

# 2019 LEVEE SAFETY PROGRAM UPDATES

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# LEVEE SAFETY PROGRAM OVERVIEW

## Mission:

The mission of the USACE Levee Safety Program is to ensure levee systems provide benefits to the nation by working with sponsors and stakeholders to assess, communicate, and manage flood risks to people, property, and the environment.

The mission is completed by USACE through inspections, risk assessments, and risk communication.



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# OVERVIEW

- 1.) 2018 Inspection Reports
- 2.) Drainage/Culvert Pipe Inspections
- 3.) 2019 Routine Inspections
- 4.) Future Changes in the Levee Safety Program



# 2018 INSPECTION REPORTS

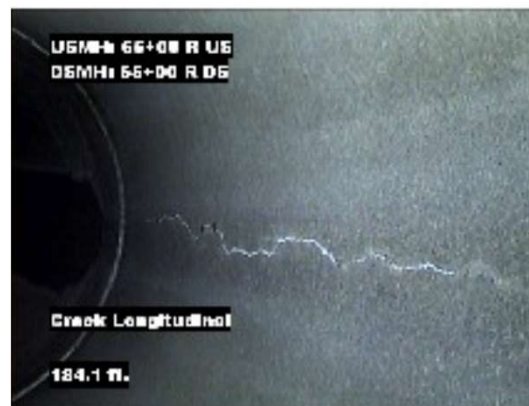
- Currently working on finalizing 2018 inspections reports.
- The remaining reports should be sent out by the end of April or early May.
- If you have questions about your 2018 inspection please contact me.



# DRAINAGE/CULVERT INSPECTIONS

Purpose: To identify, evaluate, and document the features of the levee so the risks can be minimized and to assure that the project provides benefits.

Frequency: Camera or visual inspection and report to verify condition every 5 years.



# DRAINAGE/CULVERT INSPECTIONS

Inspector: Must have knowledge of the features hydraulic, structural, and soil/structure interactions, to understand the potential for detrimental consequences to the project, if there is a deficiency.

Inspection: Can be done by entering the pipe or through camera inspection

\*\*If entering the pipe the appropriate safety procedures need to be followed.



# DRAINAGE/CULVERT INSPECTIONS

To prepare for inspection the pipe should be clean and/or dewatered.



Needs to be Cleaned



Cleaned



# DRAINAGE/CULVERT INSPECTIONS

Video Inspection should include:

- a. **Light Source** – bright, high-intensity light that travels with the camera. Ability to control glare is important.
- b. **Camera** – Color, high-resolution camera with remote focus, rotate, zoom, pan and tilt capability.
- c. **Recording** – Commonly used file format, Quick Time, Windows Media Player.
- d. **Footage Meter** – to provide location of the camera within the pipe.





# DRAINAGE/CULVERT INSPECTIONS

## Typical Information to Document

1. Cracked, fractured, torn, displaced, or offset joints.
2. Holes, cracks or perforations.
3. Deviations from horizontal alignment.
4. Deviations from vertical alignment.
5. Cracking, flaking, corrosion or exposed reinforcing steel.
6. Corrosion, rusting, flaking, or delaminating of steel.
7. Cracking of clay, fiberglass, or plastic.
8. Leaks through joints or holes, or cracks.



# DRAINAGE/CULVERT INSPECTIONS

## Typical Information to Document

9. Movement of material or soil into the feature through joints, holes or cracks.

10. Accumulation of silt, sand or other material within the feature.

11. Ponding of water or low or high areas in the invert of the feature.

12. Changes in slope. This can appear as changes in the width of the stream of water in the invert of the feature.

13. Deflections, buckles, dents, or bulging in the shape of the cross section.



# DRAINAGE/CULVERT INSPECTIONS

## Assessment:

-Assign a rating of A, M, or U to each pipe inspected. Document in a report and provide a summary of findings and recommendation.

USACE will use the sponsor's assessment report to assess the condition in the inspection report until they are reviewed during a Periodic Inspection.

