Appendix F

Public Education and Outreach Plan

[This page intentionally left blank.]

Table of Contents

Tables

Attachments

Acronyms & Abbreviations

Acronym/ Abbreviation	Definition
BSDW	Bureau of Safe Drinking Water
BWPC	Bureau of Water Pollution Control
CSWP Plan	Community Source Water Protection Plan
Education Plan	Public Education and Outreach Plan
ISWPP	Integrated Source Water Protection Program
NDEP	Nevada Division of Environmental Protection
PWSs	Public water systems
Team	Local Planning Team

Introduction

The local planning team (Team) recognizes that Community Source Water Protection (CSWP) Plan success depends on the willingness of the community to support source water protection. Additionally, the Team understands that public education and participation is an important strategy to build public support, promote voluntary protection efforts, and enable community members to be stewards of their local drinking water sources.

Goal-2 of the CSWP Plan promotes community-wide education and involvement in source water protection. The Action Plan (Appendix E) outlines various education and outreach Actions aimed at accomplishing this goal. This Public Education and Outreach Plan (Education Plan) presents an array of resources that can be used to implement community-wide education and outreach.

Education Leaders

Effective leadership in public education and outreach plays a crucial role for organizing engaging events that will motivate a community towards the singular goal of safeguarding drinking water sources for future generations. Table 1-1 provides contact information for education leaders that are committed to fostering community support for source water protection and were part of the development of this CSWP Plan.

Location of Useful CSWP Plan Information

This CSWP Plan contains detailed information about source water protection and about each public water system that can be used when conducting public education and outreach activities. Some key CSWP Plan information includes:

- Names and affiliations of the individuals who helped prepare this CSWP Plan (Table 1-1 of Section 1.3.1 of the CSWP Plan).
- Source Water Protection Area maps (Appendix A).
- Inventory maps of potential contaminants that are of concern for protecting drinking water quality (Appendix D).
- Management strategies that implement the CSWP Plan goals established by the Team (Section 3.5 of the CSWP Plan).
- Contingency measures describe what a community and public water system has in place to manage water quality and supply issues (Section 3.4 of the CSWP Plan).
- The Action Plan outlines implementation of the Education and Outreach management strategy of the CSWP Plan (Appendix E).

Table 1-1. Lincoln County Technical Assistance Contacts

Organizations	Phone Number	Email Address
Local Planning Team: (see CSWP Plan, Section 1.3.1, Table 1-1 for contact information)		
Educational Resources:		
Lincoln County Conservation District	(775) 357-6675	Lincolncountycdnv@gmail.com
Nevada Rural Water Association, Source Water Protection Coordinator	(775) 841-4222	christopherb@nvrwa.org
Nevada Division of Environmental Protection, Integrated Source Water Protection (ISWPP) Coordinator	(775) 687-9311	e.mason@ndep.nv.gov

Education Focus

The Team identified key target audiences for specific public education and outreach activities and messaging. This Education Plan has been prepared to help target audiences gain an understanding of public drinking water sources and to develop an interest in participating in community source water protection.

Target audiences and their role in source water protection is provided below.

Target Audiences

K-12 Students:

School students are integral to spreading information through a community. Promoting education related to where their water comes from, how water sources become polluted, and how to keep their water clean, can complement existing science and technology curriculums.

Homeowners / Small Business Owners:

Local residents and businesses owners are integral to developing community support and participation around source water protection issues. This target audience is most likely to benefit from increased knowledge of septic system operation and maintenance, as well as proper disposal of household hazardous waste and prescription drugs.

Community Leaders:

Community leaders, such as water system advisory boards and land-use managers, make recommendations and decisions that have the potential to impact source water quality. Increasing their fundamental knowledge about source water protection concepts and locations of Source Water Protection Areas helps to inform decision-making processes and garner their continuing support. .

Education Tools

A range of educational tools is available to enhance community understanding of drinking water sources and to promote support for source water protection. These tools can be effectively utilized alongside local educational programs, community events, and at public meetings. Examples are provided in Table 2-1. These and other tools are often accessible through the technical assistance contacts shown in Table 1-1.

Table 2-1. Educational Tools and Descriptions

Educational Tools	Description
Physical Watershed Model (Attachment A, Education Plan) Contact for technical assistance (Table 1-1) or http://www.enviroscapes.com/nonpoint-source.html	• Fun hands-on activity showing how various contaminants can be moved throughout a watershed. • Facilitates audience engagement about sources of pollution and what they can do to prevent it.
Physical Groundwater Model (Attachment A, Education Plan) Contact for technical assistance (Table 1-1) or **Awesome Aquifer Kits** Awesome Aquifer - Groundwater Education Kit – The Groundwater Foundation	• Demonstrates how contaminants can infiltrate into the ground and contaminate drinking water wells. • Illustrates how groundwater travels through an aquifer.
Source Water Protection Area Maps (Appendix A, CSWP Plan)	• Displays management boundaries for protecting drinking water sources. • Raises awareness about vulnerability of drinking water sources. • Educates communities about waste management within designated Source Water Protection Areas.
Website Sources (Attachment B, Education Plan)	• Free, convenient, accessible educational materials. • Rich multimedia content with up-to-date information based on global research. • Includes interactive aspects to enhance the learning experience.

Outreach Tactics

Team members serve as CSWP Plan ambassadors within their respective communities. With support from organizations such as Nevada Rural Water Association and the Nevada Division of Environmental Protection (NDEP) Integrated Source Water Protection (ISWPP) Program (Table 1-1), communities can get involved to learn about their sources of drinking water.

Outreach is the process of engaging the interest of target audiences in Lincoln County. Specific tactics and content are outlined in Table 2-2 to enhance community understanding of drinking water sources and to guide them on what they can do to assist their water purveyors in protecting those resources. When implementing these tactics:

- plan the desired message,
- know how an audience should utilize the information,
- recognize the channels through which the information will be disseminated, and
- identify how each tactic will be evaluated for effectiveness.

Table 2-2. Outreach Tactics and Content

Tactics	Application Methods and Content
Fact sheets / brochures / handouts / flyers / water bill inserts: Can be distributed in the mail, at libraries, community centers, builder associations, rotary club meetings, economic development authorities, etc.	• Source Water Protection factsheet, knowledge of where your water comes from and how to protect it. • Source Water Protection Area map for each community or water system service area. • How to maintain your septic system. • Proper maintenance of private wells. • Potential sources of contamination.
Presentations and on-site education:	• CSWP Plan presentation to County Commissioners, local water boards, Chamber of Commerce, etc. • Proper septic system maintenance for local homeowners. • Watershed and/or groundwater model presentation at schools, libraries, and community events.
Employee trainings:	• Safe materials handling. • Emergency spill response. • Source Water Protection Area awareness.
Source water site signage:	• "Drinking Water Source" signage at spring heads. • Fencing and signage around wellheads.
Public water system annual Consumer Confidence Report:	• Incorporate source water protection information into the annual consumer confidence report.

Sample Educational Messages and Discussion Points

Engaging an audience is important because it enhances attention, learning, participation, connection, motivation, and overall impact. By engaging their audiences, education leaders in this Education Plan can create a more meaningful and effective exchange of information and ideas related to source water protection. It is important to bring the source water protection concepts into a person's own experience to facilitate engagement and information retention. The following questions can help to kick start open communication.

Where does the water in your tap come from?

Your drinking water in Lincoln County comes mostly from groundwater, however, there are a few springs that supply drinking water as well! Groundwater is underneath the Earth's surface and is stored in underground aquifers that are made of rock, sand, and gravel. Springs are formed when groundwater pushes up to the Earth's surface through openings in the ground. Your community public water systems pump the water out of the aquifer or spring, clean it, and send it right to your tap! Your drinking water is 100% safe to drink thanks to YOUR public water system operators!

Why is it important to protect drinking water at the source?

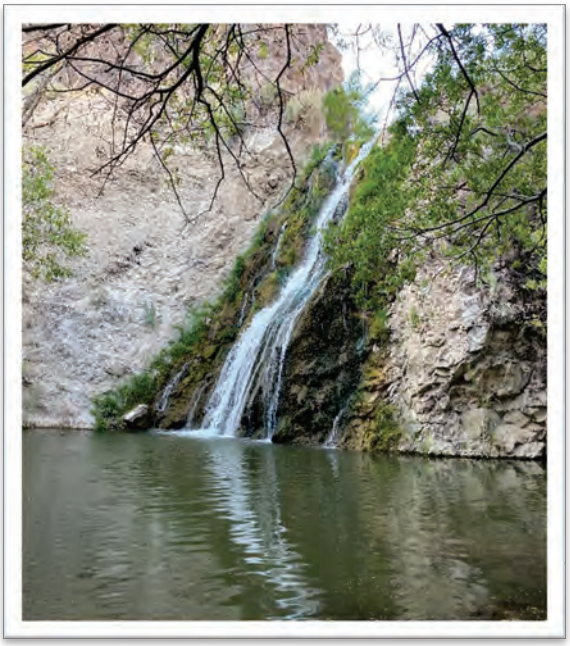
Groundwater and springs can be polluted from various human activities and natural occurrences. Once the source of your drinking water becomes polluted, it is extremely costly and difficult to clean. You have the power to support YOUR water system operators as they implement strategic safeguards to avoid or control contamination threats and incidents which may pollute your drinking water.

What is Source Water Protection?

Source water protection is a community-driven effort to prevent drinking water from becoming polluted. Source water protection identifies sources of public drinking water and any possible threats to water quality, then develops management boundaries and tools through the development of a CSWP Plan. Lincoln County has their own CSWP Plan – check it out! You have the power to prevent the contamination of your drinking water.

