



DEPARTMENT OF THE NAVY

COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBPHH, HAWAII 96860-5101

5090
Ser N45/737
October 01, 2014

CERTIFIED NO: 7014 1200 0000 9858 5240

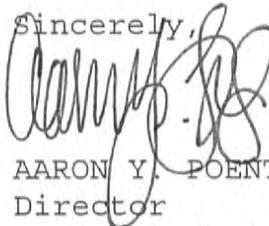
Ms. Joanna Seto, Chief
Hawaii State Department of Health
Environmental Management Division
Safe Drinking Water Branch
919 Ala Moana Boulevard, Room 308
Honolulu, HI 96814

Dear Ms. Seto,

SUBJECT: PUBLIC WATER SYSTEM NO. 360, JOINT BASE PEARL HARBOR
HICKAM (JBPHH) WATER SYTEM SANITARY SURVEY REPORT

We are providing an update on the corrective actions for the significant deficiencies identified in the JBPHH Water System Sanitary Survey Report of July 14, 2014. Enclosure (1) contains our response to four deficiencies. Corrective actions for all deficiencies identified are now complete.

Should you have any questions regarding this matter, please call Arleen Mizuno at telephone number 471-1171, extension 203.

Sincerely,


AARON Y. POENTIS
Director
Regional Environmental Department
By direction of the
Commander

Enclosure: 1. JBPHH Sanitary Survey Response

	Significant Deficiency	Corrective plan of action	Action Complete or Incomplete	Expected date of completion
1	Camp Smith Tank S-327 Secure loose bottom edge of roof vent screen.	Bottom edge of Vent screen has been secured with epoxy. See photos 1 and 2.	Complete	
2	Plug open end of water level cable pipe.	Water level cable pipe has been secured with a screen. See photos 3 and 4.	Complete	
4	Halawa Tank S-2. Plug open end of water level cable pipe.	Water level cable pipe has been secured with a screen. See photos 5 and 6.	Complete	
5	Red Hill Tank. Plug open end of water level cable pipe or completely remove water level assembly and plug any openings.	Water level assembly was completely removed and plugged. See photos 7 and 8.	Complete	

JBPHH Water System No. 360
Significant Deficiency Corrective Action Photos
September 2014



Photo 1: Camp Smith Tank S-327 – Secured bottom edge of vent screen



Photo 2: Camp Smith Tank S-327 – Secured bottom edge of vent screen (CLOSEUP).

JBPHH Water System No. 360
Significant Deficiency Corrective Action Photos
September 2014



Photo 3: Camp Smith Tank S-327 – Water level cable pipe screened



Photo 4: Camp Smith Tank S-327 – Water level cable pipe screened (CLOSEUP).

JBPHH Water System No. 360
Significant Deficiency Corrective Action Photos
September 2014



Photo 5: Halawa Tank S-2 – Water level cable pipe screened



Photo 6: Halawa Tank S-2 – Water level cable pipe screened (CLOSEUP).

JBPHH Water System No. 360
Significant Deficiency Corrective Action Photos
September 2014

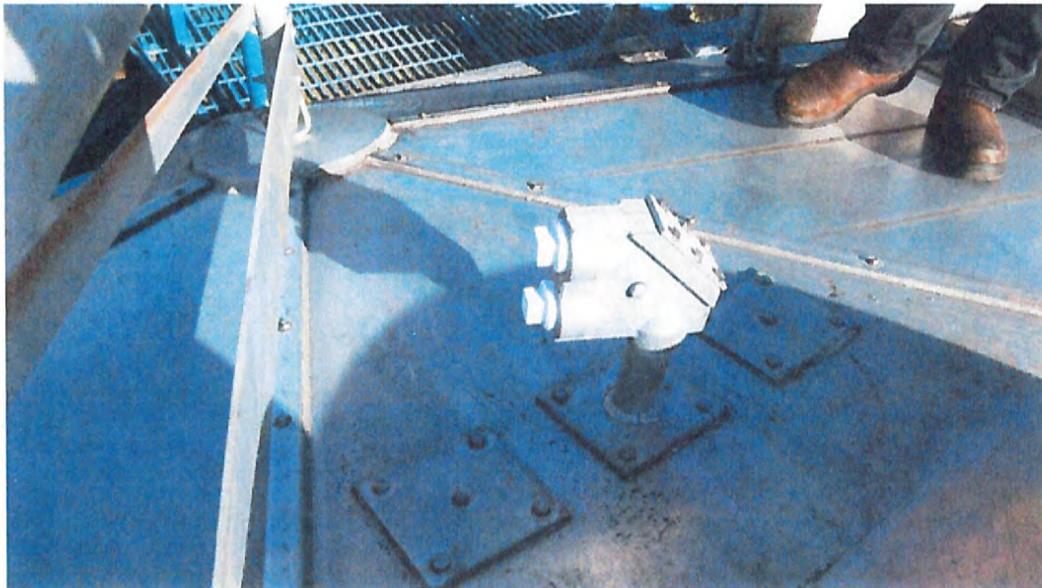


Photo 7: Red Hill Tank – Water level assembly completely removed and plugged.

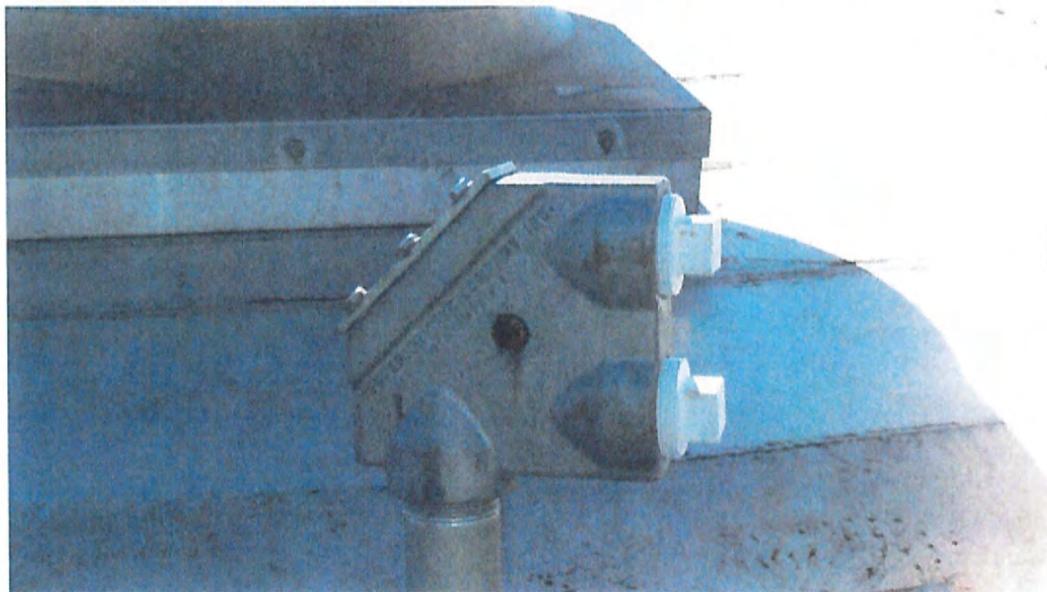


Photo 8: Red Hill Tank – Water level assembly completely removed and plugged (CLOSEUP).



DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBPHH, HAWAII 96860-5101

RECEIVED
SAFE DRINKING
WATER BRANCH
AUG 14 2014
M3
CW

5090
Ser N45/614
August 13, 2014

CERTIFIED NO: 7012 3050 0000 0992 9845

Ms. Joanna Seto, Chief
Hawaii State Department of Health
Environmental Management Division
Safe Drinking Water Branch
919 Ala Moana Boulevard, Room 308
Honolulu, HI 96814

Dear Ms. Seto,

SUBJECT: PUBLIC WATER SYSTEM NO. 360, JOINT BASE PEARL HARBOR-
HICKAM (JBPHH) WATER SYTEM SANITARY SURVEY REPORT

We are in receipt of your letter of July 14, 2014 regarding the subject sanitary survey report. We appreciate the assistance and technical guidance provided by your staff during the survey.

The sanitary survey report identified five significant deficiencies and two recommendations. Per your letter, we are providing our response (enclosure 1) which lists the actions to be taken.

Should you have any questions regarding this matter, please call Arleen Mizuno at telephone number 471-1171, extension 203.

