

Town of Erie

Source Water Protection Plan

Boulder and Weld County, Colorado
September 30, 2013



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For the Community Water Provider:
Town of Erie: ID # CO0162255

Cover Photo: Prince Lake taken by Bruce Chameroy

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EXECUTIVE SUMMARY

There is a growing effort in Colorado to protect community drinking water sources from potential contamination. Many communities are taking a proactive approach to preventing the pollution of their drinking water sources by developing a source water protection plan. A source water protection plan identifies a source water protection area, lists potential contaminant sources and outlines best management practices to implement to decrease risks to the water source. Implementation of a source water protection plan provides an additional layer of protection at the local level beyond drinking water regulations.

The Town of Erie values a clean, high quality drinking water supply and decided to work collaboratively with area stakeholders to develop a Source Water Protection Plan. The source water protection planning effort consisted of public planning meetings and individual meetings with the water utility during the months of March 2012 to October 2013, at the Erie Town Hall, Erie Community Center, and Erie Water Treatment Plant. The planning meetings were attended by 18 area stakeholders including citizens, water utility, government, and agency representatives. This group comprised the Erie Source Water Protection Steering Committee. Colorado Rural Water Association was instrumental in this effort by providing technical assistance in the development of this Source Water Protection Plan.

The Town of Erie obtains their drinking water primarily from surface water intake on Carter Lake (Colorado-Big Thompson Project); and also from Boulder Reservoir and South Boulder Creek. The Primary Source Water Protection Area includes: Boulder Reservoir and Boulder Creek Supply Canal; South Boulder Creek Ditch and Town Reservoirs; and South Boulder Creek watershed up to and including Gross Reservoir. The Primary Source Water Protection Area is the area that the Town of Erie has chosen to focus its source water protection measures to reduce source water susceptibility to contamination.

The Steering Committee conducted an inventory of potential contaminant sources and identified other issues of concern within the Source Water Protection Area that may impact the Town's drinking water sources. The Steering Committee did not prioritize the list and instead decided to use this Source Water Protection Plan as a guidance document to understand the issues. The list includes: impacts from transportation on roadways; above, underground and leaking storage tanks; wastewater dischargers and septic systems; reservoir and ditch operation and maintenance; runoff from agriculture and industry; oil and gas operations; residential practices; climate change; and wildland fires.

The Steering Committee developed several possible best management practices that may help reduce the risks from the potential contaminant sources and other issues of concern. The best management practices are centered on the themes of building partnerships with community members, businesses, and local decision makers; raising awareness of the value of protecting community drinking water supplies; and empowering local communities to become stewards of their drinking water supplies by taking actions to protect their water sources.

At the completion of this plan, members of the Steering Committee will meet to develop an Action Plan of BMPs to implement during 2014. It is further recommended that this Plan be reviewed at a frequency of once every three years or if circumstances change resulting in the development of new water sources and source water protection areas, or if new risks are identified.

INTRODUCTION

The Town of Erie operates a community water supply system that supplies drinking water to 18,135 residents located within Boulder and Weld County, Colorado. The Town of Erie obtains their drinking water primarily from surface water intake on Carter Lake (Colorado-Big Thompson Project); and also from Boulder Reservoir and South Boulder Creek. The focus of this Source Water Protection Plan is on the water supply areas of Boulder Reservoir, South Boulder Creek, conveyance ditches, and the Town’s reservoirs. This area is referred to as the Town of Erie’s Primary Source Water Protection Area.

The Town of Erie recognizes the potential for contamination of the source of their drinking water, and realizes that it is necessary to develop a protection plan to prevent the contamination of this valuable resource. Proactive planning and implementing contamination prevention strategies are essential to protect the long-term integrity of their water supply and to limit their costs and liabilities.¹

Table1. Primary Contact Information for Town of Erie

PWSID	PWS Name	Name	Title	Address	Phone	Website
CO0162255	Town of Erie	John Mays	Water/ Wastewater Operations Manager	P.O. Box 750 Erie, CO 80516	(303) 926-2895	www.erieco.gov

Purpose of the Source Water Protection Plan

The Source Water Protection Plan (SWPP) is a tool for the Town of Erie to ensure clean and high quality drinking water sources for current and future generations. This Source Water Protection Plan is designed to:

- Create an awareness of the community’s drinking water sources and the potential risks to water quality within the watershed;
- Encourage education and voluntary solutions to alleviate pollution risks;
- Promote management practices to protect and enhance the drinking water supply;
- Provide for a comprehensive action plan in case of an emergency that threatens or disrupts the community water supply.

Developing and implementing source water protection measures at the local level (i.e. county and municipal) will complement existing regulatory protection measures implemented at the state and federal governmental levels by filling protection gaps that can only be addressed at the local level.

¹ The information contained in this Plan is limited to that available from public records and the Town of Erie at the time that the Plan was written. Other potential contaminant sites or threats to the water supply may exist in the Source Water Protection Area that are not identified in this Plan. Furthermore, identification of a site as a “potential contaminant site” should not be interpreted as one that will necessarily cause contamination of the water supply.

Protection Plan Development

The Colorado Rural Water Association’s (CRWA) Source Water Protection Specialist, Colleen Williams, helped facilitate the source water protection planning process. The goal of the CRWA’s Source Water Protection Program is to assist rural and small communities served by public water systems to reduce or eliminate the potential risks to drinking water supplies through the development of Source Water Protection Plans, and provide assistance for the implementation of prevention measures.

The source water protection planning effort consisted of public planning meetings and individual meetings with water utility, government and agency representatives. Information discussed at the meetings helped the Town of Erie develop an understanding of the issues affecting source water protection for the community. In addition to the planning meetings, data and other information pertaining to Source Water Protection Area was gathered via public documents, internet research, phone calls, emails, and field trips to the protection area. A summary of the meetings is represented below.

Table 2. Planning Meetings

Date	Purpose of Meeting
March 8, 2012	Meeting with Erie Water Department members to discuss process of developing a Source Water Protection Plan for the Town of Erie, complete application for CDPHE Source Water Protection Development and Implementation grant and create a list of stakeholders to invite to the first meeting in May 2012.
April 9, 2012	Water treatment plant tour with Chief water plant operator.
May 15, 2012	First Planning Meeting - Presentation on the process of developing a Source Water Protection Plan for the Town of Erie. Review of the State’s Source Water Assessment for Town of Erie and the delineation of the source water protection area.
June 18, 2012	Second Planning Meeting – Presentation of the Source Water Protection Plans completed within Erie’s protection area including: the Left Hand Water District, Town of Jamestown, and City of Boulder. Discussion on delineating the primary source water protection area to focus the plan on and location of oil and gas development within the primary protection area.
October 30, 2012	Third Planning Meeting – Review of past meeting accomplishments and focus on the Boulder Creek Supply Canal’s source water protection area’s inventory of potential contaminant sources.
April 24, 2013	Fourth Planning Meeting – Meeting with Erie Water Department to discuss content to include in the draft Source Water Protection Plan.
October 28, 2013	Fifth Planning Meeting – Meeting with Erie Water Department to review and edit the draft Source Water Protection Plan.

Stakeholder Participation in the Planning Process

Local stakeholder participation is vitally important to the overall success of Colorado’s Source Water Assessment and Protection (SWAP) program. Source water protection was founded on the concept that informed citizens, equipped with fundamental knowledge about their drinking water source and the threats to it, will be the most effective advocates for protecting this valuable resource. Local support and acceptance of the Source Water Protection Plan is more likely where local stakeholders have actively participated in the development of their Protection Plan.

The Town of Erie’s source water protection planning process attracted interest and participation from 18 area stakeholders including local citizens, water utility, government and agency representatives. Local stakeholders were sent letters of invitation to participate and email reminders of meeting dates. During the months of May 2012 to October 2013, planning meetings were held in at the Erie Town Hall, Erie Community Center and Erie Water Treatment Plant all located in Erie, Colorado. Participants at these meetings comprised the Erie Source Water Protection Steering Committee. Input from meeting participants was greatly appreciated.

Table 3. Planning Meeting Participants

Stakeholder	Title	Affiliation
Joe Wilson	Mayor	Town of Erie
Mark Gruber	Board of Trustees	Town of Erie
Gary Behlen	Public Works Director	Town of Erie
John Mays	Water/Wastewater Operations Manager	Town of Erie
Bruce Chamero	Chief Water Plant Operator	Town of Erie
Dave Cummins	Water Treatment Facility Technician	Town of Erie
Jody Lambert	Operations and Maintenance Manager	Town of Erie
Jim Shelley	Drinking Water Program	City of Boulder
Mark Williams	Water Quality Program Coordinator	Boulder County Public Health
Eric Schroeder	Soil Scientist	U.S. Forest Service Boulder Ranger District
Tricia Pfeiffer	Environmental Protection Specialist	U.S. EPA Region 8
Glenn Patterson	Watershed Coordinator	Lefthand Watershed Oversight Group
Ted Plank	Roads Supervisor	Boulder County Transportation Department
Emily McMurtrey	Open Space and Mountain Parks	City of Boulder
Karen Martinez	Water Resource Specialist	Boulder County Open Space
Hank Schmidt	Water Treatment Manager	Left Hand Water District
Mark Hartman	Public Works Water Superintendent	City of Lafayette
Colleen Williams	Source Water Specialist	Colorado Rural Water Association

Development and Implementation Grant

The Town of Erie has been awarded a \$5,000 Development and Implementation Grant from the Colorado Department of Public Health and Environment (CDPHE). This funding is available to public water systems and representative stakeholders committed to developing and implementing a source water protection plan. A one to one financial match (cash or in-kind) is required. Town of Erie was approved for this grant in April 16, 2012, and it expires on May 1, 2014. The Town of Erie intends on using the entire grant to implement management approaches that are identified in this Plan.

WATER SUPPLY SETTING

Town of Erie

The Town of Erie is located directly east of the Front Range of the Rocky Mountains in north central Colorado. It is situated in Boulder and Weld counties at Latitude 40°2'25"N and longitude 105°3'28"W and an elevation of 5,130 feet. The Town is approximately 28 miles north of Denver and 15 miles east of Boulder. The Town of Erie covers 9.6 square miles, has a population of 18,135 people, and 6,485 residential dwellings. According to the 2010 U.S. Census, Erie saw a 188.27% change in population from 6,291 people in 2000 to 18,135 in 2010 (DOLA, 2012). As a statutory town incorporated in 1874, its municipal affairs are governed by the Erie Town Board. The county seat for Boulder County is location in the city of Boulder, Colorado and the county seat for Weld County is Greeley, Colorado.

The primary Source Water Protection Area (SWPA) for the Town of Erie is located within the eastern and western portions of Boulder County, and northern portion of Jefferson County (Fig. 1).

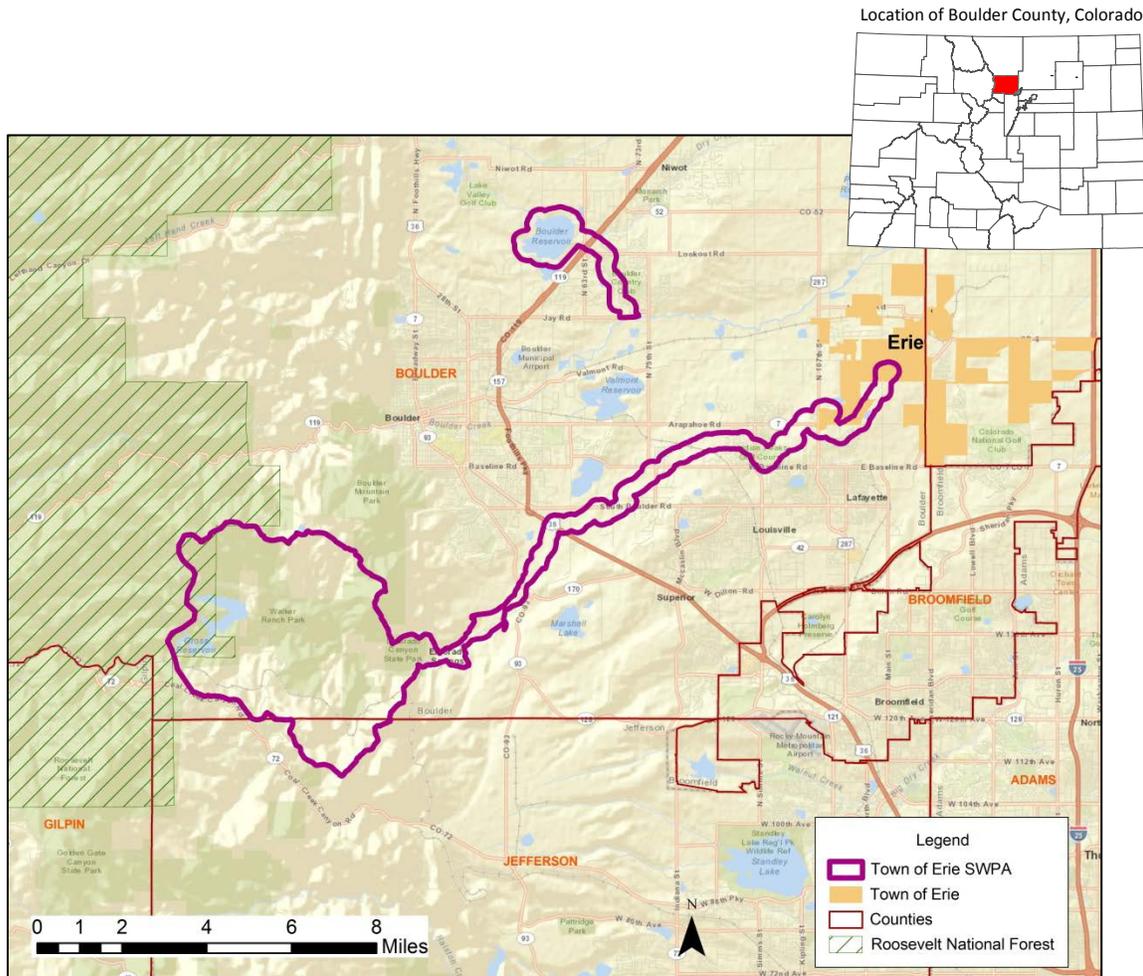


Figure 1. Regional setting map with the location of the primary Source Water Protection Area (SWPA).

