**Request for Expression of Interest – Former New Jersey School of Conservation Building Complex**

# RESPONSES TO QUESTIONS SUBMITTED TO THE NJDEP AS OF 2/16/22

**Question 1. How many buildings are there?**

**Response:** Pursuant to Paragraph 2.0 in the Request for Expression of Interest ("RFEI"), there are 40-plus buildings in various conditions on the Complex. A Map of the Site can be found at https://njparksandforests.org/parks/business_ops/comments.htm.

**Question 2. Are all of the building's gas heated and are there any underground tanks?**

**Response:** All of the buildings on the Complex are heated by propane, and all of the propane tanks are located above ground.

**Question 3. In reference to building # 3 - does the fireplace work?**

**Response:** The NJDEP has not determined if the fireplace currently works. The Complex, including the fireplace is provided in as is condition. The Respondent should consider the fireplace as not functioning when preparing their response to the RFEI. If awarded, the Respondent would be responsible for obtaining any and all necessary permits/inspections required to determine the condition of the fireplace prior to use.

**Question 4. In reference to building #3 - is this the original layout from the CCC?**

**Response:** An analysis has not been completed.

**Question 5. What is the condition of the dam on the Complex?**

**Response:** A copy of the most recent Dam Safety Inspection Report and Compliance Schedule is attached hereto as Exhibit 1.

**Question 5. Do you happen to have an inventory of buildings, structures, and systems?**

**Response:** A Map of the Site can be found at https://njparksandforests.org/parks/business_ops/comments.htm. Beyond this, the NJDEP has not completed its own inventory list. If awarded, the Respondent would be responsible for obtaining any and all necessary permits/inspections required to determine the condition of the buildings, structures and systems prior to use.

# Exhibit 1.


Known for excellence.
Built on trust.

# 2021 REGULAR INSPECTION REPORT

# for

# SKELLINGER DAM

**(NJDEP File No. 22-113)**

**Sandyston Township, Sussex County, New Jersey**

***in compliance with the***

**STATE OF NEW JERSEY**
**DAM SAFETY PROGRAM**

***Owner***

**State of New Jersey**
**Department of Environmental Protection**
**Division of Parks and Forestry**
**501 East State Street**
**Trenton, New Jersey 08625**

***Prepared by:***
**GZA GeoEnvironmental, Inc.**
55 Lane Road, Suite 407 | Fairfield, NJ 07004
973.774.3300

www.gza.com

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# SKELLINGER DAM
# VISUAL INSPECTION CHECKLIST

## NJ INSPECTION YEAR: 2021

**TYPE OF INSPECTION:** **REGULAR**

| | |
|---|---|
| **Dam Name:** | Skellinger Dam (Lake Wapalanne) |
| **Dam File Number:** | 22-113 |
| **Location:** | Sandyston Township, Sussex County |
| **Owner:** | NJDEP Division of Parks and Forestry |
| **Operator:** | NJDEP Division of Parks and Forestry (formerly operated by Montclair State University, New Jersey School of Conservation) |
| **Date of Inspection:** | August 4, 2021 |

**Reservoir Information:**

| | |
|---|---|
| **Normal Reservoir Elevation (ft.)** | 780.0 (See note below.) |
| **Reservoir Elevation at time of Inspection (ft.)** | 780.1± ft (flow just over spillway crest.) |

Note: The Normal Reservoir Elevation vertical datum is NAVD 88 based on USGS LIDAR topographic contours according to the "Hazard Classification Study" prepared by Civil Dynamics, Inc. dated January 2018.

**Weather Conditions (including recent rainfall)**
66° F, overcast. 0.05 inches of rainfall recorded in Montague Township on August 1, 2021.

