

**PART 4—
DRAINAGE, WATER AND SEWER
SPECIAL PURPOSE DISTRICT ANNEXES**

CHAPTER 16.

BOISE WARM SPRINGS WATER DISTRICT ANNEX

16.1. HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

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16.2. JURISDICTION PROFILE

The general purpose of Boise Warm Springs Water District (BWSWD) is to supply geothermal water for heating residential and commercial properties with a small percentage of patrons use geothermal water for domestic hot water.

The Boise Warm Springs Water District is a descendent of geothermal resource development in Idaho. Our geothermal plant was constructed in 1892 with water rights established on November 5, 1894. The Water District was formed in 1974, which included major upgrades to the system to support the District. The BWSWD is organized under Title 42, Chapter 32, of the Idaho Code, Water and Sewer Districts, Sections 42-3201 to 42-3239. The District has one full time maintenance foreman, a part time District Manager and a part time Accountant. A five-member Board of Directors governs the District. Operating funds are fee based on orifice size for residential patrons. Commercial and public facilities are charged based on metered consumption of geothermal water.

The existing geothermal distribution system operated by the District is fed from two geothermal wells located near the Old Penitentiary in Boise. The main trunk of the system extends along Warm Springs Avenue/Idaho Street from East Hot Springs Drive to North 6th Street. The District has 292 residential patrons and 33 public and private commercial facilities.

The following is a summary of key information about the jurisdiction:

- **Population Served**—706, 2005-2009 American Community Survey 5-Year Estimates, US Census Bureau
- **Land Area Served**—769 Acres
- **Value of Area Served**—The estimated value of the area served by the jurisdiction is \$100,814,900.
- **Land Area Owned**—13 Acres
- List of Critical Infrastructure/Equipment Owned by the Jurisdiction:
 - Electrical Panel \$6,500.00
 - Two 65 HP Pumps \$52,000.00
 - Meters and Electronic Filters \$14,800.00
 - 11,600 feet of 10- & 12-inch Main Line \$438,900.00

- **Total Value of Critical Infrastructure/Equipment**—The total value of critical infrastructure and equipment owned by the jurisdiction is \$512,200.00
- List of Critical Facilities Owned by the Jurisdiction:
 - BWSWD Pump House \$300,000.00
 - BWSWD Inventory & Supplies 83,000.00
 - 48,000 feet of 2-inch service line \$1,536,000.00
 - System Intertie \$1,000.00
- **Total Value of Critical Facilities**—The total value of critical facilities owned by the jurisdiction is \$1,920,000.00.

Current and Anticipated Service Trends—The BWSWD is currently focusing its resources on upgrading the existing distribution system comprised of 12- and 10-inch diameter mainlines with laterals and branch lines four and two inches in diameter. As existing 20 year old supply lines system fails, the District is replacing the existing Thermacore pipe with PEX pipe with superior operational qualities that protects the underground piping from corrosion, heat loss and without rigid joints that have been prone to failure in the past. The District is planning the installation of additional shutoff valves off the main line. The shutoff valves will allow the District to keep the system operational while repairs are underway.

Overall growth of the BWSWD is constrained by the geothermal well capacity. The District has senior water rights that would allow the District to increase water pumping given an increase in demand for patron needs. The District anticipates investigating new heating technologies that would allow new and existing patrons improve on the efficiency of their home heating system. The gains in system efficiencies would reduce heating costs for the patron as well as make more geothermal water available for new patrons without expanding pumping capacity resulting in high operational costs. A District patron with an average home of 1,700 square feet would pay about \$600 annually for geothermal heat.

16.3. JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 16-1 lists all past occurrences of natural hazards within the jurisdiction.

16.4. HAZARD RISK RANKING

Table 16-2 presents the ranking of the hazards of concern.

