



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY

BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

September 21, 2018

Operations and Technical Support Section

SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project,
Genesee River, Wellsville, New York (09/27/17)

Alan A. Fuchs, P.E.
NYSDEC – Division of Water
Bureau of Flood Protection & Dam Safety
625 Broadway
Albany, NY 12233-3504

Dear Mr. Fuchs,

Transmitted herewith is the FY17 Inspection of Completed Works (ICW) Periodic Inspection report for the Flood Risk Management (FRM) Project at Genesee River, Wellsville, New York. Thank you for your agency's participation in this inspection. In accordance with USACE – Headquarters guidance, the rating for this project as determined by the current inspection is **"UNACCEPTABLE" (U)**. This project is **"ACTIVE"** in the USACE Rehabilitation Program.

The enclosed inspection report includes two checklists (Attachments "C" and "F") describing project deficiencies by category and two summaries of deficiencies and recommendations (Attachment "B" and "E") for the Left Bank and Channel, and Right Bank and Dyke Creek, respectively. The local sponsor should complete this section just prior to the next scheduled inspection and provide to the United States Army Corps of Engineers (USACE) inspector upon arrival. The "Reporting Period" is the timeframe between inspections (i.e. inspection date of this report and date of next scheduled inspection).

Please keep this office informed if there are any changes to the project that would affect the design level of protection afforded by the project or if there are other changes which may alter or impact any project features. Such changes require prior Section 408 written permission from USACE and no objection from NYSDEC.

Questions pertaining to this matter should be directed to the undersigned, who can be contacted in writing at the above address, by telephone at 716-879-4277 or by e-mail at robert.w.remmers@usace.army.mil.

SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project,
Genesee River, Wellsville, New York (09/27/17)

Sincerely,

Robert W. Remmers, P.E., PMP
Levee Safety Program Manager
Chief, Operations and Technical Support Section

CF:

Theodore Myers, P.E., NYSDEC, Region 9
Stephen Len, NYSDEC, Division of Water, Flood Control Project Unit (e-copy)
Douglas Winner, NYS Office of Emergency Management – Region V – Western NY (e-copy)
Brian Shumon, FEMA – Region II (e-copy)
Jeff Luckey, Allegany County Office of Emergency Management (e-copy)

SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project, Genesee River, Wellsville, New York (09/27/17)

1. **OBJECTIVE:** The objective of this inspection is to assure project sponsor compliance with existing agreements, evaluate effectiveness of the sponsor to operate and maintain facilities constructed by the United States in accordance with the Operations and Maintenance (O&M) manual, and to determine if the sponsor has adequately met standards required to maintain eligibility for PL 84-99 Federal rehabilitation assistance should the project be damaged by flooding or a storm event.
2. **PROJECT CLASSIFICATION:** Flood Risk Management – Flood Protection
3. **REPORTING PERIOD:** 09/26/16 – 09/27/17
4. **INSPECTION TEAM:** The inspection team met at the project site on 09/27/17. The following representatives participated in this inspection.

<u>Name</u>	<u>Organization</u>	<u>Phone</u>
Jason Doktor	USACE – Buffalo District	(716) 879-4385
Thomas Brown	USACE – Buffalo District	(716) 879-4384
James Rogers	USACE – Buffalo District	(716) 879-4118
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Patrick Donohue	USACE – Buffalo District	(716) 879-4234
Theodore Myers	NYSDEC – Region 9	(716) 851-7088
Kerrie O’Keeffe	NYSDEC – Region 9	(585) 226-5465
William Whitfield	Village of Wellsville	(585) 610-9227

5. **OVERALL PROJECT RATING:** In accordance with USACE – Headquarters guidance, this project is rated "**Unacceptable**" (U). This project is currently "**ACTIVE**" in the USACE Rehabilitation Program. The inspected items have been determined to have one or more deficient conditions that lessen the degree of project reliability. This was the determining factor for the project rating. Specific deficiencies are discussed in Section 7 of this report. All deficiencies shall be addressed in a timely manner.

Prior to this evaluation, the project was last inspected on 09/26/16. The condition of the project at that time of the inspection was rated as "Unacceptable" (U) and the project was "ACTIVE" in the USACE Rehabilitation Program.

6. **PROJECT LOCATION, DESCRIPTION, AND LOCAL SPONSOR:**

- a. **Project Location:** The project is located along the Genesee River and Dyke Creek in the Village and Town of Wellsville, New York. The project extends along the Genesee River from about 2,700 feet downstream of the Bolivar Road bridge to 4,900 feet upstream of the confluence with Dyke Creek. The project limits along Dyke Creek extend from the confluence with the Genesee River to about 4,025 feet upstream.
- b. **Project Description:** The project consists of channel improvements, levees, drop structures, weirs, concrete lined channels, and interior drainages structures. The Genesee River was deepened to provide a uniform grade with bottom widths of 100 to 135 feet downstream of Dyke Creek and 100 to 160 feet wide upstream of Dyke Creek. A major

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realignment was made upstream of Bolivar Road to eliminate two sharp curves along with other realignments to ease lesser curves. A concrete drop structure was constructed between Bolivar and Pearl Streets. Steel sheet pile weirs were constructed at the upper end of the project. Low levees were constructed along the Genesee River on the right bank, and along the left bank between Chamberlain Street and Stevens Street, between State Street and West Dyke Street, and at the upstream limit of the project. The Dyke Creek channel was deepened with a bottom width of 50 to 70 feet, with a drop structure at Miller Street. A levee was constructed along the left bank of Dyke Creek, upstream of Miller Street. Existing drainage facilities throughout the project were altered to provide better entrances into the improved channel and to prevent backflow at high river stages. The project was designed to alleviate flooding within the Village and Town of Wellsville.

The original project was completed in 1958 and additional bank protection added later in 1958 and 1959. In 1972, the runoff from Tropical Storm Agnes caused extensive damage to the project and restoration work was completed in September 1972. Rectification work was undertaken in 1973 and again in 1976. NYSDOT added additional bank protection in 1974 in conjunction with the relocation of 1,900 feet of the river. An emergency rehabilitation project was completed in 1997 to repair damages from a damaging flood in 1996. Repairs were made along the left bank of the Genesee River, between State Street and barrier levee upstream of West Dyke Street, and along the left bank of Dyke Creek, between Broad Street and the upstream limit of the project.

- c. **Local Sponsor:** In accordance with the project O&M Manual, NYSDEC - Region 9 is the local sponsor of the project and has assumed responsibility for the operation and maintenance of the project.

7. INSPECTION FINDINGS: Deficiencies found during this inspection are noted in the following attachments:

- Attachment “B” – Left Bank and Channel: Summary of Deficiencies and Recommendations
- Attachment “C” – Left Bank and Channel: Flood Damage Reduction System Inspection Report
- Attachment “D” – Left Bank and Channel: Levee Inspection Map
- Attachment “E” – Right Bank and Dyke Creek: Summary of Deficiencies and Recommendations
- Attachment “F” – Right Bank and Dyke Creek: Flood Damage Reduction System Inspection Report
- Attachment “G” – Right Bank and Dyke Creek: Levee Inspection Map
- Attachment “H” – Rehabilitation Program Eligibility Determination Checklists (“Left Bank Levee and Channel” and “Right Bank and Dyke Creek”)

The three levee systems that comprise this project (Genesee River – Left Bank, Genesee River – Right Bank, and Dyke Creek – Left Bank) have been rated **“UNACCEPTABLE” (U)**.

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8. SUMMARY OF MAINTENANCE REQUIRED BY LAST INSPECTION REPORT:

See FY16 Inspection Report (inspection date 09/26/16).

9. SUMMARY OF MAINTENANCE PERFORMED AFTER LAST INSPECTION:

- (1) Routine mowing.
- (2) Routine flapgate and sluice gate maintenance.
- (3) Removal of heavy vegetation around several outfalls along the left bank levee, upstream from the State St. bridge.

10. SUMMARY OF CHANGES TO PROJECT SINCE LAST INSPECTION:

- (1) None.

11. PROBLEMS/ISSUES REQUIRING ASSISTANCE OF USACE:

(1) Project Alterations:

- a.) An alteration (formerly called “modification”) is a new or existing change (including encroachments) to a Federally-constructed, locally operated and maintained project, within the project’s permanent easements. In accordance with 33 U.S.C. 408, all alterations must be reviewed and approved by USACE. Requests for alterations are initiated by the “Requestor”, who can be any project stakeholder; including the sponsor, general public, or any other interested party. Sponsors must endorse requests from third party entities and ensure that proper operation and maintenance of the alteration is followed. To make an alteration request, the sponsor is required to submit USACE Buffalo District form entitled, “Section 408 Request to Alter, Impact, or Encroach upon a Buffalo District Inspection of Completed Works Project”; to include design criteria, as-built drawings, operations and maintenance requirements, and other pertinent documents and information. A copy of the form, either hard copy or an electronic version (fillable pdf), may be obtained by contacting the USACE Buffalo District Levee Safety Program Manager. This form may be used for either existing or new (proposed) alteration requests. Use one form for each unique alteration type. Similar alterations may be combined on one form. New alterations shall be approved in advance of the work.

For existing unauthorized alterations, an after-the-fact review and approval will be required by USACE for each change to determine whether or not the change can be approved or correction/removal will be required. A rating of “M” or “U” will be assigned to existing unauthorized alterations under the “encroachments” item on the checklist, depending on potential impacts to the functioning of the project, until either approval by USACE has been granted or the alteration is removed or corrected. If any of the cited alterations have been previously approved by USACE, the local sponsor shall submit approval documentation as proof.

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- b.) The following pending project alterations have been submitted by the sponsor and are currently being reviewed by USACE:
 - i. Riverwalk trail under Bolivar Road bridge – awaiting additional information from Village of Wellsville.
 - c.) The following project alterations have been submitted by the sponsor and approved by USACE:
 - i. Drainage swale berm at former Sinclair Refinery lagoon (approved by USACE 09/07/10).
 - ii. Route 417 bridge replacement over Dyke Creek.
- (2) **Videotaping of Pipe Inspections:** NYSDEC has successfully completed pipe video inspections for all outfalls through the project's levees. Original submission of pipe videotape inspections was received on 1/10/14. NYSDEC did a reanalysis of the data and resubmitted the results to the Corps on 9/30/14. Next pipe videotape inspection evaluation report is due on 1/10/19 (5 years after original submission).
- (3) **Issues:**
- i. Gap in levee protection – project was built with gap between left bank levee and high ground where Chamberlain ditch discharges into the Genesee River. Project was apparently built this way. There is the potential for flooding in this area during large storm events.
 - ii. Approximately 60 feet of the northeast end of the right bank barrier levee has been removed. Potential for flooding in this area during large storm event.
 - iii. Significant and extensive trees and heavy vegetation are overtaking large reaches of the project making proper inspection difficult.

12. ADDITIONAL OBSERVATIONS:

- (1) Local Sponsor did have a copy of the project O&M Manual.
- (2) Local Sponsor provided a summary of maintenance performed after last inspection at the time of this inspection.
- (3) The Genesee River and Dyke Creek channels are generally clear of debris and obstructions, however, most of the riprap areas within the project are covered with heavy vegetation making it difficult to impossible to assess the condition of the riprap, levees, pipes, and channel sideslopes.
- (4) Significant areas of shoaling were present during the inspection.

13. RECOMMENDATIONS AND MAINTENANCE REQUIRED AS A RESULT OF THIS INSPECTION:

- (1) See Attachment "B" and Attachment "E" for recommendations for deficiencies.

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- (2) Recommend sponsor investigate the potential for backflow flooding from the Genesee River during high flow events through the gap between the left bank levee and high ground at the outlet for Chamberlain Creek; take appropriate action to resolve issue if deemed a flooding problem.
- (3) Recommend sponsor investigate potential for flooding from the Genesee River during high flow events through the area where the approximately 60' section of the northeast end of the barrier levee has been removed; take appropriate action if repairs are deemed necessary.
- (4) Sponsor should take immediate action to remove the significant and extensive trees and vegetation throughout the project. This deficiency is threatening the integrity of the project and is increasing the potential for flood risk.

14. INSPECTION REPORT PREPARED BY:

James M. Rogers
Civil Engineer
Operations and Technical Support Section

15. INSPECTION REPORT REVIEWED BY:

Robert W. Remmers, P.E., PMP
Levee Safety Program Manager
Chief, Operations and Technical Support Section

16. LIST OF ATTACHMENTS:

Attachment "A" – Pre-Inspection Packets
Attachment "B" – Left Bank and Channel: Summary of Deficiencies and Recommendations
Attachment "C" – Left Bank and Channel: Flood Damage Reduction System Inspection Report
Attachment "D" – Left Bank and Channel: Levee Inspection Map
Attachment "E" – Right Bank and Dyke Creek: Summary of Deficiencies and Recommendations
Attachment "F" – Right Bank and Dyke Creek: Flood Damage Reduction System Inspection Report
Attachment "G" – Right Bank and Dyke Creek: Levee Inspection Map
Attachment "H" – Rehabilitation Program Eligibility Determination Checklists ("Left Bank Levee and Channel" and "Right Bank and Dyke Creek")
Attachment "I" – Project Map

Attachment “A” –
Pre-Inspection Packets

Levee Periodic Inspection

Genesee River, Left Bank and Channel Wellsville, New York

PRE – INSPECTION PACKAGE

Prepared By:

USACE Buffalo District
1776 Niagara Street
Buffalo, New York 14020



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of Engineers®**

Buffalo District

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January 2017

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Attachment:

Attachment 1 - Summary of Minimally Acceptable (M) or Unacceptable (U) Deficiencies – 2016 Routine Inspections, Genesee River Right Bank and Channel System, Wellsville, New York

1 Project Description

Authorization/Construction History

Construction of improvements for flood control on the Genesee River at Wellsville, New York, was authorized by the Flood Control Act of 1950 (Public Law 516, 81st Congress, Second Session) substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 232, 81st Congress, First Session. Rectification of deficiencies to the original project was authorized in two phases. The first phase was authorized in November 1966 and the second phase in June 1975. (USACE, O&M Manual, 2000)

Construction was initiated by contract in July 1956 and was completed in February 1958. This original construction improved the channel from a point 2,700 feet north of Bolivar Road to a point 1,815 feet upstream of the former Wellsville, Addison, and Galetton (W.A. & G.) Railroad Bridge. Additional bank protection was placed under contract modifications in June- July 1958 and September 1959. The latter resulted from the January 1959 flood which damaged and eroded the rip rap slopes near the upstream limit on Dyke Creek and upstream of the railroad bridge on the Genesee River.

Tropical storm "Agnes" caused extensive damage to the original flood control project at Wellsville. Emergency restoration work was accomplished by plant rental and supply contract, under Public Law 99, 84th Congress, to restore the Genesee River and Dyke Creek channels to their pre-"Agnes" condition. This work involved almost the entire length of the improved river and creek channels. The work accomplished was shoal removal, replacement of compacted embankments and levees and restoration of bank stone protection where required. This work was initiated in June 1972 and was completed in November 1972.

Rectification work was required to improve the original project (completed 1974). The work involved channel widening and levee construction in the area between West Genesee Street and the downstream concrete drop structure. Also, in the reach of the Genesee River between State Street bridge and extending approximately 5,050 feet upstream, work involved channel widening, levee construction, placement of additional riprap, and the extension and lowering of a steel sheet pile weir. Dyke Creek work involved channel widening, levee construction and placement of additional stone protection all upstream of Miller Street.

Additional rectification work was further required and construction was started in June 1976 and completed in November 1976. This work involved the extension of the upstream project limits including the construction of a steel sheet pile weir, levee construction, and channel realignment and widening, and the placement of additional stone protection. Dyke Creek work involved channel excavation and placement of additional stone protection between Broad Street and Miller Street. This work was indicated in the superseded April 1977 Operation and Maintenance Manual.

The NYSDOT completed two construction contracts, in conjunction with the realignment of Routes 17 (re-designated 417) and 19, along the Genesee River and Dyke Creek. The first phase was completed in 1974 and involved the relocation of approximately 1,900 feet of the river, downstream from State Street, toward the left bank to provide room for the new highway, and the construction of a new bridge over the river connecting West Madison and Stevens Streets. The second contract, completed in 1977, involved highway construction along the river and some channel work between Bolivar Road and the confluence with Dyke Creek. Work along Dyke Creek involved channel relocation and placement of bank protection, with the construction of a new bridge over the creek near Hanover Creek. This work had been reviewed by the Buffalo District, Corps of Engineers; it did not have a detrimental effect on the existing project.

Emergency rehabilitation work under Public Law 99, 84th Congress, was required to repair extensive damage to the project from the January 17-20, 1996 Thaw flood event. Material from eroded banks of the

project, as well as farther upstream, was deposited as shoals in the channel, reducing its capacity. Initial emergency repair work (January 24-26) involved placement of rip rap in two areas on 700 feet of eroded banks - left bank of Dyke Creek upstream of Miller Street (450 feet) and left bank of Genesee River near Seneca Street (250 feet). The work was completed in 1997.

Location

The project is located on Genesee River and Dyke Creek in the village and town of Wellsville, Allegany County, NY. The village is located 136 river miles upstream from the mouth of the Genesee River and 70 miles southeast of Buffalo. The town of Wellsville surrounds the village. The Genesee River rises in Potter County, PA, and flows in a northerly direction to enter Lake Ontario at Rochester, NY. It drains 216 square miles above Dyke Creek in the village of Wellsville. Dyke Creek rises in Steuben County, NY, and flows westward to enter the Genesee River at Wellsville, draining 72 square miles. The overall project (Left Bank and Right Bank of the Genesee River and Dyke Creek) extends on the Genesee River 1.6 miles downstream from the mouth of Dyke Creek, upstream 1.0 miles to the south limit of the village, and on Dyke Creek from its mouth 0.75 miles upstream.

Genesee System and Description

The project works consist of channel improvements, with control and drainage structures (the project includes features and work constructed on the right bank of the Genesee River and along Dyke Creek – separate Pre-inspection Packages have been prepared for these systems). The channel of the Genesee River was deepened where necessary to provide uniform bottom grades with bottom widths of 100-135 feet from a point 2,700 feet downstream from the Bolivar Road Bridge to the confluence with Dyke Creek, and from there with bottom widths of 100-300 feet to about 5,400 feet upstream of Dyke Creek. There was a major realignment upstream from Bolivar Road to eliminate two sharp curves with other realignments to ease curves. A concrete drop structure was constructed between Bolivar Road and Pearl Street, and steel sheet pile weirs were constructed near the village line and near the upper limit of the project. These structures are intended to reduce high velocities, and consequent erosion. Bank protection was provided in the vicinities of these structures and at other points where scouring could be expected. Low levees were constructed in the vicinities of Pearl and State Street, between State Street to upstream of West Dyke Street, and upstream of the upstream sheet pile weir. Existing drainage facilities were altered to provide better entrances into the improved channel and to prevent backflow at high river stages (See Figure 1 for the plan view of the entire project). Table 1 presents a general overview of the features of the Genesee Left Bank System and features.

Table 1 Features of the Wellsville Left Bank and Channel FDRP

Total Length (Miles)	Flood Wall (Miles)	Earthen Levee (Miles)	Pump Stations (Each)	Traffic and Pedestrian Closures (Each)	Channel (Miles)	Drop Structure/Weirs (Each)
2.5	0	1.7	0	0	2.5	3

Vertical Datum Adjustment

The elevations in the design plans, Operations and Maintenance (O&M) manual and the As- built drawings for the Wellsville, Flood Damage Reduction Project (FDRP) are referenced to the United States Coast and Geodetic Survey Datum (USC&GS). Unless otherwise noted, the elevations in this document will be referenced to this datum (USC&GS). According to EC 1110-2-6065 (USACE, 2007), the current standard for vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Instrumentation Data

As-built plans do not include any reference to instruments being installed as part of the Genesee River Left Bank and channel and levee systems. It is noted that a USGS operated gage station for recording river stage is present on the left bank at the concrete drop structure located approximately 2500 feet upstream of Bolivar Rd.

Summary of Physical Setting

The Design memorandum on Wellsville, New York (USACE, 1955), local Flood Protection was reviewed for information regarding the foundation conditions and analysis that was performed in designing the project features, that information is summarized below.

Geologic Conditions

The rock features of the Genesee Valley were formed in the Silurian and Devonian periods of the Paleozoic era. The rock strata in this area were originally parallel layers of mineral matter spread over the floor of epicontinental seas. At the close of the Devonian period, western New York was subjected to epeirogenic movements which ended marine submergence and the formation of sedimentary rocks. The vertical land movements were slow; consequently, the rock strata were not severely fractured or faulted, nor thrown much out of their horizontal position. There is, however, a slight southerly inclination averaging 40 feet per mile, due partly to the original slope of the sediments and partly to the net effect of the continental movements. In the Pleistocene period, western New York was covered by an ice sheet several hundred feet thick. Glacial erosion, transportation, and deposition modified the surface but did not change the gross features of the topography. The most effective work of the glacier was depositional, and the true terminal moraine of the ice sheet lies at the headwaters of the Genesee River in Pennsylvania. After the last recession of the ice sheet, the land relieved of its weight, rose slowly, producing a dome-shaped uplift. At Rochester, the uplift has been determined to be about 250 feet, from which it decreases to the south. (USACE, Design Memorandum, 1955)

The soils of the upper Genesee River basin are largely of glacial origin as the retreating ice sheet left a thin mantle of glacial till. The weathering of this till has resulted in soils of light color, known as the Volusia series. These vary in texture from a heavy silt Loam to comparatively light gravelly Loam, the former of which predominates. Drainage is deficient because the impervious subsoil at shallow depths prevents seepage. The Genesee series of soils in the valley bottoms is highly productive when it is not subject to overflow, but after a flood, two to three years may be required to work in the silt deposits and restore productivity. (USACE, Design Memorandum, 1955)

Foundation Exploration

Subsurface conditions were explored by numerous auger holes, core holes and test pits. Investigations were confined to the construction area (USACE, Design Memorandum, 1955). Throughout the project, the materials encountered were brown silty sand and gravel with firm gray silt at lower levels. Rock does not exist close to the surface (USACE, Design Memorandum, 1955).

Soils Testing

Soils were tested by the USACE North Central Division Laboratory at Chicago. Mechanical analyses, direct shear and Proctor tests were run on the various samples for determining probable changes in volume between excavation and embankment. Results of tests, on typical materials, obtained from test pits are shown below in Table 2 (USACE, Design Memorandum, 1955).

Table 2 Characteristics of Typical Soils

Description	TP-3	TP-4
Classifications	Sandy clay	Sandy clay
Direct shear undisturbed ϕ C, tons/sq. ft.	31° 0	29° 0.06
Direct shear remolded ϕ C, tons/sq. ft.	30° 0.06	30° 0.25
Unit weight, undisturbed Dry, lbs. /cu. ft. Wet, lbs. /cu. ft.	78 99	75 98
At optimum compaction Dry weight, lbs. /cu. ft. Wet weight, lbs. /cu. ft.	107 127	106 125
Specific gravity	2.70	2.68
Liquid limit	36	43
Plastic limit	22	26

(See USACE, Design Memorandum, 1955 for test pit locations)

Surface Water

The Genesee River has its source in Potter County, Pa., rising at an elevation of 2,200 feet in the Allegheny Mountains of northern Pennsylvania and flows northward to Lake Ontario at Rochester, N.Y. The watershed contains 2,476 square miles, 288.2 square miles of which are above Wellsville, N.Y. The southern part of the basin is rough with ridges having summits 2,000 to 2,500 feet above sea level separated by valleys whose floor elevations vary from 1,000 to 1,700 feet. The branches of the river in the headwater regions flow in deep narrow valleys and have average slopes of about 70 feet per mile. Dyke Creek drains a fan shaped area of about 72 square miles. The creek rises in Steuben County, N.Y., at an elevation of about 2,280 feet and flows westward to enter the Genesee River at an elevation of about 1,480 feet. The creek has an average slope of 95 feet per mile for 7.5 miles from its source and an average slope of 17 feet per mile for the lower 5 miles. The lower valley has an average width of about one-half mile and the steep hills flanking it contain many small, flashy tributaries. The channel capacities of the Genesee River and of Dyke Creek at Wellsville are estimated at 4,000 and 2,000 cubic feet per second, respectively (USACE, Design Memorandum, 1955).

The ten highest annual recorded peak stream flows for the Genesee River are as follows in Table 3.

Table 3 Ten Highest Recorded Peak Stream Flows for the Genesee River at Wellsville

Date	Stream Flow	Gage Height	Flood Elevation
Mar. 08, 1956	15,800	12.65	
Jun. 23, 1972	38,500	20.70	1490.70
Dec. 06, 1972	9,200	13.80	
Oct. 28, 1981	15,800	13.60	1483.60
Aug. 14, 1984	9,680	11.26	1481.26

Sep. 13, 1987	9,520	11.28	1481.28
Jun. 20, 1989	14,400	13.26	1483.26
Jan. 19, 1996	22,700	16.13	1486.13
Nov. 29, 2005	9,390	11.22	1481.22
Mar. 15, 2007	10,700	11.64	1481.64

Gage Datum 1470.00 feet above sea level (NGVD29)

1.1 Levee

Levees have been constructed along numerous reaches of the Genesee River and Dyke Creek, consisting of a 10 foot crest width and 1 foot vertical on 2-1/2 foot horizontal side slopes, unless otherwise stated. A levee was constructed along the left bank of the Genesee River upstream for 2,850 feet from the concrete drop structure to State Street. Along the upstream 1,150 feet of the levee, there were only small areas on the land side of the levee which were lower than the top of the levee; these were filled to that elevation so that drainage facilities would not be needed. A short levee was constructed south of State Street to prevent overflow through an abandoned mill race west of the former W.A. & G. Railroad. This levee has a crest width of 50 feet and side slopes of 1 foot vertical on 3 foot horizontal. Another levee is located on the right bank of the Genesee River starting at the concrete drop structure and extending upstream approximately 1,350 feet to about West Genesee Street. The levee is generally six feet in height, constructed to prevent high stream flows from bypassing the drop structure. A levee was constructed along the left river bank, starting immediately upstream of the State Street Bridge, and progressing about 1,680 feet upstream to the former W.A. & G. bridge and then an additional 680 feet to existing ground. A small levee, generally two feet or less in height, was constructed along the right bank of the river immediately upstream of the former W.A. & G. Bridge, extending 620 feet upstream to prevent flooding of a low area in Island Park. A barrier levee was constructed on the right bank, approximately perpendicular to the channel and parallel to the steel sheet pile weir located approximately 1,300 feet upstream of the former W.A. & G. Bridge. The levee extends approximately 670 feet to existing ground, constructed to prevent flood flows from bypassing the weir drop structure. Along the left bank, starting 290 feet downstream of the sheet pile weir located approximately 3,000 feet upstream of the former W.A. & G. Bridge and extending upstream from the weir for approximately 1,170 feet and tying into the former W.A. & G. Railroad bed, is a levee protecting the upstream flank of the project. See figure 2 for typical section of levee. (USACE, O&M Manual, 2000)

1.2 Channel

The channel of the Genesee River was improved from a point about 2,700 feet north of Bolivar Road to a point about 5,400 feet upstream of the confluence with Dyke Creek, a distance of approximately 14,000 feet. Channel width varies from 100 feet to 135 feet between the downstream limit of the project to the downstream end of the concrete drop structure. 1,800 feet of the channel upstream of Bolivar Road was realigned to ease an S-curve. The channel from the upstream end of the drop structure to the confluence with Dyke Creek changes in width from 115 feet to 100 feet and maintains a 100-foot width for approximately 1,800 feet farther upstream from the confluence of the two streams. The channel width then gradually increases to 130 feet and maintains the width to the first sheet pile weir located approximately 1,300 feet upstream of the former W.A. & G. Bridge. Between this sheet pile weir and a second weir located about 3,000 feet upstream of the former W.A. & G. Bridge, the channel varies from 150 feet to 160 feet in width. Above the second weir to the upstream limit of the project, the channel bottom gradually increases from 170 feet to 300 feet in width. The channel grade of the river bottom varies from 0.0 to 0.3 percent. Side slopes are generally 1 foot vertical on 2-1/2 foot horizontal, with minor variation for short distances. Slopes were protected with riprap in the vicinities of bridges, drop structures, weirs, drain lines and on slopes steeper than 1 foot vertical on 2-1/2 foot horizontal. The NYSDOT realigned the Genesee River toward the left bank in the reach from about 1,400 feet below the new West Madison-Stevens Street bridge to approximately 540 feet above this bridge, which did not change conditions from that described

above. The State constructed a highway realignment along the right river bank downstream from Dyke Creek, which changed some conditions from that described above. The State's work was reviewed by the Buffalo District, Corps of Engineers, and did not have an adverse effect on the original project (USACE, O&M Manual, 2000) See Figures 3 through 7 for Channel cross sections and channel protection.

Concrete panel channel slope protection was constructed by others along the Genesee River and Dyke Creek at the following locations:

- Genesee River Left Bank: continuously from approximately 1250 feet downstream of Madison Street to approximately 450 feet downstream of State Street.
- Genesee River Right Bank and Dyke Creek Right Bank: extending continuously from approximately 1320 feet downstream of Madison Street to the confluence with Dyke Creek and extending along Dyke Creek to approximately 560 feet upstream of Route 19.
- Dyke Creek Left Bank: from the confluence with the Genesee River extending continuously to approximately 550 feet upstream of Route 19.

1.3 Bridges

The bridges at Bolivar Road and State Street were not changed structurally. The Pearl Street Bridge was removed and was relocated farther upstream, and a new bridge was constructed over Dyke Creek near Hanover Creek in connection with the highway realignment undertaken by the NYSDOT. The right bank slopes at Bolivar Road were protected with riprap. At the State Street Bridge, the right bank and the upstream left bank approach were protected with riprap. The four pile bents of the former W.A. & G. Bridge within the channel limits were ringed by PMA-22 steel sheet piles, 15 feet long, extending 10.5 feet below the channel bottom. The area inside each ring was backfilled and capped with 10 inches of concrete. All cross bracing was replaced and some sheathing was added. The sheathed part of the three larger bents was filled with rock. Five, 25-foot wood piles were arranged in a triangle on the upstream side of each of these piers and sheathed with timber to form ice fenders, which were filled with rock. The remainder of the channel cross section through this bridge has riprap. (USACE, O&M Manual, 2000)

1.4 Interior Drainage Structures

Where active storm drains entered the old stream channel outside the limits of the levees, ditches were excavated to connect the ends of the pipes to the new channel or existing pipes were shortened, if they extended into the new channel, to correspond to the new channel alignment. Many pipes, no longer in use, were removed within the limits of the work area. The left bank levee in the reach from the concrete drop structure to State Street required the improvement of two drainage lines and the removal of all others within the limits of this levee. Drainage routes were revised to use the two remaining lines. Each of these was replaced within the levee limits with new pipe and seepage rings added. A concrete manhole was built at the riverward side of the levee crest and a concrete outlet, including head and wing walls and an apron, was built at the riverward end of the line. An area surrounding the outlet and extending into the channel bottom was paved with grouted riprap. An automatic (gravity- operated) flap gate was placed at the riverward end of each pipe and a manually-operated sluice gate was placed on each pipe at the downstream side of the manhole. One drainage line through the levee is an extension of a 24-inch storm drain in Brooklyn Avenue, and is installed with concrete culvert pipe. The other drains a ponding area, to which all other local drainage behind the levee was led, and is installed with two parallel, 36-inch, corrugated metal pipes. The gates used for the above drainage structures are Armco Pekrul sluice gates and Armco flap gates. The left bank levee constructed from State Street and extending upstream 2,350 feet required some alterations in the drainage system between State Street and the former W.A. & G. Bridge. Existing 36-inch and 48-inch corrugated metal pipe drainage lines were replaced through the levee with new pipe, along with the addition of seepage rings. The 48-inch drain pipe required headwalls and aprons at three locations, one each at the landward

and riverward side of the levee and one where the pipe emerges from under the former W.A. & G. Railroad embankment. The 36-inch drain pipe required the construction of one concrete outlet with headwalls and apron at the riverward side of the levee. The 48-inch drain pipe was provided with two automatic (gravity-operated) flap gates, one at the pipe's exit from the railroad embankment and one at the riverward side of the levee. The 36-inch pipe was also fitted with a flap gate at the riverward concrete outlet. These three gates are Armco flap gates. The left bank levee, located near the upstream project limit, was provided with a 12-inch corrugated metal pipe to allow drainage of the area south of the levee into the auxiliary channel adjacent to the river. The pipe was fitted with prefabricated end sections. (USACE, O&M Manual, 2000).

1.5 Drop Structure

The drop structure located at station 68+50 (2500 feet upstream of Bolivar Rd.) was originally constructed in 1956 and was modified in 1974. The principal feature of this structure is a reinforced concrete weir, two feet thick and one foot high, extending across the channel and tapering into the slope on each side. At its ends, 33 feet from the channel bottom limits, the weir crest is 12.19 feet higher than in the channel. Upstream from the weir, a strip 35.5 feet along the river bottom and left bank is protected with 15 inches of riprap over six inches of bedding, and 57 feet along the right bank and an additional 21.5 feet of the left bank are protected with 18 inches of riprap over 12 inches of bedding. The riprap extends up the banks for a horizontal distance of 40.5 feet on the left bank and for 41 feet on the right bank. For the first 50 feet downstream from the weir, concrete paving with a minimum thickness of 18 inches covers the channel bottom, and each side slope for a horizontal distance of 33 feet at the upstream end and 28 feet at the downstream end. A line of PZ-27 steel sheet piles forms a cutoff under the weir; there is a similar line near the downstream end of the concrete paving. The concrete paving is thickened over each line of piles, and there is a projecting section 3.5 feet deep and 1.5 feet wide at each side of the channel bottom. Downstream from the concrete paving, a strip 25 feet long along the bottom is covered with 18 inches of riprap. The side slopes are protected with 24 inches of riprap. Both banks are protected with 18 inches of riprap above the concrete to the top of slope. The left bank is protected with 18 inches of rip rap for an additional 300 feet downstream. Through the structure, the channel width varies uniformly from 115 feet at the upper end to 135 feet at the lower end of the concrete paving, and then remains at 135 feet across the lower riprap areas. The bottom grade is 0.085 percent across the upper riprap strip, drops 0.4 foot across the concrete, and then assumes a slope of 0.122 percent to the downstream end of the rip rap (USACE, O&M Manual, 2000) see Figures 8 and 9 for cross section and plan view.

1.6 Sheet Pile Weirs

Two steel sheet pile weirs are located on the river approximately 1,600 feet and 3,000 feet upstream of the former W.A. & G. Bridge. The weir located 1,600 feet upstream of the former W.A. & G. Bridge was originally constructed during the 1956 contract and was modified in the 1974 contract. This structure consists of a line of PZ-32 steel sheet piles, 36 feet long, extending across the river between the tops of both banks. Wherever it was necessary in the vicinity of this structure, compacted embankment was placed on the banks to bring the surface of the protected bank to the prescribed grade, but no fill was placed on the existing channel bottom. The right bank, upstream from the piles for a distance of about 487 feet, is protected with 12 inches of riprap with a riprap toe in the channel bottom. The left bank, upstream from the piles, is also protected with 12 inches of riprap extending for about 78 feet to an existing concrete intake structure. There is a riprap toe along the bottom and upstream side of the left bank protection. The channel bottom above the piles is not riprapped except for the rock toes on each bank. Immediately below the weir, the bottom width is 130 feet. The bottom is protected with three foot thick Derrick stone from the left bank toe extending across the channel bottom 93 feet, and the remaining 37 feet of channel bottom is protected with two-foot thick Derrick stone. The surface of the Derrick stone is four feet below the top of the weir. For a distance of 24 feet downstream of the weir, the three-foot thick Derrick stone gradually narrows to cover 74 feet of the channel bottom, and the remaining 56 feet is protected with two-foot thick derrick stone.

to a distance of 49 feet downstream of the weir. The 74-foot width of three-foot thick Derrick stone extends an additional six feet downstream; the two-foot thick derrick stone extends to a line 49 feet downstream of the weir, across the entire channel bottom, with a five-foot wide riprap toe at the lower end. The left bank side slope is protected with three-foot thick Derrick stone for a distance of 24 feet downstream of the weir, and for an additional 25 feet with two-foot thick Derrick stone; the slope is protected with 12 inches of riprap to a point 350 feet from the weir. The right bank side slope is protected with 18 inches of riprap for 55 feet downstream of the weir and with 12 inches of riprap for an additional 290 feet.

The sheet pile weir located about 3,000 feet upstream of the former W.A&G. Bridge consists of a line of PZ-27 steel sheet piles, 25 feet long, extending across the river between the tops of both banks. Wherever it was necessary in the vicinity of the structure, compacted fill was placed on the banks to bring the surface of the protected bank to the prescribed grade, but no fill was placed on the channel bottom. The right bank, upstream of the weir for a distance of 150 feet, is protected with 18 inches of riprap. The left bank, upstream from the weir, is also protected with 18 inches of riprap for a distance of 680 feet. This bank has a 10-foot wide rip rap toe at the top of bank for a distance of about 330 feet upstream starting at a point approximately 350 feet upstream of the weir. The channel bottom is riprapped with 18 inches of stone for a distance of 50 feet upstream of the piles. Both banks have the riprap protection toed into the channel bottom. Immediately below the weir is the stilling basin, 150 feet wide and 115 feet long. The bottom and side slopes are paved with two-foot thick concrete blocks with plan dimensions not less than 5.5 feet nor greater than 6.5 feet. The surface of the concrete blocks in the stilling basin is 8 feet below the top of weir. At the downstream end of the stilling basin is a steel sheet pile toe wall consisting of PZ-27 sheet piles, 14 feet long, extending 171 feet across the channel bottom. The top of the toe wall is two feet higher than the bottom of the stilling basin. For a distance of 25 feet downstream of the toe wall, the bottom and side slopes are paved with 2-foot thick concrete blocks with plan dimensions not less than 5.5 feet nor greater than 6.5 feet. The channel bottom downstream of the toe wall is two feet higher than the stilling basin bottom. The channel bottom for a distance of 100 feet downstream from the end of the concrete blocks is protected with 24 inches of riprap. The side slopes are protected with 30 inches of riprap for 50 feet downstream of the weir and for an additional 100 feet with 18 inches of riprap. Also on the left bank, the downstream nose of the earth levee is riprapped with 18 inches of stone. The bottom grade is 0.3 percent across the upper riprap, level across the stilling basin, and 0.065 percent downstream of the toe wall (USACE, O&M Manual, 2000). See Figures 11-12 for details.

A third sheet pile weir exists at roughly station 130+00, 600 feet upstream from State Street. As-built drawings indicate this weir was constructed in 1974 “by others”.

1.7 Spoils Area

Spoiled material was placed on both banks of the river near the downstream end of the project and upstream from Bolivar Road, on the right bank between the concrete drop structure and Pearl Street, on the right bank upstream of West Dyke Street to the barrier levee, from this barrier levee upstream to near the project limit, and on the right bank of Dyke Creek above State Street (USACE, O&M Manual, 2000).

2 Flood Insurance Study

The current FEMA FIRM map for the village of Wellsville where the Genesee River Project is located does not illustrate the presence of levees. Portions of the Genesee River are within an area which is designated as Zone AE (FEMA Panel Number 3600360001B). A flood zone designation of AE indicates that the area is at high risk of being flooded with a 1% annual chance of flooding in any given year or experience 1 flood event over the life of a 30-year mortgage.

3 *Operation and Maintenance Requirements*

In accordance with the memorandum agreement from the United States to the State of New York dated November 6, 1964, attached in Appendix E, the Government transferred all operation and maintenance functions to the State of New York Department of Environmental Conservation (NYSDEC). Operation and Maintenance is to be in accordance with the provisions in the O&M Manual.

As indicated in the O&M manual, the levee superintendent is responsible for operation and maintenance of the project. Further responsibilities include:

- Keeping a reserve supply of materials needed for emergency operations
- Preventing encroachments of the levee
- Submit a semiannual inspection report to the District Engineer
- Maintain records of levee performance during floods
- Conduct routine maintenance
- Provide flood warning and prediction service
- Provide flood fighting services
- Conduct periodic inspections, especially before, during and after floods

No annual O&M cost is provided. Operation and maintenance procedures as well as current or planned work will be discussed with the local sponsor during the field inspection and documented in the Periodic Inspection Report.

4 *Project Conditions Based on Most Recent Inspection*

As of the 2016 routine inspection in accordance with USACE - Headquarters guidance, the Right Bank System is rated “Unacceptable” (U), however the system is “ACTIVE” in the USACE Rehabilitation Program. A tabulation of the 2016 Routine Inspection Report deficiencies specific to the Genesee River Left Bank and Channel System is provided as Attachment 1.

5 *Summary of Historical Periodic Inspections*

Genesee River Wellsville Flood Risk Management Project was been given a rating of “Unacceptable” (U) based upon the findings of a joint Periodic Inspection undertaken with representatives of NYSDEC, Region 9 and the Albany office, on July 22-23, 2010. The project condition rating of “Unacceptable” (U) was primarily based upon: (1) heavy vegetation in rip-rap along the left and right bank levees of the project; and (2) the lack of video inspection documentation for all outfalls extending through the left and right bank levees. These deficient conditions were noted as possibly preventing the project from functioning as designed and result in increased risk to the public. A complete list of project deficiencies is included in the 2010 Periodic Inspection report.

6 *Significant Developments Since Last Periodic Inspection*

The following significant developments have occurred related to the Left Bank and Channel System since the 2010 Periodic Inspection:

- The Project Sponsor has completed video inspections of pipes extending beneath the levee.

7 *Emergency Preparedness Plan*

A regional flood Emergency Plan was provided for the 2010 PI. At the time of the 2010 PI, the provided Emergency Plan was deemed insufficient and out of date. As of the 2016 routine inspection a project specific Emergency Preparedness Plan (EPP) has not been provided. The regional Response Plan indicates the following flood preparedness for the NYSDEC Region 9 projects.

1. High Water Stage Response
2. Planning contact and emergency numbers
3. Project features and County map
4. Flood plan response
5. Evacuation plan

The lack of a project specific EPP is a noted deficiency from the 2016 Routine Inspection of the project.

8 *Design Criteria Review*

This section provides details on design criteria for primary parameters relative to the Genesee River Wellsville, New York Flood Damage Reduction Project, Genesee River Right Bank system. This section was developed from the review of available documentation from USACE – Buffalo District and USACE design criteria guidance and policies.

Levee Performance During Major Flood Events

To date, past performance issues regarding the levee system during high water/flooding events have not been reported by the local community or project sponsor (NYSDEC). As a result of flood action/damage to flood control features, channel rectification projects were conducted essentially for the entire project in 1972 and the left bank of both Dyke Creek and the Genesee River in 1996. Since that time, no additional flood related performance issues have been specifically noted for the project channels.

Deficiencies in Design of Existing project

The existing project was designed for the following flood flows, see Table 4 below:

Table 4 Designed Flood Flows for the Wellsville FDRP

	1955 Design Flood	1966 Design Flood
Genesee River, below Dyke Creek	12,300 cfs	21,500 cfs
Genesee River, above Dyke Creek	9,900 cfs	17,300 cfs

Based on the records available prior to 1956 when preconstruction planning was completed, the design discharges on Genesee River were estimated to have about 1 percent chance of occurrence. However, since

completion of project planning, they were nearly equaled or exceeded every year, and the estimated frequencies thereof have increased.

Since completion of the project only minor flood damages have been incurred, even though flood flows exceeding the design discharges have been experienced. This is because the actual flood profiles were less than were anticipated for the related discharges. The largest discharges experienced, though considerably in excess of design discharges, have resulted in flood profiles approximately equal to design profiles. Thus, the completed channel improvements have proven to be more efficient than anticipated from the original design computations, that is, they pass a given discharge through the project area more rapidly (at higher velocities) than predicted.

Despite the fact that flood discharges have been contained by the project, it is nonetheless true that the project does not afford the degree of protection intended, and a potential exists for serious flooding. Further, the high velocities which have accompanied these discharges have had a detrimental effect on the project itself.

The project was designed to carry the design discharges with a mean velocity of 7 feet per second with steady uniform flow. Thus, occurrence of 7-foot-per-second velocities was expected to be very infrequent, and bank protection was provided only at curves, bridges and on steep side slopes. However, since construction, the design discharges have been approached or exceeded frequently and the accompanying velocities, due to the unexpected efficiency of the project channels, have been higher than was anticipated. Greater lengths of channel banks have therefore been exposed to high velocities, accounting for the erosion that has taken place in some unprotected sections. Further, on protected sections, although the riprap itself is adequate to withstand the higher velocities, deterioration of the adjacent unprotected sections has exposed the ends of the riprap to progressive unraveling.

Additional Improvements

1966 Additional Improvements to Levee

Where channel improvements were contemplated, the channel bottom was excavated to specified depths and bottom widths, and the banks cut on a slope of 1V:2.5H. The new barrier levees were constructed of compacted embankment; levee side slopes are 1V:2.5H; an inspection trench was excavated along the center line of the levee; crest widths are 10 feet; and crests were at least one foot above the hydraulic energy level of the design discharge. Heights of the sections of barrier levee range from two to eight feet, including freeboard, with the average about four feet. The existing channel banks were raised in several locations with compacted embankment; the embankment side slope is 1V:2H; crest widths are 10 feet and crests are one foot above the design water surface. The one exception to this is the embankment on the right bank, where the crest meets design water surface profile. Heights of the various sections of compacted embankment would range from two to six feet including freeboard, with the average about four feet. Bank and bottom protection has a 12 inch layer of dumped riprap on a 6 inch bedding layer. Where protection was required on a levee slope, it would extend to the top of the levee. The vicinity of the Wellsville, Addison and Galetton Railroad Bridge is the only location where bottom protection is provided. At locations where only slope protection is contemplated (no paving on channel bottom) the total 18 inch thickness of riprap will terminate in a 3 foot toe at the edge of the channel.

Modification of Existing Drop Structure

The weir crest of the drop structure below Pearl Street would be lowered four feet, from elevation 1478.11 to 1474.11. The weir is reinforced concrete, five feet high and two feet thick.

Modification of Existing Steel Sheet Pile Weir

The existing steel sheet pile weir is a single line of Z-32 sheet piling located at station 103+00. The crest of the weir would be lowered three feet, from elevation 1488.00 to elevation 1485.00 and the crest would be lengthened from 114 feet to 150 feet. The channel bottom upstream of the weir would be at elevation 1482 thus creating a pool three feet deep. The village would draw its water supply from this pool. To prevent erosion of the channel, derrick stone would be placed from the weir to station 103+54. New Z-32 steel sheet piling would be used for making the modification to the weir.

8.1 *Hydrology and Hydraulics*

Based on the USACE provided Wellsville O&M Manual (January 2000), The Genesee River channel was designed for a flow of 21,500 cfs below the mouth of Dyke Creek and 17,300 cfs above the creek. The Dyke Creek channel was designed for a flow of 7,300 cfs. The project was originally designed to protect the village of Wellsville against damage from floods equal to a two-percent chance exceedance flood in the Genesee River and Dyke Creek and to reduce damages in the event a larger flood should occur on either. The improvement was extended downstream into the town of Wellsville far enough to accomplish the desired lowering of stages in the village. Latest frequency curves indicate full protection against a 2.5-percent flood. The two percent flood has one chance in 50 years of being exceeded in any given year, while the 2.5-percent flood has one chance in 40 years of being exceeded. Peak flows on the two streams do not occur simultaneously. The modifications undertaken by the New York State Department of Transportation (NYSDOT) on the river and creek are capable of passing the design flows stated above.

EM 1110-2-1913 (USACE, 2000) references current level of protection design criteria for levees. Section 6-1, Paragraph b states that “the term and concept of freeboard to account for these (hydraulic) uncertainties is no longer used in the design of levee projects” and “risk-based analysis directly accounts for hydraulic uncertainties and establishes nominal top of protection”. A risk-based analysis was not available for the Wellsville FDRP; therefore, current Federal Emergency Management Agency (FEMA) design criteria used to meet the requirements of Code of Federal Regulations (CFR) 65.10 of the National Flood Insurance Program (NFIP) have been referenced for the design criteria review with respect to hydrology and hydraulics.

FEMA specifies that all levees must have a minimum of 3 feet of freeboard against the 100-year flood (FEMA, 2008).

Definitive conclusions regarding adequacy of the systems’ level of protection from a hydrologic and hydraulics standpoint cannot be made due to lack of a current risk-based analysis and complete documentation with regards to past performance of the levee during flood events more severe than the FEMA 100 year event.

Interior Drainage

Specifics regarding historic interior drainage design criteria could not be located in the Contract Plans (USACE, 1966), Operation and Maintenance Manual (USACE, 2000), or Design Memorandums (USACE, 1955, 1964, and 1966). However, reference is made in the 1955 Design Memorandum to a 25-year all-season storm for runoff estimates for areas behind levees.

For the purposes of this design criteria review, current FEMA guidelines used to meet the requirements of Code of Federal Regulations (CFR) 65.10 of the National Flood Insurance Program (NFIP) are referenced. In general, the base flood is referenced as a planning guideline to follow which is generally the 100-year storm event. Due to a lack of documentation of historic interior drainage design criteria within the design manuals, it cannot be verified that the interior drainage system complies with current design standards.

