

Forest View Acres WD Source Water Protection Plan

El Paso County, Colorado
January 2014



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For the Community Water Provider:
Forest View Acres WD, PWSID #121250

Cover photo: Monument Creek in Limbaugh Canyon (Timothy Sobik, FVAWD)

This Source Water Protection Plan for the Forest View Acres WD was developed using the Colorado Rural Water Association's Source Water Protection Plan Template.

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ACRONYMS

BLM	Bureau of Land Management
BMP	Best Management Practice
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
COGCC	Colorado Oil and Gas Conservation Commission
CRWA	Colorado Rural Water Association
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
GIS	Geographic Information System
LGD	Local Governmental Designee
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NSO	No Surface Occupancy
PSOC	Potential Source of Contamination
SDWA	Safe Drinking Water Act
SWAA	Source Water Assessment Area
SWAP	Source Water Assessment and Protection
SWPA	Source Water Protection Area
SWPP	Source Water Protection Plan
TOT	Time of Travel
USDA	United States Department of Agriculture
USFS	United States Forest Service

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.

Forest View Acres WD 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 water operators, government, and agency representatives during the months of November 2012, to April 2013, at the Monument Sanitation District Office in Monument, Colorado. During the development of this Plan, a Steering Committee was formed to develop and implement this Source Water Protection Plan. Colorado Rural Water Association was instrumental in this effort by providing technical assistance in the development of this Source Water Protection Plan.

Forest View Acres WD obtains its drinking water from one groundwater well in the Arapahoe Aquifer and one surface water intakes on the Upper Monument Creek of Limbaugh Canyon. They also have a second well in the Dawson Aquifer that is currently inactive, but was included in this Plan. There are two distinct Source Water Protection Areas for each of these water sources. The Groundwater Source Water Protection Area lies just west of State Highway 105 and includes a portion of Forest View Acres WD's service boundaries. The Surface Water Source Water Protection Area lies west of Forest View Acres WD's service boundaries primarily in National Forest Systems lands in the Pikes Peak Ranger District. These Source Water Protection Areas are the areas that Forest View Acres WD 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. Through this process, it was determined that the highest priority potential contaminant sources and/or issues of concern are: Wildfires, Septic Systems, and Palmer Lake Sanitation District's main sewer line. Other noted water quality threats include: Recreation, Livestock Grazing, Potential Natural Gas Drilling, Residential Practices, Roads, Storage Tanks, Natural Gas Lines, and Timber Harvesting.

The Steering Committee developed several 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.

The following list highlights best management practices which pertain to the highest priority potential contaminant sources and other issues of concern.

- Work with El Paso County Health Department to use public outreach (i.e. presentations at HOA meetings, outreach packet, postings on website, etc.) to educate specific septic systems owners about how to maintain and check their systems.
- Share a copy of the SWPP with El Paso County Sheriff's Department, US Forest Service, and Tri Lakes Fire Protection District as it pertains to fire bans and restrictions. Encourage collaboration with Sherriff's office in reviewing fire prevention measures
- Develop fire response plans for the Source Water Protection Area.
- Request Full Fire Suppression designation on Source Water Protection Areas.
- Meet with Palmer Lake Sanitation District to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for Forest View Acres WD

The Steering Committee recognizes that the usefulness of this Source Water Protection Plan lies in its implementation and will begin to execute these best management practices upon completion of this Plan.

This Plan is a living document that is meant to be updated to address any changes that will inevitably come. The Steering Committee will review this Plan at a frequency of once every three to five 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

Forest View Acres WD operates a community water supply system that supplies drinking water to approximately 300 stand-alone residential properties located within El Paso County, Colorado. Forest View Acres WD obtains their drinking water from one well in the Arapahoe Aquifer and one surface water intake in the Upper Monument Creek watershed. They also have a second well in the Dawson Aquifer that is currently inactive, but was included in this Plan. Forest View Acres WD 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

Table 1: Primary Contact Information for Forest View Acres WD

PWSID	PWS Name	Name	Title	Address	Phone	Website
121250	Forest View Acres WD	Joel Meggers	District Manager	c/o Community Resource Services 7995 E. Prentice Ave. Suite 103E Greenwood Village, CO 80111	303-381-4960	www.fvawd.com

Purpose of the Source Water Protection Plan

The Source Water Protection Plan (SWPP) is a tool for Forest View Acres WD 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 surface water and/or groundwater 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.

¹ The information contained in this Plan is limited to that available from public records and Forest View Acres WD 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.

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.

Protection Plan Development

The Colorado Rural Water Association’s (CRWA) Source Water Protection Specialist, Kimberly Mihelich, 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 a series of public planning meetings and individual meetings. Information discussed at the meetings helped Forest View Acres WD develop an understanding of the issues affecting source water protection for the community. The Steering Committee then made recommendations for management approaches to be incorporated into the Source Water Protection Plan. 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
November 29, 2012	First Planning Meeting - Presentation on the process of developing a Source Water Protection Plan for the Forest View Acres WD. Review of the State’s Source Water Assessment for Forest View Acres WD.
January 15, 2013	Second Planning Meeting - Review delineation of Source Water Protection Area. Inventory of potential sources of contamination
March 5, 2013	Third Planning Meeting – Discussion of potential sources of contamination and other issues of concern within the Source Water Protection Area. Presentations from: CDOT representatives about State Highway maintenance practices;, Palmer Lake Sanitation District representatives about sewer line maintenance and inspection practices; El Paso County Health Department about septic system ; and US Forest Service about US Forest land use practices
April 30, 2013	Fourth Planning Meeting - Prioritization of potential sources of contamination and other issues of concern. Develop best management practices.

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.

Forest View Acres WD’s source water protection planning process attracted interest and participation from 25 stakeholders including local citizens and landowners, water operators, local and state governments, and agency representatives. During the months of November, 2012 through April, 2013, four stakeholder meetings were held in Monument, Colorado at the Monument Sanitation District Office to encourage local stakeholder participation in the planning process. Stakeholders were notified of meetings via letters, emails and phone calls. Input from these participants was greatly appreciated.

Steering Committee

During the development of this Plan, a volunteer Steering Committee, comprised of Forest View Acres WD’s Board of Directors and area stakeholders, was formed from the stakeholder group to implement this Source Water Protection Plan. Specifically, the Steering Committee’s role in the source water protection planning process was to advise Forest View Acres WD in the identification and prioritization of potential contaminant sources as well as management approaches that can be voluntarily implemented to reduce the risks of potential contamination of the untreated source water. All members attended at least one Steering Committee meeting and contributed to planning efforts from their areas of experience and expertise. Their representation provided diversity and led to a thorough Source Water Protection Plan. Forest View Acres WD and the Colorado Rural Water Association are very appreciative of the participation and expert input from the following participants.

Table 3: Stakeholders and Steering Committee Members

Stakeholder	Title	Affiliation	Steering Committee Member
Anne Bevis	Board of Directors	Forest View Acres WD	X
Eckehart Zimmermann	Board of Directors	Forest View Acres WD	X
Karla Thompson	Board of Directors	Forest View Acres WD	X
Timothy Sobik	Board of Directors	Forest View Acres WD	X
Joel Meggers	District Manager	Forest View Acres WD	X
Gabrielle Begeman	Operator in Responsible	ORC, LLC	X

	Charge		
Brenda Smith	Water Operator	ORC, LLC	
Tom Schubert	Water Operator	ORC, LLC	
Mike McCarthy	Environmental Health Division Supervisor	El Paso County Public Health	
John Vincent	Fire Marshall	Tri-Lakes Metro Fire Protection District	
Jeff Hovermale	Lands, Minerals and Special Uses	US Forest Service	
Gary Heller	Highway Maintenance Supervisor	Colorado Dept. of Transportation	
Andy Stecklein	Hydraulics Engineer	Colorado Dept. of Transportation	
Becky Orcutt	District Manager	Palmer Lake Sanitation District	
Alan Miller	Maintenance Supervisor	Palmer Lake Sanitation District	
John Cressman		R. R. R., Inc.	
Leroy Schmidt	Homeowner	Forest View Acres WD	
Tood Tillinghast	Homeowner	Forest View Acres WD	
Hans Zimmermann	Homeowner	Forest View Acres WD	
Anna Zimmermann	Homeowner	Forest View Acres WD	
John Anderson	Homeowner	Forest View Acres WD	
R. Gilbert Moore	Homeowner	Forest View Acres WD	
PK Robinson	Homeowner	Forest View Acres WD	
Andrew Carl	Homeowner	Forest View Acres WD	
Diane Anderson	Homeowner	Forest View Acres WD	
Kimberly Mihelich	Source Water Specialist	Colorado Rural Water Association	

Development and Implementation Grant

Forest View Acres WD 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. Forest View Acres WD was approved for this grant in June 2012, and it expires on June 15, 2014. Forest View Acres WD intends on using the grant funds to implement management approaches that are identified in this Plan.

WATER SUPPLY SETTING

Location and Description

Forest View Acres WD is a Colorado Special District located in unincorporated El Paso County, Colorado just outside the Town of Monument. It is a government entity governed by its Board of Directors (Forest View Acres Water District, 2013). The service boundaries cover an area of approximately 1.08 square miles. Primary access to the area is through Colorado State Highway 105 and Mount Herman Road. Forest View Acres WD serves approximately 299 taps. Future projections by Forest View Acres WD estimate that growth will increase over the next ten years. There are approximately 350 residential lots within the district, so there is potential for more houses to be developed.

The majority of Forest View Acres WD's source waters lie within both public and private lands. The private land includes unincorporated areas of El Paso County. The public lands include US Forest System Lands, managed by the Pikes Peak Ranger District. Land use on private land consists of agricultural and rural residential development.

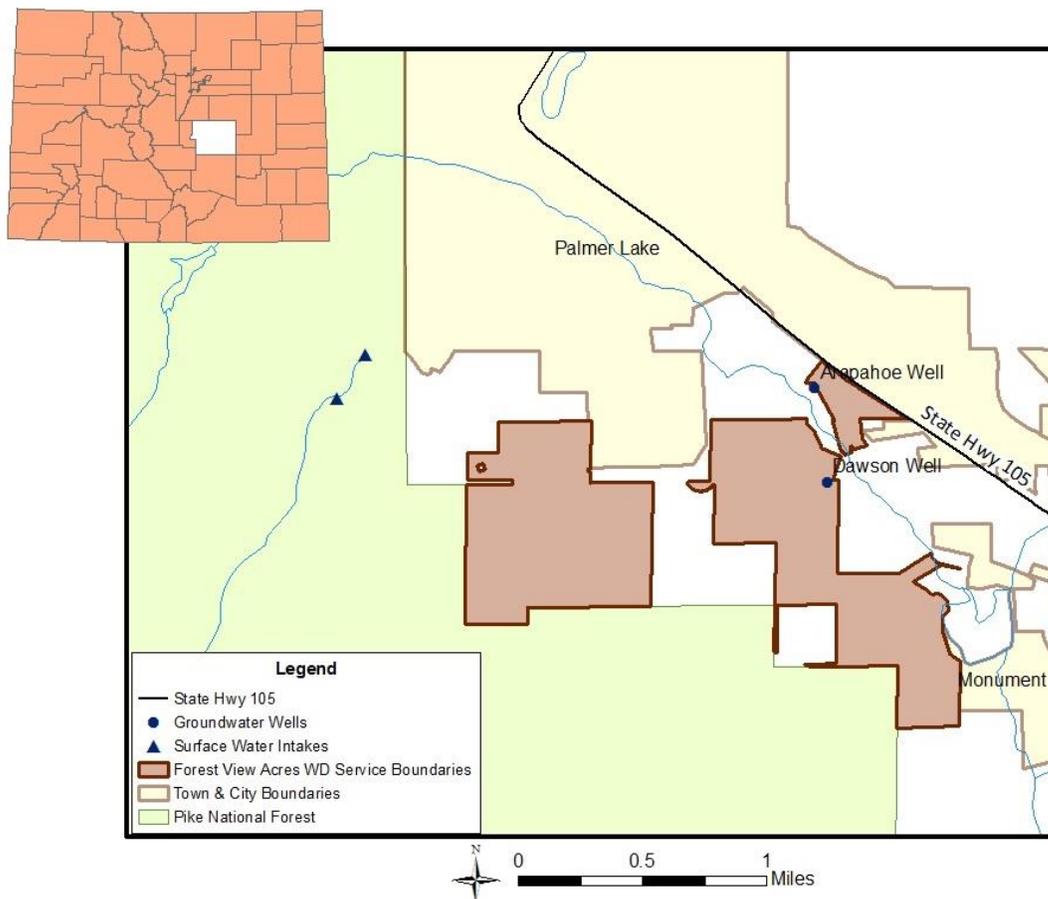


Figure 1: Location of Forest View Acres WD and its drinking water intakes in El Paso County, CO

Drinking Water Supply Operations

Water Supply and Infrastructure

Forest View Acres WD owns water rights to the Denver Basin aquifers (i.e., ground water) as well as water from Monument Creek (i.e., surface water). All water provided to FVAWD’s customers is from one or both of these resources. FVAWD currently obtains water from two sources: a well that obtains water from the Arapaho aquifer in the Denver Basin and a surface water intake that pulls water from Monument Creek in Limbaugh Canyon. An additional well drilled into the Dawson aquifer, a lower quality water source, is inactive.