16.5. APPLICABLE REGULATIONS AND PLANS

The following existing codes, ordinances, policies or plans are applicable to this hazard mitigation plan:

- Geothermal Resources Act, Idaho Code Title 42-40—The Act defines a “*geothermal resource*” as “the natural heat energy of the earth, the energy, in whatever form, which may be found in any position and at any depth below the surface of the earth present in, resulting from, or created by, or which may be extracted from such natural heat, and all minerals in solution or other products obtained from the material medium of any geothermal resource. Ground water having a temperature of two hundred twelve (212) degrees Fahrenheit or more in the bottom of a well shall be classified as a geothermal resource.

The State of Idaho further describes Geothermal resources to be sui generis, “... *being* neither a mineral resource nor a water resource, but they are also found and hereby declared to be closely related to and possibly affecting and affected by water and mineral resources in many instances.”

- Idaho Department of Environmental Quality, Water Quality—The IDWR and the Department of Environmental Quality (DEQ) are the lead agencies in charge of administering and enforcing the various rules and regulations governing water use and water quality in the State of Idaho. IDWR is responsible for issuing water rights, well construction permits and underground fluid injection wells. The DEQ’s Water Quality Division is responsible for administering surface disposal of wastewater, including geothermal fluids. There has been an impetus to pass rules and regulations that encourage geothermal development; however, geothermal direct use receives less attention from these agencies when compared with other high-priority water issues.
- Idaho Department of Water Resources, Water Rights—“low-temperature geothermal resource” defined as “...ground water having a temperature of greater than 85°F (29°C) and less than 212°F (100°C) in the bottom of a well...”. Low-temperature geothermal resources used for purposes such as “greenhouse heating, warm water aquaculture, space heating, irrigation, swimming pools and spas, are administered by the IDWR and regulated in accordance with the rules and statutes governing groundwater appropriation and well drilling regulations”. A developer “must acquire the resource by means of an application, permit and license procedure, provided that the low temperature geothermal resource is utilized primarily for heat value and secondarily for the value as water”. These rules apply to drilling on all lands in the State of Idaho (except Tribal Reservation lands).
- Water and Sewer Districts, Idaho Code 42-3201—DECLARATION OF PURPOSE. It is hereby declared that the organization of water and sewer districts, having the purposes and powers provided in this act, will serve a public use and will promote the health, safety, prosperity, security and general welfare of the inhabitants of said districts.

16.6. CLASSIFICATION IN HAZARD MITIGATION PROGRAMS

The jurisdiction’s classifications under various hazard mitigation programs are presented in Table 16-3.

16.7. HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 16-4 lists the initiatives that make up the jurisdiction’s hazard mitigation plan. Table 16-5 identifies the priority for each initiative. Table 16-6 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

16.8. FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Additional data is needed on the following hazards to have a better understanding on risk within the planning area:

- Earthquake—NEHRP soils data as well as USGS “shake maps” for scenario events most likely to impact the planning area.
- Landslide—Soils data for landslide susceptibility Analysis.
- Wildfire—Enhanced wildfire mapping that will better support risk ranking and the measurement of risk reduction activities. Mapping similar to California’s Fire and Resource Assessment Program (FRAP).
- Flood—A consistent data set on flood risk that is both publically and politically supported that accurately reflects the true flood risk is desperately needed within the planning area.

**TABLE 16-1.
NATURAL HAZARD EVENTS**

Type of Event	Date	Preliminary Damage Assessment
High wind	March 29, 2009	\$33,000 County-wide
Homestead Wildland fire	July 26, 2005	N/A
Warm Springs Wildland fire	July 12, 2004	N/A
Crow Inn Wildland fire	July 6, 2003	N/A
Severe Storm/Thunder Storm—Wind	July 25, 2002	
Pierce Park/Seaman’s Gulch Fire	July 4, 2002	N/A
Severe Storm/Thunder Storm—Wind	January 16, 1999	\$5,000 County-wide
Severe Storm/Thunder Storm—Wind	September 6, 1998	\$38,000 County-wide
Severe Hail, Wind, Thunder Storm	March 23, 1998	\$20,000 County-wide
Winter Weather –Blizzard	November 9, 1992	N/A
Severe Storm/Thunder Storm—Wind	June 15, 1987	\$10,000 County-wide
Hail—Wind	August 11, 1982	\$250,000 County-wide
High Winds	March 29, 1981	\$35,714 County-wide
Winter Weather—Wind, Snow	January 9, 1972	\$113,636 County-wide
Severe Hail—Wind	June 26, 1970	\$28,965 County-wide

