27017-ws005-update-2020

# DRINKING WATER SOURCE PROTECTION PLAN UPDATE
# VIRGIN RIVER INTAKE
# SOURCE NO. WS005

## TOWN OF SPRINGDALE WATER SYSTEM
## WATER SYSTEM NO. 27017
## SPRINGDALE, UTAH

*October 2020*

Prepared by:
SUNRISE ENGINEERING, INC.
6875 SOUTH 900 EAST
MIDVALE, UTAH 84047
801.523.0100

# UPDATED DRINKING WATER SOURCE PROTECTION PLAN FOR THE VIRGIN RIVER INTAKE SOURCE NO. WS005

## TOWN OF SPRINGDALE WATER SYSTEM WATER SYSTEM No. 27017 SPRINGDALE, UTAH

*OCTOBER 2020*


Prepared by:
SUNRISE ENGINEERING, INC.
6875 SOUTH 900 EAST
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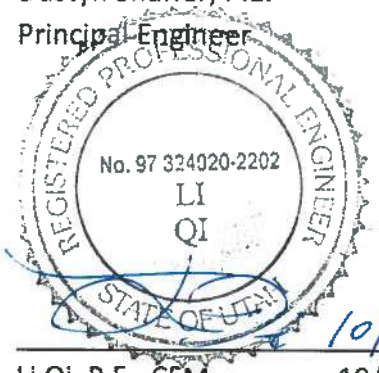
801.523.0100



Project Team Leads:
Dustyn Shaffer, P.E.
Principal Engineer




Li Qi, P.E., CFM 10/02/2020
Project Engineer

# EXECUTIVE SUMMARY

This report presents a Drinking Water Source Protection (DWSP) Plan Update for the intake on the North Fork of the Virgin River (Source No. WS005) in the Town of Springdale Water System (Water System No. 27017). The changes at and in the vicinity of the intake and in the source protection zones were documented. Management strategies were updated.

# TABLE OF CONTENTS

# DRINKING WATER SOURCE PROTECTION PLAN UPDATE FOR THE VIRGIN RIVER INTAKE (SOURCE NO. WS005)

## TOWN OF SPRINGDALE WATER SYSTEM WATER SYSTEM NO. 27017 SPRINGDALE, UTAH

*OCTOBER 2020*

## 1.0 INTRODUCTION

This Updated Drinking Water Source Protection (DWSP) Plan report for the intake on the North Fork of the Virgin River for the Town of Springdale Water System was prepared in compliance with the Utah Administrative Code R309 – 605, Source Protection: Drinking Water Source Protection for Surface Water Sources. According to the State of Utah Division of Drinking Water (Utah DDW), for an updated DWSP Plan, it may not be necessary to completely re-address each section of the original plan, but each section of the original plan should be specifically stated that no changes have taken place, if that is the case (Utah DDW, 2007). The Standard Report Format for Updated Surface Water Source Protection Plans was recommended to be kept as concise as possible by the Utah DDW.

### 1.1 System Information

There are no changes for this section.

### 1.2 Updated Source Information

| | |
|---|---|
| Source Name and Number | Intake on the North Fork of the Virgin River, WS005 |
| Water Right Number | 81-3392 |
| Point of Diversion | South 550 feet East 950 feet from Northwest Corner of Section 22, Township 41 South, Range 10 West, Salt Lake Base and Meridian |
| Source Type | River Intake, Existing Source |

The intake (diversion structure) is located within the Zion National Park on the east side of the Virgin River. From the diversion structure, screen and collection box, the water flows down

through a pipe to a pump station along the Highway SR9 at the north end of the Town of Springdale. From there the water is pumped up to a storage pond where it is held until flowing by gravity to a treatment plant.

## 1.3 Updated Designated Person

| | |
|---|---|
| Name and Title | Robby Totten, Public Works Superintendent |
| Address | 118 Lion Boulevard<br>Springdale, Utah 84767 |
| Phone | (435) 772-3434 (Office)<br>(435) 619-8496 (Cell) |

# 2.0 DELINEATION REPORT

The original Delineation Report was prepared by the Utah DDW in 2000, which is included in **Appendix A**. Later, another Springdale drinking water source, Big Spring, was identified by Utah DDW to be under the direct influence of the Virgin River (surface water influence). As indicated in a Utah DDW letter dated November 7, 2011, "this means that the Big Spring source must have a surface water source protection plan, in addition to a plan that addresses the groundwater component." In order to meet this requirement, Utah DDW extended the original delineated surface water source protection zones for the Virgin River Intake to include the Big Spring source. The updated and refined delineation was provided to Sunrise Engineering, Inc. (Sunrise) in a shapefile format. The DWSP zone boundaries were then updated by overlaying the protection zones of the Virgin River Intake and Big Spring in an AutoCAD format, as shown in **Figure 1**.

# 3.0 SUSCEPTIBILITY ANALYSIS AND DETERMINATION

The original Susceptibility Analysis for the North Fork of the Virgin River was included in a regional study entitled Virgin River Drinking Water Source Protection Plan Susceptibility Report (Tetra Tech, Inc., 2003) that was prepared as an element of the Virgin River Watershed DWSP Plan. A copy of Table D-3 and Figure D-4, Table E-3, and Table F-3 that are excerpted from the report is included in **Appendix B**.

In addition to the potential contamination sources (PCSs, **Appendix B**) determined in the original DWSP plan, a few new PCSs were introduced in the Virgin River source protection zones (**Figure 2**) since the zone boundaries were extended to include the Big Spring (and Big Spring

DWSP zones). These PCSs were addressed, and their hazards were accessed in the Big Spring DWSP plan (Sunrise, 2017). A prioritized inventory of the new PCSs is included in **Appendix C**. These PCSs are all located at least 1.2 miles downstream of the intake structure, so impact from the PCSs to the intake is minimal.

There are no changes for the rest portions of this section.

## 4.0 MANAGEMENT PROGRAM FOR EXISTING POTENTIAL CONTAMINATION SOURCES

The original Management Plan for Existing PCSs for the Virgin River was provided in a watershed management plan entitled Virgin River Drinking Water Source Protection Plan: Management and Implementation Plan to Address Existing and Future Potential Sources of Contamination (Management and Implementation Plan, The Virgin River Watershed Management Plan Committee, 2005). This management plan is an element of the Virgin River Watershed DWSP Plan. A copy of the plan is included in **Appendix D**.

The PCSs identified to be located within the Town's jurisdiction since the last update of the DWSP plan are the PCSs included in **Appendix C**. As related in Section **3.0**, the impact from these PCSs to the Virgin River intake is minimal. The management programs prepared for the PCSs that are considered as not adequately controlled to Big Spring was included in the DWSP plan for Big Spring (Sunrise, 2017).

There are no changes for the rest portions of this section.

## 5.0 MANAGEMENT PROGRAM FOR FUTURE POTENTIAL CONTAMINATION SOURCES

There are no changes for this section.

## 6.0 IMPLEMENTATION SCHEDULE

There are no changes for this section.

## 7.0 RESOURCE EVALUATION

There are no changes for this section.

## 8.0 RECORDKEEPING

All the records regarding the DWSP Plans for the Town of Springdale Water System have been and will be kept in the Town of Springdale office that is located at 118 Lion Boulevard, Springdale, Utah 84767. Town of Springdale has been and will be documenting changes as the plan is continuously updated to show current conditions in the protection zones. Town of Springdale will document the implementation of each management strategy as it is implemented and update the DWSP Plan as required by Utah DDW.

## 9.0 CONTINGENCY PLAN

There are no changes for this section.

## 10.0 PUBLIC NOTIFICATION

Public Notification has been and will be included in the annual Town of Springdale Drinking Water Quality Report (also called Consumer Confidence Report, or CCR). A copy of the 2019 annual CCR is included in **Appendix E**.

There are no changes for the rest portions of this section.

## 11.0 REFERENCES

Sunrise Engineering, Inc., 2017. Drinking Water Source Protection Plan for Big Spring, Town of Springdale Water System, Springdale, Utah.

Tetra Tech, Inc., 2003. Virgin River Drinking Water Source Protection Plan Susceptibility Report, Virgin River Watershed Management Plan Committee, St. George, Utah.

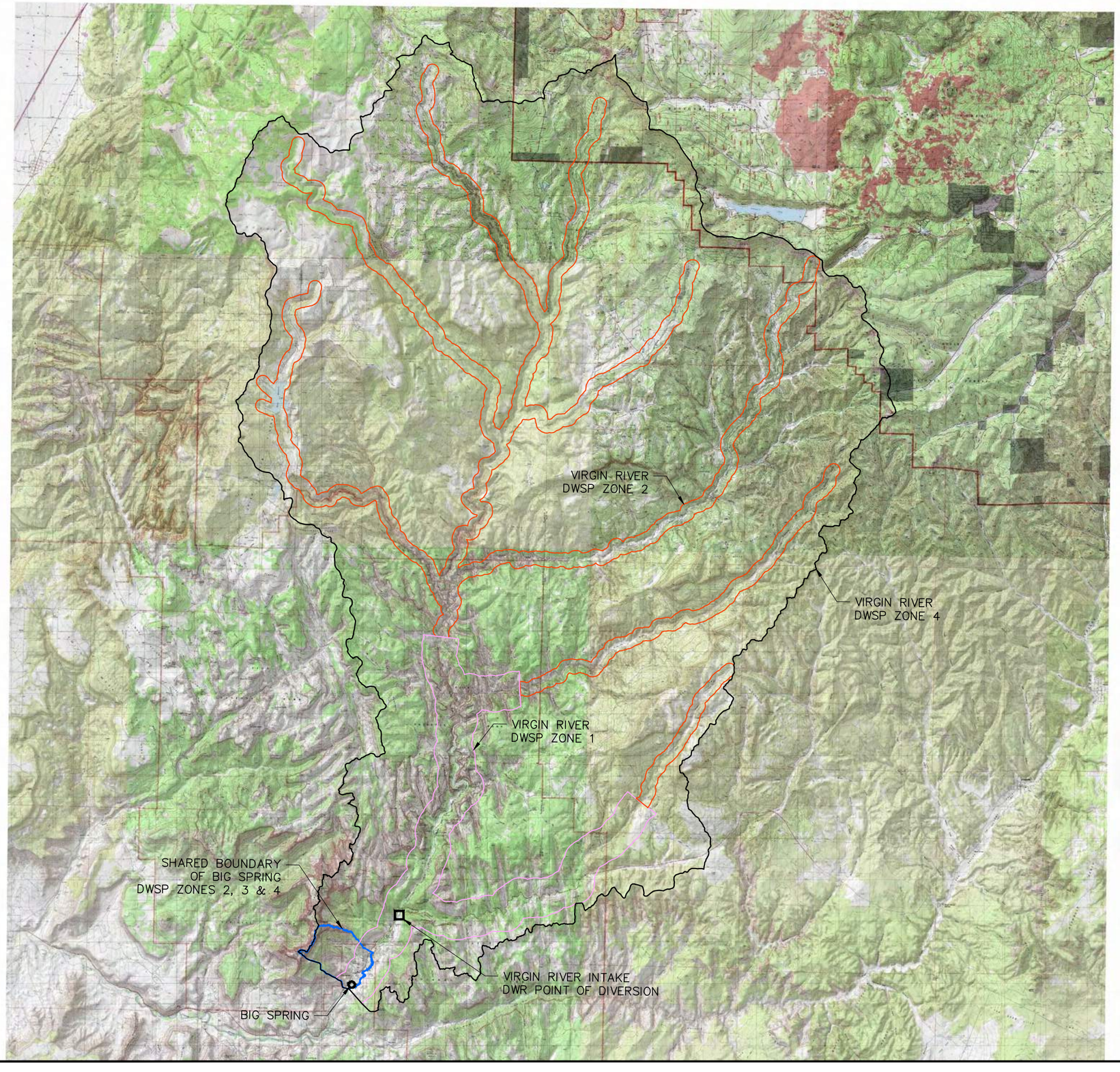
Utah Division of Drinking Water, 2000. Drinking Water Source Protection Delineation Report and Major Potential Contamination Source Inventory for the Virgin River.

Utah Division of Drinking Water, 2005. Drinking Water Source Protection Plan, Standard Report Format for Existing Surface Water Sources.

Utah Division of Drinking Water, 2007. Updated Surface Water Source Protection Plans, Standard Report Format for Updated Surface Water Source Protection Plans.

Virgin River Watershed Management Plan Committee, 2005. Virgin River Drinking Water Source Protection Plan: Management and Implementation Plan to Address Existing and Future Potential Sources of Contamination.

# FIGURES




NORTH

SCALE
0 8000 16000
HORIZ: 1" =16000'

## LEGEND

- VIRGIN RIVER INTAKE DWSP ZONE 1 BOUNDARY
- VIRGIN RIVER INTAKE DWSP ZONE 2 BOUNDARY
- VIRGIN RIVER INTAKE DWSP ZONE 4 BOUNDARY
- BIG SPRING DWSP ZONE BOUNDARY
- INTAKE
- BIG SPRING

| REV NO. | COMMENT | DATE |
|---|---|---|

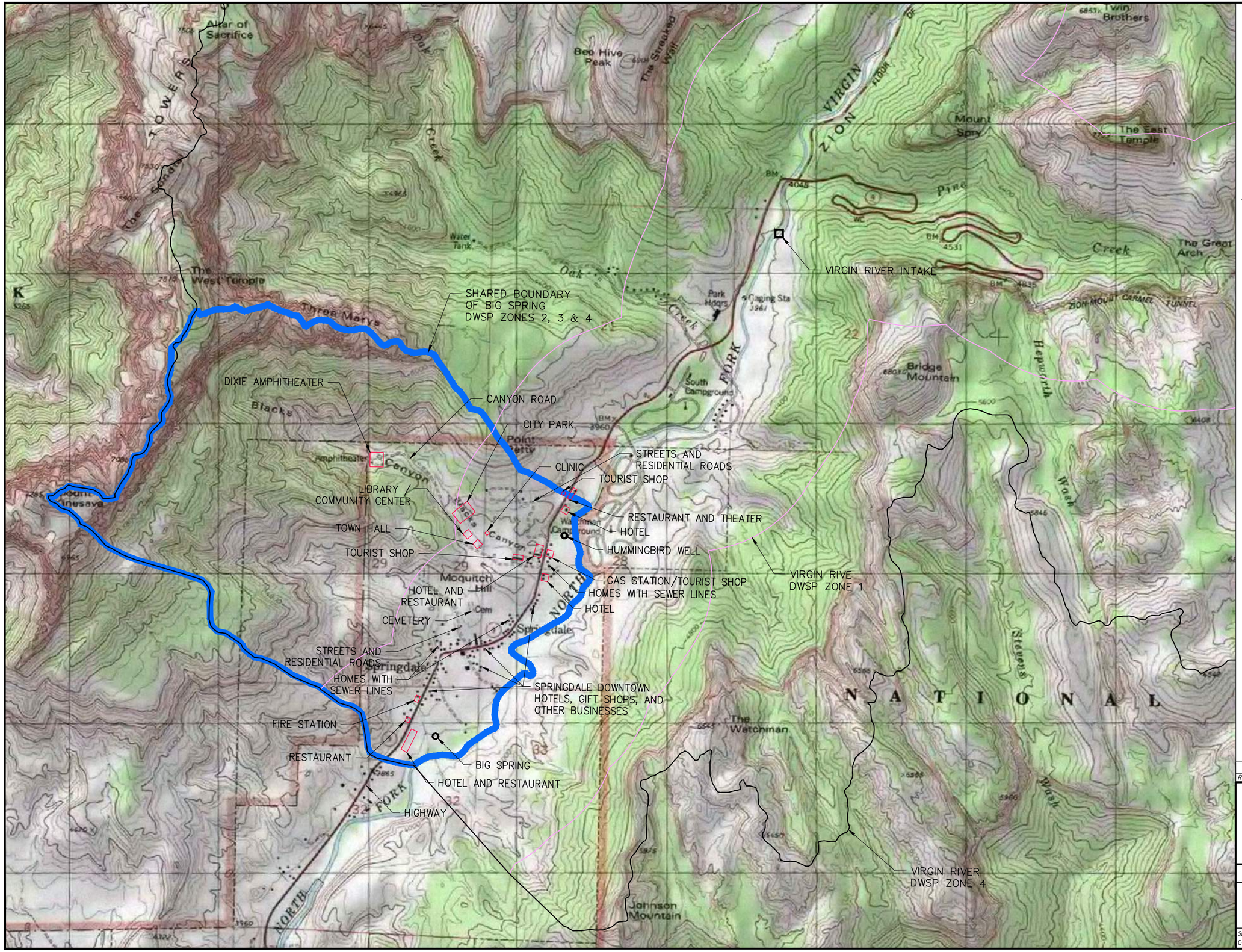
SUNRISE ENGINEERING
12227 SOUTH BUSINESS PARK DRIVE, SUITE 220
DRAPER, UTAH 84020
TEL 801.523.0100 · FAX 801.523.0990
www.sunrise-eng.com

TOWN OF SPRINGDALE

DWSP PLAN UPDATE
VIRGIN RIVER INTAKE
UPDATED DWSP ZONES

| SEI NO. | DESIGNED | DRAWN | CHECKED | SHEET NO. | FIGURE 1 |
|---|---|---|---|---|---|
| S02950 | LQ | LQ | DS | of 000 | |

D:\LI\216-Springdale Virgin River DWSP Update\Virgin River Intake DWSP Update 2020\Civil 3D\Virgin River DWSP Figures.dwg Sep 10, 2020 6:38pm lql




NORTH

SCALE
0 1000 2000
HORIZ: 1" =2000 '

## LEGEND

- VIRGIN RIVER INTAKE DWSP ZONE 1 BOUNDARY
- VIRGIN RIVER INTAKE DWSP ZONE 2 BOUNDARY
- VIRGIN RIVER INTAKE DWSP ZONE 4 BOUNDARY
- BIG SPRING DWSP ZONE BOUNDARY
- INTAKE
- OTHER WATER SOURCE
- POTENTIAL CONTAMINATION SOURCE (PCS)

| REV NO. | COMMENT | DATE |
|---|---|---|

SUNRISE ENGINEERING
12227 SOUTH BUSINESS PARK DRIVE, SUITE 220
DRAPER, UTAH 84020
TEL 801.523.0100 · FAX 801.523.0990
www.sunrise-eng.com

TOWN OF SPRINGDALE

DWSP PLAN UPDATE
VIRGIN RIVER INTAKE
BIG SPRING DWSP ZONES AND PCSS

| SEI NO. | DESIGNED | DRAWN | CHECKED | SHEET NO. | |
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# APPENDICES

# Appendix A
# Delineation Report and Major PCS Inventory

Drinking Water Source Protection
Virgin River

# INTRODUCTION

This Drinking Water Source Protection (DWSP) delineation and potential contamination source (PCS) inventory report covers part of the Virgin River watershed from the lowest location that delivers water into a closed conveyance to the watershed boundary. The delineation report meets the requirements of R309-605. The PCS inventory covers only those PCSs identified in the geographic information system data available to the Department of Environmental Quality - Division of Drinking Water. The Public Water System (PWS) that obtains water from these diversions is required to supplement this inventory with information regarding PCSs at the local level. Guidance on identifying PCSs locally is contained in the User's Guide in this report, and is also available from DDW.

