Interim Operations and Maintenance Plan/Periodic Review Report 2017, Gorham Street Area, Gabion Wall, and SWMU-1—Former Hampshire Chemical Corp. Facility, Waterloo, New York—Site No. 850001A

PREPARED FOR:	Hampshire Chemical Corp. (HCC)
PREPARED BY:	CH2M HILL Engineers, Inc. (CH2M)
DATE:	December 6, 2017

Introduction

This technical memorandum presents an interim operations and maintenance (O&M) periodic review for the Gorham Street Area, the gabion wall, and Solid Waste Management Unit 1 (SWMU-1) at the Former 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 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; however, due to 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 is completed. This report serves to bridge the gap in time between remedy completion and implementation of the SMP to ensure the cover systems are maintained and performing as designed.

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 interim corrective measure as described in more detail below. The gabion wall was installed along a portion of the southern edge of the Site 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 located on the western edge of the site and is positioned between the Cayuga-Seneca Raceway and Canal system (north and south edges) with East Water Street forming the western extent and the Evan Chemetics WWTP is located east of the unit. The facility entry from East Water Street crosses SWMU-1 and is used as the asphalt portion of the cover system; the areas to the north and south of the road are covered with the soil cap system.

Gorham Street Area Description

The Gorham Street Area is defined as two areas with engineered soil caps and covers; one larger area is located east of Gorham Street and one smaller area is located 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 is owned by Evans Chemetics. The Evans Chemetics employee parking lot covers the majority of the portion of the parcel east of Gorham Street. Prior to Gorham Street corrective measures construction activities, the remaining area was wooded or covered by grass/undergrowth (CH2M, 2014a).

Gorham Street Area Topography

Prior to Gorham Street corrective measures construction activities, 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.

Canal Bank – Gabion Wall Description

The gabion wall was constructed on the canal bank south of the Evans Chemetics 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 to not be 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” located south of the Evans Chemetics facility.

SWMU-1 Description

SWMU-1 comprises an area of waste and debris with an approximate extent of 2.3 acres and is located 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 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 and has been expanded as part of the capping project. In this area, there are now several pole-barn structures that 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 placement of the geosynthetic clay liner (GCL) cap system over approximately 1.4 acres, use of 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 protective soil layer, and a 6-inch 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 to the north of the original road surface, materials were excavated to allow the 8-inch gravel and 6-inch asphalt layer to be installed and match the elevation of the existing asphalt and overlay. The excavated material was used as leveling layer below the cap.

In the area to the north of the entry road, cover soil was placed over the existing ground surface to a depth of at least 6 inches and revegetated.

SWMU-1 Topography

Prior to 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. The 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 feet amsl 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.

Site Inspections

Inspection Frequency

Inspections are conducted at the frequency specified in the interim O&M plan submitted in 2014 (CH2M, 2014b). With completion of the 2017 inspections, future inspections are to be conducted annually until the SMP is in place as part of the sitewide corrective measures study. The gabion wall inspection is to be conducted biannually.

Inspection Forms, Sampling Data, and Maintenance Reports

These second-year inspections were performed for the Gorham Street combination soil and asphalt cover, gabion wall, and SWMU-1 combination soil and asphalt cap because SWMU-1 required a spring inspection to inspect for winter damages. Accordingly, inspections of each unit were completed on April 26, 2017, and the official inspections were completed on October 9, 2017, as shown on the inspection forms in Attachment 1. Attachment 2 contains photographs of the site taken during the October inspection. Deficiencies were noted and reported, and appropriate corrective actions were taken to remedy the deficiency.

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

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.

SWMU-1

The following areas were inspected at the SWMU-1 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
  - 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.

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).

In general, the issues that occurred in 2017 were associated with animal burrowing and vegetation management. Evans Chemetics performed requested cutting at Gorham Street and performed a groundhog removal program in summer 2017, which netted seven groundhogs. At that time, flowable fill was placed in all observed burrows; no evidence of burrowing has been observed since completion of the groundhog removal program.

