



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

NOV 05 2019

REPLY TO THE ATTENTION OF
ECW-15J

CERTIFIED MAIL 7019 0140 0000 0721 7559
RETURN RECEIPT REQUESTED

Mr. Robert Maciel
Environmental Manager
ArcelorMittal Burns Harbor, LLC
250 West U.S. Highway 12
Burns Harbor, IN 46304

Subject: October 1, 2019 Reconnaissance Inspection Report for ArcelorMittal Burns Harbor

Dear Mr. Maciel:

Enclosed, please find a copy of the U.S. Environmental Protection Agency Reconnaissance Inspection Report that describes, and documents the activities at ArcelorMittal Burns Harbor, LLC on October 1, 2019.

The purpose of the reconnaissance inspection at ArcelorMittal Burns Harbor, LLC was to gather information related to operation of the facility during the release of cyanide and ammonia nitrogen in August 2019.

If you have any questions or concerns regarding this letter, or the inspection report, please contact Joan Rogers (312) 886-2785 or at rogers.joan@epa.gov.

Sincerely,

A handwritten signature in black ink that reads "Ryan J. Bahr".

Ryan J. Bahr, Chief
Section 2
Water Enforcement and Compliance Assurance Branch

Enclosure

cc: Nicholas Ream, Environmental Engineer
Indiana Department of Environmental Management

Jason House, Branch Chief of Wastewater Compliance
Indiana Department of Environmental Management

**CWA COMPLIANCE EVALUATION INSPECTION REPORT
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5**

Purpose:

Reconnaissance Inspection

Facility:

ArcelorMittal Burns Harbor, LLC
250 US-12
Burns Harbor, Indiana 46304
Porter County
41.625, -87.117

NPDES Permit Number:

IN0000175

Date of Inspection:

October 1, 2019

EPA Representatives:

Joan Rogers, Environmental Scientist
Rogers.joan@epa.gov

312-886-2785

State Representatives:

Nicholas Ream, Indiana Department of Environmental Management
Inspector

Facility Representatives:

Teri Kirk, Environmental Engineer
Theresa.kirk@arcelormittal.com

219-214-2363

Robert Maciel, Environmental Manager
Robert.maciel@arcelormittal.com

219-787-4961

Cary Mathias, Regional Waste Manager
Cary.mathias@arcelormittal.com

330-659-9124

John Olashek, Solid Waste Engineer

Blake Crisman, Operations Technology of the Blast Furnace Manager

Rick Balunda, Manager of Operations

Morgan Swanson, Trainee

Report Prepared by:
Joan Rogers

Report Date:
November 5, 2019

Inspector Signature: Joan Rogers

Approver Name and Title: Ryan Bahr, Chief, Water Enforcement and Compliance Assurance
Branch Section 2

Approver Signature: Ryan Bahr

Approval Date: 11/5/19

1. BACKGROUND

The purpose of this report is to describe and document the discussion and site inspection at the ArcelorMittal Burns Harbor facility on October 1, 2019. This inspection was performed pursuant to Section 308(a) of the Federal Water Pollution Control Act, as amended.

The ArcelorMittal Burns Harbor (AMBH) facility is one of the largest fully integrated steel mills in North America, with the capacity to produce approximately 5 million tons of raw steel per year. They operate under NPDES Permit No. IN0000175, which was issued on May 27, 2016 and expires on June 30, 2021.

On August 11, 2019, AMBH had a failure of the pump system for its Blast Furnace Gas Closed Water Recycle System (BFGCWRS) which required the facility to draw in Lake Michigan water to use in the Blast Furnace Gas (BFG) Air Scrubbers. Since the pumps to recycle the BFG Air Scrubber water were not functioning, the water became "once-through" water and the facility discharged many more millions of gallons than during normal operations. The once-through water was not able to be treated due to the high volume and flowed out its internal Outfall 011 and then through its final Outfall 001 to the East Arm of the Little Calumet River.

Due to this pump failure, the Burns Harbor facility discharged cyanide and ammonia-nitrogen exceeding its NPDES permit limit. IDNR determined that 3,000 fish died in the East Arm of the Little Calumet River near the Portage Marina. Ogden Dunes and the Indiana Dunes National Park closed its beaches in the area and a nearby drinking water intake facility was closed.

EPA Water Enforcement inspector, Ms. Joan Rogers, joined the Indiana Department of Environmental Management inspector, Mr. Nick Ream, for an inspection at the facility

on August 22, 2010, and attended a presentation by AMBH on September 26, 2019. The inspection was to gather information about the Cyanide release and the presentation was to inform the environmental agencies on the status of the AMBH investigation of the Cyanide release. The inspection on October 1, 2019 was to gather additional information related to the Cyanide release in August and to gather information about an AMBH reported overflow and bypass on September 30, 2019.

2. SITE INSPECTION

Site Entry and Opening Conference

Arrival Time:	9:30 A.M.	
Presented credentials?	Yes	
Credentials presented to whom and at what time?	Teri Kirk, Robert Maciel, Morgan Swanson	
Was an opening conference held? With whom?	Yes. Teri Kirk, Robert Maciel, Morgan Swanson	
If photographs or documents were taken, does the facility consider any to be Confidential Business Information (CBI)?		No
EPA vehicle parked in approved location?	Yes	
Location where EPA vehicle was parked?		

