Formal Inspection Checklist

(For Engineers)

DAM NAME: LAKE FOREST

DAM INVENTORY NO: MS 02788

OWNER: Lake Forest Homeowner's Association

Land Owners Name (Per Deed): Lake Forest Homeowner's Association

Address: 609 Lake Forest Dr.

Phone #: 601-529-1672

Email: loushlogue@bellsouth.net

Primary Contact Person (if different from above): same

Address:

Phone #:

Email:

OPERATOR (if different from Owner): same

Name:

Address:

Phone #:

Email:

DATE(S) OF INSPECTION: 15 Mar 2020
19 Mar 2020
26 Mar 2020

INSPECTION PERSONNEL (include contact information)

Mississippi Licensed Professional Engineer(s):

Name	Affiliation	Area of Expertise
James Harold Whatley Jr	Consultant Engr	Embankment Design

MULTIDISCIPINARY: I am experienced in the technical disciplines or I am working with other professionals experienced in the technical disciplines to properly inspect this dam and appurtenant works. Technical disciplines, in additional to the general civil engineering, may include geotechnical, geological, hydrologic, structural, and mechanical.

☑ Yes ☐ No Comment:

Other technical expert(s) and advisors(s):

Name	Affiliation	Area of Expertise
Ron Roma	Board Member	Professional Engr

State Representative(s): None

Name	Affiliation

Dam Owner Representative(s):

Name	Affiliation
Rick Graham	Board Member, Vice President

Others:

Name	Affiliation

GENERAL INFORMATION

Weather Conditions (including rainfall within previous 14 days): Approximately 20 inches of rain in past two months. Two inches in past two weeks.

County: WARREN

Stream Name: Un-named Branch of Muddy Creek

Tributary of: N/A

Latitude (N): 32.38621

Longitude (W): -90.796.04

Purpose of Dam: Recreation

Hazard Classification: High

Drainage Area (sq. mi.): 0.37

Height of Dam (ft): 21.7 feet

Length (ft): 370'

Normal Surface (ac): 17.46 ac

Normal Capacity (ac-ft): 205.0

Maximum Surface (ac): 21.7 ac

Maximum Capacity (ac-ft): 414.0

Normal Reservoir Elevation (ft): 282.32'

Reservoir Elevation at time of inspection (ft): 281.1'

SPILLWAY SYSTEM

Type of spillway (riser and conduit, concrete chute, vegetated earthen, etc.)

Principal: 48" CMP Riser w/ 42" CMP Outlet

Auxiliary (Emergency): A 150' wide x 2.1' w/ 200# stone w/ filter cloth. Bottom is 3.0' above top of 48" CMP.

Principal Spillway Capacity (inches/24 hours & storm distribution): 19.6"/24 hour period

Auxiliary (Emergency) Spillway Capacity (inches/24 hours & storm distribution): 32.2"/24 hr period

Note: If you do not understand what is meant by the above questions please engage the services of a professional who can assist you. These questions are not meant to capture the spillway capacity in cfs, as this data is irrelevant in determining the dams overall ability to pass the extreme precipitation event (% of the PMP) as required by the Regulations. If there are more than two spillways, please add an additional item. **A formal inspection will not be approved by the Dam Safety Division unless this section is completed.**

Are the spillway(s) adequate for this classification of dam (see the dam safety regulations 11 Miss. Admin. Code Pt. 7, Ch. 3 for definition of Probable Maximum Precipitation – PMP – and what amount of PMP must be handled by the different spillways)?

Principal: Yes ☑ No ☐

Auxiliary(Emergency): Yes ☑ No ☐

If not, what percent of the total PMP will the combined spillways pass (%)? N/A

Or, note date and author of hydrologic and hydraulic report evaluating spillway capacity: Aug 2008, B&T Consulting (submitted with 2009 & 2014 EAP)

Major changes to the dam or watershed since preparation of last report that may affect spillway adequacy? (Yes / No, if yes then describe changes): No

HISTORY

Date Constructed: 1974

Date(s) Reconstructed: 2008

Designer: Unknown (

Constructed by: Cox Construction

PREVIOUS INSPECTIONS (date of)

Last Owner's Inspection: Mar 2019

Last Formal Inspection: Mar 2014

EMERGENCY ACTION PLAN

Date of Last Approved Plan (when the plan was last distributed to the EAP holders): April 2019

Date of Last Revision: Mar 19, 2020

Is the notification flowchart complete and current? yes

Is the emergency materials and equipment information current? yes

When was the plan last tested? Was this test a table top exercise or a full scale exercise? Table Top on site.