The PWS obtaining water from the Virgin River watershed includes the Town of Springdale. Any others that may obtain or plan to obtain drinking water from this source are encouraged to jointly develop the DWSP plan for these diversions. Although such joint effort is not required, it would certainly be more cost effective, and would result in a more accurate inventory and assessment, and a more effective management program.

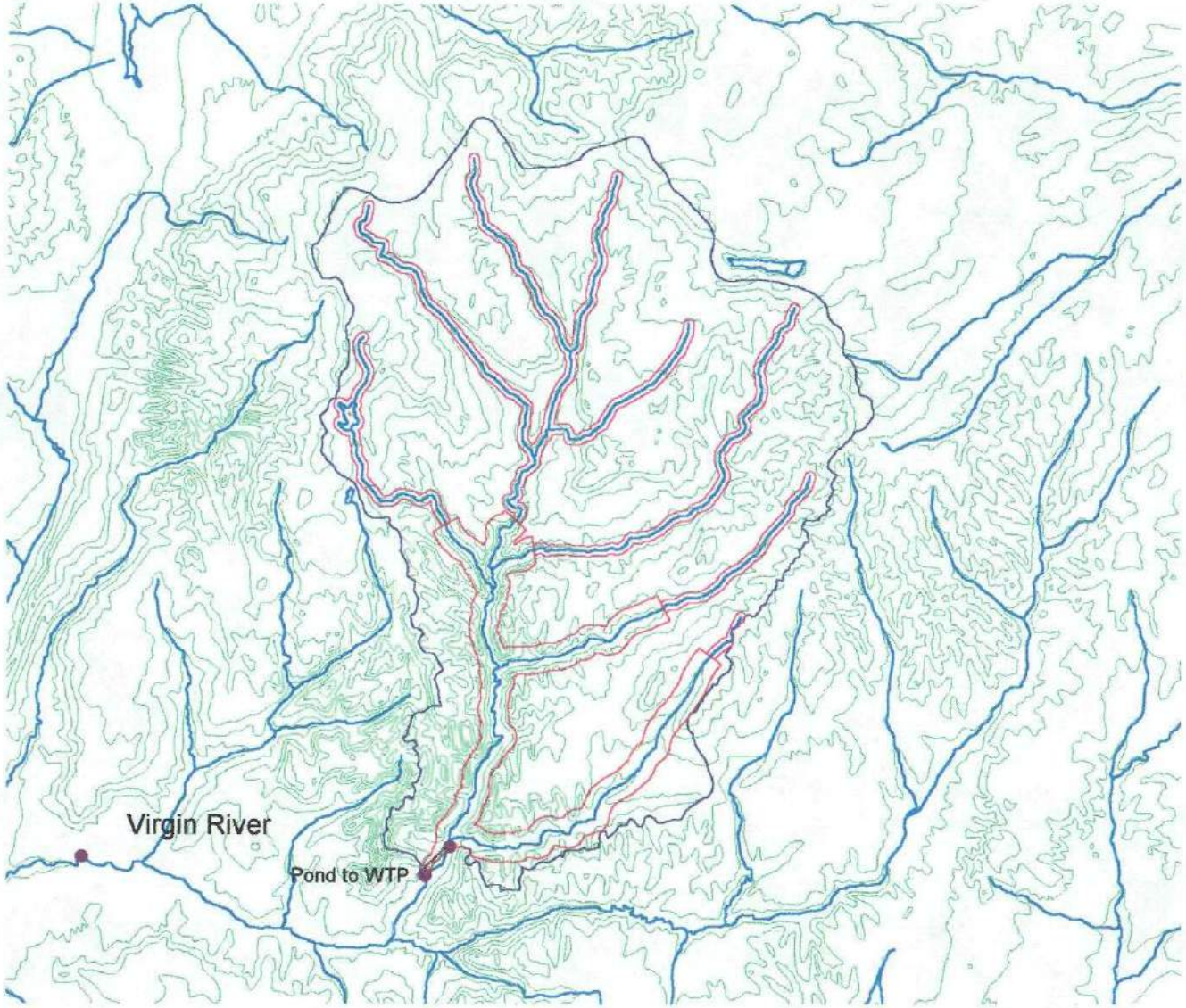
The delineation section of this report begins at the lowest known point in the system prior to water entering closed pipes or another closed delivery system. If any other part of the system is open to the air, you must delineate and inventory that section, following the requirements of R309-605.

Please note that a significant aspect of this program is the requirement for notifying the public (your customers) of the results of the assessment. This requirement is discussed in the User's Guide, and examples ("templates") of acceptable notices are provided. Please note the emphasis on the word result. The public must be advised regarding how susceptible their drinking water source is to contamination, and they must be told how to obtain a copy of the complete report. DDW will gladly work with you in order to help you meet this requirement.

DDW regards this program as an important step in recognizing and evaluating the risk of accidental contamination of your drinking water sources, as well as a means of reducing that risk. We hope you will see it as a similar opportunity. Please consider DDW to be one of the resources at your disposal to assist you in completing this work.

Disclaimer: Numerous sources of GIS data were used to develop this report. No accuracy or completeness is implied. Some of the data sources have not been updated for many years; some may not have been complete; some may contain inaccurate information. Please be prepared to verify PCS data, as needed. Contact numbers are provided for your benefit. DDW provides no warranty nor accepts any responsibility or liability for any inaccurate or incomplete data associated with these files.

# Virgin River
# POD and Protection Zone
# Springdale Town




Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
500-foot intervalTopographic contours

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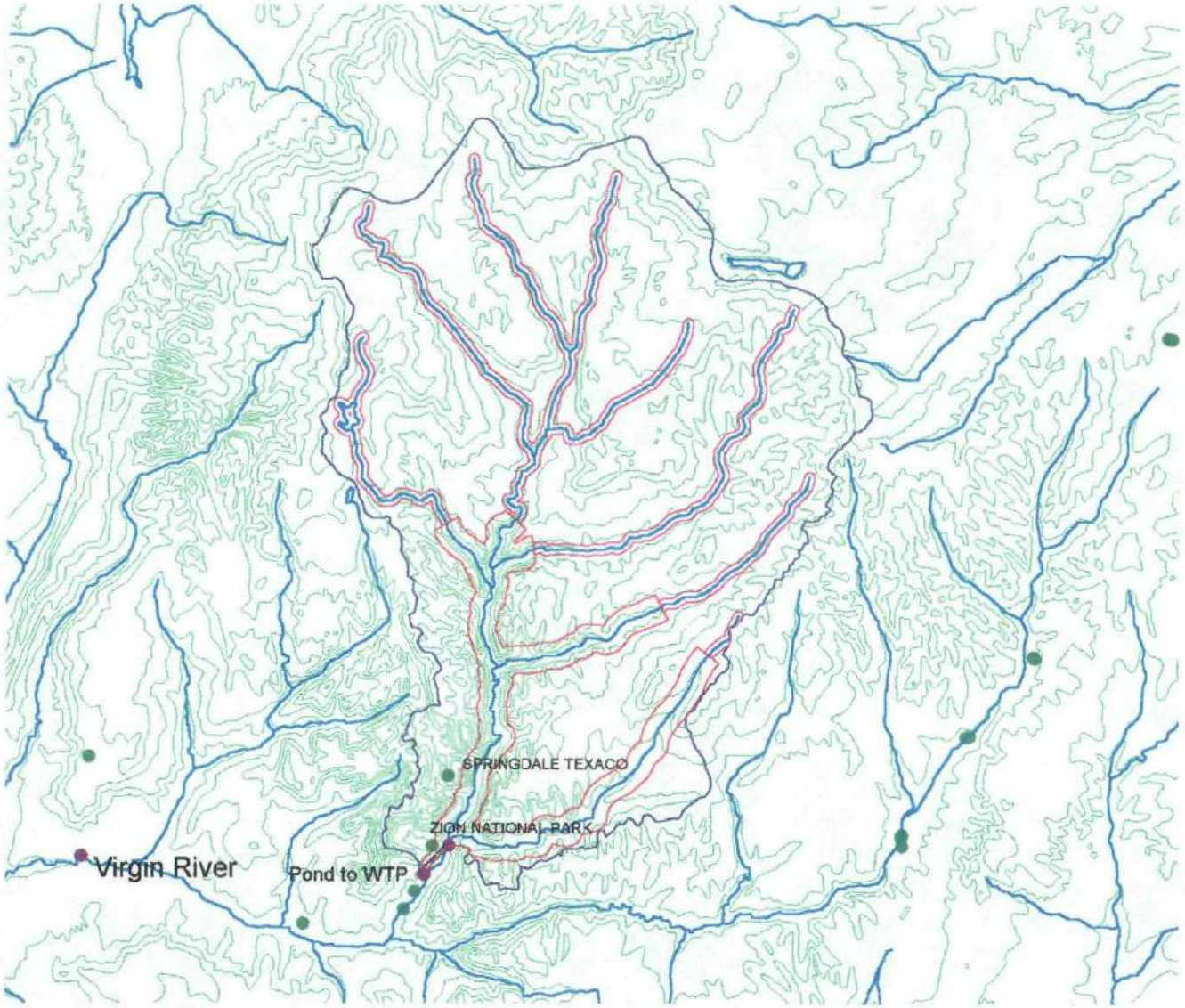
# Virgin River
# Underground Storage Tank
# Springdale Town




Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
Underground Storage Tank
500-foot intervalTopographic contours

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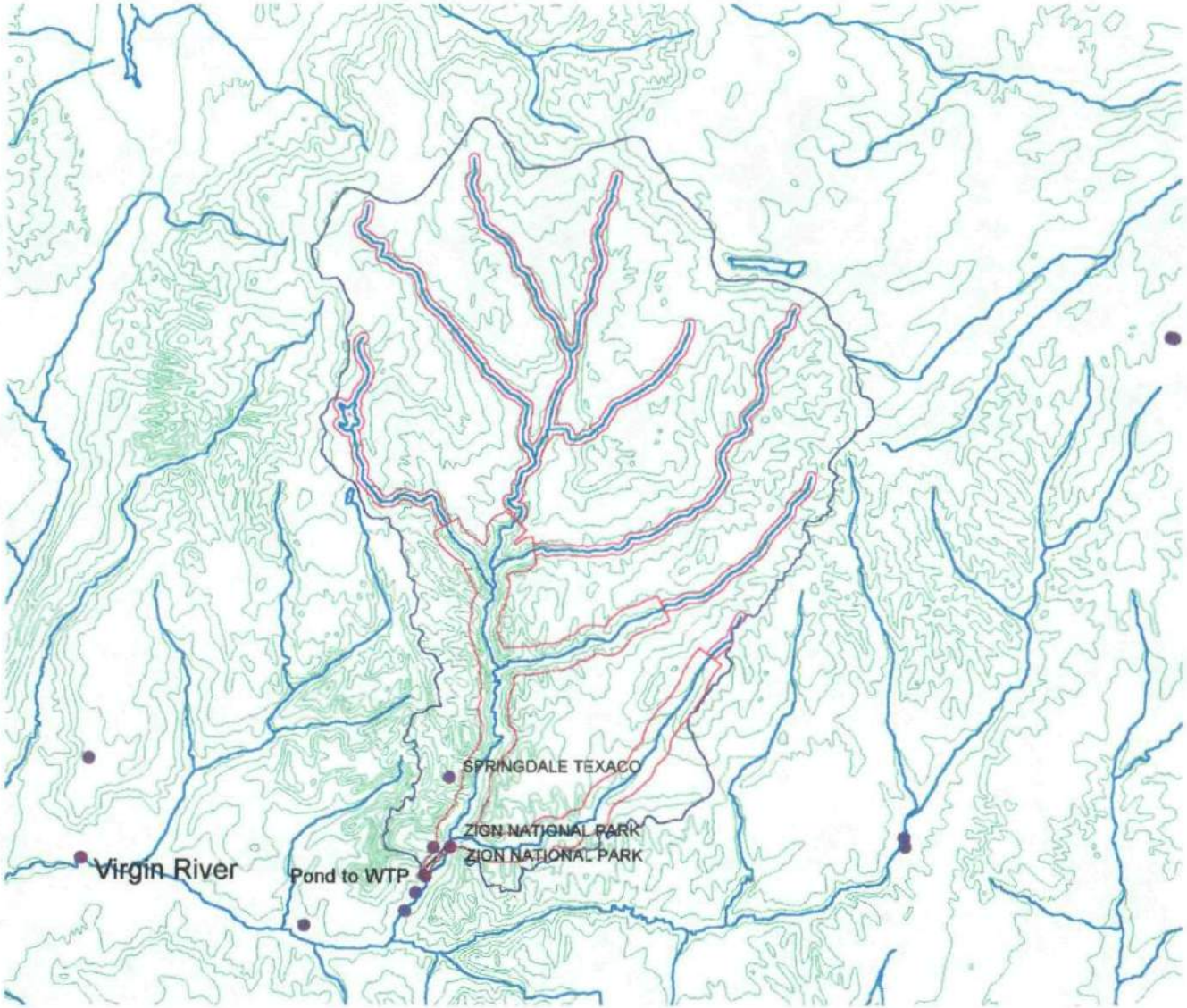
# Underground Storage Tank Facilities, Virgin Springdale

12/14/20

| Protection Zon | Nearest City | Name of Facility | Facility ID | Description |
|---|---|---|---|---|
| Zone 4 | SPRINGDALE | SPRINGDALE TEXACO | 6000400 | Commercial |
| Zone 4 | SPRINGDALE | ZION NATIONAL PARK | 6000658 | Federal Non-Military |

# Virgin River
# Leaking Underground Storage Tank
# Springdale Town




Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
Leaking UST
500-foot intervalTopographic contours

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# Leaking Underground Storage Tank Sites, Virgin Springdale

12/14/20

| Protection Zone | Name of Facility | Nearest City | Facility ID | Date Closed | Description | Most Recent Project Manager | Release ID |
|---|---|---|---|---|---|---|---|
| Zone 4 | SPRINGDALE TEXACO | SPRINGDALE | 6000400 | 4/26/1994 | Commercial | Mark Crim | GES |
| Zone 4 | ZION NATIONAL PAR | SPRINGDALE | 6000658 | 8/11/1994 | Federal Non-Military | [Kate Johnson] | HZC |
| Zone 4 | ZION NATIONAL PAR | SPRINGDALE | 6000658 | 11/7/1996 | Federal Non-Military | Mark Crim | IPU |

A Closed date indicates that the DERR considers the release at this facility to be under control, and no longer a threat to health or the

# Leaking Underground Storage Tank Sites, Virgin Springdale

12/14/20

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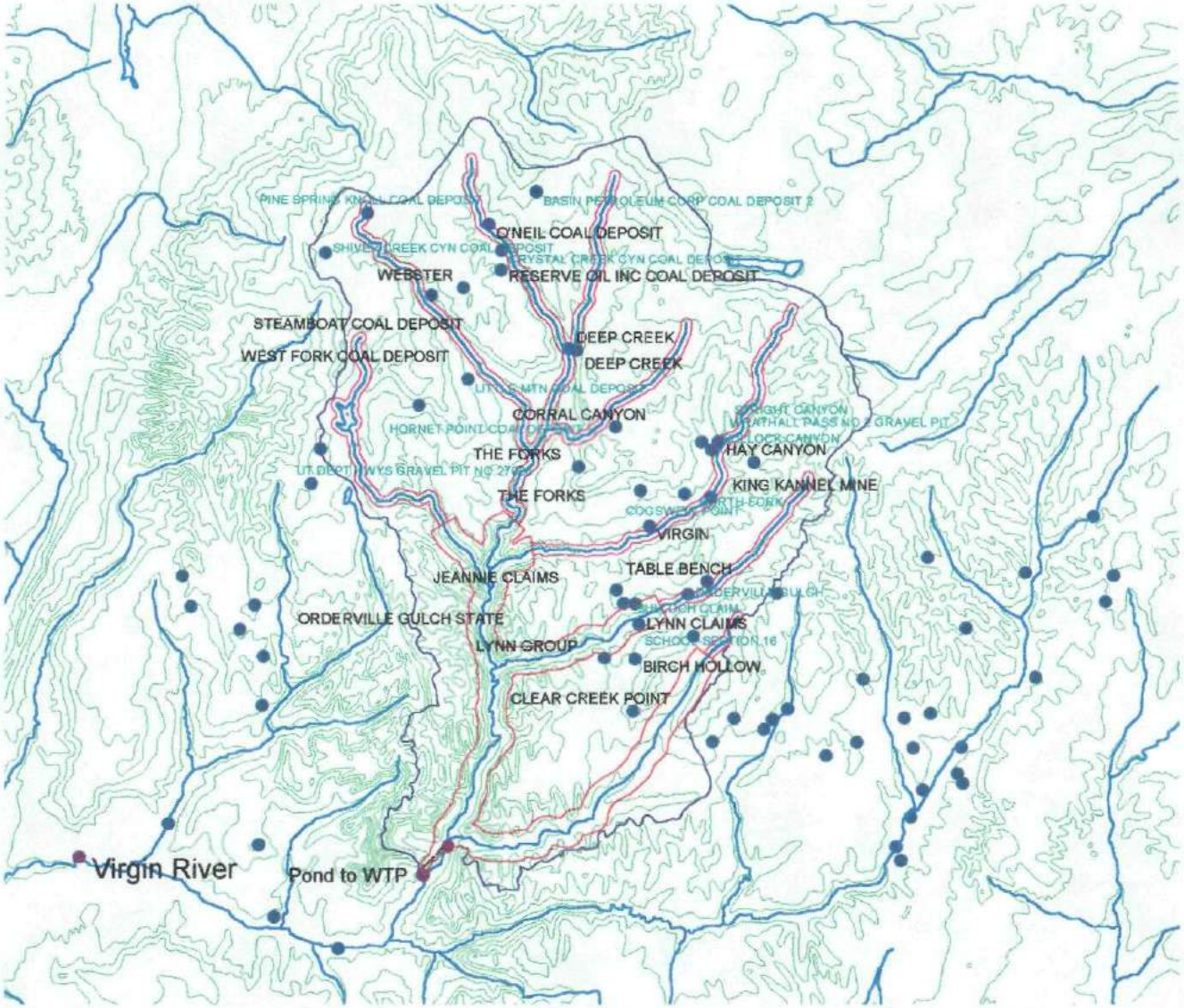
A Closed date indicates that the DERR considers the release at this facility to be under control, and no longer a threat to health or the

# Virgin River
# Mineral Properties
# Springdale Town




Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
Mine locations
500-foot intervalTopographic contours