The district owns two treatment plants, one that processes ground water and a second that processes surface water. These two plants are the Arapaho Treatment Plant (ATP), which is used for ground water processing, and the Surface Water Treatment Plant (SWTP).

At the ATP, the raw water has aesthetically objectionable amounts of iron and manganese, so it is pre-treated with sodium hypochlorite (chlorine) and potassium permanganate solutions (injected via a metering pump) and then processed through three manganese greensand pressure filters, entering the top of the filters and coming out of the bottom. After that, a VFD-controlled booster pump is used to move the treated water up the hill through a 4" transmission line and to the booster station (which then pumps the treated water further uphill).

The surface water treatment plant processes the surface water which is high-quality with little pollution or foreign substance, although it sometimes has a higher particulate content (turbidity) than the plant can readily process. After water enters the SWTP, its turbidity is measured, chemical filter aid (polymer) is injected to aid in coagulation and removal of impurities, and sodium hypochlorite is injected to disinfect the raw water. Water passes through three primary filters (garnet), and then through two secondary or polishing filters (finer grade garnet). Turbidity is measured again as the processed water exits each of the secondary filters. Once treatment is completed, booster pumps controlled by VFD pump the finished water from the plant into a line that carries it to the distribution system and the storage tank.

Table 4: Groundwater Supply Information

Water System Facility Name	Water System Facility Number	Total Depth of Well (ft)	Depth of Plain Casing (ft)	Depth of Perforation (ft)	Yield (gpm)	Year Drilled	Permit Number	Annual Permitted Amount (acre feet)
Dawson Well	CO012125 0-004	690	0-100	100-655	45	2005	40213-F	240
Arapahoe Well	CO012125 0-005	1764	0-1244	1244-1700	80	1991	39865-F	

Table 5: Surface Water Supply Information

Water System Facility Name	Water System Facility Number	Surface Water Source	Appropriation Amount (af/yr)
Limbaugh Creek	CO0121250-002	Upper Monument Creek of Limbaugh Canyon	81

Physical Characteristics

The area around Forest View Acres WD is generally a transition between the Great Plains and the South Rocky Mountains. Elevations range from approximately 7000 feet above sea level near Forest View Acres WD’s wells, to between 7800 and 9300 feet above sea level in the Limbaugh Canyon. Characteristic native vegetation ranges from grasslands and shrubs to ponderosa pine and Rocky Mountain Douglas fir forests (USDA Natural Resource Conservation Service, 2007). The climate around Forest View Acres WD and its source waters is semi-arid. The precipitation generally is low to moderate with an estimated average annual precipitation ranging between 19 and 20.50 inches.

Hydrologic Setting

Arapahoe and Dawson Wells

In addition to its surface water intake, Forest View Acres WD also obtains drinking water from their Arapahoe Well which is drilled into the Arapahoe Aquifer. They also have a second well, the Dawson Well, which is currently inactive. The Dawson Well is drilled into the Dawson Aquifer. The Dawson and Arapahoe Aquifers are part of the Denver Basin Aquifer system. As illustrated in Figures 2 and 3, the Denver Basin is comprised of layered geologic formations. Within this, four aquifers are statutory defined: Dawson, Denver, Arapahoe, and Laramie-Fox Hills. FVAWD has water rights to the Dawson (the highest) and Arapahoe (the second lowest) aquifers (Forest View Acres Water District, 2012). The Arapahoe Formation consists of a 400- to 700-foot-thick sequence of interbedded conglomerate, sandstone, siltstone, and shale. It contains the Arapahoe aquifer, which extends over an area of about 4,300 square miles or about two-thirds the area of the Denver Basin aquifer system (USGS, 1995).

The Front Range constitutes the recharge area for the Denver Basin. Mount Herman and Raspberry Mountain are in this recharge area and are immediately adjacent to FVAWD. The district recognizes that to the Denver Basin is an extremely slow process; however,, geologic conditions in the area are complex. For example, Upper Monument Creek (as fed from Limbaugh Canyon) runs underground and then reemerges with likely, but not quantified interactions with the Denver Basin near District wells.

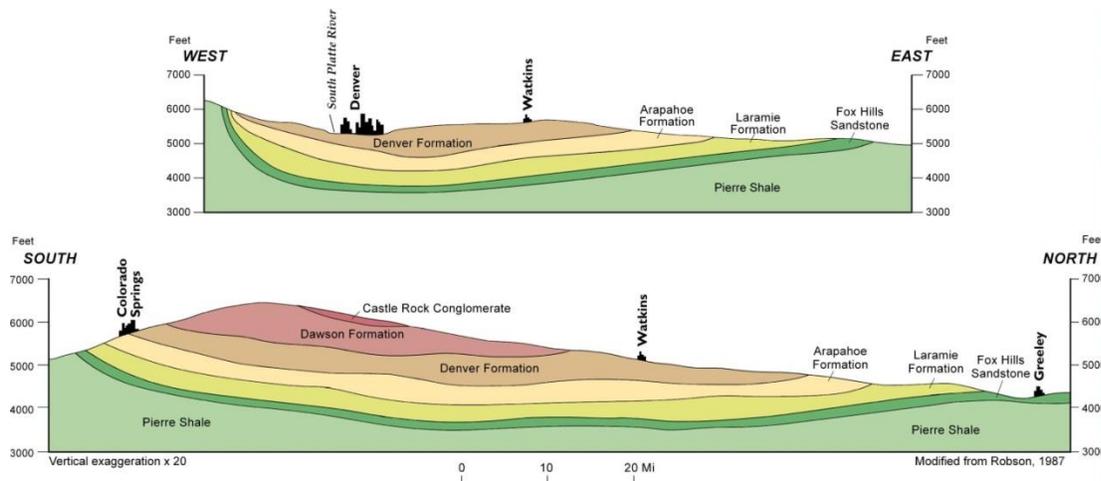


Figure 2: General geologic cross section through the Denver Basin

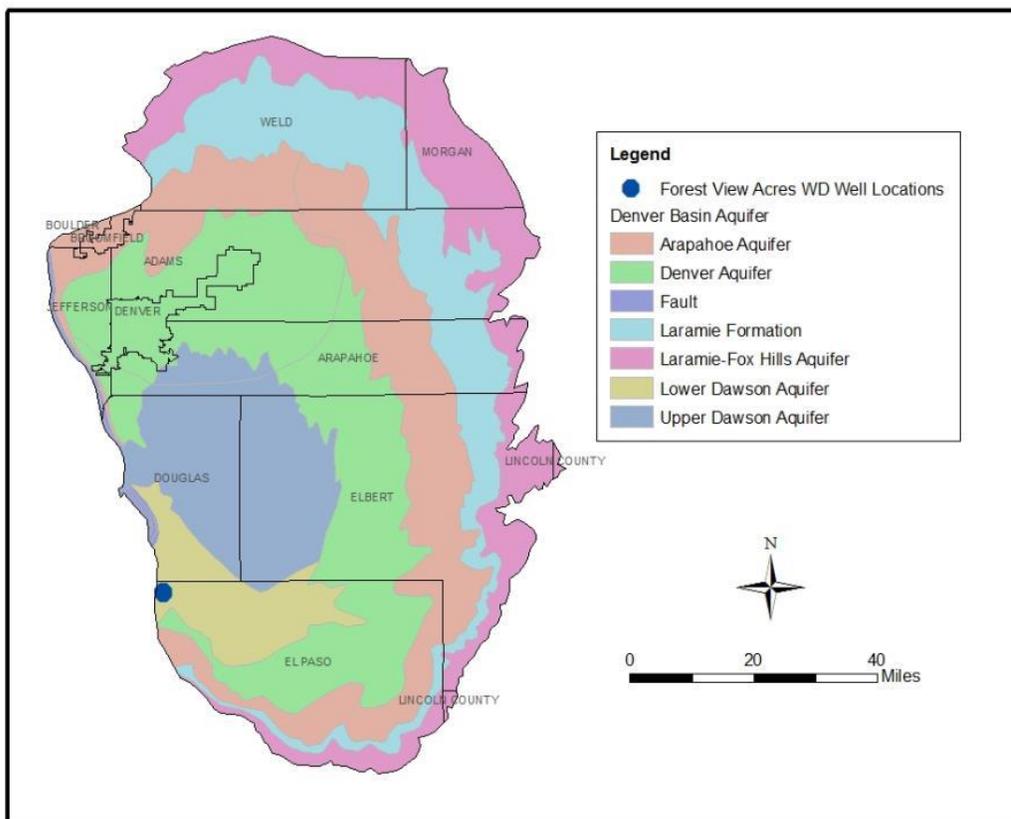


Figure 3: General location of Forest View Acres WD's wells as they relate to the Denver Basin Aquifer System

Groundwater Protection

Groundwater protection is managed as two separate issues of quantity and quality in Colorado. Quantity issues are managed through the Colorado Division of Water Resources/Office of the

State Engineer. The Division of Water Resources administers and enforces all surface and groundwater rights throughout the State of Colorado, issues water well permits, approves construction and repair of dams, and enforces interstate compacts. The Division of Water Resources is also the agency responsible for implementing and enforcing the statutes of the Groundwater Management Act passed by the Legislature as well as implementing applicable rules and policies adopted by the Colorado Groundwater Commission and the State Board of Examiners of Water Well Construction and Pump Installation Contractors.

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. Water quality is protected by the Colorado Water Quality Control Act through a number of state agencies. The Colorado Department of Public Health and Environment is the lead agency. The Colorado Water Quality Control Commission is responsible for promulgating groundwater and surface water classifications and standards. Colorado's Water Quality Control Commission has established basic standards for groundwater regulations that apply a framework for groundwater classifications and water quality standards for all waters within their jurisdictions. Standards are designed to protect the associated classified uses of water or a designated use. The groundwater classifications are applied to groundwaters within a specified area based upon use, quality and other information as indicated in the CDPHE Water Quality Control Commission's Regulation No. 41, "The Basic Standards for Ground Water." Statewide standards have been adopted for organic chemicals and radionuclides. Significant areas of the state have been classified for site specific use classification and the remainder of the state's groundwater is protected by interim narrative standards.

Classifications and standards are implemented by seven separate state agencies through their rules and regulations for activities that they regulate. Regulated activities include mining and reclamation, oil and gas production, petroleum storage tanks, agriculture, Superfund sites, hazardous waste generation and disposal, solid waste disposal, industrial and domestic wastewater discharges, well construction and pump installation, and water transfers.

Forest View Acres WD has not petitioned the Water Quality Control Commission for the establishment of a classified ground water area and associated site-specific ground water quality standards for its ground water intakes.

Colorado has proactive groundwater protection programs that include monitoring groundwater for agricultural chemicals and pesticides, issuing groundwater discharge permits; voluntary cleanup program, permitting for large hog farm operations, and educational programs. In addition, water wells must have a permit and meet minimum standards of construction and pump installation.

Upper Monument Creek of Limbaugh Canyon

The Upper Monument Creek of Limbaugh Canyon is the principal source of drinking water for Forest View Acres WD. The Upper Monument Creek watershed drains approximately 43 square

miles (27,550 acres) and is part of the Monument Creek watershed within the Fountain Creek basin (Hydrologic Unit Code (HUC) 11020003), tributary to the Arkansas River. The headwaters of the Upper Monument Creek of Limbaugh Canyon receive flow from numerous other small tributaries and springs along with seasonal surface water from snowmelt and rain storm events. The Upper Monument Creek watershed is roughly bounded by Mount Herman Road (to the south), Rampart Range Road (to the west), and Forest Service Road 322 (to the north). Mount Herman, Raspberry Mountain, and Chautauqua Mountain are also part of this watershed (to the north and east). The Arkansas River Basin is part of Colorado Water Division Two with the office of the Division Engineer in Pueblo.

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. 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.

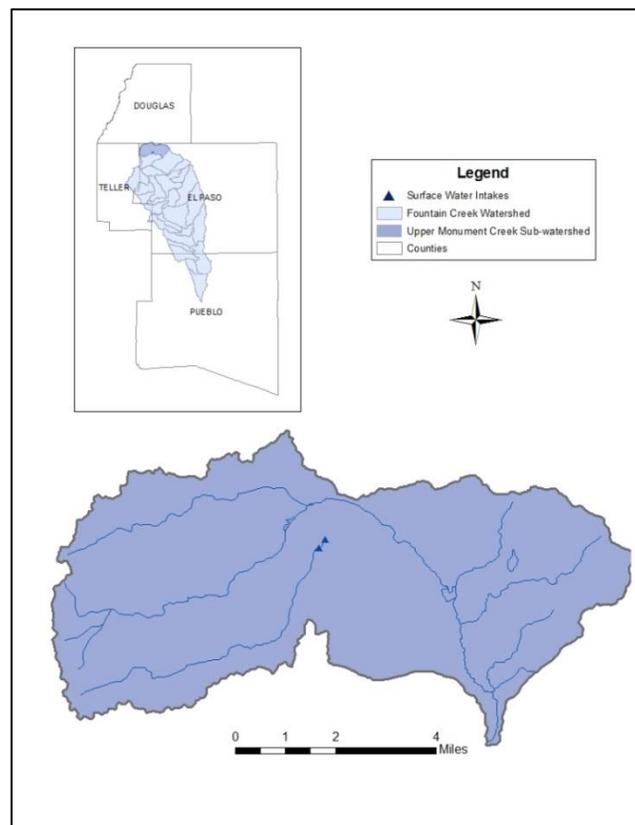


Figure 4: Upper Monument Creek sub-watershed within the Fountain Creek Basin

Water Supply Demand Analysis

Forest View Acres WD serves an estimated 299 connections in the service area annually. The water system currently has the capacity to produce 288,000 gallons per day. Current estimates by the water system indicate that the average daily demand is approximately 75,000 gallons per day, and that the average peak daily demand is approximately 90,000 gallons per day. Using these estimates, the water system has a surplus average daily demand capacity of 213,000 gallons per day and a surplus average peak daily demand capacity of 198,000 gallons per day. Drought and other limiting factors highly influence the actual capacity of the water system, particularly the surface water source.

