

Agenda Item: 5

Date: May 1, 2020

Subject: Groundwater Facility Assessment

Staff Contact: Dan York, SSWD General Manager

Recommended Committee Action:

Review the Del Paso Manor Water District (DPMWD) Groundwater Facility Assessment Findings & Ranking list and recommend taking appropriate action as noted in Attachment 1.

Background:

Following the Sacramento Suburban Water District (SSWD)/DPMWD 2X2 Ad Hoc Committee meeting on March 2, 2020, SSWD staff visited DPMWD well sites and took pictures and documented the Groundwater Facility sanitary conditions. There were universal issues along with some specific well site conditions that were noted.

At the April 6, 2020, SSWD/DPMWD 2X2 Ad Hoc Committee meeting, SSWD staff presented findings of the Groundwater Facility Assessment, which included descriptions of issues observed along with pictures taken on site. DPMWD Director Marissa Burt (Director Burt) requested SSWD's General Manager Dan York (GM York) recommendations on how to prioritize repairing issues outlined in the presentation. She further recommended DPMWD staff create a checklist to present to the DPMWD Board as repairs were made. She suggested SSWD staff review the checklist to approve completed repairs. GM York expressed that he could assist DPMWD staff with preparing the list.

Discussion:

SSWD staff reviewed the Groundwater Facility Assessment Findings. This Groundwater Facility Assessment was performed by SSWD Operations staff as part of scheduled well runs. Thus, it focuses on DPMWD's online sources (Wells 2, 4, 6B, and 9) and does not address issues that may be present at DPMWD's offline facilities (Wells 3, 5, 7, and 8). SSWD staff ranked the hazard level for each finding, provided a description, and recommended solutions. This was consolidated in a spreadsheet (see Attachment 1).

SSWD staff recommends resolving all groundwater facility findings. The hazard level ranking will help prioritize the workload.

Fiscal Impact (DPMWD):

A financial assessment has not been performed to date.

Strategic Plan Alignment:

Goal A: Provide a High Quality Reliable Water Supply by Ensuring it is Sustainable, Clean, and Safe

Goal B: Optimize Operational and Organizational Efficiencies

Attachment:

1 - DPMWD Groundwater Facility Assessment Findings & Ranking

DPMWD Groundwater Facility Assessment Findings & Ranking

Hazard Level Definition

- 1= Imminent safety or public health danger
- 2= Serious potential sanitary, safety, or operational hazard
- 3= Less urgent safety or maintenance issue

Hazard Level	Finding #	Well #	Finding Category	Finding Description	SSWD Recommended Solution(s)	DPMWD Comments
1	GW-20-01	2, 4	Chemical Safety	<u>Non-compliance with emergency eyewash/shower requirements</u> - There are eyewash units installed on the hydropneumatic tanks. These eyewash units do not meet Cal-OSHA requirements because they are not property accessible and they do not have safety showers incorporated. At Well 2, other appurtenances on the hydropneumatic tank could pose a hazard if attempting to use the eyewash unit. At Well 4, the eyewash unit is level with chemical injection less than 12" away. The caps on the eyewash unit are sun-damaged and shrunken, requiring force to remove them.	These facilities should be taken offline and the chemical should be removed. The facilities should remain offline until this issue is resolved. The existing eyewash units need to be replaced with dedicated, accessible emergency eyewash/shower stations that are compliant with Cal-OSHA requirements.	Look into installing eye wash & shower.
1	GW-20-02	2, 4, 6B, 9	Chemical Safety	<u>Lack of secondary containment</u> - There is no double-containment on any of the pressurized tubing that is used to feed sodium hypochlorite. Thus, staff operating the facilities are at high risk for chemical exposure. At Well 9, open containers are used to collect sodium hypochlorite leaks that frequently occur.	The sodium hypochlorite feed systems need to be rebuilt with double-containment tubing installed.	Agreed, looking into it.
1	GW-20-03	6B, 9	Chemical Safety/ Environmental Hazard	<u>Sodium hypochlorite leaks and risk of chemical release</u> - The double-walled tank for sodium hypochlorite has been compromised by installing a drain valve at bottom of the tank, through both walls. Leaks have occurred, shown by build-up on the tank appurtenances. There is a risk of the valve breaking off, which would immediately release the entire contents of the tank. This risk poses a severe environmental hazard. If the chemical release is not contained on site, it could potentially discharge into the creek next to Well 6B or onto the school property next to Well 9.	The existing sodium hypochlorite tank needs to be replaced with an uncompromised, double-walled tank with no drain valve installed.	Agreed, looking into it.
1	GW-20-04	2, 4	Electrical Safety	<u>Arc flash hazard</u> - The 480V panels do not have any arc flash warning labels, indicating that they have not been assessed for arc flash hazard.	A trained electrician with the appropriate arc flash PPE will need to deenergize the facilities. The facilities should remain offline until this issue is resolved. A qualified electrical contractor will need to perform an arc flash hazard assessment, perform corrections/modifications as needed, then post the appropriate warning labels.	Yes, will coordinate with SSWD on performing arch flash hazard assessment
1	GW-20-05	2	Electrical Safety	<u>Improperly secured electrical cables</u> - Electrical cables are strung across the tank and draped in the air presenting hazards.	The unpermitted generator and associated cabling need to be removed from this facility. If not, DPMWD needs to apply for an operating permit.	DPMWD needs to decide which wells will be prioritized for backup power needs and will then work to install a permitted backup powered generator.