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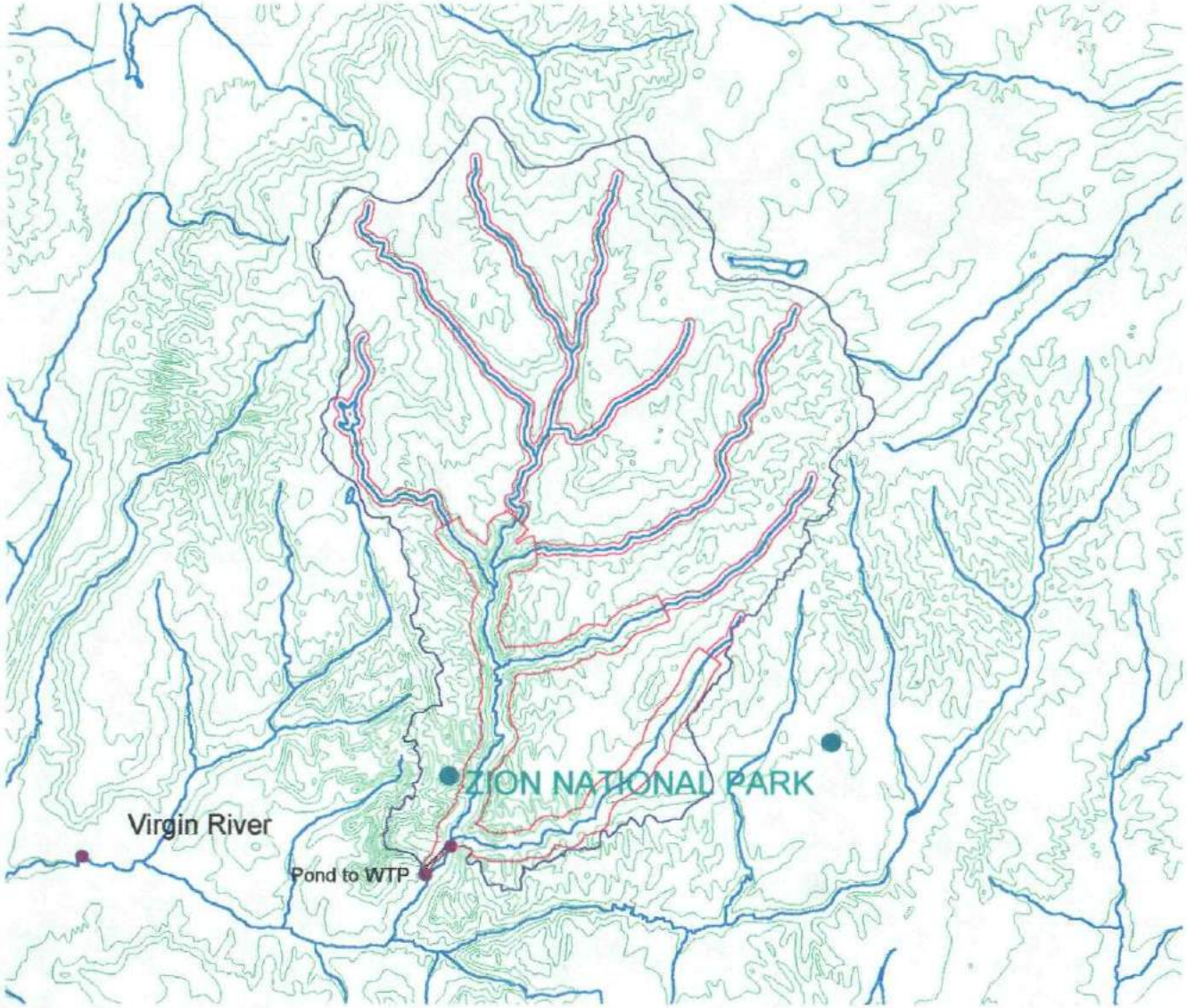
# Mineral Producers, Virgin Ri Springdale

12/14/20

| Protection Zone | Name of Mine | Type | Status | Commodity |
|---|---|---|---|---|
| Zone 1 | SCHOOL-SECTION 16 | SURFACE | OTHER | URANIUM |
| Zone 2 | DEEP CREEK | UNKNOWN | RAW PROSPECT | COAL |
| Zone 2 | DEEP CREEK | UNKNOWN | RAW PROSPECT | COAL |
| Zone 2 | KING KANNEL MINE | UNDERGROUND | PAST PRODUCER | COAL |
| Zone 2 | O'NEIL COAL DEPOSIT | UNKNOWN | PAST PRODUCER | COAL |
| Zone 2 | ORDERVILLE GULCH | UNKNOWN | RAW PROSPECT | COAL |
| Zone 2 | PINE SPRING KNOLL COAL DEPOSIT | SURFACE | RAW PROSPECT | COAL |
| Zone 2 | WEST FORK COAL DEPOSIT | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | BASIN PETROLEUM CORP COAL DEPOSIT 2 | UNKNOWN | MINERAL LOCATION | COAL |
| Zone 4 | BIRCH HOLLOW | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | BULLOCH CLAIM | UNKNOWN | RAW PROSPECT | URANIUM |
| Zone 4 | BULLOCK CANYON | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | CLEAR CREEK POINT | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | COGSWELL POINT | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | CORRAL CANYON | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | CRYSTAL CREEK CYN COAL DEPOSIT | SURFACE | RAW PROSPECT | COAL |
| Zone 4 | HAY CANYON | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | HORNET POINT COAL DEPOSIT | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | JEANNIE CLAIMS | UNKNOWN | RAW PROSPECT | URANIUM |
| Zone 4 | LITTLE MTN COAL DEPOSIT | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | LYNN CLAIMS | SURF-UNDERG | PAST PRODUCER | URANIUM |
| Zone 4 | LYNN GROUP | SURFACE | OTHER | URANIUM |
| Zone 4 | NORTH FORK | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | ORDERVILLE GULCH STATE | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | RESERVE OIL INC COAL DEPOSIT | UNKNOWN | MINERAL LOCATION | COAL |
| Zone 4 | SHIVER CREEK CYN COAL DEPOSIT | SURFACE | RAW PROSPECT | COAL |
| Zone 4 | STEAMBOAT COAL DEPOSIT | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | STRIGHT CANYON | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | TABLE BENCH | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | THE FORKS | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | THE FORKS | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | UT DEPT HWYS GRAVEL PIT NO.27008 | SURFACE | PAST PRODUCER | SAND & GRAVEL |
| Zone 4 | VIRGIN | UNKNOWN | RAW PROSPECT | COAL |
| Zone 4 | WEBSTER | UNKNOWN | RAW PROSPECT | URANIUM |
| Zone 4 | WRATHALL PASS NO.2 GRAVEL PIT | SURFACE | PAST PRODUCER | SAND & GRAVEL |

# Virgin River
# Site Assessment and Remediation
# Springdale Town




Zone 1
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Surface water intakes
Streams.shp
RCRA
500-foot intervalTopographic contours

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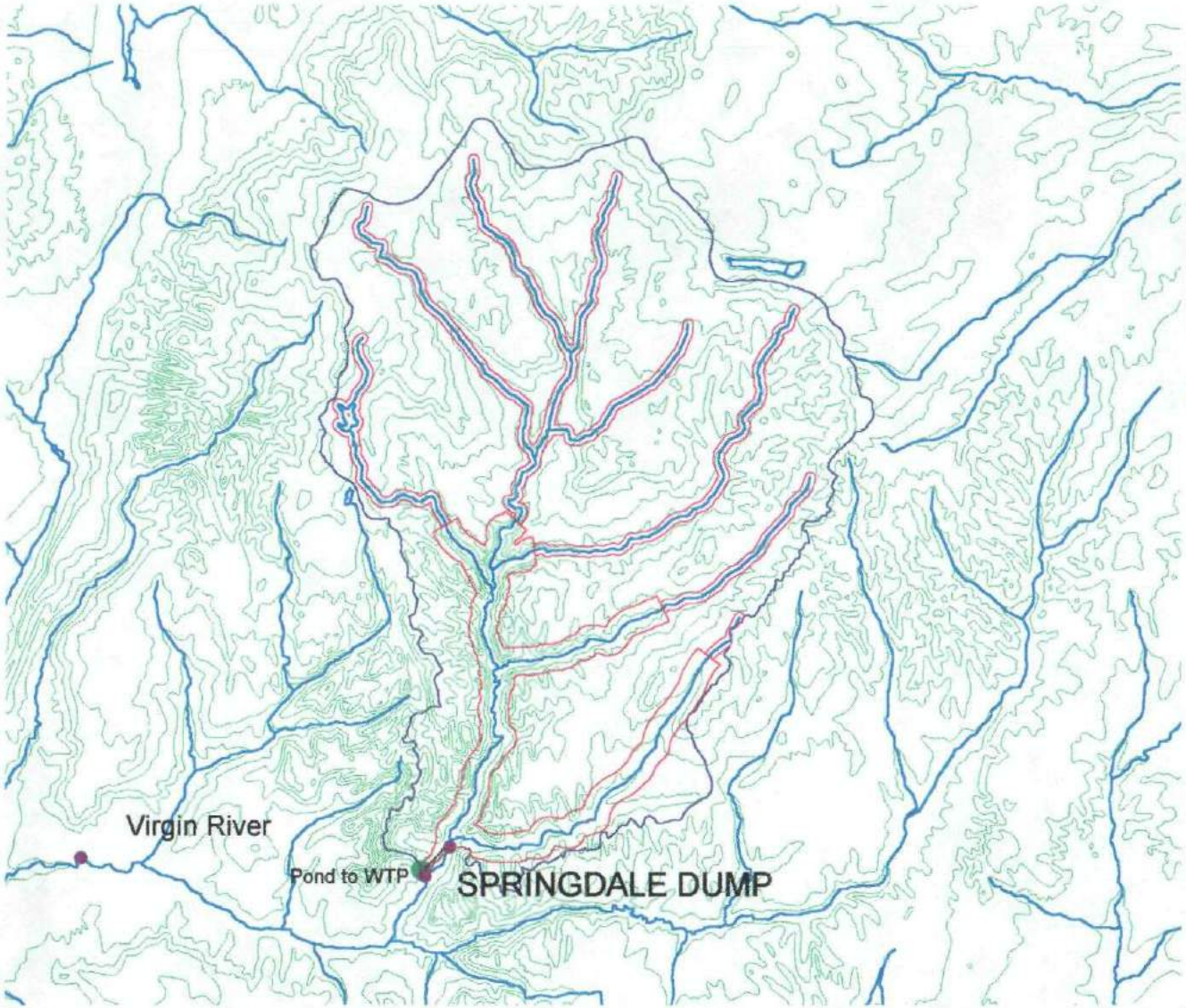
# Virgin River
# Site Assessment and Remediation
# Springdale Town




Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
Site Remediation
500-foot interval Topographic contours

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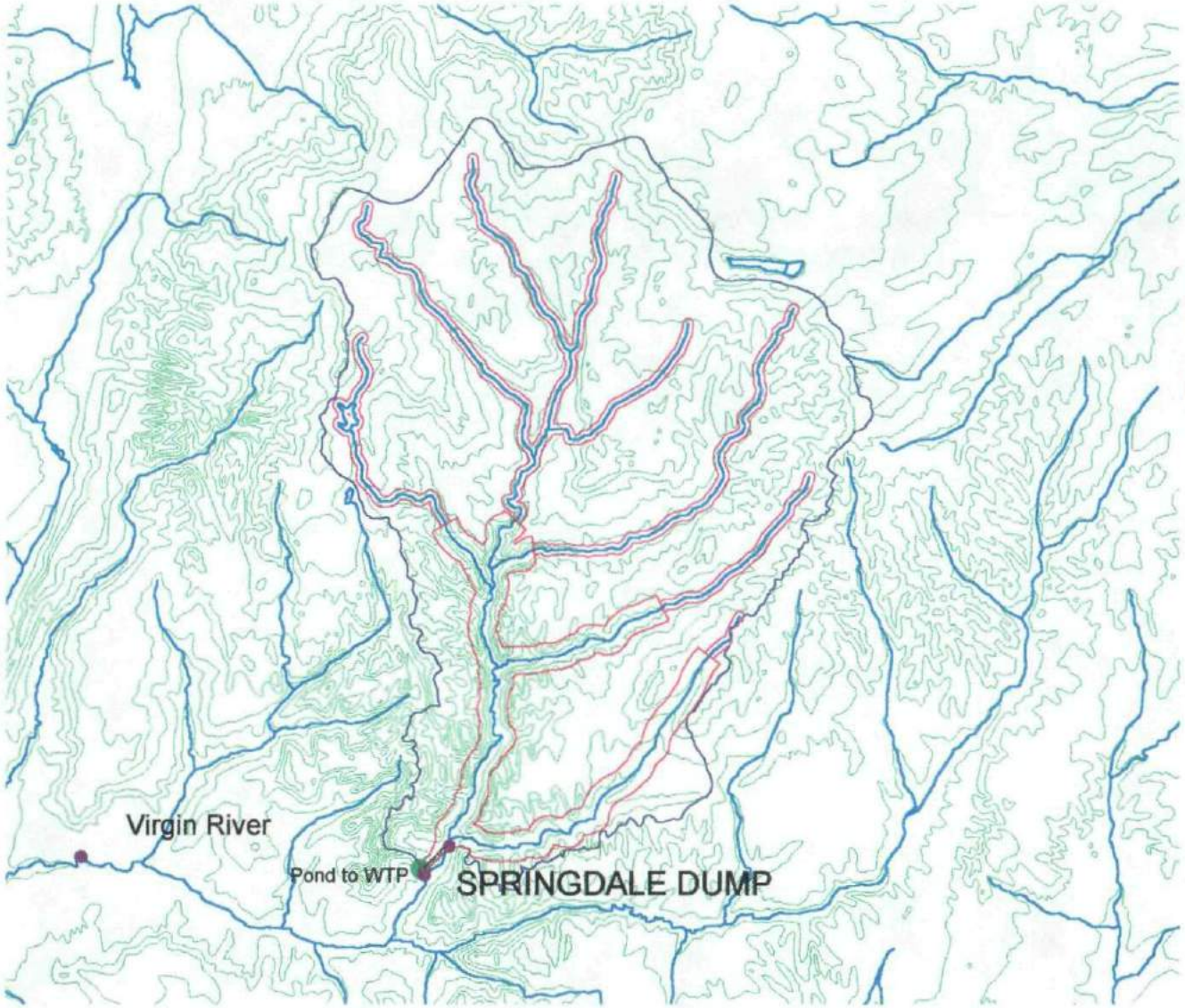
# Virgin River
# Site Assessment and Remediation
# Springdale Town

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Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
Site Remediation
500-foot interval Topographic contours

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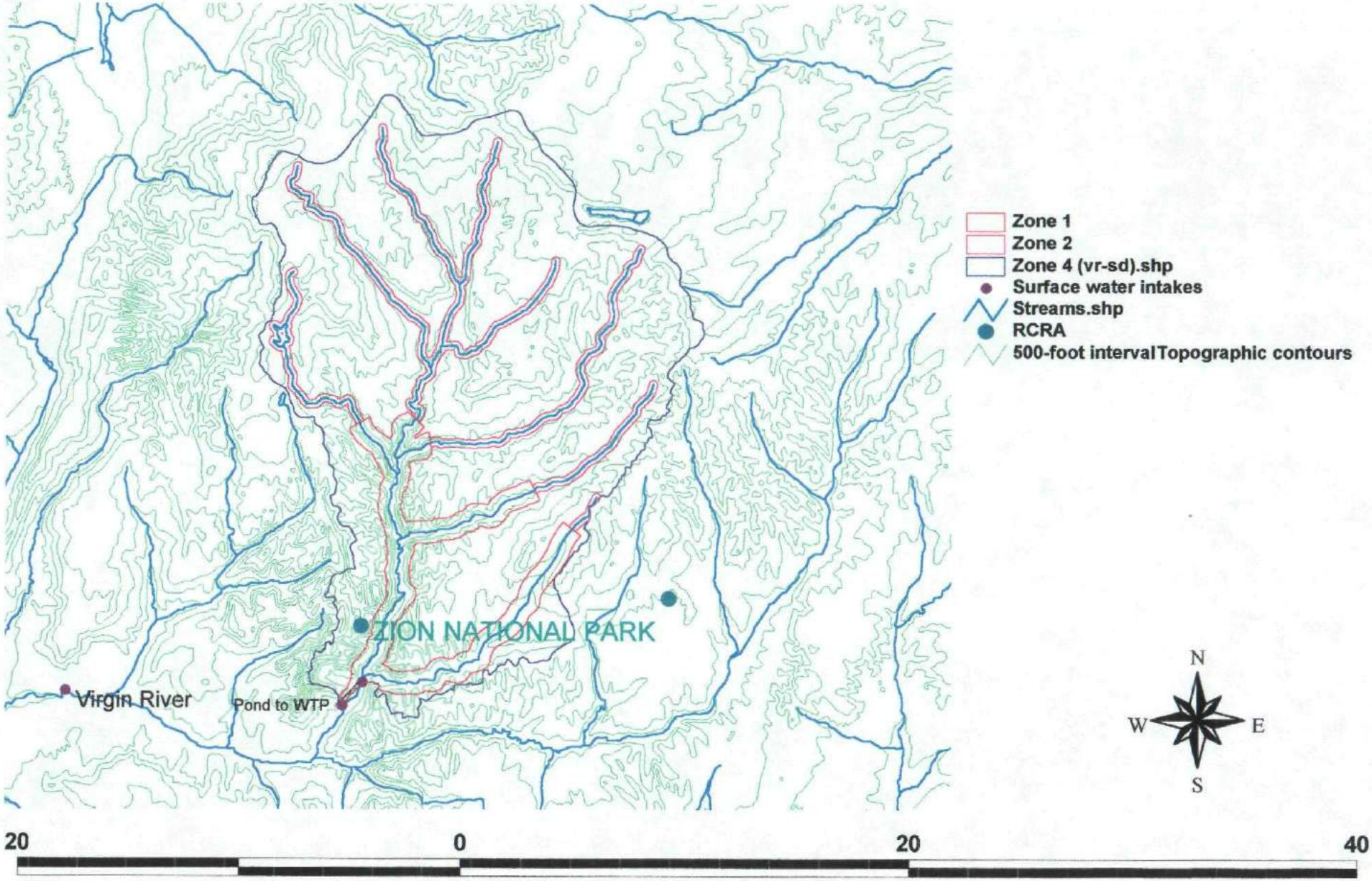
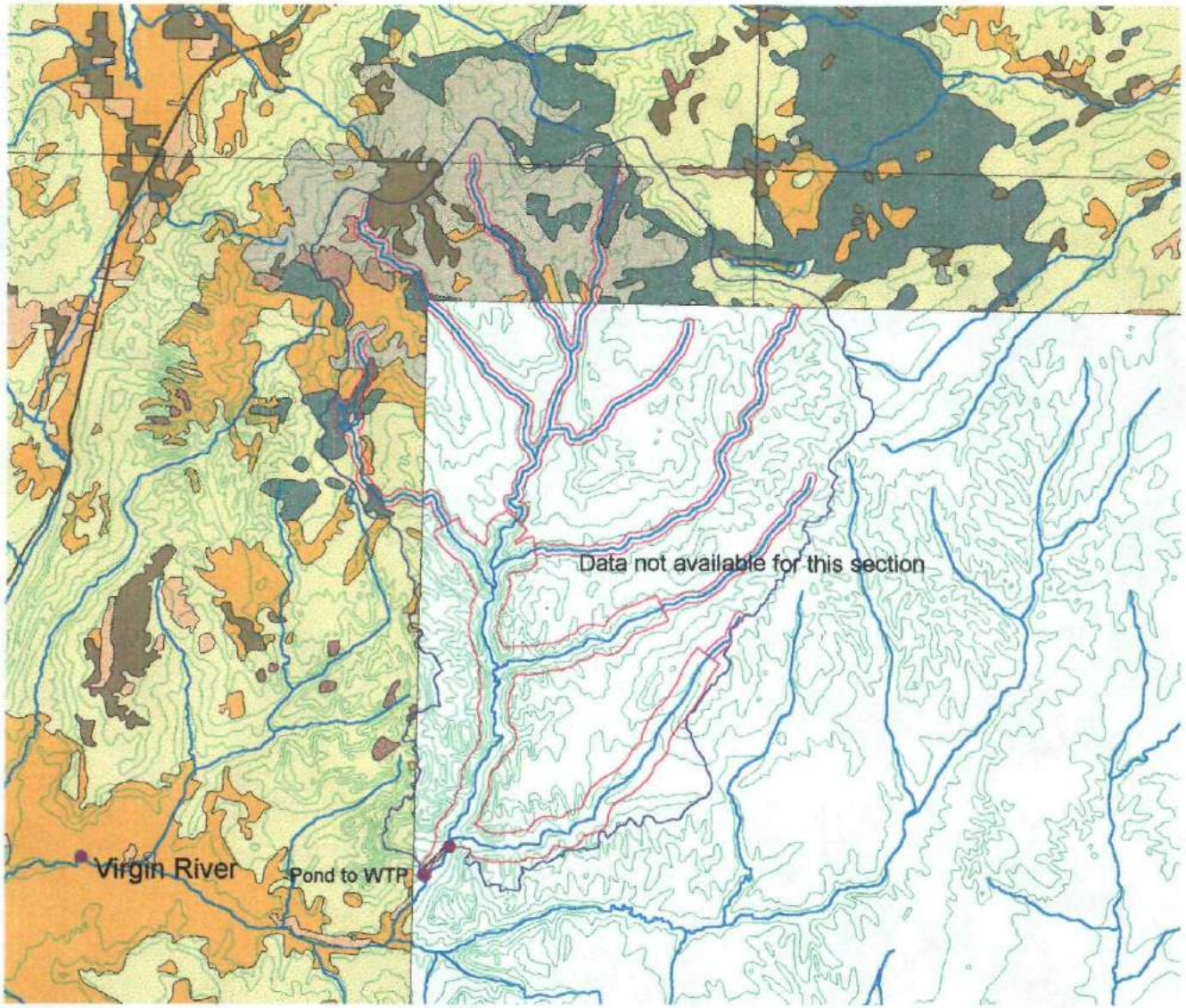
# Virgin River
# RCRIS Sites
# Springdale Town



| Protection Zone | City | Facility Name | ID Number | Location |
|---|---|---|---|---|
| Zone 4 | SPRINGDALE | ZION NATIONAL PARK | UT0141790063 | ZION NATIONAL PARK |