DOWNSTREAM HAZARD CLASSIFICATIONS

Present Hazard Classification: High

Changes in Downstream Land Use and Habitation since last inspection: None

Is present Classification appropriate? Yes

OPERATION AND MAINTENANCE

Date of Operation and Maintenance Plan: 14 Mar 2009

Are instructions adequate? Yes

Do operating personnel follow instructions? Yes

What are operating personnel capabilities? General / Design and construction; Surveying; lake maintenance

PROJECT RECORD REVIEW

Date of file review: 19 Mar 2020

Description of ~~previous~~ deficiencies noted and corrective actions taken (if so, when?):

- Three small earth washes below Dam 3'x 10' and 2'x2' were filled with clay dirt and seeded as shown on Photo. Filled 19 mar 2020 (Photo: Outflow Pipe)
- Small willow growth removed at water's edge on 19 Mar 2020 (Photo upstream Bank)
- One large tree across drain ditch from San. tornado was cleared on 19 Mar 2020. Three other trees down from tornado but they are not on DAM. They will be cleared this summer.

EXAMINATION OF EMBANKMENT DAMS

DESCRIPTION OF STRUCTURE

Embankment Material: Earth fill embankment 570' long with 47' crown and max height of 21.7'. Crown has county road on top. Side slopes are 1 on 3.

Cutoff Type (If Known): ~~Cen~~ N/A

Impervious Core (If Known): Center of reconstructed DAM (100' either side of CMP drain constructed with available clay at 99% density managed by Burns and Cooley Engineer

Internal Drainage System (Yes / No?) If yes, describe: No

Any Signs of Movement (Horizontal and Vertical Alignment)?: No

Miscellaneous: None

CREST

Width of Crest: 47'

Problems:
☒ None ☐ Ruts or Puddles ☐ Erosion ☐ Cracks with Displacement ☐ Sinkholes ☐ Not Wide Enough ☐ Low Area ☐ Misalignment ☐ Inadequate Surface Drainage ☒ Trees, Brush, Briars ☐ Other:

If Trees, Brush, Briars is checked above please describe the nature and extent of vegetation on the dam?
Some small willow growth at water's edge removed on 19 Mar 2020.

Comments:

Overall Condition:
☑ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

UPSTREAM SLOPE

Slope (H:V): 1 on 3

Problems:

☐ None ☐ Riprap - Missing, Sparse, Displaced, Weathered ☐ Wave Erosion-with Scarps

☐ Cracks-with Displacement ☐ Sinkhole ☐ Appears Too Steep ☐ Depressions or Bulges

☐ Slides ☐ Animal Burrows ☑ Trees, Brush, Briars

☐ Other:

If Trees, Brush, Briars is checked above please describe the nature and extent of vegetation on the dam?

Small willow growth removed. See photo Upstream Bank

Comments:

Overall Condition:

☑ Satisfactory

☐ Fair

☐ Poor

☐ Unsatisfactory

DOWNSTREAM SLOPE (including groins and toe area)

Slope (H:V):

Problems:

☑ None ☐ Livestock Damage ☐ Erosion or Gullies ☐ Cracks with Displacement

☐ Sinkholes ☐ Appears too Steep ☐ Depression or Bulges ☐ Slide(s) ☐ Soft Areas

☐ Trees, Brush, Briars on dam or within 50 feet of toe ☐ Animal Burrows

☐ Other:

If Trees, Brush, Briars is checked above please describe the nature and extent of vegetation on the dam?

Comments:

Overall Condition:
- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

UTILITIES

Utilities Installed in Embankment or Toe?

