
Ground surface existing (dotted) and proposed (solid)		
Existing utility lines where crossed		
Bench marks (USGS Datum)		
Elevations (USGS Datum)		
IV. Proposed Construction		
A. Pipes		
Plan and profile		
Size, type and structural class of pipe, including ASTM specification		
Grades		
Inlet and outlet details		
Manhole details (station number and invert elevations)		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
Bedding and backfilling details		
B. Open Channels		
Plan showing stationing		
Profile, including water-surface profiles		
Grades		
Typical cross-section		
Lining details		
C. Special Structures (manholes, culverts, headwalls, trash grates, etc.)		
Plan		
Elevation and water-surface profiles, details of design and appurtenances		
D. Streets, curb and gutter		
Reviewer Comments:		

Statement:

All work shall be constructed in accordance with Larimer County Standard Specifications as provided by the County Engineer, except as noted.

APPROVED: \_\_\_\_\_\_DATE: \_\_\_\_\_



## DRAINAGE LETTER CHECKLIST

		PROJECT IN	FORMATION		
1. Project N	Jame/Applicant Name	:	2. Prepared by	<i>r</i> :	
3. Location,	/Address:				
4. Submitta	al Date:	(1)	(2)	(3)	(4)
5. Submitte	ed by:	Firm:			
		Contact (name an	d email):		
		Phone:			
ITEM				Submittee to complete: Included (I), not included (NI), or not applicable (N/A)	Reviewer to complete: I, NI, or N/A
		GENERAL SUBMIT	TAL REQUIREMEN	rs	
Overall subm	ittal typed, bound stud	dy or PDF equivalent			
-	ealed P.E. certification reports and plans, if r		ps and		
		DRAINAGE	NARRATIVE		
Project locati	on				
General proje	ect description				
Proposed lan	d use(s)				
	water flows onto the s where flows go when l		onveyed across		

Easements within and adjacent to the site Approximate area of land disturbance Sediment and erosion control during and after construction Applicable calculations and plan sets if changes to basin or drainage is proposed	
Sediment and erosion control during and after construction Applicable calculations and plan sets if changes to basin or drainage is	
Applicable calculations and plan sets if changes to basin or drainage is	1
	-
DRAINAGE FEATURES	
On-site or nearby drainage features (culverts, drainages, lakes/reservoirs, rivers, irrigation ditches, low ponding areas, wetlands)	
Photos of existing drainage features	
DRAINAGE PLAN	
Scale indicated	
North arrow	
Contours	
Property boundaries	
Flow arrows	
Drainage features	
Approximate location of existing and proposed structures	
Existing and proposed roads and access points	
Approximate location of any known drainage easements	
Approximate area of disturbance	
Reviewer Comments:	



## FINAL DRAINAGE REPORT CHECKLIST

	PROJE	CT INFORMATION		
1. Project Name/Applicant Nan	ne:	2. Prepared by:		
3. Location/Address:				
4. Submittal Date:	(1)	(2)	(3)	(4)
5. Submitted by:	Firm:			
	Contact (nan	ne and email):		
	Phone:			
ITEM			Submittee to complete: Included (I), not included (NI), or not applicable (N/A)	Reviewer to complete: I, NI, or N/A
	GENERAL REPORT	SUBMITTAL REQUIREMEN	TS	
Overall submittal typed, bound s	tudy or PDF equiv	valent		
Signed and sealed P.E. certification reports and plans	on statement and	stamps and signatures on		
	DRAII	NAGE NARRATIVE		
I. Introduction				
General project description				
Proposed land use(s)				

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
II. General Location and Description		
A. Location		
City, county, and local streets within and adjacent to the site		
Township, range, section, ¼ section, lot(s) and block(s)		
Names of surrounding developments		
Location map		
B. Description of Property		
Site area		
Ground cover		
Soil types		
Infiltration test results or geotechnical study		
Groundwater characteristics, including depth to water table		
Identify major and sub-basins		
Existing drainage and water quality facilities		
Irrigation facilities on site or nearby related to site drainage		
Effect of development on hazard ratings of any reservoirs in area		
History of flooding		
Easements within and adjacent to the site		
III. Drainage Basins and Sub-basins		
A. Major Basin Descriptions		
Reference relevant MDP reports and FEMA FIRM panels		
Areas, existing and proposed land uses, imperviousness, soils information, overland and channelized slopes, and other parameters used in calculations		