# Virgin River Land Use
# Town of Springdale
# EPA BASINS Data




Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
500-foot intervalTopographic contours

Land Use, EPA BASINS

- BARE EXPOSED ROCK
- COMMERCIAL AND SERVICES
- CONFINED FEEDING OPS
- CROPLAND AND PASTURE
- DECIDUOUS FOREST LAND
- DRY SALT FLATS
- EVERGREEN FOREST LAND
- FORESTED WETLAND
- HERBACEOUS RANGELAND
- INDUSTRIAL
- LAKES
- MIXED FOREST LAND
- MIXED RANGELAND
- MXD URBAN OR BUILT-UP
- NONFORESTED WETLAND
- ORCH,GROV,VNYRD,NURS,ORN
- *OTHER AGRICULTURAL LAND*
- OTHER URBAN OR BUILT-UP
- RESERVOIRS
- RESIDENTIAL
- SANDY AREA (NON-BEACH)
- SHRUB & BRUSH RANGELAND
- STRIP MINES
- TRANS, COMM, UTIL
- TRANSITIONAL AREAS

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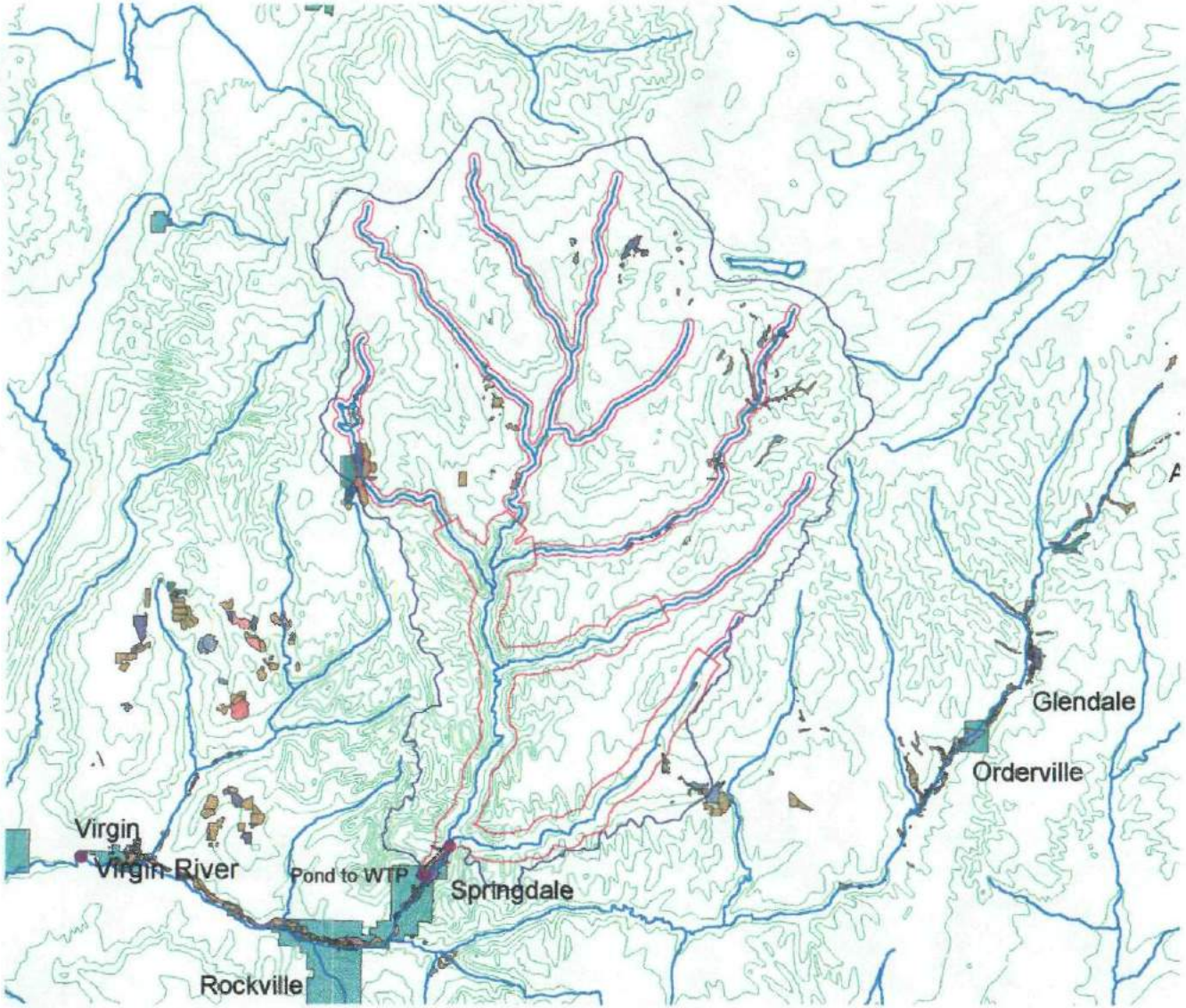
# Virgin River Land Use (Water-related)
# Town of Springdale
# Data from Division of Natural Resources




Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
500-foot intervalTopographic contours
Land Use, Water Related
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Commerc/Industr
Commercial
Dry Pasture
Evap Pond
Excavation
Farmsteads
Flooded
Industrial
Irrig.Pasture
Irrigated Cropla
Non-irrigated cr
Open space
Other
Residential
Riparian
Rural Bldg-hms
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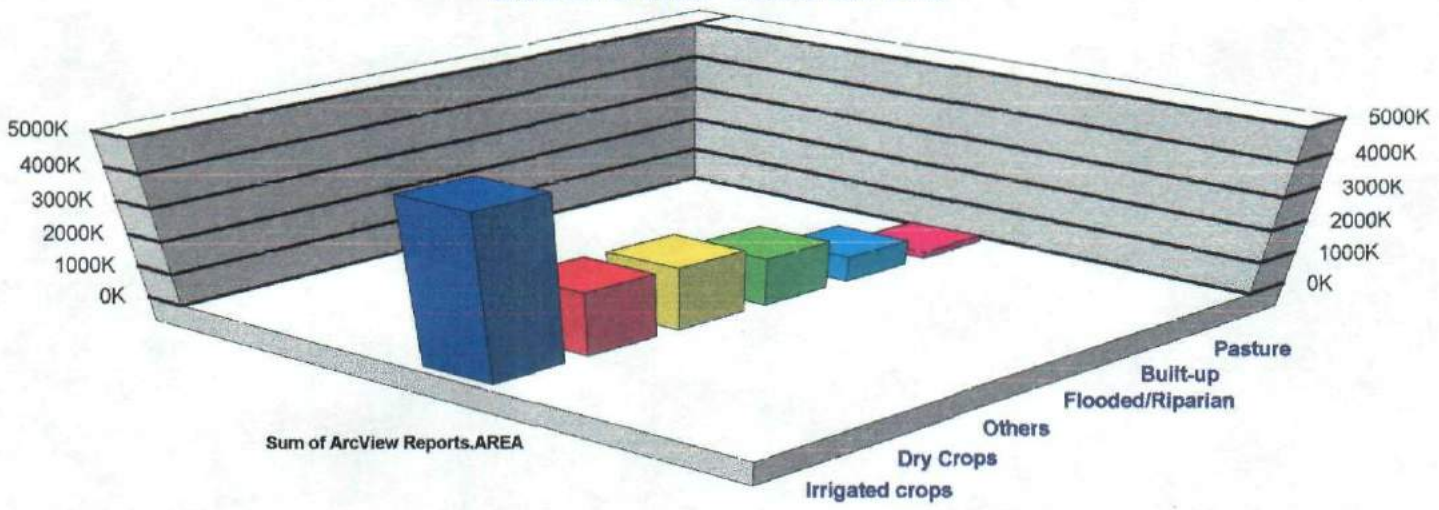


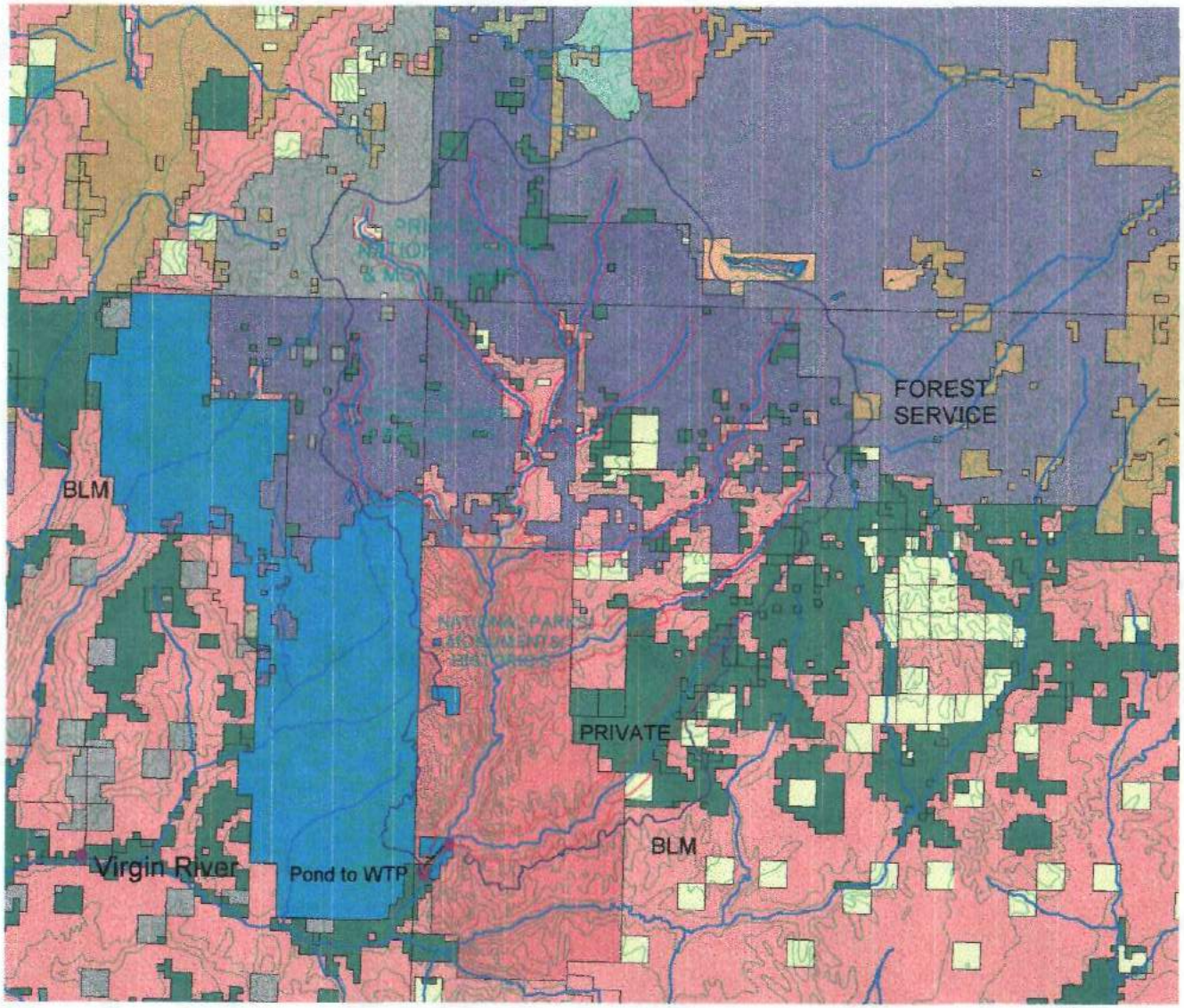

*Land use adjacent to water-ways*

# Land Use, Virgin River above Springdale

12/14/2000

| Land Use | Area |
|---|---|
| Irrigated crops | |
| Irrigated crops | 4,959,846.59 |
| Dry Crops | |
| Dry Crops | 1,948,316.16 |
| Others | |
| Others | 1,910,982.31 |
| Flooded/Riparian | |
| Flooded/Riparian | 1,451,618.42 |
| Built-up | |
| Built-up | 764,452.16 |
| Pasture | |
| Pasture | 203,127.62 |
| Grand Total: | 38,343.25 |

# Virgin River Land Ownership/Data
# Town of Springdale
# Data origin BLM through AGRC




10 0 10 20 Miles

N
W E
S

Zone 1
Zone 2
Zone 4 (vr-sd).shp
Surface water intakes
Streams.shp
500-foot interval Topographic contours

Cedar
BLM
BLM/ACQUIRED LAND
BLM/PROTECTIVE WITHDRAWAL
BLM/PUBLIC WATER RESERVE
FOREST SERVICE
FS/PROTECTIVE WITHDRAWAL
FS/PUBLIC WATER RESERVES
INTERMITTENT WATER
NATIONAL PARKS/MONUMENTS/HISTORIC S
NATIVE AMERICAN RESERVATIONS
PRIVATE
PRIVATE/FS
PRIVATE/NATIONAL PARKS & MONUMENTS
STATE
STATE WILDLIFE RESERVES
WATER

Panguitch
BANKHEAD JONES
BANKHEAD JONES/FS
BLM
BLM/PROTECTIVE WITHDRAWAL
BLM/PUBLIC WATER RESERVE
FOREST SERVICE
FS/PROTECTIVE WITHDRAWAL
INTERMITTENT WATER
NATIONAL PARKS/MONUMENTS/HISTORIC S
PRIVATE
PRIVATE/FS
PRIVATE/NATIONAL PARKS & MONUMENTS
PRIVATE/NATURE CONSERVANCY
STATE
STATE PARK/RECREATION AREA
STATE WILDLIFE RESERVES
WATER
WILDERNESS AREA/FS

Land Status
BLM
BLM/BUREAU OF RECLAMATION
BLM/PUBLIC WATER RESERVE
BLM/STATE REC AREA
BLM/WILDERNESS AREA
FOREST SERVICE
INTERMITTENT WATER
NATIONAL PARK/ACQUIRED LAND
NATIONAL PARKS/MONUMENTS/HISTORIC S
PRIVATE
PRIVATE/FS
PRIVATE/NATIONAL PARKS & MONUMENTS
PRIVATE/PUBLIC WATER RESERVE
STATE
STATE/PUBLIC WATER RESERVE
STATE/STATE REC AREA
WATER

Land Status
BLM
BLM/POWER WITHDRAWAL & CLASS.
BLM/PROTECTIVE WITHDRAWAL
BLM/PUBLIC WATER RESERVE
BLM/WILDERNESS AREA
FOREST SERVICE
FS/PROTECTIVE WITHDRAWAL
NATIONAL PARKS/MONUMENTS/HISTORIC S
NATIVE AMERICAN RESERVATIONS
PRIVATE
PRIVATE/FS
PRIVATE/NATIONAL PARKS & MONUMENTS
STATE
STATE PARK/RECREATION AREA
STATE/NATIVE AMERICAN
STATE/WILDERNESS AREA
WATER
WATER/NATIVE AMERICAN RESERVATION
WILDERNESS AREA/FS

# Appendix B
# Excerptions from Susceptibility Report

**Table D-3. Springdale Intake PCS Inventory**

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 1A-1 | Agricultural Areas in Zone 1A | See maps | A | X | X | X | X | X | | Potential for polluted runoff; soil erosion |
| 1A-2 | Forested Areas in Zone 1A | See maps | B | X | X | X | X | X | X | Activities include grazing, mining, timbering, and recreation. Potential for polluted runoff; soil erosion; small quantity camping waste. |
| 1A-3 | Residential Areas in Zone 1A | See maps | A | X | X | X | X | X | X | Potential for polluted runoff from paved areas and roads; potential for improper waste disposal; potential for improperly managed on-site wastewater management |
| 1A-4 | Major Roads in Zone 1A (State Rte. 9) | See maps | B | X | X | X | X | X | X | Transport of materials with potential for accidents, leaks, and spills. |
| 1A-5 | Zion Ridge Development Residential | North Fork County Rd., off of State Rte. 9 outside of Zion Nt'l Park east entrance (37.2698 N Lat - 112.8692 W Long) | A | X | | X | X | X | X | Residential area with significant amount of construction activity. Heavy equipment and machinery. Potential for polluted runoff from paved areas. Erosion from land disturbance. Potential for improper disposal of household hazardous wastes. |