☐ Phone/Cable ☑ Water ☐ Electrical ☑ Sewer ☐ Gas

Does the location of all utilities appear on the as-built plans for the dam? Yes

SEEPAGE

Problems:

☑ None ☐ Saturated Embankment Area ☐ Seepage Exits on Embankment ☐ Seepage Exits at Point Source ☐ Seepage Area at Toe ☐ Flow Adjacent to Outlet

☐ Other:

Comments:

Overall Condition:
- [x] Satisfactory (None)
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

Does the location of all drainage systems/filters appear on the as-built plans for the dam? N/A

SEEPAGE AND TOE DRAIN/RELIEF WELL FLOW N/A

Location	Estimated Flow	Color (Turbidity)

EXAMINATION OF SPILLWAYS AND OUTLET WORKS

PRIMARY SPILLWAY

(Fill out those sections that apply)

ENTRANCE CHANNEL

Description: Four small subdivision drain ditches

Vegetation (Trees, Bushes): No

Debris: No

Channel Side-Slope Stability: Stable

Slope Protection/Erosion: None

Unusual Conditions: None

Overall Condition:

- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

SPILLWAY CREST

Description: Emergency Spillway 150' wide by 2.0' deep. Three feet above top of 48" CMP drain pipe SEE photo upstream Bank.

Condition of Material: Good

Signs of Movement: None

Joints: N/A

Unusual Conditions: None

Overall Condition:

- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

CHUTES N/A

Description:

Condition of Material:

Signs of Movement:

Joints:

Unusual Conditions:

Overall Condition:

- [ ] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

SPILLWAY WING WALLS N/A

Description:

Condition of Material:

Signs of Movement:

Joints:

Drains:

Unusual Conditions:

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

DOWNSTREAM APRON N/A

Description:

Condition of Material:

Signs of Movement:

Unusual Conditions:

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

INLET RISER

Description and Material Type (i.e. HDPE, Concrete, Steel, CMP, etc.): 48" CMP, inlet elev at 282.3'

Condition of Material: Good

Signs of Movement: None

Joints: Good

Floor: Concrete

Unusual Conditions: None

Overall Condition:
- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

CONDUIT(S)

Description and Material Type (i.e. HDPE, Concrete, Steel, CMP, etc.):
42" CMP

When was the last video inspection of the conduit? None made

Condition of Material: Good

Signs of Movement: None

Joints: Good

Seepage into conduit(s): None observed

Location	Estimated Flow	Turbidity

Unusual Conditions:

Overall Condition:
- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

TRASH RACKS N/A

Description:

Condition of Material:

Unusual Conditions:

Overall Condition:
- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

GATES N/A

Description/Type:

Condition:

Protective Coating:

Leakage when gate is closed (Yes / No?):

Exercising Frequency:

Gates operated at time of Inspection?

Condition of seals:

Condition of gate controls and hoists:

Overall Condition:
- [ ] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

STILLING BASIN N/A

Description:

Condition of Material:

Signs of Movement:

Erosion:

Unusual Conditions:

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

OUTLET CHANNEL

Vegetation (Trees, Bushes): None

Debris: Some fallen limbs will be cleared during summer

Channel Side-Slope Stability: Stable

Erosion: None

Unusual Conditions:

Overall Condition:
- ☑ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

LOW LEVEL OUTLET N/A

Description:

Condition:

Trash Rack:

Leakage:

Location Estimated Flow

Unusual Conditions:

Was the low-level outlet operated during the inspection?

Were there difficulties operating the low-level outlet?

When was the low-level outlet last operated and did this conform with the Operation and Maintenance Procedures?

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

VALVES N/A

Description:

General Condition:

Protective Coating:

Evidence of Cavitation or Abrasion:

Leakage (Yes / No?):

Frequency of Use:

Valve operated during inspection (Yes / No?):

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

AUXILIARY (EMERGENCY) SPILLWAY

Note: For Earthen Spillways Only. If the auxiliary (emergency) spillway is not earthen please duplicate the above sections for the primary spillway here as needed. If there are more than one earthen and/or other spillway besides the primary please duplicate the appropriate sections in this report.

Description: 150' x 2.0' emergency spillway with filter cloth and 200# stone 30 feet above 48" CMP drain inlet

Vegetation (Trees, Bushes): Vegetation and bushes Keep cleared during year.

