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### 1.1 TITLE

The criteria and design standards presented herein together with all future amendments and revisions shall be known as the "COLORADO FLOODPLAIN AND STORMWATER CRITERIA MANUAL" (hereafter referred to as Statewide Manual or Manual).

### 1.2 PURPOSE

The overall Manual contents have been prepared and organized into two volumes. Volume I of the Manual contains information and guidelines that are necessary for floodplain and stormwater management practices. Volume II contains guidelines and procedures for floodplain and stormwater engineering analyses and design.

The criteria presented in Volume I of the Manual are suggested minimum guidelines that can be adopted by local communities to manage their stormwater and floodplains and to meet the requirements of the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP). In some cases, the suggested guidelines exceed minimum requirements of the NFID. However, following the corrective and preventative measures outlined in the Manual will reduce future damages to public and private properties and promote public safety and general welfare of the communities within the State of Colorado.

Presented in Volume 2 of the Manual are suggested minimum design and technical standards for analysis of natural and manmade stormwater conveyance systems and design of storm drainage facilities. Establishment of the minimum standards will help to produce consistency in the analysis and design of storm drainage facilities and

provide integrated systems that act together to protect the public health, safety, comfort, convenience, welfare, property and commerce.

## 1.3 JURISDICTION

All new and revised floodplain and floodway delineation studies within the State of Colorado should be prepared in compliance with the Colorado Water Conservation Board (CWCB) "Rules and Regulations for Regulatory Floodplains in Colorado" (hereafter referred to as the CWCB Rules). The criteria outlined in this Manual are technical guidelines of the CWCB Rules. All projects funded partially or fully by the CWCB should be prepared in accordance with the guidelines presented in the Manual.

### 1.3.1 VARIANCE PROCEDURES

Variances to this MANUAL may only be requested for the following reasons:

1. Unusual situations where strict compliance with the MANUAL may not act to protect the public health and safety.

2. Unusual situations that require additional analysis outside the scope of this Manual for which the additional analysis shows that strict compliance with the Manual may not act to protect the public health and safety.

3. Unusual hydrologic and/or hydraulic conditions which cannot be adequately addressed by strict compliance with the Manual.

Conditions that are created by improper site planning (i.e. lack of adequate space allocations) should not be considered as grounds for a variance request. If the requestor believes that a variance to the minimum standards in this Manual is warranted based on the reasons listed above, a variance request letter should be submitted to CWCB along with supporting documentations for review and approval.

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### 2.1 COMMUNITIES WITHOUT EXISTING DRAINAGE MANUALS

Many communities within the State of Colorado currently do not have adequate drainage manuals that address floodplain and stormwater management and engineering issues. Establishment and enforcement of minimum drainage standards are important for these communities to reduce future flood damages to public and private properties and promote public safety and general welfare of their communities.

Although some of the regulations presented in the Manual exceed minimum requirements of the National Flood Insurance Program, CWCB recommends that these communities adopt and implement the management and engineering criteria outlined in this Statewide Manual. The Manual has been prepared to cover a wide range of floodplain and stormwater issues we deal with throughout the State. If needed, the manual contents may be revised by the adopting communities to meet their own specific needs including lowering of standards to minimum requirements of the National Flood Insurance Program. Each entity adopting the contents of this Manual is responsible for enforcement of the manual within its jurisdictional boundaries.

### 2.2 COMMUNITIES WITH EXISTING DRAINAGE MANUALS

The intent of this statewide Manual is not to supersede the existing storm drainage manuals that have been adopted by local jurisdictions but rather to supplement the existing manuals. Each agency may choose to adopt this manual wholly or in part depending on the needs of the adopting agency. Each entity adopting the contents of this Manual is responsible for enforcement of the manual within its jurisdictional boundaries.

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## CWCB AUTHORITY AND ROLES

### 3.1 INTRODUCTION

The Colorado Water Conservation Board (CWCB) was created in 1937 for the purpose of aiding in the protection and development of the waters of the state. The Board is responsible for flood protection, water supply protection, stream and lake protection, water project planning and financing, state water policy, and other water resource responsibilities.

The CWCB's major programs include the following:

- Flood protection
- Water supply protection
- Water supply planning and finance
- Stream and lake protection
- Conservation and drought planning
- Water information

### 3.2 STATUTORY AUTHORITY

The Colorado Water Conservation Board's statutory authority and roles on floodplain and stormwater related items are defined in 37-60-106 CRS. Specifically, the CWCB Flood Protection Program is authorized in 37-60-106 CRS (1990) to prevent flood damages, review and approve floodplain designations prior to adoption by local government entities, and provide local jurisdictions with technical assistance and floodplain information. In addition, an August 1, 1977 Executive Order requires the CWCB and Land Use Commission to provide assistance to entities in meeting the requirements of the National Flood Insurance Program (NFIP).

*"To devise and formulate methods, means, and plans for bringing about the greater utilization of the waters of the state and the prevention of flood damages therefrom, and to designate and approve storm or floodwater runoff channels or basins, and to make such designations available to legislative bodies of cities and incorporated towns, to county planning commissions, and to boards of adjustment of cities, incorporated towns, and counties of this state",* Section 37-60-106(1)(c) of the Colorado Revised Statues (CRS).

*The Colorado Water Conservation Board's statutory authority and roles on the floodplain and stormwater related items are defined in 37-60-106 CRS.*

*"No floodplain shall be designated by any local government until such designation has been first approved by the Colorado water conservation board*

*as provided in sections 30-28-111 and 31-23-301",* Section 24-65.1-403(3)(b) of the Colorado Revised Statues (CRS).

## 3.3 STATEWIDE MANUAL

The CWCB designates and approves the state's floodplains under the provisions of its "Rules and Regulations for Regulatory Floodplains in Colorado", (Rules and Regulations) dated 2005 (Eff. 9-12-2005). In addition, the Board has authority to establish uniform standards for identification and designation of all floodplains within the state.

*"Any local government applying for federal or state financial assistance for floodplain studies shall provide prior notification to the Colorado Water Conservation Board. The Board shall coordinate and prescribe the standards for all floodplain studies conducted pursuant to this article, including those conducted by federal, local, or other state agencies, to the end that reasonable uniform standards can be applied to the identification and designation of all floodplains within the state and to minimize duplication of effort",* Section 24-65.1-403(3)(a) of the Colorado Revised Statues (CRS).

The Colorado Floodplain and Stormwater Criteria Manual (Statewide Manual) has been prepared to establish the minimum uniform standards for identification and designation of all floodplains within the state. The floodplain and floodway criteria outlined in the Statewide Manual are technical guidelines of the CWCB Rules and Regulations.

*The floodplain and floodway criteria outlined in the Statewide Manual are technical guidelines of the CWCB Rules and Regulations.*

The Statewide Manual also contains engineering and management guidelines for other related floodplain and stormwater topics. These guidelines are provided to help local agencies to establish standards in dealing with drainage engineering and management issues. Establishment and enforcement of minimum drainage standards are important for these communities to reduce future flood damages to public and private properties and promote public safety and general welfare of their communities.

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### 4.1 INTRODUCTION

To give context to the purpose and scope of the COLORADO FLOODPLAIN AND STORMWATER CRITERIA MANUAL, a brief outline of Colorado's recent flood history is presented. The lessons learned from records of actual flood events in the past are the single most important factor affecting the future of analysis, design, and management of Colorado's floodplains and watersheds.

This section provides a listing of the most common causes of flooding in the State along with specific examples from the past 100 years of Colorado flood history.

### 4.2 CAUSES OF FLOODING IN COLORADO

Flooding is generally caused by a combination of weather-related and physical factors. Weather patterns generate the necessary moisture, while both natural and manmade physical features can contribute to the intensity, vicinity, and duration of flood events in any given area. Colorado's unique geography and topography make it susceptible to certain types of flooding and also help determine the state's annual flood patterns. Of important note is that, in any given year, it can be expected that a 100-year flood event will occur somewhere in the State of Colorado.

#### 4.2.1 SEASONAL PRECIPITATION AND WEATHER FACTORS

As a semi-arid, inland state, Colorado receives the moisture required for flood events according to seasonal weather patterns which bring precipitation to the region from coastal locations in the south and west.

During winter months, storms containing moisture tend to originate in the cooler Pacific North. Spring thunderstorms generally enter the state from the south, bringing moisture from the Gulf of Mexico. Warm "monsoon" moisture from the southern Pacific and the Gulf of Mexico flows into Colorado during summer months, while in the fall, Pacific moisture arrives from the south and west in the form of general rainstorms.

Along with the seasonal influx of moisture, storm intensity and duration and extreme changes in temperature affect the types of flooding that occur in Colorado. *General rain floods* are the result of sustained moderate to heavy rainfall over a large area. *Thunderstorm floods* or *flash floods* occur when weather permits localized, very intense storms to dump large volumes of water over small areas in very short time periods. These floods are particularly dangerous because there is generally little or no forewarning.

Dramatic temperature changes between seasons along with precipitation account for other types of flooding in Colorado. *Snowmelt floods* result when

warming trends of longer than 1 week occur in mountain regions with unusually high snowpack. Interruption of the melting by a cold front or cloud cover can decrease flood intensity. Typically, floods due to snowmelt span over several weeks, unlike other types of flooding which usually last only a few days.

Another similar type of spring flood is the *rain with snowmelt flood* which also occurs in the late spring and early summer months when the seasons are changing. At this time of year, warm, moist storm fronts from the Gulf of Mexico can collide with cool fronts from the Pacific Northwest creating sustained moderate general rainstorms. Rain adds to the spring runoff volume, and, is some cases, may accelerate snowmelt, causing brief local floods upstream of major runoff basins.

In the winter months *ice jam floods* can occur, though they are not a serious problem in Colorado. Extreme winter temperatures cause channels to freeze solid in areas, which can dam upstream flows. When the frozen channels begin to thaw, ice blocks can collect in downstream locations also causing flows to back up. Another potential problem downstream of an ice jam is the sudden large volume of water that can be released when a jam suddenly loosens.

### 4.2.2 PHYSICAL FACTORS – NATURAL AND MANMADE

In addition to annual precipitation and severe weather patterns, physical factors play an important role in the frequency and severity of floods in Colorado. Natural physical features such as elevation, slope, stream size, aspects, vegetation density, and type and condition of terrain/soil influence the movement and distribution of moisture. All flooding is a result of the combination of both weather and physical factors, but certain types of flooding are more influenced by physical factors. One example is a *burn area rapid runoff flood*. Though rare, this type of flood is a danger in Colorado due to the state's propensity for wildfires. A burn area rapid runoff flood occurs when a general rainstorm or thunderstorm releases moisture over an area recently devastated by fire. The lack of flow-inhibiting vegetation and the water-repellant burn layer on fire-damaged ground allows for rapid runoff of stormwater into channels which, under normal conditions, would be able to accommodate the flow.

Another physical contributor to flooding is the failure of manmade structures. Dam and levee failure due to structural design issues and/or deterioration/maintenance issues can contribute to flooding. Other manmade structures whose failure for reasons of design, deterioration, or disaster can cause flooding include water pipelines, sewer pipelines, and irrigation ditches.

## 4.3 FLOOD HISTORY TABLE

The following table adapted from the Colorado Water Conservation Board's June, 2004 Flood Hazard Mitigation Plan for Colorado is a chronological listing of the most damaging floods recorded in the state's history.

**CH4-T401**
**TABLE: Major Flood Damages in Colorado***

| Date | Major Stream or Location | Deaths | Damages (In 2003 $) |
|---|---|---|---|
| May 1864 | Cherry Creek at Denver | ? | $6,570,000 |
| July 1896 | Bear Creek at Morrison | 27 | 6,570,000 |
| Oct. 1911 | San Juan River near Pagosa | 2 | 6,570,000 |
| July 1912 | Cherry Creek at Denver | 2 | 131,400,000 |
| June 1921 | Arkansas River at Pueblo | 78 | 832,200,000 |
| May 1935 | Monument Creek at Colorado | 18 | 56,940,000 |
| May 1935 | Kiowa Creek near Kiowa | 9 | 16,425,000 |
| May 1942 | South Platte River Basin | ? | 9,307,500 |
| May 1955 | Purgatoire River at Trinidad | 2 | 39,420,000 |
| June 1957 | Western Colorado | ? | 19,710,000 |
| June 1965 | South Platte River at Denver | 8 | 2,409,000,000 |
| June 1965 | Arkansas River Basin | 16 | 225,000,000 |
| May 1969 | South Platte River Basin | 0 | 23,542,000 |
| Sept. 1970 | Southwest Colorado | 0 | 14,454,000 |
| May 1973 | South Platte River at Denver | 10 | 425,736,000 |
| July 1976 | Big Thompson River in Larimer County | 144 | 93,294,000 |
| July 1982 | Fall River at Estes Park | 3 | 53,742,000 |
| June 1983 | North Central Counties | 10 | 28,744,000 |
| May-June 1984 | Western/Northwestern Counties | 2 | 50,918,000 |
| May-June | Western Slope | 0 | 2,343,000 |
| July 1997 | Fort Collins and 13 Eastern Counties | 6 | 318,995,000 |
| May-June 1999 | Colorado Springs and 12 Eastern Counties | 0 | 101,740,000 |
| July-Aug 2001 | W. Colorado, Greeley | 0 | 4,350,000 |
| July-Aug 2002 | Prowers Co., E. Colorado | 0 | 1,890,000 |
| May 2003 | Eagle Co. | 0 | 2,500,000 |
| **TOTALS** | | **352** | **$5,013,781,000** |

- FIGURE II Source: 2004. Flood Hazard Mitigation Plan for Colorado. Colorado Water Conservation Board, Denver, CO.

This table does not include all the historic flood events which, if included, would significantly increase the flood drainage total. (See Section 4.4)

## 4.4 EXAMPLE FLOODS

The following are historical examples of various types of major flooding experienced in Colorado.

### 4.4.1 GENERAL RAIN FLOODING – SOUTH PLATTE AND ARKANSAS RIVER BASINS - JUNE 1965

Known as the most severe in the state's recorded history, the June 1965 flood of the South Platte and Arkansas River basins was caused by sustained general rainstorms. A flow of warm moist air from the south produced initial rains along the eastern foothills on June 13. Rains continued through June 14 and intensified on June 15 and 16 as a cold front pushed into the region and became stationary. Sustained heavy rains continued in southeastern Colorado through June 17 due to the movement of the weather pattern and orographic lifting against the mountains.

Rainfall across the eastern half of the state averaged over 5 inches. Recorded peak rainfall reached an unprecedented 14 inches in four hours at Larkspur and Palmer Lake. A maximum recorded rainfall volume of 15.5 inches in 14 hours was measured 28 miles southeast of Lamar on June 15-16. On June 17, rainfall in the town of Holly doubled the 100-year 6-hour rainfall.

By June 18, rains subsided, but flooding in the channels filtering into the South Platte and Arkansas basins was just beginning. Flooding took on a wavelike pattern as the excess moisture worked its way downstream. Due to the volume of moisture, overland flooding also occurred. Peak flow on the South Platte at Denver was measured at 40,300 cfs on June 17, and the USGS gage station on the Arkansas River at Lamar measured peak flow on June 16 at 73,800 cfs. Regions in the South Platte basin heaviest hit were the area north of Greeley and west of Sterling, the Plum Creek and Cherry Creek basins, the Kiowa and Bijou Creek Basins, and the South Platte from Plum Creek to North Platte, Nebraska. In the Arkansas River Basin, Fountain Creek near Pueblo, the Purgatorie River, the region south of the Arkansas River from Las Animas, and the Arkansas from Pueblo east, well into central Kansas.

Damage in the Denver metropolitan area alone was estimated at over $375 million. Statewide, losses included: homes, businesses, livestock, crops, roadways, bridges, railroads, and dams. Total damage estimates for both the South Platte and Arkansas basins reached more than $540 million, and 24 people lost their lives in the week long catastrophe.

### 4.4.2 SNOWMELT FLOODING – WESTERN COLORADO MAY/JUNE 1984

Many of the rivers in the western counties of Colorado flow through steep, narrow passages originating from mountain elevations as high as 13,000 feet. Because of this, they tend to carry flows from areas with very high runoff rates, and the flows tend to run at very high velocities. The combination of unusually heavy snowpack and sustained warming trends can easily cause snowmelt flooding in these regions, which, unlike other types of flooding, can come in waves over a prolonged period of several months.

In May and June of 1984, severe flooding occurred in the following western Colorado river basins as a result of snowmelt and minor rainfall run-off: Colorado, Gunnison, Roaring Fork, Uncompahgre, White, and Yampa River basins. Peak discharges occurred in late May and exceeded the 100-year

recurrence intervals in some locations. Property damages were most extensive adjacent to the riverbanks. Similar snowmelt flooding occurred in the same region the previous year; however, flooding and damage were less extensive.

### 4.4.3 RAIN WITH SNOWMELT FLOODING – SOUTH PLATTE RIVER AT DENVER MAY 1973

While the snowmelt floods in western counties of 1983 and 1984 involved some rainfall activity, the flooding of the South Platte River Basin in May 1973 was clearly intensified by rainfall accelerating the melting of an unusually heavy snowpack.