Sincerely,


for

AARON Y. POENTIS
Director
Regional Environmental Department
By direction of the
Commander

Enclosure: 1. JBPHH Sanitary Survey Response

	Significant Deficiency	Corrective plan of action	Action Complete or Incomplete	Expected date of completion
	<u>Camp Smith Tank S-327</u>			
1	Secure loose bottom edge of roof vent screen.	Epoxy material is on order. Will be completed by 09/30/14.	Incomplete	9/30/2014
2	Plug open end of water level cable pipe.	We are coordinating the use of a man-lift to access the opening. Will be completed by 09/30/14.	Incomplete	9/30/2014
3	Halawa Tank S-1. Severe rust in the roof hatch has created holes in the raised steel curb providing an entryway for contaminants, insects and geckos. The openings should be repaired and sealed in the term. The current project to reconstruct the roof hatch should be expedited.	The roof hatch has been temporarily sealed (see attached photo documentation of repair). The contract to repair the roof of the S-1 Tank is tentatively scheduled to begin 9/1/14 and be complete by 1/31/15.	Complete	
4	Halawa Tank S-2. Plug open end of water level cable pipe.	We are coordinating the use of a man-lift to access the opening. Will be completed by 09/30/14.	Incomplete	9/30/2014
5	Red Hill Tank. Plug open end of water level cable pipe or completely remove water level assembly and plug any openings.	We are coordinating the use of a man-lift to access the opening. Will be completed by 09/30/14.	Incomplete	9/30/2014
	DOH Recommendation	Corrective plan of action	Action Complete or Incomplete	Expected date of completion
1	Halawa Tank S-1. The rust observed on the exterior tank walls near the roofline, on the roof surface and in the steel stairway should be addressed before the rust progresses further. Although both tanks have been outfitted with cathodic protection systems, there visibly a greater amount of rust in Tank S-1. The cathodic protection system should be investigated for proper functioning. The existing rust should be removed and the areas repainted.	We are continuously monitoring the rust at the S-1 tank. We have also hired a cathodic protection consultant, who has inspected the cathodic protection systems for both Tanks S-1 and S-2. We are awaiting their report and assessment.	Complete	
2	Red Hill Tank. The heightened security requirements for the access to the Red Hill Tank is an impediment to ready access to the tank in an emergency situation. Currently a military escort is required to open and relock several gates on the roadway leading up to the tank site. Because the gates need to be locked behind personnel working at the tank site, this presents a safety issue in the event of an emergency (medical, accidents, evaluation, etc.). Additionally, the Red Hill Tank is a part of a critical infrastructure that provide drinking water to the Red Hill housing area and immediate access is required for making emergency repairs to the system. It is recommended that operational protocols be established and changes to the security system be made to meet the security requirements while maintaining continuity of critical water system service and quick access in emergencies.	We are currently working with JBP/HH and NAVFAC-Hawaii security offices to allow timely access to the Red Hill tanks in cases of emergencies.	Incomplete	9/30/2015

ENCLOSURE(1)

**JBPHH Water System No. 360
Significant Deficiency #3 Corrective Action Photos
June 2014**



Photo 1: Overall view of roof hatch



Photo 2: Closer view of patch over rusted corner

**JBPHH Water System No. 360
Significant Deficiency #3 Corrective Action Photos
June 2014**



Photo 3: Close up view of patch on opposite corner of hatch



STATE OF HAWAII
DEPARTMENT OF HEALTH
SAFE DRINKING WATER BRANCH
919 ALA MOANA BLVD., ROOM 308
HONOLULU, HI 96814-4920

In reply, please refer to:
File: SDWB
360J0714.docx

July 14, 2014

Commander, Navy Region Hawaii
Attn: Code N45, June Shimabuku
Regional Environmental Department
850 Ticonderoga St., Suite 110
JBPHH, HI 96860-5101

Dear Ms. Shimabuku:

SUBJECT: PUBLIC WATER SYSTEM NO. 360, JOINT BASE PEARL
HARBOR-HICKAM (JBPHH)
TRANSMITTAL OF SANITARY SURVEY REPORT

Thank you for the assistance and information provided during the sanitary survey inspection of the Joint Base Pearl Harbor-Hickam water system conducted on June 18 - 19 and July 8, 2014.

My staff appreciated the assistance provided by Ms. Jill Ueda, Ms. Arleen Mizuno, Mr. Randy Kawamura and Mr. Flynn Garcia.

Enclosed is a copy of the JBPHH sanitary survey report. A sanitary survey of a public water system is a periodic review of the system's facilities, operation and maintenance practices, and records to assure that proper conditions, policies, and practices are in effect for that water system. Maintaining of minimum standards of operation and maintenance is the responsibility of the operator.

Systems must comply with the sanitary survey requirements of the Ground Water Rule (GWR) as of December 1, 2009. The Rule requires ground water systems with an identified "**significant deficiency**" to consult with the State on a corrective action plan and schedule of completion within 30 days of receiving written notice of the deficiency. The system must complete the corrective actions or be in compliance with the agreed upon corrective action plan and completion schedule within 120 days of receiving written notice of the deficiency.

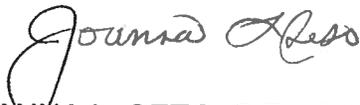
Photo documentation of all corrected significant deficiencies is required as of January 1, 2014. The Safe Drinking Water Branch (SDWB) reserves the right to conduct follow up inspections as necessary.

Ms. June Shimabuku
July 14, 2014
Page 2

The Department of Health (DOH) also requests that the system review the "recommendations" (non-significant deficiencies) noted in the report, and provide written acknowledgement that they will address them in a timely manner, to the extent that resources and operations will allow. We strongly encourage the system to address "recommendations" as you would significant deficiencies to avoid related problems in the future. The DOH will be using this report's list of significant deficiencies and recommendations as a reference and benchmark for measuring system progress in future sanitary surveys.

If there are any questions, please call Mr. Craig Watanabe of the SDWB Engineering Section at (808) 586-4258.

Sincerely,



JOANNA L. SETO, P.E., CHIEF
Safe Drinking Water Branch

CW:cw

Enclosure

SANITARY SURVEY OF THE JOINT BASE PEARL HARBOR-HICKAM (JBPHH) WATER SYSTEM

The Safe Drinking Water Branch (SDWB) performed a sanitary survey of the JBPHH water system (PWS 360) on June 18 and 19, 2014 and July 8, 2014. The sanitary survey was conducted by Craig Watanabe of the SDWB. The survey took approximately eight hours to complete, not including commute time.

The water system is owned and operated by NAVFAC (Naval Facilities Engineering Command) Hawaii. Randy Kawamura, Jill Ueda and Arleen Mizuno, NAVFAC Hawaii engineers, were present during the survey. Flynn Garcia, system operator, was also present during the survey.

The JBPHH water system provides drinking water to the Pearl Harbor Naval Shipyard, Naval Station, FISC, Subase, Bishop Point, the Navy Exchange/Commissary, and the Navy/Marine Golf Course. Additionally, the system serves the following military communities: Manana Housing, Pearl City Junction, Pearl City Peninsula, Waipio Peninsula, West Loch, Iroquois Point Housing, Puuloa Housing, Ford Island, McGrew Point Housing, Camp Smith, Halawa Housing, Coast Guard Housing, Red Hill Housing, Halsey Terrace, and the Eastern Housing complex. On October 1, 2010, the Pearl Harbor water system merged with the PWS 350 Hickam Air Force Base water system to form the current PWS 360 JBPHH water system.

The JBPHH water system also provides drinking water to a consecutive system, the Army's PWS 337 Aliamanu system). The system is also interconnected with the PWS 355 Barbers Point water system for emergency purposes and the valve at the interconnection is normally closed.

There are several other interconnection points with the Honolulu Board of Water Supply's (HBWS) water system as a backup in the event of breakdowns in the system.

All of the water system facilities are located in highly secured areas and special permission must be obtained in advance in order to inspect them. There is 24-hour security patrolling all of the facilities. The system is spread out over a distance of approximately 8 miles. The elevation ranges from 5 feet (Hickam Air Force Base) to 850 feet (Camp Smith) above mean seal level.

The water system facilities consist of three sources, two large storage tanks, four smaller storage tanks, several booster pump stations, and approximately 400 miles of pipeline.

SYSTEM DESCRIPTION AND FLOW

The JBPHH water system is a community water system serving 65,230 customers with 7,619 service connections. The average daily flow is listed at 18.748 MGD (million gallons per day), although the flow varies from approximately 11 to 22 MGD.

The system provides drinking water to all of the facilities listed above, including fire protection and irrigation.

Water Source and Operations

The JBPHH water system is supplied by three sources: the Waiawa Shaft (USGS No. 2258-20) at elevation 30 feet, the Red Hill Shaft (USGS No. 2254-01) at elevation 105 feet, and the Halawa Shaft (USGS No. 2252-32) at elevation 28 feet. The Halawa Shaft is active but run only occasionally to maintain operational capability. It was not in operation during the last sanitary survey in 2009. The Waiawa Shaft is the primary source for the water system.

