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Subject	Interim Operations and Maintenance Plan/Periodic Review Report 2019, Gorham Street Area, Gabion Wall, and SWMU-1
Project Name	Former Hampshire Chemical Corp. Facility, Waterloo, New York—Site No. 850001A
Attention	Hampshire Chemical Corp.
From	Jacobs Engineering Group Inc.
Date	January 2020

1. Introduction

This technical memorandum presents an interim operations and maintenance (O&M) periodic review for the Gorham Street Area, gabion wall, and Solid Waste Management Unit (SWMU)-1 at the former Hampshire Chemical Corp. (HCC) Facility in Waterloo, New York (facility). Evans Chemetics, a wholly owned subsidiary of Bruno Bock, currently owns and operates the facility.

At the Gorham Street Area, interim corrective measures (ICMs) were completed in fall 2013, and restoration activities including grading adjustments, erosion repairs, and additional vegetation planting were completed in spring 2014. The gabion wall installation was completed in June 2015. The SWMU-1 combination asphalt and soil cap was completed in fall 2016, but because of its late season completion, additional restoration was completed in spring 2017 to address minor winter impacts.

The activities included in this periodic review report will become a part of the Site Management Plan (SMP) after the sitewide Corrective Measures Study (CMS) is completed. This memorandum serves to bridge the gap in time between remedy completion and implementation of the SMP so the cover systems are maintained and performing as designed.

2. Site Description

The facility is located at 228 East Main Street in Waterloo, New York. The facility is bordered to the north by East Main Street, to the east by residential properties, to the west by East Water Street, and to the south by the Cayuga-Seneca Canal. South of the canal are some residences and warehouses, and further downstream is the Village of Waterloo wastewater treatment plant (WWTP). The facility also includes property on the eastern side of Gorham Street, where the employee parking lot for the site is located. The area around the parking lot was the subject of the ICM as described in more detail below.

The gabion wall was installed along a portion of the southern edge of the facility property where a sediment removal project was performed. The gabion wall and associated restoration activities were performed to stabilize this portion of the canal bank. SWMU-1 is on the western edge of the facility property and is positioned between the Cayuga-Seneca Raceway and Canal system (north and south edges), with East Water Street forming the western extent and facility WWTP located east of SWMU-1. The facility entry from East Water Street crosses SWMU-1 and is used as the asphalt portion of the cover system; the soil cap system covers the areas north and south of the road.

2.1 Gorham Street Area Description

The Gorham Street Area is defined as two areas with engineered soil caps and covers; one larger area is east of Gorham Street and one smaller area is west of Gorham Street. The portion east of Gorham Street is approximately 1.8 acres of land that extends approximately 365 feet east of Gorham Street and terminates at the adjacent residential parcel (Figure 1). The area extends from the northern property boundary to the canal located to the south. The New York State Canal Corporation owns a thin right-of-way extending along the canal. A thin right-of-way owned by the Village of Waterloo also extends along each edge of Gorham Street. The area on the western side of Gorham Street encompasses approximately 0.04 acre of land that Evans Chemetics owns. The Evans Chemetics employee parking lot covers most of the portion of the parcel east of Gorham Street. Before Gorham Street corrective measures construction activities were conducted, the remaining area was wooded or covered by grass and undergrowth (CH2M HILL Engineers, Inc. [CH2M] 2014a).

2.2 Gorham Street Area Topography

Before Gorham Street corrective measures construction activities were conducted, the parcel west of Gorham Street sloped gently southeasterly toward the bridge abutment embankment and south toward the canal. East of Gorham Street, the land surface gently graded eastward across the parking lot and the adjacent wooded area to the eastern boundary of the facility.

The top of the canal bank was approximately 1 to 3 feet below the average grade of the parking lot, and a drainage swale trending west-east was present between the top of the canal bank and the parking lot. Beyond the swale, the grade dropped steeply to the canal where the bank was overgrown by vegetation and trees.