## INSPECTION PERSONNEL

**New Jersey Licensed Professional Engineer(s):**

| Name | Affiliation | Area of Expertise |
|---|---|---|
| Jess Bergmann, P.E. | GZA GeoEnvironmental, Inc. | Dam Engineering |

**Non-Licensed Technical Expert(s) and Advisor(s):**

| Name | Affiliation | Area of Expertise |
|---|---|---|
| Allen Bickhardt | GZA GeoEnvironmental, Inc. | Civil Engineering |

**New Jersey State Representative(s):**

| Name | Affiliation | Area of Expertise |
|---|---|---|
| None | | |

**Dam Owner Representative(s):**

| Name | Affiliation | Area of Expertise |
|---|---|---|
| Clark Howell | High Point State Park / Stokes State Forest | Maintenance Specialist / Acting Supervisor |

**Others:**

| Name | Affiliation | Area of Expertise |
|---|---|---|
| None | | |

# SKELLINGER DAM
# VISUAL INSPECTION CHECKLIST

## GENERAL INFORMATION

| | | | |
|---|---|---|---|
| **Name of Dam:** | Skellinger Dam | | |
| **Federal I.D. Number:** | NJ00020 | **NJ Dam Number:** | 22-113 |
| **River Basin:** | Delaware | | |
| **Town:** | Sandyston Twp. | **County:** | Sussex |
| **Block:** | 201 | **Lot:** | 1 |
| **Nearest Downstream City or Town:** | Sandyston | | |
| **Stream Name:** | Spring Cabin Brook | | |
| **Tributary of:** | Big Flat Brook | | |
| **Latitude:** | 41° 13′ 46″ N | **Longitude:** | 74° 45′ 02″ W |
| **Type of Dam:** | Earthfill | | |
| **Purpose of Dam:** | Recreation | | |
| **Hazard Category:** | Class II – Significant | **Drainage Area (sq.miles):** | 1.6 |
| **Height (ft):** | 16 | **Length (ft):** | 340 |
| **Normal Surface (ac):** | 12.5 | **Normal Capacity (af):** | 33 |
| **Maximum Capacity (af):** | 73 | **Spillway Capacity (cfs):** | 998 |

Note: Portions of general information were obtained from Phase I Inspection Report conducted by Louis Berger and Associates, Inc. dated June 1981 and from the Hazard Classification Study prepared by Civil Dynamics, Inc. dated January 2018.

## HISTORY

| | | | |
|---|---|---|---|
| **Date Constructed:** | 1936 - 1937 | **Date(s) Reconstructed:** | 1941 – 1942 dam raise<br>Downstream culvert work – unknown<br>2018 low level outlet repair. |
| **Designed by:** | State Department of Conservation and Development, Division of Forests and Parks. | **Repairs Designed by:** | State Department of Conservation and Development, Division of Forests and Parks.<br>2018 repair work by Langan Engineering and Environmental Services, Inc. |
| **Constructed by:** | Civilian Conservation Corps (CCC) | **Repairs Constructed by:** | 1941 – 1942 Unknown<br>2018 - Ferraro Construction Corp. |
| **Owner:** | NJDEP Division of Parks and Forestry | | |
| **Owner's Address:** | State of New Jersey<br>Department of Environmental Protection<br>Division of Parks and Forestry<br>501 East State Street<br>Trenton, NJ 08625 | | |

# SKELLINGER DAM
# VISUAL INSPECTION CHECKLIST

**Owner / Operator present during inspection:** Yes X No

**Description of 2018 Repair Work:** The repair work consisted of replacing the existing 24-inch low level outlet sluice gate and installing a new trash rack at the low level outlet intake, tree and stump removal throughout the embankment and installation of a new dry hydrant on the left abutment.

## PREVIOUS INSPECTION

**Date of Last Inspection:** Aug. 28, 2019 **Date of Last Regular Inspection:** Aug. 28, 2019

**Date of Last Phase I Inspection:** Feb. 5, 1981 **Date of Last Formal Inspection:** None

## EMERGENCY ACTION PLAN (Required for all Class I and Class II dams)

| | |
|---|---|
| **Date of Approved Plan:** | None known. A plan needs to be prepared since the Hazard Classification of the dam was confirmed as Class II. |
| **Date of Plan Revision:** | N/A |
| **Is the notification flowchart complete and current?** | N/A |
| **Is inundation mapping or a description included?** | N/A |
| **Are emergency materials and equipment identified?** | N/A |
| **When was the plan last tested?** | N/A |

## DOWNSTREAM HAZARD CLASSIFICATIONS

| | |
|---|---|
| **Present Hazard Classification:** | Previously Class III - Low Hazard, but qualitatively upgraded to Class I – High Hazard by Division. Reduced to Class II – Significant Hazard by the Division after review of the Hazard Classification Study prepared by Civil Dynamics, Inc. dated January 2018. |
| **Changes in downstream Land Use and Habitation:** | No known or expected changes. |
| **Is the present classification appropriate?** | Yes |