All nearby irrigation facilities that may be affected by local drainage       Image: Comparison of the property and surrounding areas         B. Sub-basin Descriptions       Image: Comparison of the property and surrounding areas         Proposed on-site and off-site sub-basin drainage patterns of the property and surrounding areas       Image: Comparison of the property and surrounding areas, susting and proposed conditions including area, existing and proposed conditions including area, existing and proposed land uses, imperviousness, hydrologic soil groups, overland and channelized slopes, and other physical parameters used for drainage calculations or analyses       Image: Comparison of the property and and channelized slopes, and other physical parameters         V. Drainage Design Criteria       Image: Comparison of the property and proposed conditions including area, existing and proposed conditions including area, existing and proposed and uses, imperviousness, hydrologic soil groups, well and uses, imperviousness, hydrologic soil groups or analyses         V. Drainage Design Criteria       Image: Criteria References and Constraints         Previous drainage studies       Image: Criteria         Data in ape studies       Image: Criteria         Design rainfall and design storm recurrence intervals       Image: Criteria         Design calculation method       Image: Criteria         Runoff calculation method       Image: Criteria         Runoff calculation methods       Image: Criteria         Calculate: imperviousness       Image: Criteria         Cont	ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
B. Sub-basin Descriptions         Historical on-site and off-site sub-basin drainage patterns of the property and surrounding areas       Image: Constraints of the property and surrounding areas         Proposed on-site and off-site sub-basin characteristics and impacts of development       Image: Constraints of the property area, existing and proposed conditions including area, existing and proposed land uses, imperviousness, hydrologic soil groups, overland and channelized slopes, and other physical parameters used for drainage calculations or analyses       Image: Constraints         Image: Design Criteria       Image: Constraints       Image: Constraints         Previous drainage studies       Image: Criteria       Image: Criteria         Drainage impacts of site constraints       Image: Criteria       Image: Criteria         B. Hydrologic Criteria       Image: Criteria       Image: Criteria         Design rainfall and design storm recurrence intervals       Image: Criteria       Image: Criteria         Calculate imperviousness       Image: Criteria       Image: Criteria       Image: Criteria         Detention discharge and storage calculation method       Image: Criteria       Image: Criteria       Image: Criteria         Calculate imperviousness       Image: Criteria       Image: Criteria       Image: Criteria       Image: Criteria         Cother criteria or calculation methods       Image: Criteria       Image: Criteria       Image: Criteria       Image:	All nearby irrigation facilities that may be affected by local drainage		
Historical on-site and off-site sub-basin drainage patterns of the property and surrounding areas       Image: Content of the property of the property of the property of the proposed on-site and off-site sub-basin characteristics and impacts of development         Sub-basin characteristics for existing and proposed conditions including area, existing and proposed land uses, imperviousness, hydrologic soil groups, overland and channelized slopes, and other physical parameters used for drainage calculations or analyses       Image: Content of the property of the physical parameters used for drainage calculations or analyses         IV. Drainage Design Criteria       Image: Content of the property of the physical parameters of the property of the physical parameters of site constraints         Previous drainage studies       Image: Content of the physical parameters of the physical parameters of site constraints         B. Hydrologic Criteria       Image: Content of the physical parameters of site constraints         Design rainfall and design storm recurrence intervals       Image: Content of the physical parameters of the physical paramete	All outfalls to major drainageways		