The system is also connected to the Honolulu Board of Water Supply system at four locations: Manana Housing, Halawa Heights Road, Red Hill, and Puuloa Road. These connections are intended for fire protection and emergency uses.

The water at all three sources is disinfected and fluoridated before entering the distribution system. The Waiawa Shaft has three 6,000 gpm (gallons per minute) pumps and one 6,500 gpm pump. The Red Hill Shaft has four 6,500 gpm pumps. The Halawa Shaft has two 3,200 gpm pumps and one 3,500 gpm pump.

The JBPHH water system is generally operated as follows:

Water source pumps at the Waiawa and Red Hill Shafts are operated automatically via SCADA controls in the Power Plant No. 2 Watch Office (Bldg 149). A total of four pumps at the two water sources are typically sequenced based on water levels in the Halawa S-1 and S-2 tanks (6.0 MG each). These tanks provide storage and fire protection for most of the JBPHH water system. One of four pumps at the Waiawa Shaft normally runs continuously to provide water to the S-1 and S-2 tanks as well as into the distribution system. As demand increases and water levels at the tanks drop, a second pump will automatically activate. During high demand periods (typically during the summer months) when the tank levels decrease further, a third pump will automatically activate. The fourth pump is also activated based on water level, but rarely turns on, even during high demand periods.

The sequence of pumps 1 through 4 at Waiawa and Red Hill are typically alternated during the summer and winter seasons. During the summer periods, the following pump sequence is typically used:

- Pump No. 1 – Waiawa 1
- Pump No. 2 – Waiawa 2
- Pump No. 3 – Red Hill 1
- Pump No. 4 – Red Hill 2

During the winter months, the following pump sequence is typically used:

Pump No. 1 – Waiawa 1
Pump No. 2 – Red Hill 1
Pump No. 3 – Waiawa 2
Pump No. 4 – Red Hill 2

The Halawa Shaft is a back-up water source. Typically, the three pumps at the Halawa Shaft are run once per week to (one pump per week) to maintain operational readiness and to prevent water stagnation within the piping system

Two booster pumps (500 gpm each) at the Halawa Shaft pump room send water up to the three storage tanks located in Camp Smith. These tanks provide water to the Camp Smith distribution system.

Furthermore, two booster pumps (500 gpm each) at the Red Hill Shaft pump room send water up to the Red Hill tank. This tank provides water to the Red Hill Housing complex.

Fluoridation and Disinfection

At both the Waiawa, Red Hill, and Halawa Shafts the water is disinfected by on-site sodium hypochlorite generation systems (ClorTec) and injector pumps. The generation units (two at each site), injector pumps, salt tanks, brine tanks, and sodium hypochlorite storage tanks are situated in secured hollow-tile buildings at all shaft locations.

The disinfection point at the Waiawa Shaft is on the 42-inch transmission line that leaves the site and flows into the distribution system, toward to the Halawa S-1 and S-2 storage tanks. Fluoridation occurs just after disinfection, on the same 42-inch line.

The disinfection point at the Red Hill Shaft is on the 30-inch transmission line that leaves the site and flows toward the Red Hill and Halawa S-1 and S-2 storage tanks. Fluoridation occurs just after disinfection, on the same 30-inch line.

The disinfection point at the Halawa Shaft is located on the 12 inch transmission line that serves the Camp Smith service area. The injection site for fluoridation is just after the site for disinfection.

At all three shaft locations, the water is fluoridated by means of a fluoride saturator system, sodium fluoride, and injector pumps. All of these items are situated in secured areas at both sites.

Storage

As stated previously, the finished water (disinfected and fluoridated) from the sources is pumped to the steel Halawa Tanks S-1 and S-2. Both tanks have a capacity of 6 MG,

are approximately 40 feet high, and are situated at elevation 178.5 feet. The finished water flows out of the tanks into the distribution system via a 30-inch pipe. These two tanks provide water for most of the system. Both tanks are outfitted with a cathodic protection system.

The three storage tanks at Camp Smith are situated at an approximate elevation of 850 feet. Two of the tanks (S-325 and S-326) are constructed of concrete, have a capacity of 200,000 gallons, and are approximately 16 feet high. The third tank is a glass-lined steel type (S-327), has a capacity of 250,000 gallons, and is approximately 20 feet high. The finished water flows out of the three tanks into the Camp Smith distribution system via a 10-inch pipe.

The glass-lined steel storage tank at Red Hill is located at elevation 598 feet. It has a capacity of 250,000 gallons and is approximately 30-feet high. The finished water from the tank serves the Red Hill Housing complex.

Distribution.

The JBPHH distribution system serves all of the facilities and housing complexes as described previously. The system demand includes: residential, offices, classrooms, kitchen/cafeteria, laundry facilities, shipyard docks, light to heavy industrial activities, painting, plating areas, cleaning areas, irrigation, etc.

The distribution lines range in size from 2-inch to 42-inch pipes. The larger lines (6-inch and above) are cast iron, ductile iron, concrete, or asbestos cement pipes. The smaller service lines are copper, PVC, or galvanized iron pipes.

Distribution system pressure is targeted for 40 to 80 psi (pounds per square inch). The chlorine residual is targeted at 0.6 to 0.7 ppm (parts per million) and the fluoridation residual is targeted at 0.8 ppm as the finished water leaves the Waiawa, Halawa and Red Hill Shafts.

The Manana booster pump station (approximate elevation 127 feet) raises the system pressure for the Manana Housing area. This station consists of two 225 gpm pumps and one diesel engine powered 1,500 gpm fire pump.

The Moanalua Terrace booster pump station (approximate elevation 105 feet) also raises the system pressure for the Moanalua Terrace Housing area. This station consists of two 130 gpm pumps.

Within the Camp Smith distribution system, the elevation ranges from 425 feet (Halawa Heights Road) to 850 feet (storage tanks). Therefore, there are eight pressure reducing valves (PRV) at five stations, ranging in size from 3-inch to 10-inch. The Camp Smith system is separated into three pressure zones. The upper pressure zone is controlled by the three storage tanks. The middle pressure zone is controlled by PRV stations 1, 2, and 3. The lower pressure zone is controlled by PRV stations 4 and 5.

MONITORING

Coliform Monitoring Program. There have not been any coliform bacteria detected during the past 12 months from both routine and quality assurance testing.

Lead and Copper Monitoring Program. The system is in compliance with Lead and Copper Rule requirements.

Monitoring. The chemical monitoring program is being performed in an acceptable manner.

Phase II and Phase V Monitoring Program. The Phase II and V monitoring is in compliance.

Microbiological Water Quality. There were no violations of the microbiological monitoring requirements.

Consumer Confidence Reports: The system is in compliance.

CAPACITY ASSESSMENT

This section compiles data for SDWB use.

TECHNICAL

1. OPERATOR CERTIFICATION. Each public water system (except) transient, non-community) shall be under the responsible charge of an operator(s) holding a valid certification equal to or greater than the classification of the WTP or DS. Check whether the water system operators are certified.

Satisfactory. NAVFAC Hawaii is staffed adequately with a number of grade 4 certified distribution system operators.

2. ADEQUATE WATER SOURCES. Discuss with manager whether the present water sources are adequate for the future (next 5 years).

Satisfactory.

3. POTENTIAL FOR CONTAMINATION OF THE WATER. Inspect for pathways that could contaminate the finished water at the well site, storage tanks, or distribution system.

Unsatisfactory. The roof hatch for Tank S-1 is severely rusted with holes in the raised steel curb. The open water level cable tubes at Tank S-1, Tank 327 and

Red Hill Tanks need to be plugged. The screen for the roof vent needs to be secured for Tank S-327.

MONITORING PROGRAMS. Check water quality monitoring performance. This evaluation is reported in the Monitoring section of the Sanitary Survey Report.

Satisfactory.

4. BACKFLOW AND CROSS-CONNECTIONS. Check whether backflow prevention devices are used if the water system serves hospitals, farms, golf courses, sewage treatment plants, or other activities that could cause a backflow of contamination into the drinking water. Look for cross-connections with the drinking water system.

Satisfactory. No cross-connections were observed during the survey.

MANAGERIAL

1. CAPITAL IMPROVEMENT PROJECTS. Identify improvements to the water system and include the month and year the improvement was installed. The facility improvements indicate management support of the water system needs. If no improvements are noted indicate whether the existing system is adequate.

Satisfactory. The existing system is adequate.

2. SYSTEM MAINTENANCE. The overall condition of the water system infrastructure should be assessed. Is the present maintenance level adequate for the water system?