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 1B-1 | Clear Creek Ranch And Resort | North Fork County Rd., off of State Rte. 9 outside of Zion Nt'l Park east entrance (37.2524 N Lat - 112.8351 W Long) | A | X | | X | X | X | | Small quantity waste; potential for polluted runoff |
| 1B-2 | Sinclair Gas Station | State Rte. 9, outside east entrance of Zion Nt'l Park (37.2380 N Lat -112.8568 W Long) | A | X | X | X | | | X | |
| 1B-3 | Trash Dumpsters For Western Kane County | 37.2467 N Lat - 112.8326 W Long | B | | | | | | | Unknown wastes within dumpsters. Waste materials collected around base of dumpsters. Creek bed filled with debris from overflowing dumpsters or possibly illegal dumping. |
| 1B-4 | Zion Mukuntaweep RV Park | State Rte. 9, outside east entrance of Zion Nt'l Park (37.2380 N Lat -112.8568 W Long) | A | X | | X | X | X | | Small quantity waste; potential for polluted runoff |
| 1B-5 | Zion N.P. Sinawava Temple | 37.2884 N Lat - 112.9510 W Long | B | X | | | X | X | | Small quantity waste generated by tourists; septic systems at public rest rooms |
| 1B-6 | Zion Ponderosa Ranch Cabins | North Fork County Rd, off of State Rte. 9 at marker #46 (37.2728 N Lat - 112.8788 W Long) | A | X | X | X | X | X | | Small quantity camping waste. Outdoor pool and hot tub chemicals. Runoff from paved areas. |

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 1B-7 | Agricultural Areas in Zone 1B | See maps | A | X | X | X | X | X | | Potential for polluted runoff; soil erosion |
| 1B-8 | Forested Areas in Zone 1B | See maps | B | X | X | X | X | X | X | Activities include grazing, mining, timbering, and recreation. Potential for polluted runoff; soil erosion; small quantity camping waste. |
| 1B-9 | Residential Areas in Zone 1B | See maps | A | X | X | X | X | X | X | Potential for polluted runoff from paved areas and roads; potential for improper waste disposal; potential for improperly managed on-site wastewater management |
| 1B-10 | Major Roads in Zone 1B (State Rte. 9) | See maps | B | X | X | X | X | X | X | Transport of materials with potential for accidents, leaks, and spills. |
| 1C-1 | Jeannie Claims Mine (uranium) | 37.3486 N Lat - 112.8708 W Long | B | | | | | | | Polluted runoff potentially containing sediment and radioactive material; potential dumping |
| 1C-2 | Lynn Group Mine (uranium) | 37.3125 N Lat - 112.8777 W Long | B | | | | | | | Polluted runoff potentially containing sediment and radioactive material; potential dumping |
| 1C-3 | School-Section 16 Mine (uranium) | 37.3308 N Lat - 112.8555 W Long | B | | | | | | | Polluted runoff potentially containing sediment and radioactive material; potential dumping |
| 1C-4 | Agricultural Areas in Zone 1C | See maps | A | X | X | X | X | X | | Potential for polluted runoff; soil erosion |

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 1C-5 | Forested Areas in Zone 1C | See maps | B | X | X | X | X | X | X | Activities include grazing, mining, timbering, and recreation. Potential for polluted runoff; soil erosion; small quantity camping waste. |
| 1C-6 | Residential Areas in Zone 1C | See maps | A | X | X | X | X | X | X | Potential for polluted runoff from paved areas and roads; potential for improper waste disposal; potential for improperly managed on-site wastewater management |
| 1C-7 | Major Roads in Zone 1C (State Rte. 9) | See maps | B | X | X | X | X | X | X | Transport of materials with potential for accidents, leaks, and spills. |
| 2-1 | Birch Hollow Mine | 37.3125 N Lat - 112.8575 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-2 | Bullock Canyon Mine | 37.4277 N Lat - 112.8166 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-3 | Cogswell Point Mine | 37.4013 N Lat - 112.8563 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-4 | Corral Canyon Mine | 37.4347 N Lat - 112.8736 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-5 | Crystal Creek Cyn Coal Deposit | 37.5266 N Lat - 112.9505 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 2-6 | Deep Creek Mine | 37.4750 N Lat - 112.9000 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-7 | Hay Canyon Mine | 37.4175 N Lat - 112.7819 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-8 | King Kannel Mine | 37.3986 N Lat - 112.8097 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-9 | Little Mtn Coal Deposit Mine | 37.4583 N Lat - 112.9708 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-10 | O'Neil Coal Deposit Mine | 37.5402 N Lat - 112.9591 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-11 | Orderville Gulch Mine | 37.3472 N Lat - 112.8236 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-12 | Pine Spring Knoll Coal Deposit Mine | 37.5447 N Lat - 113.0400 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-13 | Shiver Creek Cyn Coal Deposit Mine | 37.5233 N Lat - 113.0672 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-14 | Stright Canyon Mine | 37.4280 N Lat - 112.8055 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-15 | The Forks Mine | 37.4133 N Lat - 112.8972 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 2-16 | Virgin Mine | 37.3827 N Lat - 112.8500 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-17 | Webster Mine (uranium) | 37.5066 N Lat - 112.9752 W Long | B | | | | | | | Polluted runoff potentially containing sediment and radioactive material; potential dumping |
| 2-18 | West Fork Coal Deposit Mine | 37.4755 N Lat - 112.9055 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-19 | Wrathall Pass No.2 Gravel Pit Mine | 37.4236 N Lat - 112.8100 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 2-20 | Agricultural Areas in Zone 2 | See maps | A | X | X | X | X | X | | Potential for polluted runoff; soil erosion |
| 2-21 | Commercial Areas in Zone 2 | See maps | A | X | X | X | X | X | X | Potential for polluted runoff from paved areas; potential for improper waste disposal |
| 2-22 | Forested Areas in Zone 2 | See maps | B | X | X | X | X | X | X | Potential activities include grazing, mining, timbering, and recreation. Polluted runoff; soil erosion; small quantity camping waste. |
| 2-23 | Residential Areas in Zone 2 | See maps | A | X | X | X | X | X | X | Potential for polluted runoff from paved areas and roads; potential for improper waste disposal; potential for improperly managed on-site wastewater management |
| 4-1 | Basin Petroleum Corp Coal Deposit 2 | 37.5580 N Lat - 112.9286 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 4-2 | Bulloch Claim Mine (uranium) | 37.3416 N Lat - 112.8583 W Long | B | | | | | | | Polluted runoff potentially containing sediment and radioactive material; potential dumping |
| 4-3 | Clear Creek Point Mine | 37.2847 N Lat - 112.8583 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 4-4 | Hornet Point Coal Deposit Mine | 37.4438 N Lat - 113.0030 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 4-5 | Lynn Claims Mine (uranium) | 37.3250 N Lat - 112.8194 W Long | B | | | | | | | Polluted runoff potentially containing sediment and radioactive material; potential dumping |
| 4-6 | North Fork Mine | 37.4000 N Lat - 112.8269 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 4-7 | Orderville Gulch State Mine | 37.3416 N Lat - 112.8658 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 4-8 | Reserve Oil Inc Coal Deposit Mine | 37.5163 N Lat - 112.9505 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 4-9 | Steamboat Coal Deposit Mine | 37.5022 N Lat - 112.9963 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 4-10 | Table Bench Mine | 37.3541 N Lat - 112.8111 W Long | B | | | | | | | Polluted runoff potentially containing sediment; potential dumping |

| Zone and PCS ID | PCS Name | Location Information | Contaminant Hazard Class | Associated Hazards | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuels | Solvents | Pesticides/ Fertilizers | Pathogens | Nutrients | Metals | Other |
| 4-11 | Te-Ah Campground | 28 miles east of Cedar City on Highway 14, 7 miles on Navajo Lake Rd. (37.5363 N Lat - 112.8133 W Long) | A | X | | X | X | X | | Small quantity waste; potential for polluted runoff |
| 4-12 | Ut Dept Hwys Gravel Pit No. 27008 | 37.4197 N Lat - 113.0675 W Long | B | X | X | | | | | Polluted runoff potentially containing sediment; potential dumping |
| 4-13 | Zion National Park | 37.2484 N Lat - 112.9797 W Long | A | | | | | | | RCRIS |
| 4-14 | Agricultural Areas in Zone 4 | See maps | A | X | X | X | X | X | | Potential for polluted runoff; soil erosion |
| 4-15 | Commercial Areas in Zone 4 | See maps | A | X | X | X | X | X | X | Potential for polluted runoff from paved areas; potential for improper waste disposal |
| 4-16 | Forested Areas in Zone 4 | See maps | B | X | X | X | X | X | X | Potential activities include grazing, mining, timbering, and recreation. Polluted runoff; soil erosion; small quantity camping waste. |
| 4-17 | Residential Areas in Zone 4 | See maps | A | X | X | X | X | X | X | Potential for polluted runoff from paved areas and roads; potential for improper waste disposal; potential for improperly managed on-site wastewater management |
| 4-18 | Roads in Zone 4 | See maps | B | X | X | X | X | X | X | Transport of hazardous materials with potential for accidents, leaks, and spills. |

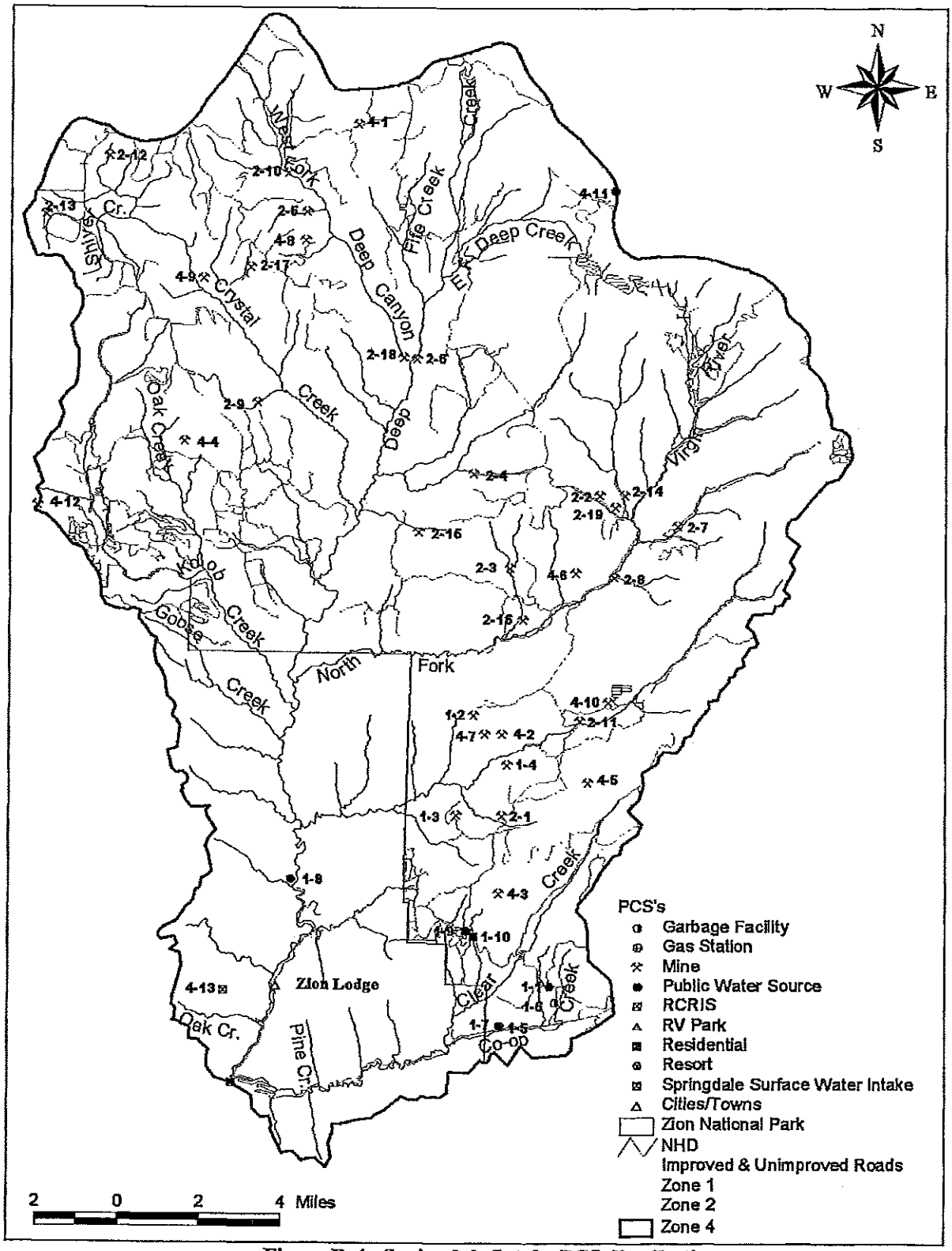



**Figure D-4. Springdale Intake PCS distribution.**

**Table E-3. Springdale Intake PCS Control Assessment**

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 1A-1 | Agricultural Areas in Zone 1A | X | Uncontrolled nonpoint source. | | | |
| 1A-2 | Forested Areas in Zone 1A | X | Uncontrolled nonpoint source. | | | |
| 1A-3 | Residential Areas in Zone 1A | X | Uncontrolled nonpoint source. | | | |
| 1A-4 | Major Roads in Zone 1A (State Rte. 9) | X | Uncontrolled nonpoint source. | | | |
| 1A-5 | Zion Ridge Development Residential | X | No apparent controls to contain sediment from construction sites. No controls for septic. (Need to verify that these homes aren't on sewer.) | | | |
| 1B-1 | Clear Creek Ranch And Resort | X | Uncontrolled activities, such as camping and use of ATV trails, on property. | | | |
| 1B-2 | Sinclair Gas Station | X | No controls for uncovered paved areas that may contain spilled fuel, oil, and automotive fluids. | | | |
| 1B-3 | Trash Dumpsters For Western Kane County | X | No controls to prevent dumpster overflow and/or dumping into creek bed. | | | |
| 1B-4 | Zion Mukuntaweep RV Park | X | Possible dark water/grey water contamination if RVs not properly connected to sewer hook-up and/or using dumping station. Runoff from paved areas. | | | |
| 1B-5 | Zion N.P. Sinawava Temple | | | X | BMP Control. Managed in accordance with Zion National Park Management Plan. Septic tanks regularly serviced. | (TBD) |
| 1B-6 | Zion Ponderosa Ranch Cabins | X | No controls for septic. (Need to verify that these homes aren't on sewer.) | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 1B-7 | Agricultural Areas in Zone 1B | X | Uncontrolled nonpoint source. | | | |
| 1B-8 | Forested Areas in Zone 1B | X | Uncontrolled nonpoint source. | | | |
| 1B-9 | Residential Areas in Zone 1B | X | Uncontrolled nonpoint source. | | | |
| 1B-10 | Major Roads in Zone 1B (State Rte. 9) | X | Uncontrolled nonpoint source. | | | |
| 1C-1 | Jeannie Claims Mine (uranium) | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 1C-2 | Lynn Group Mine (uranium) | X | Data provided by DDW from the MAS/MILS mineral location database lists mine status as "other." Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 1C-3 | School-Section 16 Mine (uranium) | X | Data provided by DDW from the MAS/MILS mineral location database lists mine status as "other." Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 1C-4 | Agricultural Areas in Zone 1C | X | Uncontrolled nonpoint source. | | | |
| 1C-5 | Forested Areas in Zone 1C | X | Uncontrolled nonpoint source. | | | |
| 1C-6 | Residential Areas in Zone 1C | X | Uncontrolled nonpoint source. | | | |
| 1C-7 | Major Roads in Zone 1C (State Rte. 9) | X | Uncontrolled nonpoint source. | | | |
| 2-1 | Birch Hollow Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-2 | Bullock Canyon Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-3 | Cogswell Point Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |

| PCS ID | PCS Name | Control Identification and Justification | | | | |
|---|---|---|---|---|---|---|
| | | Not Adequately Controlled | Rationale | Adequately Controlled | | Date for Reassessing Hazard |
| 2-4 | Corral Canyon Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-5 | Crystal Creek Cyn Coal Deposit | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-6 | Deep Creek Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-7 | Hay Canyon Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 2-8 | King Kannel Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a past producer. Date of entry into database unknown; therefore, unsure when mine became inactive. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-9 | Little Mtn Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-10 | O'Neil Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a past producer. Date of entry into database unknown; therefore, unsure when mine became inactive. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-11 | Orderville Gulch Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a past producer. Date of entry into database unknown; therefore, unsure when mine became inactive. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 2-12 | Pine Spring Knoll Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-13 | Shiver Creek Cyn Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-14 | Stright Canyon Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-15 | The Forks Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 2-16 | Virgin Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-17 | Webster Mine (uranium) | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-18 | West Fork Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-19 | Wrathall Pass No.2 Gravel Pit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a past producer. Date of entry into database unknown; therefore, unsure when mine became inactive. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 2-20 | Agricultural Areas in Zone 2 | X | Uncontrolled nonpoint source. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 2-21 | Commercial Areas in Zone 2 | X | Uncontrolled nonpoint source. | | | |
| 2-22 | Forested Areas in Zone 2 | X | Uncontrolled nonpoint source. | | | |
| 2-23 | Residential Areas in Zone 2 | X | Uncontrolled nonpoint source. | | | |
| 4-1 | Basin Petroleum Corp Coal Deposit 2 | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a mineral location (i.e., prospect or claim without workings). Date of entry into database unknown; therefore, unsure if this site ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-2 | Bulloch Claim Mine (uranium) | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-3 | Clear Creek Point Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 4-4 | Hornet Point Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-5 | Lynn Claims Mine (uranium) | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a past producer. Date of entry into database unknown; therefore, unsure when mine became inactive. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-6 | North Fork Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-7 | Orderville Gulch State Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 4-8 | Reserve Oil Inc Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a mineral location (i.e., prospect or claim without workings). Date of entry into database unknown; therefore, unsure if this site ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-9 | Steamboat Coal Deposit Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-10 | Table Bench Mine | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a raw prospect. Date of entry into database unknown; therefore, unsure if this ever became an active mine. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-11 | Te-Ah Campground | X | No controls to prevent possible contamination associated with use of property by the general public. | | | |

| PCS ID | PCS Name | Not Adequately Controlled | Rationale | Adequately Controlled | Control Identification and Justification | Date for Reassessing Hazard |
|---|---|---|---|---|---|---|
| 4-12 | Ut Dept Hwys Gravel Pit No. 27008 | X | Data provided by DDW from the MAS/MILS mineral location database lists mine as a past producer. Date of entry into database unknown; therefore, unsure when mine became inactive. DOGM Rules (UAC - R643, R645, R647) do not enforce pollution prevention. | | | |
| 4-13 | Zion National Park | | | X | Negligible Quantity. UT DEQ file notes from 1991 states that the US Park Service filed as a hazardous waste generator as a precaution, although DEQ compliance inspections show that this status does not apply to Zion National Park. | (TBD) |
| 4-14 | Agricultural Areas in Zone 4 | X | Uncontrolled nonpoint source. | | | |
| 4-15 | Commercial Areas in Zone 4 | X | Uncontrolled nonpoint source. | | | |
| 4-16 | Forested Areas in Zone 4 | X | Uncontrolled nonpoint source. | | | |
| 4-17 | Residential Areas in Zone 4 | X | Uncontrolled nonpoint source. | | | |
| 4-18 | Roads in Zone 4 | X | Uncontrolled nonpoint source. | | | |

