

2018 RESTORATION MAINTENANCE SUMMARY REPORT

Bloody Brook
Onondaga County, New York

Prepared for:
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Syracuse, New York

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February 2019

Certification Statement

I, Nickcole M. Evans, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this *2018 Restoration Maintenance Summary Report* was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that activities were performed in full accordance with the DER-approved work plan and DER-approved modifications.



Nickcole M. Evans, P.E.
License Number 085978

In accordance with New York State Education Law, it is a violation for any person, unless he is acting under the direction of a licensed professional engineer, to alter this summary report in any way.

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.1 SITE DESCRIPTION.....	2
2.0 SUMMARY OF COMPLETED RESTORATION MAINTENANCE	4
2.1 WOODED AREA AND WETLANDS MAINTENANCE	4
2.1.1 Vegetation Maintenance	4
2.1.2 Invasive Species Control	4
2.2 EROSION CONTROL	5
2.2.1 Location 1	5
2.2.2 Locations 2 and 3	6
2.2.3 Location 4	6
2.2.4 Location 5	6
2.2.5 Locations 6 and 7	6
2.2.6 Locations 8 and 9	6
2.2.7 Location 10	7
2.2.8 Location 11	7
2.2.9 Location 12	7
2.2.10 Location 13	7
2.2.11 Location 14	8
3.0 CONCLUSION	9

List of Figures

- Figure 1 Site Location Map
- Figure 2 Site Area Map
- Figure 3 Wetland Habitats
- Figure 4A Erosion Locations 1 through 7
- Figure 4B Erosion Locations 8 through 12
- Figure 4C Erosion Locations 13 and 14

Acronyms and Abbreviations

Drainage District	Onondaga County Bloody Brook Drainage District
ERNMX-105	Northeastern U.S. Road Native Mix
ERNMX-253	PA New England Province Riparian Mix
MOW	Upland Meadow
NYSDEC	New York State Department of Environmental Conservation
F&W	Fish and Wildlife
OCDWEP	Onondaga County Department of Water Environment Protection
RMSR	Restoration Maintenance Summary Report
RMWP	Restoration Maintenance Work Plan
SMP	Site Management Plan
Thruway	New York State Thruway
VCA	Voluntary Cleanup Agreement
WBBB	West Branch of Bloody Brook

1.0 INTRODUCTION

This 2018 *Restoration Maintenance Summary Report* (RMSR) has been prepared to summarize the activities completed in November 2018 in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved *Restoration Maintenance Work Plan* (RMWP) dated October 2018. These activities were completed to address the areas of concern identified in the *Annual Post-Construction Restoration Monitoring Summary Report* dated August 2018, which summarized the results of monitoring activities completed during the spring of 2018 and included vegetation monitoring and an inspection for areas of erosion at the Bloody Brook site.

Results of monitoring activities completed in May and June 2018 included an evaluation of the success of the vegetation planting and established hydraulic regimes and an inspection for areas of erosion at the Bloody Brook site. The remediation, including construction and restoration activities completed from June 2014 through July 2017, was conducted in accordance with a Voluntary Cleanup Agreement (VCA) between Lockheed Martin and the NYSDEC (Index #: D7-0001-01-09, effective July 20, 2002). The remediation included the West Branch of Bloody Brook (WBBB) and Bloody Brook from below the confluence of the West and Middle Branches of Bloody Brook and adjacent property located between the New York State Thruway (Thruway) and Onondaga Lake Parkway (approximately 5,000 foot long section of stream) in the Town of Salina and a portion of the Village of Liverpool, Onondaga County, New York, as shown on Figure 1.¹ The NYSDEC “Release and Covenant Not to Sue” was received by Lockheed Martin for the Bloody Brook site on March 21, 2018.

Following the monitoring completed during spring 2018 and the August 2018 submittal of the 2018 *Annual Post-Construction Restoration Monitoring Summary Report*, representatives from NYSDEC and NYSDEC Fish and Wildlife (F&W) visited the site on September 27, 2018 and October 18, 2018. A conference call was held between NYSDEC, Lockheed Martin, and AECOM on November 1, 2018 to discuss additional maintenance activities required for the site based on observations from and discussions during the site visits. The NYSDEC approval letter for the RMWP, dated November 5, 2018, summarized the additional concerns of NYSDEC F&W and identified the following three additional components that will be addressed as part of the adaptive management approach to the development of the habitat areas.

- Habitat area W-11, shown on Figure 3, has developed a strong population of emergent vegetation. However, there is still a large area where the wetland seed mix did not germinate. Cattails from adjacent areas on the site will be transplanted in these bare spots. If the 2019 monitoring results indicate the transplants failed to develop, other options will be evaluated.

¹ The term “site” in the VCA is defined as: a portion of the banks, surface waters and sediments of the West and Middle Branches of Bloody Brook located in the Town of Salina with a portion of the site located in the Village of Liverpool and commences downstream of Interstate 90, the New York State Thruway, and extends generally southward past the confluence of the West Branch and the Middle Branch of Bloody Brook creating Bloody Brook, and ends on the upstream side of Onondaga Lake Parkway. After examining data developed during remedial investigation work in the Middle Branch, NYSDEC determined that no further action was required for that branch of Bloody Brook. For this reason, the “site” in this document relates only to those areas within the VCA site where the remedial program has been implemented.

- During early spring 2019, the health of the trees in the wooded and wetland habitats will be surveyed in coordination with NYSDEC F&W, with particular attention placed on the trees that had been damaged by either vandalism or Onondaga County maintenance activities. Woodchips will be placed around the base of trees, as needed, to provide nutrients, and the trunks will be protected (e.g., chicken wire around the trunk) in areas susceptible to damage. It is likely that some of these trees will be in UPF-2, a habitat area that is maintained by Onondaga County; therefore, they will be consulted prior to completion of these activities.
- Actions to control invasive species at the site are still required. Additionally, there is a large source of purple loosestrife and *Phragmites* adjacent to the site near the Thruway. In order to help act as a barrier against the offsite invasive species and to provide a canopy, trees and live stakes will be planted in early spring 2019 in this area, in consultation with NYSDEC F&W, with the goal of developing a stand of large trees once fully developed. In addition to providing shade and acting as a barrier, large trees in this area would be expected to help reduce noise from the Thruway heard by the residents in the neighborhood.

In compliance with the NYSDEC approved February 2018 *Site Management Plan* (SMP) for Bloody Brook, annual restoration inspections are to be completed for five years following completion of restoration activities to ensure no erosion of the channel and banks is occurring and that the vegetation is growing as intended. The annual inspections are to be completed in accordance with the March 2014 Decision Document prepared by NYSDEC, property-specific owner restoration agreements, and the February 2018 SMP. The first of these monitoring events was completed in May 2017 for the majority of the Bloody Brook site. Restoration was still in progress at three areas identified on Figure 2 (Apartment complex area including the stream side banks and bottom; a portion of the commercial property outside of the stream side banks and located between the Old Liverpool Road culvert and the railroad tracks; and the construction access area at Onondaga Lake Parkway). Consequently, these areas were not monitored as part of the 2017 annual inspection. The first of the annual inspections for those areas was completed in 2018.