**TABLE 16-2.
HAZARD RISK RANKING**

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe Weather	(3x18) = 54
2	Earthquake	(2x18) = 36
3	Wildfire	(3x9) = 27
4	Flood	(3x6) = 18
5	Dam Failure	(1x15) = 15
6	Landslide	(2x7) = 14
7	Drought	(3x3) = 9
8	Volcano	(1x3) = 3

**TABLE 16-3.
COMMUNITY CLASSIFICATIONS**

	Participating?	Classification	Date Classified
Public Protection	N/A	N/A	N/A
Storm Ready	N/A	N/A	N/A
Firewise	N/A	N/A	N/A

TABLE 16-4. HAZARD MITIGATION ACTION PLAN MATRIX						
Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative #BWSWD-1 —Purchase and install electrical transfer switch to support emergency generator connection. Any incident resulting in a prolonged (greater than 24 hours) electrical power outage at the BWSWD pump house during the winter season can result in patron homes freezing domestic water pipes. The installation of an electrical transfer switch with plug-ins to accommodate a portable generator can ensure continued and abundant geothermal heat is available to our patrons. Maintaining geothermal heat in patron’s homes will eliminate potential frozen and bursting pipes.						
Existing	All Hazards	2, 8, & 10	BWSWD	\$11,000 (Medium)	FEMA Grant/ BWSWD 75/25%	Short Term
Initiative #BWSWD-2 —Install fourteen lateral line shutoff valves to isolate a lateral line break from the 12 inch main line. Any break or leak in a two inch lateral supply line off the mainline can result in the entire geothermal system being shut down due to the inability to isolate the lateral line from the main line pressure. The ability to isolate broken or leaking lateral lines will ensure the entire geothermal system does not have to be shut down during repair work.						
Existing	Earthquake	1,2, & 8	BWSWD	\$50,000 (High)	Federal Grant/ BWSWD 75/25%	Short Term
Initiative #BWSWD-3 —Support County-wide initiatives identified in Volume 1.						
New and Existing	All Hazards	All	ACCEM, BWSWD	Low	BWSWD	Short term Ongoing
Initiative #BWSWD-4 —Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1.						
New & Existing	All Hazards	All	ACCEM, BWSWD	Low	Ada County FEMA Mitigation Grant Funding for 5-year update	Short-Term, Ongoing

TABLE 16-5. MITIGATION STRATEGY PRIORITY SCHEDULE							
Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Priority ^a
BWSWD-1	3	High	Medium	Yes	Yes	No	High
BWSWD-2	3	High	High	Yes	Yes	No	Medium
BWSWD-3	10	Low	Low	Yes	No	Yes	High
BWSWD-4	10	Low	Low	Yes	Yes	Yes	High

a. See Section 1.3 for definitions of high, medium and low priorities.

**TABLE 16-6.
ANALYSIS OF MITIGATION INITIATIVES**

Hazard Type	Initiative Addressing Hazard, by Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Dam Failure	3, 4	1	3, 4		1, 3	
Drought	3, 4	1	3, 4		1, 3	
Earthquake	3, 4	1, 2	3, 4		1, 3	2
Flood	3, 4	1	3, 4		1, 3	
Landslide	3, 4	1	3, 4		1, 3	
Severe Weather	3, 4	1	3, 4		1, 3	
Wildfire	3, 4	1	3, 4		1, 3	
Volcano	3, 4	1	3, 4		1, 3	

1. Prevention: Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
2. Property Protection: Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
3. Public Education and Awareness: Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
4. Natural Resource Protection: Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. Emergency Services: Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
6. Structural Projects: Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.