Physical Setting

The SWPA lies within two physiographic provinces. The eastern portion lies within the Piedmont Section of the Great Plains Physiographic Province that encompasses approximately 40% of the state. The region consists of a broad hilly valley between the base of the Rocky Mountains to the west and the High Plains Section to the east. The Great Plains are characterized predominantly by sedimentary rocks. Underlying bedrock consists primarily of Cretaceous age Foxhill Sandstone and Pierre Shale that gently dips to the east (Topper et al, 2003)

The western portion of the primary Source Water Protection Area lies within the Southern Rocky Mountains Physiographic Province that encompasses the center of the state and runs its entire north-south length. Precambrian granitic rocks dominate the geology of the mountainous portion of the protection area (Fig. 2)

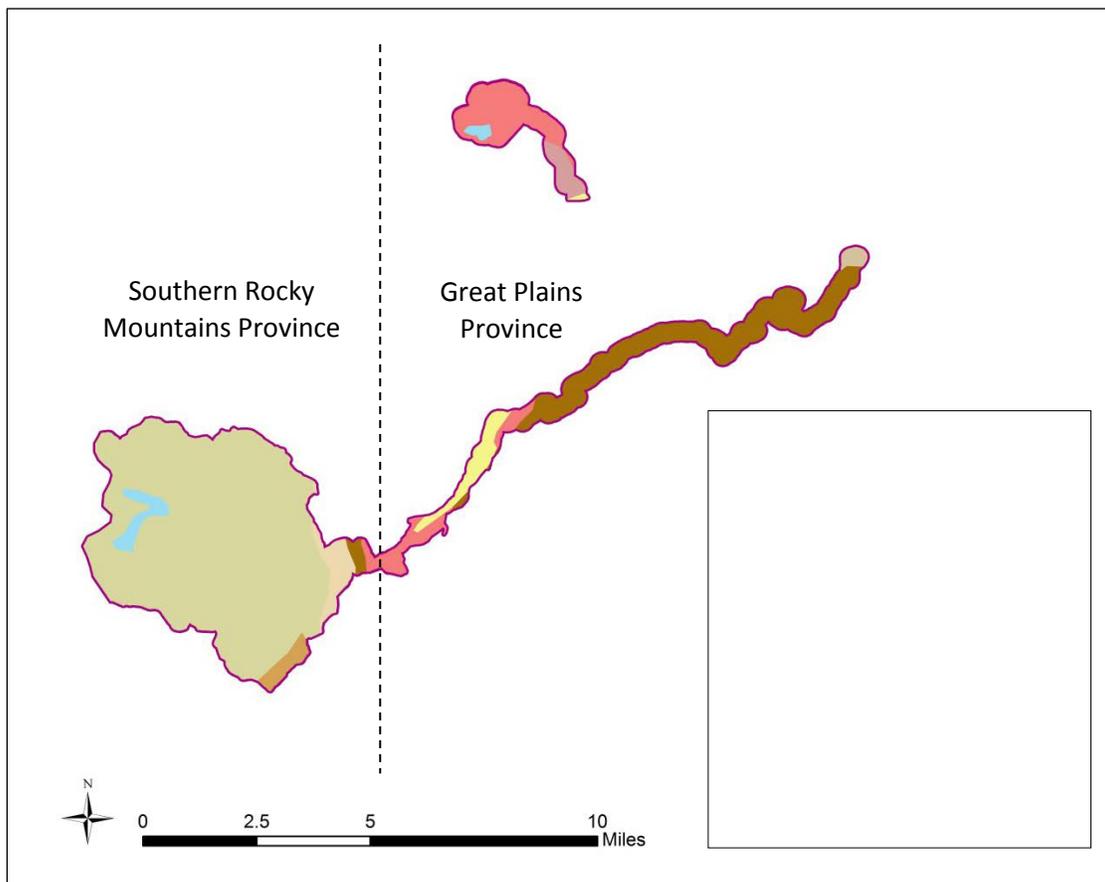


Figure 2. The Physiographic provinces and geology of the primary Source Water Protection Area.

Topography

Elevations in western portion of the primary Source Water Protection Area range from 8,738 feet in the mountains surrounding Gross Reservoir to 6,000 feet at the town of Eldorado Springs. The eastern boundary of the SWPA in Erie, Colorado is at 5,135 feet elevation.

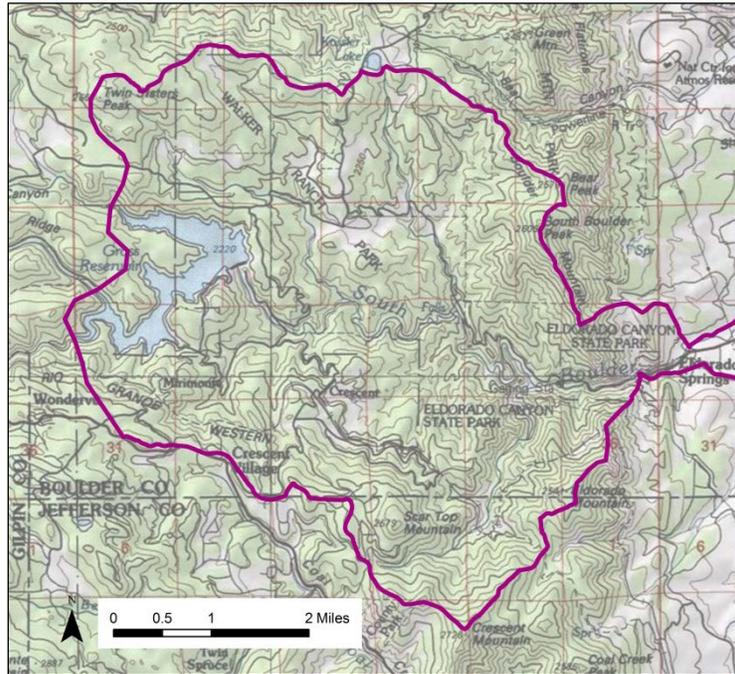


Figure 3. Topography of the western portion of the SWPA.

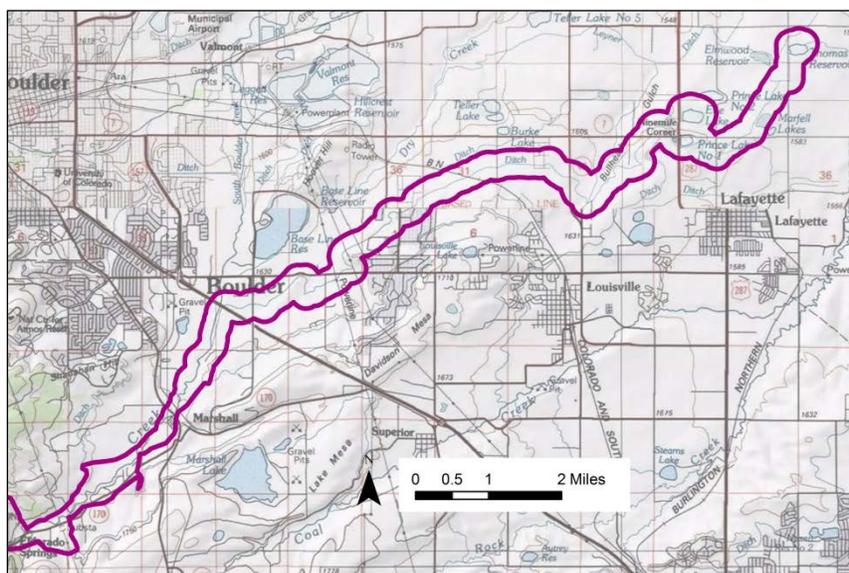


Figure 4. Topography of the eastern portion of the primary SWPA.

Climate

Temperatures vary widely across the source water protection areas depending on the elevations. The climate on the eastern plains is semi-arid with abundant sun, warm summers and mild to cold winters. January is generally the coldest month and July is the warmest. The average high temperature in July is 90 degrees F and the average low temperature in January is 14 degrees F. The air masses from the west lose their moisture over the mountains so the eastern slope and plains precipitation is mainly in the form of spring rains and snows as well as summer thunderstorms (BCPOS, 2004).

The average annual precipitation in the plains area of the protection area is 15-19 inches, whereas in the foothills and mountainous area the average is 19-22 inches (Fig. 5).

Most of the precipitation that falls on the land surface during snowmelt and storm events flows directly into drainages, eventually flowing into streams and rivers. Some of the water will infiltrate the soil and recharge the underlying aquifers. In the mountainous regions of the state, annual runoff is related to the greater amount of precipitation, steeper topography, thin to nonexistent soils, and cooler temperatures.

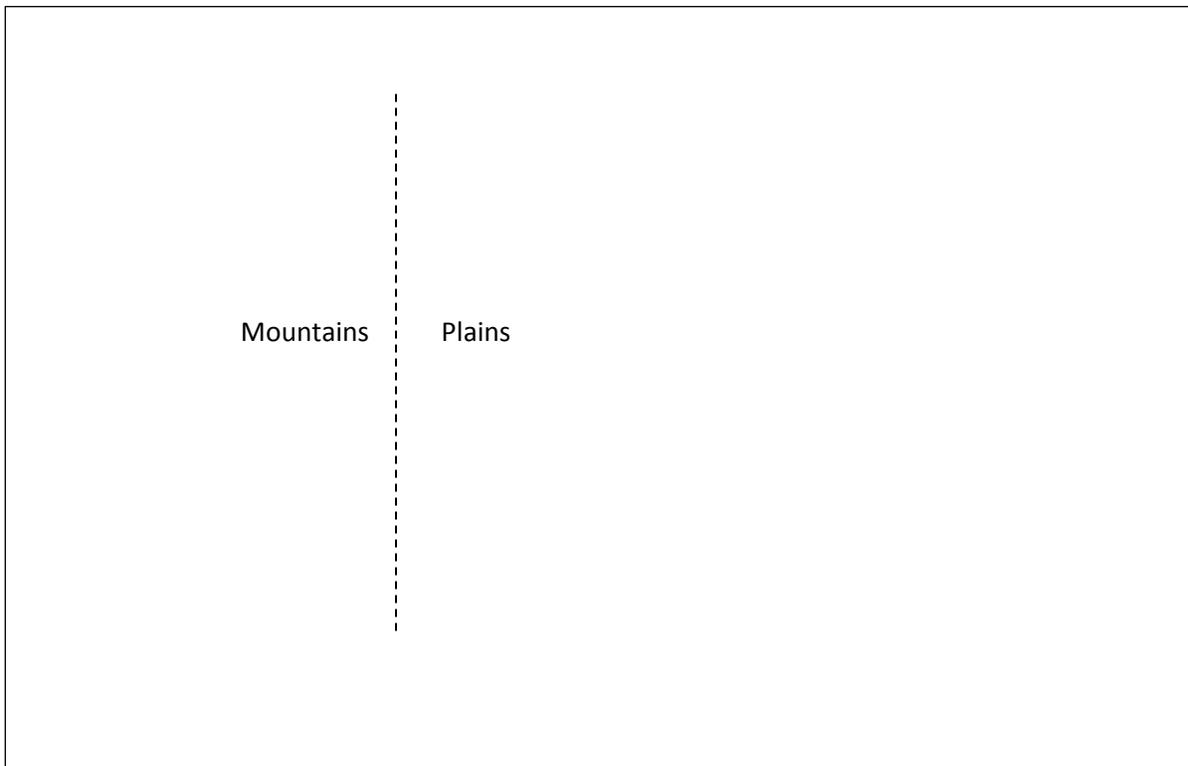


Figure 5. Average annual precipitation from 1991 to 2010 (data from USDA Natural Resource Conservation Service).

Land Ownership

The Town of Erie’s Source Water Protection area lies within both public and private lands. The public lands include lands managed by the U.S. Department of Agriculture’s Forest Service, Bureau of Land Management, State of Colorado, Boulder County, City of Boulder, City of Lafayette, and the City of Louisville. Privately owned land includes land within the cities of Erie, Lafayette, Louisville, and Boulder; as well as land within the unincorporated area of Boulder County. Approximately half of the land in the SWPA is public land and parks and/or open space (Fig. 6).

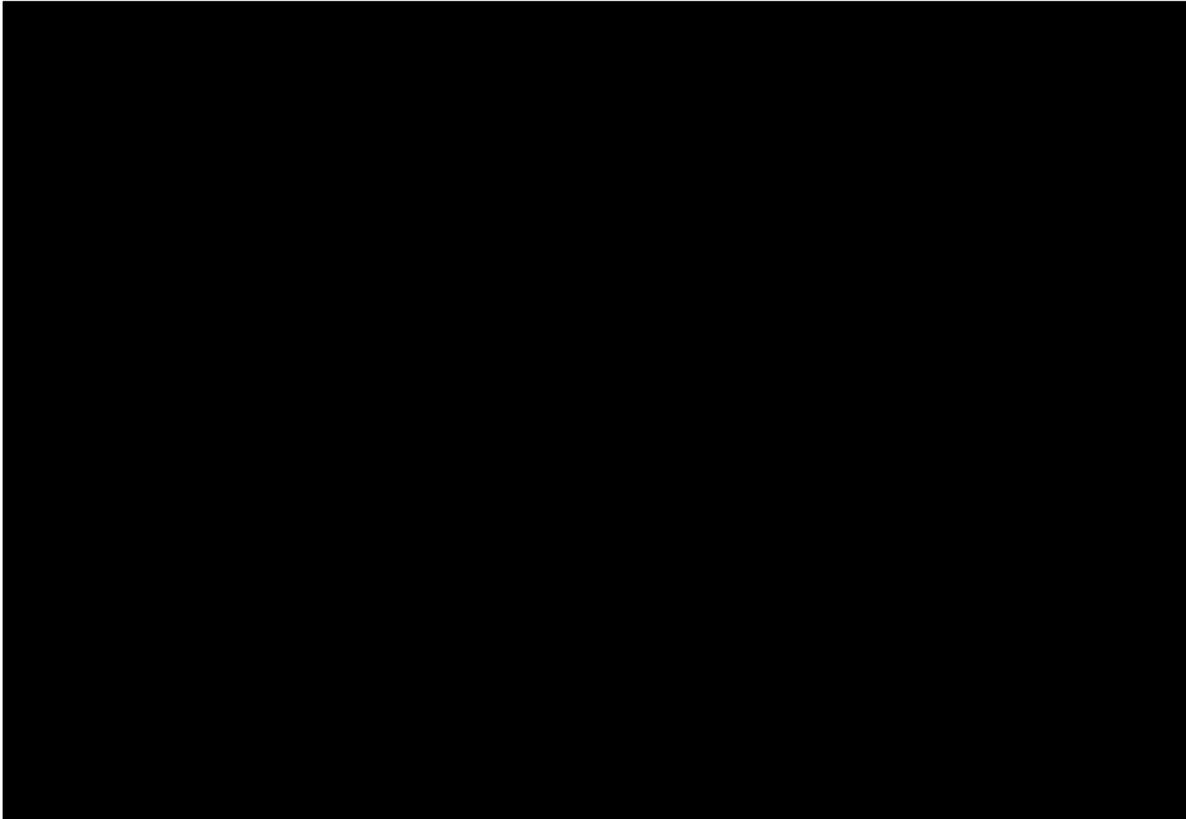


Figure 6. Land Owners/Managers within the primary Source Water Protection Area.

Land Use

Land use on public land consists of hiking, hunting, fishing, camping, winter sports, mountain biking, wildlife habitat. Public lands also provide drinking water supply for the cities of Erie, Boulder, Denver, Lafayette, Louisville; and irrigation water for agricultural users on the plains. Land use on private land consists of urban and rural residential development, recreation, land conservation, and industry. Land use decisions are made by each of the owners/managers of land within the SWPA.

WATER QUALITY

Hydrologic Setting

The Town of Erie’s main source of drinking water is from a surface water intake on Carter Lake (Colorado-Big Thompson Project and Windy Gap) via a pipeline to its water treatment facility. During irrigation season the Town diverts water from Boulder Reservoir via the Boulder Creek Supply Canal and from South Boulder Creek via the South Boulder Canyon Ditch. The Town stores its raw water in Erie Reservoir, Prince Reservoir or Thomas Reservoir.

Carter Lake

Carter Lake is located in the foothills west of Loveland, Colorado at an elevation of 5,760 feet in Larimer County, Colorado. Carter Lake is part of the Colorado-Big Thompson Project (C-BT) operated by the Bureau of Reclamation and the Northern Colorado Water Conservancy District (NCWCD). The Colorado-Big Thompson Project is the largest transmountain water diversion project in Colorado. West of the Continental Divide, Willow Creek and Shadow Mountain reservoirs, Grand Lake and Lake Granby collect and store the water of the upper Colorado River. The water is pumped into Shadow Mountain Reservoir where it flows by gravity into Grand Lake. From there, the 13.1 mile Alva B. Adams Tunnel transports the water under the divide to the East Slope. Windy Gap water is water delivered to the Front Range through the Windy Gap project and the CBT system. Water is pumped from Windy Gap reservoir to Lake Granby where it is conveyed through the CBT system to Front Range water providers (Erie, 2008).

