Clark County
Wellhead Protection Report

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BACKGROUND

Authority

Amendments to the federal Safe Drinking Water Act in 1996 mandated that "*each state develop a Wellhead Protection Program (WHPP) for the purpose of protecting groundwater that serves as a source of public drinking water supplies.*" The Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control (BWPC) administers the state's Wellhead Protection Program.[1] This Report provides background for the Clark County Wellhead Protection Element in accordance with NRS §278.160 (1) (b).

Objectives of this report

The Clark County Wellhead Protection Report provides the background, analysis and recommendations that are the basis of the corresponding Element of the Comprehensive Plan. The Wellhead Protection Element assists in guiding land use and policy decisions made by the Planning Commission and Board of County Commissioners that will ultimately preserve and protect the County's groundwater from contamination by incompatible land uses that might otherwise locate too near to a well or well field.

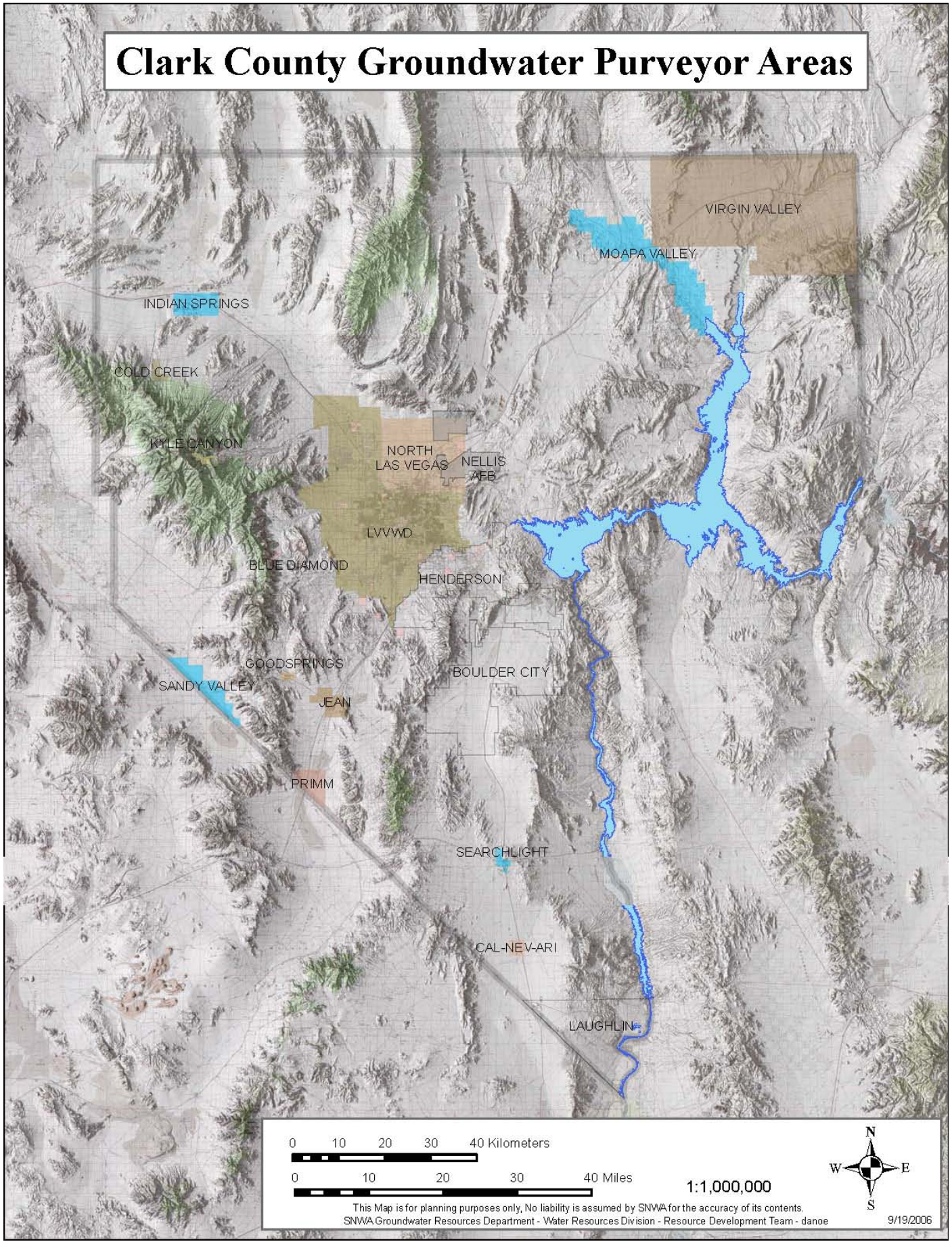
Overview

Clark County is one of the fastest growing counties in the United States. Over the last fifteen years, Clark County has maintained a population growth rate of 5.65 percent a year. At present, over 5,700 people are added to the Clark County population every month. By the year 2025, the population of Clark County is projected to be over three million. As the County's population expands, all of its residents rely on a safe, continuous supply of drinking water. This supply is maintained by the 119 public water systems located throughout Clark County through a combination of surface water from Lake Mead, and a network of groundwater supply wells.

The rate and amount of growth in Clark County challenge the ability of public water systems to meet the ever-increasing demand for drinking water. This challenge is compounded by diminished water supplies due to recent drought. Since 1999, the elevation of Lake Mead has declined by more than 80 feet. The United States Department of Agriculture issued statewide drought declarations for Nevada in 2002 and 2004. As the surface water supply is strained through drought and political constraints (seven 'Basin States' and Mexico share water from the Colorado River), Clark County increasingly relies on groundwater to meet its water needs. As Clark County continues to grow, the network of groundwater supply wells may increase and protection of these valuable drinking water supplies becomes increasingly important.

