



Wastewater Services Operational Shutdown Summary

Branches	Document #	Location of Shutdown	Date of Shutdown
Wastewater Collections, Wastewater Maintenance (E&I)	N/A	Hart LFPS 174 Glenwood Crescent	August 9, 2024 (8:00am – 5:00pm)

Section 1: Purpose

Describe the purpose of the planned shutdown.

Hart Lift and Flood Pumping Station (LFPS) is having maintenance and testing performed on the main service transformer. The intention of the work is to verify the installation for any anomalies which can be corrected as well as to obtain an understanding of the general condition of the main electrical service transformer. Engineered construction documents will be subsequently created to upgrade this facility with the installation of a primary 5 KV main padmount disconnect switch and primary metering. It is anticipated that the high side cable connections will be re-configured during this subsequent work. The maintenance work being performed is to facilitate the next stages of the engineering and upgrade work and to provide an understanding of the condition of the existing service transformer.

The intention of the site work is to de-energize, lock-out, disconnect the main 300 kVA oil filled padmount transformer. Transformer inspection and maintenance will be performed, which include visual inspection, inspection for leaks or abnormalities, check bushing and connections, verify connection torque values, perform turns ratio test, resistance winding test, insulation test, power factor test, Meggar test, obtain an oil sample of the transformer. The oil sample will be sent to a lab for dissolved gas analysis (DGA) of H₂, C₂H₂, CO and CH₂. The values from the lab will be compared against past transformer DGA results.

During the outage the engineering team from AtkinsRealis will visually review existing breaker, cable and system connection details for an accurate and up to date arc-flash model and study.

If time permits the City would like to use the shutdown to have Shermco install an oil sampling port as part of a separate project (directly between the City and Shermco).

Section 2: Stakeholders

List all relevant stakeholders that will be involved or at a minimum, must be kept informed, of the shutdown and related activities.

Name	Role	Phone #	Cell #
David Becker	AtkinsRealis Project Manager	204-786-8080	204-292-0498
Brian Cleven	AtkinsRealis Project Manager	204-786-8080	204-930-4265
Vivek Elimban	AtkinsRealis Electrical Eng.	204-786-8080	204-295-4515
Braden Wilkes	AtkinsRealis Electrical Eng.	204-786-8080	204-619-2550



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Norman Figueroa	Shermco		204-996-1254
Romeo Abunda	Shermco Site Forman		204 -227-8816
Wastewater Control Centre	Operations Control Centre	204-986-7948	
Brent Soloway	Project Coordinator		204-451-4521
Kevin Sapiak	Project Engineer (Maintenance)		431-278-0876
Ryan Norrie	El Supervisor		204-391-6372
Colin Marshal	Foreman, Electrical		204-250-1267
Travis Stephenson	Project Coordinator		204-391-2675
Eric Weiske	Superintendent of Collections		204-619-0520
Jamie Pittumbur	Acting Maintenance Coordinator		204-226-4511
Jose Altoveros	Collections Supervisor	204-986-4788	204-801-1393
Ryan Salunga	Senior Project Engineer		204-451-5375
Eric Weiske	Collections Superintendent		204-619-0520
Nick Clinch	Collections Operator In Charge		204-794-4525