2.1 Records Review

EPA and IDEM had 17 questions that they wanted responses to following the August 11, 2019 Cyanide release and subsequent communications between the facility and the environmental agencies. Additionally, AMBH reported an overflow and bypass the previous night, on September 30, 2019. The bypass was reported to be from Manhole 120 to the Storm Ditch. In addition to the questions about the Cyanide release, EPA and IDEM wanted to gather information about the bypass, as well.

IDEM began the discussion with the previous nights' bypass report. Ms. Kirk and Mr. Maciel explained that although AMBH reported a bypass, they didn't believe that one happened. They stated that they reported it within the required 24 hours.

During the previous night, instrumentation personnel were working on the level sensor and may have knocked the transmitter offline. In Pump Station 1, the pump was off, and the facility received a high alarm. The overflow would have been from Manhole 120 and would have discharged flow to the Storm Ditch. The Storm Ditch flows into the East Arm of the Little Calumet River after Outfall 011 and before Outfall 001. Facility personnel investigated and did not observe any indication that there was an overflow and bypass. The pollutants of concern would have been solids and oil and grease. EPA and IDEM stated that they wanted to observe the manhole after the discussions with facility personnel in the office.

EPA and IDEM proceeded to ask the following questions of Ms. Kirk and Mr. Maciel. When they indicated that they did not know the answers, they were asked to provide the

names of the facility personnel who would know. EPA and IDEM inspectors stated that they wanted to interview those personnel also. Once all the questions were asked to Ms. Kirk and Mr. Maciel, the additional personnel joined the inspectors and answered the questions that pertained to their knowledge of the incident.

Question 1: When safe fails in the Blast Furnace Closed Loop Pump Station (BFCLPS) caused the addition of lake make-up water, how/where did the lake make-up water enter the pump station?

AMBH: Ms. Kirk stated that the lake make-up water enters the north wall of the well both hot and cold well intakes were flowing. When Mr. Balunda joined the discussion, he stated that 2700-3000 gallons per minute were going into each well. He explained that the pipe is at the top of the well, 1/2' below the grating.

Question 2: How was the BFCLPS dewatered and where did the water go?

AMBH: Ms. Kirk and Mr. Maciel stated that the water was vacuumed out and probably put into the treatment plant. Rick Balunda stated that the water either went to the treatment plant or if there were solids in it, to a contained area called the "sheds", where the solids would be dewatered and sent to the headworks of the treatment plant. He stated that there were two loads with approximately 3,000 gallons per load. He didn't know if the second load was full.

Question 3: How was the operation of the thickeners impacted during the event? Did the rate of flow to the thickeners change? Were solids washed out of the thickeners during the event? Were there any solids collected for recycling or landfilling during the incident?

AMBH: Mr. Maciel stated that the solids were at the bottom of the thickeners and the underflow goes to dewatering. The higher flow during the event would have gone to the thickeners but overflowed and flowed to the Dirty Industrial Wastewater (DIW) standpipe. Mr. Maciel also stated that if the thickeners overflowed, the overflow would have gone onto the ground and he didn't know if the thickeners were affected by the additional flow after the facility began using lake make-up water for the air scrubbers.

Blake Crisman stated that when he walked the drains, he did not observe an overflow over the tops of the thickeners, but it went up to the 54" drain. Mr. Crisman stated that before 7:00 A.M. on August 11, 2019, he saw computer screens that showed there were problems in the plant. He talked to central dispatch at that time. At the thickeners, the level of water was too high for the thickeners to do their jobs. He could not see down into the water in the thickeners for any solids. Mr. Crisman stated that for (at most) an hour, there was backpressure coming up in the drains. Some of the water from the drain flowed out onto the ground and he wanted to keep the water out from under the cast floor.

Ms. Kirk stated that solids from the thickeners is grab-sampled every Monday, Wednesday and Friday. The results vary but are usually in the 20-120 mg/L range for

TSS. Lake Michigan water typically has a TSS result less than 40 mg/L. EPA asked if the solids are recycled or landfilled and Ms. Kirk stated that they don't know because it is hauled offsite, but the waste is not considered a hazardous waste.

Question 4: When operators noted the lack of pressure and initiated use of lake water to operate the air scrubber, what was the initial rate of flow of incoming lake water? Was that flow rate later adjusted, and if so, how was it adjusted and why?

AMBH: Mr. Crisman stated that the lake water entered the pump house by the gas cleaning building and drew a diagram of it on the white board (Photo 2). He explained that the flow for Furnace D was 1250 to 1400 gpm to get enough water to the air scrubber. He did not know the flow rate for Furnace C. He explained that since the lake water is cooler, less was needed, but the flow rate for lake make-up water for both furnaces was approximately 3000-4000 gpm.

Question 5: Did the 24-inch sewer into which the BLCLPS overflow enters serve as the limiting factor with regard to the rate at which lake water could be drawn in to operate the air scrubber, i.e. was the flow rate limited to about 4000 gallons per minute? If so, how does this rate of flow compare to the rate of flow under normal operating conditions? Were there any adverse impacts to the operation of the air scrubber?