On May 6 - 7,1973, a storm released widespread rain and snow along the Front Range, filling the South Platte to four feet above flood level at some points. As is characteristic of general rain floods, this was a sustained flood over a wide area which included overflows of many South Platte tributaries such as Plum Creek and Indian Creek, Bear Creek in southwest Denver, the Highline Canal, Little Dry Creek, Lost Creek in Weld County, and mountain canyon creeks including Bear, Clear, and Turkey. Counties affected included Douglas, Weld, Denver, Adams, Jefferson, Morgan. Ten deaths resulted from this flood event with total damages estimated at $120 million.

### 4.4.4 ICE JAMS – GUNNISON COUNTY – DECEMBER 1970

Colorado experiences limited flooding due to ice jams. The majority of ice jamming occurs in the southwestern mountains, namely along the Gunnison River, upstream from the Blue Mesa Reservoir. Extreme cold temperatures in the fall cause ice to form on the reservoir surface and in the river. As ice from the river moves downstream and collects against the icy surface of the reservoir, it can clog up the channel causing upstream flooding. Warming trends can open parts of the channel and allow floodwaters to recede; however, once ice jamming has begun, it can be a recurring problem throughout the cold season.

A prime example of ice jamming began at the head of the Blue Mesa Reservoir in early December 1970. Jamming caused downstream flooding at the Cooper Ranch cabins adjacent to the Gunnison River on December 7. Authorities attempted to loosen the jam by releasing increased flows from the Taylor Park Reservoir upstream, but this only worsened the problem. Ice continued to form and collect 400 feet above the mouth of the Reservoir.

The weather warmed between December 7-11, creating an opening in the channel. But the cabins at Cooper Ranch flooded again on December 13 when temperatures fell once again. The ice jam continued to grow and fill the channel through December and into the first week in January 1971, causing flooding the Neversink Resort, the McCabe Bridge area, and Dos Rios. On January 9, a warming trend began which finally loosened the jam for the season. However, both the Neversink Resort and the Cooper Ranch continued to experience flooding. That summer, precautionary measures were taken to help alleviate the problem, but ice jam flooding continued to cause problems in the area over the next two years.

### 4.4.5 THUNDERSTORM/FLASH FLOODING – BIG THOMPSON FLOOD JULY 1976

The Big Thompson River runs through a steep, narrow canyon between Estes Park and Loveland. Intense thunderstorm activity on the evening of July 31, 1976 brought very heavy rain over a 70 square-mile portion of the Big Thompson drainage basin. An estimated 4 inches of rain fell in a 4 and a half hour period over the entire length of Big Thompson Canyon, with more than 12 inches falling on the upper third of the canyon. This caused flash flooding down a 25-mile stretch of the canyon downstream of Estes Park. Flood water velocities between Drake and the mouth of the canyon were estimated at 23 feet per second. When the floodwaters reached the mouth of the canyon, they were forceful enough to dislodge a 227,000 pound water pipe and carry it approximately a quarter mile downstream, leaving many area residents without potable water. The floodwaters dispersed rapidly once they exited the steep narrow canyon.

Damage resulting from the Big Thompson Flood was extensive. On August 2, 1976, Larimer County was declared a presidential disaster area. Areas adjacent to the Big Thompson River downstream of Loveland and the North Fork Big Thompson River were completely devastated. Much of U.S. Highway 34 in the canyon was washed out. At least 144 people lost their lives, and more than 350 homes, 52 businesses, and 438 automobiles were destroyed. Total damages were estimated at over $35.5 million. Losses from the Big Thompson flood were likely compounded by the “flash flood” nature of this event. It occurred so suddenly that there was little chance of advanced warning.

### 4.4.6 STATEWIDE INTENSE THUNDERSTORM FLOODING – JULY 1997

Intense thunderstorms produced significant rainfall amounts and flooding along a wide band of north eastern Colorado late in July, 1997. A monsoonal moisture pattern developed over eastern Larimer County on July 27 as a cold front, pushing southward, met humid surface air originating from the plains of Colorado and Kansas. Heavy rainfall produced massive flooding in Fort Collins (Larimer County) followed a day later by flooding in Weldona (Morgan County), and Sterling (Logan County). At the epicenters of the storms, total rainfall was reported to be 14.5 inches in Western Fort Collins; 10 inches southeast of Weldona and up to 14 inches the upper Pawnee Creek basin east of Sterling near the Weld County/Logan County line. The depth of reported rainfall easily exceeded 100-year precipitation levels. Extensive damage was reported in the affected communities, along with six deaths. Unofficial damage totals of over $10 million in Sterling alone were reported.

### 4.4.7 MUD AND DEBRIS FLOW FLOODING – MOUNTAIN AREAS

Smaller tributary streams flowing from high mountain elevations tend to deposit debris fans in the larger mountain valleys. Over the years, these valleys, and the land masses produced by successive mud and debris flow from the tributaries, also known as alluvial fanning, have been the development sites of many mountain communities. Glenwood Springs, Idaho Springs, Ouray, and Telluride are examples of towns built on the alluvial fans of mountain tributaries, and as such, are susceptible to future mudslides and

debris flows. The communities of Ouray and Telluride experience debris flow floods frequently.

As demand for mountain development increases, the pressure to build in areas susceptible to debris and mudflows intensifies. Increased development in debris and mudflow prone areas will likely escalate the frequency and levels of damage resulting from these types of flood events. Specific events with mud and debris flow flooding include:

- **Glenwood Springs:** On July 24, 1977 an intense rainstorm created a deposit of mud and debris ranging from 4-inches up to 14-feet in depth. Damage in 1977 dollars was estimated to exceed $300,000.

- **Telluride:** Flooding in the town of Telluride can occur from two sources, the San Miguel River and Cornet Creek. On July 27, 1914 a rainstorm on Cornet Creek (according to the Telluride Journal) sent a *"river of mud, very conservatively estimated at between 8 and 10 feet in height"* into the northern end of town. Damages were estimated at about $250,000 with one person killed and many badly injured. On August 1, 1969, a flood event on Cornet Creek caused a stream of mud loaded with boulders, tree trunks, and debris to flow into Town reaching depths of 2 to 6 feet.

- **Ouray:** Portland and Cascade Creeks flow through developed portions of the Town of Ouray. Between 1908 and 1982, there have been reported incidents of flooding at least 14 times on Portland Creek and 16 times on Cascade. Damage estimates were made for two events, July 14-15, 1981 and August 20-23, 1982 at $196,000 and $360,000 respectively. During the 1982 flood, an estimated 40 residences and 12 businesses were damaged from mud, debris and water accumulation in basements and ground-level floors.

### 4.4.8 BURN AREA RAPID RUNOFF FLOOD – BUFFALO CREEK – JULY 1996

On July 12, 1996, Buffalo Creek, Colorado experienced a severe thunderstorm dropping 2-3 inches of rain in 1 hour directly over an area that had been devastated by a 12,000 acre wildfire two months earlier. The fire left the otherwise forested area charred and without vegetation. The scorched ground surface acted as a water repellant, causing rapid runoff which washed away anything in its path including roads, rocks, trees, and other debris. The combined debris and water flow raised the levels of the South Platte 10 feet above normal. Estimated peak flows in the South Platte River, Buffalo Creek, and Sand Draw as determined by the CWCB and USGS, exceeded FEMA FIS 100-yr flows by as much as 10 times. Water built up and created surges down the South Platte River which left behind a 12-mile band of debris.

The town of Buffalo Creek sustained the greatest damages. Two lives were lost; buildings, homes, and bridges were destroyed; and the town's water system was ruined. Total damages to the town were estimated at $521,000.

### 4.4.9 FAILURE OF MANMADE STRUCTURES – FALL RIVER AT ESTES PARK JULY 1982

Erosion around the outlet pipe of 26-foot earthen dam above the Roaring River was the likely cause of its failure July 15, 1982. The breach released 674 acre-feet of water downstream to the Fall River at an estimated peak discharge of 18,000 cubic feet/second. A smaller concrete gravity dam on the Fall River also failed as the floodwaters made their way downstream, through the town of Estes Park and into Lake Estes, a total distance of 12.5 miles in less than 4 hours. Channels were scoured as the floodwaters made their way downhill, and a 42-acre debris fan was left behind damming the River and forming a 17-acre lake upstream. Three people died and $31 million in damages resulted.

### 4.4.10 OTHER NOTABLE EVENTS

Other notable events in Colorado include the 1984 Gunnison River basin flooding from rain and snowmelt on the Grand Mesa and the 1999 flooding in the Colorado Springs area. In addition, there are numerous examples of severe local flooding events which were substantial rainfall events but effected only a localized area.

## 4.5 SUMMARY

Colorado's documented flood history dates back to the Colorado Water Conservation Board's record of the flood event in the Cherry Creek Basin in 1864. The following table presents a summary of Colorado flood event facts:

## 4.6 CWCB FLOOD RESPONSE PROGRAM

The Colorado Water Conservation Board has established a program with the objectives of providing advance notice of situations that may lead to flooding; documenting flood events; providing information for flood recovery operations, and assisting with mitigation recommendations after a flood event. The five major elements of the program are:

**1. Flood Forecasting and Preparation**

- Utilize federal, state, local, and private experts for developing and providing accurate flood outlooks and information;
- Formalize a programmatic approach for providing concise flood threat potential; and
- Maintain an accurate and functional CWCB Flood Page to inform the public before flood events occur.

Outlooks for the flood year are discussed at three meetings (early spring, late spring and early summer).

**2. Aerial Photography of Flooded Areas**

- Secure the actual flood event pictures showing the extent of the flood;
- Make the pictures rapidly available for flood recovery operations; and
- Compile the data in a format compatible with future GIS uses.

The CWCB has an annual on-call aerial photography contract in place to facilitate rapid deployment of this element.

**3. Flood Documentation and Identification of Specific Hazards**

- Prepare a field report for a major flood event within 14 days from the date of occurrence;
- Gather hydrologic and hydraulic information for flood events;
- Collect scientific/historic flood data for flood events;
- Prepare damage assessments;
- Generate valuable data and analyses for the development of mitigation recommendations; and
- Prepare and produce field/annual flood documentation reports.

Past flood documentation reports are available for review on the CWCB website. A link to the published reports is on the CWCB website Annual summary reports are published by December 31st of the year.

**4. Evaluations and Revisions of Floodplain Designations**

- Confirm that hydrologic values are reasonable;
- Verify that the hydraulic determinations are representative of field conditions;
- Delineate the 100-year floodplain limits, if applicable; and
- Present floodplain changes to the local entities, CWCB, and FEMA if applicable.

This element is to be completed within 90 days of the flood event and is completed in co-operation with FEMA and at the request of a local governmental entity.

**5. Development of Disaster and Recovery Mitigation Plans**

- Enhance and compliment community cooperative spirit in the reconstruction planning process;
- Prepare a draft disaster and recovery mitigation field report within ninety (90) days;
- Provide an opportunity for the flood victims to be directly involved in reconstruction efforts;
- Provide a more rapid response to assist in developing community consensus; and
- Formulate mitigation alternatives that are in direct harmony with what specifically happened, sound floodplain management principles, and cooperation with other state and federal programs.

This element is usually in conjunction with a declared disaster event, but may also be initiated upon request by a local governmental entity.

# CHAPTER 1

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## APPLICABLE DRAINAGE LAWS

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# DRAINAGE LAW

## 5.1 INTRODUCTION

Drainage law not only has its basis in law made by the courts and the legislature, but also relies to a large extent on the drainage facts that exist in each case. Therefore, a party with the most reliable facts and information will have a distinct advantage in court. Similarly, drainage engineering and design revolves around drainage law as well as the natural laws of gravity.

This chapter deals with the general principles of drainage law along with local government drainage actions, financing, floodplain management, and special matters. This chapter is meant to provide an outline of the general principles of Colorado drainage law for the engineer and agency official. It is not meant to serve as a substitute for a lawyer's opinions, though this chapter may be of interest to practicing attorneys.

In using this chapter of the *Manual*, the reader should be familiar with the entire *Manual*. However, the following legal principles are summarized below for ready reference.

### 5.1.1 LEGAL PRINCIPLES

1. The owner of upstream property possesses a natural easement on land downstream for drainage of surface water flowing in its natural course. The upstream property owner may alter drainage conditions so long as the water is not sent down in a manner or quantity to do more harm to the downstream land than formerly. Bittersweet Farms, Inc. v. Zimbelman, 976 P.2d 326 (Colo. App. 1998).

2. For purposes of determining liability in a negligence action, the duty of a public entity shall be determined in the same manner as if it were a private party. Leake v. Cain, 720 P.2d 152 (Colo. 1986).

3. A natural watercourse may be used as a conduit or outlet for the drainage of lands, at least where the augmented flow will not tax the stream beyond its capacity and cause flooding of adjacent lands. Ambrosio v. Pearl-Mack Construction Co., 351 P.2d 803 (Colo. 1960).

4. Ditch corporations that own ditches owe a duty to those property owners through which their ditches pass to maintain their ditches using ordinary care so as to prevent damage to adjoining real property. Oliver v. Amity Mut. Irrigation Co., 994 P.2d 495 (Colo. App. 1999).

5. Construction or enlargement of jurisdictional dams or reservoirs is subject to approval by the Colorado State Engineer, which includes

consideration of requiring their spillways to be capable of passing the inflow design flood generated by 100 percent of the probable maximum precipitation. A "jurisdictional dam" is defined as a dam that impounds water above the elevation of the natural surface of the ground creating a reservoir with a capacity of more than 100 acre-feet or creating a reservoir with a surface area exceeding 20 acres at the high waterline or exceeding 10 feet in height measured vertically from the elevation of the lowest point of the natural surface of the ground where that point occurs along the longitudinal centerline of the dam up to the flow line crest of the emergency spillway of the dam. Rules 4 & 5 of the Department of Natural Resources, Division of Water Resources, Office of the State Engineer, Rules and Regulations for Dam Safety and Dam Construction.

6. The boundaries of the floodplain should be accurately determined and based on a reasonable standard. Mallett v. Mamarooneck, 125 N.E. 2d 875 (N.Y. 1955).

7. Adoption of a floodplain regulation to regulate flood-prone areas is a valid exercise of police power and is not a taking as long as the regulation does not go beyond protection of the public's health, safety, morals, and welfare. Hermanson v. Board of County Commissioners of Fremont, 595 P.2d 694 (Colo. App. 1979).

8. The adoption by a municipality of floodplain ordinances to regulate flood-prone areas is a valid exercise of police power and is not a taking. Morrison v. City of Aurora, 745 P.2d 1042 (Colo. App. 1987).

9. A zoning ordinance is not unconstitutional because it prohibits a landowner from using or developing his land in the most profitable manner. It is not required that a landowner be permitted to make the best, maximum or most profitable use of his property. Baum v. City and County of Denver, 363 P.2d 688 (Colo. 1961) and Sundheim v. Board of County Commissioners of Douglas County, 904 P.2d 1337 (Colo. App. 1995).

10. The safest approach to avoiding liability in regard to drainage and flood control improvements is to assume that the defense of a design error will not protect a governmental entity from a lawsuit and liability for injury to property or person. Scott v. City of Greeley, 931 P.2d 525 (Colo. App. 1996) and 24-10-106 (1)(e) and (f) C.R.S.

11. A "dangerous condition" constitutes an unreasonable risk to the health or safety of the public, which is known to exist or which in the exercise of reasonable care should have been known to exist and which condition is proximately caused by the negligent act or omission of the public entity in constructing or maintaining such facility. 24-10-103 C.R.S.

12. Under the Colorado Governmental Immunity Act (CGIA), a drainage and flood control facility is considered to be a "sanitation facility" and thus not protected by the defense that the facility caused damage solely because the design of the facility was inadequate. 24-10-106 (f) and 24-10-103 C.R.S. and Burnworth v. Adams County, 826 P.2d 368 (Colo. App. 1991).

13. Under the CGIA, a governmental entity will be liable for the negligent operation and maintenance of any drainage and flood control facility. 24-10-106 (f) and 24-10-103 C.R.S. and Burnworth v. Adams County, 826 P.2d 368 (Colo. App. 1991).

14. Under the CGIA, a governmental entity will not be liable for its failure to upgrade, modernize, modify, or improve the design or construction of a drainage or flood control facility. 24-10-103 (1) C.R.S.

15. In imposing conditions upon the granting of land-use approvals, no local government shall require an owner of private property to dedicate real property to the public or pay money to a public entity in an amount that is determined on an individual and discretionary basis, unless there is an essential nexus between the dedication or payment and a legitimate local government interest and the dedication or payment is roughly proportional both in nature and extent to the impact of the proposed use or development of such property. This law does not apply to any legislatively formulated assessment, fee, or charge that is imposed on a broad class of property owners by a local government. 29-20-203 C.R.S.

16. Public entities that own dams or reservoirs are not subject to strict liability for damages caused by water escaping from their dams or reservoirs. Further, those public entities have no duty to ensure that waters released from an upstream reservoir because of a dam failure would be contained by their facilities or would bypass those facilities without augmentation. Kane v. Town of Estes Park, 786 P.2d 412 (Colo. 1990).