Satisfactory. Overall except for the deficiencies as noted, the existing facilities are adequately maintained.

3. EMERGENCY PLANS. Check whether the water system has an emergency plan. The plan should include obtaining backup sources of water in drought situations, loss of a well pump or extended loss of electrical power.

Satisfactory. There are multiple pumps which provide redundancy at the sources. Back-up diesel generators, portable diesel generators. There are multiple tanks serving service areas in the system. Dual disinfection systems are present at the sources. There are four emergency connection points to the Honolulu BWS system.

4. CORRECTION OF PROBLEMS. The water system should have plans to correct obvious significant problems noted during the survey. The water system should also have corrected earlier identified significant problem(s) in a timely fashion.

Satisfactory. There were no significant deficiencies from the 2009 sanitary survey. A screen has been installed at the overflow discharge for Tanks S-1 and S-2.

FINANCIAL

1. ADEQUATE FINANCIAL BUDGETS. Discuss whether funding levels for operation and maintenance are sufficient. Is there funding for capital improvement projects?

Satisfactory.

2. NORMAL OPERATION AND MAINTENANCE.

Satisfactory.

3. CAPITAL IMPROVEMENT PROJECTS.

Satisfactory.

SIGNIFICANT DEFICIENCIES

The recently promulgated Ground Water Rule (Rule) has a compliance date of December 1, 2009. The State intends to incorporate the requirements of the Rule into the Hawaii Administrative Rules, Title 11, Chapter 20 (HAR 11-20), Rules Relating to Potable Water Systems. The Rule will require ground water systems with a “**significant deficiency**” to consult with the State on a corrective action plan and schedule of completion within 30 days of receiving written notice of the deficiency. The system must complete the corrective actions or be in compliance with the agreed upon corrective action plan and time schedule within 120 days of receiving written notice of the deficiency. Failure to correct the deficiency or be in compliance with a corrective action plan within 120 days of receiving written notice of the significant deficiency from the State, will subject the water system to penalties of not more than \$25,000 per violation per day under HRS 340E-8.

After the Ground Water Rule has been incorporated into HAR 11-20, the SDWB may conduct follow-up inspections to verify that the significant deficiencies have in fact been corrected.

The following significant deficiencies were identified:

SIGNIFICANT DEFICIENCIES:

Camp Smith Tank S-327:

1. **Secure loose bottom edge of roof vent screen.**
2. **Plug open end of water level cable pipe.**

Halawa Tank S-1:

Severe rust in the roof hatch has created holes in the raised steel curb providing an entryway for contaminants, insects and geckos. The openings should be repaired and sealed in the interim. The current project to reconstruct the roof hatch should be expedited.

Halawa Tank S-2:

Plug open end of water level cable pipe.

Red Hill Tank:

Plug open end of water level cable pipe or completely remove water level assembly and plug any openings.

The following recommendations were identified.

RECOMMENDATIONS

Halawa Tank S-1:

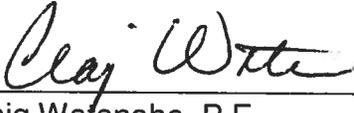
The rust observed on the exterior tank walls near the roofline, on the roof surface and in the steel stairway should be addressed before the rust progresses further. Although both tanks have been outfitted with cathodic protection systems, there is visibly a greater amount of rust in Tank S-1. The cathodic protection system should be investigated for proper functioning. The existing rust should be removed and the areas repainted.

Red Hill Tank:

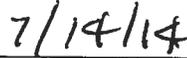
The heightened security requirements for the access to the Red Hill Tank is an impediment to ready access to the tank in an emergency situation. Currently a military escort is required to open and relock several gates on the roadway leading up to the tank site. Because the gates need to be locked behind personnel working at the tank site, this presents a safety issue in the event of an emergency (medical, accidents, evacuation etc.). Additionally, the Red Hill Tank is a part of a critical infrastructure that provides drinking

water to the Red Hill housing area and immediate access is required for making emergency repairs to the system.

It is recommended that operational protocols be established and changes to the security system be made to meet the security requirements while maintaining continuity of critical water system service and quick access in emergencies.



Craig Watanabe, P.E.
DOH Safe Drinking Water Branch



Date

SIGNIFICANT DEFICIENCIES:



Tank 327: Secure loose bottom edge of roof vent screen.



Tank 327: Plug open end of water level cable pipe.

SIGNIFICANT DEFICIENCIES:



Halawa Tank S-1: Severe rust in the roof hatch has created holes in the raised steel curb providing an entryway for contaminants, insects and geckos. The openings should be repaired and sealed in the interim. The current project to reconstruct the roof hatch should be expedited.



Halawa Tank S-2: Plug open end of water level cable pipe.



Red Hill Tank: Plug open end of water level cable pipe or completely remove water level assembly and plug any openings.

RECOMMENDATIONS:



Halawa Tank S-1: The rust observed on the exterior tank walls near the roofline, on the roof surface and in the steel stairway should be addressed before the rust progresses further.



Halawa Tank S-1: Rust observed on the roof should be addressed.

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM PRE-INSPECTION FORM

Survey Date: June 18, 19, July 8, 2014

Persons Present During Sanitary Survey:

- | | |
|--|---|
| 1. <u>Jill Ueda, NAVFAC Hawaii</u>
2. <u>Randy Kawamura, NAVFAC Hawaii</u>
3. <u>Arleen Mizuno, NAVFAC Hawaii</u>
4. <u>Flynn Garcia, NAVFAC Hawaii</u> | 5. <u>David Cain, NAVFAC Hawaii</u>
6. <u>Craig Watanabe, SDWB</u>
7. _____
8. _____ |
|--|---|

System Information:

PWS ID No: 360 Water System Name: Pearl Harbor

Island: Oahu Classification: CWS ~~NTNCWS~~ ~~TNCWS~~

Owner: NAVFAC (Naval Facilities Engineering Command) Hawaii

Contact: Jill Ueda

Phone: (808) 471-1171 ext. 203

Fax: (808) 471-1160

E-mail: jill.ueda@navy.mil

Population Served 65,230 Service Connections 7,619

Water source type: surface, GWUDI, groundwater, roof catchment, hauled, other

<u>Source Name</u>	<u>Type of Source</u>	<u>USGS Number</u>
<u>Waiawa Shaft</u>	<u>Groundwater</u>	<u>3-2258-10</u>
<u>Red Hill Shaft</u>	<u>Groundwater</u>	<u>3-2254-01</u>
<u>Halawa Shaft</u>	<u>Groundwater</u>	<u>3-2252-32</u>

Compliance History:

A. Microbiological & Turbidity Violations During the Past 12 Months

<u>Violation Type</u>	<u>Date</u>	<u>Result</u>	<u>Comment</u>
<u>None</u>			

B. Regulated Chemicals

Flouride: 0.48 mg/L
Nitrate, Nitrate as Nitrogen: 0.58 mg/L

C. Unregulated Chemicals

D. Date of last sanitary survey and major findings

November 2, 2009: Verify condition of overflow for screening or flapper outlets. Address rusted areas for Tank S-1 and S-2.

E. Operator Certification Compliance (HAR 11-25):

<u>Name</u>	<u>Grade</u>	<u>Cert. #</u>	<u>Work Facility</u>
Leoanrd Nehl	4	D4-048	DRC - JBPHH
Greg Hayashi	4	D4-022	DRC - JBPHH

System Management & Operation:

Annual Report or similar document provided? No

CCR database storage and compliance status: OK

Is an updated Emergency Response Plan available per HAR 11-19-5 (County only)? Not Applicable

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM GROUNDWATER SOURCE PROTECTION

Source Name: Waiawa Shaft
 Location: Waiawa, Oahu, Hawaii
 USGS #: 3-2258-10 (as applicable)
 Type: Well Tunnel Spring **Shaft** Other: _____
 Infrastructure immediately downstream: JBPHH distribution, S-1 and S-2 tanks
 Source Specific Yield (ave.): 16 **mgd** gpm / cfs
 Permitted Use allocation (if applicable): Unknown mgd / gpm / cfs
 Confined / Unconfined Aquifer? Unconfined

Attach raw water quality data and sampling station location map if available

Contributing Watershed _____
 Land area in acres or sq. miles (attach exhibit if available): _____
 Estim. Land Uses or Zoning (%): _____
 (Agricultural / Conservation / Residential / Urban / Industrial / Other)
 Estimated Land Ownership (%) _____
 (Private / City / State / Federal)

Vulnerability Assessments / baseline studies conducted in the watershed? ? (Y/N)

If yes, cite the document & date: _____

Emergency Spill Response Plan available? _____ (Y/N)