Once the water reaches the East Slope, it is stored in Carter Lake, Horsetooth Reservoir and Boulder Reservoir (Fig. 7). The CB-T Project provides water for municipal use by over 30 cities and towns, for agricultural use irrigating 693,000 acres, and industrial users on the Front Range (NCWCD, 2010).

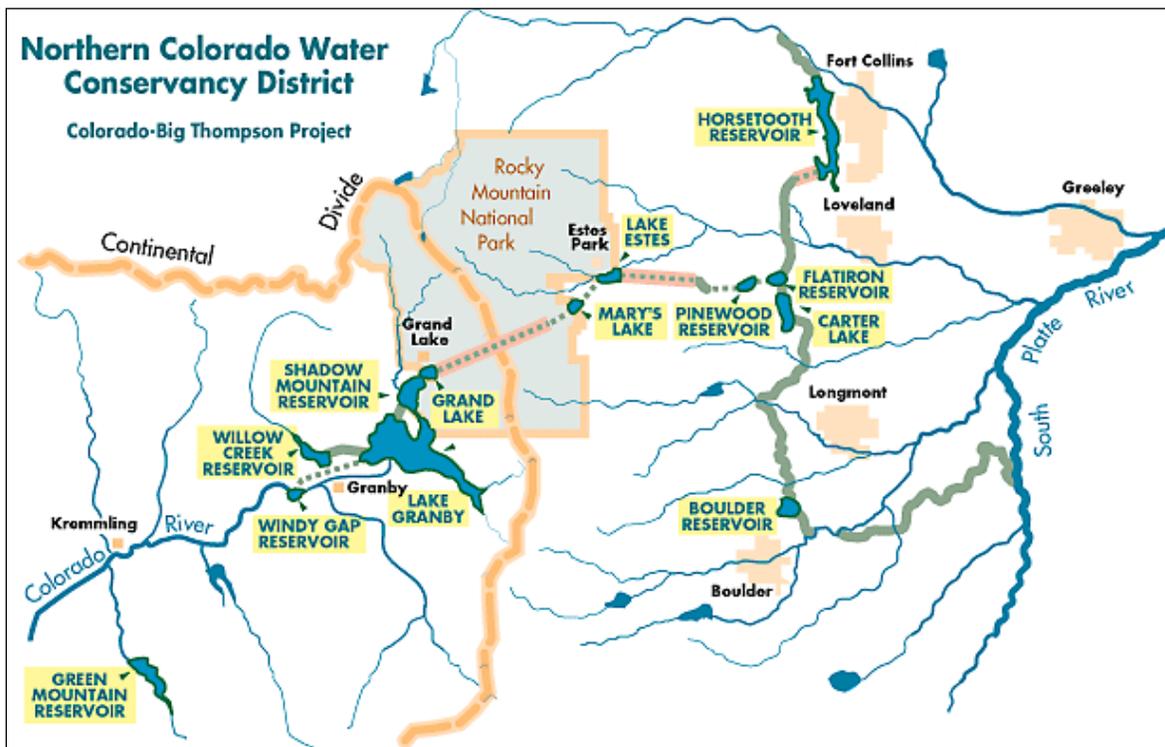


Figure 7. Map of the Colorado-Big Thompson Project.

[Boulder Reservoir and Boulder Creek Supply Canal](#)

Boulder Reservoir is the terminal reservoir for the southern end of the C-BT Project. Almost all of the water in Boulder Reservoir comes from the C-BT and Windy Gap Project through Carter Lake via supply canals, although water substituted by Left Hand Water District from St. Vrain Creek and deliveries from the Farmer's Ditch add to the water supply. Boulder Reservoir stores water until it is released for irrigation in the South Platte River Basin or for cities and industries in northeastern Colorado. The City of Boulder stores 20% of its drinking water supply in Boulder Reservoir and also owns the majority of the land comprising the Boulder Reservoir area. Boulder, through its water utility, has the overriding role in managing the reservoir and protecting water quality for municipal purposes. NCWCD operates and maintains the Boulder Reservoir dams and water conveyance facilities. The City of Boulder Parks and Recreation Department is the management entity for the recreation facilities, wildlife, and weed and pest control. This department also monitors water quality in the reservoir for management of recreational activities such as the swim beach (Boulder, 2009).

The Town of Erie obtains water from Boulder Reservoir via the Boulder Creek Supply Canal during irrigation season. The Boulder Creek Supply Canal transfers water from Boulder Reservoir to Boulder Creek to the South Platte River. The supply canal is owned by the Bureau of Reclamation and operated by NCWCD. The Town of Erie has an intake on the supply canal directing raw water into a pump station and into a pipe that conveys the water for 8 miles to the Town's settling ponds.

[South Boulder Creek, Ditch and Reservoirs](#)

The Town of Erie obtains water from South Boulder Creek via the South Boulder Canyon Ditch during irrigation season. South Boulder Creek originates on the east side of the Continental Divide from James Peak to Corona Pass, just south of the Moffat Tunnel. From the Moffat Tunnel, where the Denver Water Department brings water through from the Western Slope, to Gross Reservoir, where Denver stores some of its drinking water supply, South Boulder Creek serves as a channel for moving water from one basin to another. The east side of Gross Reservoir is managed by Denver Water, while the west site is managed by Roosevelt National Forest/Boulder Ranger District.

Below Gross Reservoir South Boulder Creek cuts through Eldorado Canyon State Park and then passes through the Town of Eldorado Springs (BASIN, 2005). Here a series of diversion ditches begin, including the South Boulder Canyon Ditch. The South Boulder Canyon Ditch was established in 1870 to divert water for irrigation of farmland in Boulder County. A portion of the original irrigation rights have been changed to include municipal use and are owned by the Town of Erie (Black, 2007). South Boulder Canyon Ditch water is stored in Erie and Prince Reservoir and also conveyed via the South Boulder Canyon Ditch Extension into Thomas Reservoir.

[Future Water Supplies](#)

The Town of Erie will participate in the Windy Gap Firming Project, which will divert river water to Lake Granby and subsequently to the Eastern Slope for delivery to municipalities such as Erie, as well as the Northern Integrated Supply Project, which proposes to deliver 40,000 acre feet of water supply to 15 northern Front Range partners.

In order to provide an increase in supply to its new water customers, Denver Water is proposing to enlarge its existing 42,000-AF Gross Reservoir. The initial filling may increase organic matter in the reservoir which could result in short term decreases in water quality.

Water Quality Standards

Under the Clean Water Act, every state must adopt water quality standards to protect, maintain and improve the quality of the nation’s surface waters. The State of Colorado’s Water Quality Control Commission has established water quality standards that define the goals and limits for all waters within their jurisdictions. Colorado streams are divided into individual stream segments for classification and standards identification purposes (Table 4). Standards are designed to protect the associated classified uses of the streams (Designated Use). Stream classifications can only be downgraded if it can be demonstrated that the existing use classification is not presently being attained and cannot be attained within a twenty year time period (Section 31.6(2)(b)). A Use Attainability Analysis must be performed to justify the downgrade.

Table 4. Stream segments within the Town of Erie’s Source Water Protection Area, Designated Uses and Impairment Status

Waterbody Name	Waterbody ID	Stream Segment Description	Designated Use	Status
South Boulder Creek, Source to Outlet Gross Reservoir (88.5 mi)	COSPBO04A_008	Mainstem Of South Boulder Creek, Including All Tributaries, Lakes, Reservoirs And Wetlands, From The Source To The Outlet Of Gross Reservoir.	Agriculture Aquatic Life Cold Water-Class 1 Water Supply Recreation Primary Contact	Good
South Boulder Creek & Tributaries (28.4 mi)	COSPBO04B_008	Mainstem Of South Boulder Creek, Including All Tributaries, Lakes, Reservoirs, And Wetlands, From The Outlet Of Gross Reservoir To South Boulder Road, Except For Specific Listings In Segments 4c And 4d.	Agriculture Aquatic Life Cold Water-Class 1 Water Supply Recreation Primary Contact	Not Assessed
Gross Reservoir	COSPBO15_008	All lakes and reservoirs tributary to South Boulder Creek from the source to Highway 93. All lakes and reservoirs tributary to Coal Creek from the source to Highway 93. This segment includes Gross Reservoir.	Agriculture Aquatic Life Cold Water-Class 2 Water Supply Recreation Primary Contact	Not Assessed
Boulder Reservoir (537.4 acres)	COSPSV07_008	Boulder Reservoir, Coot Lake, and Left Hand Valley Reservoir	Agriculture Aquatic Life Warm Water-Class 1 Water Supply Recreation Primary Contact	Good

SOURCE: COLORADO 2012 WATER QUALITY MONITORING AND ASSESSMENT Report (WQCC, 2012)

Definitions of Designated Uses

Aquatic Life Cold 1: Refers to waters that are capable of sustaining a wide variety of cold water biota, including sensitive species, or could sustain such biota in correctable water quality conditions.

Aquatic Life Warm 1: Refers to waters that (1) currently are capable of sustaining a wide variety of warm water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions.

Recreation Primary Contact Use: These surface waters are used for primary contact recreation (i.e. swimming) or have been used for such activities since November 28, 1975.

Water Supply: These surface waters are suitable or intended to become suitable for potable water supplies. After receiving standard treatment (defined as coagulation, flocculation, sedimentation, filtration, and disinfection with chlorine or its equivalent) these waters will meet Colorado drinking water regulations and any revisions, amendments, or supplements.

Agriculture: These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock (WQCC, 2009).

Water Quality Monitoring

States are required by Section 305(b) of the Clean Water Act to assess and report on the quality of waters within their State. The Colorado 2012 Integrated Water Quality Monitoring and Assessment Report (305(b) report) summarizes water quality conditions in the State of Colorado. This report provides the State's assessments of water quality that were conducted during the past five years. Specifically, it compares the classified uses of all surface waters within the State to the corresponding standards in order to assess the degree to which waters are in attainment of those standards.

Under the Clean Water Act, States are required to submit to Congress their list of impaired waters that do not meet the state's water quality standards for their designated and existing uses. There are no water body segments within the Town of Erie's Primary Source Water Protection on the 2012 Colorado Section 303(d) list of impaired waters. The State used the data generated by water quality monitoring conducted on Boulder Reservoir by EPA National Lakes Assessment and the City of Boulder Source Water program to determine that water quality standards are currently being attained. Gross Reservoir is listed on the 305(b) report as in full support of its designated use. In 2012 the Colorado Water Quality Control Commission added Gross Reservoir to their Monitoring and Evaluation list for further study because it has a median Fish Hg (Mercury) of greater than 0.3 ppm. The CDPHE has issued a fish consumption advisory on Gross Reservoir. The stream segment of South Boulder Creek below Gross Reservoir has not been assessed (WQCC, 2012).

Water quality monitoring within the Source Water Protection Area is being conducted by the following entities/organizations:

- Town of Erie
- City of Boulder
- River Watch Volunteers
- Boulder County Open Space
- Colorado Department of Public Health and Environment

In general, the water quality of the source waters within the primary Source Water Protection Area is from a good quality, high mountain water supply. The water has moderately low hardness and alkalinity, as well as low dissolved and suspended solids. However, natural and man-made influences impact the water quality. Spring snowmelt can cause an increase in turbidity and organic carbon, and wildlife and humans can introduce pathogens. Stormwater runoff into conveyance structures such as canals and ditches can lead to degradation of water quality. The quality of water in the canals and ditches and the reservoirs can be significantly different even though the original source of water is the same. This is primarily due to the function of a canal versus a reservoir and the potential for dilution in the reservoir (Boulder, 2009).

Drinking Water Supply Operations

Water Supply and Infrastructure

The Town of Erie provides municipal treated water to over 18,135 customers or approximately 6,500 homes in addition to commercial users and other municipal needs. Erie's service area consists of 46 square miles bordered to the east by Interstate 25 and on the west by U.S. Highway 287. The service area extends north of Highway 52, with State Highway 7 serving as its southern boundary.

The Town of Erie's water supply portfolio consists of a variety of surface water supplies. This includes reservoir, ditch, CBT, and Windy Gap water rights with a total average year yield of 7,022 acre-feet per year (AFY). Table 5 shows Erie's current water supply portfolio. These supplies provide an adequate amount of water to meet current needs. However, additional water rights will be needed to meet future demands.

Table 5. Surface Water Supply Information

Water Right Name	Number of Shares or Units Owned	Average Annual Yield (Acre Feet)	Dry Year Annual Yield (Acre Feet)
CBT	6,693	4,685	6,617
Windy Gap Project	14	50	0
Erie Reservoir	239	239	72
Prince Reservoir	80	80	24
Thomas Reservoir	148	148	0
Leyner Cottonwood Ditch	294	158	62
South Boulder Canyon Ditch	203	589	0
Erie Coal Creek Ditch and Reservoir Co.	83	407	46
FROCO – Marshall Lake Div.	4	16	2
Total	7,758	7,022	6,823

SOURCE: ERIE WATER CONSERVATION PLAN, 2008

Raw CBT and Windy Gap water are delivered to Erie from the Northern Colorado Water Conservancy District (NCWCD) via a pipeline to Lynn R. Morgan Water Treatment Facility in Erie. CBT water is also delivered via pipeline to reservoirs for storage in Erie Reservoir, Prince Reservoir or Thomas Reservoir. Erie also fills their reservoirs via the South Boulder Canyon Ditch which originates from Gross Reservoir in Boulder. Pipelines carry water from the reservoirs directly to the Water Treatment Facility (Erie, 2008).

The Town of Erie's water treatment consists of a pressure membrane system and a submerged microfiltration membrane system followed by chlorination (Fig. 8). The submerged membrane system, completed in 2005, increased the capacity of the facility from 4.5 million gallons per day (mgd) to 9.9 mgd to meet the needs of Erie's current and future residential, business and commercial water customers.

After treatment, a high service pump station distributes the treated (potable) water to Town residents via a network of 120 miles of underground pipes to 6,887 metered service connections or taps. Treated

water is stored in a 1.5 million gallon storage tank to ensure adequate delivery pressures and volumes (Fig. 9).

The Town of Erie provides an Annual Drinking Water Quality Report to the public which provides information on the results of their water monitoring program. The 2012 report is available at the Erie Town Hall or online at www.erieco.gov.

Water Supply Demand Analysis

The water system currently has the capacity to produce 9.9 million gallons per day. The average daily demand is 2.94 million gallons per day. The maximum daily gallon per day is 7.16 million gallons. Peak use during the summer is in July with an average of 5.90 million gallons per day. The lowest month usage is February with an average of 1.04 million gallons per day (Chameroy, 2013). Using these estimates, the water system has a surplus average daily demand capacity of 3.328 million gallons per day and a surplus average peak daily demand capacity of 368,838 gallons per day.

Erie is anticipating a significant amount of growth within the next few decades. The town is not only planning to acquire additional water supplies, but to also expand existing facilities and develop new facilities to accommodate growth. Additionally, the Town of Erie has developed an emergency response plan to coordinate rapid and effective response to any emergency incident that threatens or disrupts the community water supply.



Figure 8. The Town of Erie's Lynn R. Morgan Water Treatment Facility is a state-of-the-art microfiltration membrane system.

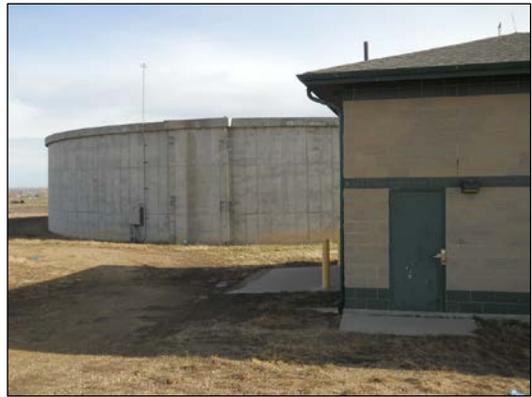


Figure 9. Treated water is stored in a 1.5 million gallon storage tank to ensure adequate delivery pressures and volumes.