General overland flow from the parking lot and the extension area east of the parking lot was either south toward the canal or to the east. However, the canal bank berm was slightly higher in elevation than the grassy and formerly wooded area to the north and may limit some overland flow moving north to south. Precipitation that fell on the canal bank would potentially flow south toward the canal or north toward the grassy/vegetated area between the canal bank and the parking lot.

2.3 Canal Bank – Gabion Wall Description

The gabion wall was constructed on the canal bank south of the facility and north of the North Shore Deposit. The gabion wall is constructed with two layers of 3-foot by 3-foot by 6-foot galvanized wire mesh baskets with a polyvinyl chloride coating. The gabion baskets are filled with 3- to 5-inch-diameter stone. An 8-ounce geotextile fabric was placed in the over-excavated area and filled with self-compacting pea stone to provide a more stable subgrade. The canal bank side of the gabion wall was shaped, and an 8-ounce geotextile fabric was placed and filled with pea stone backfill to support the backside of the gabion wall.

Before intrusive work was performed, a comparison with the construction drawings was made, and adjustments to the gabion wall alignment were made to compensate for site conditions. Riprap was placed on the canal bank in areas where construction of the gabion wall was determined not feasible. These areas include the eastern end of the gabion wall from approximately Station 22+30 to the east and the western end of the gabion wall from approximately Station 20+30 (Figure 2) to the west in an area commonly referred to as the “horseshoe area” south of the facility.

2.4 SWMU-1 Description

SWMU-1 comprises an approximately 2.3-acre area of waste and debris west of the facility WWTP, east of East Water Street, north of the Cayuga-Seneca Canal, and south of the Cayuga-Seneca raceway that supplies cooling and process water to the facility (Figure 3). A paved access road, which has been expanded as part of the capping project, runs from East Water Street through SWMU-1 and east into the facility and is used by large haul trucks for Evans Chemetics product transportation. In this area, several pole-barn structures house Evans Chemetics chemical and equipment storage areas. West of the

structures, the expanded asphalt area is used for large haul trucks to pull to the side of the access road and idle before entering the facility, as needed.

A combination soil and asphalt cap was installed over the 2.3-acre SWMU-1 area. This capping system included placing the geosynthetic clay liner (GCL) cap system over approximately 1.4 acres, using the existing asphalt cap (approximately 0.65 acre), and an asphalt expansion area that encompasses approximately 0.25 acre. The GCL cap system was placed over a leveling layer and demarcation layer that separate the waste and cover materials. The overlying cap materials consist of a granular sodium bentonite GCL layer, a geocomposite drainage layer, an 18-inch-thick protective soil layer, and a 6-inch-thick topsoil layer to support vegetation.

The asphalt cap was constructed by milling and reworking the existing road surface and placing a 6-inch-thick asphalt layer consisting of a 4-inch-thick Type 3 binder course and a 2-inch-thick Type 6 top course. In areas where the asphalt road was expanded north of the original road surface, materials were excavated to allow the 8-inch gravel and 6-inch asphalt layers to be installed and match the elevation of the existing asphalt and overlay. The excavated material was used as a leveling layer below the cap. In the area north of the entry road, cover soil was placed over the existing ground surface to a depth of at least 6 inches and revegetated.

2.5 SWMU-1 Topography

Before construction, elevation across the site varied from approximately 453 feet above mean sea level (amsl) at the elevated mound area in the center of the unit to approximately 436 feet amsl in the southern and southeastern areas of SWMU-1. Placement of the cap followed a similar configuration, but the area toward the canal was reshaped to promote positive drainage to the perimeter and intermediate swale. The final elevation of the capped SWMU-1 ranges from 457 to 440 feet amsl in the drainage swales. The elevation along the canal beyond the cap grades sharply to the canal pool elevation of approximately 429 feet amsl.

3. Site Inspections

3.1 Inspection Frequency

Inspections are conducted at the frequency specified in the interim O&M plan submitted in 2014 (CH2M 2014b). Accordingly, annual cover inspections and biennial gabion wall inspections will be performed until the SMP is in place as part of the sitewide CMS.