1.1 SITE DESCRIPTION

The Bloody Brook site was broken into four distinct areas based on land use and characteristics as shown on Figure 2 and described below.

- **Wooded Area** – This portion of the site extends from the Thruway south (downstream) approximately 1,050 feet. This undeveloped area is irregularly shaped and relatively wide (i.e., greater than 150 feet) and includes three wetlands. The wooded area is entirely within the Onondaga County Bloody Brook Drainage District (Drainage District) easement and is owned by the Town of Salina. The Drainage District easement provides Onondaga County personnel permanent access for various projects to improve and maintain drainage. Storm water drainage from the surrounding development enters the WBBB from the west via a drainage channel at the southern end of the wooded area.
- **Residential Area** – The residential area surrounds the wooded area commencing at the Thruway and extending downstream of the wooded area with residential properties abutting the Drainage District easement along the WBBB to the downstream side of Floradale Road.

- Apartment Complex Area – The apartment complex area is located on Pearl Street and Town Gardens Drive between the residential properties along Floradale Road and the commercial properties along Old Liverpool Road. Construction activities outside of the Drainage District easement were completed in the apartment complex area during spring 2017; therefore the first inspection for this portion of the site was conducted as part of the 2018 annual monitoring event.
- Commercial Area – The commercial area extends from commercial properties located along Old Liverpool Road to Onondaga Lake Parkway. Construction activities were completed in portions of this area during spring 2017; therefore the first inspection of these areas was conducted as part of the 2018 annual monitoring event.

2.0 SUMMARY OF COMPLETED RESTORATION MAINTENANCE

The October 2018 RMWP identified several areas of concern that warranted restoration maintenance activities to support the establishment of diverse habitats and to prevent erosion of the soil cover. The maintenance activities included overseeding, removing invasive species, and repairing erosion controls. The following sections summarize the restoration maintenance activities for each of the areas identified, including those first documented in the NYSDEC approval letter dated November 5, 2018, discussed in Section 1.0 of this RMSR.

2.1 WOODED AREA AND WETLANDS MAINTENANCE

2.1.1 Vegetation Maintenance

As discussed in the 2018 *Annual Post-Construction Restoration Monitoring Summary Report*, the wetlands are beginning to develop as designed based on the adaptive management approach. Based on the 2018 wetland inspection, no tree or shrub plantings were recommended for the fall 2018 maintenance activities. There were however two habitat areas where additional seeding was proposed based on the June 2018 wetland inspection. When the maintenance activities were completed in fall 2018, site conditions for some of the areas had changed slightly since the inspection was conducted. Subsequently, the maintenance activities described below were slightly modified from the RMWP based on site conditions at the time of implementation.

- W-11, shown on Figure 3, has developed a strong population of emergent vegetation. However, there is still a large area where the wetland seed mix did not germinate. After consultation with NYSDEC F&W during the October 18, 2018 site visit, approximately 40 cattails from adjacent areas on the site were transplanted in these bare spots instead of overseeding the area. If the 2019 monitoring results indicate the transplants failed to develop, other options will be evaluated, including overseeding with PA New England Province FACW Mix (ERNMX-251).
- For the majority of the planted upland meadow habitats (MOW-1 and MOW-2) (Figure 3), the seed mixture placed during restoration activities was successful. During the 2018 monitoring activities, large bare spots were identified in MOW-1 where the temporary construction staging area was located. During the November 2018 maintenance activities, those bare spots were covered with vegetation consistent with the upland meadow seed mix, therefore no reseeding was required.

2.1.2 Invasive Species Control

Consistent with the 2017 monitoring, two primary species of invasive plants were documented during the 2018 monitoring activities, *Phragmites* and purple loosestrife. During November 2018, a 10-day removal effort was completed in areas where invasive species attributed to five percent or more of the ground cover. Removal was completed per Attachment D of the RMWP (*Bloody Brook Invasive Species Control Procedure*) using hand tools (i.e., spading forks and “Uprooter”) in order to prevent inadvertently spreading seeds or root material to surrounding areas and included as much subsurface root material as possible. Manual removal was also

completed weekly (about one to two days per week through December 2018) to slow the spread of the invasive species. When the ground became too frozen to remove the plant by the roots, seed heads were removed from the remaining plants. Plant material was placed in trash bags and removed for offsite disposal.

2.2 EROSION CONTROL

As discussed in the RMSR and RMWP, there were 14 areas requiring overseeding, planting of live stakes, placement of additional rip rap, and/or adjustment of the rip rap currently present. Locations 1 through 7 are shown on Figure 4A, Locations 8 through 12 are shown on Figure 4B, and Locations 13 and 14 are shown on Figure 4C. The corrective measures that were implemented to address the areas of concern noted during the 2018 erosion inspection, in accordance with the RMWP, are described in the following sections.

As discussed in the following sections, live stakes were planted in some areas along the bank to improve bank stability and help protect the bank against future erosion. The live stakes were planted through the rip rap, with at least half the length of each live stake being inserted into the soil beneath the rip rap. The live stakes were cut to a point on the basal end prior to insertion. An iron bar was used to make a pilot hole to prevent damaging the live stakes during planting. The live stakes were planted by hand into the pilot holes. A minimum of two live buds were exposed above the rip rap. Damaged portions of the live stakes were cut back to undamaged condition.

Some of the erosion locations discussed below are in transition areas, where the rip rap and vegetative ground cover meet. In these transition areas, the vegetation is not establishing as well as the other areas, and erosion of the soil along the edge of the rip rap has been observed. To promote the growth of vegetation, these areas were addressed by adding a mixture of bagged topsoil and bagged compost prior to seeding.

In addition to the maintenance activities to address the specific erosion locations identified below, the channel and wetlands were walked, and any remaining groundcover netting from temporary erosion controls were removed and disposed of.

2.2.1 Location 1

Location 1 is located in the upland forested area adjacent to the Thruway property (Figure 4A). At the time of the May 2018 inspection, minor vegetation loss within the area disturbed by remedial activities was noted for this location. During the November 2018 maintenance activities, vegetation loss and wet soil conditions were observed. Live stakes were planted within this area to stabilize the ground and to act as a barrier between the wetland and the invasive species present along the thruway. In coordination with NYSDEC F&W, large trees and additional live stakes will be planted in this area during spring 2019 to further stabilize this area and to create a stand of trees as a barrier between the Thruway and the wetlands.