Using the surplus estimates above, Forest View Acres WD has evaluated its ability to meet the average daily demand and the average peak daily demand of its customers in the event the water supply from one or more of its water sources becomes disabled for an extended period of time due to potential contamination. The evaluation indicated that Forest View Acres WD may not be able to meet the average daily demand of its customers if as few as one of the water sources became disabled for an extended period of time. The evaluation also indicated that Forest View Acres WD may not be able to meet the average peak daily demand of its customers if as few as one of the water sources became disabled for an extended period of time. The ability of Forest View Acres WD to meet either of these demands for an extended period of time is also affected by the amount of treated water the water system has in storage at the time a water source(s) becomes disabled.

Forest View Acres WD recognizes that potential contamination of its ground water source(s) could potentially result in having to treat the ground water and/or abandon the water source if treatment proves to be ineffective or too costly. To understand the potential financial costs associated with such an accident, Forest View Acres WD evaluated what it might cost to replace one of its water sources (i.e., replacement of the intake structure and the associated infrastructure) if this occurs. The evaluation did not attempt to estimate treatment costs, which can be variable depending on the type of contaminant(s) that need(s) to be treated. The evaluation indicated that it could cost greater than \$600,000 in today's dollars to replace one of its water sources.

The potential financial and water supply risks related to the long-term disablement of one or more of the community's water sources are a concern to the Steering Committee. As a result, the Steering Committee believes the development and implementation of a source water protection plan for Forest View Acres WD and their community can help to reduce the risks posed by potential contamination of its water source(s). Additionally, Forest View Acres WD has developed an emergency response plan or contingency plan to coordinate rapid and effective response to any emergency incident that threatens or disrupts the community water supply.

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. The two phases include the Assessment Phase and the Protection Phase as depicted in the upper and lower portions of Figure 5, respectively.



Figure 5: Source Water Assessment and Protection Phases

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 Forest View Acres WD's source water comes from, what contaminant sources potentially threaten the water sources, and how susceptible each water source is to potential contamination. The susceptibility of an individual water source is analyzed by examining the properties of its physical setting and potential contaminant source threats. The resulting analysis calculations are used to report an estimate of how susceptible each water source is to potential contamination. A Source Water Assessment Report was provided to each public water system in Colorado in 2004 that outlines the results of this Assessment Phase.

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. As depicted in the lower portion of Figure 5, 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.

The water system and the community recognize that the Safe Drinking Water Act grants no statutory authority to the Colorado Department of Public Health and Environment or to any

other state or federal agency to force the adoption or implementation of source water protection measures. This authority rests solely with local communities and local governments. The source water protection phase is an ongoing process as indicated in Figure 5. The evolution of the SWAP program is to incorporate any new assessment information provided by the public water supply systems and update the protection plan accordingly.

SOURCE WATER PROTECTION PLAN DEVELOPMENT

Source Water Assessment Report Review

Forest View Acres WD has reviewed the Source Water Assessment Report along with the Steering Committee. These Assessment results were used as a starting point to guide the development of appropriate management approaches to protect the source waters of Forest View Acres WD from potential contamination. A copy of the Source Water Assessment Report for Forest View Acres WD can be obtained by contacting Forest View Acres WD or by downloading a copy from the CDPHE's SWAP program website located at: <http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596793639>.

Defining the Source Water Protection Area

A source water protection area (SWPA) is the surface and subsurface areas from which contaminants are reasonably likely to reach a water source. The purpose of delineating a source water protection area is to determine the recharge area that supplies water to a public water source. Delineation is the process used to identify and map the area around a pumping well that supplies water to the well or spring, or to identify and map the drainage basin that supplies water to a surface water intake. The size and shape of the area depends on the characteristics of the aquifer and the well, or the watershed. The source water assessment areas that were delineated as part of Forest View Acres WD's Source Water Assessment Report provides the basis for understanding where the community's source water and potential contaminant threats originate, and 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.

After carefully reviewing their Source Water Assessment Report and the CDPHE's delineation of the Source Water Assessment Areas for each of Forest View Acres WD's sources, the Steering Committee chose to modify it before accepting it as their Source Water Protection Area for this Source Water Protection Plan. Their Assessment Report contained delineated Source Water Assessment Areas for both wells and the Upper Inlet surface water intake. The group decided to include the Lower Inlet in their Surface Water SWPA and therefore expanded their Surface Water SWPA to include the creek downstream of their Upper Inlet up to the Lower Inlet. They also decided to expand the Groundwater SWPA for the Arapahoe Well to include a section of CO Highway 105. Because the Dawson Well is inactive, the group decided to keep the existing delineation around it and reevaluate if and when the well becomes active.

Groundwater SWPAs:

1. **Zone 1** is defined as a 500 foot radius around the wellhead.
2. **Zone 2** is defined by calculating the distance from the wellhead through which a parcel of water travels over a two year time period or 2 year time of travel (TOT).
3. **Zone 3** is defined by calculating the distance from the wellhead through which a parcel of water travels over a five year time period or 5 year time of travel (TOT).

The groundwater SWPA is made up of two distinct areas for both the Arapahoe and Dawson Wells and lies west of State Highway 105. The SWPA is comprised of unincorporated areas of El Paso County and Forest View Acres WD boundaries. The groundwater Source Water Protection Areas is illustrated in the following map.

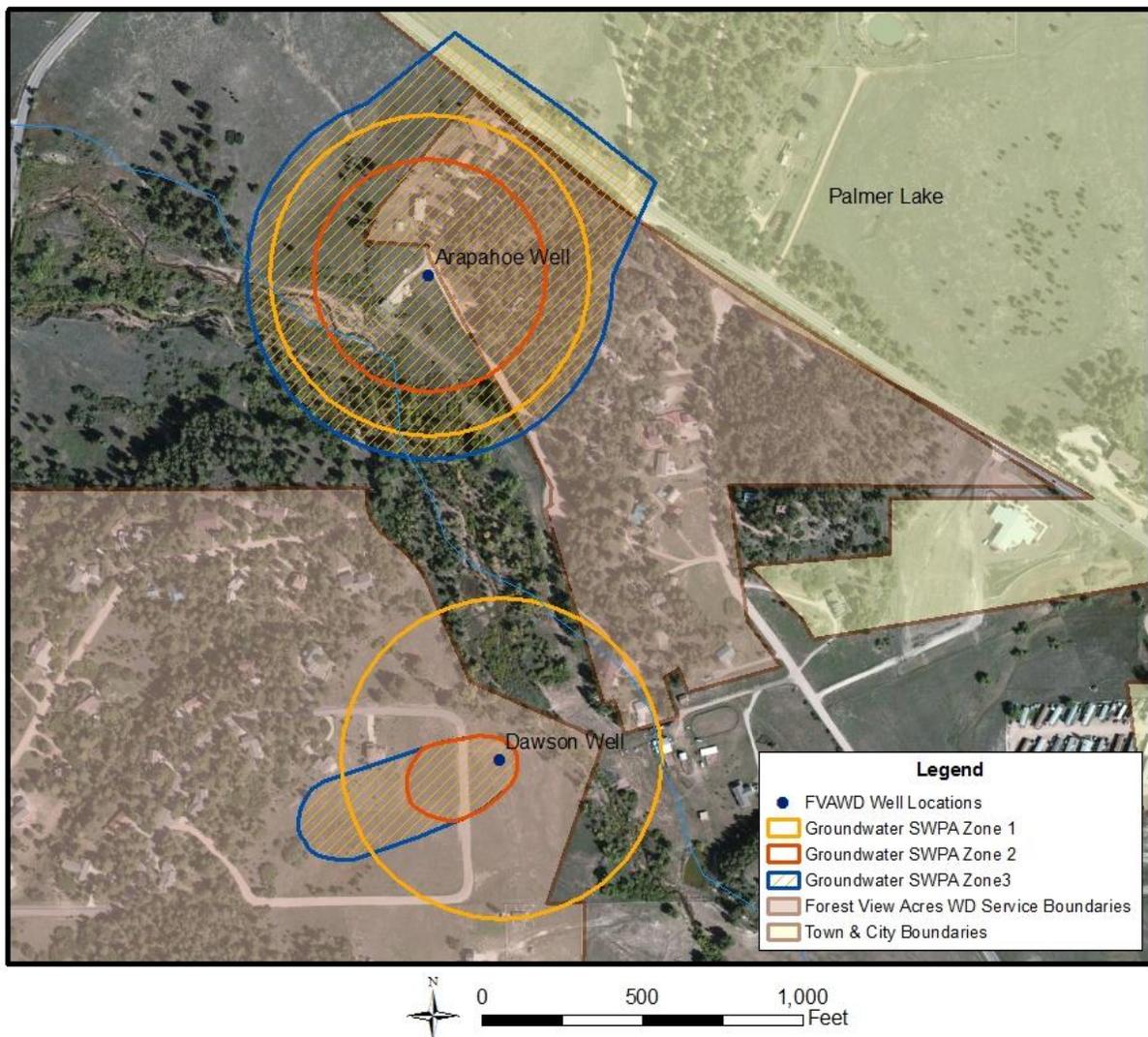


Figure 6: Forest View Acres WD's Groundwater SWPAs

Surface Water SWPA:

1. **Zone 1** is defined as a 1,000 foot wide band on either side of the stream and is the main focus area for preventing contamination.
2. **Zone 2** extends 1/4 mile beyond each side of the boundary of zone 1 (2,320 feet from the stream).
3. **Zone 3** is made up by the remainder of the SWAA area not covered by Zones 1 or 2.

The Surface Water SWPA is located in the southwestern corner of the Upper Monument Creek sub-watershed. Over ninety percent of the SWPA for Forest View Acres WD's surface water intake is located within US Forest System lands managed by the Pike Ranger District. The surface water Source Water Protection Area is illustrated in the following maps.