3.2 Inspection Forms, Sampling Data, and Maintenance Reports

Recent inspections were performed on July 23 and July 24, 2019 in conjunction with a mowing event at SWMU-1. A second mowing event was conducted on October 28, 2019. The inspection results are shown on the inspection forms in Attachment 1. Attachment 2 contains photographs of the site taken during the July 2019 inspection. Deficiencies were noted and reported, and appropriate corrective actions were taken to remedy the deficiency.

3.2.1 Gorham Street

The following areas were inspected for the Gorham Street Area:

- Soil cover
 - Stressed or dead vegetation
 - Observation as to whether mowing of vegetation is being performed at a suitable frequency
 - Erosion, furrows, ruts, penetrations, cracking, or animal burrows
 - Areas of ponding water
 - Evidence of vandalism to the cover
 - Evidence of slope movement along the canal
 - Signs of traffic on the soil cover area other than from mowing equipment

- Asphalt cap
 - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
 - Vegetation growth through the asphalt
 - Areas of ponding water
 - Evidence of vandalism to the cap
- Drainage swales
 - Observation as to whether drainage swales are still allowing for adequate flow toward the canal
 - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
 - Condition of check dams
 - Confirm flow is not bypassing check dams
 - Erosion issues at down chutes
- Perimeter security (fences and gates)
 - Gates are locked
 - Fence condition
 - Signs of vandalism
 - Signs of vegetation growing on fence or gates

3.2.2 Gabion Wall

The following gabion wall areas were inspected:

- Confirm that eroded soil has not built up on the top of the wall; remove materials as necessary.
- Inspect for visual signs on vertical or horizontal alignment changes, bulging, or other changes since the last inspection. Take photographs for similar locations and directions for comparison over time.
- Inspect face of wall for broken or separated sections of the wire gabions and plant growth. Large vegetation/trees should be removed.

3.2.3 SWMU-1

The following areas were inspected at SWMU-1:

- Soil cover
 - Stressed or dead vegetation
 - Observation as to whether mowing of vegetation is being performed at a suitable frequency
 - Erosion, furrows, ruts, penetrations, cracking, or animal burrows
 - Areas of ponding water
 - Evidence of vandalism to the cover
 - Evidence of slope movement along the canal
 - Signs of traffic on the soil cover area other than from mowing equipment
 - Signs of damage to monitoring wells
- Asphalt cap
 - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
 - Vegetation growth through the asphalt
 - Areas of ponding water
 - Evidence of vandalism to the cap
- Drainage swales
 - Observation as to whether drainage swales are still allowing for adequate flow toward the canal
 - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
 - Exterior clean-out locations intact
 - Condition of check dams
 - Confirm flow is not bypassing check dams

- Erosion issues at drainage layer outfall pipes or down chutes
- Perimeter security (fences and gates)
 - Gates are locked
 - Fence condition
 - Signs of vandalism
 - Signs of vegetation growing on fence or gates

Attachment 1 contains applicable inspection forms and other records generated for the site during the reporting period.

4. Corrective Measures Completed

Any deficiencies noted during inspections were corrected as noted in the inspection reports (Attachment 1). Each deficiency was addressed within 90 days as stipulated in the O&M plan (CH2M 2014b) except for a subsidence feature near the raceway that required contractor support and took additional time to address. The subsidence feature was observed near the raceway within the extent of SWMU-1 and was repaired in July 2019 by filling the void (believed to be a collapsed abandoned sprinkler water line) with gravel, covering the depression with topsoil, and reseeding. The grass in the area has been re-established.

Three burrows were noted on Gorham Street and appear to be historical (seven groundhogs were removed from the area in summer 2017) and were covered by Japanese knotweed. The three burrows will be monitored in 2020 to determine if they are active.