and surrounding areas       Image: Content of the sub-basin characteristics and impacts of development         Sub-basin characteristics for existing and proposed conditions including area, existing and proposed land uses, imperviousness, hydrologic soil groups, overland and channelized slopes, and other physical parameters used for drainage calculations or analyses       Image: Content of the sub-basin characteristics and impacts of development criteria References and Constraints         Previous drainage studies       Image: Content of the sub-basin characteristics       Image: Content of the sub-basin characteristics         Adjacent drainage studies       Image: Content of the sub-basin characteristics       Image: Content of the sub-basin characteristics         B. Hydrologic Criteria       Image: Content of the sub-basin characteristics       Image: Content of the sub-basin characteristics         Hydrologic soil groups       Image: Content of the sub-basin characteristics       Image: Content of the sub-basin characteristics         Hydrologic soil groups       Image: Content of the sub-basin characteristics       Image: Content of the sub-basin characteristics         Runoff calculation method       Image: Content of the sub-basin characteristics       Image: Content of the sub-basin characteristics         Other criteria or calculation methods       Image: Content of the sub-basin charage calculation method       Image: Content of the sub-basin charage calculation method         Other criteria       Image: Content of the sub-basin charage calculation method       Image: Conten charag	B. Sub-basin Descriptions		
development       Image:			
area, existing and proposed land uses, imperviousness, hydrologic soil       groups, overland and channelized slopes, and other physical parameters         used for drainage calculations or analyses       Impervious parameters         V. Drainage Design Criteria       Impervious drainage studies         A. Development Criteria References and Constraints       Impervious drainage studies         Previous drainage studies       Impervious drainage studies         Adjacent drainage studies       Impervious drainage studies         Drainage impacts of site constraints       Impervious drainage studies         B. Hydrologic Criteria       Impervious drainage studies         Design rainfall and design storm recurrence intervals       Impervious drainage         Hydrologic soil groups       Impervious drainage calculation method         Detention discharge and storage calculation method       Impervious         Other criteria or calculation methods       Impervious         C. Hydraulic Criteria       Impervious			
A. Development Criteria References and Constraints         Previous drainage studies         Adjacent drainage studies         Adjacent drainage studies         Drainage impacts of site constraints         B. Hydrologic Criteria         Design rainfall and design storm recurrence intervals         Hydrologic soil groups         Calculate imperviousness         Runoff calculation method         Detention discharge and storage calculation method         Other criteria or calculation methods         C1. Hydraulic Criteria	area, existing and proposed land uses, imperviousness, hydrologic soil groups, overland and channelized slopes, and other physical parameters		
Previous drainage studies	IV. Drainage Design Criteria		
Adjacent drainage studies	A. Development Criteria References and Constraints		
Drainage impacts of site constraints       Image: Impacts of site constraints         B. Hydrologic Criteria         Design rainfall and design storm recurrence intervals       Image: Imag	Previous drainage studies		
B. Hydrologic Criteria         Design rainfall and design storm recurrence intervals         Hydrologic soil groups         Calculate imperviousness         Runoff calculation method         Detention discharge and storage calculation method         Other criteria or calculation methods         C. Hydraulic Criteria	Adjacent drainage studies		
Design rainfall and design storm recurrence intervals       Image: Constraint of the constraint of	Drainage impacts of site constraints		
Hydrologic soil groups       Image: Calculate imperviousness         Calculate imperviousness       Image: Calculation method         Runoff calculation method       Image: Calculation method         Detention discharge and storage calculation method       Image: Calculation methods         Other criteria or calculation methods       Image: Calculation methods	B. Hydrologic Criteria		
Calculate imperviousness       Image: Calculation method         Runoff calculation method       Image: Calculation method         Detention discharge and storage calculation method       Image: Calculation methods         Other criteria or calculation methods       Image: Calculation methods	Design rainfall and design storm recurrence intervals		
Runoff calculation method   Detention discharge and storage calculation method   Other criteria or calculation methods   C. Hydraulic Criteria	Hydrologic soil groups		
Detention discharge and storage calculation method     Image: Color of the storage calculation methods       Other criteria or calculation methods     Image: Color of the storage calculation methods	Calculate imperviousness		