OVERVIEW OF COLORADO'S SWAP PROGRAM

Source water assessment and protection came into existence in 1996 as a result of Congressional reauthorization and amendment of the Safe Drinking Water Act. The 1996 amendments required each state to develop a source water assessment and protection (SWAP) program. The Water Quality Control Division, an agency of the Colorado Department of Public Health and Environment (CDPHE), assumed the responsibility of developing Colorado's SWAP program. The SWAP program protection plan is integrated with the Colorado Wellhead Protection Program that was established in amendments made to the federal Safe Drinking Water Act (SDWA, Section 1428) in 1986. Colorado's SWAP program is an iterative, two-phased process designed to assist public water systems in preventing potential contamination of their untreated drinking water supplies.

Source Water Assessment Phase

The Assessment Phase for all public water systems consists of four primary elements:

1. Delineating the source water assessment area for each of the drinking water sources;
2. Conducting a contaminant source inventory to identify potential sources of contamination within each of the source water assessment areas;
3. Conducting a susceptibility analysis to determine the potential susceptibility of each public drinking water source to the different sources of contamination;
4. Reporting the results of the source water assessment to the public water systems and the general public.

The Assessment Phase involves understanding where the Town of Erie's source water comes from, what contaminant sources potentially threaten the water sources, and how susceptible each water source is to potential contamination. The Town of Erie received their SWAP Assessment Report from CDPHE in 2004.

Source Water Protection Phase

The Protection Phase is a voluntary, ongoing process in which all public water systems have been encouraged to voluntarily employ preventative measures to protect their water supply from the potential sources of contamination to which it may be most susceptible. The Protection Phase can be used to take action to avoid unnecessary treatment or replacement costs associated with potential contamination of the untreated water supply. Source water protection begins when local decision-makers use the source water assessment results and other pertinent information as a starting point to develop a protection plan. The source water protection phase for all public water systems consists of four primary elements:

1. Involving local stakeholders in the planning process;
2. Developing a comprehensive protection plan for all of their drinking water sources;
3. Implementing the protection plan on a continuous basis to reduce the risk of potential contamination of the drinking water sources; and
4. Monitoring the effectiveness of the protection plan and updating it accordingly as future assessment results indicate.

SOURCE WATER PROTECTION PLAN DEVELOPMENT

Source Water Assessment Report Review

The Town of Erie has reviewed the Source Water Assessment Report along with the Steering Committee. These Assessment results were used as a starting point to guide in the development of this Source Water Protection Plan. A copy of the Source Water Assessment Report for the Town of Erie can be obtained by contacting the Town of Erie or by downloading a copy from the CDPHE's SWAP program website located at: <http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596793639>.

The Source Water Assessment Report for the Town of Erie delineated a Source Water Assessment Area for the Town's surface water sources. Delineation is the process used to identify and map the drainage basins (watersheds) that supplies water to the water intakes. The delineated source water assessment area provides the basis for understanding where the community's source water and potential contaminant threats originate.

Defining the Source Water Protection Area

The Steering Committee reviewed the Town of Erie's Source Water Assessment Report which included the delineation of the Source Water Assessment Area for each of the Town's drinking water sources. They also reviewed the completed Source Water Protection Plans for the City of Boulder, Town of Jamestown, and Left Hand Water District and their delineated Source Water Protection Areas (included in Appendices). The Steering Committee chose to focus the Town of Erie's protection efforts on the local areas of concern which include: the Boulder Reservoir and the Boulder Creek Supply Canal, a portion of South Boulder Creek from Gross Reservoir to the South Boulder Canyon Ditch diversion, the South Boulder Canyon Ditch and South Boulder Canyon Ditch Extension, and the Town of Erie's reservoirs (Erie, Prince, and Thomas). These areas were re-delineated as the Town of Erie's Primary Source Water Protection Area.

The Town of Erie's Primary Source Water Protection Area is where the community has chosen to implement its source water protection measures in an attempt to manage the susceptibility of their source water to potential contamination (Fig. 10).

The Town of Erie's Secondary Source Water Protection Area is identified as the watersheds that provide drinking water for the Town of Erie (Fig. 11).

Source Water Protection Zones

The Primary Source Water Protection Area includes the following protection zones:

Zone 1 is defined as a 1,000 foot wide band on either side of the reservoirs, stream, and ditches. Zone 1 is the most sensitive and important area to protect from potential sources of contamination. This area is where nonpoint source contaminants are most likely to reach the water source.

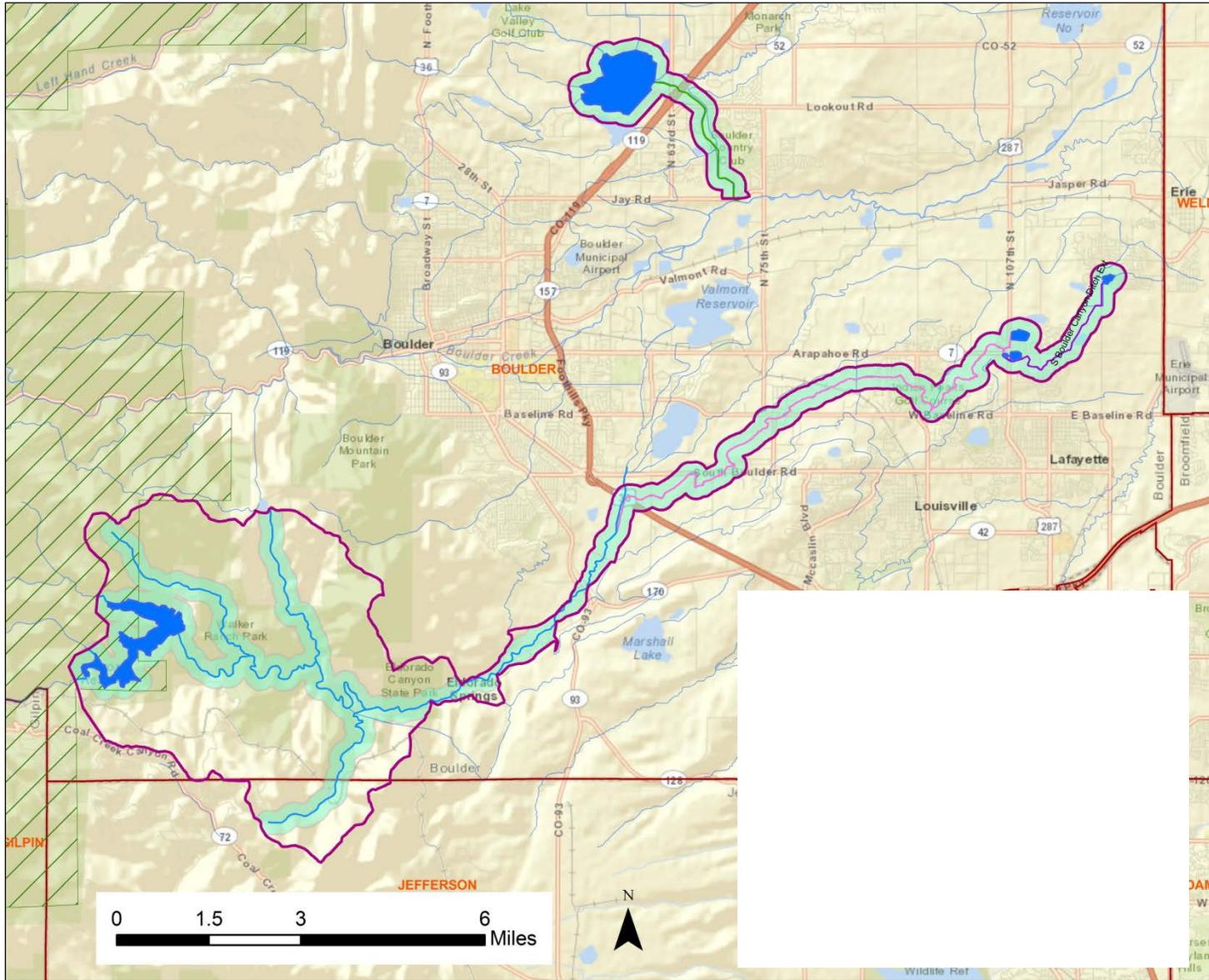


Figure 10. Town of Erie's Primary Source Water Protection Area

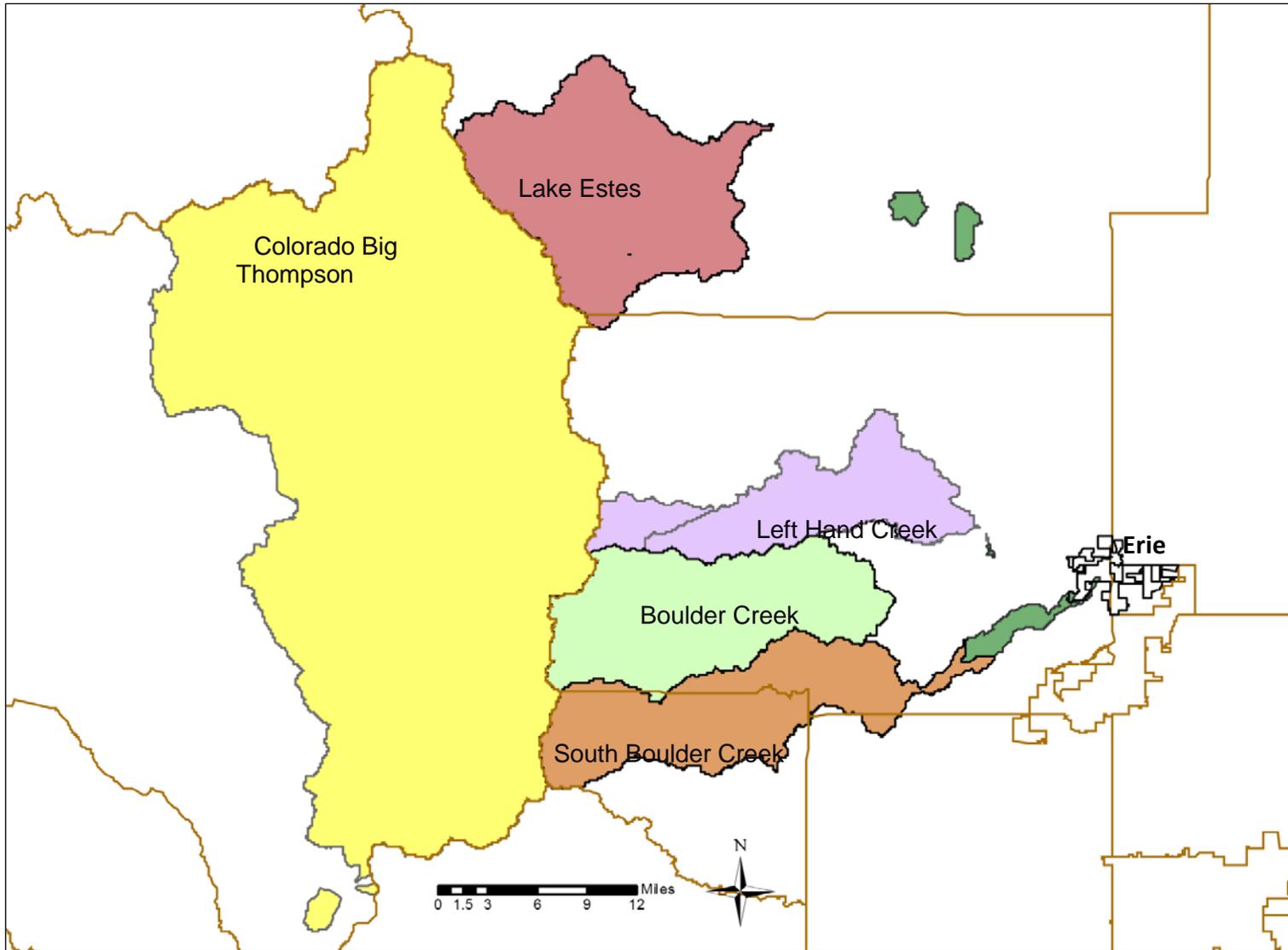


Figure 11. Watersheds that provide drinking water to the Town of Erie.

Potential Contaminant Source Inventory

Many types of land uses have the potential to contaminate source waters: spills from tanks, trucks, and railcars; leaks from buried containers; failed septic systems, buried or injection of wastes underground, use of fertilizers, pesticides, and herbicides, road salting, as well as urban and agricultural runoff. While catastrophic contaminant spills or releases can wipe out a water resource, groundwater degradation can result from a plethora of small releases of harmful substances. According to the USEPA, nonpoint-source pollution (when water runoff moves over or into the ground picking up pollutants and carrying them into surface and groundwater) is the leading cause of water quality degradation (Fig. 12) (GWPC, 2008).

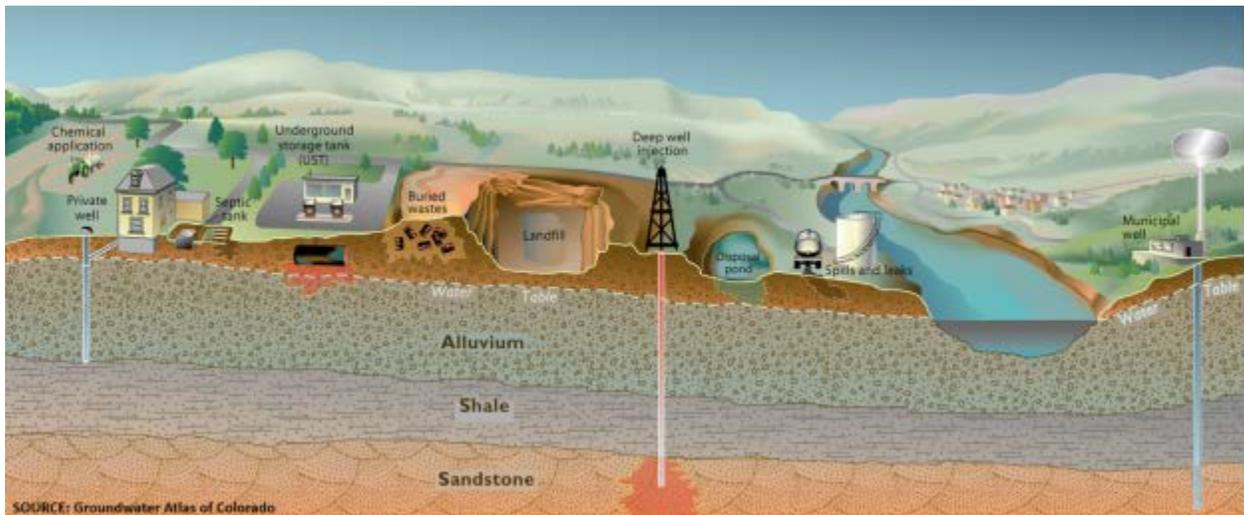


Figure 12. Schematic drawing of the potential source of contamination to surface and groundwater.

In 2001 – 2002, as part of the Source Water Assessment Report, a contaminant source inventory was conducted by the Colorado Department of Public Health and Environment to identify selected potential sources of contamination that might be present within the source water assessment areas. In 2012, CDPHE provided the Town of Erie Geographic Information System (GIS) information on these potential contaminant sources located within the delineated assessment areas. The Source Water Protection Steering Committee conducted a more accurate and current contaminant source inventory of the re-delineated Source Water Protection Area. This report will only reflect the current inventory.