Additionally, two fence repairs were necessary due to snow-plowing impacts and were completed in summer 2017. Evans Chemetics constructed pole barns within the expanded asphalt area of SWMU-1 and the area where the poles had penetrated the asphalt were open during the spring visit; however, the issue was immediately addressed (summer 2017) and the areas were covered with asphalt, which was confirmed during the fall inspection.

Issues discovered during the second (official site inspection) including spraying of the vines along the Gorham Street fence, spraying of the weeds in the parking lot, repairs to the fence, and removal of the vines on the gabion wall, which were completed by Evans Chemetics on November 3, 2017. Backfilling of the small burrows at SWMU-1 was completed by CH2M on November 8, 2017.

All cover systems and the gabion wall appear to be performing as designed.

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.

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

Figure 1
Interim Operations and Maintenance Plan / Periodic Review Inspection Area
Periodic Review Report for Gorham Street Area
Former Hampshire Chemical Corp. Facility
Waterloo, New York

ch2m

\\LAKEFRONT\PROJ\GIS\DOW\WATERLOO\REPORTS\2014\MISC\MAPFILES\FIGURE 01 - INTERIM OPS AND MAINTENANCE PLAN REVIEW INSPECTION AREA.MXD JHANSEN1 11/6/2017 1:34:30 PM