AMBH: Mr. Balunda stated that the 24" pipe was the choke point for flow out of the system and that there was no quantifiable number for the flow to it. He approximated it at around 4000 gpm. After the lake water was shut off and there was approximately 2000 gpm for each furnace, the level of water in the pump wells started draining. He also stated that the facility had plans to confirm that flow rate.

Question 6: During the failure of the BFCLPS, were any measures taken to reduce water usage at the air scrubber or at other operations in the plant that contribute flow to the secondary wastewater treatment plant?

AMBH: Mr. Crisman stated that before noon, the facility stopped quenching on the slag to stop adding water to the quick dump. He did not know if the slag pit pump turned on.

Question 7: Has the BFCLPS pump station overflow been used in the past? If so, when and under what circumstances?

AMBH: Ms. Kirk stated that it has not happened during her 25 years at the facility. Mr. Maciel stated that it may have happened once before, but it didn't flood on August 4, 2019. Mr. Balunda stated that the last time it flooded was because the facility had to do an emergency repair. They had to shut down the hi-lift pump. During that repair, the furnaces never trimmed back, and the water flooded to the same level. Mr. Balunda also stated that during 2015, Furnace D went on lake make-up water for 20 days, while Furnace C stayed on recirculated water.

Mr. Balunda stated that there was no adverse impact to the air scrubber system in the August 2019 event. The system to transfer over to lake water is handled manually.

Question 8: What is the average flow at wastewater pump station 1 (WW1)? What is the average flow at wastewater pump station 2 (WW2)? Are there flow meters on these pump stations? If not, where is influent flow to the secondary wastewater treatment plant measured?

AMBH: Mr. Balunda stated that the average flow at WW1 is 38,000-42,000 gpm during peak operations. The average flow at WW2 during peak operations is 10,000-15,000 gpm. He said there were no flow meters at WW1 and the facility just started measuring the flow at WW2 effluent. The facility has the ability to do engineering calculations for the flow at WW2, but the only place the flow is metered is at total wastewater (WW1 and WW2).

Question 9: ArcelorMittal indicated that sampling is conducted of the filtrate from the solids handling process from the slurry from the thickeners (C and D). Please provide this sampling analysis from January 1 through September 30, 2019.

AMBH: Mr. Maciel and Ms. Kirk explained that the hydrocyclone filtrate is not sampled alone. The facility has some results from prior sampling, but it was typically for lead and zinc. The sludge from the thickeners is sent to the Reclamation Services Building (RSB) for additional dewatering in the final thickener. Those solids are then hauled offsite. Mr. Olashek stated that there is no analysis for the slurry before the final thickener.

Question 10: ArcelorMittal indicated that the CN destruction unit was last used in 2015. Please provide a detailed explanation of the decision process for the use of the unit. To the extent possible please provide any internal sampling of the BFCLPS and/or CN destruction unit. Additionally, please include an influent sampling from this system to the final treatment plant.

AMBH: Mr. Maciel and Ms. Kirk stated that the CN destruction unit is utilized in anticipation for start up and shut down of blast furnaces and for when there are high top temperatures at the blast furnaces. They stated that the facility cannot respond to events in near time frames because the chemicals are not stored onsite for long term because they would degrade. Neither knew what precipitated the use of the CN destruction unit in 2015.

Mr. Balunda stated that there is screening for CN at the influent of WW2 but based on what was happening at the plant on August 11, 2019, there was no procedure that required two-hour sampling. Mr. Balunda stated that the event in 2015 was the same as 2019 for sampling protocols (sampling 3x/week for CN) and the event in 2015 went on for 20 days. Mr. Mathias and Mr. Balunda said that the sampling data from 2015, and another CN exceedance in 2010, is not retained anymore.

Question 11: Have the solids in the thickeners ever been analyzed? If so, please provide this information for all analysis completed. (This question was asked previously during discussion for Question 9.)

AMBH: Ms. Kirk clarified that the hydrocyclone is intended to take lead and zinc out of the water. The solids from the hydrocyclone go either to the landfill or the center plant – depending on cost. The water (post hydrocyclone) goes to the influent of the RSB and final thickener. Sludge from the final thickener goes to a landfill and the filtrate goes to the Secondary Wastewater Treatment Plant (SWTP). Sampling is not done on the solids from the thickeners alone.

Question 12: What corrective steps have been taken to ensure that the event on 8-4-19 (failure of the relief valve) that damaged the 250 v DC battery system does not recur?

AMBH: Ms. Kirk and Mr. Maciel stated that they were not aware of any corrective steps on either the valve or solenoid to ensure that the event on 8-4-19 does not recur.

Question 13: Please explain how the water released during 8-4-19 failure of the relief valve was able to come in contact with the 250 v DC battery system.

AMBH: Ms. Kirk and Mr. Maciel stated that the water sprayed up and over the wall and down into the other room that housed the 250 v DC battery system.

Question 14: Were there any overflows from the thickeners or the blast furnace air scrubber system to Outfall 002 before or after the flooding of the pump room at approximately 6:30 A.M. on August 11?

AMBH: Mr. Maciel stated that most of the outside sewers for Outfall 002 are designed to be higher than grade or are sealed. The ones below grade are supposed to be sealed.