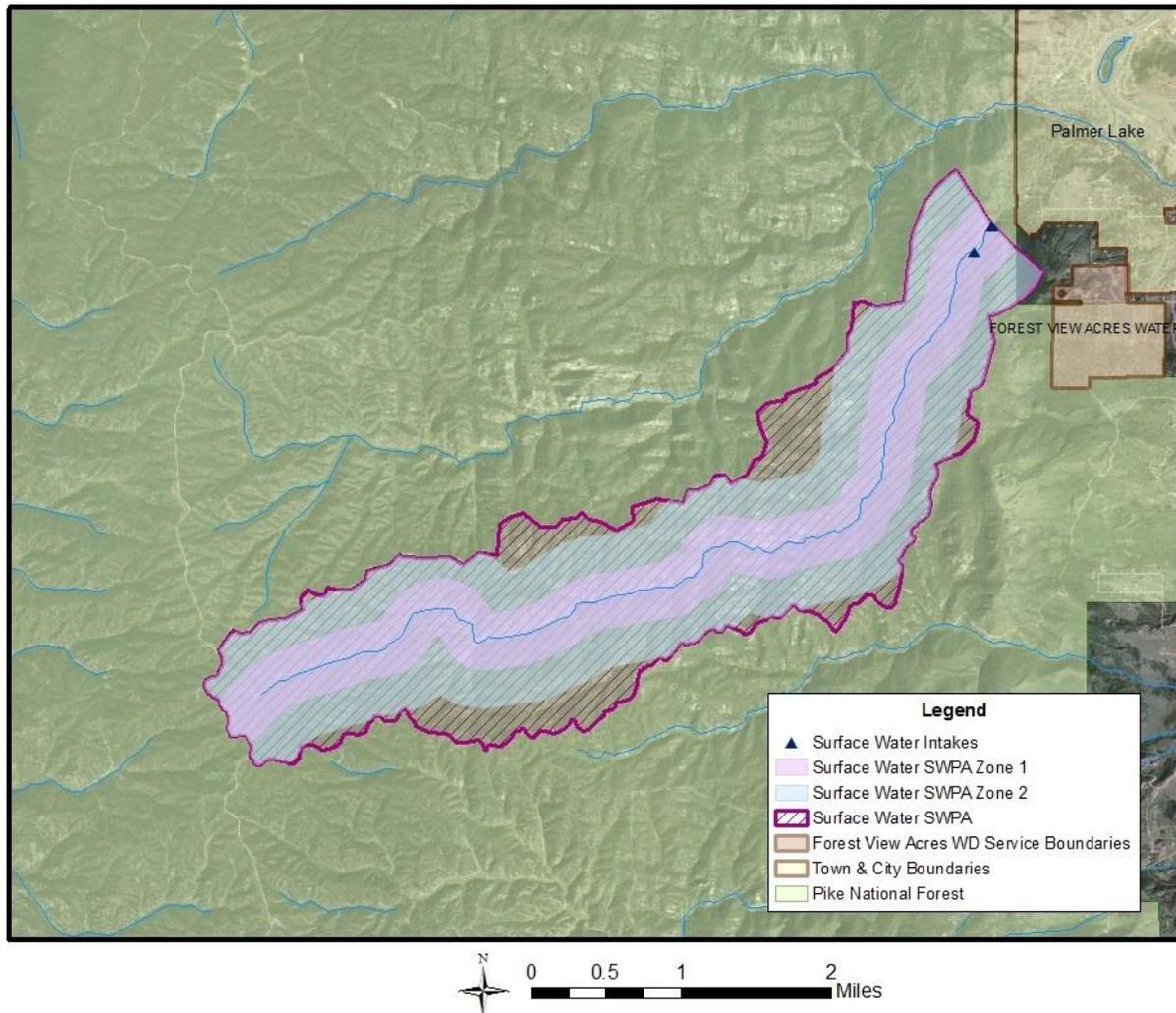


Figure 7: Forest View Acres WD Surface Water SWPA

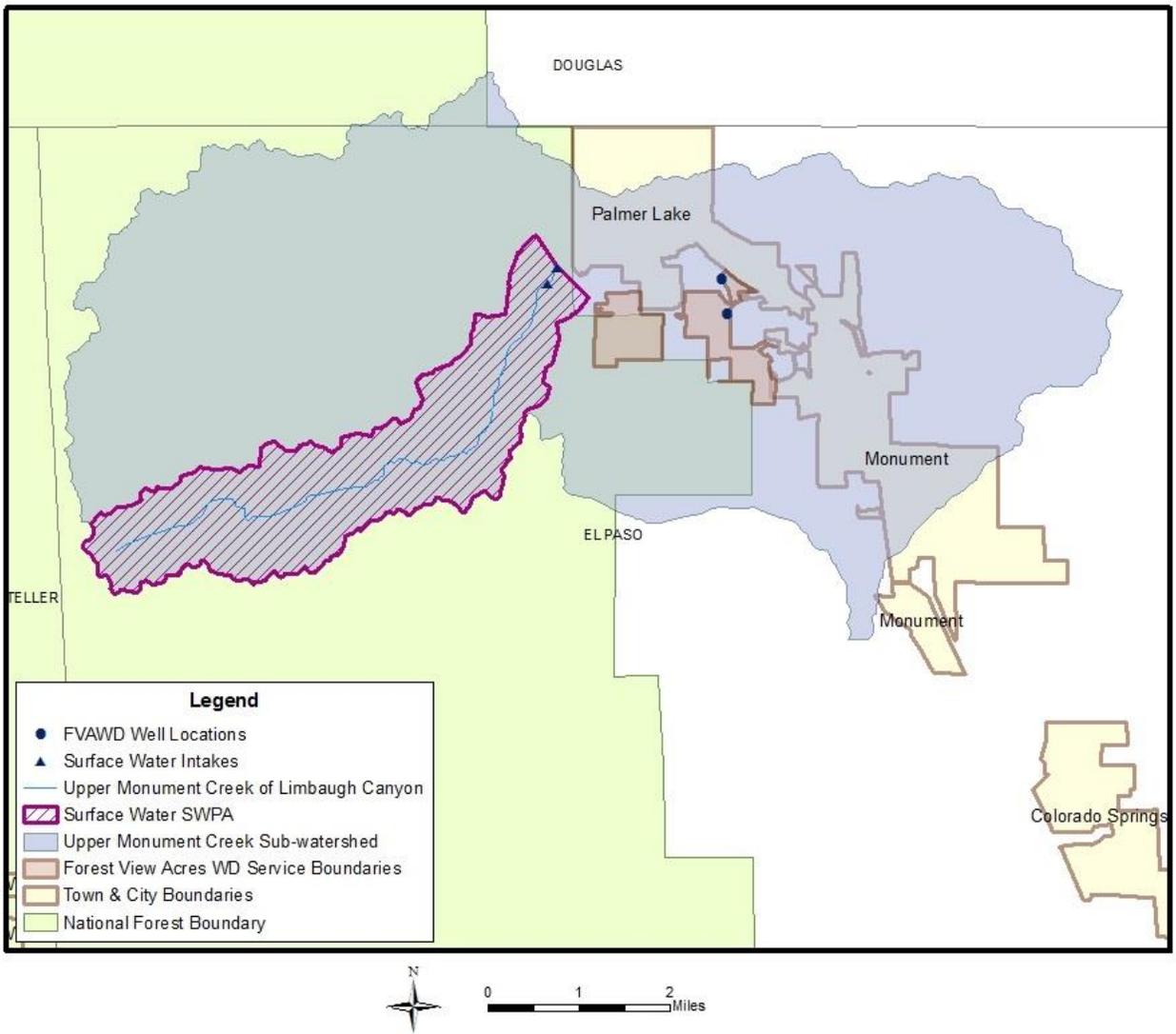


Figure 8: Surface Water SWPA in relation to the Upper Monument Creek Sub-watershed

Potential Contaminant Source Inventory and Other Issues of Concern

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 (GWPC, 2008).

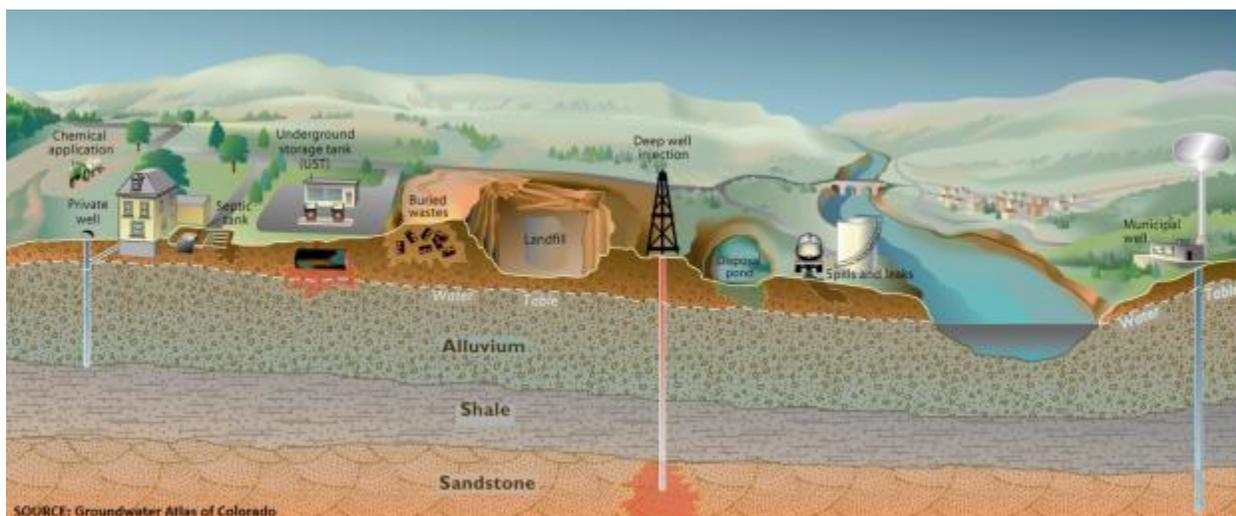


Figure 9: Schematic drawing of the potential source of contamination to surface and groundwater

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. Discrete² contaminant sources were inventoried using selected state and federal regulatory databases including: mining and reclamation, oil and gas production, above and underground petroleum tanks, Superfund sites, hazardous waste generators, solid waste disposal, industrial and domestic wastewater dischargers, and water well permits. Dispersed contaminant 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 Geographic Information System (GIS).

The State's contaminant source inventory consisted of draft maps, along with a summary of the discrete and dispersed contaminant sources inventoried within the source water assessment area. Forest View Acres WD was asked, by CDPHE, to review the inventory information, field-

² The WQCD's assessment process used the terms "discrete" and "dispersed" potential sources of contamination. A discrete source is a facility that can be mapped as a point, while a dispersed source covers a broader area such as a type of land use (crop land, forest, residential, etc.).

verify selected information about existing and new contaminant sources, and provide feedback on the accuracy of the inventory. Through this Source Water Protection Plan, Forest View Acres WD is reporting its findings to the CDPHE.

After much consideration, discussion, and input from local stakeholders, Forest View Acres WD and the Steering Committee have developed a more accurate and current inventory of contaminant sources and other issues of concern located within each Source Water Protection Area. Upon completion of this contaminant source inventory, Forest View Acres WD has decided to adopt it in place of the original contaminant source inventory provided by the CDPHE.

Contaminant Source Inventory and Other Issues of Concern (in no particular order):

Groundwater

- State and County Roads
- Storage Tanks
- Residential Practices
- Septic Systems
- Livestock Grazing on Private Lands
- Natural Gas Line
- Potential Resource Development

Surface Water

- County/Forest Roads
- Recreation
- Wildfires
- Timber Harvesting
- Potential Resource Development

Priority Strategy

After developing a contaminant source inventory and list of issues of concern that is more accurate, complete, and current, the Steering Committee began the task of prioritizing this inventory for the implementation of the Best Management Practices outlined in this Source Water Protection Plan (see Table 9).

The strategy which the Town and Steering Committee used is based on four criteria.

1. **Migration Potential or Proximity to the Water Source** - The migration potential generally has the greatest influence on whether a contaminant source could provide contaminants in amounts sufficient for the source water to become contaminated at concentrations that may pose a health concern to consumers of the water. Shorter migration paths and times of travel mean less chance for dilution or degradation of the contaminant before it reaches water sources. The proximity of a potential contaminant source of contamination to Forest View Acres WD's water sources was considered relative to the three sensitivity zones in the Source Water Protection Area (i.e. Zone 1, Zone 2, and Zone 3).
2. **Contaminant Hazard** - The contaminant hazard is an indication of the potential human health danger posed by contaminants likely or known to be present at the contaminant source. Using the information tables provided by CDPHE (see Appendices D-G), the Steering Committee considered the following contaminant hazard concerns for each contaminant source:
 - **Acute Health Concerns** - Contaminants with acute health concerns include individual contaminants and categories of constituents that pose the most serious immediate health concerns resulting from short-term exposure to the constituent. Many of these acute health concern contaminants are classified as potential cancer-causing (i.e. carcinogenic) constituents or have a maximum contaminant level goal (MCLG) set at zero (0).
 - **Chronic Health Concerns** - Contaminants with chronic health concerns include categories of constituents that pose potentially serious health concerns due to long-term exposure to the constituent. Most of these chronic health concern contaminants include the remaining primary drinking water contaminants.
 - **Aesthetic Concerns** - Aesthetic contaminants include the secondary drinking water contaminants, which do not pose serious health concerns, but cause aesthetic problems such as odor, taste or appearance
3. **Potential Volume** - The volume of contaminants at the contaminant source is important in evaluating whether the source water could become contaminated at concentrations that may pose a health concern to consumers of the water in the event

these contaminants are released to the source water. Large volumes of contaminants at a specific location pose a greater threat than small volumes.

4. **Likelihood of Release** - The more likely that a potential source of contamination is to release contaminants, the greater the contaminant threat posed. The regulatory compliance history for regulated facilities and operational practices for handling, storage, and use of contaminants were utilized to evaluate the likelihood of release.

Based on the above criteria, the Steering Committee has ranked the potential contaminant source inventory and issues of concern in the following way:

Prioritized Surface Water Potential Contaminant Sources and Issues of Concern:

- | High | Moderate | Low |
|---|--|--|
| <ul style="list-style-type: none">• Wildfires | <ul style="list-style-type: none">• Recreation | <ul style="list-style-type: none">• County and US Forest System Roads• Timber harvesting• Potential natural gas drilling |

Prioritized Groundwater Potential Contaminant Sources and Issues of Concern:

- | High | Moderate | Low |
|--|--|---|
| <ul style="list-style-type: none">• Septic systems• Palmer Lake Sanitation District's main sewer line | <ul style="list-style-type: none">• Livestock grazing• Potential natural gas drilling• Residential practices | <ul style="list-style-type: none">• State and County Roads• Storage tanks• Natural gas line |

Susceptibility Analysis of Water Sources

Forest View Acres WD’s Source Water Assessment Report contained a susceptibility analysis³ to identify how susceptible an untreated water source could be to contamination from potential sources of contamination inventoried within its source water assessment area. The analysis looked at the susceptibility posed by individual potential contaminant sources and the collective or total susceptibility posed by all of the potential contaminant sources in the source water assessment area. The CDPHE developed a susceptibility analysis model for surface water sources and ground water sources under the influence of surface water, and another model for groundwater sources. Both models provided an objective analysis based on the best available information at the time of the analysis. The two main components of the CDPHE’s susceptibility analysis are:

1. **Physical Setting Vulnerability Rating** – This rating is based on the ability of the surface water and/or groundwater flow to provide a sufficient buffering capacity to mitigate potential contaminant concentrations in the water source.
2. **Total Susceptibility Rating** – This rating is based on two components: the physical setting vulnerability of the water source and the contaminant threat.