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Section 3: Risks and Contingency Planning	
<i>List all potential risks associated with the planned shutdown. Develop contingency plans to address risks. Hit tab in lowest right cell to add additional lines.</i>	
Risk	Contingency Plan
Power supply to the lift pumps is shut off for too long, resulting in either a discharge to the environment or, basement flooding for residents of the Hart Combined Sewer District.	<ol style="list-style-type: none"> 1. City E&I crew will have a 150KVA mobile generator on-site during the shutdown period. They will connect and operate the generator, which is capable of powering the Lift Station (LS) and lift pumps. The generator will be connected and operational within approx. 20 minutes after Shermco shuts down MB Hydro power to the LS. Once the generator is connected and operational, the LS and lift pumps will operate under normal operating conditions as per normal utility power. 2. Prior to Shermco shutting down MB Hydro power to the LS, City Collections crew will pump down the LS wet well and close the PG of the FPS outfall to help prevent a discharge to the environment. 3. Station shutdown will begin at 10:00am to ensure shutdown occurs during period of lower flow. 4. Collections crew will remain on site to operate the lift pumps and monitor levels in LS wet well during the entire shutdown period to ensure normal LS pump operations are maintained and critical levels are not exceeded. 5. Collections crew will open/throttle the PG of the FPS outfall to allow for a controlled release to the environment, but will only do so if required to prevent basement flooding. 6. In the event the generator stops working during the shutdown period, E&I and Collections crews will try to get the generator working again or will replace it ASAP, and also notify Shermco of the situation. If the generator can't be restarted or replaced soon enough to prevent potential basement flooding or a discharge, then E&I or Collections crew will instruct Shermco to have the MB Hydro power supply to the LS restored ASAP. 7. Collections crew will open the PG of the FPS outfall once the shutdown is complete. If there is any wastewater being contained within the sewer system because the PG is still closed, Collections crew will arrange to have the wastewater pumped back into the collection system before opening the PG in order to avoid a discharge to the environment.



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Section 4: Shutdown Plan
<i>Outline the shutdown plan. Include all related tasks, timelines, communication planning, etc.</i>
<p>Shutdown Scheduled to Commence: August 8, 2024 from 10:00am until 5pm.</p> <p>Summary:</p> <p>Work planned is expected to take approximately 7 hours to complete. The shutdown window is requested by Shermco to perform the work. The station will be re-energized by 5:00 pm regardless of whether the work is completed or not. If needed an additional shutdown will be scheduled.</p> <p>The mobile genset will be connected to energize the lift station. The mobile genset size is not sufficient to energize flood pumps, and so the flood station will remain de-energized during the work.</p>



Sequence of Work: Pre–Shutdown Work

- 1) Shermco & Collections and E&I crews will meet on-site at 8AM to review shutdown plan, and confirm the various roles and responsibilities and lines of communication to be followed during the shutdown.
- 2) Collections crew will advise Wastewater Control Center that MB Hydro power to the station will be shutdown at 10:00AM.
- 3) Collections crew will pump down the LS wet well as much as possible.
- 4) Collections crew will close the PG of the FPS outfall.
- 5) E&I crew will confirm CSTE / power supply phase rotation.
- 6) Once Collections crew has completed their pre-shutdown work (close PG, pump down wet well), Collections and E&I crews will notify Shermco that the LS is ready for the shutdown to proceed.
- 7) Shermco will coordinate the shutdown work with Manitoba Hydro. Manitoba Hydro crews will be on site to de-energize the main electrical service transformer to the site.

Sequence of Work: During Shutdown

- 1) Shermco will notify Collections and E&I crews that the main Manitoba Power Supply is switched off and record time (10AM). The main supply will be locked out by Shermco and Manitoba Hydro.
- 2) E&I crew with assistance from Shermco will connect the generator to the 600V main breaker (located inside the lift station). This will require power shut down to the 600V MCC-L1 inside the lift station (open CSTE breaker feeding the lift station and lockout) to connect the generator cabling to the lift station main breaker. The power shutdown duration will be approximately 20 minutes. Remove existing cable terminations (keep ready if needed) at MCC-L1 in the LS. Once hooked up to the Generator, the station will operate under normal operating conditions as per normal utility power. Lift pumps and controls will operate under automation mode.
- 3) Shermco and Collections and E&I crews will confirm that the generator and the LS and lift pumps are all connected and functioning as intended before proceeding with removing any other equipment from service. Collections and E&I are responsible for ensuring the generator is operating as intended for the duration of the shutdown.
- 4) If E&I crew is unable to connect the generator to the LS as intended, or the generator is not able to power the LS or lift pumps as intended, the shutdown must not proceed, and Shermco must immediately begin the process of reconnecting and restoring MB Hydro power so the LS and lift pumps can be operated by the Collections crew ASAP.
- 5) Collections crew will monitor levels in the LS wet well and operate the lift pumps as needed.
- 6) If Collections crew notice that levels in the LS wet well will potentially exceed the critical elevation, Collections crew will notify Shermco and E&I crew, and Collections crew will open/throttle PG of the FPS outfall if needed to prevent basement flooding.
- 7) Shermco will test that MB Hydro power in the CSTE has been disconnected, the system is de-energized and locked off. Shermco will ensure that genset power supply will not backfeed into the CSTE prior to beginning work.
- 8) Shermco will begin work detailed in the RFP on the service transformer (testing and maintenance).
- 9) If time permits, Shermco will install the sample port valve on the exterior of the service