Pipe Materials

USACE design criteria indicates that all pipes that cross over or through the levee should be in known good condition, be able to withstand levee loading, and have adequate cover for frost.

Based on historic reliability issues with corrugated metal pipe (CMP) for gravity drains, the minimum standard for these pipelines is reinforced concrete pipe (RCP). As-built drawings (USACE, 1973) for the Wellsville FDRP indicate that pipe lines associated with the FDRP are constructed of corrugated metal pipe (CMP) or cast iron pipe (CIP). From the O&M Manual, we can see that parts of the levee's left bank drainage system were replaced with corrugated metal pipe along with the addition of seepage rings.

Gravity lines should be provided with flap-type or slide-type service gates on the riverside of the levee. Automatic flap-type gates are usually used where the water is likely to rise to the "Gate Closing Stage" rather suddenly and where the water stage is likely to fluctuate within a few feet above and below the "Gate Closing Stage" for prolonged periods of time during flood season. Automatic gates are also required on slower rising streams or bodies of water where frequent visit from operating personnel are not practical.

8.2 Levee Embankments

Based on a review of the As-Constructed drawings and the 1955, 1964, and 1966 USACE Design Memorandum, findings are summarized in Table 5.

Table 5 Design Criteria for Levee Embankments

Design Criteria Parameter	Current Design Criteria	Design or As-Constructed Condition	Meets Current Design Criteria (Yes,No,N/A)
Slope Stability Analysis; Design and Construction of Levees (EM 1110-2-1913, EM 1110-2-1902)	Minimum Factor of Safety, FS = 1.3 'end of construction' case; Long Term (Steady Seepage) FS=1.4	Minimum FS = Not Provided	Unknown
Standard Levee Sections and Min. Levee Section (EM 1110-2-1913) Crown Width River Side Slope Land Side Slope	10 – 12 feet	Generally 10 feet wide	Yes
	1 (V): 2 (H) or flatter	1(V): 2.5(H)	Yes
	1 (V): 2 (H) or flatter	1(V): 2.5(H)	Yes
Design and Construction of Levees (EM 1110-2-1913), Seepage Analysis and Control (EM 1110-2-1901, ETL 1100-2-569) (Through Seepage & Underseepage), Design, Construction and Maintenance of Relief	As applicable, embankment protected by impervious blanket, cut-off wall, seepage berm, relief wells or trench drains.	Not specifically indicated as considered during design, however an inspection trench/cutoff wall is shown on as-built levee sections	Unknown

Wells (EM 1110-2-1914)			
Settlement Analysis (EM 1110-2-1913& 1110-1-1904)	Based on subsoil conditions; project specific when high consolidation is expected	Borings were advanced with generally no problematic soils indicated. Settlement not specifically indicated as considered during design	N/A
Earthquake Design and Evaluation (ER 1110-2-1806), Design and Construction of Levees (EM 1110-2-1913)	Determine during Reconnaissance study phase if seismic loadings control project design. If a controlling factor, then it should be incorporated into design. Earthquake loadings are not normally considered in analyzing the stability of levees because of the low probability of earthquake coinciding with periods of high water.	Not specifically indicated as considered during design	Unknown
Conduits, Culverts, and Pipes (EM 1110-2-2902)	Project specific. Use of corrugated metal pipes (CMP) and seepage collars is no longer recommended.	Corrugated pipes and seepage collars are indicated on as-built dwgs.	No
Instrumentation of Embankment Dams and Levees (EM 1110-2-1908)	N/A	No Instrumentation incorporated into design	N/A
Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures (ETL 1110-2-571)	The vegetation free zone is a minimum of the width of the levee and all appurtenant structures, plus 15 feet on each side.	Vegetation was not present during initial as-built conditions	Yes

The embankments meet the minimum required dimensions and slopes. Slope stability considerations are mentioned but not included in the design memorandum. There is no record in the design memorandum of an earthquake analysis being performed for the levee. There is no record of observed embankment or foundation failures in the previous inspection reports. The original design did not identify the need for pressure relief wells to address seepage and no seepage analysis was included in the design memorandum.

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No engineering analysis of settlement is provided in the design report. There is also no record of settlement related issues in the previous inspection report. The levee system was generally constructed in accordance with the design criteria that existed at the time of the construction.

8.3 Channel Relocation

According to the 1955 Design Memorandum,

- a. General: The design criteria used in developing the project plan are presented in the following paragraphs.
- b. Design discharges: The design discharges adopted for the Wellsville project are based on the estimated discharges from the maximum floods of record on the Genesee River and on Dyke Creek at Wellsville.
- c. Channel cross section: The improved channel is trapezoidal in shape, with varying bottom widths.
- d. Velocity: Stream bed and bank materials through Wellsville are erosion resistant and can withstand fairly high velocities. The improved channels have been designed to carry the design discharges with a mean velocity of 7 feet per second with steady uniform flow. Thus, occurrence of 7-foot per second velocity will be very infrequent and no bank protection is considered necessary except at curves, bridges and places where steep side slopes occur.
- e. Channel roughness coefficients: A roughness coefficient (Manning's "n") of 0.030 was adopted for use in design of the improved channels.
- f. Bottom grades: The depths and slopes of the improved channels have been governed by topography and other design criteria listed above.
- g. Side slopes: Channel side slopes have been covered by stability of bank material and maintenance requirements. The adopted side slopes are 1 on 2½ except at places where channel banks were made steeper to avoid alteration of existing structures and at places where riprap is required.
- h. Riprap: Riprap will be provided wherever channel velocities exceed 7 feet per second, channel curvature exceeds 6 degrees, and where protection of bridge abutments is required due to lowering of the existing grade. Riprap will also be placed at the confluence of the Genesee River and Dyke Creek to prevent any possibility of scour.

Based on a review of the As-Constructed drawings and the 1955 USACE Design Memorandum, findings are summarized in Table 6.

Table 6 Design Criteria for the Channel Relocation

Design Criteria Parameter	Current Design Criteria	Design or As-Constructed Condition	Meets Current Design Criteria (Yes,No,N/A)
Stability Analysis (EM 1110-2-1418)	Channel side slopes not steeper than 1(V) to 1.5 (H)	Channel side slopes not steeper than 1(V) to 2.5 (H)	Yes

Bank Protection (EM 1110-2-1601)	Channel whose velocity (7.0 fps) and/or shear exceed permissible values will require paving or bank revetment	Riprap channel lining on Genesee River where high velocities (7.0 fps and above) were expected, channel curvature exceeds 6 degrees, and at the confluence of the Genesee River and Dyke Creek	Yes
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8.4 *Structural*

Structures include the pipe and headwalls for interior drainage through the levee, drop structure and sheet pile weirs. There are no floodwalls or closure structures on this project.

No structural analysis calculations, results or summary was provided in the design report and therefore could not be reviewed. Technical review of the design memoranda indicated that concrete pipe was to comply with D-Load requirements and should have pressure type gasket joints. No requirements for D-Load or for pressure pipe are shown on the plans so the adequacy of the reinforced concrete pipes could not be evaluated.

There is no record of observed structures failures in the previous inspection report. Without a structural analysis, no conclusion can be made regarding the adequacy of the structures to meet the required structural design criteria.

Figures

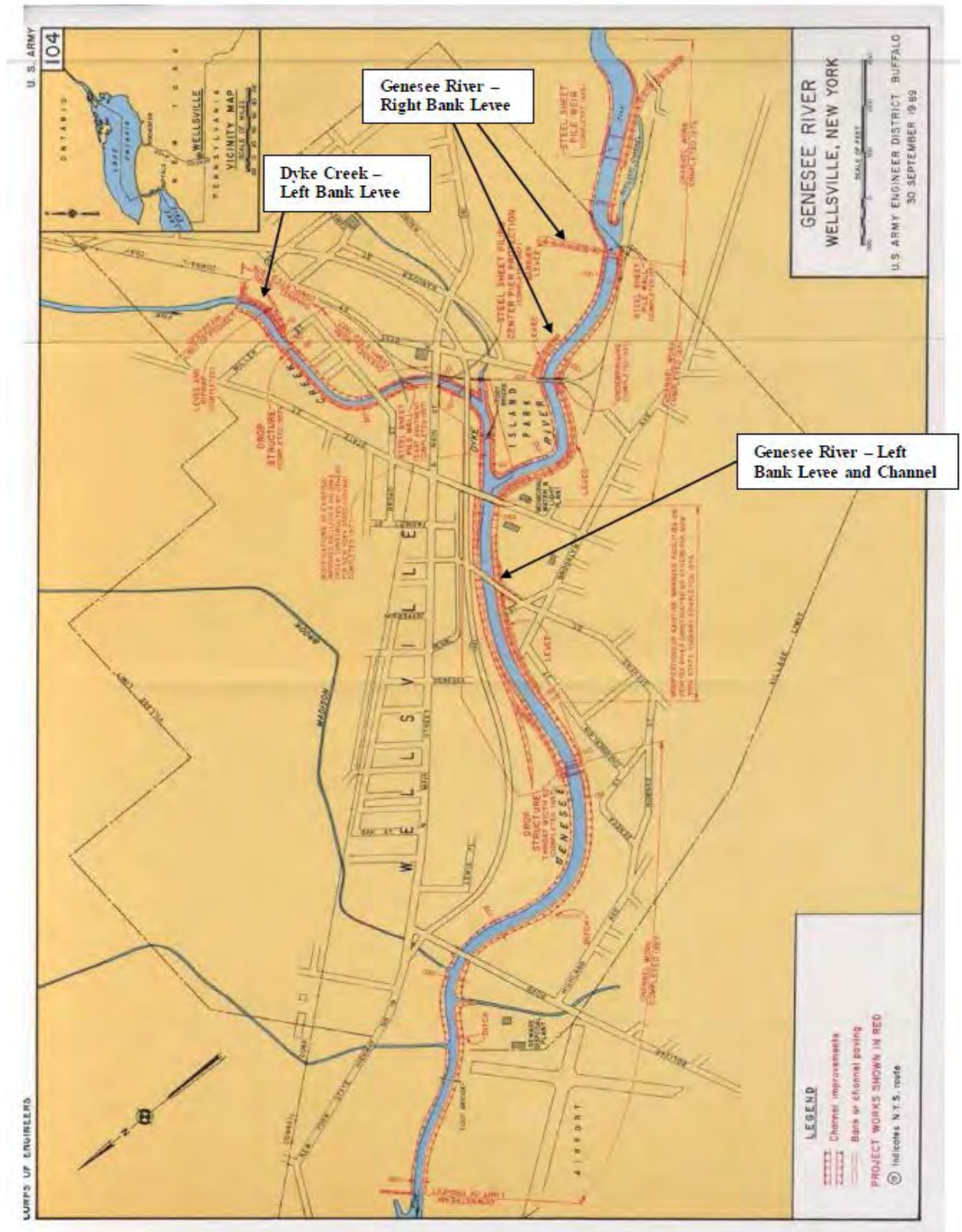


Figure 1: Project Map

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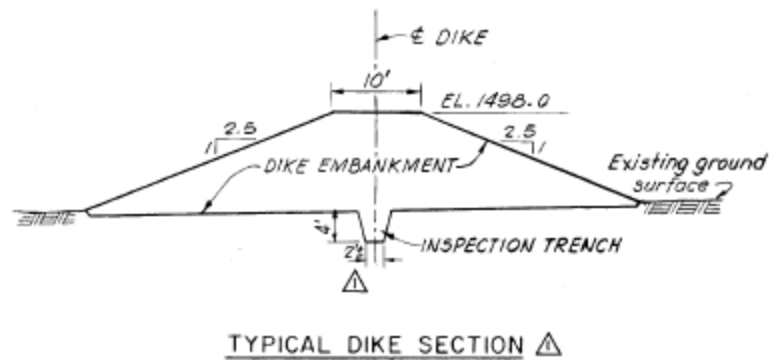


Figure 2. Typical Levee Cross Section

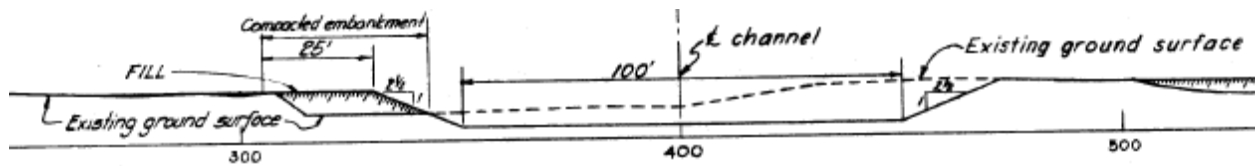


Figure 3. Channel Cross Section Station 100 Feet Downstream of Bolivar Road

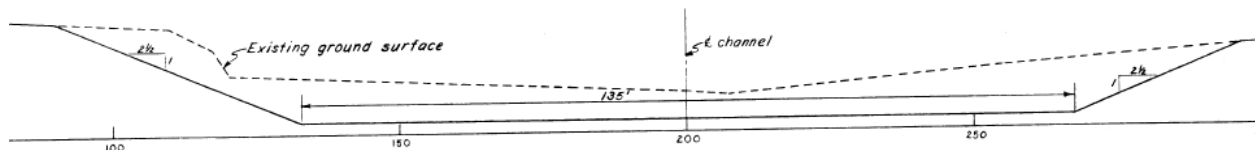


Figure 4. Channel Cross Section Station 500 Feet Downstream of Concrete Drop Structure

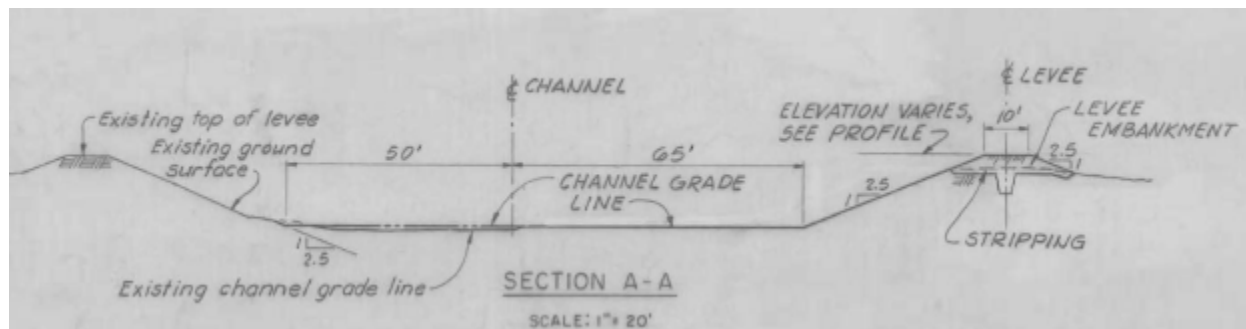


Figure 5. Channel Cross Section Station 150 Feet Upstream of Concrete Drop Structure

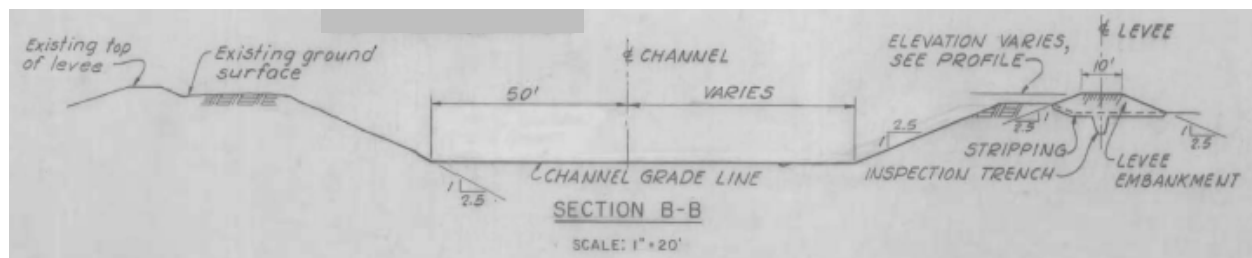


Figure 6. Channel Cross Section Station 850 Feet Upstream of Concrete Drop Structure

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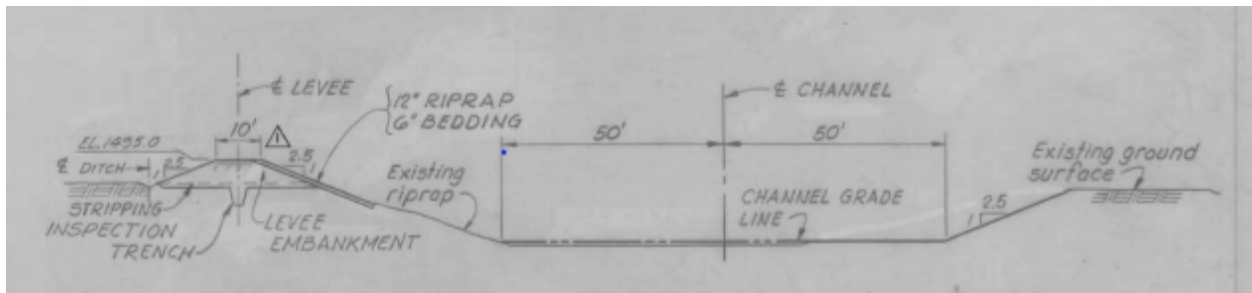


Figure 7. Channel Cross Section Station 300 Feet Upstream of Weir Built by Others

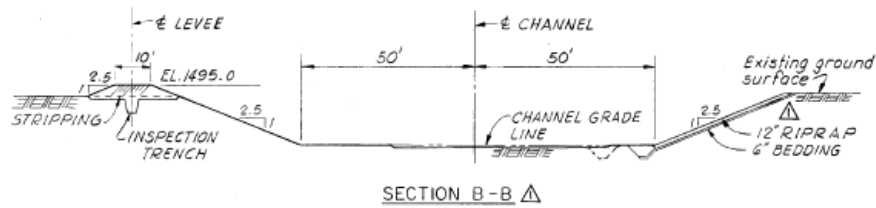


Figure 8. Channel Cross Section directly downstream of W.A. &G. bridge

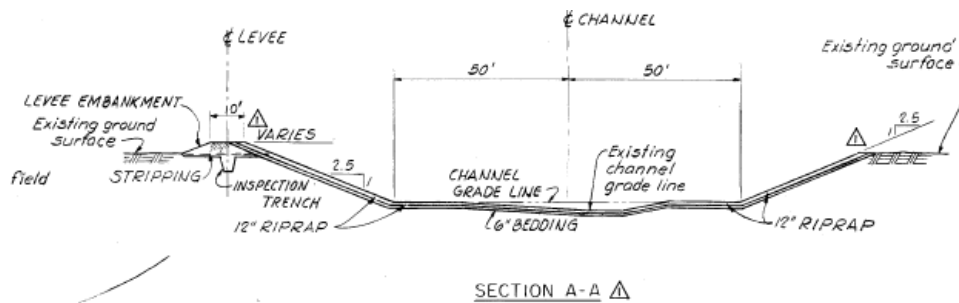


Figure 9. Channel Cross Section directly upstream of W.A. &G. bridge

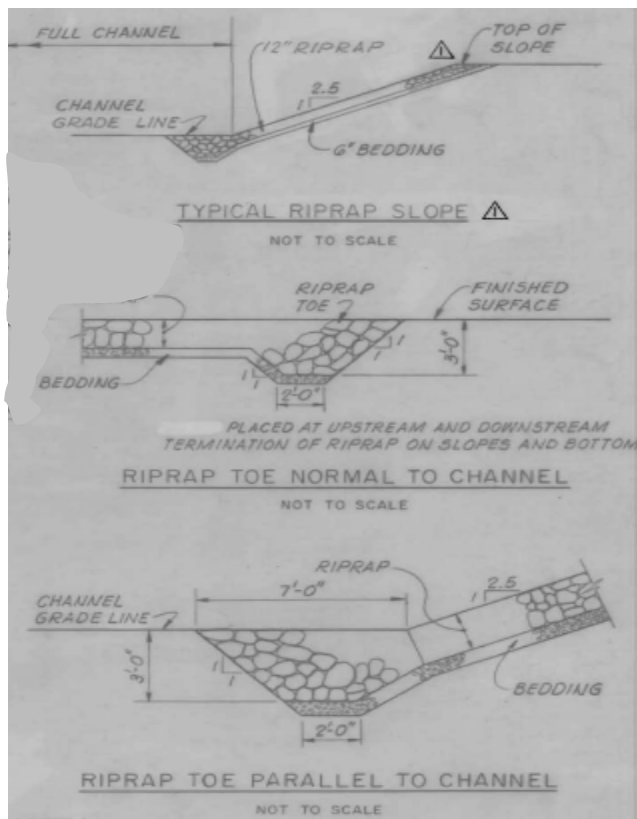


Figure 10. Channel Slope Protection

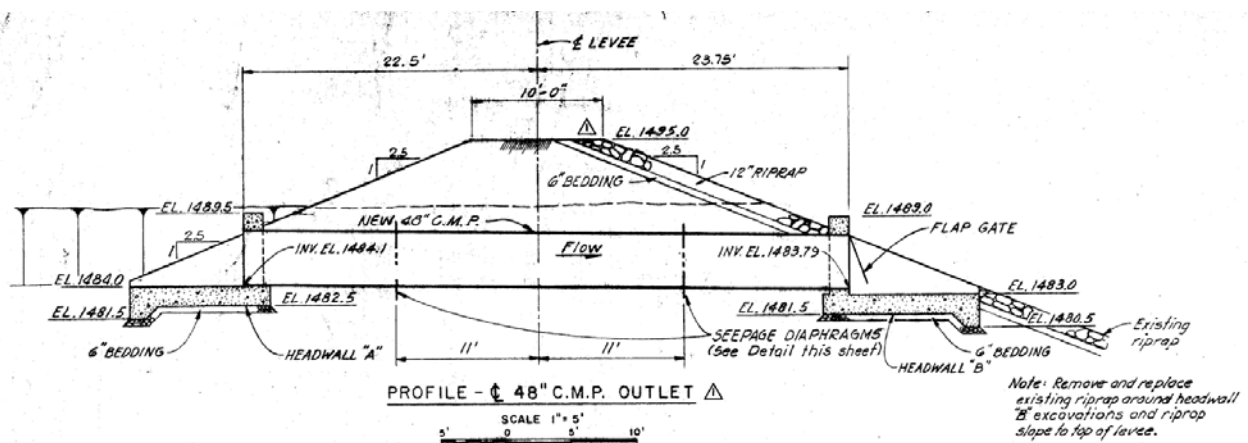


Figure 11. Interior Drainage Example: 48" CMP

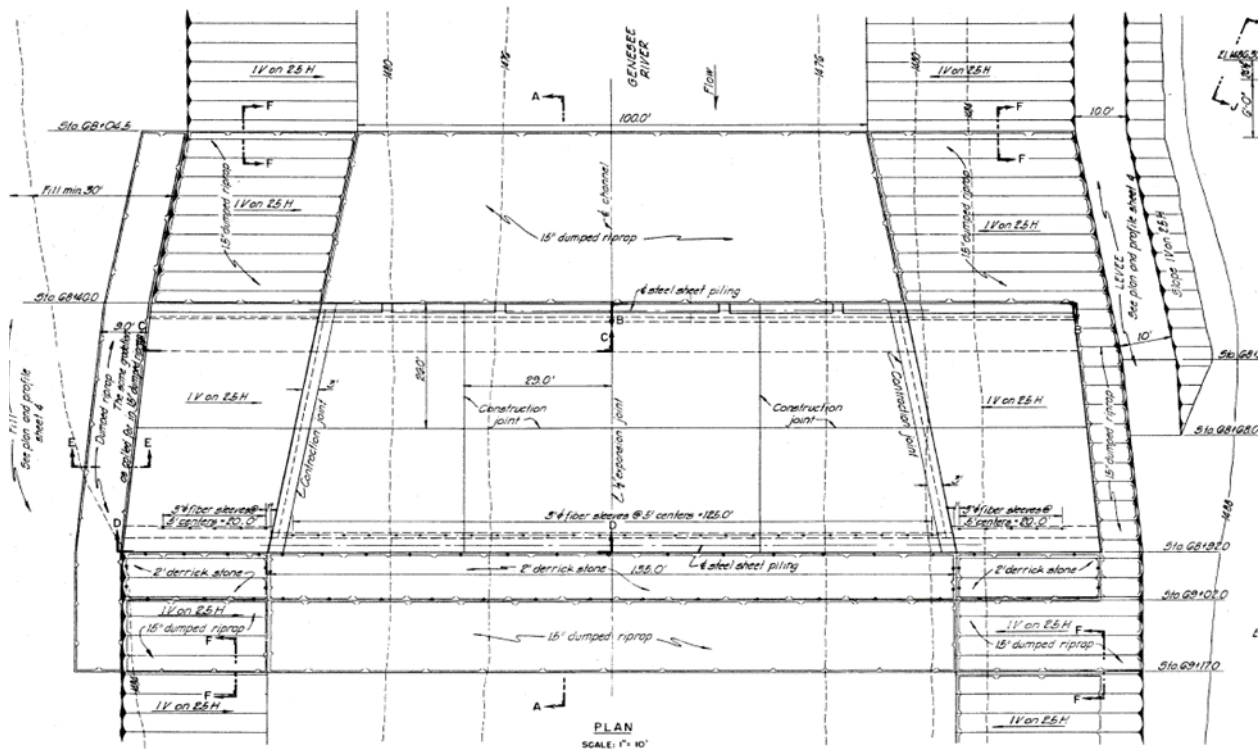


Figure 14. Drop Structure Plan View

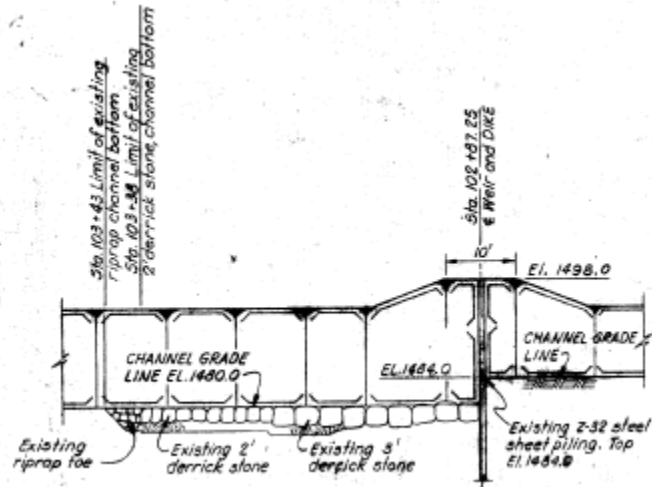


Figure 15. Steel Sheet Pile Weir Cross 1600 Feet Upstream of W.A. &G. bridge

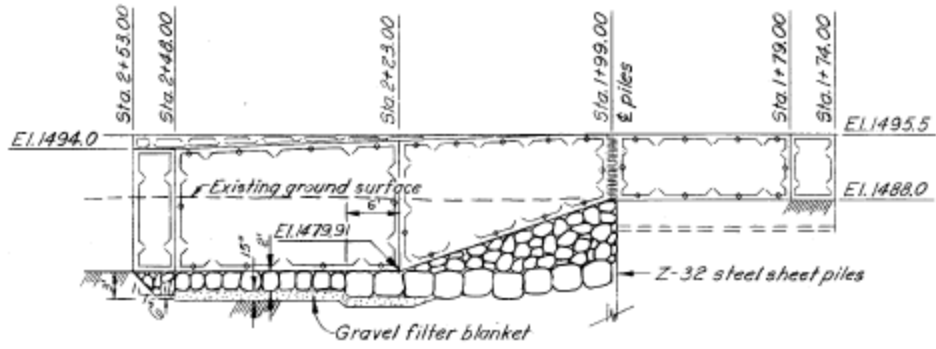


Figure 16. Steel Sheet Pile Weir Cross Section 3000 Feet Upstream of W.A. &G Bridge

Attachment 1

Summary of Minimally Acceptable (M) or Unacceptable (U) Deficiencies – 2016 Routine Inspections, Genesee River and Channel System, Wellsville, New York

Left Bank /Channel	Deficiency	Recommendation	Rating
Channel	Soft vegetation on both banks upstream and downstream of the golf course pedestrian bridge.	Remove unwanted vegetation.	M
Channel	Grassy shoal along right bank from 225' to 700' downstream of golf course pedestrian bridge.	Remove shoaling.	M
Left Bank	Unauthorized Alteration – Pump station, intake pipe to pump station for golf course water, and feeder pipes.	Remove unauthorized alteration or submit Section 408 Alteration Request Form.	M
Channel	Unauthorized Alteration – Golf course pedestrian bridge 1,250' downstream of Bolivar Road bridge.	Remove unauthorized alteration or submit Section 408 Alteration Request Form.	M
Channel	4 alternating vegetated shoals on both banks from 150' upstream of golf course pedestrian bridge to Bolivar Road bridge.	Remove shoals.	M
Channel	Soft vegetation and woody growth on right bank from 300' upstream of golf course pedestrian bridge to Bolivar Road bridge.	Remove unwanted vegetation.	M
Channel	Trees on right bank channel slopes 900 feet downstream of Bolivar Street bridge.	Remove trees.	M
Channel	Erosion at 2 outfalls (36" and 24" diameter) on LB upstream of pedestrian bridge. Pipe extension required.	Repair erosion and modify pipe.	M
Channel	Unauthorized Alteration – Riprap on right bank toe from 300' upstream of pedestrian bridge to 100 feet downstream of Bolivar Street bridge.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Left Bank	Riprap missing or covered on left bank underneath Bolivar Road bridge.	Replace or uncover missing riprap.	U
Channel	Unwanted heavy woody vegetation on both banks around Bolivar Road bridge.	Remove vegetation.	M
Channel	Vegetation in riprap on right bank around Bolivar Road bridge.	Remove vegetation from riprap.	M
Left Bank	Lower supports of headwall railing are dislodged on left bank outfall 300' upstream of Bolivar Road bridge.	Repair headwall railing.	M
Left Bank	Unauthorized Alteration – 42" Outfall on left bank 300' upstream of Bolivar Road bridge.	Remove unauthorized alteration or submit Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration – Riverwalk kiosk on left bank.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Channel	Shoaling along right bank from 750' to 1,300' upstream of Bolivar Road bridge.	Remove shoaling.	M
Channel	Unwanted vegetation on both bank slopes from 750' upstream of Bolivar Road bridge to Madison Street bridge.	Remove unwanted vegetation.	M
Left Bank	Unauthorized Alteration – 42" outfall on left bank 900' upstream of Bolivar Road bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Soft unwanted vegetation obstructing outfall on left bank 900' upstream of Bolivar Road bridge.	Remove unwanted vegetation.	M
Left Bank	Unauthorized Alteration – pet waste sign encroachment in channel slopes.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Left Bank	30" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge is approx. 20% obstructed by minor sediment.	Remove sediment obstruction.	M
Left Bank	Unauthorized Alteration – Asphalt drive and access gate on left bank 1,600' upstream of Bolivar Road bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration – 30" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration – One utility pole and 3 guy wires 1,700' upstream of Bolivar Road bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration – Misc. landscaping encroachments 1,900' to 2,200' upstream of Bolivar Road bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Vegetation in left bank riprap from 1,900' to 2,500' upstream of Bolivar Road bridge.	Remove vegetation from riprap.	U
Left Bank	Vegetation in riprap on both banks around Drop Structure.	Remove vegetation in riprap.	M
Left Bank	Vegetation in riprap on both banks around Drop Structure.	Remove vegetation from riprap.	U
Left Bank	Vegetation obstructions in Chamberlain Street drainage channel to river.	Remove vegetation and beaver dam obstructions.	M
Left Bank	Chamberlain Street drainage channel creates apparent gap in line of protection on left bank levee.	Evaluate the possibility of altering the project to improve a continuous line of protection; potentially include a pipe and flapgate.	M
Channel	Tree debris in channel just downstream of Drop Structure.	Remove tree debris.	M
Left Bank	Unauthorized Alteration – Gate house on left bank 2,230' downstream of Madison Street (Stevens Street) bridge is in acceptable condition.	Remove unauthorized alteration or submit Section 408 Alteration Request Form.	M
Left Bank	Vegetation in riprap on left bank 2,200' to 900' downstream of Madison Street (Stevens Street) bridge.	Remove vegetation from riprap.	U
Left Bank	Significant woody unwanted vegetation on left bank channel slopes from 2,200' downstream of the Madison Street (Stevens Street) bridge to the Madison Street bridge.	Remove unwanted vegetation.	U
Left Bank	Unauthorized Alteration – Shed, timbers, and debris encroaching on landside slope at 70 Seneca Street on left bank 1,700' downstream of Madison Street (Stevens Street) bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	9 trees and 1 tree stump within 15' of levee landside toe 1,600' downstream of Madison Street (Stevens Street) bridge.	Remove trees and tree stump.	M
Left Bank	Inadequate sod cover at 70 Chamberlain Street on landside slope.	Re-establish sod cover.	M
Left Bank	Unauthorized Alteration – Misc. encroachments (chain link fence and shed) at 60 Seneca Street on left bank 1,600' downstream of Madison Street (Stevens Street) bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration – Tree debris and metal debris on levee landside slope 1,600' downstream of Madison Street (Stevens Street) bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Channel	Shoal on left bank toe, not part of as-built project (189-WEL-2/5).	Remove Shoal.	M

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Attachment 1 Continued

Left Bank	Unauthorized Alteration - Misc. encroachments (tree house, deck, utility marker, landscaping, pool, and sheds) on left bank 1,400' to 1,000' downstream of Madison Street bridge. Table, signs post, and NY telephone cable in overbuilt section of levee.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Vegetation in riprap on right bank from 1,600' to 1,300' downstream of Madison Street (Stevens Street) bridge.	Remove vegetation from riprap.	M
Left Bank	Unauthorized Alteration - goose fence.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Left Bank	Trees on left bank landside slope and within 15' of landside toe from 1,200' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.	Remove trees.	M
Left Bank	24" RCP on left bank 900' downstream of Madison Street (Stevens Street) bridge (rated M in NYSDC 19DEC13 pipe inspection).	Repair pipe to acceptable condition and videotape inspect.	M
Left Bank	Unauthorized Alteration - Utility pole on left bank 850' downstream of Madison Street (Stevens Street) bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - Guy wire w/in 15' of landside toe on left bank 850' downstream of Madison Street (Stevens Street) bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Trees and unwanted vegetation on ponding area fence.	Remove trees and unwanted vegetation.	M
Channel	Unauthorized Alteration - Pipe Line bridge just upstream of Pearl Street bridge removed.	Replace Pipe Line bridge or submit Section 408 Request Form.	M
Left Bank	Unauthorized Alteration - Fence on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Trees on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.	Remove trees.	M
Channel	Minor shoaling on left bank from 600' downstream of Madison Street (Stevens Street) bridge to State Street bridge.	Remove shoaling.	M
Channel	Unauthorized Alteration - Madison Street (Stevens Street) bridge.	Remove unauthorized alteration or submit Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - concrete walkway at Wellsville High School (Manhole and Wellsville High School building are part of project).	Remove unauthorized alteration or Submit Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - Fence on left bank channel crest from Madison Street (Stevens Street) bridge to State Street bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - Fence (covered in unwanted vegetation) 300' downstream of State Street bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - Wellsville High School Rail and parking lot on left bank levee downstream of State Street bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Significant unwanted vegetation and trees on left bank 400' downstream of State Street bridge.	Remove unwanted vegetation and trees.	U
Left Bank	Unauthorized Alteration - 2 utility poles and associated guy wires 75' downstream of State Street bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - 4 Utility Poles on left bank 250' upstream of State Street bridge.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Vegetation and woody growth in left bank riprap from State Street bridge to 950' upstream of State Street bridge. Not much vegetation from Sta. 29+00 to 27+00.	Remove vegetation and woody growth from riprap.	U
Channel	Vegetation in riprap on right bank from State Street bridge to 400' upstream of State Street bridge.	Remove vegetation from riprap.	U
Left Bank	Multiple animal burrows (approx. half dozen) on left bank river side slope 450' upstream of State Street bridge.	Fill animal burrows and improve animal control program.	M
Channel	Unwanted vegetation and bushes on landside slope and within 15' of landside toe 500' upstream of State Street bridge.	Remove unwanted vegetation.	M
Left Bank	Unauthorized Alteration - Stairs and concrete pad for access to Water Intake Unit in left bank river side slope upstream of Steel Sheet Pile Weir (Water Intake Unit is part of project as shown on As-Constructed drawing 189-WEL-2/4).	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Channel	Unauthorized Alteration - Fishing access platform and fence on right bank 200' upstream of Steel Sheet Pile Weir.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - unidentified drainage structure on channel side slope on left bank.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Left Bank	Unauthorized Alteration - Asphalt sidewalk on landside slope of left bank.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Left Bank	Unauthorized Alteration - Utility pole on left bank landside slope 475' upstream of Steel Sheet Pile Weir.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Significant vegetation in left bank riprap from 400' to 700' upstream of steel sheet pile weir.	Remove vegetation from riprap.	U
Channel	Unauthorized Alteration - Parking lot and wooden posts on right bank in Island Park 500' upstream of Steel Sheet Pile Weir. Bollards restrict access.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Channel	Unauthorized Alteration - Riprap added on right bank toe.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Left Bank	48" CMP on left bank landside slope 515' upstream of Steel Sheet Pile Weir is not currently obstructed, however, it does not have a trash rack to prevent obstructions from entering the pipe (rated A in NYSDC 19DEC13 pipe inspection).	Install trash rack over opening to keep out debris and unauthorized access. Maintain pipe and videotape inspect by 19DEC18.	M
Left Bank	48" CMP inlet to culvert under Dyke Street access road on left bank obstructed by vegetation 500' upstream of Steel Sheet Pile Weir.	Remove vegetation obstruction.	M
Channel	Shoaling along left bank toe from 450' downstream of Island Park pedestrian walkway bridge to Island Park Pedestrian Walkway Bridge.	Remove shoaling.	M
Left Bank	Erosion and animal burrow on left bank.	Repair erosion and animal burrow.	M
Left Bank	Unauthorized Alteration - Wellsville, Addison, & Galetton Railroad railway rocks obstructing access 575' downstream of 1957 Weir.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - Wellsville, Addison, & Galetton Railroad railway and signs on left bank near 1957 Weir.	Remove unauthorized alteration or submit Section 408 Alteration Request Form.	M
Channel	Significant vegetation in riprap on right bank from 400' downstream of 1957 Weir to 1957 Weir.	Remove vegetation from riprap.	U

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Attachment 1 Continued

Channel	Minor shoal just downstream of weir.	Remove shoal.	M
Left Bank	Significant unwanted vegetation and trees on left bank 175' upstream of 1957 Weir.	Remove unwanted vegetation.	U
Channel	Significant woody vegetation in riprap on right bank from Upstream Weir to 500' upstream of 1957 Weir.	Remove vegetation from riprap.	U
Channel	Significant vegetated shoaling and trees in channel on right bank from 100'-700' downstream of 1976 Weir.	Remove shoaling.	U
Left Bank	Significant unwanted vegetation on left bank side slope from 1957 Weir to 1976 Weir.	Remove unwanted vegetation.	U
Channel	Significant unwanted vegetation on right bank sideslope from 400' downstream of 1976 Weir to 1976 Weir.	Remove unwanted vegetation.	U
Left Bank	Significant vegetation in riprap on left bank upstream and downstream of 1976 Weir.	Remove vegetation from riprap.	U
Channel	Large tree debris in channel at downstream end of large shoal.	Remove tree debris.	M
Channel	Large tree debris in channel just downstream of weir.	Remove tree debris.	M
Channel	Minor debris on right bank, near weir at upstream limit of project.	Remove debris.	M
Channel	Significant vegetation in riprap on right bank from 1976 Weir to 350' upstream of 1976 Weir.	Remove vegetation from riprap.	U
Channel	Significant vegetated shoaling on right bank from 50' to 225' upstream of 1976 Weir.	Remove shoaling.	U
Channel	Unauthorized Alteration - Barbed wire fence and metal gate on right bank at 1976 Weir.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Left Bank	Unauthorized Alteration - USA CE levee on left bank at upstream end of project has been removed and replaced by a new levee (constructed by BP & Sinclair Refinery during landfill remediation).	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
Channel	Significant vegetated shoaling with trees on upstream end of project.	Remove shoaling.	U
Left Bank	Unauthorized Alteration - Sidewalk encroachment (benches, and lightposts are not encroachments) along left bank from Bolivar road bridge to 1,775 feet upstream of Bolivar Road bridge.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
Channel	Soft vegetation in riprap on right bank.	Remove soft vegetation.	M
Channel	Vegetation and high grass on right bank from Island Park Pedestrian Walkway bridge to 325 feet downstream of 1957 Weir. (Left Bank has been resolved).	Remove vegetation.	M

Levee Periodic Inspection

Genesee River, Right Bank Wellsville, New York

PRE – INSPECTION PACKAGE

Prepared By:

USACE Buffalo District
1776 Niagara Street
Buffalo, New York 14020



**US Army Corps
of Engineers®**

Buffalo District

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January 2017

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1 Project Description

Authorization/Construction History

Construction of improvements for flood control on the Genesee River at Wellsville, New York, was authorized by the Flood Control Act of 1950 (Public Law 516, 81st Congress, Second Session) substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 232, 81st Congress, First Session. Rectification of deficiencies to the original project was authorized in two phases. The first phase was authorized in November 1966 and the second phase in June 1975. (USACE, O&M Manual, 2000)

Construction was initiated by contract in July 1956 and was completed in February 1958. This original construction improved the channel from a point 2,700 feet north of Bolivar Road to a point 1,815 feet upstream of the former Wellsville, Addison, and Galetton (W.A. & G.) Railroad Bridge. Additional bank protection was placed under contract modifications in June- July 1958 and September 1959. The latter resulted from the January 1959 flood which damaged and eroded the rip rap slopes near the upstream limit on Dyke Creek and upstream of the railroad bridge on the Genesee River.

Tropical storm "Agnes" caused extensive damage to the original flood control project at Wellsville. Emergency restoration work was accomplished by plant rental and supply contract, under Public Law 99, 84th Congress, to restore the Genesee River and Dyke Creek channels to their pre-"Agnes" condition. This work involved almost the entire length of the improved river and creek channels. The work accomplished was shoal removal, replacement of compacted embankments and levees and restoration of bank stone protection where required. This work was initiated in June 1972 and was completed in November 1972.

Rectification work was required to improve the original project (completed 1974). The work involved channel widening and levee construction in the area between West Genesee Street and the downstream concrete drop structure. Also, in the reach of the Genesee River between State Street bridge and extending approximately 5,050 feet upstream, work involved channel widening, levee construction, placement of additional riprap, and the extension and lowering of a steel sheet pile weir. Dyke Creek work involved channel widening, levee construction and placement of additional stone protection all upstream of Miller Street.

Additional rectification work was further required and construction was started in June 1976 and completed in November 1976. This work involved the extension of the upstream project limits including the construction of a steel sheet pile weir, levee construction, and channel realignment and widening, and the placement of additional stone protection. Dyke Creek work involved channel excavation and placement of additional stone protection between Broad Street and Miller Street. This work was indicated in the superseded April 1977 Operation and Maintenance Manual.

The NYSDOT completed two construction contracts, in conjunction with the realignment of Routes 17 (re-designated 417) and 19, along the Genesee River and Dyke Creek. The first phase was completed in 1974 and involved the relocation of approximately 1,900 feet of the river, downstream from State Street, toward the left bank to provide room for the new highway, and the construction of a new bridge over the river connecting West Madison and Stevens Streets. The second contract, completed in 1977, involved highway construction along the river and some channel work between Bolivar Road and the confluence with Dyke Creek. Work along Dyke Creek involved channel relocation and placement of bank protection, with the construction of a new bridge over the creek near Hanover Creek. This work had been reviewed by the Buffalo District, Corps of Engineers; it did not have a detrimental effect on the existing project.

Emergency rehabilitation work under Public Law 99, 84th Congress, was required to repair extensive damage to the project from the January 17-20, 1996 Thaw flood event. Material from eroded banks of the

project, as well as farther upstream, was deposited as shoals in the channel, reducing its capacity. Initial emergency repair work (January 24-26) involved placement of rip rap in two areas on 700 feet of eroded banks - left bank of Dyke Creek upstream of Miller Street (450 feet) and left bank of Genesee River near Seneca Street (250 feet). The work was completed in 1997.

Location

The project is located on Genesee River and Dyke Creek in the village and town of Wellsville, Allegany County, NY. The village is located 136 river miles upstream from the mouth of the Genesee River and 70 miles southeast of Buffalo. The town of Wellsville surrounds the village. The Genesee River rises in Potter County, PA, and flows in a northerly direction to enter Lake Ontario at Rochester, NY. It drains 216 square miles above Dyke Creek in the village of Wellsville. Dyke Creek rises in Steuben County, NY, and flows westward to enter the Genesee River at Wellsville, draining 72 square miles. The overall project (Left Bank and Right Bank of the Genesee River and Dyke Creek) extends on the Genesee River 1.6 miles downstream from the mouth of Dyke Creek, upstream 1.0 miles to the south limit of the village, and on Dyke Creek from its mouth 0.75 miles upstream.

Genesee River Right Bank System and Description

The overall project works consist of channel improvements, with control and drainage structures. The channel of the Genesee River was deepened where necessary to provide uniform bottom grades with bottom widths of 100-135 feet from a point 2,700 feet downstream from the Bolivar Road Bridge to the confluence with Dyke Creek, and from there with bottom widths of 100-300 feet to about 5,400 feet upstream of Dyke Creek. There was a major realignment upstream from Bolivar Road to eliminate two sharp curves with other realignments to ease curves. A concrete drop structure was constructed between Bolivar Road and Pearl Street, and steel sheet pile weirs were constructed near the village line and near the upper limit of the project. These structures are intended to reduce high velocities, and consequent erosion. Bank protection was provided in the vicinities of these structures and at other points where scouring could be expected. Low levees were constructed in the vicinities of Pearl and State Street, between State Street to upstream of West Dyke Street, and upstream of the upstream sheet pile weir. Existing drainage facilities were altered to provide better entrances into the improved channel and to prevent backflow at high river stages (See Figure 1 for the plan view of the entire project).

The original right bank levee system included a span approximately 1,450 feet from West Genesee Street to the Genesee River drop structure upstream of Bolivar Bridge, as well as, 1,150 feet of levee located upstream of the W.A.&G. Railroad Bridge, which is the only portion still inspected currently. The realignment project of Routes 17 and 19 by the NYSDOT in the 1970s provided protection that superseded the need for the continuation of the levee inspection upstream of the drop structure. The 1,150 feet of levee upstream of the W.A.&G. Railroad Bridge that remains consists of an approximate 600 foot segment that runs parallel to the Genesee river and a 750 foot barrier segment that runs perpendicular to the river 1,600 feet upstream of the W.A.&G Railroad Bridge (See Figure 1 for the plan view of the entire project). Table 1 presents a general overview of the features of the Genesee Right Bank System and features.

Table 1 Features of the Wellsville Right Bank

Total Length (Miles)	Flood Wall (Miles)	Earthen Levee (Miles)	Pump Stations (Each)	Traffic and Pedestrian Closures (Each)	Channel (Miles)	Drop Structure/Weirs (Each)
.22	0	.22	0	0	0	0

Vertical Datum Adjustment

The elevations in the design plans, Operations and Maintenance (O&M) manual and the As-built drawings for the Wellsville, Flood Damage Reduction Project (FDRP) are referenced to the United States Coast and Geodetic Survey Datum (USC&GS). Unless otherwise noted, the elevations in this document will be referenced to this datum (USC&GS). According to EC 1110-2-6065 (USACE, 2007), the current standard for vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Instrumentation Data

As-built plans do not include any reference to instruments being installed as part of the Genesee River Right Bank system.

Summary of Physical Setting

The Design memorandum on Wellsville, New York (USACE, 1955), local Flood Protection was reviewed for information regarding the foundation conditions and analysis that was performed in designing the project features, that information is summarized below.

Geologic Conditions

The rock features of the Genesee Valley were formed in the Silurian and Devonian periods of the Paleozoic era. The rock strata in this area were originally parallel layers of mineral matter spread over the floor of epicontinental seas. At the close of the Devonian period, western New York was subjected to epeirogenic movements which ended marine submergence and the formation of sedimentary rocks. The vertical land movements were slow; consequently, the rock strata were not severely fractured or faulted, nor thrown much out of their horizontal position. There is, however, a slight southerly inclination averaging 40 feet per mile, due partly to the original slope of the sediments and partly to the net effect of the continental movements. In the Pleistocene period, western New York was covered by an ice sheet several hundred feet thick. Glacial erosion, transportation, and deposition modified the surface but did not change the gross features of the topography. The most effective work of the glacier was depositional, and the true terminal moraine of the ice sheet lies at the headwaters of the Genesee River in Pennsylvania. After the last recession of the ice sheet, the land relieved of its weight, rose slowly, producing a dome-shaped uplift. At Rochester, the uplift has been determined to be about 250 feet, from which it decreases to the south (USACE, Design Memorandum, 1955).