Debris: None

Channel Side-Slope Stability: N/A

Slope Protection/Erosion: None

Unusual Conditions:

Overall Condition:
- ☑ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

EXAMINATION OF OTHER FEATURES

INSTRUMENTATION N/A

List all instrumentation (i.e. weirs, piezometers, flow gauges):

(A separate report including instrument location, instrument readings, instrument condition, normal readings, observations, and conclusions based upon the collected data shall be attached.)

RESERVOIR

Slopes: Slopes are back yards of subdivision homes

Sedimentation: High over past 45 years reducing lake capacity in acre feet significantly.

Unusual Conditions Which May Affect Dam: None

Any Other Unusual Conditions: None

APPURTENANT STRUCTURES (Power House, Gatehouse, Penstocks, Water Supply, Other)

Description and Condition of each: N/A

FOUNDATION AND GEOLOGY N/A

Unusual Conditions Which May Affect Dam: None

Cracks, Joints, Bedding Planes Which May Affect Dam Or Provide Seepage Paths:

CONCLUSIONS

I certify that the above dam was personally inspected by me and the conditions described herein are correct to the best of my knowledge and belief. Ronald Lowe, President

The following maintenance concerns should be addressed (in order of importance): Annual maint. on outlet ditch during dry months

I recommend the following changes in maintenance: None

I recommend the following repairs be made within one year (in order of importance): None

The following long-term improvements should also be undertaken (in order of importance): None

The following studies should also be undertaken (in order of importance): None

Have the recommendations above included those from previous Inspections? yes

Does the Emergency Action Plan or the Operation and Maintenance Procedures require revision? No

Mississippi Licensed Professional Engineer representing the dam owner in responsible charge of the inspection:

Signature James H. Wyatley Jr Date 28 Mar 23

MS Professional Engineer License No. 03052

P.E. SEAL

GUIDELINES FOR DETERMINING CONDITIONS

CONDITIONS OBSERVED - APPLIES TO UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, PRINCIPAL SPILLWAY, AUXILIARY SPILLWAY