Question 15a: Provide the Original Equipment Manufacturer (OEM) on the blast furnace air scrubber system.

AMBH: Mr. Maciel stated that the air scrubber system consists of two scrubbers and they are not the same. The scrubber for Furnace D is nine years old, put on in 2008-2009. The scrubber for Furnace C is much older than the one for Furnace D and may be original to the plant. Mr. Crisman provided that the air scrubber for Furnace D is a Palworth 2008. It was put into operation in 2010. Mr. Crisman did not know the OEM for the air scrubber for Furnace C.

Question 15b: Provide the OEM on the cyanide destruction unit.

AMBH: Mr. Maciel and Ms. Kirk stated that the CN destruction unit was built in place and there was no OEM. It was installed between 1965-1970 and there are no documents on the unit.

Question 16: What are the communication protocols between the different departments, i.e. the blast furnace room and the environmental group, and the environmental group and wastewater group? How was it communicated with the rest of the plant that the pumps had failed?

AMBH: Mr. Maciel stated that on Sunday, August 11, 2019, Mr. Balunda notified Ms. Kirk that the pumps were down, and it was once through water. He also told her that the pump station was flooded. Mr. Crisman stated that he talked to Air, Gas and Water Department and Central Dispatch. He also talked to the furnace departments and the railroad departments. Additionally, he instructed Phoenix Services to build up the berm to prevent flow from the 54" sewer from flowing along the ground any further. When asked if there was an "incident commander" for the event, or one person that would be in charge of the overall response coordination, Mr. Crisman stated that there wasn't.

Question 17: Once the rest of the plant was notified of the failure of the pumps, what changes in operations were required or completed to account for the change in flow?

AMBH: Mr. Balunda stated that everyone in the plant knew on Sunday that there was something wrong and everyone knew there was the catastrophic pump failure.

IDEM inspector Mr. Ream asked Mr. Maciel and Ms. Kirk about language in their permit for a discharge from the lagoon recirculating pump station. They didn't know about this language in the permit. They mentioned that there were pumps to allow the facility to pump from the lagoons to the plant for emergencies, like if the lake water pumps go out. Additionally, the plant has a five-million-gallon water tank as a backup in case they lose the ability to pump from the lake or the lagoons.

Additional Discussions:

Mr. Maciel also provided that there were no observations of oil and grease sheens by the facility during the August 14 and August 20 events.

Mr. Mathias stated that he changed test method for CN analysis during the pump failure in order to get faster analysis. He acknowledged that he did not have approval from IDEM to change the test method and stated that he would be requesting approval to change it soon.

2.2 Walkthrough of the Facility

Following the discussion in the office, EPA and IDEM followed the facility personnel in the EPA vehicle to observe specific locations within the facility and Outfall 001. Photos of the areas observed are in Attachment A – Photolog.

2.3 Closing Conference and Post-Inspection

Post Walk-Through

Was a closing conference held? With whom? Yes, with Ms. Kirk and Ms. Swanson.	
Were specific Areas of Concern discussed with facility personnel?	No
Were any deficiencies or areas of concern addressed or fixed during the inspection? If so, list what was done. No	
Compliance assistance materials given to facility personnel: None	
Exit Time:	2:22 P.M.

3. LIST OF DOCUMENTS RECEIVED FROM FACILITY

EPA and IDEM did not take any documents from the facility.

4. AREAS OF CONCERN

The purpose of this reconnaissance inspection was to gather additional information related to operations at the facility during the August 2019 release of cyanide and ammonia nitrogen and to observe a limited number of areas on the facility.

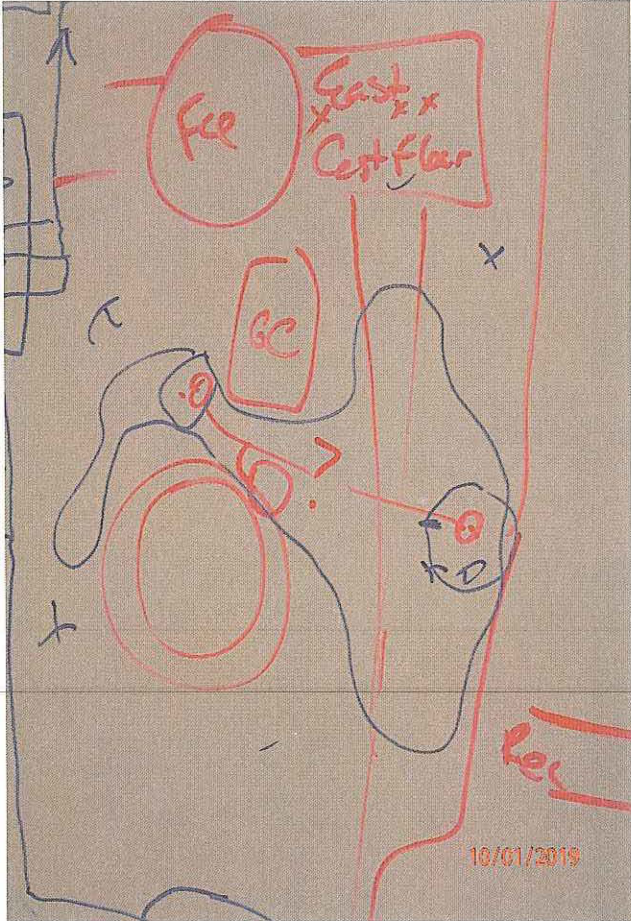
5. LIST OF ATTACHMENTS

A) Photolog

ArcelorMittal Burns Harbor
EPA Inspection October 1, 2019
ATTACHMENT A - PHOTOLOG

All photos taken by Joan Rogers, Environmental Scientist, U.S. EPA
Camera: Ricoh TG-4

All the times for each photo are one hour early. Actual time was one hour later.