Establishment of an integrated wellhead protection system throughout Clark County will help to protect our groundwater resources from contamination and reduce the chance of extremely expensive clean up and system replacement costs[2]. This Report analyzes the current situation and recommends policies and work programs. It also recommends that Clark County establish a zoning overlay district—a "Wellhead Protection Overlay" around public water wells to ensure that compatible land uses are located near water wells.

[1] Details are listed in the State of Nevada Wellhead Protection Program Guide, January 2004, provided by NDEP.
[2] Costs will vary but local experience has shown that amounts can easily exceed $1,000,000 per event, see page 6.


Clark County Groundwater Purveyor Areas
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MOAPA VALLEY
INDIAN SPRINGS
COLD CREEK
KYLE CANYON
NORTH LAS VEGAS
NELLIS AFB
LVVWD
BLUE DIAMOND
HENDERSON
GOODSPRINGS
SANDY VALLEY
JEAN
BOULDER CITY
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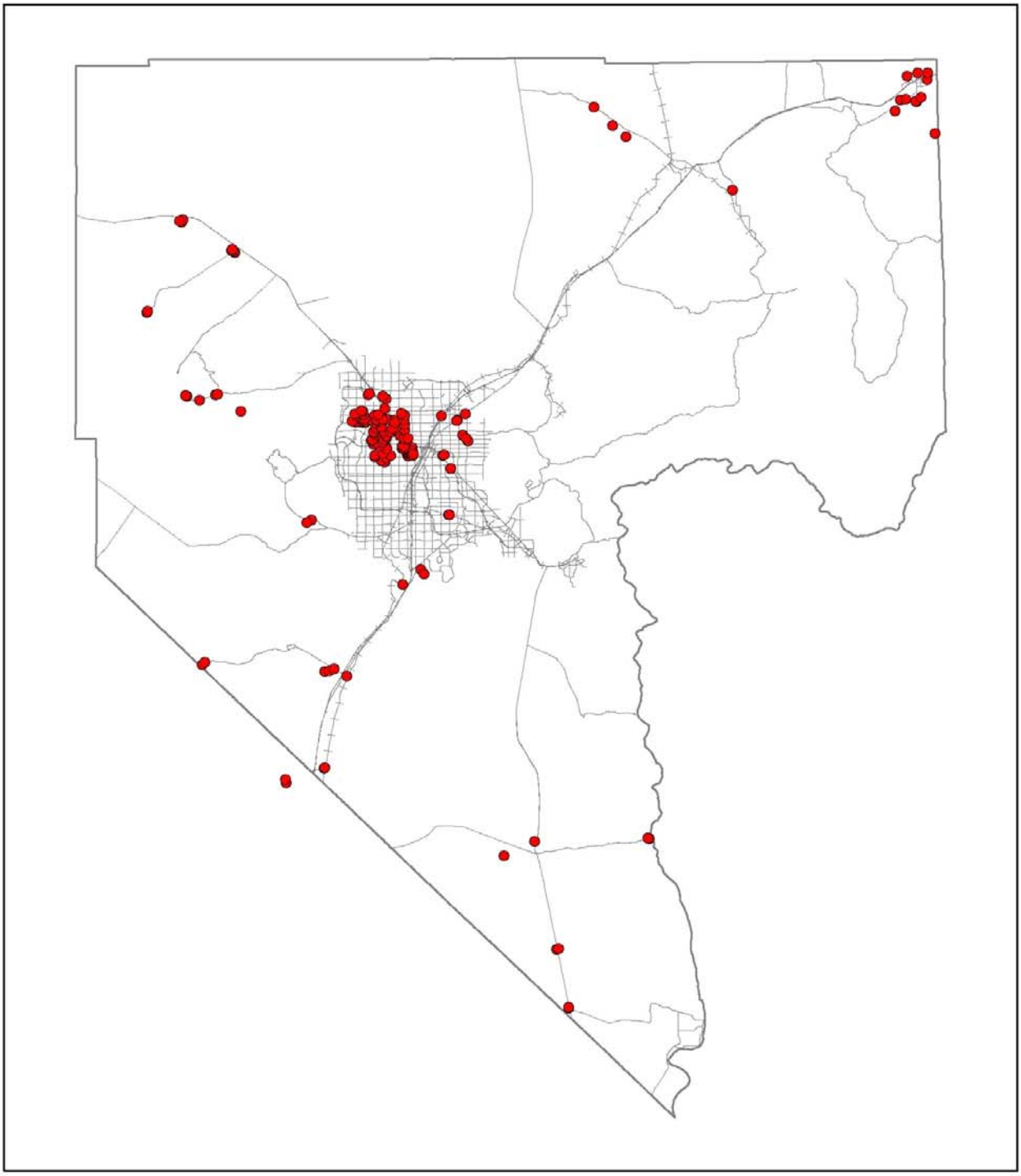
SNWA Groundwater Resources Department - Water Resources Division - Resource Development Team - danoe
9/19/2006