The soils of the upper Genesee River basin are largely of glacial origin as the retreating ice sheet left a thin mantle of glacial till. The weathering of this till has resulted in soils of light color, known as the Volusia series. These vary in texture from a heavy silt Loam to comparatively light gravelly Loam, the former of which predominates. Drainage is deficient because the impervious subsoil at shallow depths prevents seepage. The Genesee series of soils in the valley bottoms is highly productive when it is not subject to overflow, but after a flood, two to three years may be required to work in the silt deposits and restore productivity (USACE, Design Memorandum, 1955).

Foundation Exploration

Subsurface conditions were explored by numerous auger holes, core holes and test pits. Investigations were confined to the construction area (USACE, Design Memorandum, 1955). Throughout the project, the materials encountered were brown silty sand and gravel with firm gray silt at lower levels. Rock does not exist close to the surface (USACE, Design Memorandum, 1955).

Soils Testing

Soils were tested by the USACE North Central Division Laboratory at Chicago. Mechanical analyses, direct shear and Proctor tests were run on the various samples for determining probable changes in volume between excavation and embankment. Results of tests, on typical materials, obtained from test pits are shown below in Table 2. (USACE, Design Memorandum, 1955)

Table 2 Characteristics of Typical Soils

Description	TP-3	TP-4
Classifications	Sandy clay	Sandy clay
Direct shear undisturbed Ø C, tons/sq. ft.	31° 0	29° 0.06
Direct shear remolded Ø C, tons/sq. ft.	30° 0.06	30° 0.25
Unit weight, undisturbed Dry, lbs. /cu. ft. Wet, lbs. /cu. ft.	78 99	75 98
At optimum compaction Dry weight, lbs. /cu. ft. Wet weight, lbs. /cu. ft.	107 127	106 125
Specific gravity Liquid limit Plastic limit	2.70 36 22	2.68 43 26

(See USACE, Design Memorandum, 1955 for test pit locations)

Surface Water

The Genesee River has its source in Potter County, Pa., rising at an elevation of 2,200 feet in the Allegheny Mountains of northern Pennsylvania and flows northward to Lake Ontario at Rochester, N.Y. The watershed contains 2,476 square miles, 288.2 square miles of which are above Wellsville, N.Y. The southern part of the basin is rough with ridges having summits 2,000 to 2,500 feet above sea level separated by valleys whose floor elevations vary from 1,000 to 1,700 feet. The branches of the river in the headwater regions flow in deep narrow valleys and have average slopes of about 70 feet per mile. Dyke Creek drains a fan shaped area of about 72 square miles. The creek rises in Steuben County, N.Y., at an elevation of about 2,280 feet and flows westward to enter the Genesee River at an elevation of about 1,480 feet. The creek has an average slope of 95 feet per mile for 7.5 miles from its source and an average slope of 17 feet per mile for the lower 5 miles. The lower valley has an average width of about one-half mile and the steep hills flanking it contain many small, flashy tributaries. The channel capacities (non-flood) of the Genesee River and of Dyke Creek at Wellsville are estimated at 4,000 and 2,000 cubic feet per second, respectively. (USACE, Design Memorandum, 1955)

Table 3 Ten Highest Recorded Peak Stream Flows for the Genesee River at Wellsville

Date	Stream Flow (cfs)	Gage Height (Feet)	Flood Elevation (NGVD29)
Mar. 08, 1956	15,800	12.65 ¹	
Jun. 23, 1972	38,500 ^{3,4}	20.70	1490.70
Dec. 06, 1972	9,200	13.80 ²	
Oct. 28, 1981	15,800	13.60	1483.60
Aug. 14, 1984	9,680	11.26	1481.26
Sep. 13, 1987	9,520	11.28	1481.28
Jun. 20, 1989	14,400	13.26	1483.26
Jan. 19, 1996	22,700 ⁴	16.13	1486.13
Nov. 29, 2005	9,390	11.22	1481.22
Mar. 15, 2007	10,700	11.64	1481.64

Gage Datum 1470.00 feet above sea level (NGVD29)

Peak Gage Height Qualification codes:

- 1 – Gage height at different site and (or) datum
- 2 – Gage datum changed during this year

Peak Stream flow qualification codes:

- 3 – Discharge is an Historic Peak
- 4 – Discharge due to snowmelt, hurricane, ice-jam or debris dam breakup

1.1 Levee

A small levee, generally two feet or less in height, was constructed along the right bank of the river immediately upstream of the former W.A. & G. Bridge, extending 620 feet upstream to prevent flooding of a low area in Island Park. A barrier levee was constructed on the right bank, approximately perpendicular to the channel and parallel to the steel sheet pile weir located approximately 1,300 feet upstream of the former W.A. & G. Bridge. The levee extends approximately 670 feet to existing ground, constructed to prevent flood flows from bypassing the weir drop structure. See figures 2-3 for typical sections of the levees (USACE, O&M Manual, 2000).

1.2 Interior Drainage Structures

The northeast end of the right bank barrier levee, located about 1,300 feet upstream of the former W.A. & G. Bridge, is provided with a 24-inch corrugated metal pipe to allow the drainage of runoff from an existing ditch to flow through the levee. The new pipe was installed with seepage diaphragms and prefabricated end sections (USACE, O&M Manual, 2000). (See Figure 2).

1.3 Spoils Area

Spoiled material was placed on both banks of the river near the downstream end of the project and upstream from Bolivar Road, on the right bank between the concrete drop structure and Pearl Street, on the right bank

upstream of West Dyke Street to the barrier levee, from this barrier levee upstream to near the project limit (Figure 4), and on the right bank of Dyke Creek above State Street (USACE, O&M Manual, 2000).

2 *Flood Insurance Study*

The current FEMA FIRM map (FEMA Panel Number 3600360001B, July 1978) for the village of Wellsville where the Genesee River Project is located does not illustrate the presence of levees. Portions of the Genesee River are within an area which is designated as Zone AE. A flood zone designation of AE indicates that the area is at high risk of being flooded with a 1% annual chance of flooding in any given year or experience 1 flood event over the life of a 30-year mortgage.

3 *Operation and Maintenance Requirements*

In accordance with the memorandum agreement from the United States to the State of New York dated November 6, 1964, attached in Appendix E, the Government transferred all operation and maintenance functions to the State of New York Department of Environmental Conservations (NYSDEC). Operation and Maintenance is to be in accordance with the provisions in the O&M Manual.

As indicated in the O&M manual, the levee superintendent is responsible for operation and maintenance of the project. Further responsibilities include:

- Keeping a reserve supply of materials needed for emergency operations
- Preventing encroachments of the levee
- Submit a semiannual inspection report to the District Engineer
- Maintain records of levee performance during floods
- Conduct routine maintenance
- Provide flood warning and prediction service
- Provide flood fighting services
- Conduct periodic inspections, especially before, during and after floods

No annual O&M cost is provided. Operation and maintenance procedures as well as current or planned work will be discussed with the local sponsor during the field inspection and documented in the Periodic Inspection Report.

4 *Project Conditions Based on Most Recent Inspection*

As of the 2016 routine inspection in accordance with USACE - Headquarters guidance, the Right Bank System is rated “Unacceptable” (U), however the system is “ACTIVE” in the USACE Rehabilitation Program.

Deficiencies:

A tabulation of the 2016 Routine Inspection Report deficiencies specific to the Right Bank System is as follows (USACE 2016):

**Table 4 Summary of Minimally Acceptable (M) or Unacceptable (U) Deficiencies – 2016
Routine Inspections, Genesee River Right Bank System, Wellsville, New York**

Right Bank	Deficiency	Recommendation	Rating
RB	Unauthorized Alteration - Fence along right bank barrier levee landside toe.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
RB	Unwanted vegetation on right bank barrier levee riverside slope and w/in 15' of riverside toe.	Remove unwanted vegetation.	M
RB	Unauthorized Alteration - Gray brick building and sidewalk within 15' of right bank barrier levee landside toe.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
RB	Unauthorized Alteration - Right bank barrier levee removed at east end for access road.	Resolve unauthorized alteration (repair levee to As-Built conditions) or submit a Section 408 Alteration Request Form.	M
RB	Unauthorized Alteration - Road and fence through and across right bank barrier levee.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
RB	24" CMP at east end of right bank barrier levee is 80% obstructed by sediment.	Clear obstructed outfall.	M

5 *Summary of Historical Periodic Inspections*

Genesee River Wellsville Flood Risk Management Project was given a rating of “Unacceptable” (U) based upon the findings of a joint Periodic Inspection undertaken with representatives of NYSDEC, Region 9 and the Albany office, on July 22-23, 2010. The project condition rating of “Unacceptable” (U) was primarily based upon: (1) heavy vegetation in rip-rap along the left and right bank levees of the project; and (2) the lack of video inspection documentation for all outfalls extending through the left and right bank levees. These deficient conditions were noted as possibly preventing the project from functioning as designed and result in increased risk to the public. A complete list of project deficiencies is included in the 2010 Periodic Inspection report.

6 *Significant Developments Since Last Periodic Inspection*

The following significant developments have occurred related to the Right Bank System since the 2010 Periodic Inspection:

- None.

7 *Emergency Preparedness Plan*

A regional flood Emergency Plan was provided for the 2010 PI. At the time of the 2010 PI, the provided Emergency Plan was deemed insufficient and out of date. As of the 2016 routine inspection a project specific Emergency Preparedness Plan (EPP) has not been provided. The regional Response Plan indicates the following flood preparedness for the NYSDEC Region 9 projects.

1. High Water Stage Response

2. Planning contact and emergency numbers
3. Project features and County map
4. Flood plan response
5. Evacuation plan

The lack of a project specific EPP is a noted deficiency from the 2016 Routine Inspection of the project.

8 *Design Criteria Review*

This section provides details on design criteria for primary parameters relative to the Genesee River Wellsville, New York Flood Damage Reduction Project, Genesee River Right Bank system. This section was developed from the review of available documentation from USACE – Buffalo District and USACE design criteria guidance and policies.

Levee Performance During Major Flood Events

To date, past performance issues regarding the levee system during high water/flooding events have not been reported by the local community or project sponsor (NYSDEC). As a result of flood action/damage to flood control features, channel rectification projects were conducted essentially for the entire project in 1972 and the left bank of both Dyke Creek and the Genesee River in 1996. Since that time, no additional flood related performance issues have been specifically noted for the project channels.

Deficiencies in Design of Existing project

The existing project was designed for the following flood flows, see Table 5 below

Table 5 Designed Flood Flows for the Wellsville FDRP

	1955 Design Flood	1966 Design Flood
Genesee River, below Dyke Creek	12,300 cfs	21,500 cfs
Genesee River, above Dyke Creek	9,900 cfs	17,300 cfs

Based on the records available prior to 1956 when preconstruction planning was completed, the design discharges on Genesee River were estimated to have about 1 percent chance of occurrence. However, since completion of project planning, they were nearly equaled or exceeded every year, and the estimated frequencies thereof have increased.

Since completion of the project only minor flood damages have been incurred, even though flood flows exceeding the design discharges have been experienced. This is because the actual flood profiles were less than were anticipated for the related discharges. The largest discharges experienced, though considerably in excess of design discharges, have resulted in flood profiles approximately equal to design profiles. Thus, the completed channel improvements have proven to be more efficient than anticipated from the original design computations, that is, they pass a given discharge through the project area more rapidly (at higher velocities) than predicted.

Despite the fact that flood discharges have been contained by the project, it is nonetheless true that the project does not afford the degree of protection intended, and a potential exists for serious flooding. Further,

the high velocities which have accompanied these discharges have had a detrimental effect on the project itself.

The project was designed to carry the design discharges with a mean velocity of 7 feet per second with steady uniform flow. Thus, occurrence of 7-foot-per-second velocities was expected to be very infrequent, and bank protection was provided only at curves, bridges and on steep side slopes. However, since construction, the design discharges have been approached or exceeded frequently and the accompanying velocities, due to the unexpected efficiency of the project channels, have been higher than was anticipated. Greater lengths of channel banks have therefore been exposed to high velocities, accounting for the erosion that has taken place in some unprotected sections. Further, on protected sections, although the riprap itself is adequate to withstand the higher velocities, deterioration of the adjacent unprotected sections has exposed the ends of the riprap to progressive unraveling.

Additional Improvements

1966 Additional Improvements to Levee

Where channel improvements were contemplated, the channel bottom was excavated to specified depths and bottom widths, and the banks cut on a slope of 1V:2.5H. The new barrier levees were constructed of compacted embankment; levee side slopes are 1V:2.5H; an inspection trench was excavated along the center line of the levee; crest widths are 10 feet; and crests were at least one foot above the hydraulic energy level of the design discharge. Heights of the sections of barrier levee range from two to eight feet, including freeboard, with the average about four feet. The existing channel banks were raised in several locations with compacted embankment; the embankment side slope is 1V:2H; crest widths are 10 feet and crests are one foot above the design water surface. The one exception to this is the embankment on the right bank, where the crest meets design water surface profile. Heights of the various sections of compacted embankment would range from two to six feet including freeboard, with the average about four feet. Bank and bottom protection has a 12 inch layer of dumped riprap on a 6 inch bedding layer. Where protection was required on a levee slope, it would extend to the top of the levee. The vicinity of the Wellsville, Addison and Galetton Railroad Bridge is the only location where bottom protection is provided. At locations where only slope protection is contemplated (no paving on channel bottom) the total 18 inch thickness of riprap will terminate in a 3 foot toe at the edge of the channel.

8.1 Hydrology and Hydraulics

Based on the USACE provided Wellsville O&M Manual (January 2000), The Genesee River channel was designed for a flow of 21,500 cfs below the mouth of Dyke Creek and 17,300 cfs above the creek. The Dyke Creek channel was designed for a flow of 7,300 cfs. The project was originally designed to protect the village of Wellsville against damage from floods equal to a two-percent chance exceedance flood in the Genesee River and Dyke Creek and to reduce damages in the event a larger flood should occur on either. The improvement was extended downstream into the town of Wellsville far enough to accomplish the desired lowering of stages in the village. Latest frequency curves indicate full protection against a 2.5-percent flood. The two percent flood has one chance in 50 years of being exceeded in any given year, while the 2.5-percent flood has one chance in 40 years of being exceeded. Peak flows on the two streams do not occur simultaneously. The modifications undertaken by the New York State Department of Transportation (NYSDOT) on the river and creek are capable of passing the design flows stated above.

EM 1110-2-1913 (USACE, 2000) references current level of protection design criteria for levees. Section 6-1, Paragraph b states that “the term and concept of freeboard to account for these (hydraulic) uncertainties is no longer used in the design of levee projects” and “risk- based analysis directly accounts for hydraulic uncertainties and establishes nominal top of protection”. A risk-based analysis was not available for the Wellsville FDRP; therefore, current Federal Emergency Management Agency (FEMA) design criteria used

to meet the requirements of Code of Federal Regulations (CFR) 65.10 of the National Flood Insurance Program (NFIP) have been referenced for the design criteria review with respect to hydrology and hydraulics.

FEMA specifies that all levees must have a minimum of 3 feet of freeboard against the 100-year flood (FEMA, 2008).

Definitive conclusions regarding adequacy of the systems level of protection from hydrology and hydraulics standpoint cannot be made due to lack of a current risk-based analysis and complete documentation with regards to past performance of the levee during flood events more severe than the FEMA 100 year event.

Interior Drainage

Interior drainage and features are minimal for the right bank system. Specifics regarding historic interior drainage design criteria could not be located in the Contract Plans (USACE, 1966), Operation and Maintenance Manual (USACE, 2000), or Design Memorandums (USACE, 1955,1964,1966). However, reference is made in the 1955 Design Memorandum to a 25-year all-season storm for runoff estimates for areas behind levees.

For the purposes of this design criteria review, current FEMA guidelines used to meet the requirements of Code of Federal Regulations (CFR) 65.10 of the National Flood Insurance Program (NFIP) are referenced. In general, the base flood is referenced as a planning guideline to follow which is generally the 100-year storm event. Due to a lack of documentation of historic interior drainage design criteria within the design manuals, it cannot be verified that the interior drainage system complies with current design standards.

Pipe Materials

Based on historic reliability issues with corrugated metal pipe (CMP) for gravity drains, the minimum standard for these pipelines is reinforced concrete pipe (RCP). As-built drawings (USACE, 1973) for the Wellsville FDRP indicate that drainage pipe associated with the right bank system is constructed of corrugated metal pipe (CMP) and no closure gate is indicated as being installed.

Gravity lines should be provided with flap-type or slide-type service gates on the riverside of the levee. Automatic flap-type gates are usually used where the water is likely to rise to the “Gate Closing Stage” rather suddenly and where the water stage is likely to fluctuate within a few feet above and below the “Gate Closing Stage” for prolonged periods of time during flood season. Automatic gates are also required on slower rising streams or bodies of water where frequent visit from operating personnel are not practical.

8.2 Levee Embankments

Based on a review of the As-Constructed drawings and the 1955, 1964, and 1966 USACE Design Memorandum, findings are summarized in Table 5.

Table 6 Design Criteria for Levee Embankments

Design Criteria Parameter	Current Design Criteria	Design or As-Constructed Condition	Meets Current Design Criteria (Yes,No,N/A)
---------------------------	-------------------------	------------------------------------	--

Slope Stability Analysis; Design and Construction of Levees (EM 1110-2-1913, EM 1110-2-1902)	Minimum Factor of Safety, FS = 1.3 'end of construction' case; Long Term (Steady Seepage) FS=1.4	Minimum FS = Not Provided	Unknown
Standard Levee Sections and Min. Levee Section (EM 1110-2-1913) Crown Width River Side Slope Land Side Slope	10 – 12 feet	Generally 10 feet wide	Yes
	1 (V): 2 (H) or flatter	1(V): 2.5(H)	Yes
	1 (V): 2 (H) or flatter	1(V): 2.5(H)	Yes
Design and Construction of Levees (EM 1110-2-1913), Seepage Analysis and Control (EM 1110-2-1901, ETL 1100-2-569) (Through Seepage &Underseepage), Design, Construction and Maintenance of Relief Wells (EM 1110-2-1914)	As applicable, embankment protected by impervious blanket, cut-off wall, seepage berm, relief wells or trench drains.	Not specifically indicated as considered during design, however an inspection trench/cutoff wall is shown on as-built levee sections	Unknown
Settlement Analysis (EM 1110-2-1913& 1110-1-1904)	Based on subsoil conditions; project specific when high consolidation is expected	Borings were advanced with generally no problematic soils indicated. Settlement not specifically indicated as considered during design	N/A
Earthquake Design and Evaluation (ER 1110-2-1806), Design and Construction of Levees (EM 1110-2-1913)	Determine during Reconnaissance study phase if seismic loadings control project design. If a controlling factor, then it should be incorporated into design. Earthquake loadings are not normally considered in analyzing the stability of levees because of the low probability of earthquake coinciding with periods of high water.	Not specifically indicated as considered during design	Unknown

Conduits, Culverts, and Pipes (EM 1110-2-2902)	Project specific. Use of corrugated metal pipes (CMP) and seepage collars is no longer recommended.	Corrugated pipes and seepage collars are indicated on as-built dwgs.	No
Instrumentation of Embankment Dams and Levees (EM 1110-2-1908)	N/A	No Instrumentation incorporated into design	N/A
Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures (ETL 1110-2-571)	The vegetation free zone is a minimum of the width of the levee and all appurtenant structures, plus 15 feet on each side.	Vegetation was not present during initial as-built conditions	Yes

The embankments meet the minimum required dimensions and slopes. Slope stability considerations are mentioned but not included in the design memorandum. There is no record in the design memorandum of an earthquake analysis being performed for the levee. There is no record of observed embankment or foundation failures in the previous inspection reports. The original design did not identify the need for pressure relief wells to address seepage and no seepage analysis was included in the design memorandum. No engineering analysis of settlement is provided in the design report. There is also no record of settlement related issues in the previous inspection report. The levee system was generally constructed in accordance with the design criteria that existed at the time of the construction.

8.3 *Structural*

No structural elements are included as part of the right bank system.

Figures

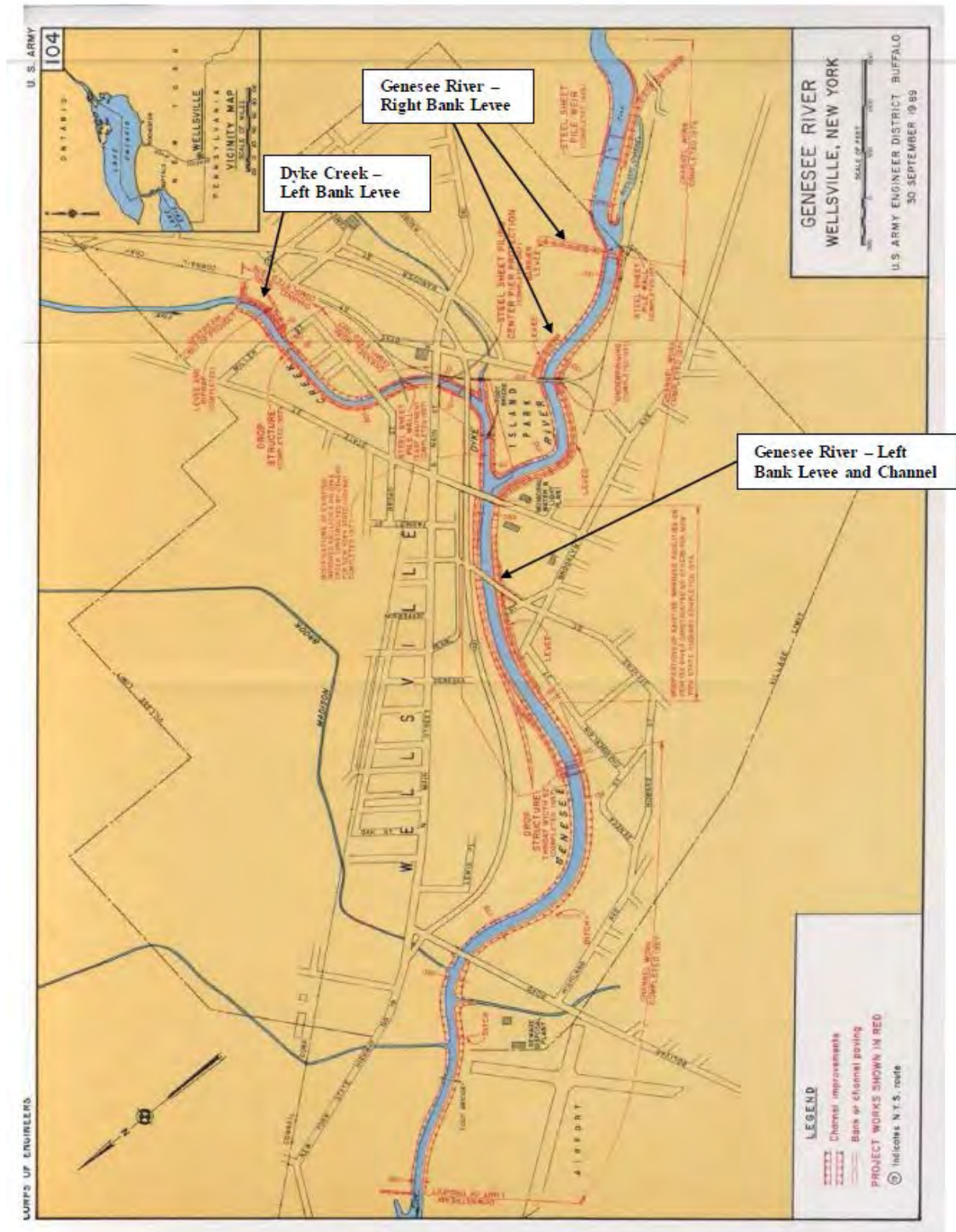


Figure 1: Project Map

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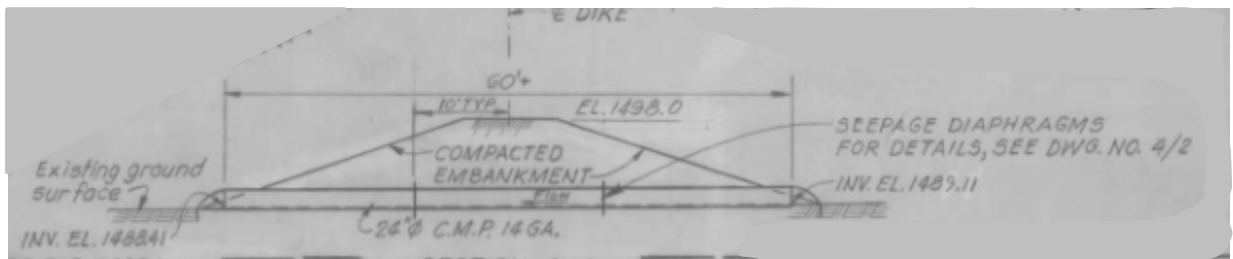


Figure 2. Barrier Levee Cross Section Station 7+40

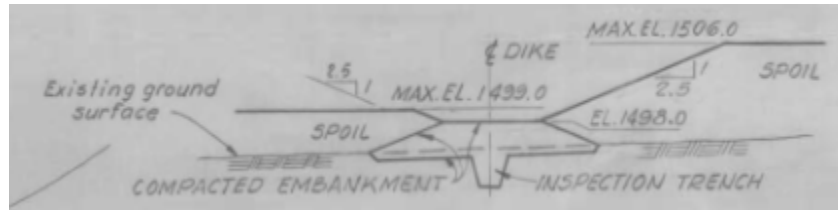


Figure 3. Barrier Levee Cross Section Station 3+75



Figure 4. Spoils Cross Section

Levee Periodic Inspection

Dyke Creek Wellsville, New York

PRE – INSPECTION PACKAGE

Prepared By:

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January 2017

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Attachment:

Attachment 1 - Summary of Minimally Acceptable (M) or Unacceptable (U) Deficiencies – 2016 Routine Inspections, Dyke Creek System, Wellsville, New York

1 Project Description

Authorization/Construction History

Construction of improvements for flood control on the Genesee River at Wellsville, New York, was authorized by the Flood Control Act of 1950 (Public Law 516, 81st Congress, Second Session) substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 232, 81st Congress, First Session. Rectification of deficiencies to the original project was authorized in two phases. The first phase was authorized in November 1966 and the second phase in June 1975. (USACE, O&M Manual, 2000)

Construction was initiated by contract in July 1956 and was completed in February 1958. This original construction improved the channel from a point 2,700 feet north of Bolivar Road to a point 1,815 feet upstream of the former Wellsville, Addison, and Galetton (W.A. & G.) Railroad Bridge. Additional bank protection was placed under contract modifications in June- July 1958 and September 1959. The latter resulted from the January 1959 flood which damaged and eroded the rip rap slopes near the upstream limit on Dyke Creek and upstream of the railroad bridge on the Genesee River.

Tropical storm "Agnes" caused extensive damage to the original flood control project at Wellsville. Emergency restoration work was accomplished by plant rental and supply contract, under Public Law 99, 84th Congress, to restore the Genesee River and Dyke Creek channels to their pre-"Agnes" condition. This work involved almost the entire length of the improved river and creek channels. The work accomplished was shoal removal, replacement of compacted embankments and levees and restoration of bank stone protection where required. This work was initiated in June 1972 and was completed in November 1972.

Rectification work was required to improve the original project (completed 1974). The work involved channel widening and levee construction in the area between West Genesee Street and the downstream concrete drop structure. Also, in the reach of the Genesee River between State Street bridge and extending approximately 5,050 feet upstream, work involved channel widening, levee construction, placement of additional riprap, and the extension and lowering of a steel sheet pile weir. Dyke Creek work involved channel widening, levee construction and placement of additional stone protection all upstream of Miller Street.

Additional rectification work was further required and construction was started in June 1976 and completed in November 1976. This work involved the extension of the upstream project limits including the construction of a steel sheet pile weir, levee construction, and channel realignment and widening, and the placement of additional stone protection. Dyke Creek work involved channel excavation and placement of additional stone protection between Broad Street and Miller Street. This work was indicated in the superseded April 1977 Operation and Maintenance Manual.

The NYSDOT completed two construction contracts, in conjunction with the realignment of Routes 17 (re-designated 417) and 19, along the Genesee River and Dyke Creek. The first phase was completed in 1974 and involved the relocation of approximately 1,900 feet of the river, downstream from State Street, toward the left bank to provide room for the new highway, and the construction of a new bridge over the river connecting West Madison and Stevens Streets. The second contract, completed in 1977, involved highway construction along the river and some channel work between Bolivar Road and the confluence with Dyke Creek. Work along Dyke Creek involved channel relocation and placement of bank protection, with the construction of a new bridge over the creek near Hanover Creek. This work had been reviewed by the Buffalo District, Corps of Engineers; it did not have a detrimental effect on the existing project.

Emergency rehabilitation work under Public Law 99, 84th Congress, was required to repair extensive damage to the project from the January 17-20, 1996 Thaw flood event. Material from eroded banks of the

project, as well as farther upstream, was deposited as shoals in the channel, reducing its capacity. Initial emergency repair work (January 24-26) involved placement of rip rap in two areas on 700 feet of eroded banks - left bank of Dyke Creek upstream of Miller Street (450 feet) and left bank of Genesee River near Seneca Street (250 feet). The work was completed in 1997.

Location

The project is located on Genesee River and Dyke Creek in the village and town of Wellsville, Allegany County, NY. The village is located 136 river miles upstream from the mouth of the Genesee River and 70 miles southeast of Buffalo. The town of Wellsville surrounds the village. The Genesee River rises in Potter County, PA, and flows in a northerly direction to enter Lake Ontario at Rochester, NY. It drains 216 square miles above Dyke Creek in the village of Wellsville. Dyke Creek rises in Steuben County, NY, and flows westward to enter the Genesee River at Wellsville, draining 72 square miles. The overall project (Left Bank and Right Bank of the Genesee River and Dyke Creek) extends on the Genesee River 1.6 miles downstream from the mouth of Dyke Creek, upstream 1.0 miles to the south limit of the village, and on Dyke Creek from its mouth 0.75 miles upstream.

Dyke Creek System and Description

The overall project works consist of channel improvements, with control and drainage structures. The channel of the Genesee River was deepened where necessary to provide uniform bottom grades with bottom widths of 100-135 feet from a point 2,700 feet downstream from the Bolivar Road Bridge to the confluence with Dyke Creek, and from there with bottom widths of 100-300 feet to about 5,400 feet upstream of Dyke Creek. There was a major realignment upstream from Bolivar Road to eliminate two sharp curves with other realignments to ease curves. A concrete drop structure was constructed between Bolivar Road and Pearl Street, and steel sheet pile weirs were constructed near the village line and near the upper limit of the project. These structures are intended to reduce high velocities, and consequent erosion. Bank protection was provided in the vicinities of these structures and at other points where scouring could be expected. Low levees were constructed in the vicinities of Pearl and State Street, between State Street to upstream of West Dyke Street, and upstream of the upstream sheet pile weir. Existing drainage facilities were altered to provide better entrances into the improved channel and to prevent backflow at high river stages (See Figure 1 for the plan view of the entire project).

The channel in Dyke Creek was also deepened to uniform bottom grades and widths of 50 to 70 feet, with a drop structure at Miller Street. As in the Genesee River, bank protection was provided and drainage structures were altered. A levee was constructed upstream of Miller Street. (USACE, O&M Manual, 2000) Table 1 below represents a general overview of the features of the Wellsville Dyke Creek and features.

Table 1 Features of the Dyke Creek FDRP

Total Length (Miles)	Flood Wall (Miles)	Earthen Levee (Miles)	Pump Stations (Each)	Traffic and Pedestrian Closures (Each)	Channel (Miles)	Drop Structure/Weirs (Feet)
0.76	0	0.10	0	0	0.76	1

Vertical Datum Adjustment

The elevations in the design plans, Operations and Maintenance (O&M) manual and the As-built drawings for the Wellsville, Flood Damage Reduction Project (FDRP) are referenced to the United States Coast and Geodetic Survey Datum (USC&GS). Unless otherwise noted, the elevations in this document will be referenced to this datum (USC&GS). According to EC 1110-2-6065 (USACE, 2007), the current standard for vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Instrumentation Data

As-built plans do not include any reference to instruments being installed as part of the Dyke Creek channel and levee systems.

Summary of Physical Setting

The Design memorandum on Wellsville, New York (USACE, 1955), local Flood Protection was reviewed for information regarding the foundation conditions and analysis that was performed in designing the project features, that information is summarized below.

Geologic Conditions

The rock features of the Genesee Valley were formed in the Silurian and Devonian periods of the Paleozoic era. The rock strata in this area were originally parallel layers of mineral matter spread over the floor of epicontinental seas. At the close of the Devonian period, western New York was subjected to epeirogenic movements which ended marine submergence and the formation of sedimentary rocks. The vertical land movements were slow; consequently, the rock strata were not severely fractured or faulted, nor thrown much out of their horizontal position. There is, however, a slight southerly inclination averaging 40 feet per mile, due partly to the original slope of the sediments and partly to the net effect of the continental movements. In the Pleistocene period, western New York was covered by an ice sheet several hundred feet thick. Glacial erosion, transportation, and deposition modified the surface but did not change the gross features of the topography. The most effective work of the glacier was depositional, and the true terminal moraine of the ice sheet lies at the headwaters of the Genesee River in Pennsylvania. After the last recession of the ice sheet, the land relieved of its weight, rose slowly, producing a dome-shaped uplift. At Rochester, the uplift has been determined to be about 250 feet, from which it decreases to the south. (USACE, Design Memorandum, 1955)

The soils of the upper Genesee River basin are largely of glacial origin as the retreating ice sheet left a thin mantle of glacial till. The weathering of this till has resulted in soils of light color, known as the Volusia series. These vary in texture from a heavy silt Loam to comparatively light gravelly Loam, the former of which predominates. Drainage is deficient because the impervious subsoil at shallow depths prevents seepage. The Genesee series of soils in the valley bottoms is highly productive when it is not subject to overflow, but after a flood, two to three years may be required to work in the silt deposits and restore productivity. (USACE, Design Memorandum, 1955)

Foundation Exploration

Subsurface conditions were explored by numerous auger holes, core holes and test pits. Investigations were confined to the construction area (USACE, Design Memorandum, 1955). Throughout the project, the materials encountered were brown silty sand and gravel with firm gray silt at lower levels. Rock does not exist close to the surface (USACE, Design Memorandum, 1955).

Soils Testing

Soils were tested by the USACE North Central Division Laboratory at Chicago. Mechanical analyses, direct shear and Proctor tests were run on the various samples for determining probable changes in volume between excavation and embankment. Results of tests, on typical materials, obtained from test pits are shown below in Table 2 (USACE, Design Memorandum, 1955).

Table 2 Characteristics of Typical Soils

Description	TP-3	TP-4
Classifications	Sandy clay	Sandy clay
Direct shear undisturbed Ø C, tons/sq. ft.	31° 0	29° 0.06
Direct shear remolded Ø C, tons/sq. ft.	30° 0.06	30° 0.25
Unit weight, undisturbed Dry, lbs. /cu. ft. Wet, lbs. /cu. ft.	78 99	75 98
At optimum compaction Dry weight, lbs. /cu. ft. Wet weight, lbs. /cu. ft.	107 127	106 125
Specific gravity Liquid limit Plastic limit	2.70 36 22	2.68 43 26

(See USACE, Design Memorandum, 1955 for test pit locations)

Surface Water

The Genesee River has its source in Potter County, Pa., rising at an elevation of 2,200 feet in the Allegheny Mountains of northern Pennsylvania and flows northward to Lake Ontario at Rochester, N.Y. The watershed contains 2,476 square miles, 288.2 square miles of which are above Wellsville, N.Y. The southern part of the basin is rough with ridges having summits 2,000 to 2,500 feet above sea level separated by valleys whose floor elevations vary from 1,000 to 1,700 feet. The branches of the river in the headwater regions flow in deep narrow valleys and have average slopes of about 70 feet per mile. Dyke Creek drains a fan shaped area of about 72 square miles. The creek rises in Steuben County, N.Y., at an elevation of about 2,280 feet and flows westward to enter the Genesee River at an elevation of about 1,480 feet. The creek has an average slope of 95 feet per mile for 7.5 miles from its source and an average slope of 17 feet per mile for the lower 5 miles. The lower valley has an average width of about one-half mile and the steep hills flanking it contain many small, flashy tributaries. The channel capacities (non-flood) of the Genesee River and of Dyke Creek at Wellsville are estimated at 4,000 and 2,000 cubic feet per second, respectively. (USACE, Design Memorandum, 1955)

1.1 Levee

Levees have been constructed along numerous reaches of the Genesee River and Dyke Creek, consisting of a 10 foot crest width and 1 foot vertical on 2-1/2 foot horizontal side slopes, unless otherwise stated. On Dyke Creek, a levee was constructed on the left bank, upstream of the Miller Street drop structure, for approximately 530 feet upstream, where it curves away from the channel to become perpendicular to the channel line and forms a barrier levee which is an additional 310 feet long. (USACE, O&M Manual, 2000) See typical section of levee in Figure 2.

1.2 Channel

The channel of Dyke Creek was improved from the mouth of the creek upstream for approximately 4,000 feet. The stream was realigned near its mouth to eliminate a sharp curve and to provide a better entrance of flows into the Genesee River. The channel bottom widths in the reach downstream of the Miller Street drop structure, a distance of about 3,300 feet, vary from 40 to 50 feet. Upstream of the structure, the bottom width is 70 feet. The channel bottom grade varies from 0.026 to 0.516 percent. Side slopes vary between 1 foot vertical on 2 foot horizontal and 1 foot vertical on 3 foot horizontal. Banks were protected with riprap in the vicinity of the drop structure and where slopes are steeper than 1 foot vertical on 2-1/2 foot horizontal. The NYSDOT constructed a highway realignment from the mouth of Dyke Creek to about 1,100 feet upstream, which involved the realignment of the mouth, widening of the channel, and the placement of additional bank protection. The Buffalo District reviewed the plans for this improvement and insured that the highway construction did not compromise the channel capacity (USACE, O&M Manual, 2000) see Figures 3 - 6 of channel cross sections.

1.3 Bridges

A new bridge was constructed over Dyke Creek near Hanover Creek in connection with the highway realignment undertaken by the NYSDOT. A ring of PSA-23 steel sheet piles was placed around the center pier of the South Main Street bridge and the area between piles and pier was filled with concrete to protect against undermining after the channel was deepened. Both banks were protected with riprap through this bridge. A row of PZ-27 steel sheet piles was placed in front of the left abutment of the Erie Railroad bridge, and both banks there were protected with riprap. (USACE, O&M Manual, 2000).

1.4 Interior Drainage Structures

On Dyke Creek, the left bank levee between Miller Street and the upstream project limit caused the alteration of the drainage pattern behind the levee. In order to handle this runoff, a ditch was excavated nearly parallel to the levee; the ditch flows are carried under Miller Street and exit through the side slope downstream of the drop structure from a 24-inch corrugated metal pipe. A metal end section was provided at the upstream end of the pipe.

1.5 Drop Structure

The structure at Sta. 35+00 consists of a section of concrete-paved channel with Derrick stone and riprap protection upstream and downstream. The concrete paving covers the channel bottom and the side slopes to a height of 10.18 feet above the bottom, on a slope of 1 foot vertical on 2 foot horizontal, for a length of 49.26 feet. There is a fall of 8.52 feet in the upstream 19.26 feet, beyond which the bottom is level except for a sill at the downstream end 18 inches wide and one foot higher than the level area. Three lines of PZ-27 steel sheet piles extend the entire width of the concrete, one at each end and one at the break in the slope. Piles in each line are 10 feet long in the center of the channel and decrease at the edges in two steps to six feet, except at the right end of the upper line where the outer five piles were extended seven feet each by welding an additional length. The concrete paving has a minimum thickness of 18 inches across the channel bottom with thicker sections at the edges and at the break in grade. Paving on the side slopes decreases in thickness uniformly from 16 inches at the bottom to nine inches at the top. All the concrete paving is underlain by 12 inches of gravel. A strip 10 feet wide, extending across the channel above the concrete, and a similar strip 15 feet wide downstream are protected with two-foot thick Derrick stone underlain by 15 inches of gravel. A strip 32 feet wide across the bottom and side slopes at the upstream end of the structure is protected with 15 inches of riprap over six inches of gravel. There is a riprap toe at the downstream end. In the reaches paved with concrete or Derrick stone, there is a strip six feet wide on each bank, at levels

higher than those thus paved, which is protected with 12 inches of riprap. Upstream from the structure, a 40-foot length of the right bank and, to the upstream limit of work, 653 feet on the left bank is protected with 12 inches of riprap. There is a riprap toe at the foot of each slope. Banks downstream of the drop structure are also rip rapped. The left bank has 30 inches of riprap overlying 15 inches of bedding, extending from downstream of the drop structure approximately 124 feet; 12 inches of riprap over six inches of bedding continues for an additional 174 feet. The right bank is rip rapped with 12 inches of stone for approximately 1,470 feet downstream. From the upstream end of the structure to the downstream end of the concrete paving, the channel bottom is 70 feet wide. It narrows to 50 feet between the downstream end of the concrete and the downstream end of the structure. (USACE, O&M Manual, 2000)

1.6 Spoils Area

Spoiled material was placed on both banks of the river near the downstream end of the project and upstream from Bolivar Road, on the right bank between the concrete drop structure and Pearl Street, on the right bank upstream of West Dyke Street to the barrier levee, from this barrier levee upstream to near the project limit, and on the right bank of Dyke Creek above State Street. (USACE, O&M Manual, 2000)

2 Flood Insurance Study

The current FEMA FIRM map (FEMA Panel Number 3600360001B, July 1978) for the village of Wellsville where the Genesee River Project is located does not illustrate the presence of levees. Portions of the Genesee River are within an area which is designated as Zone AE. A flood zone designation of AE indicates that the area is at high risk of being flooded with a 1% annual chance of flooding in any given year or experience 1 flood event over the life of a 30-year mortgage.

3 Operation and Maintenance Requirements

In accordance with the memorandum agreement from the United States to the State of New York dated November 6, 1964, attached in Appendix E, the Government transferred all operation and maintenance functions to the State of New York Department of Environmental Conservations (NYSDEC). Operation and Maintenance is to be in accordance with the provisions in the O&M Manual.

As indicated in the O&M manual, the levee superintendent is responsible for operation and maintenance of the project. Further responsibilities include:

- Keeping a reserve supply of materials needed for emergency operations
- Preventing encroachments of the levee
- Submit a semiannual inspection report to the District Engineer
- Maintain records of levee performance during floods
- Conduct routine maintenance
- Provide flood warning and prediction service
- Provide flood fighting services
- Conduct periodic inspections, especially before, during and after floods

No annual O&M cost is provided. Operation and maintenance procedures as well as current or planned work will be discussed with the local sponsor during the field inspection and documented in the Periodic Inspection Report.

4 *Project Conditions Based on Most Recent Inspection*

As of the 2016 routine inspection in accordance with USACE - Headquarters guidance, the Dyke Creek System is rated “Unacceptable” (U), however the system is “ACTIVE” in the USACE Rehabilitation Program.

Deficiencies:

A tabulation of the minimally acceptable or unacceptable 2016 Routine Inspection Report deficiencies specific to the Dyke Creek System is presented as Attachment 1.

5 *Summary of Historical Periodic Inspections*

Genesee River Wellsville Flood Risk Management Project was given a rating of “Unacceptable” (U) based upon the findings of a joint Periodic Inspection undertaken with representatives of NYSDEC, Region 9 and the Albany office, on July 22-23, 2010. The project condition rating of “Unacceptable” (U) was primarily based upon: (1) heavy vegetation in rip-rap along the left and right bank levees of the project; and (2) the lack of video inspection documentation for all outfalls extending through the left and right bank levees. These deficient conditions were noted as possibly preventing the project from functioning as designed and result in increased risk to the public. A complete list of project deficiencies is included in the 2010 Periodic Inspection report.

6 *Significant Developments Since Last Periodic Inspection*

The following significant developments have occurred related to the Dyke Creek System since the 2010 Periodic Inspection:

- None.

7 *Emergency Preparedness Plan*

A regional flood Emergency Plan was provided for the 2010 PI. At the time of the 2010 PI, the provided Emergency Plan was deemed insufficient and out of date. As of the 2016 routine inspection a project specific Emergency Preparedness Plan (EPP) has not been provided. The regional Response Plan indicates the following flood preparedness for the NYSDEC Region 9 projects.

1. High Water Stage Response
2. Planning contact and emergency numbers
3. Project features and County map
4. Flood plan response
5. Evacuation plan

The lack of a project specific EPP is a noted deficiency from the 2016 Routine Inspection of the project.

8 *Design Criteria Review*

This section provides details on design criteria for primary parameters relative to the Genesee River Wellsville, New York Flood Damage Reduction Project, Dyke Creek system. This section was developed from the review of available documentation from USACE – Buffalo District and USACE design criteria guidance and policies.

Levee and Channel Performance During Major Flood Events

To date, past performance issues regarding the levee system during high water/flooding events have not been reported by the local community or project sponsor (NYSDEC). As a result of flood action/damage to flood control features, channel rectification projects were conducted essentially for the entire project in 1972 and the left bank of both Dyke Creek and the Genesee River in 1996. Since that time, no additional flood related performance issues have been specifically noted for the project channels.

Deficiencies in Design of Existing project

The existing project was designed for the following flood flows, see Table 3 Below:

Table 3 Designed Flood Flows for the Wellsville FDRP

	1955 Design Flood	1966 Design Flood
Dyke Creek	5,350 cfs	7,300 cfs

Based on the records available prior to 1956 when preconstruction planning was completed, the design discharge on Dyke Creek to have about 2 percent chance of occurrence. However, since completion of project planning, they have been nearly equaled or exceeded every year, and the estimated frequencies thereof have increased.

Since completion of the project only very minor flood damages have been incurred, even though flood flows exceeding the design discharges have been experienced. This is because the actual flood profiles have been less than were anticipated for the related discharges. The largest discharges experienced, though considerably in excess of design discharges, have resulted in flood profiles approximately equal to design profiles. Thus, the completed channel improvements have proven to be more efficient than anticipated from the original design computations, that is, they pass a given discharge through the project area more rapidly (at higher velocities) than predicted.

Despite the fact that flood discharges have so far been contained by the project, it is nonetheless true that the project does not afford the degree of protection intended, and a potential exists for serious flooding. Further, the high velocities which have accompanied these discharges have had a detrimental effect on the project itself.

The project was designed to carry the design discharges with a mean velocity of 7 feet per second with steady uniform flow. Thus, occurrence of 7-foot-per-second velocities was expected to be very infrequent, and bank protection was provided only at curves, bridges and on steep side slopes. However, since construction, the design discharges have been approached or exceeded frequently and the accompanying velocities, due to the unexpected efficiency of the project channels, have been higher than was anticipated. Greater lengths of channel banks have therefore been exposed to high velocities, accounting for the erosion that has taken place in some unprotected sections. Further, on protected sections, although the riprap itself

is adequate to withstand the higher velocities, deterioration of the adjacent unprotected sections has exposed the ends of the riprap to progressive unraveling.

8.1 *Hydrology and Hydraulics*

Based on the USACE provided Wellsville O&M Manual (January 2000), The Genesee River channel was designed for a flow of 21,500 cfs below the mouth of Dyke Creek and 17,300 cfs above the creek. The Dyke Creek channel was designed for a flow of 7,300 cfs. The project was originally designed to protect the village of Wellsville against damage from floods equal to a two-percent chance exceedance flood in the Genesee River and Dyke Creek and to reduce damages in the event a larger flood should occur on either. The improvement was extended downstream into the town of Wellsville far enough to accomplish the desired lowering of stages in the village. Latest frequency curves indicate full protection against a 2.5-percent flood. The two percent flood has one chance in 50 years of being exceeded in any given year, while the 2.5-percent flood has one chance in 40 years of being exceeded. Peak flows on the two streams do not occur simultaneously. The modifications undertaken by the New York State Department of Transportation (NYSDOT) on the river and creek are capable of passing the design flows stated above.

EM 1110-2-1913 (USACE, 2000) references current level of protection design criteria for levees. Section 6-1, Paragraph b states that “the term and concept of freeboard to account for these (hydraulic) uncertainties is no longer used in the design of levee projects” and “risk- based analysis directly accounts for hydraulic uncertainties and establishes nominal top of protection”. A risk-based analysis was not available for the Wellsville FDRP; therefore, current Federal Emergency Management Agency (FEMA) design criteria used to meet the requirements of Code of Federal Regulations (CFR) 65.10 of the National Flood Insurance Program (NFIP) have been referenced for the design criteria review with respect to hydrology and hydraulics.

FEMA specifies that all levees must have a minimum of 3 feet of freeboard against the 100-year flood (FEMA, 2008).

Definitive conclusions regarding adequacy of the systems level of protection from hydrology and hydraulics standpoint cannot be made due to lack of a current risk-based analysis and complete documentation with regards to past performance of the levee during flood events more severe than the FEMA 100 year event.