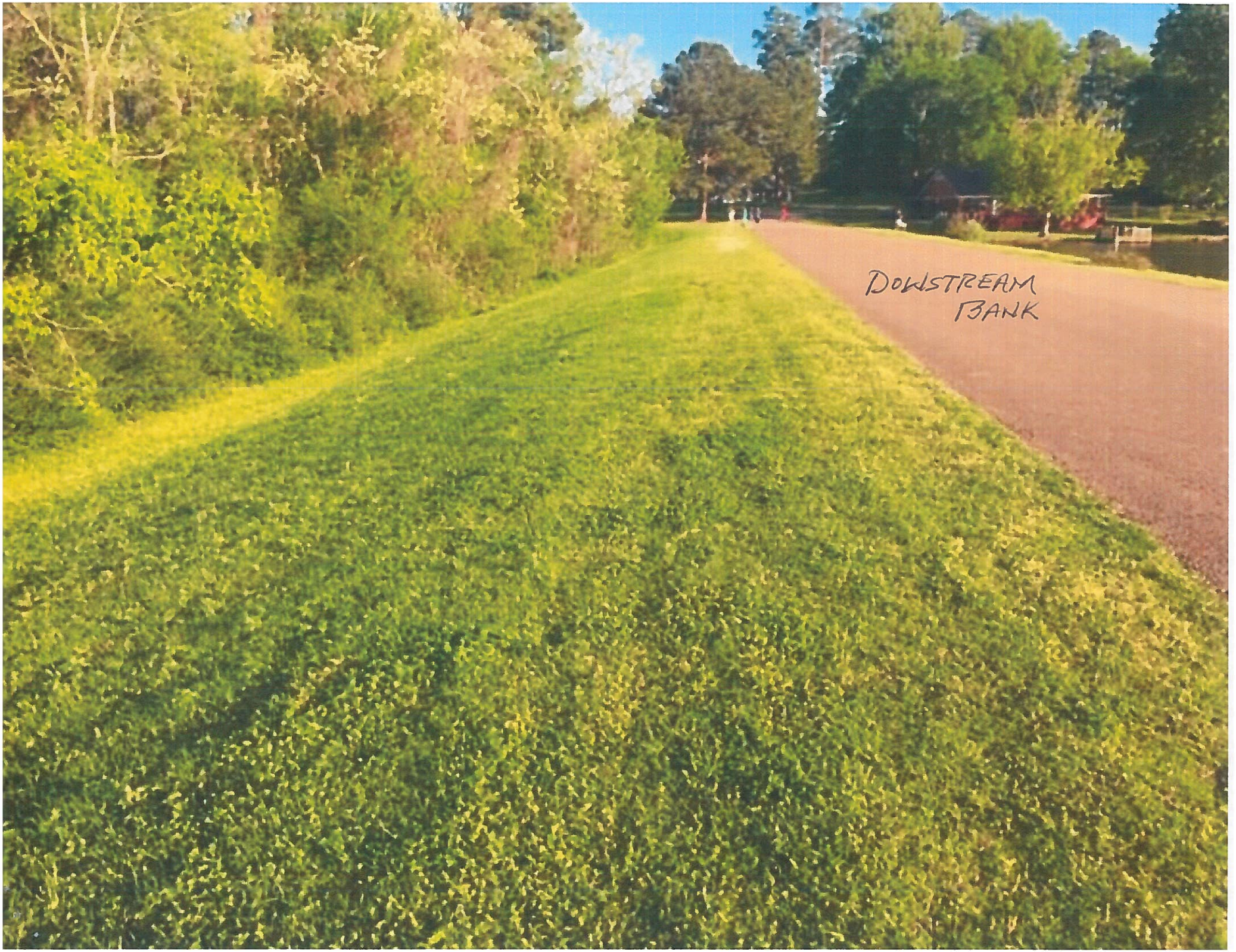
SATISFACTORY	FAIR	POOR	UNSATISFACTORY
In general, this part of the structure has a good appearance, and conditions observed in this area do not appear to threaten the safety of the dam.	Although general cross-section is maintained, surfaces may be irregular, eroded, rutted, spalled, or otherwise not in like new condition. Conditions in this area do not currently appear to threaten the safety of the dam.	Continued deterioration and/or unusual loading may threaten the safety of the dam.	Conditions observed in this area appear to threaten the safety of the dam. Conditions observed in this area are unacceptable.