Other criteria or calculation methods C. Hydraulic Criteria	Runoff calculation method		
C. Hydraulic Criteria	Detention discharge and storage calculation method		
·	Other criteria or calculation methods		
Capacity analysis of existing and proposed drainage infrastructure	C. Hydraulic Criteria	1	
	Capacity analysis of existing and proposed drainage infrastructure		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
Floodplain analyses (if required)		
Other drainage facility design criteria used		
D. Stormwater Quality		
Describe how the project will satisfy MS4 permit		
V. Drainage Facility Design		
A. General Concept		
General drainage concepts		
Off-site runoff considerations		
Anticipated and proposed drainage patterns		
Discuss tables, charts, figures, and drawings		
B. Specific Details		
Drainage problems and solutions		
Design flows and detention storage volumes		
Existing stormwater conveyance and storage facilities		
Proposed stormwater conveyance, storage facilities, and outlet structures		
Spillway design included		
Structural and Non-structural Control Measures (SCMs)		
Maintenance access and aspects		
Easements and tracts		
Compliance with local, state, and federal requirements		
Describe safety hazards that may be associated with various drainage structures and the provisions that have been included in the design to minimize safety hazards		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
C. Variances		•
Any requested variances from Larimer County drainage criteria or approved master plans		
VI. Conclusions		
A. Compliance with Standards		
Compliance with criteria in Larimer County Manual		
Compliance with Larimer County and FEMA floodplain rules and regulations		
B. Drainage Concept		
Drainage design will control damage from storm runoff		
Compatibility of proposed development with approved master plans		
Drainage impacts of proposed development on upstream and downstream properties		
C. Water Quality		
Compliance with CDPS MS4 Permit		
Post-construction design standards in the MS4 Permit will be met		
VII. References		
Criteria and technical information used		
VIII. Appendices		
A. Hydrologic Computations		
Land use assumptions for adjacent properties		
Historic and proposed runoff computations		
Calculations for WQCV, EURV, detention storage volumes, release rates, and drain time		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
B. Hydraulic Computations		
Culvert capacity calculations		
Street capacity and inlet calculations for minor storm runoff and major storm runoff		
Storm drain capacity calculations and profile showing hydraulic grade lines, ground surface grade, and pipe grade for the minor and major storms		
Detention area/volume capacity and outlet capacity calculations; include historic inflow, developed inflow, and outflow design hydrographs for detention facilities		
Stage-volume curves, outlet rating curves, spillway rating curves, and the method used to determine the rating curves for storm water storage facilities		
Documentation, water surface profiles for open channel. Designs for low- flow and trickle channel, stabilization (erosive velocities), and grade control		
Backwater profiles for open channels for the minor and major storm runoff with input data and procedures used for calculations		
Energy dissipation and calculations		
Downstream/outfall system capacity		
C. Floodplain Information		
FIRM		
D. Soils Information		
Soils map		
Soils report		
DRAINAGE PLAN		
IX. Drainage Plan Maps/Drawings		
A. Overall Drainage Map		
Scale indicated		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
Title block, legend, and north arrow		
Engineering firm name, professional engineering stamp, signature, and date		
Major basin and sub-basin boundaries		
Project/development boundaries		
Flow path for major drainageways		
Location and elevations of floodplain boundaries		
Drainage patterns entering, leaving, and within the site		
Existing and proposed stormwater management facilities		
B. Detailed Drainage Plan		
Scale indicated		
Title block, legend, and north arrow		
Existing/proposed contours at 2-foot maximum intervals on USGS Datum		
Location and elevations of USGS Benchmarks. All elevations shall be on USGS Datum		
Minimum lowest floor elevations for protection from major storm runoff		
Major basin and sub-basin boundaries, area, and imperviousness		
Definition of overland and channelized flow paths used for time of concentration calculation		
Location and elevations of floodplain boundaries		
Routing and accumulation of flows at design points for minor and major storm runoff		
Property lines, easements, and right-of-way		
Location and elevations of existing and proposed utilities and structures		
Streets, names, and grades		

Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
	complete:

I hereby certify that this report (plan) for the final drainage design of

\_\_\_\_\_ was prepared by me (or under my direct supervision) for the owners thereof and meets or exceeds the criteria in the Larimer County Stormwater Design Standards.

Licensed Professional Engineer State of Colorado No. \_\_\_\_\_ (Seal)



#### PRELIMINARY DRAINAGE REPORT CHECKLIST

PROJECT INFORMATION				
1. Project Name/Applicant Nam	e:	2. Prepared by:		
3. Location/Address:				
4. Submittal Date:	(1)	(2)	(3)	(4)
5. Submitted by:	Firm:			
	Contact (nan	ne and email):		
	Phone:			
ITEM			Submittee to complete: Included (I), not included (NI), or not applicable (N/A)	Reviewer to complete: I, NI, or N/A
G	ENERAL REPORT	SUBMITTAL REQUIREMEN	TS	
Overall submittal typed, bound st	udy or pdf equiva	alent		
Signed and sealed P.E. certificatio reports and plans	n statement and	stamps and signatures on		
	DRAI	NAGE NARRATIVE		
I. Introduction				
General project description				
Proposed land use(s)				

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
II. General Location and Description		
A. Location		
City, county, and local streets within and adjacent to the site		
Township, range, section, ¼ section, lot(s) and block(s)		
Names of surrounding developments		
Location map		
B. Description of Property		
Site area		
Ground cover		
Soil types		
Infiltration test results or geotechnical study		
Groundwater characteristics, including depth to water table		
Identify major and sub-basins		
Existing drainage and water quality facilities		
Irrigation facilities on site or nearby related to site drainage		
Effect of development on hazard ratings of any reservoirs in area		
History of flooding		
Easements within and adjacent to the site		
III. Drainage Basins and Sub-basins		
A. Major Basin Descriptions		
Reference relevant MDP reports and FEMA FIRM panels		
Areas, existing and proposed land uses, imperviousness, soils information, overland and channelized slopes, and other parameters used in calculations		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
All nearby irrigation facilities that may be affected by local drainage		
All outfalls to major drainageways		
B. Sub-basin Descriptions		
Historical on-site and off-site sub-basin drainage patterns of the property and surrounding areas		
Proposed on-site and off-site sub-basin characteristics and impacts of development		
Sub-basin characteristics for existing and proposed conditions including area, existing and proposed land uses, imperviousness, hydrologic soil groups, overland and channelized slopes, and other physical parameters used for drainage calculations or analyses		
IV. Drainage Design Criteria		
A. Development Criteria References and Constraints		
Previous drainage studies		
Adjacent drainage studies		
Drainage impacts of site constraints		
B. Hydrologic Criteria		
Design rainfall and design storm recurrence intervals		
Hydrologic soil groups		
Calculate imperviousness		
Runoff calculation method		
Preliminary detention discharge and storage calculation method		
Other criteria or calculation methods		
C. Hydraulic Criteria		
Preliminary capacity analysis of existing and proposed drainage infrastructure		

ΙΤΕΜ	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
Floodplain analyses (if required)		
Other preliminary drainage facility design criteria used		
D. Stormwater Quality		I
Describe how the project will satisfy MS4 permit		
V. Drainage Facility Design		
A. General Concept		
General drainage concepts		
Off-site runoff considerations		
Anticipated and proposed drainage patterns		
Discuss tables, charts, figures, and drawings		
B. Specific Details		
Drainage problems and preliminary solutions		
Preliminary design flows and detention storage volumes		
Existing stormwater conveyance and storage facilities		
Proposed stormwater conveyance, storage facilities, and outlet structures		
Structural and Non-structural Control Measures (SCMs)		
Maintenance		
Easements		
Compliance with local, state, and federal requirements		
C. Variances		
Any requested variances from Larimer County drainage criteria or approved master plans		

