



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WV 25701

January 11, 2017

Engineering and Construction Division

Honorable Kathy Catazaro-Perry
Municipal Government Annex
City Administration Building
151 Lincoln Way East
Massillon, Ohio 44646

Dear Mayor Catazaro-Perry:

A routine continuing eligibility inspection of the Massillon Local Flood Protection Project was conducted on November 2-3, 2016, by Mr. Jon Samsa of your organization and Mr. Charles Barry and Mr. David Humphreys of the Huntington District.

As a part of the U.S. Army Corps of Engineers (USACE) Levee Safety Program, routine inspections are intended to verify proper maintenance, owner readiness, and component operation.

I am pleased to inform you that the Massillon Local Protection Projects (both East and West systems) are rated Minimally Acceptable and are active in our Rehabilitation Inspection Program (RIP). Specifically, both projects are eligible for potential Federal assistance under the authority of PL 84-99 should components under your jurisdiction become damaged by a flood event.

The purpose of the Levee Safety Program is to prevent loss of life and catastrophic damage, preserve the value of the Federal investment, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections verify that Flood Damage Reduction structures and facilities are continually maintained and operated to obtain maximum benefits.

A minimally acceptable system rating indicates there are maintenance deficiencies associated with project components. The assessments of individual components rated during the inspection were based on criteria provided in the enclosed detailed inspection report template. One or more items were rated as minimally acceptable and an engineering determination concluded that the items would not prevent the system from performing as intended during the next flood event.

The enclosed detailed inspection reports contain the maintenance items that require attention. I am furnishing a copy of this letter, with enclosures, to the Ohio Emergency Management Agency and FEMA Region V for their public safety and potential response mission awareness.

Please feel free to contact Mr. Steve Spagna, our Levee Safety Program Manager, at 304-399-5805 if you have any questions.

Sincerely,

A handwritten signature in black ink, reading "August W. Martin". The signature is written in a cursive style with a large, stylized "A" and "M".

August W. Martin, P.E., PMP
Huntington District Levee Safety Officer

Enclosures

Copies furnished:

Ohio Emergency Management Agency
3397-3023 W Dublin Granville Rd
Columbus, OH 43235

Stark County Emergency Management
4500 Atlantic Blvd-LL
Canton, Ohio 44705

FEMA Region IV
536 South Clark Street
Chicago, IL 60605

CELRH-OP-DOT



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Flood Damage Reduction Segment / System Inspection Report

Name of Segment / System: Massillon, OH, LPP, (East)

Public Sponsor(s): City of Massillon, Ohio

Public Sponsor Representative: Collection System Maintenance Supervisor

Sponsor Phone: 3330-280-2246

Sponsor Email: jsamsa@massillonohio.com

Corps of Engineers Inspector: David Humphreys, P.E. / Charles Barry, P.E.

Inspection Start Date: 11/2/2016

Inspection End Date: 11/3/2016

Inspection Report Prepared By: David Humphreys, P.E.

Date Report Prepared: 12/1/2016

Internal Technical Review (for Periodic Inspections) By: Charles D. Barry, P.E./Steven S. Spagna, P.G., C.F.M., LSPM Date of ITR: 12/28/16

Final Approved By: August W. Martin P.E., P.M.P., LSO

Date Approved: 12 Jan 17

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) Massillon, OH, LPP, (East)
2. Reporting period: (month/day/year to month/day/year) July 25, 2015 to November 3, 2016
3. Summary of maintenance required by last inspection report: Vegetation removal and animal burrows were the primary observations for the previous routine report.
4. Summary of maintenance performed this reporting period: Periodic checks of pump station components including Megger testing. Normal mowing and clearing by USACE. Routine architectural improvements to pump station buildings.
5. Summary of maintenance planned next reporting period: Continuing readiness checks - periodic operation of components, lubrication, etc - and addressing any issues identified in the upcoming inspection.
6. Summary of changes to segment / system since last inspection: None.
7. Problems/ issues requiring the assistance of the US Army Corps of Engineers: No assistance, but USACE maintains the levee at Massillon and must make levee recommendations here part of USACE O&M budget and work plan.



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**Flood Damage Reduction Segment / System
Inspection Report
Massillon, OH, LPP, (East) (MALE)**

**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)

[illegible]

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**Flood Damage Reduction Segment / System
Inspection Report
Massillon, OH, LPP, (East) (MALE)**

Pre-Inspection Form
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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.	RIIs 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.	Updated O&M manual in 2010.
		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.	Sandbags and other emergency supplies are present and stored at the railroad closure storage building that is a component of the West system.
		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)	M	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.	Sponsor collaborates with local county emergency staff and flood preparedness/preventative maintenance remains exceptional at this project. The sponsor provides a yearly report outlining work orders (interval triggered) that indicate inspection, maintenance, and preparedness activities for the components the sponsor is responsible to operate and maintain. An M rating was only assigned here because of the requirement that a "system-specific" flood response plan exist and a plan of that nature has not been prepared.
		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
Massillon, OH, LPP, (East) (MALE)

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	A	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.	MALE_2016_a_0003: Station_1 NA: Typical landside toe. Note the improvement to the disposition of vegetation from previous inspections. Operations staff have done a good job of directing mowing contractor.: NA (A); Vegetation is improved from previous inspection.
		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.	
		U	Significant vegetation growth (brush, weeds, or any trees greater than 2 inches in diameter) is present within the zones described above and must to be removed to reestablish or ascertain levee integrity.	
2. Sod Cover	M	A	There is good coverage of sod over the levee.	MALE_2016_a_0005: Station_1 NA: Typical conditions.: NA (A) MALE_2016_a_0006: Station_1 NA: Sod cover challenged at this location.: NA (M); Sod cover could be improved in some areas. The sandy/gravelly nature of the overburden and levee material appear to make the establishment of good sod cover a challenge. For the most part, the poor sod cover is at locations of levee "overbuild" (say, as witnessed in the vicinity of the Sippos Creek station) or in the shadow profile of the multiple bridges that cross 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	A	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.	MALE_2016_a_0007: Station_1 NA: Block steps installed in levee by unknown party.: NA (M); The east system has a multitude of crossings that may be considered "encroachments". The National Levee Database survey contractor, in fact, documented over 150 such "encroachments", however, they are typically related to existing facilities and outgrants for permitted occupation associated with highway bridges, railroad bridges, and bike trail features. They will be reviewed and likely removed from the database.
		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.	
4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag)	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.	No closure structures are contained in the east system at Massillon.

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Flood Damage Reduction Segment / System
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Massillon, OH, LPP, (East) (MALE)

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
Closures) (A or U only)		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.	No stability issues noted.
		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.	MALE_2016_a_0004: Station_1 NA: No erosion present in this particular reach.; NA (A); Erosion was addressed in previous USACE bank protection work and the system continues to look good in that regard in 2016.
		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.	No settlement noted. Levee crest elevations were checked along both the east and west levees during this inspection by a third party (commercial insurer with clients in the leveed area).
		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.	MALE_2016_a_0001: Station_1 NA: There's a 10-inch diameter hole in the crest of the levee near the tie-in to Route 21. It is roughly ten-inches deep. It is well-defined, circular and more of a safety hazard than a performance hazard. Perhaps it is a valve for a pipeline crossing.; Investigate cause and take action regarding safety. (U) MALE_2016_a_0002: Station_1 NA: A sinkhole about 15-20' east of the levee/toe drain north of piezometer B6 09.; NA (U); USACE Operations staff will be advised to investigate these issues as the owner and maintainer of the levees as Massillon.
		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.	No cracking present.