Comprehensive Planning

Community Public Water System Wellheads

1 inch equals 15.83 miles

Plot created on : March 8, 2007

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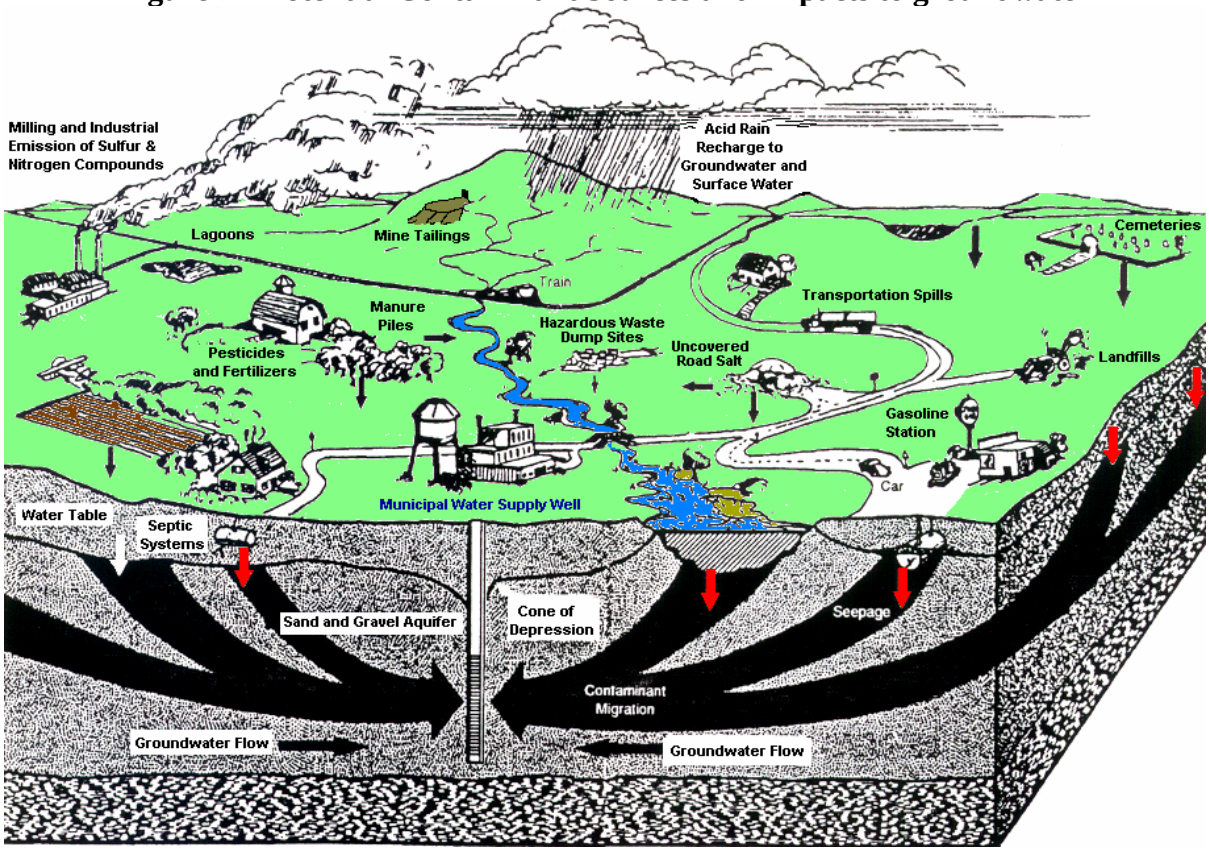
ANALYSIS

As water moves through the environment, it passes from the clouds to the ground—either running off the surface into streams and flowing towards lakes or the oceans, or soaking into the ground. Groundwater is found in the small cracks and spaces between the rocks and sediments at different levels underground. The places that hold large quantities of groundwater are called aquifers. People usually get groundwater by drilling a well down through the earth into an aquifer, placing pipes in the well, and using a pump to lift the water to the surface.

Water moving through the ground on the way to aquifers can dissolve and carry many different types of chemicals. Water companies and local, state and federal governments all have very strict rules about the types and concentrations of chemicals allowed in our drinking water—regardless of where it comes from. These rules come from the Safe Drinking Water Act[3] and are enforced by the Environmental Protection Agency (EPA), the Nevada Division of Environmental Protection (NDEP) and the Southern Nevada Health District. Water that does not meet standards cannot be used for drinking water (and treating water to meet standards can cost a significant amount of money.)

Figure 1—Potential Contaminant Sources and Impacts to groundwater



Modified from Protecting Nevada's Ground Water, Information, Ideas and Resources for Your Community, Nevada Ground Water Protection Task Force, April 1997.

[3] Safe Drinking Water Act of 1977. Amended in 1996 to promote protection of water resources.

How Groundwater gets Contaminated

Since groundwater is obtained through wells, the land surrounding a well is very important. Water wells are susceptible to pollution from human activities on the ground surface. Spills of harmful chemicals onto the ground can end up polluting nearby groundwater, and ultimately, an entire aquifer. This can happen when rain or irrigation runoff picks up chemicals and then soaks into the ground. It can also happen if underground facilities such as sanitary sewers, septic systems, or underground storage tanks leak their contents into the soil. Figure 1 on the previous page shows many of these potential threats to clean water.

Every month, an average of 35 spills or releases are called into the NDEP Spill Reporting Hotline in Carson City. The majority of these calls are to report incidents occurring in Clark County. As these calls evolve into "case files" at the NDEP Bureau of Corrective Actions, they progress through response, clean-up, and monitoring phases. At any given time, the Bureau of Corrective Actions handles 300 active case files in Clark County alone. Of these, approximately 200 cases involve leaking underground storage tanks (USTs), while the remaining 100 incorporate other contaminant source issues (i.e. releases from dry cleaners, chemical factories, etc.). Mobile sources, such as leaking tanker trucks, traffic accidents, and other transportation-related incidents, are not always included in these case files.