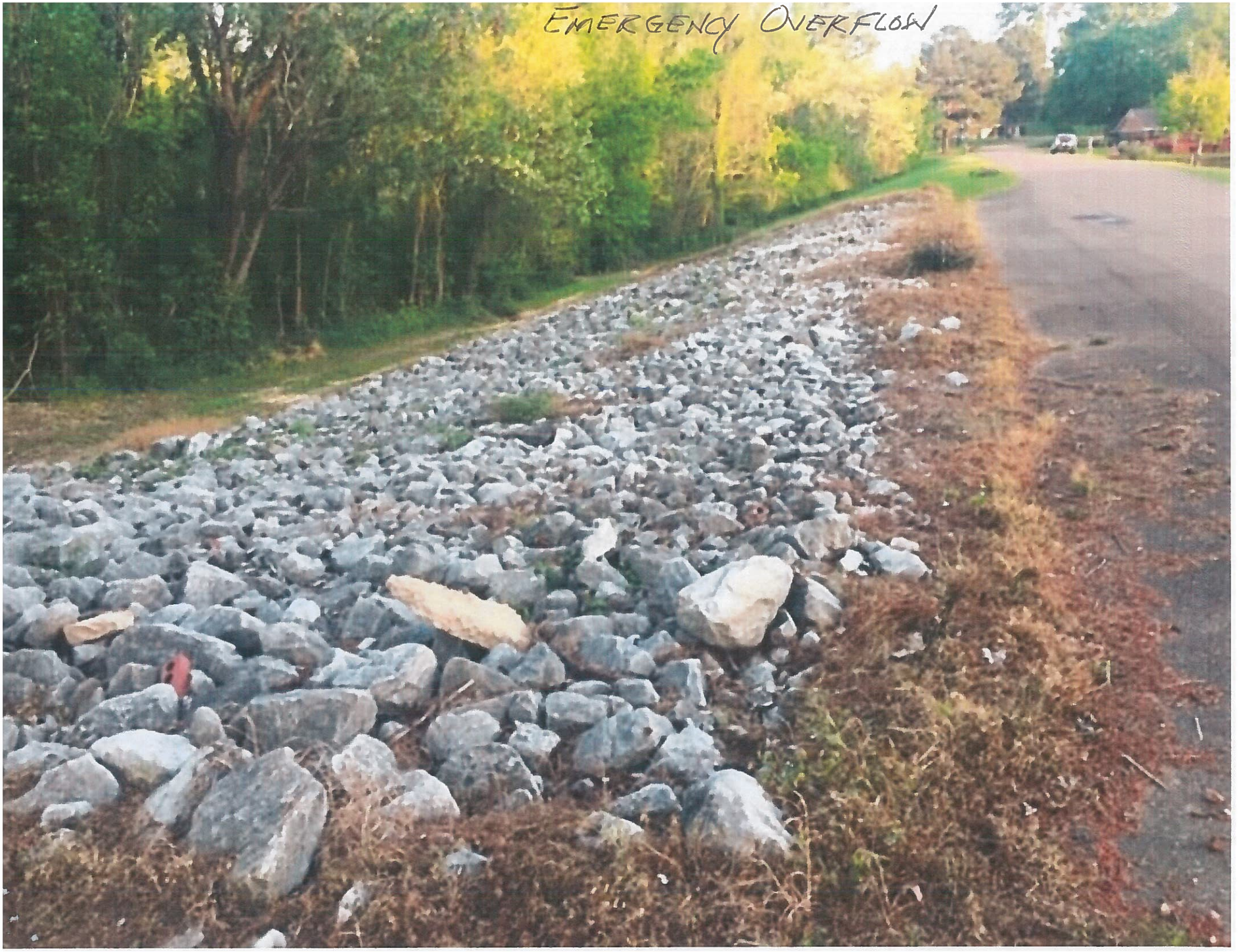
CONDITIONS OBSERVED – APPLIES TO SEEPAGE

SATISFACTORY (NONE)	FAIR	POOR	UNSATISFACTORY
No evidence of uncontrolled seepage. No unexplained increase in flows from designed drains. All seepage is clear. Seep- age conditions do not appear to threaten the safety of the dam.	Some seepage exists at areas other than the drain outfalls, or other designed drains. No unexplained increase in flows from designed drains. All seepage is clear. Seepage conditions observed do not currently appear to threaten the safety of the dam.	Excessive seepage exists at areas other than drain outfalls and other designed drains. Seepage needs to be evaluated. Increased flow and/or continued deterioration in seepage conditions may threaten the safety of the dam.	Excessive seepage conditions observed appear to threaten the safety of the dam and is unacceptable. Examples: 1) Designed drain or seepage flows have increased without increase in reservoir level. 2) Drain or seepage flows contain sediment. i.e., muddy water or particles in jar samples. 3) Widespread seepage, concentrated seepage or ponding appears to threaten the safety of the dam.

UPSTREAM BANK

42" OUTFLOW CMP


DOWNSTREAM
BANK


EMERGENCY OVERFLOW

INSTRUCTIONS FOR COMPLETING THIS FORMAL INSPECTION CHECKLIST

1. **Complete all items that are applicable; if not applicable, write in "N/A".**

2. Use the next page to determine ratings of each dam component.

3. Please either type or write legibly and concisely.

4. The inspection personnel shall review the "Guidelines for Inspection of Dams" available on the MDEQ website prior to conducting the inspection. Failure to comply with the requirements of this guideline may result in the inspection being rejected by MDEQ.

5. If the ratings of the components of the dam have changed since the last inspection, please explain the change in condition under the appropriate section. If a rating has improved, dam repairs, improvements, analyses, or maintenance must have been performed and documented.

6. The inspection report including this form shall be submitted to MDEQ including pictures in an appendix section.

7. Please sign and date this page in the space below to verify that you have read and understand these instructions.

Inspector's Signature: James A. Whatley Jr. Date: 28 MAR 20