Interior Drainage

The noted interior drainage features for the Dyke Creek left bank system is a 24-inch diameter corrugated metal gravity drain and associated drainage ditch. Specifics regarding historic interior drainage design criteria could not be located in the Contract Plans (USACE, 1966), Operation and Maintenance Manual (USACE, 2000), or Design Memorandums (USACE, 1955, 1964, 1966). However, reference is made in the 1955 Design Memorandum to a 25-year all-season storm for runoff estimates for areas behind levees.

For the purposes of this design criteria review, current FEMA guidelines used to meet the requirements of Code of Federal Regulations (CFR) 65.10 of the National Flood Insurance Program (NFIP) are referenced. In general, the base flood is referenced as a planning guideline to follow which is generally the 100-year storm event. Due to a lack of documentation of historic interior drainage design criteria within the design manuals, it cannot be verified that the interior drainage system complies with current design standards.

Pipe Materials

Based on historic reliability issues with corrugated metal pipe (CMP) for gravity drains, the minimum standard for these pipelines is reinforced concrete pipe (RCP). As-built drawings (USACE, 1973) for the

Wellsville FDRP indicate that drainage pipe associated with the Dyke Creek left bank system is constructed of corrugated metal pipe (CMP) and no closure gate is indicated as being installed.

Gravity lines should be provided with flap-type or slide-type service gates on the riverside of the levee. Automatic flap-type gates are usually used where the water is likely to rise to the “Gate Closing Stage” rather suddenly and where the water stage is likely to fluctuate within a few feet above and below the “Gate Closing Stage” for prolonged periods of time during flood season. Automatic gates are also required on slower rising streams or bodies of water where frequent visit from operating personnel are not practical.

8.2 Levee Embankments

Based on a review of the As-Constructed drawings and the 1955, 1964, and 1966 USACE Design Memorandum, findings are summarized in Table 4.

Table 4 Design Criteria for Levee Embankments

Design Criteria Parameter	Current Design Criteria	Design or As-Constructed Condition	Meets Current Design Criteria (Yes,No,N/A)
Slope Stability Analysis; Design and Construction of Levees (EM 1110-2-1913, EM 1110-2-1902)	Minimum Factor of Safety, FS = 1.3 ‘end of construction’ case; Long Term (Steady Seepage) FS=1.4	Minimum FS = Not Provided	Unknown
Standard Levee Sections and Min. Levee Section (EM 1110-2-1913) Crown Width River Side Slope Land Side Slope	10 – 12 feet	Generally 10 feet wide	Yes
	1 (V): 2 (H) or flatter	1(V): 2.5(H)	Yes
	1 (V): 2 (H) or flatter	1(V): 2.5(H)	Yes
Design and Construction of Levees (EM 1110-2-1913), Seepage Analysis and Control (EM 1110-2-1901, ETL 1100-2-569) (Through Seepage & Underseepage), Design, Construction and Maintenance of Relief Wells (EM 1110-2-1914)	As applicable, embankment protected by impervious blanket, cut-off wall, seepage berm, relief wells or trench drains.	Not specifically indicated as considered during design, however an inspection trench/cutoff wall is shown on as-built levee sections	Unknown
Settlement Analysis (EM 1110-2-1913& 1110-1-1904)	Based on subsoil conditions; project specific when high consolidation is expected	Borings were advanced with generally no problematic soils indicated. Settlement not specifically indicated as considered during design	N/A

Earthquake Design and Evaluation (ER 1110-2-1806), Design and Construction of Levees (EM 1110-2-1913)	Determine during Reconnaissance study phase if seismic loadings control project design. If a controlling factor, then it should be incorporated into design. Earthquake loadings are not normally considered in analyzing the stability of levees because of the low probability of earthquake coinciding with periods of high water.	Not specifically indicated as considered during design	Unknown
Conduits, Culverts, and Pipes (EM 1110-2-2902)	Project specific. Use of corrugated metal pipes (CMP) and seepage collars is no longer recommended.	Corrugated pipes are indicated on as-built dwgs.	No
Instrumentation of Embankment Dams and Levees (EM 1110-2-1908)	N/A	No Instrumentation incorporated into design	N/A
Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures (ETL 1110-2-571)	The vegetation free zone is a minimum of the width of the levee and all appurtenant structures, plus 15 feet on each side.	Vegetation was not present during initial as-built conditions	Yes

The embankments meet the minimum required dimensions and slopes. Slope stability considerations are mentioned but not included in the design memorandum. There is no record in the design memorandum of an earthquake analysis being performed for the levee. There is no record of observed embankment or foundation failures in the previous inspection reports. The original design did not identify the need for pressure relief wells to address seepage and no seepage analysis was included in the design memorandum. No engineering analysis of settlement is provided in the design report. There is also no record of settlement related issues in the previous inspection report. The levee system was generally constructed in accordance with the design criteria that existed at the time of the construction.

8.3 Channel Relocation

According to the 1955 Design Memorandum,

- a. General: The design criteria used in developing the project plan are presented in the following paragraphs.
- b. Design discharges: The design discharges adopted for the Wellsville project are based on the estimated discharges from the maximum floods of record on the Genesee River and on Dyke Creek at Wellsville.
- c. Channel cross section: The improved channel is trapezoidal in shape, with varying bottom widths.
- d. Velocity: Stream bed and bank materials through Wellsville are erosion resistant and can withstand fairly high velocities. The improved channels have been designed to carry the design discharges with a mean velocity of 7 feet per second with steady uniform flow. Thus, occurrence of 7-foot per second velocity will be very infrequent and no bank protection is considered necessary except at curves, bridges and places where steep side slopes occur.
- e. Channel roughness coefficients: A roughness coefficient (Manning's "n") of 0.030 was adopted for use in design of the improved channels.
- f. Bottom grades: The depths and slopes of the improved channels have been governed by topography and other design criteria listed above.
- g. Side slopes: Channel side slopes have been covered by stability of bank material and maintenance requirements. The adopted side slopes are 1 on 2½ except at places where channel banks were made steeper to avoid alteration of existing structures and at places where riprap is required.
- h. Riprap: Riprap will be provided wherever channel velocities exceed 7 feet per second, channel curvature exceeds 6 degrees, and where protection of bridge abutments is required due to lowering of the existing grade. Riprap will also be placed at the confluence of the Genesee River and Dyke Creek to prevent any possibility of scour.

Based on a review of the As-Constructed drawings and the 1955 USACE Design Memorandum, findings are summarized in Table 5.

Table 5 Design Criteria for the Channel Relocation

Design Criteria Parameter	Current Design Criteria	Design or As-Constructed Condition	Meets Current Design Criteria (Yes,No,N/A)
Stability Analysis (EM 1110-2-1418)	Channel side slopes not steeper than 1(V) to 1.5 (H)	Channel side slopes not steeper than 1(V) to 2.5 (H)	Yes

Bank Protection (EM 1110-2-1601)	Channel whose velocity (7.0 fps) and/or shear exceed permissible values will require paving or bank revetment	Riprap channel lining on Genesee River where high velocities (7.0 fps and above – note rectification design indicates 6.0 fps and above) were expected, channel curvature exceeds 6 degrees, and at the confluence of the Genesee River and Dyke Creek	Yes
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8.4 *Structural*

Structures include the pipe and headwalls for interior drainage through the levee and the drop structure at Miller Street. There are no floodwalls or closure structures on this project.

No structural analysis calculations, results or summary are provided in the design reports and therefore could not be reviewed. Technical review of the design memoranda indicated that concrete pipe was to comply with D-Load requirements and should have pressure type gasketed joints. No requirements for D-Load or for pressure pipe are shown on the plans so the adequacy of the reinforced concrete pipes could not be evaluated.

There is no record of observed structure failures in the previous inspection report. Without a structural analysis, no conclusion can be made regarding the adequacy of the structures to meet the required structural design criteria.

Figures

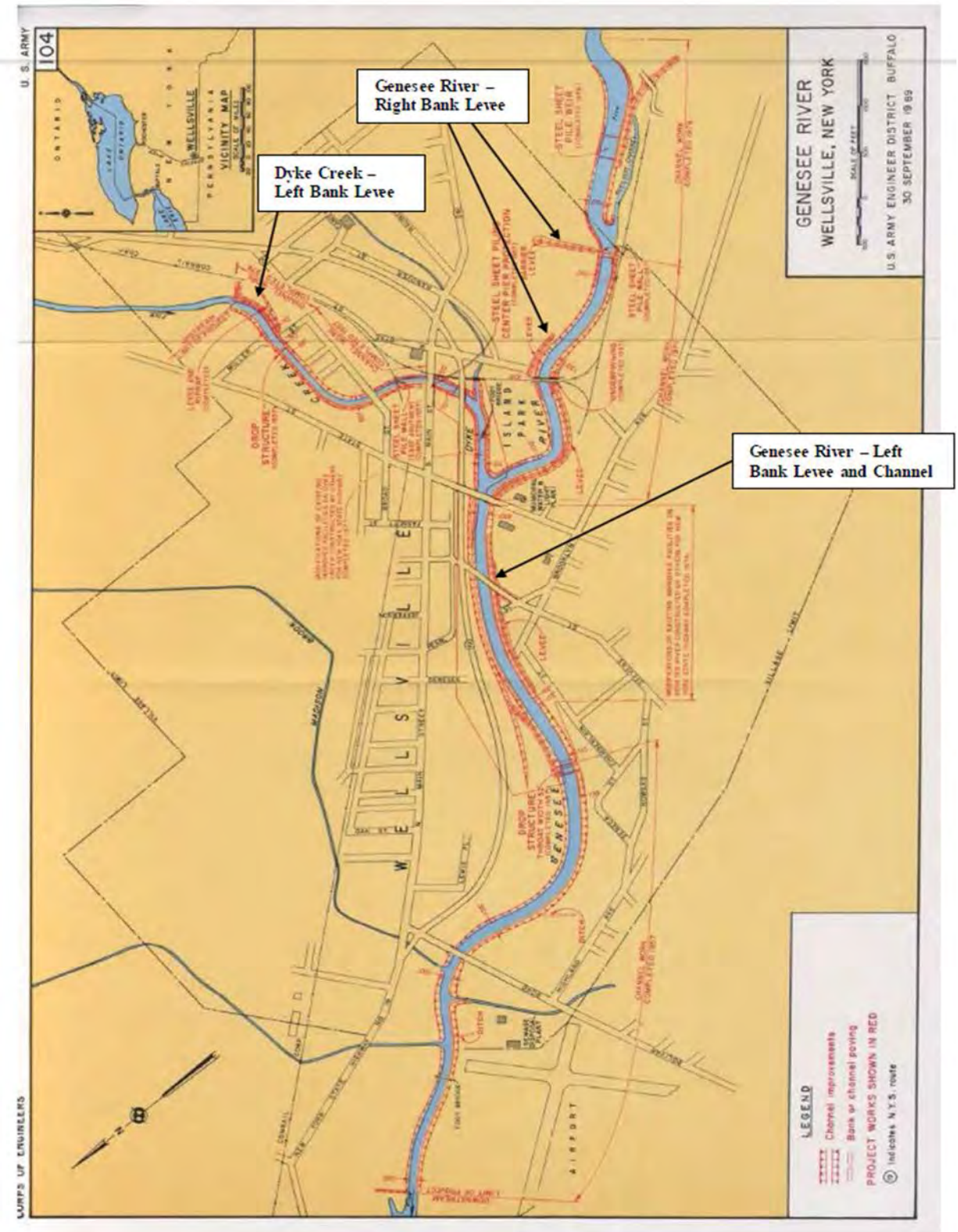


Figure 1 Project Map

FOR OFFICIAL USE ONLY

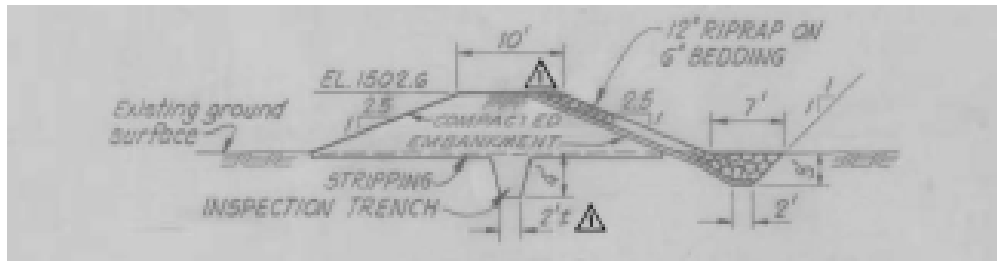


Figure 2 Typical Levee Cross Section

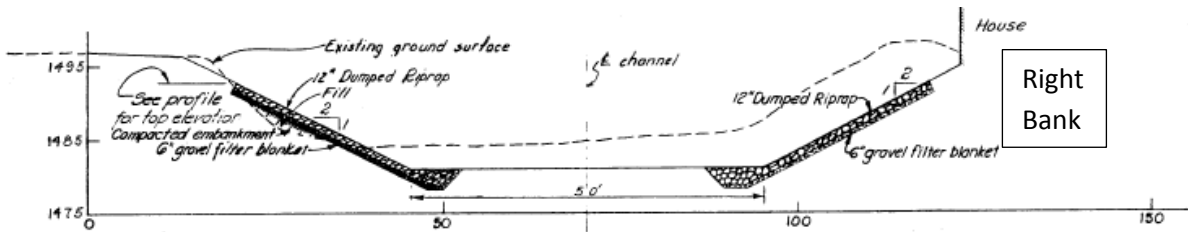


Figure 3 Channel Cross Section Station 18+20

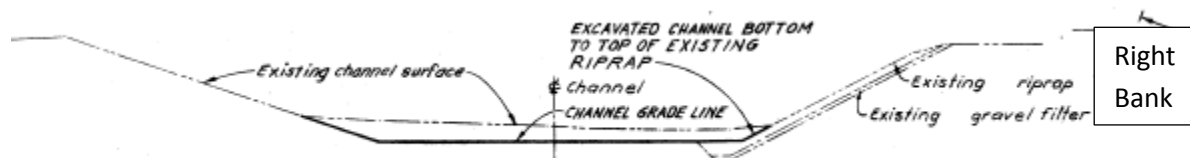


Figure 4 Channel Cross Section Approx. Station 27+00

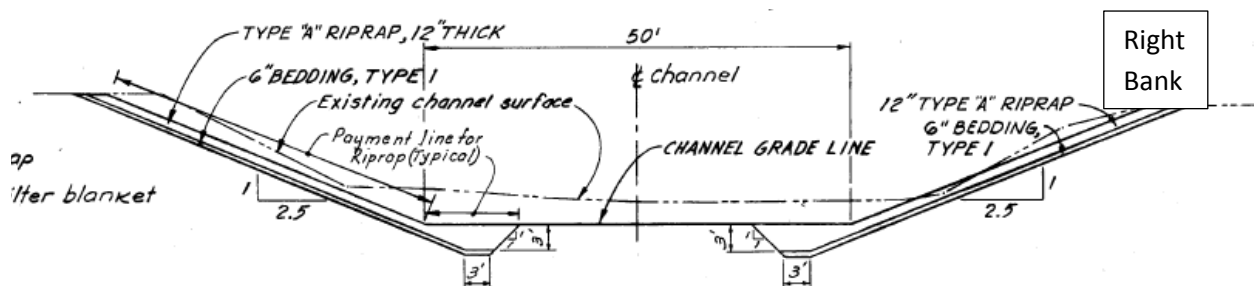


Figure 5 Channel Cross Section Approx. Station 30+25

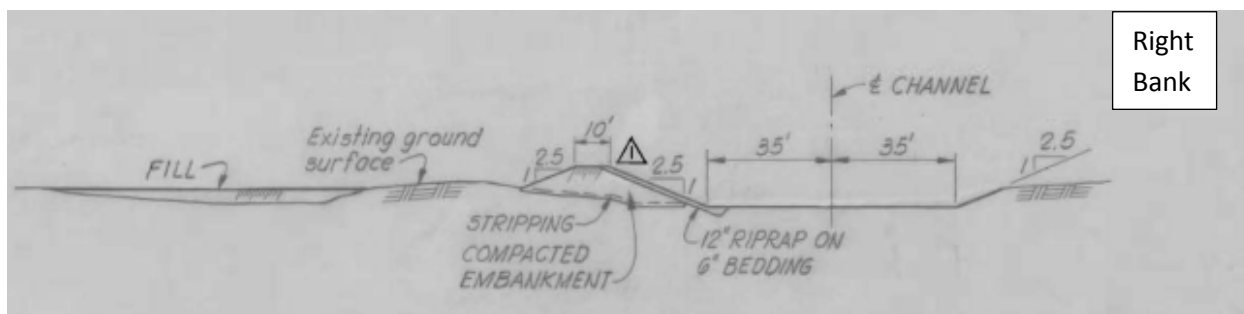


Figure 6 Channel Cross Section Approx. 500 Feet Upstream of Miller Street Drop Structure

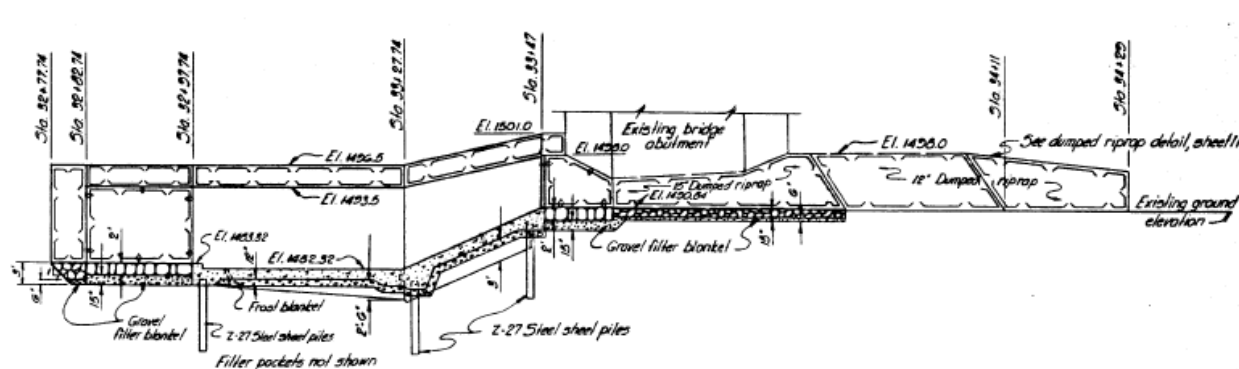


Figure 7 Drop Structure Cross Section

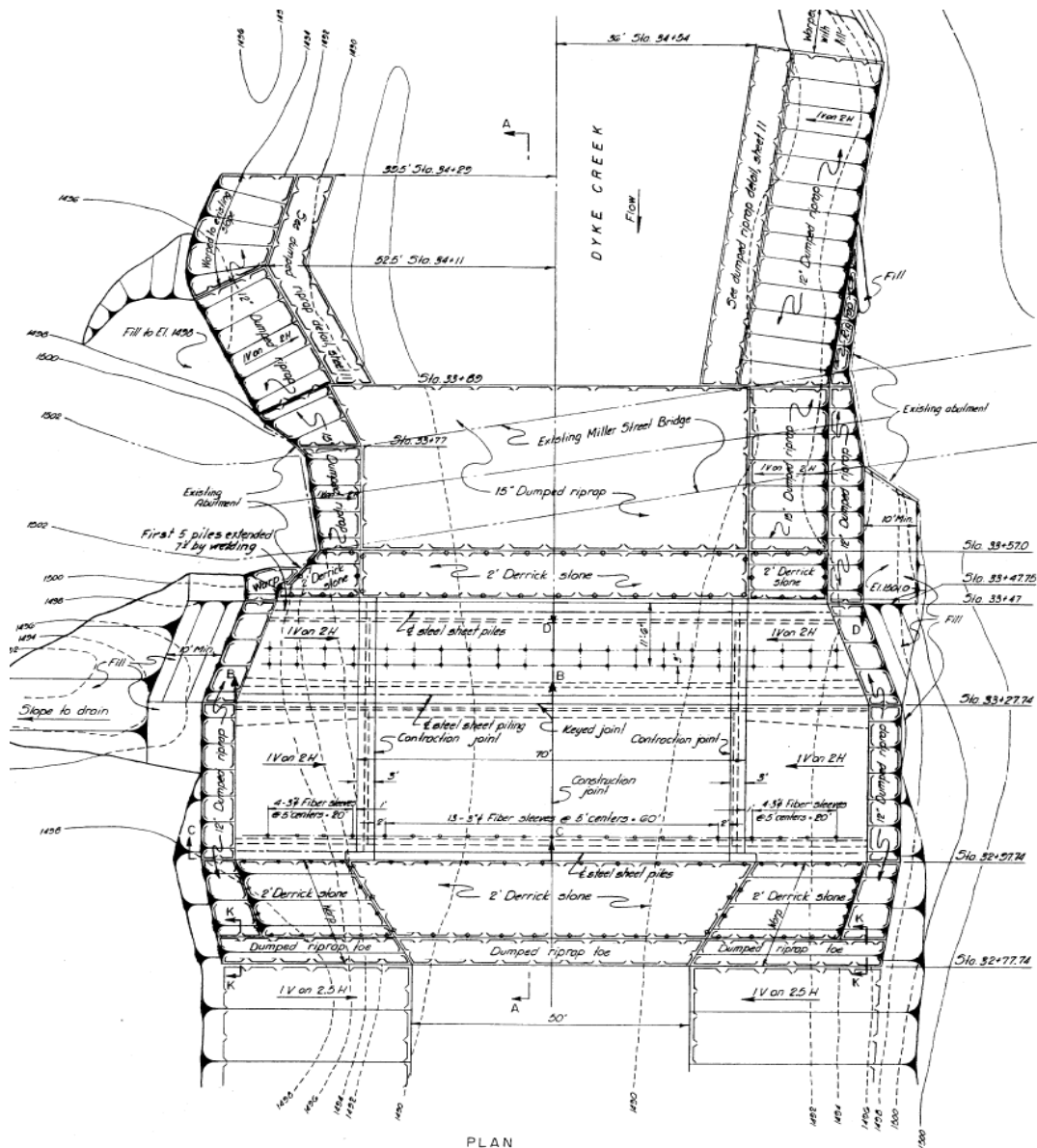


Figure 8 PLAN Drop Structure Plan View

Attachment 1

Summary of Minimally Acceptable (M) or Unacceptable (U) Deficiencies – 2016 Routine Inspections, Dyke Creek System, Wellsville, New York

Dyke Creek	Deficiency	Recommendation	Rating
DC	Trees on left bank levee landside slope 700'	Remove trees.	U
DC	Unauthorized Alteration - Levee added by others to levee upstream limit.	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
DC	Significant trees and unwanted vegetation on left bank from levee upstream limit to just	Remove trees and unwanted vegetation.	U
DC	Log debris in channel 500' upstream of Drop	Remove debris.	M
DC	Shoaling right bank from 200' upstream of Drop Structure to upstream project limit.	Remove shoaling.	M
DC	Tree debris on Drop Structure.	Remove tree debris.	M
DC	Vegetation in riprap on left bank from 300' downstream to 200' upstream of Drop	Remove vegetation from riprap.	U
DC	Unauthorized Alteration - Concrete blocks, guardrail, and utility pole encroachments on	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
DC	Trees and unwanted vegetation in riprap on right bank from Broad Street bridge to Drop	Remove unwanted vegetation.	U
DC	Significant vegetation and trees on right bank	Remove vegetation and trees.	M
DC	Minor shoal in center of channel 100'	Remove shoal.	M
DC	Shoaling on left bank from 500' to 750'	Remove shoaling.	M
DC	Shoaling on left bank from Broad Street bridge to 750' upstream of Broad Street	NA	M
DC	Significant shoaling in channel from Broad Street bridge to 500' upstream of Broad Street	Remove shoaling.	U
DC	Vegetation on left bank upstream of Broad	Remove Vegetation.	M
DC	Debris in channel just upstream of Broad	Remove debris.	M
DC	Significant unwanted vegetation and trees in riprap on both banks between Railroad bridge	Remove unwanted vegetation.	U
DC	Significant trees and heavy unwanted vegetation in riprap on both banks between	Remove trees and unwanted vegetation.	U
DC	Unauthorized alteration - stairs and railing encroachments.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
DC	Unauthorized alteration - stairs and pipe encroachments.	Submit Section 408 Alteration Request or remove unauthorized alteration.	M
DC	Erosion on left bank upstream of Main street.	Repair erosion.	M
DC	Debris on upstream face of Main Street bridge	Remove debris.	M
DC	Significant trees and vegetation in riprap on both banks just downstream of Main Street	Remove trees and vegetation from riprap.	U
DC	Vegetation on shoal on concrete sideslopes and in channel on both banks from State	Remove vegetation from concrete.	M
DC	Tree debris in channel downstream of Main	Remove tree debris.	M
DC	Minor shoal in channel just upstream of State	Remove shoal.	M
DC	Unauthorized Alteration - Lumber yard on Dyke Creek left bank just upstream of State	Remove unauthorized alteration or submit a Section 408 Alteration Request Form.	M
DC	Vegetated shoaling on both banks from convergence of Dyke Creek to the State Route	Remove shoaling.	M
DC	Cracking with unwanted vegetation on concrete channel sideslopes and deteriorating weep holes from Dyke Creek convergence to	Repair cracking, remove vegetation, clean out, and weep holes.	M
DC	Significant unwanted vegetation on left bank from Broad Street bridge to Drop Structure.	Remove unwanted vegetation.	U

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**Attachment “B” – Left Bank and Channel:
Summary of Deficiencies and Recommendations**

SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project, Genesee River, Wellsville, New York (09/27/17)
Project: Genesee River - Left Bank and Channel, Wellsville

Inspect ID	Rating	Deficiency	Recommendations	Photo #	Category	Rated Item	Due Date	Station 1	Station 2
1	M	Grassy shoal (S-1) along right bank from 225' to 700' downstream of golf course pedestrian bridge.	Remove shoaling.	01_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 4)	111+00	106+00
2	M	Unwanted vegetation on left bank channel sideslope just downstream of golf course pedestrian bridge.	Remove unwated vegetation.	02_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/19 (FY17)	105+00	104+00
3	M	Unauthorized alteration (E-1): New pump station building, riprap, intake pipe to pump station, and feeder pipes for golf course water just downstream of pedestrian bridge.	Submit Section 408 Alteration Request to USACE.	03_1.jpg 03_2.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 3)	104+00	NA
4	M	Unauthorized alteration (E-2): Green golf course pedestrian bridge 1,250' downstream of Boliver Road bridge. NYSDEC says permitted (need to verify).	Submit Section 408 Alteration Request to USACE.	04_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 7)	104+00	NA
5	M	Four alternating vegetated shoals (S-2, S-3, S-4, S-5) on both banks from green golf course pedestrian bridge to Bolivar Road bridge.	Remove shoals.	05_1.jpg 05_2.jpg 05_3.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 6)	103+00	92+00
6	M	Trees on right bank channel sideslope 900 feet downstream of Bolivar Street bridge.	Remove trees.	06_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/18 (FY16 - 7)	100+00	NA
7	M	Erosion at two outfalls (36" and 24" diameter) on left bank 400' upstream of pedestrian bridge. Outfalls are not on plans-possible encroachment.	Repair erosion and modify pipe.	07_1.jpg 07_2.jpg 07_3.jpg 07_4.jpg	Flood Damage Reduction Channels	Erosion	12/31/18 (FY16 - 8)	100+00	NA
8	M	Unauthorized alteration (E-3): Riprap on right bank toe fron 300' upstream of pedestrian bridge to 300 feet downstream of Bolivar Street bridge.	Remove or submit Section 408 Alteration Request to USACE.	08_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 9)	100+00	93+00
9	M	Unwanted vegetation (high grass) on left bank channel sideslope upstream of Bolivar Road bridge.	Remove unwanted vegetation.	09_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/19 (FY17)	96+00	91+00
10	M	Vegetation in riprap on right bank around Bolivar Road bridge.	Remove vegetation from riprap.	10_1.jpg 10_2.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 16)	91+00	NA
11	M	Unwanted heavy woody vegetation on right bank around Bolivar Road bridge.	Remove vegetation.	11_1.jpg 11_2.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 15)	91+00	NA
12	M	Sideslope erosion along left bank toe starting at Bolivar Road bridge and continuing 425' downstream.	Repair erosion.	12_1.jpg 12_2.jpg	Flood Damage Reduction Channels	Erosion	12/31/19 (FY17)	96+00	91+00
13	M	Sideslope erosion at left bank toe just upstream of Bolivar Road bridge	Repair erosion.	13_1.jpg	Flood Damage Reduction Channels	Erosion	12/31/19 (FY17)	91+00	NA
14	U	Riprap missing or covered on left bank underneath Bolivar Road bridge (no riprap on as built, possible alteration).	Replace or uncover missing riprap.	14_1.jpg 14_2.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 10)	91+00	NA
16	M	Lower supports of headwall railing are dislodged on left bank outfall 300' upstream of Bolivar Road bridge.	Repair headwall railing.	16_1.jpg 16_2.jpg	Interior Drainage System	Fencing and Gates	12/31/17 (FY15 - 14)	88+00	NA
17	M	Unauthorized alteration (E-6): 42" outfall on left bank 300' upstream of Bolivar Road bridge (at Top's Plaza). NYSDEC says permitted.	Submit Section 408 Alteration Request to USACE.	17_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 17)	88+00	NA
18	M	Unauthorized alteration (E-4): Sidewalk encroachment (benches and lightposts are not encroachments) along left bank from Bolivar road bridge to 1,775 feet upstream of Bolivar Road bridge.	Submit Section 408 Alteration Request to USACE.	18_1.jpg 18_2.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 13)	90+00	76+00
20	M	Unauthorized alteration (E-5): Riverwalk kiosk on left bank channel crest.	Remove or submit Section 408 Alteration Request to USACE.	20_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/18 (FY16 - 18)	85+00	NA
21	M	Shoaling (S-6) along right bank from 750' to 1,300' upstream of Bolivar Road bridge (near K-mart Plaza).	Remove shoaling.	21_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 18)	83+00	78+00
22	M	Unwanted vegetation on both bank sideslopes from 750' upstream of Bolivar Road bridge to Madison Street bridge.	Remove unwanted vegetation.	22_1.jpg 22_2.jpg 22_3.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 22)	84+00	44+00
24	M	Unauthorized alteration (E-7): 42" outfall on left bank 900' upstream of Bolivar Road bridge at K-Mart. NYSDEC says permitted.	Submit Section 408 Alteration Request to USACE.	24_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 20)	82+00	NA
25	M	Soft unwanted vegetation obstructing outfall on left bank 900' upstream of Bolivar Road bridge.	Remove unwanted vegetation.	25_1.jpg	Interior Drainage System	Vegetation and Obstructions	12/31/17 (FY15 - 21)	82+00	NA
27	M	Unauthorized alteration (E-8): Pet sign and post encroachment on left bank channel crest.	Remove or submit Section 408 Alteration Request to USACE.	27_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 27)	77+00	NA
28	M	24" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge is approximately 20% obstructed by minor sediment.	Remove sediment obstruction.	28_1.jpg 28_2.jpg	Interior Drainage System	Vegetation and Obstructions	12/31/17 (FY15 - 23)	75+00	NA
30	M	Unauthorized alteration (E-10): Asphalt access drive and gate on left bank just downstream of Seneca Street.	Remove or submit Section 408 Alteration Request to USACE.	30_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 24)	75+00	NA
31	M	Unauthorized alteration (E-11): Utility pole and 2 guy wires on left bank channel crest 1,700' upstream of Boliver Road bridge (just upstream of asphalt drive).	Submit Section 408 Alteration Request to USACE.	31_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 26)	74+00	NA
32	M	Unauthorized alteration (E-12): Guy wire for utility pole on left bank channel crest at Seneca Street (utility pole not an encroachment).	Submit Section 408 Alteration Request to USACE.	32_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 134)	73+00	NA



SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project, Genesee River, Wellsville, New York (09/27/17)

Project: Genesee River - Left Bank and Channel, Wellsville

33	M	Unauthorized alteration (E-13): Misc. landscaping encroachments (plastic and wooden planter) 1,900' to 2,200' upstream of Bolivar Road bridge (92 Seneca Street). Unable to inspect because resident threatened inspection group with dog.	Remove or submit Section 408 Alteration Request to USACE.		Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 28)	72+00	69+00
34	U	Vegetation in left bank riprap from 1,900' to 2,500' upstream of Bolivar Road bridge.	Remove vegetation from riprap.	34_1.jpg 34_2.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 29)	72+00	66+00
35	M	Vegetation obstructions in Chamberlain Street drainage channel to river.	Remove vegetation obstructions.	35_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 30)	69+00	NA
36	M	Chamberland Street drainage channel creates apparent gap in line of protection on left bank levee.	Evaluate the possibility of altering the project to improve a continuous line of protection; potentially include a pipe and flapgate.	36_1.jpg	Levee Embankments	Depressions/ Rutting	12/31/17 (FY15 - 31)	69+00	NA
38	M	Vegetation in riprap on both banks around drop structure.	Remove vegetation in riprap.	38_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 33)	66+00	NA
39	M	Tree debris in channel just downstream of Drop Structure.	Remove tree debris.	39_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 32)	66+00	NA
41	U	Vegetation in riprap on left bank 2,200' to 1,200' downstream of Madison Street (Stevens Street) bridge.	Remove vegetation from riprap.	41_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 36)	65+00	52+00
42	U	Significant unwanted woody vegetation on left bank channel sideslopes from 2,200' downstream of the Madison Street (Stevens Street) bridge to the Madison Street bridge.	Remove unwanted vegetation.	42_1.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 37)	44+00	64+00
43	M	Unauthorized alteration (E-15): Landscaping timbers and debris on landside slope at 70 Chamberlain Street on left bank 1,700' downstream of Madison Street (Stevens Street) bridge.	Remove or submit Section 408 Alteration Request to USACE.	43_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 40)	60+00	NA
44	M	Unauthorized alteration (E-15a): 24" CMP encroachment on left bank channel side slope with flap gate. Pipe has not been videotaped. Potentially causing 2' depression on levee crown.	Remove or submit Section 408 Alteration Request to USACE. Videotape pipe.	44_1.jpg 44_2.jpg	Interior Drainage System	Encroachments	12/31/19 (FY17)	61+00	NA
45	M	9 trees and 1 tree stump within 15' of levee landside toe 1,600' downstream of Madison Street (Stevens Street) bridge (60, 68, and 70 Seneca Street).	Remove trees and tree stump.	45_1.jpg 45_2.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/17 (FY15 - 39)	61+00	58+00
46	M	Unauthorized alteration (E-15b): access ramp built on top of landside slope of left bank levee by sponsor.	Submit Section 408 Alteration Request to USACE.	46_1.jpg	Levee Embankments	Encroachments	12/31/19 (FY17)	61+00	NA
47	M	Inadequate sod cover at 70 Chamberlain Street on landside slope.	Re-establish sod cover.	47_1.jpg	Levee Embankments	Sod Cover	12/31/18 (FY16 - 45)	60+00	NA
48	M	Unauthorized alteration (E-16): Tree trunk sections and metal debris on levee landside slope 1,600' downstream of Madison Street (Stevens Street) bridge (68 Chamberlain Street).	Remove or submit Section 408 Alteration Request to USACE.	48_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 42)	59+00	NA
49	M	Unauthorized alteration (E-17): Red metal shed, chain link fence, and wooden debris at 60 Chamberlain Street on left bank 1,600' downstream of Madison Street (Stevens Street) bridge (60 Chamberlain Street).	Remove or submit Section 408 Alteration Request to USACE.	49_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 41)	59+00	NA
50	M	Shoal (S-7) on left bank toe, not part of as-built project (189-WEL-2/5).	Remove Shoal.	50_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/18 (FY16 - 48)	60+00	56+00
51	M	Minor erosion on channel sideslope at 68 Chamberlain St.	Repair minor erosion.	51_1.jpg	Flood Damage Reduction Channels	Erosion	12/31/19 (FY17)	60+00	NA
52	M	Vegetation in riprap on right bank from 1,600' to 1,300' downstream of Madison Street (Stevens Street) bridge.	Remove vegetation from riprap.	52_1.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 48)	59+00	56+00
53	M	Unauthorized alteration (E-18): White concrete block shed, utility marker, and tree house on left bank levee landside slope at 52 and 48 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).	Remove or submit Section 408 Alteration Request to USACE.	53_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 135)	57+00	NA
54	M	Unauthorized alteration (E-19): Utility line potentially buried in levee section from 70 Chamberlain Street to 44 Chamberlain Street.. Note: levee is overbuilt at this location (approx. 42 feet wide).	Remove or submit Section 408 Alteration Request to USACE.	54_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 136)	57+00	53+00
55	M	Unauthorized alteration (E-21): Yellow garage and on left bank levee lanside toe at 44 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).	Remove or submit Section 408 Alteration Request to USACE.	55_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 137)	56+00	NA
56	M	Unauthorized alteration (E-20): Stone landscaping and tree debris on left bank levee landside slope; pool within 15 feet of landside toe at 48 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).	Remove or submit Section 408 Alteration Request to USACE.	56_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 138)	56+00	NA
57	M	Unauthorized alteration (E-22): Dilapidated white garage, shed and patio deck at left bank levee landside toe; clothesline and metal pole on landside slope at 38 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).	Remove or submit Section 408 Alteration Request to USACE.	57_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 139)	55+00	NA
58	M	Unauthorized alteration (E-23): Chicken wire fence on left bank levee landside toe at 20 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).	Remove or submit Section 408 Alteration Request to USACE.	58_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 140)	55+00	NA



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60	M	24" RCP on left bank 900' downstream of Madison Street (Stevens Street) bridge (rated M in NYSDEC 19DEC13 pipe inspection).	Repair pipe to acceptable condition.	60_1.jpg	Interior Drainage System	Culverts/ Discharge Pipes	12/31/17 (FY15 - 46)	53+00	NA
61	M	Trees on left bank landside slope and within 15' of landside toe from 1,200' downstream of Madison Street (Stevens Street) bridge to Ponding Area fence	Remove trees.	61_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/17 (FY15 - 44)	54+00	46+00
64	M	Unauthorized alteration (E-24): Utility pole on left bank 850' downstream of Madison Street (Stevens Street) bridge (just upstream of gatewell # 3).	Submit Section 408 Alteration Request to USACE.	64_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 53)	52+00	NA
65	M	Unauthorized alteration (E-25): Guy wire w/in 15' of landside toe on left bank 850' downstream of Madison Street (Stevens Street) bridge(just upstream of gatewell # 3).	Submit Section 408 Alteration Request to USACE.	65_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 54)	52+00	NA
66	M	Unwanted heavy vegetation within 15' of levee landside toe.	Remove unwanted vegetation.	66_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/19 (FY17)	53+00	NA
70	M	Trees and unwanted vegetation on ponding area fence.	Remove trees and unwanted vegetation.	70_1.jpg	Interior Drainage System	Vegetation and Obstructions	12/31/17 (FY15 - 57)	50+00	47+00
72	M	Minor shoaling (S-8) on left bank from 600' downstream of Madison Street (Stevens Street) bridge to State Street bridge.	Remove shoaling.	72_1.jpg 72_2.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 60)	49+00	0+00
74	M	Unauthorized alteration (E-26): Pearl Street bridge removed.	Submit Section 408 Alteration Request to USACE.	74_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 124)	46+00	NA
75	M	Unauthorized alteration (E-27): Pipe Line bridge just downstream of Steven Street bridge has been removed.	Submit Section 408 Alteration Request to USACE.	75_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 125)	46+00	NA
76	M	Unauthorized alteration (E-28): Chain link fence on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.	Remove or submit Section 408 Alteration Request to USACE.	76_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 64)	46+00	44+00
77	M	Trees on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.	Remove trees.	77_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 65)	46+00	44+00
81	M	Unauthorized alteration (E-29): Madison Street (Stevens Street) bridge (replaced Pearl Street bridge). Constructed after project. NYSDEC says permitted.	Submit Section 408 Alteration Request to USACE.	81_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 67)	44+00	NA
82	M	Unauthorized alteration (E-30): Fence on left bank channel crest from Madison Street (Stevens Street) bridge to school building.	Remove or submit Section 408 Alteration Request to USACE.	82_1.jpg 82_2.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 70)	34+00	43+00
83	M	Unauthorized alteration (E-35): Concrete siphon gatewell on right bank channel sideslope (across from school). NYSDEC says permitted.	Submit Section 408 Alteration Request to USACE.	83_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 141)	36+00	NA
84	M	Unauthorized alteration (E-31): concrete walkway at Wellsville High School (manhole is part of project per As-Built F-189-A-10/5).	Submit Section 408 Alteration Request to USACE.	84_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 75)	38+00	NA
85	M	Unauthorized alteration (E-32): Fence (covered in unwanted vegetation) 300' downstream of State Street bridge .	Remove or submit Section 408 Alteration Request to USACE.	85_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 76)	38+00	NA
86	M	Unauthorized alteration (E-33): Wellsville High School rail, parking lot, and 2 signs on left bank levee downstream of State Street bridge. Blocks O&M access, per NYSDEC.	Submit Section 408 Alteration Request to USACE.	86_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 77)	37+00	NA
87	U	Significant unwanted vegetation and trees on left bank 400' downstream of State Street bridge.	Remove unwanted vegetation and trees.	87_1.jpg 87_2.jpg 87_3.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 78)	37+00	NA
88	M	Unauthorized alteration (E-34): 2 utility poles 6 guy wires just downstream of State Street bridge (NYSDEC says permitted).	Submit Section 408 Alteration Request to USACE.	88_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 80)	35+00	NA
89	M	Unauthorized alteration (E-36): 18" HDPE outfall and duck bill valve on left bank side slope just downstream of State Street bridge owned by NYSDOT. (NYSDEC says permitted)	Submit Section 408 Alteration Request to USACE.	89_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 81)	34+00	NA
90	U	Vegetation and woody growth in left bank riprap from State Street bridge to 1250' upstream of State Street bridge. (Not much vegetation from Sta. 29+00 to 27+00)	Remove vegetation and woody growth from riprap.	90_1.jpg 90_2.jpg 90_3.jpg 90_4.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/17 (FY15 - 81)	33+00	24+00
91	M	Unauthorized alteration (E-37): 4 Utility poles witin 15' of landside toe on left bank 250' upstream of State Street bridge.	Submit Section 408 Alteration Request to USACE.	91_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 83)	30+00	NA
92	M	Multiple animal burrows (approx. half dozen) on left bank waterside slope 450' upstream of State Street bridge.	Fill animal burrows and improve animal control program.	92_1.jpg 92_2.jpg	Levee Embankments	Animal Control	12/31/17 (FY15 - 83)	28+00	NA
93	M	Unwanted vegetation and bushes on landside slope and within 15' of landside toe 500' upstream of State Street bridge.	Remove unwanted vegetation.	93_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/17 (FY15 - 85)	28+00	NA
95	M	Soft vegetation on right bank from Island Park to 500 feet upstream of Island Park pedestrian bridge.	Remove soft vegetation.	95_1.jpg 95_2.jpg 95_3.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/18 (FY16 - 132)	29+00	11+00
96	M	Unauthorized alteration (E-NEW): 6" cast iron pipe on left bank waterside slope 450' upstream of State Street bridge.	Remove or submit Section 408 Alteration Request to USACE.	96_1.jpg	Levee Embankments	Encroachments	12/31/19 (FY17)	29+00	NA

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97	M	Unauthorized alteration (E-38): Green metal stairs and concrete pad for access to Water Intake Unit in left bank riverside slope at Steel Sheet Pile Weir (Water Intake Unit is part of project as shown on As-Constructed drawing 189-WEL-2/4).	Remove or submit Section 408 Alteration Request to USACE.	97_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 87)	27+00	NA
98	M	Unauthorized alteration (E-40): Unidentified drainage structure (metal man hole) on channel side slope on left bank, just upstream of Steel Sheet Pile Weir.	Remove or submit Section 408 Alteration Request to USACE.	98_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 92)	26+00	NA
99	M	Unauthorized alteration (E-41): Wooden observation platform and fence on right bank 200' upstream of Steel Sheet Pile Weir.	Remove or submit Section 408 Alteration Request to USACE.	99_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 88)	25+00	NA
100	M	Unauthorized alteration (E-39): Asphalt sidewalk and guy wire at left bank levee landside toe.	Submit Section 408 Alteration Request to USACE.	100_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 93)	24+00	28+00
102	M	Unauthorized alteration (E-42): Utility pole on left bank landside slope 475' upstream of Steel Sheet Pile Weir (across from maintenance garage).	Submit Section 408 Alteration Request to USACE.	102_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 92)	23+00	NA
105	M	48" CMP inlet to culvert under Dyke Street access road on left bank obstructed by vegetation 500' upstream of Steel Sheet Pile Weir.	Remove vegetation obstruction.	105_1.jpg	Interior Drainage System	Vegetation and Obstructions	12/31/17 (FY15 - 94)	23+00	NA
106	M	Unauthorized alteration (E-44): Riprap added on right bank toe at island park adjacent to parking area.	Remove or submit Section 408 Alteration Request to USACE.	106_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 99)	21+00	17+00
108	M	Shoal (S-9) along left bank toe from 450' downstream of Island Park pedestrian walkway bridge to Island Park Pedestrian Walkway Bridge.	Remove shoaling.	108_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 96)	17+00	21+00
109	M	Unauthorized alteration (E-43): Parking lot and wooden post barrier on right bank in Island Park 500' upstream of Steel Sheet Pile Weir. Posts and wire rope restrict access.	Submit Section 408 Alteration Request to USACE.	109_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 95)	22+00	NA
113	M	Unwanted sporadic vegetation on left bank waterside slope, 400' upstream of pedestrian bridge.	Remove unwanted vegetation.	113_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/19 (FY17)	13+00	NA
114	M	Erosion and animal burrow on left bank 350' upstream of the pedestrain bridge.	Repair erosion and animal burrow.	114_1.jpg	Levee Embankments	Animal Control	12/31/18 (FY16 - 109)	13+00	NA
115	M	Unauthorized alteration (E-45): Wellsville, Addison, & Galetton Railroad gravel trailway (from Island Park pedestrian bridge to barrier levee weir) and signs of left bank near boulders blocking all access to channel crest.	Submit Section 408 Alteration Request to USACE.	115_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 143)	0+00	13+00
116	M	Minor shoaling (S-10) downstream of barrier levee weir.limits to approx 600ft ds	Remove shoal.	116_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/18 (FY16 - 114)	3+00	NA
117	U	Unauthorized alteration (E-46): Wellsville, Addison, & Galetton Railroad railway rocks obstructing access 575' downstream of barrier levee weir.	Remove or submit Section 408 Alteration Request to USACE.	117_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 102)	6+00	NA
119	M	Unwanted woody vegetation in riprap on left bank starting 550' downstream of barrier levee weir up to barrier levee weir.	Remove unwanted woody vegetation.	119_1.jpg 119_2.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/19 (FY17)	6+00	0+00
121	U	Significant unwanted vegetation and trees on left bank 175' upstream of barrier levee weir.	Remove unwanted vegetation.	121_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 108)	0+00	NA
122	M	Large tree debris in channel at downstream end of large shoal on right bank.	Remove tree debris.	122_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/18 (FY16 - 123)	0+00	NA
123	M	Unauthorized alteration (E-46a): 12" cast iron pipe on left bank 125' upstream of barrier levee weir.	Remove or submit Section 408 Alteration Request to USACE.	123_1.jpg	Interior Drainage System	Culverts/ Discharge Pipes	12/31/19 (FY17)	0+00	NA
125	M	Minor debris on right bank at upstream limit weir.	Remove debris.	125_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 125)	0+00	NA
127	U	Significant vegetated shoal (S-11) and trees in channel on right bank from 100'-700' downstream of upstream limit weir.	Remove shoaling.	127_1.jpg 127_2.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 111)	0+00	NA
128	U	Significant vegetated shoaling (S-12) on right bank from 50' to 225' upstream of upstream limit weir.	Remove shoaling.	128_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 117)	0+00	0+00
129	U	Signficant vegetation in riprap on right bank from upstream limit weir to 350' upstream of upstream limit weir.	Remove vegetation from riprap.	129_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 116)	0+00	0+00
130	U	Significant unwanted vegetation on right bank sideslope from 400' downstream of upstream limit weir to upstream limit weir.	Remove unwanted vegetation.	130_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 112)	0+00	0+00
131	U	Significant vegetated shoaling (S-13) with trees in center of channel just upstream of upstream limit weir.	Remove shoaling.	131_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/18 (FY16 - 130)	0+00	NA
132	M	Unauthorized alteration (E-48): USACE levee on left bank at upstream end of project has been removed and replaced by a new levee (constructed by BP & Sinclair Refinery during landfill remediation). NYSDEC says permitted.	Submit Section 408 Alteration Request to USACE.	132_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 122)	0+00	NA
133	U	Significant vegetation in riprap on right bank from 400' downstream of upstream limit weir to barrier levee weir.	Remove vegetation from riprap.	133_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 104)	4+00	0+00
134	U	Significant woody vegetation in riprap on right bank from barrier levee weir to 500' upstream of barrier levee weir.	Remove vegetation from riprap.	134_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 107)	0+00	0+00



SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project, Genesee River, Wellsville, New York (09/27/17)
Project: Genesee River - Left Bank and Channel, Wellsville

135	U	Significant vegetation in riprap on left bank upstream and downstream of upstream limit weir.	Remove vegetation from riprap.	135_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/17 (FY15 - 118)	0+00	0+00
136	M	Unauthorized alteration (E-47): Barbed wire fence and metal gate on right bank at upstream limit weir.	Remove or submit Section 408 Alteration Request to USACE.	136_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 114)	0+00	NA
140	M	Unauthorized alteration (E-9): Stone along left bank channel crest at 82 Seneca Street.	Remove or submit Section 408 Alteration Request to USACE.		Flood Damage Reduction Channels	Encroachments	12/31/19 (FY17)	71+00	NA
141	M	Unauthorized alteration (E-47a): Riprap added to left bank channel toe.	Remove or submit Section 408 Alteration Request to USACE.	141_1.jpg 141_2.jpg	Flood Damage Reduction Channels	Encroachments	12/31/19 (FY17)	84+00	68+00

Attachment “C” – Left Bank and Channel:
Flood Damage Reduction System Inspection Report



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Flood Damage Reduction Segment / System Inspection Report

Name of Segment / System: Genesee River - Left Bank and Channel, Wellsville

Public Sponsor(s): New York State Department of Environmental Conservation - Region 9

Public Sponsor Representative: Theodore Myers

Sponsor Phone: (716) 851-7070

Sponsor Email: theodore.myers@dec.ny.gov

Corps of Engineers Inspector: J. Doktor, T. Brown, J. Rogers, G. Hinds, P. Donohue

Inspection Start Date: 9/27/2017

Inspection End Date: 9/27/2017

Inspection Report Prepared By: James Rogers

Date Report Prepared: _____

Internal Technical Review (for Periodic Inspections) By: _____

Date of ITR: _____

Final Approved By: _____

Date Approved: _____

Type of Inspection:

- ☐ **Initial Eligibility Inspection**
☐ **Continuing Eligibility Inspection (Routine)**
☒ **Continuing Eligibility Inspection (Periodic)**

Overall Segment / System Rating:

- ☐ **Acceptable**
☐ **Minimally Acceptable**
☒ **Unacceptable**

Contents of Report:

- ☒ **Instructions**
☐ **Initial Eligibility Inspection**
☒ **General Items for All Flood Control Works**
☒ **Levee Embankment**
☐ **Concrete Floodwalls**
☐ **Sheet Pile and Concrete I-walls**
☒ **Interior Drainage System**
☐ **Pump Stations**
☒ **FDR System Channels**

Note: In addition to the report contents indicated here, a plan view drawing of the system, with stationing, should be included with this report to reference locations of items rated less than acceptable. Photos of general system condition and any noted deficiencies should also be attached.

