

CITY OF LONGMONT  
STORM DRAINAGE CRITERIA MANUAL

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CITY OF LONGMONT  
STORM DRAINAGE CRITERIA MANUAL

SECTION 200 DRAINAGE PLANNING SUBMITTAL REQUIREMENTS

201 REVIEW PROCESS

All subdivisions, resubdivisions, planned unit developments, or other development within the jurisdiction of this manual shall submit drainage reports, Construction drawings/specifications, and as-built information in accordance with the requirements of this section. Two copies of the drainage report shall be submitted to the City Engineer; one copy will be retained with comments. Before the drainage reports are accepted for review, the report will be checked for minimum submittal requirements as noted in the "Drainage Report Submittal Checklist", Standard Form SF-1.

The subdivider or authorized representative shall first consult with the office of the City Engineer for general information regarding subdivision regulations, required procedure, possible drainage problems, and specific submittal requirements (REGULATIONS Title 14 Chapter 15, Section 3.2).

202 ST. VRAIN VALLEY PLAN

202.1 Drainage Requirements

Applications approved by the Planning and Zoning Commission and the City Council under the "neighborhood unit" concept shall follow the same development review procedure as required for a Subdivision or Site Plan. The submittal requirements for Drainage shall be as set forth under Sections 203 and 204 of this MANUAL and include the following additional information:

202.2 Report Contents

The Preliminary and Final Drainage reports shall include the following Section:

ST. VRAIN VALLEY PLAN

A. Goals and Policies

1. Discuss how the proposed drainage plan meets the "Environmental Management Goals" and adheres to the Floodplain Policy
2. Discuss any deviation from the above goals and policies

B. Oligarchy Ditch

1. If the ditch is used for drainage discuss the overall concept
2. Discuss the interaction of storm drainage and ditch water

C. Criteria

1. Discuss the deviation from the MANUAL criteria and methodology approved by the City Engineer
2. Discuss the design criteria for the storm drainage design of the Oligarchy ditch

203 PRELIMINARY DRAINAGE REPORT

The purpose of the Preliminary Drainage Report is to identify and define conceptual solutions to the problems which may occur on site and off site as a result of the development. In addition, those problems that exist on site prior to development must be addressed during the preliminary phase. All reports shall be typed on 8-1/2" x 11" paper and bound together. The drawings, figures,

plates, and tables shall be bound with the report or included in a folder/pocket at the back of the report. The report shall include a cover letter presenting the preliminary design for review and shall be prepared by or supervised by an engineer licensed in Colorado. The report shall contain a certification sheet as follows:

"I hereby certify that this report (plan) for the preliminary drainage design of (Name of Development) was prepared by me (or under my direct supervision) in accordance with the provisions of City of Longmont Storm Drainage Criteria Manual for the owners thereof."

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

### 203.1 Report Contents

The Preliminary Drainage Report shall be in accordance with the following outline and contain the applicable information listed:

#### I. GENERAL LOCATION AND DESCRIPTION

##### A. Location

1. Township, range, section, 1/4 section
2. Local streets within and adjacent to the subdivision
3. Major drainageways and facilities
4. Names of surrounding developments

##### B. Description of Property

1. Area in acres
2. Ground cover (type of trees, shrubs, vegetation)
3. Major drainageways
4. General project description
5. Irrigation facilities (see Boulder County "Ditch and Reservoir Map")

#### II. DRAINAGE BASINS AND SUB-BASINS

##### A. Major Basin Description

1. Reference to major drainageway planning studies such as flood hazard delineation reports, major drainageway planning reports, and flood insurance rate maps (see Table-201 and Figure-201)
2. Major basin drainage characteristics
3. Identification of all nearby irrigation facilities within 100-feet of the property boundary, which will influence or be influenced by the local drainage

##### B. Sub-Basin Description

1. Discussion of historic drainage patterns of the property in question
2. Discussion of offsite drainage flow patterns and impact of development

#### III. DRAINAGE DESIGN CRITERIA

- ##### A. Regulations:
- Discussion of the optional criteria selected or the deviation from the MANUAL if any