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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	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.	Some animal borrows are present (by no means pervasive) and it appears that they have been flagged for upcoming repair efforts. Pin flags likely set by USACE mowing contractor or Operations personnel.
		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.)	A	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.	MALE_2016_a_0008: Station_1 NA: Sippo Pressure conduit inspected by city staff using visual methods in August 2015.: NA (A) MALE_2016_a_0009: Station_1 NA: Whetmore Avenue Pressure conduit inspected by city staff using visual methods in August 2015.: NA (A); Pipelines passing under the levee have been inspected and records are available in the offices of the Huntington District. Video or visual inspection of particular pipelines (based on PACP rating from previous video inspections) will be required during the next maintenance period as the 5 year period for inspection is at hand.
		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.	

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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
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.	Bank protection or armoring, where present, is in good condition and no noticeable changes from the previous inspection were noted.
		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	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	A	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.	Relief wells at Massillon are included in a Huntington District relief well maintenance program since the levee is operated and maintained by USACE.
		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.	No history of seepage during loading.
		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.	

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
	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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Inspect ID: MALE_2016_a_0003 **Title:** USACE_CELRH_MALE_2016_a_0003_1.jpg
Rated Item: 1. Unwanted Vegetation Growth **Caption:** Rating: Acceptable; Remarks: Typical landside toe. Note the improvement to the disposition of vegetation from previous inspections. Operations staff have done a good job of directing mowing contractor.; Vegetation across the project showed signs of attention by the USACE Operations staff. Much improved and certainly a continuous maintenance activity.



Inspect ID: MALE_2016_a_0006 **Title:** USACE_CELRH_MALE_2016_a_0006_1.jpg
Rated Item: 2. Sod Cover **Caption:** Rating: Minimally Acceptable; Remarks: Sod cover challenged at this location.; This is an overbuilt section for channel access so erosion concern is low, but poor sod cover exhibited.



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Inspect ID: MALE_2016_a_0006 **Title:** USACE_CELRH_MALE_2016_a_0006_2.jpg
Rated Item: 2. Sod Cover **Caption:** Rating: Minimally Acceptable; Remarks: Sod cover challenged at this location.; Poor sod cover in the area of the Sippo Creek outlet.



Inspect ID: MALE_2016_a_0004 **Title:** USACE_CELRH_MALE_2016_a_0004_1.jpg
Rated Item: 6. Erosion/ Bank Caving **Caption:** Rating: Acceptable; Remarks: No erosion present in this particular reach.; Erosion has been an issue at Massillon and USACE has performed bank stabilization with stone protection schemes. Given this history, erosion should be something inspectors monitor at every visit to the project area.



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Inspect ID: MALE_2016_a_0001 **Title:** USACE_CELRH_MALE_2016_a_0001_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Unacceptable; Remarks: There's a 10-inch diameter hole in the crest of the levee near the tie-in to Route 21. It is roughly ten-inches deep. It is well-defined, circular and more of a safety hazard than a performance hazard. Perhaps it is a valve for a pipeline crossing.; Thigh-deep hole (safety concern) in top of levee.



Inspect ID: MALE_2016_a_0002 **Title:** USACE_CELRH_MALE_2016_a_0002_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Unacceptable; Remarks: A sinkhole about 15-20' east of the levee/toe drain north of piezometer B6 09.; Depression landward of levee toe.



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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.	Clear vegetation at the Sippo Creek pressure conduit inlet to prevent potential fouling and a more problematic removal issue.
		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.	None noted for the two pressure conduits for this rated item - Sippo and Whetmore.
		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.	Clear Sippo Creek ponding area of sediment. Inspector understands that this is done regularly.
		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.	Concrete in good condition.

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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.	No tilting or sliding noted.
		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.	No issues noted.
		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	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.	No issues.
		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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9. Culverts/ Discharge Pipes ⁴	A	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.	Both the Sippo Creek and Whetmore Avenue pressure conduits discharge directly into the Tuscarawas and their terminating culverts under the levee and Route 21 are competent. See observation comments under "Levee" section, same rated item.
		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	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.	
10. Sluice / Slide Gates ⁵	A	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.	Sluice gate for lower Sippo basin stormwater entrance into the Sippo pressure conduit is in good condition and regularly test operated.
		N/A	There are no discharge pipes/ culverts.	
		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.	Flap valves for drainage inlets were operable and in good condition.
		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.	Rated as part of the adjacent pump station feature.
		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	A	A	All metal parts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	Well maintained and replaced as service life dictates.
		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.	No issues at the pressure conduit discharge locations for either Sippo Creek or Whetmore Avenue.
		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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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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Pump Stations

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Pump Stations Operating, Maintenance, Training, & Inspection Records	A	A	Operation, maintenance and inspection records are present at the pump station and are being used and updated, and personnel have been trained in pump station operations. Names and last training date shown in the record book.	Pump stations are all well-maintained and all pumps were operated. Buildings were in good condition and the sponsor demonstrates excellent knowledge of the equipment and performs periodic maintenance. Inspection and maintenance records are maintained.
		M	Operation, maintenance and inspection records are present but not adequately used and updated.	
		U	No operation, maintenance and inspection records are present, or refresher training for personnel has not been conducted.	
2. Pump Station Operations and Maintenance Equipment Manuals	A	A	Operation and Maintenance Equipment Manuals and/or posted operating instructions are present and updated as required, and adequately cover all pertinent pump station features. O&M manuals include points of contact for manufacturers and suppliers of major equipment used in the facility.	
		M	Operation and Maintenance Equipment Manuals and/or posted operating instructions are present and adequately cover all pertinent pump station features. However, they are incomplete and the necessary updates have not been made.	
		U	Operation and Maintenance Equipment Manuals are not available.	
3. Safety Compliance	A	A	Safety compliance inspection reports by applicable local, state, or federal agencies available for review.	No safety issues apparent.
		M	No safety compliance inspection reports are available for review.	
4. Communications (A or M only)	A	A	A telephone, cellular phone, two-way radio, or similar device is available to pump station operator and maintenance personnel.	Communications are not an issue.
		M	A telephone, cellular phone, two-way radio, or similar device is not available to pump station operator and maintenance personnel.	
5. Plant Building	A	A	The building is in good structural condition with no major foundation settlement problems. The roof is not leaking, intake & exhaust louvers are clear of debris, fans are operational, etc.	Buildings all in good condition.
		M	There are minor structural defects, minimal foundation settlement, leaks, or other conditions noted that need repair. Defects do not threaten the structural integrity or stability of the building, and will not impact pumping operations.	
		U	The structural integrity or stability of the building is threatened, or there is damage to the building that threatens safety of the operator or impacts pumping operations.	
6. 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.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		N/A	There are no features noted that require safety fencing.	
7. Pumps ¹	A	A	All pumps are properly maintained and lubricated. Systems are periodically tested and documented for review. No vibration, cavitation noises or unusual sounds are noted when the pump is operated. Bearing temperature sensor records don't indicate any problems.	Pumps at all stations were in good condition. No apparent issues.
		M	Minor deficiencies noted that need to be closely monitored or repaired, such as the presence of slight vibrations, leakage of packing gland, bearing temperature sensors are inoperable or no record is present. However, the pumps are operational and are expected to perform through the next period of usage.	
		U	Major deficiencies identified that may significantly reduce pumping operations. For example, bearing sensor records indicate problems, excessive vibration noted, impellers are badly corroded, or there are eroded or missing blades.	
8. Motors, Engines, Fans, Gear Reducers, Back Stop Devices, etc.	A	A	All items are operational. Preventative maintenance and lubrication is being performed and the system is periodically subjected to performance testing. Instrumentation, alarms, bearing sensors and auto shutdowns are operational.	All motors test operated during the inspection and all were functional.
		M	Systems have minor deficiencies, but are operational and will function adequately through the next flood. Bearing sensors are not operational.	
		U	One or more of the primary motors or systems is not operational, or noted deficiencies have not been corrected.	
9. Sumps / Wet well	A	A	Clear of debris, sediment, or other obstructions. Procedures are in place to remove debris accumulation during operation.	No issues. Excellent condition. Dehumidification and pumped dry to extend service life of pumps and other metal components extending below the motor floors. A temporary sump pump issue at Federal Avenue is being addressed.
		M	Debris, sediment, or other obstructions may be present and must be removed, but the sump/ wet well will function as intended during the next flood. Procedures are in place to remove debris accumulation during operation.	
		U	Large debris or excessive silt present which will hinder or damage pumps during operation, or no procedures established to remove debris accumulation during operation.	
10. Mechanical Operating Trash Rakes ¹	NA	A	Drive chain, bearing, gear reducers, and other components are in good operating condition and are being properly maintained.	
		M	The trash rake is in need of maintenance, but is still operational.	
		U	Trash rake not operational or deficiencies will inhibit operations during the next flood event.	
		N/A	There are no mechanical trash rakes.	
11. Non-Mechanical Trash Racks	A	A	Trash racks are fastened in place and properly maintained.	Good throughout the station inventory.
		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.	