VI. Conclusions         A. Compliance with Standards         Compliance with criteria in Larimer County Manual         Compliance with Larimer County and FEMA floodplain rules and regulations         B. Drainage Concept         Drainage design will control damage from storm runoff         Compatibility of proposed development with approved master plans         Drainage impacts of proposed development on upstream and downstream properties         C. Water Quality         Compliance with CDPS MS4 Permit         Post-construction design standards in the MS4 Permit will be met         VII. References         Criteria and technical information used         VII. Appendices         A. Hydrologic Computations         Land use assumptions for adjacent properties         Historic and proposed runoff computations         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time         B. Hydraulic Computations         Detention area/volume capacity	ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
Compliance with criteria in Larimer County Manual       Image: Compliance with Larimer County and FEMA floodplain rules and regulations         B. Drainage Concept       Image: Compliance with Larimer County and FEMA floodplain rules and regulations         Drainage design will control damage from storm runoff       Image: Compatibility of proposed development with approved master plans         Drainage impacts of proposed development on upstream and downstream properties       Image: Compliance with CDPS MS4 Permit         Compliance with CDPS MS4 Permit       Image: Compliance with CDPS MS4 Permit         Post-construction design standards in the MS4 Permit will be met       Image: Compliance with CDPS MS4 Permit         VII. References       Image: Compliance Computations         Criteria and technical information used       Image: Compliance Computations         Land use assumptions for adjacent properties       Image: Computations         Historic and proposed runoff computations       Image: Computations         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time       Image: Computations         B. Hydraulic Computations       Image: Computations       Image: Computations	VI. Conclusions		
Compliance with Larimer County and FEMA floodplain rules and regulations       Image Concept         B. Drainage Concept       Image Concept         Drainage design will control damage from storm runoff       Image Concept         Compatibility of proposed development with approved master plans       Image Concept         Drainage impacts of proposed development on upstream and downstream properties       Image Concept         C. Water Quality       Image Concept         Compliance with CDPS MS4 Permit       Image Concept         Post-construction design standards in the MS4 Permit will be met       Image Concept         VII. References       Image Concept         VIII. Appendices       Image Concept         A. Hydrologic Computations       Image Concept         Land use assumptions for adjacent properties       Image Concept         Historic and proposed runoff computations       Image Concept         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time       Image Concept Computations         B. Hydraulic Computations       Image Concept Computations       Image Concept Computations	A. Compliance with Standards		
B. Drainage Concept         Drainage design will control damage from storm runoff         Compatibility of proposed development with approved master plans         Drainage impacts of proposed development on upstream and downstream properties         C. Water Quality         Compatibility of proposed development on upstream and downstream         Properties         C. Water Quality         Compliance with CDPS MS4 Permit         Post-construction design standards in the MS4 Permit will be met         VII. References         Criteria and technical information used         VIII. Appendices         A. Hydrologic Computations         Land use assumptions for adjacent properties         Historic and proposed runoff computations         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time         B. Hydraulic Computations	Compliance with criteria in Larimer County Manual		
Drainage design will control damage from storm runoff	Compliance with Larimer County and FEMA floodplain rules and regulations		
Compatibility of proposed development with approved master plans	B. Drainage Concept		
Drainage impacts of proposed development on upstream and downstream properties       Image: Ima	Drainage design will control damage from storm runoff		
properties       Image: Compliance with CDPS M54 Permit         Compliance with CDPS M54 Permit       Image: Compliance with CDPS M54 Permit         Post-construction design standards in the M54 Permit will be met       Image: Compliance with CDPS M54 Permit         VII. References       Image: Compliance with CDPS M54 Permit will be met       Image: Compliance with CDPS M54 Permit will be met         VII. References       Image: Compliance with CDPS M54 Permit will be met       Image: Compliance with CDPS M54 Permit will be met         VII. References       Image: Compliance with CDPS M54 Permit will be met       Image: Compliance with CDPS M54 Permit will be met         VII. References       Image: Compliance with CDPS M54 Permit will be met       Image: Compliance with CDPS M54 Permit will be met         VII. Appendices       Image: Compliance with CDPS M54 Permit will be met       Image: Compliance with CDPS M54 Permit will be met         A. Hydrologic Computations       Image: Compliance with CDPS M54 Permit will be met       Image: Compliance with CDPS M54 Permit will be met         Image: Land use assumptions for adjacent properties       Image: Compliance with CDPS M54 Permit will be met       Image: Compliance with CDPS M54 Permit will be met         Image: Land use assumptions for WQCV, EURV, detention storage volumes, release rates, and drain time       Image: Compliance with complia	Compatibility of proposed development with approved master plans		