**Table F-3. Susceptibility Analysis for Springdale Intake, Prioritized PCS Inventory**

| PCS ID | PCS NAME | INTAKE RATING | SENSITIVITY RATING | RISK RATING | HAZARD CLASS | HAZARD CONTROL | THREAT RATING | VULNERABILITY RATING |
|---|---|---|---|---|---|---|---|---|
| 1B-1 | Clear Creek Ranch And Resort | Pass | Moderate | Moderate | A | N | High | High |
| 1B-2 | Sinclair Gas Station | Pass | Moderate | Moderate | A | N | High | High |
| 1B-4 | Zion Mukuntaweep RV Park | Pass | Moderate | Moderate | A | N | High | High |
| 1B-6 | Zion Ponderosa Ranch Cabins | Pass | Moderate | Moderate | A | N | High | High |
| 1A-5 | Zion Ridge Development Residential | Pass | Moderate | Moderate | A | N | High | High |
| 1A-1 | Agricultural Areas in Zone 1A | Pass | Moderate | Moderate | A | N | High | High |
| 1B-7 | Agricultural Areas in Zone 1B | Pass | Moderate | Moderate | A | N | High | High |
| 1C-4 | Agricultural Areas in Zone 1C | Pass | Moderate | Moderate | A | N | High | High |
| 1A-3 | Residential Areas in Zone 1A | Pass | Moderate | Moderate | A | N | High | High |
| 1B-9 | Residential Areas in Zone 1B | Pass | Moderate | Moderate | A | N | High | High |
| 1C-6 | Residential Areas in Zone 1C | Pass | Moderate | Moderate | A | N | High | High |
| 2-20 | Agricultural Areas in Zone 2 | Pass | Moderate | Moderate | A | N | High | High |
| 2-21 | Commercial Areas in Zone 2 | Pass | Moderate | Moderate | A | N | High | High |
| 2-23 | Residential Areas in Zone 2 | Pass | Moderate | Moderate | A | N | High | High |
| 1C-1 | Jeannie Claims Mine (uranium) | Pass | Moderate | Moderate | B | N | High | High |
| 1C-2 | Lynn Group Mine (uranium) | Pass | Moderate | Moderate | B | N | High | High |
| 1C-3 | School-Section 16 Mine (uranium) | Pass | Moderate | Moderate | B | N | High | High |
| 1B-3 | Trash Dumpsters For Western Kane County | Pass | Moderate | Moderate | B | N | High | High |
| 1A-2 | Forested Areas in Zone 1A | Pass | Moderate | Moderate | B | N | High | High |
| 1B-8 | Forested Areas in Zone 1B | Pass | Moderate | Moderate | B | N | High | High |
| 1C-5 | Forested Areas in Zone 1C | Pass | Moderate | Moderate | B | N | High | High |
| 1A-4 | Major Roads in Zone 1A (State Rte. 9) | Pass | Moderate | Moderate | B | N | High | High |

| PCS ID | PCS NAME | INTAKE RATING | SENSITIVITY RATING | RISK RATING | HAZARD CLASS | HAZARD CONTROL | THREAT RATING | VULNERABILITY RATING |
|---|---|---|---|---|---|---|---|---|
| 1B-10 | Major Roads in Zone 1B (State Rte. 9) | Pass | Moderate | Moderate | B | N | High | High |
| 1C-7 | Major Roads in Zone 1C (State Rte. 9) | Pass | Moderate | Moderate | B | N | High | High |
| 2-1 | Birch Hollow Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-2 | Bullock Canyon Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-3 | Cogswell Point Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-4 | Corral Canyon Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-5 | Crystal Creek Cyn Coal Deposit | Pass | Moderate | Moderate | B | N | High | High |
| 2-6 | Deep Creek Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-7 | Hay Canyon Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-8 | King Kannel Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-9 | Little Mtn Coal Deposit Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-10 | O'Neil Coal Deposit Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-11 | Orderville Gulch Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-12 | Pine Spring Knoll Coal Deposit Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-13 | Shiver Creek Cyn Coal Deposit Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-14 | Stright Canyon Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-15 | The Forks Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-16 | Virgin Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-17 | Webster Mine (uranium) | Pass | Moderate | Moderate | B | N | High | High |
| 2-18 | West Fork Coal Deposit Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-19 | Wrathall Pass No.2 Gravel Pit Mine | Pass | Moderate | Moderate | B | N | High | High |
| 2-22 | Forested Areas in Zone 2 | Pass | Moderate | Moderate | B | N | High | High |
| 4-1 | Basin Petroleum Corp Coal Deposit 2 | Pass | Moderate | Moderate | B | N | High | High |
| 4-3 | Clear Creek Point Mine | Pass | Moderate | Moderate | B | N | High | High |
| 4-9 | Steamboat Coal Deposit Mine | Pass | Moderate | Moderate | B | N | High | High |
| 4-16 | Forested Areas in Zone 4 | Pass | Moderate | Moderate | B | N | High | High |
| 4-11 | Te-Ah Campground | Pass | Moderate | Moderate | A | AC | Moderate | Moderate |
| 4-14 | Agricultural Areas in Zone 4 | Pass | Low | Low | A | N | High | Moderate |

| PCS ID | PCS NAME | INTAKE RATING | SENSITIVITY RATING | RISK RATING | HAZARD CLASS | HAZARD CONTROL | THREAT RATING | VULNERABILITY RATING |
|---|---|---|---|---|---|---|---|---|
| 4-15 | Commercial Areas in Zone 4 | Pass | Low | Low | A | N | High | Moderate |
| 4-17 | Residential Areas in Zone 4 | Pass | Low | Low | A | N | High | Moderate |
| 4-2 | Bulloch Claim Mine (uranium) | Pass | Low | Low | B | N | High | Moderate |
| 4-4 | Hornet Point Coal Deposit Mine | Pass | Low | Low | B | N | High | Moderate |
| 4-5 | Lynn Claims Mine (uranium) | Pass | Low | Low | B | N | High | Moderate |
| 4-6 | North Fork Mine | Pass | Low | Low | B | N | High | Moderate |
| 4-7 | Orderville Gulch State Mine | Pass | Low | Low | B | N | High | Moderate |
| 4-8 | Reserve Oil Inc Coal Deposit Mine | Pass | Low | Low | B | N | High | Moderate |
| 4-10 | Table Bench Mine | Pass | Low | Low | B | N | High | Moderate |
| 4-12 | Ut Dept Hwys Gravel Pit No. 27008 | Pass | Low | Low | B | N | High | Moderate |
| 4-18 | Roads in Zone 4 | Pass | Low | Low | B | N | High | Moderate |
| 1B-5 | Zion N.P. Sinawava Temple | Pass | Moderate | Moderate | B | AC | Low | Low |
| 4-13 | Zion National Park | Pass | Low | Low | A | AC | Moderate | Low |

# Appendix C
# Big Spring Prioritized Inventory of PCSs

**Big Spring Prioritized Inventory of PCSs**

| Priority | PCSs | Contact | Address | Phone No. |
|---|---|---|---|---|
| 1 | Residential Chemical Uses | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 2 | Springdale Chevron | Zion Enroute, LLC | 1593 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3677 |
| 2 | Springdale Texaco | Joanna Adamson | 1490 Ambassador Way Salt Lake City, UT 84108 | (801) 582-5112 |
| 2 | Canyon Tire & Food Mart | Jerry Hatch | 962 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3693 |
| 2 | Zion Canyon Exxon | Zion Park Resort, Inc. | 2159 S 700 E, Ste. 200 Salt Lake City, UT 84106 | (801) 467-3600 |
| 2 | Sewer Lines | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 3 | Best Western Zion Park Inn/Switchback Restaurant (Hotel/ Restaurant) | Dean Cook (Inn) | 1215 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3200 |
| | | Mike Marriott (Restaurant) | 1249 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3700 |
| 3 | Bit & Spur Restaurant | Trish Jennings | 1212 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3498 |
| 3 | Flanigans Inn and Spa/Spotted Dog Café (Hotel and Restaurant) | Larry McKown | 450 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3244 |
| 3 | Whiptail Grill | Travis Barney | 445 Zion Park Blvd Springdale, Utah 84767 | (435) 772-0283 |
| 3 | Medical Clinic | Mike and Helen McMahan | 120 Lion Boulevard Springdale, Utah 84767 | (435) 772-3226 |
| 3 | Rockville/Springdale Fire Protection District (Fire Station) | Ryan Ballard, Fire Chief | PO Box 159 Springdale, UT 84767 | (435) 772-3220 |
| 3 | Park | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 3 | Cemetery | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 3 | City Facilities | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |

| | | | | |
|---|---|---|---|---|
| 3 | Cliffrose Lodge and Gardens (Hotel 1) | Colin Dockstader | 281 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3234 |
| 3 | Quality Inn RV and Campground (Hotel 2) | Stewart Ferber | 479 Zion Park Blvd Springdale, Utah 84767 | (435) 772-3237 |
| 3 | Dixie Amphitheater | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 3 | Zion Adventure Co. (Tourist Shop 1) | Jonathan Zambella | 36 Lion Boulevard Springdale, Utah 84767 | (435) 772-1001 |
| 3 | Old Tsunami Building (Tourist Shop 2) | Rene Goodnow | 180 Zion Park Blvd Springdale, Utah 84767 | (801) 223-3158 |
| 3 | Zion Canyon Giant Screen Theater (Restaurant and Theater) | Bob Orton | 145 Zion Park Blvd Springdale, Utah 84767 | (435) 772-2400 |
| 3 | City Facilities, Hotels, Restaurants, Theaters, Tourist Shops and Other Businesses | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 4 | State Route 9 | Carl Johnson, UDOT Region 4 | 1345 South 350 West Richfield, Utah 84701 | (435) 896-1303 |
| 4 | Dirt Roads | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 5 | Hummingbird Well | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |
| 5 | Submersible Pump | Robby Totten | 118 Lion Boulevard Springdale, Utah 84767 | (435) 772-3434 |

# Appendix D
# Management and Implementation Plan
# To Address Existing and Future PCSs

# Virgin River Drinking Water Source Protection Plan: Management and Implementation Plan to Address Existing and Future Potential Sources of Contamination
## June 29, 2005

Efforts to develop a Drinking Water Source Protection (DWSP) Plan for the Virgin River began in July 2002, in conjunction with other activities aimed at improving the health of the Virgin River and its tributaries. The Virgin River Watershed Management Plan Committee initiated a watershed planning process to concurrently develop Total Maximum Daily Loads (TMDLs) – which includes the review of water quality standards – a DWSP Plan, and an overarching Watershed Management Plan. By coordinating these three planning efforts, the Virgin River Watershed Management Plan Committee intends to integrate strategies that will effectively and efficiently meet regulatory requirements as well as the needs of local stakeholders.

As part of this planning process, a DWSP Plan must be developed in accordance with the requirements of the Utah Department of Environmental Quality, Division of Drinking Water (DDW) and must include the following eight elements:

(1) Delineation Report
(2) Susceptibility Analysis and Determination Report
(3) Management Plan for Existing Potential Contamination Sources (PCSs)
(4) Management Plan for Future PCSs
(5) Implementation Schedule
(6) Resource Evaluation
(7) Contingency Plan
(8) Public Notification Plan.

### Elements of a Drinking Water Source Protection Plan

- Delineation Report (completed in January 2003)
- Susceptibility Analysis and Determination Report (completed in January 2003)
- **Management Plan for Existing Potential Contamination Sources**
- **Management Plan for Future Potential Contamination Sources**
- **Implementation Schedule**
- **Resource Evaluation**
- **Contingency Plan**
- **Public Notification Plan**

The Virgin River Watershed Management Plan Committee, with support from Tetra Tech, Inc., completed the first two elements of the DWSP Plan in January 2003. Activities related to development of the TMDL and the Watershed Management Plan continued throughout 2003, including the identification of strategies to address water quality impairments and stakeholders' key issues. Upon developing recommended strategies to implement the TMDL and the Watershed Management Plan, the Virgin River Watershed Management Plan Committee determined how these recommended strategies linked to source water protection and addressed the remaining elements of the DWSP Plan.

This document contains the management and implementation elements of the Virgin River DWSP Plan. It focuses on the existing PCSs identified in the Susceptibility Analysis and Determination Report for three surface water intakes located in the Virgin River Watershed, as well as future PCSs that may move into the area over time. Provided below is a brief description of the sections contained in this report:

- **Section 1: Management Plan for Existing Potential Contamination Sources.** This section identifies the highest priority PCSs for each surface water intake and describes the management strategies that the Virgin River Watershed Management Plan Committee intends to implement to ensure high quality source water.

- **Section 2: Management Plan for Future Potential Contamination Sources.** Given the rate of growth and development in the Virgin River Watershed, new PCSs might locate within the three source water protection zones over time. This section describes the Virgin River Watershed Management Plan Committee's program for managing future PCSs to ensure high quality source water.

- **Section 3: Implementation Schedule.** This section identifies when management strategies for existing and future PCSs will start and how frequently they will take place.

- **Section 4: Resource Evaluation.** Management strategies to address existing and future PCSs will require a commitment of resources to implement according to the schedule identified in Section 3. This section identifies the resources available to successfully implement management strategies, as well as any gaps in resources that must be addressed.

- **Section 5: Recordkeeping.** This section describes the recordkeeping method that will be used to document progress in implementing management strategies to address existing and future management strategies. The recordkeeping method includes the related public notification activities and documentation.

- **Section 6: Contingency Plan.** Every public water system must have a contingency plan to address water shortages or contamination that threatens the ability to provide safe drinking water. This section contains the contingency plans for the public water systems within the Virgin River watershed.

- **Section 7: Public Notification Plan.** A requirement of Utah's Source Water Assessment Program is to educate the public on how to prevent contamination of surface waters that serve as sources of drinking water. This section contains a proposed public notice and a description of distribution mechanisms.

Implementation of the DSWP Plan, in conjunction with the TMDL and the Watershed Management Plan, will be a significant undertaking; therefore, the Virgin River Watershed Management Plan Committee created a full-time position for a Virgin River Watershed Coordinator. The Coordinator is an employee of the Washington County Water Conservancy District and has office space in the Water District office. The Utah Department of Environmental Quality and the Water District have provided initial funding for the Watershed Coordinator position.

The Virgin River Watershed Coordinator will work with other local partners to implement the management strategy for both existing and future PCSs in the Virgin River watershed. As the eyes and ears of the Virgin River watershed, the Coordinator will play a key role in educating landowners on the importance of source water protection and other watershed management activities. In addition to management strategy implementation, the Virgin River Watershed Coordinator will take the lead on updating and resubmitting the DWSP Plan every six years, as required under the Drinking Water Source Protection rule (Utah Administrative Code R309-605). The resubmittal will include an updated inventory of PCSs based on the Coordinator's knowledge of new PCSs located within the source water protection areas (see Section 2 for details) and a reprioritized list of PCSs using the methodology described in the

Susceptibility Analysis and Determination Report. The remainder of this document describes the activities under the DSWP Plan that the Virgin River Watershed Coordinator will implement with support from local watershed partners.

## Section 1: Management Plan for Existing Potential Contamination Sources

The Susceptibility Analysis and Determination Report identifies the highest priority PCSs within the Virgin River Watershed source water protection areas that are not adequately controlled. Table 1-1 lists the highest priority, not adequately controlled PCSs for each of the three source water protection areas. The Drinking Water Source Protection rule (Utah Administrative Code R309-605) requires management strategies for the three highest priority PCSs that are not controlled. According to *Utah's Drinking Water Source Protection for Surface Water User's Guide*, public water systems can choose to manage more than the three highest priority PCSs. (Appendix F in the Susceptibility Analysis and Determination Report contains the complete prioritized PCS inventory for each surface water intake.)

**Table 1-1. Priority PCSs in the Virgin River Watershed Source Water Protection Areas Listed by Surface Water Intake**

| Quail Lake Intake | Quail Lake Pipeline Diversion | Spring Intakes |
|---|---|---|
| Quail Creek State Park | Commercial Areas in Zones 1A, 1B, 1C | Clear Creek Ranch and Resort |
| Commercial Areas in Zones 1A, 1B, 1C | Desert Garden Estates (residential and construction) | Sinclair Gas Station |
| | Zion River Resort and RV Park | Zion Mukuntaweep RV Park |
| | Agricultural Areas in Zones 1A, 1B, and 1C | Zion Ponderosa Ranch Cabins |
| | Residential Areas in Zones 1A, 1B, 1C | Zion Ridge Development |
| | | Agricultural Areas in Zones 1A, 1B, 1C |
| | | Residential Areas in Zones 1A, 1B, 1C |
| | | Commercial Areas in Zone 2 |
| | | Residential Areas in Zone 2 |

To prevent existing PCSs from affecting surface drinking water supplies, the Virgin River Watershed Management Plan Committee will focus on watershed outreach and education as the primary management strategy. Outreach and education for source water protection will tie into the larger watershed planning effort aimed at improving water quality in the Virgin River Watershed. As part of the overall watershed planning effort, the Virgin River Watershed Management Plan Committee has developed TMDLs to address water quality impairments and a Watershed Management Plan to address stakeholders' key issues. Through each planning effort, the Committee identified a need for outreach and education on various water quality issues, as well as a dedicated staff person to oversee the implementation of all watershed management strategies. The Virgin River Watershed Management Plan Committee proposes to fulfill the needs identified through the DWSP Planning effort, in conjunction with the overall watershed management planning effort, through the development and implementation of a watershed information and education (I&E) strategy for the Virgin River Watershed.

A watershed I&E strategy is a comprehensive plan for a coordinated outreach and education program that targets specific audiences and behaviors. The purpose of a watershed I&E strategy is to provide stakeholders with information that will raise their awareness on watershed issues, educate them on

potential solutions, and motivate them to take action. The ultimate goal is to create an informed group of watershed stakeholders that are motivated to either discontinue negative behaviors or adopt positive behaviors that will result in achieving watershed management goals. Steps involved in the development of a watershed I&E strategy include:

- Identifying goals and objectives
- Targeting audiences within the watershed and associated behaviors
- Developing effective messages that will resonate with target audiences
- Creating appropriate formats for delivering messages to target audiences
- Identifying effective mechanisms for distributing outreach formats and messages
- Generating and applying evaluation tools to determine the effectiveness of messages, formats, and distribution mechanisms.

The most significant aspect of creating a watershed I&E strategy is thoroughly and accurately characterizing target audiences. Some of the work necessary to characterize target audiences for the Virgin River watershed I&E strategy has been initiated through the overall watershed management planning effort. For example, meetings held to identify stakeholders' key issues in the watershed produced a large amount of information about stakeholders' values, concerns, and existing level of awareness. The Virgin River Watershed Management Plan Committee intends to collect and analyze additional information for the I&E strategy to ensure it is comprehensive and will address target audiences related to existing PCSs, as well as other target audiences within the watershed. Through an I&E strategy for the Virgin River watershed, existing agencies and organizations conducting outreach activities will require an inventory of existing outreach and education activities. Table 1-2 presents a starting point for characterizing target audiences that encompass the priority PCSs listed above in Table 1-1, as well as developing and distributing messages on source water protection.