Note: This inspection rating represents the Corps evaluation of operations and maintenance of the flood damage reduction system and may be used in conjunction with other information for a levee certification determination for National Flood Insurance Program (NFIP) purposes if applicable. An Acceptable Corps inspection rating, alone, does not equate to a certifiable levee for the NFIP. It is recommended for levee systems currently accredited by the Federal Emergency Management Agency (FEMA) for NFIP purposes receiving a Corps Minimally Acceptable or Unacceptable rating, be evaluated by the levee owner to determine the potential impacts to the certification for FEMA.



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Flood Damage Reduction Segment / System Public Sponsor Pre-Inspection Form

The following information is to be provided by the levee district sponsor prior to an inspection. This information will be used to help evaluate the organizational capability of the levee district to manage the levee segment / system maintenance program.

1. Levee segment / system and district: (name of the segment / system and levee district) Genesee River - Left Bank and Channel, Wellsville for CELRB
2. Reporting period: (month/day/year to month/day/year)
3. Summary of maintenance required by last inspection report:
4. Summary of maintenance performed this reporting period:
5. Summary of maintenance planned next reporting period:
6. Summary of changes to segment / system since last inspection:
7. Problems/ issues requiring the assistance of the US Army Corps of Engineers:



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**Flood Damage Reduction Segment / System
Inspection Report
Genesee River - Left Bank and Channel,**

**Pre-Inspection Form
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Public Sponsor Pre-Inspection Report

The following information is to be provided by the levee district sponsor prior to an inspection

8. Levee district organization: (elected or appointed levee district officials and key employees)

Name	Position	Mailing Address	Phone Number	Email Address



General Instructions for the Inspection of Flood Damage Reduction Segments / Systems

A. Purpose of USACE Inspections:

The primary purpose of these inspections is to prevent loss of life and catastrophic damages; preserve the value of Federal investments, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should assure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Assistance under authority of PL 84-99 for Federal and non-Federal systems. (ER 1130-2-530, ER 500-1-1)

B. Types of Inspections:

The Corps conducts several types of inspections of Flood Damage Reduction systems, as outlined below:

Initial Eligibility Inspections	Continuing Eligibility Inspections	
	Routine Inspections	Periodic Inspections
IEIs are conducted to determine whether a non-Federally constructed Flood Damage Reduction system meets the minimum criteria and standards set forth by the Corps for initial inclusion into the Rehabilitation and Inspection Program.	RIs are intended to verify proper maintenance, owner preparedness, and component operation.	PIs are intended to verify proper maintenance and component operation and to evaluate operational adequacy, structural stability, and safety of the system. Periodic Inspections evaluate the system's original design criteria vs. current design criteria to determine potential performance impacts, evaluate the current conditions, and compare the design loads and design analysis used against current design standards. This is to be done to identify components and features for the sponsor that need to be monitored more closely over time or corrected as needed. (Periodic Inspections are used as the basis of risk assessments.)

C. Inspection Boundaries:

Inspections should be conducted so as to rate each Flood Damage Reduction "Segment" of the system. The overall system rating will be the lowest segment rating in the system.

Project	System	Segment
A flood damage reduction project is made up of one or more flood damage reduction systems which were under the same authorization.	A flood damage reduction system is made up of one or more flood damage reduction segments which collectively provide flood damage reduction to a defined area. Failure of one segment within a system constitutes failure of the entire system. Failure of one system does not affect another system.	A flood damage reduction segment is defined as a discrete portion of a flood damage reduction system that is operated and maintained by a single entity. A flood damage reduction segment can be made up of one or more features (levee, floodwall, pump stations, etc).

D. Land Use Definitions:

The following three definitions are intended for use in determining minimum required inspection intervals and initial requirements for inclusion into the Rehabilitation and Inspection Program. Inspections should be considered for all systems that would result in significant environmental or economic impact upon failure regardless of specific land use.

Agricultural	Rural	Urban
Protected population in the range of zero to 5 households per square mile protected.	Protected population in the range of 6 to 20 households per square mile protected.	Greater than 20 households per square mile; major industrial areas with significant infrastructure investment. Some protected urban areas have no permanent population but may be industrial areas with high value infrastructure with no overnight population.

E. Use of the Inspection Report Template:

The report template is intended for use in all Army Corps of Engineers inspections of levee and floodwall systems and flood damage reduction channels. The section of the template labeled "Initial Eligibility" only needs to be completed during Initial Eligibility Inspections of Non-Federally constructed Flood Damage Reduction Systems. The section labeled "General Items" needs to be completed with every inspection, along with all other sections that correspond to features in the system. The section labeled "Public Sponsor Pre-Inspection Report" is intended for completion before the inspection, if possible.

F. Individual Item / Component Ratings:

Assessment of individual components rated during the inspection should be based on the criteria provided in the inspection report template, though inspectors may incorporate additional items into the report based on the characteristics of the system. The assessment of individual components should be based on the following definitions.

Acceptable Item	Minimally Acceptable Item	Unacceptable Item
The inspected item is in satisfactory condition, with no deficiencies, and will function as intended during the next flood event.	The inspected item has one or more minor deficiencies that need to be corrected. The minor deficiency or deficiencies will not seriously impair the functioning of the item as intended during the next flood event.	The inspected item has one or more serious deficiencies that need to be corrected. The serious deficiency or deficiencies will seriously impair the functioning of the item as intended during the next flood event.

G. Overall Segment / System Ratings:

Determination of the overall system rating is based on the definitions below. Note that an Unacceptable System Rating may be either based on an engineering determination that concluded that noted deficiencies would prevent the system from functioning as intended during the next flood event, or based on the sponsor's demonstrated lack of commitment or inability to correct serious deficiencies in a timely manner.

Acceptable System	Minimally Acceptable System	Unacceptable System
All items or components are rated as Acceptable.	One or more items are rated as Minimally Acceptable or one or more items are rated as Unacceptable and an engineering determination concludes that the Unacceptable items would not prevent the segment / system from performing as intended during the next flood event.	One or more items are rated as Unacceptable and would prevent the segment / system from performing as intended, or a serious deficiency noted in past inspections (which had previously resulted in a minimally acceptable system rating) has not been corrected within the established timeframe, not to exceed two years.

H. Eligibility for PL84-99 Rehabilitation Assistance:

Inspected systems that are not operated and maintained by the Federal government may be Active in the Corps' Rehabilitation and Inspection Program (RIP) and eligible for rehabilitation assistance from the Corps as defined below:

If the Overall System Rating is Acceptable	If the Overall System Rating is Minimally Acceptable	If the Overall System Rating is Unacceptable
The system is active in the RIP and eligible for PL84-99 rehabilitation assistance.	The system is Active in the RIP during the time that it takes to make needed corrections. Active systems are eligible for rehabilitation assistance. However, if the sponsor does not present USACE with proof that serious deficiencies (which had previously resulted in a minimally acceptable system rating) were corrected within the established timeframe, then the system will become Inactive in the RIP.	The system is Inactive in the RIP, and the status will remain Inactive until the sponsor presents USACE with proof that all items rated Unacceptable have been corrected. Inactive systems are ineligible for rehabilitation assistance.

I. Reporting:

After the inspection, the Corps is responsible for assembling an inspection report (or a summary report if it was a Periodic Inspection) including the following information:

- a. All sections of the report template used during the inspection, including the cover and pre-inspection materials. (Supplemental data collected, and any sections of the template that weren't used during the inspection do not need to be included with the report.)
- b. Photos of the general system condition and noted deficiencies.
- c. A plan view drawing of the system, with stationing, to reference locations of items rated less than acceptable.
- d. The relative importance of the identified maintenance issues should be specified in the transmittal letter.
- e. If the Overall System Rating is Minimally Acceptable, the report needs to establish a timeframe for correction of serious deficiencies noted (not to exceed two years) and indicate that if these items are not corrected within the required timeframe, the system will be rated as Unacceptable and made Inactive in the Rehabilitation Inspection Program.

J. Notification:

Reports are to be disseminated as follows within 30 days of the inspection date.

If the Overall System Rating is Acceptable	If the Overall System Rating is Minimally Acceptable	If the Overall System Rating is Unacceptable
Reports need to be provided to the local sponsor and the county emergency management agency.	Reports need to be provided to the local sponsor, state emergency management agency, county emergency management agency, and to the FEMA region.	Reports need to be provided to the local sponsor, state emergency management agency, county emergency management agency, FEMA region, and to the Congressional delegation within 30 days of the inspection.

General Items for All Flood Damage Reduction Segments / Systems

For use during all inspections of all Flood Damage Reduction Segments / Systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Operations and Maintenance Manuals	A	A	Levee Owner's Manual, O&M Manuals, and/or manufacturer's operating instructions are present.	N21L_2017_p_0137: Station_1 102+00: Sponsor presented O&M Manual at time of inspection.: NA (A) N21L_2017_p_0139: Station_1 102+00: Sponsor submitted Public Sponsor Pre- Inspection Report.: NA (A)
		M	Sponsor manuals are lost or missing or out of date; however, sponsor will obtain manuals prior to next scheduled inspection.	
		U	Sponsor has not obtained lost or missing manuals identified during previous inspection.	
2. Emergency Supplies and Equipment (A or M only)	A	A	The sponsor maintains a stockpile of sandbags, shovels, and other flood fight supplies which will adequately supply all needs for the initial days of a flood fight. Sponsor determines required quantity of supplies after consulting with inspector.	
		M	The sponsor does not maintain an adequate supply of flood fighting materials as part of their preparedness activities.	
3. Flood Preparedness and Training (A or M only)	A	A	Sponsor has a written system-specific flood response plan and a solid understanding of how to operate, maintain, and staff the FDR system during a flood. Sponsor maintains a list of emergency contact information for appropriate personnel and other emergency response agencies.	N21L_2017_p_0138: Station_1 102+00: Sponsor has an acceptable EPP.: NA (A)
		M	The sponsor maintains a good working knowledge of flood response activities, but documentation of system-specific emergency procedures and emergency contact personnel is insufficient or out of date.	

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction



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Flood Damage Reduction Segment / System
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Genesee River - Left Bank and Channel,

General Items for All Flood Damage Reduction
Segments / Systems
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Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Unwanted Vegetation Growth ¹	U	A	The levee has little or no unwanted vegetation (trees, bush, or undesirable weeds), except for vegetation that is properly contained and/or situated on overbuilt sections, such that the mandatory 3-foot root-free zone is preserved around the levee profile. The levee has been recently mowed. The vegetation-free zone extends 15 feet from both the landside and riverside toes of the levee to the centerline of the tree. If the levee access easement doesn't extend to the described limits, then the vegetation-free zone must be maintained to the easement limits. Reference EM 1110-2-301 or Corps policy for regional vegetation variance.	N21L_2017_p_0045: Station_1 61+00: Station_2 58+00: 9 trees and 1 tree stump within 15' of levee landside toe 1,600' downstream of Madison Street (Stevens Street) bridge (60, 68, and 70 Seneca Street):. Remove trees and tree stump. (M)
		M	Minimal vegetation growth (brush, weeds, or trees 2 inches in diameter or smaller) is present within the zones described above. This vegetation must be removed but does not currently threaten the operation or integrity of the levee.	N21L_2017_p_0061: Station_1 54+00: Station_2 46+00: Trees on left bank landside slope and within 15' of landside toe from 1,200' downstream of Madison Street (Stevens Street) bridge to Ponding Area fence.: Remove trees. (M)
		U	Significant vegetation growth (brush, weeds, or any trees greater than 2 inches in diameter) is present within the zones described above and must be removed to reestablish or ascertain levee integrity.	N21L_2017_p_0066: Station_1 53+00: Unwanted heavy vegetation within 15' of levee landside toe.: Remove unwanted vegetation. (M) N21L_2017_p_0090: Station_1 33+00: Station_2 24+00: Vegetation and woody growth in left bank riprap from State Street bridge to 1250' upstream of State Street bridge. (Not much vegetation from Sta. 29+00 to 27+00): Remove vegetation and woody growth from riprap. (U) N21L_2017_p_0093: Station_1 28+00: Unwanted vegetation and bushes on landside slope and within 15' of landside toe 500' upstream of State Street bridge.: Remove unwanted vegetation. (M) N21L_2017_p_0113: Station_1 13+00: Unwanted sporadic vegetation on left bank waterside slope, 400' upstream of pedestrian bridge.: Remove unwanted vegetation. (M) N21L_2017_p_0135: Station_1 0+00: Station_2 0+00: Significant vegetation in riprap on left bank upstream and downstream of upstream limit weir.: Remove vegetation from riprap. (U)
2. Sod Cover	M	A	There is good coverage of sod over the levee.	N21L_2017_p_0047: Station_1 60+00: Inadequate sod cover at 70 Chamberlain Street on landside slope.: Re-establish sod cover. (M)
		M	Approximately 25% of the sod cover is missing or damaged over a significant portion or over significant portions of the levee embankment. This may be the result of over-grazing or feeding on the levee, unauthorized vehicular traffic, chemical or insect problems, or burning during inappropriate seasons.	
		U	Over 50% of the sod cover is missing or damaged over a significant portion or portions of the levee embankment.	
		N/A	Surface protection is provided by other means.	
3. Encroachments	M	A	No trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the levee.	N21L_2017_p_0043: Station_1 60+00: Unauthorized alteration (E-15): Landscaping timbers and debris on landside slope at 70 Chamberlain Street on left bank 1,700'

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction



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Flood Damage Reduction Segment / System
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Levee Embankments
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Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems

Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
	M	Trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	downstream of Madison Street (Stevens Street) bridge.: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0046: Station_1 61+00: Unauthorized alteration (E-15b): access ramp built on top of landside slope of left bank levee by sponsor.: Submit Section 408 Alteration Request to USACE. (M)
	U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of the levee.	N21L_2017_p_0048: Station_1 59+00: Unauthorized alteration (E-16): Tree trunk sections and metal debris on levee landside slope 1,600' downstream of Madison Street (Stevens Street) bridge (68 Chamberlain Street).: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0049: Station_1 59+00: Unauthorized alteration (E-17): Red metal shed, chain link fence, and wooden debris at 60 Chamberlain Street on left bank 1,600' downstream of Madison Street (Stevens Street) bridge (60 Chamberlain Street).: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0053: Station_1 57+00: Unauthorized alteration (E-18): White concrete block shed, utility marker, and tree house on left bank levee landside slope at 52 and 48 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0054: Station_1 57+00: Station_2 53+00: Unauthorized alteration (E-19): Utility line potentially buried in levee section from 70 Chamberlain Street to 44 Chamberlain Street.. Note: levee is overbuilt at this location (approx. 42 feet wide).: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0055: Station_1 56+00: Unauthorized alteration (E-21): Yellow garage and on left bank levee landside toe at 44 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0056: Station_1 56+00: Unauthorized alteration (E-20): Stone landscaping and tree debris on left bank levee landside slope; pool within 15 feet of landside toe at 48 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0057: Station_1 55+00: Unauthorized alteration (E-22): Dilapidated white garage, shed and patio

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction



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Flood Damage Reduction Segment / System
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Levee Embankments
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Levee Embankments

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
			<p>deck at left bank levee landside toe; clothesline and metal pole on landside slope at 38 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0058: Station_1 55+00: Unauthorized alteration (E-23): Chicken wire fence on left bank levee landside toe at 20 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0064: Station_1 52+00: Unauthorized alteration (E-24): Utility pole on left bank 850' downstream of Madison Street (Stevens Street) bridge (just upstream of gatewell # 3).: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0065: Station_1 52+00: Unauthorized alteration (E-25): Guy wire w/in 15' of landside toe on left bank 850' downstream of Madison Street (Stevens Street) bridge(just upstream of gatewell # 3).: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0069: Station_1 47+00: Station_2 50+00: Ponding Area fence is part of the project.: NA (A)</p> <p>N21L_2017_p_0081: Station_1 44+00: Unauthorized alteration (E-29): Madison Street (Stevens Street) bridge (replaced Pearl Street bridge). Constructed after project. NYSDEC says permitted.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0082: Station_1 34+00: Station_2 43+00: Unauthorized alteration (E-30): Fence on left bank channel crest from Madison Street (Stevens Street) bridge to school building.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0084: Station_1 38+00: Unauthorized alteration (E-31): concrete walkway at Wellsville High School (manhole is part of project per As-Built F-189-A-10/5).: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0091: Station_1 30+00: Unauthorized alteration (E-37): 4 Utility poles w/in 15' of landside toe on left bank 250' upstream of State Street bridge.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0094: Station_1 27+00: 1974 Steel Sheet Pile Weir by Others - shown on AS-CONSTRUCTED drawing 189-WEL-2/4 (approved by USACE).: NA (A)</p>

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				<p>N21L_2017_p_0096: Station_1 29+00: Unauthorized alteration (E-NEW): 6" cast iron pipe on left bank waterside slope 450' upstream of State Street bridge.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0097: Station_1 27+00: Unauthorized alteration (E-38): Green metal stairs and concrete pad for access to Water Intake Unit in left bank riverside slope at Steel Sheet Pile Weir (Water Intake Unit is part of project as shown on As-Constructed drawing 189-WEL-2/4).: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0100: Station_1 24+00: Station_2 28+00: Unauthorized alteration (E-39): Asphalt sidewalk and guy wire at left bank levee landside toe.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0102: Station_1 23+00: Unauthorized alteration (E-42): Utility pole on left bank landside slope 475' upstream of Steel Sheet Pile Weir (across from maintenance garage).: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0110: Station_1 16+00: Island Park Pedestrian Walkway Bridge is not an encroachment. Bridge support is deteriorating (Former railroad bridge as shown on As-Constructed drawing F-189-A-10/6).: NA (A)</p> <p>N21L_2017_p_0124: Station_1 0+00: Station_2 0+00: Approved alteration: Drainage swale berm at left bank lagoon between barrier levee weir and upstream limit weir.: NA (A)</p> <p>N21L_2017_p_0132: Station_1 0+00: Unauthorized alteration (E-48): USACE levee on left bank at upstream end of project has been removed and replaced by a new levee (constructed by BP & Sinclair Refinery during landfill remediation). NYSDEC says permitted.: Submit Section 408 Alteration Request to USACE. (M)</p>
4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures) (A or U only)	NA	A	Closure structure in good repair. Placing equipment, stoplogs, and other materials are readily available at all times. Components are clearly marked and installation instructions/ procedures readily available. Trial erections have been accomplished in accordance with the O&M Manual.	
		U	Any of the following issues is cause for this rating: Closure structure in poor condition. Parts missing or corroded. Placing equipment may not be available within the anticipated warning time. The storage vaults cannot be opened during the time of inspection. Components of closure are not clearly marked and installation instructions/ procedures are not readily available. Trial erections have not been accomplished in accordance with the O&M Manual.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		N/A	There are no closure structures along this component of the FDR segment / system.	
5. Slope Stability	A	A	No slides, sloughs, tension cracking, slope depressions, or bulges are present.	
		M	Minor slope stability problems that do not pose an immediate threat to the levee embankment.	
		U	Major slope stability problems (ex. deep seated sliding) identified that must be repaired to reestablish the integrity of the levee embankment.	
6. Erosion/ Bank Caving	A	A	No erosion or bank caving is observed on the landward or riverward sides of the levee that might endanger its stability.	
		M	There are areas where minor erosion is occurring or has occurred on or near the levee embankment, but levee integrity is not threatened.	
		U	Erosion or caving is occurring or has occurred that threatens the stability and integrity of the levee. The erosion or caving has progressed into the levee section or into the extended footprint of the levee foundation and has compromised the levee foundation stability.	
7. Settlement ²	A	A	No observed depressions in crown. Records exist and indicate no unexplained historical changes.	
		M	Minor irregularities that do not threaten integrity of levee. Records are incomplete or inclusive.	
		U	Obvious variations in elevation over significant reaches. No records exist or records indicate that design elevation is compromised.	
8. Depressions/ Rutting	M	A	There are scattered, shallow ruts, pot holes, or other depressions on the levee that are unrelated to levee settlement. The levee crown, embankments, and access road crowns are well established and drain properly without any ponded water.	N21L_2017_p_0036: Station_1 69+00: Chamberland Street drainage channel creates apparent gap in line of protection on left bank levee.: Evaluate the possibility of altering the project to improve a continuous line of protection; potentially include a pipe and flapgate. (M)
		M	There are some infrequent minor depressions less than 6 inches deep in the levee crown, embankment, or access roads that will pond water.	
		U	There are depressions greater than 6 inches deep that will pond water.	
9. Cracking	A	A	Minor longitudinal, transverse, or desiccation cracks with no vertical movement along the crack. No cracks extend continuously through the levee crest.	
		M	Longitudinal and/or transverse cracks up to 6 inches in depth with no vertical movement along the crack. No cracks extend continuously through the levee crest. Longitudinal cracks are no longer than the height of the levee.	
		U	Cracks exceed 6 inches in depth. Longitudinal cracks are longer than the height of the levee and/or exhibit vertical movement along the crack. Transverse cracks extend through the entire levee width.	
10. Animal Control	M	A	Continuous animal burrow control program in place that includes the elimination of active burrowing and the filling in of existing burrows.	N21L_2017_p_0092: Station_1 28+00: Multiple animal burrows (approx. half dozen) on left bank waterside slope

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		M	The existing animal burrow control program needs to be improved. Several burrows are present which may lead to seepage or slope stability problems, and they require immediate attention.	450' upstream of State Street bridge.: Fill animal burrows and improve animal control program. (M) N21L_2017_p_0114: Station_1 13+00: Erosion and animal burrow on left bank 350' upstream of the pedestrian bridge.: Repair erosion and animal burrow. (M)
		U	Animal burrow control program is not effective or is nonexistent. Significant maintenance is required to fill existing burrows, and the levee will not provide reliable flood protection until this maintenance is complete.	
11. Culverts/ Discharge Pipes ³ (This item includes both concrete and corrugated metal pipes.)	M	A	There are no breaks, holes, cracks in the discharge pipes/ culverts that would result in significant water leakage. The pipe shape is still essentially circular. All joints appear to be closed and the soil tight. Corrugated metal pipes, if present, are in good condition with 100% of the original coating still in place (either asphalt or galvanizing) or have been relined with appropriate material, which is still in good condition. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	
		M	There are a small number of corrosion pinholes or cracks that could leak water and need to be repaired, but the entire length of pipe is still structurally sound and is not in danger of collapsing. Pipe shape may be ovalized in some locations but does not appear to be approaching a curvature reversal. A limited number of joints may have opened and soil loss may be beginning. Any open joints should be repaired prior to the next inspection. Corrugated metal pipes, if present, may be showing corrosion and pinholes but there are no areas with total section loss. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	
		U	Culvert has deterioration and/or has significant leakage; it is in danger of collapsing or as already begun to collapse. Corrugated metal pipes have suffered 100% section loss in the invert. HOWEVER: Even if pipes appear to be in good condition, as judged by an external visual inspection, an Unacceptable Rating will be assigned if the condition of pipes has not been verified using television camera video taping or visual inspection methods within the past five years, and reports for all pipes are not available for review by the inspector.	
		N/A	There are no discharge pipes/ culverts.	
12. Riprap Revetments & Bank Protection	A	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		N/A	There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
13. Revetments other than Riprap	NA	A	Existing revetment protection is properly maintained, undamaged, and clearly visible.	
		M	Minor revetment displacement or deterioration that does not pose an immediate threat to the integrity of the levee. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant revetment displacement, deterioration, or exposure of bedding observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Revetment protection is hidden by dense brush and trees.	
		N/A	There are no such revetments protecting this feature of the segment / system.	
14. Underseepage Relief Wells/ Toe Drainage Systems	NA	A	Toe drainage systems and pressure relief wells necessary for maintaining FDR segment / system stability during high water functioned properly during the last flood event and no sediment is observed in horizontal system (if applicable). Nothing is observed which would indicate that the drainage systems won't function properly during the next flood, and maintenance records indicate regular cleaning. Wells have been pumped tested within the past 5 years and documentation is provided.	
		M	Toe drainage systems or pressure relief wells are damaged and may become clogged if they are not repaired. Maintenance records are incomplete or indicate irregular cleaning and pump testing.	
		U	Toe drainage systems or pressure relief wells necessary for maintaining FDR segment / system stability during flood events have fallen into disrepair or have become clogged. No maintenance records. No documentation of the required pump testing.	
		N/A	There are no relief wells/ toe drainage systems along this component of the FDR segment / system.	
15. Seepage	A	A	No evidence or history of unrepaired seepage, saturated areas, or boils.	
		M	Evidence or history of minor unrepaired seepage or small saturated areas at or beyond the landside toe but not on the landward slope of levee. No evidence of soil transport.	
		U	Evidence or history of active seepage, extensive saturated areas, or boils.	

¹ If there is significant growth on the levee that inhibits the inspection of animal burrows or other items, the inspection should be ended until this item is corrected.

² Detailed survey elevations are normally required during Periodic Inspections, and whenever there are obvious visual settlements.

³ The decision on whether or not USACE inspectors should enter a pipe to perform a detailed inspection must be made at the USACE District level. This decision should be made in conjunction with the District Safety Office, as pipes may be considered confined spaces. This decision should consider the age of the pipe, the diameter of the pipe, the apparent condition of the pipe, and the length of the pipe. If a pipe is entered for the purposes of inspection, the inspector should record observations with a video camera in order that the condition of the entire pipe, including all joints, can later be assessed. Additionally, the video record provides a baseline to which future inspections can be compared.

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	<p>Inspect ID: N21L_2017_p_0045 Title: USACE_CELRB_N21L_2017_p_0045_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: 9 trees and 1 tree stump within 15' of levee landside toe 1,600' downstream of Madison Street (Stevens Street) bridge (60, 68, and 70 Seneca Street).; Action: Remove trees and tree stump.; Station_1: 61+00; Station_2: 58+00</p>
	<p>Inspect ID: N21L_2017_p_0045 Title: USACE_CELRB_N21L_2017_p_0045_2.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: 9 trees and 1 tree stump within 15' of levee landside toe 1,600' downstream of Madison Street (Stevens Street) bridge (60, 68, and 70 Seneca Street).; Action: Remove trees and tree stump.; Station_1: 61+00; Station_2: 58+00</p>



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	<p>Inspect ID: N21L_2017_p_0061 Title: USACE_CELRB_N21L_2017_p_0061_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: Trees on left bank landside slope and within 15' of landside toe from 1,200' downstream of Madison Street (Stevens Street) bridge to Ponding Area fence.; Action: Remove trees.; Station_1: 54+00; Station_2: 46+00</p>
	<p>Inspect ID: N21L_2017_p_0066 Title: USACE_CELRB_N21L_2017_p_0066_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: Unwanted heavy vegetation within 15' of levee landside toe.; Action: Remove unwanted vegetation.; Station_1: 53+00</p>



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	<p>Inspect ID: N21L_2017_p_0090 Title: USACE_CELRB_N21L_2017_p_0090_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Unacceptable; Remarks: Vegetation and woody growth in left bank riprap from State Street bridge to 1250' upstream of State Street bridge. Not much vegetation from Sta. 29+00 to 27+00.; Action: Remove vegetation and woody growth from riprap.; Station_1: 33+00; Station_2: 24+00</p>
	<p>Inspect ID: N21L_2017_p_0090 Title: USACE_CELRB_N21L_2017_p_0090_2.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Unacceptable; Remarks: Vegetation and woody growth in left bank riprap from State Street bridge to 1250' upstream of State Street bridge. Not much vegetation from Sta. 29+00 to 27+00.; Action: Remove vegetation and woody growth from riprap.; Station_1: 33+00; Station_2: 24+00</p>





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	<p>Inspect ID: N21L_2017_p_0090 Title: USACE_CELRB_N21L_2017_p_0090_3.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Unacceptable; Remarks: Vegetation and woody growth in left bank riprap from State Street bridge to 1250' upstream of State Street bridge. Not much vegetation from Sta. 29+00 to 27+00.; Action: Remove vegetation and woody growth from riprap.; Station_1: 33+00; Station_2: 24+00</p>
	<p>Inspect ID: N21L_2017_p_0090 Title: USACE_CELRB_N21L_2017_p_0090_4.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Unacceptable; Remarks: Vegetation and woody growth in left bank riprap from State Street bridge to 1250' upstream of State Street bridge. Not much vegetation from Sta. 29+00 to 27+00.; Action: Remove vegetation and woody growth from riprap.; Station_1: 33+00; Station_2: 24+00</p>



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	<p>Inspect ID: N21L_2017_p_0093 Title: USACE_CELRB_N21L_2017_p_0093_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation and bushes on landside slope and within 15' of landside toe 500' upstream of State Street bridge.; Action: Remove unwanted vegetation.; Station_1: 28+00</p>
	<p>Inspect ID: N21L_2017_p_0113 Title: USACE_CELRB_N21L_2017_p_0113_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: Unwanted sporadic vegetation on left bank waterside slope, starting 400' upstream of pedestrian bridge.; Action: Remove unwanted vegetation.; Station_1: 13+00</p>



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	<p>Inspect ID: N21L_2017_p_0135 Title: USACE_CELRB_N21L_2017_p_0135_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Unacceptable; Remarks: Significant vegetation in riprap on left bank upstream and downstream of upstream limit weir.; Action: Remove vegetation from riprap.; Station_1: 0+00; Station_2: 0+00</p>
	<p>Inspect ID: N21L_2017_p_0047 Title: USACE_CELRB_N21L_2017_p_0047_1.jpg Rated Item: 2. Sod Cover Caption: Rating: Minimally Acceptable; Remarks: Inadequate sod cover at 70 Chamberlain Street on iandside slope.; Action: Re-establish sod cover.; Station_1: 60+00</p>



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	<p>Inspect ID: N21L_2017_p_0043 Title: USACE_CELRB_N21L_2017_p_0043_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-15) - Tree debris, landscaping, and debris on landside slope at 70 Chamberlain Street on left bank 1,700' downstream of Madison Street (Stevens Street) bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 60+00</p>
	<p>Inspect ID: N21L_2017_p_0046 Title: USACE_CELRB_N21L_2017_p_0046_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (NEW) - access ramp built on top of landside slope of left bank levee.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 61+00</p>



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	<p>Inspect ID: N21L_2017_p_0048 Title: USACE_CELRB_N21L_2017_p_0048_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-16) - Tree trunk sections and metal debris on levee landside slope 1,600' downstream of Madison Street (Stevens Street) bridge (68 Chamberlain Street).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 59+00</p>
	<p>Inspect ID: N21L_2017_p_0049 Title: USACE_CELRB_N21L_2017_p_0049_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-17) - Red shed, chain link fence, and wooden debris at 60 Chamberlain Street on left bank 1,600' downstream of Madison Street (Stevens Street) bridge (60 Chamberlain Street).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 59+00</p>



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	<p>Inspect ID: N21L_2017_p_0053 Title: USACE_CELRB_N21L_2017_p_0053_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-18) - White concrete block shed, utility marker, and tree house on left bank levee landside slope at 52 and 48 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 57+00</p>
	<p>Inspect ID: N21L_2017_p_0054 Title: USACE_CELRB_N21L_2017_p_0054_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-19) - Utility line potentially buried in levee section from 70 Chamberlain Street to 44 Chamberlain Street.. Note: levee is overbuilt at this location (approx. 42 feet wide).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 57+00; Station_2: 53+00</p>



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	<p>Inspect ID: N21L_2017_p_0055 Title: USACE_CELRB_N21L_2017_p_0055_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-21) - Yellow garage and on left bank levee landside toe at 44 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 56+00</p>
	<p>Inspect ID: N21L_2017_p_0056 Title: USACE_CELRB_N21L_2017_p_0056_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-20) - Stone landscaping and tree debris on left bank levee landside slope; pool within 15 feet of landside toe at 48 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 56+00</p>



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	<p>Inspect ID: N21L_2017_p_0057 Title: USACE_CELRB_N21L_2017_p_0057_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-22) - Dilapidated white garage, shed and patio deck at left bank levee landside toe; clothesline and metal pole on landside slope at 38 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 55+00</p>
	<p>Inspect ID: N21L_2017_p_0058 Title: USACE_CELRB_N21L_2017_p_0058_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-23) - Chicken wire fence on left bank levee landside toe at 20 Chamberlain Street. Note: levee is overbuilt at this location (approx. 42 feet wide).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 55+00</p>



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	<p>Inspect ID: N21L_2017_p_0064 Title: USACE_CELRB_N21L_2017_p_0064_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-24) - Utility pole on left bank 850' downstream of Madison Street (Stevens Street) bridge (just upstream of gatewell # 3).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 52+00</p>
	<p>Inspect ID: N21L_2017_p_0065 Title: USACE_CELRB_N21L_2017_p_0065_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-25) - Guy wire w/in 15' of landside toe on left bank 850' downstream of Madison Street (Stevens Street) bridge(just upstream of gatewell # 3).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 52+00</p>



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	<p>Inspect ID: N21L_2017_p_0069 Title: USACE_CELRB_N21L_2017_p_0069_1.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: Ponding Area fence is part of the project.; Action: NA; Station_1: 47+00; Station_2: 50+00</p>
	<p>Inspect ID: N21L_2017_p_0081 Title: USACE_CELRB_N21L_2017_p_0081_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-29) - Madison Street (Stevens Street) bridge (replaced Pearl Street bridge). Constructed after project. NYSDEC says permitted.; Action: Submit Section 408 Alteration Request Form to USACE.; Station_1: 44+00</p>



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	<p>Inspect ID: N21L_2017_p_0082 Title: USACE_CELRB_N21L_2017_p_0082_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-30) - Fence on left bank channel crest from Madison Street (Stevens Street) bridge to school building.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 34+00; Station_2: 43+00</p>
	<p>Inspect ID: N21L_2017_p_0082 Title: USACE_CELRB_N21L_2017_p_0082_2.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-30) - Fence on left bank channel crest from Madison Street (Stevens Street) bridge to school building.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 34+00; Station_2: 43+00</p>



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	<p>Inspect ID: N21L_2017_p_0084 Title: USACE_CELRB_N21L_2017_p_0084_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-31) - concrete walkway at Wellsville High School (manhole is part of project per As-Built F-189-A-10/5).; Action: Submit Section 408 Alteration Request Form to USACE.; Station_1: 38+00</p>
	<p>Inspect ID: N21L_2017_p_0091 Title: USACE_CELRB_N21L_2017_p_0091_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-37) - 4 Utility poles within 15' of landside toe on left bank 250' upstream of State Street bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 30+00</p>



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	<p>Inspect ID: N21L_2017_p_0094 Title: USACE_CELRB_N21L_2017_p_0094_1.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: 1974 Steel Sheet Pile Weir by Others - shown on AS-CONSTRUCTED drawing 189-WEL-2/4 (approved by USACE).; Action: NA; Station_1: 27+00</p>
	<p>Inspect ID: N21L_2017_p_0096 Title: USACE_CELRB_N21L_2017_p_0096_1.jpg Rated Item: 3. Encroachments Caption: Rated Item: 1. Public Sponsor (A or U only); Rating: Acceptable; Remarks: 6" cast iron pipe on left bank waterside slope 450' upstream of State Street bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 29+00</p>



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	<p>Inspect ID: N21L_2017_p_0097 Title: USACE_CELRB_N21L_2017_p_0097_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-38) - Green metal stairs and concrete pad for access to Water Intake Unit in left bank riverside slope at Steel Sheet Pile Weir (Water Intake Unit is part of project as shown on As-Constructed drawing 189-WEL-2/4).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 27+00</p>
	<p>Inspect ID: N21L_2017_p_0100 Title: USACE_CELRB_N21L_2017_p_0100_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-39) - Asphalt sidewalk and guy wire at left bank levee landside toe.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 24+00; Station_2: 28+00</p>



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	<p>Inspect ID: N21L_2017_p_0102 Title: USACE_CELRB_N21L_2017_p_0102_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-42) - Utility pole on left bank landside slope 475' upstream of Steel Sheet Pile Weir (across from maintenance garage).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 23+00</p>
	<p>Inspect ID: N21L_2017_p_0110 Title: USACE_CELRB_N21L_2017_p_0110_1.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: Island Park Pedestrian Walkway Bridge is not an encroachment. Bridge support is deteriorating (Former railroad bridge as shown on As-Constructed drawing F-189-A-10/6).; Action: NA; Station_1: 16+00</p>



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	<p>Inspect ID: N21L_2017_p_0124 Title: USACE_CELRB_N21L_2017_p_0124_1.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: Approved Alteration - Drainage swale berm at left bank lagoon between barrier levee weir and upstream limit weir.; Action: NA; Station_1: 0+00; Station_2: 0+00</p>
	<p>Inspect ID: N21L_2017_p_0132 Title: USACE_CELRB_N21L_2017_p_0132_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-48) - USACE levee on left bank at upstream end of project has been removed and replaced by a new levee (constructed by BP & Sinclair Refinery during landfill remediation). NYSDEC says permitted.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00</p>



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	<p>Inspect ID: N21L_2017_p_0036 Title: USACE_CELRB_N21L_2017_p_0036_1.jpg Rated Item: 8. Depressions/ Rutting Caption: Rating: Minimally Acceptable; Remarks: Chamberland Street drainage channel creates apparent gap in line of protection on left bank levee.; Action: Evaluate the possibility of altering the project to improve a continuous line of protection; potentially include a pipe and flapgate.; Station_1: 69+00</p>
	<p>Inspect ID: N21L_2017_p_0092 Title: USACE_CELRB_N21L_2017_p_0092_1.jpg Rated Item: 10. Animal Control Caption: Rating: Minimally Acceptable; Remarks: Multiple animal burrows (approx. half dozen) on left bank waterside slope 450' upstream of State Street bridge.; Action: Fill animal burrows and improve animal control program.; Station_1: 28+00</p>



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	<p>Inspect ID: N21L_2017_p_0092 Title: USACE_CELRB_N21L_2017_p_0092_2.jpg Rated Item: 10. Animal Control Caption: Rating: Minimally Acceptable; Remarks: Multiple animal burrows (approx. half dozen) on left bank waterside slope 450' upstream of State Street bridge.; Action: Fill animal burrows and improve animal control program.; Station_1: 28+00</p>
	<p>Inspect ID: N21L_2017_p_0114 Title: USACE_CELRB_N21L_2017_p_0114_1.jpg Rated Item: 10. Animal Control Caption: Rating: Minimally Acceptable; Remarks: Erosion and animal burrow on left bank 350' upstream of the pedestrain bridge.; Action: Repair erosion and animal burrow.; Station_1: 13+00</p>



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Interior Drainage System

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Vegetation and Obstructions	M	A	No obstructions, vegetation, debris, or sediment accumulation noted within interior drainage channels or blocking the culverts, inlets, or discharge areas. Concrete joints and weep holes are free of grass and weeds.	N21L_2017_p_0025: Station_1 82+00: Soft unwanted vegetation obstructing outfall on left bank 900' upstream of Bolivar Road bridge.: Remove unwanted vegetation. (M)
		M	Obstructions, vegetation, debris, or sediment are minor and have not impaired channel flow capacity or blocked more than 10% of any culvert openings, but should be removed. A limited volume of grass and weeds may be present in concrete channel joints and weep holes.	N21L_2017_p_0028: Station_1 75+00: 24" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge is approx. 20% obstructed by minor sediment.: Remove sediment obstruction. (M)
		U	Obstructions, vegetation, debris, or sediment have impaired the channel flow capacity or blocked more than 10% of a culvert opening. Sediment and debris removal required to re-establish flow capacity.	N21L_2017_p_0070: Station_1 50+00: Station_2 47+00: Trees and unwanted vegetation on ponding area fence.: Remove trees and unwanted vegetation. (M) N21L_2017_p_0105: Station_1 23+00: 48" CMP inlet to culvert under Dyke Street access road on left bank obstructed by vegetation 500' upstream of Steel Sheet Pile Weir.: Remove vegetation obstruction. (M)
2. Encroachments	M	A	No trash, debris, unauthorized structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the interior drainage system.	N21L_2017_p_0044: Station_1 61+00: Unauthorized alteration (E-15a): 24" CMP encroachment on left bank channel side slope with flap gate. Pipe has not been videotaped. Potentially causing 2" depression on levee crown.: Remove or submit Section 408 Alteration Request to USACE. Videotape pipe. (M)
		M	Trash, debris, unauthorized structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	
		U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of this component of the interior drainage system.	
3. Ponding Areas	A	A	No trash, debris, structures, or other obstructions present within the ponding areas. Sediment deposits do not exceed 10% of capacity.	
		M	Trash, debris, excavations, structures, or other obstructions present, or inappropriate activities that will not inhibit operations and maintenance. Sediment deposits do not exceed 30% of capacity.	
		U	Trash, debris, excavations, structures, or other obstructions, or other encroachments or activities noted that will inhibit operations, maintenance, or emergency work. Sediment deposits exceeds 30% of capacity.	
		N/A	There are no ponding areas associated with the interior drainage system.	
4. Fencing and Gates ¹	M	A	Fencing is in good condition and provides protection against falling or unauthorized access. Gates open and close freely, locks are in place, and there is little corrosion on metal parts.	N21L_2017_p_0016: Station_1 88+00: Lower supports of headwall railing are dislodged on left bank outfall 300' upstream of Bolivar Road bridge.: Repair headwall railing. (M)
		M	Fencing or gates are damaged or corroded but appear to be maintainable. Locks may be missing or damaged.	
		U	Fencing and gates are damaged or corroded to the point that replacement is required, or potentially dangerous features are not secured.	

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Flood Damage Reduction Segment / System
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For use during Initial and Continuing Eligibility Inspections of interior drainage systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		N/A	There are no features noted that require safety fencing.	
5. Concrete Surfaces (Such as gate wells, outfalls, intakes, or culverts)	A	A	Negligible spalling, scaling or cracking. If the concrete surface is weathered or holds moisture, it is still satisfactory but should be seal coated to prevent freeze/ thaw damage.	
		M	Spalling, scaling, and open cracking present, but the immediate integrity or performance of the structure is not threatened. Reinforcing steel may be exposed. Repairs/ sealing is necessary to prevent additional damage during periods of thawing and freezing.	
		U	Surface deterioration or deep cracks present that may result in an unreliable structure. Any surface deterioration that exposes the sheet piling or lies adjacent to monolith joints may indicate underlying reinforcement corrosion and is unacceptable.	
		N/A	There are no concrete items in the interior drainage system.	
6. Tilting, Sliding or Settlement of Concrete and Sheet Pile Structures ² (Such as gate wells, outfalls, intakes, or culverts)	A	A	There are no significant areas of tilting, sliding, or settlement that would endanger the integrity of the structure.	
		M	There are areas of tilting, sliding, or settlement (either active or inactive) that need to be repaired. The maximum offset, either laterally or vertically, does not exceed 2 inches unless the movement can be shown to be no longer actively occurring. The integrity of the structure is not in danger.	
		U	There are areas of tilting, sliding, or settlement (either active or inactive) that threaten the structure's integrity and performance. Any movement that has resulted in failure of the waterstop (possibly identified by daylight visible through the joint) is unacceptable. Differential movement of greater than 2 inches between any two adjacent monoliths, either laterally or vertically, is unacceptable unless it can be shown that the movement is no longer active. Also, if the floodwall is of I-wall construction, then any visible or measurable tilting of the wall toward the protected side that has created an open horizontal crack on the riverside base of a monolith is unacceptable.	
		N/A	There are no concrete items in the interior drainage system.	
7. Foundation of Concrete Structures ³ (Such as culverts, inlet and discharge structures, or gatewells.)	A	A	No active erosion, scouring, or bank caving that might endanger the structure's stability.	
		M	There are areas where the ground is eroding towards the base of the structure. Efforts need to be taken to slow and repair this erosion, but it is not judged to be close enough to the structure or to be progressing rapidly enough to affect structural stability before the next inspection. The rate of erosion is such that the structure is expected to remain stable until the next inspection.	
		U	Erosion or bank caving observed that may lead to structural instabilities before the next inspection.	
		N/A	There are no concrete items in the interior drainage system.	
8. Monolith Joints	NA	A	The joint material is in good condition. The exterior joint sealant is intact and cracking/ desiccation is minimal. Joint filler material and/or waterstop is not visible at any point.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
9. Culverts/ Discharge Pipes ⁴	M	M	The joint material has appreciable deterioration to the point where joint filler material and/or waterstop is visible in some locations. This needs to be repaired or replaced to prevent spalling and cracking during freeze/ thaw cycles, and to ensure water tightness of the joint.	
		U	The joint material is severely deteriorated or the concrete adjacent to the monolith joints has spalled and cracked, damaging the waterstop; in either case damage has occurred to the point where it is apparent that the joint is no longer watertight and will not provide the intended level of protection during a flood.	
		N/A	There are no monolith joints in the interior drainage system.	
		A	There are no breaks, holes, cracks in the discharge pipes/ culverts that would result in significant water leakage. The pipe shape is still essentially circular. All joints appear to be closed and the soil tight. Corrugated metal pipes, if present, are in good condition with 100% of the original coating still in place (either asphalt or galvanizing) or have been relined with appropriate material, which is still in good condition. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	
	M	M	There are a small number of corrosion pinholes or cracks that could leak water and need to be repaired, but the entire length of pipe is still structurally sound and is not in danger of collapsing. Pipe shape may be ovalized in some locations but does not appear to be approaching a curvature reversal. A limited number of joints may have opened and soil loss may be beginning. Any open joints should be repaired prior to the next inspection. Corrugated metal pipes, if present, may be showing corrosion and pinholes but there are no areas with total section loss. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	<p>N21L_2017_p_0037: Station_1 69+00: 36" cast iron pipe is shown on plans. Inspection was unable to locate in field.: NA (A)</p> <p>N21L_2017_p_0060: Station_1 53+00: 24" RCP on left bank 900' downstream of Madison Street (Stevens Street) bridge (rated M in NYSDEC 19DEC13 pipe inspection).: Repair pipe to acceptable condition. (M)</p> <p>N21L_2017_p_0071: Station_1 50+00: Two 36" outfalls with flap gates.: NA (A)</p> <p>N21L_2017_p_0079: Station_1 44+00: 12" CMP repaired on right bank 250' downstream of Madison Street (Stevens Street) bridge.: NA (A)</p> <p>N21L_2017_p_0080: Station_1 43+00: Outfall on right bank in acceptable condition.: NA (A)</p> <p>N21L_2017_p_0101: Station_1 23+00: 36" CMP on left bank 475' upstream of Steel Sheet Pile Weir (rated A in NYSDEC 19DEC13 pipe inspection).: Maintain pipe and videotape inspect by 19DEC18. (A)</p> <p>N21L_2017_p_0103: Station_1 23+00: 48" CMP outlet on left bank riverside slope 515' upstream of Steel Sheet Pile Weir (rated A in NYSDEC 19DEC13 pipe inspection).: Maintain pipe and videotape inspect by 19DEC18. (A)</p> <p>N21L_2017_p_0104: Station_1 23+00: 48" CMP on left bank landside slope 515' upstream of Steel Sheet Pile Weir (rated A in NYSDEC 19DEC13 pipe inspection). Pipet does not have a trash rack to prevent obstructions from entering the pipe.: Maintain pipe and videotape inspect by 19DEC18. Recommend installing trash rack over opening to keep out debris and unauthorized access. (A)</p> <p>N21L_2017_p_0112: Station_1 13+00: 42" CMP outfall on left bank 325' upstream of Island Park Pedestrian Walkway Bridge (rated A in NYSDEC 19DEC13 pipe inspection).: Maintain pipe and videotape inspect by 19DEC18. (A)</p>
		U	Culvert has deterioration and/or has significant leakage; it is in danger of collapsing or as already begun to collapse. Corrugated metal pipes have suffered 100% section loss in the invert. HOWEVER: Even if pipes appear to be in good condition, as judged by an external visual inspection, an Unacceptable Rating will be assigned if the condition of pipes has not been verified using television camera video taping or visual inspection methods within the past five years, and reports for all pipes are not available for review by the inspector.	
		N/A	There are no discharge pipes/ culverts.	
		A	There are no breaks, holes, cracks in the discharge pipes/ culverts that would result in significant water leakage. The pipe shape is still essentially circular. All joints appear to be closed and the soil tight. Corrugated metal pipes, if present, are in good condition with 100% of the original coating still in place (either asphalt or galvanizing) or have been relined with appropriate material, which is still in good condition. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				N21L_2017_p_0118: Station_1 5+00: 36 inch CMP outfall on left bank just upstream of Wellsville, Addison, & Galetton Railroad railway rocks.: NA (A) N21L_2017_p_0123: Station_1 0+00: Unauthorized alteration (E-46a): 12" cast iron pipe on left bank 125' upstream of barrier levee weir.: Remove or submit Section 408 Alteration Request to USACE. (M)
10. Sluice / Slide Gates ⁵	A	A	Gates open and close freely to a tight seal or minor leakage. Gate operators are in good working condition and are properly maintained. Sill is free of sediment and other obstructions. Gates and lifters have been maintained and are free of corrosion. Documentation provided during the inspection.	N21L_2017_p_0059: Station_1 53+00: Gatewell on left bank 1,000' downstream of Madison Street (Stevens Street) bridge appears to be in good condition, not operated at time of FY17 Inspection.: NA (A) N21L_2017_p_0067: Station_1 49+00: Gatewell on left bank 550' downstream of Madison Street (Stevens Street) bridge in good condition, not operated at time of FY17 Inspection.: NA (A)
		M	Gates and/or operators have been damaged or have minor corrosion, and open and close with resistance or binding. Leakage quantity is controllable, but maintenance is required. Sill is free of sediment and other obstructions.	
		U	Gates do not open or close and/or operators do not function. Gate, stem, lifter and/or guides may be damaged or have major corrosion.	
		N/A	There are no sluice/ slide gates.	
11. Flap Gates/ Flap Valves/ Pinch Valves ¹	A	A	Gates/ valves open and close easily with minimal leakage, have no corrosion damage, and have been exercised and lubricated as required.	N21L_2017_p_0023: Station_1 82+00: 42" flap gate on left bank 900' upstream of Bolivar Road bridge exercised.: NA (A)
		M	Gates/ valves will not fully open or close because of obstructions that can be easily removed, or have minor corrosion damage that requires maintenance.	
		U	Gates/ valves are missing, have been damaged, or have deteriorated to the point that they need to be replaced.	
		N/A	There are no flap gates.	
12. Trash Racks (non-mechanical)	NA	A	Trash racks are fastened in place and properly maintained.	
		M	Trash racks are in place but are unfastened or have bent bars that allow debris to enter into the pipe or pump station, bars are corroded to the point that up to 10% of the sectional area may be lost. Repair or replacement is required.	
		U	Trash racks are missing or damaged to the extent that they are no longer functional and must be replaced. (For example, more than 10% of the sectional area may be lost.)	
		N/A	There are no trash racks, or they are covered in the pump stations section of the report.	
13. Other Metallic Items	NA	A	All metal parts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	
		M	Corrosion seen on metallic parts appears to be maintainable.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		U	Metallic parts are severely corroded and require replacement to prevent failure, equipment damage, or safety issues.	
		N/A	There are no other significant metallic items.	
14. Riprap Revetments of Inlet/ Discharge Areas	A	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	N21L_2017_p_0073: Station_1 48+00: Rusted 12" CMP and eroded concrete repaired with HDPE pipe on right bank 475' downstream of Madison Street (Stevens Street) bridge.: NA (A)
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
15. Revetments other than Riprap		A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There are no such revetments protecting this feature of the segment / system.	