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		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.	
12. Fuel System for Pump Engines	NA	A	Fuel system is operational, day tank present and operational, fuel fresh and rotated regularly.	
		M	Fuel system is operational and of adequate capacity, but day tank is missing or fuel is not fresh and rotated regularly.	
		U	Fuel system not functional.	
		N/A	No fuel system.	
13. Power Source	A	A	The normal power source and backup generators, if installed, are operational, properly exercised and well maintained. Surge protection, grounding, lightning protection, transformers, and automatic/manual transfer of main power to backup system is working.	Commercial power typically reliable.
		M	Normal power source and backup units, if applicable, are operational with minor discrepancies or maintenance, inspection and exercising record is present but not up to date. Preventative maintenance or repairs are required.	
		U	Normal power source or generators are not operational and must be repaired; or generator, if required, is not on site.	
14. Electrical Systems ²	A	A	Operational and maintained free of damage, corrosion, and debris. Preventative maintenance and system testing is being performed periodically.	Maintained and in operating order. No issues during test operations.
		M	Operational with minor discrepancies. Preventative maintenance or repairs are required, but the components are expected to function adequately during the next flood event.	
		U	Components of the electrical system will not function adequately during the next flood event and must be replaced.	
15. Megger Testing on Pump Motors and Critical Power Cables	A	A	Results of megger tests on pump motors or critical power cables show that the insulation meets manufacturer's or industry standards. Tested within the last year.	Megger testing performed regularly as part of Masillon's exemplary work order system.
		M	Megger testing not conducted within the past year. If megger tests on pump motors indicate that insulation resistance is below the manufacturer's or industry standard, but the resistance can be corrected with proper application of heat, this is minimally acceptable. (The application of heat does not relate to critical power cables.)	
		U	Megger tests not conducted within past two years, or tests indicate that insulation resistance is low enough that the equipment will not be able to meet design standards of operation; or evidence of arcing or shorting is detected visually.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
16. Enclosures, Panels, Conduit and Ducts	A	A	All enclosures, panels, conduits, and ducts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	
		M	Minor surface corrosion which appears to be maintainable. Cleaning and painting required.	
		U	Severely corroded and must be replaced to prevent failure, equipment damage, or safety issues.	
17. Intake and Discharge Pipelines	A	A	Intake and discharge pipelines have no corrosion and paint is intact, except for minor touch up required. Pipe couplings and anchors have no leakage or corrosion.	
		M	Intake and discharge pipelines have minor corrosion and repair and painting is required. Pipe coupling with anchors have minor leakage, corrosion and require bolts to be tightened.	
		U	Intake and discharge pipelines have major corrosion and replacement is required. Pipe coupling with anchors have major leakage and is heavily corroded and requires replacement.	
18. Sluice/ Slide Gates ³	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.	Same as the west system - gates in good working order. Trial run as proscribed prior to flood seasons according to submitted work order documentation.
		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.	
19. Flap Gates/ Flap Valves/ Pinch Valves ¹	NA	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 gates on discharge lines from pump station.	
20. Cranes ¹	A	A	Cranes operational and have been inspected and load tested in accordance with applicable standards within the last year. Documentation is on hand.	The sponsor, when required, will use alternative means to lift pump motors, shafts, and pumps for major maintenance

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
Massillon, OH, LPP, (East) (MALE)

Pump Stations
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Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		M	Cranes have not been inspected or operationally tested within the past year, or there are visible signs of corrosion, oil leakage, etc, requiring maintenance.	as they have observed that the piers in the pump station structures receiving the chain hoist loading exhibit cracking that reduces their confidence in the use of the original station equipment hoist.
		U	Cranes are not operational, and this may prevent the pump station from functioning as required. No documentation available on cranes.	
		N/A	There are no cranes.	
21. Other Metallic Items (Equipment, Ladders, Platform Anchors, etc)	A	A	All metal parts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	Maintenance - painting, repair or replacement - as required is being performed.
		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.	

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

² Check motor control center, circuit breakers, pilot lights, volt meters, ammeters, sump level indicator, gate position indicators, remote operating systems, including SCADA and telemetry systems. Also, check interior and exterior lighting; especially lighting near trash rack screens, ladders, walkways, etc.

³ 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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Flood Damage Reduction Segment / System
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Massillon, OH, LPP, (East) (MALE)

Pump Stations
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Flood Damage Reduction Segment / System Supplemental Data Sheet

This form is intended for the Corps' internal use and may not need to be updated with every inspection.

Name of Segment / System: Massillon, OH, LPP, (East)	
Sponsor: City of Massillon, Ohio	
Location: The project is located in the City of Massillon in Stark County, Ohio.	
River Basin: Tuscarawas River	
Project Description: Flood Control Act of 28 June 1938, Public No. 761	
Authority that Project was Constructed Under: Flood Control Act of 28 June 1938, Public No. 761, Seventy-fifth Congress, third session	
Date of Construction: 1/1/1951	
Approximate Annual Maintenance Costs:	
Construction:	☒ Federally Constructed ☐ Non-Federally Constructed
Maintenance:	☒ Federally Maintained ☐ Non-Federally Maintained
National Flood Insurance Program:	
a. Is the project currently NFIP? ☒ Yes ☐ No	
b. If in the NFIP, Date of Certification (per 44 CFR 65.10): 12/24/2015	
Datum Information:	
a. Datum used for the design and construction of this project is: NGVD29	
b. Current recommended datum for this project is: NAVD88	
c. Has the Project been converted to the current recommended datum? ☐ Yes ☒ No	
Levee Embankment Data:	Protected Features (For use in preparing estimates and PIRs):
a. Levee Designed Gage Function Reading/Station:	a. Total acres protected: 195
b. Level of Protection Provided: 4000 Yr. ACE	b. Total agriculture production acres protected:
c. Average Height of Levee: 15	c. Towns:
d. Average Crown Width: 12	d. Businesses:
e. Average Side Slope: 2.5H:1V	e. Residences:
	f. Roads:
	g. Utilities:
	h. Barns:
	i. Machine Sheds:
	j. Outbuildings:
	k. Irrigation Systems:
	l. Grain Bins:
	m. Other Facilities:



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**Flood Damage Reduction Segment / System
Inspection Report
Massillon, OH, LPP, (East) (MALE)**

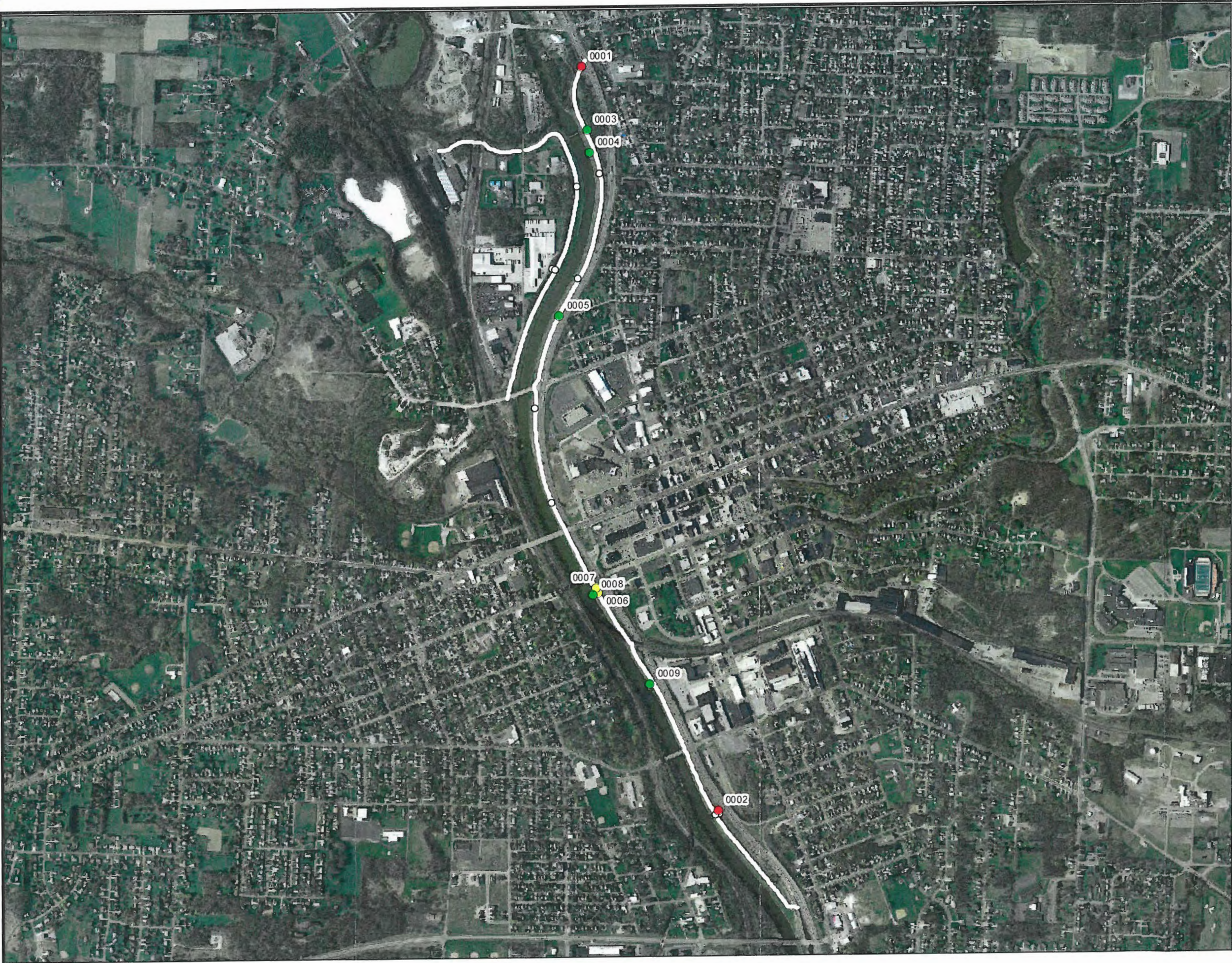
**Supplemental Data Sheet
Page 1 of 1**

MAP POINT INDEX

Year: 2016

Project: Massillon, OH, LPP, (East)

ID	Rating	Item	Remarks
001	U	8. Depressions/ Rutting	There's a 10-inch diameter hole in the crest of the levee near the tie-in to Route 21. It is roughly ten-inches deep. It is well-defined, circular and more of a safety hazard than a performance hazard. Perhaps it is a valve for a pipeline crossing.
002	U	8. Depressions/ Rutting	A sinkhole about 15-20' east of the levee/toe drain north of piezometer B6 09.
003	A	1. Unwanted Vegetation Growth	Typical landside toe. Note the improvement to the disposition of vegetation from previous inspections. Operations staff have done a good job of directing mowing contractor.
004	A	6. Erosion/ Bank Caving	No erosion present in this particular reach.
005	A	2. Sod Cover	Typical conditions.
006	M	2. Sod Cover	Sod cover challenged at this location.
007	M	3. Encroachments	Block steps installed in levee by unknown party.
008	A	11. Culverts/ Discharge Pipes (This item includes both concrete and corrugated metal pipes.)	Sippo Pressure conduit inspected by city staff using visual methods in August 2015.
009	A	11. Culverts/ Discharge Pipes (This item includes both concrete and corrugated metal pipes.)	Whetmore Avenue Pressure conduit inspected by city staff using visual methods in August 2015.



Levee Inspection Map

Massillon, OH, LPP, (East)

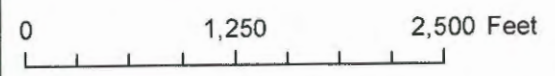
Location: Massillon, Ohio (East)
Year/cycle: 2016 a
Inspection type: Routine
Inspected by: Barry/Humphreys
Inspection date(s): 11/2/2016
Observation ID prefix:
USACE_CELRH_MALE_2016_a
Map created: 21 December 2016

Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable



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Project Name:

Massillon, Ohio (East)

Rehabilitation Program Eligibility Determination

Yes ☒ Public sponsor provided maintenance information per the Public Sponsor Pre-
No ☐ Inspection Form.

Yes ☒
No ☐ Non-federal levee system meets Initial Eligibility criteria.
N/A ☐

If either of the above items is marked "No" the levee system is not eligible.

Rating Rated Item

Levee Embankments

A ☒
M ☐
U ☐ 3. Encroachments

A ☐
U ☐
N/A ☒ 4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag
Closures)

A ☒
M ☐
U ☐ 5. Slope Stability

A ☒
M ☐
U ☐ 6. Erosion/ Bank Caving

A ☐
M ☒
U ☐ 10. Animal Control

A ☒
M ☐
U ☐
N/A ☐ 11. Culverts/Discharge Pipes (This item includes both concrete and corrugated
metal pipes.)

A ☒
M ☐
U ☐
N/A ☐ 14. Underseepage Relief Wells/Toe Drainage Systems

Floodwalls

A ☐
M ☐
U ☐ 2. Encroachments

A ☐
U ☐
N/A ☐ 3. Closure Structures (Stop Log Closures and Gates)

A ☐
M ☐
U ☐ 5. Tilting, Sliding, or Settlement of Concrete Structures

A	☐	6. Foundation of Concrete Structures
M	☐	
U	☐	
A	☐	8. Underseepage Relief Wells/Toe Drainage Systems
M	☐	
U	☐	
N/A	☐	
Interior Drainage System		
A	☒	9. Culverts/Discharge Pipes
M	☐	
U	☐	
N/A	☐	
A	☒	10. Sluice/Slide Gates
M	☐	
U	☐	
N/A	☐	
A	☒	11. Flap Gates/Flap Valves/Pinch Valves
M	☐	
U	☐	
N/A	☐	
Pump Stations		
A	☒	17. Intake and Discharge Pipelines
M	☐	
U	☐	
A	☒	18. Sluice/Slide Gates
M	☐	
U	☐	
N/A	☐	
A	☐	19. Flap Gates/Flap Valves/Pinch Valves
M	☐	
U	☐	
N/A	☐	
Rehabilitation Program Status		
Active	☒	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	☐	System does not meet interim eligibility requirements.
Comments: Levee project on the east bank of the Tuscarawas River at Massillon is in good condition and maintenance conditions indicate that it is ready to perform during the next flood event.		