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1	GW-20-06	4	Electrical Safety	<u>Exposed utility power line</u> - The power lines on the pole for this facility had damaged insulation, leaving the 480V wires exposed.	SSWD staff requested that DPMWD staff notify SMUD. It has now been corrected.	Repaired
1	GW-20-07	2	Water Quality	<u>Chlorination system not in service</u> - The chlorination system was found isolated at the injection assembly, though the well was online. Well 2 has an unresolved history of raw water total coliform positive samples and DDW required DPMWD to ensure it was continuously chlorinated.	SSWD staff went to restore the chlorination system into service and found the assembly broken in multiple locations. SSWD staff performed immediate repairs and the chlorination system is now back in service. Due to the repeated total coliform positive sample results, a sample should be collected and analyzed as a Most Probable Number (MPN) to evaluate the severity of the total coliform issue. Based on this result, the well may need to be taken out of service until it has been superchlorinated and flushed and it renders total coliform negative sample results.	DPMWD will coordinate with SSWD on appropriate sampling testing.
1	GW-20-08	2, 4	Water Quality	<u>Pump bases in unacceptable condition</u> - The base of the pipe entering the pump base has a seal that is no longer secure or sealed. The pump bases have an extensive amount of debris collected. When the well turns off, contaminants from this area can potentially be drawn into the well. Contaminated rainwater could also enter the well.	Due to the public health risk, these facilities should be taken offline and remain offline until this issue is resolved. The pump bases need to be thoroughly cleaned and sealed so that they are water-tight.	DPMWD has addressed this issue and will coordinate inspections with SSWD
1	GW-20-09	8	Water Quality	<u>Source with water quality issues not physically isolated from system</u> - Motor oil was used instead of dripper oil, causing the well to be placed in off due to water quality concerns. The gate valve on the discharge piping was not locked out to physically prevent water from this well entering the distribution system.	SSWD staff secured the valve with chain and lock to physically isolate the well from the distribution system. The well must remain physically isolated until this water quality issue is resolved.	Addressed
2	GW-20-10	4	Chemical Safety	<u>Leaking sodium hypochlorite injection point</u> - There is a leak on the injection system causing corrosion on the piping below. A rag was present to absorb drips.	The chemical injection point needs to be rebuilt. The hydropneumatic tank may need to be isolated and depressurized to perform the repair.	Parts on order. DPMWD to coordinate with SSWD on proper repairs
2	GW-20-11	6B, 9	Chemical Safety	<u>Sodium hypochlorite leaks</u> - Chemical fittings and pumps have evidence of leaks, shown by build-up. Rags are used to absorb chemical drips.	The sodium hypochlorite feed systems need to be rebuilt to replace any failed parts and install double-containment tubing.	Repairs have been made. DPMWD will coordinate with SSWD on double containment installation process.
2	GW-20-12	6B	Chemical Safety	<u>Improper sodium hypochlorite containment</u> - The chemical pump used to remove the off-gas from the sodium hypochlorite feed system discharges into an open bucket.	The sodium hypochlorite feed system should be reconfigured to prevent off-gassing and remove the need for the de-gas pump and associated bucket.	DPMWD will coordinate with SSWD.
2	GW-20-13	6B	Chemical Safety	<u>Potential for incompatible chemical reaction with sodium hypochlorite</u> - Lubricant spray has been kept on top of sodium hypochlorite dosing pump, and there is evidence of leaks where the tubing connects to the PVC piping. Sodium hypochlorite is known to react violently with organic materials, so it may have an adverse reaction if in contact with this petroleum-based product.	No chemicals should be stored in the sodium hypochlorite room, except for sodium hypochlorite.	Addressed
2	GW-20-14	9	Cross Connection Control	<u>Failed backflow prevention assemblies</u> - Both of the backflow prevention assemblies are leaking from the relief valves, indicating they have failed.	The backflow prevention assemblies need to be repaired and retested by a certified backflow prevention assembly tester.	DPMWD will coordinate repairs with SSWD