¹ Proper operation of this item must be demonstrated during the inspection.

² The sponsor should be monitoring any observed movement to verify whether the movement is active or inactive.

³ Inspectors must have as-built drawings available during the inspection so that the lateral distance to the heel and toe of the floodwalls can be determined in the field.

⁴ The decision on whether or not USACE inspectors should enter a pipe to perform a detailed inspection must be made at the USACE District level. This decision should be made in conjunction with the District Safety Office, as pipes may be considered confined spaces. This decision should consider the age of the pipe, the diameter of the pipe, the apparent condition of the pipe, and the length of the pipe. If a pipe is entered for the purposes of inspection, the inspector should record observations with a video camera in order that the condition of the entire pipe, including all joints, can later be assessed. Additionally, the video record provides a baseline to which future inspections can be compared.

⁵ Proper operation of the gates (full open and closed) must be demonstrated during the inspection if no documentation is available. Be aware of both manual and electrical operators.

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	<p>Inspect ID: N21L_2017_p_0025 Title: USACE_CELRB_N21L_2017_p_0025_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Soft unwanted vegetation obstructing outfall on left bank 900' upstream of Bolivar Road bridge.; Action: Remove unwanted vegetation.; Station_1: 82+00</p>
	<p>Inspect ID: N21L_2017_p_0028 Title: USACE_CELRB_N21L_2017_p_0028_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: 24" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge is approx. 20% obstructed by minor sediment.; Action: Remove sediment obstruction.; Station_1: 75+00</p>



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	<p>Inspect ID: N21L_2017_p_0028 Title: USACE_CELRB_N21L_2017_p_0028_2.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: 24" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge is approx. 20% obstructed by minor sediment.; Action: Remove sediment obstruction.; Station_1: 75+00</p>
	<p>Inspect ID: N21L_2017_p_0070 Title: USACE_CELRB_N21L_2017_p_0070_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Trees and unwanted vegetation on ponding area fence.; Action: Remove trees and unwanted vegetation.; Station_1: 50+00; Station_2: 47+00</p>



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	<p>Inspect ID: N21L_2017_p_0105 Title: USACE_CELRB_N21L_2017_p_0105_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: 48" CMP inlet to culvert under Dyke Street access road on left bank obstructed by vegetation 500' upstream of Steel Sheet Pile Weir.; Action: Remove vegetation obstruction.; Station_1: 23+00</p>
	<p>Inspect ID: N21L_2017_p_0044 Title: USACE_CELRB_N21L_2017_p_0044_1.jpg Rated Item: 2. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (NEW) - 24" CMP encroachment on left bank channel side slope with flap gate. Pipe has not been videotape. Potentially causing 2" depression on levee crown.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 61+00</p>



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	<p>Inspect ID: N21L_2017_p_0044 Title: USACE_CELRB_N21L_2017_p_0044_2.jpg Rated Item: 2. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (NEW) - 24" CMP encroachment on left bank channel side slope with flap gate. Pipe has not been videotape. Potentially causing 2" depression on levee crown.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 61+00</p>
	<p>Inspect ID: N21L_2017_p_0060 Title: USACE_CELRB_N21L_2017_p_0060_1.jpg Rated Item: 9. Culverts/ Discharge Pipes Caption: Rating: Minimally Acceptable; Remarks: 24" RCP on left bank 900' downstream of Madison Street (Stevens Street) bridge (rated M in NYSDEC 19DEC13 pipe inspection).; Action: Repair pipe to acceptable condition.; Station_1: 53+00</p>



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Inspect ID: N21L_2017_p_0079 **Title:** USACE_CELRB_N21L_2017_p_0079_1.jpg
Rated Item: 9. Culverts/ Discharge Pipes **Caption:** Rating: Acceptable; Remarks: 12" CMP repaired on right bank 250' downstream of Madison Street (Stevens Street) bridge.; Action: NA; Station_1: 44+00





Inspect ID: N21L_2017_p_0101 **Title:** USACE_CELRB_N21L_2017_p_0101_1.jpg
Rated Item: 9. Culverts/ Discharge Pipes **Caption:** Rating: Acceptable; Remarks: 36" CMP on left bank 475' upstream of Steel Sheet Pile Weir (rated A in NYSDEC 19DEC13 pipe inspection).; Action: Maintain pipe and videotape inspect by 19DEC18.; Station_1: 23+00



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	<p>Inspect ID: N21L_2017_p_0104 Title: USACE_CELRB_N21L_2017_p_0104_1.jpg Rated Item: 9. Culverts/ Discharge Pipes Caption: Rating: Acceptable; Remarks: 48" CMP on left bank landside slope 515' upstream of Steel Sheet Pile Weir (rated A in NYSDEC 19DEC13 pipe inspection). Pipet does not have a trash rack to prevent obstructions from entering the pipe. ; Action: Maintain pipe and videotape inspect by 19DEC18. Recommend installing trash rack over opening to keep out debris and unauthorized access. ; Station_1: 23+00</p>
	<p>Inspect ID: N21L_2017_p_0123 Title: USACE_CELRB_N21L_2017_p_0123_1.jpg Rated Item: 9. Culverts/ Discharge Pipes Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-NEW) - 12" cast iron pipe on left bank 125' upstream of barrier levee weir.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00</p>



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Flood Damage Reduction Channels

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Vegetation and Obstructions	U	A	No obstructions, vegetation, debris, or sediment accumulation within the channel. Concrete channel joints and weep holes are free of grass and weeds.	N21L_2017_p_0002: Station_1 105+00: Station_2 104+00: Unwanted vegetation on left bank channel sideslope just downstream of golf course pedestrian bridge.: Remove unwanted vegetation. (M)
		M	Obstructions (including log jams), vegetation, debris, or sediment are minor and have not impaired channel flow capacity, but should be removed. Sediment shoals have not developed to the extent that they can support vegetation other than non-aquatic grasses. A limited volume of grass and weeds may be present in concrete channel joints and weep holes.	N21L_2017_p_0006: Station_1 100+00: Trees on right bank channel sideslope 900 feet downstream of Bolivar Street bridge.: Remove trees. (M)
		U	Obstructions (including log jams), vegetation, debris or sediment have impaired the channel flow capacity. Sediment shoals are well established and support woody and/or brushy vegetation. Sediment and debris removal required to re-establish flow capacity.	N21L_2017_p_0009: Station_1 96+00: Station_2 91+00: Unwanted vegetation (high grass) on left bank channel sideslope upstream of Bolivar Road bridge.: Remove unwanted vegetation. (M) N21L_2017_p_0010: Station_1 91+00: Vegetation in riprap on right bank around Bolivar Road bridge.: Remove vegetation from riprap. (M) N21L_2017_p_0011: Station_1 91+00: Unwanted heavy woody vegetation on right bank around Bolivar Road bridge.: Remove vegetation. (M) N21L_2017_p_0020: Station_1 85+00: Unauthorized alteration (E-5): Riverwalk kiosk on left bank channel crest.: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0022: Station_1 84+00: Station_2 44+00: Unwanted vegetation on both bank sideslopes from 750' upstream of Bolivar Road bridge to Madison Street bridge.: Remove unwanted vegetation. (M) N21L_2017_p_0038: Station_1 66+00: Vegetation in riprap on both banks around drop structure.: Remove vegetation in riprap. (M) N21L_2017_p_0039: Station_1 66+00: Tree debris in channel just downstream of Drop Structure.: Remove tree debris. (M) N21L_2017_p_0041: Station_1 65+00: Station_2 52+00: Vegetation in riprap on left bank 2,200' to 1,200' downstream of Madison Street (Stevens Street) bridge.: Remove vegetation from riprap. (U) N21L_2017_p_0077: Station_1 46+00: Station_2 44+00: Trees on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.: Remove trees. (M) N21L_2017_p_0087: Station_1 37+00: Significant unwanted vegetation and trees on left bank 400' downstream of State Street bridge.: Remove unwanted vegetation and trees. (U)

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				<p>N21L_2017_p_0095: Station_1 29+00: Station_2 11+00: Soft vegetation on right bank from Island Park to 500 feet upstream of Island Park pedestrian bridge.: Remove soft vegetation. (M)</p> <p>N21L_2017_p_0119: Station_1 6+00: Station_2 0+00: Unwanted woody vegetation in riprap on left bank starting 550' downstream of barrier levee weir up to barrier levee weir.: Remove unwanted woody vegetation. (M)</p> <p>N21L_2017_p_0120: Station_1 0+00: Weir structure at barrier levee ("barrier levee weir") at upstream end of project, clear of debris: NA (A)</p> <p>N21L_2017_p_0121: Station_1 0+00: Significant unwanted vegetation and trees on left bank 175' upstream of barrier levee weir.: Remove unwanted vegetation. (U)</p> <p>N21L_2017_p_0122: Station_1 0+00: Large tree debris in channel at downstream end of large shoal on right bank.: Remove tree debris. (M)</p> <p>N21L_2017_p_0129: Station_1 0+00: Station_2 0+00: Significant vegetation in riprap on right bank from upstream limit weir to 350' upstream of upstream limit weir.: Remove vegetation from riprap. (U)</p> <p>N21L_2017_p_0130: Station_1 0+00: Station_2 0+00: Significant unwanted vegetation on right bank sideslope from 400' downstream of upstream limit weir to upstream limit weir.: Remove unwanted vegetation. (U)</p> <p>N21L_2017_p_0133: Station_1 4+00: Station_2 0+00: Significant vegetation in riprap on right bank from 400' downstream of upstream limit weir to barrier levee weir.: Remove vegetation from riprap. (U)</p> <p>N21L_2017_p_0134: Station_1 0+00: Station_2 0+00: Significant woody vegetation in riprap on right bank from barrier levee weir to 500' upstream of barrier levee weir.: Remove vegetation from riprap. (U)</p>
2. Shoaling ¹ (sediment deposition)	U	A	No shoaling or minor, non-vegetated shoaling is present.	<p>N21L_2017_p_0001: Station_1 111+00: Station_2 106+00: Grassy shoal (S-1) along right bank from 225' to 700' downstream of golf course pedestrian bridge.: Remove shoaling. (M)</p> <p>N21L_2017_p_0005: Station_1 103+00: Station_2 92+00: Four alternating vegetated shoals (S-2, S-3, S-4, S-5) on both banks from green golf course pedestrian bridge to Bolivar Road bridge.: Remove shoals. (M)</p> <p>N21L_2017_p_0021: Station_1 83+00: Station_2 78+00:</p>
		M	More widespread vegetated and non-vegetated shoaling is present. Non-aquatic grasses are present on shoal. No trees or brush is present on shoal, and channel flow is not significantly reduced. Sediment and debris removal recommended.	
		U	Shoaling is well established, stabilized by saplings, brush, or other vegetation. Shoals are diverting flow to channel walls. Channel flow capacity is reduced and maintenance is required.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				Shoaling (S-6) along right bank from 750' to 1,300' upstream of Bolivar Road bridge (near K-mart Plaza):. Remove shoaling. (M) N21L_2017_p_0050: Station_1 60+00: Station_2 56+00: Shoal (S-7) on left bank toe, not part of as-built project (189-WEL-2/5):. Remove Shoal. (M) N21L_2017_p_0072: Station_1 49+00: Station_2 0+00: Minor shoaling (S-8) on left bank from 600' downstream of Madison Street (Stevens Street) bridge to State Street bridge.: Remove shoaling. (M) N21L_2017_p_0108: Station_1 17+00: Station_2 21+00: Shoal (S-9) along left bank toe from 450' downstream of Island Park pedestrian walkway bridge to Island Park Pedestrian Walkway Bridge.: Remove shoaling. (M) N21L_2017_p_0116: Station_1 3+00: Minor shoaling (S-10) downstream of barrier levee weir.limits to approx 600ft ds: Remove shoal. (M) N21L_2017_p_0127: Station_1 0+00: Significant vegetated shoal (S-11) and trees in channel on right bank from 100'-700' downstream of upstream limit weir.: Remove shoaling. (U) N21L_2017_p_0128: Station_1 0+00: Station_2 0+00: Significant vegetated shoaling (S-12) on right bank from 50' to 225' upstream of upstream limit weir.: Remove shoaling. (U) N21L_2017_p_0131: Station_1 0+00: Significant vegetated shoaling (S-13) with trees in center of channel just upstream of upstream limit weir.: Remove shoaling. (U)
3. Encroachments	U	A	No trash, debris, unauthorized structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the channel.	N21L_2017_p_0003: Station_1 104+00: Unauthorized alteration (E-1): New pump station building, riprap, intake pipe to pump station, and feeder pipes for golf course water just downstream of pedestrian bridge.: Submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0004: Station_1 104+00: Unauthorized alteration (E-2): Green golf course pedestrian bridge 1,250' downstream of Bolivar Road bridge. NYSDEC says permitted (need to verify):. Submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0008: Station_1 100+00: Station_2 93+00: Unauthorized alteration (E-3): Riprap on right bank toe from 300' upstream of pedestrian bridge to 300 feet downstream of Bolivar Street bridge.: Remove or submit Section 408
		M	Trash, debris, unauthorized structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	
		U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of the channel.	

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
			<p>Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0015: Station_1 92+00: Pending alteration: proposed recreational trail on right bank under bridge connecting Riverwalk trail to Bolivar Road. Currently processing Section 408 paperwork (as of 2/28/18): USACE is processing Section 408 Alteration Request. (A)</p> <p>N21L_2017_p_0017: Station_1 88+00: Unauthorized alteration (E-6): 42" outfall on left bank 300' upstream of Bolivar Road bridge (at Top's Plaza). NYSDEC says permitted.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0018: Station_1 90+00: Station_2 76+00: Unauthorized alteration (E-4): Sidewalk encroachment (benches and lightposts are not encroachments) along left bank from Bolivar road bridge to 1,775 feet upstream of Bolivar Road bridge.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0024: Station_1 82+00: Unauthorized alteration (E-7): 42" outfall on left bank 900' upstream of Bolivar Road bridge at K-Mart. NYSDEC says permitted.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0027: Station_1 77+00: Unauthorized alteration (E-8): Pet sign and post encroachment on left bank channel crest.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0029: Station_1 75+00: 24" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge (just downstream of gravel access drive).: (A)</p> <p>N21L_2017_p_0030: Station_1 75+00: Unauthorized alteration (E-10): Asphalt access drive and gate on left bank just downstream of Seneca Street.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0031: Station_1 74+00: Unauthorized alteration (E-11): Utility pole and 2 guy wires on left bank channel crest 1,700' upstream of Bolivar Road bridge (just upstream of asphalt drive).: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0032: Station_1 73+00: Unauthorized alteration (E-12): Guy wire for utility pole on left bank channel crest at Seneca Street (utility pole not an encroachment).: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0033: Station_1 72+00: Station_2 69+00:</p>

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
			<p>Unauthorized alteration (E-13): Misc. landscaping encroachments (plastic and wooden planter) 1,900' to 2,200' upstream of Bolivar Road bridge (92 Seneca Street). Unable to inspect because resident threatened inspection group with dog.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0035: Station_1 69+00: Vegetation obstructions in Chamberlain Street drainage channel to river.: Remove vegetation obstructions. (M)</p> <p>N21L_2017_p_0040: Station_1 65+00: Gage house on left bank 2,230' downstream of Madison Street (Stevens Street) bridge is in acceptable condition, part of project.: As-Built Drawing Number 189-WEL-2/5 (Sheet 8 of 13) (A)</p> <p>N21L_2017_p_0074: Station_1 46+00: Unauthorized alteration (E-26): Pearl Street bridge removed.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0075: Station_1 46+00: Unauthorized alteration (E-27): Pipe Line bridge just downstream of Steven Street bridge has been removed.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0076: Station_1 46+00: Station_2 44+00: Unauthorized alteration (E-28): Chain link fence on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0083: Station_1 36+00: Unauthorized alteration (E-35): Concrete siphon gatewell on right bank channel sideslope (across from school). NYSDEC says permitted.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0085: Station_1 38+00: Unauthorized alteration (E-32): Fence (covered in unwanted vegetation) 300' downstream of State Street bridge.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0086: Station_1 37+00: Unauthorized alteration (E-33): Wellsville High School rail, parking lot, and 2 signs on left bank levee downstream of State Street bridge. Blocks O&M access, per NYSDEC.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0088: Station_1 35+00: Unauthorized alteration (E-34): 2 utility poles 6 guy wires just downstream of State Street bridge (NYSDEC says permitted).: Submit Section 408 Alteration Request to USACE. (M)</p>

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
			<p>N21L_2017_p_0089: Station_1 34+00: Unauthorized alteration (E-36): 18" HDPE outfall and duck bill valve on left bank side slope just downstream of State Street bridge owned by NYSDOT. (NYSDEC says permitted): Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0098: Station_1 26+00: Unauthorized alteration (E-40): Unidentified drainage structure (metal man hole) on channel side slope on left bank, just upstream of Steel Sheet Pile Weir.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0099: Station_1 25+00: Unauthorized alteration (E-41): Wooden observation platform and fence on right bank 200' upstream of Steel Sheet Pile Weir.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0106: Station_1 21+00: Station_2 17+00: Unauthorized alteration (E-44): Riprap added on right bank toe at island park adjacent to parking area.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0109: Station_1 22+00: Unauthorized alteration (E-43): Parking lot and wooden post barrier on right bank in Island Park 500' upstream of Steel Sheet Pile Weir. Posts and wire rope restrict access.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0115: Station_1 0+00: Station_2 13+00: Unauthorized alteration (E-45): Wellsville, Addison, & Galetton Railroad gravel trailway (from Island Park pedestrian bridge to barrier levee weir) and signs on left bank near boulders blocking all access to channel crest.: Submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0117: Station_1 6+00: Unauthorized alteration (E-46): Wellsville, Addison, & Galetton Railroad trailway rocks obstructing access 575' downstream of barrier levee weir.: Remove or submit Section 408 Alteration Request to USACE. (U)</p> <p>N21L_2017_p_0125: Station_1 0+00: Minor debris on right bank at upstream limit weir.: Remove debris. (M)</p> <p>N21L_2017_p_0136: Station_1 0+00: Unauthorized alteration (E-47): Barbed wire fence and metal gate on right bank at upstream limit weir.: Remove or submit Section 408 Alteration Request to USACE. (M)</p> <p>N21L_2017_p_0140: Station_1 71+00: Unauthorized alteration (E-9): Stone along left bank channel crest at 82</p>

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				Seneca Street.: Remove or submit Section 408 Alteration Request to USACE. (M) N21L_2017_p_0141: Station_1 84+00: Station_2 68+00: Unauthorized alteration (E-47a): Riprap added to left bank channel toe.: Remove or submit Section 408 Alteration Request to USACE. (M)
4. Erosion	M	A	No head cutting or horizontal deviation observed.	N21L_2017_p_0007: Station_1 100+00: Erosion at two outfalls (36" and 24" diameter) on left bank 400' upstream of pedestrian bridge. Outfalls are not on plans-possible encroachment.: Repair erosion and modify pipe. (M) N21L_2017_p_0012: Station_1 96+00: Station_2 91+00: Sideslope erosion along left bank toe starting at Bolivar Road bridge and continuing 425' downstream.: Repair erosion. (M) N21L_2017_p_0013: Station_1 91+00: Sideslope erosion at left bank toe just upstream of Bolivar Road bridge: Repair erosion. (M) N21L_2017_p_0019: Station_1 88+00: Sideslope erosion at left bank toe at northern 42" outfall.: Repair erosion. (M) N21L_2017_p_0051: Station_1 60+00: Minor erosion on channel sideslope at 68 Chamberlain St.: Repair minor erosion. (M)
		M	Head cutting and horizontal deviation evident, but is less than 1 foot from the designed grade or cross section.	
		U	Head cutting and horizontal deviation of more than 1 foot from the designed grade or cross section. Corrective actions required to stop or slow erosion.	
5. Concrete Surfaces	A	A	Negligible spalling, scaling or cracking. If the concrete surface is weathered or holds moisture, it is still satisfactory but should be seal coated to prevent freeze/ thaw damage.	
		M	Spalling, scaling, and open cracking present, but the immediate integrity or performance of the structure is not threatened. Reinforcing steel may be exposed. Repairs/ sealing is necessary to prevent additional damage during periods of thawing and freezing.	
		U	Surface deterioration or deep cracks present that may result in an unreliable structure. Any surface deterioration that exposes the sheet piling or lies adjacent to monolith joints may indicate underlying reinforcement corrosion and is unacceptable.	
		N/A	There are no concrete items in the channel.	
6. Tilting, Sliding or Settlement of Concrete Structures ²	A	A	There are no significant areas of tilting, sliding, or settlement that would endanger the integrity of the structure.	
		M	There are areas of tilting, sliding, or settlement (either active or inactive) that need to be repaired. The maximum offset, either laterally or vertically, does not exceed 2 inches unless the movement can be shown to be no longer actively occurring. The integrity of the structure is not in danger.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		U	There are areas of tilting, sliding, or settlement (either active or inactive) that threaten the structure's integrity and performance. Any movement that has resulted in failure of the waterstop (possibly identified by daylight visible through the joint) is unacceptable. Differential movement of greater than 2 inches between any two adjacent monoliths, either laterally or vertically, is unacceptable unless it can be shown that the movement is no longer active. Also, if the floodwall is of I-wall construction, then any visible or measurable tilting of the wall toward the protected side that has created an open horizontal crack on the riverside base of a monolith is unacceptable.	
		N/A	There are no concrete items in the channel.	
7. Foundation of Concrete Structures ³	A	A	No active erosion, scouring, or bank caving that might endanger the structure's stability.	
		M	There are areas where the ground is eroding towards the base of the structure. Efforts need to be taken to slow and repair this erosion, but it is not judged to be close enough to the structure or to be progressing rapidly enough to affect structural stability before the next inspection. For the purposes of inspection, the erosion or scour is not closer to the riverside face of the wall than twice the floodwall's underground base width if the wall is of L-wall or T-wall construction; or if the wall is of sheetpile or I-wall construction, the erosion is not closer than twice the wall's visible height. Additionally, rate of erosion is such that the wall is expected to remain stable until the next inspection.	
		U	Erosion or bank caving observed that is closer to the wall than the limits described above, or is outside these limits but may lead to structural instabilities before the next inspection. Additionally, if the floodwall is of I-wall or sheetpile construction, the foundation is unacceptable if any turf, soil or pavement material got washed away from the landside of the I-wall as the result of a previous overtopping event.	
		N/A	There are no concrete items in the channel.	
8. Slab and Monolith Joints	A	A	The joint material is in good condition. The exterior joint sealant is intact and cracking/desiccation is minimal. Joint filler material and/or waterstop is not visible at any point.	
		M	The joint material has appreciable deterioration to the point where joint filler material and/or waterstop is visible in some locations. This needs to be repaired or replaced to prevent spalling and cracking during freeze/ thaw cycles, and to ensure water tightness of the joint.	
		U	The joint material is severely deteriorated or the concrete adjacent to the monolith joints has spalled and cracked, damaging the waterstop; in either case damage has occurred to the point where it is apparent that the joint is no longer watertight and will not provide the intended level of protection during a flood.	
		N/A	There are no concrete items in the channel.	
9. Flap Gates/ Flap Valves/	A	A	Gates/ valves open and close easily with minimal leakage, have no corrosion damage, and have been exercised and lubricated as required.	

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction



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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
Pinch Valves ⁴		M	Gates/ valves will not fully open or close because of obstructions that can be easily removed, or have minor corrosion damage that requires maintenance.	
		U	Gates/ valves are missing, have been damaged, or have deteriorated to the point that they need to be replaced.	
		N/A	There are no flap gates.	
10. Riprap Revetments & Banks	U	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	N21L_2017_p_0014: Station_1 91+00: Riprap missing or covered on left bank underneath Bolivar Road bridge (no rr on as built, possible alteration):. Replace or uncover missing riprap. (U) N21L_2017_p_0034: Station_1 72+00: Station_2 66+00: Vegetation in left bank riprap from 1,900' to 2,500' upstream of Bolivar Road bridge.: Remove vegetation from riprap. (U) N21L_2017_p_0042: Station_1 44+00: Station_2 64+00: Significant unwanted woody vegetation on left bank channel sideslopes from 2,200' downstream of the Madison Street (Stevens Street) bridge to the Madison Street bridge.: Remove unwanted vegetation. (U) N21L_2017_p_0052: Station_1 59+00: Station_2 56+00: Vegetation in riprap on right bank from 1,600' to 1,300' downstream of Madison Street (Stevens Street) bridge.: Remove vegetation from riprap. (M)
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
11. Revetments other than Riprap	A	A	Existing revetment protection is properly maintained, undamaged, and clearly visible.	N21L_2017_p_0062: Station_1 52+00: 15' x 3' concrete spalling repaired on right bank 975' downstream of Madison Street (Stevens Street) bridge.: NA (A) N21L_2017_p_0063: Station_1 52+00: Station_2 43+00: Minor unwanted vegetation removed from joints of right bank concrete channel surface from 900' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.: Remove unwanted vegetation. (A) N21L_2017_p_0078: Station_1 45+00: Cracking in concrete sideslope repaired on right bank 250' downstream of Madison Street (Stevens Street) bridge.: NA (A)
		M	Minor revetment displacement or deterioration that does not pose an immediate threat to the integrity of the levee. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant revetment displacement, deterioration, or exposure of bedding observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Revetment protection is hidden by dense brush and trees.	
		N/A	There are no such revetments protecting this feature of the segment / system.	

¹ If weather and flow conditions allow, inspectors should walk in the channel and probe shoal areas in order to estimate extent of blockage of the cross-sectional area where shoaling is present.

² The sponsor should be monitoring any observed movement to verify whether the movement is active or inactive.

³ Inspectors must have as-built drawings available during the inspection so that the lateral distance to the heel and toe of the floodwalls can be determined in the field.

⁴ Proper operation of this item must be demonstrated during the inspection.

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction





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	<p>Inspect ID: N21L_2017_p_0002 Title: USACE_CELRB_N21L_2017_p_0002_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation on left bank channel sideslope just downstream of golf course pedestrian bridge.; Action: Remove unwanted vegetation.; Station_1: 105+00; Station_2: 104+00</p>
	<p>Inspect ID: N21L_2017_p_0006 Title: USACE_CELRB_N21L_2017_p_0006_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Trees on right bank channel sideslope 900 feet downstream of Bolivar Street bridge.; Action: Remove trees.; Station_1: 100+00</p>



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	<p>Inspect ID: N21L_2017_p_0009 Title: USACE_CELRB_N21L_2017_p_0009_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation on left bank channel sideslope upstream of Bolivar Road bridge.; Action: Remove unwanted vegetation.; Station_1: 96+00; Station_2: 91+00</p>
	<p>Inspect ID: N21L_2017_p_0010 Title: USACE_CELRB_N21L_2017_p_0010_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Vegetation in riprap on right bank around Bolivar Road bridge.; Action: Remove vegetation from riprap.; Station_1: 91+00</p>



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Inspect ID: N21L_2017_p_0010 **Title:** USACE_CELRB_N21L_2017_p_0010_2.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation in riprap on right bank around Bolivar Road bridge.; **Action:** Remove vegetation from riprap.; **Station_1:** 91+00





Inspect ID: N21L_2017_p_0011 **Title:** USACE_CELRB_N21L_2017_p_0011_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Unwanted heavy woody vegetation on right bank around Bolivar Road bridge.; **Action:** Remove vegetation.; **Station_1:** 91+00



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	<p>Inspect ID: N21L_2017_p_0011 Title: USACE_CELRB_N21L_2017_p_0011_2.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unwanted heavy woody vegetation on right bank around Bolivar Road bridge.; Action: Remove vegetation.; Station_1: 91+00</p>
	<p>Inspect ID: N21L_2017_p_0020 Title: USACE_CELRB_N21L_2017_p_0020_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-5) - Riverwalk kiosk on left bank channel crest.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 85+00</p>





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	<p>Inspect ID: N21L_2017_p_0022 Title: USACE_CELRB_N21L_2017_p_0022_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation on both bank sideslopes from 750' upstream of Bolivar Road bridge to Madison Street bridge.; Action: Remove unwanted vegetation.; Station_1: 84+00; Station_2: 44+00</p>
	<p>Inspect ID: N21L_2017_p_0022 Title: USACE_CELRB_N21L_2017_p_0022_2.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation on both bank sideslopes from 750' upstream of Bolivar Road bridge to Madison Street bridge.; Action: Remove unwanted vegetation.; Station_1: 84+00; Station_2: 44+00</p>





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	<p>Inspect ID: N21L_2017_p_0022 Title: USACE_CELRB_N21L_2017_p_0022_3.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation on both bank sideslopes from 750' upstream of Bolivar Road bridge to Madison Street bridge.; Action: Remove unwanted vegetation.; Station_1: 84+00; Station_2: 44+00</p>
	<p>Inspect ID: N21L_2017_p_0038 Title: USACE_CELRB_N21L_2017_p_0038_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Vegetation in riprap on both banks around Drop Structure; Action: Remove vegetation in riprap.; Station_1: 66+00</p>



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	<p>Inspect ID: N21L_2017_p_0039 Title: USACE_CELRB_N21L_2017_p_0039_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Tree debris in channel just downstream of Drop Structure.; Action: Remove tree debris.; Station_1: 66+00</p>
	<p>Inspect ID: N21L_2017_p_0041 Title: USACE_CELRB_N21L_2017_p_0041_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Vegetation in riprap on left bank 2,200' to 1,200' downstream of Madison Street (Stevens Street) bridge.; Action: Remove vegetation from riprap.; Station_1: 65+00; Station_2: 52+00</p>



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	<p>Inspect ID: N21L_2017_p_0077 Title: USACE_CELRB_N21L_2017_p_0077_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Trees on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.; Action: Remove trees.; Station_1: 46+00; Station_2: 44+00</p>
	<p>Inspect ID: N21L_2017_p_0087 Title: USACE_CELRB_N21L_2017_p_0087_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Significant unwanted vegetation and trees on left bank 400' downstream of State Street bridge.; Action: Remove unwanted vegetation and trees.; Station_1: 37+00</p>



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Inspect ID: N21L_2017_p_0087 **Title:** USACE_CELRB_N21L_2017_p_0087_2.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Unacceptable; Remarks: Significant unwanted vegetation and trees on left bank 400' downstream of State Street bridge.; Action: Remove unwanted vegetation and trees.; Station_1: 37+00



Inspect ID: N21L_2017_p_0087 **Title:** USACE_CELRB_N21L_2017_p_0087_3.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Unacceptable; Remarks: Significant unwanted vegetation and trees on left bank 400' downstream of State Street bridge.; Action: Remove unwanted vegetation and trees.; Station_1: 37+00



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Inspect ID: N21L_2017_p_0095 **Title:** USACE_CELRB_N21L_2017_p_0095_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Soft vegetation on right bank from Island Park to 500 feet upstream of Island Park pedestrian bridge.; **Action:** Remove soft vegetation.; **Station_1:** 29+00; **Station_2:** 11+00



Inspect ID: N21L_2017_p_0095 **Title:** USACE_CELRB_N21L_2017_p_0095_2.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Soft vegetation on right bank from Island Park to 500 feet upstream of Island Park pedestrian bridge.; **Action:** Remove soft vegetation.; **Station_1:** 29+00; **Station_2:** 11+00



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Inspect ID: N21L_2017_p_0095 **Title:** USACE_CELRB_N21L_2017_p_0095_3.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Soft vegetation on right bank from Island Park to 500 feet upstream of Island Park pedestrian bridge.; **Action:** Remove soft vegetation.; **Station_1:** 29+00; **Station_2:** 11+00



Inspect ID: N21L_2017_p_0119 **Title:** USACE_CELRB_N21L_2017_p_0119_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Unwanted woody vegetation in riprap on left bank starting 550' downstream of barrier levee weir up to barrier levee weir.; **Action:** Remove unwanted woody vegetation.; **Station_1:** 6+00; **Station_2:** 0+00




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	<p>Inspect ID: N21L_2017_p_0119 Title: USACE_CELRB_N21L_2017_p_0119_2.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Unwanted woody vegetation in riprap on left bank starting 550' downstream of barrier levee weir up to barrier levee weir.; Action: Remove unwanted woody vegetation.; Station_1: 6+00; Station_2: 0+00</p>
	<p>Inspect ID: N21L_2017_p_0121 Title: USACE_CELRB_N21L_2017_p_0121_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Significant unwanted vegetation and trees on left bank 175' upstream of barrier levee weir.; Action: Remove unwanted vegetation.; Station_1: 0+00</p>



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Inspect ID: N21L_2017_p_0122 **Title:** USACE_CELRB_N21L_2017_p_0122_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Large tree debris in channel at downstream end of large shoal.; **Action:** Remove tree debris.; **Station_1:** 0+00



Inspect ID: N21L_2017_p_0129 **Title:** USACE_CELRB_N21L_2017_p_0129_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Unacceptable; **Remarks:** Significant vegetation in riprap on right bank from upstream limit weir to 350' upstream of upstream limit weir.; **Action:** Remove vegetation from riprap.; **Station_1:** 0+00; **Station_2:** 0+00





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	<p>Inspect ID: N21L_2017_p_0130 Title: USACE_CELRB_N21L_2017_p_0130_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Significant unwanted vegetation on right bank sideslope from 400' downstream of upstream limit weir to upstream limit weir.; Action: Remove unwanted vegetation.; Station_1: 0+00; Station_2: 0+00</p>
	<p>Inspect ID: N21L_2017_p_0133 Title: USACE_CELRB_N21L_2017_p_0133_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Significant vegetation in riprap on right bank from 400' downstream of upstream limit weir to barrier levee weir.; Action: Remove vegetation from riprap.; Station_1: 4+00; Station_2: 0+00</p>



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	<p>Inspect ID: N21L_2017_p_0134 Title: USACE_CELRB_N21L_2017_p_0134_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Significant woody vegetation in riprap on right bank from barrier levee weir to 500' upstream of barrier levee weir.; Action: Remove vegetation from riprap.; Station_1: 0+00; Station_2: 0+00</p>
	<p>Inspect ID: N21L_2017_p_0001 Title: USACE_CELRB_N21L_2017_p_0001_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Grassy shoal (S-1) along right bank from 225' to 700' downstream of golf course pedestrian bridge.; Action: Remove shoaling.; Station_1: 111+00; Station_2: 106+00</p>





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	<p>Inspect ID: N21L_2017_p_0005 Title: USACE_CELRB_N21L_2017_p_0005_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Four alternating vegetated shoals (S-2, S-3, S-4, S-5) on both banks from green golf course pedestrian bridge to Bolivar Road bridge.; Action: Remove shoals.; Station_1: 103+00; Station_2: 92+00</p>
	<p>Inspect ID: N21L_2017_p_0005 Title: USACE_CELRB_N21L_2017_p_0005_2.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Four alternating vegetated shoals (S-2, S-3, S-4, S-5) on both banks from green golf course pedestrian bridge to Bolivar Road bridge.; Action: Remove shoals.; Station_1: 103+00; Station_2: 92+00</p>





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	<p>Inspect ID: N21L_2017_p_0005 Title: USACE_CELRB_N21L_2017_p_0005_3.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Four alternating vegetated shoals (S-2, S-3, S-4, S-5) on both banks from green golf course pedestrian bridge to Bolivar Road bridge.; Action: Remove shoals.; Station_1: 103+00; Station_2: 92+00</p>
	<p>Inspect ID: N21L_2017_p_0021 Title: USACE_CELRB_N21L_2017_p_0021_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Shoaling (S-6) along right bank from 750' to 1,300' upstream of Bolivar Road bridge (near K-mart Plaza).; Action: Remove shoaling.; Station_1: 83+00; Station_2: 78+00</p>



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Inspect ID: N21L_2017_p_0050 **Title:** USACE_CELRB_N21L_2017_p_0050_1.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Minimally Acceptable;
Remarks: Shoal (S-7) on left bank toe, not part of as-built project (189-WEL-2/5).;
Action: Remove Shoal.; Station_1: 60+00; Station_2: 56+00



Inspect ID: N21L_2017_p_0072 **Title:** USACE_CELRB_N21L_2017_p_0072_1.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Minimally Acceptable;
Remarks: Minor shoaling (S-8) on left bank from 600' downstream of Madison Street (Stevens Street) bridge to State Street bridge.; **Action:** Remove shoaling.; Station_1: 49+00; Station_2: 0+00



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	<p>Inspect ID: N21L_2017_p_0072 Title: USACE_CELRB_N21L_2017_p_0072_2.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Minor shoaling (S-8) on left bank from 600' downstream of Madison Street (Stevens Street) bridge to State Street bridge.; Action: Remove shoaling.; Station_1: 49+00; Station_2: 0+00</p>
	<p>Inspect ID: N21L_2017_p_0108 Title: USACE_CELRB_N21L_2017_p_0108_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Shoaling (S-9) along left bank toe from 450' downstream of Island Park pedestrian walkway bridge to Island Park Pedestrian Walkway Bridge.; Action: Remove shoaling.; Station_1: 17+00; Station_2: 21+00</p>



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Inspect ID: N21L_2017_p_0116 **Title:** USACE_CELRB_N21L_2017_p_0116_1.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Minimally Acceptable;
Remarks: Minor shoaling (S-10) downstream of barrier levee weir.limits to approx 600ft
ds; **Action:** Remove shoal.; **Station_1:** 3+00



Inspect ID: N21L_2017_p_0127 **Title:** USACE_CELRB_N21L_2017_p_0127_1.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Unacceptable;
Remarks: Significant vegetated shoal (S-11) and trees in channel on right bank from 100'-
700' downstream of upstream limit weir.; **Action:** Remove shoaling.; **Station_1:** 0+00



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Inspect ID: N21L_2017_p_0127 **Title:** USACE_CELRB_N21L_2017_p_0127_2.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Unacceptable;
Remarks: Significant vegetated shoal (S-11) and trees in channel on right bank from 100'-700' downstream of upstream limit weir.; **Action:** Remove shoaling.; **Station_1:** 0+00



Inspect ID: N21L_2017_p_0128 **Title:** USACE_CELRB_N21L_2017_p_0128_1.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Unacceptable;
Remarks: Significant vegetated shoaling (S-12) on right bank from 50' to 225' upstream of upstream limit weir.; **Action:** Remove shoaling.; **Station_1:** 0+00; **Station_2:** 0+00



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Inspect ID: N21L_2017_p_0131 **Title:** USACE_CELRB_N21L_2017_p_0131_1.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Unacceptable;
Remarks: Significant vegetated shoaling (S-13) with trees in center of channel just upstream of upstream limit weir.; **Action:** Remove shoaling.; **Station_1:** 0+00



Inspect ID: N21L_2017_p_0003 **Title:** USACE_CELRB_N21L_2017_p_0003_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; **Remarks:** Unauthorized Alteration (A-1) - New pump station building, riprap, intake pipe to pump station, and feeder pipes for golf course water just downstream of pedestrian bridge.; **Action:** Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; **Station_1:** 104+00



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Inspect ID: N21L_2017_p_0003 **Title:** USACE_CELRB_N21L_2017_p_0003_2.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-1) - New pump station building, riprap, intake pipe to pump station, and feeder pipes for golf course water just downstream of pedestrian bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 104+00



Inspect ID: N21L_2017_p_0004 **Title:** USACE_CELRB_N21L_2017_p_0004_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-2) - Green golf course pedestrian bridge 1,250' downstream of Boliver Road bridge. NYSDEC says permitted (need to verify).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 104+00



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	<p>Inspect ID: N21L_2017_p_0008 Title: USACE_CELRB_N21L_2017_p_0008_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-3) - Riprap on right bank toe from 300' upstream of pedestrian bridge to 300 feet downstream of Bolivar Street bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 100+00; Station_2: 93+00</p>
	<p>Inspect ID: N21L_2017_p_0015 Title: USACE_CELRB_N21L_2017_p_0015_1.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: Pending Alteration - proposed recreational trail on right bank under bridge connecting Riverwalk trail to Bolivar Road. Currently processing Section 408 paperwork (as of 1/4/17); Action: NA; Station_1: 92+00</p>



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	<p>Inspect ID: N21L_2017_p_0015 Title: USACE_CELRB_N21L_2017_p_0015_2.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: Pending Alteration - proposed recreational trail on right bank under bridge connecting Riverwalk trail to Bolivar Road. Currently processing Section 408 paperwork (as of 1/4/17); Action: NA; Station_1: 92+00</p>
	<p>Inspect ID: N21L_2017_p_0017 Title: USACE_CELRB_N21L_2017_p_0017_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-6) - 42" outfall on left bank 300' upstream of Bolivar Road bridge (at Top's Plaza). NYSDEC says permitted.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 88+00</p>



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Inspect ID: N21L_2017_p_0018 **Title:** USACE_CELRB_N21L_2017_p_0018_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-4) - Sidewalk encroachment (benches and lightposts are not encroachments) along left bank from Bolivar road bridge to 1,775 feet upstream of Bolivar Road bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 90+00; Station_2: 76+00



Inspect ID: N21L_2017_p_0018 **Title:** USACE_CELRB_N21L_2017_p_0018_2.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-4) - Sidewalk encroachment (benches and lightposts are not encroachments) along left bank from Bolivar road bridge to 1,775 feet upstream of Bolivar Road bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 90+00; Station_2: 76+00



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Inspect ID: N21L_2017_p_0024 **Title:** USACE_CELRB_N21L_2017_p_0024_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-7) - 42" outfall on left bank 900' upstream of Bolivar Road bridge at K-Mart. NYSDEC says permitted.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 82+00



Inspect ID: N21L_2017_p_0027 **Title:** USACE_CELRB_N21L_2017_p_0027_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-8) - Pet sign and post encroachment on left bank channel crest.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 77+00



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	<p>Inspect ID: N21L_2017_p_0029 Title: USACE_CELRB_N21L_2017_p_0029_1.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: 24" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge (just downstream of gravel access drive). ; Action: ; Station_1: 75+00</p>
	<p>Inspect ID: N21L_2017_p_0029 Title: USACE_CELRB_N21L_2017_p_0029_2.jpg Rated Item: 3. Encroachments Caption: Rating: Acceptable; Remarks: 24" CMP outfall on left bank 1,600' upstream of Bolivar Road bridge (just downstream of gravel access drive). ; Action: ; Station_1: 75+00</p>





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	<p>Inspect ID: N21L_2017_p_0030 Title: USACE_CELRB_N21L_2017_p_0030_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-10) - Asphalt access drive and gate on left bank just downstream of Seneca Street.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 75+00</p>
	<p>Inspect ID: N21L_2017_p_0031 Title: USACE_CELRB_N21L_2017_p_0031_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-11) - Utility pole and 2 guy wires on left bank channel crest 1,700' upstream of Boliver Road bridge (just upstream of asphalt drive).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 74+00</p>



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	<p>Inspect ID: N21L_2017_p_0032 Title: USACE_CELRB_N21L_2017_p_0032_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-12) - Guy wire for utility pole on left bank channel crest at Seneca Street (utility pole not an encroachment).; Action: Submit Section 408 Alteration Request or remove unauthorized alteration.; Station_1: 73+00</p>
	<p>Inspect ID: N21L_2017_p_0035 Title: USACE_CELRB_N21L_2017_p_0035_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Vegetation obstructions in Chamberlain Street drainage channel to river.; Action: Remove vegetation obstructions.; Station_1: 69+00</p>



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Inspect ID: N21L_2017_p_0040 **Title:** USACE_CELRB_N21L_2017_p_0040_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-14) - Gage house on left bank 2,230' downstream of Madison Street (Stevens Street) bridge is in acceptable condition (NYSDEC says part of project, need to verify).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 65+00



Inspect ID: N21L_2017_p_0040 **Title:** USACE_CELRB_N21L_2017_p_0040_2.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-14) - Gage house on left bank 2,230' downstream of Madison Street (Stevens Street) bridge is in acceptable condition (NYSDEC says part of project, need to verify).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 65+00



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C-87

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Inspect ID: N21L_2017_p_0074 **Title:** USACE_CELRB_N21L_2017_p_0074_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks:
Unauthorized Aleteration (A-26) - Pearl Street bridge removed.; Action: Submit Section
408 Alteration Request to USACE.; Station_1: 46+00