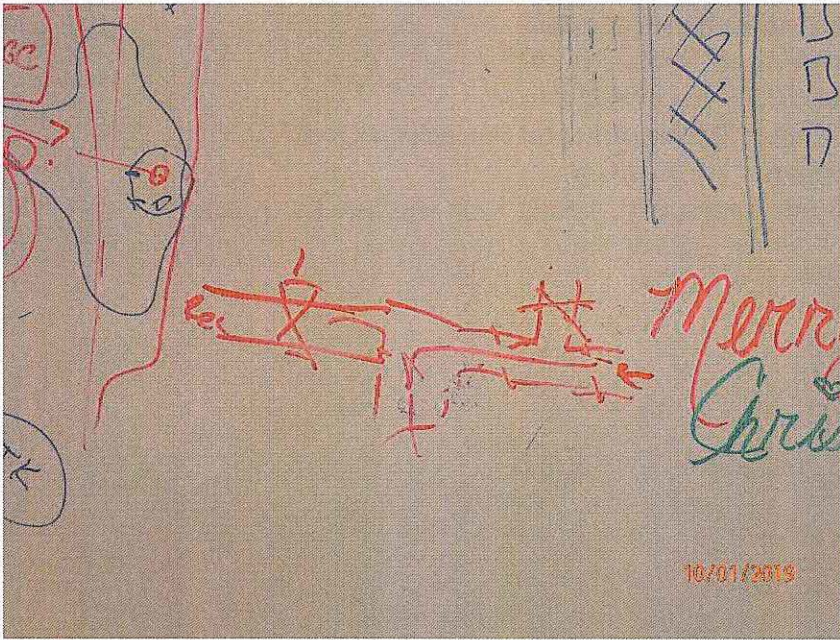


1: PA010138

Description: White board drawing by Blake Crisman of the extent of flow to the ground on the day of the pump failure.

Location: White board in conference room.

Date/Time: October 1, 2019 11:41 A.M.

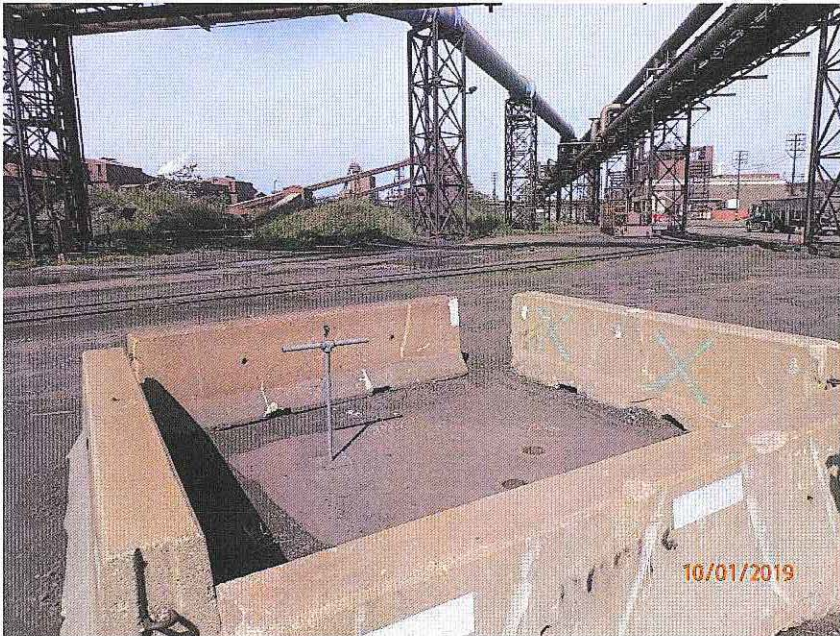


2: PA010139

Description: Drawing by Blake Crisman of the piping for lake intake water.

Location: White board in the conference room.

Date/Time: October 1, 2019 11:41 A.M.