17. A professional engineer is required not only to serve the interests of his or her employer/client but is also required, as his or her primary obligation, to protect the safety, health, property, and welfare of the public. Rule I 2. of The Colorado Rules of Professional Conduct of the State Board of Registration for Professional Engineers and Professional Land Surveyors.

18. Where a municipality imposes a special fee upon owners of property for purposes of providing a service and where the fee is reasonably designed to defray the cost of the service provided by the municipality, such a fee is a valid form of governmental charge within the legislative authority of the municipality. Bloom v. City of Fort Collins, 784 P.2d 304 (Colo. 1989).

## 5.2 GENERAL PRINCIPLES OF DRAINAGE LAW

Very little is gained if the same act which dries up one tract of land renders the adjoining tract twice as difficult to redeem.

Livingston v. McDonald, 21 Iowa 160, 170 (1866).

### 5.2.1 PRIVATE LIABILITY

Traditionally, courts have analyzed the legal relations between parties in drainage matters in terms of such property concepts as natural easements, rights, privileges, and servitudes but have based liability for interfering with surface waters on tort principles. See Kenyon and McClure Interferences

With Surface Waters, 24 Minn. L. Rev. 891 (1940). Drainage and flood control problems attendant with increased urbanization, the trend in tort law toward shifting the burden of a loss to the best risk-bearer, and complete or partial abolition of governmental immunity by the judiciary or the legislature will continue to change the traditional rules that have governed legal relations between parties in drainage matters. These changes are reflected in the three basic rules relating to drainage of surface waters that have been applied over a period of time in the United States: the common enemy rule, the civil law rule (later to be called a "modified civil law rule"), and the reasonable use rule.

#### 5.2.1.1 COMMON ENEMY RULE

Under the common enemy rule, which is also referred to as the common law rule, surface water is regarded as a common enemy, which each property owner may fight off or control as he or she will or is able, either by retention, diversion, repulsion, or altered transmission. Thus, there is no cause of action even if some injury occurs. All jurisdictions originally following this harsh rule have either modified the rule or adopted the civil law rule or reasonable use rule. 5 Water and Water Rights, §§450.6, 451.2 (R.E. Clark ed. 1972).

#### 5.2.1.2 CIVIL LAW RULE

The civil law rule, or natural flow rule, places a natural easement or servitude upon the lower land for the drainage of surface water in its natural course, and the natural flow of the water cannot be obstructed by the servient owner to the detriment of the dominant owner. 5 Water and Water Rights, §452.2A (R.E. Clark ed. 1972). Most states following this rule, including Colorado, have modified the rule. Under the modified rule, the owner of upper lands has an easement over lower lands for drainage of surface waters, and natural drainage conditions can be altered by an upper proprietor provided the water is not sent down in a manner or quantity to do more harm than formerly. Hankins v. Borland, 163 Colo. 575, 431 P.2d 1007 (1967); H. Gordon Howard v. Cactus Hill Ranch Company, 529 P.2d 660 (1974); Hoff v. Ehrlich, 511 P.2d 523 (1973); but see Ambrosio v. Perl-Mack Construction Company, 143 Colo. 49, 351 P.2d 803 (1960) and Bittersweet Farms, Inc. v. Zimbelman, 976 P.2d 326 (Colo. App. 1998).

The law in Colorado continues to be the same since the case of Hankins v. Borland 431 P. 2d 1007 (Colo. 1967). In that case, the Court held the owner of upstream property posses a natural easement on land downstream for drainage of surface water flowing in its natural course. Therefore, the upstream property owner may alter natural drainage conditions so long as the water is not sent down in a manner or quantity to do more harm to the downstream land than formerly. The Court went on to hold that the right to discharge surplus irrigation water is subject to the same natural easement analysis as that governing the right of an upper landowner to discharge surface water onto the property of a lower owner. Bittersweet Farms, Inc. v. Zimbelman 529 P.2d 660 (Colo. App. 1974

In the case of H. G. Howard v. Cactus Hill Ranch Company 529 P. 2d 660 (Colo. App. 1974), the Court held that the owner of an irrigation ditch was

entitled to maintain the same and, since the ditch had been in existence over twenty years and was in existence prior to the time that the downstream property owner acquired title and prior to the time the upstream landowner acquired title, the upstream landowner was entitled to the protection of the "no more harm than formerly" rule of the Court.

In the case of Hoff v. Ehrlich 511 P. 2d 523 (Colo. App. 1973), the Court held that when an interruption in the natural flow or passage of surface waters is caused by the servient owner to the detriment or injury of the dominant owner, the court should issue a mandatory injunction for the opening of the easement which has been blocked.

#### 5.2.1.2.1 CONTINUING MIGRATION AND ONGOING PRESENCE OF WATER CONSTITUTES A TRESPASS

Although the case of Hoery v. United States of America 64 P. 3d 214 (Colo. 2003) involves the alleged migration and ongoing presence of toxic chemicals onto another's property and the failure to abate and to remove the toxic chemical by the causing party, the Court's logic can be applied to the same situation only involving the damaging of a downstream landowner by causing more water to be deposited on that downstream landowner than formerly.

The Court in its holding continued to endorse the concept that the continuous flooding of an adjacent property in violation of Colorado law constituted a continuing trespass entitling the injured property owner to an injunction to stop the flooding. See Docheff v. City of Broomfield 623 P. 2d 69 (Colo. App. 1980)

### 5.2.1.3 REASONABLE USE RULE

Under the reasonable use rule, each property owner can legally make reasonable use of his land, even though the flow of surface waters is altered thereby and causes some harm to others. However, liability attaches when the harmful interference with the flow of surface water is "unreasonable." Whether a landowner's use is unreasonable is determined by a nuisance-type balancing test. The analysis involves three inquiries:

1. Was there reasonable necessity for the actor to alter the drainage to make use of his or her land?
2. Was the alteration done in a reasonable manner?
3. Does the utility of the actor's conduct reasonably outweigh the gravity of harm to others?

Restatement Torts, §§822-831, 833 (1939); Restatement (Second) Torts, §158, Illustration 5. Alaska, Hawaii, Kentucky, Massachusetts, Minnesota, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio and Utah have adopted this rule. Some states have restricted their application of the rule to urban areas (South Dakota and Texas). In Pendegast v. Aiken, 236 S.E. 2d 787 (1977), the North Carolina Supreme Court traces the common law rule to the civil law rule to adoption by that court of the reasonable use rule, starting at page 793:

> It is no longer simply a matter of balancing the interests of individual landowners; the interests of society must be considered. On the whole the rigid solutions offered by the common enemy and civil law rules no longer provide an adequate vehicle by which drainage problems may be properly resolved.

### 5.2.2 MUNICIPAL LIABILITY

On July 1, 1972 the Colorado Governmental Immunity Act (24-10-101 *et.seq.* C.R.S.) became law in Colorado. It's intent was to define and, in some instances, limit or eliminate liability of governmental entities for their actions and inactions. Up until 2002, it was unclear whether governmental entities that constructed and maintained drainage and flood control facilities were exempt from liability as result of those facilities. There were a few lower court cases that held that drainage and flood control facilities were a "sanitation facility" under the CGIA and thus governmental entities would have limited liability under the Act. In 2002, the Colorado Supreme Court in the cases of City of Colorado Springs v. Powell 48 P. 3d 561 (Colo. 2002) and in the companion case of City of Longmont v. Henry-Hobbs 50 P. 3d 906 (Colo. 2002) held that irrigation and drainage ditches used as part of a storm water drainage system are considered "sanitation facilities" under the Colorado Governmental Immunity Act. Since those ditches are covered under the CGIA, a governmental entity that uses those ditches for drainage or flood control will be held legally responsible, within the limits of the CGIA, for their negligent design or negligent maintenance. In a final holding of the Court, the Court clearly stated that it was not holding that all irrigation ditches are sanitation facilities.

In the 2003 session of the Colorado General Assembly, House Bill 03-1288 was passed and signed by the Governor. That Act specifically addressed the City of Colorado Springs and City of Longmont cases and noted that those cases may have significantly expanded the potential liability of governmental entities providing utility services to the public. The Act specifically redefined the word "maintenance" to mean "the act or omission of a public entity or public employee in keeping a facility in the same general state of repair or efficiency as initially constructed or in preserving a facility from decline or failure. 'Maintenance' does not include any duty to upgrade. Modernize, modify, or improve the design or construction of a facility." The purpose of this section of the Act was to clarify that governmental entities do not have an affirmative duty to improve the design or construction of a facility.

The Act went on to redefine what a "public sanitation facility" is and is not. In describing what a "public sanitation facility" is not, the Act reads as follows: "'Public sanitation facility' does not include: a public water facility; a natural watercourse even if dammed, channelized, or containing storm water runoff, discharge from a storm sewer, or discharge from a sewage treatment plant outfall; a drainage, borrow, or irrigation ditch even if the ditch contains stormwater runoff or discharge from storm sewers; a curb and gutter system; or other drainage, flood control, and stormwater facilities." Therefore, after this Act became effective on July 1, 2003, governmental entities were again protected from liability under the CGIA for negligent design and maintenance of a drainage facility which includes an irrigation ditch.

### 5.2.2.1 PLANNING DRAINAGE IMPROVEMENTS

As a general rule, municipalities are under no legal duty to construct drainage improvements unless public improvements necessitate drainage—as in those situations in which street grading and paving or construction of schools accelerates or alters storm runoff. Denver v. Mason, 88 Colo. 294, 295 P. 788 (1931); Denver v. Capelli, 4 Colo. 25, 34 Am. Rep. 62 (1877); Daniels v. City of Denver, 2 Colo. 669 (1875). This is because statutory provisions authorizing municipal drainage improvements and flood control are generally written in non-mandatory language. Thus, absent mandatory statutory language imposing a duty on municipalities or judicial imposition of an implied duty to avoid or abate injuries, municipalities are not liable for failing to provide drainage or flood control. This general rule was recently reconfirmed in the case of Larry L. Miller Corporation v. Urban Drainage and Flood Control District 64 P. 3d 941 (Colo. App. 2003) wherein the Court held that , pursuant to the District's enabling statutes, it is granted the discretion to choose which properties to acquire, condemn, improve, operate, and maintain.

Although the rule of law in the case of Scott v. City of Greeley, 931 P.2d 525 (Colo. App. 1996) has been modified by House Bill 03-1288, the case is very instructive as to what a court considers negligent in the area of the design and construction of drainage facilities. For that reason, the case bears consideration. The court found that the city formulated a comprehensive drainage plan which called for placement of a 42-inch storm sewer line throughout the length of the street adjacent to the property of the plaintiff and down to the river. The city placed a 42-inch pipe under a section of the street. However, the sewer renovation did not extend to the river, and the 42-inch line was instead connected to the pre-existing 15-inch line at a junction near the plaintiff's property. The plaintiff's property suffered flooding several times. The city argued that the damages that the plaintiff suffered were a result of a "design flaw" and thus immunity would apply. However, the court found the plaintiff's property was damaged not as a result of any inadequacy of the plan but rather from the city having departed from it in temporally connecting the new larger pipe to the existing 15-inch pipe.

On the basis of the Scott case, two things are clear. First, once a plan is in place, it should be followed. Second, drainage improvements should be constructed from the downstream end upstream to avoid creating flows that violate the civil law rule, or special arrangements should be made to keep potential flow damage from increasing downstream of the work. One possible exception to this general rule is the construction of detention facilities, which actually reduce the potential for downstream damages.

Thus, although not now applicable to governmental entities, governmental entities should consider the holding in the Scott case and try to abide by that holding. The law in regard to non-governmental entities remains the same and that is in order to establish a case of negligence, the following must be proved: (1) the existence of a legal duty owed by the defendant to the plaintiff; (2) a breach of that duty; (3) injury to the plaintiff; and (4) a causal relationship between the breach and the injury.

#### 5.2.2.2 CONSTRUCTION, MAINTENANCE, AND REPAIR OF DRAINAGE IMPROVEMENTS

Although municipalities can no loner be held liable for negligent construction of drainage improvements, other legal theories have been used to impose liability on municipalities for faulty construction and maintenance of drainage improvements. Thus, a municipality may incur liability for trespass, Barberton v. Miksch, 128 Ohio St. 169, 190 N.E. 387 (1934) (casting water upon the land of another by seepage or percolation resulting from construction and maintenance of a reservoir was a trespass by the municipality); an unconstitutional taking, Mosley v. City of Lorain, 43 Ohio St. 2d 334, 358 N.E. 2d 596 (1976) (the city had effectively appropriated the plaintiff's property by constructing a storm sewer system which channeled a greater volume of water into the creek than the creek could reasonably be expected to handle without flooding); taking, Lucas v. Carney, 167 Ohio St. 416, 149 N.E. 2d (1958) (construction of a public improvement on county property, which greatly increased the amount and force of surface water which flowed onto the plaintiff's property, overflowing and inundating it, raised a claim of pro tanto appropriation); or nuisance, Mansfield v. Bolleet, 65 Ohio St. 451, 63 N.E. 8.6 (1902) (a municipality is liable if it causes drainage to be emptied into a natural watercourse and substantially damages a downstream landowner). Even in the absence of negligence, nuisance, trespass, or taking, the evolving doctrine of inverse condemnation is being used to permit landowners to obtain compensation from a municipality where storm runoff from municipal projects is diverted across another's land on the theory that the city has taken a drainage easement. Thus, like an easement for noise emanating from the municipal airport, physical entry by the governmental entity or statutory allowance of compensatory damages is not required in order for landowners to recover damages.

In several Colorado cases, however, municipalities have not incurred liability for faulty construction where they are found to be upstream proprietors with a natural easement for drainage—even when water is sent down in a manner or quantity to do more harm than formerly. City of Englewood v. Linkenheil, 362 P.2d 186 (1961) (the city's action in channeling water by a system of drains, catch basins, intakes, and pipes, from a higher place to a place contiguous to the land of the plaintiff, which was a natural drainage area, so as to overflow onto the land of plaintiff did not constitute a taking of property without just compensation); City and County of Denver v. Stanley Aviation Corporation, 143 Colo. 182, 352 P.2d 291 (1960) (plaintiff could not recover from the city for damage caused by flood waters which backed onto lower land on its theory that the city had been negligent or failed to use due care in installing a pipe adequate to carry the waters); Aicher v. Denver, 10 Colo. App. 413, 52 P. 86 (1897) (the city was not found liable for damage where street grade was changed, trolley tracks were permitted in a street, and a culvert was built too small, but the landowner was declared to be in the unfortunate position of having built below the grade of the street).

Since complete governmental immunity has now been put in place for drainage and flood control improvements, claims by land owners have focused on a claim of inverse condemnation which is not protected under CGIA. Inverse condemnation is simply based upon the theory that a governmental entity, who has the authority of eminent domain, has taken some action which has diminished the value of the land of a private citizen.

This action can be both in the form of the construction of a drainage and flood control facility or through the imposition of a governmental regulation affecting a land owners use of his property. The viability of a claim in inverse condemnation was most recently recognized in the case of Animas Valley Sand And Gravel, Inc. v. Board Of County Commissioners Of The County Of La Plata 38 P. 3d 59 (Colo. 2001). The Court addressed a claim by the landowner that the county's restriction of the use of it's land because of flood control concerns was a taking of it's property and thus a claim of inverse condemnation would lie. The court held that such a regulation could be a taking but the factors of the regulation's economic effect on the landowner, the extent to which the regulation interferes with reasonable investment-backed expectations, and the character of the government action.

In regard to the maintenance of drainage and flood control facilities, the CGIA provides in 24-10-103 (1) C.R.S. that maintenance does not include any duty to upgrade, modernize, modify, or improve the design or construction of a facility. Therefore, a governmental entity, under this statute, would not be found to have failed to maintain a facility if it failed to perform one or more of these enumerated actions. However, if a governmental entity fails to maintain a facility other than the excluded enumerated actions above, such failure could subject that entity to a claim that such failure was negligent, and such entity would not be protected by the CGIA.

#### 5.2.2.3 REFUSAL TO ISSUE A CERTIFICATE OF OCCUPANCY IN A FLOODPLAIN

In the case of Patzer v. City of Loveland 2003 Colo. App. LEXIS 1506 (Colo. App. 2003), the City of Loveland was sued by a construction company who had received a building permit for a residence based upon its engineer's report and, after the residence was completed, the City refused to issue a certificate of occupancy due to the fact that the City's engineering report, completed after the building permit was issued, showed that the residence encroached into the 100-year flood plain. Although the City eventually issued the certificate of occupancy, the Court held that the issuance of a building permit is an exercise of the City's police powers which include the regulation of flood control. Further, that the building permit contains no agreement, consideration, or promise that a certificate of occupancy would be issued and therefore, the City could not be held liable for breach of contract. Finally, the Court went on to hold that the Governmental Immunity Act protected the City from a claim of negligent misrepresentation. Thus, the construction company received no relief from the Court.