In general, the remaining issues that occurred in 2019 were associated with vegetation management. Additional effort was expended on eradicating Japanese knotweed, which included physical removal and herbicide application by Cardno Corporation. Japanese knotweed is a hardy invasive species and likely will take at least two seasons to eradicate.

Minor grapevine growth along the western edge of the gabion wall was observed during the site inspection and had been cut. This area will be monitored, as the grapevine is hardy and has been a persistent (albeit minor) maintenance issue.

Both cover systems and the gabion wall appear to be performing as designed, and no significant issues have been observed. HCC will continue annual cover and biennial gabion inspections until the SMP for the facility is finalized.

5. Report Submission

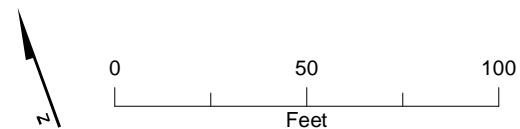
The periodic review report will continue to be submitted annually in hard copy and electronic format to the New York State Department of Environmental Conservation Central and Region 8 Office and the New York State Department of Health Central Office.

6. References

CH2M HILL Engineers, Inc. (CH2M). 2014a. *Construction Completion Report, Former Hampshire Chemical Corp., Gorham Street Corrective Measures, Waterloo, New York.*

CH2M HILL, Engineers, Inc. (CH2M). 2014b. *Interim Operations and Maintenance Plan for Gorham Street Area, Former Hampshire Chemical Corp. Facility, Waterloo, New York.*

Figures





GENERAL SHEET NOTE

1.

RIPRAP TO BE PLACED AT SELECT LOCATIONS BELOW THE WATERLINE AT TOE OF SLOPE AFTER THE EXCAVATION OF SEDIMENT TO PROVIDE THE STABILITY TO THE CANAL BANK.

2.

FOR RIPRAP LOCATIONS SEE CROSS SECTIONS IN SHEETS C-301 THROUGH C-315

LEGEND

GABIONS

RIPRAP
(SEE NOTE 1)



ENLARGED GABION PLAN

1"= 20'

GABION COORDINATE TABLE

STATION	NORTHING	EASTING
0+00.00	1057258.29	747770.49
0+20.00	1057244.05	747784.50
0+40.00	1057229.29	747797.99
0+60.00	1057214.63	747811.60
0+80.00	1057200.41	747825.65
1+00.00	1057185.88	747839.38
1+20.00	1057170.08	747851.63
1+40.00	1057155.06	747864.83
1+60.00	1057140.09	747878.09
1+80.00	1057125.29	747891.54
1+99.28	1057110.72	747904.13

NOTE:
FOR GABION INSTALLATION LOCATION
SEE REFERENCE DRAWING THEW ASSOCIATES
GABION WALL LOCATION MONITORING

Figure 2. Gabion Wall Record Drawing, Periodic Review
Report for Gorham Street Area and Gabion Wall
Former Hampshire Chemical Corp. Facility
Waterloo, New York

RECORD DRAWINGS

Revisions Drawn By D.SCHAUER Date 2015-08-11
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

JACOBS

CIVIL

BANK STABILIZATION PLAN

RESTORED BANK

SEDIMENT REMOVAL CORRECTIVE MEASURES

FORMER HAMPSHIRE CHEMICAL CORPORATION FACILITY

WATERLOO, NEW YORK

NO.

DATE

DR

CHK

REVISION

APVD

BY

APVD

NO.

