GLWA Board of Directors Meeting

September 1, 2021

June 25, 2021 Post Event Analysis

Preliminary, subject to further investigation and analysis
Agenda

1. Investigation Progress
2. Weather Forecast and Actual Rainfall
3. GLWA Operations Staffing Timeline
4. Stormwater Pumping Stations – Electrical Considerations
5. System-Wide Operational Overview
6. Preliminary Mapping of Claimants
Investigation Progress
Investigation Progress to Date into the June 25, 2021 Wet Weather Event

1. Forensic Data Collection, Review and Analysis
2. Event Operational Review, Analysis and Timeline
3. Basement Flooding Complaints
4. Event Modeling Simulations and Analyses
Weather Forecast and Actual Rainfall
Weather Forecast for June 25 thru June 30, 2021 Event Weather Sentry – GLWA Subscription

Thursday, June 24, 2021

Precipitation Forecast for Southeast Michigan

From the weather sentry report, expecting rain for Downtown Detroit from:
- 06/25/2021-0.74 inches
- 06/26/2021-0.33 inches

From the weather sentry report, expecting rain for DTW from:
- 06/25/2021- 0.82 inches
- 06/26/2021-0.37 inches
- 06/27/2021-0.31 inches
- 06/28/2021-0.05 inches
- 06/29/2021-0.17 inches
- 06/30/2021-0.15 inches
- 06/27/2021-0.34 inches
- 06/28/2021-0.06 inches
- 06/29/2021-0.18 inches
- 06/30/2021-0.16 inches
National Weather Service Probabilistic Forecast

Thursday, June 24, 2021

Probabilistic Quantitative Precipitation Forecast

From the picture below the probability of receiving a precipitation of greater than 0.25 inches on

- 06/24/2021-06/27/2021 is 100%
- Expected Liquid Precipitation for Detroit from 06/24/2021 08:00 am-06/27/2021 08:00 am is 1.59".
- Expected Precipitation from 06/25/2021 2:00 pm to 06/25/2021 7:59 pm is 0.50" to 0.75".
Actual Rainfall Recorded by GLWA Rain Gauge Network
June 25, 2021 Wet Weather Event – Temporal Distribution

Rainfall in 5-min Time Steps (inches)
Actual Gauge Adjusted Radar Rainfall

Based on gauge adjusted radar rainfall data from Vieux and Associates
Conners Creek and Freud Pump Stations were staffed throughout the storm event.

- The facilities are within minutes of each other.
- Freud Pump Station design provides for remote operation.

Preliminary, subject to further investigation and analysis.
GLWA Staff Response Timeline to June 25, 2021 Event

Preliminary, subject to further investigation and analysis
Focused Timeline – House Power Service Interruption at Conners Creek PS

Events leading up to, during, and following the power interruption:

• Electrician was dispatched to Freud PS due to power feed issues (9:40 PM)
• Systems Technician started 2nd pump at Conners Creek PS when breaker tripped (12:49 AM)
• Electrician was notified to return to Conners Creek PS to address power outage (12:53 AM)
• Electrician investigated power supply, diagnosed and reset the breaker (1:38 AM)
• Duration of power interruption due to breaker trip was 49 minutes
• Two (2) pumps operated throughout this period of the breaker trip
• Three (3) additional pumps were started within about 12 minutes
Stormwater Pumping Stations – Electrical Considerations
Storm Pump Station Electrical Considerations
June 25 Rain Event

• Freud Pump Station (PS)
  • Power Supply
  • Stand-By Generator
  • Power Quality

• Conners Creek PS
  • House Power Service Interruption

• Bluehill PS
Freud PS – Electrical System

Preliminary, subject to further investigation and analysis
Freud PS – Electrical System: June Rain Event
Preliminary, subject to further investigation and analysis

Freud Pump Station – June Event Timeline

Legend:
- Normal Pump On:  
- Operational Pump Off:  
- Pump Trip off:

6/25/2021
- ST3
- ST7
- Wetwell Low Level Reached

6/26/2021
- ST5
- ST8
- Wetwell Low Level Off Reached
Conners Creek Pump Station – June Event Timeline

**Legend:**
- Normal Pump On: ST6
- Operational Pump Off: ST7
- Pump Trip off: ST8

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- **House Power Out**
- **House Power Restored**
- **Relative Wet Level**
- **Wetwell Low Level Off Reached**
Bluehill Pump Station – June Event Timeline

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Legend:
- Normal Pump On: ST1
- Operational Pump Off: ST2
- Pump Trip off: ST3

Relative Wetwell Level

Wetwell Operational Low Level Reached

Wetwell Operational Low Level Reached
System-Wide Operational Overview
System-Wide Operational Overview - June 25th Event

- CSO treatment facilities
- WRRF
- Pump stations
- Collection system
Preliminary Mapping of Claimants
Preliminary Mapping of Claimants

Preliminary, subject to further investigation and analysis
Thank you!