#### 5.2.2.4 GOVERNMENTAL ENTITY NOT REQUIRED TO PURCHASE OR REMEDY A PARTICULAR SITUATION

The case of Larry H. Miller Corporation v. Urban Drainage and Flood Control District 64 P. 3d 941 (Colo. App. 2003) was brought as a result of flooding damage at a car dealership allegedly caused by construction of a highway ramp by Colorado Department of Transportation. The Court denied relief to the car dealership on the basis that the alleged failure of UDFCD to take affirmative steps to decrease the risk of flooding caused by CDOT's

construction of the highway ramp was not the exercise of "powers, duties, and functions vested in it by law" and therefore, the District did not "operate or maintain" a sanitation facility within the meaning of the Governmental Immunity Act and thus UDFCD was not able to be sued. The Court's underlying reasoning in the case was that the District in the statute is granted the discretion to choose which properties to acquire, condemn, improve, operate, and maintain.

In a companion case to the Larry H. Miller Corporation v. Urban Drainage and Flood Control District case, the Court in Larry H. Miller Corporation v. Board of County Commissioners, Adams County, Colorado 77 P. 3d 870 (Colo. App. 2003) held that Adams County did not have a common law duty to take affirmative steps to decrease the risk of flooding caused by CDOT's construction of the ramp or to implement certain portions of the master drainage plan prepared by the Urban Drainage and Flood Control District. However, the Court went on to hold that if Adams County choose to operate and maintain a public water or sanitation facility related to the flooding, it had a duty not to do so in a negligent manner.

#### 5.2.2.5 SUMMARY

In general, pursuant to the Colorado Governmental Immunity Act, as it now stands, governmental entities are not legally responsible for their negligence in the design, construction or maintenance of drainage and flood facilities. However, best practices would dictate that governmental entities hold themselves to the same standard as private citizens and strive to design, construct and maintain drainage and flood control facilities in a non-negligent manner. The exceptions to this rule are claims which are based on other theories of law than negligence. Thus, as stated earlier, a claim based upon inverse condemnation does not fall within the complete immunity provisions of the CGIA but is afforded limited protection under the monetary limitations of the Act.

### 5.2.3 MUNICIPAL LIABILITY FOR ACTS OF OTHERS

#### 5.2.3.1 ACTS OR OMISSIONS OF MUNICIPAL OFFICERS, AGENTS, OR EMPLOYEES

The general rule is that a municipality is not liable under the doctrine of respondent superior for the acts of officers, agents, or employees that are governmental in nature but is liable for negligent acts of its agents in the performance of duties relating to proprietary or private corporate purposes of the city. Denver v. Madison, 142 Colo. 1, 351 P.2d 826 (1960). The construction, maintenance and repair of drainage improvements have been regarded as proprietary or corporate functions. Denver v. Maurer, 47 Colo. 209, 106 P. 875 (1910). Although the governmental-proprietary distinction has been abolished by statute in Colorado, the distinction apparently still applies whenever the injury arises from the act, or failure to act, of a public employee who would be, "or heretofore has been personally immune from liability." 24-10-106 C.R.S. Since the Colorado Governmental Immunity Act generally provides immunity to governmental entities in regard to the design, construction and maintenance of drainage and flood control facilities, the employees of those governmental entities are afforded those same

protections. However, if an employee, in the course of that employee's duties, were to commit a willful and wanton act that damages an individual; the governmental entity will not be liable for the damages that flow from that act. See Middleton v. Travis 45 P. 3d 721 (Colo. 2002). However, in all cases where an individual employee of a governmental entity is sued for an action or inaction that the employee took in the course of his duties with the governmental entity that was not willful and wanton, the governmental entity is responsible for providing the employee with a defense and paying any judgment rendered against that employee.

#### 5.2.3.2 MUNICIPAL LIABILITY FOR ACTS OF DEVELOPERS

Unless an ordinance or statute imposes a duty on a municipality to prevent or protect land from surface water drainage, a municipality will not incur liability for wrongfully issuing building permits, failing to enforce an ordinance, or approving defective subdivision plans. Breiner v. C & P Homebuilder's Inc., 536 F.2d 27 (3rd Cir. 1976), reversing the District Court. (In a suit by landowners in an adjacent township against a borough, its engineers, and subdivision developer for damages caused by increased flow of surface water from development where the borough approved a subdivision plan which did not provide drainage facilities and issued building permits, the borough was not liable because it owed no duty to landowners outside its boundaries. However, the developer was held liable.)

One state court, however, has held that a municipality is liable for damages where the municipality has furnished building permits to a contractor for development of an industrial complex which benefited the village financially but also diminished surface area available for drainage of water, causing flooding of neighboring servient estates. Myotte v. Village of Mayfield, 375 N.E.2d 816 (1977). In Myotte, the village's liability was based on the following reasoning:

> To require the developer to pick up the cost of flood prevention by requiring him to acquire land along stream margins for widening or deepening to accommodate accelerated flow, would subject him to possible overreaching by riparian owners. The developer has no power of eminent domain. Municipalities do have powers of condemnation. Accordingly, as an advantaged party with the power to protect itself from crisis pricing, it seems reasonable and just that the municipality should either enlarge the stream to accommodate water accelerated from permitted improvements that enrich it or pay the consequences.
>
> Myotte, supra at 820. (Day, J. concurring.). See also, Armstrong v. Francis Corporation, 20 N.J. 320, 120 A.2d 4 (1956); Sheffet v. County of Los Angeles, 3 Cal. App. 3d 720 (1970); Powers, et al., County of Clark and Clark County Flood Control District, District Court, State of Nevada (No. A 125197) (1978).

There is a trend toward imposing a greater burden or responsibility on municipalities for the drainage consequences of urban development. See Wood Brothers Homes, Inc. v. City of Colorado Springs, 568 P.2d 487 (1977) (where the city abused its discretion by not granting variance and by assessing the entire cost of a major drainage channel on the developer, where the area to be served by the major

drainage channel already suffered from occasional flooding and needed an expanded drainage facility whether the property was developed or not).

### 5.2.4 PERSONAL LIABILITY OF MUNICIPAL OFFICERS, AGENTS, AND EMPLOYEES

An injured person always has a remedy against the original tort feasor even if no recovery may be had from the municipality for acts of its officers, agents, or employees in discharge of governmental functions. Denver v. Madison, 142 Colo. 1, 351 P.2d 826 (1960). Thus, public employees generally have been personally liable for injuries caused by their negligent actions within the scope of employment, even when the defense of sovereign immunity was available to their employers. Antonpoulos v. Town of Telluride, 187 Colo. 392, 532 P.2d 346 (1975); Liber v. Flor, 143 Colo. 205, 353 P.2d 590 (1960). Since an injured person's right to sue the negligent employee of an immune entity derives from the common law, the Colorado Supreme Court will not infer legislative abrogation of that right absent clear legislative intent. Thus, the CGIA is only directed toward liability of public entities. Kristensen v. Jones, 574 P.2d 854 (1978) (a bus driver for the regional transportation district was found personally liable for injuries sustained in a collision with the district's bus, and written notice was not a condition precedent to a suit against a public employee in his or her individual capacity).

However, the CGIA provides both for the defense of any governmental employee who is sued individually as a result of the employee's acts during the performance of his or her duties as well as the payment of any judgment or settlement. The act provides in part that a public entity shall be liable for the payment of all judgments and settlements of claims against any of its public employees where the claim against the public employee arises out of injuries sustained from an act or omission of such employee occurring during the performance of his or her duties and within the scope of employment, except where such act or omission is willful and wanton or where sovereign immunity bars the action against the public entity (24-10-110 [b][I] C.R.S.).

Therefore, it is possible for an employee to be personally liable for a negligent act and the public entity to escape liability. Such a situation would arise when the claimant fails to give proper notice to the public entity, thus providing that entity with the defense of lack of jurisdiction against it. However, the public employee would have no such defense.

## 5.3 DRAINAGE IMPROVEMENTS BY A LOCAL GOVERNMENT

In an era of increasing urbanization and suburbanization, drainage of surface water most often becomes a subordinate feature of the more general problem of proper land use—a problem acutely sensitive to social change.

Pendergast v. Arkin, 236 S.E. 2d 787, 796 N. Carolina.

### 5.3.1 CONSTITUTIONAL POWER

A municipality's inherent police powers enable it to enact ordinances that serve the public's health, safety, morals, or general welfare. Ordinances addressing drainage problems are clearly a proper exercise of a municipality's police powers. Wood Brother's Homes, Inc. v. City of Colorado

Springs, 568 P.2d 487, 490 (1977). Hutchinson v. Valdosta, 227 U.S. 303, 308 (1913).

### 5.3.2 STATUTORY POWER

#### 5.3.2.1 STATUTES-COLORADO WATER CONSERVATION BOARD

37-61-101, 37-60-123 C.R.S. The statute creates a 13-member state water conservation board for purposes of water conservation and flood prevention. An important duty of this board is to "designate and approve storm or floodwater runoff channels or basins, and to make such designations available to legislative bodies of cities and incorporated towns, and counties of this state." 30-60-123 C.R.S.

##### 5.3.2.1.1 GENERAL POWERS

The CWCB was created by the Colorado Legislature for the purpose of aiding in the protection and development of the waters of the state, for the benefit of the present and future inhabitants of the state. (37-60-102 C.R.S.) The duties of the CWCB include the promotion of the conservation of the waters of the state of Colorado and the utmost prevention of floods. (37-60-106 C.R.S.) In order to accomplish those purposes the CWCB has been given the following powers and duties:

a) To devise and formulate methods, means, and plans for the prevention of flood damages, and to designate and approve storm or floodwater runoff channels or basins, and to make such designations available to legislative bodies of cities and incorporated towns, and counties of this state;
b) To gather data and information looking toward the greater utilization of the waters of the state and the prevention of floods and for this purpose to make investigations and surveys;
c) To cooperate with the United States and the agencies thereof, and with other states for the purpose of bringing about the greater utilization of the waters of the state of Colorado and the prevention of flood damages;
d) To cooperate with the Unites States, or any of the agencies thereof, in the making of preliminary surveys, and sharing the expenses thereof, when necessary, respecting the engineering and economic feasibility of any proposed water conservation or flood control project with the state of Colorado;
e) To formulate and prepare drafts of legislation, state and federal, designed to assist in securing greater beneficial use and utilization of the waters of the state and protection from flood damages;
f) To acquire by grant, purchase, bequest, devise, or lease, any real property or interest therein for the purpose of the prevention or control of floods, or to acquire by eminent domain any real property or interest therein with respect to any project specifically authorized by the United States congress for the prevention or control of floods, including but not limited to easements and rights-of-way for ingress into and egress from such project, with the power in either event to lease such lands or interest therein to agencies of the federal government or to the state or any agency or political subdivision thereof for the construction, operation, or maintenance of flood control and prevention facilities and

g) In general, to take such action and have such powers as are incidental to the foregoing specific provisions and to the general purposes of this article.

The CWCB may construct, rehabilitate, enlarge, or improve, or loan moneys to enable the construction, rehabilitation, enlargement, or improvement of flood control facilities, in whole or in part, as will, in the opinion of the CWCB , abate floods. The CWCB may also enter into contracts for the use of, or to loan moneys to enable the construction, rehabilitation, enlargement, or improvement of flood control facilities. (37-60-119 C.R.S.)

The CWCB may recommend the loan of funds for floodplain projects out of the Colorado water conservation board construction fund. (30-60-121 C.R.S.) The CWCB is authorized to provide funding for flood preparedness and for response and recovery activities following flood events and disasters out of a flood response fund. The moneys in the response fund are continuously appropriated to the CWCB for flood response purposes, including, but not limited to funds for aerial photography of flooded areas, flood documentation and identification of specific hazards, evaluations and revisions of floodplain designations, flood forecasting and preparation, and development of disaster and recovery mitigation plans. (37-60-123.2 C.R.S.) In addition, the CWCB may make grants to counties to assist them in removing stream flow obstructions. (30-30-105 C.R.S.)

In addition, the CWCB may adopt rules and regulations as are necessary or expedient for the conduct of its business and the administration of the statute. (30-60-108 C.R.S.) The CWCB did, based upon this statutory authority adopt Rules and Regulations for Regulatory Floodplains in Colorado (Dated July 2005, Effective September 12, 2005). The purposes of these rules is to provide reasonably uniform standards for the designation and approval of floodplains and of storm or floodwater runoff channel in Colorado, and to prescribe the process by which floodplains and channel will be designated and approved by the Colorado Water Conservation Board. Rule 13 of the Rules provides that the CWCB will designate and approve floodplains and storm or floodwater channels by the adoption of written resolutions base only upon such floodplain information as the CWCB determines meets the standards set forth in these Rules taking into consideration the effects of dams and levees.

#### 5.3.2.1.2 CWCB, THE COLORADO LAND USE ACT (HOUSE BILL 1041) AND THE DESIGNATION OF FLOOD

H.B. 1041 required the Colorado land use commission to designate critical areas in the state where a one hundred-year (storm return frequency) floodway should be identified and shall aid the state agencies and local governments having jurisdiction over such critical areas in adopting a program for such identification. The purpose of identifying a floodway is to insure that life and property are protected, that the expenditure of public funds to clean up flood damage is kept to a minimum, that a high volume of water runoff can be accommodated, and that impediments to this flow are held to a minimum. (24-65-105 C.R.S.)

H.B. 1041 also defined “floodplain” as an area adjacent to a stream, which area is subject to flooding as the result of the occurrence of an intermediate

regional flood and which area thus is so adverse to past, current, or foreseeable construction or land use as to constitute a significant hazard to public health and safety or to property. The term includes but is not limited to:
(a) Mainstream floodplains;
(b) Debris-fan floodplains; and
(c) Dry wash channels and dry wash floodplains. and "natural hazard" as a geologic hazard, a wildlife hazard or a flood. (24-65.1-103 C.R.S.)

H.B. 1041 went on to provide that floodplains shall be administered so as to minimize significant hazards to public health and safety or to property. The Colorado water conservation board shall promulgate a model floodplain regulation no later than September 30, 1974. Open space activities such as agriculture, recreation, and mineral extraction shall be encouraged in the floodplains. Any combination of these activities shall be conducted in a mutually compatible manner. Building of structures in the floodplain shall be designed in terms of the availability of flood protection devices, proposed intensity of use, effects on the acceleration of floodwaters, potential significant hazards to public health and safety or to property, and other impact of such development on downstream communities such as the creation of obstructions during floods. Activities shall be discouraged that, in time of flooding, would create significant hazards to public health and safety or to property. Shallow wells, solid waste disposal sites, and septic tanks and sewage disposal systems shall be protected from inundation by floodwaters. Unless an activity of state interest is to be conducted therein, an area of corrosive soil, expansive soil and rock, or siltation shall not be designated as an area of state interest unless the Colorado conservation board, through the local conservation district, identifies such area for designation. (24-65.1-202 C.R.S.)

H.B. 1041 also requires any local government applying for federal or state financial assistance for floodplain studies shall provide prior notification to the Colorado water conservation board. The CWCB shall coordinate and prescribe the standards for all floodplain studies conducted pursuant to this article, including those conducted by federal, local, or other state agencies, to the end that reasonably uniform standards can be applied to the identification and designation of all floodplains within the state and to minimize duplication of effort. (24-65.1-403 C.R.S.)

Finally, and most importantly, **No floodplains shall be designated by any local government until such designation has been first approved by the Colorado Water Conservation Board as provided in sections 30-28-111 and 31-23-301, C.R.S.** (24-65.1-403 C.R.S.)

The individual statutes applicable to counties and municipalities provide, as noted above, that the CWCB must first approve the designation of any floodplain. The statutes applicable to counties provides that: "To the end that adequate safety may be secured, the county planning commission may include in said zoning plan provisions establishing, regulating, and limiting such uses on or along any storm or floodwater runoff channel or basin as such storm or floodwater runoff channel or basin has been designated and approved by the Colorado water conservation board in order to lessen or avoid the hazards to persons and damage to property resulting from the accumulation of storm or floodwaters." (30-28-111 C.R.S.) The statutes

pertaining to municipalities provide that: "to the end that adequate safety may be secured, said governing body also has power to establish, regulate, restrict, and limit such uses on or along any storm or floodwater runoff channel or basin, as such storm or floodwater runoff channel or basin has been designated and approved by the Colorado water conservation board, in order to lessen or avoid the hazards to persons and damage to property resulting from the accumulation of storm or floodwaters." (31-23-301 C.R.S.)

#### 5.3.2.2 STATUTES-MUNICIPALITIES

##### 5.3.2.2.1 MUNICIPAL POWERS-PUBLIC PROPERTY AND IMPROVEMENTS

31-15-701, 31-15-714 C.R.S. The statute grants municipalities the power to establish, improve, and regulate such improvements as streets and sidewalks, water and water works, sewers and sewer systems, and water pollution controls. In addition, a municipality may, among other powers, "deepen, widen, cover, wall, alter or change the channel of watercourses." 31-15-711 (1) (a) C.R.S.

##### 5.3.2.2.2 PUBLIC IMPROVEMENTS-SPECIAL IMPROVEMENT DISTRICTS IN MUNICIPALITIES

31-25-501, 31-25-508 C.R.S. The statute authorizes municipalities to construct local improvements and assess the cost of the improvements wholly or in part upon property specially benefited by such improvements. By ordinance, a municipality may order construction of district sewers for storm drainage in districts called storm sewer districts.