Responding Agency: _____

Potential Polluting Activities Near the Source:

1. Waiawa Industrial area
2. Halawa Industrial area
3. _____
4. _____

Potential Sources of Pollution	Minimum Horizontal Distance From Pollution Source	Estimated distance upgradient from source (feet)
Any sewer line	50 feet	<u>None</u>
Cesspool, septic tank, or subsurface sewage leaching field	1000 feet	<u>None</u>
Hazardous waste landfills, ponds, or chemical storage	1000 feet	<u>None</u>
Treated effluent injection well	1/4 mile	<u>None</u>

Is the source site in a 100-year flood plain? N (Y/N)

Protected from runoff? Y (Y/N) How? Located in underground tunnels

Source enclosed? Y (Y/N) How? Located in underground tunnels

Source site fenced? Y (Y/N)

Source site gated? Y (Y/N) Signage? Y (Y/N)

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM GROUNDWATER SOURCE PROTECTION

Source Name: Red Hill Shaft
 Location: Red Hill, Oahu, Hawaii
 USGS #: 3-2254-01 (as applicable)
 Type: Well Tunnel Spring **Shaft** Other: _____
 Infrastructure immediately downstream: Light Industrial
 Source Specific Yield (ave.) 6 max **mgd** gpm / cfs
 Permitted Use allocation (if applicable): Unknown mgd / gpm / cfs
 Confined / Unconfined Aquifer? Unconfined

Attach raw water quality data and sampling station location map if available

Contributing Watershed _____
 Land area in acres or sq. miles (attach exhibit if available): _____
 Estim. Land Uses or Zoning (%): 50% conservation, 50% Industrial
 (Agricultural / **Conservation** / Residential / Urban / **Industrial** / Other)
 Estimated Land Ownership (%) _____
 (Private / City / State / Federal)

Vulnerability Assessments / baseline studies conducted in the watershed? ? (Y/N)

If yes, cite the document & date: _____

Emergency Spill Response Plan available? _____ (Y/N)

Responding Agency: _____

Potential Polluting Activities Near the Source:

1. Halawa Industrial area (rock quarry, concrete production, previous military
2. industrial activity (fuel storage)
3. _____
4. _____

Potential Sources of Pollution	Minimum Horizontal Distance From Pollution Source	Estimated distance upgradient from source (feet)
Any sewer line	50 feet	<u>None</u>
Cesspool, septic tank, or subsurface sewage leaching field	1000 feet	<u>None</u>
Hazardous waste landfills, ponds, or chemical storage	1000 feet	<u>None</u>
Treated effluent injection well	1/4 mile	<u>None</u>

Is the source site in a 100-year flood plain? N (Y/N)

Protected from runoff? Y (Y/N) How? Located in underground tunnels

Source enclosed? Y (Y/N) How? Located in underground tunnels

Source site fenced? Y (Y/N)

Source site gated? Y (Y/N) Signage? Y (Y/N)

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM GROUNDWATER SOURCE PROTECTION

Source Name: Halawa Shaft
 Location: Halawa, Oahu, Hawaii
 USGS #: 3-2252-32 (as applicable)
 Type: Well Tunnel Spring Shaft Other: _____
 Infrastructure immediately downstream: Transmission/Distribution
 Source Specific Yield (ave.) 1 (run only to keep exercised) mgd gpm / cfs
 Permitted Use allocation (if applicable): Unknown mgd / gpm / cfs
 Confined / Unconfined Aquifer? Unconfined

Attach raw water quality data and sampling station location map if available

Contributing Watershed _____
 Land area in acres or sq. miles (attach exhibit if available): _____
 Estim. Land Uses or Zoning (%): All residential land use
 (Agricultural / Conservation / Residential / Urban / Industrial / Other)
 Estimated Land Ownership (%) _____
 (Private / City / State / Federal)

Vulnerability Assessments / baseline studies conducted in the watershed? ? (Y/N)

If yes, cite the document & date: _____

Emergency Spill Response Plan available? _____ (Y/N)

Responding Agency: _____

Potential Polluting Activities Near the Source:

1. None observed - site located in single home, residential area
2. _____
3. _____
4. _____

Potential Sources of Pollution	Minimum Horizontal Distance From Pollution Source	Estimated distance upgradient from source (feet)
Any sewer line	50 feet	<u>Yes - residential</u>
Cesspool, septic tank, or subsurface sewage leaching field	1000 feet	<u>None</u>
Hazardous waste landfills, ponds, or chemical storage	1000 feet	<u>None</u>
Treated effluent injection well	1/4 mile	<u>None</u>

Is the source site in a 100-year flood plain? N (Y/N)

Protected from runoff? Y (Y/N) How? Located in underground tunnels

Source enclosed? Y (Y/N) How? Located in underground tunnels

Source site fenced? Y (Y/N)

Source site gated? Y (Y/N) Signage? Y (Y/N)

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM PUMPS, PUMP FACILITIES & CONTROLS

Source: Waiawa Shaft
 Location: Waiawa, Oahu, Hawaii
 USGS # 3-2258-10 (as applicable)
 Source type: Well GWUDI Tunnel Ditch Spring Shaft
 Infrastructure immediately downstream: Waiawa Industrial area

Pump Summary:

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1	450	170	s	6,000	182	
2	450	170	s	6,000	182	210 ft. TDH with 2 pumps running
3	450	170	s	6,000	182	247 ft. TDH with 3 pumps running
4		170	s	6,500	182	

* Pump types can be described as submersible vertical turbine (s) or line shaft vertical turbine (ls)

** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Do well and pump construction and materials appear to meet:

AWWA Standards? Unknown (Y / N / Unknown) Old construction - built in 1951
 County Standards? Unknown (Y / N / Unknown)
 NSF 61? Unknown (Y / N / Unknown)
 State Well Construction & Pump Installation Standards? Unknown (Y / N / Unknown)

Is the pump "water-lubed"? Y (Y/N)

If not, is food grade grease or NSF 61-approved lubricating oil used to lubricate the pump?

Specify lubricant: _____

Condition of oil lube equipment: _____

Is the pump site in a 100-yr flood plain? N (Y / N / Unknown)

If "yes", does well casing extend a minimum of 2-feet above flood level? _____ (Y/N)

Is the pump site protected from runoff? Y (Y/N) Located in pump room down inclined shaft

Well casing extends minimum 12 inches above well or floor slab? Y (Y/N)

Well slab/floor material and condition: Concrete, good condition

Watertight seal for:

Pump base plate/discharge head openings? Y (Y/N)

Airline tubing for water level measurements? _____ (Y/N)

Pump column vent hole/tubing? Y (Y/N)

Pump-to-waste vent elevated? NA (Y/N/NA)
 Is it screened? _____ (Y/N) All other ARVs screened? Y (Y/N/NA)
 Direction of vent? Down (up / down / sideways)
 Condition of pump-to-waste piping flapper valve? _____
 Do valve or flow tube vault walls extend above finish grade? NA (Y / N / NA)

Note any cross connections (submerged outlets, standing water, hose bibb connections):

1. None
2. _____
3. _____

Safety cages for equipment? Y (Y/N)
 Identify daily maintenance log entries: flow rate, pump hours, chlorine residual, fluoride residual, pressure
 Are the required spare parts and tool kits maintained on site? Y* (Y/N) * *on base*
 Chemical addition onsite? Y (Y/N) Chlorine disinfection, fluoride addition
 MSDS available onsite? Y (Y/N)
 Are inappropriate chemicals stored onsite? N (Y/N)
 If so, identify: _____

Does emergency power exist? Y (Y/N) Exercised regularly? Y (Y/N)
 Is it well protected from vandalism or the elements? Y (Y/N)

Pump Site Fenced? Y (Y/N)
 Gates Padlocked? Y (Y/N)
 Entrance Sign? Y (Y/N)

Remarks:

The Waiawa Shaft facility is in good condition. Physical plant is essentially unchanged over the decades. Primary source of water for the Pearl Harbor water system. Manned 24 hours/day.