- B. Development Criteria Reference and Constraints
  - 1. Discussion of previous drainage studies (i.e., project master plans) for the site in question that influence or are influenced by the drainage design and how the plan will affect drainage design for the site
  - 2. Discussion of the drainage impact of site constraints such as streets, utilities, light rail rapid transit, existing structures, and development or site plan
- C. Hydrological Criteria
  - 1. Identify design rainfall
  - 2. Identify runoff calculation method
  - 3. Identify detention discharge and storage calculation method
  - 4. Identify design storm recurrence intervals
  - 5. Discussion and justification of other criteria or calculation methods used that are not presented in or referenced by the MANUAL
- D. Hydraulic Criteria
  - 1. Identify various capacity references
  - 2. Identify detention outlet type
  - 3. Identify check drop criteria used
  - 4. Discussion of other drainage facility design criteria used that are not presented in the MANUAL

#### IV. DRAINAGE FACILITY DESIGN

- A. General Concept
  - 1. Discussion of concept and typical drainage patterns
  - 2. Discussion of compliance with offsite runoff considerations
  - 3. Discussion of the content of tables, charts, figures, plates, or drawings presented in the report
  - 4. Discussion of anticipated and proposed drainage patterns
- B. Specific Details
  - 1. Discussion of drainage problems encountered and solutions at specific design points
  - 2. Discussion of detention storage and outlet design
  - 3. Discussion of maintenance access and aspects of the design

#### V. CONCLUSIONS

- A. Compliance with Standards
  - 1. "Storm Drainage MANUAL"
  - 2. "Major Drainageway Planning Studies"
- B. Drainage Concept
  - 1. Effectiveness of drainage design to control damage from storm runoff
  - 2. Influence of proposed development on the Major Drainageway Planning Studies recommendation(s)

#### VI. REFERENCES

Reference all criteria and technical information used

## VII. APPENDICES

### A. Hydrologic Computations

1. Land use assumptions regarding adjacent properties
2. Minor and major storm runoff at specific design points
3. Historic and fully developed runoff computations at specific design points
4. Hydrographs at critical design points

### B. Hydraulic Computations

1. Culvert capacities
2. Storm sewer capacity
3. Street capacity
4. Storm inlet capacity including inlet control rating at connection to storm sewer
5. Open channel design
6. Check and/or channel drop design
7. Detention area/volume capacity and outlet capacity calculations

## 203.2 Drawing Contents

Sheet-1 General Location Map: A map shall be provided in sufficient detail to identify drainage flows entering and leaving the development and general drainage patterns. The map should be at a scale of 1" = 1000' to 1" = 8000' and show the path of all drainage from the upper end of any offsite basins to the defined major drainageways (see Figure-201 and Drainage Policy, Section 303). The map shall identify any major construction (i.e., development, irrigation ditches, existing detention facilities, culverts, storm sewers) along the entire path of drainage.

Sheet-2 Floodplain Information: A copy of Figure-201 showing the location of the subject property shall be included with the report.

Sheet-3 Drainage Plan: Map(s) of the proposed development at a scale of 1" = 20' to 1" = 200' on a 24" x 36" drawing shall be included. The plan shall show the following:

1. Existing and proposed contours at 2-foot maximum intervals. In terrain where the slope exceeds 15%, the maximum interval is 10-feet.
2. Property lines, and easements with purposes noted.
3. Streets.
4. Existing drainage facilities and structures, including irrigation ditches, roadside ditches, drainageways, gutter flow directions, and culverts. All pertinent information such as material, size, shape, slope, and location shall also be included.
5. Overall drainage area boundary and drainage sub-area boundaries.
6. Proposed type of street flow (i.e., vertical or combination curb and gutter), roadside ditch, gutter flow directions, and cross pans.
7. Proposed storm sewers and open drainageways, including inlets, manholes, culverts, and other appurtenances.

8. Proposed outfall point for runoff from the developed area and facilities to convey flows to the final outfall point without damage to downstream properties.
9. Routing and accumulation of flows at various critical points for the Minor storm runoff.
10. Path(s) chosen for computation of time-of-concentration.
11. Details of detention storage facilities and outlet works.
12. Location and elevations of all defined floodplains affecting the property.
13. Location and elevations of all existing and proposed utilities affected by or affecting the drainage design.
14. Routing of offsite drainage flow through the development.

#### 204 FINAL DRAINAGE REPORT

The purpose of the Final Drainage Report is to update the concepts, and to present the design details for the drainage facilities discussed in the Preliminary Drainage Report. Also, any change to the preliminary concept must be presented.

All reports shall be typed on an 8-1/2" x 11" paper and bound together. The drawings, figures, charts, plates and/or tables shall be bound with the report or included in a folder/pocket attached at the back of the report.