DATE

DR

CHK

REVISION

APVD

BY

APVD

DATE

JULY 2014

PROJ

428287

DWG

C-212

SHEET

14 of 14

1" = 60'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

DATE

JULY 2014

PROJ

428287

DWG

C-212

SHEET

14 of 14

1" = 60'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

DATE

JULY 2014

PROJ

428287

DWG

C-212

SHEET

14 of 14

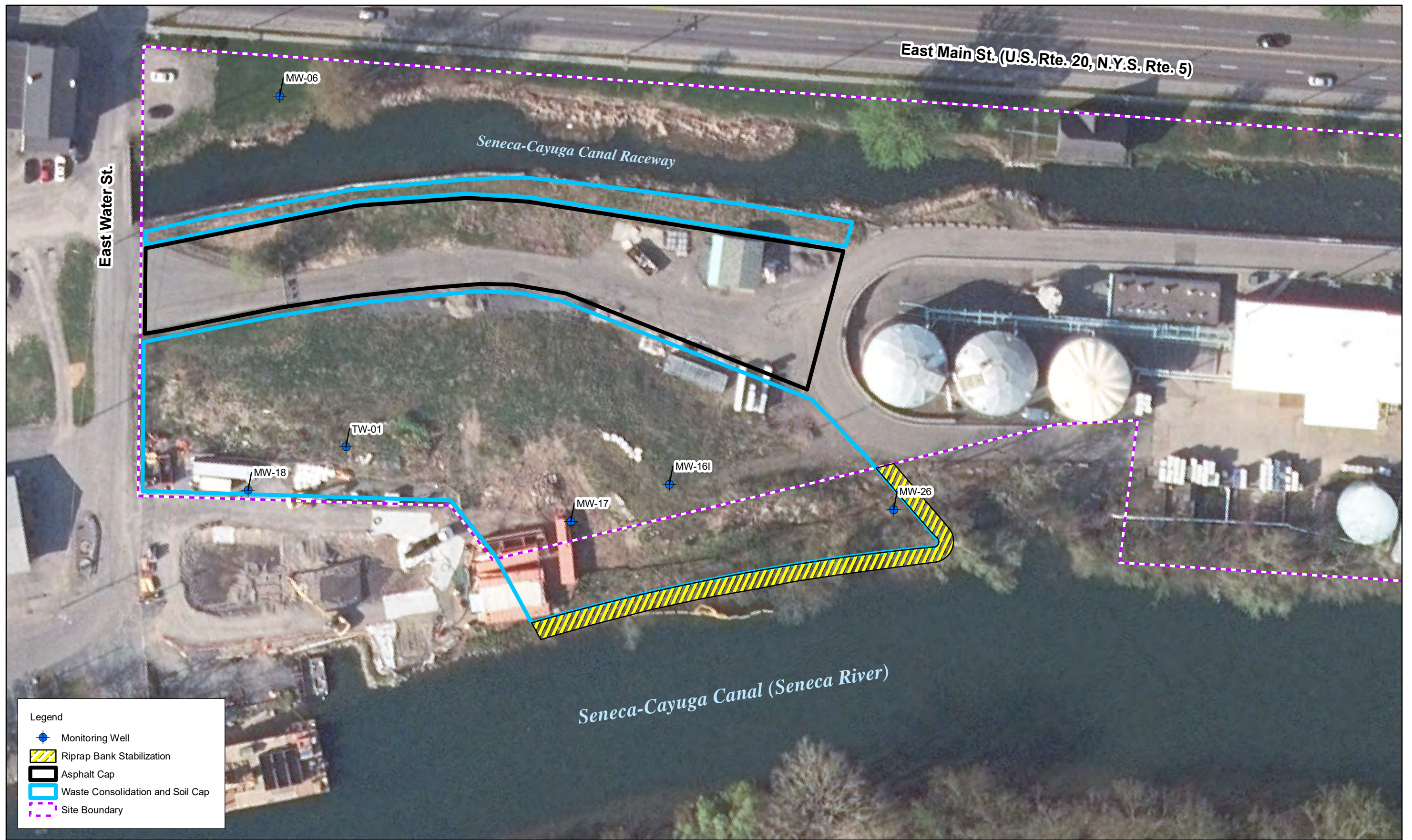


Figure 3. Interim Operations and Maintenance Plan/
Periodic Review Inspection Area for SWMU-1
Former Hampshire Chemical Corp. Facility
Waterloo, New York

Attachment 1 Inspection Forms

Former Hampshire Chemical Corp.