Upon review of the susceptibility analysis, the Steering Committee determined that the Physical Setting Vulnerability Rating and the Total Susceptibility Rating needed updated to more accurately reflect the current situation. The updated susceptibility analysis for each water intake is as follows:

Table 6: Updated Susceptibility Analysis

Source ID #	Source Name	Source Type	Total Susceptibility Rating	Physical Setting Vulnerability Rating
CO0121250-004	Dawson Well	Groundwater	Low	Low
CO0121250-005	Arapahoe Well	Groundwater	Moderately Low	Moderately Low
CO0121250-002	Limbaugh Creek	Surface Water	Moderately High	Moderately High

³ The susceptibility analysis provides a screening level evaluation of the likelihood that a potential contamination problem could occur rather than an indication that a potential contamination problem has or will occur. The analysis is NOT a reflection of the current quality of the untreated source water, nor is it a reflection of the quality of the treated drinking water that is supplied to the public.

DISCUSSION OF POTENTIAL CONTAMINANT SOURCES AND ISSUES OF CONCERN

The following section provides a brief description of potential contaminant sources and 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.

Public Land Management

The Surface Water SPWA for Forest View Acres WD is located almost entirely within Pike National Forest land managed by the Pikes Peak Ranger District, within the USFS Rocky Mountain Region. US Forest Service land use management practices have the potential to directly affect the quality of Forest View's source waters. Jeff Hovermale, with the Pikes Peak Ranger District, attended Forest View's SWPP planning meetings, and his input on US Forest System lands was greatly appreciated.

Protecting Water Resources

A principal purpose for which the Forest Reserves (predecessor to the National Forest System) were established was to "secure favorable conditions of water flows". Throughout its history, the Forest Service has had a very diverse and broad mission of multiple use management outlined by the National Forest Management Act, Multiple Use-Sustained Yield Act, Federal Land Policy and Management Act, etc. This means that the agency balances outdoor recreation and preservation of wildlife habitat, air and water, and other scenic and historical values with environmentally responsible commercial development of the land and its resources. The Forest Service's mandate to manage lands for multiple-use requires balancing present and future resource use with domestic water supply needs as well as many other needs. The greater the proportion of National Forest System lands in a source water area, the greater the potential to be directly affected by Forest Service land use and management activities. It is the desired condition of the National Forest System land managers to "maintain favorable conditions of flow and sustain supplies of high quality raw water while providing for multiple-use management" (GMUG, 2006).

One of the long-term management goals of the Rocky Mountain Region is to manage the forest for water resources:

"Protect the resource. Maintain, and where opportunities exist, restore watershed and forest health to ensure full watershed function exhibiting high geomorphic, hydrologic, and biotic integrity. Ensure that forest management activities occur in a manner that adequately protects the integrity of watersheds (USFS, 2010)."

In October 2009, the Forest Service Rocky Mountain Region and the State of Colorado Department of Public Health and Environment signed a Memorandum of Understanding (MOU) to establish a framework to work together on issues regarding the management and protection of water quality on state defined Source Water Assessment Areas on National Forest System

lands in Colorado (see Appendix H). Under this agreement, the Forest Service recognizes a CDPHE-delineated Source Water Area as a “Municipal Supply Watershed” per definition in FSM 2542 (MOU Between CDPHE and USFS Rocky Mountain Region, 2009). The source water protection area for Forest View Acres WD that lies within these National Forest lands, will be included in future Revised Forest Plans as a municipal supply watershed. In the interim, Forest View Acres should be watchful of new and modified activities requesting permitting with the forest and notify the USFS if Forest View Acres is concerned proposed changes in use could impact the their water supply.

Wildfires

The forests throughout Colorado are dense with fuel build-up from a century of fire suppression and thus more vulnerable to high-intensity fires than it was historically. 2012 and 2013 were among the worst years for wildfires in Colorado due to drought conditions throughout the State. The previous winters were extremely dry and summer temperatures exceeded or came near to 100°F. The Waldo Canyon Fire that occurred near Colorado Springs in the summer of 2012 was located just outside Forest View Acres WD’s Surface Water SWPA. Most of Colorado’s wildfires are caused by lightning strikes from the many thunderstorms that pass through the state on a regular basis during the summer months. Forest View’s Surface Water SWPA is heavily forested by a dry-mesic montane mixed conifer forest commonly comprised of Ponderosa pine, Douglas-fir, White fir and Aspen. In the lower elevation foothills of the SWPA, gamble oak-mixed montane shrublands appear. This vegetation has the potential to fuel a wildfire should one ever ignite.

Wildfires can have an impact on source waters by removing vegetation and decreasing infiltration during rain events. This can result in soil erosion and sediment and ash pollution in drinking water. Large rain events can produce mudslides, and debris flow capable of destroying water infrastructure and altering clarity and pH of the source waters. Chemicals used in fire retardants may also have a negative impact on drinking water sources. On December 31, 2011, the US Forest Service signed a new direction to approve the use of aerially applied fire retardant and implement an adaptive management approach that protects resources and improves the documentation of retardant effects through reporting, monitoring and application coordination. Aerial retardant drops are not allowed in mapped avoidance areas for certain threatened, endangered, proposed, candidate or sensitive (TEPCS) species or waterways. All waterways were given at least a 300 foot buffer avoidance area. A waterway is defined as a body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life (US Department of Agriculture, 2013).

Wildfires Best Management Practices Recommendations:

1. Fuels Reduction Plan - The Forest Service will continue to implement the National Fire Plan to reduce the risk of catastrophic fire and to create a more open forest that is more characteristic of historic forest conditions and more resilient to insect and disease damage. The Forest Service will provide an opportunity for the public during their NEPA process. The Steering Committee will become actively involved in reviewing proposed projects and providing comment when needed on source water protection concerns.
2. Explore opportunities to work with private landowners for landscape scale fuel reduction and defensible space projects.
3. Fire Prevention – The Forest Service will continue to implement community wide fire education prevention programs and activities including the Fire Wise Program.
4. Share a copy of the SWPP with El Paso County Sheriff's Department as it pertains to fire bans and restrictions. Encourage collaboration with Sherriff's office in reviewing fire prevention measures
5. Develop fire response plans for the Source Water Protection Area.
6. Request Full Suppression designation on Source Water Protection Area.
7. Avoid aerial application of fire retardant or foam within 300 feet of waterways.

Septic Systems

There are between five to eight residential areas within Forest View Acres WD's Groundwater SWPA which consist of properties that rely on onsite wastewater treatment systems (OWTS) or 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.

When onsite wastewater systems are properly designed, constructed, and maintained, they effectively reduce or eliminate most human health or environmental threats posed by pollutants such as nitrogen, phosphorus, and disease-causing bacteria and viruses in household wastewater. However, they require regular maintenance or they can fail. Unapproved, aging, and failing septic systems can have a large impact on the quality and safety of a water supply. The failure to pump solids that accumulate in the septic tank can 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. However, because there

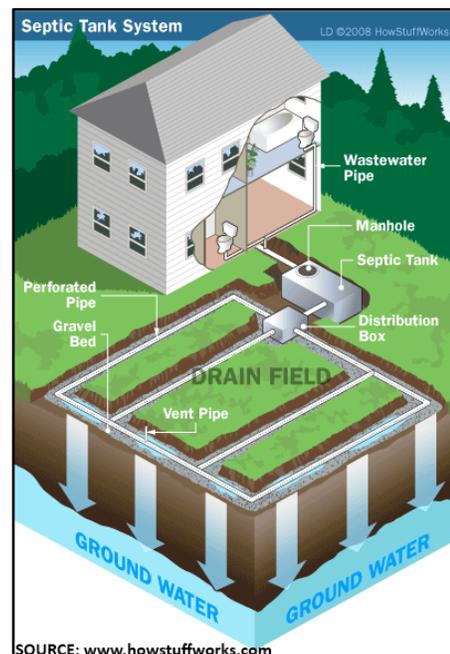


Figure 10: Schematic of a septic system

are such a low number of septic systems in the SWPA, the impact to Forest View Acres WD's drinking water sources is probably low.

In El Paso County individual sewage disposal systems are permitted by the El Paso County Health Department. The County Health Department administers and enforces the standards, rules, and regulations outlined in the State of Colorado's Revised Statute 25-10-105 by the Colorado Water Quality Control Commission. El Paso County requires that a permit be issued for the installation, repair, replacement or alteration of any new or existing OWTS in El Paso County.

Septic System Best Management Practices Recommendations:

1. Develop a GIS layer with septic systems identified along with prioritizing which septic systems are the most immediate threat (Zone 1 or 1,000 ft. for 5 miles upstream may be considered).
2. Share GIS layer with the county to identify sensitivity areas, buffer zones, and protection areas related to septic systems.
3. Work with El Paso County Health Department to use public outreach (i.e. presentations at HOA meetings, outreach packet, postings on website, etc.) to educate specific septic systems owners about how to maintain and check their systems.
4. Coordination on adoption of new state septic systems regulations and add language to county plans to address threats to drinking water from septic systems.
5. Consider septic pumping rebates or "sludge judge" monitoring in sensitivity zones.

Palmer Lake Sanitation District's main sewer line

Palmer Lake Sanitation District is a neighboring system whose main sewer line is less than 100 feet from the Arapahoe Well and runs directly through its corresponding SWPA (see Figure below). The depth of the lines around the well vary from 5 ½ to 8 ½ feet below the surface. Becky Orcutt and Alan Miller, with Palmer Lake Sanitation District, attended one planning meeting for Forest View Acres and reported that Palmer Lake has a rigid cleaning and maintenance schedule of their pipelines. A break in this line is unlikely, but could have major impacts on Forest View Acres drinking water intakes.



Figure 11: Palmer Lake Sanitation District's main sewer line (shown in green) is located less than 100 feet from the Arapahoe Well

Palmer Lake Sanitation District's Main Sewer Line Best Management Practices Recommendations:

1. Keep informed on the maintenance practices and schedules within the Source Water Protection Area (SWPA) including Best Management Practices used.
2. Provide Palmer Lake Sanitation District with a copy of the Source Water Protection Plan and map of the protection area.
3. Meet with Palmer Lake Sanitation District to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for Forest View Acres WD
4. Ensure that all employees are familiar with the Source Water Protection Plan, emergency and contingency plan, and hazardous spill response.
5. Share Palmer Lake Sanitation District's contact information with Forest View Acres WD and homeowners near the sewer line in case of a spill or other incident

Recreation

There are many types of recreation occurring in Forest View Acres WD's Surface Water SWPA including camping, hiking, horseback riding, and bicycling off-road-vehicle use where legal, on system roads and trails. These activities can pose threats to forested lands and streams. According to the 2010 Motor Vehicle Use Map, there are identified trails that are open for motorized use in the Surface Water SWPA. The USFS is working to close and restore non-permitted roads. Some undesirable impacts include severely eroded soils, user-created unplanned roads, disrupted wetland ecosystems, as well as general habitat destruction and degraded water quality throughout forested lands.

Target practice is a potential concern to the Steering Committee due to residual lead from bullets contaminating the surface water intake. Jeff Hovermale reported that a similar concern was identified near Manitou Springs and was tested by the EPA for residual lead. The study reported that lead material had migrated; however, the results were negative for lead contamination in their water sources.

Recreation Best Management Practices Recommendations:

1. Work with USFS to encourage and educate about setbacks for campsites from surface water with the application of Leave No Trace Principles.
2. Work with USFS to educate campers about proper waste containment and disposal with the application of Leave No Trace Principles.
3. Minimize the effects of recreational activities within the watershed from both motorized and non-motorized activities. Continue to provide multiple uses while restricting motorized vehicles to designated roads and trails under the Forest Service Travel Management Regulations. Motorized use on roads and trails is open on designated routes identified in the Pikes Peak Ranger District Motor Vehicle Use Map (MVUM). Prevent recreational vehicle damage to stream banks and upland areas within the protection areas. Restore or close areas degraded by vehicular usage.
4. For those permitted activities utilizing horses or other animals, the permittees will be advised about the source water protection plan and recommended best practices to ensure activities avoiding or minimize impacts in or near reservoir basins, ditches, and streams.
5. On non-federal lands Install signage at trailheads and other areas associated with high recreational use that notifies users they are in a SWPA and explains the importance of Source Water Protection.
6. Target Shooting – Utilize signage and multiple media information to increase public awareness of shooting restrictions, restricted areas and rules for shooting on National Forest System lands.

Livestock Grazing on Private Lands

Livestock (cattle) grazing occurs on private lands within Forest View Acres WD’s Groundwater SWPA. While this grazing activity is a low concern to the Steering Committee, this activity can impact riparian health, stream-channel conditions and water quality. The most common water quality impacts include pathogen contamination, sedimentation, and increased water temperatures from loss of vegetative stream coverage. Grazing activities with the highest potential for direct and indirect impacts to water resources include long-term concentrated grazing in riparian areas, and trampling/trailing near water sources. Direct bank damage may add large amounts of sediment directly into streams, especially in wet meadow streams or erosive topography that is prone to gully formation.