The report shall include a cover letter presenting the final design for review and shall be prepared by or under the direction of an engineer licensed in Colorado, certified as shown above in Section 203 for the preliminary report.

The Final Drainage Report shall be prepared in accordance with the outline shown in Section 203.1. The report drawings shall follow the requirements presented in Section 203.2, above.

A mylar reproducible of the approved Final Drainage Plan shall be submitted to the City for signature and retention in their files. A copy of the approved plan will be returned to the applicant.

#### 205 CONSTRUCTION DRAWINGS AND SPECIFICATIONS

Where drainage improvements are to be constructed in accordance with the approved Final Drainage Report, the construction plans (on 24" x 36" mylar) and specifications shall be submitted with a Building Permit Application for review and approval prior to construction. A reproducible copy of the approved plans will be submitted to the City for file. The plans and specifications for the drainage improvements will include:

1. Storm sewers, inlets, and outlets.
2. Culverts, end sections, and inlet/outlet protection.



3. Channels, ditches, and swales.
4. Checks, channel drops, erosion control facilities.
5. Detention pond grading, trickle channels, outlets, and landscaping.
6. Other drainage related structures and facilities.
7. Maintenance access considerations.
8. Finished floor elevations of adjacent buildings.
9. 100-year water surface elevations.
10. Engineer certificate (Section 203).
11. Approval by the City.

The information required for the drawings and specifications shall be in accordance with sound engineering principles, this MANUAL and the City requirements for subdivision designs. Construction documents shall include geometric, dimensional, structural, foundation, bedding, hydraulic, landscaping, and other details as needed to construct the storm drainage facility. The approved Final Drainage Plan shall be included as part of the construction documents for all facilities affected by the drainage plan.

#### 206 "AS-BUILT DRAWINGS"

As constructed finished plans ("As-Builts") for all public improvements shall be attested to by a professional engineer registered in Colorado and submitted to the City before the City will accept the improvements. The construction drawings, as approved with the Building Permit are acceptable, if they remain true after construction and are attested to by a registered engineer to represent "As-Built" conditions.



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**BOULDER COUNTY STORM DRAINAGE CRITERIA MANUAL  
FLOODPLAIN INFORMATION FOR BOULDER COUNTY**