Inspect ID: N21L_2017_p_0075 **Title:** USACE_CELRB_N21L_2017_p_0075_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks:
Unauthorized Alteration (A-27) - Pipe Line bridge just downstream of Steven Street
bridge.; Action: Submit Section 408 Alteration Request to USACE.; Station_1: 46+00



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	<p>Inspect ID: N21L_2017_p_0076 Title: USACE_CELRB_N21L_2017_p_0076_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-28) - Chain link fence on left bank channel crest from 250' downstream of Madison Street (Stevens Street) bridge to Madison Street bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 46+00; Station_2: 44+00</p>
	<p>Inspect ID: N21L_2017_p_0083 Title: USACE_CELRB_N21L_2017_p_0083_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-35) - Concrete siphon gatewell on right bank channel sideslope (across from school). NYSDEC says permitted.; Action: Submit Section 408 Alteration Request to USACE.; Station_1: 36+00</p>



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Inspect ID: N21L_2017_p_0085 **Title:** USACE_CELRB_N21L_2017_p_0085_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-32) - Fence (covered in unwanted vegetation) 300' downstream of State Street bridge .; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 38+00



Inspect ID: N21L_2017_p_0086 **Title:** USACE_CELRB_N21L_2017_p_0086_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-33) - Wellsville High School rail, parking lot, and 2 signs on left bank levee downstream of State Street bridge. Blocks O&M access, per NYSDEC.; Action: Submit Section 408 Alteration Request Form to USACE.; Station_1: 37+00



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Inspect ID: N21L_2017_p_0088 **Title:** USACE_CELRB_N21L_2017_p_0088_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-34) - 2 utility poles 6 guy wires just downstream of State Street bridge (NYSDEC says permitted).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 35+00





Inspect ID: N21L_2017_p_0089 **Title:** USACE_CELRB_N21L_2017_p_0089_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-36) - 18" HDPE outfall and duck bill valve on left bank side slope just downstream of State Street bridge owned by NYSDOT. (NYSDEC says permitted); Action: Submit Section 408 Alteration Request to USACE; Station_1: 34+00



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	<p>Inspect ID: N21L_2017_p_0098 Title: USACE_CELRB_N21L_2017_p_0098_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-40) - Unidentified drainage structure (metal man hole) on channel side slope on left bank, just upstream of Steel Sheet Pile Weir.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 26+00</p>
	<p>Inspect ID: N21L_2017_p_0099 Title: USACE_CELRB_N21L_2017_p_0099_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-41) - Wooden observation platform and fence on right bank 200' upstream of Steel Sheet Pile Weir.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 25+00</p>



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Inspect ID: N21L_2017_p_0106 **Title:** USACE_CELRB_N21L_2017_p_0106_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-44) - Riprap added on right bank toe at island park adjacent to parking area.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 21+00; Station_2: 17+00



Inspect ID: N21L_2017_p_0109 **Title:** USACE_CELRB_N21L_2017_p_0109_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-43) - Parking lot and wooden post barrier on right bank in Island Park 500' upstream of Steel Sheet Pile Weir. Posts and wire rope restrict access.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 22+00



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	<p>Inspect ID: N21L_2017_p_0115 Title: USACE_CELRB_N21L_2017_p_0115_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-45) - Wellsville, Addison, & Galetton Railroad gravel trailway (from Island Park pedestrian bridge to barrier levee weir) and signs on left bank near boulders blocking all access to channel crest.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00; Station_2: 13+00</p>
	<p>Inspect ID: N21L_2017_p_0117 Title: USACE_CELRB_N21L_2017_p_0117_1.jpg Rated Item: 3. Encroachments Caption: Rating: Unacceptable; Remarks: Unauthorized Alteration (A-46) - Wellsville, Addison, & Galetton Railroad trailway rocks obstructing access 575' downstream of barrier levee weir.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 6+00</p>



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Inspect ID: N21L_2017_p_0125 **Title:** USACE_CELRB_N21L_2017_p_0125_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Minor debris on right bank at upstream limit weir.; Action: Remove debris.; Station_1: 0+00



Inspect ID: N21L_2017_p_0136 **Title:** USACE_CELRB_N21L_2017_p_0136_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-47) - Barbed wire fence and metal gate on right bank at upstream limit weir.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00



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Inspect ID: N21L_2017_p_0141 **Title:** USACE_CELRB_N21L_2017_p_0141_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-NEW) - Riprap added to left bank channel toe.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 84+00; Station_2: 68+00



Inspect ID: N21L_2017_p_0141 **Title:** USACE_CELRB_N21L_2017_p_0141_2.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-NEW) - Riprap added to left bank channel toe.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 84+00; Station_2: 68+00



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	<p>Inspect ID: N21L_2017_p_0007 Title: USACE_CELRB_N21L_2017_p_0007_1.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Erosion at two outfalls (36" and 24" diameter) on left bank 400' upstream of pedestrian bridge. Outfalls are not on plans-possible encroachment.; Action: Repair erosion and modify pipe.; Station_1: 100+00</p>
	<p>Inspect ID: N21L_2017_p_0007 Title: USACE_CELRB_N21L_2017_p_0007_2.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Erosion at two outfalls (36" and 24" diameter) on left bank 400' upstream of pedestrian bridge. Outfalls are not on plans-possible encroachment.; Action: Repair erosion and modify pipe.; Station_1: 100+00</p>



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Inspect ID: N21L_2017_p_0007 **Title:** USACE_CELRB_N21L_2017_p_0007_3.jpg
Rated Item: 4. Erosion **Caption:** Rating: Minimally Acceptable; Remarks: Erosion at two outfalls (36" and 24" diameter) on left bank 400' upstream of pedestrian bridge. Outfalls are not on plans-possible encroachment.; Action: Repair erosion and modify pipe.; Station_1: 100+00



Inspect ID: N21L_2017_p_0007 **Title:** USACE_CELRB_N21L_2017_p_0007_4.jpg
Rated Item: 4. Erosion **Caption:** Rating: Minimally Acceptable; Remarks: Erosion at two outfalls (36" and 24" diameter) on left bank 400' upstream of pedestrian bridge. Outfalls are not on plans-possible encroachment.; Action: Repair erosion and modify pipe.; Station_1: 100+00



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	<p>Inspect ID: N21L_2017_p_0012 Title: USACE_CELRB_N21L_2017_p_0012_1.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Sideslope erosion along left bank toe starting at Bolivar Road bridge and continuing 425' downstream.; Action: Repair erosion.; Station_1: 96+00; Station_2: 91+00</p>
	<p>Inspect ID: N21L_2017_p_0012 Title: USACE_CELRB_N21L_2017_p_0012_2.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Sideslope erosion along left bank toe starting at Bolivar Road bridge and continuing 425' downstream.; Action: Repair erosion.; Station_1: 96+00; Station_2: 91+00</p>



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	<p>Inspect ID: N21L_2017_p_0013 Title: USACE_CELRB_N21L_2017_p_0013_1.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Sideslope erosion at left bank toe just upstream of Bolivar Road bridge; Action: Repair erosion.; Station_1: 91+00</p>
	<p>Inspect ID: N21L_2017_p_0019 Title: USACE_CELRB_N21L_2017_p_0019_1.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Sideslope erosion at left bank toe at northern 42" outfall.; Action: Repair erosion.; Station_1: 88+00</p>



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	<p>Inspect ID: N21L_2017_p_0019 Title: USACE_CELRB_N21L_2017_p_0019_2.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Sideslope erosion at left bank toe at northern 42" outfall.; Action: Repair erosion.; Station_1: 88+00</p>
	<p>Inspect ID: N21L_2017_p_0051 Title: USACE_CELRB_N21L_2017_p_0051_1.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Minor erosion on channel sideslope at 68 Chamberlain St.; Action: Repair minor erosion.; Station_1: 60+00</p>



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Inspect ID: N21L_2017_p_0014 **Title:** USACE_CELRB_N21L_2017_p_0014_1.jpg
Rated Item: 10. Riprap Revetments & Banks **Caption:** Rating: Unacceptable; Remarks: no rr on as built - Riprap missing or covered on left bank underneath Bolivar Road bridge.; Action: Replace or uncover missing riprap.; Station_1: 91+00



Inspect ID: N21L_2017_p_0014 **Title:** USACE_CELRB_N21L_2017_p_0014_2.jpg
Rated Item: 10. Riprap Revetments & Banks **Caption:** Rating: Unacceptable; Remarks: no rr on as built - Riprap missing or covered on left bank underneath Bolivar Road bridge.; Action: Replace or uncover missing riprap.; Station_1: 91+00



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	<p>Inspect ID: N21L_2017_p_0034 Title: USACE_CELRB_N21L_2017_p_0034_1.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Vegetation in left bank riprap from 1,900' to 2,500' upstream of Bolivar Road bridge.; Action: Remove vegetation from riprap.; Station_1: 72+00; Station_2: 66+00</p>
	<p>Inspect ID: N21L_2017_p_0034 Title: USACE_CELRB_N21L_2017_p_0034_2.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Vegetation in left bank riprap from 1,900' to 2,500' upstream of Bolivar Road bridge.; Action: Remove vegetation from riprap.; Station_1: 72+00; Station_2: 66+00</p>





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	<p>Inspect ID: N21L_2017_p_0042 Title: USACE_CELRB_N21L_2017_p_0042_1.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Significant unwanted woody vegetation on left bank channel sideslopes from 2,200' downstream of the Madison Street (Stevens Street) bridge to the Madison Street bridge.; Action: Remove unwanted vegetation.; Station_1: 44+00; Station_2: 64+00</p>
	<p>Inspect ID: N21L_2017_p_0052 Title: USACE_CELRB_N21L_2017_p_0052_1.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Minimally Acceptable; Remarks: Vegetation in riprap on right bank from 1,600' to 1,300' downstream of Madison Street (Stevens Street) bridge.; Action: Remove vegetation from riprap.; Station_1: 59+00; Station_2: 56+00</p>



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Attachment “D” – Left Bank and Channel:
Levee Inspection Map



Levee Inspection Map

Genesee River - Left Bank and Channel, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Routine
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix:
USACE_CELRB_N21L_2017_p
Map created: 21 September 2018

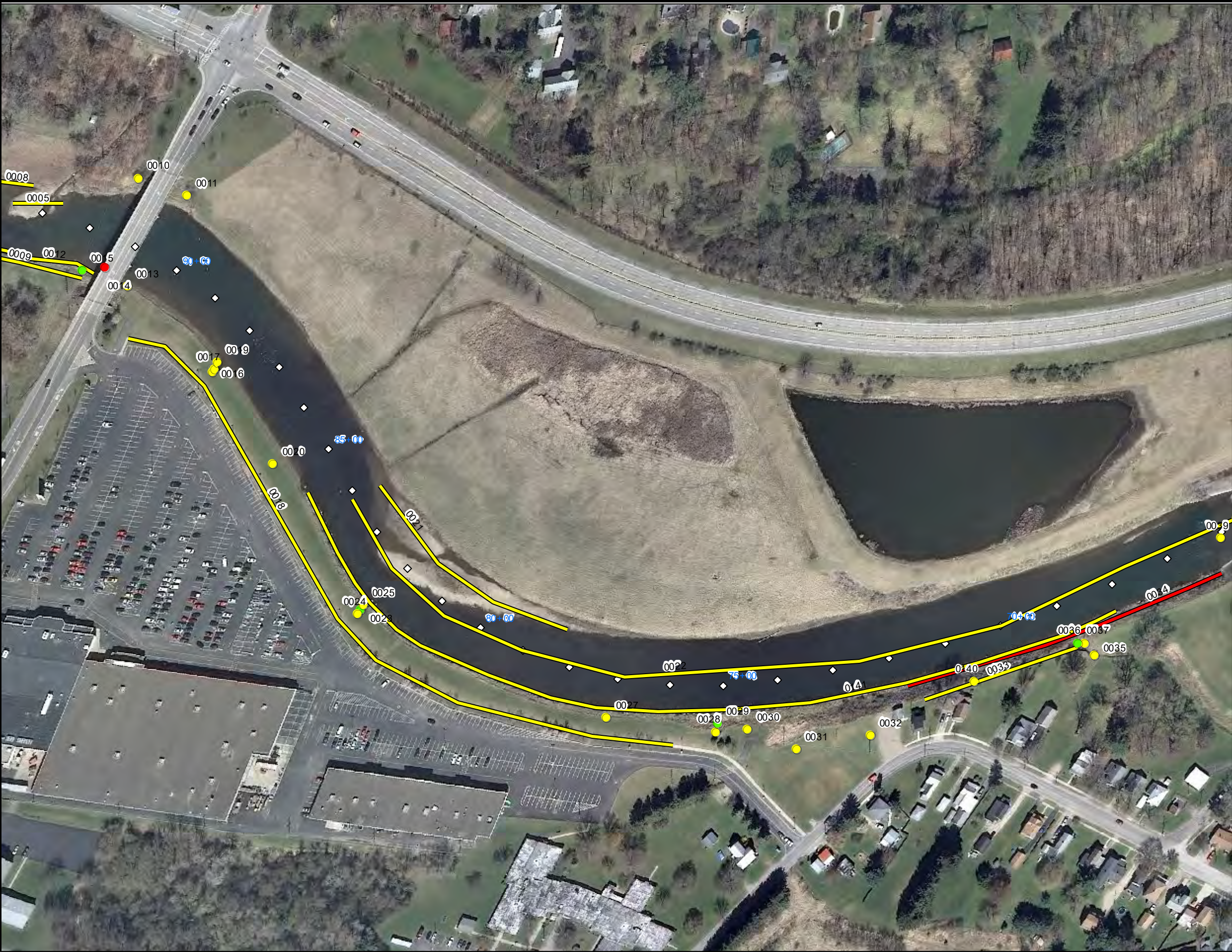
- Observation Points**
- Acceptable
 - Minimally Acceptable
 - Unacceptable
 - Not Applicable
- Observation Lines**
- Acceptable
 - Minimally Acceptable
 - Unacceptable
 - Not Applicable

0 230 460 Feet



Allegany New York

Potter Pennsylvania



Levee Inspection Map

Genesee River - Left Bank and Channel, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Routine
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix:
USACE_CELRB_N21L_2017_p
Map created: 21 September 2018

Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

0 230 460 Feet



Allegany New York

Potter Pennsylvania



Levee Inspection Map

Genesee River - Left Bank and Channel, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Routine
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix: USACE_CELRB_N21L_2017_p
Map created: 21 September 2018



Observation Points

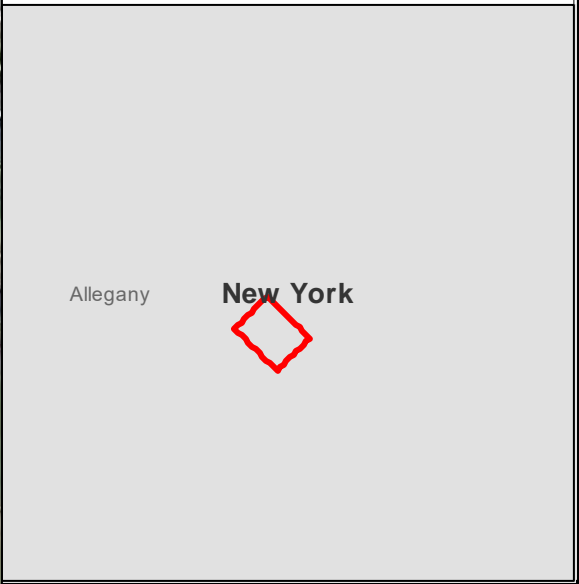
- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable





0 230 460 Feet









Genesee River - Left Bank and Channel, Wellsville

Observation Points

-  Acceptable
-  Minimally Acceptable
-  Unacceptable
-  Not Applicable

Observation Lines

-  Acceptable
-  Minimally Acceptable
-  Unacceptable
-  Not Applicable



US Army Corps
of Engineers





Levee Inspection Map

Genesee River - Left Bank and Channel, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Routine
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix: USACE_CELRB_N21L_2017_p
Map created: 21 September 2018

Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

0 230 460 Feet

US Army Corps of Engineers

N

Allegany New York



Levee Inspection Map

Genesee River - Left Bank and Channel, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Routine
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix:
USACE_CELRB_N21L_2017_p
Map created: 21 September 2018

Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

0 230 460 Feet



Allegany New York



**Attachment “E” – Right Bank and Dyke Creek:
Summary of Deficiencies and Recommendations**

SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project, Genesee River, Wellsville, New York (09/27/17)
Project: Genesee River - Right Bank and Dyke Creek, Wellsville

Inspect ID	Rating	Deficiency	Recommendations	Photo #	Category	Rated Item	Due Date	Station 1	Station 2
1	M	Trees on left bank levee landside slope 700' upstream of Drop Structure. (Dyke Creek)	Remove trees.	01_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/17 (FY15 - 36)	35+00	NA
2	M	Unauthorized alteration (E-49): Levee overbuild added on to USACE levee at upstream limit by Soil Conservation Service to levee upstream limit. (Dyke Creek)	Submit Section 408 Alteration Request to USACE.	02_1.jpg 02_2.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 37)	35+00	NA
3	M	Significant trees and unwanted vegetation in riprap on left bank river side slope from upstream limit of Dyke Creek to 300' downstream of the Drop Structure. (Dyke Creek)	Remove trees and unwanted vegetation.	03_1.jpg 03_2.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 39)	35+00	35+00
4	M	Log debris in channel on right bank shoal 500' upstream of drop structure. (Dyke Creek)	Remove debris.	04_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15 - 35)	35+00	NA
5	M	Shoaling (S-14) on right bank from 200' upstream of drop structure to upstream project limit. (Dyke Creek)	Remove shoaling.	05_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 34)	35+00	35+00
8	M	Significant vegetation and trees on right bank upstream of drop structure. (Dyke Creek)	Remove vegetation and trees.	08_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/18 (FY16 - 13)	35+00	NA
9	M	Unauthorized alteration (E-50): Concrete blocks, guardrail, utility pole, guy wire, and dead end sign encroachments on left bank at end of Miller Street just upstream of drop structure. (Dyke Creek)	Remove or submit Section 408 Alteration Request to USACE.	09_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 31)	35+00	NA
12	M	Erosion on left bank channel sideslope just downstream of Drop Structure.	Repair erosion	12_1.jpg 12_2.jpg	Flood Damage Reduction Channels	Erosion	12/31/19 (FY17)	D 35+00	NA
14	M	Trees and unwanted vegetation in riprap on right bank from Broad Street bridge to Drop Structure. (Dyke Creek)	Remove unwanted vegetation.	14_1.jpg 14_2.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 21)	35+00	28+00
15	M	Minor shoal (S-15) in center of channel 100' downstream of drop structure to 200' downstream of drop structure. (Dyke Creek)	Remove shoal.	15_1.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 26)	34+00	NA
16	M	Significant unwanted vegetation on left bank from Broad Street bridge to Drop Structure. (Dyke Creek)	Remove unwanted vegetation.	16_1.jpg 16_2.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/17 (FY15-24)	35+00	24+00
17	M	Shoaling (S-16) on left bank and in center of channel from drop structure to Broadway Street bridge. (Dyke Creek)	Remove shoal.	17_1.jpg 17_2.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 20)	24+00	33+00
18	M	Unauthorized alteration (E-NEW): 18" CMP on left bank channel sideslope at Loring Ave	Remove or submit Section 408 Alteration Request to USACE.	18_1.jpg 18_2.jpg	Flood Damage Reduction Channels	Encroachments	12/31/19 (FY17)	D 32+00	NA
22	M	Significant unwanted vegetation and trees in riprap on both banks between Railroad bridge and Broad Street bridge. (Dyke Creek)	Remove unwanted vegetation.	22_1.jpg 22_2.jpg 22_3.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 19)	24+00	22+00
23	M	Large tree debris in channel just upstream of Broad Street bridge. (Dyke Creek)	Remove tree debris.	23_1.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/19 (FY17)	D 24+00	NA
24	M	Unauthorized alteration (E-51): wood stairs on left bank channel slope just downstream of railroad bridge. (Dyke Creek)	Submit Section 408 Alteration Request to USACE.	24_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 24)	21+00	NA
25	M	Significant trees and heavy unwanted vegetation in riprap on both banks between Main Street bridge and Railroad bridge. (Dyke Creek)	Remove trees and unwanted vegetation.	25_1.jpg 25_2.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 17)	22+00	18+00
26	M	Unauthorized alteration (E-51a): 12" HDPE outfall on left bank channel sideslope, 50' downstream of Railroad bridge	Remove or submit Section 408 Alteration Request to USACE.	26_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/19 (FY17)	D 22+00	NA
27	M	Unauthorized alteration (E-52): wooden stairs and railing encroachments on left bank channel slope just downstream of railroad bridge. (Dyke Creek)	Remove or submit Section 408 Alteration Request to USACE.	27_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 25)	21+00	NA
29	M	Erosion on left bank channel sideslope 175' upstream of Main St. bridge.	Repair erosion.	29_1.jpg 29_2.jpg	Flood Damage Reduction Channels	Erosion	12/31/19 (FY17)	D 20+00	NA
30	M	Unauthorized alteration (E-54): 12' metal outfall pipe with riprap apron on left bank channel slope just upstream of Main Street bridge. (Dyke Creek)	Remove or submit Section 408 Alteration Request to USACE.	30_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 46)	D 20+00	NA
31	M	Unauthorized alteration (E-53): wood stairs left bank channel slope (Dyke Creek)	Remove or submit Section 408 Alteration Request to USACE.	31_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/18 (FY16 - 26)	20+00	NA
32	M	Erosion on left bank upstream of Main Street. (Dyke Creek)	Repair erosion.	32_1.jpg	Flood Damage Reduction Channels	Erosion	12/31/18 (FY16 - 27)	19+00	NA
33	M	Unauthorized alteration (E-53a): 24" CMP outfall on left bank channel sideslope, 50' upstream of Main Street bridge.	Remove or submit Section 408 Alteration Request to USACE.	33_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/19 (FY17)	D 19+00	NA
35	M	Significant trees and vegetation in riprap on both banks just downstream of Main Street bridge. (Dyke Creek)	Remove trees and vegetation from riprap.	35_1.jpg	Flood Damage Reduction Channels	Riprap Revetments & Banks	12/31/17 (FY15 - 15)	17+00	NA



SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project, Genesee River, Wellsville, New York (09/27/17)
Project: Genesee River - Right Bank and Dyke Creek, Wellsville

36	M	Vegetated shoals (S-17) on concrete sideslopes on both banks and in channel from State Route 417 bridge to Main Street bridge (Dyke Creek)	Remove vegetation from concrete.	36_1.jpg 36_2.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 12)	12+00	18+00
38	M	Unauthorized alteration (E-55): Heating, electrical, and plumbing yard on Dyke Creek left bank just upstream of State Route 417 bridge. (Dyke Creek)	Remove or submit Section 408 Alteration Request to USACE.	38_1.jpg	Flood Damage Reduction Channels	Encroachments	12/31/17 (FY15 - 13)	15+00	13+00
39	M	Unwanted vegetation in left and right bank concrete channel sideslopes.	Remove unwanted vegetation from concrete channel sideslopes.	39_1.jpg 39_2.jpg 39_3.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/19 (FY17)	D 18+00	D 12+00
41	M	Vegetated shoaling (S-18) on both banks from convergence of Dyke Creek to the State Route 417 bridge	Remove shoaling.	41_1.jpg 41_2.jpg	Flood Damage Reduction Channels	Shoaling (sediment deposition)	12/31/17 (FY15 - 9)	11+00	2+00
42	M	Unwanted vegetation in left and right bank concrete channel sideslopes.	Remove unwanted vegetation from concrete channel sideslopes	42_1.jpg 42_2.jpg	Flood Damage Reduction Channels	Vegetation and Obstructions	12/31/19 (FY17)	D 11+00	D 2+00
44	M	Unauthorized alteration (E-56): Chain link fence along right bank barrier levee within 15 feet of levee landside toe at ball field (approx 130 feet long as measured from road. (Right Bank)	Remove or submit Section 408 Alteration Request to USACE.	44_1.jpg	Levee Embankments	Encroachments	12/31/18 (FY16 - 47)	0+00	0+00
45	M	Unwanted vegetation on right bank barrier levee waterside slope and within 15' of riverside toe. (Right Bank	Remove unwanted vegetation.	45_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/17 (FY15 - 4)	0+00	0+00
46	M	Unauthorized alteration (E-57): Gray brick utility building and sidewalk within 15' of right bank barrier levee landside toe.	Remove or submit Section 408 Alteration Request to USACE.	46_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 5)	0+00	NA
47	M	Unauthorized alteration (E-59): Right bank barrier levee removed at east end. (Right Bank)	Resolve unauthorized alteration (repair levee to As-Built conditions) or submit a Section 408 Alteration Request Form.	47_1.jpg 47_2.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 6)	0+00	NA
48	M	Unauthorized alteration (E-58): Chain link fence and gate across right bank barrier levee. (Right Bank	Remove or submit Section 408 Alteration Request to USACE.	48_1.jpg	Levee Embankments	Encroachments	12/31/17 (FY15 - 7)	0+00	NA
49	M	24" CMP at east end of right bank barrier levee is obstructed by sediment. (Right Bank)	Clear obstructed outfall.	49_1.jpg	Interior Drainage System	Culverts/ Discharge Pipes	12/31/17 (FY15 - 8)	0+00	NA
50	M	Unauthorized alteration (E-60): Asphalt road through right bank barrier levee. (Right Bank	Submit Section 408 Alteration Request to USACE.	50_1.jpg	Levee Embankments	Encroachments	12/31/19 (FY17)	0+00	NA
51	M	Unwanted vegetation on right bank levee crown.	Remove vegetation.	51_1.jpg	Levee Embankments	Unwanted Vegetation Growth	12/31/19 (FY17)	D 35+00	D 35+00



Attachment “F” – Right Bank and Dyke Creek:
Flood Damage Reduction System Inspection Report



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Flood Damage Reduction Segment / System Inspection Report

Name of Segment / System: Genesee River - Right Bank and Dyke Creek, Wellsville

Public Sponsor(s): New York State Department of Environmental Conservation - Region 9

Public Sponsor Representative: Theodore Myers

Sponsor Phone: (716) 851-7070

Sponsor Email: theodore.myers@dec.ny.gov

Corps of Engineers Inspector: J. Doktor, T. Brown, J. Rogers, G. Hinds, P. Donohue

Inspection Start Date: 9/27/2017

Inspection End Date: 9/27/2017

Inspection Report Prepared By: James Rogers

Date Report Prepared: _____

Internal Technical Review (for Periodic Inspections) By: _____

Date of ITR: _____

Final Approved By: _____

Date Approved: _____

Type of Inspection:

- ☐ **Initial Eligibility Inspection**
☐ **Continuing Eligibility Inspection (Routine)**
☒ **Continuing Eligibility Inspection (Periodic)**

Overall Segment / System Rating:

- ☐ **Acceptable**
☐ **Minimally Acceptable**
☒ **Unacceptable**

Contents of Report:

- ☒ **Instructions**
☐ **Initial Eligibility Inspection**
☒ **General Items for All Flood Control Works**
☒ **Levee Embankment**
☐ **Concrete Floodwalls**
☐ **Sheet Pile and Concrete I-walls**
☒ **Interior Drainage System**
☐ **Pump Stations**
☒ **FDR System Channels**

Note: In addition to the report contents indicated here, a plan view drawing of the system, with stationing, should be included with this report to reference locations of items rated less than acceptable. Photos of general system condition and any noted deficiencies should also be attached.

Note: This inspection rating represents the Corps evaluation of operations and maintenance of the flood damage reduction system and may be used in conjunction with other information for a levee certification determination for National Flood Insurance Program (NFIP) purposes if applicable. An Acceptable Corps inspection rating, alone, does not equate to a certifiable levee for the NFIP. It is recommended for levee systems currently accredited by the Federal Emergency Management Agency (FEMA) for NFIP purposes receiving a Corps Minimally Acceptable or Unacceptable rating, be evaluated by the levee owner to determine the potential impacts to the certification for FEMA.



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Flood Damage Reduction Segment / System Public Sponsor Pre-Inspection Form

The following information is to be provided by the levee district sponsor prior to an inspection. This information will be used to help evaluate the organizational capability of the levee district to manage the levee segment / system maintenance program.

1. Levee segment / system and district: (name of the segment / system and levee district) Genesee River - Right Bank and Dyke Creek, Wellsville for CELRB
2. Reporting period: (month/day/year to month/day/year)
3. Summary of maintenance required by last inspection report:
4. Summary of maintenance performed this reporting period:
5. Summary of maintenance planned next reporting period:
6. Summary of changes to segment / system since last inspection:
7. Problems/ issues requiring the assistance of the US Army Corps of Engineers:



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**Flood Damage Reduction Segment / System
Inspection Report
Genesee River - Right Bank and Dyke**

**Pre-Inspection Form
Page 1 of 2**

Public Sponsor Pre-Inspection Report

The following information is to be provided by the levee district sponsor prior to an inspection

8. Levee district organization: (elected or appointed levee district officials and key employees)

Name	Position	Mailing Address	Phone Number	Email Address



General Instructions for the Inspection of Flood Damage Reduction Segments / Systems

A. Purpose of USACE Inspections:

The primary purpose of these inspections is to prevent loss of life and catastrophic damages; preserve the value of Federal investments, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should assure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Assistance under authority of PL 84-99 for Federal and non-Federal systems. (ER 1130-2-530, ER 500-1-1)

B. Types of Inspections:

The Corps conducts several types of inspections of Flood Damage Reduction systems, as outlined below:

Initial Eligibility Inspections	Continuing Eligibility Inspections	
	Routine Inspections	Periodic Inspections
IEIs are conducted to determine whether a non-Federally constructed Flood Damage Reduction system meets the minimum criteria and standards set forth by the Corps for initial inclusion into the Rehabilitation and Inspection Program.	RIs are intended to verify proper maintenance, owner preparedness, and component operation.	PIs are intended to verify proper maintenance and component operation and to evaluate operational adequacy, structural stability, and safety of the system. Periodic Inspections evaluate the system's original design criteria vs. current design criteria to determine potential performance impacts, evaluate the current conditions, and compare the design loads and design analysis used against current design standards. This is to be done to identify components and features for the sponsor that need to be monitored more closely over time or corrected as needed. (Periodic Inspections are used as the basis of risk assessments.)

C. Inspection Boundaries:

Inspections should be conducted so as to rate each Flood Damage Reduction "Segment" of the system. The overall system rating will be the lowest segment rating in the system.

Project	System	Segment
A flood damage reduction project is made up of one or more flood damage reduction systems which were under the same authorization.	A flood damage reduction system is made up of one or more flood damage reduction segments which collectively provide flood damage reduction to a defined area. Failure of one segment within a system constitutes failure of the entire system. Failure of one system does not affect another system.	A flood damage reduction segment is defined as a discrete portion of a flood damage reduction system that is operated and maintained by a single entity. A flood damage reduction segment can be made up of one or more features (levee, floodwall, pump stations, etc).

D. Land Use Definitions:

The following three definitions are intended for use in determining minimum required inspection intervals and initial requirements for inclusion into the Rehabilitation and Inspection Program. Inspections should be considered for all systems that would result in significant environmental or economic impact upon failure regardless of specific land use.

Agricultural	Rural	Urban
Protected population in the range of zero to 5 households per square mile protected.	Protected population in the range of 6 to 20 households per square mile protected.	Greater than 20 households per square mile; major industrial areas with significant infrastructure investment. Some protected urban areas have no permanent population but may be industrial areas with high value infrastructure with no overnight population.



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**Flood Damage Reduction Segment / System
Inspection Report
Genesee River - Right Bank and Dyke Creek,**

**General Instructions
Page 1 of 3**

E. Use of the Inspection Report Template:

The report template is intended for use in all Army Corps of Engineers inspections of levee and floodwall systems and flood damage reduction channels. The section of the template labeled "Initial Eligibility" only needs to be completed during Initial Eligibility Inspections of Non-Federally constructed Flood Damage Reduction Systems. The section labeled "General Items" needs to be completed with every inspection, along with all other sections that correspond to features in the system. The section labeled "Public Sponsor Pre-Inspection Report" is intended for completion before the inspection, if possible.

F. Individual Item / Component Ratings:

Assessment of individual components rated during the inspection should be based on the criteria provided in the inspection report template, though inspectors may incorporate additional items into the report based on the characteristics of the system. The assessment of individual components should be based on the following definitions.

Acceptable Item	Minimally Acceptable Item	Unacceptable Item
The inspected item is in satisfactory condition, with no deficiencies, and will function as intended during the next flood event.	The inspected item has one or more minor deficiencies that need to be corrected. The minor deficiency or deficiencies will not seriously impair the functioning of the item as intended during the next flood event.	The inspected item has one or more serious deficiencies that need to be corrected. The serious deficiency or deficiencies will seriously impair the functioning of the item as intended during the next flood event.

G. Overall Segment / System Ratings:

Determination of the overall system rating is based on the definitions below. Note that an Unacceptable System Rating may be either based on an engineering determination that concluded that noted deficiencies would prevent the system from functioning as intended during the next flood event, or based on the sponsor's demonstrated lack of commitment or inability to correct serious deficiencies in a timely manner.

Acceptable System	Minimally Acceptable System	Unacceptable System
All items or components are rated as Acceptable.	One or more items are rated as Minimally Acceptable or one or more items are rated as Unacceptable and an engineering determination concludes that the Unacceptable items would not prevent the segment / system from performing as intended during the next flood event.	One or more items are rated as Unacceptable and would prevent the segment / system from performing as intended, or a serious deficiency noted in past inspections (which had previously resulted in a minimally acceptable system rating) has not been corrected within the established timeframe, not to exceed two years.

H. Eligibility for PL84-99 Rehabilitation Assistance:

Inspected systems that are not operated and maintained by the Federal government may be Active in the Corps' Rehabilitation and Inspection Program (RIP) and eligible for rehabilitation assistance from the Corps as defined below:

If the Overall System Rating is Acceptable	If the Overall System Rating is Minimally Acceptable	If the Overall System Rating is Unacceptable
The system is active in the RIP and eligible for PL84-99 rehabilitation assistance.	The system is Active in the RIP during the time that it takes to make needed corrections. Active systems are eligible for rehabilitation assistance. However, if the sponsor does not present USACE with proof that serious deficiencies (which had previously resulted in a minimally acceptable system rating) were corrected within the established timeframe, then the system will become Inactive in the RIP.	The system is Inactive in the RIP, and the status will remain Inactive until the sponsor presents USACE with proof that all items rated Unacceptable have been corrected. Inactive systems are ineligible for rehabilitation assistance.

I. Reporting:

After the inspection, the Corps is responsible for assembling an inspection report (or a summary report if it was a Periodic Inspection) including the following information:

- a. All sections of the report template used during the inspection, including the cover and pre-inspection materials. (Supplemental data collected, and any sections of the template that weren't used during the inspection do not need to be included with the report.)
- b. Photos of the general system condition and noted deficiencies.
- c. A plan view drawing of the system, with stationing, to reference locations of items rated less than acceptable.
- d. The relative importance of the identified maintenance issues should be specified in the transmittal letter.
- e. If the Overall System Rating is Minimally Acceptable, the report needs to establish a timeframe for correction of serious deficiencies noted (not to exceed two years) and indicate that if these items are not corrected within the required timeframe, the system will be rated as Unacceptable and made Inactive in the Rehabilitation Inspection Program.

J. Notification:

Reports are to be disseminated as follows within 30 days of the inspection date.

If the Overall System Rating is Acceptable	If the Overall System Rating is Minimally Acceptable	If the Overall System Rating is Unacceptable
Reports need to be provided to the local sponsor and the county emergency management agency.	Reports need to be provided to the local sponsor, state emergency management agency, county emergency management agency, and to the FEMA region.	Reports need to be provided to the local sponsor, state emergency management agency, county emergency management agency, FEMA region, and to the Congressional delegation within 30 days of the inspection.

General Items for All Flood Damage Reduction Segments / Systems

For use during all inspections of all Flood Damage Reduction Segments / Systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Operations and Maintenance Manuals	A	A	Levee Owner's Manual, O&M Manuals, and/or manufacturer's operating instructions are present.	
		M	Sponsor manuals are lost or missing or out of date; however, sponsor will obtain manuals prior to next scheduled inspection.	
		U	Sponsor has not obtained lost or missing manuals identified during previous inspection.	
2. Emergency Supplies and Equipment (A or M only)	A	A	The sponsor maintains a stockpile of sandbags, shovels, and other flood fight supplies which will adequately supply all needs for the initial days of a flood fight. Sponsor determines required quantity of supplies after consulting with inspector.	
		M	The sponsor does not maintain an adequate supply of flood fighting materials as part of their preparedness activities.	
3. Flood Preparedness and Training (A or M only)	A	A	Sponsor has a written system-specific flood response plan and a solid understanding of how to operate, maintain, and staff the FDR system during a flood. Sponsor maintains a list of emergency contact information for appropriate personnel and other emergency response agencies.	
		M	The sponsor maintains a good working knowledge of flood response activities, but documentation of system-specific emergency procedures and emergency contact personnel is insufficient or out of date.	

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction



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Flood Damage Reduction Segment / System
Inspection Report
Genesee River - Right Bank and Dyke

General Items for All Flood Damage Reduction
Segments / Systems
Page 1 of 1

Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Unwanted Vegetation Growth ¹	U	A	The levee has little or no unwanted vegetation (trees, bush, or undesirable weeds), except for vegetation that is properly contained and/or situated on overbuilt sections, such that the mandatory 3-foot root-free zone is preserved around the levee profile. The levee has been recently mowed. The vegetation-free zone extends 15 feet from both the landside and riverside toes of the levee to the centerline of the tree. If the levee access easement doesn't extend to the described limits, then the vegetation-free zone must be maintained to the easement limits. Reference EM 1110-2-301 or Corps policy for regional vegetation variance.	N21R_2017_p_0001: Station_1 35+00: Trees on left bank levee landside slope 700' upstream of Drop Structure. (Dyke Creek): Remove trees. (U) N21R_2017_p_0045: Station_1 0+00: Station_2 0+00: Unwanted vegetation on right bank barrier levee waterside slope and within 15' of riverside toe. (Right Bank): Remove unwanted vegetation. (M)
		M	Minimal vegetation growth (brush, weeds, or trees 2 inches in diameter or smaller) is present within the zones described above. This vegetation must be removed but does not currently threaten the operation or integrity of the levee.	N21R_2017_p_0051: Station_1 D 35+00: Station_2 D 35+00: Unwanted vegetation on right bank levee crown.: Remove vegetation. (M)
		U	Significant vegetation growth (brush, weeds, or any trees greater than 2 inches in diameter) is present within the zones described above and must be removed to reestablish or ascertain levee integrity.	
2. Sod Cover	A	A	There is good coverage of sod over the levee.	
		M	Approximately 25% of the sod cover is missing or damaged over a significant portion or over significant portions of the levee embankment. This may be the result of over-grazing or feeding on the levee, unauthorized vehicular traffic, chemical or insect problems, or burning during inappropriate seasons.	
		U	Over 50% of the sod cover is missing or damaged over a significant portion or portions of the levee embankment.	
		N/A	Surface protection is provided by other means.	
3. Encroachments	M	A	No trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the levee.	N21R_2017_p_0002: Station_1 35+00: Unauthorized alteration (E-49): Levee overbuild added on to USACE levee at upstream limit by Soil Conservation Service to levee upstream limit. (Dyke Creek): Submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0044: Station_1 0+00: Station_2 0+00: Unauthorized alteration (E-56): Chain link fence along right bank barrier levee within 15 feet of levee landside toe at ball field (approx. 130 feet long as measured from road. (Right Bank): Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0046: Station_1 0+00: Unauthorized alteration (E-57): Gray brick utility building and sidewalk within 15' of right bank barrier levee landside toe.: Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0047: Station_1 0+00: Unauthorized alteration (E-59): Right bank barrier levee removed at east end. (Right Bank): Resolve unauthorized alteration (repair
		M	Trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	
		U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of the levee.	

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction



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Flood Damage Reduction Segment / System
Inspection Report
Genesee River - Right Bank and Dyke

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Levee Embankments
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Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				levee to As-Built conditions) or submit a Section 408 Alteration Request Form. (M) N21R_2017_p_0048: Station_1 0+00: Unauthorized alteration (E-58): Chain link fence and gate across right bank barrier levee. (Right Bank): Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0050: Station_1 0+00: Unauthorized alteration (E-60): Asphalt road through right bank barrier levee. (Right Bank): Submit Section 408 Alteration Request to USACE. (M)
4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures) (A or U only)	NA	A	Closure structure in good repair. Placing equipment, stoplogs, and other materials are readily available at all times. Components are clearly marked and installation instructions/ procedures readily available. Trial erections have been accomplished in accordance with the O&M Manual.	
		U	Any of the following issues is cause for this rating: Closure structure in poor condition. Parts missing or corroded. Placing equipment may not be available within the anticipated warning time. The storage vaults cannot be opened during the time of inspection. Components of closure are not clearly marked and installation instructions/ procedures are not readily available. Trial erections have not been accomplished in accordance with the O&M Manual.	
		N/A	There are no closure structures along this component of the FDR segment / system.	
5. Slope Stability	A	A	No slides, sloughs, tension cracking, slope depressions, or bulges are present.	N21R_2017_p_0043: Station_1 0+00: Right bank levee at barrier levee.: NA (A)
		M	Minor slope stability problems that do not pose an immediate threat to the levee embankment.	
		U	Major slope stability problems (ex. deep seated sliding) identified that must be repaired to reestablish the integrity of the levee embankment.	
6. Erosion/ Bank Caving	A	A	No erosion or bank caving is observed on the landward or riverward sides of the levee that might endanger its stability.	
		M	There are areas where minor erosion is occurring or has occurred on or near the levee embankment, but levee integrity is not threatened.	
		U	Erosion or caving is occurring or has occurred that threatens the stability and integrity of the levee. The erosion or caving has progressed into the levee section or into the extended footprint of the levee foundation and has compromised the levee foundation stability.	
7. Settlement ²	A	A	No observed depressions in crown. Records exist and indicate no unexplained historical changes.	
		M	Minor irregularities that do not threaten integrity of levee. Records are incomplete or inclusive.	
		U	Obvious variations in elevation over significant reaches. No records exist or records indicate	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
			that design elevation is compromised.	
8. Depressions/ Rutting	A	A	There are scattered, shallow ruts, pot holes, or other depressions on the levee that are unrelated to levee settlement. The levee crown, embankments, and access road crowns are well established and drain properly without any ponded water.	
		M	There are some infrequent minor depressions less than 6 inches deep in the levee crown, embankment, or access roads that will pond water.	
		U	There are depressions greater than 6 inches deep that will pond water.	
9. Cracking	A	A	Minor longitudinal, transverse, or desiccation cracks with no vertical movement along the crack. No cracks extend continuously through the levee crest.	
		M	Longitudinal and/or transverse cracks up to 6 inches in depth with no vertical movement along the crack. No cracks extend continuously through the levee crest. Longitudinal cracks are no longer than the height of the levee.	
		U	Cracks exceed 6 inches in depth. Longitudinal cracks are longer than the height of the levee and/or exhibit vertical movement along the crack. Transverse cracks extend through the entire levee width.	
10. Animal Control	A	A	Continuous animal burrow control program in place that includes the elimination of active burrowing and the filling in of existing burrows.	
		M	The existing animal burrow control program needs to be improved. Several burrows are present which may lead to seepage or slope stability problems, and they require immediate attention.	
		U	Animal burrow control program is not effective or is nonexistent. Significant maintenance is required to fill existing burrows, and the levee will not provide reliable flood protection until this maintenance is complete.	
11. Culverts/ Discharge Pipes ³ (This item includes both concrete and corrugated metal pipes.)	M	A	There are no breaks, holes, cracks in the discharge pipes/ culverts that would result in significant water leakage. The pipe shape is still essentially circular. All joints appear to be closed and the soil tight. Corrugated metal pipes, if present, are in good condition with 100% of the original coating still in place (either asphalt or galvanizing) or have been relined with appropriate material, which is still in good condition. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		M	There are a small number of corrosion pinholes or cracks that could leak water and need to be repaired, but the entire length of pipe is still structurally sound and is not in danger of collapsing. Pipe shape may be ovalized in some locations but does not appear to be approaching a curvature reversal. A limited number of joints may have opened and soil loss may be beginning. Any open joints should be repaired prior to the next inspection. Corrugated metal pipes, if present, may be showing corrosion and pinholes but there are no areas with total section loss. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	
		U	Culvert has deterioration and/or has significant leakage; it is in danger of collapsing or as already begun to collapse. Corrugated metal pipes have suffered 100% section loss in the invert. HOWEVER: Even if pipes appear to be in good condition, as judged by an external visual inspection, an Unacceptable Rating will be assigned if the condition of pipes has not been verified using television camera video taping or visual inspection methods within the past five years, and reports for all pipes are not available for review by the inspector.	
		N/A	There are no discharge pipes/ culverts.	
12. Riprap Revetments & Bank Protection	A	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
13. Revetments other than Riprap	A	A	Existing revetment protection is properly maintained, undamaged, and clearly visible.	
		M	Minor revetment displacement or deterioration that does not pose an immediate threat to the integrity of the levee. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant revetment displacement, deterioration, or exposure of bedding observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Revetment protection is hidden by dense brush and trees.	
		N/A	There are no such revetments protecting this feature of the segment / system.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
14. Underseepage Relief Wells/ Toe Drainage Systems	NA	A	Toe drainage systems and pressure relief wells necessary for maintaining FDR segment / system stability during high water functioned properly during the last flood event and no sediment is observed in horizontal system (if applicable). Nothing is observed which would indicate that the drainage systems won't function properly during the next flood, and maintenance records indicate regular cleaning. Wells have been pumped tested within the past 5 years and documentation is provided.	
		M	Toe drainage systems or pressure relief wells are damaged and may become clogged if they are not repaired. Maintenance records are incomplete or indicate irregular cleaning and pump testing.	
		U	Toe drainage systems or pressure relief wells necessary for maintaining FDR segment / system stability during flood events have fallen into disrepair or have become clogged. No maintenance records. No documentation of the required pump testing.	
		N/A	There are no relief wells/ toe drainage systems along this component of the FDR segment / system.	
15. Seepage	A	A	No evidence or history of unrepaired seepage, saturated areas, or boils.	
		M	Evidence or history of minor unrepaired seepage or small saturated areas at or beyond the landside toe but not on the landward slope of levee. No evidence of soil transport.	
		U	Evidence or history of active seepage, extensive saturated areas, or boils.	

¹ If there is significant growth on the levee that inhibits the inspection of animal burrows or other items, the inspection should be ended until this item is corrected.

² Detailed survey elevations are normally required during Periodic Inspections, and whenever there are obvious visual settlements.

³ The decision on whether or not USACE inspectors should enter a pipe to perform a detailed inspection must be made at the USACE District level. This decision should be made in conjunction with the District Safety Office, as pipes may be considered confined spaces. This decision should consider the age of the pipe, the diameter of the pipe, the apparent condition of the pipe, and the length of the pipe. If a pipe is entered for the purposes of inspection, the inspector should record observations with a video camera in order that the condition of the entire pipe, including all joints, can later be assessed. Additionally, the video record provides a baseline to which future inspections can be compared.