The majority of leaking underground storage tank cases entails the contamination of groundwater. Between 1988 and 1998, Nevada implemented new requirements to bring USTs into compliance with more stringent federal standards. Even with these changes, construction, installation, and operational changes, leaks occur from these UST systems at rates typically undetectable with routine monitoring equipment. Consequently, having a UST setback distance from water supply wells is prudent.

Land Use Concerns

Obviously not all land uses are the same, some offer a much higher potential for soil or groundwater pollution, than others do. The EPA has developed the "Potential Sources of Drinking Water Contamination Index", "Potential Drinking Water Contaminant Index" and other tools[4] to assist states and local governments in determining the potential pollution risks in their communities. These documents are useful in determining the potential hazards posed by land use activities and in evaluating the risks of land use related groundwater contamination.

The potential threat from incompatible land uses located too near to a well site is so high that several states and local governments have developed wellhead protection plans and programs with a major focus on land use compatibility. Examples include Butler County, Ohio; Redmond, Washington; Show Low, Arizona; several cities and counties in Nebraska; Riverside, California; Portland, Oregon and Sandy City and several counties in Utah.

Facilities Concerns

Regardless of land use, facilities constructed on properties can also adversely affect groundwater quality. Facility conflicts that could adversely affect groundwater quality include: underground sanitary sewer conveyance systems, stormwater conveyance systems, lift stations, sumps, underground storage tanks, septic tanks, burrow pits, and large-scale irrigation systems. Because many of these structures are underground, contaminant releases through leakage may not be immediately obvious.

[4] http://cfpub.epa.gov/safewater/sourcewater/

Why we should care

Contamination of a public water source or aquifer by harmful chemicals could occur in a variety of ways and has the potential to require very costly clean up and remediation actions. Impacts associated with drinking water contamination include adverse health effects, clean-up/replacement costs, and service interruption inconveniences.

Health effects are dependant upon the nature of the groundwater contaminant and the susceptibility of individuals based on a variety of factors including age, gender, genetic pre-disposition and physical conditions. The EPA has set standards for more than 80 groundwater contaminants that could pose a health risk. These have been divided into two groups—Acute and Chronic, based on their effects on health. From EPA's 1999 report Drinking Water and Health: What You Need to Know!:

> "***Acute*** *effects occur within hours or days of the time that a person consumes a contaminant. People can suffer acute health effects from almost any contaminant if they are exposed to extraordinarily high levels (as in the case of a spill). In drinking water, microbes, such as bacteria and viruses, are the contaminants with the greatest chance of reaching levels high enough to cause acute health effects. Most people's bodies can fight off these microbial contaminants the way they fight off germs, and these acute contaminants typically don't have permanent effects. Nonetheless, when high enough levels occur, they can make people ill, and can be dangerous or deadly for a person whose immune system is already weak due to HIV/AIDS, chemotherapy, steroid use, or another reason.*
>
> ***Chronic*** *effects occur after people consume a contaminant at levels over EPA's safety standards for many years. The drinking water contaminants that can have chronic effects are chemicals (such as disinfection by-products, solvents, and pesticides), radionuclides (such as radium), and minerals (such as arsenic). Examples of these chronic effects include cancer, liver or kidney problems, or reproductive difficulties.*" [5]

According to the EPA, the potential economic impacts of groundwater contamination include:

- the cost of removal of contaminants from drinking water sources through remediation or at the point of supply;
- the cost of relocating wells and finding new groundwater supplies;
- contaminants in groundwater add liability to the land owners of the property that is the source of the contamination;
- loss of groundwater due to over-pumping and contamination can lead to loss of drinking water, agricultural and industrial supplies, and recreational uses.[6]

Local Well Closure

Two public water supply wells were permanently removed from service in December 2002 due to vulnerability to contamination. The affected water system had stopped using these wells temporarily three and one half years earlier to allow clean up to occur on shallow groundwater contaminated with gasoline from two separate fueling stations. A small amount of gasoline contamination was found in one well during routine annual start-up sampling in June 1999 which prompted the well idling and subsequent closure.

Upon the closure of the two wells, the system operator relocated the water rights to one well in a different location.

Investigation of the contamination source lead to several years of costly groundwater clean-up by the fuel station owners. NDEP provided clean-up oversight and the cost for both clean-ups was partially reimbursed by the State of Nevada Petroleum Fund. Combined cost for the clean-ups was more than 2.6 million dollars and the cost to the municipality for plugging and abandonment of the wells was more than $40,000. Well location, age, design, and off-site land uses contributed to increased vulnerability for these wells.