Discrete contaminant sources (point sources) were inventoried using selected state and federal regulatory databases including: mining and reclamation, oil and gas operations, above and underground petroleum tanks, Superfund sites, hazardous waste generators, solid waste disposal, industrial and domestic wastewater dischargers, solid waste sites, and water well permits. Dispersed contaminant sources (nonpoint sources) were inventoried using then recent land use / land cover and transportation maps of Colorado, along with selected state regulatory databases. The contaminant inventory was completed by mapping the potential contaminant sources with the aid of a GIS.

DISCUSSION OF ISSUES OF CONCERN

The Steering Committee reviewed the information presented in the State's assessment, discussed other potential sources of contaminants not included in the assessment and identified areas of concern within the source water protection area that may impact the Town's drinking water sources. The Steering Committee did not prioritize the list and instead decided to use this Source Water Protection Plan as a guidance document to understand the issues. A list of the issues of concern is included below.

Issues of Concern:

- Impacts from Transportation: Roadways
- Above, Underground and Leaking Storage Tanks
- Wastewater Dischargers
- Septic Systems
- Reservoir and Ditch Operation and Maintenance
- Runoff from Agriculture and Industry
- Oil and Gas Operations
- Residential Practices
- Climate Change
- Wildland Fires

The following section provides a description of the issues of concern that have been identified in this plan, describes the way in which they threaten the water source(s) and outlines best management practices. A table of Contaminants Associated with Common PSOCs as well as Contaminants Associated with Discrete and Dispersed Contaminant Sources is included in the Appendices of this report.

Impacts from Transportation: Roadways

The source water protection area is served by a network of paved and natural surface rural roads. There are four major highways that cross over the conveyance ditches and canals in the SWPA (Hwy 287, Hwy 119, Hwy 36, and Hwy 93). Highway 287 at the southeastern boundary of the Town of Erie lies in close proximity to Erie and Prince Reservoirs as well as the settling pond. The roads within the protection area are maintained by the Colorado Department of Transportation (CDOT) and Boulder County Transportation Department.

Motor vehicles, roads and parking facilities are a major source of water pollution to both surface and groundwater. Parked vehicles, including trucks that frequently stop and park along the highway corridor within the protection area may leak hazardous fluids onto the ground, including oil, brake fluid and antifreeze. Runoff from roads and parking areas has a high concentration of toxic metals, suspended solids, and hydrocarbons, which originate largely from vehicles (Gowler and Sage, 2006). Storm water runoff over these roads can deliver contaminants from the road surface into the nearby groundwater. Figure 13 below illustrates the ground and surface water contamination pathways from traffic and transport.

Vehicular Spills

Vehicular spills may occur along the transportation routes within the protection area from trucks that transport fuels, waste, and other chemicals that have a potential for contaminating the surface water. Chemicals from accidental spills are often diluted with water, potentially washing the chemicals into the soil and infiltrating into the groundwater. Roadways are also frequently used for illegal dumping of hazardous or other potentially harmful waste.

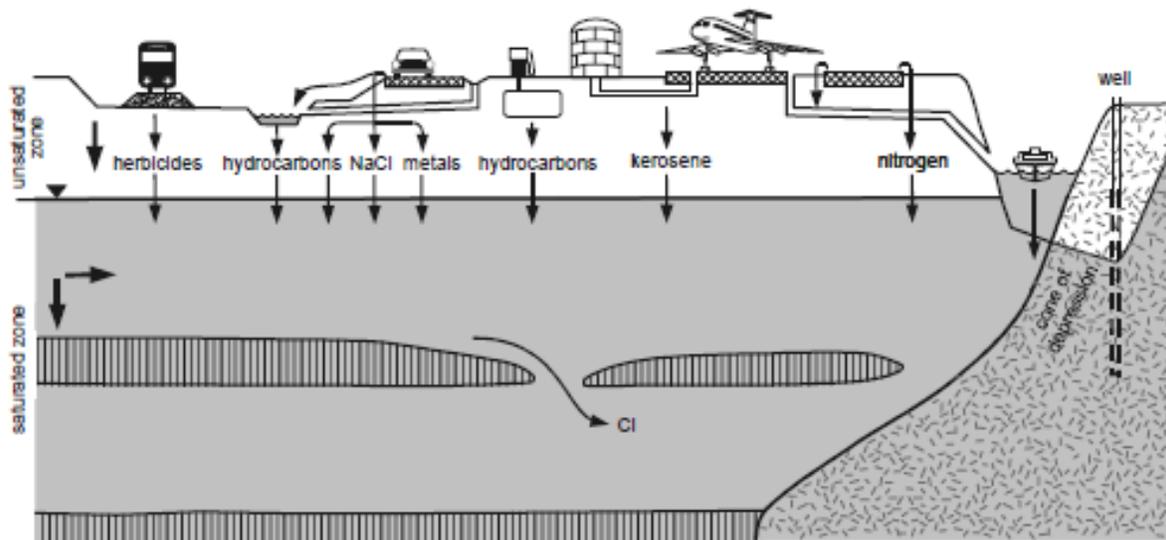


Figure 13. Contamination pathways from traffic and transport to ground and surface water.

Chemical Applications

During the winter season, CDOT applies a salt-sand mixture and de-icer (magnesium chloride, M1000, or Ice Slicer) to highways throughout the Town of Erie's Source Water Protection Area. Surface and groundwater quality problems resulting from the use of road de-icers are causing concern among federal, state, and local governments. Salt from the highway is introduced into the groundwater through a number of ways:

- 1) When runoff occurs from highways, flows are sometimes carried to ditches and unlined channels through which the water infiltrates into the soil and eventually into the groundwater.
- 2) When snow is plowed together with the salt, the pile that is accumulated on the roadside melts during warmer weathers. The water that results contains dissolved salt that can also infiltrate. Plowing and splashing of salt causes the salt to deposit along the pavement, especially near the shoulders where it melts causing runoff to enter drainage ways and then the groundwater system (Seawell et al, 1998).

Salt contributes to increased chloride levels in groundwater through infiltration of runoff from roadways. Unlike other contaminants, such as heavy metals or hydrocarbons, chloride is not naturally removed from water as it travels through soil and sediments and moves towards the water table. Once in the groundwater, it may remain for a long time if groundwater velocity is slow and it is not flushed away.

Transportation Corridor Recommendations:

1. Educate the public on how to respond to a hazardous spill by calling "911". Public utilities should report spills, drinking water and emergency incidents by contacting the Colorado Environmental Release and Incident Reporting Hotline at (877) 518-5608 (Toll Free 24 hour hotline).
2. Work with local emergency response teams to ensure that any spill within the protection areas can be effectively contained.
3. Provide the Colorado Department of Transportation and Boulder County Transportation Department with a map of the protection area.
4. Encourage the use of proper road BMPs to prevent the transport of road materials into the source waters. Recommendations for application of road deicing materials include:
 - applying minimum amounts necessary;
 - apply only when removal of snow and ice cannot be accomplished by blading, plowing or sanding;
 - minimize use of chemicals in and adjacent to streams, aquifers, and flood prone areas; and
 - avoid dumping or storing chemically treated or sanded snow where it can melt and infiltrate groundwater or flow into surface waters.

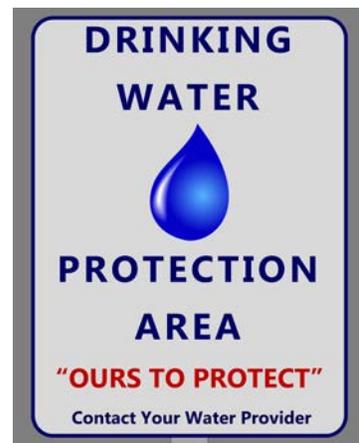
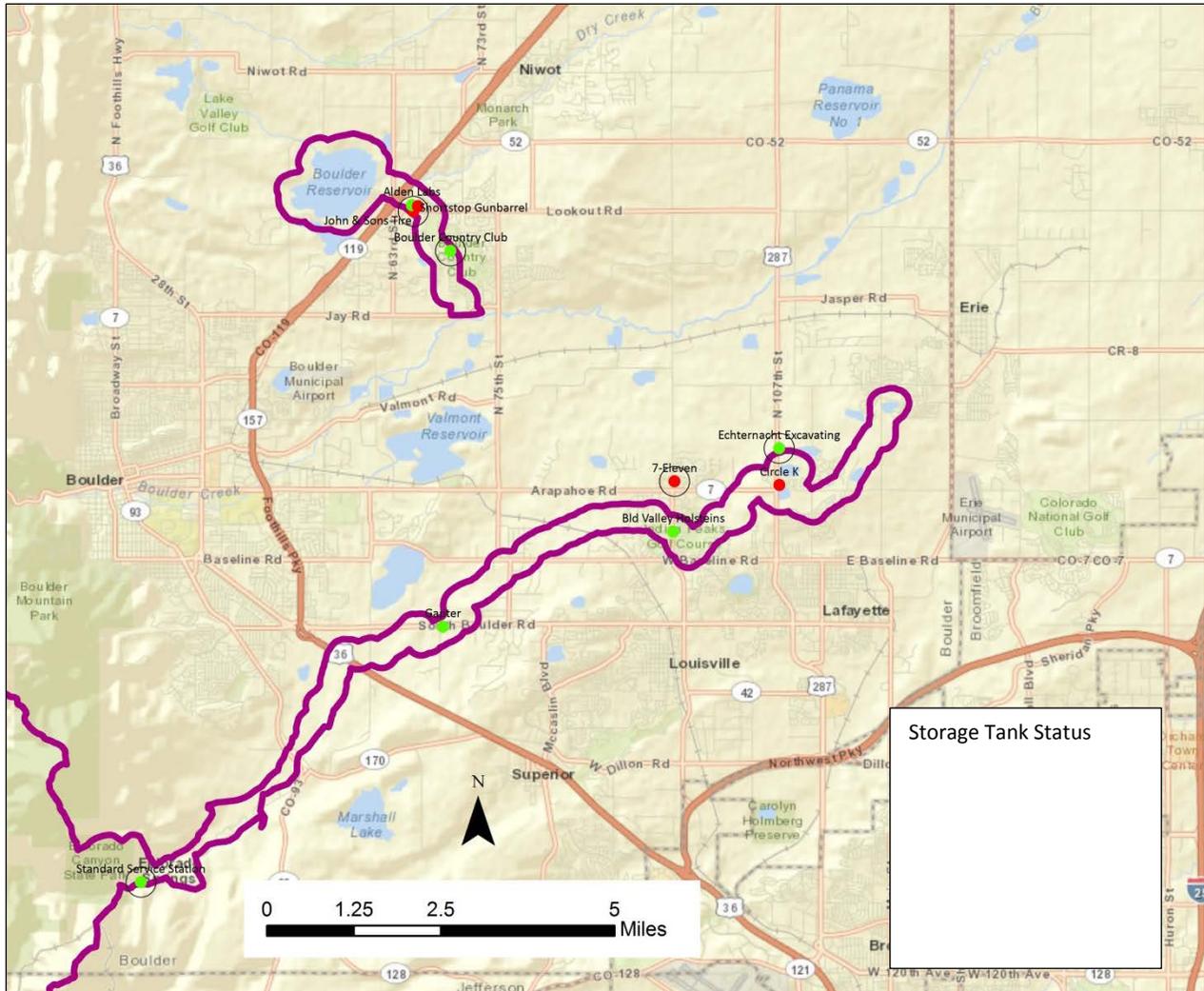


PHOTO: COLLEEN WILLIAMS

Figure 14. Placing signage along the road corridor within the source water protection area is one way of educating travelers on how to notify emergency personnel if a contamination should occur.

Above, Underground and Leaking Storage Tanks

There are 13 permitted fuel storage tank sites (4 active and 9 inactive) within the Town's source water protection area or in close proximity (Fig. 15). Information on the status of Aboveground Storage Tanks (AST) and Underground Storage Tanks (UST) within the source water protection area was obtained from the Colorado Department of Labor and Employment Division of Oil and Public Safety's database via their Colorado Storage Tank Information (COSTIS) website at <http://costis.cdle.state.co.us>.



SOURCE: COLORADO DEPARTMENT OF LABOR AND EMPLOYMENT DIVISION OF OIL AND PUBLIC SAFETY

Figure 15. Storage tank facilities within and in close proximity to the Source Water Protection Area.

Table 6. Storage Tanks within the Source Water Protection Area

Tank Facility Site	Facility ID #	Status	Events	Information
Circle K Store #2709895 3334 Arapahoe Avenue Erie, CO 80516	15306	Active		3 Underground storage tanks (UST) in use. No spills.
John & Sons Tire 6590 Odell Place Boulder, CO 80301	16575	Active		1 Aboveground liquid propane gas (LPG) in use. No spills.
Shortstop Gunbarrel Shell Oil Gas Station 6510 Lookout Road Boulder, CO 80301 (Prior Gunbarrel Texaco)	6694	Active	x	6 tanks (4 Underground storage tanks currently in use); 4 Confirmed Release events: 1) Confirmed Release in 1989, 1991 LUST clean-up, 1998 closed; 2) Confirmed Release in 2005 and status closed; 3) Confirmed Release in 2006, Corrective Action Plan completed and closed in 2012; Source – historical contamination; 4) Confirmed Release in 2010 due to overfill, status closed.
Gunbarrel Texaco 6580 Lookout Road Boulder, CO 80301	10879	Inactive	x	7 Underground and 1 Aboveground LPG tank closed. Confirmed release in 2002 and closed in 2005.
Richard A. Gapter Property 6832 South Boulder Road Boulder, CO 80303	30	Inactive		4 Underground storage tanks closed.
Eldorado Springs 103 Eldorado Springs Drive Eldorado Springs, CO 80303	13113	Inactive	x	Confirmed release in 1994 and closed.
Standard Service Station 3360 Eldorado Springs Drive Eldorado Springs, CO 80025	19128	Inactive	x	2 Underground storage tanks closed due to spill event and historical contamination. Confirmed release in 2011 and closed.
Eldorado Springs Unknown address	9979	Inactive		2 Underground storage tanks closed. No spills.
Boulder Valley Holsteins 1042 95 th Street Lafayette, CO 80026	8271	Inactive		1 Underground storage tank closed. No spills.
Boulder Country Club 7350 Clubhouse Road Boulder, CO 80301	12125	Inactive	x	Confirmed release in 1991 and LUST cleanup in 1991 completed.
Alden Labs 5455 Spine Road Boulder, CO 80301	10705	Inactive		1 Aboveground storage tank closed. No spills.

SOURCE: COLORADO DEPARTMENT OF LABOR AND EMPLOYMENT DIVISION OF OIL AND PUBLIC SAFETY

Table 7. Storage Tank Facilities in Close Proximity to SWPA

Tank Facility Site	Facility ID #	Status	Events	Information
7-Eleven #32673 1446 95 th Street Lafayette, CO 80026	15120	Active	x	3 Underground Storage Tanks in use. 2 Confirmed Release events as a result of overspill fill bucket: 1) spill event on 8/25/10 and closed; 2) spill event on 2/7/13 and closed.
Echternacht Excavating 2395 North 107 th Street Lafayette, CO 80026	18842	Inactive	x	2 Underground storage tanks close. Confirmed Release in 2009 due to overfill tank and closed.

Storage Tank Spills

Fifty-four percent of the storage tank facilities have had spills or leaks, recorded as Confirmed Releases. There have been 7 Confirmed Release spills of which all have been cleaned up (Table 6). A release means any spilling, leaking, emitting, discharging, escaping, leaching, or disposing of a regulated substance from a storage tank into groundwater, surface water or soils. The owner/operator must report a suspected release within 24 hours and investigate suspected releases within seven days. After confirming a release and conducting the initial response and abatement, the owner/operator must continue further source investigation, site assessment, characterization and corrective actions.