## OPERATION AND MAINTENANCE

| | |
|---|---|
| **Date of Operation and Maintenance Plan:** | August 2005 |
| **Are instructions adequate?** | Plan needs to be updated to include procedures for notifying campers downstream ahead of low level outlet operation. |
| **Do operating personnel follow instructions?** | Unknown |
| **What are the operating personnel capabilities?** | General maintenance. |

# SKELLINGER DAM
# VISUAL INSPECTION CHECKLIST

## EXAMINATION OF EMBANKMENT DAM

### DESCRIPTION OF STRUCTURE

| | |
|---|---|
| **Embankment Material:** | Zoned earthfill embankment dam. |
| **Cutoff Type:** | 10-foot wide clay cutoff contiguous with clay core. |
| **Impervious Core:** | Clay core, 2-foot wide at crest and 10-foot wide at base. |
| **Internal Drainage system:** | None reported or documented in Phase I. |
| **Movement (Horizontal & Vertical Alignment):** | No signs of movement observed or apparent. |
| **Junctions with Abutments or Embankments:** | Right and left abutments widen into wooded areas. The abutments appeared stable. |
| **Miscellaneous:** | Dry hydrant was installed on the left abutment during the 2018 repair work. |

### CREST

| | |
|---|---|
| **Description:** | 340-foot long grass covered crest. A 5-foot square low level outlet chamber with locking steel cover is located on the crest near the center of the dam. |
| **Vertical Alignment:** | Crest elevation varied by about 1 foot (based on October 2017 topographic measurements). Crest edges were rounded.<br><br>Right side crest appeared slightly irregular with a low area adjacent to the spillway (4 to 6-foot length of crest was measured approximately 8 inches lower than the rest of the top of dam). |
| **Horizontal Alignment:** | Crest appeared straight with a uniform crest width of about 7 feet. Crest was locally narrower near the spillway. |
| **Surface Cracks:** | None observed. |
| **Settlement:** | None observed. |
| **Unusual Conditions:** | Most of the exposed roots previously observed throughout the crest on the left side were grubbed during the 2018 repair work. A few roots remained on the crest.<br><br>Minor areas of sparse grass growth observed on the crest on both sides of the dam. |

### UPSTREAM SLOPE

| | |
|---|---|
| **Description:** | Hand-placed layer of riprap covered by sediment and some vegetation. Vertical rock masonry spillway training walls return approximately 20 feet along the left side slope and 15 feet along the right side slope. |
| **Slope Estimate (H:V):** | Approx. 3H:1V (based on October 2017 topographic measurements). |
| **Trees, Undesirable Growth or Debris, Animal Burrows:** | Tall woody/weedy vegetation was observed throughout the left side slope. Tree stumps were removed during the 2018 repair work, but a few roots remained. |

| | |
|---|---|
| | Phragmites and cattails were observed along the water's edge approaching the left abutment. The start of possible burrows were observed at a few locations near the top of slope on the left side near the center of the dam.<br><br>Woody/weedy vegetation and minor wood debris were observed on the right side slope. |
| **Sloughing, Subsidence or Depressions:** | Minor localized area of erosion was observed on the left side approximately 10 feet left of the spillway training wall during the 2015 and 2017 inspections. The erosion condition was difficult to observe during the 2019 inspection due to overgrown conditions along the water line. This erosion was not observed during this inspection. Minor vertical scarping was observed along the entire length of the left side at the waterline. This condition was observed since the 2015 inspection and no significant change was apparent during this inspection. |
| **Slope Protection:** | Hand placed layer of riprap. Riprap appeared uniform and stable. |
| **Surface Cracks or Movement at Toe:** | Toe submerged. Unable to observe. |
| **Unusual Conditions:** | Exposed tree roots observed along the top of slope. |