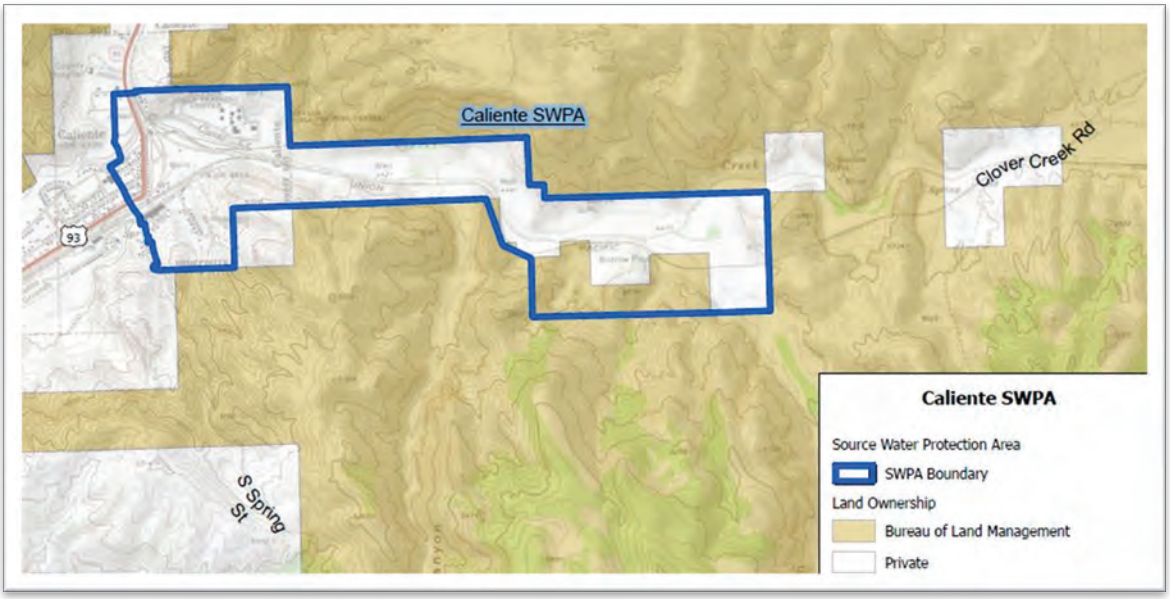
What are Source Water Protection Areas?

In Lincoln County, Source Water Protection Areas are management boundaries surrounding public drinking water sources, as illustrated on your source water protection figures in the CSWP Plan. Typically, Source Water Protection Areas include a broad recharge area surrounding your drinking water sources. Recharge areas are where groundwater from rain or snow soaks into the ground and fills up your aquifer. In the case of springs, the smaller watershed directly up-gradient from the spring head often becomes the source water protection area.



What contaminates the water we drink?

There are numerous pollutants that can contaminate the surface and groundwater. Some contaminants are a result of improper disposal of common household products, such as cleaning products, waste oil, pet waste, fertilizers, and pesticides. When improperly used, stored, or disposed of, these contaminants can pose a risk to your drinking water. Other pollutants can come from improper maintenance of the byproducts of certain types of industries, making local industries and businesses important participants in the source water protection efforts.



Ways to Measure Education and Outreach Success

Evaluation plays a crucial role in assessing the impact of key messages and tactics used in outreach, as well as in identifying areas for improvement. To assess effectiveness, it is important to determine the most suitable metric for evaluating each tactic; these can either be quantitative or qualitative measurements. It is essential to consider the desired outcomes of the outreach activity, the key audience(s), and the resources available.

Quantitative Measurements:

Refers to things that are measurable or countable, such as the amount of information provided. Examples of quantitatively measuring effectiveness include:

- Number of presentations delivered and number of people in attendance.
- Number of materials distributed (e.g., pamphlets, flyers, emails, etc.).
- Quantity of inquiries based on materials/presentations provided (e.g., phone calls, e-mails, and in-person participation).

Qualitative Measurements:

Relates to the quality or value of the information provided. Examples of qualitative evaluation for public education and outreach include:

- Survey presentation participants about content and knowledge gained.
- For public websites hosting source water protection information, provide a way for the public to give feedback or ask questions.
- Email/mail a questionnaire to individuals hooked into a public water system.

Education Outreach Tips

Education and outreach should be personalized and tailored to each community and each target audience. Some communities want short, to-the-point presentations, while other communities enjoy detailed presentations with graphics and interactive materials. Students and young children tend to ask a lot of questions and retain information better with hands-on activities. Depending on the tactics selected, you may need to create additional communication materials.

A few tips to remember when creating any communication materials:

- Keep it simple and to the point – let the audience ask questions if they want more information,
- Use words your audience will understand and explain all scientific topics in detail,
- Allow whitespace – do not fill every space in your presentation/conversation, and
- Be consistent with your messaging.

Always consider:

- Who is my audience and what do they need to know?
- What are my resources and budget?
- How much time do I have?
- How will I follow up to see if it was effective? And when?

Be consistent with your messages and always include a call to action, such as:

- "To learn more about how to dispose of household hazardous waste check out…"
- "Learn more about what Lincoln County is doing to protect your drinking water at…"
- "Learn more about septic system maintenance, visit…"

References

Alabama A & M and Auburn Cooperative Extension. What is an Aquifer, June 15, 2021. Web. Accessed July 6, 2023. https://www.aces.edu/blog/topics/fish-water/what-is-an-aquifer/

Enviroscape EnviroScape: Environmental Education Products (enviroscapes.com)

Hudson River Watershed Alliance. What is a Watershed, ND. Web. June 2023. https://hudsonwatershed.org/what-is-a-watershed/

Lincoln County Nevada Water District. Water Basins, 2007. Web. June 2023. https://lincolncountynv.org/departments/lincoln-county-water-district/

Lincoln County Nevada Solid Waste. Bin Site Protocol, 2017. Web. June 2023. https://lincolncountynv.org/departments/solid-waste/

Lincoln County Nevada Solid Waste. Bin Site Map, ND. Web. June 2023. https://lincolncountynv.org/departments/solid-waste/

National Groundwater Association. 2022. Groundwater Fundamentals. https://www.ngwa.org/what-is-groundwater/About-groundwater

Nevada Rural Water Association. 2022. Nevada Rural Water Association. https://www.nvrwa.org/

State of Nevada Bureau of Safe Drinking Water. 2022. Drinking Water. https://ndep.nv.gov/water/drinking-water

State of Nevada Division of Environmental Protection. 2010. Nevada Integrated Source Water Protection Program Draft Update. March 2010.

State of Nevada Division of Environmental Protection. 2022. Nevada Division of Environmental Protection. https://ndep.nv.gov/

The Groundwater Foundation Awesome Aquifer - Groundwater Education Kit – The Groundwater Foundation

United States Environmental Protection Agency. 2016. Drinking Water & Groundwater Kids' Stuff. https://www3.epa.gov/safewater/kids/index.html

United States Environmental Protection Agency. 2014-2016. Septic Smart Education Materials. Web. 2023. https://www.epa.gov/septic/septicsmart-education-materials

United States Geological Survey. 2022. Water Science School. https://www.usgs.gov/special-topics/water-science-school

Public Education and Outreach

Attachment A

Using the Models in Outreach: An Example

Outreach using watershed (e.g., Enviroscape, etc.) and groundwater (e.g., Awesome Aquifer, etc.) models is appropriate for community events or schools. It is recommended that presentations can be somewhat brief (30 minutes) or can extend for up to one hour depending on your audience and the event structure.

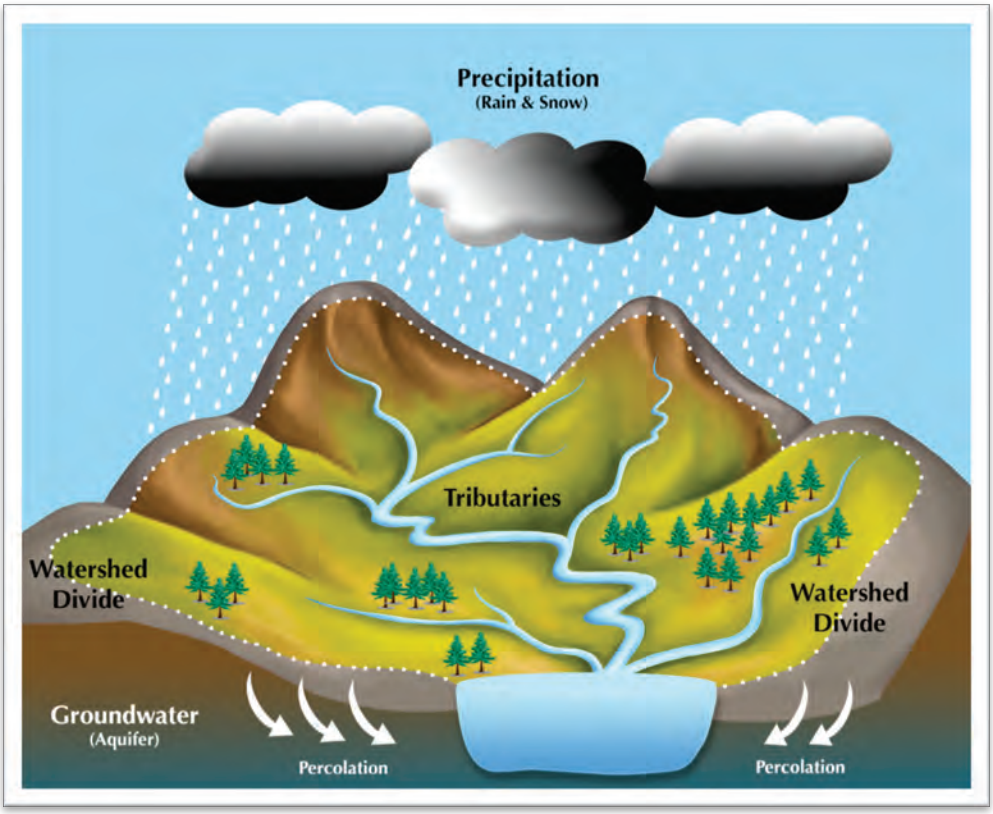
Surface Water:

When you turn on the tap in your home, where does the water come from?

Depending on the answers the discussion can evolve. A discussion regarding what the sewer does, rainfall quantities, and how groundwater is recharged might be appropriate.

What is a watershed?

A watershed is the area of land from which the water drains into nearby water bodies, such as a river, stream, or underground aquifer. A watershed is a difficult concept to grasp, drawing a diagram can help facilitate a discussion. The following figure (Hudson River Watershed Alliance, 2023) is an example.



Demonstration of the Watershed Model

- ✓ Invite participants to come close to see the watershed model and ask if they know:

  What is a contaminant? Discuss various forms such as oil and grease, factory chemicals, fertilizer, etc. Use cool aid packets or another water-soluble substance and sprinkle around the model to demonstrate various forms of man-made contaminants.

  How much rainfall does the community receive each year? Discuss average rainfall and then rain on the watershed. Watch the rain flow down the drainages and take the contaminants along. Discuss infiltration, pull the plug, and move to the groundwater model.