The leaky underground storage tank releases gasoline or “liquid phase hydrocarbon.” The gasoline descends through the unsaturated soil zone to float on the water table (gasoline is lighter than water). The gasoline releases compounds like benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tert-butyl ether (MTBE) to the groundwater and they are carried in the direction of groundwater flow. The extent of contamination is defined by the concentration of benzene (from 10 to 10,000 parts per billion) in the groundwater.

Spills from leaking underground storage tanks (LUST) sites can contaminate the groundwater and also present other hazards (Fig. 16). Because gasoline is lighter than water, gasoline floats on the water table and remains relatively close to the land surface. The most hazardous compounds in groundwater (the BTEX compounds) are quite volatile and carcinogenic. Besides the potential for being consumed in drinking water, volatile compounds can enter nearby buildings. In poorly ventilated buildings, the compounds can accumulate and present a health risk through inhalation. In buildings, the volatile compounds can also present an explosion hazard (Ryan, 2006).

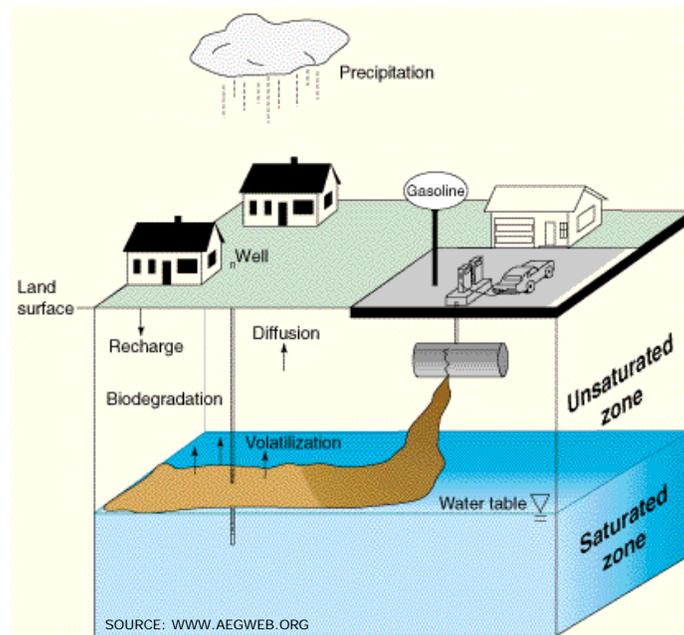


Figure 16. Schematic of a leaking underground storage tank.

Residential Storage Tanks

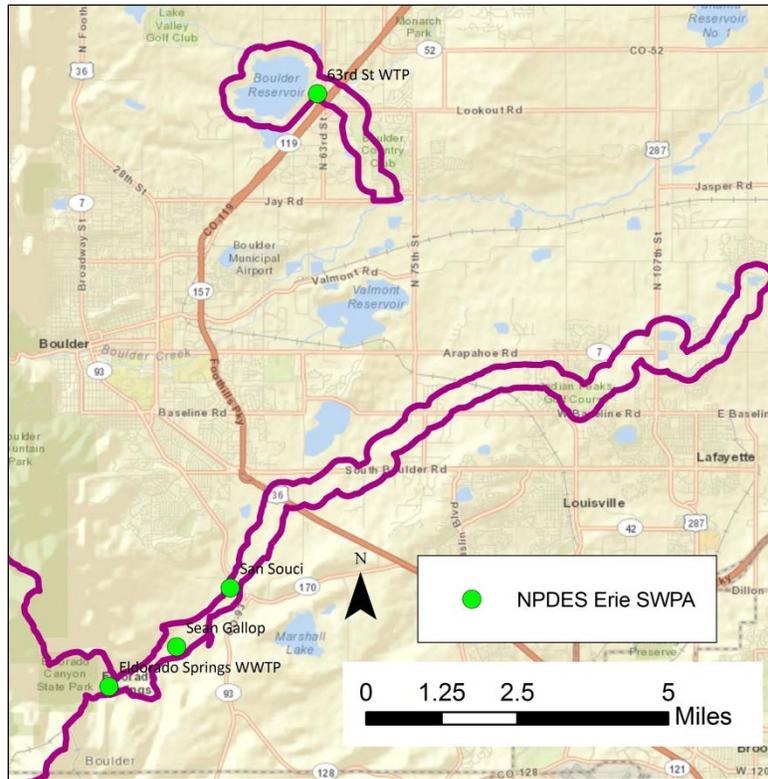
Rural residents of the source water protection area may have private aboveground storage tanks containing gasoline to store vehicular fuel. The private aboveground storage tanks are a concern because they may be old and subject to leakage. It only takes a small amount of petroleum to contaminate the ground or surface water. Fuel tanks should be inspected visually on an annual basis and properly seated on a type of secondary containment structure to prevent spills from reaching the ground. The containment area should be able to hold 125% of the tank capacity.

Storage Tank Recommendations:

1. Maintain a current inventory and information on the status of regulated above and underground storage tanks in and near the source water protection area using the Colorado Storage Tank Information (COSTIS) website at <http://costis.cdle.state.co.us>. Storage tank information from this site includes: facility, tank, owner, and events.
2. Identify Leaking Underground Storage Tank (LUST) events that have occurred within the SWPA using the State's database COSTIS. Contact the Colorado Department of Labor and Employment Division of Oil and Public Safety (303-318-8000) for information regarding LUST events within the SWPA. Contact the Public Records Center for a file review at (303) 318-8521 or (303) 318-8522. Monitor progress on any remedial action conducted for the known contamination sites.
3. Develop an inventory of residential or farm unregulated storage tanks within the source water protection area.
4. Provide information to tank owners on how they can implement storage tank practices to prevent petroleum products from leaking onto the ground.

Wastewater Dischargers

There are four wastewater discharge sites within the source water protection area (Fig. 17, Table 8). These facilities are permitted under the CDPHE National Pollutant Discharge Elimination System (NPDES) regulation. The Water Quality Control Division issues and administers discharge permits and other control mechanisms as provided by the Colorado Water Quality Control Act.



SOURCE: COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT WATER QUALITY CONTROL DIVISION

Figure 17. Location of wastewater dischargers within the Source Water Protection Area.

Table 8. Wastewater Discharge Sites with Active Permits

Permit ID	Facility	Address	Description	Receiving waters
COG641073	63rd Street Water Treatment Plant	5605 N 63rd Street Boulder, CO	Water treatment plant	Little Dry Creek
COG588101	San Souci Mobile Home Park	1561 South Foothills HWY Boulder, CO	Sewerage system	South Boulder Creek
COG074119	Sean Gallop Shallow Well Excavation & Cistern Tank	4339 Prado Drive Boulder, CO	Non-major discharger	South Boulder Creek
CO0047651	Eldorado Spring WWTF	Eldorado Springs, CO	Future waste water treatment facility	South Boulder Creek

SOURCE: EPA ENVIROMAPPER

Waste Water Systems

There are also areas within the Source Water Protection Area that are served by sanitary sewerage systems. Sanitary sewer systems are designed to collect and transport to wastewater treatment facilities the municipal and industrial wastewaters from residences and commercial buildings. Over the years, many of these systems have experienced major infrastructure deterioration due to inadequate preventative maintenance and replacement programs. These conditions have resulted in deteriorated pipes, manholes, and pump stations that allow sewage to exit the systems (exfiltration) and contaminate adjacent ground and surface waters (Fig. 18). Untreated sewage often contains high levels of suspended solids, pathogenic microorganisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease, and other pollutants (Amick and Burgess, 2000).

Sewer leaks can occur from tree root invasion, soil slippage, seismic activity, loss of foundation due to washout, flooding and sewage back up, among other events. High pressure systems will push leaks to the soil surface where they can be easily detected by sight or odor. Systematic inspection of sewer lines, exclusion of hazardous waste, and adherence to modern construction and maintenance specifications are necessary preventative measures for protection of groundwater sources from sewer leaks.

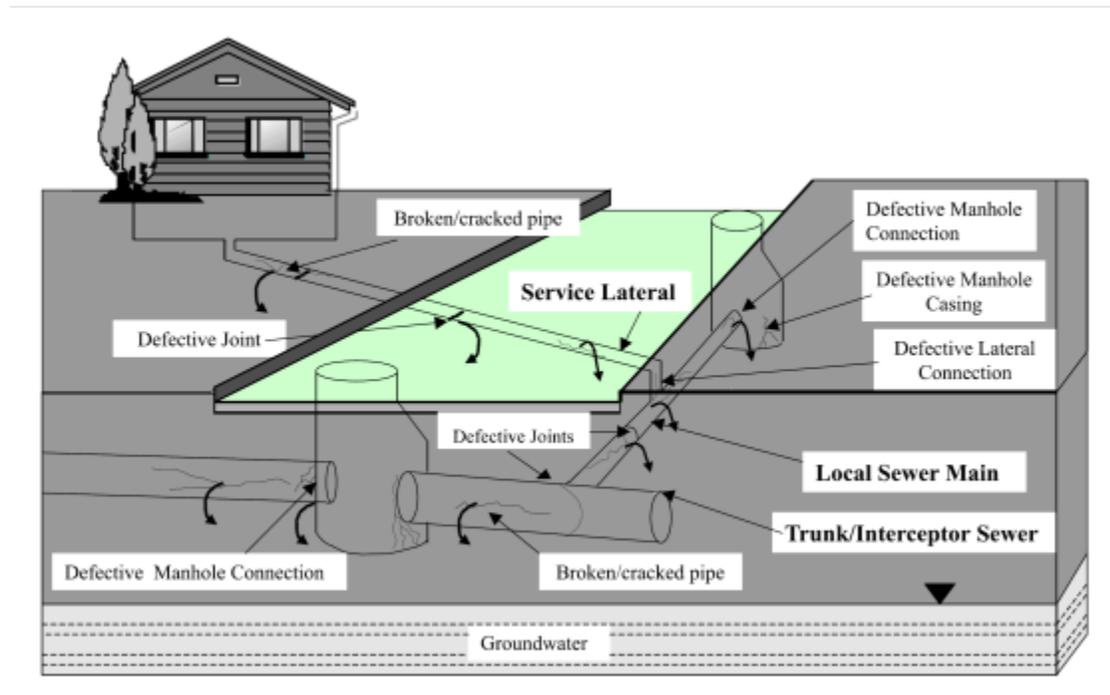


Figure 18. Sanitary sewer system components and exfiltration sources.

Septic Systems

Within the source water protection areas there are properties that rely on septic systems to dispose of their sewage. A septic system is a type of onsite wastewater system consisting of a septic tank that collects all the sewage and a leach field that disperses the liquid effluent onto a leach field for final treatment by the soil (Fig. 19).

Septic systems are the second most frequently cited source of groundwater contamination in our country. Unapproved, aging, and failing septic systems have a large impact on the quality and safety of the water supply. The failure to pump solids that accumulate in the septic tank will also eventually clog the lines and cause untreated wastewater to back up into the home, to surface on the ground, or to seep into groundwater. If managed improperly, these residential septic systems can contribute excessive nutrients, bacteria, pathogenic organisms, and chemicals to the groundwater.

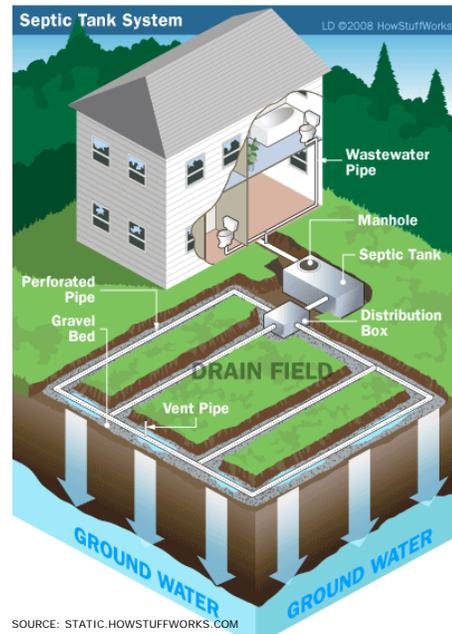


Figure 19. Septic system components.

In Boulder County, there are approximately 14,300 households that utilize septic systems to treat and dispose of human and household waste. Of the 14,300 septic systems, 1,800 have not been approved, as required by regulation; this means they have not been inspected to ensure that they meet the specific requirements necessary to achieve effective treatment of wastewater.

The number of unapproved systems currently in use in Boulder County, the aging of all septic systems, and the absence of effective monitoring and education increases the risk of these contaminants entering the waterways. Boulder County Public Health is addressing this issue with the development of a Septic Smart Program. In 2008, the Boulder County Board of Health adopted a property transfer regulation that requires all homes in the County to have an adequately operating and approved septic system at the time of sale or purchase of a home, or a written agreement that the buyer will make any needed repairs within one year of the closing (BCPH, 2010).

Waste Water and Septic System Recommendations:

1. Ensure proper maintenance of wastewater treatment plant and sewerage system to prevent contamination to groundwater from pipes leaking.
2. Develop an emergency response plan for spills and notification to the public in the event of a spill or broken pipes.
3. Educate the residents of the SWPA on the prevention of pollutants entering the sewerage system, the proper use and maintenance of their septic systems, and water conservation measures.
4. Encourage the Town to develop an inventory of non-permitted septic systems in the SWPA and encourage compliance with State regulations.
5. Encourage the County Public Health Department to educate property owners when they apply for a septic permit on the link between good septic practices and protecting groundwater.

Reservoir and Ditch Operation and Maintenance

The Town of Erie's source waters include water stored at Boulder, Gross, Erie, Thomas and Prince Reservoirs. Boulder Reservoir is managed by the City of Boulder and Gross Reservoir by Denver Water. Erie's manages their storage reservoirs (Erie, Prince, and Thomas Reservoirs). Reservoir managers conduct routine maintenance activities at drinking water reservoirs as well as monitoring water quantity and quality of these reservoirs. Maintenance activities may include removing silt and debris upstream of a dam, dam or spillway repairs, clearing shoreline vegetation, removing nuisance aquatic and shoreline vegetation, managing eutrophication, dredging to restore depth, and other in-lake work. Any of these activities may include partial or complete drawdown of the reservoir. Pipelines and ditches can develop leaks, which will also require repair and/or replacement.

If the maintenance work is conducted improperly, there can be short-term or long-term damage to wetlands, streams or ponds, floodplain, fisheries, state and federal rare and endangered species habitat, drinking water sources, and other resources.

Both human caused and natural flood events can result in the release of sediment and/or debris-laden waters from upstream water sources into the ditches and reservoirs that supply the Town of Erie. The integrity of the ditches and reservoirs may become impacted and damaged. The water quality may fall below standards and affect fisheries, wildlife and drinking water. Increased turbidity can also interfere with disinfection at water supplies downstream. Sediment management efforts to control upstream erosion and pollution in the watershed will help to improve downstream water quality and reduce the need for dredging downstream reservoirs.

Boulder Reservoir's water quality is affected by recreation allowed on and around the reservoir and wildlife that frequent the reservoir. Boulder Reservoir is open for swimming and motorized boating. Body-contact recreation activities are a potential source of pathogens, and motorized boating allows the potential for fuel spills. The nutrient loading to the reservoir makes the reservoir susceptible to algal blooms and noxious weeds. Naturally occurring dissolved manganese during summer months when temperature stratification occurs is followed by anoxic conditions in the bottom water resulting in algae bloom. Algae causes difficult-to-treat taste and odor problems. Bacteria levels in Boulder Reservoir during summer months may be linked to runoff into the Boulder Feeder Canal and wildlife that frequent the reservoir (Boulder, 2009).

The ditches/canals that convey water within the source water protection area is bordered by public and private lands that have agricultural, residential, industrial and recreational uses. Open ditches/canals can collect runoff from surrounding land uses. Herbicide applications have a potential for contaminating the source waters.

