

Alternative Measures of Control for lower screw pump sumps (3) confined space entry Moderate Hazard Atmosphere

City of Penticton AWWTP
July 31, 2018

Alternate Measures Submission Elements:

1. The three confined spaces are open air (no covers, open to atmosphere). Spaces are located at the lower level of 3 Archimedes screw pumps (drawings attached) and each sump is isolated from the upstream channel by a single hand pull gate (engineer's letter attached). Gates are 1050 mm in height and the average height of the Sewage behind the gate in the upstream channel is between 300 mm and 580 mm diurnally or .8 psi, that allows 470mm of free board prior to sewage spilling over into the space. The space is accessed via stairs down to a walkway which sits above the upstream channel, this area is referred to as "screw pump lower level". The confined space in which the work is to be undertaken and is referred to as the "sump" which is then accessed by a ladder over the existing railing.
2. Isolation of the upstream channel using the measures specified in section 9.18 are not practicable as we only have single isolation (hand pull gate), no means to double block and bleed or blind flange a live wastewater treatment plant channel.
3. Jason Jeffery, OH&S, NCSO, MSO, AHERA the City's Safety Coordinator 250-490-2553
jason.jeffrey@penticton.ca administers the Confined Space program for the City of Penticton. Jason Jeffrey and Randy Craig (AWWTP Supervisor) prepared the Alternate Measures and Hazard Identification/Risk Assessment (HIRA).
4. Information need for element #4 – Hazards to be addressed;
 - Potential for material to flow into the space will be isolated by a single hand pull gate. No work will be performed that will contribute to the likelihood of material flowing into the space.
 - The characteristic of the water on the upstream side is typical of municipal raw sanitary sewage. Single isolation gate will be holding back <1 psi of pressure. Typical temperatures

of raw sanitary sewage is 12° C - 20° C. Flows upstream vary between 5 ML/day to 20 ML/day diurnally.

- See attached HIRA.
- Historical air monitoring from June-Aug. 2014 (Last entry into space) shows Clean Respirable Air.
- Work to be performed under this AMC includes both corrective, preventative and predictive maintenance as per the equipment manufacturers Operation and Maintenance Manuals and will not contribute to the likelihood of material flow into it.

5. Alternate Measures;

- The analysis of valves/gates as a control measure should assume that all valves/gates leak. However, there is no expectation that a properly installed and maintained valve/gate will fail catastrophically if no work is being performed on it. It is recognized that systems will often permit some leakage; a means of pumping out the fluid will be undertaken.
- Engineering means of controlling flow, see letter from P. Eng.
- Ventilation, see attached HIRA.
- Atmospheric testing, see attached HIRA.
- Any potential leakage from the upstream channel will be continuously monitored by the standby person, if any leakage enters into the sump the confined space will be evacuated and the issue will be addressed prior to re-entry. A secondary measure will also be in place, the upstream channel level will be continuously monitored with a local audio/visual high level float set to 200 mm of freeboard below the top of the isolation gate (Normal freeboard is 470 - 750 mm), if the water level rises to less than 200 mm freeboard in the upstream channel the alarm will sound and light will flash and the confined space will be evacuated and the issue will be addressed prior to re-entry. See attached drawings.



- The method of communication between a person or system for monitoring material flow and entry workers will be by the continuous stand-by person, stand-by person will have verbal communication with workers in the space and will carry a two way radio and cell phone to communicate with other plant personnel.
- Follow SWP for CSE emergency/rescue procedures

6. Workers will be orientated to this AMC and required to sign off on their orientation.
7. AMC will be supervised by AWWTP Supervisor and regular visits documented.
8. Time period for which the AMC will be needed is 3 years.
9. Gary Marsden and Elias Vikner (JH&S worker reps) reviewed the AMC and provided feedback for this submission.