- ✓ Discuss the importance of individual actions to protect source water and drinking water.

Groundwater:

What is an aquifer?

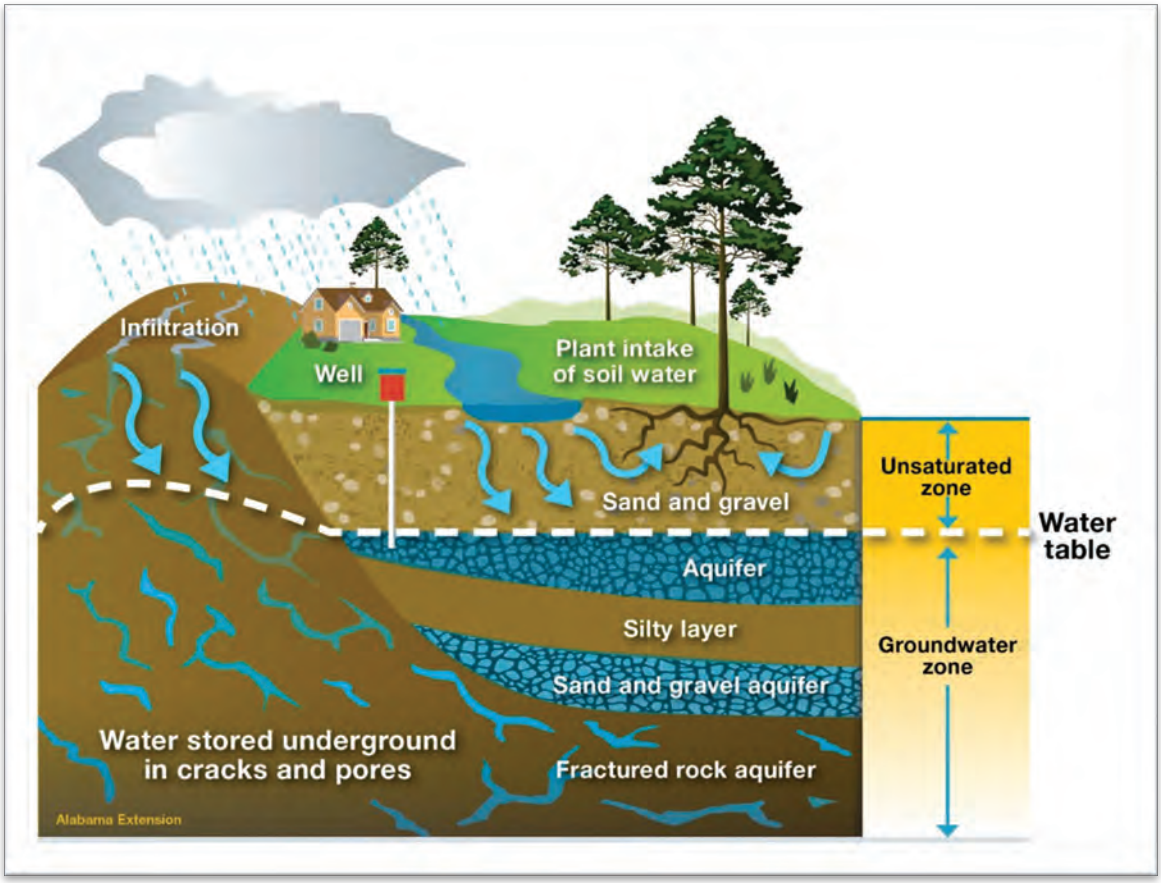
An aquifer is an underground body of water that sits in permeable material such as sand, gravel, and fractured rock. This water is accessed by drilling down to the depth of the water (or aquifer) and installing a well, which acts like a giant straw.

What happens when groundwater becomes contaminated?

Contaminants can be human-made or naturally occurring. If a contaminant is not managed, stored, or disposed of properly it has the potential to leak through the soil, eventually reaching an underground aquifer where people get their water. And once an aquifer becomes polluted, it is very difficult and expensive to clean, in some cases a polluted aquifer is too polluted and must be abandoned.

Demonstration of the Groundwater Model or Awesome Aquifer Kits

- ✓ Simulate pumping from a well. Discuss aquifers, pumping, water movement, etc.
- ✓ Use food coloring to illustrate contamination of groundwater. Discuss types of contaminants, movement with groundwater pumping, etc.
- ✓ Talk about infiltration and how the pollution in the watershed model can end up in the groundwater.
- ✓ Revisit the question: ***Why is it important to protect drinking water at the source?***



Share the Source Water Protection Area Maps of the Community

- ✓ Discuss Source Water Protection Areas and what they mean for each community.
- ✓ Discuss different common chemicals or products that are more or less harmful to the environment. Open the conversation and walk through the importance of thinking about the chemicals we use and how we use them.
- ✓ Discuss proper disposal methods, and the importance of keeping contaminants out of the irrigation ditches.
- ✓ Reiterate that each person makes a difference to source water protection by his or her actions and choices they make every day.

[This page intentionally left blank.]

Public Education and Outreach

Attachment B

Online Resources

For more information on your drinking water and source water protection go to:

What is Groundwater? https://www.youtube.com/watch?v=oNWAerr_xEE&t=51s

What is a Watershed? https://www.youtube.com/watch?v=QOrVotzBNto

Nevada Source Water Protection. https://ndep.nv.gov/water/source-water-protection

Nevada Integrated Source Water Protection Program. https://ndep.nv.gov/water/source-water-protection/integrated-source-water-protection

Nevada Source Water Assessment Program. https://ndep.nv.gov/water/source-water-protection/source-water-assessment

Nevada Drinking Water. http://water.epa.gov/drink/local/nv.cfm

After the Storm: A Citizen's Guide to Understanding Stormwater. https://www.youtube.com/watch?v=fn736F34QyQ

This EPA link is excellent regarding water quality and household wells. http://water.epa.gov/drink/info/well/upload/2003_06_03_privatewells_pdfs_household_wells.pdf

Nevada Project Wet. https://ndep.nv.gov/water/rivers-streams-lakes/water-education-and-outreach/project-wet

EPA. https://www.epa.gov/ground-water-and-drinking-water

National Groundwater Association. https://wellowner.org/

Enviroscape. EnviroScape: Environmental Education Products (enviroscapes.com)

The Groundwater Foundation. Awesome Aquifer - Groundwater Education Kit – The Groundwater Foundation

EPA. https://www.epa.gov/ground-water-and-drinking-water

Note: Links may change but you can search for key words above that describe each link!

[This page intentionally left blank.]

Public Education and Outreach

Attachment C

Terms Defined

Aquifer: a naturally occurring, underground area of water-soaked sand or gravel.

Best Management Practices: are barriers, methods, measures, or practices designed to prevent or reduce water pollution.

Bureau of Safe Drinking Water: the mission of BSDW is *to protect public health and the environment by providing oversight, guidance, and support, while fostering collaboration with safe drinking water partners*. This is accomplished by providing regulatory oversight for the Public Water System Supervision Program in Nevada, reviews compliance data from approximately 600 public water systems (PWSs) based on State and Federal regulations and conducts Source Water Assessments and Vulnerability Assessment Reports for Nevada PWSs. Through the NDEP, the Source Water Protection Program is administered through the BSDW to help communities protect their drinking water.

Bureau of Water Pollution Control: the mission of the State of Nevada Bureau of Water Pollution Control (BWPC) is to protect the waters of the State from the discharge of pollutants. The BWPC regulates all discharges to waters of the State through issuing permits and enforcing the State's water pollution control laws and regulations, and staff provides technical assistance to dischargers. Through the NDEP, BWPC helps communities protect their drinking water.

Contamination: introduction of an undesirable chemical or biological substance not normally present in source water.

Groundwater: water found beneath the earth's surface. The water is pumped to the surface for drinking water.

Integrated Source Water Protection Program: The State of Nevada Integrated Source Water Protection Program is a comprehensive, voluntary approach designed to help communities develop and implement a plan that protects their drinking water supplies. The Integrated Source Water Protection Program is a program created and monitored through the Bureau of Safe Drinking Water.

Nevada Division of Environmental Protection (NDEP): NDEP will protect the State's natural resources through an effective, efficient program of permitting, enforcement of regulations, monitoring the environment, pollution prevention and remediation based on state and federal laws. NDEP encourages, motivates, and supports communities' local source water protection activities; manages, shares, and integrates source water protection information; develops federal, state, and local source water protection partnerships; and integrates and implements source water protection at the state level.

Source water: consists of bodies of water such as lakes, springs, streams, rivers, and groundwater/ aquifers that become our water supply.

Surface water: consists of springs, streams, and rivers that become our drinking water.

Watershed: the area of land that drains to a common water body like a stream, river, or lake.

[This page intentionally left blank.]