AOC A Sediment Removal Project

Gabion Wall Inspections

The gabion wall located on the Cayuga-Seneca Canal should be assessed and inspected bi-annually. The following items will be included in these routine visual inspections:

- Confirm that eroded soil has not built up on the top of the wall; remove materials as necessary
- Inspect for visual signs on vertical or horizontal alignment changes, bulging, or other changes since the last inspection. Take photos for similar locations and directions for comparison over time
- Inspect face of wall for broken or separated sections of the wire gabions and plant growth; large vegetation/trees should be removed.

If during inspections, individual wires or sections of the gabions are found to be broken, they must be repaired as soon as possible because they are structural elements of the wall. Repairs should include gabion wire repair materials (welded wire mesh, binding wire, rings, etc.) recommended by a reputable gabion manufacturer and supplier. All repairs will be performed in strict conformance to gabion manufacturer recommendations.

Inspection	Comments
Erosion at top or back of gabion wall	NONE
Horizontal alignment (bulging)	NONE NOTED
Vertical alignment (drop or deflection of top of wall)	NONE NOTED
Gabion basket wire (damage or breaks)	NONE
Vegetation (on face or top of wall)	VIRGINIA CREEPER AT WEST END

Inspection Completed by: TAYLOR SALSBERG

Inspection Date: 7/24/19

Attachment 1: Semi-Annual Inspection Form
Interim Operations and Maintenance Plan for Gorham Street
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Inspection Date: 7/23/14 Inspector Name: TAYLOR SALSBERG

Soil Cover	Yes	No	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are there signs of stressed or dead vegetation?	✓		CAIRP SPRAYED, HERBICIDE TO KILL KNOTWEED	GRASS IS ALREADY GREEN
Is mowing of vegetation being performed at a suitable frequency?	✓			
Are there signs of erosion, furrows, ruts, penetrations, cracking or animal burrows?	✓		3 BARROWS: 1 UNDER LARGE ROCK + 2 UNDER POWERLINES FAR EAST WHERE KNOTWEED WAS REMOVED. PILS TAKEN	
Are there any areas of ponding water?		✓		
Any evidence of vandalism to the cover?		✓		
Is there evidence of slope movement along the canal?		✓		
Are there signs of traffic on the soil cover area other than from mowing equipment?		✓		
Asphalt Cap	Yes	No	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are there Signs of Erosion, Furrows, Ruts, Penetrations, Cracking or Animal Burrows?		✓		
Is there any vegetation growth through the asphalt?		✓		
Are there any areas of ponding water?		✓		
Any evidence of vandalism to the cap?		✓		
Drainage Swales	Yes	No	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are the drainage swales still allowing for adequate flow towards the canal?	✓			
Are there any signs of erosion, furrows, etc?		✓		
Perimeter Security (Fences & Gates)	Yes	No	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are all gates locked?	✓			
Is fence in good condition?	✓			
Are there signs of vandalism?		✓		
Is vegetation growing on fence or gates?		✓		

CA - Corrective Actions

Attachment 1: Annual Inspection Form
Interim Operations and Maintenance Plan for SWMU 1
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Inspection Date: 7/24/19 Inspector Name: THOMAS SALSBURG