2.2.2 Locations 2 and 3

Locations 2 and 3 are located in the riparian area just upstream of Weir 1 (Figure 4A). Minor vegetation loss and erosion within the areas disturbed by remedial activities was noted for these locations during the 2018 inspection. In early November 2018, live stakes were planted at Location 2 to improve bank stability. At Location 3, live stakes were planted and rip rap was placed to stabilize the ground to allow the live stakes to take root. These locations will be overseeded with PA New England Province Riparian Mix (ERNMX-253) or equivalent depending on availability, as needed during early spring 2019, prior to the 2019 monitoring event.

2.2.3 Location 4

Location 4 is located in the riparian area adjacent to Weir 1 (Figure 4A). Minor vegetation loss within the area disturbed by remedial activities was noted for this location during the 2018 inspection. Live stakes were planted in this area in early November 2018 to improve bank stability. This location will be overseeded with PA New England Province Riparian Mix (ERNMX-253) or equivalent depending on availability, as needed during early spring 2019, prior to the 2019 monitoring event.

2.2.4 Location 5

Location 5 is located in the riparian area downstream from Weir 1 (Figure 4A). During the 2018 inspection, portions of the side bank were noted as having sparse vegetation growth and minor rip- rap erosion. Live stakes were planted in this area in early November 2018 to improve bank stability. The rip rap was also adjusted in this area to prevent future erosion. This location will be overseeded with PA New England Province Riparian Mix (ERNMX-253) or equivalent depending on availability, as needed during early spring 2019, prior to the 2019 monitoring event.

2.2.5 Locations 6 and 7

Location 6 is located along the side bank adjacent to the empty lot on Midwood Drive, and Location 7 is located on the opposite bank just downstream from Location 6 (Figure 4A), both in residential areas. During the 2018 inspection, portions of the side bank showed signs of minor rip rap erosion at both of these locations. Rip rap was adjusted in both areas to help prevent future erosion. In both areas, a mixture of bagged topsoil and bagged compost were added prior to seeding. Both areas were then seeded with a cool season lawn mix to improve stability. These locations will be overseeded with Northeastern U.S. Road Native Mix (ERNMX-105) or equivalent depending on availability, as needed during the spring of 2019, prior to the 2019 monitoring event.

2.2.6 Locations 8 and 9

Locations 8 and 9 are located in a residential area along the side bank between Brookview Lane and Sunflower Drive (Figure 4B). During the 2018 inspection, portions of the side bank showed signs of minor rip rap erosion. Rip rap was adjusted at both areas to help prevent future

erosion. The placement of additional topsoil was needed prior to overseeding. To promote the growth of vegetation, these areas were addressed by adding a mixture of bagged topsoil and bagged compost prior to seeding. Both areas were then seeded with a cool season lawn mix to improve stability. These locations will be overseeded with Northeastern U.S. Road Native Mix (ERNMX-105) or equivalent depending on availability, as needed during the spring of 2019, prior to the 2019 monitoring event.

2.2.7 Location 10

Location 10 is located in the residential area between Sunflower Drive and Floradale Road (Figure 4B). During the 2018 inspection, portions of the side bank showed signs of minor rip rap erosion. This bank area was addressed by adjusting the rip rap to help prevent future erosion.

2.2.8 Location 11

Location 11 is located along the side bank within the apartment complex area (Figure 4B). During the 2018 inspection, portions of this side bank showed signs of soil erosion. This bank area was addressed by adding a mixture of bagged topsoil and bagged compost prior to seeding. Both areas were then seeded with a cool season lawn mix to improve stability. These locations will be overseeded with Northeastern U.S. Road Native Mix (ERNMX-105) or equivalent depending on availability, as needed during the spring of 2019, prior to the 2019 monitoring event.

2.2.9 Location 12

Location 12 is located along the side bank within a commercial property across from the apartment complex area (Figure 4B). During the 2018 inspection, portions of this side bank showed signs of minor rip rap erosion. This bank area was addressed by adjusting the rip rap to help prevent future erosion.

2.2.10 Location 13

Location 13 is located in the commercial-light industrial area along the side bank below Old Liverpool Road (Figure 4C). As discussed in the RMSR and the RMWP, Onondaga County Department of Water Environment Protection (OCDWEP) notified AECOM in July 2018 that armor material had washed away from a portion of the channel bank below Old Liverpool Road following a heavy rain event. In May 2018, this location had been identified as Location 13 during the inspection and was noted as being an area with some rip rap erosion requiring installation of additional armor material.

In November/December 2017, repairs were made to the bank armor material just upstream from Location 13 in accordance with the NYSDEC approved October 2017 *Restoration Maintenance Work Plan*. These repairs were successful at stabilizing the armor material and were therefore extended to address the new erosion area. The repairs at Location 13 consisted of installing additional rip rap to continue the bank armoring from the stable upstream side

bank to the stable downstream side bank using similar rip rap used upstream during the repair activities in 2017 and was completed as follows:

- Similar to the installation of rip rap located upstream and downstream of Location 13, soil was removed to a depth of one foot from the top of the stream side bank to match the angle and anchoring of rip rap. The removed soil was reused onsite for filling in the transitional areas between the rip rap and the existing ground cover as well as to repair/reseed the access areas used to complete the repairs.
- Demarcation fabric (Mirafi FW700 or equivalent) similar to the original restoration and restoration completed for the remainder of the site was placed over the soil.
- Over the demarcation layer, 24- to 36-inch rip rap was laid at the bottom of the stream side bank and 6- to 12-inch stones around the larger stones and at the top of the bank. The rip rap was placed with two larger stones staggered on top of one another with the smaller stones filling in the gaps, and additional smaller stones were placed at the top of the stream side bank. Any remaining small stones were placed immediately downstream to further stabilize the banks where needed.

The work was completed during the week of November 12, 2018 using an excavator to remove soil and place the rip rap. The channel was accessed from the adjacent commercial property, and crane mats were used to stabilize the work area and minimize damage caused by equipment. The maintenance activities were to replace eroded rip rap and did not change the stream dimensions. Intrusive work (including soil removal) was completed outside of the brook. Additionally, to minimize turbidity concerns, removal of rip rap currently in place along the bottom of the side bank was completed by hand.

Following armor repairs, the area was restored by overseeding with Northeastern U.S. Road Native Mix (ERNMX-105). Straw was placed over the seeded areas to promote germination. Additional seed will be placed as needed in spring 2019, prior to the spring 2019 monitoring event. Additionally in early spring 2019 prior to the 2019 monitoring activities, armor material at Location 13 will be adjusted within the transition areas to fill any gaps following material settling over the winter.

2.2.11 Location 14

Location 14 is located in the commercial-light industrial area upstream from the railroad (Figure 4C). During the 2018 inspection, vegetation loss was noted for a portion of the side bank. During the maintenance activities in November 2018, this area had filled in with vegetation, therefore no seed was placed. If needed, this location will be overseeded with Northeastern U.S. Road Native Mix [ERNMX-105] during spring 2019 to help improve bank stability.