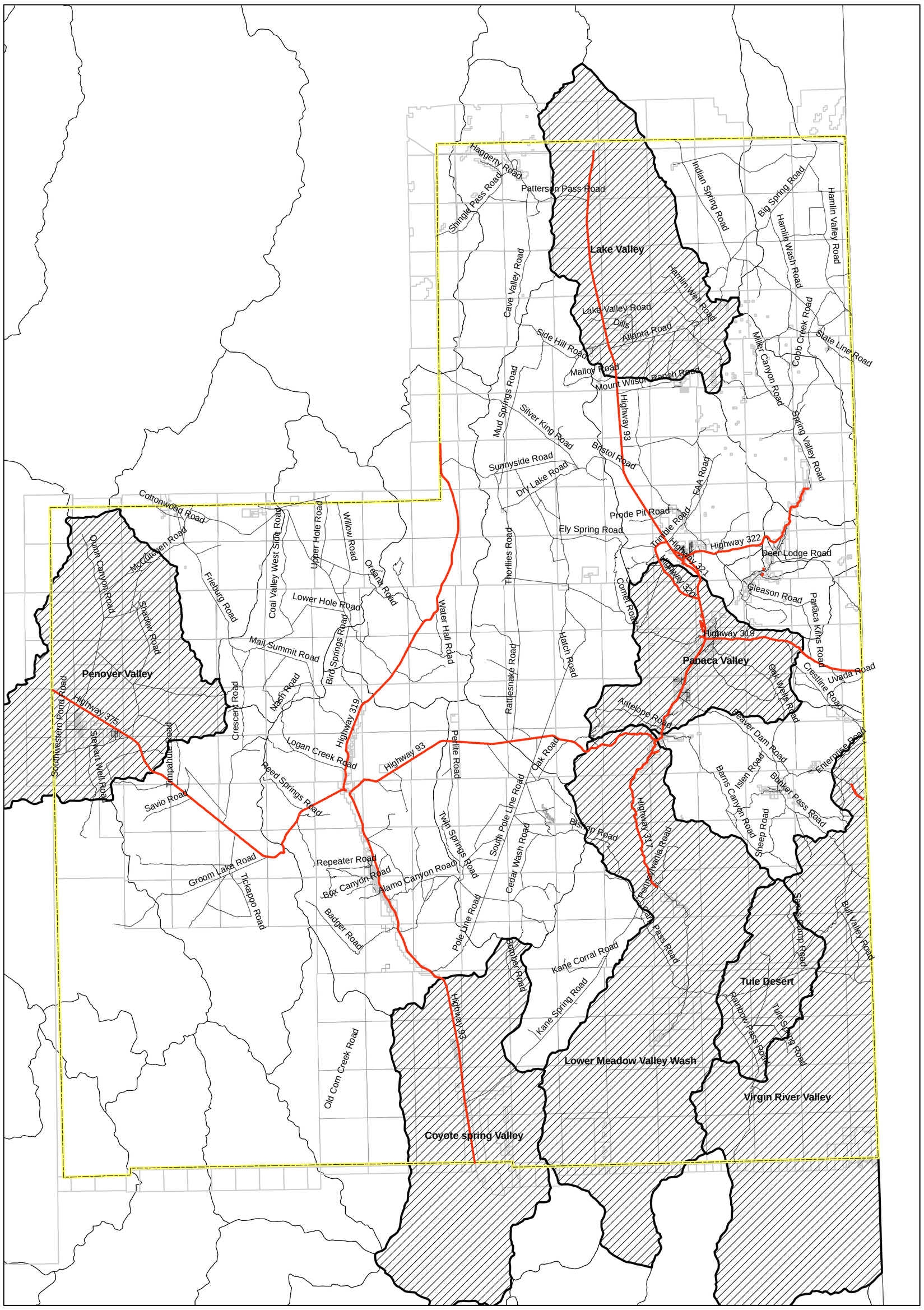
Public Education and Outreach

Attachment D

Examples of Educational Information

[This page intentionally left blank.]

LINCOLN COUNTY DESIGNATED WATER BASINS



JULY 13, 2007

0 42,000 84,000 168,000 252,000 336,000 Feet

The GIS material is made available as a public service. Maps and data are to be used for reference purposes only and Lincoln County, Nevada, is not responsible for any inaccuracies herein contained. In no event will Lincoln County be liable for any damage s, including loss of data, lost profits, business interruption, loss of business information or other pecuniary loss that might arise from the use of maps or the information they contain. GIS information is in the public domain and may be copied without permission; citations for all sources is appreciated. The cadastral information contained on the maps is used to locate, identify and inventory parcels or other features of land. It is NOT to be construed or used as a "legal description." Map information i s believed to be accurate but accuracy is not guaranteed. Any corrections should be reported to Lincoln County Planning Department.

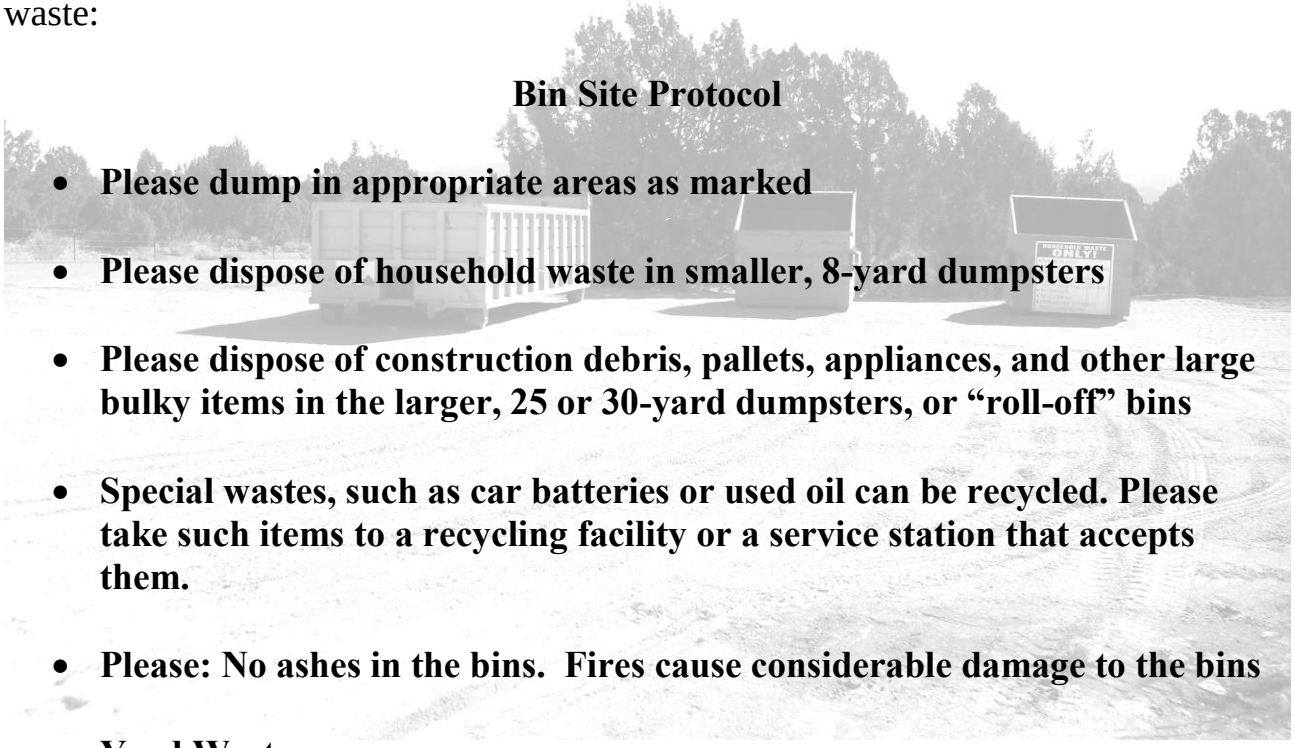
Lincoln County Solid Waste
Post Office Box 690
Pioche, Nevada 89043
Office location: 1005 Main St. Panaca
Phone (775) 962-8091

Dear Property Owner:

Lincoln County now owns the Crestline Landfill, equipment and facilities that are necessary to provide our solid waste service. This directly translates to you, **the public**, having ownership in solid waste in the County.

Labor costs increase when articles are dumped on the ground that should be in a bin, certain waste is placed in the wrong bins, or illegal waste is dumped. Loads must be sorted at the landfill and wastes which cannot be deposited in the landfill must be removed and dealt with accordingly.

In an effort to reduce added labor costs at the Public Waste Bin Facilities, or Bin Sites, as well as at the landfill, please keep in mind the following when dumping waste:



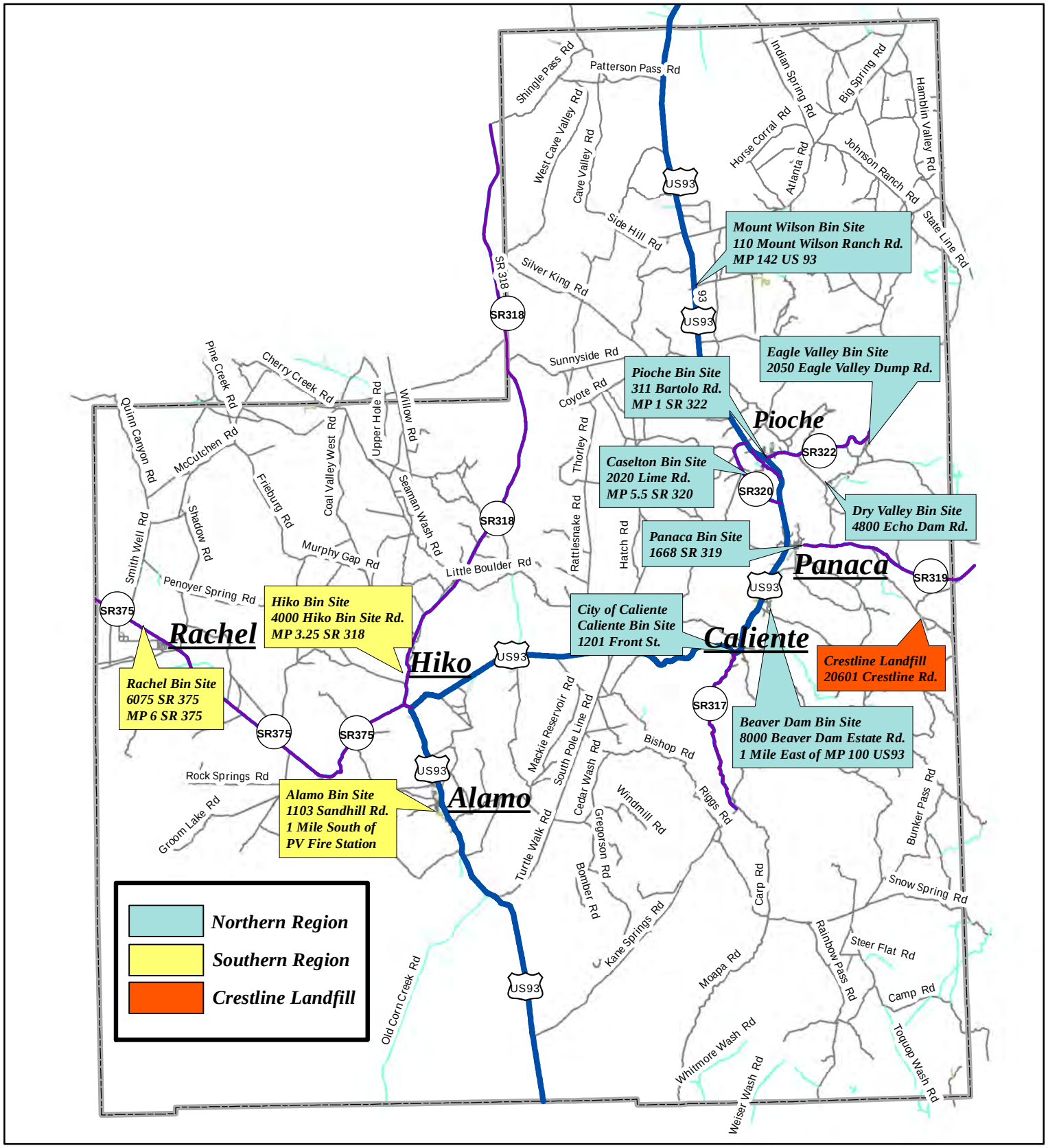
Bin Site Protocol

- **Please dump in appropriate areas as marked**
- **Please dispose of household waste in smaller, 8-yard dumpsters**
- **Please dispose of construction debris, pallets, appliances, and other large bulky items in the larger, 25 or 30-yard dumpsters, or "roll-off" bins**
- **Special wastes, such as car batteries or used oil can be recycled. Please take such items to a recycling facility or a service station that accepts them.**
- **Please: No ashes in the bins. Fires cause considerable damage to the bins**
- **Yard Waste-**
  - ***Small bagged yard waste should go in the roll off bins**
  - ***Other yard waste should go in yard waste or "chip-able" area**

Please do your part and help keep Lincoln County clean!