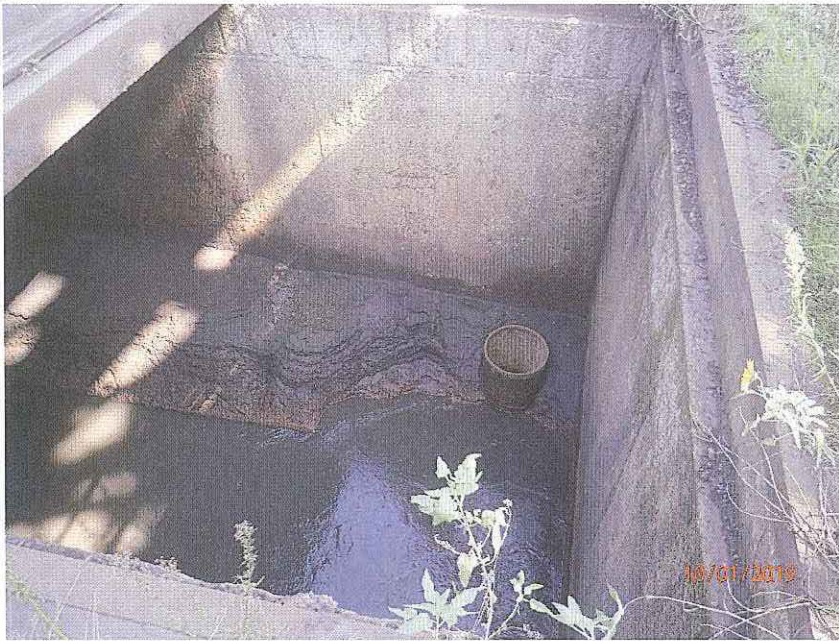


3: PA010140

Description: Location of the pit that housed the valves to shut of lake water to the wells. On August 11, 2019, this pit flooded and had to be dewatered before the valves could be turned to shut off lake water intake.

Location: Near the pump house building.

Date/Time: October 1, 2019 11:53 A.M.



4: PA010141

Description: 24" standpipe that limited the flow from leaving the well.

Location: Near the pump house building.

Date/Time: October 1, 2019 11:56 A.M.



5: PA010142

Description: An air valve break in this room of the pump house building caused water to spray up to the ceiling and over the wall on the right into the adjacent room.

Location: Pump house building.

Date/Time: October 1, 2019 12:02 P.M.



6: PA010143

Description: Air valve break happened on the air valve in the background denoted by a blue circle.

Location: Pump house building.

Date/Time: October 1, 2019 12:02 P.M.

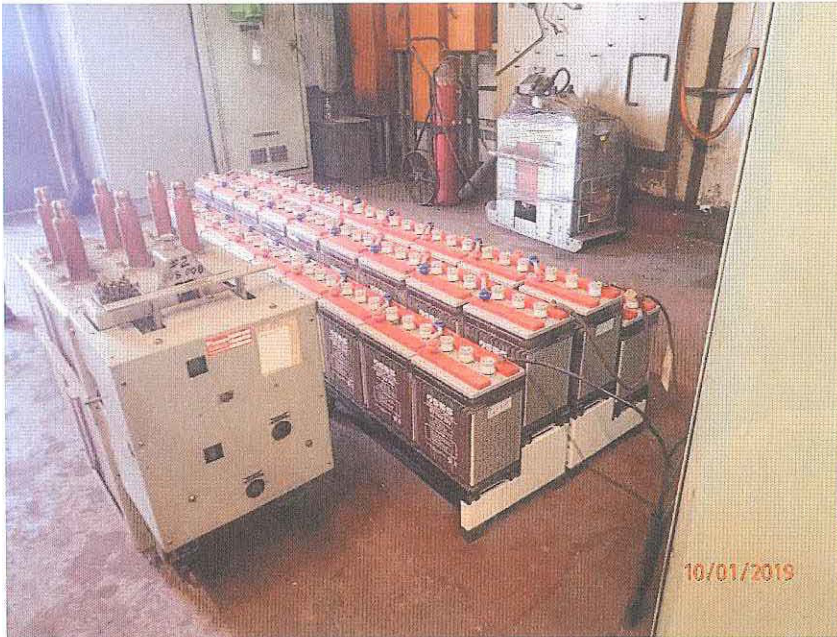


7: PA010144

Description: Battery charger (in foreground) for battery pack for blast furnace gas washer recycle pumps. There are water marks on the white wall from water that came down from the ceiling after the air valve broke.

Location: Pump house building.

Date/Time: October 1, 2019 12:04 P.M.



8: PA010145

Description: The battery pack for the blast furnace gas washer recycle pumps.

Location: Pump house building.

Date/Time: October 1, 2019 12: P.M. 12:05 P.M.



9: PA010146

Description: The manhole that overflowed on August 11, 2019.

Location: South of the east cast floor.

Date/Time: October 1, 2019 12:11 P.M.