##### 5.3.2.2.3 PUBLIC IMPROVEMENTS-IMPROVEMENT DISTRICTS IN MUNICIPALITIES

31-25-601, 31-25-604 C.R.S. The statute authorizes municipalities to establish improvement districts as taxing units for the purpose of constructing or installing public improvements. The organization of districts is initiated by a petition filed by at least thirty percent of registered electors of the municipality who own real or personal property in the district.

##### 5.3.2.2.4 SEWER AND WATER SYSTEMS-MUNICIPALITIES

31-35-401, 31-35-417 C.R.S. The statute authorizes municipalities to operate, maintain, and finance water and sewage facilities for the benefit of users within and without their territorial boundaries. Sewerage facilities are defined as "any one or more of the various devices used in the collection, treatment, or disposition of sewage or industrial wastes of a liquid nature or storm, flood, or surface drainage waters...." 31-35-401(6) C.R.S.

#### 5.3.2.3 STATUTES-COUNTY

##### 5.3.2.3.1 PUBLIC IMPROVEMENTS-SEWER AND WATER SYSTEMS

30-20-401, 30-20-402 C.R.S. The statute authorizes county construction, maintenance, improvement and financing of water and sewerage facilities for the county's own use and for the use of the public and private consumers and users within and without the county's territorial limits.

##### 5.3.2.3.2 COUNTY PUBLIC IMPROVEMENT DISTRICTS

30-20-501, 30-20-531 C.R.S. The statute authorizes creation of public improvement districts within any county as taxing units for purposes of constructing, installing, or acquiring any public improvement. 30-20-513 C.R.S. lists special benefits for purposes of assessing improvements within a public improvement district, particularly with respect to storm sewer drainage and drainage improvements to carry off surface waters.

##### 5.3.2.3.3 PUBLIC IMPROVEMENTS-LOCAL IMPROVEMENT DISTRICTS-COUNTIES

30-20-601, 30-20-606 C.R.S. The statute authorizes a county by resolution to construct local improvements and assess costs thereof wholly or in part upon property specially benefited by such improvements.

##### 5.3.2.3.4 FLOOD CONTROL-CONTROL OF STREAM FLOW

30-30-101, 30-28-102 C.R.S. The statute authorizes the board of county commissioners of each county for flood control purposes only:

> ...to remove or cause to be removed any obstruction to the channel of any natural stream which causes a flood hazard, and for such purpose only the board of county commissioners shall have a right of access to any such natural stream, which access shall be accomplished through existing gates and lanes, if possible. Such authority includes the right to modify existing diversion or storage facilities at no expense to the diverter of a water right, but it shall in no way alter or diminish the quality or quantity of water entitled to be received under any vested water right. 30-30-102 (1) C.R.S.

##### 5.3.2.3.5 CONSERVANCY LAW-FLOOD CONTROL

37-1-101, 37-2-101 C.R.S. The statute authorizes the district court for any county to establish conservancy districts for any of the following purposes: Preventing floods; regulating stream channels by changing, widening, and deepening the same; regulating the flow of streams; diverting, controlling, or in whole or in part eliminating watercourses; protecting public and private property from inundation…

#### 5.3.2.3.6 DRAINAGE DISTRICTS

37-20-101, 37-20-109 C.R.S. The statute authorizes owners of agricultural lands susceptible to drainage by the same general system of works to petition the board of county commissioners for the organization of a drainage district.

### 5.3.2.4 STATUTES-STATE

#### 5.3.2.4.1 COLORADO LAND USE ACT

24-65-101, 24-65-105 C.R.S. The statute establishes a nine-member Colorado land use commission. Among other powers, the commission has authority to assist counties and municipalities in developing guidelines for developing land uses and construction controls within designated floodways.

#### 5.3.2.4.2 DRAINAGE OF STATE LANDS

37-30-101, 37-30-102 C.R.S. The statute authorizes the state board of land commissioners to make contracts with any person, corporation, association, or drainage district to provide drainage of state lands.

#### 5.3.2.4.3 STATE CANALS AND RESERVOIRS

37-88-101, 37-88-109 C.R.S. The statute authorizes the Department of Corrections to locate, acquire, and construct ditches, canals, reservoirs, and feeders for irrigating and domestic purposes for the use of the State of Colorado. The board of county commissioners have charge and control of any state reservoir in their county including the obligation to maintain and keep said reservoir in good condition at the county's expense. In addition, the county in which the state reservoir is located is liable for any damages resulting from breakage of the dams or water discharges therefrom.

#### 5.3.2.4.4 REGULATORY IMPAIRMENT OF PROPERTY RIGHTS

29-20-201 C.R.S. This law became effective July 1, 1999. One of the legislative declarations of the act is that "The general assembly further finds and declares that an individual private property owner should not be required, under the guise of police power regulation of the use and development of property, to bear burdens for the public good that should more properly be borne by the public at large." The main thrust of the act is contained in 29-20-203 (1) C.R.S., which reads as follows:

> In imposing conditions upon the granting of land-use approvals, no local government shall require an owner of private property to dedicate real property to the public, or pay money to a public entity in an amount that is determined on an individual and discretionary basis, unless there is an essential nexus between the dedication or payment and a legitimate local government interest, and the dedication or payment is roughly proportional both in nature and extent to the impact of the proposed use or development of such property. This section shall not apply

> to any legislatively formulated assessment, fee, or charge that is imposed on a broad class of property owners by local government.

The act goes on to prescribe the remedies available to a private property owner who believes his or her rights have been violated under the act. However, unlike most litigation, it is the burden of the local government and not the plaintiff "to establish, based upon substantial evidence appearing in the record" that the dedication or payment required by the local government is roughly proportional to the impact of the proposed use of the subject property.

Therefore, the Colorado legislature has now established a standard that is consistent with the leading case law in this area to assist local governments with reaching a safe harbor when imposing conditions on development. The concepts are fairly simple. First, the conditions imposed have to have some causal relationship with the impact of the development and, second, those conditions must be "roughly proportional" to the impact of the development. However, it should be noted that these restrictions relate only to those instances where the local government is negotiating individually with a developer as to what conditions will be imposed by the local government. The act does provide that, if the local government is legislatively imposing conditions for development on a broad class of property owners, the "essential nexus" and "roughly proportional" requirements of the act do not apply to those legislatively imposed conditions.

#### 5.3.2.4.5 INTERGOVERNMENTAL RELATIONSHIPS

29-1-201 C.R.S. In 1974, Section 2 of Article XI of the state constitution was amended to permit and encourage governments to make the most efficient and effective use of their powers and responsibilities by cooperating and contracting with other governments. 29-1-203 C.R.S. provides more detail in regard to how that cooperation is to be carried out. It reads in part as follows:

> Governments may cooperate or contract with one another to provide any function, service, or facility lawfully authorized to each of the cooperating or contracting units, including the sharing of costs, the imposition of taxes, or the incurring of debt, only if such cooperation or contracts are authorized by each party thereto with the approval of its legislative body or other authority having the power to so approve.

### 5.3.2.5 URBAN DRAINAGE AND FLOOD CONTROL ACT

32-11-101 C.R.S., et. seq., established the Urban Drainage and Flood Control District (District), including all of the City and County of Denver and the urbanized and urbanizing portions or Adams, Arapahoe, Boulder, Douglas and Jefferson Counties. An 18-person board, comprised of 16 elected officials and 2 professional engineers, is given the power to (1) plan solutions to drainage and flood control problems (with an authorized mill levy of 0.1 mill); (2) construct drainage and flood control improvements (with an authorized mill levy of 0.4 mill); (3) maintain such improvements and other natural drainageways in the District (with an authorized mill levy of 0.4 mill);

and (4) construct drainage and flood control improvements in and adjacent to the South Platte River (with an authorized mill levy of 0.1 mill). The board also has the power to adopt and enforce a floodplain regulation.

#### 5.3.2.6 INTERFERENCE WITH THE FLOW OF WATER IN A DITCH

37-89-101 C.R.S. was amended in the 2001 session of the Colorado General Assembly and provides that anyone who "interferes with the flow of water in any drainage ditch" shall be legally responsible for full restitution for the actual damages that were sustained as a result of that interference.

#### 5.3.2.7 ENTITLEMENT OF SUBDIVIDERS TO FAIR SHARE REIMBURSEMENT OF THE COST OF IMPROVEMENTS

30-28-133 (12) C.R.S. was also amended in the 2001 session of the Colorado General Assembly and provides that counties may adopt subdivision regulations that provide that a subdivider is entitled to fair-share reimbursement of the cost of storm drainage facilities that the county requires the subdivider to construct adjacent to or outside the subdivision. Such payment shall be made to the subdivider by the owner of the property that is adjacent to or has presumed use of the improvements when that property is developed. The period for such reimbursement shall not exceed fifteen years and the regulations may entitle the subdivider to interest on the amount to be reimbursed.

## 5.4 FINANCING DRAINAGE IMPROVEMENTS

The ability of one owner to develop land, install impervious surfaces, alter drainage paths, and accelerate runoff onto other properties involves more than issues of what rights and relief should be accorded neighboring property owners. Urbanization may double or triple the peak flows of 5- and 10-year floods. Lands far downstream may be severely affected by the cumulative impact of unplanned and unregulated changes in drainage patterns due to urban clearance, grading, and development. Increasingly, the costs of uncontrolled drainage modifications and storm water management have fallen on the state and federal budgets.

> Westen, Gone With the Water—Drainage Rights and Storm Water Management in Pennsylvania, 22 Vill. L. Rev. 901, 902 (1976-77).

### 5.4.1 CAPITAL IMPROVEMENT

Resources from the current budget, usually derived from sales, property, and income taxes, can be used to finance drainage improvements. Since the cost is paid from the "general fund" or "capital improvement fund" and no specific property tax is levied, the financing is relatively simple.

### 5.4.2 LOCAL IMPROVEMENT

Financing for drainage improvements through local improvements or as part of a general bond issue requires that all property be assessed on a valuation basis. Since a majority of all taxpaying electors must approve the decision, the success of this method usually turns on how well the facts (needs) have been prepared and how well a plan has been developed.

### 5.4.3 SPECIAL IMPROVEMENT

When drainage improvements are financed as special improvements, the property assessed must be specially benefited. In Colorado, benefits, for purposes of special assessments, are defined in several statutory sections. (See 30-20-513, 30-20-606, 31-25-507, and 37-23-101.5 C.R.S.). For example, 37-23-101.5 C.R.S. provides:

> Determination of special benefits—factors considered. (1) The term 'benefit,' for the purposes of assessing a particular property within a drainage system improvement district, includes, but is not limited to, the following: (a) any increase in the market value of the property; (b) the provision for accepting the burden from specific dominant property for discharging surface water onto servient property in a manner or quantity greater than would naturally flow because the dominant owner made some of his property impermeable; (c) any adaptability of property to a superior or more profitable use; (d) any alleviation of health and sanitation hazards accruing to particular property or accruing to public property in the improvement district, if the provision of health and sanitation is paid for wholly or partially out of funds derived from taxation of property owners of the improvement district; (e) any reduction in the maintenance costs of particular property or of public property in the improvement district, if the maintenance of the public property is paid for wholly or partially out of funds derived from taxation of property owners of the improvement district; (f) any increase in convenience or reduction in inconvenience accruing to particular property owners, including the facilitation of access to and travel over streets, roads, and highways; (g) recreational improvements accruing to particular property owners as a direct result of drainage improvement.

This statute was adopted by the Colorado legislature to define "benefits," a term previously defined only by courts. See Shoemaker, What Constitutes 'Benefits' for Urban Drainage Projects, 51 Denver L. Journal 551 (1974).

Although a benefit to the premises assessed must at least be equal to the burden imposed, the standard of apportionment of local improvement costs to benefits is not one of absolute equality, but one of reasonable approximation. Satter v. City of Littleton, 185 Colo. 90, 522 P.2d 95 (1974). A presumption of validity inheres in a city council's determination that benefits specifically accruing to properties equal or exceed assessments thereon. Satter, supra. Further, a determination of special benefits and assessments is left to the discretion of municipal authorities, and their determination is conclusive in the courts unless it is fraudulent or unreasonable. Orchard Court Development Co. v. City of Boulder, 182 Colo. 361, 513 P.2d 199 (1973). A determination of no benefit in an eminent domain proceeding does not preclude a subsequent special assessment providing a landowner's property benefited from construction of the improvement. City of Englewood v. Weist, 184 Colo. 325, 520 P.2d 120 (1974). See, also, Denver v. Greenspoon, 140 Colo. 402, 344 P.2d 679 (1959); Town of Fort Lupton v. Union Pacific R.R. Co., 156 Colo. 352, 399 P.2d 248 (1965); Houch v. Little River District, 239 U.S. 254 (1915); and Miller and Lux v. Sacramento Drainage District, 256 U.S. 129 (1921).

### 5.4.4 SERVICE CHARGE

For example the Urban Drainage and Flood Control District can charge service fees for the use of its facilities or services and thereby finance its improvements. 32-11-217 (l)(e), 32-11-306 C.R.S. provides:

> Such service charges may be charged to and collected in advance or otherwise by the District at any time or from time to time from any person owning real property within the District or from any occupant of such property which directly or indirectly is, has been, or will be connected with the drainage and flood control system of the District or from which or on which originates or has originated rainfall, other surface and subsurface drainage, and storm and flood waters (or any combination thereof) which have entered or may enter such system, and such owner or occupant of any such real property shall be liable for and shall pay such service charges to the District at the time when and place where such service charges are due and payable.

Storm and flood control facilities fall within the definition of "sewerage facilities" defined in 30-35-401 (5) C.R.S; 30-35-402 (1) C.R.S. states:

> In addition to the powers which it may now have, any municipality, without any election of the taxpaying or qualified electors thereof, has power under this part for:
>
> (f) to prescribe, revise and collect in advance or otherwise, from any consumer or any owner or occupant of any real property connected therewith or receiving service therefrom rates, fees, tolls, and charges or any combination thereof for the services furnished by, or the direct or indirect connection with, or the use of, or any commodity from such water facilities or sewerage facilities or both,...

A service charge is neither a tax nor a special assessment but is a fee for the sole purpose of defraying the cost of establishing and maintaining a storm drainage and flood control utility. Western Heights Land Corp. v. City of Fort Collins, 146 Colo. 464, 362 P.2d 155 (1961). See, also, City of Aurora v. Bogue, 176 Colo. 198, 4-9 P.2d 1295 (1971); Brownbriar Enterprises v. City and County of Denver, 177 Colo. 198, 493 P.2d 352 (1972); and City of Boulder v. Arnold, 978 P.2d 149 (Colo. App. 1976) which upheld the City of Boulder's flood control fee. Counties in Colorado have similar powers pursuant to 30-20-402 (1) C.R.S.

The issue of whether a storm drainage service charge based upon the ratio of impervious to pervious land surface of a piece of real property was addressed by the Colorado Supreme Court in the case of Zelinger v. City and County of Denver 724 P. 2d 1356 (Colo. 1986). The court held that such a fee is rationally related to the legitimate governmental interest of operating, maintaining and replacing the City's storm drainage facilities and there is not a tax.

### 5.4.5 DEVELOPER'S COST

1. A county planning commission or the board of adjustment of any county may condition any portion of a zoning resolution, or any amendments or

exceptions thereto, upon "the preservation, improvement, or construction of any storm or floodwater runoff channel designated and approved by the Colorado Water Conservation Board." 30-28-111 (2) C.R.S.

2. Every Colorado county is required to have a planning commission to develop, adopt and enforce subdivision regulations. Among the provisions that the board of county commissioners must include in the county's regulations are those requiring developers to submit:

   a. A plat and other documentation showing the layout or plan of development, including, where applicable, the following information:

      i. Estimated construction cost and proposed method of financing of the streets and related facilities, water distribution system, sewage collection system, storm drainage facilities, and such other utilities as may be required of the developer by the county.

      ii. Maps and plans for facilities to prevent stormwater in excess of historic runoff caused by the proposed subdivision from entering, damaging, or being carried by conduits, water supply ditches and appurtenant structures, and other storm drainage facilities. 30-28-133 (3)(c) C.R.S.

In addition, subdivision regulations must include provisions governing:

Standards and technical procedures applicable to storm drainage plans and related designs, in order to ensure proper drainage ways, which may require, in the opinion of the board of county commissioners, detention facilities which may be dedicated to the county or the public, as are deemed necessary to control, as nearly as possible, storm waters generated exclusively within a subdivision from a one-hundred year storm which are in excess of the historic runoff volume of storm water from the same land area in its undeveloped and unimproved condition. 30-28-133 (4)(b) C.R.S.