Clean-up efforts vary depending upon the nature of the contaminant; however, one of the more common groundwater contaminants requiring clean up is gasoline. Estimates provided by the NDEP Bureau of Corrective Actions Petroleum Fund Reimbursement Program indicate that the typical cost for cleaning up groundwater contaminated by petroleum is between $300,000 and $400,000 per occurrence. Additionally, costs may be incurred as alternative water supplies are used until clean-up activities are completed, or in extreme cases permanent drinking water supply replacement costs may be incurred. With approximately 80% (1,450,000) of Clark County residents depending on

[5] EPA Drinking Water and Health: What You Need to Know; October 1999.
[6] Safe Drinking Water Act, Section 1429 Ground Water Report to Congress; 1999; p. 19.

groundwater for at least a part of their total water use, even temporary interruption could be a high-cost "inconvenience."[7]

Federal, State & Local Efforts[8]

Federal Efforts

Since approval of the original Environmental Protection Act by Congress in 1974, there have been a variety of programs by the federal government aimed at protecting the nation's water supplies. Early on, the federal government mainly focused on establishing scientific and health-based guidelines for water quality. The Safe Drinking Water Act of 1996 authorized the EPA to provide grants to the states to develop and implement groundwater protection programs. In its report to Congress, one of the EPA's top recommendations was that "(s)upporting the comprehensive management efforts that are emerging in the states will best serve the nation's need for maintaining sustainable groundwater resources into the future.[9]"

The EPA continues to support state and local protection efforts by:

- administering the Drinking Water State Revolving Fund (DWSRF);
- reviewing and approving states' Wellhead Protection Programs;
- working with states and local governments to oversee underground injection of waste in order to prevent contamination of drinking water sources;
- developing partnership opportunities among different programs to protect drinking water supplies;
- cooperatively supporting National Rural Water Association and the United States Department of Agriculture's programs to provide assistance to well owners, farmers and community in risk assessment;
- maintenance of an Environmental Information Management System ; and
- making available 109 Groundwater Protection Ordinances from 29 states.

State Supported Planning Efforts

The State of Nevada's groundwater and wellhead protection efforts include the development of a voluntary Wellhead Protection Program (WHP), funded by the DWSRF. The program administers financial assistance and provides technical support to public water systems and communities in WHP planning and implementation efforts.

Under the Nevada Wellhead Protection Program, grants are available to communities and CPWS operators for the development and implementation of Community Wellhead Protection Plans. To date, there are 51 state endorsed community WHP plans throughout the State. In Clark County, five CPWS operators and communities have worked together to prepare Wellhead Protection Plans. The Southern Nevada Water Authority and the Las Vegas Valley Water District are currently working on the Las Vegas Valley Aquifer Protection Plan, which will also address small systems within the Las Vegas Valley. Modeled Wellhead Protection Areas developed by water systems for many public water wells and springs located in Clark County and other communities and are available in GIS format from NDEP.

NDEP has begun to work with local governments in their efforts to develop Wellhead Protection Ordinances. Currently, Lyon and White Pine counties are working to establish and adopt countywide Wellhead Protection Ordinances. The Tahoe Regional Planning Agency has an existing Source Water Protection Ordinance, which establishes a Source Water Protection Zone of 600-foot radius around wells, springs or lake intakes and regulates possible contamination activities within the protection zone.

[7] Southern Nevada Water Authority, 2006.
[8] Includes Clark County's 208 Water Quality plans, mandated by the U.S. Environmental Protection Agency and the Nevada Division of Environmental Protection.
[9] Safe Drinking Water Act, Section 1429 Ground Water Report to Congress; 1999; p. 32.

NDEP is in the process of developing guidance for drinking water protection area delineation and management strategies to be used for state regulations, local ordinances, and education/outreach efforts. The goals for NDEP are to:

1. establish consistent state-wide standards, criteria, terminology and definitions for drinking water protection;
2. develop and maintain an up-to-date official database for drinking water protection areas (in GIS format); and
3. assist and enhance drinking water protection activities conducted by organizations throughout the State through coordination of source water, wellhead protection activities, and public education and outreach efforts.

The State of Nevada also regulates discharge to surface waters and groundwater under different permitting programs, administered by NDEP, to protect water supply. They include the Underground Injection Control, Commercial Septic Systems, National Pollutant Discharge Elimination System and Stormwater Discharge permits.

Storm Water Protection

Following EPA regulations, NDEP issued a joint discharge permit to the Clark County Regional Flood Control District; the Cities of Las Vegas, North Las Vegas and Henderson; Clark County; and the Nevada Department of Transportation. This permit authorizes the entities to discharge storm water and urban runoff into the Las Vegas Wash and its tributaries. *(Note: Storm water is **not** treated at any time during its trip into the storm drain, and then to a local wash, and finally to Lake Mead.)*

One of the conditions requires the co-permitees to have a program in place to ensure the construction industry is not impacting the storm drain system. Construction site owners are required to comply with State regulations for storm water. This includes development and implementation of a Storm Water Pollution Prevention Plan or SWPPP if their site is one acre or greater or is next to a wash or waterway. This plan requires best management practices such as silt fences, to be placed around construction sites before they move soil to ensure that nothing on their site enters the public right of way, including streets and sidewalks. In addition, runoff must not contain sediment, concrete, mortar, paint, solvents, lubricants, vehicle fluids, fuel, pesticides, construction debris, or other pollutants. All storm drain inlets and streams on construction sites must be protected.

Industrial sites can be potential sources of urban pollutants, and are particularly identified by the EPA for regulation under the NPDES storm-water discharge permit program. Permitees must comply with a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal and recovery facilities, and industrial facilities.

Inspections of both Industrial and Construction sites are conducted by various government agencies. Enforcement officers look for violations of local stormwater ordinances and forward inspection results to the appropriate enforcement agency. A site that is not in compliance could be subject to local, state and U.S. Environmental Protection Agency enforcement action. Site owners are held responsible for the actions of their contractors and subcontractors.

Local Planning Efforts

For many years, Clark County has had an ordinance in effect (Title 30.44) that requires a setback for underground fuel tanks. These tanks must be set back 1,000 feet from any well used as a source of potable water, lake, or major wash unless the underground tank meets the Southern Nevada Health District's stringent structural requirements. This ordinance is specifically in place for new construction of convenience stores, service stations, and truck stops where underground tanks may affect the local water sources.