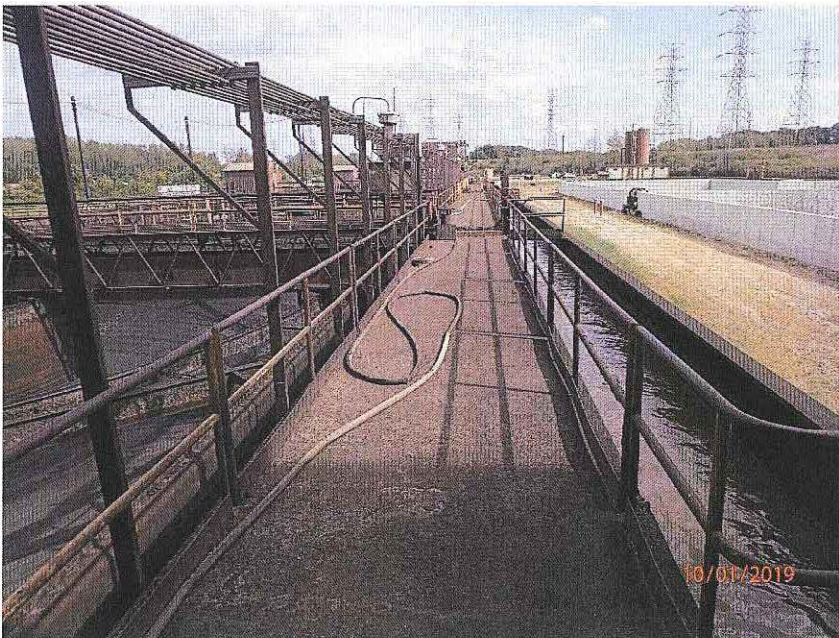


10: PA010147

Description: Influent to the hot side of the Secondary Wastewater Treatment Plant

Location: Hot side of the Secondary Wastewater Treatment Plant.

Date/Time: October 1, 2019 12:30 P.M.

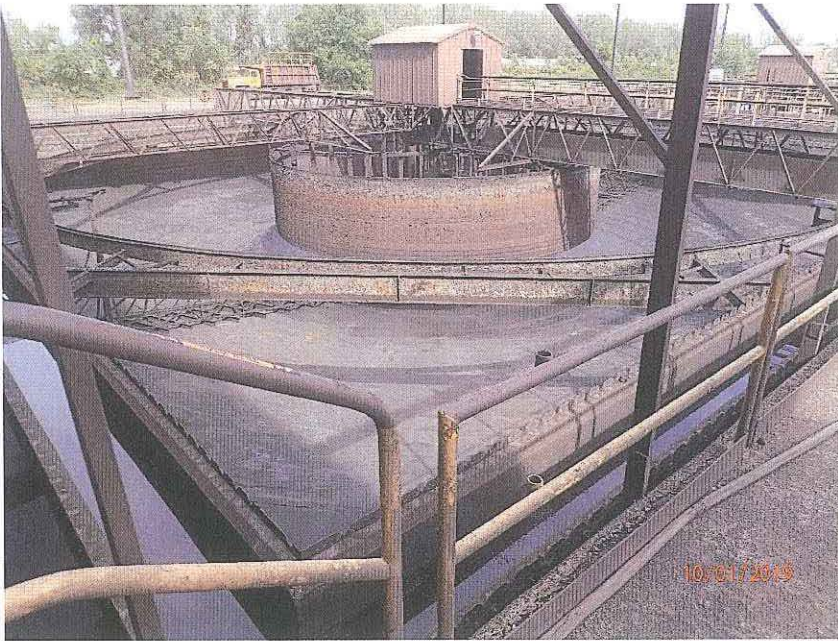


11: PA010148

Description: Influent is directed to one of the clarifiers on the hot side of the plant.

Location: Hot side of the Secondary Wastewater Treatment Plant.

Date/Time: October 1, 2019 12:30 P.M.



12: PA010149

Description: #1 Hot Mill Clarifier.

Location: Hot side of the Secondary Wastewater Treatment Plant.

Date/Time: October 1, 2019 12:30 P.M.



13: PA010150

Description: #1 Hot Mill Clarifier is out of use for cleaning.

Location: Hot side of the Secondary Wastewater Treatment Plant.

Date/Time: October 1, 2019 12:31 P.M.



14: PA010151

Description: Influent from hot mill, plate mill, and (cold) finishing mill merge in Manhole 120.

Location: Manhole 120.

Date/Time: October 1, 2019 12:41 P.M.



15: PA010152

Description: No evidence that there has been an overflow from Manhole 120 over the walls. The receiving waterway, called "The Storm Ditch", is in the vegetation in the background. A pipe (not shown in photo) would discharge any overflow from this manhole to the waterway.

Location: Manhole 120.

Date/Time: October 1, 2019 12:41 P.M.



16: PA010153

Description: Looking down into Manhole 120.

Location: Manhole 120.

Date/Time: October 1, 2019 12:41 P.M.

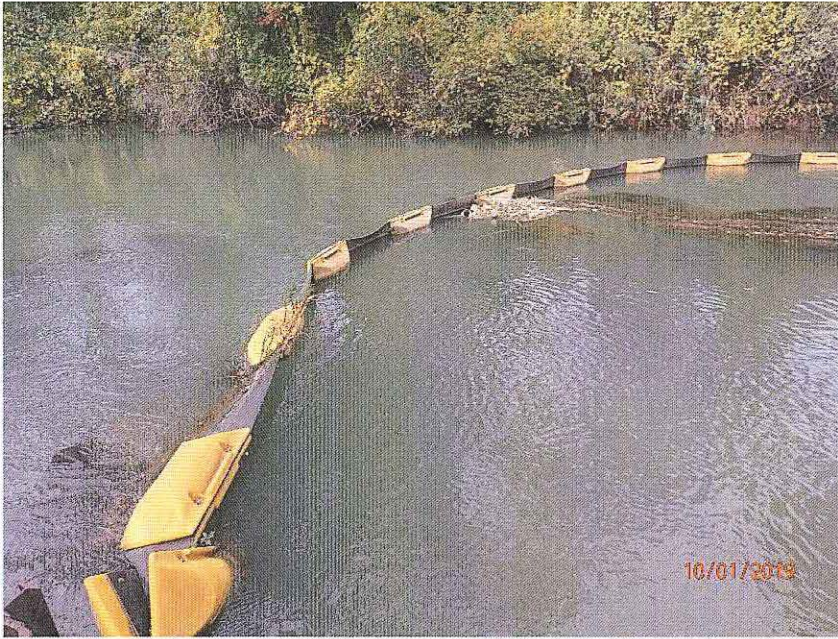


17: PA010154

Description: Flow from Manhole 120 goes to Wastewater I building, the small building in the foreground of the photo.