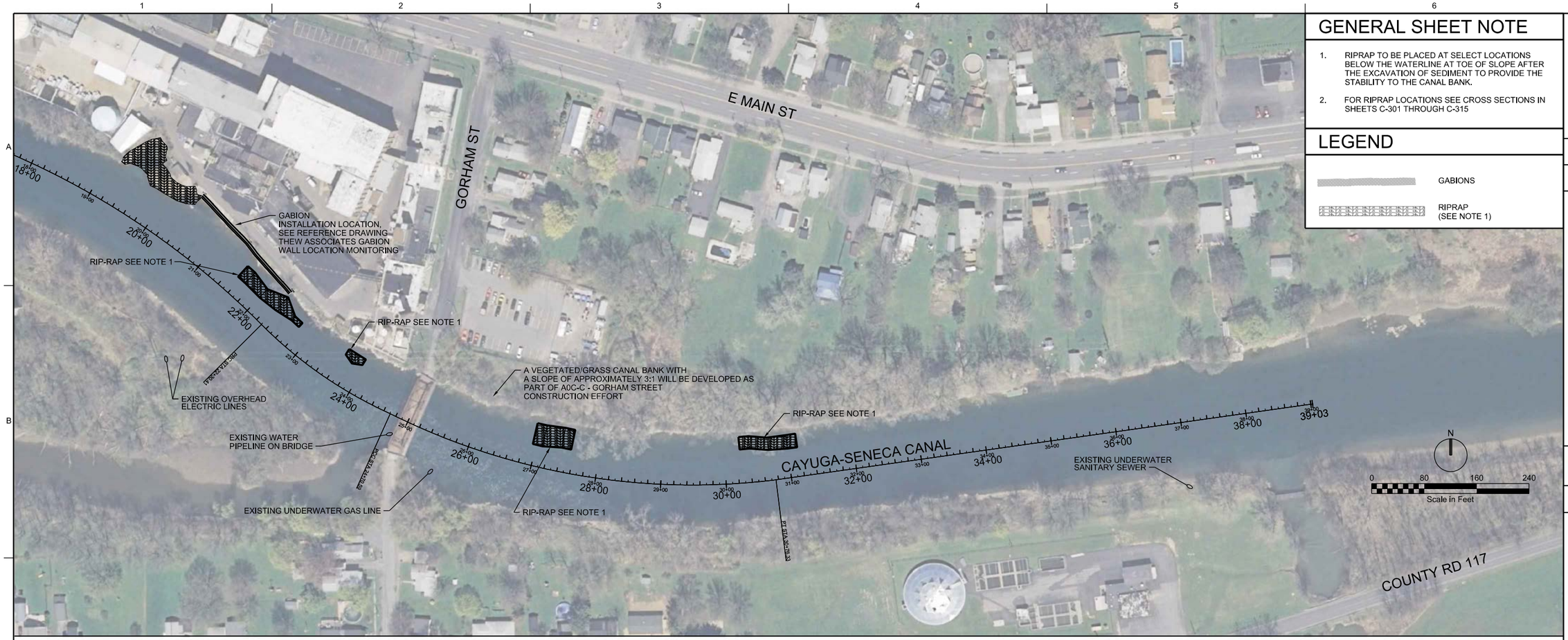
GENERAL SHEET NOTE

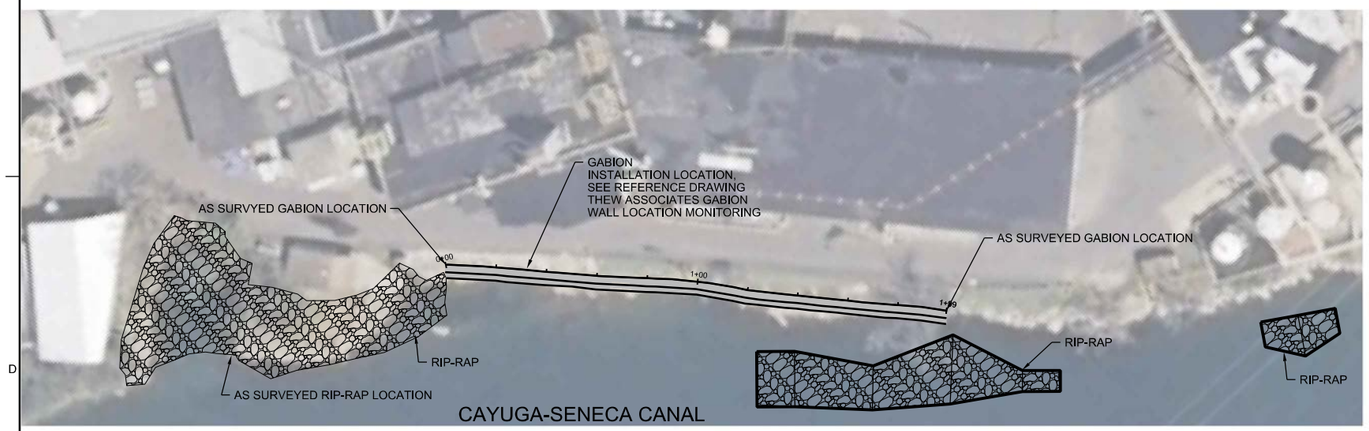
1. RIPRAP TO BE PLACED AT SELECT LOCATIONS BELOW THE WATERLINE AT TOE OF SLOPE AFTER THE EXCAVATION OF SEDIMENT TO PROVIDE THE STABILITY TO THE CANAL BANK.
2. FOR RIPRAP LOCATIONS SEE CROSS SECTIONS IN SHEETS C-301 THROUGH C-315

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

NO.	DATE	REVISION	BY	APVD
DSGN	S RAMAMURTHY	DR D.SCHAUER	CHK W ANDRAE	APVD G COLVIN

SEDIMENT REMOVAL CORRECTIVE MEASURES
FORMER HAMPSHIRE CHEMICAL CORPORATION FACILITY
WATERLOO, NEW YORK

CH2MHILL®

CIVIL

BANK STABILIZATION PLAN RESTORED BANK

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

FILENAME: 005-C-2012_428287.dgn PLOT DATE: 2016\01\14 PLOT TIME: 2:24:22 PM

East Main St. (U.S. Rte. 20, N.Y.S. Rte. 5)

East Water St.