In addition, several local wellhead protection plans have been prepared. Examples of these efforts are Searchlight, Moapa Valley and Sandy Valley.

The Town of Searchlight is located approximately 60 miles south of Las Vegas. During the late 1800's through the early 1900's, Searchlight was a center for mining and prospecting activities. Wellhead protection planning for this community started in 2003 and considered both past and present activities in the Searchlight area. Agencies with responsibilities for water service, land use, water reclamation, environmental health, emergency response and wellhead protection participated along with community members in developing the document. The plan considered the potential sources of ground water contamination in Searchlight, groundwater demands, and land use in the near future. Now complete, the Wellhead Protection Plan serves as a tool for members of the Searchlight community as well as local and state agencies with oversight responsibilities.

Moapa Valley is approximately 60 miles northeast of Las Vegas. The Moapa Valley Water District recognized the need to develop a comprehensive plan protect the District's public drinking water sources

from possible contamination. The District received a grant from the Nevada Division of Environmental Protection to draft the wellhead protection plan. The plan would identify the geographical impact areas that influence the public supply sources, conduct a risk assessment of the potential contaminant sources and recommend land uses in the areas of impact that would minimize the potential for groundwater contamination. NDEP has endorsed the plan.

Sandy Valley is approximately 50 miles southwest of Las Vegas. In 2003, the Sky Ranch Estates Owners Association spearheaded Sandy Valley's first efforts toward wellhead protection planning. The Association applied for and received grant funding from the NDEP to prepare a wellhead protection plan. Subsequently, the Association applied for and received funding for their Wellhead Protection Program Implementation Plan. The Implementation Plan proposed a proactive approach to drinking water protection that incorporated an educational approach with a push for local legislative reform.

Based on their plans, these system operators and the Las Vegas Valley Water District approached NDEP and Clark County to request development of wellhead protection regulations. This required a thorough study and planning. Staff began work on a plan element and soon recognized the need for expanding the scope to include all of unincorporated Clark County. As awareness of this initiative has grown, other communities and their representatives have agreed to join this positive approach to groundwater stewardship.

Issues

Emergency Notification—at present, there is no system in Clark County for notifying Public Water System operators near a contaminant release that there could be a threat to groundwater quality near their system.

Outlying Area Hazardous Materials—fire departments in many of the Outlying areas rely heavily on volunteers as well as professional firefighters, and do not have immediate access to the County's Hazardous Materials Team. A contaminant release onto land surface through either chemical spills, fires/explosions, or other means would result in a significantly longer response time.

Land Use Compatibility—at present, there is no mechanism within Clark County to ensure that the land uses developed near groundwater wells are compatible with this particular type of public water facility.

RECOMMENDATIONS

Policy Recommendations

Based on the work done by the planning team for this report, the following policies are recommended for inclusion in the Clark County Comprehensive Plan. It is recommended that these policies be included in and replace the current "Groundwater" section of the Plan.

- Clark County supports local, state and federal efforts to protect drinking water supplies.
- Clark County will recognize and support state-endorsed wellhead protection plans through land use and facilities plans, zoning and other appropriate methods.
- Clark County will support communication and coordination efforts to protect and preserve groundwater resources and facilities.

Work Program Recommendations

1. The Board of County Commissioners should direct staff to prepare an amendment to Title 30 for the creation of a Wellhead Protection Overlay District. (See the "Concept", below).
2. Incorporate Wellhead Protection Zone information into the Clark County Emergency Operations Plan and the Local Emergency Planning Committee Hazmat Plans.
3. Inform Emergency Responders and Community Partners about Clark County's Wellhead Protection Zones.
4. Incorporate wellhead protection areas into routine emergency management exercises to familiarize emergency response organizations with the specialized concerns and approaches related to the wellhead zones.

Wellhead Protection Overlay District Concept

Establishment of an integrated zoning overlay district throughout Clark County will help to protect our groundwater resources from contamination and reduce the chance of extremely expensive clean up and system replacement costs. A zoning overlay district located around public water wells will keep new incompatible land uses from locating too close to these wells. Existing and approved incompatible uses located near the wells would be "grandfathered" so the overlay would have no effect on them.[10] The overlay district will compliment existing Federal, State, County and local programs. Cities could adopt programs similar to the one outlined here.

Protection Zones

The overlay district would consist of three concentric protection zones, drawn around all public drinking water wells in the county. The zones would be drawn in one of two ways depending on the following conditions:

1. <u>The water system has a wellhead protection plan (Figure 2-A)</u> – If a water system has developed a wellhead protection plan for its wells, a circle with a 150-foot radius drawn around the wells, or the 6-month modeled area, whichever is greater, will be Protection Zone 1. The 2-year and 5-year protection areas established in the wellhead protection plan will delineate Protection Zone 2 and Zone 3, respectively.[11]

[10] See County Code section 30.76, Nonconformities.
[11] Currently, five of the 119 public water systems in Clark County have wellhead protection plans.

2. The water system does **not** have a wellhead protection plan (Figure 2-B) – In the absence of a wellhead protection plan, three concentric circles drawn around the well will establish the three protection zones. The circles will have radii of 150 feet, 1,000 feet and 3,000 feet from the wellhead. As water systems complete wellhead protection plans, or as a part of their 5-year update cycle, the protection areas established in their plans will become the protection zones of record for the overlay district.