Location: Manhole 120.

Date/Time: October 1, 2019 12:44 P.M.

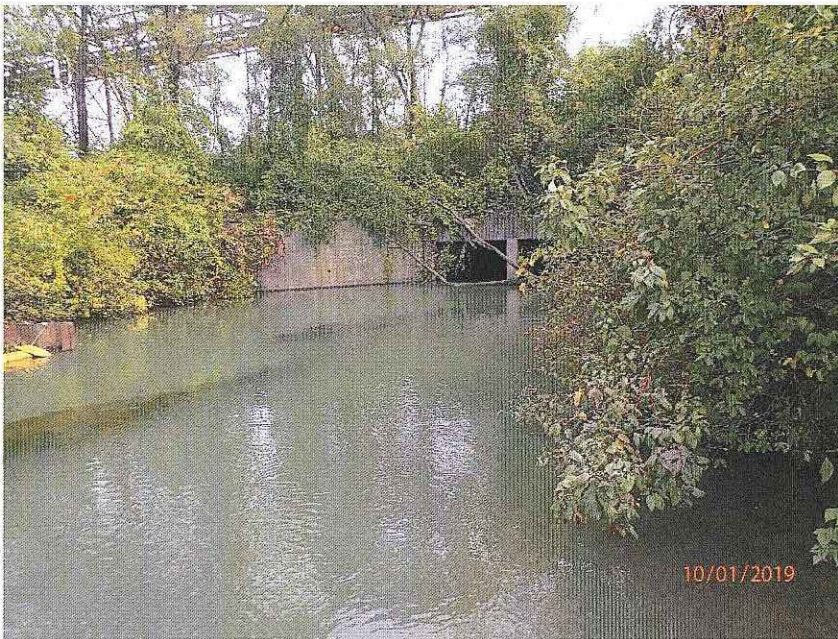


18: PA010155

Description: Permanent boom in the Storm Ditch. There was no evidence of a discharge from Manhole 120 to the Storm Ditch.

Location: Storm Ditch near Manhole 120.

Date/Time: October 1, 2019 12:50 P.M.

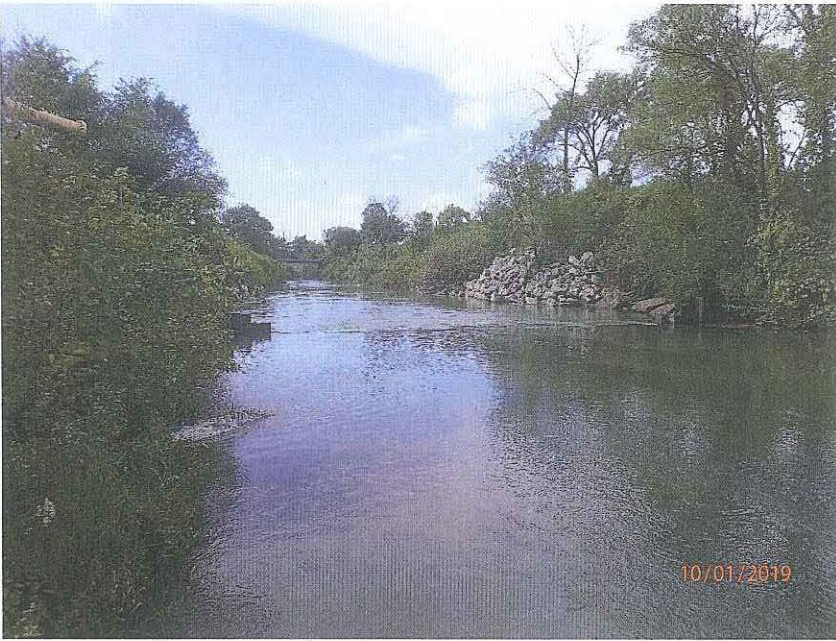


19: PA010156

Description: Looking upstream at the water in the Storm Ditch.

Location: At the boom in the Storm Ditch.

Date/Time: October 1, 2019 12:50 P.M.



20: PA010157

Description: Looking downstream at the water in the Storm Ditch. The water in the Storm Ditch flows to Outfall 001 and enters the waterway after Outfall 011,

Location: At the boom in the Storm Ditch.

Date/Time: October 1, 2019 12:50 P.M.



21: PA010158

Description: Water downstream of the sampling location for Outfall 001.

Location: Outfall 001.

Date/Time: October 1, 2019 1:17 P.M.



22: PA010159

Description: Looking upstream at the flow to Outfall 001.

Location: Outfall 001.

Date/Time: October 1, 2019 1:17 P.M.