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Flood Damage Reduction Segment / System Inspection Report

Name of Segment / System: Massillon, OH, LPP, (West)

Public Sponsor(s): City of Massillon, Ohio

Public Sponsor Representative: Collection System Maintenance Supervisor

Sponsor Phone: 3330-280-2246

Sponsor Email: jsamsa@massillonohio.com

Corps of Engineers Inspector: David Humphreys, P.E. / Charles Barry, P.E.

Inspection Start Date: 11/2/2016

Inspection End Date: 11/3/2016

Inspection Report Prepared By: David Humphreys, P.E.

Date Report Prepared: 12/1/2016

Internal Technical Review (for Periodic Inspections) By: Charles D. Barry, P.E. / Steven S. Spagna, P.G., C.F.M.,
LSPM

Date of ITR: 12/28/16

Final Approved By: August W. Martin P.E., P.M.P., LSO

Date Approved: 12/28/17

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) Massillon, OH, LPP, (West)
2. Reporting period: (month/day/year to month/day/year) July 25, 2015 to November 3, 2016
3. Summary of maintenance required by last inspection report: Vegetation removal and animal burrows were the primary observations for the previous routine report.
4. Summary of maintenance performed this reporting period: Periodic checks of pump station components including Megger testing. Normal mowing and clearing by USACE. Routine architectural improvements to pump station buildings.
5. Summary of maintenance planned next reporting period: Continuing readiness checks - periodic operation of components, lubrication, etc. - and addressing any issues identified in the upcoming inspection.
6. Summary of changes to segment / system since last inspection: None.
7. Problems/ issues requiring the assistance of the US Army Corps of Engineers:



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**Flood Damage Reduction Segment / System
Inspection Report
Massillon, OH, LPP, (West) (MALW)**

**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)

[illegible]

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**Flood Damage Reduction Segment / System
Inspection Report
Massillon, OH, LPP, (West) (MALW)**

Pre-Inspection Form
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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.	RIIs 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
Massillon, OH, LPP, (West) (MALW)**

**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.



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**Flood Damage Reduction Segment / System
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Massillon, OH, LPP, (West) (MALW)**

**General Instructions
Page 2 of 3**

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.



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**Flood Damage Reduction Segment / System
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Massillon, OH, LPP, (West) (MALW)**

**General Instructions
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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.	Updated O&M manual in 2010.
		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.	Sandbags and other emergency supplies are present and stored at the railroad gate closure storage building.
		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.	Sponsor collaborates with local county emergency staff and flood preparedness/preventative maintenance remains exceptional at this project. The sponsor provides a yearly report outlining work orders (interval triggered) that indicate inspection, maintenance, and preparedness activities for the components the sponsor is responsible to operate and maintain. An M rating was only assigned here because of the requirement that a "system-specific" flood response plan exist and a plan of that nature has not been prepared.
		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
Massillon, OH, LPP, (West) (MALW)

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	A	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.	MALW_2016_a_0028: Station_1 NA: Vegetation should be cleared to within 15' of the toe.: NA (M) MALW_2016_a_0050: Station_1 NA: Vegetation should be removed within 15' of the toe of the levee.: NA (M) MALW_2016_a_0051: Station_1 NA: Vegetation should be removed within 15' of the toe of the levee.: NA (M); Significant vegetation has been removed since 2015 inspection. Improved.
		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.	
		U Significant vegetation growth (brush, weeds, or any trees greater than 2 inches in diameter) is present within the zones described above and must to be removed to reestablish or ascertain levee integrity.	
2. Sod Cover	A	A There is good coverage of sod over the levee.	MALW_2016_a_0009: Station_1 NA: Levee begins; good sod cover present.: NA (A); A good sod cover is maintained throughout the project.
		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	A	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.	An adjacent stormwater management project requires investigation as inspectors were advised that the completed project would impound detained stormflows on the interior levee slope. Prior to inspection departure, process was initiated to resolve this advancing encroachment before construction was complete.
		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.	
4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag	A	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.	MALW_2016_a_0019: Station_1 NA: Stoplog Storage Building in good condition. Logs and components present. Erection instructions present.: NA (A); There is one sandbag closure required on Third Avenue and the required 1100 bags

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
Massillon, OH, LPP, (West) (MALW)

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
Closures) (A or U only)		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.	are stored along with the stop log gate components for the two railroad closures at the railroad closure gate storage building.
		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.	No stability issues noted.
		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	M	A	No erosion or bank caving is observed on the landward or riverward sides of the levee that might endanger its stability.	Some erosion at the toe of the west levee downstream from the weir/James Avenue station discharge is apparent. This area was noted during the bank erosion investigation and work (downstream of Walnut Street) performed by USACE associated with the system certification. Funds limited the stone slope protection work to the higher priority section downstream and annual inspections monitor any changing conditions at this location. No meaningful change in the condition was observed from the observation made in 2015.
		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.	No settlement noted. Levee crest elevations were checked along both the east and west levees during this inspection by a third party (commercial insurer with clients in the leveed area). The upstream tie-in to high ground for the west levee appears low, not due to settlement, but as an as-constructed condition. Additionally, the downstream end of the project ties into high ground at the Cherry Street bridge at about elevation 945 but the railroad passes under the same bridge landward of the tie-in at an elevation of about 939-940.
		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.	MALW_2016_a_0044: Station_1 NA: NA: NA (M); One depression associated with mowing equipment was noted.
		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.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
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.	No cracking present.
		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.	MALW_2016_a_0035: Station_1 NA: Animal burrow. Many have been marked with pin flags.: NA (M)
		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.	MALW_2016_a_0038: Station_1 NA: Station_2 NA: Pin flagged burrows. Planned remedial efforts for this reach appear to be being made.: NA (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.	MALW_2016_a_0041: Station_1 NA: Another animal burrow - but it appears remedial efforts are being planned due to pin flagging noted along the project at the burrow locations.: NA (M) MALW_2016_a_0048: Station_1 NA: Animal burrow - it appears remedial efforts are being planned due to pin flagging noted along the project at the burrow locations.: NA (M); Animal borrows are present along the Newman Creek reach and in the vicinity of the James Avenue station.
11. Culverts/ Discharge Pipes ³ (This item includes both concrete and corrugated metal pipes.)	A	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.	Pipelines passing under the levee have been inspected and records are available in the offices of the Huntington District. Video or visual inspection of particular pipelines (based on PACP rating from previous video inspections) will be required during the next maintenance period as the 5 year period for inspection is at hand.
		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.	

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		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.	MALW_2016_a_0029: Station_1 NA: Riprap in good condition; vegetation should continue to be cleared.: NA (A) MALW_2016_a_0034: Station_1 NA: Riprap along levee toe; vegetation should continue to be cleared along this reach.: NA (A) MALW_2016_a_0039: Station_1 NA: An existing void in the rip rap behind the gatewell is present. Monitor for future changes.: NA (M); Bank protection or armoring, where present, is in good condition and no noticeable changes from the previous inspection were noted.
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. Underscepage 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.	No relief wells in this system.