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM PUMPS, PUMP FACILITIES & CONTROLS

Source: Red Hill Shaft
 Location: Halawa, Oahu, Hawaii
 USGS # 3-2254-01 (as applicable)
 Source type: Well GWUDI Tunnel Ditch Spring Shaft
 Infrastructure immediately downstream: Halawa Industrial area

Pump Summary:

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1	400	210	s	6,500	186	
2	400	210	s	6,500	186	209 ft. TDH with 2 pumps running
3	400	210	s	6,500	186	
4	400	210	s	6,500	186	

* Pump types can be described as submersible vertical turbine (s) or line shaft vertical turbine (ls)
 ** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Do well and pump construction and materials appear to meet:
 AWWA Standards? Unknown (Y / N / Unknown) Old construction - drilled 1943
 County Standards? Unknown (Y / N / Unknown)
 NSF 61? Unknown (Y / N / Unknown)
 State Well Construction & Pump Installation Standards? Unknown (Y / N / Unknown)

Is the pump "water-lubed"? Y (Y/N)
 If not, is food grade grease or NSF 61-approved lubricating oil used to lubricate the pump?
 Specify lubricant: _____
 Condition of oil lube equipment: _____

Is the pump site in a 100-yr flood plain? N (Y / N / Unknown)
 If "yes", does well casing extend a minimum of 2-feet above flood level? _____ (Y/N)
 Is the pump site protected from runoff? Y (Y/N)
 Well casing extends minimum 12 inches above well or floor slab? Y (Y/N)
 Well slab/floor material and condition: Concrete, good condition

Watertight seal for:
 Pump base plate/discharge head openings? Y (Y/N)
 Airline tubing for water level measurements? _____ (Y/N)
 Pump column vent hole/tubing? Y (Y/N)

**SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM
PUMPS, PUMP FACILITIES & CONTROLS**

Source: Halawa Shaft
 Location: Halawa, Oahu, Hawaii
 USGS # 3-2252-32 (as applicable)
 Source type: Well GWUDI Tunnel Ditch Spring Shaft
 Infrastructure immediately downstream: Camp Smith service area

Pump Summary:

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1	200	99	s	3,500	196	
2	200	99	s	3,200	196	
3	200	99	s	3,200	196	

* Pump types can be described as submersible vertical turbine (s) or line shaft vertical turbine (ls)

** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Do well and pump construction and materials appear to meet:

AWWA Standards? Unknown (Y / N / Unknown) Old construction - drilled 1943
 County Standards? Unknown (Y / N / Unknown)
 NSF 61? Unknown (Y / N / Unknown)
 State Well Construction & Pump Installation Standards? Unknown (Y / N / Unknown)

Is the pump "water-lubed"? Y (Y/N)

If not, is food grade grease or NSF 61-approved lubricating oil used to lubricate the pump?

Specify lubricant: _____

Condition of oil lube equipment: _____

Is the pump site in a 100-yr flood plain? N (Y / N / Unknown)

If "yes", does well casing extend a minimum of 2-feet above flood level? _____ (Y/N)

Is the pump site protected from runoff? Y (Y/N)

Well casing extends minimum 12 inches above well or floor slab? Y (Y/N)

Well slab/floor material and condition: Concrete, good condition

Watertight seal for:

Pump base plate/discharge head openings? Y (Y/N)

Airline tubing for water level measurements? _____ (Y/N)

Pump column vent hole/tubing? Y (Y/N)

Pump-to-waste vent elevated? NA (Y/N/NA)
 Is it screened? _____ (Y/N) All other ARVs screened? Y (Y/N/NA)
 Direction of vent? Down (up / down / sideways)
 Condition of pump-to-waste piping flapper valve? _____
 Do valve or flow tube vault walls extend above finish grade? NA (Y / N / NA)

Note any cross connections (submerged outlets, standing water, hose bibb connections):

1. None
2. _____
3. _____

Safety cages for equipment? Y (Y/N)
 Identify daily maintenance log entries: flow rate, pump hours, chlorine residual, fluoride residual, pressure
 Are the required spare parts and tool kits maintained on site? Y* (Y/N) * on base
 Chemical addition onsite? Y (Y/N) Chlorine disinfection, fluoride addition
 MSDS available onsite? Y (Y/N)
 Are inappropriate chemicals stored onsite? N (Y/N)
 If so, identify: _____

Does emergency power exist? Y (Y/N) Exercised regularly? Y (Y/N)
 Is it well protected from vandalism or the elements? Y (Y/N)

Pump Site Fenced? Y (Y/N)
 Gates Padlocked? Y (Y/N)
 Entrance Sign? Y (Y/N)

Remarks:

Physical plant is essentially unchanged over the decades. The well pumps are run only to exercise pumps and prevent stagnation.

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.

Booster Pump Stations

Manana Booster Station:

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1	15	NA	c	225	118	
2	15	NA	c	225	118	
Fire	86 - 112	NA	c	1,500	118	diesel pump

* Pump types can be described as centrifugal (c) or line shaft vertical turbine (ls)

** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Is the pump "water-lubed"? Y (Y/N)

Is the pump site protected from runoff? Y (Y/N)

Well casing extends minimum 12 inches above well or floor slab? NA (Y/N)

Well slab/floor material and condition: Concrete, good condition

Chemical addition onsite? N (Y/N)

Are inappropriate chemicals stored onsite? N (Y/N)

Does emergency power exist? Y (Y/N)

diesel pump Exercised regularly? Y (Y/N)

Is it well protected from vandalism or the elements? Y (Y/N)

Pump Site Fenced? Y (Y/N)

Diesel fuel tank outside of bldg in concrete walled containment basin

Gates Padlocked? Y (Y/N)

Entrance Sign? Y (Y/N)

Red Hill Booster Station:

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1			c	500	600	Located at Red Hill Shaft Water Plant
2			c	500	600	Located at Red Hill Shaft Water Plant

* Pump types can be described as centrifugal (c) or line shaft vertical turbine (ls)

** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Is the pump "water-lubed"? Y (Y/N)

Is the pump site protected from runoff? Y (Y/N)

Well casing extends minimum 12 inches above well or floor slab? NA (Y/N)

Well slab/floor material and condition: Concrete, good condition

Chemical addition onsite? Y (Y/N) chlorine disinfection, flouride addition

Are inappropriate chemicals stored onsite? N (Y/N)

Does emergency power exist? Y (Y/N)

Exercised regularly? Y (Y/N)

Is it well protected from vandalism or the elements? Y (Y/N)

Pump Site Fenced? Y (Y/N)

Gates Padlocked? Y (Y/N)

Entrance Sign? Y (Y/N)

Camp Smith Bldg. 680 Booster Pump for BWS connection at Halawa Heights Road

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1			c	480	380	For emergency BWS connection

* Pump types can be described as centrifugal (c) or line shaft vertical turbine (ls)

** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Is the pump "water-lubed"? Y (Y/N)

Is the pump site protected from runoff? Y (Y/N)

Well casing extends minimum 12 inches above well or floor slab? NA (Y/N)

Well slab/floor material and condition: Concrete, good condition

Chemical addition onsite? *Yes (Y/N) *For emergency as required.

Are inappropriate chemicals stored onsite? N (Y/N)

Does emergency power exist? Y (Y/N) Exercised regularly? Y (Y/N)

Is it well protected from vandalism or the elements? Y (Y/N)

Pump Site Fenced? Y (Y/N)

Gates Padlocked? Y (Y/N)

Entrance Sign? Y (Y/N)

Moanalua Terrace Booster Station:

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1			c	130	119	
2			c	130	119	

* Pump types can be described as centrifugal (c) or line shaft vertical turbine (ls)

** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Is the pump "water-lubed"? Y (Y/N)

Is the pump site protected from runoff? Y (Y/N)

Well casing extends minimum 12 inches above well or floor slab? NA (Y/N)

Well slab/floor material and condition: Concrete, good condition

Chemical addition onsite? N (Y/N)

Are inappropriate chemicals stored onsite? N (Y/N)

Does emergency power exist? N (Y/N) Exercised regularly? N (Y/N)

Is it well protected from vandalism or the elements? Y (Y/N)

Pump Site Fenced? N (Y/N) In locked CMU building in military housing area

Gates Padlocked? NA (Y/N)

Entrance Sign? Y (Y/N)

Camp Smith Booster Station at Halawa Shaft:

Pump No.	HP	Depth (ft)	Type *	Q (gpm)	TDH (ft)	Remarks**
1	150		c	500	785	
2	150		c	500	785	

* Pump types can be described as centrifugal (c) or line shaft vertical turbine (ls)

** Identify lead/lag/standby or out of service pumps, motor brand, excessive bearing leakage, motor noise, etc.

Is the pump "water-lubed"? Y (Y/N)

Is the pump site protected from runoff? Y (Y/N)

Well casing extends minimum 12 inches above well or floor slab? NA (Y/N)

Well slab/floor material and condition: Concrete, good condition

Chemical addition onsite? Y (Y/N) Chlorine disinfection

Are inappropriate chemicals stored onsite? N (Y/N)

Does emergency power exist? N (Y/N) Exercised regularly? N (Y/N)

Is it well protected from vandalism or the elements? Y (Y/N)

Pump Site Fenced? Y (Y/N) Located next to Halawa Shaft building

Gates Padlocked? Y (Y/N)

Entrance Sign? Y (Y/N)

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM DISINFECTION

Source Name: Waiawa Shaft & Red Hill Shaft
 Location: Waiawa & Red Hill, Oahu, Hawaii

Disinfection Method:
 Gas Cl₂ Sodium Hypochlorite Calcium Hypochlorite
 Chloramination UV Other

Labeled chemical manufacturer's information: ClorTec on-site sodium hypochlorite
generation systems. Two units in operation with one unit as backup.