Map 1

Lincoln County Public Waste Storage Bin Facility or Bin Sites



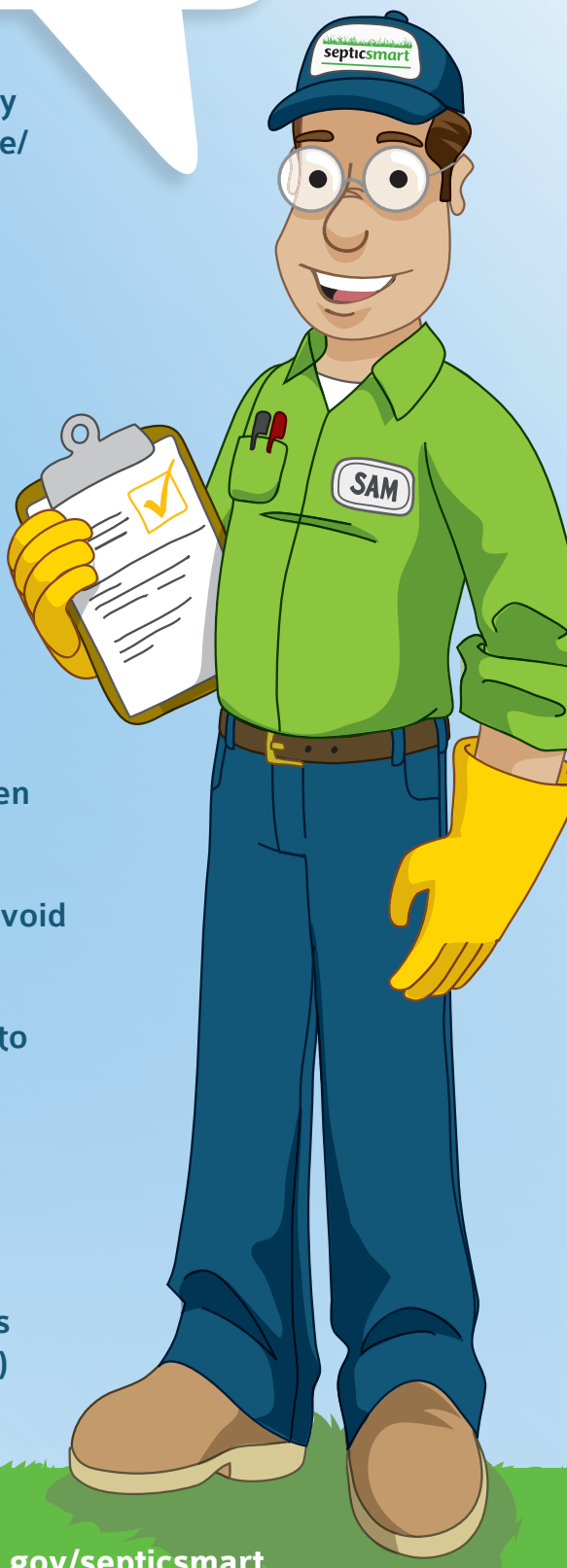
0 6.5 13 19.5 26 Miles

N W E S

Map Produced by Lincoln County Planning Department.

Top 10 Ways to Be a Good Septic Owner

- Have your system inspected every three years by a qualified professional or according to your state/ local health department's recommendations
- Have your septic tank pumped, when necessary, generally every three to five years
- Avoid pouring harsh products (e.g., oils, grease, chemicals, paint, medications) down the drain
- Discard non-degradable products in the trash (e.g., floss, disposable wipes, cat litter) instead of flushing them
- Keep cars and heavy vehicles parked away from the drainfield and tank
- Follow the system manufacturer's directions when using septic tank cleaners and additives
- Repair leaks and use water efficient fixtures to avoid overloading the system
- Maintain plants and vegetation near the system to ensure roots do not block drains
- Use soaps and detergents that are low-suds, biodegradable, and low- or phosphate-free
- Prevent system freezing during cold weather by inspecting and insulating vulnerable system parts (e.g., the inspection pipe and soil treatment area)



septicsmart
U.S. Environmental Protection Agency

For more SepticSmart tips, visit **www.epa.gov/septicsmart**

EPA EPA-832-F-16-010 | July 2016

On a septic system?

When's the last time you thought about it?

Your septic system is part of your home and your responsibility.

Don't wait until you have issues with your septic system. Protect your home investment and avoid costly replacement—call a licensed septic tank contractor today.

- Have your septic tank inspected and pumped out by a licensed septic tank contractor as needed (on average every three to five years).
- Protect your system by practicing simple, daily tips (see reverse).

septicsmart™

U.S. Environmental Protection Agency

SEPTIC TIPS

☑ **Keep it Protected—Get it Inspected!**
Have your septic tank inspected and pumped out by a licensed septic tank contractor as needed (on average every three to five years).

☑ **Don't Strain your Drain!**
Use water efficiently to avoid overtaxing your system. Fix household leaks, run the dishwasher and clothes washer only on full loads, and consider installing high-efficiency fixtures.

☑ **Think at the Sink!**
Don't pour grease, fats, or harmful chemicals like paints and solvents down your sink. They can clog or harm your system.

☑ **Don't Overload the Commode!**
Do not flush non-degradable items such as dental floss, diapers, coffee grounds, or feminine hygiene products.

☑ **Shield your Field!**
Care for your drainfield by only planting grass, not driving or parking on it, and reducing roof and surface water drainage near the drainfield.

Know your part, be SepticSmart!
Learn more at **www.epa.gov/septicsmart.**

septicsmart™
U.S. Environmental Protection Agency

EPA-832-R-14-004 June 2014

Protecting Our Drinking Water

Much of the Nevada countryside is in agricultural operations and plays a huge role in our state's production of food. Conversely, agriculture may also impact the drinking water sources throughout the state. Farmers and ranchers have a unique challenge in balancing efficient operations with environmental stewardship. This brochure is designed to provide information on various Best Management Practices (BMPs) that can help reduce nutrients found in manure and sediment from row crops.

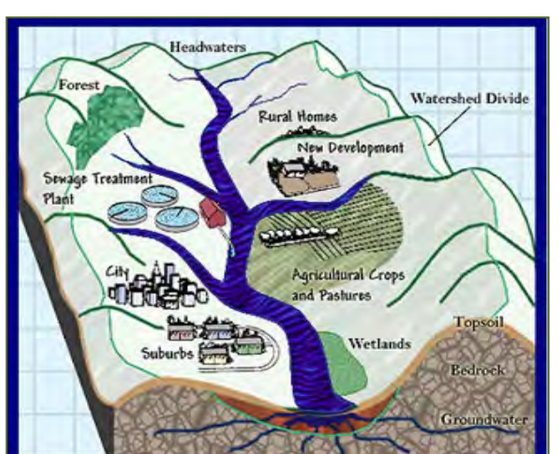
All agricultural producers are encouraged to seek assistance from their County Conservation District and the Natural Resources Conservation Service for the installation and implementation of these practices.

What is a Watershed?

A watershed is all the land that drains to the same river or lake. Water travels from the highest points at the watershed edge to the lowest point at the bottom of the watershed. Wherever you are, you are in a watershed!

When it rains, some water travels over the land surface to the nearest stream or creek. This water is called *surface runoff* or *stormwater*. As the stormwater flows, it picks up any contaminants lying on the surface – pesticides and fertilizer from lawns, manure from farms, sediment from construction sites, and oil and gas from roads. Small streams join to form larger and larger rivers, until the water – and any contaminants it is carrying.

Some precipitation, instead of traveling over the land, will infiltrate into the soil and reach the *groundwater*. Similarly, the groundwater may pick up these contaminants, which are then carried by the groundwater into one of the rivers or lakes in the watershed.



HOMEOWNER GUIDE

Agriculture and Your Drinking Water

Community Source Water Protection Plan
for Public Water Systems in Lincoln County

NEVADA RURAL WATER ASSOCIATION

How Does Drinking Water Become Polluted?

Your drinking water may become polluted when substances that are harmful to human health enter the groundwater or surface source, like a lake or reservoir. Sometimes pollutants like manure and sediment from stormwater runoff find their way into streams and creeks. Once water is contaminated, it must be treated or abandoned as a drinking water source. The expense of treating polluted water or finding a new source of drinking water can be avoided through source water protection.

Examples of Agriculture Practices That Reduce Pollution

No-Till Planting and **Contour Strips** reduce loss of sediment through stormwater runoff.

Streambank Fencing prevents animals from depositing manure into streams. The fence also avoids destruction of the streambanks that add sediment to the water.

Grazing Management helps maintain plant life on pasture lands, reducing soil loss during rain events or snow melts.

Conservation and Nutrient Plans help farmers with sustainable operations.

Buffer Plantings along streams and creeks help filter pollutants in stormwater runoff from getting into the water.