**Table 1-2. Management Strategies for Existing PCSs in the Virgin River Watershed**

| Target Audience | Potential Contaminant Sources Addressed (Source Water Protection Area)[1] | Strategy/Message | Format/Distribution |
|---|---|---|---|
| Homeowners | Desert Garden Estates (QLPDD)<br>Zion Ponderosa Ranch Cabins (SI)<br>Zion Ridge Development (SI)<br>Residential Areas in Zones 1A, 1B, 1C (QLPDD and SI)<br>Residential Areas in Zone 2 (SI) | • Riparian education<br>• Proper use of chemicals<br>• Proper disposal of materials<br>• Water conservation<br>• Connection between homeowner activities and drinking water supply | • Flyers posted at public locations<br>• Materials with water bills<br>• Websites<br>• Household hazardous waste collection events<br>• Advertise waste oil recycling centers<br>• Provide educational materials to local realtors |
| State/National Park Management | Quail Creek State Park (QL) | • Potential contaminant information<br>• Encouragement to work with users<br>• Pollution prevention operation and maintenance practices | • Letters<br>• Technical guidance<br>• Source water protection area maps |

[1] QL: Quail Lake Intake, QLPDD: Quail Lake Pipeline Diversion Dam, SI: Springdale Intake

| Target Audience | Potential Contaminant Source Addressed (Source Water Protection Area) | Strategy/Message | Format/Distribution |
|---|---|---|---|
| State/National Park Users | Quail Creek State Park (QL) | • Value of clean water<br>• Relationship of park to drinking water supplies<br>• Activities that might generate potential contaminants | • Permanent signs at key locations<br>• Material distributed upon entering the park<br>• Information posted in restroom facilities and picnic areas<br>• Information on park website |
| Business Owners | Commercial Areas in Zones 1A, 1B, 1C (QL and QLPDD)<br>Commercial Areas in Zone 2 (SI)<br>Zion River Resort and RV Park (QLPDD)<br>Clear Creek Ranch and Resort (SI)<br>Zion Mukuntaweep RV Park (SI) | • Relationship of business to drinking water supply<br>• Pollution prevention activities<br>• Riparian education | • Letters<br>• Periodic mailings<br>• Websites (chamber of commerce)<br>• Personal contact/public meetings<br>• Household hazardous waste collection events and used oil recycling information |
| Transient Business Users | Zion River Resort and RV Park (QLPDD)<br>Clear Creek Ranch and Resort (SI)<br>Zion Mukuntaweep RV Park (SI) | • Value of clean water<br>• Responsibility of visitors to contribute to drinking water protection<br>• Activities/behaviors that might contribute contaminants to drinking water supplies<br>• Location of source water protection areas in relation to tourist-related attraction, facilities and services | • Materials to business owners for distribution to customers<br>• Supply signs for posting in and around businesses<br>• Ads in local newspaper |
| Agriculture | Agricultural Areas in Zones 1A, 1B, 1C (QLPDD and SI) | • Location of source water protection areas<br>• Pollution prevention activities to reduce potential contamination of drinking water supplies<br>• Appeal to other motivating factors (e.g., | • Personal contact<br>• Letters<br>• Technical assistance<br>• Dixie Soil Conservation District |
| County/ Municipal Government | All Source Water Protection Areas | • Value and need of clean water<br>• Riparian education | • Presentations<br>• Letters<br>• Public meetings |

| Target Audience | Potential Contaminant Sources Addressed (Source Water Protection Area) | Strategy/Message | Format/Distribution |
|---|---|---|---|
| County/ Municipal Government (continued) | | • Proper use/disposal of material (e.g., encourage municipal operations to use and encourage municipal governments to provide programs)<br>• Importance of making residents and visitors aware of connection between actions and drinking water supplies | |

## Section 2: Management Plan for Future Potential Contamination Sources

To manage future PCSs, the Drinking Water Source Protection rule contains the following minimum requirements:

- Contact each potential PCS as it moves into a source water protection area
- Determine if it is a PCS
- Add new PCSs to the PCS inventory for a source water protection area
- Identify and assess controls at new PCSs
- Plan and implement land management strategies for new PCSs that are not adequately controlled.

The management plan for future PCSs in the Virgin River watershed will meet the minimum requirements through the activities of the Virgin River Watershed Coordinator and existing local regulations pertaining to development. The Coordinator will work with local partners to track potential PCSs that move into source water protection areas, update the PCS inventory, assess controls, and implement new management strategies. Tracking of potential PCSs will occur using information from local development and onsite wastewater permitting processes. To establish the PCS tracking process, the Coordinator will contact the entities responsible for reviewing building and onsite wastewater permit applications to (1) discuss the DWSP Plan requirements for managing future PCSs and (2) devise an effective means to share information about new developments that locate in source water protection areas. The Coordinator will contact and work with the following organizations and departments:

- Southwest Utah Public Health Department (responsible for reviewing onsite wastewater system permit applications in Kane and Washington Counties where source water protection areas are located)
- Washington County Planning Commission
- Kane County Planning Commission
- Town of Leeds Planning Commission
- City of Hurricane Planning Commission
- Town of Virgin Planning Commission
- Town of Rockville Planning Commission

- Town of Springdale Planning Commission.

Source water protection areas cross not only county and city boundaries, but also cover portions of Dixie National Forest, Zion National Park, and public lands administered by the Bureau of Land Management. As a result, the Coordinator will also work with the U.S. Forest Service, the National Park Service, and the Bureau of Land Management to establish a process for tracking future PCSs in source water protection areas that fall into their respective jurisdictions.

Given that source water protection areas may only extend into portions of a city, town, county, or federally-administered land, the Coordinator will require the tools necessary to map potential PCSs and determine their exact location. Using the GIS data layers developed for the DWSP Plan, the Coordinator can determine if potential PCSs are located within source water protection areas and identify the appropriate source water protection zone. This information is essential for future updates to the PCS inventory and the overall DWSP Plan, as required under the Drinking Water Source Protection rule.

Upon determining that a potential PCS has moved into a source water protection area, the Coordinator will take the appropriate steps to contact the potential PCS. The Coordinator will determine the most appropriate means for contacting potential PCSs, possibly relying on one or more methods such as visiting the location of the potential PCS, scheduling a meeting with the individual or organization responsible for the potential PCS, sending a letter, or distributing outreach materials with the approved permit. To ensure the procedures for notifying potential PCSs are understood, the Coordinator will develop a written description of the possible methods for contacting potential PCSs and distribute this document to all local partners participating in source water protection efforts (e.g., planning commissions, health department, federal landowners). It is important that all partners agreeing to implement source water protection activities through their existing programs and processes have full knowledge of the procedures for communicating with potential PCSs – their "customers."

To determine if the potential PCS is truly a PCS, the Coordinator will go into the field to observe the new facility or activity firsthand. The Coordinator will use either a windshield survey approach or a more in-depth site visit to make this determination. Windshield surveys were used to develop the initial PCS inventory; therefore, it is entirely appropriate that the Coordinator uses the same technique to determine if the new facility or activity poses a contamination risk. However, windshield surveys provide limited information about controls at the PCS. Upon determining that a new facility or activity is truly a PCS, the Coordinator will schedule a site visit with the owner of the PCS to assess and determine what controls are in place to reduce the potential for contamination. All information collected through the windshield survey and the site visit will go into the existing PCS inventory spreadsheet. If the Coordinator determines that a new PCS is adequately controlled using the definitions from the Drinking Water Source Protection rule, no further action is necessary. If, however, the new PCS is not adequately controlled, the Coordinator will plan and implement an appropriate land management strategy to reduce the potential for contamination.

## Section 3: Implementation Plan

Implementation of the management strategies for existing and future PCSs will begin when the Utah DEQ has approved the DWSP. Table 3-1 presents a preliminary implementation schedule for the DSWP Plan. This implementation schedule has the potential to change based on the timing of the review and approval of the DWSP by Utah DEQ. Upon approval of the DWSP, the Coordinator will review the DWSP Plan implementation schedule and make adjustments accordingly. If necessary, the Coordinator will submit the updated implementation schedule to Utah DEQ for final review and approval.

**Table 3-1. Preliminary PCS Management Strategy Implementation Schedule**

| Management Strategy Task Description | Start Date | Frequency |
|---|---|---|
| Hire Virgin River Watershed Coordinator | August 2004 | Position will be full-time for a period of 3 years |
| Develop Virgin River Watershed I&E Strategy<br>• Goals and Objectives<br>• Target Audience Characterization<br>• Messages<br>• Formats<br>• Distribution Channels<br>• Evaluation Tools | December 2004 | Development may take 3 – 6 months, depending on the amount of involvement from the Committee and stakeholders. Techniques used to characterize the target audience may also influence length of time to develop the strategy. |
| Initiate Implementation of the Virgin River Watershed I&E Strategy | June 2005 (assuming 6 month development time, including time to secure support from local partners) | Implementation of the I&E strategy is dependent on the schedule specifically developed for strategy implementation. Typically implementation occurs throughout the course of a year with intermittent evaluation and annual adjustments. Implementation will occur consistently until 2010, when the DWSP Plan is updated and resubmitted. |
| Develop New PCS Tracking Process | December 2004 | Reassess effectiveness of tracking process at least on an annual basis |
| Develop New PCS Communication Options | December 2004 | Reassess effectiveness of communication options at least on an annual basis |
| Initiate Implementation of new PCS Tracking and Communication Process | February 2005 | On a monthly basis, Coordinator will obtain information on potential PCSs from partners. Frequency is subject to change based on information obtained from partners during development of the PCS tracking process. |
| Initiate Updates to the PCS Inventory | February 2005 | Upon determining that a new facility or activity identified within a source water protection zone is truly a PCS. |

## Section 4: Resource Evaluation

Funding for the DWSP Plan will come from a variety of partners involved in the overall Virgin River watershed management planning effort. The Virgin River Watershed Coordinator will perform much of the work outlined in this Plan. As mentioned in the introduction, the Utah DEQ and the Washington County Water Conservancy District are providing funding for the Virgin River Watershed Coordinator position and the Washington County Water Conservancy District is providing office space for the Coordinator. The initial funding for the Coordinator will sustain this position for at least 3 years. It is anticipated that both the State of Utah and the water district will maintain the position in the future.

Implementation of the management strategies to address existing and future PCSs will also require additional resources beyond those allocated to fund the Virgin River Watershed Coordinator (e.g., resources will be needed for printing and mailing outreach materials). It is anticipated that such resources

will be secured on an as-needed basis from a variety of potential sources depending on the specific nature of each management task.

## Section 5: Record Keeping

Recording keeping for the Virgin River Watershed DWSP Plan will include documentation on the activities of the Virgin River Watershed Coordinator, the I&E strategy intended to manage existing PCSs and the tracking process intended to manage future PCSs. A list of the associated records for each activity under the DWSP Plan is presented below.

**Watershed Coordinator**

1) Any progress report information required by partners contributing funding to the position
2) Annual performance review information (if any)
3) Records of communication with stakeholders
4) Copies of meeting agendas and related meeting materials
5) Other materials used to track performance and determine effectiveness

**Watershed I&E Strategy**

1) Final watershed I&E strategy and supporting documentation from development process (e.g., stakeholder surveys, focus group results, drafts of outreach materials)
2) Outreach materials developed during I&E strategy implementation
3) Evaluation information generated during I&E strategy implementation
4) Changes to the final watershed I&E strategy based on evaluation information

**Tracking Process for Future PCSs**

1) Written procedures for tracking potential PCSs using development and onsite wastewater system permitting processes, as well as processes associated with federally-administered lands.
2) Written procedures for notifying potential PCSs that move into a source water protection area.
3) Documentation from partners regarding potential PCSs. Documentation is most likely to be in the form of permit applications.
4) Documentation of actions taken to notify potential PCSs (record of phone calls, copy of letter, notes from personal meeting, etc.)
5) Notes from windshield survey of potential PCS.
6) Updated PCS inventory, including assessment of controls.
7) Documentation of land management strategy for any new PCSs that are not adequately controlled.

**Public Notification**

1) Public notification plan
2) Final approved public notice
3) Stakeholder feedback from public meetings, newspaper ads/articles, web pages, newsletters, etc.
4) Updated public notification plan based on stakeholder feedback and other evaluation tools
5) Updated public notice based on stakeholder feedback and other evaluation tools

**DWSP Biennial Update**

1) Updated maps of source water protection areas reflecting changes in land use
2) Updated PCS inventory reflecting addition of new PCSs and deletion of old PCSs that may not exist

**DWSP Resubmittal (6 years after initial submittal)**

1) Updated PCS inventory reflecting addition of new PCSs and deletion of old PCSs that may not exist
2) Reprioritized PCS inventory based on methodology contained in the Susceptibility Analysis and Determination Report
3) New proposed management strategy for existing PCSs based on reprioritization (if top three PCSs are different from original list of prioritized PCSs)

## Section 6: Contingency Plan

In the event of water shortages or contamination incidents, the public water systems located within the Virgin River Watershed will implement their contingency plans to ensure that safe drinking waters supplies are available. Provided below are descriptions of the contingency plans for public water systems within the Virgin River Watershed.

**Quail Creek Water Treatment Plant Contingency Plan**

The Quail Creek Water Treatment Plant (QCWTP) has two sources of raw water available for treatment.

1. Quail Lake
2. Virgin River by way of a bypass line connected to the fill line used to fill the lake. This connection is upstream of the influent point of the reservoir and is classified as the Virgin River Source

- In the event the River Water is contaminated upstream of the diversion dam, the Washington County Water Conservancy District will turn the stream out of the diversion dam, protecting Quail Lake.

- In the event contamination enters the Lake fill line it can be discharged at two points along the way preventing Lake Contamination.

- In the event the lake is contaminated by way of the Quail Creek Watershed; the River Source can be utilized up to 10 million gallons per day.

- In the event the river source is lost to contamination the Lake source can be utilized up to 20 million gallons per day.

- In the event contamination enters the fill line and reaches the lake, the lake and river sources are lost. The QCWTP will be shut down.

- In the event the QCWTP is shut down the St. George City Water Dept. can service all areas with well and spring water sources.

- In the event that there is a contamination problem with the Quail Creek Reservoir, Washington City will shut down the treatment plant, backwash and chemically treat filter membrane, test water to ensure contamination did not enter the system, service Washington City culinary demands with existing wells and implement drought management plan staging as needed.

- In the event of contamination in the Virgin River above its intake, Springdale City will close the intake. For the short term, the city will rely first on approximately 1 million gallons of treated water stored in two tanks. An additional three million gallons of water is available in settling

ponds that are used for normal pretreatment of the river water. For longer term needs the city has springs located within Zion National Park that can be used.

## Section 7: Public Notice

A key element of the Virgin River Watershed DWSP is making information available to the public about the susceptibility of the drinking water supply to potential sources of contamination. The Drinking Water Source Protection rule requires drafting a public notice that contains information about the DWSP and a plan for distributing the public notice to customers. The public notice must contain the following six pieces of information:

- A map of the watershed and general areas of concern, including generalized locations of PCSs
- A general discussion of the sensitivity of the watershed (e.g., topography, vegetative cover, precipitation, etc.)
- A discussion of the general categories of PCSs found in the inventory and how susceptible the drinking water source may be to them
- A general discussion of land management strategies
- Specific information regarding how anyone can obtain a copy of the final DWSP Plan.

Appendix A contains the draft public notice for the Virgin River Watershed DWSP Plan.

Given the required elements, effective methods for distributing the public notice to customers is somewhat limited due to the length. Customers that receive their drinking water from Virgin River surface water supplies will receive their public notice through a combination of methods. Distribution methods include:

- Making the public notice (or a link to the public notice) available on web sites that local residents and visitors are likely to use. Web sites may include the following: the City of St. George, the City of Springdale, Washington County Water Conservancy District, St. George Chamber of Commerce, Zion Canyon Visitors Bureau, and Hurricane Valley Chamber of Commerce, and SouthernUtah.com.

- Posting the public notice (or leaving multiple copies for distribution) at a variety of facilities that residents and visitors use, such as post offices, libraries, hotels and churches.

- Placing a brief message about the availability of the public notice and the DWSP Plan in water bills.

- Securing a brief advertisement in the local newspaper about the availability of the DWSP Plan with the web address for the public notice and the plan.

- Publishing a brief article about the DWSP Plan in the Washington Count Water Conservancy District's newsletter, *Waterline*, and other local newsletters.

Table 7-1 below will serve as a planning matrix for distribution of the Virgin River Watershed DWSP Plan public notice.

**Table 7-1. Planning Matrix for Distribution of the DWSP Plan Public Notice**

| Distribution Mechanism | Where? | Who? | When? | Cost and Other Resources |
|---|---|---|---|---|
| Web sites | Washington County Water Conservancy District and St. George City | WCWCD and St. George City | 2005 | |
| Facilities | Quail Creek State Park, Sand Hollow State Park, Zion National Park | Park Mgt. | 2005 | |
| Water bills | St. George, Washington, and Springdale City Customers | Cities | Annually | |
| Newspaper ad | Spectrum (Waterline publication inserted into newspaper) | WCWCD | 2005 | |
| Newsletter article | Spectrum (Waterline publication inserted into newspaper) | WCWCD | 2005 | |

# Appendix A

## Draft Public Notice for the Virgin River Watershed Drinking Water Source Protection Plan

**The Safety of Your Drinking Water: It Starts with the Virgin River and You**

**Do you ever wonder where the water comes from when you turn on your faucet or hose?** Communities in Washington County that do not rely on groundwater wells most likely get their drinking water from the Quail Creek Water Treatment Plant located near the Quail Creek Reservoir or the water treatment facility in Springdale. These treatment facilities collect, treat, and distribute water that comes from the Virgin River – the only source of surface water used for culinary purposes in Washington County.

As an important supply of drinking water, the Virgin River and its smaller streams and creeks need special attention because they are vulnerable to contamination. If you help to prevent the Virgin River from becoming contaminated before it reaches the treatment facility, you could lower your utility bills by reducing treatment costs and you could also help to improve the taste and quality of your drinking water at the tap. A high quality Virgin River could also benefit you in other ways by improving recreational opportunities, increasing property values, and generating more revenue for the local economy.