## DOWNSTREAM SLOPE

| | |
|---|---|
| **Description:** | Grass covered upper slope. A 20-foot length of large rock exists along the toe of upper slope on the left side near the spillway exit channel. The downstream roadway is part of the downstream embankment which widens the dam cross section. The left side lower slope was previously wooded but trees were removed during the 2018 repair work. |
| **Slope Estimate (H:V):** | Approx. 3H:1V along left side upper slope and 2.5H:1V along left side lower slope (based on October 2017 topographic measurements). |
| **Trees, Undesirable Growth or Debris, Animal Burrows:** | Grass appeared well maintained along the upper slope. Most of the exposed stumps and roots previously observed throughout the upper slope on the left side were cleared and grubbed during the 2018 repair work. Minor rutting and area of sparse grass were observed on the far left side near the left abutment. The start of a burrow at the top of slope on the far left side was observed. One animal burrow was observed in left side upper slope above a large rock about 20 feet left of the spillway.<br><br>The medium to large diameter trees on the lower slope on the left side were cleared and grubbed during the 2018 repair work.<br><br>Lower slope on the left side was overgrown with tall, thick weedy/woody vegetation. Minor weedy/woody vegetation was observed growing within the large boulders and rocks along the right bank of the exit channel. |

| | |
|---|---|
| | An animal burrow was observed beneath a large boulder on the right side lower slope/channel bank. |
| **Sloughing, Subsidence or Depressions:** | Minor localized depressed area observed on the left side adjacent to the spillway training wall, but the conditions did not appear to be an active problem and appeared similar to the 2019 inspection.<br><br>A localized subsidence area was observed at the toe of the upper slope on the left side adjacent to the stone stairway leading to the spillway apron. (subsidence was measured a maximum of approximately 5 inches deep and 2.5 feet wide). Subsidence area appeared to be slightly lower compared to the 2019 inspection.<br><br>A minor void was observed between the lower left training wall (downstream of the steps) and the lower downstream slope area.<br><br>Minor erosion was observed along the lower right slope along the edge of the right downstream culvert wing wall. A localized void was observed in the lower slope downstream of the culvert wing wall just above a large boulder. It is unknown if this void is a result of surface erosion or subsidence. |
| **Surface Cracks or Movement at Toe:** | None observed. |
| **Seepage:** | None observed along the right and left upper slopes or right side lower slope. Unable to properly observe left side lower slope due to overgrown conditions. |
| **External Drainage System (Ditches, Trenches, Blanket):** | None observed. |
| **Condition around Outlet Structure:** | The low level outlet discharges through the left side lower slope downstream of Skellenger Road. The area around the outlet appeared stable but was difficult to observe due to overgrown conditions. |
| **Unusual Conditions:** | Skellenger Road embankment forms a wide (35 to 50 feet) downstream bench. Asphalt roadway appeared to be intact with no significant cracks, but various areas of asphalt patching were observed.<br><br>Utility pole with guy wire located along Skellenger Road on the left upper downstream slope near the center of the dam.<br><br>Sewer utility crosses the upper slope of the dam along the upstream side of Skellenger Road.<br><br>12-inch diameter HDPE roadway storm drainage pipe inlet at the bottom of the upper slope on the left side of the dam under Skellenger Road. Small riprap was observed around the inlet end of the pipe. The pipe discharges through the lower left downstream slope and no headwall was observed. |

# SKELLINGER DAM
# VISUAL INSPECTION CHECKLIST

## ABUTMENT AND TOE AREA

**Description:** Right and left abutments widen into slightly raised wooded areas. The upstream toe of the dam was submerged and could not be observed.

**Erosion at Contact:** Minor erosion gully observed along the left side downstream groin likely caused by surface water runoff from Skellenger Road.

**Seepage or Wet Area Along Contact:** Wetness and standing water observed along the downstream toe area between the low level outlet exit channel and the spillway exit channel. This condition was also observed during previous inspections.

**Signs of Movement:** None observed.

**Depressions, Sinkholes:** None observed.

**Unusual Conditions:** Downstream toe was overgrown with tall weedy and woody vegetation making observations difficult.

## SEEPAGE AND TOE DRAIN / RELIEF WELL FLOW SUMMATION

| Location | Estimated Flow | Color (Turbidity) |
|---|---|---|
| None observed. | N/A | N/A |

# EXAMINATION OF SPILLWAYS AND OUTLET WORKS

## TYPES AND DESCRIPTION OF SPILLWAY(S)

**Primary:** 31-foot long concrete ogee spillway with rock masonry training walls.

**Secondary (Auxiliary):** None

**Emergency:** None

**Other:** None

## SPILLWAY ENTRANCE CHANNEL

**Description:** Open to lake.

**Vegetation (trees, bushes, etc.):** Minor weedy vegetation observed.

**Debris:** Minor woody debris observed on spillway crest and downstream face.

**Channel Side-Slope Stability:** Appeared stable.

**Slope Protection/Erosion:** None observed.

**Unusual Conditions:** None observed.

## SPILLWAY STRUCTURE

**Description:** 31-foot long concrete ogee spillway with rock masonry training walls.

**Condition of Material:** Crest and downstream face of spillway appeared intact but weathered. Minor loss of concrete was observed at the contact with the left and

right training walls. Conditions appeared similar to the 2019 inspection.