3.0 CONCLUSION

In November 2018, the areas of concern identified in the RMWP requiring maintenance to support the establishment of diverse habitats and to prevent erosion of the soil cover were addressed, as discussed herein. The activities included overseeding, invasive species removal, and the implementation of erosion control measures. Due to weather conditions during the maintenance activities, some overseeding will be completed during early spring 2019, prior to the 2019 monitoring event. Additionally, erosion locations 1 through 14 will be re-inspected, and top soil or armor material that settled or repositioned during the winter will be repaired prior to the spring 2019 monitoring event.

As discussed in Section 1.0 of this RMSR, Lockheed Martin will coordinate with NYSDEC F&W on the adaptive management approach, as detailed in the bullets below, and these activities will be summarized as appropriate in future site monitoring reports.

- During early spring 2019, the health of the trees in the wooded and wetland habitats will be surveyed in coordination with NYSDEC F&W, with particular attention placed on the trees that had been damaged by either vandalism or Onondaga County maintenance activities. Woodchips will be placed around the base of trees, as needed, to provide nutrients, and the trunks will be protected (e.g., chicken wire around the trunk) in areas susceptible to damage. It is likely that some of these trees will be in UPF-2, a habitat area that is maintained by Onondaga County; therefore, they will be consulted prior to completion of these activities.
- In order to help act as a barrier against the offsite invasive species adjacent to the site near the Thruway and to provide a canopy, trees and live stakes will be planted in early spring 2019 in this area, in consultation with NYSDEC F&W, with the goal of developing a stand of large trees once fully developed. In addition to providing shade and acting as a barrier, large trees in this area would be expected to help reduce noise from the Thruway heard by the residents in the neighborhood.

FIGURES



APPROXIMATE SCALE

REFERENCE:

1. NYSDOT 7.5 MIN TOPOGRAPHIC MAP OF SYRACUSE WEST, QUADRANGLE 1990, SCALE: 1" = 2000'.

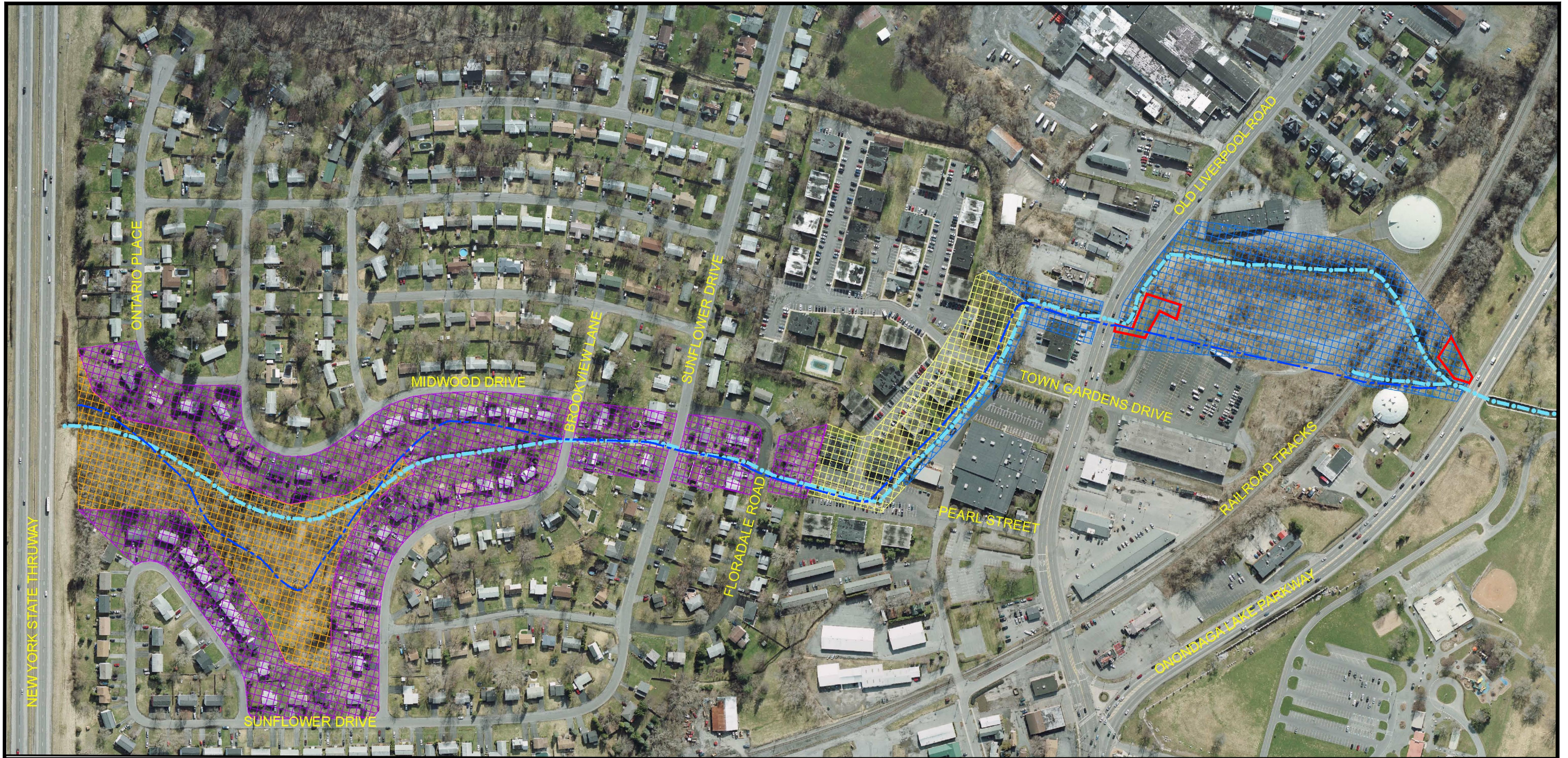
AECOM

LOCKHEED MARTIN CORPORATION

2018 RESTORATION MAINTENANCE SUMMARY REPORT
SITE LOCATION MAP

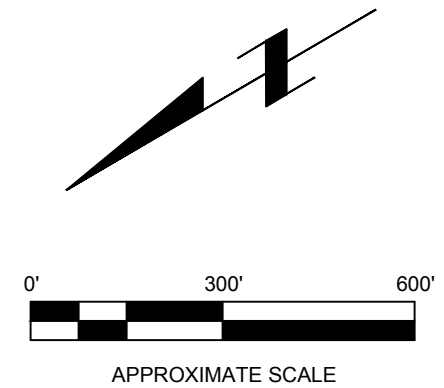
BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
A1FIG1_130618.dwg	RNB	60591327	1 / 2019	1



Legend

-  CURRENT BROOK ALIGNMENT
-  WOODED AREA
-  RESIDENTIAL AREA
-  APARTMENT COMPLEX AREA
-  COMMERCIAL-LIGHT INDUSTRIAL AREA
-  COMMERCIAL AREAS EXCLUDED FROM MAY 2017 MONITORING