This fact sheet will provide you with more information about your drinking water supply. It will give you details under the following facts:

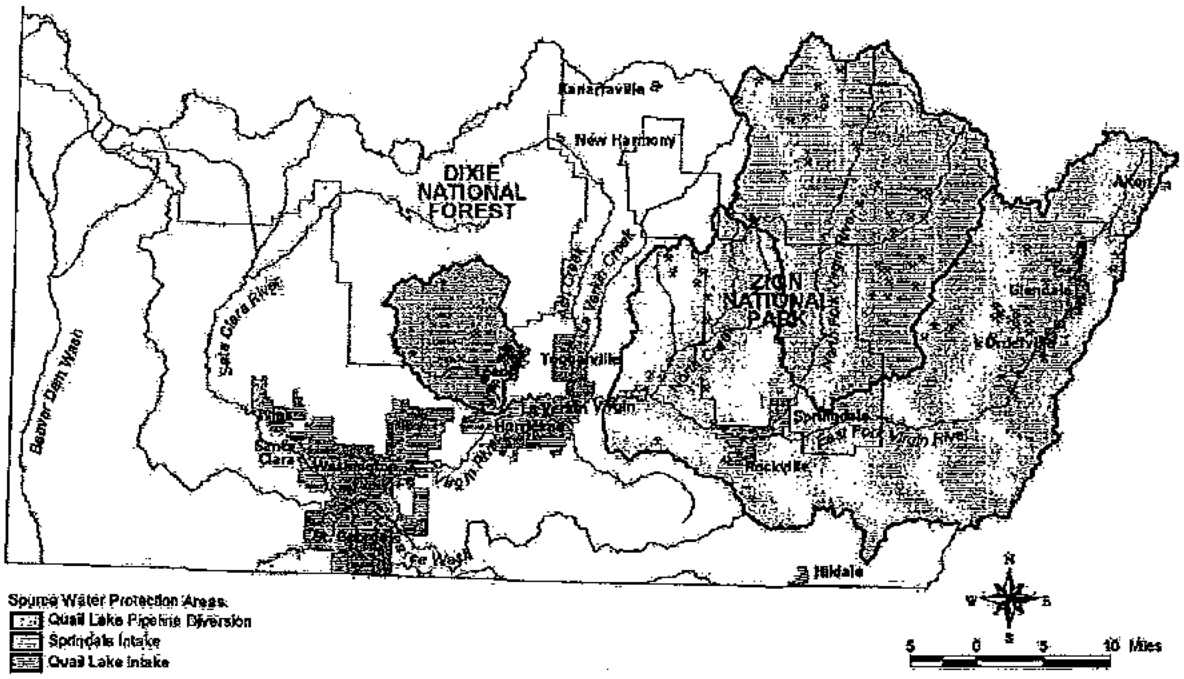
- You get your drinking water from the Virgin River.
- Your drinking water supply could be vulnerable to contamination from many sources in and around your community.
- Your drinking water supply is part of a new local plan to keep the Virgin River free from contamination.
- You can be a part of the plan to keep the Virgin River clean for your enjoyment today and tomorrow.

**You get your drinking water from the Virgin River.**
Water that flows through the Quail Creek Water Treatment Plant comes from the Virgin River, either from the Quail Creek Reservoir located in Quail Creek State Park or from a diversion dam on the Virgin River located between La Verkin and Virgin. A network of streams and creeks drain into the Virgin River and into Quail Creek Reservoir. The area of land that surrounds this network of streams and creeks is referred to as a watershed. This area requires special attention because the water traveling through it will eventually become drinking water; therefore, the area above the Virgin River diversion dam and the Quail Creek Reservoir is also referred to as a Source Water Protection Area.

Water that flows through the Springdale water treatment facility also comes from the Virgin River. Unlike the Quail Creek Water Treatment Plant, the Springdale water treatment facility does not rely on a large dam or a reservoir. A smaller intake structure diverts water from the

Virgin River within the boundaries of Zion National Park. However, this water is collected for drinking water within the boundaries of Zion National Park.

The map below shows the boundaries of the Virgin River watershed in Utah. The three Source Water Protection Areas within the Virgin River watershed are shown in color with blue boundaries. Note that the Quail Lake Pipeline Diversion Protection Area includes the Springdale Intake Protection Area.

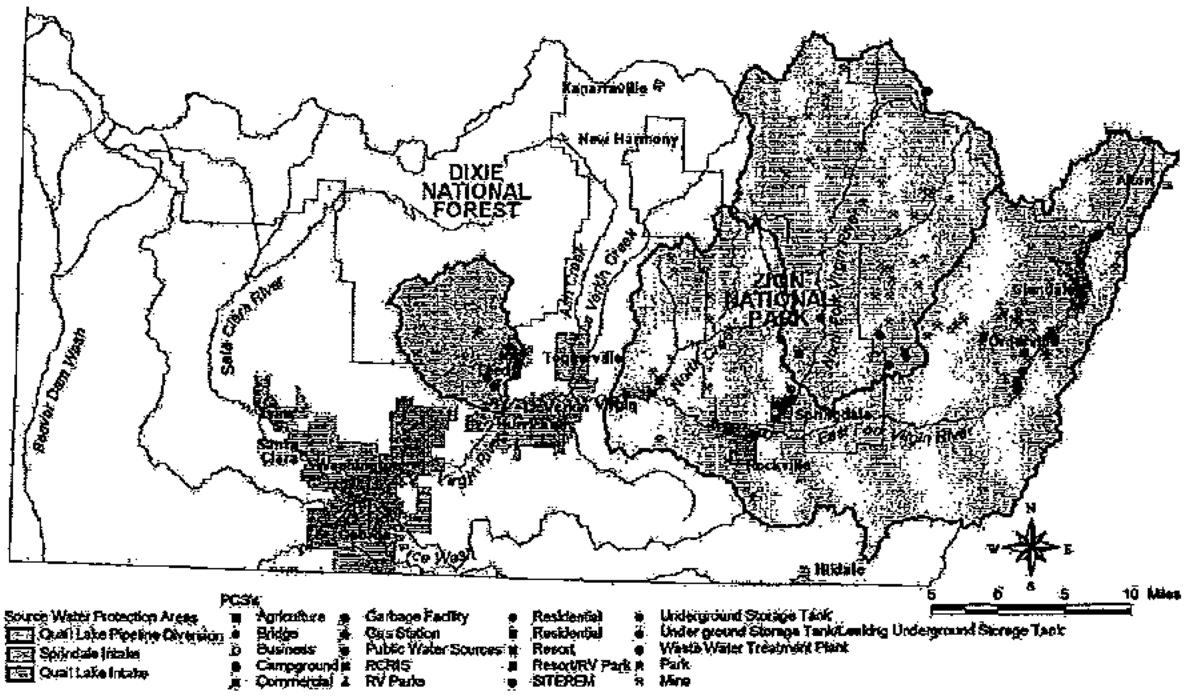



Features of the land, such as slope, vegetation, and rainfall, influence how sensitive the source water protection area is to potential contamination. For example, a chemical spill in an area with steep slopes, sparse vegetation and significant rainfall would likely impact the Virgin River more quickly than in an area that had no slopes, dense vegetation and little rainfall. In the Virgin River watershed, the three source protection areas are moderately sensitive to contamination.

**Your drinking water supply could be vulnerable to contamination from many sources in and around your community.**

Natural features are not the only factors that influence the quality of the Virgin River. Certain activities and types of land uses have the potential to contaminate the Virgin River. These activities and land uses are referred to as potential contamination sources. The closer a potential contamination source is to the Virgin River, or one of its tributaries, the greater the risk it presents to water quality. Certain types of potential contamination sources pose a more significant threat to the Virgin River, depending on the types of pollutants associated with the activity or land use and if there are controls to prevent contamination. Controls could be a regulation or a physical barrier between a pollutant and the Virgin River.

The map below shows the location of the various potential contamination sources located within each of the source water protection areas. Potential contamination sources include gas stations, RV parks, residential neighborhoods, commercial areas, campgrounds, agricultural lands, mining activities, businesses, and construction sites. Without the proper precautions, contaminants may enter the water drawn directly from the Virgin River before treatment.




For each source water protection area, specific potential contamination sources are high priorities because they are not adequately controlled and are in close proximity to the Virgin River. These potential contaminant sources include:

- **RV Parks, Campgrounds, Resorts.** The Virgin River watershed provides many tourism opportunities, generating a variety of places for visitors to stay including RV parks, campgrounds, and resort facilities. Many of these facilities are located on or near the Virgin River, providing visitors with a unique experience; unfortunately, proximity to the Virgin River creates the potential for contamination. Pollutants that may originate from these types of facilities include pathogens such as giardia and cryptosporidium, nutrients, sediment, and toxic chemicals found in herbicides, pesticides, cleaning products.

- **Commercial Areas.** Throughout the Virgin River watershed, commercial activity is helping to sustain the local economy. The source water protection areas contain commercial areas in close proximity to the Virgin River. Depending on the type of activities taking place in these commercial areas, and the practices used at a particular commercial facility, the potential for contamination may increase. Commercial areas may include automobile shops, construction companies and sites, office buildings, hotels,

restaurants, gas stations, golf courses, and retail operations. In addition, these areas contain a significant amount of paved roads and parking lots that collect pollutants, such as oil and grease, from vehicles. Pollutants that may originate from commercial areas include oil and grease from parking lots, pesticides and herbicides, cleaning solvents, and chemicals specifically used for a commercial activity.

- **Agricultural Areas.** Agriculture is very important to residents' way of life in the Virgin River watershed. As a result, agricultural areas are located throughout the Source Water Protection Areas and have the potential to affect drinking water supplies. Given agricultural activities are dependent on water, many of these areas are adjacent to the Virgin River and its tributaries. A variety of pollutants may originate from agricultural areas due to crop fertilization, grazing, and inadequate manure management. Pollutants from agricultural areas may include nutrients, bacteria, pathogens, and sediment.

- **Residential Areas.** Everyday activities around a homeowner's property can affect the Virgin River, even if a homeowner cannot see or hear it. Landscaping activities pose a significant risk to the Virgin River, particularly if they involve the excessive use of pesticides or fertilizers. Home automobile repair can result in spills, leaks, or improperly disposal of fluids. Without regular maintenance, septic systems can leak or fail and unmaintained septic systems can contribute pollutants to the Virgin River and its tributaries. Pollutants from residential areas may include nutrients, bacteria, pathogens, toxic chemicals from household hazardous waste, oil and grease from vehicles, and sediment.

- **New housing developments.** Where new houses are under construction, there is the potential for contamination of the Virgin River. Construction tears up vegetation and exposes soil that will easily travel to the Virgin River during a storm or from blowing winds, causing sediment to accumulate and water to become cloudy. Materials used during the construction process may also contribute potentially toxic materials if not properly used and stored on site. In addition, heavy construction equipment may leak fuels and fluids.

- **Gas stations.** Each source water protection zone contains gas stations to meet the needs of residents and visitors. Gas stations have the potential to generate a variety of harmful pollutants given the nature of the activities that take place on- site. These paved areas collect fuel, automotive fluids, oil and grease, in addition to other chemicals that may be on-site for maintaining the appearance of the facility (e.g., cleaning products, landscaping materials, car repair supplies, etc.).

**Your drinking water supply is part of a new local plan to keep the Virgin River free from contamination.**

Recognizing that high quality drinking water starts with high quality raw water, partners within the Virgin River watershed are taking steps to reduce the risk from potential contamination sources. These steps are part of an overall Drinking Water Source Protection Plan for the Virgin River watershed.

- **Step One: Make taking care of the Virgin River watershed a full-time job.** Partners working to maintain a healthy Virgin River watershed realize that there is a lot to be done – from getting to know the people who live in the Virgin River watershed to coordinating the efforts of multiple agencies and organizations. The Utah Department of Environmental Quality and the Washington County Water Conservancy District have worked with other local partners to create and fill a full-time Virgin River Watershed Coordinator position. As the Virgin River Watershed Coordinator, this individual will become the point of contact on watershed-specific issues and will bring together interests on the local, state, and federal level to not only oversee drinking water source protection, but also achievement of other watershed goals.

- **Step Two: Get the word out that the Virgin River has been tapped for drinking water.** An important part of drinking water source protection is increasing awareness of people who live in source water protection areas and who rely on the Virgin River as their primary source of drinking water. To get the word out, the Virgin River Watershed Coordinator will develop a plan for educating residents and visitors on why the Virgin River is an important resource and actions they can take to ensure it is a high quality resource – before and after treatment.

- **Step Three: Connect with future potential contamination sources that move into the neighborhood.** Communities within the Virgin River watershed are growing at a rapid rate and it is likely that new potential contamination sources will move into source water protection areas over time. Every new development and new septic system located in a source water protection area will have the opportunity to meet the Virgin River Watershed Coordinator. As a "watershed ambassador," the Coordinator will welcome newcomers to the Virgin River watershed by educating them about the special place they are located and their responsibility to help with drinking water source protection.

**You can get involved to make a difference in the Virgin River and make a difference in your quality of life.**

People who live and work in the Virgin River watershed are the key to successful drinking water source protection because their everyday decisions affect water quality. If you care about a safe, clean source of drinking water and want more information on the possible sources of contamination, you can obtain a copy of the Virgin River Watershed Drinking Water Source Protection Plan from the Washington County Water Conservancy District and other local watershed partners. The Virgin River Watershed Drinking Water Source Protection Plan contains detailed information on how vulnerable the Virgin River is to contamination, a complete inventory of potential sources of contamination that exist in the Virgin River watershed, and actions to reduce the likelihood that these sources will affect your drinking water supplies.

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# Appendix E
# Town of Springdale 2019 CCR

# ***Town of Springdale***
## *2019 Annual Drinking Water Quality Report*

We're pleased to present to you this year's Annual Drinking Water Quality Report. This report is designed to inform you about the quality of the water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is drawn from the Virgin River and treated through our water treatment plant.

The Drinking Water Source Protection Plan for Springdale is available for your review. It contains information about source protection zones, potential contamination sources and management strategies to protect our drinking water. Please contact us if you have questions or concerns about our source protection plan.

**Cross Connection Customer Education**:

There are many connections to our water distribution system. When connections are properly installed and maintained, the concerns are very minimal. However, unapproved and improper piping changes or connections can adversely affect not only the availability, but also the quality, of the water. A cross connection may let polluted water or even chemicals mingle into the water supply system when not properly protected. This not only compromises the water quality but can also affect your health. So, what can we do? Do not make or allow improper connections at your homes. Even that unprotected garden hose lying in the puddle next to the driveway is a cross connection. The unprotected lawn sprinkler system after you have fertilized or sprayed is also a cross connection. When the cross connection is allowed to exist at your home it will affect you and your family first. If you'd like to learn more about helping to protect the quality of our water, call us for further information about ways you can help.

**We're pleased to report that our drinking water meets federal and state requirements.**

If you have any questions about this report or concerning your water utility, please contact Rob Totten at (435) 772-3434. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled council meetings. They are held on the second Wednesday of each month at 5:00 pm.

The Town of Springdale routinely monitors for constituents in our drinking water in accordance with the Federal and Utah State laws. The following table shows the results of our monitoring for the period of January 1st to December 31st, 2019**.** All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

In the following table you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

***Non-Detects (ND)*** - laboratory analysis indicates that the constituent is not present.
***ND/Low - High*** - For water systems that have multiple sources of water, the Utah Division of Drinking Water has given water systems the option of listing the test results of the constituents in one table, instead of multiple tables. To accomplish this, the

lowest and highest values detected in the multiple sources are recorded in the same space in the report table.
***Parts per million (ppm) or Milligrams per liter (mg/l)*** - one part per million corresponds to one minute in two years or a single penny in $10,000.
***Parts per billion (ppb) or Micrograms per liter (ug/l)*** - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.
***Parts per trillion (ppt) or Nanograms per liter (nanograms/l)*** - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.
***Parts per quadrillion (ppq) or Picograms per liter (picograms/l)*** - one part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in $10,000,000,000,000.
***Picocuries per liter (pCi/L)*** - picocuries per liter is a measure of the radioactivity in water.
***Millirems per year (mrem/yr)*** - measure of radiation absorbed by the body.
***Million Fibers per Liter (MFL)*** - million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.
***Nephelometric Turbidity Unit (NTU)*** - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
***Action Level (AL)*** - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
***Treatment Technique (TT)*** - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.
***Maximum Contaminant Level (MCL)*** - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
***Maximum Contaminant Level Goal (MCLG)*** - The "Goal" (MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
***Maximum Residual Disinfectant Level (MRDL)*** - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
***Maximum Residual Disinfectant Level Goal (MRDLG)*** - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
***Date***- Because of required sampling time frames i.e. yearly, 3 years, 4 years and 6 years, sampling dates may seem out-dated.
***Waivers (W)*** - Because some chemicals are not used or stored in areas around drinking water sources, some water systems have been given waivers that exempt them from having to take certain chemical samples; these waivers are also tied to Drinking Water Source Protection Plans.

| **TEST RESULTS** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contaminant | Violation Y/N | Level Detected ND/Low-High | Unit Measurement | MCLG | MCL | Date Sampled | Likely Source of Contamination |
| **Microbiological Contaminants** | | | | | | | |
| Total Coliform Bacteria | N | ND | N/A | 0 | Presence of coliform bacteria in 5% of monthly samples | 2019 | Naturally present in the environment |
| Fecal coliform and *E.coli* | N | ND | N/A | 0 | If a routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive | 2019 | Human and animal fecal waste |
| Turbidity for Surface Water | N | .21 | NTU | N/A | 0.5 in at least 95% of the samples and must never exceed 5.0 | 2019 | Soil Runoff<br><br>(highest single measurement & the lowest monthly percentage of samples meeting the turbidity limits) |
| Carbon, Total Organic (TOC) | N | 0.647/3.02 | ppm | NA | TT | 2019 | Naturally present in the environment |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Radioactive Contaminants** | | | | | | | |
| Gross Alpha | N | .93 | pCi/1 | 0 | 15 | 2019 | Erosion of natural deposits |
| Radium 228 | N | 0.33 | mrem/yr | 0 | 5 | 2019 | Decay of natural and man-made deposits |
| | | | | | | | |
| **Inorganic Contaminants** | | | | | | | |
| Arsenic | N | .0007 | ppb | 0 | 10 | 2019 | Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes |
| Barium | N | 0.079 | ppm | 2 | 2 | 2019 | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits |
| Copper<br>a. 90% results<br>b. # of sites that exceed the **AL** | N | a – 81<br><br>b - 0 | ppb | 1300 | AL=1300 | 2017 | Corrosion of household plumbing systems; erosion of natural deposits |
| Cyanide | N | 0 | ppb | 200 | 200 | 2019 | Discharge from plastic and fertilizer factories; Discharge from steel/metal factories. |
| Fluoride | N | 0 | ppm | 4 | 4 | 2019 | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories |
| Lead:<br>a. 90% results<br>b. # of sites that exceed the **AL** | N | a – 1.2<br><br>b - 0 | ppb | 0 | 15 | 2017 | Corrosion of household plumbing systems; Erosion of natural deposits. |
| Nitrate (as Nitrogen) | N | ND | ppm | 10 | 10 | 2019 | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Selenium | N | 0 | ppb | 50 | 50 | 2019 | Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines |
| Sodium | N | 64 | ppm | None set by EPA | None set by EPA | 2019 | Erosion of natural deposits; discharge from refineries and factories; runoff from landfills. |
| Sulfate | N | 98.1 | ppm | 1000 | 1000 | 2019 | Erosion of natural deposits; discharge from refineries and factories; runoff from landfills, runoff from cropland |
| TDS (Total Dissolved solids) | N | 428 | ppm | 2000** | 2000** | 2019 | Erosion of natural deposits |
| **Disinfection by-products** | | | | | | | |
| TTHM [Total trihalomethanes] | N | 4.8-119 | ppb | 0 | 80 | 2019 | By-product of drinking water disinfection |
| Haloacetic Acids | N | 0-63.2 | ppb | 0 | 60 | 2019 | By-product of drinking water disinfection |

All sources of drinking water are subject to potential contamination by constituents that are naturally occurring or are man made. Those constituents can be microbes, organic or inorganic chemicals, or radioactive materials. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Springdale Town is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

MCLs are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

We at Springdale Town work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.