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2	GW-20-15	4	Electrical Safety	<u>Exposed 120V wiring</u> - Electrical wires on compressor on top of hydropneumatic tank are unsecured.	Install wiring into a proper NEMA junction box.	DPMWD will coordinate repairs with SSWD
2	GW-20-16	2	General Safety Concern	<u>Overhead hazards</u> - There are cables and barbed wire through the middle of the facility.	The barbed wire running across the interior of the facility needs to be removed. The unpermitted generator and associated cabling need to be removed.	Barbed wire has been removed
2	GW-20-17	2, 6B	Sanitary Concern	<u>Improper vent height</u> - The air release valve vents do not meet the minimum required 36" from ground surface, per American Water Works Association Standard C512-04 and Manual M51 (2001).	The vent piping needs to be replumbed so that it is at least 36" above the ground surface.	Well 2 has been raised. Well 6 is still pending
2	GW-20-18	2, 4	Water Quality	<u>Aged sodium hypochlorite</u> - The 5-gallon carboys of sodium hypochlorite were last filled on December 17, 2019. These facilities have limited runtime and the chemical is over 120 days old. Per the American Water Works Association Manual M20, undesirable by-products are formed as sodium hypochlorite degrades. There are water quality risks associated with by-products (such as chlorate) added to the water supply and the reduced strength of the disinfectant (which could lead to bacteriological vulnerability).	Sodium hypochlorite should be titrated on a regular basis to monitor when the chemical needs to be replaced or rotated. SSWD staff have found the typical life of the chemical is 30 to 90 days, depending on the storage and environmental conditions. If sodium hypochlorite has degraded and can no longer be used, it must be properly disposed of as hazardous waste.	Addressed
2	GW-20-19	4	Water Quality	<u>Sodium hypochlorite injection point is on the hydropneumatic tank</u> - The water in the tank could short circuit and not be adequately disinfected.	The existing chemical injection needs to be removed and plugged. The discharge pipe upstream of the hydropneumatic tank will need to be tapped to install a new chemical injection point. Piping modifications may be necessary to accommodate a new chemical injection point.	Parts on order. DPMWD to coordinate with SSWD on proper repairs
3	GW-20-20	6B	Compliance Concern	<u>Improper sample port</u> - The raw water sample port is barbed. Raw water sample ports shall not be threaded (or barbed), per Title 22, Chapter 16, California Waterworks Standards – Article 3: Water Sources §64560.	The barbed fitting should be replaced with copper tubing.	DPMWD to coordinate with SSWD on proper installation
3	GW-20-21	2, 4, 6B, 9	Cross Connection Control	<u>Improper hose bibb connections</u> - All hose bibbs at the facilities are missing atmospheric vacuum breakers. Some of the hose bibbs have caps which can be easily removed. Installing atmospheric vacuum breakers on hose connections is a best practice for potable water districts concerned with preventing backflow and back-siphoning conditions. DDW will typically require this if identified during an inspection.	Atmospheric vacuum breakers will need to be installed on all hose bibb connections.	Addressed
3	GW-20-22	2, 4, 9	Documentation	<u>Poor recordkeeping/documentation</u> - Well 6B has a paper log on-site but the other online facilities do not. At Wells 2 and 4, flow meter readings are written by hand on the side of the hydropneumatic tanks.	SSWD set up and has been maintaining a binder with well run logs on paper for all four online wells. However, the ultimate solution is to record the data electronically into a system designed for future reference and reporting, similar to SSWD's Production Data Capture system.	Data is recorded by SCADA system. Initiating new documentation procedures
3	GW-20-23	2, 4	Electrical Safety	<u>Improperly secured conduit fittings</u> - Electrical conduit fittings are held together using tape.	Trained staff or an electrician need to make the appropriate repairs so the tape can be removed.	DPMWD will coordinate with SSWD
3	GW-20-24	9	General Safety Concern	<u>Overhead hazards at eye level</u> - Unistrut installed on the wall near the sodium hypochlorite tank poses a risk for injury.	The Unistrut should be relocated to prevent potential injury.	Unistrut has been removed

