***Colchester ~ East Hampton***

 Water Pollution Control Facilities

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 Joint Facilities Pump Station Checks

Standard Operating Procedure

Prospect Hill Pump Station

* 31 Prospect Hill Road, Colchester CT

Effective date: xxxxxxxxxx

**RATIONALE / PURPOSE**

* Lift stations should be inspected at least weekly. (Based on system design and capacity, more frequent inspections may be required).
* Records of these inspections must be maintained through the use of written notes, logs, notebooks, and /or computer format.
* These are to be referenced by management, operations, and maintenance crews, to ensure established procedures are being followed to ensure the maximum lifespan of all facilities and equipment.
* Documentation may also be required by outside regulatory agencies and insurance companies in the event of a spill, equipment failure, or property loss.

**INSPECTIONS**

* DAILY Monday – Friday
* Pickup any trash on the property.
* Shovel snow within the gate and spread ice melt if needed.
* Visually inspect the wet well covers, locks, Mission system alarm antenna, Eversource meter, and vents for damage or vandalism.
* Report any potential safety conditions observed to the Superintendent and Colchester Utilities Administrator.
* Record flow totalizer.
* Record pump hours.
* Record pump #1 and #2 GPM @ 60 Hz.
* Record generator hours.
* Calculate total gallons pumped.
* Ensure generator block heater and trickle charger are functioning properly.
* Confirm that the comminutor panel is on and shows the equipment running.
* Inspect wet well lighting.
* Inspect wet well blower.
* Inspect wet well Muffin Monster.

* WEEKLY
* Empty all garbage.
* Sweep and clean all floors.
* Clean bathroom.
* Clean/dust off all electrical cabinets and inspect VFD filters.
* Exercise station flooding float.
* Check operation of sump pumps.
* Inspect floats for proper operation and clean each float so it is free of debris, rags, and grease.
* Lift the high/low level floats up and check alarms for proper operation.
* Inspect well system particulate filter.
* Turn on generator battery charger for 3 hours.
* Report to Superintendent as to the general condition of the pump station building including siding, roofing, chimney, pavement, oil filler, oil vent, garage door, entry doors, gates, and lighting.
* QUARTERLY – Jan, Apr, Jul, Oct
* Change well water system particulate filter.
* Inspect generator battery water level.
* Operate main generator under load to ensure proper operation of generator and lift station under emergency power supply. Run test for a minimum of 15 minutes. Check fuel levels, battery and general condition of generator.
* Inspection of pumps (dry well) should be performed quarterly. Inspection of the impeller should be performed semi-annually or when the flow (GPM reading on the flow meter receiver) is under 1500 gallons per minute. The flow reading would ensure that the impeller is free of debris and fully pumping.
* Grease pumps.
* Test alarms.
* Exercise the force main valves between the driveway and Route 2.

**METHODS / PROCEDURES: DAILY CHECKLIST**

* For daily inspections unlock the gate and building entry door and turn both interior lights on, including dry well lights and wet well lights.
* Ensure that the heater (winter 55 degrees) is on and functioning properly.
* Ensure that the air conditioners (summer 75 degrees) are on and functioning properly.
* Confirm that the comminutor panel is on and shows the equipment is running.
* Select view total on the blue flow meter adjacent to the control screen and record the flow meter totalizer on the pump station checklist and send a picture of the reading to the Superintendent and Colchester Utilities Administrator.
* Record on the pump station checklist pump #1 and pump #2 hours located on the front of the drive cabinets.
* Observe full load amp reading above the hour meter on each pump. Pumps should be inspected when flow readings are under 1500 GPM.
* Observe each main pump running (1500-1600 GPM is normal @ 60 Hz) and record reading on the checklist.
* Behind the dry well elevator on the wall use the flat computer touch screen to confirm that the pumps are on in “Auto” position and take note of any alarms.
* Verify both pumps are operating in “Alternate” on the touchscreen.
* Enter the generator room. Visually and physically inspect the battery charger voltage and block temperature. The generator block should be warm to the touch.
* Check generator components for leaks.
* Record Generator hours on the checklist.
* Note generator day tank fuel level and record it on the checklist.
* Enter the garage bay and ensure the heater is working (during winter) and the water line is not leaking.
* Record the fuel tank levels on the checklist.
* Return to the control room and look down into the dry well tube, listen for any unusual pump noises and look for water on the floor.
* Continue to the outside of the building and open the wet well hatch.
* Turn on blower to evacuate old air for 3-5 minutes.
* Start Confined Space Protocol (Appendix A).
* Descend carefully down the wet well stairs to the first platform and confirm that the blower, housing, duct work and lights are in good working order and functioning properly.
* Continue descending to the bottom level of the wet well and confirm that all the lights are on.
* Listen to the muffin monster (grinder) for any unusual noise.
* Inspect wet well, sluice gates, muffin monster, and coatings for any damage.
* inspect for excessive grease and debris build up. Wet well walls and components should be cleaned, including grating and stair steps.
* Finish Confined Space Protocol (Appendix A).
* Note anything unusual and record it on the lift station checklist, write it in log book, and notify the Superintendent and Colchester Utilities Administrator by text or email.
* Before leaving the pump station ensure that all lights are turned off, and the doors and gate are locked.