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	<p>Inspect ID: N21R_2017_p_0001 Title: USACE_CELRB_N21R_2017_p_0001_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Unacceptable; Remarks: Trees on left bank levee landside slope 700' upstream of Drop Structure. (Dyke Creek); Action: Remove trees.; Station_1: 35+00</p>
	<p>Inspect ID: N21R_2017_p_0045 Title: USACE_CELRB_N21R_2017_p_0045_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation on right bank barrier levee waterside slope and within 15' of riverside toe. (Right Bank); Action: Remove unwanted vegetation.; Station_1: 0+00; Station_2: 0+00</p>



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	<p>Inspect ID: N21R_2017_p_0051 Title: USACE_CELRB_N21R_2017_p_0051_1.jpg Rated Item: 1. Unwanted Vegetation Growth Caption: Rating: Minimally Acceptable; Remarks: Unwanted vegetation on right bank levee crown.; Action: Remove vegetation.; Station_1: D 35+00; Station_2: D 35+00</p>
	<p>Inspect ID: N21R_2017_p_0002 Title: USACE_CELRB_N21R_2017_p_0002_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-49) - Levee overbuild added on to USACE levee at upstream limit by Soil Conservation Service to levee upstream limit. (Dyke Creek).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 35+00</p>



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	<p>Inspect ID: N21R_2017_p_0002 Title: USACE_CELRB_N21R_2017_p_0002_2.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-49) - Levee overbuild added on to USACE levee at upstream limit by Soil Conservation Service to levee upstream limit. (Dyke Creek).; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 35+00</p>
	<p>Inspect ID: N21R_2017_p_0044 Title: USACE_CELRB_N21R_2017_p_0044_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-56) - Chain link fence along right bank barrier levee within 15 feet of levee landside toe at ball field (approx. 130 feet long as measured from road. (Right Bank); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00; Station_2: 0+00</p>



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	<p>Inspect ID: N21R_2017_p_0046 Title: USACE_CELRB_N21R_2017_p_0046_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-57) - Gray brick utility building and sidewalk within 15' of right bank barrier levee landside toe.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00; ; ;</p>
	<p>Inspect ID: N21R_2017_p_0047 Title: USACE_CELRB_N21R_2017_p_0047_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-59) - Right bank barrier levee removed at east end. (Right Bank); Action: Resolve unauthorized alteration (repair levee to As-Built conditions) or submit a Section 408 Alteration Request Form.; Station_1: 0+00</p>



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	<p>Inspect ID: N21R_2017_p_0047 Title: USACE_CELRB_N21R_2017_p_0047_2.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-59) - Right bank barrier levee removed at east end. (Right Bank); Action: Resolve unauthorized alteration (repair levee to As-Built conditions) or submit a Section 408 Alteration Request Form.; Station_1: 0+00</p>
	<p>Inspect ID: N21R_2017_p_0048 Title: USACE_CELRB_N21R_2017_p_0048_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-58) - Chain link fence and gate across right bank barrier levee. (Right Bank); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00</p>



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	<p>Inspect ID: N21R_2017_p_0050 Title: USACE_CELRB_N21R_2017_p_0050_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-60) - Asphalt road through right bank barrier levee. (Right Bank); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 0+00</p>



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Interior Drainage System

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Vegetation and Obstructions	A	A	No obstructions, vegetation, debris, or sediment accumulation noted within interior drainage channels or blocking the culverts, inlets, or discharge areas. Concrete joints and weep holes are free of grass and weeds.	
		M	Obstructions, vegetation, debris, or sediment are minor and have not impaired channel flow capacity or blocked more than 10% of any culvert openings, but should be removed. A limited volume of grass and weeds may be present in concrete channel joints and weep holes.	
		U	Obstructions, vegetation, debris, or sediment have impaired the channel flow capacity or blocked more than 10% of a culvert opening. Sediment and debris removal required to re-establish flow capacity.	
2. Encroachments	A	A	No trash, debris, unauthorized structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the interior drainage system.	N21R_2017_p_0011: Station_1 35+00: 24" CMP outfall on left bank downstream of Drop Structure is not an encroachment, it existed prior to project. (Dyke Creek): NA (A)
		M	Trash, debris, unauthorized structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	
		U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of this component of the interior drainage system.	
3. Ponding Areas	NA	A	No trash, debris, structures, or other obstructions present within the ponding areas. Sediment deposits do not exceed 10% of capacity.	
		M	Trash, debris, excavations, structures, or other obstructions present, or inappropriate activities that will not inhibit operations and maintenance. Sediment deposits do not exceed 30% of capacity.	
		U	Trash, debris, excavations, structures, or other obstructions, or other encroachments or activities noted that will inhibit operations, maintenance, or emergency work. Sediment deposits exceeds 30% of capacity.	
		N/A	There are no ponding areas associated with the interior drainage system.	
4. Fencing and Gates ¹	NA	A	Fencing is in good condition and provides protection against falling or unauthorized access. Gates open and close freely, locks are in place, and there is little corrosion on metal parts.	
		M	Fencing or gates are damaged or corroded but appear to be maintainable. Locks may be missing or damaged.	
		U	Fencing and gates are damaged or corroded to the point that replacement is required, or potentially dangerous features are not secured.	
		N/A	There are no features noted that require safety fencing.	
5. Concrete Surfaces (Such as gate)	A	A	Negligible spalling, scaling or cracking. If the concrete surface is weathered or holds moisture, it is still satisfactory but should be seal coated to prevent freeze/ thaw damage.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
wells, outfalls, intakes, or culverts)		M	Spalling, scaling, and open cracking present, but the immediate integrity or performance of the structure is not threatened. Reinforcing steel may be exposed. Repairs/ sealing is necessary to prevent additional damage during periods of thawing and freezing.	
		U	Surface deterioration or deep cracks present that may result in an unreliable structure. Any surface deterioration that exposes the sheet piling or lies adjacent to monolith joints may indicate underlying reinforcement corrosion and is unacceptable.	
		N/A	There are no concrete items in the interior drainage system.	
6. Tilting, Sliding or Settlement of Concrete and Sheet Pile Structures ² (Such as gate wells, outfalls, intakes, or culverts)	A	A	There are no significant areas of tilting, sliding, or settlement that would endanger the integrity of the structure.	
		M	There are areas of tilting, sliding, or settlement (either active or inactive) that need to be repaired. The maximum offset, either laterally or vertically, does not exceed 2 inches unless the movement can be shown to be no longer actively occurring. The integrity of the structure is not in danger.	
		U	There are areas of tilting, sliding, or settlement (either active or inactive) that threaten the structure's integrity and performance. Any movement that has resulted in failure of the waterstop (possibly identified by daylight visible through the joint) is unacceptable. Differential movement of greater than 2 inches between any two adjacent monoliths, either laterally or vertically, is unacceptable unless it can be shown that the movement is no longer active. Also, if the floodwall is of I-wall construction, then any visible or measurable tilting of the wall toward the protected side that has created an open horizontal crack on the riverside base of a monolith is unacceptable.	
		N/A	There are no concrete items in the interior drainage system.	
7. Foundation of Concrete Structures ³ (Such as culverts, inlet and discharge structures, or gatewells.)	A	A	No active erosion, scouring, or bank caving that might endanger the structure's stability.	
		M	There are areas where the ground is eroding towards the base of the structure. Efforts need to be taken to slow and repair this erosion, but it is not judged to be close enough to the structure or to be progressing rapidly enough to affect structural stability before the next inspection. The rate of erosion is such that the structure is expected to remain stable until the next inspection.	
		U	Erosion or bank caving observed that may lead to structural instabilities before the next inspection.	
		N/A	There are no concrete items in the interior drainage system.	
8. Monolith Joints	NA	A	The joint material is in good condition. The exterior joint sealant is intact and cracking/ desiccation is minimal. Joint filler material and/or waterstop is not visible at any point.	
		M	The joint material has appreciable deterioration to the point where joint filler material and/or waterstop is visible in some locations. This needs to be repaired or replaced to prevent spalling and cracking during freeze/ thaw cycles, and to ensure water tightness of the joint.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		U	The joint material is severely deteriorated or the concrete adjacent to the monolith joints has spalled and cracked, damaging the waterstop; in either case damage has occurred to the point where it is apparent that the joint is no longer watertight and will not provide the intended level of protection during a flood.	
		N/A	There are no monolith joints in the interior drainage system.	
9. Culverts/ Discharge Pipes ⁴	M	A	There are no breaks, holes, cracks in the discharge pipes/ culverts that would result in significant water leakage. The pipe shape is still essentially circular. All joints appear to be closed and the soil tight. Corrugated metal pipes, if present, are in good condition with 100% of the original coating still in place (either asphalt or galvanizing) or have been relined with appropriate material, which is still in good condition. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	N21R_2017_p_0028: Station_1 D 21+00: 8" PVC outfall on left bank channel sideslope, 125' downstream of Railroad bridge. On As-builts.: NA (A) N21R_2017_p_0049: Station_1 0+00: 24" CMP at east end of right bank barrier levee is obstructed by sediment. (Right Bank): Clear obstructed outfall. (M)
		M	There are a small number of corrosion pinholes or cracks that could leak water and need to be repaired, but the entire length of pipe is still structurally sound and is not in danger of collapsing. Pipe shape may be ovalized in some locations but does not appear to be approaching a curvature reversal. A limited number of joints may have opened and soil loss may be beginning. Any open joints should be repaired prior to the next inspection. Corrugated metal pipes, if present, may be showing corrosion and pinholes but there are no areas with total section loss. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	
		U	Culvert has deterioration and/or has significant leakage; it is in danger of collapsing or as already begun to collapse. Corrugated metal pipes have suffered 100% section loss in the invert. HOWEVER: Even if pipes appear to be in good condition, as judged by an external visual inspection, an Unacceptable Rating will be assigned if the condition of pipes has not been verified using television camera video taping or visual inspection methods within the past five years, and reports for all pipes are not available for review by the inspector.	
		N/A	There are no discharge pipes/ culverts.	
10. Sluice / Slide Gates ⁵	NA	A	Gates open and close freely to a tight seal or minor leakage. Gate operators are in good working condition and are properly maintained. Sill is free of sediment and other obstructions. Gates and lifters have been maintained and are free of corrosion. Documentation provided during the inspection.	
		M	Gates and/or operators have been damaged or have minor corrosion, and open and close with resistance or binding. Leakage quantity is controllable, but maintenance is required. Sill is free of sediment and other obstructions.	
		U	Gates do not open or close and/or operators do not function. Gate, stem, lifter and/or guides may be damaged or have major corrosion.	
		N/A	There are no sluice/ slide gates.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
11. Flap Gates/ Flap Valves/ Pinch Valves ¹	A	A	Gates/ valves open and close easily with minimal leakage, have no corrosion damage, and have been exercised and lubricated as required.	
		M	Gates/ valves will not fully open or close because of obstructions that can be easily removed, or have minor corrosion damage that requires maintenance.	
		U	Gates/ valves are missing, have been damaged, or have deteriorated to the point that they need to be replaced.	
		N/A	There are no flap gates.	
12. Trash Racks (non-mechanical)	NA	A	Trash racks are fastened in place and properly maintained.	
		M	Trash racks are in place but are unfastened or have bent bars that allow debris to enter into the pipe or pump station, bars are corroded to the point that up to 10% of the sectional area may be lost. Repair or replacement is required.	
		U	Trash racks are missing or damaged to the extent that they are no longer functional and must be replaced. (For example, more than 10% of the sectional area may be lost.)	
		N/A	There are no trash racks, or they are covered in the pump stations section of the report.	
13. Other Metallic Items	NA	A	All metal parts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	
		M	Corrosion seen on metallic parts appears to be maintainable.	
		U	Metallic parts are severely corroded and require replacement to prevent failure, equipment damage, or safety issues.	
		N/A	There are no other significant metallic items.	
14. Riprap Revetments of Inlet/ Discharge Areas	A	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
15. Revetments other than Riprap	NA	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	

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Interior Drainage System
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Interior Drainage System

For use during Initial and Continuing Eligibility Inspections of interior drainage systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There are no such revetments protecting this feature of the segment / system.	

¹ Proper operation of this item must be demonstrated during the inspection.

² The sponsor should be monitoring any observed movement to verify whether the movement is active or inactive.

³ Inspectors must have as-built drawings available during the inspection so that the lateral distance to the heel and toe of the floodwalls can be determined in the field.

⁴ The decision on whether or not USACE inspectors should enter a pipe to perform a detailed inspection must be made at the USACE District level. This decision should be made in conjunction with the District Safety Office, as pipes may be considered confined spaces. This decision should consider the age of the pipe, the diameter of the pipe, the apparent condition of the pipe, and the length of the pipe. If a pipe is entered for the purposes of inspection, the inspector should record observations with a video camera in order that the condition of the entire pipe, including all joints, can later be assessed. Additionally, the video record provides a baseline to which future inspections can be compared.

⁵ Proper operation of the gates (full open and closed) must be demonstrated during the inspection if no documentation is available. Be aware of both manual and electrical operators.

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Inspect ID: N21R_2017_p_0028 **Title:** USACE_CELRB_N21R_2017_p_0028_1.jpg
Rated Item: 9. Culverts/ Discharge Pipes **Caption:** Rating: Acceptable; Remarks: 8" PVC outfall on left bank channel sideslope, 125' downstream of Railroad bridge. On As-builts.; Action: NA; Station_1: D 21+00



Inspect ID: N21R_2017_p_0049 **Title:** USACE_CELRB_N21R_2017_p_0049_1.jpg
Rated Item: 9. Culverts/ Discharge Pipes **Caption:** Rating: Minimally Acceptable; Remarks: 24" CMP at east end of right bank barrier levee is ~80% obstructed by sediment. (Right Bank); Action: Clear obstructed outfall.; Station_1: 0+00



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Flood Damage Reduction Channels

For use during Initial and Continuing Eligibility Inspections of flood damage reduction channels

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Vegetation and Obstructions	U	A	No obstructions, vegetation, debris, or sediment accumulation within the channel. Concrete channel joints and weep holes are free of grass and weeds.	N21R_2017_p_0003: Station_1 35+00: Station_2 35+00: Significant trees and unwanted vegetation in riprap on left bank river side slope from upstream limit of Dyke Creek to 300' downstream of the Drop Structure. (Dyke Creek):. Remove trees and unwanted vegetation. (U)
		M	Obstructions (including log jams), vegetation, debris, or sediment are minor and have not impaired channel flow capacity, but should be removed. Sediment shoals have not developed to the extent that they can support vegetation other than non-aquatic grasses. A limited volume of grass and weeds may be present in concrete channel joints and weep holes.	N21R_2017_p_0004: Station_1 35+00: Log debris in channel on right bank shoal 500' upstream of drop structure. (Dyke Creek): Remove debris. (M)
		U	Obstructions (including log jams), vegetation, debris or sediment have impaired the channel flow capacity. Sediment shoals are well established and support woody and/or brushy vegetation. Sediment and debris removal required to re-establish flow capacity.	N21R_2017_p_0008: Station_1 35+00: Significant vegetation and trees on right bank upstream of drop structure. (Dyke Creek): Remove vegetation and trees. (U) N21R_2017_p_0016: Station_1 35+00: Station_2 24+00: Significant unwanted vegetation on left bank from Broad Street bridge to Drop Structure. (Dyke Creek): Remove unwanted vegetation. (U) N21R_2017_p_0023: Station_1 D 24+00: Large tree debris in channel just upstream of Broad Street bridge. (Dyke Creek): Remove tree debris. (M) N21R_2017_p_0039: Station_1 D 18+00: Station_2 D 12+00: Unwanted vegetation in left and right bank concrete channel sideslopes.: Remove unwanted vegetation from concrete channel sideslopes. (M) N21R_2017_p_0042: Station_1 D 11+00: Station_2 D 2+00: Unwanted vegetation in left and right bank concrete channel sideslopes.: Remove unwanted vegetation from concrete channel sideslopes. (M)
2. Shoaling ¹ (sediment deposition)	M	A	No shoaling or minor, non-vegetated shoaling is present.	N21R_2017_p_0005: Station_1 35+00: Station_2 35+00: Shoaling (S-14) on right bank from 200' upstream of drop structure to upstream project limit. (Dyke Creek):. Remove shoaling. (M)
		M	More widespread vegetated and non-vegetated shoaling is present. Non-aquatic grasses are present on shoal. No trees or brush is present on shoal, and channel flow is not significantly reduced. Sediment and debris removal recommended.	N21R_2017_p_0015: Station_1 34+00: Minor shoal (S-15) in center of channel 100' downstream of drop structure to 200' downstream of drop structure. (Dyke Creek): Remove shoal. (M)
		U	Shoaling is well established, stabilized by saplings, brush, or other vegetation. Shoals are diverting flow to channel walls. Channel flow capacity is reduced and maintenance is required.	N21R_2017_p_0017: Station_1 24+00: Station_2 33+00: Shoaling (S-16) on left bank and in center of channel from drop structure to Broadway Street bridge. (Dyke Creek): Remove shoal. (M) N21R_2017_p_0036: Station_1 12+00: Station_2 18+00: Vegetated shoals (S-17) on concrete sideslopes on both banks and in channel from State Route 417 bridge to Main Street bridge. (Dyke Creek): Remove vegetation from

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				concrete. (M) N21R_2017_p_0041: Station_1 11+00: Station_2 2+00: Vegetated shoaling (S-18) on both banks from convergence of Dyke Creek to the State Route 417 bridge.: Remove shoaling. (M)
3. Encroachments	M	A	No trash, debris, unauthorized structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the channel.	N21R_2017_p_0007: Station_1 35+00: 24" CMP drainage inlet on left bank 175' upstream of Drop Structure is not an encroachment, part of existing drainage prior to project. (Dyke Creek): NA (A)
		M	Trash, debris, unauthorized structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	N21R_2017_p_0009: Station_1 35+00: Unauthorized alteration (E-50): Concrete blocks, guardrail, utility pole, guy wire, and dead end sign encroachments on left bank at end of Miller Street just upstream of drop structure. (Dyke Creek): Remove or submit Section 408 Alteration Request to USACE. (M)
		U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of the channel.	N21R_2017_p_0013: Station_1 35+00: Drop Structure in acceptable condition. (Dyke Creek): NA (A) N21R_2017_p_0018: Station_1 D 32+00: Unauthorized alteration (E-NEW): 18" CMP on left bank channel sideslope at Loring Ave.: Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0024: Station_1 21+00: Unauthorized alteration (E-51): wood stairs on left bank channel slope just downstream of railroad bridge. (Dyke Creek): Submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0026: Station_1 D 22+00: Unauthorized alteration (E-51a): 12" HDPE outfall on left bank channel sideslope, 50' downstream of Railroad bridge: Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0027: Station_1 21+00: Unauthorized alteration (E-52): wooden stairs and railing encroachments on left bank channel slope just downstream of railroad bridge. (Dyke Creek): Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0030: Station_1 D 20+00: Unauthorized alteration (E-54): 12' metal outfall pipe with riprap apron on left bank channel slope just upstream of Main Street bridge. (Dyke Creek): Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0031: Station_1 20+00: Unauthorized alteration (E-53): wood stairs left bank channel slope. (Dyke Creek): Remove or submit Section 408 Alteration Request to

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				USACE. (M) N21R_2017_p_0033: Station_1 D 19+00: Unauthorized alteration (E-53a): 24" CMP outfall on left bank channel sideslope, 50' upstream of Main Street bridge.: Remove or submit Section 408 Alteration Request to USACE. (M) N21R_2017_p_0037: Station_1 11+00: Approved alteration: State Route 417 bridge replacement over Dyke Creek.: NA (A) N21R_2017_p_0038: Station_1 15+00: Station_2 13+00: Unauthorized alteration (E-55): Heating, electrical, and plumbing yard on Dyke Creek left bank just upstream of State Route 417 bridge. (Dyke Creek): Remove or submit Section 408 Alteration Request to USACE. (M)
4. Erosion	M	A	No head cutting or horizontal deviation observed.	N21R_2017_p_0012: Station_1 D 35+00: Erosion on left bank channel sideslope just downstream of Drop Structure.: Repair erosion (M) N21R_2017_p_0029: Station_1 D 20+00: Erosion on left bank channel sideslope 175' upstream of Main St. bridge.: Repair erosion. (M) N21R_2017_p_0032: Station_1 19+00: Erosion on left bank upstream of Main Street. (Dyke Creek): Repair erosion. (M)
		M	Head cutting and horizontal deviation evident, but is less than 1 foot from the designed grade or cross section.	
		U	Head cutting and horizontal deviation of more than 1 foot from the designed grade or cross section. Corrective actions required to stop or slow erosion.	
5. Concrete Surfaces	A	A	Negligible spalling, scaling or cracking. If the concrete surface is weathered or holds moisture, it is still satisfactory but should be seal coated to prevent freeze/ thaw damage.	
		M	Spalling, scaling, and open cracking present, but the immediate integrity or performance of the structure is not threatened. Reinforcing steel may be exposed. Repairs/ sealing is necessary to prevent additional damage during periods of thawing and freezing.	
		U	Surface deterioration or deep cracks present that may result in an unreliable structure. Any surface deterioration that exposes the sheet piling or lies adjacent to monolith joints may indicate underlying reinforcement corrosion and is unacceptable.	
		N/A	There are no concrete items in the channel.	
6. Tilting, Sliding or Settlement of Concrete Structures ²	A	A	There are no significant areas of tilting, sliding, or settlement that would endanger the integrity of the structure.	
		M	There are areas of tilting, sliding, or settlement (either active or inactive) that need to be repaired. The maximum offset, either laterally or vertically, does not exceed 2 inches unless the movement can be shown to be no longer actively occurring. The integrity of the structure is not in danger.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		U	There are areas of tilting, sliding, or settlement (either active or inactive) that threaten the structure's integrity and performance. Any movement that has resulted in failure of the waterstop (possibly identified by daylight visible through the joint) is unacceptable. Differential movement of greater than 2 inches between any two adjacent monoliths, either laterally or vertically, is unacceptable unless it can be shown that the movement is no longer active. Also, if the floodwall is of I-wall construction, then any visible or measurable tilting of the wall toward the protected side that has created an open horizontal crack on the riverside base of a monolith is unacceptable.	
		N/A	There are no concrete items in the channel.	
7. Foundation of Concrete Structures ³	A	A	No active erosion, scouring, or bank caving that might endanger the structure's stability.	
		M	There are areas where the ground is eroding towards the base of the structure. Efforts need to be taken to slow and repair this erosion, but it is not judged to be close enough to the structure or to be progressing rapidly enough to affect structural stability before the next inspection. For the purposes of inspection, the erosion or scour is not closer to the riverside face of the wall than twice the floodwall's underground base width if the wall is of L-wall or T-wall construction; or if the wall is of sheetpile or I-wall construction, the erosion is not closer than twice the wall's visible height. Additionally, rate of erosion is such that the wall is expected to remain stable until the next inspection.	
		U	Erosion or bank caving observed that is closer to the wall than the limits described above, or is outside these limits but may lead to structural instabilities before the next inspection. Additionally, if the floodwall is of I-wall or sheetpile construction, the foundation is unacceptable if any turf, soil or pavement material got washed away from the landside of the I-wall as the result of a previous overtopping event.	
		N/A	There are no concrete items in the channel.	
8. Slab and Monolith Joints	A	A	The joint material is in good condition. The exterior joint sealant is intact and cracking/desiccation is minimal. Joint filler material and/or waterstop is not visible at any point.	
		M	The joint material has appreciable deterioration to the point where joint filler material and/or waterstop is visible in some locations. This needs to be repaired or replaced to prevent spalling and cracking during freeze/ thaw cycles, and to ensure water tightness of the joint.	
		U	The joint material is severely deteriorated or the concrete adjacent to the monolith joints has spalled and cracked, damaging the waterstop; in either case damage has occurred to the point where it is apparent that the joint is no longer watertight and will not provide the intended level of protection during a flood.	
		N/A	There are no concrete items in the channel.	
9. Flap Gates/ Flap Valves/	A	A	Gates/ valves open and close easily with minimal leakage, have no corrosion damage, and have been exercised and lubricated as required.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
Pinch Valves ⁴		M	Gates/ valves will not fully open or close because of obstructions that can be easily removed, or have minor corrosion damage that requires maintenance.	
		U	Gates/ valves are missing, have been damaged, or have deteriorated to the point that they need to be replaced.	
		N/A	There are no flap gates.	
10. Riprap Revetments & Banks	U	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	N21R_2017_p_0014: Station_1 35+00: Station_2 28+00: Trees and unwanted vegetation in riprap on right bank from Broad Street bridge to Drop Structure. (Dyke Creek): Remove unwanted vegetation. (U) N21R_2017_p_0022: Station_1 24+00: Station_2 22+00: Significant unwanted vegetation and trees in riprap on both banks between Railroad bridge and Broad Street bridge. (Dyke Creek): Remove unwanted vegetation. (U) N21R_2017_p_0025: Station_1 22+00: Station_2 18+00: Significant trees and heavy unwanted vegetation in riprap on both banks between Main Street bridge and Railroad bridge. (Dyke Creek): Remove trees and unwanted vegetation. (U) N21R_2017_p_0035: Station_1 17+00: Significant trees and vegetation in riprap on both banks just downstream of Main Street bridge. (Dyke Creek): Remove trees and vegetation from riprap. (U)
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
11. Revetments other than Riprap	A	A	Existing revetment protection is properly maintained, undamaged, and clearly visible.	
		M	Minor revetment displacement or deterioration that does not pose an immediate threat to the integrity of the levee. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant revetment displacement, deterioration, or exposure of bedding observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Revetment protection is hidden by dense brush and trees.	
		N/A	There are no such revetments protecting this feature of the segment / system.	

¹ If weather and flow conditions allow, inspectors should walk in the channel and probe shoal areas in order to estimate extent of blockage of the cross-sectional area where shoaling is present.

² The sponsor should be monitoring any observed movement to verify whether the movement is active or inactive.

³ Inspectors must have as-built drawings available during the inspection so that the lateral distance to the heel and toe of the floodwalls can be determined in the field.

⁴ Proper operation of this item must be demonstrated during the inspection.

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	<p>Inspect ID: N21R_2017_p_0003 Title: USACE_CELRB_N21R_2017_p_0003_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Acceptable; Remarks: Significant trees and unwanted vegetation in riprap on left bank river side slope from upstream limit of Dyke Creek to 300' downstream of the Drop Structure. (Dyke Creek).; Action: Remove trees and unwanted vegetation.; Station_1: 35+00; Station_2: 35+00</p>
	<p>Inspect ID: N21R_2017_p_0003 Title: USACE_CELRB_N21R_2017_p_0003_2.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Acceptable; Remarks: Significant trees and unwanted vegetation in riprap on left bank river side slope from upstream limit of Dyke Creek to 300' downstream of the Drop Structure. (Dyke Creek).; Action: Remove trees and unwanted vegetation.; Station_1: 35+00; Station_2: 35+00</p>





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	<p>Inspect ID: N21R_2017_p_0004 Title: USACE_CELRB_N21R_2017_p_0004_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Log debris in channel on right bank shoal 500' upstream of drop structure. (Dyke Creek); Action: Remove debris.; Station_1: 35+00</p>
	<p>Inspect ID: N21R_2017_p_0008 Title: USACE_CELRB_N21R_2017_p_0008_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Minimally Acceptable; Remarks: Significant vegetation and trees on right bank upstream of drop structure. (Dyke Creek); Action: Remove vegetation and trees.; Station_1: 35+00</p>




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	<p>Inspect ID: N21R_2017_p_0016 Title: USACE_CELRB_N21R_2017_p_0016_1.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Significant unwanted vegetation on left bank from Broad Street bridge to Drop Structure. (Dyke Creek); Action: Remove unwanted vegetation.; Station_1: 35+00; Station_2: 24+00</p>
	<p>Inspect ID: N21R_2017_p_0016 Title: USACE_CELRB_N21R_2017_p_0016_2.jpg Rated Item: 1. Vegetation and Obstructions Caption: Rating: Unacceptable; Remarks: Significant unwanted vegetation on left bank from Broad Street bridge to Drop Structure. (Dyke Creek); Action: Remove unwanted vegetation.; Station_1: 35+00; Station_2: 24+00</p>



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Inspect ID: N21R_2017_p_0023 **Title:** USACE_CELRB_N21R_2017_p_0023_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
 Remarks: Large tree debris in channel just upstream of Broad Street bridge. (Dyke Creek); Action: Remove tree debris.; Station_1: D 24+00



Inspect ID: N21R_2017_p_0039 **Title:** USACE_CELRB_N21R_2017_p_0039_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
 Remarks: Unwanted vegetation in left and right bank concrete channel sideslopes.;
 Action: Remove unwanted vegetation from concrete channel sideslopes.; Station_1: D 18+00; Station_2: D 12+00



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Inspect ID: N21R_2017_p_0039 **Title:** USACE_CELRB_N21R_2017_p_0039_2.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Unwanted vegetation in left and right bank concrete channel sideslopes.;
Action: Remove unwanted vegetation from concrete channel sideslopes.; **Station_1:** D 18+00; **Station_2:** D 12+00



Inspect ID: N21R_2017_p_0039 **Title:** USACE_CELRB_N21R_2017_p_0039_3.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Unwanted vegetation in left and right bank concrete channel sideslopes.;
Action: Remove unwanted vegetation from concrete channel sideslopes.; **Station_1:** D 18+00; **Station_2:** D 12+00



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Inspect ID: N21R_2017_p_0042 **Title:** USACE_CELRB_N21R_2017_p_0042_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Unwanted vegetation in left and right bank concrete channel sideslopes.;
Action: Remove unwanted vegetation from concrete channel sideslopes.; Station_1: D 11+00; Station_2: D 2+00



Inspect ID: N21R_2017_p_0042 **Title:** USACE_CELRB_N21R_2017_p_0042_2.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Unwanted vegetation in left and right bank concrete channel sideslopes.;
Action: Remove unwanted vegetation from concrete channel sideslopes.; Station_1: D 11+00; Station_2: D 2+00





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	<p>Inspect ID: N21R_2017_p_0005 Title: USACE_CELRB_N21R_2017_p_0005_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Shoaling (S-14) on right bank from 200' upstream of drop structure to upstream project limit. (Dyke Creek).; Action: Remove shoaling.; Station_1: 35+00; Station_2: 35+00</p>
	<p>Inspect ID: N21R_2017_p_0015 Title: USACE_CELRB_N21R_2017_p_0015_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Minor shoal (S-15) in center of channel 100' downstream of drop structure to 200' downstream of drop structure. (Dyke Creek); Action: Remove shoal.; Station_1: 34+00</p>




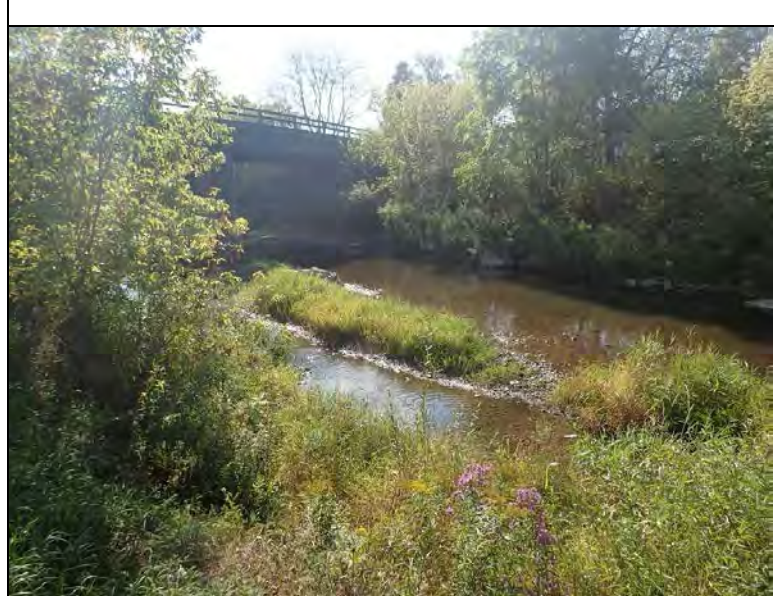
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	<p>Inspect ID: N21R_2017_p_0017 Title: USACE_CELRB_N21R_2017_p_0017_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Shoaling (S-16) on left bank and in center of channel from drop structure to Broadway Street bridge. (Dyke Creek); Action: Remove shoal.; Station_1: 24+00; Station_2: 33+00</p>
	<p>Inspect ID: N21R_2017_p_0017 Title: USACE_CELRB_N21R_2017_p_0017_2.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Shoaling (S-16) on left bank and in center of channel from drop structure to Broadway Street bridge. (Dyke Creek); Action: Remove shoal.; Station_1: 24+00; Station_2: 33+00</p>



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Inspect ID: N21R_2017_p_0036 **Title:** USACE_CELRB_N21R_2017_p_0036_1.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetated shoals (S-17) on concrete sideslopes on both banks and in channel from State Route 417 bridge to Main Street bridge. (Dyke Creek); **Action:** Remove vegetation from concrete.; Station_1: 12+00; Station_2: 18+00



Inspect ID: N21R_2017_p_0036 **Title:** USACE_CELRB_N21R_2017_p_0036_2.jpg
Rated Item: 2. Shoaling (sediment deposition) **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetated shoals (S-17) on concrete sideslopes on both banks and in channel from State Route 417 bridge to Main Street bridge. (Dyke Creek); **Action:** Remove vegetation from concrete.; Station_1: 12+00; Station_2: 18+00



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	<p>Inspect ID: N21R_2017_p_0041 Title: USACE_CELRB_N21R_2017_p_0041_1.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Vegetated shoaling (S-18) on both banks from convergence of Dyke Creek to the State Route 417 bridge.; Action: Remove shoaling.; Station_1: 11+00; Station_2: 2+00</p>
	<p>Inspect ID: N21R_2017_p_0041 Title: USACE_CELRB_N21R_2017_p_0041_2.jpg Rated Item: 2. Shoaling (sediment deposition) Caption: Rating: Minimally Acceptable; Remarks: Vegetated shoaling (S-18) on both banks from convergence of Dyke Creek to the State Route 417 bridge.; Action: Remove shoaling.; Station_1: 11+00; Station_2: 2+00</p>



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Inspect ID: N21R_2017_p_0009 **Title:** USACE_CELRB_N21R_2017_p_0009_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-50) - Concrete blocks, guardrail, utility pole, guy wire, and dead end sign encroachments on left bank at end of Miller Street just upstream of drop structure. (Dyke Creek); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 35+00



Inspect ID: N21R_2017_p_0013 **Title:** USACE_CELRB_N21R_2017_p_0013_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Acceptable; Remarks: Drop Structure in acceptable condition. (Dyke Creek); Action: NA; Station_1: 35+00



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Inspect ID: N21R_2017_p_0018 **Title:** USACE_CELRB_N21R_2017_p_0018_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (NEW) - 18" CMP on left bank channel sideslope at Loring Ave.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: D 32+00



Inspect ID: N21R_2017_p_0018 **Title:** USACE_CELRB_N21R_2017_p_0018_2.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (NEW) - 18" CMP on left bank channel sideslope at Loring Ave.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: D 32+00



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Inspect ID: N21R_2017_p_0024 **Title:** USACE_CELRB_N21R_2017_p_0024_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-51) - wood stairs on left bank channel slope just downstream of railroad bridge. (Dyke Creek); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 21+00



Inspect ID: N21R_2017_p_0026 **Title:** USACE_CELRB_N21R_2017_p_0026_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (NEW) - 12" HDPE outfall on left bank channel sideslope, 50' downstream of Railroad bridge; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: D 22+00



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Inspect ID: N21R_2017_p_0027 **Title:** USACE_CELRB_N21R_2017_p_0027_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-52) - wooden stairs and railing encroachments on left bank channel slope just downstream of railroad bridge. (Dyke Creek); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 21+00



Inspect ID: N21R_2017_p_0030 **Title:** USACE_CELRB_N21R_2017_p_0030_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized Alteration (A-54) - 12' metal outfall pipe with riprap apron on left bank channel slope just upstream of Main Street bridge. (Dyke Creek); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: D 20+00; on asdbuilt; ;



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Inspect ID: N21R_2017_p_0031 **Title:** USACE_CELRB_N21R_2017_p_0031_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Unauthorized alteration (A-53) - wood stairs left bank channel slope. (Dyke Creek); Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 20+00



Inspect ID: N21R_2017_p_0033 **Title:** USACE_CELRB_N21R_2017_p_0033_1.jpg
Rated Item: 3. Encroachments **Caption:** Rated Item: 1. Public Sponsor (A or U only); Rating: Acceptable; Remarks: Unauthorized Alteration (NEW) - 24" CMP outfall on left bank channel sideslope, 50' upstream of Main Street bridge.; Action: Submit Section 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: D 19+00



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Inspect ID: N21R_2017_p_0037 **Title:** USACE_CELRB_N21R_2017_p_0037_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Acceptable; Remarks: Approved
 Alteration - State Route 417 bridge replacement over Dyke Creek.; Action: NA;
 Station_1: 11+00



Inspect ID: N21R_2017_p_0038 **Title:** USACE_CELRB_N21R_2017_p_0038_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks:
 Unauthorized Alteration (A-55) - Heating, electrical, and plumbing yard on Dyke Creek
 left bank just upstream of State Route 417 bridge. (Dyke Creek); Action: Submit Section
 408 Alteration Request to USACE or remove unauthorized alteration.; Station_1: 15+00;
 Station_2: 13+00



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Inspect ID: N21R_2017_p_0012 **Title:** USACE_CELRB_N21R_2017_p_0012_1.jpg
Rated Item: 4. Erosion **Caption:** Rating: Minimally Acceptable; Remarks: Erosion on left bank channel sideslope just downstream of Drop Structure.; Action: Repair erosion; Station_1: D 35+00





Inspect ID: N21R_2017_p_0012 **Title:** USACE_CELRB_N21R_2017_p_0012_2.jpg
Rated Item: 4. Erosion **Caption:** Rating: Minimally Acceptable; Remarks: Erosion on left bank channel sideslope just downstream of Drop Structure.; Action: Repair erosion; Station_1: D 35+00



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	<p>Inspect ID: N21R_2017_p_0029 Title: USACE_CELRB_N21R_2017_p_0029_1.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Erosion on left bank channel sideslope 175' upstream of Main St. bridge.; Action: Repair erosion.; Station_1: D 20+00</p>
	<p>Inspect ID: N21R_2017_p_0029 Title: USACE_CELRB_N21R_2017_p_0029_2.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Erosion on left bank channel sideslope 175' upstream of Main St. bridge.; Action: Repair erosion.; Station_1: D 20+00</p>





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	<p>Inspect ID: N21R_2017_p_0032 Title: USACE_CELRB_N21R_2017_p_0032_1.jpg Rated Item: 4. Erosion Caption: Rating: Minimally Acceptable; Remarks: Erosion on left bank upstream of Main Street. (Dyke Creek); Action: Repair erosion.; Station_1: 19+00</p>
	<p>Inspect ID: N21R_2017_p_0014 Title: USACE_CELRB_N21R_2017_p_0014_1.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Trees and unwanted vegetation in riprap on right bank from Broad Street bridge to Drop Structure. (Dyke Creek); Action: Remove unwanted vegetation.; Station_1: 35+00; Station_2: 28+00</p>





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	<p>Inspect ID: N21R_2017_p_0014 Title: USACE_CELRB_N21R_2017_p_0014_2.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Trees and unwanted vegetation in riprap on right bank from Broad Street bridge to Drop Structure. (Dyke Creek); Action: Remove unwanted vegetation.; Station_1: 35+00; Station_2: 28+00</p>
	<p>Inspect ID: N21R_2017_p_0022 Title: USACE_CELRB_N21R_2017_p_0022_1.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Significant unwanted vegetation and trees in riprap on both banks between Railroad bridge and Broad Street bridge. (Dyke Creek); Action: Remove unwanted vegetation.; Station_1: 24+00; Station_2: 22+00</p>



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Inspect ID: N21R_2017_p_0022 **Title:** USACE_CELRB_N21R_2017_p_0022_2.jpg
Rated Item: 10. Riprap Revetments & Banks **Caption:** Rating: Unacceptable; Remarks: Significant unwanted vegetation and trees in riprap on both banks between Railroad bridge and Broad Street bridge. (Dyke Creek); Action: Remove unwanted vegetation.; Station_1: 24+00; Station_2: 22+00



Inspect ID: N21R_2017_p_0022 **Title:** USACE_CELRB_N21R_2017_p_0022_3.jpg
Rated Item: 10. Riprap Revetments & Banks **Caption:** Rating: Unacceptable; Remarks: Significant unwanted vegetation and trees in riprap on both banks between Railroad bridge and Broad Street bridge. (Dyke Creek); Action: Remove unwanted vegetation.; Station_1: 24+00; Station_2: 22+00





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	<p>Inspect ID: N21R_2017_p_0025 Title: USACE_CELRB_N21R_2017_p_0025_1.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Significant trees and heavy unwanted vegetation in riprap on both banks between Main Street bridge and Railroad bridge. (Dyke Creek); Action: Remove trees and unwanted vegetation.; Station_1: 22+00; Station_2: 18+00</p>
	<p>Inspect ID: N21R_2017_p_0025 Title: USACE_CELRB_N21R_2017_p_0025_2.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Significant trees and heavy unwanted vegetation in riprap on both banks between Main Street bridge and Railroad bridge. (Dyke Creek); Action: Remove trees and unwanted vegetation.; Station_1: 22+00; Station_2: 18+00</p>




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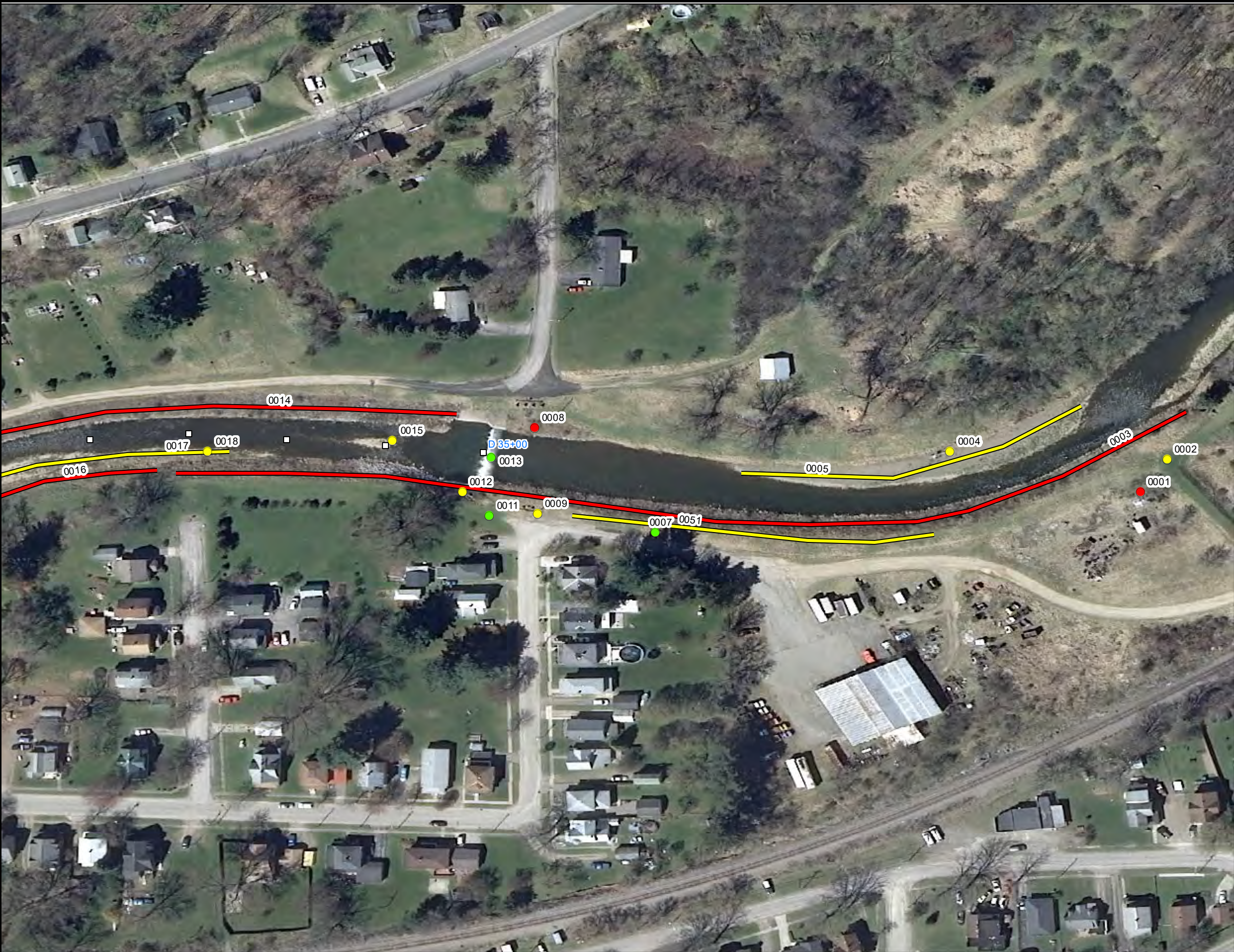
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	<p>Inspect ID: N21R_2017_p_0035 Title: USACE_CELRB_N21R_2017_p_0035_1.jpg Rated Item: 10. Riprap Revetments & Banks Caption: Rating: Unacceptable; Remarks: Significant trees and vegetation in riprap on both banks just downstream of Main Street bridge. (Dyke Creek); Action: Remove trees and vegetation from riprap.; Station_1: 17+00</p>



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Attachment “G” – Right Bank and Dyke Creek:
Levee Inspection Map



Levee Inspection Map

**Genesee River - Right Bank and
Dyke Creek, Wellsville**

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Periodic
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix:
USACE_CELRB_N21R_2017_p
Map created: 21 September 2018

- Observation Points**
- Acceptable
 - Minimally Acceptable
 - Unacceptable
 - Not Applicable
- Observation Lines**
- Acceptable
 - Minimally Acceptable
 - Unacceptable
 - Not Applicable

0 140 280 Feet





Levee Inspection Map

Genesee River - Right Bank and Dyke Creek, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Periodic
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix: USACE_CELRB_N21R_2017_p
Map created: 21 September 2018

Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

0 140 280 Feet

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Allegany New York



Levee Inspection Map

Genesee River - Right Bank and Dyke Creek, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Periodic
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix: USACE_CELRB_N21R_2017_p
Map created: 21 September 2018

Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

0 140 280 Feet

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Allegany New York



Levee Inspection Map

Genesee River - Right Bank and Dyke Creek, Wellsville

Location: Wellsville, New York
Year/cycle: 2017 p
Inspection type: Periodic
Inspected by: USACE - Buffalo District
Inspection date(s): 09/27/17
Observation ID prefix: USACE_CELRB_N21R_2017_p
Map created: 21 September 2018

Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

0 140 280 Feet

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Allegany New York

Attachment “H” – Rehabilitation Program Eligibility
Determination Checklists
(“Left Bank Levee and Channel” and “Right Bank and Dyke
Creek”)

SUBJECT: FY17 Periodic Inspection of Completed Works, Flood Risk Management Project, Genesee River, Wellsville, New York (09/27/17)

Rehabilitation Program Eligibility Determination		
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Public sponsor provided maintenance information per the Public Sponsor Pre-Inspection Form.
Yes <input type="checkbox"/>	No <input type="checkbox"/>	Non-federal levee system meets Initial Eligibility criteria.
N/A <input checked="" type="checkbox"/>		
If either of the above items is marked "No" the levee system is not eligible.		
Rating	Rated Item	
Levee Embankments		
A <input type="checkbox"/>	M <input checked="" type="checkbox"/>	U <input type="checkbox"/>
		3. Encroachments
A <input type="checkbox"/>	U <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
		4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures)
A <input checked="" type="checkbox"/>	M <input type="checkbox"/>	U <input type="checkbox"/>
		5. Slope Stability
A <input checked="" type="checkbox"/>	M <input type="checkbox"/>	U <input type="checkbox"/>
		6. Erosion/ Bank Caving
A <input type="checkbox"/>	M <input checked="" type="checkbox"/>	U <input type="checkbox"/>
		10. Animal Control
A <input type="checkbox"/>	M <input checked="" type="checkbox"/>	U <input type="checkbox"/>
		11. Culverts/Discharge Pipes (This item includes both concrete and corrugated metal pipes.)
N/A <input type="checkbox"/>		
A <input type="checkbox"/>	M <input type="checkbox"/>	U <input type="checkbox"/>
		14. Underseepage Relief Wells/Toe Drainage Systems
N/A <input checked="" type="checkbox"/>		
Floodwalls - Not Applicable		
A <input type="checkbox"/>	M <input type="checkbox"/>	U <input type="checkbox"/>
		2. Encroachments
A <input type="checkbox"/>	M <input type="checkbox"/>	U <input type="checkbox"/>
		3. Closure Structures (Stop Log Closures and Gates)
A <input type="checkbox"/>	M <input type="checkbox"/>	U <input type="checkbox"/>
		5. Tilting, Sliding, or Settlement of Concrete Structures
A <input type="checkbox"/>	M <input type="checkbox"/>	U <input type="checkbox"/>
		6. Foundation of Concrete Structures

Appendix H Rehabilitation Program Eligibility Determination Checklist

A	<input type="checkbox"/>	8. Underseepage Relief Wells/Toe Drainage Systems
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
Interior Drainage System		
A	<input type="checkbox"/>	9. Culverts/Discharge Pipes
M	<input checked="" type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input checked="" type="checkbox"/>	10. Sluice/Slide Gates
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input checked="" type="checkbox"/>	11. Flap Gates/Flap Valves/Pinch Valves
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
Pump Stations - Not Applicable		
A	<input type="checkbox"/>	17. Intake and Discharge Pipelines
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input type="checkbox"/>	18. Sluice/Slide Gates
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input type="checkbox"/>	19. Flap Gates/Flap Valves/Pinch Valves
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
Rehabilitation Program Status		
Active	<input checked="" type="checkbox"/>	System meets all interim eligibility criteria, including having received a rating of A, M, N/A or Yes for all subset items and is therefore eligible for rehabilitation assistance.
Inactive	<input type="checkbox"/>	System does not meet interim eligibility requirements.
<p>Comments: This checklist applies to all three levee systems associated with the Genesee River, Wellsville, NY FRM project (Genesee River - Left Bank, Dyke Creek - Left Bank, & Genesee River, Right Bank). As a result of this FY16 routine inspection, the overall ratings for these systems remain as "UNACCEPTABLE" (U) primarily due to extensive vegetation and channel shoaling. However, the project is "Active" in the USACE Rehabilitation Program since all items on this checklist are rated as either "Acceptable" (A) or "Minimally Acceptable" (M).</p>		

Note: Item numbers listed above refer to their placement in the Flood Damage Reduction System Inspection Report. In order to be eligible, all of the following items must be rated A, M, N/A or Yes.

Attachment “I” – Project Map

Attachment “I” – Project Map