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transformer.

- 10) Shermco will remove wiring, connections, grounds, and test equipment.
- 11) Shermco will ensure that all cabling is re-connected and properly torqued.
- 12) Shermco will ensure that transformer oil level is adequate.
- 13) Collections crew will pump down the LS wet well as much as possible prior to Shermco proceeding with next steps.
- 14) E&I crew and Shermco will shutdown generator, will disconnect the generator supply cable and install 600v feeder cable (from the CSTE) into the line side of lift station MCC-L1 main breaker to allow for normal power connections and energization. Power Shutdown duration approximately 20 minutes.
- 15) Shermco and E&I crew will ensure that any temporary safety grounds have been removed prior to energizations
- 16) Shermco and E&I crew will inspect and verify installation prior to energization.
- 17) Shermco and Manitoba Hydro will remove locks, will energize the utility electrical service and will record the time.
- 18) Shermco will confirm Phase Rotation and Voltage.
- 19) Shermco and E&I crew will ensure that power monitoring panel and existing RTU panel are energized and functioning.
- 20) Shermco will advise E&I and Collections crews that station equipment installation and energization are complete and record time.
- 21) Collections crew will advise Wastewater Control Center that MB Hydro power to the station has been restored.



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Sequence of Work: Post Shutdown

- 1) Collections and E&I crews will test and confirm that the lift station (LS) equipment and lift pumps are operating as intended once MB Hydro power is restored by Shermco.
- 2) Collections and E&I crews will confirm with Wastewater Control Center that there are no issues with the SCADA signals/monitoring for the LS after MB Hydro Power has been restored.
- 3) If Collections and E&I crews finds that the LS, lift pumps, or SCADA signals are not operating as intended, then they will immediately notify Shermco of the problem, and Shermco will have to immediately begin trouble-shooting and assisting the Collections and E&I crews in correcting the problem prior to leaving the site.
- 4) Collections crew will open the PG of the FPS outfall, but only if/when no wastewater is being stored against the PG. If wastewater is being stored against the PG of the FPS outfall, then Collections crew will make arrangements to have the wastewater removed or pumped back into the CS system upstream of the diversion weir/LS as soon as possible.
- 5) E&I crew to remove generator from site.



Section 5: Monitoring

Describe any monitoring required leading up to, during, and following the shutdown.

1. Visual monitoring of the LS operation and the levels in the LS wet well will be performed by City Collections crew during the shutdown. The Collections crew will monitor levels in the LS wet well using the existing electronic level monitoring equipment and/or the sight glass in the LS as required to ensure the wastewater does not reach/exceed the critical elevation and potentially result in a discharge to the environment or basement flooding.
2. If the level of wastewater does reach the critical elevation in the LS wet well/sight glass, then the Collections crew must determine if the PG of the FPS outfall should be opened/throttled accordingly to prevent basement flooding, and then the Collections crew needs to open/throttle the PG accordingly if/as needed to prevent basement flooding.
The Collections crew will visually check that no wastewater has accumulated against the PG of the FPS outfall, or within the wet well of the FPS, prior to opening the PG of the FPS outfall. If any wastewater has accumulated against the PG of the FPS outfall, then the Collections crew will arrange to have the wastewater pumped back into the CS system before opening the PG, in order to prevent a discharge to the environment.