<p><b>Acceptable</b>  (A)</p>	<p>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.</p>
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# DRAINAGE/CULVERT INSPECTIONS

## Assessment:

<p><b>Minimally Acceptable</b></p> <p><b>(MA)</b></p>	<p>There are a small number of corrosion pinholes or cracks that could leak water and need to be repaired, but the entire length of pipe is still structurally sound and is not in danger of collapsing. Pipe shape may be ovalized in some locations but does not appear to be approaching a curvature reversal. A limited number of joints may have opened and soil loss may be beginning. Any open joints should be repaired prior to the next inspection. Corrugated metal pipes, if present, may be showing corrosion and pinholes but there are no areas with total section loss. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.</p>
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# DRAINAGE/CULVERT INSPECTIONS

## Assessment:

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<p><b>Unacceptable</b></p> <p><b>(U)</b></p>	<p>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. <b>HOWEVER:</b> 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.</p>
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# DRAINAGE/CULVERT INSPECTIONS

## Sample Report

EXAMPLE TABLE - CULVERT VIDEO CAMERA INSPECTION

MRLS L-____ Levee District	
<b>Station:</b>	18+03
<b>Size:</b>	42"
<b>Type:</b>	CMP
<b>Date of Inspection:</b>	1/21/2008
<b>Type of Inspection:</b>	Video - Ace Pipe Cleaning
<b>Inspection Notes:</b>	Video from landside (LS) (inlet) end of pipe to and thru the gatewell (GW). Distances shown below are reference from the LS end of the pipe to the GW and from the GW to the riverside (RS) end of the pipe.
<b>Location:</b>	<b>Comments:</b>
Plans	Plans show pipe extends 55' LS of GW and 37' RS of GW.
Inlet (LS)	Invert rusted through to soil at approximately 5 and 7 o'clock positions with 6 o'clock being the centerline of the pipe.
36.2 ft.	Joint in CMP. Good condition.
42.4 ft.	Ponded water in invert starts
47.8 ft.	Coating peeled on right springline.
60.5 ft.	Holes in pipe at 3 o'clock and 9 o'clock immediately LS of GW.



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# DRAINAGE/CULVERT INSPECTIONS

## Sample Report (Continue)

64.0 ft.	End of LS pipe
0 ft	RS of GW. Start of RS pipe inspection.
1.9 ft.	Water coming through the rusted pipe at just below the springline. ~12"
4.3 ft.	Water seeping thru pipe at springline.
6.0 ft.	Rt. side water seeping thru pipe.
6.7 - 7.0 ft	Rust / water thru pipe at 3 o'clock.
17.0 ft	Mud in pipe
32.0 ft.	Water ponded to RS end of pipe. Pipe has low (depressed) area in flowline between GW and end of pipe.
<b>Summary:</b>	Water is ponded in the pipe from approximately 20 feet landward of the gatewell to the riverside end of the pipe indicating settlement of the levee and pipe. Rusted holes were observed in the pipe immediately landward and riverward of the gatewell. Rust and water infiltration were noted at several locations in the pipe on the river side of the gatewell.
<b>Rating:</b>	M - Minimally Acceptable
<b>Inspector:</b>	John Doe, Superintendent 333-444-8888



# 2019 INSPECTIONS

- The first inspections of the year were scheduled to begin this week.
- Inspections will begin when weather allows
- A general push to move inspections up earlier.
- Inspectors will call about 1 month prior to coordinate.
- No changes to procedure or reports





# FUTURE CHANGES IN THE LEVEE SAFETY PROGRAM.

Updates to the Engineering Circular(EC) 1165-2-218 *Levee Safety Program – Policy and Procedures*

Public Comment in Late Spring/Early Summer

Updates to the Engineering and Construction Bulletin (ECB) 2019-xx *Procedures for Site Visits and Inspections for Levees within the USACE Portfolio*

Public Comment in Late Spring/Early Summer



# QUESTIONS



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