Hazard Level	Finding #	Well #	Finding Category	Finding Description	SSWD Recommended Solution(s)	DPMWD Comments
3	GW-20-25	2	General Safety Concern	<u>Restricted path of travel with overhead hazard</u> - There is a cable hanging down that interferes with an individual's path of travel to the wellhead. There is no room to travel on the other side of the tank.	The unpermitted generator and associated cabling needs to be removed.	Addressed above
3	GW-20-26	2	General Safety Concern	<u>Air compressor on hydropneumatic tank is operated manually</u> - A ladder is left continually on site so DPMWD staff can turn the air compressor on and off manually during the business day.	The air compressor should be replaced with a unit that operates automatically based on the water level.	Part is on order. DPMWD will coordinate installation with SSWD
3	GW-20-27	2	Operational Concern	<u>Improper air buffer in hydropneumatic tank</u> - The hydropneumatic tank is 90% full of water, so there is insufficient air buffer. The sight tube is warping from UV damage. The air charge in the tank is used to absorb system shock and reduce water hammer.	The air compressor needs to be repaired or replaced to ensure proper air buffer. The sight tube needs to be replaced.	See above
3	GW-20-28	2, 4, 6B, 9	Preventive Maintenance	<u>Lack of preventive maintenance</u> - The motor oil is discolored, indicating it is overdue to be changed. The motor screens need to be cleaned to allow for proper air flow. Preventive maintenance is critical in maximizing the life of the equipment and reducing failures.	Staff or a pump contractor will need to perform preventive maintenance tasks at each facility, including changing the oil, cleaning, and lubricating the motor.	Staff will develop a preventative maintenance plan. Ken to coordinate with SSWD
3	GW-20-29	9	Sanitary Concern	<u>Stagnant water collected</u> - The eyewash station bowl was assembled incorrectly. The rubber gasket was installed above (instead of below) the bowl and it currently dams up the water from draining, causing biological growth in the bowl.	The eyewash station gasket needs to be reinstalled properly and the bowl needs to be thoroughly cleaned.	Addressed
3	GW-20-30	2, 4, 6B, 9	Signage	<u>Lack of facility signage</u> - There are no signs on the fencing that would allow for facility identification or emergency contact information.	Signs should be posted on the gates at each facility. The text should include the DPMWD's name, facility identification number, a "No Trespassing" notice, and a 24-hour phone number to contact in the event of an emergency.	DPMWD to discuss with SSWD
3	GW-20-31	4	Signage	<u>Lack of chemical identification</u> - On the sodium hypochlorite storage container that holds the 5-gallon carboy, there is an excessively weathered "corrosive" hazard decal, with no chemical identifier label.	Replace the existing decal with a new label that contains the chemical identifier and meets Globally Harmonized System requirements.	Labels are on order and will be replaced

Issues resolved as of April 24, 2020.

Note: This Groundwater Facility Assessment was performed by SSWD Operations staff as part of scheduled well runs. Thus, it focuses on DPMWD's online sources (Wells 2, 4, 6B, and 9) and does not address issues that may be present at DPMWD's offline facilities (Wells 3, 5, 7, and 8).