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		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.	No history of seepage during loading.
		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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Inspect ID: MALW_2016_a_0009 **Title:** USACE_CELRH_MALW_2016_a_0009_1.jpg **Rated Item:** 2. Sod Cover **Caption:** Rating: Acceptable; Remarks: Levee begins; good sod cover present.; Potential encroachment activity addressed in the Encroachments rated item. Good sod cover on levee shown.



Inspect ID: MALW_2016_a_0019 **Title:** USACE_CELRH_MALW_2016_a_0019_1.jpg **Rated Item:** 4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures) (A or U only) **Caption:** Rating: Acceptable; Remarks: Stoplog Storage Building in good condition. Logs and components present. Erection instructions present.



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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Unwanted Vegetation Growth ¹	A	A	A grass-only or paved zone is maintained on both sides of the floodwall, free of all trees, brush, and undesirable weeds. The vegetation-free zone extends 15 feet from both the land and riverside of the floodwall, at ground-level, to the centerline of the tree. Additionally, an 8-foot root-free zone is maintained around the entire structure, including the floodwall toe, heel, and any toe-drains. If the floodwall 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 and/or Corps policy for regional vegetation variance.	Short floodwall section associated with 2 railroad gate closures exhibits no vegetation issues.
		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 floodwall.	
		U	Significant vegetation growth (brush, weeds, or any trees greater than 2 inches in diameter) is present within the zones described above. This vegetation threatens the operation or integrity of the floodwall and must be removed.	
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 floodwall.	None.
		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 floodwall.	
3. Closure Structures (Stop Log Closures and Gates) (A or U only)	A	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.	MALW_2016_a_0018: Station_1 NA: Penn Railroad Stop Log Closure - good condition.: NA (A); Closure structures in good condition and the sponsor presented photographs of recent trial erection of the east gate. Trial erection exercises alternate between the two adjacent railroad gates.
		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.	
4. 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.	MALW_2016_a_0003: Station_1 NA: B&O Railroad Stop Log Closure - good condition and recently trial erected.: NA (A) MALW_2016_a_0014: Station_1 NA: Floodwall section at railroad gate closures in good condition.: NA (A) MALW_2016_a_0017: Station_1 NA: Penn Railroad Stop
		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.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		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.	Log Closure - Good condition.: NA (A); Concrete surfaces are in good condition.
5. 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.	No tilting or sliding.
		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.	
6. Foundation of Concrete Structures ¹	A	A	No active erosion, scouring, or bank caving that might endanger the structure's stability.	No foundation distress apparent.
		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.	
7. 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.	Monolith joint filler material
		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
8. Underseepage Relief Wells/ Toe Drainage Systems	NA	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.	This short section of floodwall Check plans
		N/A	There are no monolith joints in the floodwall.	
		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.	
9. Seepage	A	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.	No seepage history noted.
		N/A	There are no relief wells/ toe drainage systems along this component of the FDR segment / system.	
		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 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.

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

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Inspect ID: MALW_2016_a_0003 **Title:**
USACE_CELRH_MALW_2016_a_0003_1.jpg **Rated Item:** 4. Concrete Surfaces
Caption: Rating: Acceptable; Remarks: B&O Railroad Stop Log Closure - good
condition and recently trial erected.



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Pump Stations

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Pump Stations Operating, Maintenance, Training, & Inspection Records	A	A	Operation, maintenance and inspection records are present at the pump station and are being used and updated, and personnel have been trained in pump station operations. Names and last training date shown in the record book.	MALW_2016_a_0001: Station_1 NA: James Ave Pump Station in good condition.: NA (A); Operating instructions present and records of operation available.
		M	Operation, maintenance and inspection records are present but not adequately used and updated.	
		U	No operation, maintenance and inspection records are present, or refresher training for personnel has not been conducted.	
2. Pump Station Operations and Maintenance Equipment Manuals	A	A	Operation and Maintenance Equipment Manuals and/or posted operating instructions are present and updated as required, and adequately cover all pertinent pump station features. O&M manuals include points of contact for manufacturers and suppliers of major equipment used in the facility.	Data was present and current.
		M	Operation and Maintenance Equipment Manuals and/or posted operating instructions are present and adequately cover all pertinent pump station features. However, they are incomplete and the necessary updates have not been made.	
		U	Operation and Maintenance Equipment Manuals are not available.	
3. Safety Compliance	A	A	Safety compliance inspection reports by applicable local, state, or federal agencies available for review.	No safety issues apparent.
		M	No safety compliance inspection reports are available for review.	
4. Communications (A or M only)	A	A	A telephone, cellular phone, two-way radio, or similar device is available to pump station operator and maintenance personnel.	Communications are not an issue.
		M	A telephone, cellular phone, two-way radio, or similar device is not available to pump station operator and maintenance personnel.	
5. Plant Building	A	A	The building is in good structural condition with no major foundation settlement problems. The roof is not leaking, intake & exhaust louvers are clear of debris, fans are operational, etc.	Building in good condition.
		M	There are minor structural defects, minimal foundation settlement, leaks, or other conditions noted that need repair. Defects do not threaten the structural integrity or stability of the building, and will not impact pumping operations.	
		U	The structural integrity or stability of the building is threatened, or there is damage to the building that threatens safety of the operator or impacts pumping operations.	
6. 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.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		N/A	There are no features noted that require safety fencing.	
7. Pumps ¹	A	A	All pumps are properly maintained and lubricated. Systems are periodically tested and documented for review. No vibration, cavitation noises or unusual sounds are noted when the pump is operated. Bearing temperature sensor records don't indicate any problems.	Pumps were in good condition. No apparent issues.
		M	Minor deficiencies noted that need to be closely monitored or repaired, such as the presence of slight vibrations, leakage of packing gland, bearing temperature sensors are inoperable or no record is present. However, the pumps are operational and are expected to perform through the next period of usage.	
		U	Major deficiencies identified that may significantly reduce pumping operations. For example, bearing sensor records indicate problems, excessive vibration noted, impellers are badly corroded, or there are eroded or missing blades.	
8. Motors, Engines, Fans, Gear Reducers, Back Stop Devices, etc.	A	A	All items are operational. Preventative maintenance and lubrication is being performed and the system is periodically subjected to performance testing. Instrumentation, alarms, bearing sensors and auto shutdowns are operational.	All motors test operated during the inspection.
		M	Systems have minor deficiencies, but are operational and will function adequately through the next flood. Bearing sensors are not operational.	
		U	One or more of the primary motors or systems is not operational, or noted deficiencies have not been corrected.	
9. Sumps / Wet well	A	A	Clear of debris, sediment, or other obstructions. Procedures are in place to remove debris accumulation during operation.	No issues.
		M	Debris, sediment, or other obstructions may be present and must be removed, but the sump/ wet well will function as intended during the next flood. Procedures are in place to remove debris accumulation during operation.	
		U	Large debris or excessive silt present which will hinder or damage pumps during operation, or no procedures established to remove debris accumulation during operation.	
10. Mechanical Operating Trash Rakes ¹	NA	A	Drive chain, bearing, gear reducers, and other components are in good operating condition and are being properly maintained.	
		M	The trash rake is in need of maintenance, but is still operational.	
		U	Trash rake not operational or deficiencies will inhibit operations during the next flood event.	
		N/A	There are no mechanical trash rakes.	
11. Non-Mechanical Trash Racks	A	A	Trash racks are fastened in place and properly maintained.	No issues.
		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.	