**Signs of Movement:** None observed.

**Joints:** Horizontal joint (possibly a construction joint) was observed along the downstream face of the spillway near the bottom. Contact with spillway training walls appeared intact, except as noted above.

**Unusual Conditions:** Flow was concentrated at the center and far right side of the crest indicating that the spillway crest is likely not level.

## SPILLWAY WALLS

**Description:** Vertical rock masonry spillway training walls that extend 14 feet upstream of the spillway on both sides, approximately 30 feet downstream of the spillway on the left side and 25 feet downstream of the spillway on the right side. The vertical rock masonry walls return approximately 20 feet along the left side upstream slope and 15 feet along the right side upstream slope. A small rock masonry stairway is located at the downstream end of the rock masonry wall on the left side.

The downstream rock masonry walls transition to newer concrete training walls on both sides of the exit channel (the training walls and downstream culvert pipe under Skellenger Road are relatively new).

**Condition of Material:** Rock masonry walls appeared generally intact and stable. Minor deterioration was observed at the perpendicular return of the upstream right and left side walls. Specifically, a few loose and displaced stones were observed in the return of the right side wall. A few displaced stones were also observed in the return of the left side wall at the water line. The condition of the upstream walls appeared similar to the 2019 inspection.

Downstream rock masonry walls appeared intact with minor cracking in the masonry and weedy/woody vegetation was growing through both walls.

The newer concrete walls appeared intact and in good condition. No significant cracks or spalls observed in the walls.

**Signs of Movement:** Localized horizontal displacement of the upstream rock masonry wall was observed at the perpendicular return of the right side wall. Displacement was measured to be approximately 5 inches during this inspection. This condition was observed during previous inspections and appeared similar to the 2019 inspection.

**Joints:** None observed. Contacts between older rock masonry walls and the newer concrete walls appeared in good condition.

**Leakage:** Similar to the 2017 and 2019 inspections, minor leakage was observed from the right masonry wall at the contact with the downstream face of the spillway. Leakage appeared clear and was estimated at less than 1 gpm during this inspection. Leakage was also observed along the left rock masonry wall at the contact with the left training wall.

**Drains:** None observed.

**Unusual Conditions:** Undermining was observed along the base of the left masonry wall at the contact with the spillway. Undermining was measured to be a

maximum depth of about 22 inches. This condition was observed during the 2019 inspection and undermining was slightly deeper.

Some minor weedy/woody vegetation observed growing through rock masonry walls.

## DOWNSTREAM APRON

**Description:** 33-foot wide riprap lined apron appeared to consist of a concrete slab with imbedded riprap that terminates approximately 15 feet downstream of the spillway. A layer of loose riprap then continues from the end of the concrete slab to a 3-foot high concrete sill/step leading to a 23-foot wide by 6-foot high corrugated elliptical pipe culvert under Skellenger Road.

**Condition of Material:** Riprap apron appeared intact and stable. Downstream end of concrete slab appeared mostly intact but weathered. An approximately 2-foot by 1.5-foot section of the concrete slab was displaced on the right side, but the condition did not appear to be critical and appeared similar to the past inspections. The concrete sill/step appeared intact and in good condition. A minor longitudinal crack was observed along the center of the concrete step, similar to the 2019 inspection. Several drains were observed through the base of the concrete step and most drains were flowing.

**Signs of Movement:** Some minor displacement of loose riprap was observed upstream of the concrete step. A scour hole (approx. 1 foot deep and maximum of 6 feet wide) was observed between the concrete step and the downstream culvert. Conditions appeared similar to the 2017 and 2019 inspections.

**Unusual Conditions:** Minor woody debris and weedy vegetation observed throughout the riprap apron.

## EXIT CHANNEL

**Description:** A 23-foot long by 6-foot high corrugated elliptical pipe discharges flow under Skellenger Road to a natural stream channel.