Soil Cover	Yes	No	N/A	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are there signs of stressed or dead vegetation?		✓		JUST MOWED TODAY	
Is mowing of vegetation being performed at a suitable frequency?	✓				
Are there signs of erosion, furrows, ruts, penetrations, cracking or animal burrows?		✓		NO BURROWS NOTED, BUT I DID SEE A GRAYING HOLE NEAR THE CANAL AT SOUTHWEST CORNER	
Are there any areas of ponding water?		✓			
Any evidence of vandalism to the cover?		✓			
Is there evidence of slope movement along the canal?		✓			
Are there signs of traffic on the soil cover area other than from mowing equipment?					
Are the monitoring wells damaged?		✓		NOTE STEEL COVER MISSING FROM FLW-17	
Asphalt Cap	Yes	No	N/A	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are there Signs of Erosion, Furrows, Ruts, Penetrations, Cracking or Animal Burrows?		✓			
Is there any vegetation growth through the asphalt?		✓			
Are there any areas of ponding water?		✓			
Any evidence of vandalism to the cap?		✓			
Drainage Swales	Yes	No	N/A	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are the drainage swales still allowing for adequate flow towards the canal?	✓				
Are there any signs of erosion, furrows, etc?		✓			
Are exterior cleanout locations able to be located?	✓				
Are check dams in good condition?	✓				
Is flow bypassing the check dams?		✓		NO WATER OBSERVED	
Any signs of excessive erosion from drainage layer outfall pipe and at down chutes?		✓			
Are there any signs of erosion, furrows, etc?		✓			
Perimeter Security (Fences & Gates)	Yes	No	N/A	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are all gates locked?	✓				
Is fence in good condition?	✓				
Are there signs of vandalism?		✓			
Is vegetation growing on fence or gates?		✓			

Attachment 2 Photo Logs

Interim Operations and Maintenance
Plan/Periodic Review Report 2019,
Gorham Street Area, Gabion Wall, and
SWMU-1
January 2020

Project Title	Interim Operations and Maintenance Plan/Periodic Review Report 2019, Gorham Street Area, Gabion Wall, and SWMU-1
Location	Former Hampshire Chemical Corporation Facility, Waterloo, New York—Site No. 850001A
Date	January 2020

Gorham Street Area



Photograph 1: View of power pole area (looking east) prior to Japanese knotweed eradication measures.



Photograph 2: View of Evans employee parking lot cover system (looking east) with evidence of repairs to enhance cover.



Photograph 3: View of Evans employee parking lot cover system expansion area (looking east) with vegetative cover and canal in background.



Photograph 4: View of cover system along the canal bank (looking east).



Photograph 5: View of cover system and swale with Japanese knotweed removal occurring near the power pole (looking north).



Photograph 6: One of two groundhog burrows identified within the Japanese knotweed eradication area – the burrow does not appear to be active but will be monitored.



Photograph 7: Groundhog burrow identified near the edge of the boulder – the burrow does not appear to be active but will be monitored.



Photograph 8: View of power pole area after Japanese knotweed removal effort (looking southeast).



Photograph 9: View of the open portion of the cover system (looking west).



Photograph 10: View of pole area after Japanese knotweed removal (looking northwest).

Gabion Wall



Photograph 11: View of gabion alignment (looking east) – grapevine in foreground was removed.



Photograph 12: View of gabion alignment (looking east).



Photograph 13: View of gabion alignment (looking west).



Photograph 14: View of gabion alignment (looking west) – rip-rap at termination for stormwater management.

Solid Waste Management Unit 1



Photograph 155: Area of Japanese knotweed adjacent to tote storage area (looking west) prior to removal efforts.



Photograph 16: Packing supersacks with Japanese knotweed biomass.



Photograph 17: Area of Japanese knotweed removal adjacent to tote storage area (looking west).



Photograph 18: Area of Japanese knotweed removal adjacent to tote storage area (looking north).



Photograph 19: Portion of SWMU-1 cover system immediately following cutting (looking northeast).



Photograph 20: Portion of SWMU-1 cover system immediately following cutting (looking west).



Photograph 21: Western edge of SWMU-1 cover system (along East Water Street) immediately following cutting (looking north) – GP-03 and GP-04 soil vapor probes in background.



Photograph 22: Portion of SWMU-1 cover system immediately following cutting (looking east) with swale system and check dams visible.



Photograph 23: Area of soil cover near raceway with pole buildings and expanded pavement in the background (looking west).



Photograph 24: Portion of SWMU-1 cover system immediately following cutting (looking west) with swale system visible.



Photograph 25: Portion of SWMU-1 cover system immediately following cutting (looking northeast).



Photograph 26: Portion of SWMU-1 cover system and former sediment treatment pad immediately following cutting (looking east).