Livestock Grazing Best Management Practices Recommendations:

1. Develop a public education campaign for land owners and area residents within the SWPA the relationship of their lands to the public and private drinking water supply.
2. Provide land owners with information on agricultural Best Management Practices for handling manure, pesticide/herbicide/fertilizer application, and chemical use and storage. Farmers using land near the wellfield or intakes will be contacted explaining the hazard and/or prohibition of mixing chemicals near the wells.
3. Provide land owners with information on the water quality impacts of grazing within the creeks and on stream banks. Education material will encourage the use of Best Management Practices on: alternative stock watering, livestock exclusion fencing, creating a buffer zone between the cattle and the creek, and bioengineering stream bank stabilization wastes practices.

Residential Practices

Forest View Acres WD's Groundwater SWPA includes residential dwellings within the Water District's boundaries. Common household practices may cause pollutants to runoff residential property and enter the surface or groundwater as indicated in Figure 8 below. Prevention of surface and groundwater contamination requires education, public involvement, and people motivated to help in the effort. 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. Forest View Acres will need to coordinate with the County since all the private lands within the protection area are under county jurisdiction.

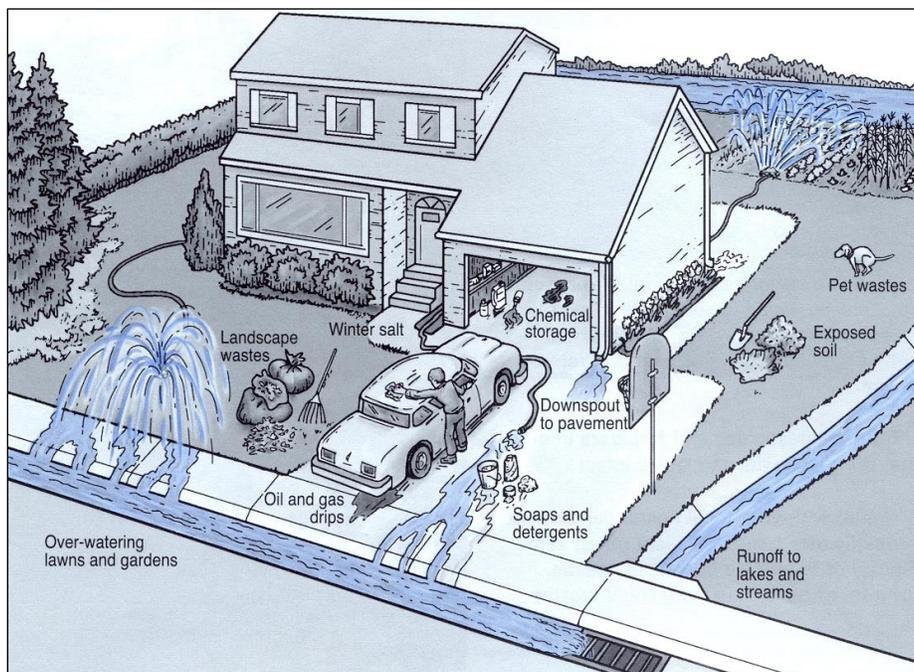


Figure 12: Common residential practices that may be potential sources of contamination to surface or groundwater

Residential Practices Best Management Practices Recommendations:

1. Conduct public education and outreach programs for SWPA residents to encourage practices that will protect their drinking water source. Topics may include: source water protection, household hazardous waste storage and disposal, fertilizer usage, pet waste cleanup, water conservation, car washing, and secondary containment for above ground fuel storage tanks.
2. Opportunities for public education include: newspaper articles, poster displays at local utility offices and public buildings, water bill inserts, flyers, creek festivals, public forums, workshops and community events, county fair, sheep dog trials.
3. Participate in local Conservation District's annual workshops and provide materials about the Source Water Protection Plan and BMPs to prevent contamination of the source waters
4. Provide Information concerning the SWPP in the annual Consumer Confidence Report (CCR). Insert an additional letter or paragraph in the CCR about the completed SWPP and information on how they can help prevent pollutants from entering the source waters.
5. Post a copy of the SWPP on FVAWD's website

County, State and US Forest System Roads

The stakeholder group decided to expand Arapahoe Well's SWPA to include a portion of Colorado State Highway 105 due to its close proximity to the well. In addition to Highway 105, other roadways are present within Forest View Acres' SWPAs. The different roadways are maintained by El Paso County, Colorado Department of Transportation (CDOT), and the US Forest Service. The roads in the SWPA are used for primarily for residential and recreational access.

Spills & Accidents on Roads

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

Emergency response for State Highway 105 is overseen by the Colorado State Patrol and the El Paso Sheriff's department. If a spill occurs alongside the road, a Hazardous Response Team is responsible for contracting with one of four companies in the area to help mitigate the area. These companies must get a permit for hazardous material clean-up.

Road Maintenance

De-icing materials and other maintenance practices alongside roadways are a potential concern to the group. Andy Stecklein and Gary Heller, with the Colorado Department of Transportation, attended a Forest View's SWPP planning meeting and reported about CDOT maintenance practices along Highway 105. It was reported that an anti-skid material composed of fine grade sand with approximately 10% salt is used primarily on Highway 105. Weed spraying

occurs during the months of May-June alongside the road and is only isolated for noxious weeds. Striping of the road lines occurs once a year and the paint is a water-based, non-hazardous paint. The striping is contracted out through several different companies. An enhanced magnesium chloride product is used for all CDOT roadways; however, this product is not heavily used on Highway 105.

Magnesium chloride, used in dust abatement, is highly soluble in water and has the potential to move through the soil with water. The movement is dependent on the rate and frequency of rainfall, the drainage characteristics, and soil type. If the soil surface is not bound together well or if the rain event is extreme, dust suppressant treated soil particles can be carried by overland flow into streams, rivers, and ditches. Potential water quality impacts include elevated chloride concentrations in streams downstream of application areas and shallow groundwater contamination (US Environmental Protection Agency, 2002).

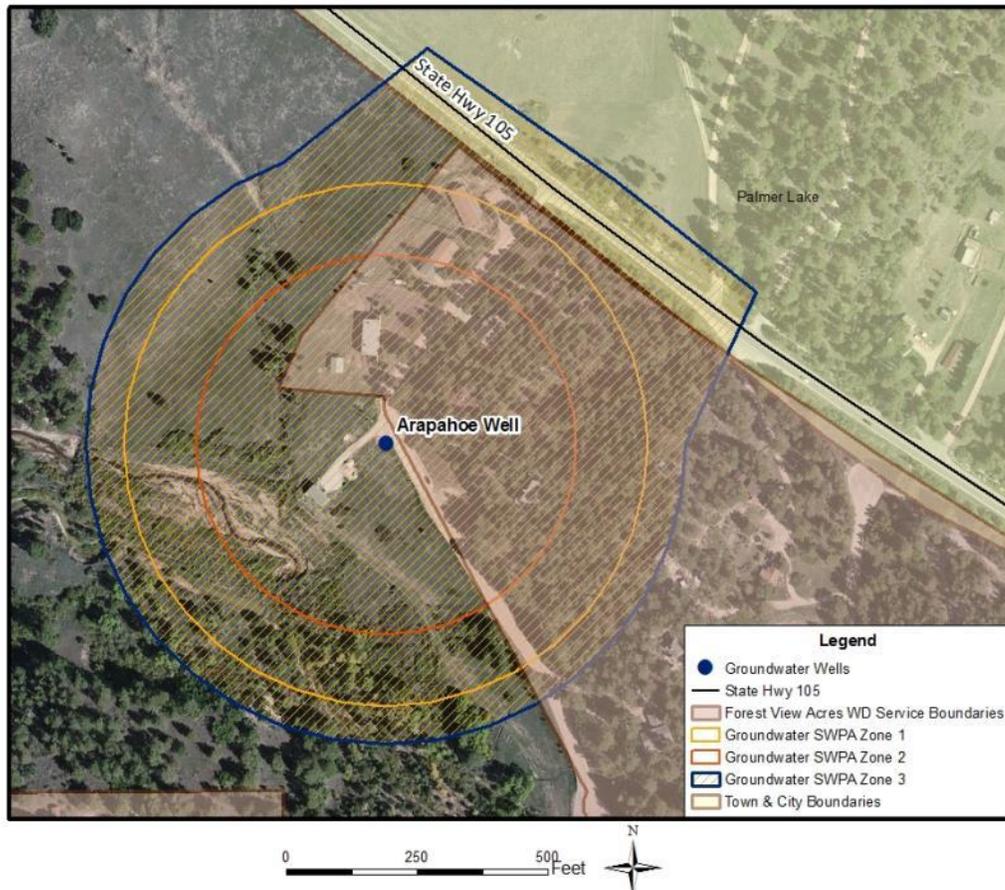


Figure 13: Colorado State Highway 105 lies approximately 600 feet from the Arapahoe Well

Road Systems Best Management Practices Recommendations:

1. Keep informed on the road maintenance practices and schedules within the Source Water Protection Area (SWPA) including: grading, de-icing, dust abatement and Best Management Practices used.
2. Provide El Paso County Dept. of Transportation, USFS and CDOT with a copy of the Source Water Protection Plan and map of the protection area. Encourage them to use road Best Management Practices to prevent road materials from entering the source waters.
3. Meet with the Fire Dept., CO State Patrol, and other emergency responders, to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for Forest View Acres WD
4. Provide information to the local fire departments and other emergency responders:
 - Importance of the Source Water Protection Plan
 - Location of the intakes and Source Water Protection Area
 - Overview of the Emergency Contingency Plan
 - Personnel to be notified in the event of an emergency
5. Educate the public on how to call “911” to report any spills within the SWPA.
6. Place signage on public roads within the protection areas to educate the public about reporting spills on the roadway

Timber Harvesting

Timber harvesting occurs within Forest View Acres WD’s Surface Water SWPA. Timber harvesting can potentially generate several forms of non-point pollution. Disturbance of land surfaces from road construction, log landings, and skid trails are the primary causes of sediment transport into streams from this activity. Other potential impacts include: debris from timber harvesting ending up in the stream, oils and fuels used in machinery washing into streams, and an increase in temperature levels as a result of clearing timber along stream banks.

Timber Harvesting Best Management Practices Recommendations:

1. Implement Water Conservation Practices, BMP, guidelines, and proper design criteria to prevent or reduce sediment delivery to water bodies within the watershed

Potential Natural Gas Drilling

Although many areas of Colorado are experiencing an oil and gas boom, there is currently no oil and gas drilling within Forest View Acres WD’s Source Water Protection Areas. There is proposed exploratory drilling near Red Rocks Road, but it is currently not active. The potential for natural resource development in the protection area is low, but may change in the future based on economic and resource needs. Forest View Acres WD considers its drinking water sources vital to the community and impacts from resource development are a concern to the Steering Committee. The US Forest Service is in the process of developing an Environment Impact Statement (EIS) for oil and gas drilling, which Forest View Acres WD has provided

comment on. Forest View Acres WD has requested that their SWPAs be closed to oil and gas drilling and that any existing leases be allowed to expire and not be renewed. If a closure is not possible, Forest View Acres WD has requested that No Surface Occupancy (NSO) Stipulations be applied to all area of Upper Monument Creek and that Upper Monument Creek be identified in USFS records and documents relevant to drilling activity as a municipal watershed, and that surrounding areas be identified as water influence zones (WIZ) and that NSO Stipulations be applied to them because of their proximity to the edge of the Denver Basin and their role as recharge area for the aquifers (Forest View Acres WD, 2013).

Colorado Oil and Gas Conservation Commission: Rule 317B

The oil and gas industry in Colorado is regulated by the Colorado Oil and Gas Conservation Commission (COGCC). The mission of the COGCC is "To promote responsible development of Colorado's oil and gas natural resources." The Colorado legislature passed House Bill 1341 in spring 2007 to increase environmental and public health protections in the face of unprecedented oil and gas development. House Bill 1341 directed the Colorado Oil and Gas Conservation Commission to make and enforce rules consistent with the protection of the environment, wildlife resources, and public health, safety, and welfare. In 2008, the COGCC developed and passed new rules that became effective on May 1, 2009 on federal land and April 1, 2009 on all other land.

One of the new rules, Rule 317B, protects public water systems by protecting the source of their drinking water. It creates protection zones, or buffer zones, combined with performance requirements applicable within 5 miles upstream of the surface water intake. The most protected Internal Buffer Zone is located within 300 feet of a water segment and is a drilling excluding zone. The purpose for protecting this zone is that a significant release in these areas would likely contaminate surface water used as a drinking water source. Enhanced drilling and production requirements also apply in areas ½ mile from the water supply segment, in an Intermediate and Extended Buffer Zone (Colorado Oil and Gas Conservation Commission, 2008).