**Vegetation (trees, bushes):** Minor weedy/woody vegetative growth was observed in the channel downstream of the culvert pipe. A small diameter tree was observed at the top of the left channel bank.

**Condition of Culvert:** The pipe culvert appeared dry, intact and in good condition. Upstream concrete headwall and downstream concrete wing walls appeared intact and in good condition.

**Debris:** The culvert was clear of debris. Minor wood debris was observed in the downstream channel.

**Channel Side-Slope Stability:** Downstream channel banks appeared stable.

**Erosion:** None observed. The bottom of the culvert was rock lined. Boulders and rocks lined the channel banks downstream of the culvert. The channel bottom was also rock lined.

**Unusual Conditions:** During the 2015 inspection, leakage was observed through a bolt hole in the sidewall of corrugated pipe at the left upstream end. This condition was not observed during inspections since 2015.

# SKELLINGER DAM
# VISUAL INSPECTION CHECKLIST

## LOW LEVEL OUTLET

**Description:** The low level outlet system consists of a 24-inch diameter bituminous-coated corrugated iron pipe encased in 6 inches of reinforced concrete with a 24-inch diameter sluice gate located within a concrete chamber on the left side crest near the center of the dam. The inlet and outlet ends of the pipe are encased in concrete headwalls with a trash rack on the upstream headwall. The low level outlet sluice gate and trash rack were replaced during the 2018 repair work.

**Condition:** Low level outlet concrete chamber interior appeared intact and in good condition and no significant cracks or spalls were observed. Standing water was observed on the chamber floor. During prior inspections and this inspection, the operator reported that the low level outlet pipe downstream of the chamber slopes slightly upstream. Downstream headwall and pipe appeared intact and in good condition but were difficult to properly observe due to overgrown conditions.

**Trash Rack:** New galvanized steel trash rack installed during the 2018 repair work.

**Leakage:** Outlet pipe did not appear to be leaking, but toe area does not drain well and the pipe was slightly submerged with standing water. Leakage was not observed prior to operation, but minor dripping was audible after operation.

| Location | Estimated Flow |
|---|---|
| Unknown due to standing water along the toe of slope below outlet end of low level outlet pipe. | Unknown |

**Unusual Conditions:** Portions of the low level outlet channel are too low to drain to spillway exit channel.

**Was the Low Level Outlet operated during the inspection?** Yes, the sluice gate was 100-percent opened and closed.

**Were there difficulties operating the Low Level Outlet?** No problems were reported.

**When was the Low Level Outlet last operated and did this conform with the Operation and Maintenance procedures?** The low level outlet sluice gate was replaced and exercised during the 2018 repair work. It is unknown if the valve was exercised since then because the prior Operator (New Jersey School of Conservation) no longer occupies the property.

**Miscellaneous:** Level indicator on the operator stem became dislodged during the exercise and needs repair. Operation of the gate was not impacted.

## EXIT CHANNEL FOR LOW LEVEL OUTLET

**Description (trees, bushes):** Low level outlet discharges into a narrow channel that flows to the spillway exit channel approximately 50 feet downstream. The low level outlet exit channel was observed subsequent to the low level outlet operation.

**Vegetation, Debris:** Branches and leafy debris were observed within the narrow channel. Channel was overgrown with tall weedy/woody vegetation.

**Channel Side-Slope Stability:** Channel banks are shallow. Right bank ties into the downstream toe of the dam. Banks appeared stable.

| | |
|---|---|
| **Slope Protection / Erosion:** | A concrete apron protects approximately 3 feet of the exit channel downstream of the outlet pipe. Various sized rock was observed scattered throughout the channel bottom and banks. |
| **Unusual Conditions:** | The exit channel is narrow and shallow and does not have the capacity to pass the full flow from the low level outlet pipe. During the low level outlet operation, the flow was observed spreading across an area about 20 feet wide, beyond the limits of the channel. Minor scouring of the rock channel bottom was observed 10 to 15 feet downstream of the outlet. |

