

# **Hawthorne Army Depot**

## **Water Conservation Plan**

**June 1, 2005**

## Description of Water System

The water system at the Hawthorne Army Depot (HWAD) is supplied by, both surface and ground water. The water system consists of seven elevated tanks, one underground tank, three surface water reservoirs providing approximately 137,000,000 gallons of storage and approximately 259 miles of distribution lines. The system provides water to 80 housing units and 450 employees on a daily basis. The construction of the water system began in 1928. It has been expanded, and modernized over the past 77 years.

## Water Supply Inventory

The Hawthorne Army Depot uses surface water from the Wassuk Mountain range and water from five wells two of which are potable and three that are non-potable. Non-potable well water is used for dust suppression.

The surface water is gathered from drainages on Mount Grant, and stored in one of three reservoirs. The drainages which are used at the present time from north to south are Cottonwood Creek, Squaw Creek, Rose Creek, and Cat Creek. With the exception of Cat Creek the water is collected by series of small dams or catch basins. Cat Creek has a 100 ft tall concrete arch dam which collects runoff from the Cat Creek Drainage. Cat Dam can also be filled from the other drainages. Presently the surface water is used throughout the year as our main source of water. HWAD can only estimate the amount of surface water collects from each of the drainages. A study of the HWAD water system, conducted by Walters Engineering, 1975, estimated an annual runoff of 2500 acre feet.

Table 1 shows the amounts of surface water used annually from 1996 to present. The water system was designed to use surface water first with groundwater as a backup.

Table 1

Surface Water Usage	
1996-2004	Gallons
1996	211,119,400
1997	233,260,700
1998	231,902,800
1999	257,807,000
2000	122,415,000
2001	167,134,000
2002	147,853,000
2003	163,201,000
2004	145,394,000

The groundwater currently used for potable purposes comes from two wells. These wells are located NE  $\frac{1}{4}$  NE  $\frac{1}{4}$  sec 18 T. 8 N. R.30 E. and SE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Sec.2 T. 7 N. R.30 E. and are referred to Wells 11 and 4 respectively. Non potable water for dust control comes from three wells designated Well 3, Well 5 and Well 7. Well 3 is located in the NE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Sec.32 T.8 N. R. 31 E.. Well 5 is located in SW  $\frac{1}{4}$  SE  $\frac{1}{4}$  Sec. 18 T. 8 N. R.30 E.. Well 7 is located in SE  $\frac{1}{4}$  SE  $\frac{1}{4}$  Sec. 3 T. 8 N. R. 31 E.

Well 11 has the capability to supply ground water at 850 gpm and Well 4 supplies groundwater at 180 gpm.

The constraints on the water system are the amount of precipitation received and the specific yield of the wells. Once the surface water treatment plant is built, projected 4<sup>th</sup>

qtr 2005, the constraining factor on surface water will be the 500,000 gallons per day capacity of the plant and the size of the storage tank. In addition the ability to obtain an exemption from the state for several years once the Arsenic Rule goes into effect in January 2006 and receipt of U.S. Army funding for the construction of a new 2 million GPD groundwater treatment facility.

## **Present Water Use and Future Water Needs**

The present water use can be divided into three distinct areas drinking water, irrigation, industrial process and water loss. Currently there is only one meter on the surface water distribution system, which makes an accurate calculation of water usage in the four areas impossible.

The abuses may occur in the water system are as follows:

- Unrestrained use of water since no one has a water meter or is charged for the water that they use.
- Watering of yards and parks excessively and too often.
- Failure of water lines; with water line age at HWAD ranging from a couple of years to 60 plus years water loss of water of can occur at any time and at high rates.

The water needs will grow in the future with the addition of and Bulk Energetic Demilitrazion System (B.E.D.S.) and training of troops. At the present time water usage during Blasting Agent Production is unknown. B.E.D.S. is predicted to use 20,000 gallon per day. The industrial usage of water can be expected to increase with the addition of new industrial processes and air pollution abatement technology. Training usage will vary with the number of troops training at HWAD at any given time.