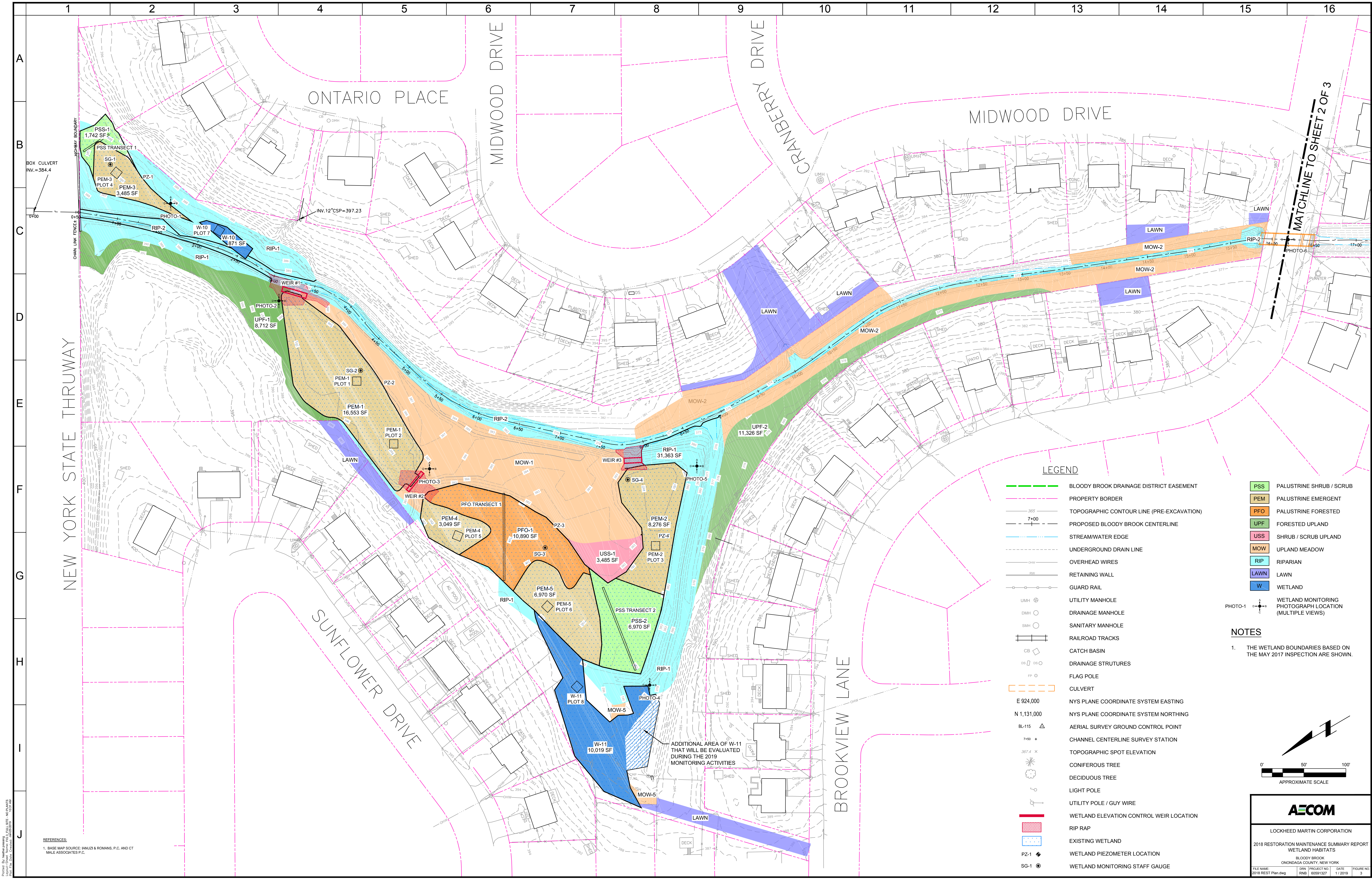


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LOCKHEED MARTIN CORPORATION
2018 RESTORATION MAINTENANCE SUMMARY REPORT
SITE AREA MAP

BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
SiteAreaMap Correct.dwg	RNB	60591327	1 / 2019	2



LEGEND

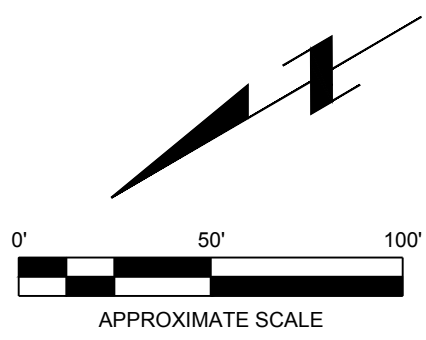
- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- TOPOGRAPHIC CONTOUR LINE (PRE-EXCAVATION)
- PROPOSED BLOODY BROOK CENTERLINE
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OVERHEAD WIRES
- RETAINING WALL
- GUARD RAIL
- UTILITY MANHOLE
- DRAINAGE MANHOLE
- SANITARY MANHOLE
- RAILROAD TRACKS
- CATCH BASIN
- DRAINAGE STRUTURES
- FLAG POLE
- CULVERT
- NYS PLANE COORDINATE SYSTEM EASTING
- NYS PLANE COORDINATE SYSTEM NORTHING
- AERIAL SURVEY GROUND CONTROL POINT
- CHANNEL CENTERLINE SURVEY STATION
- TOPOGRAPHIC SPOT ELEVATION
- CONIFEROUS TREE
- DECIDUOUS TREE
- LIGHT POLE
- UTILITY POLE / GUY WIRE
- WETLAND ELEVATION CONTROL WEIR LOCATION
- RIP RAP
- EXISTING WETLAND
- WETLAND PIEZOMETER LOCATION
- WETLAND MONITORING STAFF GAUGE

- PSS PALUSTRINE SHRUB / SCRUB
- PEM PALUSTRINE EMERGENT
- PFO PALUSTRINE FORESTED
- UPF FORESTED UPLAND
- USS SHRUB / SCRUB UPLAND
- MOW UPLAND MEADOW
- RIP RIPARIAN
- LAWN LAWN
- W WETLAND

WETLAND MONITORING PHOTOGRAPH LOCATION (MULTIPLE VIEWS)

NOTES

- THE WETLAND BOUNDARIES BASED ON THE MAY 2017 INSPECTION ARE SHOWN.