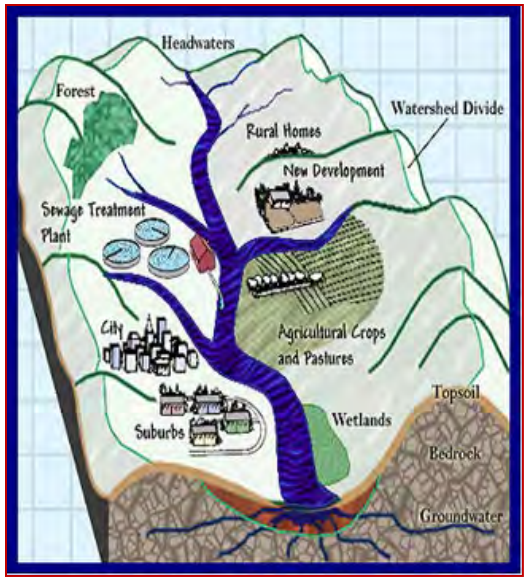
Creek Crossings minimize animal access to streams and reduces manure and sediment contamination.

What is a Watershed?

A watershed is all the land that drains to the same river or lake. Water travels from the highest points at the watershed edge to the lowest point at the bottom of the watershed. Wherever you are, you are in a watershed!

When it rains, some water travels over the land surface to the nearest stream or creek. This water is called *surface runoff* or *stormwater*. As the stormwater flows, it picks up any contaminants lying on the surface – pesticides and fertilizer from lawns, manure from farms, sediment from construction sites, and oil and gas from roads. Small streams join to form larger and larger rivers, until the water – and any contaminants it is carrying – reaches the water sources.

Some precipitation, instead of traveling over the land, will percolate into the soil and reach the *groundwater*. Similarly, the groundwater may pick up nitrates from failing septic systems, gasoline from leaky storage tanks, and industrial chemicals from improper dumping. The groundwater ultimately flows into one of the rivers or lakes in the watershed.



Ways to Help

What can you do?

- Dispose of motor oil at a garage that will recycle it. Never pour oil on the ground in a storm drain or sewer on the street.
- Purchase alternative products that contain fewer hazardous ingredients.
- Use only as much as you need and use up the product completely.
- Minimize the use of pesticides and herbicides on your lawn and garden. Use biodegradable products when available.
- Do not pour used or unused chemicals or paints down the drain or flush in the toilet.
- Use water-based paints if possible. Sweep up dust and paint chips from sanding or stripping activities.
- NEVER mix leftover chemicals with other materials.
- Make sure all chemicals are properly labeled and stored away from children and pets.
- Contact your county solid waste department for HHW collection events in your area.
- Remember: anything you throw or store on the ground can find its way into the groundwater. Store and handle chemicals properly.

For more information:
Check your county's website for programs available.

HOMEOWNER GUIDE

Proper Disposal of Household Hazardous Waste

Community Source Water Protection Plan
for Public Water Systems in Lincoln County

NEVADA RURAL WATER ASSOCIATION

Remember, it's not just toxic to you!

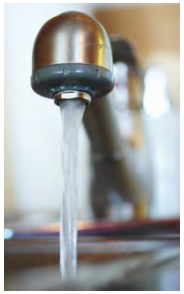
Did you know that many household products are dangerous to our children, pets, and environment? Household cleaners, lawn & garden chemicals, gasoline, antifreeze, and many other substances need to be stored and disposed of properly.

When Household Hazardous Waste (HHW) makes its way into the environment, plants, animals, and humans can all be affected. Never throw away these materials into the trash or flushed down a drain.

All the items listed in this brochure should be carefully handled and disposed of according to directions. Check for HHW collection events sponsored by your municipality or the county government.

Examples of Household Hazardous Wastes

- ✓ Latex and oil-based paint
- ✓ Vehicle fluids like gasoline, used motor oil, and antifreeze
- ✓ Lawn & garden fertilizers, pesticides, and herbicides
- ✓ Pool Chemicals
- ✓ Solvents
- ✓ Household cleaners
- ✓ Electronic devices
- ✓ Asphalt and driveway sealants
- ✓ Ammunition
- ✓ Vehicle batteries
- ✓ Lithium/NiCad batteries
- ✓ Outdated or unused pharmaceuticals



How does drinking water sometimes become polluted?

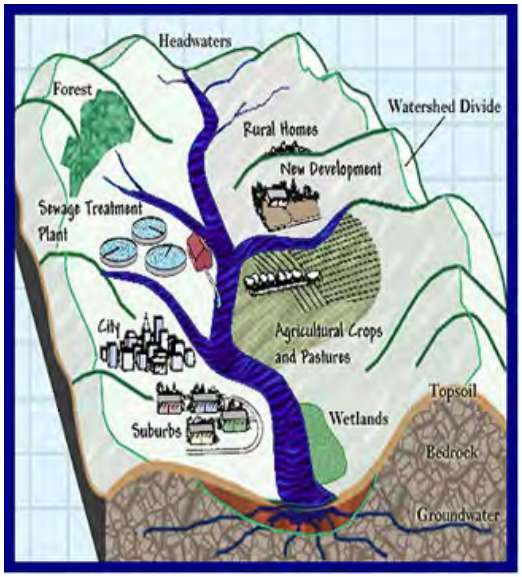
Your drinking water may become polluted when substances that are harmful to human health enter the groundwater or surface source, like a lake or reservoir. Common pollutants include gasoline or oil from leaking tanks, homeowner lawn and garden activities , salt from winter road maintenance, and other chemicals from stormwater runoff. Once water is contaminated, it must be treated or abandoned as a drinking water source. The expense of treating polluted water or finding a new source of drinking water can be avoided through source water protection.

What is a Watershed?

A watershed is all the land that drains to the same river or lake. Water travels from the highest points at the watershed edge to the lowest point at the bottom of the watershed. Wherever you are, you are in a watershed!

When it rains, some water travels over the land surface to the nearest stream or creek. This water is called *surface runoff* or *stormwater*. As the stormwater flows, it picks up any contaminants lying on the surface – pesticides and fertilizer from lawns, manure from farms, sediment from construction sites, and oil and gas from roads. Small streams join to form larger and larger rivers, until the water – and any contaminants it is carrying – reaches the water sources.

Some precipitation, instead of traveling over the land, will percolate into the soil and reach the *groundwater*. Similarly, the groundwater may pick up nitrates from failing septic systems, gasoline from leaky storage tanks, and industrial chemicals from improper dumping. The groundwater may supply your drinking water wells, and ultimately flows into one of the rivers or lakes in the watershed.



Other Ways to Protect Your Drinking Water

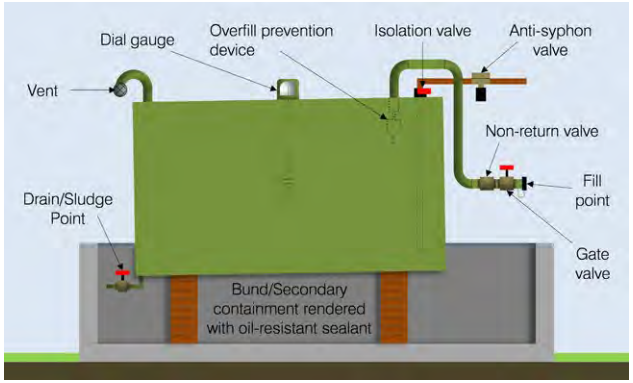
What can you do?

- Dispose of used motor oil at a garage that will recycle it. Never pour oil on the ground or in a storm drain on the street.
- Minimize the use of pesticides and herbicides on your lawn and garden. Use biodegradable products when available.
- Do not pour unwanted pharmaceuticals or unused chemicals or paints down the drain or flush in the toilet. Take your pharmaceuticals to a collection area to avoid use by others.
- Participate in community cleanup events or planting projects.
- Contact your county solid waste department for Household Hazardous Waste collection events in your area.
- Clean up after your pet. Pet waste contains bacteria and other pathogens that can make its way into waterways through rain or snow melt.
- If you have an on-lot septic system, inspect it and arrange for pump-out every three years, or according to local ordinances.
- Remember: anything you throw or store on the ground can find its way into the groundwater. Store and handle chemicals properly.

For more information:
Check your county's website for programs available.

HOMEOWNER GUIDE

Tips for Residential Heating Oil Tank Owners



Community Source Water Protection Plan
for Public Water Systems in Lincoln County

NEVADA RURAL WATER ASSOCIATION

The Costs of Cleanup

When heating oil or other materials makes its way into the environment, plants, animals, and humans can all be affected. Leaking tanks can potentially contaminate public water supplies, private wells, contaminate soil, and cause fire or explosion hazards.

Cleanups to tank owners can also be very expensive. Owners of leaking underground storage tanks are required to clean up affected contaminated soil as well as polluted groundwater or surface water like creeks and streams.

If you notice a leak, it is in your best interest to clean it up promptly and properly to reduce expense, liability, and the potential for contamination. Your best bet is to prevent contamination by monitoring and maintaining your tank.

Access these informative factsheets at www.dep.pa.gov KEYWORD Tank Tips:

- *Tips for Residential Heating Oil Tank Owners*
- *Home Heating Oil Releases*
- *Leaking Underground Storage Tanks: Controlling Cleanup Costs*

How can releases from residential tanks be prevented?

✓ Routinely inspect the exterior of an aboveground tank and all attached equipment.

✓ Install spill and overfill prevention devices.

✓ Ensure that the tank address is clear, and the fill line is marked, to help avoid accidental deliveries.

✓Consider a secondary containment structure to prevent spills or leaks from entering the environment.

✓ Be sure to take out the fill pipe if removing a tank from inside your home.

✓ If you notice drips or leaks, or you are using more oil than normal, call a professional for a detailed inspection of your tank.

How does drinking water sometimes become polluted? Your drinking water may become polluted when substances that are harmful to human health enter the groundwater or surface source, like a lake or reservoir. Common pollutants include gasoline or oil from leaking tanks, homeowner lawn and garden activities , salt from winter road maintenance, and other chemicals from stormwater runoff. Once water is contaminated, it must be treated or abandoned as a drinking water source. The expense of treating polluted water or finding a new source of drinking water can be avoided through source water protection.

Caring for Your System

Remember that the Homeowner is responsible for the care and maintenance of the septic system! Here are some ideas to keep your system in top shape:

- Inspect the entire system every 1 to 3 years to ensure good working order.
- Pump the solids from the tank every three (3) years to avoid overfilling and failing tanks.
- Keep service and pumping records handy.
- Repair the system as soon as trouble signs appear, such as sluggish toilets, sewer odors, spongy ground around septic tank, or raw sewage backups.
- Conserve water and follow directions to prevent malfunctions.