Do chemicals meet NSF 60? Y (Y/N) Sure Soft NSF 60 certified salt crystals

Equipment in an enclosed structure? Y (Y/N)
 Materials of Construction: CMU buildings
 Chlorinators in a separate room? Y (Y/N)
 Warning signs on doors? Y (Y/N)
 Are light and exhaust fan switches outside of the room? NA (Y / N / NA)
 Are panic bars on an outward swinging door to outside? NA (Y / N / NA)
 Adequate floor ventilation? NA (Y / N / NA)
 Viewing window into room? NA (Y / N / NA)

Feed equipment type? Injector Pumps, Baldor pumps used at Red Hill
 Target Residual (ppm) ? 0.6 to 0.7 ppm
 How are feed adjustments made? water quality
 Automatic switch over equipment _____
 Number of backup units 1-2 at each site
 # of days of chemical are stored? 3-6 months
 Cylinders labeled and chained? NA (Y / N / NA)
 Protective cap on stored cylinders? NA (Y / N / NA)
 Working scale? (type / manufacturer) NA
 Chlorine leak detectors/kits in room? NA
 Leak detection/low residual alarms? SCADA monitors and alerts operators
 Positive pressure SCBA availability and training? NA (Y / N / NA)
 Chemical handling clothes, safety equipment & tools? NA (Y / N / NA)
 Critical spare parts and cylinder repair kit on hand? Y (Y/N)

For chloramination, when is ammonia combined with chlorine? _____

For UV applications: X NA

Obtain equipment specifications: _____

Describe operation of unit(s): _____

Redundancy or contingency plans: _____

Routine maintenance: _____

Spare parts inventory: _____

Secondary disinfection residual operations: _____

Disinfectant feed point locations: Waiawa: 42" main Red Hill: 30" main

Daily log entries (feed rate, dilution ratios, dosage, residual monitoring, CT calculations, DBP formation)

feed rate, dosage, residual, run hours, salt level (amt) _____

Preventative maintenance program Y (Y/N)

Auxiliary power onsite? Y (Y/N)

Emergency response plan procedures onsite? Y (Y/N)

Fire and police department coordination? Y (Y/N)

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM DISINFECTION

Source Name: Halawa Shaft
 Location: Halawa, Oahu, Hawaii

Disinfection Method:
 Gas Cl₂ Sodium Hypochlorite Calcium Hypochlorite
 Chloramination UV Other

Labeled chemical manufacturer's information: Uniclor on-site sodium hypochlorite generation system.

Do chemicals meet NSF 60? Y (Y/N) Sure Soft NSF 60 certified salt crystals

Equipment in an enclosed structure? Y (Y/N)

Materials of Construction: CMU building

Chlorinators in a separate room? Y (Y/N)

Warning signs on doors? Y (Y/N)

Are light and exhaust fan switches outside of the room? NA (Y / N / NA)

Are panic bars on an outward swinging door to outside? NA (Y / N / NA)

Adequate floor ventilation? NA (Y / N / NA)

Viewing window into room? NA (Y / N / NA)

Feed equipment type? Chemical metering pumps that mixes brine and fresh water

Target Residual (ppm) ? 0.7 ppm (Severn Trent Capital Controls 1770 chlorine analyzer)

How are feed adjustments made? SCADA adjusted variable speed pump, manually pump stroke

Automatic switch over equipment Dual pump setup

Number of backup units Dual pump setup

of days of chemical are stored? 3-6 months

Cylinders labeled and chained? NA (Y / N / NA)

Protective cap on stored cylinders? NA (Y / N / NA)

Working scale? (type / manufacturer) NA

Chlorine leak detectors/kits in room? NA

Leak detection/low residual alarms? Low residual triggers SCADA alerts

Positive pressure SCBA availability and training? NA (Y / N / NA)

Chemical handling clothes, safety equipment & tools? NA (Y / N / NA)

Critical spare parts and cylinder repair kit on hand? NA (Y/N)

For chloramination, when is ammonia combined with chlorine? _____

For UV applications: X NA

Obtain equipment specifications: _____

Describe operation of unit(s): _____

Redundancy or contingency plans: _____

Routine maintenance: _____

Spare parts inventory: _____

Secondary disinfection residual operations: _____

Disinfectant feed point locations: Well discharge

Daily log entries (feed rate, dilution ratios, dosage, residual monitoring, CT calculations, DBP formation)

Preventative maintenance program Y (Y/N)

Auxiliary power onsite? Y (Y/N)

Emergency response plan procedures onsite? Y (Y/N)

Fire and police department coordination? Y (Y/N)

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.

SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM FINISHED WATER STORAGE

Location: Camp Smith, Halawa & Red Hill, Oahu, Hawaii
 Owner: U.S. Department of Navy

<u>Tank Name/No.</u>	<u>Spillway Elev.(ft)</u>	<u>Capacity (MG)</u>	<u>Material</u>
1) Halawa S-1 (makai tank)	178.5	6.0 MG	Welded Steel
2) Halawa S-2 (mauka tank)	178.5	6.0 MG	Welded Steel
3) S-325 (Camp Smith)	850	0.2 MG	Concrete
4) S-326 (Camp Smith)	850	0.2 MG	Concrete
5) S-327 (Camp Smith)	850	0.25 MG	Glass-lined Steel Bolted
6) Red Hill	598	0.25 MG	Glass-lined Steel Bolted
7)			
8)			
9)			

1) Halawa S-1 (makai tank)	
Site fenced? <u>Y</u> (Y/N)	Gates padlocked? <u>Y</u> (Y/N)
Warning Signs? <u>Y</u> (Y/N)	Exposure <u>No vandalism noted & no history of vandalism.</u> <u>Located on a secure military base.</u>
Surrounding landscaping <u>Grass field with moderate slope.</u>	
Cross connection potential w/ onsite irrigation system? <u>N</u> (Y/N)	
Site drainage <u>OK</u>	
Tank exterior	<u>OK but moderately rusty with numerous areas with significant rust on exterior of tank walls, roof and in stairway. Recommend removing rust and repainting as soon as possible. Tank is reportedly outfitted with cathodic protection. Cathodic protection should be investigated for proper functioning.</u>
Access ladder	<u>OK. Steel stairway has moderate amount of rust.</u>
Vent screens	<u>OK. Central hooded roof vent with screen.</u>
Access MH(s)	<u>Poor condition - severe rust. All four corners of frame have rusted completely through with open holes. There is a contract to replace the hatch that is expected to begin end of August 2014 and take 4 months to complete. Recommend temporary repair until contract work can be done.</u>
Level indicator	<u>OK</u>
Overflow line	<u>Outlet is screened and located in a in concrete box (covered with rusty steel plates). Verified that screen was installed per sanitary survey in 2009.</u>
Washout (blowoff) line	
Control valve vaults	
System pressure range	<u>40 to 80 psi</u>
O&M program	<u>Yes</u>
Isolated through valving?	<u>Yes</u>
Disinfection Onsite?	<u>N (Y/N) (if yes, fill out "disinfection.xls" form)</u>

Comments.
 2009 sanitary survey: "There are some areas of light rusting on the roof, sidewalls, and around the roof access manhole hatch. Recommend keeping a close eye on these rust areas and repair, resurface, and repaint as required."
 This condition is still true. Tank exterior should be cleaned and painted.
 Screen has been installed per Navy letter dated 1/29/2010

2) Halawa S-2 (mauka tank)

Site fenced? Y (Y/N) Gates padlocked? Y (Y/N)
 Warning Signs? Y (Y/N) Exposure No vandalism noted & no history of vandalism.
Located on a secure military base.

Surrounding landscaping Grass field with moderate slope.

Cross connection potential w/ onsite irrigation system? N (Y/N)

Site drainage OK

Tank exterior OK. Good condition.

Access ladder OK. Steel stairway good condition.

Vent screens OK. Four hooded roof vents are screened.

Access MH(s) OK (with gasket). No significant rust noted.

Level indicator Water level cable tube is open and needs to be plugged

Overflow line Verified that discharge outlet has been covered with a square screen since sanitary survey in 2009..