### 5.4.6 LEGISLATIVELY FORMULATED ASSESSMENT, FEE OR CHARGE

In the case of Marshall B. Krupp, et.al. v. The Breckenridge Sanitation District, et.al. 19 P. 3d 687 (Colo. 2001), the Court was asked to address Colorado's regulatory takings statute and the statute's explicit declination to apply the Nolan/Dolan tests to "any legislatively formulated assessment, fee, or charge that is imposed on a broad class of property owners by a local government." The Krupp case arose when The Breckenridge Sanitation District legislatively assessed a fee on all building projects within the District. The Krupps challenged the assessment of the fee on their new residential townhouse project on the basis that it amounted to an unconstitutional taking of property. The Colorado Supreme Court held that a legislatively created, generally applicable service fee, is not subject to a takings analysis under Nollan/Dolan. Therefore, once a fee such as that in this case is assessed by way of a legislative act of the governmental entity it virtually cannot be challenged as being unconstitutional.

### 5.4.7 THE TAXPAYERS BILL OF RIGHTS, ARTICLE X, SECTION 20, COLORADO CONSTITUTION

On December 31, 1992 the Taxpayers Bill of Rights (TABOR) became effective. Its effect is to limit governmental spending generally so that "the maximum annual percentage change in each local district's fiscal year spending equals inflation in the prior calendar year plus annual local growth." In addition to a spending limitation, TABOR imposes a revenue limit that is similar to the spending limit. Finally, districts must have voter approval in advance for:

> ...any new tax, tax rate increase, mill levy above that for the prior year, valuation for assessment ratio increase for a property class, or extension of an expiring tax, or a tax policy change directly causing a net tax revenue gain to any district.

Prior to the passage of TABOR there were a number of cases that addressed whether a service charge was a tax. The first of note was Zelinger v. City and County of Denver, 724 P.2d 1356 (Colo. 1986) wherein a storm drainage service charge was attacked as an unconstitutional property tax and an unconstitutional denial of equal protection and due process guarantees to property owners. The storm drainage service charge applied to all owners of property in Denver and was used to pay for the operation, maintenance, improvement and replacement of the city's storm drainage facilities. The charge was based on the ratio of impervious to pervious land surface. The higher the ratio of impervious to pervious surface, the greater the charge per square foot. The Colorado Supreme Court held that such a service charge was not a tax nor was it a violation of due process or equal protection. The court concluded with the following finding:

> ...although alternative cost allocation schemes may be equally well-suited or arguably better suited to serving the governmental interest in providing storm drainage facilities than the scheme actually adopted, the equal protection clauses do not authorize the invalidation of the scheme chosen unless it is without rational foundation.

The Zelinger case has continued as good law ever since 1986 and has been cited recently as the law of Colorado in regard to these matters. Thus, a storm drainage service charge similar to that adopted by Denver is not a tax and therefore is not subject to the limitations of TABOR.

In 1989 the Colorado Supreme Court revisited fees in the case of Bloom v. City of Fort Collins, 784 P.2d 304 (Colo. 1989). In that case the court considered a transportation utility fee and held that such a fee was not a property tax but rather a special fee imposed upon owners or occupants of developed lots fronting city streets and that such a fee is reasonably related to the expenses incurred by the city in carrying out its legitimate goal of maintaining an effective network of city streets. The court in reaching this conclusion considered any number of possibilities as to what this fee was and rejected the following as not applying: property tax, excise tax and special assessment. It therefore found that the fee was a special fee that

was a charge imposed on persons and property and reasonably designed to meet the overall cost of the service for which the fee is imposed.

Finally, in the case of City of Littleton v. State of Colorado, 855 P.2d 448 (Colo. 1993), the Colorado Supreme Court addressed another stormwater and flood management utility fee. The fee was enacted to prevent damage to property from accumulations and uncontrolled runoff of water. The ordinance declares that as the ultimate beneficiaries and users of the contemplated system, the owners of property within the city shall be required to pay a fee for the costs of constructing, operating, maintaining and replacing the system and its facilities. The state Community Colleges Board challenged the fee as a special assessment and thus something that could not be charged against the state. The court found that, despite the fact that the service fees did not specifically benefit the property owned by the state, it did create the capacity to remove excess water from property and prevent flooding, which benefited all property owners; thus, the fee is a permissible fee.

*In conclusion, drainage fees, if properly structured, are not property taxes and can be implemented without TABOR implications. However, outside of Colorado, there have been three recent cases where each have held, for various reasons, that a "stormwater service charge," a "stormwater utility charge" and a "stormwater drainage service charge" are each a tax and not a fee. Those cases are Bolt v. City of Lansing, 561 N.W. 2d 423 (Mich. 1997); Fulton County Taxpayers Association v. City of Atlanta, Georgia, Superior Court of Fulton County, State of Georgia, Civil Action File Number: 1999 cv05897; and City of Cincinnati v. United States, United States Court of Appeals for the Federal Circuit, 98-5039.*

### 5.4.8 WATER ACTIVITIES-ENTERPRISE STATUTE 37-45.1-101 C.R.S.

*This statute, which was adopted after the passage of TABOR, takes advantage of the exception in TABOR that the same does not apply to governmental enterprises by setting forth, in regard to water activities, what a governmental entity needs to do to become and remain a enterprise and thus not subject to TABOR. Numerous Front Range cities have taken advantage of this statute to adopt enterprises without a vote of the people to address drainage and flooding issues in their municipalities.*

*The statute provides in regard to the establishment of a water activity enterprise that:*

> *Any district which under applicable provisions of law has its own bonding authority may establish or may continue to maintain water activity enterprises for the purpose of pursuing or continuing water activities including...water project or facility activities, including the construction, operation, repair, and replacement of water or wastewater facilities. Any water activity enterprise established or maintained pursuant to this article is excluded from the provision of Section 20 of Article X of the state constitution.*

*The statute defines "water project or facility" as including a dam, storage reservoir, compensatory or replacement reservoir, canal, conduit, pipeline, tunnel, power plant, water or wastewater treatment plant, and any and all*

*works, facilities, improvements, and property necessary or convenient for the purpose of conducting a water activity. The statute also defines water activity as including stormwater services.*

Two restrictions in regard to water activity enterprises are that they cannot receive more than 10 percent of their annual revenues from grants from state and local governmental entities and that an enterprise may not tax.

### 5.4.9 WATER DRAINAGE AUTHORITY

Finally, 29-1-204.2 C.R.S. was adopted by the 2001 session of the Colorado General Assembly and provides that "Any combination of municipalities, special districts, or other political subdivisions of this state that are authorized to own and operate water systems or facilities or drainage facilities may establish, by contract with each other, a separate governmental entity, to be known as a water or drainage authority, to be used by such contracting parties to effect the development of water resources, systems, or facilities or of drainage facilities in whole or in part for the benefit of the inhabitants of such contracting parties or others at the discretion of the board of directors of the water or drainage authority."

The powers that an authority shall have are: (a) To develop water resources, systems, or facilities or drainage facilities in whole or in part for the benefit of the inhabitants of the contracting parties or others, at the discretion of the board of directors, subject to fulfilling any conditions or requirements set forth in the contract establishing the entity; (b) To make and enter into contracts;

(c) To employ agents and employees;

(d) To acquire, construct, manage, maintain, or operate water systems, facilities, works, or improvements, or drainage facilities, or any interest therein; (e) To acquire, hold, lease (as lessor or lessee), sell, or otherwise dispose of any real or personal property utilized only for the purposes of water treatment, distribution, and waste water disposal, or of drainage; (f) To condemn property for use as rights-of-way only if such property is not owned by any public utility and devoted to such public use pursuant to state authority;

(g) To incur debts, liabilities, or obligations; (h) To sue and be sued in its own name;

(i) To have and use a corporate seal; (j) To fix, maintain, and revise fees, rates, and charges for functions, services, or facilities provided by the entity; (k) To adopt, by resolution, regulations respecting the exercise of its powers and the carrying out of its purpose; (l) To exercise any other powers which are essential to the provision of functions, services, or facilities by the entity and which are specified in the contract; and

(m) To do and perform any acts and things authorized by this section under, through, or by means of an agent or by contracts with any person, firm, or corporation.

## 5.5 FLOODPLAIN MANAGEMENT

Floodplain management involves fuller use of non-structural techniques. See 24-65.1-202 (2)(a)(I) C.R.S. Such techniques include:

1. Floodplain zoning and building code ordinances to regulate flood area construction.
2. Flood insurance programs.
3. Flood warning systems, including notification to occupants of floodplains.

See Westen, Gone With the Water—Drainage Rights and Storm Water Management in Pennsylvania, 22 Vill. L. Rev., 901, 972 (1976-77).

### 5.5.1 FLOODPLAIN REGULATIONS

#### 5.5.1.1 CONSTITUTIONAL CONSIDERATIONS

The general principles of zoning were established in Village of Euclid v. Amber Realty Co., 272 U.S. 365 (1926), in which the U.S. Supreme Court stated:

> While the meaning of constitutional guarantees never varies, the scope of their application must expand or contract to meet new and different conditions that are constantly coming within the field of their operation.

The court in Colorado has determined that zoning is justified as a valid exercise of police power, and that this legal basis for zoning legislation must be reconciled with the legitimate use of private property, in harmony with constitutional guarantees. Westwood Meat Market, Inc. v. McLucas, 146 Colo. 435, 361 P.2d 776 (1961); People ex rel. Grommon v. Hedgcock, 106 Colo. 300, 104 P.2d 607 (1940).

The adoption by a municipality of floodplain ordinances to regulate flood-prone areas is a valid exercise of police power and is not a taking. Morrison v. City of Aurora, 745 P.2d 1042 (Colo. App. 1987).

#### 5.5.1.2 STATUTORY GRANTS OF POWER

Specific legislative action has given local governments authority to proceed in floodplain regulation. In Colorado, cities, counties, and the Urban Drainage and Flood Control District all have plenary grants of power.

The governing body of each municipality has the following authority:

> To establish, regulate, restrict and limit such uses on or along any storm or floodwater runoff channel or basin, as such storm or floodwater runoff channel or basin has been designated and approved by the Colorado Water Conservation Board, in order to lessen or avoid the hazards to persons and damage to property resulting from the accumulation of storm or floodwaters. 31-23-301 (1) C.R.S.

Counties in Colorado are directly authorized by statute to adopt zoning plans concerned with regulating use in a floodplain area through the provisions of 30-28-111 (1) C.R.S.:

> ...the county planning commission may include in said zoning plan or plans provisions establishing, regulating, and limiting such uses upon or along any storm or water runoff channel or basin as such storm or runoff channel or basin has been designated and approved by the Colorado Water Conservation Board in order to lessen or avoid the hazards to persons and damage to property resulting from the accumulation of storm or flood waters.

Home rule counties and cities have the same powers as noted above. These powers may be expanded by charter as long as those powers do not violate the Colorado constitution dealing with home rule governmental entities.

The Urban Drainage and Flood Control District is authorized to:

> ...adopt, amend, repeal, enforce, and otherwise administer under the police power such reasonable floodplain zoning resolutions, rules, regulations, and orders pertaining to properties within the district of any public body or other person (other than the federal government) reasonably affecting the collection, channeling, impounding or disposition of rainfall, other surface and subsurface drainage, and storm and flood waters (or any combination thereof), including without limitation variances in the event of any practical difficulties or unnecessary hardship and exceptions in the event of appropriate factors, as the board may from time to time deem necessary or convenient. In the event of any conflict between any floodplain zoning regulation adopted under this section and any floodplain zoning regulation adopted by any other public body, the more restrictive regulation shall control. (emphasis added) 32-11-218 (1) (f) (I) C.R.S.

Because of the underlined language above, UDFCD has proceeded on the basis that if local governments within UDFCD fail to adopt floodplain regulations, then the District would administer its regulation within that local jurisdiction. Further, since the UDFCD's regulation prohibits residential development within the floodway (the most hazardous portion of the floodplain), any local government failing to prohibit residential development within the floodway would be governed by the UDFCD's regulation inasmuch as the UDFCD's regulation would be "more restrictive" and, thus, controlling under the statute.



### 5.5.1.3 COURT REVIEW OF FLOODPLAIN REGULATIONS

The leading Colorado case is Famularo v. Adams County, 180 Colo. 333, 505 P.2d 958 (1973), in which the Colorado Supreme Court upheld the District Court's findings that (1) the Adams County Commissioners had authority to regulate, by resolution, the uses of land in unincorporated areas for "trade, industry, residence, recreation, or other purposes, and for flood control"; and (2) the regulation in question did not so limit the uses of

plaintiff's land so as to violate the Colorado Constitution, Article II, §25 or the U.S. Constitution, Amendment XIV.

In the case of Kolwicz v. City of Boulder, 538 P.2d 482 (Colo. App. 1975) the court was asked to determine if a city resident had standing to sue the city to require the city council and its administrator to implement floodplain regulations by adopting a map that delineated the floodway and the flood storage areas within the floodplain, for which the city had adopted a map four years prior to the lawsuit. The court denied the city resident's request on the basis that nothing in the record showed that the resident herself had been aggrieved, wronged, or had any of her rights impaired or threatened as a result of the city council's failure to implement its regulations.

In the case of Hermanson v. Board of County Commissioners of Fremont, 595 P.2d 694 (Colo. App. 1979), the court addressed an assertion by the plaintiff that his property had been taken from him because of a series of regulatory obstructions to its development that had been imposed by the county. The plaintiff alleged that his property had been taken by inverse condemnation, and the court found that such an action is justified when there has been a taking of private property for public use without payment of just compensation by some public body that has the power of eminent domain. However, the court did acknowledge that it is true that the use of property may be regulated by valid exercise of the police power, if the regulation does not go beyond protection of the public health, safety, morals, and welfare. Therefore, it found that, when regulations are designed to depress value with a view to future acquisition, this may form the basis of a cause of action for compensation on the theory of inverse condemnation against the public entity initiating the regulation.

Finally, in the case of Morrison v. City of Aurora, 745 P.2d 1042 (Colo. App. 1987), a property owner alleged that the city's adoption of floodway restrictions was a taking of his property. The court found for the city, since an adoption by a municipality of floodplain ordinances to regulate flood-prone areas is a valid exercise of police power and is not a taking.

In Colorado, the legislature has taken the lead in granting local governments power to regulate flood hazard areas. Usually, courts interpret such regulation that follows on a case-by-case basis, depending on what is "reasonable" under the circumstances. Some guidelines that have emerged in anticipating "reasonableness" follow.

In Palazzolo v. Rhode Island et.al. 121 S. Ct. 2448 (2001) the Supreme Court addressed the issue of inverse condemnation in the context of regulatory takings. It noted that a regulation which denies all economically beneficial or productive use of land will require compensation under the Takings Clause. However, it went on to say that "Where a regulation places limitations on land that fall short of eliminating all economically beneficial use, a taking nonetheless may have occurred, depending on a complex of factors including the regulation's economic effect on the landowner, the extent to which the regulation interferes with reasonable investment-backed expectations, and the character of the government action . . . These inquiries are informed by the purpose of the Takings Clause, which is to prevent the government from 'forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole.'"

The Colorado Supreme Court shortly after the Palazzolo case, decided the case of Animas Valley Sand & Gravel v. Board of County Commissioners 38 P. 3d 59 (Colo. 2001) which involved the adoption by La Plata County of a plan that sought to regulate development and activities within certain areas out of concern for flood control among other things.. In the Court's holding, they adopted the United States Supreme Court's holdings in the Palazzolo case and noted the following: "Takings jurisprudence balances the competing goals of compensating landowners on whom a significant burden of regulation falls and avoiding prohibitory costs to needed government regulation . . .This court has interpreted the 'damage' language in Colorado's takings clause to provide broader rights than does the federal clause but only insofar as it allows recovery to landowners whose land has been damaged by 'the making of . . . public improvements abutting their lands, but hose lands have not been physically taken by the government." The Colorado Supreme Court went on to conclude that "Where a regulation places limitations on land that fall short of eliminating all economically beneficial use, a taking nonetheless may have occurred, depending on a complex of factors including the regulation's economic effect on the landowner, the extent to which the regulation interferes with reasonable investment-backed expectation, and the character of the government action . . . a mere decrease in property value is not enough. This is true because a landowner is not entitled to the highest and best use of his property." See also Animas Valley Sand And Gravel, Inc. v. Board Of County Commissioners Of The County Of La Plata 38 P. 3d 59 (Colo. 2001) discussed earlier in 5.2.2.2.

#### 5.5.1.3.1 RESTRICTION OF USES

The restriction of uses on property that would prevent a public harm, as opposed to the creation of a public *benefit,* removes the requirement of compensation to property owners who are restricted from the full use of their property. Dunham, A Legal and Economic Basis for City Planning, 58 Colum. L. Rev. 650 (1958).

The restrictions on the uses must not be so severe as to deny the owners a constitutional right to make "beneficial use" of their land because such restrictions would be confiscatory and void. Francis v. City and County of Denver, 160 Colo. 440, 418 P.2d 45 (1966). However, a zoning ordinance is not unconstitutional because it prohibits a landowner from using or developing his or her land in the most profitable manner. It is not required that a landowner be permitted to make the best, maximum or most profitable use of his or her property. Baum v. City & County of Denver, 363 P.2d 688 (Colo. 1961); and Sundheim v. Board of County Commissioners of Douglas County, 904 P.2d 1337 (Colo. App. 1995).

#### 5.5.1.3.2 HEALTH REGULATIONS

The relationship of the zoning restrictions to the public's health, safety, morals, and general welfare must be considered. Whether the zoning provisions are reasonable and for the promotion of the public's welfare must be determined by the court from the facts, circumstances, and locality in a particular case. DiSalle v. Giggal, 128 Colo. 208, 261 P.2d 499 (1953).