Allowable Land Uses Within the Protection Zones

Table 1 lists the allowed land uses within the protection zones. The codes are from the Geographic Integrated Land use Information System (GILIS) and more information about them can be found at http://www.co.clark.nv.us/comprehensive_planning/05/Demographics.htm. Generally, land uses with low potential for release of harmful chemicals will be allowed closer to drinking water wells and uses with higher potential for releases will be allowed further from wells.

Figure 2—Wellhead Protection Overlay Subzones

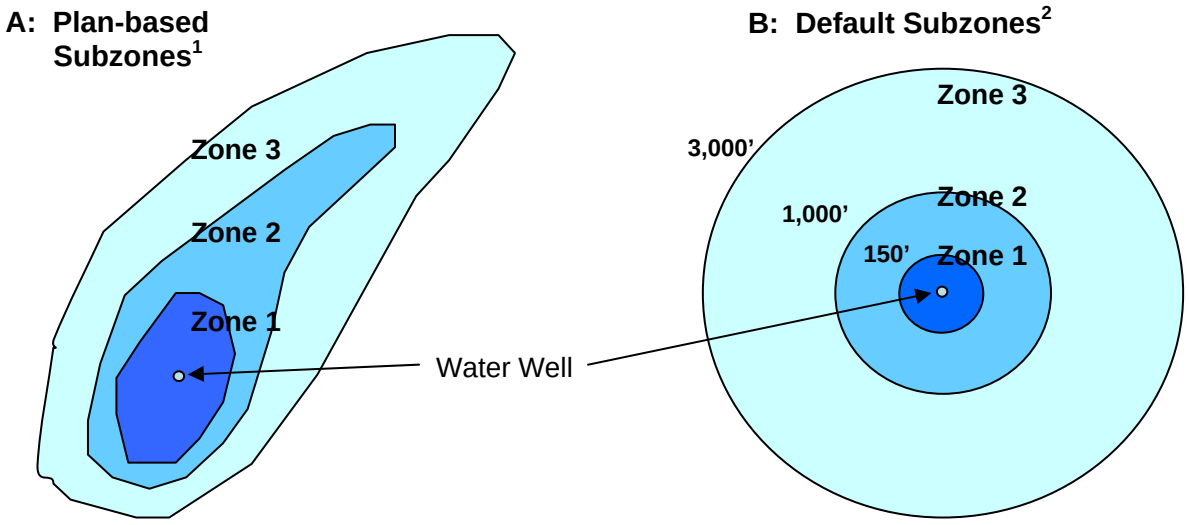
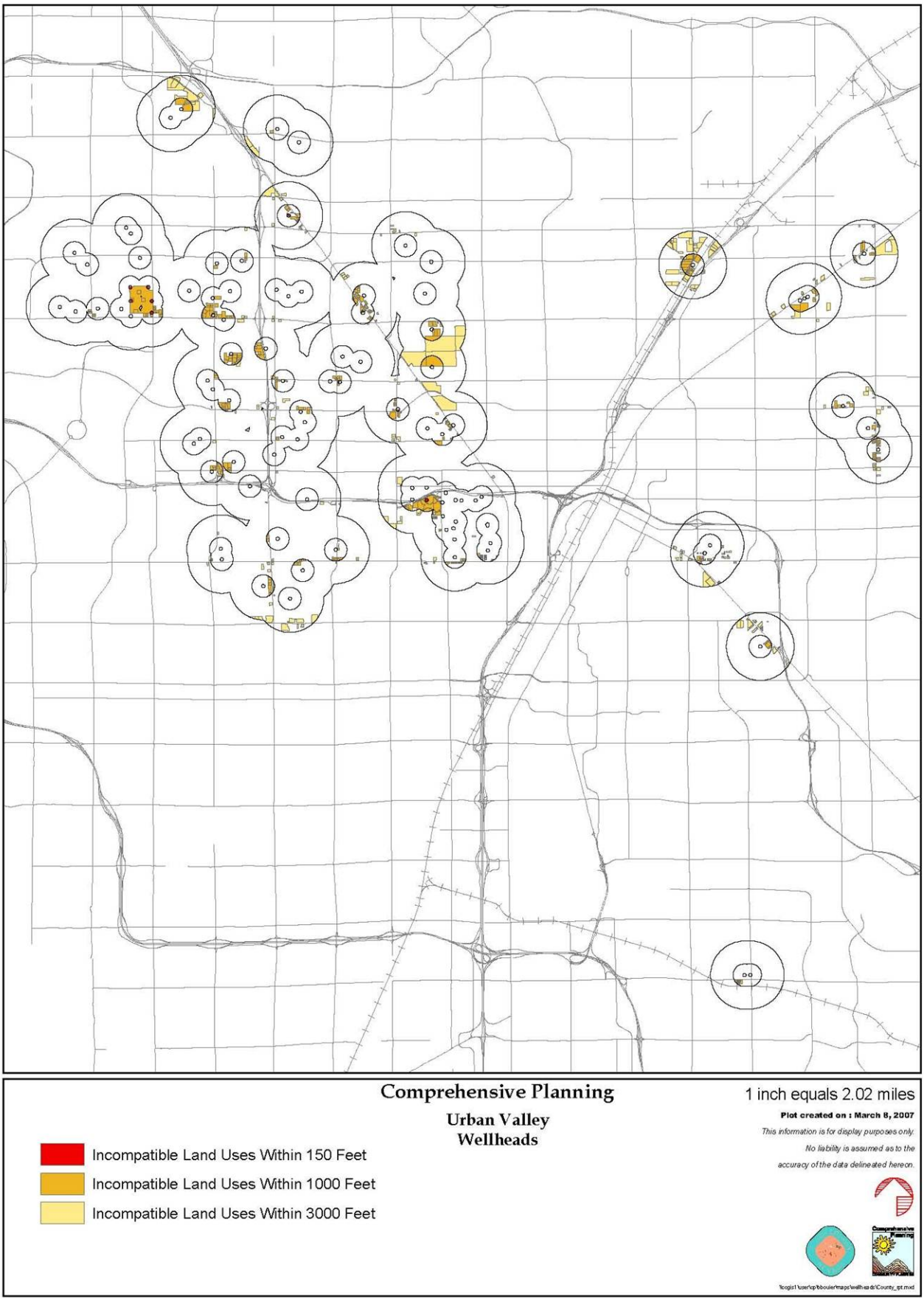