Visit the Nevada Division of Environmental Protection website for more information at:

https://ndep.nv.gov/water/water-pollution-control/permitting/onsite-sewage-disposal-system-program_wm/FACTS/pa1607.htm

Septic System Maintenance Record			
Date	Company	Service	Comments

Do's and Don'ts

DO dispose of motor oil at a garage that will recycle it. Never pour oil down the sink or in a storm drain or sewer on the street.

DO limit the use of household chemicals. These substances can reduce the necessary bacteria that breaks down the waste solids. Resulting sludge can clog the drainfield.

DON'T dispose of non-degradable solids in the system. Examples include tissues, sanitary supplies, cigarette butts, and paper towels. A buildup will clog the inlet and effluent pipes.

DO regularly check faucets and toilets for leaks. This extra drainage can overload your system.

DO substitute substances like vinegar, baking soda,, or borax for household hazardous wastes like ammonia bleach, and other hazardous cleaners. Use a phosphate-free laundry detergent.

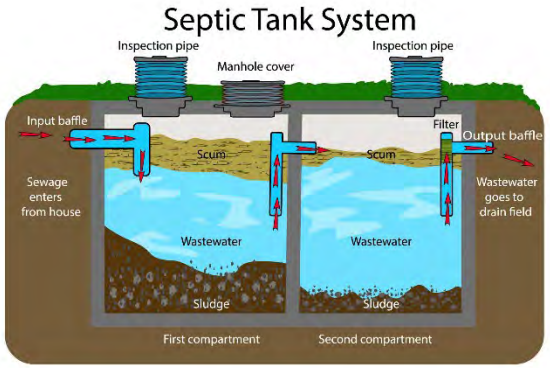
DON'T clean paint brushes or dispose of paint into the septic system. Both latex-based and oil-based paint can clog the system and create problems.

For more information

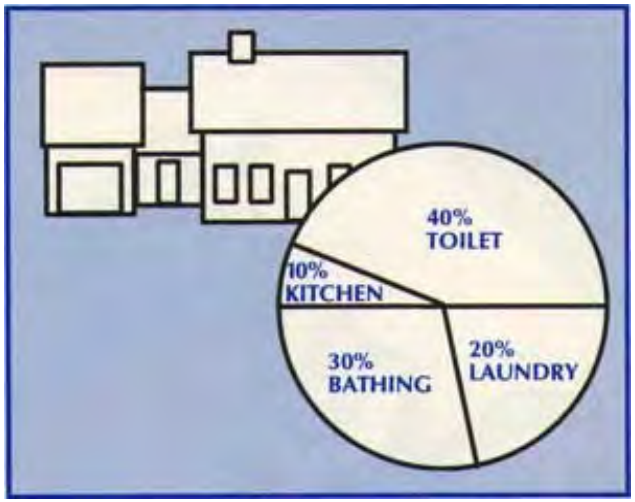
USDA Grassroots Source Water Protection Specialist
Nevada Rural Water Association
363 Fairview Drive
Carson City, NV 89701
(775) 841-4222
NvRWA.com

HOMEOWNER GUIDE

Septic Systems Care and Maintenance



Community Source Water Protection Plan
for Public Water Systems in Lincoln County



What is a Septic System?

Households that are not on a public sewer system use an on-lot septic system to dispose of their wastewater. Household wastewater contains all the wastes from our homes, including toilet use, bathroom and kitchen use, laundry, and other activities. It contains human waste, detergents, chemicals, grease, oils, and many other substances. If not treated properly, these substances can travel through soil and potentially contaminate local waterways.

Most systems have three components:

• **Septic Tank** – Tanks can be constructed from plastic, fiberglass, or concrete. Tank size and specifications are determined by state regulation, and systems are permitted and approved by local agencies.

• **Drainfield** – a drainfield is constructed from a series of perforated pipes buried in gravel- filled trenches in the soil. When wastewater enters the septic tank, an equal amount (known as *effluent)* is forced into the drainfield for treatment.

• **Soil** – the soil encompassing the trenches treats the wastewater by allowing infiltration of the liquids to neutralize most of the pollutants. The effluent eventually is incorporated into groundwater.

NEVADA RURAL WATER ASSOCIATION

Example of Typical Septic System

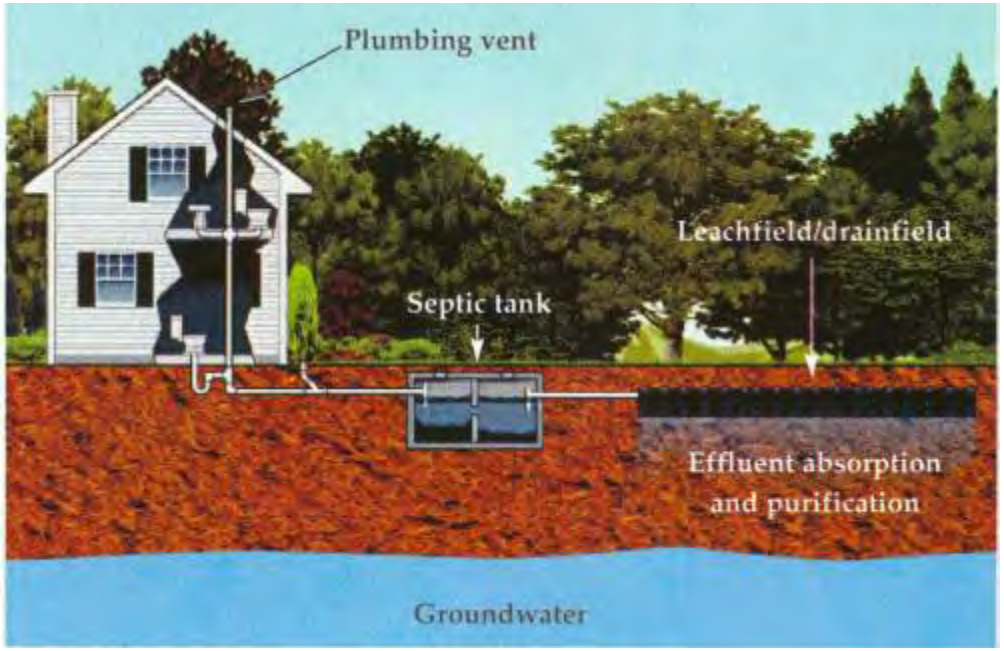


Photo courtesy of Infiltrator Systems, Inc.

Why Should I Maintain My Septic System?

• ***Saves Money!*** Repairing or replacing a septic system can be very expensive. Inspecting and pumping the system every 3 years helps keep the components working correctly.

• ***Protects Your Health!*** Bacteria and viruses are found in the wastewater, and a functional septic system removes most of the organisms during treatment.

• ***Protects the Environment!*** What goes into your septic system may end up in your drinking water source. Refrain from using cleaners and other chemicals that may eventually be discharged from your system and soak into the ground.

Flushing Do's and Don'ts

What are the WORST items to dump down the drain:

- **WIPES** – Wipes (even "flushable" wipes) do not break down like toilet paper and can clog household sewer pipes and pipes at the treatment plant. This can be expensive to fix.
- **HOUSHOLD CHEMICALS** like cleaners, painting products, and pesticides contain some chemicals that cannot be removed during the wastewater treatment process. If possible, used biodegradable or plant-based cleaning products that are more easily treated.
- **FATS, OILS, GREASE** (FOGs) Cooking grease, leftover animal fats, and motor oil can become solid, causing buildup in pipes when they are poured in the drain, or washed away. Pour FOGs into a container to solidify and throw away in the trash.


Photo Courtesy of Rock Hill, SC

What Else Should Never Go In A Drain:

- Medicines/Prescriptions
- Kitty Litter
- Feminine Products
- Cigarette Butts
- Diapers
- Disposable Toilet Brushes

Protecting Source Water

Local water and wastewater operators are working non-stop provide residents with services that protect the environment, and they can use your help! Everyone has an important part to play in protecting drinking water – today and for the future. Source water protection is a community effort – we hope you will read this, and other information forwarded to you, and help protect your water supply.

Why do water sources sometimes become polluted? A water supply can become polluted when substances that are harmful to human health enter the groundwater, rivers, reservoir, or springs. Common pollutants include gasoline or oil from leaking tanks, nitrate and pesticides from agriculture and lawns, pathogens from livestock and pet waste, salt from winter road maintenance, and chemicals from industrial facilities. Once drinking water is contaminated, it must be treated or abandoned as a drinking water source. The expense of treating polluted water or finding a new source of drinking water can be avoided through source water protection.

To further strengthen our efforts, Lincoln County community water systems participated in the Nevada Division of Environmental Protection's Integrated Source Water Protection Program (ISWPP) and partnered with Nevada Rural Water Association's Source Water Protection Specialist

Through ISSWP, a source water protection plan was developed for all the water sources that supply residents with safe drinking water.

CITIZEN'S GUIDE

Wastewater in Your Home

Community Source Water Protection Plan
for Public Water Systems in Lincoln County

NEVADA RURAL WATER ASSOCIATION

What Happens to Our Wastewater?

Household wastewater contains all the wastes from our homes, including toilet use, bathroom and kitchen use, laundry, and other activities. It contains human waste, detergents, chemicals, fats, oils, grease, and many other substances. This brochure helps people understand the complex process of treating wastewater.

Households that are on a public sewer system have these wastes treated at a local wastewater treatment plant. They are designed to handle water, human waste, and toilet paper.

Anything else that goes down the drain can damage both the treatment system and the environment! Before you dump something in a sink, think ***Should this go down the drain?***

What Are The Worst Things To Dump in Drains?