Reservoir & Ditch Operation and Maintenance Recommendations:

1. Maintain the lowest possible dissolved solids and adequate dissolved oxygen level in the reservoirs. Monitor water quality of the reservoirs routinely.
2. Encourage Open Space managers to plant grass-hay crops rather than annuals. (Grass-hay requires less maintenance (e.g., pesticides, fertilizers, water and tilling).
3. Work with county planners and developers to ensure that storm water runoff issues along the ditches are addressed early on in the planning process.

Runoff from Agriculture and Industry

There are agricultural lands within the source water protection areas adjacent to the ditches and canals that convey raw water to the Town's reservoirs. Pesticides may be used on these lands to protect crops and livestock from losses due to insects, weeds, and diseases. The major groups of pesticides include insecticides, herbicides, and fungicides. Because herbicides are the most widely used class of agricultural and urban use pesticides, they are the pesticides most frequently found in ground and surface water. Improper pesticide use has led to human illness, wildlife losses, and water quality degradation. The development of extremely sensitive detection methods has led to the discovery that commonly used management practices may lead to small amounts of pesticide that contaminate ground and surface water supplies. Since we depend on these water supplies for drinking water, pesticide users need to exercise a high level of care and sound pesticide use management to avoid contamination. Contamination from normal pesticide application is typically considered nonpoint contamination (CSU, 2010).

Herbicides are used by land managers to control noxious weeds within the source water protection area along roadsides and ditches. These chemicals can enter the water source through direct application, runoff, and wind transport. The goal is to prevent contamination of water supplies by considering the use of non-herbicide alternatives, a 50 foot buffer restriction near drinking water intakes, and using the following best management practices for application of the herbicides.

Industrial Runoff

There are many business facilities within the protection area, none of which are hazardous waste generators. The Boulder Creek Supply Canal runs through residential and industrial areas, and through a golf course. Water management is an important consideration for the operation of a golf course. The surface and groundwater quality can also be affected by the different practices used on a golf course. Poor golf course management practices can result in pesticide and fertilizer contamination of the surface and ground water. Recommend use of BMPs to prevent runoff of chemicals into the groundwater or surface water.

Adjacent to the Erie Reservoir area lies a shopping center with a large parking lot, gas station and car maintenance facility. Runoff from this area has potential to impact Erie Reservoir.

Agricultural and Industrial Recommendations:

1. Maintain a current inventory of industrial facilities within the Source Water Protection Area. Gather information about their emergency response plan for spills and stormwater management plan.
2. Work together with regulatory agencies to ensure that site visits and inspections are conducted on a routine basis and government regulations are followed and enforced when violations occur.
3. Build partnerships with agricultural landowners and industrial facilities within the protection area in order to encourage stewardship of their land and protect the quality of the surface and groundwater.

Oil and Gas Operations

Many areas in the State of Colorado are experiencing an oil and gas boom. Oil and/or gas are currently being produced in areas of Boulder County. There are 784 wells in Boulder County that were permitted by the Colorado Oil and Gas Conservation Commission (COGCC). There are seven producing oil or gas wells within the eastern portion of the source water protection area; all located on private land in the Wattenburg Field (Fig. 20). A list of the permitted producing wells is included in Table 9.

Between October 3, 1995 and October 11, 2013, COGCC conducted 269 inspections of oil/gas facilities/wells in Boulder County and sited 29 inspections as unsatisfactory in compliance with COGCC regulations (COGCC, 2013). Of the seven producing oil and/or gas wells within the Erie Source Water Protection Area, five have had field inspection violations some as a result of spills and oil saturated soil (Table 9).

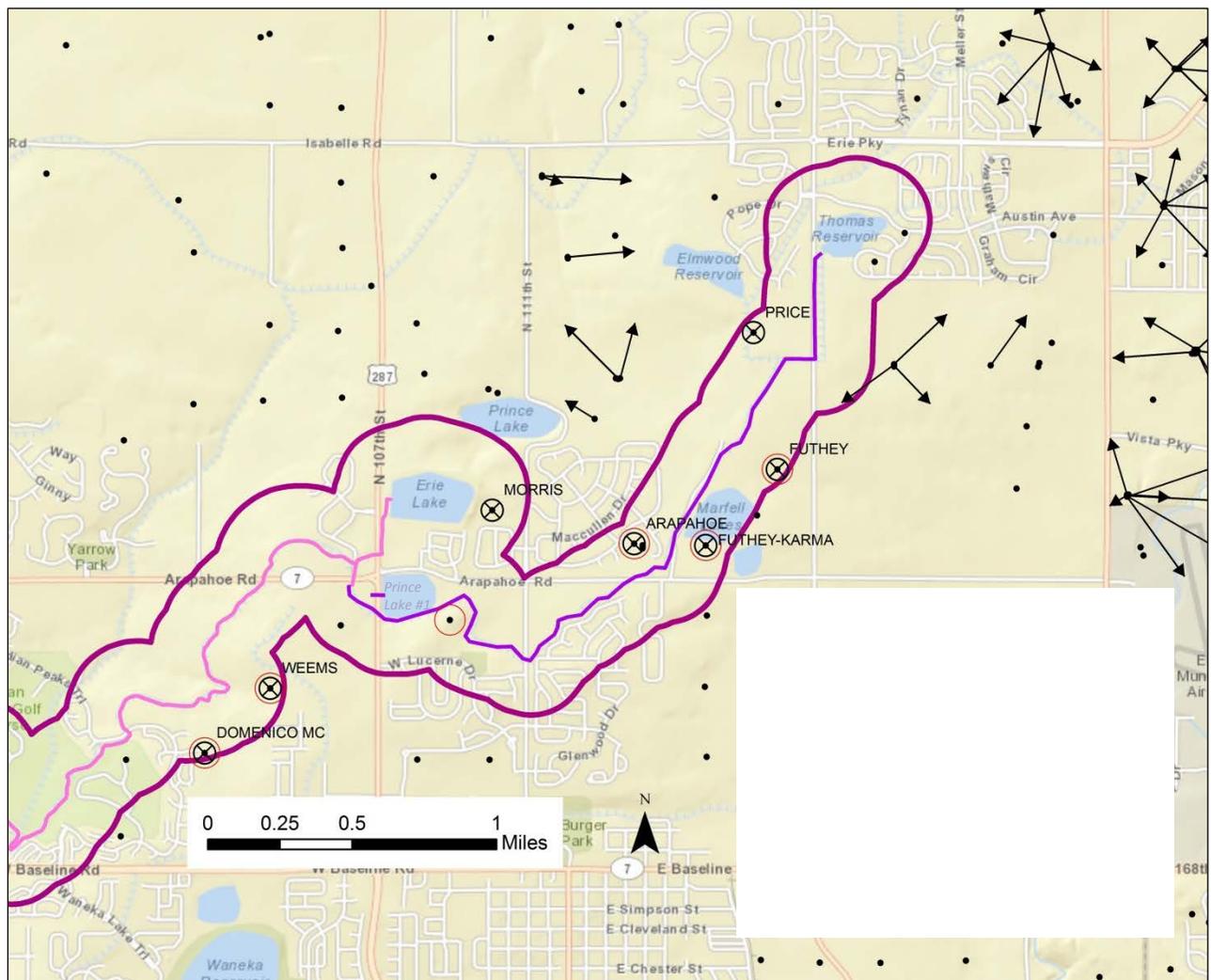


Figure 20. Map of the location of permitted producing oil and/or gas wells within the SWPA.

Table 9. Table of Producing Oil and/or Gas Wells within the SWPA

No.	Well name	Owner	Total depth (ft)	Completion date	Facility ID	Last inspection	Violation and Date(s)	Violation Cause
1	Domenico MC	Nobel Energy Inc.	8,377	1994	206965	2010	2009	Misc.
2	Weems	CDM Oil & Gas Company	8,720	1984	206670	2010	2009	oil leak & saturated soil
3	Futhey-Karma	Smith Oil Properties Inc.	8,237	1994	206959	2012* unsatisfactory	2009	Oil saturated soil
4	Arapahoe	Nobel Energy Inc.	8,665	1983	206640	2010	7/2007, 10/2007, 1997	oil leak & saturated soil
5	Morris	Nobel Energy Inc.	8,650	1991	206674	2007	None	
6	Futhey	Smith Oil Properties Inc.	8,050	1981	206551	2012	2009	oil leak & saturated soil
7	Price	Nobel Energy Inc.	8,567	1984	206639	2007	None	

* Unsatisfactory inspection in 2012 as a result of a produced water spill.

The oil and gas industry in Colorado is regulated by the Colorado Oil and Gas Conservation Commission . The COGCC seeks to serve, solicit participation from, and maintain working relationships with all those having an interest in Colorado's oil and gas natural resources. The COGCC website, www.cogcc.state.co.us, provides updated information on the location and status of oil and gas operations throughout Colorado. The public can also access the COGCC website to find out information regarding violations and complaints of well permit holders.

Currently there are no oil and gas drilling permits issued by COGCC within the Source Water Protection Area. Although the potential for oil and gas development in the protection area is low, there are adjacent areas near the protection area on private land that may be developed depending on the future economic and resource needs.

Water Quality Concerns

Many different activities related to oil and gas development may result in risks to drinking water supplies. Improperly constructed and/or maintained oil or gas wells can act as migration pathways for oil, gas, formation water, drilling fluid, or “fracking” fluid to contaminate groundwater. Hydraulic fracturing or fracking is the process of drilling and injecting fluid (water, sand, and chemical additives) into the ground at a high pressure in order to fracture shale rock to release petroleum, natural gas or other substances for extraction. A wide variety of chemical additives are used in hydraulic fracturing fluids. They include: dilute acids, biocides, breakers, corrosion inhibitors, crosslinkers, friction reducers, gels, potassium chloride, oxygen scavengers, pH adjusting agents, scale inhibitors and surfactants. These chemical additives typically might make up just 1/2 to 2 percent of the fluid. The remaining 98 to 99 1/2 percent of the fluid is water. Proppants such as sand, aluminum shot or ceramic beads are frequently injected to hold fractures open after the pressure treatment is completed (King, 2014). Fracking fluid can also migrate along natural geologic fractures or fault and migrate into groundwater aquifers, depending on how much separation there is between the producing formation and the aquifer. Well drilling and production may result in spills or releases of drilling fluids, fracking fluids, produced water, hydrocarbons, or other chemicals transported within the protection areas. It is important for local

communities to stay informed of any potential oil and gas development on surrounding lands and become involved in the public process to encourage Best Management Practices (BMPs) to protect the groundwater aquifers.

In February of 2012, the Erie Board of Trustees approved the purchase of multi-parameter source water monitoring equipment as part of efforts to address the public's concern that chemicals used in the hydraulic fracturing process could potentially come in contact with Erie's drinking water. The Water Treatment staff has sampled and recorded data at the Lynn R. Morgan Water Treatment Facility, Erie Reservoir, Prince Reservoir, Thomas Reservoir, South Boulder Canyon Ditch and the Canyon Creek drainage basin which is close to the Red Hawk Elementary. To date all test results from all sites have come back negative. Specifically, chemicals related to oil and gas operations have not been detected at any of these testing sites. The Town will continue source water monitoring on a regular basis (Erie, 2012).

Oil and Gas Development Recommendations:

1. Stay informed on oil and gas development within and around the Source Water Protection Area by using the State's COGCC website, attending Oil and Gas Regional Forums, contacting County Planners and Public Land managers, and meeting with industry representatives.

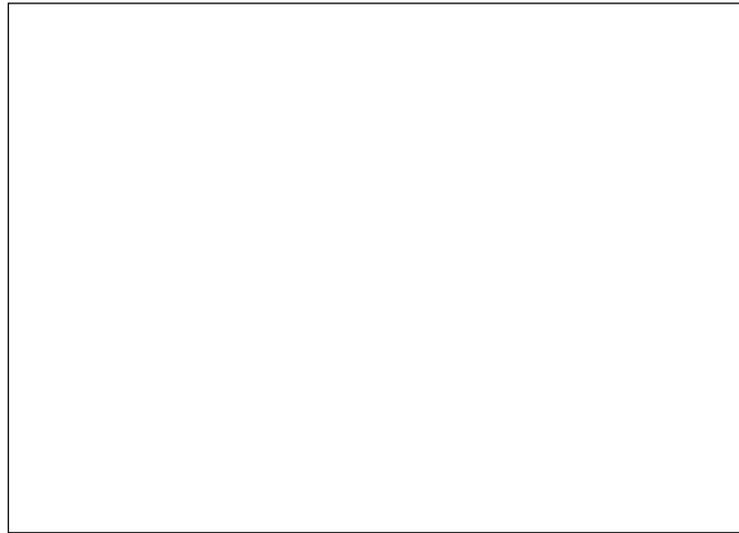
2. Ensure industry protects Erie's water sources by implementing these activities:

- Conduct geologic and hydrologic mapping and risk analysis to identify underground fractures and faults that may provide pathways for gas and fluids to groundwater.
- Identify existing wellbores in or near the protection area and determine the integrity of the casings, cement, plugs.
- Provide the Town disclosure of all chemical planned for a fracking operation at least 30 days beforehand, and a report on chemicals actually used within 30 days following fracking.
- Comply with and implement all actions in the approved Storm Water Management Plan to prevent or minimize impacts from storm water to the source waters.
- Adequately treat wastewater before discharge; no discharge to publicly owned treatment works; and no road or ground spreading of wastewater.
- Use routine and preventative maintenance to help prevent spills and immediately notify the Town of any spills.
- Provide adequate buffer zones from the Town's source waters.

3. Continue the source water monitoring of the Town's water sources on a routine basis.

Residential Practices

The Town of Erie's Source Water Protection Area includes rural residential dwellings. Common household practices may cause pollutants to runoff residential property and enter the surface or ground water as indicated in the picture below (Fig. 21). Prevention of ground water contamination requires education, public involvement, and people motivated to help in the effort. Educating the community and decision makers is one of the challenges and cornerstone of this protection plan. Public education will help people understand the potential threats to their drinking water source and motivate them to participate as responsible citizens to protect their valued resources.



SOURCE: COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Figure 21. Common household practices may cause pollutants to runoff residential property and enter the surface or ground water.

Recommendations for Residents:

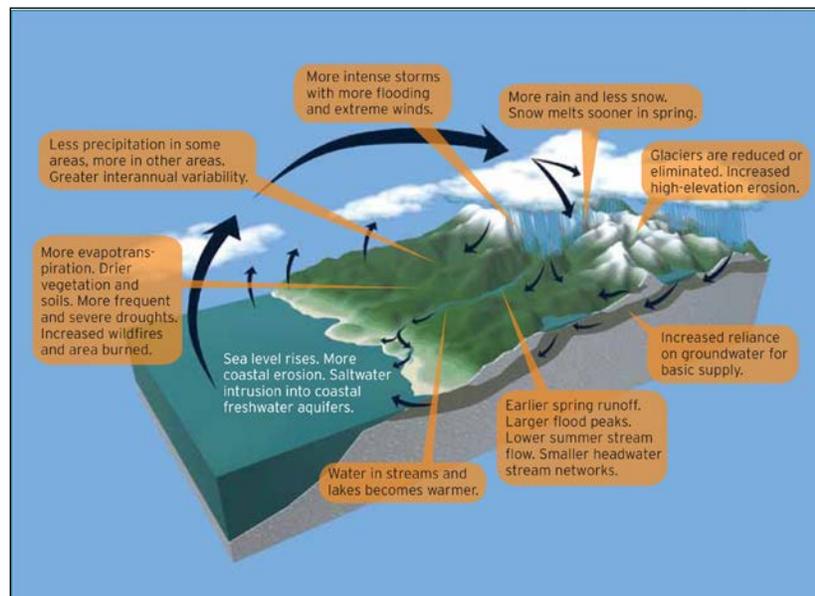
1. Properly dispose of chemicals and motor oil – Never pour on the ground, down the drain, or toilet. Participate in household hazardous waste collection events.
2. Use fertilizers, herbicides and pesticides properly - Apply chemicals according to label instructions and avoid runoff. Do not exceed recommended application rates.
3. Properly dispose of drugs and personal care products – Pour medications into a sealable plastic bag and add kitty litter, sawdust, coffee grounds, or glue and deposit in the trash along with unused personal care products. Participate in medication drop off campaigns.
4. Dispose of pet waste properly – Flush pet waste down the toilet, put into the garbage, or bury under 8 inches of soil. Pick up your pet waste when walking your dog.
5. Use water wisely – Check for plumbing leaks, use water-saving showerheads and faucets, water laws morning or evenings, and direct runoff onto vegetative buffers.
6. Purchase safer alternative products – Choose natural alternatives or Green Products.

