



North Shore Watershed Management Plan

Notes from Working Group Meeting #2

November 15, 2012

SUMMARY: Board of Water Supply (BWS) and Group 70, Inc. presented an overview of the North Shore water resources, use and projected demand. Meeting participants were given the opportunity throughout the presentation to comment and ask questions.

The meeting was opened by Cami Kloster of Group 70, who presented a PowerPoint presentation that included a North Shore Watershed Management Plan overview; a synopsis of North Shore Water Resources, Systems & Uses; and North Shore Water Demand Projections. The presentation is posted on the BWS website: <http://hbws.org/cssweb/display.cfm?sid=125022>.

Below are the various topics covered and issues raised by attendees. BWS and Group 70 comments where included are *italicized*.

Population Forecasting

- Tourists are year-round and their water demand should be included in the water projections. There may also be residents who own second houses and may be away for periods of time.

Updated projections will include a factor for visiting tourists and residents away.

- How many people are assumed per acre or per household?

A factor of 500 gallons per unit or 2,500 gallons per acre is the standard for single family residences used by the Honolulu Board of Water Supply.

Surface Water

- The R-2 (secondary disinfected) water from the Wahiawā Wastewater Treatment Plant (WWTP) flows into Wahiawā Reservoir. Therefore, the entire Wahiawā irrigation system supply is considered R-2 recycled water, even though surface water is 10-times the volume of recycled water (20 mgd surface to 2 mgd recycled water). After the WWTP upgrade to R-1 (tertiary disinfected) effluent, the irrigation system water will be considered R-1 water, which can be used to irrigate all types of crops according to the DOH Reuse Guidelines.

- Is brackish water available for agricultural use?

Brackish is used in the 'Ewa area but not on the North Shore.

- Why is Anahulu Stream not gaged?

Stream gages are expensive to maintain. Most streams that are gaged were the result of a diversion that was built, or some other specific desire by the landowner. Adding a gage to Anahulu Stream could be a potential project.

- Are instream flow standards a requirement? Why aren't we doing it?

The Declarations of Water Use from 1992 serve as the interim instream flow standards. The setting of instream flow standards requires extensive studies and has only occurred where there have been competing uses for the water. On O'ahu it has only been done for Waiāhole, Waianu, Waikane and Kahana streams.

- Agricultural runoff flows into the ocean, affecting the reef, fish, tourists, etc. What can be done about this?

It is up to the landowners to follow Best Management Practices such as buffer areas, vegetated swales, berms, and settling basins to keep the soil on their property.

Potential Climate Change Impacts

- What is the impact of climate change to ground water? With a higher tide, what will the impact be on the aquifer? What is the timing of this?

The sea level rise is expected to be at one foot by the year 2050, and three feet by 2100. Low lying areas will be inundated during high tide, coastal areas by marine inundation and inland areas by groundwater inundation. This will happen in areas like Waikiki, and possibly Hale'iwa. Because fresh water is buoyant, any inundation will make the ground water rise by same amount, 1 to 3 feet, and in some areas may create wetlands. The caprock formation, which overlays the basalt formation and extends 10-30 feet above mean sea level, protects the ground water from becoming saline; however the water in the caprock (accessed by caprock wells) will become salty.

- What about the use of desalination plants?

BWS has the land for a brackish and seawater desalination plant in 'Ewa. If and when additional freshwater is needed, BWS will pursue design and construction. This option is expensive, however, it is less costly than installing regional water transmission mains and pumping that water to Ewa.

- How will water rise affect my injection well?

Department of Health Safe Drinking Water Branch regulates injection wells and outcomes may vary depending on well location and depth of the well.

- If more water is needed because of a warmer environment, shouldn't the forecast allow for an increase in water use per acre as well as overall quantity?

- *The irrigation experts at University of Hawaii may be able to provide the percent change in additional water needed per degree change. There are many factors that will affect agricultural water demand, (location, slope, crop type, crop cycle, irrigation method, weather, etc.), of which temperature is but one.*

- The question was posed, "What can we be doing now that we wish we would have done in 100 years?"