Washout (blowoff) line _____

Control valve vaults _____

System pressure range 40 to 80 psi

O&M program Yes

Isolated through valving? Yes

Disinfection Onsite? N (Y/N) (if yes, fill out "disinfection.xls" form)

Comments:

Verified that overflow outlet was covered with a square screen.

3) S-325 (Camp Smith)

Site fenced? Y (Y/N) Gates padlocked? Y (Y/N)
 Warning Signs? Y (Y/N) Exposure No vandalism noted & no history of vandalism.
Located on a secure military base.

Surrounding landscaping Asphalt access roadway, forested, cutslope has been regarded and planted

Cross connection potential w/ onsite irrigation system? N (Y/N)

Site drainage OK

Tank exterior OK. Concrete

Access ladder OK. Ladder ends at tank mid height. Step ladder propped against tank for access to ladder.
OK. 4 vents covered with circular hoods with vertical slotted openings. T-shaped PVC pipe with screened openings in rooftop enclosure. Window openings in enclosure are screened.

Vent screens _____

Access MH(s) OK.

Level indicator OK

Overflow line OK. Downturned in concrete drainage channel. End appears screened - difficult to access.

Washout (blowoff) line _____

Control valve vaults _____

System pressure range 40 to 80 psi

O&M program Yes

Isolated through valving? Yes

Disinfection Onsite? N (Y/N) (if yes, fill out "disinfection.xls" form)

Comments:

4) S-326 (Camp Smith)

Site fenced? Y (Y/N) Gates padlocked? Y (Y/N)
 Warning Signs? Y (Y/N) Exposure No vandalism noted & no history of vandalism.
Located on a secure military base.

Surrounding landscaping Asphalt access roadway, forested, cutslope has been regarded and planted
 Cross connection potential w/ onsite irrigation system? N (Y/N)
 Site drainage OK
 Tank exterior OK. Concrete
 Access ladder OK. Ladder ends at tank mid height. Step ladder propped against tank for access to ladder.
OK. No roof vents. T-shaped PVC pipe with screened openings in rooftop enclosure.
 Vent screens Window openings in enclosure are screened.
 Access MH(s) OK 4 round manholes with gaskets on roof.
 Level indicator **Water level cable tube is open and needs to be plugged**
 Overflow line OK with flapper valve
 Washout (blowoff) line _____
 Control valve vaults _____
 System pressure range 40 to 80 psi
 O&M program Yes
 Isolated through valving? Yes
 Disinfection Onsite? N (Y/N) (if yes, fill out "disinfection.xls" form)

Comments:

5) S-327 (Camp Smith)

Site fenced? Y (Y/N) Gates padlocked? Y (Y/N)
 Warning Signs? Y (Y/N) Exposure Forested area in Camp Smith high security area.

Surrounding landscaping Asphalt access roadway, forested.
 Cross connection potential w/ onsite irrigation system? N (Y/N)
 Site drainage OK. Asphalt apron.
 Tank exterior OK. Good condition. Glass lined, bolted steel.
 Access ladder OK. Safety cage and padlocked security cover.
OK. Hooded roof vent has screen. **Secure down bottom edge of screen to close off opening at bottom edge of screen.**
 Vent screens OK. Gasketed. Hatch is padlocked.
 Access MH(s) OK
 Level indicator OK. Flappered overflow in grated catch basin at entrance to site.
 Overflow line _____
 Washout (blowoff) line _____
 Control valve vaults _____
 System pressure range 40 to 80 psi
 O&M program Yes
 Isolated through valving? Yes

Disinfection Onsite? N (Y/N) (if yes, fill out "disinfection.xls" form)

Comments:

6) Red Hill

Site fenced? Y (Y/N)

Gates padlocked? Y (Y/N)

Warning Signs? Y (Y/N)

Exposure _____

Located on a secure military base.

Surrounding landscaping Asphalt access road, forested

Cross connection potential w/ onsite irrigation system? N (Y/N)

Site drainage OK. Asphalt apron. Site is on a ridgeline.

Tank exterior OK. Steel bolted.

Access ladder OK. Steel stairway.

Vent screens OK. Hooded, screened roof vent.

Access MH(s) OK with gasket.

Level indicator OK. Partially dismantled. **Recommend fully removing apparatus and plugging openings.**

Overflow line OK Discharge at steep dropoff is flappered.

Washout (blowoff) line _____

Control valve vaults _____

System pressure range 40 to 80 psi

O&M program Yes

Isolated through valving? Yes

Disinfection Onsite? N (Y/N) (if yes, fill out "disinfection.xls" form)

Comments:

**SAFE DRINKING WATER BRANCH SANITARY SURVEY FORM
DISTRIBUTION & TRANSMISSION**

Owner: NAVFAC Hawaii
Contact: Kyle Teraoka
Phone: (808) 473-3817
Fax: (808) 473-1545
E-mail: kyle.teraoka@navy.mil

System Reference Standards: _____

Pipe materials: 6" to 42": cast iron, ductile iron, concrete or AC. 4" & smaller: copper, PVC or galv. iron
System pressure range: 40 to 80 psi
Emergency interconnections w/ other systems? Y (Y/N)
Method of isolation and security measures: Isolation valves

Installation/repair program procedures: Disinfect pipes when replacing or repairing

Flushing program & schedule: As required.

Cross connection control program: Yes. Backflow prevention devices are tested once a year at a minimum.

Corrosion control program: Not required at this time.

Leak detection control program: Unknown

Regulatory Compliance Status?

Disinfection byproducts monitoring (attach appropriate data) Y (Y/N)
Total Coliform Rule monitoring (attach appropriate data) Y (Y/N)
Lead and Copper Rule monitoring (attach appropriate data) Y (Y/N)
Surface Water Treatment Rule (SWTR, IESWTR, LT1 ESWTR) _____ (Y/N)
Other: _____

Attach maps, diagrams, sketches and plans to this field form for future reference - stamp "received Safe Drinking Water Branch" with date as applicable.



STATE OF HAWAII
DEPARTMENT OF HEALTH
SAFE DRINKING WATER BRANCH

919 ALA MOANA BLVD., ROOM 308
HONOLULU, HI 96814-4920

In reply, please refer to:
File: SDWB
360H0514

May 16, 2014

Commander, Navy Region Hawaii
Attn: Code N45, June Shimabuku
Regional Environmental Department
850 Ticonderoga St., Suite 110
JBPHH, HI 96860-5101

Dear Ms. Shimabuku:

**SUBJECT: PUBLIC WATER SYSTEM NO. 360, JOINT BASE PEARL HARBOR
HICKAM; CONFIRMATION OF SANITARY SURVEY**

This letter is to confirm the telephone discussion with your staff requesting the sanitary survey of the PWS 360 Joint Base Pearl Harbor Hickam water system. My staff, Mr. Craig Watanabe, will meet your staff at Building X-11 at the NAVFAC Compound on June 18 and 19, 2014, at 7:30 a.m. We understand that the survey should take approximately two days to complete.

The sanitary surveys are conducted to evaluate the adequacy of the source, facilities, equipment, operation, and maintenance of a water system. The survey is an essential part of the rules administered by the Safe Drinking Water Branch (SDWB). The survey is beneficial to both the Department of Health and the purveyor because it allows the staff to become familiar with your water system and provides your staff with information on how to maintain and operate your system. If violations or problems should occur, this knowledge facilitates analysis of the situation.

In order to conduct the survey, we would appreciate your assistance in providing access to the facilities, including storage tank roofs. Please advise us if fall protection equipment (harness, lanyard, rope grab, etc.) is required. We also request that one of your staff members knowledgeable about the water system be present during the survey. Please have the following information available the day of the survey:

1. **SYSTEM FLOW** - Description of the overall system flow (i.e., from source to disinfection to reservoir, etc.), amount of water used by the system, the population served, and a map or schematic of the system flow. We would appreciate having a copy of the water system map or schematic for our files.

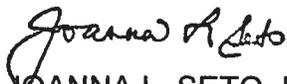
Ms. June Shimabuku
May 16, 2014
Page 2

2. FACILITIES - Information on the facilities and their operation. For example:
 - a. Well source: The pumping capacity and flow rate (GPD) of the pump.
 - b. Reservoirs: The storage capacity.
 - c. Distribution system: The pipe material used and location of the sample points.
3. RECORDS – Daily log of chemical additions, including date, time, dosage (PPM), residual (PPM), flow rate, etc.

If, for any reason, you are unable to accommodate our request for this survey, or if you have any questions regarding the survey, please call Mr. Craig Watanabe of the SDWB Engineering Section at (808) 586-4258.

Thank you for your attention to this matter.

Sincerely,



JOANNA L. SETO, P.E., CHIEF
Safe Drinking Water Branch

CW:mc