## **Water Problems, Conservation Measures, and Goals**

Water problem that will be encountered in the future are:

- Reduced size of the surface water treatment plant.
- Whether the U.S. Army will finance a groundwater treatment plant to bring the arsenic levels in the groundwater into compliance with the 10 ppb after January 2006.
- Replacement of aging infrastructure to limit loss through leaks.
- Political pressure to release HWAD watershed water to Walker Lake.
- Failure to obtain an exemption for the arsenic rule.

The Current water conservation measures include installing drip systems in the tree line, automating sprinkler systems. The alternating of days for irrigation scheduling.

Other water conservation measures being examined are:

- to cycle watering of the grass areas to prevent runoff

- install half moon or rectangular inserts in the fringe areas sprinklers,
- convert fringe areas from grass to xeriscape
- Set a limit on wind speed where watering will be stopped.
- Cutting grass to 3 inches in length.
- Apply mulch to turf after aeration to help hold water in grass roots.
- Install metering on the distribution system in key areas and have these read and enter into our preventive maintenance program daily.
- Install metering on houses and irrigation systems to track how much water is being used.
- Meters will serve to track line loss.
- Install water meters on all new facilities
- Educate HWAD water users.
- Evapotranspiration monitors on automated sprinkler systems.
- Rain monitors on automated sprinkler systems

The water conservation education plan should consist of educating housing residents on the proper watering and water conservation techniques. Educating grounds maintenance personnel on watering techniques and the reason why not to let water run off of grass areas. Education of housing residents can consist of a monthly flyer with water conservation tips. Work with housing office to produce a water conservation flyer for their housing packet. Monthly posting of water saving tips on official bulletin boards to help educate the employees.

Work with the county extension agent, U.S. Army and DZHC Management to develop list of plants that are adapted to arid and semi-arid climates. Include that list of plants following updates of this plan. All new landscaping projects shall comply with the Army Installation Design Guides.

Water conservation actions during drought situation declared by the Army, Are detailed in the depot operations contract with Day & Zimmermann Hawthorne Corp.

### **Implementing and Updating the Water Conservation Plan.**

In order to attain water conservation goals the person in responsible charge of the water system as defined in NAC 445A.628 and the Supervisor of Grounds and Golf Course Maintenance should be trained and certified as AWWA Water Conservation Practitioners. Have the Person in Responsible Charge and the Supervisor Grounds and Golf Course Maintenance perform audits of the irrigation system. Perform audits on distribution system.

In order to monitor progress we will require meters to be installed on the distribution system. We will have to get "buy-in" from housing residence, management and the employees.

Divide water conservation measures into short term and long term goals. Short term goals are water conservation measures that can be accomplished in one to three years. While long term goals are water conservation measures that can be accomplished in five to ten years.

Short term goals

- Get plant list approved and inserted into the water conservation plan
- Evaluate half moon and rectangular sprinkler heads for fringes
- Install meters in all water lines on the distribution side of station reservoir

Long term goals:

- Limit irrigation water usage to under 1 million gallons per day.
- Replace 8 inch line from 10 inch high pressure to pressure reducing pit at Building 67
- Replace ponderosa line with new 8 in line
- Pursue Army funding for the construction of new Groundwater Treatment Facility

The water conservation plan should be reviewed in August so that items requiring financial expenditures can be placed in the next fiscal budget. An annual update of the water conservation plan should be accomplished in February. The plan should be revised to reflect the projects completed and projects that were not funded and remain to be accomplished.

The plan will be posted on bulletin boards for the employees every July with the current Consumer Confidence Report (CCR). Forward revised copies to the Bureau of Health Protection and State Engineer Water Resources Division. Keep copies for public in section in the housing office and person in responsible charge's office.