Table 201

City/Town	Stream Seq.	Stream	Stream Miles	Study Director	Report Title	Engineer	Comp. Date	Designation Number&Date			
Longmont	1	Lower St. Vrain Crk.	8.2	County	Flood Plain Information	USACE, Omaha Dist.	06/72	24-07/11/73			
			(4.8)	FIA	Flood Insurance Study	Gingery Assoc., Inc.	07/77	77-07/27/77			
			(5.0)	CWCB/ CTY	Flood Plain & Drainage	Water Res. Consult.	04/81				
Lyons	2	Upper St. Vrain Crk.	7.2	County	Flood Plain Information	USACE, Omaha Dist.	09/72	24-07/11/73			
			(3.0)	FIA	Flood Insurance Study	Howd,Need,Tam&Berg	02/80	201-08/16/82			
Lyons to Peac.Valley	2A	South St. Vrain Crk.	17.5	CWCB/ Cnty	Flood Plain Information	Camp,Dress.&McK.Inc.	10/78	126-01/31/72			
Niwot	3	Dry Crk. (No.2)	8.0	CWCB	Flood Plain Information	USACE, Omaha Dist.	06/78	124-11/01/78			
Longmont	4	Spring Gul.& Trib; Dry Crk. (No.1)	(3.5)	FIA	Flood Insurance Study	Gingery Assoc., Inc.	07/77				
		Dry Crk. (No.1)	7.7	CWCB/ CTY	Flood Plain Inform & Drainage	Water REs, Consult.	04/80	173-02/11/81			
Ward	5	Left-Hand Crk.	(14.0)	DRCOG	Flood Plain Information	USACE, Omaha Dist.	01/69	4-05/07/69			
Longmont			2.1	FIA	Flood Insurance Study	Gingery Assoc., Inc.	07/77				
Ward			1.0	FIA	Flood Insurance Study	Howd,Need,Tam&Berg	In Prog.				
Unincorp. Areas			11.6	FIA	Flood Insurance Study	USDA, SCS	09/78				
Ward to Longmont			29.0	CWCG/ Cnty	Flood Plain Information	USACE, Omaha Dist.	12/81, 09/83	186-0/01/70			
Jamestown			James Crk.	(1.5)	FIA	Flood Insurance Study	Howd,Need,Tam&Berg	09/83			
Boulder	6	Boulder Crk.	12.2	DRCOG	Flood Plain Information	USACE, Omaha Dist.	08/69	8-04/01/70			
			2.5	UD&FCD	Special Flood Hazard Inform	USACE, Omaha Dist.	05/79	20-08/16/72			
			4.4	UD&FCD	Major Drainageway Planning	URS Co.	12/79				
			4.2	FIA	Flood Insurance Study	Dames & Moore	01/78	111-07/11/78			
			13.0	UD&FCD	Flood Hazard Area Delineation	Muller Eng.	03/83	218-05/05/83			
			4.8	UD&FCD	Flood Hazard Area Delineation	Muller Eng.	01/83				
Boulder East to Countyline			12.2	CWCB/	Flood Plain Information	USACE, Omaha Dist.	01/83	215-05/05/83			
Unincorp. Areas			(11.3)	FIA	Flood Insurance Study	USDA, SCS	09/78				
Nederlands to Boulder		Middle Boulder Crk. & Trib.	12.7	CWCB/ Cnty	Flood Plain Information	USACE, Omaha Dist.	12/81	187-04/01/82			
Nederlands			1.7	FIA	Flood Insurance Study	Howd,Need,Tam&Berg.	01/79	145-12/05/79			
Louis., Lafay., Super., Erie	7	Coal & Rock Crk.	14.0	UD&FCD/ CWCB	Flood Hazard Analyses	USDA, SCS	10/76	66-01/04/77			
Super., Lafay., Erie			5.5	FIA	Flood Insurance Study	Howd,Need,Tam&Berg	03/79, 09/79				
Unincorp. Areas			(14.0)	FIA	Flood Insurance Study	USDA, SCS	09/78				
Louisville		Coal Crk. & Tribs.	2.4	FIA	Flood Insurance Study	USDA, SCS	01/73				
Erie		Coal Crk.	(1.9)	CWCB/ City	Flood Plain Information	Water Res. Consult.	08/80	174-02/11/82			
Eldor.Spgs.to Boulder	8	Boulder & Dry Crk.	(9.3)	UD&FCD	Flood Hazard Area Delineation	Leonard Rice CWE,Inc.	06/75	47-09/10/75			
			9	UD&FCD	Major Drainageway Planning	R.W. Beck & Assoc.	12/73	8-04/01/70 33-06/21/74			
			9.3	FIA	Flood Insurance Study	USDA, SCS	09/78				
Boulder	10	Gregry., Blubell, Skunk & Bear Cany. Crk., Viele & Andrsn. Chann, Davids Draw; King Gul.	(8.4)	UD&FCD	Flood Hazard Area Delineation	USACE, Omaha Dist.	In Prog.				
			13.8	DRCOG	Major Drainageways Planning	Wright, McLaugh. Eng.	09/70	13-01/12/71			
			10A	Skunk & Bear Canyon Crks.	(4.7)	FIA	Flood Insurance Study	MSM	In Prog.		
			11	Fourmile, Two Mile, Cany. Crk. Goose, Elmers, Two Mile & Wonderld. Crk., Sun- shine Gul.	15.1	DRCOG	Pilot Planning Study (North Boulder Drainage)	Wright, McLaugh. Eng.	04/69	13-01/12/71	
			11A	Fourmile Crk.	(9.9)	FIA	Flood Insurance Study	MSM	In Prog.		
					6.3	PTA	Flood Insurance Study	MSM	In Prog.		
			12	Little Thompson R.	3.0	CWCB	Flood Plain Information	USACE, Omaha Dist.	06/77	83-11/15/77	
			13	Fourmile Crk.	9.8	CWCB/ Cnty	Flood Plain Information	USACE, Omaha Dist.	12/81	187-04/01/82	
			Broomfield	14	City Park, Nissen & Gay Drainages	6.0	UD&FCD	Flood Hazard Area Delineation	Wright, McLaugh. Eng.	06/79	144-12/05/79
					Nissen Tributary A	(6.0)	FIA	Flood Insurance Study	MSM	In Prog.	
						0.9	FIA	Flood Insurance Study	MSM	In Prog.	
Lafayette	15	Lafayette Area Drainage	7.0	UD&FCD	Major Basinwide Plan	CampDress.&McK.Inc.	12/80				