Climate Change

Climate Change in Colorado and its implications for water resources is an important consideration for water utilities. The Colorado Water Conservation Board's report, "Climate Change in Colorado - A Synthesis to Support Water Resources Management and Adaptation" completed by the Western Water Assessment identifies the following causes and issues occurring in a global context. The accumulation of greenhouse gases in the atmosphere is very likely the cause of most of the increase in global average temperature. Elevated temperatures combined with changes in precipitation and stream flow will impact the ecosystems and socioeconomics of Colorado. Climate projections and the impacts to Colorado's water resources include:

- **Temperature increases:** In Colorado, temperatures have increased by approximately 2⁰F between 1977 and 2006. Climate models project Colorado will warm 2.5⁰F by 2025, and 4⁰F by 2050.
- **Precipitation and snowpack:** A projected seasonal shift in precipitation may result in more mid-winter precipitation throughout the state and, in some areas, a decrease in late spring and summer precipitation. Lower elevation snowpack (below 8200 ft.) is likely to decline, with modest declines for high elevation snowpack.
- **Runoff:** Warmer spring temperatures may lead to earlier snowmelt, runoff, and peak natural stream flows. There may be a reduction in late summer stream flows.
- **Evaporation rates:** Warmer temperatures may increase the evaporation rates in our rivers, streams and reservoirs, perhaps making less water available for beneficial use. There is a potential for decreased annual stream flow volume.

Secondary changes within the watershed may occur as a result of the climate projections. These include earlier drying of soil moisture and riparian habitats; increase in fire risk and insect outbreaks; elevational shifts in plant and animal communities; a reduction or loss of alpine tundra; and potential for more extreme weather events (e.g. droughts, floods, more intense summer storms) (CWCB, 2008).



SOURCE: USFS, 2010

Figure 22. Examples of potential direct and indirect effects of climate change on the hydrologic cycle.

Future Management Challenges for Water Supply Entities

Climate change may affect Colorado's use and distribution of water resulting in substantial water supply shortages for Colorado communities. Although the total annual water supply available to municipal users is not projected to change significantly under global warming, seasonal availability will likely shift (Clarke, et al, 2008)

A key management challenge for water suppliers is anticipating the potential long-term shifts in annual precipitation and water availability and planning for the flexibility to address those shifts. Many water providers are adapting to these potential future challenges by:

- Understanding the vulnerability of their water supply;
- Acquiring additional water rights;
- Building additional storage;
- Implementing ongoing water conservation measures;
- Involving the community in discussions about various options related to adaptation to changes;
- Preparing plans for rapid response to severe wildfire, flood, and drought;
- Developing source water protection plans.

Wildland Fires

Although this protection plan only addresses a portion of the Town of Erie’s drinking water source, the water that flows into the primary SWPA originate on national forest land within the Rocky Mountain Region. Erie shares these water resources with other major Front Range water providers including Aurora, Boulder, Colorado Springs, Denver Water, Fort Collins, Northern Colorado and Westminster. These water providers draw their water supplies from 10 watersheds in the mountains that collectively provide more than two-thirds of Colorado’s population with drinking water. These public lands are managed by the U.S. Department of Agriculture’s Forest Service and Bureau of Land Management.

The forests in these public lands are overly dense with fuel build-up from a century of fire suppression and thus more vulnerable to high-intensity fires than it was historically. Past management practices and fire exclusion have allowed over-dense stand structures to develop on the forested landscape across Colorado’s Front Range. Since 1996, several large crown fires have devastated natural resources, homes and municipal water supplies in Colorado.

Since the probability of large fires in the region is high, the reduction of fuels is becoming a major concern for decision makers and forest planners. Fuel reduction including timber harvesting can reduce wildfire intensity, thereby reducing erosion potential and sediment pollution. The potential of a watershed to deliver sediments following wildfire depends on forest and soil conditions, the physical configuration of the watershed, and the sequence and magnitude of rain fall on the burned area. High-severity fires can cause changes in watershed conditions that are capable of dramatically altering runoff and erosion processes in watersheds. Water and sediment yields may increase as more of the forest floor is affected by fire (JWA, 2010).

Wildland Fire Recommendations:

1. Keep informed on forest management issues within the watersheds.
2. Participate in forest planning activities and develop partnerships with land managers at the local and regional level.
3. Support efforts to improve watershed conditions (i.e. fuels reduction activities, wildfire/watershed assessments, and post-fire/flood restoration).

SOURCE WATER PROTECTION MEASURES

Best Management Practices

The Steering Committee reviewed and discussed several possible best management practices that could be implemented within the Source Water Protection Area to help reduce the potential risks of contamination to the community's source water. The Steering Committee established a "common sense" approach in identifying and selecting the most feasible source water management activities to implement locally. The focus was on selecting those protection measures that are most likely to work for the community. The best management practices were obtained from multiple sources including: Environmental Protection Agency, Colorado Department of Public Health and Environment, Natural Resources Conservation Service, and other source water protection plans.

The Steering Committee recommends the best management practices listed in Table 10, "Source Water Protection Best Management Practices" be considered for implementation by:

- Town of Erie
- Boulder County (Government, Land Use, Transportation, Public Health, Open Space)
- Citizens of the Source Water Protection Area
- U.S. Forest Service Boulder Ranger District
- City of Boulder

Evaluating Effectiveness of Best Management Practices

The Town of Erie is committed to developing a tracking and reporting system to gauge the effectiveness of the various source water best management practices that have been implemented. The purpose of tracking and reporting the effectiveness of the source water best management practices is to update water system managers, consumers, and other interested entities on whether or not the intended outcomes of the various source water best management practices are being achieved, and if not, what adjustments to the Source Water Protection Plan will be taken in order to achieve the intended outcomes. It is further recommended that this Plan be reviewed at a frequency of once every three years or if circumstances change resulting in the development of new water sources and source water protection areas, or if new risks are identified.

The Town of Erie is committed to a mutually beneficial partnership with the Colorado Department of Public Health and Environment in making future refinements to their source water assessment and to revise the Source Water Protection Plan accordingly based on any major refinements.

Table 10. Source Water Protection Best Management Practices

Issue	Management Approach	Implementer
<p><i>Impacts from Transportation: Roadways</i></p>	<ol style="list-style-type: none"> 1. Educate the public on how to respond to a hazardous spill. 2. Work with local emergency response teams to ensure that any spill within the protection areas can be effectively contained. 3. Provide the Colorado Department of Transportation and Boulder County Transportation Department with a map of the protection area. 4. Encourage the use of proper road BMPs to prevent the transport of road materials into the source waters. Recommendations for application of road deicing materials include: <ul style="list-style-type: none"> • applying minimum amounts necessary; • apply only when removal of snow and ice cannot be accomplished by blading, plowing or sanding; • minimize use of chemicals in and adjacent to streams, aquifers, and flood prone areas; and • avoid dumping or storing chemically treated or sanded snow where it can melt and infiltrate groundwater or flow into surface waters. 	<p>Steering Committee</p> <p>Steering Committee</p> <p>Town of Erie</p> <p>Steering Committee CDOT Boulder County</p>
<p><i>Above, Underground and Leaking Storage Tanks</i></p>	<ol style="list-style-type: none"> 1. Maintain a current inventory and information on the status of regulated above and underground storage tanks in and near the source water protection area using the Colorado Storage Tank Information (COSTIS) website at http://costis.cdle.state.co.us. Storage tank information from this site includes: facility, tank, owner, and events. 2. Identify Leaking Underground Storage Tank (LUST) events that have occurred within the SWPA using the State’s database COSTIS. Contact the Colorado Department of Labor and Employment Division of Oil and Public Safety (303-318-8000) for information regarding LUST events within the SWPA. Contact the Public Records Center for a file review at (303) 318-8521 or (303) 318-8522. Monitor progress on any remedial action conducted for the known contamination sites. 3. Develop an inventory of residential or farm unregulated storage tanks within the source water protection area. 4. Provide information to tank owners on how they can implement storage tank practices to prevent petroleum products from leaking onto the ground. 	<p>Steering Committee</p> <p>Steering Committee</p> <p>Steering Committee</p> <p>Steering Committee</p>

Table 10. Source Water Protection Best Management Practices

Issue	Management Approach	Implementer
<i>Wastewater and Septic Systems</i>	<ol style="list-style-type: none"> 1. Ensure proper maintenance of wastewater treatment plant and sewerage system to prevent contamination to groundwater from pipes leaking. 2. Develop an emergency response plan for spills and notification to the public in the event of a spill or broken pipes. 3. Educate the residents of the SWPA on the prevention of pollutants entering the sewerage system, the proper use and maintenance of their septic systems, and water conservation measures. 4. Encourage the Town to develop an inventory of non-permitted septic systems in the SWPA and encourage compliance with State regulations. 5. Encourage the County Public Health Department to educate property owners when they apply for a septic permit on the link between good septic practices and protecting groundwater. 	<p>Erie Public Works Department</p> <p>Erie Public Works Department</p> <p>Steering Committee</p> <p>Steering Committee</p> <p>Steering Committee Boulder County Public Health</p>
<i>Reservoir and Ditch Operation and Maintenance</i>	<ol style="list-style-type: none"> 1. Maintain the lowest possible dissolved solids and adequate dissolved oxygen level in the reservoirs. Monitor water quality of the reservoirs routinely. 2. Encourage Open Space managers to plant grass-hay crops rather than annuals. (Grass-hay requires less maintenance (e.g., pesticides, fertilizers, water and tilling). 3. Work with county planners and developers to ensure that storm water runoff issues along the ditches are addressed early on in the planning process. 	<p>Erie Public Works Department</p> <p>Steering Committee</p> <p>Steering Committee</p>
<i>Nonpoint Source Pollution: Agricultural and Industrial</i>	<ol style="list-style-type: none"> 1. Maintain a current inventory of industrial facilities within the Source Water Protection Area. Gather information about their emergency response plan for spills and stormwater management plan. 2. Work together with regulatory agencies to ensure that site visits and inspections are conducted on a routine basis and government regulations are followed and enforced when violations occur. 3. Build partnerships with agricultural landowners and industrial facilities within the protection area in order to encourage stewardship of their land and protect the quality of the surface and groundwater. 	<p>Steering Committee</p> <p>Steering Committee</p> <p>Steering Committee</p>

Table 10. Source Water Protection Best Management Practices

Issue	Management Approach	Implementer
<i>Oil and Gas</i>	<ol style="list-style-type: none"> 1. Stay informed on oil and gas development within and around the Source Water Protection Area by using the State's COGCC website, attending Oil and Gas Regional Forums, contacting County Planners and Public Land managers, and meeting with industry representatives. 2. Ensure industry protects Erie's water sources by implementing these activities: <ul style="list-style-type: none"> • Conduct geologic and hydrologic mapping and risk analysis to identify underground fractures and faults that may provide pathways for gas and fluids to groundwater. • Identify existing wellbores in or near the protection area and determine the integrity of the casings, cement, plugs. • Provide the Town disclosure of all chemical planned for a fracking operation at least 30 days beforehand, and a report on chemicals actually used within 30 days following fracking. • Comply with and implement all actions in the approved Storm Water Management Plan to prevent or minimize impacts from storm water to the source waters. • Adequately treat wastewater before discharge; no discharge to publicly owned treatment works; and no road or ground spreading of wastewater. • Use routine and preventative maintenance to help prevent spills and immediately notify the Town of any spills. • Provide adequate buffer zones from the Town's source waters. 3. Continue the source water monitoring of the Town's water sources on a routine basis. 	<p>Steering Committee</p> <p>Town of Erie</p> <p>Erie Public Works Department</p>
<i>Climate Change</i>	<ol style="list-style-type: none"> 1. Understanding the vulnerability of your water supply. 2. Acquiring additional water rights and water storage. 3. Implementing ongoing water conservation measures. 4. Involving the community in discussions about various options related to adaptation to changes. 5. Preparing plans for rapid response to severe wildfire, flood and drought. 	<p>Erie Public Works Department</p>

Table 10. Source Water Protection Best Management Practices

Issue	Management Approach	Implementer
<i>Residential Practices</i>	<ol style="list-style-type: none"> 1. Properly dispose of chemicals and motor oil – Never pour on the ground, down the drain, or toilet. Participate in household hazardous waste collection events. 2. Use fertilizers, herbicides and pesticides properly - Apply chemicals according to label instructions and avoid runoff. Do not exceed recommended application rates. 3. Properly dispose of drugs and personal care products – Pour medications into a sealable plastic bag and add kitty litter, sawdust, coffee grounds, or glue and deposit in the trash along with unused personal care products. Participate in medication drop off campaigns. 4. Dispose of pet waste properly – Flush pet waste down the toilet, put into the garbage, or bury under 8 inches of soil. Pick up your pet waste when walking your dog. 5. Use water wisely – Check for plumbing leaks, use water-saving showerheads and faucets, water laws morning or evenings, and direct runoff onto vegetative buffers. 6. Purchase safer alternative products – Choose natural alternatives or Green Products. 	Steering Committee Town of Erie
<i>Wildland Fires</i>	<ol style="list-style-type: none"> 1. Keep informed on forest management issues within the watersheds. 2. Participate in forest planning activities and develop partnerships with land managers at the local and regional level. 3. Support efforts to improve watershed conditions (i.e. fuels reduction activities, wildfire/watershed assessments, and post-fire/flood restoration). 	Steering Committee
<i>Land Use Planning</i>	<ol style="list-style-type: none"> 1. Provide Boulder County with a copy of the Source Water Protection Plan and GIS mapping information of the SWP area and encourage them to overlay this area on their land use maps. 2. Request to be notified by Boulder County officials of land use hearings or meetings regarding land within the SWPA and will have the opportunity to participate in the process. 3. Provide information to the Town of Erie information on protecting the drinking water source for the Town with an ordinance that develops a watershed district. 	Erie Public Works Department Erie Public Works Department Colorado Rural Water Association
<i>Municipal Utilities</i>	<ol style="list-style-type: none"> 1. Inspect and protect source water intakes; be knowledgeable of the emergency response plan, and provide Information concerning the SWPP and implementation measures in the annual Consumer Confidence Report (CCR). 2. Conduct water quality monitoring according to a monitoring plan. 	Erie Public Works Department

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Appendices

Emergency Response Plan*

Source Water Assessment Report and Appendices

Contact List of Stakeholders Invited to Participate

Citizen's Guides

Contaminants Health Concerns

Miscellaneous Maps and Reports

Funding Source for Source Water Protection

Additional Resources

Glossary

*Notice: This public document will only include information that is not deemed sensitive to the safety and operation of the individual community's water plan operation. Appendices marked with a * are only included in the Public Utility's report or kept on file at their office. All other documents are included on the CD located in the back pocket of this report. All documents can be reprinted.*