**METHODS / PROCEDURES: WEEKLY CHECKLIST**

* For weekly inspections unlock the gate and building entry door and turn both interior lights on, including dry well lights and wet well lights.
* Turn on the dry well blower and evacuate old air for 3-5 minutes.
* Start Confined Space Protocol (Appendix A).
* Remove the safety chain, step onto the elevator, return the safety chain and descend carefully down the elevator using the up/down lever.
* Listen for unusual noises and wear while on the elevator.
* While at the bottom confirm that the blower, housing, duct work and lights are in good working order and functioning properly.
* Inspect pumps and piping for leaks and listen for unusual sounds.
* Behind each pump ensure that the sump pumps are working by lifting up their attached float.
* Lift the station flooding alarm and verify that the operator on call received the alarm.
* Ascend the elevator to the surface, make sure the safety chain is in place, turn off the blower and lights.
* Finish Confined Space Protocol (Appendix A).
* Continue to the outside of the building and open the wet well hatch.
* Start Confined Space Protocol (Appendix A).
* Descend carefully down the wet well stairs to the bottom platform.
* Pull up floats to inspect and remove rags/grease.
* Wash down the wet well floor and grating with the hose.
* Finish Confined Space Protocol (Appendix A).
* Return to the inside of the building and enter the garage.
* Use the broom and dustpan to clean the floors.
* After the floors have been swept fill the mop bucket with water and simple green and mop the floors.
* Empty the mop water into the garage drain.
* Use the germicidal cleaner located in the store room to clean the sink and toilet.
* Refresh the paper goods and soap in the bathroom.
* Empty both trash cans and replace them with fresh garbage bags.
* Secure the trash bags in the bed of the pickup truck so they don’t blow out on the way back to the plant.
* Note anything unusual and record it on the lift station checklist, write it in log book, and notify the Superintendent and Colchester Utilities Administrator by text or email.
* Before leaving the pump station ensure that all lights are turned off, and the doors and gate are locked.

**METHODS / PROCEDURES: QUARTERLY INSPECTION**

* For quarterly inspections unlock the gate and building entry door and turn both interior lights on, including dry well lights and wet well lights.
* In the MCC room open the closet door and turn off the valves on both sides of the water particulate filter. Use the supplied wrench to remove the filter canister. Remove the old filter and install a new filter. Reinstall the canister with the new filter and open both valves.
* Enter the generator room and inspect the water level in the batteries by unscrewing the caps. Ensure that the water level is at a minimum of 1/2” over the plates and no more than 1/8” below the bottom of the vent walls. The batteries can be filled with distilled water.
* Return to the MCC room and in between pump cycles press the “Test” button on the right breaker cabinet to shutoff main power and operate the generator under load. Ensure proper operation of generator and lift station under emergency power supply. Run test for a minimum of 15 minutes. Check fuel levels, battery and general condition of generator.
* To return the station to street power in between pump cycles push down and lift up the main breaker under “Test” button on breaker cabinet.
* Enter the store room and change the well system particulate filter.
* Turn on the dry well blower and evacuate old air for 3-5 minutes.
* Start Confined Space Protocol (Appendix A).
* Remove the safety chain, step onto the elevator, return the safety chain and descend carefully down the elevator using the up/down lever.
* Lift the vault flooding float and verify that the operator on call received the alarm.
* Grease the pumps.
* Before exercising the valves have the attendant lock out the pumps before exercising them.
* Turn each valve fully clockwise and fully counter-clockwise and make sure to return them to their normal operating position (open).
* Unlock the pumps and return them to auto.
* Ensure that both pumps are valved properly before ascending the elevator.
* Finish Confined Space Protocol (Appendix A).
* Continue to the outside of the building and open the wet well hatch.
* Start Confined Space Protocol (Appendix A).
* Descend carefully down the wet well stairs to the bottom platform.
* Pull up the low level float and high level floats to test the alarms and verify that the operator on call received the alarm.
* Finish Confined Space Protocol (Appendix A).
* In the field between Route 2 and the pump station driveway remove the curb box caps and setup the mechanical valve turner.
* In the MCC room lockout both pump drives.
* Exercise each valve by closing and reopening them the same amount of turns.
* Reinstall the curb box caps.
* In the MCC room unlock both pump drives.
* On the pump control panel make sure both pumps are in auto.
* Watch each pump run through one cycle to ensure everything is operating properly.
* Note anything unusual and record it on the lift station checklist, write it in log book, and notify the Superintendent and Colchester Utilities Administrator by text or email.
* Before leaving the pump station ensure that all lights are turned off, and the doors and gate are locked.

Appendix A

**Start**

* Turn on the Drager X-am 2500 gas meter (Figure: 1) by holding down the green ok on button for three seconds.
* Dräger’s X-am® 2500 accurately detects Ch4, O2, H2S and CO.
* Tie Drager X-am 2500 gas meter to a 50 feet long rope and lower down the stairwell tube to make sure the air at all levels is safe to enter.
* OSHA considers a space to have a **hazardous atmosphere** if it has any of the following conditions:
	+ >10% of Ch4 of flammable gas or vapor.
	+ Hydrogen sulfide level must be maintained below 10 ppm H2S.
	+ Oxygen, levels must be above 19.5% and not exceed 23.5% oxygen.
	+ Carbon monoxide, levels must remain below 35ppm.
* If anyone of these conditions is present down inside of the chamber there will be high pitched audio alarm, visually red flashing light and the Drager X-am 2500 gas meter will be vibrating.
* If an alarm should sound and acceptable levels are exceeded, secure the area and notify supervisor immediately.
* The gas monitoring device shall remain with the entrant while in the confined space during the entire maintenance process when entry is required.

Fill out confined space alternate entry checklist before descending with the Drager X-am 2500 gas meter attached to your belt.

Perform prescribed work.

**Finish**

* Ascend to the surface, turn off the blower, close the hatch and shut off lights. Turnoff the Drager X-am 2500 gas meter by holding down the blue + button along with the green ok on button for three seconds, verify that wet well lid is closed before leaving, and finish up confined space permit.

Figure: 1