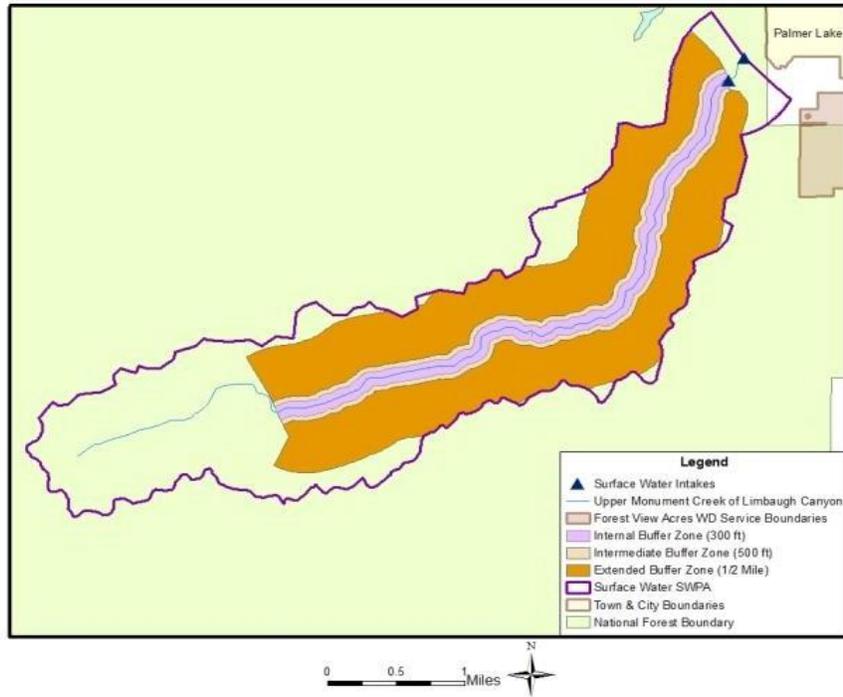


Figure 14: COGCC Rule 317B buffer zones in the Source Water Protection Area

El Paso County's Role

The El Paso County has a Local Governmental Designee (LGD), Diana May, which is a COGCC recognized individual designated by the local government to receive copies of all state oil and gas permit applications. The LGD may make comments to the COGCC regarding any permit applications. The LGD also serves as a liaison between COGCC, COGA, local government, the oil and gas industry, local oil and gas operators and the public.

Potential Natural Gas Drilling Best Management Practices Recommendations:

1. Stay informed of any potential oil and gas developments on federal and private lands within the protection area and become involved in the public process to encourage BMPs to protect water quality.
2. Encourage industry representative to share information about their operation, including chemicals utilized as part of their operations, within the source water protection area by inviting them to participate in the Forest View Acres WD's Source Water Protection Steering Committee meetings.
3. Encourage the local community to become actively involved in participating in local and regional oil and gas forums.
4. Encourage industry to educate all employees and subcontractors on the location of the source water protection areas, Emergency Response Plans, Storm Water Management plans, and Spill Response Plans.
5. Request county notification of application for permit to drill (APD). The Steering Committee will provide comment.
6. The Steering Committee will encourage the industry to comply with and implement all actions in the approved Storm Water Management Plan to prevent or minimize storm water runoff impacts to the source waters.
7. The Steering Committee will encourage the industry to:
 - Administer a Spill Prevention, Control, and Countermeasures Plan to prevent surface water and ground water contamination,
 - Immediately notify the water providers of any spills, and
 - Use proper equipment & vehicle maintenance BMPs to prevent chemicals from contaminating ground water.
8. Develop an action plan with Forest View Acres WD, Tri Lakes Fire Protection District, Industry Representatives and local residents for spill response and/or other emergencies.
9. Establish baseline water quality monitoring for resource development within the source water protection area.

Storage Tanks

There are two underground storage tanks identified in Zone 1 of Arapahoe Well's SWPA. Storage tanks are a concern to drinking water if they become leaky. A leaking underground storage tank (LUST) site can contaminate the groundwater and present other hazards. A LUST site 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.

While this is a concern to the Steering Committee, both of the storage tank sites in the SWPA have been permanently closed. The Steering Committee will continue to monitor the status of these storage tank sites as well as any new sites that may be developed in the SWPA.

Table 7: Storage Tank Status within the SWPA

Facility ID	Facility Name	Owner	Facility Type	Status
5450	Jay Cedarleaf	Cedarleaf Jay	UST	Permanently Closed
5971	Jay Cedarleaf	Cedarleaf Jay	UST	Permanently Closed

SOURCE: COLORADO STORAGE TANK INFORMATION SYSTEM

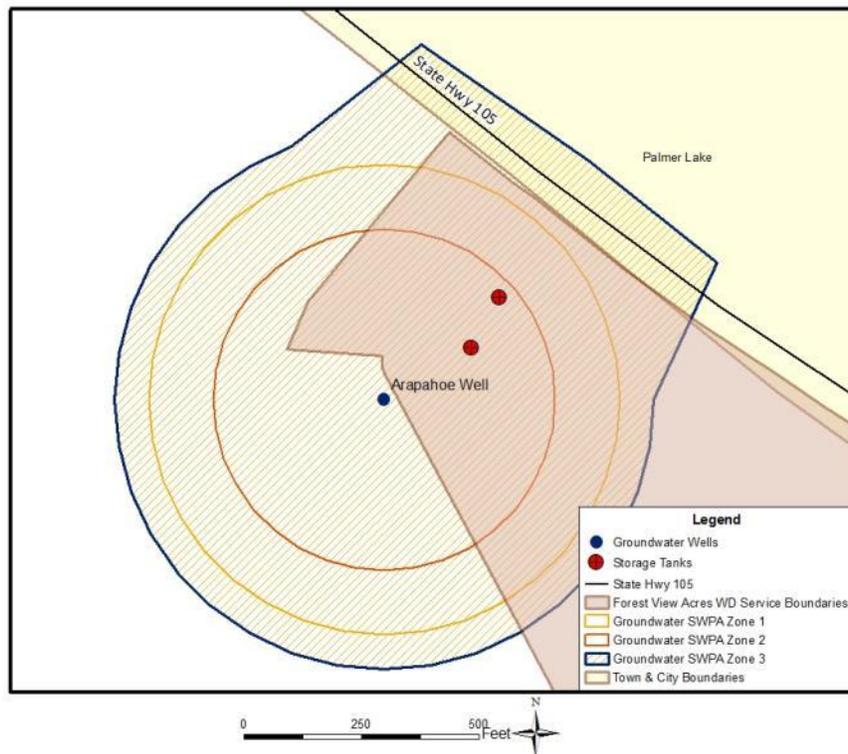


Figure 15: Two storage tanks within the SWPA are permanently closed

Storage Tanks Best Management Practices Recommendations

1. Gather information on the status of ASTs within the SWPA using the Colorado Storage Tank Information (COSTIS) website at <http://costis.cdle.state.co.us>.
2. Encourage fuel vendors to field-check AST to assess the condition of the tanks, location to the source water, and secondary containment surrounding the tanks.
3. Educate the tank owners on the need to assess their storage system and develop a system that guards against leaks and spills that may potentially contaminate the water supply.
4. Ensure that decommissioned storage tanks are properly closed.

Natural Gas Line

A natural gas transmission line is located just outside Forest View Acres WD's Groundwater SWPA that runs along State Highway 105 and Redstone Ridge Road. The pipeline is operated by Black Hills Energy. The Pipeline and Hazardous Materials Safety Administration (PHMSA) is the primary federal regulatory agency responsible for ensuring that pipelines are safe, reliable, and environmentally sound. From the federal level, they oversee the development and implementation of regulations concerning pipeline construction, maintenance and operation, and they share these responsibilities with state regulatory partners. The pipeline safety regulations implement the laws found in the U.S. Code (Pipeline & Hazardous Materials Safety Administration, 2011).

A release from this pipeline could be result from a variety of causes, including third-party excavations, corrosion, mechanical failure, control system failure, and operator error. Although a pipeline release is unlikely, a single pipeline accident can be catastrophic in terms of death and environmental damage and could have major impacts on Forest View Acres drinking water intakes (Parfomak, 2013).

Table 8: Natural Gas Pipeline information

Operator ID	Operator Name	System Name	Commodity Category	Commodity Description	Interstate Designation	Pipeline Status Code
15359	Black Hills Energy	Transmission	Natural Gas	Natural Gas	N	In-Service

SOURCE: PIPELINE & HAZARDOUS MAERIALS SAFETY ADMINISTRATION

NATIONAL PIPELINE MAPPING SYSTEM

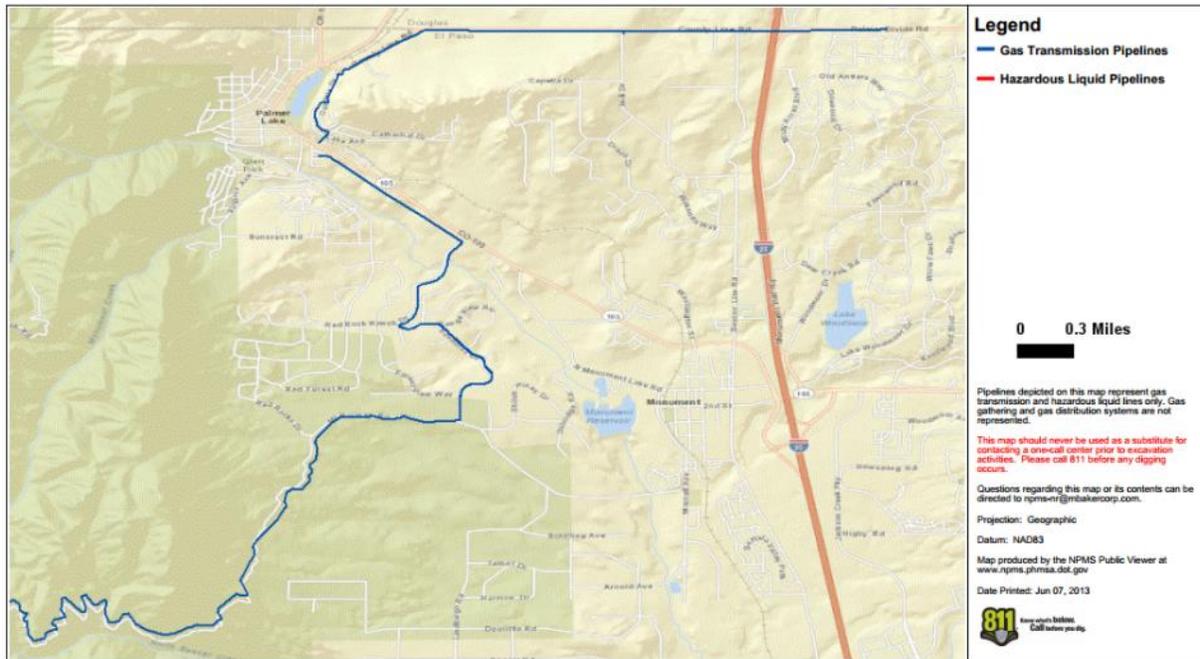


Figure 16: Natural Gas Transmission Line near Forest View Acres WD's SWPA

Natural Gas Line Best Management Practices Recommendations:

1. Work with El Paso County, COGCC, the Federal Energy Regulatory Commission (FERC) and the federal Department of Transportation to obtain a contact list of all pipeline companies located within the SWPA.
2. Keep informed on the maintenance practices and schedules within the Source Water Protection Area (SWPA) including Best Management Practices used.
3. Provide pipeline companies with a copy of the Source Water Protection Plan and map of the protection area.
4. Meet with pipeline companies to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for Forest View Acres WD
5. Use routine and preventative maintenance to help prevent spills and immediately notify Forest View Acres WD of any spills

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 9, "Source Water Protection Best Management Practices" be considered for implementation by:

- Forest View Acres WD
- Palmer Lake Sanitation District
- US Forest Service
- Colorado Department of Transportation
- El Paso County
- Private Landowners
- Timber Harvesting Companies
- Oil and Gas Industry

Evaluating Effectiveness of Best Management Practices

Forest View Acres WD 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-five years or if circumstances change resulting in the development of new water sources and source water protection areas, or if new risks are identified.