- Wipes – even “flushable” wipes!
- Fats, Oils, and Grease
- Household Chemicals

Example of a Typical Wastewater Treatment Plant

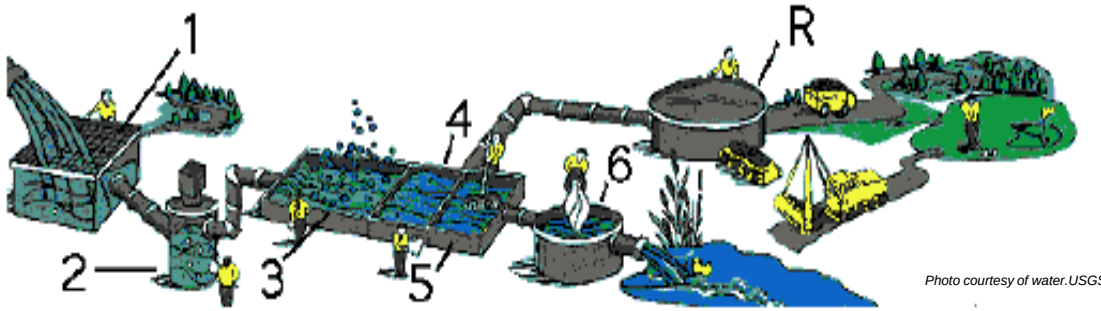


Photo courtesy of water.USGS.gov

The Primary Treatment Process

1. **Screening:** Wastewater entering the treatment plant includes items like wood, rocks, and even dead animals. Unless they are removed, they could cause problems later in the treatment process.

2. **Pumping:** Gravity moves sewage from your home to the treatment plant. If the plant is built above the ground level, the wastewater has to be pumped up to the aeration tanks (item 3).

3. **Aerating:** One of the first steps is to shake up the sewage and expose it to air. This causes some of the dissolved gases (such as hydrogen sulfide, which smells like rotten eggs) that taste and smell bad to be released from the water. Wastewater enters a series of long, parallel concrete tanks. Each tank is divided into two sections. In the first section, air is pumped through the water. As organic matter decays, it uses up oxygen. Aeration replenishes the oxygen. The 'grit' (coffee grounds, sand and other small, dense particles) will settle out.

4. **Removing sludge:** Wastewater then enters the second section or sedimentation tanks. Here, the organic sludge settles out of the wastewater and is pumped out of the tanks. Some of the water is removed in a step called thickening and then the sludge is processed in large tanks called digesters.

5. **Removing scum:** As sludge is settling to the bottom of the sedimentation tanks, lighter materials are floating to the surface. This 'scum' includes grease, oils, plastics, and soap. Slow-moving rakes skim the scum off the surface of the wastewater. Scum is thickened and pumped to the digesters along with the sludge. Many cities also use filtration in sewage treatment. After the solids are removed, the liquid sewage is filtered through a substance, usually sand, by the action of gravity. This method gets rid of almost all bacteria, reduces turbidity and color, removes odors, reduces the amount of iron, and removes most other solid particles that remained in the water.

6. **Killing bacteria:** Finally, the wastewater flows into a 'chlorine contact' tank, where the chemical chlorine is added to kill bacteria, which could pose a health risk, just as is done in swimming pools. The chlorine is mostly eliminated as the bacteria are destroyed, but sometimes it must be neutralized by adding other chemicals. This protects fish and other marine organisms, which can be harmed by the smallest amounts of chlorine.

The treated water (called effluent) is then discharged to a local river or the ocean.

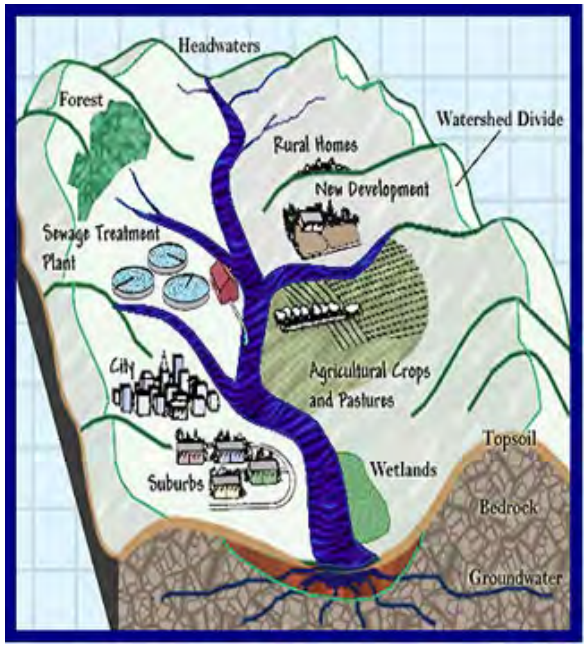
Reproduced from https://water.usgs.gov/edu/wwvisit.html

What is a Watershed?

A watershed is all the land that drains to the same river or lake. Water travels from the highest points at the watershed edge to the lowest point at the bottom of the watershed. Wherever you are, you are in a watershed!

When it rains, some water travels over the land surface to the nearest stream or creek. This water is called *surface runoff* or *stormwater*. As the stormwater flows, it picks up any contaminants lying on the surface – pesticides and fertilizer from lawns, manure from farms, sediment from construction sites, and oil and gas from roads. Small streams join to form larger and larger rivers, until the water – and any contaminants it is carrying – reaches the final lake or river.

Some precipitation, instead of traveling over the land, will percolate into the soil and reach the *groundwater*. Similarly, the groundwater may pick up nitrates from failing septic systems, gasoline from leaky storage tanks, and industrial chemicals from improper dumping. The groundwater ultimately flows into one of the rivers or lakes in the watershed.



Ways to Help

What can you do?

- Dispose of motor oil at a garage that will recycle it. Never pour oil on the ground or in a storm drain or sewer on the street.
- Pump out your septic system every two or three years. Look under "Septic Tanks" in the Yellow Pages to find a contractor.
- Bring household hazardous waste – such as paint, varnishes, and other chemicals – to a county waste collection site. Call ahead or check the county website for dates.
- Minimize the use of pesticides and herbicides on your lawn and garden.
- If you drill a new well, make sure the old one is properly closed and abandoned.
- Do not dump swimming pool water into a creek or storm drain at the end of the season. If possible, direct the water into the sanitary sewer. Otherwise, wait until the chlorine diminishes and then direct pool water onto grass, forest, or other natural area.
- Remember: anything you throw or store on the ground can find its way into the water supply. Store and handle chemicals properly.
- Call the local emergency response unit immediately if you observe a chemical spill.

For more information:

Nevada DEP www.ndep.nv.gov
Watershed Protection www.epa.gov/hwp
Center for Watershed Protection www.cwp.org
Source Water Collaborative
www.sourcewatercollaborative.org
American Waterworks Association www.awwa.org
Source Water Protection in NV www.nvrwa.org
363 Fairview Drive
Carson City, NV 89701
(775) 841-4222

CITIZEN'S GUIDE

Protecting Your Drinking Water

Community Source Water Protection Plan
for Public Water Systems in Lincoln County

NEVADA RURAL WATER ASSOCIATION

A Message from YOUR Public Water System

Everyone uses local water sources every day, but do you know where your water really comes from?

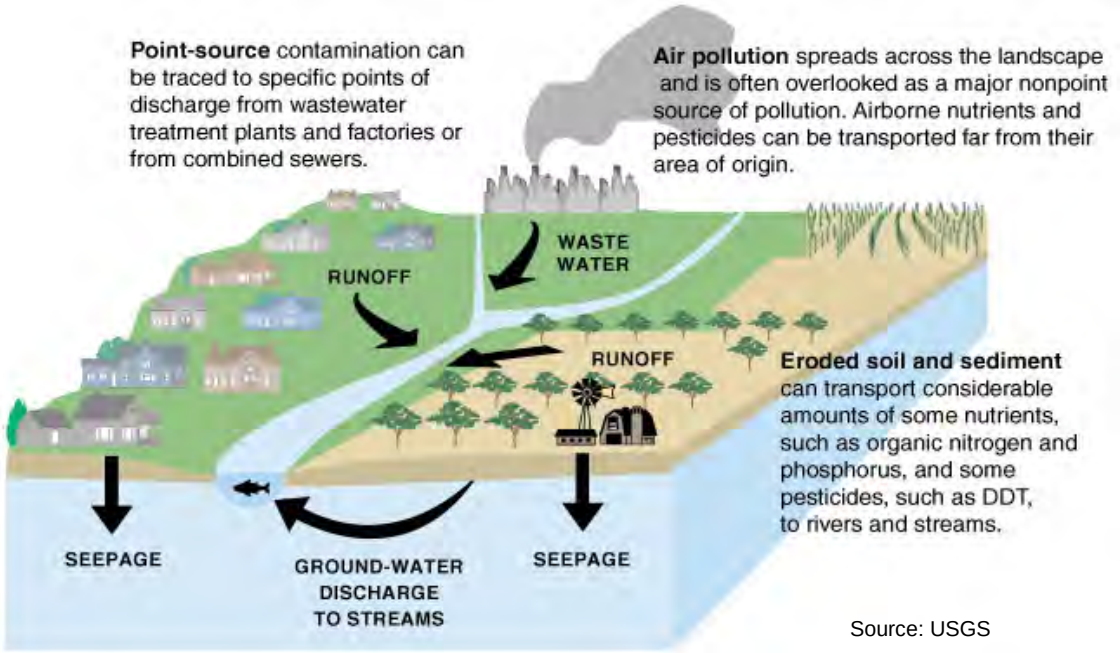
The operators in Lincoln County work around the clock to provide top quality water to every tap. They work hard to protect your water resources, which are the heart of your community, your way of life and your children's future. To maintain a clean, dependable water supply, they need your help!

This brochure was developed to make your community aware of the importance of protecting your water supply. Once a water source becomes contaminated, the cleanup often takes many years and can be very expensive. It is in our community's best interest to take the proper precautions to prevent contaminants from entering our water supply.

Who is responsible for protecting your drinking water? EVERYONE!

If you have any questions about source water protection in your area, please contact the Nevada Rural Water Association – Source Water Protection Specialist at **Christopherb@nvrwa.org** for more information.

Examples of Source Water Contamination



Source: USGS

The water systems participating in this program obtain your drinking water from several groundwater sources in the county. Source water protection can help prevent your drinking water from becoming polluted by managing possible sources of contamination in the watershed. Everyone has an important part to play in protecting drinking water – today and for the future. Source water protection is a community effort – we hope you will read this, and other information forwarded to you, and help protect our water supply.

Why do water sources sometimes become polluted? A water supply can become polluted when substances that are harmful to human health enter the groundwater, rivers, reservoir, or springs. Common pollutants include gasoline or oil from leaking tanks, nitrate and pesticides from agriculture and lawns, pathogens from livestock and pet waste, salt from winter road maintenance, and chemicals from industrial facilities. Once drinking water is contaminated, it must be treated or abandoned as a drinking water source. The expense of treating polluted water or finding a new source of drinking water can be avoided through source water protection.