Compliance with CDPS MS4 PermitImage: Compliance with CDPS MS4 PermitPost-construction design standards in the MS4 Permit will be metImage: Compliance with CDPS MS4 PermitVII. ReferencesImage: Compliance with CDPS MS4 Permit will be metCriteria and technical information usedImage: Compliance with CDPS MS4 PermitVIII. AppendicesImage: Compliance with CDPS MS4 Permit will be metA. Hydrologic ComputationsImage: Compliance with CDPS MS4 PermitLand use assumptions for adjacent propertiesImage: Compliance with CDPS MS4 PermitHistoric and proposed runoff computationsImage: Compliance with CDPS MS4 PermitPreliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain timeImage: Compliance with CDPS MS4 PermitB. Hydraulic ComputationsImage: Compliance with CDPS MS4 PermitImage: Compliance with CDPS MS4 Permit			
Post-construction design standards in the MS4 Permit will be met       Image: Construction design standards in the MS4 Permit will be met         VII. References       Image: Construction design standards in the MS4 Permit will be met         Criteria and technical information used       Image: Construction design standards in the MS4 Permit will be met         VIII. Appendices       Image: Construction standards in the MS4 Permit will be met         A. Hydrologic Computations       Image: Construction standards in the MS4 Permit will be met         Land use assumptions for adjacent properties       Image: Construction standards in the MS4 Permit will be met         Historic and proposed runoff computations       Image: Construction standards in time         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time       Image: Construction storage volumes, release rates, and drain time	C. Water Quality		
VII. References         Criteria and technical information used         VIII. Appendices         VIII. Appendices         A. Hydrologic Computations         Land use assumptions for adjacent properties         Historic and proposed runoff computations         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time         B. Hydraulic Computations	Compliance with CDPS MS4 Permit		
Criteria and technical information used   VIII. Appendices   A. Hydrologic Computations   Land use assumptions for adjacent properties   Historic and proposed runoff computations   Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time   B. Hydraulic Computations	Post-construction design standards in the MS4 Permit will be met		
VIII. Appendices         A. Hydrologic Computations         Land use assumptions for adjacent properties         Historic and proposed runoff computations         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time         B. Hydraulic Computations	VII. References		
A. Hydrologic Computations         Land use assumptions for adjacent properties         Historic and proposed runoff computations         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time         B. Hydraulic Computations	Criteria and technical information used		
Land use assumptions for adjacent properties       Image: Computations         Historic and proposed runoff computations       Image: Computations         Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time       Image: Computations         B. Hydraulic Computations       Image: Computations	VIII. Appendices		
Historic and proposed runoff computations       Image: Computation storage volumes, release rates, and drain time         B. Hydraulic Computations       Image: Computation storage volumes, release rates, and drain time	A. Hydrologic Computations		
Preliminary calculations for WQCV, EURV, detention storage volumes, release rates, and drain time B. Hydraulic Computations	Land use assumptions for adjacent properties		
release rates, and drain time B. Hydraulic Computations	Historic and proposed runoff computations		
Detention area/volume capacity	B. Hydraulic Computations	1	L
	Detention area/volume capacity		
Preliminary capacity analysis for any proposed control measures	Preliminary capacity analysis for any proposed control measures		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
C. Floodplain Information		•
FIRM		
D. Soils Information		
Soils map		
Soils report		
DRAINAGE PLAN		
I. Overall Drainage Map		
Scale indicated		
Title block, legend, and north arrow		
Engineering firm name, professional engineering stamp, signature, and date		
Major basin and sub-basin boundaries		
Project/development boundaries		
Flow path for major drainageways		
Location and elevations of floodplain boundaries		
Drainage patterns entering, leaving, and within the site		
Existing and proposed stormwater management facilities		
II. Detailed Drainage Plan		
Scale indicated		
Title block, legend, and north arrow		
Existing/proposed contours at 2-foot maximum intervals on USGS Datum		
Location and elevations of USGS Benchmarks. All elevations shall be on USGS Datum.		
Minimum lowest floor elevations for protection from major storm runoff		

ITEM	Submittee to complete: I, NI, or N/A	Reviewer to complete: I, NI, or N/A
Major basin and sub-basin boundaries, area, and imperviousness		
Definition of overland and channelized flow paths used for time of concentration calculation		
Location and elevations of floodplain boundaries		
Routing and accumulative flows at design points for minor and major storm runoff		
Property lines, easements, and right-of-way		
Location and elevations of existing and proposed utilities and structures		
Streets, names, and grades		
Off-site features influencing drainage through the development		
Existing drainage facilities and structures		
Proposed types of curb and gutter and gutter flow direction, including cross pans		
Proposed storm drains and open drainageways, including proposed inlets, manholes, culverts, and other appurtenances		
Proposed outfall points for runoff from study area		
Locations and footprints of water quality and/or detention facilities		
Proposed volumes and release rates for detention storage facilities		
Reviewer Comments:		

Certification:

I hereby certify that this report (plan) for the preliminary drainage design of \_\_\_\_\_\_\_was prepared by me (or under my direct supervision) for the owners thereof and meets or exceeds the criteria in the Larimer County Stormwater Design Standards.

> Licensed Professional Engineer State of Colorado No. \_\_\_\_\_ (Seal)