ALL ABOUT WATER
IN HOT SPRINGS VILLAGE

Lake & Water Management Committee - 2006
Revised January 2009

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#1- Hot Springs Village Water Overview

The basic water flow in the Village is from West to East. The northern part of the Village is in the Middle Fork of the Saline River drainage basin. The southern area is in the South Fork of the Saline River drainage basin. Two primary creeks channel water through Village property.

Mill Creek channels water through the northern area of the Village into Lake Desoto, then through Lake Cortez and on into the Middle Fork of the Saline River.
Cedar Creek flows through the southern areas of the Village and through lakes Pineda, Coronado, Balboa and then into the South Fork of the Saline River.

The Village covers approximately 41 square miles or 26,000 acres and has an estimated population of 13,168 as of January 2007. There are a total of 34,096 residential lots and as of June 15, 2006, 7,679 have water meters. There are also176 commercial businesses in the Village with water meters. Water usage currently [January-May 2006] averages 1.8 million gallons per day [mgd] with a peak demand around 4 mgd. Hot Springs Village has valid riparian rights to water in the Middle Fork due to owning property on the river.

Potable [household use] Water:

The source of potable water for the Village is the Middle Fork of the Saline River. Pumps are located on the Middle Fork on Village owned property near the Cortez golf course area. These pumps move water into Lake Lago and are only operated when water in the river is flowing over the weir. At high flow periods, these pumps can refill Lago at a rate of 7 mgd. Lake Lago is 100 acres and when full holds about 1 billion gallons, which is a 12 month supply if water is used at the current average rate, no pumping was allowed due to low water in the river and no conservation measures were in effect. Pumps move water from the holding lake [Lago] to the water treatment plant located on Jarandilla Drive. From the treatment plant water is distributed to the Village via a network of water storage tanks. The water treatment plant has the capacity to handle 4 million gallons daily and is designed to be upgraded as additional capacity is needed.

Wastewater:

Wastewater is treated in two locations;

#1, Mill Creek Waste Water Treatment Plant is located on Cortez Road just past Lake Cortez and is in the Middle Fork of the Saline River drainage basin. This plant has the capacity to handle 1 mgd and is designed to be upgraded as additional capacity is needed. (currently handles .7 mgd)

#2, Cedar Creek Wastewater Treatment Plant is located on Ponce de Leon Drive below the Balboa dam and is in the South Fork of the Saline River drainage basin. It can handle-1 mgd and can be upgraded as additional capacity is needed. (currently handles .5 mgd) Currently [January 2006] both are operating within regulatory guidelines.

Recreational Water:

The Village maintains the recreational lakes for the use and enjoyment of all members and as reservoirs for irrigation for golf courses. Lakeshore residents are permitted to water their lawns with water from the lake.

The western most lake is DeSoto that receives water from Mill Creek and overflows into Lake Cortez. These lakes are in the Middle Fork of the Saline River drainage basin.

Lake Desoto, 200 acres and supplies water for the DeSoto golf course.

Lake Cortez, 245 acres, is not used as a water source for any golf course. Water from Cortez flows into the Middle Fork via Mill Creek and can be used to supplement the discharge flow of processed water from the Mill Creek wastewater treatment plant. Under severe drought conditions it would be possible to use Lake Cortez as a backup source of potable water. The Cortez golf course is watered from an artesian spring located on the course.

Lakes in the South Fork of the Saline River drainage basin are, west to east, Lake Pineda, Lake Coronado and Lake Balboa.

Lake Pineda, 63 acres, is not used for golf course watering. This lake receives water from Cedar Creek and overflows into Lake Coronado.

Lake Coronado, 380 acres, water is pumped to ponds on Balboa golf course and is also used for watering Coronado golf course. It overflows into Lake Balboa.

Lake Balboa, 944 acres, water is pumped to Ponce golf course, Balboa golf course and, by siphon, fills the Magellan pond. As a source of golf course water Balboa is sufficient to cover a sustained drought (120 days) with a temporary lowering of the lake level of about 4 feet. A L&W Committee report is available on this subject. Balboa Lake then

overflows into the South Fork of the Saline River via Cedar creek. This overflow also supplements the processed water released from the Cedar Creek Wastewater Treatment Plant.

Magellan Pond, 5 acres, receives water from Lake Balboa via a siphon system and from a pumping system downstream from the Cedar Creek processed water outlet. Magellan pond is used to water Magellan golf course and to fill Isabella Lake, which is used to water most of Isabella golf course.

Lake Granada, 52 acres, The Diamante pumping station located on the Middle Fork of the Saline River below Mill Creek sends water to Diamante Country Club (non POA) and to Lake Granada. Lake Granada then is used to water most of Granada golf course.

Lake Sofia, a natural lake, 38 acres waters the new nine-hole extension of Isabella golf course.

Lake Segovia is primarily residential/recreational in nature.

Lakes Estrella and, Maria are natural lakes, residential/recreational in nature and the remaining smaller lakes and ponds are golf course design/residential.

All dam permits are posted in the POA building.

#2- Hot Springs Village Water Issues, 2009

Some area residents have expressed concern about the environmental future of the Middle Fork and South Fork of the Saline River. Bank erosion, water flow and water quality are the main concerns of these groups. The Alliance for an Improved Middle Fork [AIM], Concerned Citizens of the Middle Fork and Environmental Community Heritage Objective [ECHO] are groups formed to explore these issues, voice concerns and propose and implement solutions. Hot Springs Village as an entity and several concerned Villagers have joined the Alliance for an Improved Middle Fork [AIM] to assist in protecting the river and getting the message out that the Village is also concerned about these issues.