A similar matter in zoning restrictions was determined by the U.S. Supreme Court in upholding the validity of the police power in a zoning ordinance that prohibited excavation below a certain water table, which in effect deprived the property of its most beneficial use, stated:

> The ordinance in question was passed as a safety measure, and the town is attempting to uphold it on that basis. To evaluate its reasonableness, we therefore need to know such things as to the nature of the menace against which it will protect, the availability and effectiveness of other less drastic protective steps, and the loss which the appellants will suffer from the imposition of the ordinance. Goldblatt v. Town of Hempstead, (N.Y.) 369 U.S. 590 (1962).

This holding appears to coincide with the Colorado cases on the requirements for the determination by the court from facts, circumstances, and locality in a particular case, as to the reasonableness of the zoning ordinances in their promotion of the general welfare, and to prove that the restrictive use would bear a substantial relation to the public's health, safety, morals, or general welfare. DiSalle v. Giggal, supra; Westwood Meat Market, Inc. v. McLucas, supra.

#### 5.5.1.3.3 DETERMINATION OF BOUNDARIES

The boundaries of the floodplain should be accurately determined and based on a reasonable standard. Mallett v. Mamaroneck, 1313 N.Y. 821, 125 N.E. 2d 875 (1955).

The setting of the boundaries of the floodplain zone to determine the hydraulic reach of a potential flood should be determined accurately. The accuracy of which will be affected by terrain, river course, and other factors that will necessarily cause some variation from the initially adopted boundary.

The Federal Emergency Management Agency (FEMA), U.S. Army Corps of Engineers, Colorado Water Conservation Board (CWCB), the District, and local governments have conducted extensive stream surveys throughout Colorado. The surveys have been completed upon reasonable scientific standards and have often become an integral part of the floodplain zoning ordinances and resolutions adopted by Colorado's cities and counties.

The CWCB has actively cooperated in the past to designate and approve such areas as delineated as a storm or "floodwater runoff channel or basin." Such approval or designation of a runoff channel or basin by the CWCB is required by statute prior to any action by a local government, including the District, to set the boundaries on proposed floodplain zoning resolutions.

### 5.5.2 FLOOD INSURANCE

The National Flood Insurance Act of 1968, as amended in 1973, provides for a federally subsidized flood insurance program conditioned on active management and regulation of flood plan development by states and local governments. 42 U.S.C., §§4001 and 4128; 24 C.F.R., §1979.1-1925.14 (1975). Communities designated as flood prone by FEMA can obtain flood insurance eligibility for structures within the community upon meeting the qualifications of the act by developing a floodplain management system. Development of a floodplain management system requires the community to

promulgate a land use and building permit system that restricts development in flood hazard areas. FEMA publishes a list, updated monthly, of the status of communities. Flood insurance is provided on a subsidized basis through all licensed insurance agents.

Federally regulated lending institutions (FDIC, ESLIC, NCUA) must require flood insurance for loans made on structures in FEMA-identified flood hazard areas in communities where flood insurance is available. The lender is required to give notice to the borrower 10 days in advance that the property securing the loan is located in a flood hazard area, and written acknowledgement of the borrower's knowledge of the flood hazard must be obtained. If flood insurance is not available in the community, the lender may still make the loan, but he or she must notify the borrower that federal disaster assistance may not be available in the event of a flood disaster. Federally insured loans (SBA, VA and FHA) have the same requirements, with the exception that they cannot be made on property located in a FEMA identified flood hazard area if flood insurance is not available in the community.

An area of great concern is whether flood hazard boundaries should be based on current development in the drainage watershed or on future development. FEMA uses current development as its criteria. The District uses future development, which results in the regulation of a larger floodplain area in most instances. Although the watershed may take time to develop in accordance with the local government's Master Land Use Plan and land use requirements may call for on-site upstream detention, it is the District's position that "future condition" criterion is preferable because existing floodplain users are put on notice of what the future may bring, and potential users of the floodplain are also put on notice of the potential hazard. The net result is a more restrictive regulation under 32-11-218 (I)(f) C.R.S.

### 5.5.3 FLOOD WARNING SYSTEMS AND NOTIFICATION

The Urban Drainage and Flood Control District has adopted a procedure to notify known occupants of identified flood hazard areas (100-year floodplains). Although larger floods can and do occur, the local governments in Colorado are directed by the legislature to identify the areas that would be affected by 100-year storms. The CWCB has been directed by the legislature to coordinate this land use program.

UDFCD's "Flood Hazard Information Official Notice" also suggests actions that individuals can take to help themselves mitigate the hazard. This notice is mailed annually to the occupants of all residential units identified as being in the flood hazard area.

With the use of radar and a communications network, UDFCD has put in place a system to help inform all residents of UDFCD of potential flooding.

## 5.6 SPECIAL MATTERS

### 5.6.1 IRRIGATION DITCHES

In situations in which an irrigation ditch intersects a drainage basin, the irrigation ditch does not have to take underground waters diverted by a tile drain. However, the surface drainage must be accepted if the irrigation ditch

is constructed in such a way that surface water would naturally flow into it. Clark v. Beauprez, 151 Colo. 119, 377 P.2d 105 (1962) (between private parties, the owner of an irrigation ditch can prevent an upstream landowner from diverting waters from their natural course into the irrigation ditch); City of Boulder v. Boulder and White Rock Ditch & Reservoir Company, 73 Colo. 426, 216 P. 553 (1923) (where an irrigation ditch was constructed in a natural drainageway into which surface water would naturally flow, the ditch owners could not complain merely on the ground that the city, in building storm sewers, collected the surface water and accelerated its flow and precipitated or discharged it at some particular point in the line of the ditch instead of spreading it out at different places of entrance).

In urbanizing areas, the conflict between the natural flow of surface water and irrigation ditches which bisect many drainage basins continues to be a difficult condition to resolve, taking into consideration the rights and liabilities of upstream property owners and irrigation ditch owners. Innumerable natural drainageways have been blocked by irrigation ditches, although they were constructed long before the basin became urbanized. This special area of urban drainage points to the need for good land use requirements, as well as identification of potential problem areas.

7-42-108 C.R.S. provides in part that:

> Every ditch corporation organized under the provisions of law shall be required to keep its ditch in good condition so that the water shall not be allowed to escape from the same to the injury of any mining claim, road, ditch, or other property.

This provision of Colorado law was recently interpreted in the case of Oliver v. Amity Mut. Irrigation Co., 994 P.2d 495 (Colo. App. 1999). In this case, the ditch company was being sued for damages to property resulting from a break in the bank of the ditch company's ditch. The court held that the statute imposed a duty of ordinary care, such as a person of average prudence and intelligence would use, under like circumstances to protect his or her own property. The court went on to state that, in order for the ditch company to fulfill its statutory duty, it had to prevent erosion of the ditch bank, keep the ditch free of sediment and debris, and control the amount of water flowing through its ditch, among other things, keeping the spillway at the intersection of its ditch and another free of obstructions. Finally, the court concluded that, although a ditch company is not liable for damages caused solely by an act of God, the company may not escape liability if its negligence contributed to or cooperated with an act of God to cause the damage.

In conclusion, those that own ditches owe a duty to those property owners through which their ditches pass to maintain their ditches, using ordinary care so as to prevent damage to the adjoining real property.



### 5.6.2 DITCH OWNERS DUTY TO MAINTAIN, USE, AND MANAGE THEIR DITCHES

In the Colorado Supreme Court case of Roaring Fork Club, L.P. v. St. Jude Company 36 P. 3d 1229 (Colo. 2001) the Court recognized that as early as Colorado's territorial legislatures, legislators recognized that our arid climate required the creation of a right to appropriate and convey water across the land of another so that lands not immediately proximate to water could be

used and developed. Because of this importance of ditches, the holder of ditch easements has the right to inspect, operate, maintain, and repair the ditch. In addition, the owners of land upon which these ditches are located cannot damage the ditch or unreasonably inhibit the owner's ability to maintain the ditch. Thus, the owner of a ditch may go on the land of another for the purpose of cleaning out the waterway and making repairs. Additionally, the Colorado legislature has required ditch owners to undertake a host of duties in relation to ditch upkeep. The rights of ditch owners are so dominate that the Court held that the owner of property burdened by a ditch easement has not right to move or alter the easement without consent of the benefited owner unless he first obtains a declaration of a court that such alterations will cause no damage to the benefited owner.

The most recent case discussing the obligations of ditch owners was East Meadows Company, LLC v. Greeley Irrigation Company 66 P. 3d 214 (Colo. App. 2003) wherein the Court found that ditch owners have a duty to maintain, use, and manage their ditches to prevent damage to the property of others. Further, the Court took note of a Colorado statute that requires "every ditch corporation organized under the provisions of law shall be required to keep its ditch in good condition so that the water shall not be allowed to escape from the same to the injury of any mining claim, road, ditch, or other property." This law imposes a duty of care on ditch owners, and failure to meet this duty can serve as the basis for a claim of negligence. Thus, a ditch owner, is required to use ordinary care in maintaining its ditch and preventing water from escaping and damaging adjoining property.

As noted earlier, the Court in Oliver v. The Amity Irrigation Company 994 P. 2d 495 (Colo. App. 1999) made three significant findings in holding an irrigation company responsible for damage to property resulting from a break in the bank of an irrigation ditch. 1) The obligation to maintain a ditch includes the prevention of erosion of the ditch bank, keeping the ditch free of sediment and debris, and controlling the amount of water flowing through its ditch. 2) A ditch company may not escape liability if its negligence contributed to or cooperated with an act of God to cause the damage. and 3) It is not necessary that expert engineering testimony be offered to prove causation of a ditch failure if nonexpert witnesses acquainted with conditions in the area could express an opinion as to the cause of a ditch failure.

The Oliver v. The Amity Irrigation Company case is important because it sets forth the Court's conclusion that a ditch company will be held responsible for a failure of its ditch because it allowed more water to enter the ditch than the ditch's capacity. Thus, using irrigation ditches for drainage and flood control purposes, will subject both the irrigation company as well as any other entity that participates in such activity to a potential for damages if the property of others is damaged.



### 5.6.3 DAMS AND DETENTION FACILITIES

Subdivision regulations adopted by the board of county commissioners must include provisions requiring subdivisions to submit:

> Maps and plans for facilities to prevent storm waters in excess of historic runoff, caused by the proposed subdivision, from entering, damaging, or being carried by conduits, water supply ditches and appurtenant structures, and other storm drainage facilities. 30-28-133 (3)(c)(VIII) C.R.S.

In addition, the regulations must include provisions governing:

> Standards and technical procedures applicable to storm drainage plans and related designs, in order to ensure proper drainageways, which may require, in the opinion of the board of county commissioners, detention facilities which may be dedicated to the county or the public, as are deemed necessary to control as nearly as possible, storm waters generated exclusively within a subdivision from a one-hundred year storm which are in excess of the historic runoff volume of storm water from the same land area in its undeveloped and unimproved condition.
>
> 30-28-133 (4)(b) C.R.S. See Shoptaugh v. Board of County Commissioners, 543 P.2d 524 (Colo. App. 1975).

The law in regard to liability for damages caused by failure of a dam or detention facility has recently changed. In the case of Kane v. Town of Estes Park, 786 P.2d 412 (Colo. 1990), the Colorado Supreme Court considered the issue of whether the Town of Estes Park was negligent for the failure of its dam and reservoir, which was the result of the failure of an upstream dam. The court held that "To impose a burden on a downstream builder to construct facilities adequate to hold or bypass the entire capacity of an upstream reservoir has the potential for foreclosing construction of beneficial downstream storage facilities because of prohibitive costs." The court then concluded as follows:

> In summary, we hold that public entities that own dams or reservoirs are not subject to strict liability for damages caused by water escaping from their dams or reservoirs. Furthermore, we hold that Estes Park had no duty to ensure that waters released from an upstream reservoir because of a dam failure of this magnitude would be contained by its facilities or would bypass those facilities without augmentation.

The Colorado legislature, in response to the 1982 flood that then resulted in the above-referenced lawsuit, amended the statute in regard to storage reservoirs to clarify the law. The applicable sections of 37-87-104 C.R.S. read as follows:

(1) Any provision of law to the contrary notwithstanding, no entity or person who owns, controls, or operates a water storage reservoir shall be liable for any personal injury or property damage resulting from water escaping from that reservoir by overflow or as a result of the failure or partial failure of the structure or structures forming that reservoir unless such

failure or partial failure has been proximately caused by the negligence of that entity or person. No entity or person shall be required to pay punitive or exemplary damages for such negligence in excess of that provided by law. Any previous rule or law imposing absolute or strict liability on such an entity or person is hereby repealed.

(2) No such entity or person shall be liable for allowing the inflow to such reservoir to pass through it into the natural stream below such reservoir.

The law therefore is relatively clear now in regard to the ownership of dams and reservoirs and the owner's liability for them. No longer are dam owners subject to strict liability for damages caused by those dams. Meaning, that now in order to hold a dam owner responsible for damage caused by the dam, it must be established that the dam owner was negligent in maintenance or operation of the dam. However, this test of negligence is further limited by the law's permission to dam owners to pass all inflows through the dam.

The court, in the case of Barr v. Game, Fish and Parks Commission, 497 P.2d 340 (Colo. App. 1972), held that the criteria for the construction of a dam is to safely pass the probable maximum precipitation (PMP). In Barr, the Colorado Court of Appeals found that, since modern meteorological techniques provide a method of predicting the probable maximum storm and flood, liability should be imposed for injuries resulting from a failure to determine the probable maximum flood and to design and construct a dam with a spillway having the capacity to handle that storm. The court stated:

> The maximum probable storm, by definition, is both maximum and probable. It can and may occur…Thus being both predictable and foreseeable to the defendant in the design and construction of the dam, the defense of act of God is not available to them.

However, the Colorado State Engineer, pursuant to 37-87-105 (1) and (3) C.R.S. must approve plans and specifications for the alteration, modification, repair, or enlargement of a jurisdictional reservoir or dam and, pursuant to regulation, may impose less stringent requirements than those dictated by consideration of the PMP. In fact, the Colorado State Engineer has issued Rules and Regulations for Dam Safety and Dam Construction, 2 CCR 402-1 (September 1988) wherein at Rule 4 dams are classified based upon an evaluation of the consequences of the failure of the dam absent flooding conditions. Based upon that classification, Rule 5 sets forth the inflow design flood to be used in determining the spillway capacity of that dam.

A question arises, however, regarding the proper criteria to use in determining the size of the floodplain or channel below the dam: the 100-year flood, before the dam was constructed or after construction? This special area has not been resolved by either the legislature or the courts in Colorado. However, since some dams and reservoirs are required by law to safely pass the PMP (storms greater than the 100-year storm) it might be argued that the watercourse below the dam should be constructed to at least carry the same water as before construction of the dam. Assuming the dam safely passes a 500-year flood, for example, the 100-year floodplain would

obviously be inadequate. But with no dam in place, the same floodplain would also be inadequate.

Preserving the 100-year floodplain before the dam was constructed will prevent damage below the newly constructed dam in the larger than 100-year storm, although not for the PMP.

### 5.6.4 WATER QUALITY

Stormwater runoff is a major non-point source of water pollution. In urbanizing areas, where land-disturbing activities are numerous, stormwater washes soil and sediment into surface waters causing increased levels of turbidity and eutrophication, threatening fish and wildlife, and blocking drainage. In developed areas, runoff carries with it the pollutants from surfaces over which it runs, including, oil, litter, chemicals, nutrients and biological wastes, together with soils eroded from downstream channels of the flow.

> U.S. Environmental Protection Agency, Legal and Institutional Approaches to Water Quality Management Planning and Implementation. VI-I (1977).

It is reasoned that water quality control should be an integral part of any drainage or stormwater management program, since stormwater management techniques are often consistent with water quality objectives. However, this special area, as related to urban drainage, has not been researched adequately enough so as to provide the facts upon which a cost-effective approach could integrate water quality objectives with plans for surface drainage improvements. See City of Boulder v. Boulder and White Rock Ditch & Reservoir Company, 73 Colo. 426, 216 P. 553, 555 (1923).

Currently, some counties and municipalities are under regulation through the U.S. Environmental Protection Agency and the State of Colorado to address water quality issues. Other portions of this *Manual* deal in detail with those requirements.

### 5.6.5 TENTH AMENDMENT TO THE U.S. CONSTITUTION

In one of the most recent United States Supreme Court cases to consider the question of federal vs. state's rights, the Court in the case of New York v. United States 505 U.S. 144 (1992) considered the Low-Level Radioactive Waste Policy Amendments Act of 1985 which dealt with the interstate market in the disposal of low level radioactive waste. The Court found that ". . . while the Tenth Amendment makes explicit 'that [t]he powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people the task of ascertaining the constitutional line between federal and state power has given rise to many of the Court's most difficult and celebrated cases."