This is why climate change and ultimate demand scenario planning is being incorporated into this plan.

Ground Water Quality

- When did BWS start filtering water for the Hale'iwa well?
BWS began granular activated carbon filtering to remove agricultural pesticides from groundwater in the late 1980's.
- Does BWS have a relationship with the seed corn companies so that they know what types of pesticides they need to test for in their water wells?
Characterization of chemicals and fertilizers applied on all agricultural lands above drinking water wells should be addressed in a comprehensive source water protection program. It is easier to find a specific chemical if you know what to look for. Source Water Protection will be a project. The State DOH will be funding a monitoring study to characterize recycled water and test groundwater for specific constituents, such as pharmaceutical and personal care products.

Water Quantity

- Residents do not want North Shore water transferred to other parts of the island. Could the North Shore become important for the water needs in other parts of the island?
Water transfers are not restricted in the State Water Code, however, BWS has no plans or infrastructure for potable water transfers to other districts due to high capital cost and the feasibility of desalination in Ewa. Water on the North Shore is needed for North Shore agriculture. The North Shore actually imports a small portion of its BWS water from the Ko'olau Loa district, and irrigation water from the Central district via the Wahiawā irrigation system.
- What is the impact of invasive species on water recharge? Removing feral pigs would make a positive impact, like they did on Lanai.
Invasive species can have a significant impact on forest health, reducing recharge to streams and aquifers and increasing polluted runoff to nearshore water. This is why the Koolau Mountain Watershed Partnership exists and in cooperation with the US Army, several fence enclosures have been constructed and more are planned in the upper Opaepala, Helemano and Wahiawa watersheds.
- Would more agricultural lands in production increase percolation?
In general, yes because irrigation adds more water to the land than just rainfall and some water will always percolate. During the sugar plantation days when furrow irrigation was used, a high amount of water was percolating and created a larger aquifer than today, post plantation. Now, efficient irrigation practices deliver the water to where it's needed with less percolation. The difference in percolation and a decrease in the amount of active agricultural lands caused the State Water Commission in 2008 to reduce the sustainable yields of the Mokuleia (12 mgd to 8 mgd), Waialua (40 mgd to 25 mgd) and Kawailoa (39 mgd to 29 mgd) aquifer systems.

Even if there is an increase in agricultural production however, there may not be a change in sustainable yield.

If there are comments or questions on water demand forecasting, please provide them at this time for inclusion in the study. And, if water projects (for example, well construction, installing a stream diversion, water system improvements) are planned by 2035 please contact Group 70 for including in the water planning program for the North Shore. The Watershed Management Plan will provide guidance to agencies and decision makers regarding future projects and permitting.

THOSE PRESENT:

D. Anderson (NS Outdoor Circle)
S. Brewer (Waimea Ranch)
L. Cheape (Rep. District 45)
A. Ellenson (Wahihuena Farm)
K. Falinski (UH Manoa)
K. Fronda (Kamehameha Schools)
M. Higashida (DPP)
C. Kloster (Group 70)
M. Koehne (Girl Scouts Camp Paumalu)
B. Leinau (MPW)
S. Matsushima (NSCC / Alluvion)
A. Miller (NS CoC / NSNB)
B. Natale (Group 70)
D. Nellis (Dole)
J. Ng (NSNB 27)
L. Ohye (CWRM)
J. O'Shea
J. Paulin (HIHWNMS)
C. Philips (NSNB)
K. Rotzoll (UH Manoa WRRC)
W. Schoettle (Haleiwa Town Center)
J. Scott (NSNB Ag Cmte)
K. Sokugawa (DPP)
M. Takemoto (Pioneer Hi-Bred)
B. Usagawa (BWS)
J. Vierra (FWT)
S. Wojtowicz (NSWC)
R. Yost (UH Manoa – TPSS)
M. Zoll (DLNR / DOFAW)