Potable Water:

The HSV potable water supply system is adequate for a “built out” Village provided that (1.there is no interruption of our riparian rights to water from the Middle Fork (2. there is no prolonged drought that would prohibit water being withdrawn from the Middle Fork and (3.there is no contamination of the river from upstream residents or industry. The projected demand in 2050 is 9 mgd and the safe yield of the Middle Fork, based upon data from Garver Engineers in 1996, is 14 mgd. Lake Lago has sufficient storage capacity to handle this volume.

The two pumps were upgraded in 2005 to move 7 mgd to Lake Lago. There is currently no contingency plan in place for a water supply other than the Middle Fork River. Alternatives are being considered such as participation in a pipeline to Lake Ouachita and the use of Lake Cortez as a back up reservoir.

The water treatment plant is currently rated at 4 mgd with the capability to expand to 14 mgd, which is the projected need in 2050. The POA Board of Directors is considering adding capacity to our water treatment plant in the reasonably near future and they have established a reserve account to help with the cost of modification.

Water flow:

Recently governmental agencies and environmental groups have been considering imposing minimum flow requirements on designated waterways. These rules would prohibit water withdrawal if the flow in the river were at or below the established minimum. These rules would not affect the Villages withdrawal of potable water because (1. we have preexisting enforceable riparian rights to potable water and (2. this water is only withdrawn from the river at high water. The recreational water withdrawn at the Diamante pumping station which supplies recreational water to the Diamante Country Club (non POA), Granada Golf course and Lake Granada also is protected by riparian rights but with a lower priority than were it used as potable water. If overly stringent standards were imposed, damage could result to the Diamante Golf Course due to lack of water during the summer months. The Granada lake level would also be adversely affected. No decisions have been reached at this time regarding minimum flow and the basis for these standards is currently in litigation elsewhere in the state.

Wastewater quality:

The wastewater currently being processed by our two treatment plants meet all current standards. If more stringent standards are imposed on the rivers, phosphate levels in the future may result in expensive modifications to our wastewater plant. This is a complicated issue because the ADEQ (the primary regulator) basically only deals with Point Source pollution; i.e., a water treatment outlet .The overall water quality issues are: (1.what is a reasonable phosphate level for the river, (2.what do all classes of users contribute individually to the total phosphate level and (3.what is the fairest approach to a solution if indeed a solvable problem exists. At the Villages instigation, water quality is being measured at points upstream and downstream from where Mill Creek joins the Middle Fork. The information received will assist in understanding the affect various users of the river have on its overall quality. Suggestions have been made for the use of treated wastewater to water Village golf courses during the summer however if this were done it would result in a substantial lowering of the flow in the Middle Fork.
Water quality information and water treatment volume information is available from Public Works Department of the POA.

#3- Water in the Future

The Villages use of the water resource will be increasingly reviewed by outside entities in the future. Access to water for both potable and recreational uses will always be an issue as will water treatment standards and the effective use of treated water. The Village is not alone in facing these potential problems .We need to stay current on external technological, legal and political developments which could have impact on our water usage. We also need to continue to work with governmental agencies and our fellow concerned citizens to use our water resource responsibly.

In November 2004 the Lake and Water Management Committee recommended that Village lakes be lowered four feet to permit property owners to maintain their shoreline and to allow the near shore bottom to solidify. It recommended that Village lakes be lowered in rotation; i.e., Lake Balboa in 2005; Lake DeSoto in 2006; Lake Pineda in 2007; Lake Coronado in 2008; Lake Cortez in 2009, etc.

Addendum: Water Conservation Measures - May 2007 (attached)

L&WM will assume responsibility for updating this document when significant events occur.

Water Conservation Measures
Proposed for Hot Springs Village
During Drought Conditions

- **Do Not Over Water Lawn**
  One inch per week is sufficient.
- **Be Water Wise**
  Watering early in the morning minimizes evaporation. Water the grass, not the street.
- **Be Weather wise**
  Don't water on rainy days.
- **Be Grass Wise**
  Keep grass 2" to 3" high as this provides shade for roots, requires less watering and mowing, and allows roots to grow deeper and be more water efficient.
- **Be Equipment Wise**
  Use sprinklers that spray low, large drops - not a high fine spray (less evaporation).
- **Be Soil Wise**
  Loose soil absorbs more - tight soil promotes runoff.
- **Vehicle Washing**
  Wet vehicle, turn off water, and use bucket with soapy water and sponge to wash vehicle, turn water on, and rinse off vehicle.

IF YOU KNOW YOU HAVE A WATER LEAK - GET IT FIXED!

Utility Measures:

- **Keep leaks repaired.**
- **Don't schedule fire hydrant flushing during drought conditions.**
- **Have pumps and tanks in good operating condition before drought conditions occur.**
- **Start odd/even-watering schedule.**
- **Ask car wash businesses to shut down.**
- **Ask restaurants to only give water on request.**
- **Give incentives to customers who don't exceed minimums.**
- **Provide public education on conservation methods.**
- **Penalize customers who abuse water usage.**
- **Set minimum daily use (worse case).**