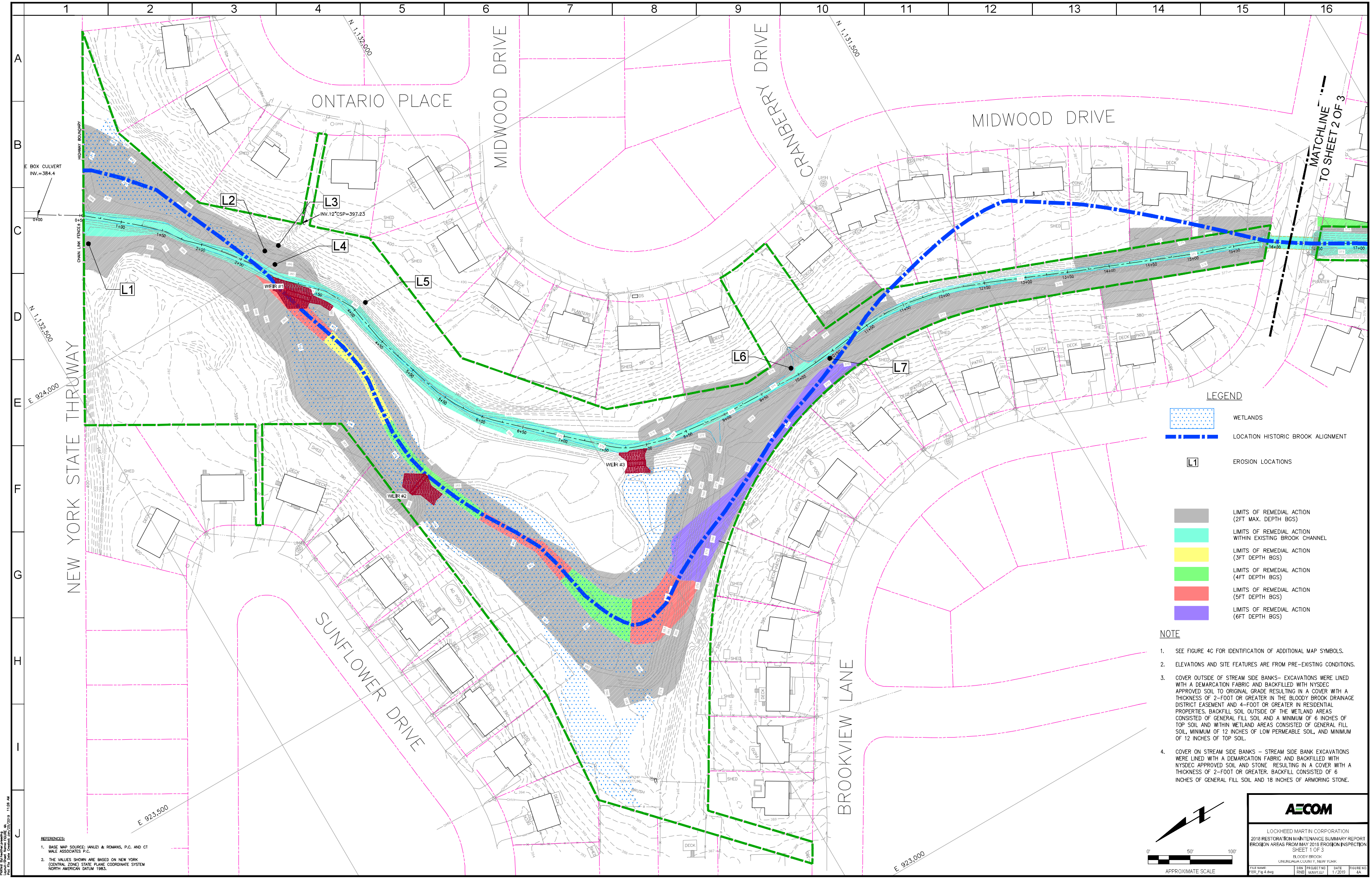
AECOM

LOCKHEED MARTIN CORPORATION
2018 RESTORATION MAINTENANCE SUMMARY REPORT
WETLAND HABITATS
BLOODY BROOK
ONONDAGA COUNTY, NEW YORK
FILE NAME: 2018 REST Plan.dwg DRI PROJECT NO: 60591327 DATE: 1/2019 FIGURE NO: 3

REFERENCES:
1. BASE MAP SOURCE: IANUZZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.

Created By: [Name] Date: [Date]
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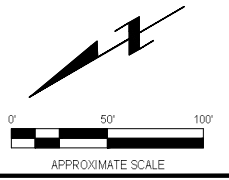
Filename: C:\DWG\3D PROJECTS\BLOODY BROOK\RP\2018 REST PLAN.DWG



LEGEND

- WETLANDS
- LOCATION HISTORIC BROOK ALIGNMENT
- EROSION LOCATIONS
- LIMITS OF REMEDIAL ACTION (2FT MAX. DEPTH BGS)
- LIMITS OF REMEDIAL ACTION WITHIN EXISTING BROOK CHANNEL
- LIMITS OF REMEDIAL ACTION (3FT DEPTH BGS)
- LIMITS OF REMEDIAL ACTION (4FT DEPTH BGS)
- LIMITS OF REMEDIAL ACTION (5FT DEPTH BGS)
- LIMITS OF REMEDIAL ACTION (6FT DEPTH BGS)

- NOTE**
- SEE FIGURE 4C FOR IDENTIFICATION OF ADDITIONAL MAP SYMBOLS.
 - ELEVATIONS AND SITE FEATURES ARE FROM PRE-EXISTING CONDITIONS.
 - COVER OUTSIDE OF STREAM SIDE BANKS- EXCAVATIONS WERE LINED WITH A DEMARCATION FABRIC AND BACKFILLED WITH NYSDEC APPROVED SOIL TO ORIGINAL GRADE RESULTING IN A COVER WITH A THICKNESS OF 2-FOOT OR GREATER IN THE BLOODY BROOK DRAINAGE DISTRICT EASEMENT AND 4-FOOT OR GREATER IN RESIDENTIAL PROPERTIES. BACKFILL SOIL OUTSIDE OF THE WETLAND AREAS CONSISTED OF GENERAL FILL SOIL AND A MINIMUM OF 6 INCHES OF TOP SOIL AND WITHIN WETLAND AREAS CONSISTED OF GENERAL FILL SOIL, MINIMUM OF 12 INCHES OF LOW PERMEABLE SOIL, AND MINIMUM OF 12 INCHES OF TOP SOIL.
 - COVER ON STREAM SIDE BANKS - STREAM SIDE BANK EXCAVATIONS WERE LINED WITH A DEMARCATION FABRIC AND BACKFILLED WITH NYSDEC APPROVED SOIL AND STONE RESULTING IN A COVER WITH A THICKNESS OF 2-FOOT OR GREATER. BACKFILL CONSISTED OF 6 INCHES OF GENERAL FILL SOIL AND 18 INCHES OF ARMORING STONE.