Section 6: Key Data

Describe data required for shutdown planning and monitoring purposes.

Hart Flood and Lift Station Storage Time: **Approx. 6 hrs (Estimate based on fry weather low flow)**
Critical Elevation in LS Wet well/Sight Glass: Collections crew will monitor the LS pump operation and levels in the LS wet well during the shutdown, to ensure that the level of wastewater in the LS wet well does not reach/exceed the critical elevation, in order to prevent either basement flooding or a discharge to the environment.

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Section 7: Lessons Learned	
<i>Once shutdown is complete, meet with relevant stakeholders to review the shutdown. List what went well and what should be changed for future shutdowns.</i>	
What went well?	What should be changed for future shutdowns?

Section 8: Document Close	
Closed by:	Date:

ATTACHMENTS:

- APPENDIX A: EI Generator Procedure - HART Lift Station
- APPENDIX B: Hart Single Line Diagram
- APPENDIX C: Hart FPS Isometric

Hart Lift Station

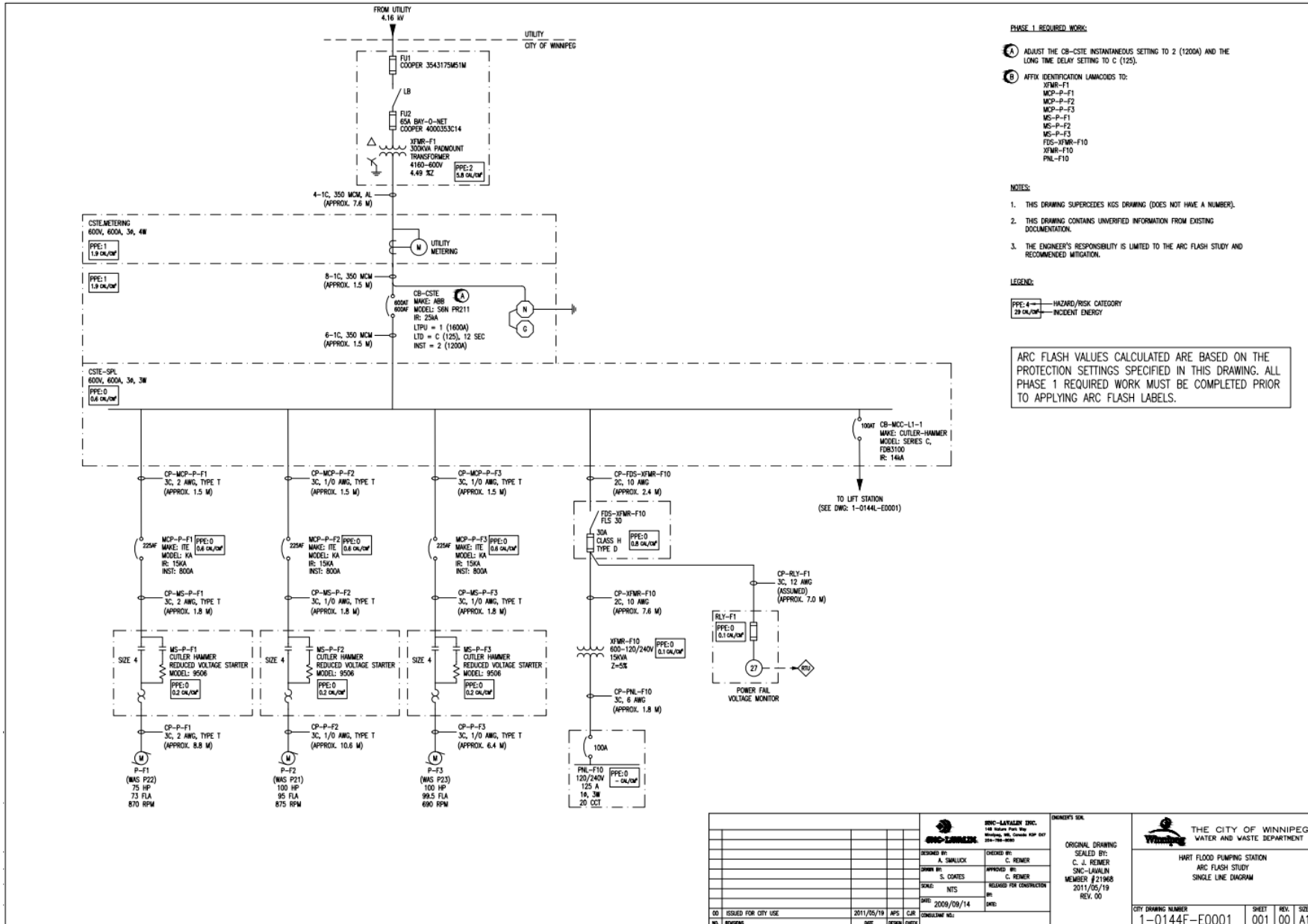
600v 3 phase

- Open Main breaker in MCC and remove Kirk key
- Connect generator cable to exterior termination box
 - Turn Generator on and close breaker
- Insert Kirk key in MCC “Temp Gen” bucket and close breaker
 - Check rotation



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APPENDIX B: Hart Station Single Line Diagram



- PHASE 1 REQUIRED WORK:**