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		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.	
12. Fuel System for Pump Engines	NA	A	Fuel system is operational, day tank present and operational, fuel fresh and rotated regularly.	
		M	Fuel system is operational and of adequate capacity, but day tank is missing or fuel is not fresh and rotated regularly.	
		U	Fuel system not functional.	
		N/A	No fuel system.	
13. Power Source	A	A	The normal power source and backup generators, if installed, are operational, properly exercised and well maintained. Surge protection, grounding, lightning protection, transformers, and automatic/manual transfer of main power to backup system is working.	Commercial power typically reliable.
		M	Normal power source and backup units, if applicable, are operational with minor discrepancies or maintenance, inspection and exercising record is present but not up to date. Preventative maintenance or repairs are required.	
		U	Normal power source or generators are not operational and must be repaired; or generator, if required, is not on site.	
14. Electrical Systems ²	A	A	Operational and maintained free of damage, corrosion, and debris. Preventative maintenance and system testing is being performed periodically.	Maintained and in operating order.
		M	Operational with minor discrepancies. Preventative maintenance or repairs are required, but the components are expected to function adequately during the next flood event.	
		U	Components of the electrical system will not function adequately during the next flood event and must be replaced.	
15. Megger Testing on Pump Motors and Critical Power Cables	A	A	Results of megger tests on pump motors or critical power cables show that the insulation meets manufacturer's or industry standards. Tested within the last year.	Megger testing performed regularly as part of Masillon's exemplary work order system.
		M	Megger testing not conducted within the past year. If megger tests on pump motors indicate that insulation resistance is below the manufacturer's or industry standard, but the resistance can be corrected with proper application of heat, this is minimally acceptable. (The application of heat does not relate to critical power cables.)	
		U	Megger tests not conducted within past two years, or tests indicate that insulation resistance is low enough that the equipment will not be able to meet design standards of operation; or evidence of arcing or shorting is detected visually.	

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Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
16. Enclosures, Panels, Conduit and Ducts	A	A	All enclosures, panels, conduits, and ducts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	
		M	Minor surface corrosion which appears to be maintainable. Cleaning and painting required.	
		U	Severely corroded and must be replaced to prevent failure, equipment damage, or safety issues.	
17. Intake and Discharge Pipelines	A	A	Intake and discharge pipelines have no corrosion and paint is intact, except for minor touch up required. Pipe couplings and anchors have no leakage or corrosion.	
		M	Intake and discharge pipelines have minor corrosion and repair and painting is required. Pipe coupling with anchors have minor leakage, corrosion and require bolts to be tightened.	
		U	Intake and discharge pipelines have major corrosion and replacement is required. Pipe coupling with anchors have major leakage and is heavily corroded and requires replacement.	
18. Sluice/ Slide Gates ³	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.	Gates in good working order. Trial run as proscribed prior to flood seasons according to submitted work order documentation.
		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.	
19. 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 gates on discharge lines from pump station.	
20. Cranes ¹	A	A	Cranes operational and have been inspected and load tested in accordance with applicable standards within the last year. Documentation is on hand.	The sponsor, when required, will use alternative means to lift pump motors, shafts, and pumps for major maintenance

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
Massillon, OH, LPP, (West) (MALW)

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Pump Stations

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		M	Cranes have not been inspected or operationally tested within the past year, or there are visible signs of corrosion, oil leakage, etc, requiring maintenance.	as they have observed that the piers in the pump station structures receiving the chain hoist loading exhibit cracking that reduces their confidence in the use of the original station equipment hoist.
		U	Cranes are not operational, and this may prevent the pump station from functioning as required. No documentation available on cranes.	
		N/A	There are no cranes.	
21. Other Metallic Items (Equipment, Ladders, Platform Anchors, etc)	M	A	All metal parts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	Maintenance - painting, repair or replacement - as required is being performed.
		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.	

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

² Check motor control center, circuit breakers, pilot lights, volt meters, ammeters, sump level indicator, gate position indicators, remote operating systems, including SCADA and telemetry systems. Also, check interior and exterior lighting; especially lighting near trash rack screens, ladders, walkways, etc.

³ 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: MALW_2016_a_0001 **Title:**
USACE_CELRH_MALW_2016_a_0001_1.jpg **Rated Item:** 1. Pump Stations
Operating, Maintenance, Training, & Inspection Records **Caption:** Rating: Acceptable;
Remarks: James Ave Pump Station in good condition.



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Flood Damage Reduction Segment / System Supplemental Data Sheet

This form is intended for the Corps' internal use and may not need to be updated with every inspection.

Name of Segment / System: Massillon, OH, LPP, (West) Sponsor: City of Massillon, Ohio Location: The project is located in the City of Massillon in Stark County, Ohio. River Basin: Tuscarawas River Project Description: Flood Control Act of 28 June 1938, Public No. 761 Authority that Project was Constructed Under: Flood Control Act of 28 June 1938, Public No. 761, Seventy-fifth Congress, third session Date of Construction: 1/1/1951 Approximate Annual Maintenance Costs: Construction: ☒ Federally Constructed ☐ Non-Federally Constructed Maintenance: ☐ Federally Maintained ☒ Non-Federally Maintained	
National Flood Insurance Program: a. Is the project currently NFIP? ☒ Yes ☐ No b. If in the NFIP, Date of Certification (per 44 CFR 65.10): 12/24/2015	
Datum Information: a. Datum used for the design and construction of this project is: NGVD29 b. Current recommended datum for this project is: NAVD88 c. Has the Project been converted to the current recommended datum? ☐ Yes ☒ No	
Levee Embankment Data: a. Levee Designed Gage Function Reading/Station: b. Level of Protection Provided: ACE 0.2% (500 yr) c. Average Height of Levee: 16 d. Average Crown Width: 12 e. Average Side Slope: 2.5H:1V	Protected Features (For use in preparing estimates and PIRs): a. Total acres protected: 57 b. Total agriculture production acres protected: c. Towns: d. Businesses: e. Residences: f. Roads: g. Utilities: h. Barns: i. Machine Sheds: j. Outbuildings: k. Irrigation Systems: l. Grain Bins: m. Other Facilities:



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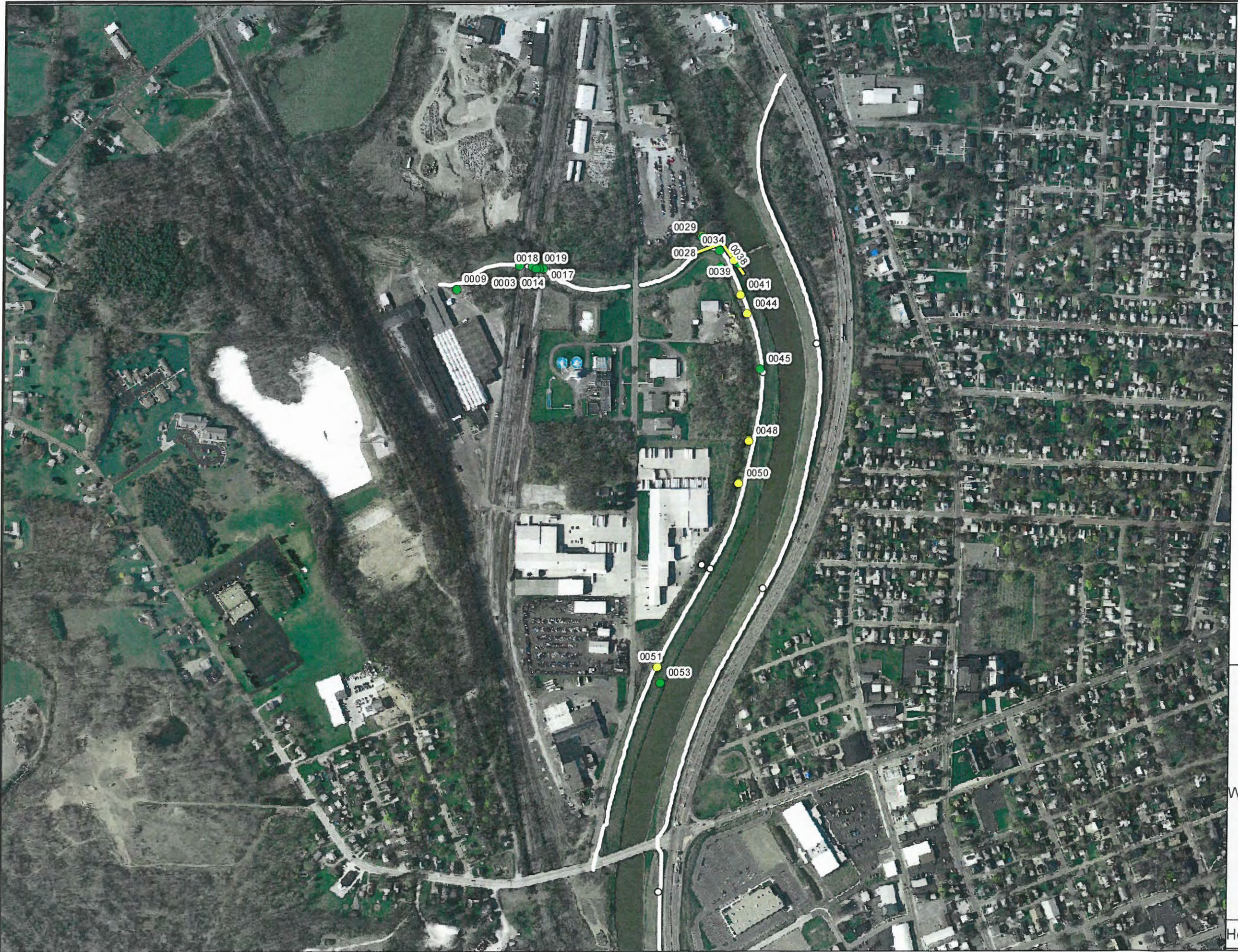
MAP POINT INDEX

Year: 2016

Project: Massillon, OH, LPP, (West)

ID	Rating	Item	Remarks
001	A	1. Pump Stations Operating, Maintenance, Training, & Inspection Records	James Ave Pump Station in good condition.
003	A	4. Concrete Surfaces	B&O Railroad Stop Log Closure - good condition and recently trial erected.
009	A	2. Sod Cover	Levee begins; good sod cover present.
014	A	4. Concrete Surfaces	Floodwall section at railroad gate closures in good condition.
017	A	4. Concrete Surfaces	Penn Railroad Stop Log Closure - Good condition.
018	A	3. Closure Structures (Stop Log Closures and Gates) (A or U only)	Penn Railroad Stop Log Closure - good condition.
019	A	4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures) (A or U only)	Stoplog Storage Building in good condition. Logs and components present. Erection instructions present.
028	M	1. Unwanted Vegetation Growth	Vegetation should be cleared to within 15' of the toe.
029	A	12. Riprap Revetments & Bank Protection	Riprap in good condition; vegetation should continue to be cleared.
030	A	5. Concrete Surfaces (Such as gate wells, outfalls, intakes, or culverts)	James Avenue Outlet - concrete in good condition.
031	A	10. Sluice / Slide Gates	Sluice gate in gatewell in good condition.
034	A	12. Riprap Revetments & Bank Protection	Riprap along levee toe; vegetation should continue to be cleared along this reach.
035	M	10. Animal Control	Animal burrow. Many have been marked with pin flags.
038	M	10. Animal Control	Pin flagged burrows. Planned remedial efforts for this reach appear to be being made.
039	M	12. Riprap Revetments & Bank Protection	An existing void in the rip rap behind the gatewell is present. Monitor for future changes.
041	M	10. Animal Control	Another animal burrow - but it appears remedial efforts are being planned due to pin flagging noted along the project at the burrow locations.
044	M	8. Depressions/ Rutting	NA
045	A	5. Concrete Surfaces (Such as gate wells, outfalls, intakes, or culverts)	Gatewell - concrete in good condition.

048	M	10. Animal Control	Animal burrow - it appears remedial efforts are being planned due to pin flagging noted along the project at the burrow locations.
050	M	1. Unwanted Vegetation Growth	Vegetation should be removed within 15' of the toe of the levee.
051	M	1. Unwanted Vegetation Growth	Vegetation should be removed within 15' of the toe of the levee.
053	A	5. Concrete Surfaces (Such as gate wells, outfalls, intakes, or culverts)	Gatewell Structure in good condition.



Levee Inspection Map

Massillon, OH, LPP, (West)

Location: Massillon, Ohio (West)
Year/cycle: 2016 a
Inspection type: Routine
Inspected by: Humphreys/Barry
Inspection date(s): 11/2/2016
Observation ID prefix:
USACE_CELRH_MALW_2016_a
Map created: 21 December 2016

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

0 550 1,100 Feet



Project Name:

Massillon, Ohio (West)

Rehabilitation Program Eligibility Determination

Yes ☒ Public sponsor provided maintenance information per the Public Sponsor Pre-
No ☐ Inspection Form.

Yes ☐
No ☐ Non-federal levee system meets Initial Eligibility criteria.
N/A ☒

If either of the above items is marked "No" the levee system is not eligible.

Rating Rated Item

Levee Embankments

A ☒
M ☐ 3. Encroachments
U ☐

A ☒
U ☐ 4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag
N/A ☐ Closures)

A ☐
M ☐ 5. Slope Stability
U ☐

A ☐
M ☒ 6. Erosion/ Bank Caving
U ☐

A ☐
M ☒ 10. Animal Control
U ☐

A ☒
M ☐ 11. Culverts/Discharge Pipes (This item includes both concrete and corrugated
U ☐ metal pipes.)
N/A ☐

A ☐
M ☐ 14. Underseepage Relief Wells/Toe Drainage Systems
U ☐
N/A ☒

Floodwalls

A ☒
M ☐ 2. Encroachments
U ☐

A ☒
U ☐ 3. Closure Structures (Stop Log Closures and Gates)
N/A ☐

A ☒
M ☐ 5. Tilting, Sliding, or Settlement of Concrete Structures
U ☐

A	☒	6. Foundation of Concrete Structures
M	☐	
U	☐	
A	☐	8. Underseepage Relief Wells/Toe Drainage Systems
M	☐	
U	☐	
N/A	☒	
Interior Drainage System		
A	☐	9. Culverts/Discharge Pipes
M	☐	
U	☐	
N/A	☒	
A	☐	10. Sluice/Slide Gates
M	☐	
U	☐	
N/A	☒	
A	☐	11. Flap Gates/Flap Valves/Pinch Valves
M	☐	
U	☐	
N/A	☒	
Pump Stations		
A	☒	17. Intake and Discharge Pipelines
M	☐	
U	☐	
A	☒	18. Sluice/Slide Gates
M	☐	
U	☐	
N/A	☐	
A	☒	19. Flap Gates/Flap Valves/Pinch Valves
M	☐	
U	☐	
N/A	☐	
Rehabilitation Program Status		
Active	☒	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	☐	System does not meet interim eligibility requirements.
Comments: Ready to perform during the next flood events.		