Table 1—Allowed Uses - Wellhead Protection Overlay District Subzones[3]

Zone 1:	Zone 2:	Zone 3:
All 100s *(residential uses)*	All 100s	All 100s
336 *(300s are commercial uses)*	250 *(200s are industrial uses)*	240
338	336	241
345	338	250
All 400s except 411, 431, 463, 466 *(400s are community facilities)*	339	All 300s except 310, 311, 341, 350,
521 *(500s are agricultural uses)*	340	359, 370, 371, 372, 375
530	345	All 400s except 431, 463, 466
610 *(600s are transportation and utilities)*	All 400s except 411, 431, 463, 466	510
611	521	521
621	530	530
630 – Drinking water facilities only	610	610
640	611	611
700s *(700s are minor improvements)*	621	621
	630 - Drinking water facilities only	630 - Drinking water facilities only
	640	640
	700s	700s

Notes:
[1] Subzones for systems **with** an approved Wellhead Protection Plan.
[2] Subzones for systems **without** an approved Wellhead Protection Plan.
[3] GILIS Land Uses, Clark County Department of Comprehensive Planning.


Comprehensive Planning
Urban Valley
Wellheads
1 inch equals 2.02 miles
Plot created on : March 8, 2007
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No liability is assumed as to the
accuracy of the data delineated hereon.
Incompatible Land Uses Within 150 Feet
Incompatible Land Uses Within 1000 Feet
Incompatible Land Uses Within 3000 Feet
Comprehensive Planning
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Land Use Impacts and Effects

Based on the County's GILIS land use database, the following tables indicate the effects of a Wellhead Protection Overlay with the default Subzones throughout Clark County[12]. Table 2 shows that there are over 71 square miles of land covered by Zones 1 through 3. Zone 3, the zone with the fewest land use restrictions, covers the largest part of that area at 38,041 acres (just over 59 square miles.) Zone 1, the most restrictive area, covers just over 1/3 of a square mile. Table 2 also shows that 19,120 acres (nearly 30 square miles) is currently vacant.

Table 2—Current Land Use Compatibility, by Acres

Overlay District	Land Use Acres			
	Compatible	Incompatible	Vacant	Total
Zone 1	148	18	54	221
Zone 2	4,553	927	2,278	7,758
Zone 3	19,778	1,475	16,787	38,041
Total	**24,479**	**2,421**	**19,120**	**46,020**

Table 3 shows the current land status within the proposed overlay zones by percent. Ninety-five percent of the area within the proposed zones is compatible or vacant. Five percent of the area currently has incompatible land uses.

Table 3—Current Land Use Compatibility, by Percent

Overlay District	% of Area		
	Compatible	Incompatible	Vacant
Zone 1	67%	8%	25%
Zone 2	59%	12%	29%
Zone 3	52%	4%	44%
Overall Average	**53%**	**5%**	**42%**

Table 4 shows what would happen if the Wellhead Overlay were adopted for Clark County. If the regulations are put into place, future development would be required to be compatible with them and the result would be an overall average of 95% compatibly developed land within all of the zones.

Table 4—Potential Future Results, by Percent

Overlay District	% of Area	
	Compatible	Incompatible
Zone 1	92%	8%
Zone 2	88%	12%
Zone 3	96%	4%
Overall Average	**95%**	**5%**

[12] For analysis purposes, calculations in this report show potential effects of a countywide program and therefore include areas within cities. Areas within cities would not be affected by zoning actions taken by Clark County.

Glossary

BMP
Best management practices for managing processes and wastes to reduce the risk of unpermitted releases to the environment.

CPWS
Community Public Water System – a system, regardless of ownership, that provides the public with water for human consumption through pipes or other constructed conveyances, if the system has 15 or more service connections.

DWPA
Drinking Water Protection Area – An area described in plan view around a well, from within which groundwater is reasonably likely to flow to the well and through which groundwater pollution, if it occurs, is reasonably likely to pose a threat to the water quality of the well; The DWPA is delimited by the use of a time-of-travel and hydrologic boundaries, and is further subdivided by multiple times-of-travel; an area around a well or spring used by the State of Nevada to make decisions regarding drinking water protection activities and appropriate land uses. The protection area of record.

GIS
Geographical information systems and related software.

NAC
Nevada Administrative Code.

NDEP
Nevada Division of Environmental Protection

NRS
Nevada Revised Statutes.

Source
A well, spring, or surface water intake used as a source of drinking water by a public water system.

Time of travel
The time required for a particle of groundwater to move through the saturated zone from a specific point to a well.

UST
Underground storage tank

WHPA
Wellhead Protection Areas – Protection areas developed by Nevada public water systems and communities, or by the State Wellhead Protection Program around well and spring sources of drinking water.