- A ADJUST THE CB-CSTE INSTANTANEOUS SETTING TO 2 (1200A) AND THE LONG TIME DELAY SETTING TO C (12S).
 - B AFFIX IDENTIFICATION LABELS TO:
 - XNMR-F1
 - MCP-P-F1
 - MCP-P-F2
 - MCP-P-F3
 - MS-P-F1
 - MS-P-F2
 - MS-P-F3
 - FDS-XNMR-F10
 - XNMR-F10
 - PNL-F10

- NOTES:**
- THIS DRAWING SUPERCEDES KOS DRAWING (DOES NOT HAVE A NUMBER).
 - THIS DRAWING CONTAINS UNVERIFIED INFORMATION FROM EXISTING DOCUMENTATION.
 - THE ENGINEER'S RESPONSIBILITY IS LIMITED TO THE ARC FLASH STUDY AND RECOMMENDED MITIGATION.

LEGEND:

PPE:4 — HAZARD/RISK CATEGORY

29 OJ/OM — INCIDENT ENERGY

ARC FLASH VALUES CALCULATED ARE BASED ON THE PROTECTION SETTINGS SPECIFIED IN THIS DRAWING. ALL PHASE 1 REQUIRED WORK MUST BE COMPLETED PRIOR TO APPLYING ARC FLASH LABELS.

		SNC-LAMBIN INC. 140 Victoria Park Way Winnipeg, MB, Canada R2V 0P7 204-788-8888		ENGINEER'S SEAL ORIGINAL DRAWING SEALED BY: C. J. REMER APPROVED BY: C. REMER MEMBER #21968 2011/05/19 REV. 00	
DESIGNED BY:	A. SULLOCK	CHECKED BY:	C. REMER	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT HART FLOOD PUMPING STATION ARC FLASH STUDY SINGLE LINE DIAGRAM	
DRAWN BY:	S. COATES	APPROVED BY:	C. REMER		
SCALE:	NTS	RELEASED FOR CONSTRUCTION BY:			
DATE:	2009/09/14	DATE:			
ISSUED FOR CITY USE	2011/05/19	APS	CJR	CITY DRAWING NUMBER	1-0144F-E0001
NO. REVISIONS		DATE	DESCRIPTION	SHEET	REV. 00
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APPENDIX C: FPS Isometric