The Court in the New York case went on to hold that "States are not mere political subdivisions of the United States. State governments are neither regional offices nor administrative agencies of the Federal Government . . . the Federal Government may not compel the States to enact or administer a federal regulatory program . . . The Constitution enables the Federal Government to pre-empt state regulation contrary to federal interests, and it

permits the Federal Government to hold out incentives to the States as a means of encouraging them to adopt suggested regulatory schemes. It does not, however, authorize Congress simply to direct the States to provide for the disposal of the radioactive waste generated within their borders."

The next Supreme Court case of note on the subject was Printz v. United States 521 U.S. 898 (1997) which dealt with the Brady Handgun Violence Prevention Act and specifically the section of the Act that commanded chief law enforcement officers of each local jurisdiction to conduct background checks for prospective handgun purchasers. The Court held that "We held in New York that Congress cannot compel the States to enact or enforce a federal regulatory program. Today we hold that Congress cannot circumvent that prohibition by conscripting the State's officers directly. The Federal government may neither issue directives requiring the States to address particular problems, nor command the State's officers, or those of their political subdivisions, to administer or enforce a federal regulatory program. It matters not whether policy making is involved, and no case by case weighing of the burdens or benefits is necessary; such commands are fundamentally incompatible with our constitutional system of dual sovereignty."

Next in the trilogy of recent cases on states' rights is the case of Reno v. Condon 528 U.S. 141 (2000) which addressed the constitutionality of the Driver's Privacy Protection Act of 1994 dealing with the selling of information by States that they acquire when a driver's license is issued. This Act was held constitutional since the Court found that Congress has the authority to regulate interstate commerce under the Commerce Clause. The Court found that the Act did not require the States in their sovereign capacity to regulate their own citizens. The Act instead regulates the States as the owners of the databases. It further does not require stat officials to assist in the enforcement of federal statutes regulating private individuals.

How then have these holdings of the United States Supreme Court been applied to cases arising out of the Clean Water Act and challenges to the constitutionality of regulations issued under that Act? The first of the two most recent cases on the subject is Texas Cities Coalition On Stormwater; Texas Counties Storm Water Coalition v. United States Environmental Protection Agency (10th Cir. 2003). In that case, the Court in addressing the Tenth Amendment arguments of the Plaintiffs, found that Congress "may encourage State and municipalities to implement federal regulatory programs . . . For example, the federal government may make certain federal funds available only to those State or municipalities that enact a given regulatory regime . . . The crucial proscribed element is coercion; the residents of the State or municipality must retain 'the ultimate decision' as to whether or not the State or municipality will comply with the federal regulatory program . . . However, as long as 'the alternative to implementing a federal regulatory program does not offend the Constitution's guarantees of federalism, the fact that the alternative is difficult, expensive or otherwise unappealing is insufficient to establish a Tenth Amendment violation.'" On that basis, the Court did not find that those regulations were a violation of the Tenth Amendment. The Plaintiffs also challenged the regulations under the Clean Water Act on the basis that such regulations violated the First Amendment because they compelled municipalities to deliver EPA's political message.

The Court concluded that "the purpose of the challenged provisions is legitimate and consistent with the regulatory goals of the overall scheme of the Clean Water Act . . . and does not offend the First Amendment. The State may not constitutional require an individual to disseminate an ideological message . . ., but requiring a provider of storm sewers that discharge into national waters to educate the public about the impacts of stormwater discharge on water bodies and to inform affected parties, including the public, about the hazards of improper waste disposal falls short of compelling such speech. These broad requirements do not dictate a specific message. They require appropriate educational and public information activities that need not include any specific speech at all. . . . Informing the public about safe toxin disposal is non-ideological; it involves no 'compelled recitation of a message' and no 'affirmation of belief'"

In the other recent case addressing these same issues, the Court in the case of City of Abilene v. United States Environmental Protection Agency (5th Cir. 2003) held that the Clean Water Act and the regulations issued by the EPA pursuant to that Act were not violations of either the Tenth or First Amendment. The Court in its decision notes that the City of Abilene conceded that under the Commerce Clause, Congress may directly regulate the discharge of storm water into United States waters. This same concept, although not discussed above, is involved in the other cases discussed above. In other words, Congress could, if it chose to, directly regulate matters permitted under the Commerce Clause thus bypassing the States. However, having said this, none of the above-cited cases arise under that set of fact. The Court held in this case that "the Cities cannot establish a Tenth Amendment violation without demonstrating that they had no option but to regulate according to federal standards. Here, the Cities were offered a choice between the permits at issue, which require implementation of the challenged management programs, and the numeric end-of-pipe permits, which would have required compliance with rigid effluent limitations. The Cities chose the former . . . Because the record shows that the Cities voluntarily chose the management permits over permits that did not require the Cities to regulate according to federal standards, the Cities have not been compelled to implement a federal regulatory scheme. Accordingly, their Tenth Amendment challenge fails." Again, in considering the claim that their permits violate the First Amendment since "the public education provisions compel them to deliver the EPA's message regarding illicit discharges into MS4s and proper disposal of used motor oil, household hazardous wastes, and agricultural products. . . the Cities have not been compelled to implement the conditions of the permits. Instead, the Cities voluntarily chose permits that contained public education requirements over permits that did not."

### 5.6.6 ECONOMIC LOSS RULE / DUTY OF CARE

In the case of BRW, Inc. *et.al* v. Dufficy & Sons, Inc. 99 P. 3d 66 (Colo. 2004), the Colorado Supreme Court addressed the "economic loss rule" as it applies to contractual relationships. It holds that courts must focus on the contractual relationship between and among the parties when there is a claim of economic loss as a result of a construction contract. Thus it is not enough to simply allege negligence in a construction claims case. There must be a contractual relationship between the parties in order to sustain a claim based upon an economic loss. The Court reasoned that the "economic loss rule"

applies in construction cases in order to permit the court to enforce expectancy interests of the parties so that they can reliably allocate risks and costs during their bargaining and to encourage the parties to build the cost considerations into the contract because they will not be able to recover economic damages in tort. Therefore, it should be assumed that in order to successfully pursue a claim in "economic loss" in a construction contract there must be a contractual relationship, either express or implied, between the parties and the provisions of that contract must address the obligation that is being alleged was breached.

### 5.6.7 WATER RIGHTS AND DRAINAGE IMPROVEMENTS

Although infrequently raised, the issue of the impact of drainage improvements on existing water rights in Colorado should be considered, evaluated and addressed as part of any drainage improvement planning. The Water Right Determination and Administration Act of 1969 provides remedies for water right owners who are impacted by the action of others. One of the possible remedies that might be required as part of the construction of a drainage improvement is the adoption of a plan of augmentation that would eliminate the impact on the affected water right owner. There appears to be no exception to this statute in regard to protecting the public health and safety by constructing drainage and flood control structures. In the case of Three Bells Ranch Associates, *et.al.* v. Cache La Poudre Water Users Association, *et.al.* 758 P. 2d 164 (Colo. 1988) the court considered the question of whether a quarry operator which inadvertently created ponds of ground water in its pits must adopt a plan of augmentation to compensate for any injury that will be caused to owners of senior water rights as a result of the ponding water and its evaporation. The court, in concluding that the quarry operator must compensate the inured senior water right holder, held that it makes no difference if the quarry operator disavowed any wish to obtain a water right. The court went on to hold that, if a junior right cannot be exercised without injury to a senior right the injury, the injury must be eliminated by imposing conditions on the exercise of the junior water right. In addition, in the case of The Board of County Commissioners of the County of Arapahoe *et.al.* v. Crystal Creek Homeowners' Association *et.al.* 14 P. 3d 325 (Colo. 2000) the Colorado Supreme Court affirmed its earlier holding in the case of Pueblo West Metro. Dist v. Southeastern Colo. Water Conservation Dist. 689 P. 2d 594 that the capture and storage of flood waters may be a "beneficial use" underlying an appropriation of water. Therefore, these cases confirm that the capture and storage of flood water is a permitted use under the statutory water rights scheme in Colorado thus establishing the need to obtain a recognized water right if a drainage or flood control facility will impact the availability of water and thus other water rights holders.

### 5.6.8 PROFESSIONAL RESPONSIBILITY

The Colorado Rules of Professional Conduct of the State Board of Registration for Professional Engineers and Professional Land Surveyors provides in the Basis and Purpose section the following:

In order to safeguard life, health and property, to promote the public welfare, and to establish and maintain a high standard of integrity and

practice, the following Rules of Professional Conduct shall be binding on every person holding a certificate of registration and on all partnerships or corporations or other legal entities authorized to offer or perform engineering or land surveying services in Colorado.

These Rules were authorized by Colorado statute and in 12-25-108 (1) C.R.S.

The board has the power to deny, suspend, revoke, or refuse to renew the license and certificate of registration of, limit the scope of practice of, or place on probation, any professional engineer or engineer-intern who is found guilty of:..(e) Violating, or aiding or abetting in the violation of,...any rule or regulation adopted by the board in conformance with the provisions of this part 1,...Rule I—Registrants shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.

2. Rule I shall include, but not be limited to, the following:

   A. Registrants shall at all times recognize that their primary obligation is to protect the safety, health, property and welfare of the public. If their professional judgment is overruled under circumstances where the safety, health, property or welfare of the public are endangered, they shall notify their employer or client and/or such other authority as may be appropriate.

Based upon the law and rule set forth above, a professional engineer is required not only to serve the interests of his or her employer/client but is also required as a primary obligation to protect the safety, health, property, and welfare of the public. Therefore, this obligation of protection is superior to the obligation to an employer/client and therefore must be considered in all professional decisions made by a professional engineer.

### 5.6.9 WHAT LAW DO I FOLLOW?

The preceding paper sets forth and describes many statutes, court cases, regulations and federal mandates. In dealing with the many diverse issues related to drainage and flood control, it is imperative that current federal and state laws be complied with, that current regulations and mandates emanating from both the federal and state government and lastly that court cases that deal with these issues also be complied with to the extent they are applicable. In other words, it is simply not enough to focus on one of these parts of the law and assume that you have met all legal requirements for the action proposed. An example of this interrelationship with various federal and state laws would be a situation where it is anticipated that drainage improvements will be constructed in a floodplain. Not only do you have to consider the law of Colorado, both statutory as well as court cases, you also will need to consider if a §404 Permit will be necessary.

## 5.7 CONCLUSION

The force of gravity which causes all waters flowing on the earth to seek the lowest level creates natural drainage, and provides for the distribution of all water, whether surface or otherwise. This natural drainage is necessary to

render the land fit for the use of man. The streams are the great natural sewers through which the surface water escapes to the sea, and the depressions in the land are the drains leading to the streams. These natural drains are ordained by nature to be used, and so long as they are used without exceeding their natural capacity the owner of land through which they run cannot complain that the water is made to flow in them faster than it does in a state of nature. 2 Farnham, Water and Water Rights, p. 968.

Drainage is both simple and complicated. If the facts are ascertained and a plan is developed before initiating a proposed improvement, the likelihood of an injury to a landowner is remote, and the municipality or developer should be able to undertake such improvements relatively assured of no legal complications and be able to use several different means of financing the improvement.

A legal opinion on proposed drainage improvements should state as a minimum whether:

1. The watercourse under study has been walked.
2. There are problems involved, and what causes them (obstructions, topography, development, present or future).
3. The proposed improvements to make the situation better.
4. The proposal requires that the natural drainage be modified.
5. There is potential liability for doing something versus doing nothing.
6. Someone will benefit from the proposed improvements.
7. In general, what is proposed is “reasonable,” using the criteria set forth herein.

# CHAPTER 1

## GENERAL PROVISIONS

# SECTION 6

## DEFINITION OF TERMS AND ACRONYMS

# CHAPTER 1
## GENERAL PROVISIONS

# SECTION 6
## DEFINITION OF TERMS AND ACRONYMS

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# CHAPTER 1
## GENERAL PROVISIONS

# SECTION 6
## DEFINITION OF TERMS AND ACRONYMS

### 6.1 DEFINITION OF TERMS

Base Flood Elevation (BFE) - The elevation of the 100-year floodwater surface at the location of interest.

Conditional Letter of Map Revision (CLOMR) - FEMA's conditional approval of the proposed modifications to their regulatory Special Flood Hazard Area.

Development - Any man-made changes to improved or unimproved real estate including, but not limited to, building or enlarging a structure, remodeling or improving a structure, placing a manufactured home, mining, dredging, filling, grading, paving, excavating, and drilling.

Elevation Certificate - A certificate prepared by a registered professional engineer or land surveyor that shows various elevations of a building in comparison to the 100-year BFE. This certificate is used to determine if the building complies with local and federal elevation requirements for buildings located in the 100-year floodplain and is also used for adjusting flood insurance rates for buildings that meet the applicable elevation requirements.

Encroachment - A constriction, placement of fill, or other alteration of topography in the floodplain that reduces the area available to convey floodwaters.

Federal Emergency Management Agency (FEMA) - A federal agency that oversees the administration of the National Flood Insurance Program.

Flood Boundary and Floodway Map (FBFM) - The floodplain management map issued by FEMA that depicts, based on detailed analyses, the boundaries of the 100- and 500-year floodplains and the regulatory 100-year floodway.

Flood Hazard Boundary Map (FHBM) - The initial insurance map issued by FEMA that identifies, based on approximate analyses, the areas of 100-year flood hazard in a community.

Flood Insurance Rate Map (FIRM) - The insurance and floodplain management map issued by FEMA that identifies, based on detailed or approximate analyses, the areas of 100-year flood hazard in a community.

Flood Insurance Study (FIS) - An engineering study that is performed under contract to FEMA to identify flood prone areas and to determine BFEs, flood insurance risk zones, and other flood risk data for a community.

Floodplain - The area inundated during a flood event (the 100-year event unless stated otherwise) including ponding and ineffective flow conveyance areas.

Floodplain Administrator - The local official designated to administer and enforce the floodplain management regulations for the community.

Floodway - The regulatory area defined as the channel, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood discharge can be conveyed without increases of more than one (1) foot in the BFE.

Flood fringe - The area between the 100-year floodplain and floodway limits in which development and other forms of encroachment may be permitted.

Letter of Map Revision (LOMR) - An official revision, by letter, to an effective NFIP map. A LOMR may change flood insurance risk zones, floodplain boundary delineations, planimetric features, and/or BFEs.

National Flood Insurance Program (NFIP) - The federal program under which flood prone areas are identified and flood insurance is made available to owners of property in participating communities.

Physical Map Revision (PMR) - An official republication of an NFIP map to show changes to floodplain and/or floodway boundary delineations, BFEs, and planimetric features.

Structure - Walled or roofed building or manufactured home that is principally above ground.

Substantial Damage - Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty percent (50%) of the market value of the structure before the damage occurred.

Substantial Improvement - Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty percent (50%) of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred “substantial damage”, regardless of the actual repair work performed. The term does not, however, include either:

a. Project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or

b. Any alteration of a “historic structure” provided that the alteration would not preclude the structure’s continued designation as a “historic structure”.

## 6.2 ACRONYMS

ASTM – American Society for Testing and Materials

BFE – Base Flood Elevation

BMP – Best Management Practice

CAP – Corrugated Aluminum Pipe

CAPA – Corrugated Aluminum Pipe Arch

CBC – Concrete Box Culvert

CDOT – Colorado Department of Transportation

CEC – Consulting Engineers Council

CFR – Code of Federal Regulations

CLOMR – Conditional Letter of Map Revision

CMP – Corrugated Metal Pipe

CMPA – Corrugated Metal Pipe Arch

CRS – Colorado Revised Statutes

CSP – Corrugated Steel Pipe

CSPA – Corrugate Steel Pipe Arch

CUHP – Colorado Urban Hydrograph Procedure

CWCB – Colorado Water Conservation Board

DFIRM – Digital Flood Insurance Rate Map

EGL – Energy Gradeline

EPA – Environmental Protection Agency

FBFM – Flood Boundary and Floodway Map

FEMA – Federal Emergency Management Agency

FHAD – Flood Hazard Area Delineation

FHBM – Flood Hazard Boundary Map

FHWA – Federal Highway Administration

FIRM – Flood Insurance Rate Map

FIS – Flood Insurance Study

GIS – Geographic Information System

GPS – Global Positioning System

HEC – Hydrologic Engineering Center

HGL – Hydraulic Gradeline

LOMA – Letter of Map Amendment

LOMR – Letter of Map Revision

NFIP – National Flood Insurance Program

NOAA – National Oceanic and Atmospheric Administration

NRCS – National Resources Conservation Service

NWS – National Weather Service

P.E. – Professional Engineers Licensed by the State of Colorado

PMF – Probable Maximum Flood

PMP – Probable Maximum Precipitation

PMR – Physical Map Revision

RCBC – Reinforced Concrete Box Culvert

RCP – Reinforced Concrete Pipe

ROW – Right of Way

SCS – Soil Conservation Service

SFHA – Special Flood Hazard Area

SPP – Structural Plate Pipe

SPPA – Structural Plate Pipe Arch

UDFCD – Urban Drainage and Flood Control District

UDSWM – Urban Drainage Storm Water Model

USACE – United States Army Corps of Engineers

USBR – United States Bureau of Reclamation

USGS – United States Geological Survey

WSEL – Water Surface Elevation