AECOM

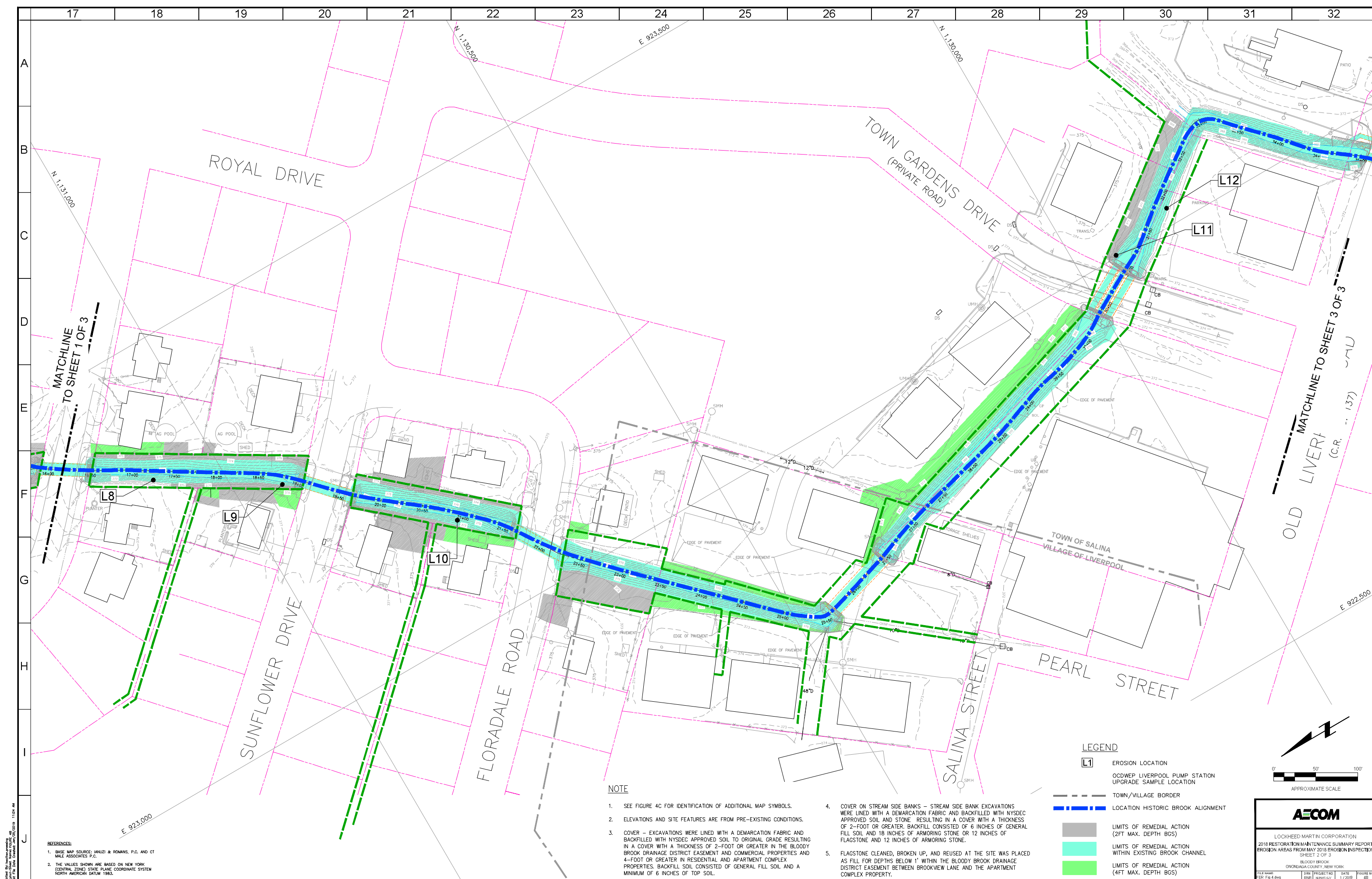
LOCKHEED MARTIN CORPORATION
2018 RESTORATION MAINTENANCE SUMMARY REPORT
EROSION AREAS FROM MAY 2018 EROSION INSPECTION
SHEET 1 OF 3
BLOODY BROOK
UNIONDALE COUNTY, NEW YORK

FILE NAME 25L_Fig 4.dwg	DIN RWB	PROJECT NO 06061232	DATE 1/2019	FIGURE NO 4A
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REFERENCES:

1. BASE MAP SOURCE: JANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.

Plotted By: jgheiser/jgheiser
User: jgheiser
Date: 1/22/2019 11:08 AM
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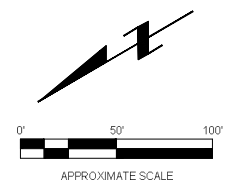


NOTE

- SEE FIGURE 4C FOR IDENTIFICATION OF ADDITIONAL MAP SYMBOLS.
- ELEVATIONS AND SITE FEATURES ARE FROM PRE-EXISTING CONDITIONS.
- COVER -- EXCAVATIONS WERE LINED WITH A DEMARCATION FABRIC AND BACKFILLED WITH NYSDEC APPROVED SOIL TO ORIGINAL GRADE RESULTING IN A COVER WITH A THICKNESS OF 2-FOOT OR GREATER IN THE BLOODY BROOK DRAINAGE DISTRICT EASEMENT AND COMMERCIAL PROPERTIES AND 4-FOOT OR GREATER IN RESIDENTIAL AND APARTMENT COMPLEX PROPERTIES. BACKFILL SOIL CONSISTED OF GENERAL FILL SOIL AND A MINIMUM OF 6 INCHES OF TOP SOIL.
- COVER ON STREAM SIDE BANKS -- STREAM SIDE BANK EXCAVATIONS WERE LINED WITH A DEMARCATION FABRIC AND BACKFILLED WITH NYSDEC APPROVED SOIL AND STONE. RESULTING IN A COVER WITH A THICKNESS OF 2-FOOT OR GREATER. BACKFILL CONSISTED OF 6 INCHES OF GENERAL FILL SOIL AND 18 INCHES OF ARMORING STONE OR 12 INCHES OF FLAGSTONE AND 12 INCHES OF ARMORING STONE.
- FLAGSTONE CLEANED, BROKEN UP, AND REUSED AT THE SITE WAS PLACED AS FILL FOR DEPTHS BELOW 1' WITHIN THE BLOODY BROOK DRAINAGE DISTRICT EASEMENT BETWEEN BROOKVIEW LANE AND THE APARTMENT COMPLEX PROPERTY.