Forest View Acres WD 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 9: Source Water Protection Best Management Practices

Issues	Best Management Practices	Implementers
<p>National Forest Land Management</p>	<ol style="list-style-type: none"> 1. The Forest Service plans to begin the revision process for its Land and Resource Management Plan (Forest Plan) for the area sometime in the future. The Forest Service will educate and involve the public in the opportunities for public input at public meetings. The Steering Committee will become actively involved in reviewing the plan and providing comment when needed on source water protection concerns. 2. The Steering Committee will actively participate in the public participation process for revision of the Pike and San Isabel National Forest’s 1992 Oil and Gas Leasing EIS, which is scheduled to start during late 2013. 3. Provide comment during the development of the US Forest Service’s Environmental Impact Statement (EIS) for oil and gas drilling. Request that Forest View Acres WD SWPAs be closed to oil and gas drilling and that any existing leases be allowed to expire and not be renewed. If a closure is not possible, request that No Surface Occupancy (NSO) Stipulations be applied to all area of Upper Monument Creek and that Upper Monument Creek be identified in USFS records and documents relevant to drilling activity as a municipal watershed, and that surrounding areas be identified as water influence zones (WIZ) and that NSO Stipulations be applied to them because of their proximity to the edge of the Denver Basin and their role as recharge area for the aquifers. 	<ol style="list-style-type: none"> 1. USFS, Steering Committee 2. USFS, Steering Committee 3. Forest View Acres WD
<p>Wildfires</p>	<ol style="list-style-type: none"> 1. Fuels Reduction Plan - The Forest Service will continue to implement the National Fire Plan to reduce the risk of catastrophic fire and to create a more open forest that is more characteristic of historic forest conditions and more resilient to insect and disease damage. The Forest Service will provide an opportunity for the public during their NEPA process. The Steering Committee will become actively involved in reviewing proposed projects and providing comment when needed on source water protection concerns. 2. Explore opportunities to work with private landowners for landscape scale fuel reduction and defensible space projects. 3. Fire Prevention – The Forest Service will continue to implement community wide fire education prevention programs and activities including the Fire Wise Program. 	<ol style="list-style-type: none"> 1. USFS, Steering Committee 2. Tri-Lakes Fire Protection District, Colorado State Forest Service and Natural Resources Conservation Service. 3. USFS, Tri-Lakes Fire Protection District and

	<p>4. Share a copy of the SWPP with El Paso County Sheriff's Department, US Forest Service, and Tri-Lakes Fire Protection District as it pertains to fire bans and restrictions. Encourage collaboration with Sherriff's office in reviewing fire prevention measures</p> <p>5. Develop fire response plans for the Source Water Protection Area.</p> <p>6. Request Full Suppression designation on Source Water Protection Area.</p> <p>7. Avoid aerial application of fire retardant or foam within 300 feet of waterways.</p>	<p>Colorado State Forest Service.</p> <p>4. El Paso County Sheriff's Department, Steering Committee</p> <p>5. Tri-Lakes Fire Protection District and El Paso County</p> <p>6. Tri-Lakes Fire Protection, USFS, El Paso County Sheriff's Department</p> <p>7. Tri-Lakes Fire Protection District, USFS,</p>
<p>Recreation (Trail traffic, shooting ranges)</p>	<p>1. Work with USFS to encourage and educate about setbacks for campsites from surface water with the application of Leave No Trace Principles.</p> <p>2. Work with USFS to educate campers about proper waste containment and disposal with the application of Leave No Trace Principles.</p> <p>3. Minimize the effects of recreational activities within the watershed from both motorized and non-motorized activities. Continue to provide multiple uses while restricting motorized vehicles to designated roads and trails under the Forest Service Travel Management Regulations. Motorized use on roads and trails is open on designated routes identified in the Pikes Peak Ranger District Motor Vehicle Use Map (MVUM). Prevent recreational vehicle damage to stream banks and upland areas within the protection areas. Restore or close areas degraded by vehicular usage.</p> <p>4. For those permitted activities utilizing horses or other animals, the permittees will be advised about the source water protection plan and recommended best practices to ensure activities avoiding or minimize impacts in or near reservoir basins, ditches, and streams.</p> <p>5. On non-federal lands Install signage at trailheads and other areas associated with high recreational use that notifies users they are in a SWPA and explains the importance of Source Water Protection.</p>	<p>1. Forest View Acres WD, Steering Committee, USFS</p> <p>2 Forest View Acres WD, Steering Committee, USFS</p> <p>3. USFS</p> <p>4. USFS</p> <p>5. Forest View Acres WD, Steering Committee, USFS</p>

	6. Target Shooting – Utilize signage and multiple media information to increase public awareness of shooting restrictions, restricted areas and rules for shooting on National Forest System lands.	6. USFS
Road Systems	<p>1. Keep informed on the road maintenance practices and schedules within the Source Water Protection Area (SWPA) including: grading, de-icing, dust abatement and Best Management Practices used.</p> <p>2. Provide El Paso County Dept. of Transportation, USFS and CDOT with a copy of the Source Water Protection Plan and map of the protection area. Encourage them to use road Best Management Practices to prevent road materials from entering the source waters.</p> <p>3. Meet with the Fire Dept., CO State Patrol, and other emergency responders, to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for Forest View Acres WD</p> <p>4. Provide information to the local fire departments and other emergency responders:</p> <ul style="list-style-type: none"> • Importance of the Source Water Protection Plan • Location of the intakes and Source Water Protection Area • Overview of the Emergency Contingency Plan • Personnel to be notified in the event of an emergency <p>5. Educate the public on how to call “911” to report any spills within the SWPA.</p> <p>6. Place signage on public roads within the protection areas to educate the public about reporting spills on the roadway</p>	<p>1. Steering Committee</p> <p>2. Steering Committee , El Paso County, USFS, CDOT</p> <p>3. Steering Committee</p> <p>4. Steering Committee and Forest View Acres WD</p> <p>5. Steering Committee</p> <p>6. Steering Committee, El Paso County, USFS, CDOT</p>
Oil and Gas and other Resource Development	<p>1. Stay informed of any potential oil and gas developments on federal and private lands within the protection area and become involved in the public process to encourage BMPs to protect water quality.</p> <p>2. Encourage industry representative to share information about their operation, including chemicals utilized as part of their operations, within the source water protection area by inviting them to participate in the Forest View Acres WD Source Water Protection Steering Committee meetings.</p> <p>3. Encourage the local community to become actively involved in participating in local and regional oil and gas forums.</p>	<p>1. Steering Committee, BLM, USFS</p> <p>2. Steering Committee, Industry Representatives</p> <p>3. Steering Committee, BLM</p>

	<p>4. Encourage industry to educate all employees and subcontractors on the location of the source water protection areas, Emergency Response Plans, Storm Water Management plans, and Spill Response Plans.</p> <p>5. Request county notification of application for permit to drill (APD). The Steering Committee will provide comment.</p> <p>6. The Steering Committee will encourage the industry to comply with and implement all actions in the approved Storm Water Management Plan to prevent or minimize storm water runoff impacts to the source waters.</p> <p>7. The Steering Committee will encourage the industry to:</p> <ul style="list-style-type: none"> • Administer a Spill Prevention, Control, and Countermeasures Plan to prevent surface water and ground water contamination, • Immediately notify the water providers of any spills, and • Use proper equipment & vehicle maintenance BMPs to prevent chemicals from contaminating ground water. <p>8. Develop an action plan with Forest View Acres WD, Tri Lakes Fire Protection District, Industry Representatives and local residents for spill response and/or other emergencies.</p> <p>9. Establish baseline water quality monitoring for resource development within the source water protection area.</p>	<p>4. Steering Committee, Industry Representatives</p> <p>5. Forest View Acres WD, El Paso County LGD, Steering Committee</p> <p>6. Steering Committee, Industry Representatives</p> <p>7. Steering Committee, Industry Representatives</p> <p>8. Forest View Acres WD, Tri Lakes Fire Protection District, Industry Representatives</p> <p>9. Forest View Acres WD</p>
Forest Health/Timber Harvesting	<p>1. Implement Water Conservation Practices, BMPs, guidelines, and proper design criteria to prevent or reduce sediment delivery to water bodies within the watershed.</p>	<p>1. USFS</p>
Septic Systems	<p>1. Develop a GIS layer with septic systems identified along with prioritizing which septic systems are the most immediate threat (Zone 1 or 1,000 ft. for 5 miles upstream may be considered).</p> <p>2. Share GIS layer with the county to identify sensitivity areas, buffer zones, and protection areas related to septic systems.</p> <p>3. Work with El Paso County Health Department to use public outreach (i.e. presentations at HOA meetings, outreach packet, postings on website, etc.) to educate specific septic systems owners about how to maintain and check their systems.</p> <p>4. Coordination on adoption of new state septic systems regulations and add language to county</p>	<p>1. Forest View Acres WD</p> <p>2. Forest View Acres WD and El Paso County</p> <p>3. Forest View Acres WD, Steering Committee, El Paso County Health Department</p>

	<p>plans to address threats to drinking water from septic systems.</p> <p>5. Consider septic pumping rebates or “sludge judge” monitoring in sensitivity zones.</p>	<p>4. El Paso County</p> <p>5. Forest View Acres WD</p>
Palmer Lake Sanitation District sewer line	<p>1. Keep informed on the maintenance practices and schedules within the Source Water Protection Area (SWPA) including Best Management Practices used.</p> <p>2. Provide Palmer Lake Sanitation District with a copy of the Source Water Protection Plan and map of the protection area.</p> <p>3. Meet with Palmer Lake Sanitation District to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for Forest View Acres WD</p> <p>4. Ensure that all employees are familiar with the Source Water Protection Plan, emergency and contingency plan, and hazardous spill response.</p> <p>5. Share Palmer Lake Sanitation District’s contact information with Forest View Acres WD and homeowners near the sewer line in case of a spill or other incident</p>	<p>1. Forest View Acres WD, Palmer Lake Sanitation District</p> <p>2. Forest View Acres WD, Steering Committee</p> <p>3. Forest View Acres WD</p> <p>4. Palmer Lake Sanitation District</p> <p>5. Palmer Lake Sanitation District, Forest View Acres WD</p>
Livestock Grazing on Private Lands	<p>1. Develop a public education campaign for land owners and area residents within the SWPA the relationship of their lands to the public and private drinking water supply.</p> <p>2. Provide land owners with information on agricultural Best Management Practices for handling manure, pesticide/herbicide/fertilizer application, and chemical use and storage. Farmers using land near the wellfield or intakes will be contacted explaining the hazard and/or prohibition of mixing chemicals near the wells.</p> <p>3. Provide land owners with information on the water quality impacts of grazing within the creeks and on stream banks. Education material will encourage the use of Best Management Practices on: alternative stock watering, livestock exclusion fencing, creating a buffer zone between the cattle and the creek, and bioengineering stream bank stabilization practices.</p>	<p>1. Forest View Acres WD, Steering Committee</p> <p>2. Forest View Acres WD, Steering Committee</p> <p>3. Forest View Acres WD, Steering Committee</p>

<p>Residential Practices</p>	<ol style="list-style-type: none"> 1. Conduct public education and outreach programs for SWPA residents to encourage practices that will protect their drinking water source. Topics may include: source water protection, household hazardous waste storage and disposal, fertilizer usage, pet waste cleanup, water conservation, car washing, and secondary containment for above ground fuel storage tanks. 2. Opportunities for public education include: newspaper articles, poster displays at local utility offices and public buildings, water bill inserts, flyers, creek festivals, public forums, workshops and community events, county fair, sheep dog trials. 3. Participate in local Conservation District’s annual workshops and provide materials about the Source Water Protection Plan and BMPs to prevent contamination of the source waters 4. Provide Information concerning the SWPP in the annual Consumer Confidence Report (CCR). Insert an additional letter or paragraph in the CCR about the completed SWPP and information on how they can help prevent pollutants from entering the source waters. 5. Post a copy of the SWPP on FVAWD’s website 	<ol style="list-style-type: none"> 1. Steering Committee, Forest View Acres WD 2. Steering Committee 3. Steering Committee 4. Forest View Acres WD 5. Forest View Acres WD
<p>Storage Tanks</p>	<ol style="list-style-type: none"> 1. Gather information on the status of ASTs within the SWPA using the Colorado Storage Tank Information (COSTIS) website at http://costis.cdle.state.co.us. 2. Encourage fuel vendors to field-check AST to assess the condition of the tanks, location to the source water, and secondary containment surrounding the tanks. 3. Educate the tank owners on the need to assess their storage system and develop a system that guards against leaks and spills that may potentially contaminate the water supply. 4. Ensure that decommissioned storage tanks are properly closed. 	<ol style="list-style-type: none"> 1. Steering Committee 2. Steering Committee 3. Steering Committee 4. Steering Committee
<p>Natural Gas Line</p>	<ol style="list-style-type: none"> 1. Work with El Paso County, COGCC, the Federal Energy Regulatory Commission (FERC) and the federal Department of Transportation to obtain a contact list of all pipeline companies located within the SWPA. 2. Keep informed on the maintenance practices and schedules within the Source Water Protection Area (SWPA) including Best Management Practices used. 3. Provide pipeline companies with a copy of the Source Water Protection Plan and map of the protection area. 	<ol style="list-style-type: none"> 1. Forest View Acres WD, El Paso County, COGCC, FERC, Federal DOT 2. Forest View Acres WD, Steering Committee 3. Forest View Acres WD

	<p>4. Meet with pipeline companies to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for Forest View Acres WD</p> <p>5. Use routine and preventative maintenance to help prevent spills and immediately notify Forest View Acres WD of any spills</p>	<p>4. Pipeline Companies, Forest View Acres WD</p> <p>5. Pipeline Companies</p>
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APPENDICES⁴

- A. Source Water Assessment Report
- B. Source Water Assessment Report Appendices
- C. Table A-1 Discrete Contaminant Types
- D. Table A-2 Discrete Contaminant Types (SIC Related)
- E. Table B-1 Dispersed Contaminant Types
- F. Table C-1 Contaminants Associated with Common PSOC
- G. MOU Between CDPHE and U.S. Forest Service Rocky Mountain Region

⁴ All appendices are located on the CD version of this SWPP.