Seneca-Cayuga Canal Raceway

MW-06

TW-01

MW-18

MW-16I

MW-17

MW-26

Seneca-Cayuga Canal (Seneca River)

Legend

- Monitoring Well
- Riprap Bank Stabilization
- Asphalt Cap
- Waste Consolidation and Soil Cap
- Site Boundary

N

0 60 120

Feet

Figure 3

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

ch2m

\\LAKEFRONT\PROJ\GIS\DOW\WATERLOO\REPORTS\2017\MAINTENANCE_PLAN_REVIEWREPORT\FIGURE 3 - SWMU 1 INTERIM OPERATIONS AND MAINTENANCE PLAN.MXD JHANSEN1 11/7/2017 8:48:10 AM

Attachment 1
Inspection Forms

October 2017 Inspection

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 Observed
Horizontal alignment (bulging)	None observed - appears consistent w/ previous visits
Vertical alignment (drop or deflection of top of wall)	None Observed
Gabion basket wire (damage or breaks)	None
Vegetation (on face or top of wall)	Vine growing on west end needs to be removed. Corrected by Evans 11/3/17

Inspection Completed by: Carling, Salsburg, Costlin

Inspection Date: 10/9/17

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

Inspection Date: 10/9/17 **Inspector Name:** Carling

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?		✓			
Is mowing of vegetation being performed at a suitable frequency?		✓			
Are there signs of erosion, furrows, ruts, penetrations, cracking or animal burrows?	✓			Two small burrows along canal Once at NW Corner	Corrected by CH2M on 11/8/17
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?		✓			
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?	✓			Few small spots from today's rain	No Action Required
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?		✓			
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?	✓			NW Corner of SWMU-1 and edge of Tote Storage	Corrected by Evans on 11/3/17

CA - Corrective Actions

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

Inspection Date: 10/9/17 **Inspector Name:** Carling

Soil Cover	Yes	No	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are there signs of stressed or dead vegetation?		✓		
Is mowing of vegetation being performed at a suitable frequency?	✓			
Are there signs of erosion, furrows, ruts, penetrations, cracking or animal burrows?		✓	7 Groundhogs removed and burrows filled w/ flowable fill	No Action Required
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?	✓		Very minor from today's rain	No Action Required
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 security signs in place?		✓		
Are all gates locked?	✓			
Is fence in good condition?	✓		Fence along canal has been hit - popped top rail & gate	Corrected By Evans 11/3/17
Are there signs of vandalism?		✓		
Is vegetation growing on fence or gates?	✓		Minor growth in a couple spots	Corrected by Evans on 11/3/17

Attachment 2
Photo Logs

October 2017 Inspection

Western end of Gabion Wall (looking east).

Eastern end of Gabion Wall (looking west).

Western end of Gabion Wall Access Road (looking east).

Western end of Gabion Wall (looking west).

Western side of Gorham Street upland area (looking north).

Western end of Gorham Street bank (looking east).

Northern end of Gorham Street area (looking west).

Eastern end of Gorham Street area (looking west).

Southern end of Gorham Street area asphalt cap (looking west).

Gorham Street area asphalt cap (looking north).

Western side of SWMU-1 (looking east).

Eastern end of South Side of SWMU-1 (looking west).

Western end of south side of SWMU-1 (looking west).

Northern side of SWMU-1 (looking west).

Western end and north side of SWMU-1 drainage swale (looking west).

Northern side of SWMU-1 drainage swale and rock check dam (looking east).

Southern side of SWMU-1 (looking northwest).

Northern side and eastern end of SWMU-1 and asphalt cap area (looking south).

Western end of asphalt cap (looking west).

Western end of asphalt cap (looking northwest).

Eastern end of asphalt cap (looking east).

North side of asphalt cap (looking east).

North side of asphalt cap (looking west).

Sealed asphalt cap penetrations for new storage buildings.

Animal burrow (filled with topsoil on 11/18/2017)

Animal burrow (filled with topsoil on 11/18/2017)

Animal burrow (filled with topsoil on 11/18/2017)