LEGEND

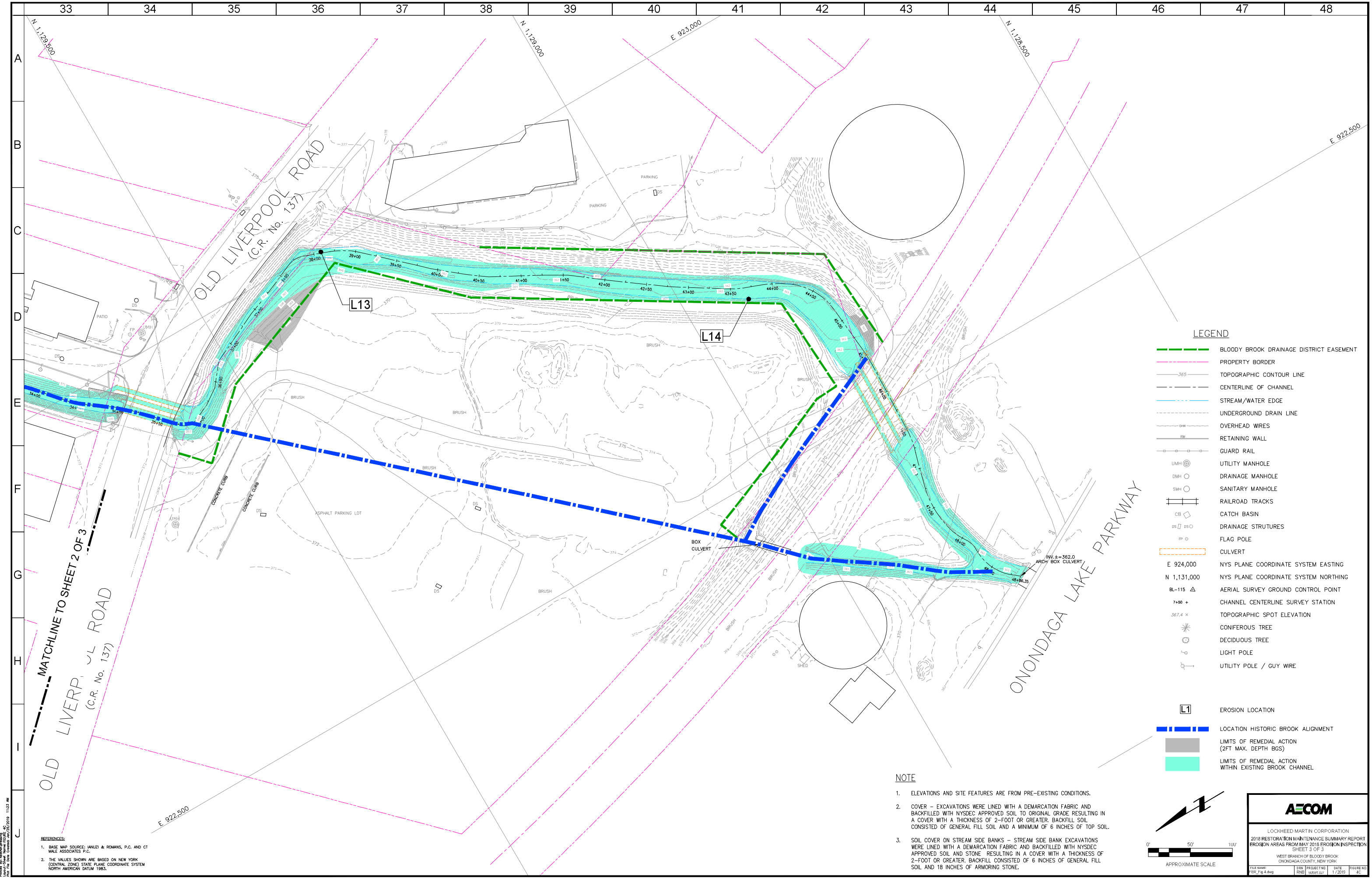
- L1 EROSION LOCATION
- OCDWEP LIVERPOOL PUMP STATION UPGRADE SAMPLE LOCATION
- TOWN/VILLAGE BORDER
- LOCATION HISTORIC BROOK ALIGNMENT
- LIMITS OF REMEDIAL ACTION (2FT MAX. DEPTH BGS)
- LIMITS OF REMEDIAL ACTION WITHIN EXISTING BROOK CHANNEL
- LIMITS OF REMEDIAL ACTION (4FT MAX. DEPTH BGS)



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LOCKHEED MARTIN CORPORATION
2018 RESTORATION MAINTENANCE SUMMARY REPORT
EROSION AREAS FROM MAY 2018 EROSION INSPECTION
SHEET 2 OF 3
BLOODY BROOK
ONONDAGA COUNTY, NEW YORK
FILE NAME: 251_Fig 4.dwg
SHEET NO: 4B
DATE: 1/2019
FIGURE NO: 4B

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Date: 1/2019
Time: 11:24 AM
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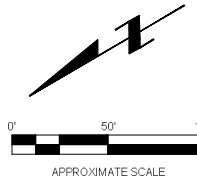
LEGEND

- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- TOPOGRAPHIC CONTOUR LINE
- CENTERLINE OF CHANNEL
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OVERHEAD WIRES
- RETAINING WALL
- GUARD RAIL
- UTILITY MANHOLE
- DRAINAGE MANHOLE
- SANITARY MANHOLE
- RAILROAD TRACKS
- CATCH BASIN
- DRAINAGE STRUTURES
- FLAG POLE
- CULVERT
- NYS PLANE COORDINATE SYSTEM EASTING
- NYS PLANE COORDINATE SYSTEM NORTHING
- AERIAL SURVEY GROUND CONTROL POINT
- CHANNEL CENTERLINE SURVEY STATION
- TOPOGRAPHIC SPOT ELEVATION
- CONIFEROUS TREE
- DECIDUOUS TREE
- LIGHT POLE
- UTILITY POLE / GUY WIRE
- EROSION LOCATION
- LOCATION HISTORIC BROOK ALIGNMENT
- LIMITS OF REMEDIAL ACTION (2FT MAX. DEPTH BGS)
- LIMITS OF REMEDIAL ACTION WITHIN EXISTING BROOK CHANNEL

NOTE

- ELEVATIONS AND SITE FEATURES ARE FROM PRE-EXISTING CONDITIONS.
- COVER - EXCAVATIONS WERE LINED WITH A DEMARCATION FABRIC AND BACKFILLED WITH NYSDEC APPROVED SOIL TO ORIGINAL GRADE RESULTING IN A COVER WITH A THICKNESS OF 2-FOOT OR GREATER. BACKFILL SOIL CONSISTED OF GENERAL FILL SOIL AND A MINIMUM OF 6 INCHES OF TOP SOIL.
- SOIL COVER ON STREAM SIDE BANKS - STREAM SIDE BANK EXCAVATIONS WERE LINED WITH A DEMARCATION FABRIC AND BACKFILLED WITH NYSDEC APPROVED SOIL AND STONE RESULTING IN A COVER WITH A THICKNESS OF 2-FOOT OR GREATER. BACKFILL CONSISTED OF 6 INCHES OF GENERAL FILL SOIL AND 18 INCHES OF ARMORING STONE.

REFERENCES:
1. BASE MAP SOURCE: JANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.



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LOCKHEED MARTIN CORPORATION
2018 RESTORATION MAINTENANCE SUMMARY REPORT
EROSION AREAS FROM MAY 2018 EROSION INSPECTION
SHEET 3 OF 3
WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME 25L_Fig 4.dwg	DIN RWB	PROJECT NO. 25L-137	DATE 1/2019	FIGURE NO. 4C
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