## EXAMINATION OF OTHER FEATURES

**INSTRUMENTATION** (Monumentation / Surveys, Observation Wells, Weirs, Piezometers, Etc. location, condition

None

**RESERVOIR**

| | |
|---|---|
| **Slopes:** | Rock outcrops along the lake edge. Slopes appeared stable. |
| **Sedimentation:** | Unknown |
| **Unusual Conditions Which Affect the Dam:** | 2015 inspection noted significant beaver activity at the spillway and in the exit channel. No signs of beaver activity observed during the 2017, 2019 inspection or this inspection. |
| **Unusual Conditions:** | None observed. |

**APPURTENANT STRUCTURES** (Power House, Gatehouse, Penstocks, Water Supply, etc.)

| Item | Location | Condition |
|---|---|---|
| Lake level staff gauge. | Upstream rock masonry wall of spillway structure. | Missing |

# CONCLUSION

## DAM INSPECTION PROGRAM GUIDELINES

The following new guidelines have been established by the NJDEP Bureau of Dam Safety & Flood Control to help meet the requirements of the National Inventory of Dams condition assessment of existing dam structures. Please follow the guidelines/definitions below and select the appropriate checkbox.

**SATISFACTORY**
No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all required loading conditions (static, hydrologic, seismic) in accordance with the applicable regulatory criteria. Minor maintenance items may be required.

**FAIR**
Acceptable performance is expected under all required loading conditions (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

**POOR**
A dam safety deficiency is recognized for any required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. POOR also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies.

**UNSATISFACTORY**
Considered unsafe. A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

I herby state that the dam structure referenced herein was personally inspected by me and in my professional opinion based on the visual inspection, the dam was found to be in the following condition **(select one only):**

☐ SATISFACTORY

☐ FAIR

☑ POOR

**(Due to known inadequate spillway capacity.)**

☐ UNSATISFACTORY

# CONCLUSION (continued)

I recommend the following repairs be made immediately:

1. **Cut woody/weedy vegetation and remove wood debris from slopes of dam.**
2. **Fill in animal burrows along the upstream and downstream slopes.**
3. **Repair rock masonry walls at the upstream returns of the spillway structure.**
4. **Repair undermining along the base of the left rock masonry spillway training wall.**
5. **Repair scour hole in the downstream apron between the concrete step and discharge culvert.**
6. **Replace lake level staff gauge.**
7. **Repair low level outlet operator level indicator.**

The following long term improvements should also be undertaken:

1. **Develop an EAP and include notification procedure for campers downstream.**
2. **Update the Operation and Maintenance Manual for the dam. Include notification procedure for campers downstream in advance of operation of the low level outlet.**

| | |
|---|---|
| The following studies are recommended: | ☐ Hydrologic and Hydraulic analysis<br>☐ Stability analysis<br>☐ Failure/Inundation analysis<br>☒ **Other <u>Conceptual design (see below).</u>**<br>☐ None |

1. **Develop a conceptual design to increase the spillway capacity at the dam to safely pass the 100-year storm event or possibly decommission the dam.**

Have the recommendations above included those from the Phase I Inspection Report or previous Regular or Formal Inspection Reports? If not, indicate why. **Yes**

**EMERGENCY ACTION PLAN** (**This section must be completed for all Class I & II dams)**

Date of Approved Plan: **None, but a plan needs to be prepared since the Hazard Classification of the dam was confirmed as Class II.**
Date of Last Plan Revision: **N/A**
Is the notification flowchart complete and current? **N/A**
(If the notification flow chart is not complete and current, all modifications, corrections, and additions must be made and replacement pages submitted with this report)
Is inundation mapping or a description included? If not, why? **N/A**

**NJ Dam Safety Compliance Schedule Form** (attached).
This form must be completed or the Inspection Report will be deemed incomplete. **Yes**

Name of Professional Engineering Company/Consultant Representing the Owner:

**GZA GeoEnvironmental, Inc.**
**55 Lane Road, Suite 407**
**Fairfield, New Jersey 07004**
**(973) 774-3300**

**SKELLINGER DAM**
**VISUAL INSPECTION CHECKLIST**

New Jersey Licensed Professional Engineers representing the dam owner in responsible charge of the inspection:

**Jessica A. Bergmann, P.E.**

Sign _____ Date 10/13/2021

New Jersey Professional Engineer License Number: **24GE04842200** SEAL

**Christopher S. Adams, P.E.**

Sign _____ Date 10/13/2021

New Jersey Professional Engineer License Number: **24GE03130000** SEAL

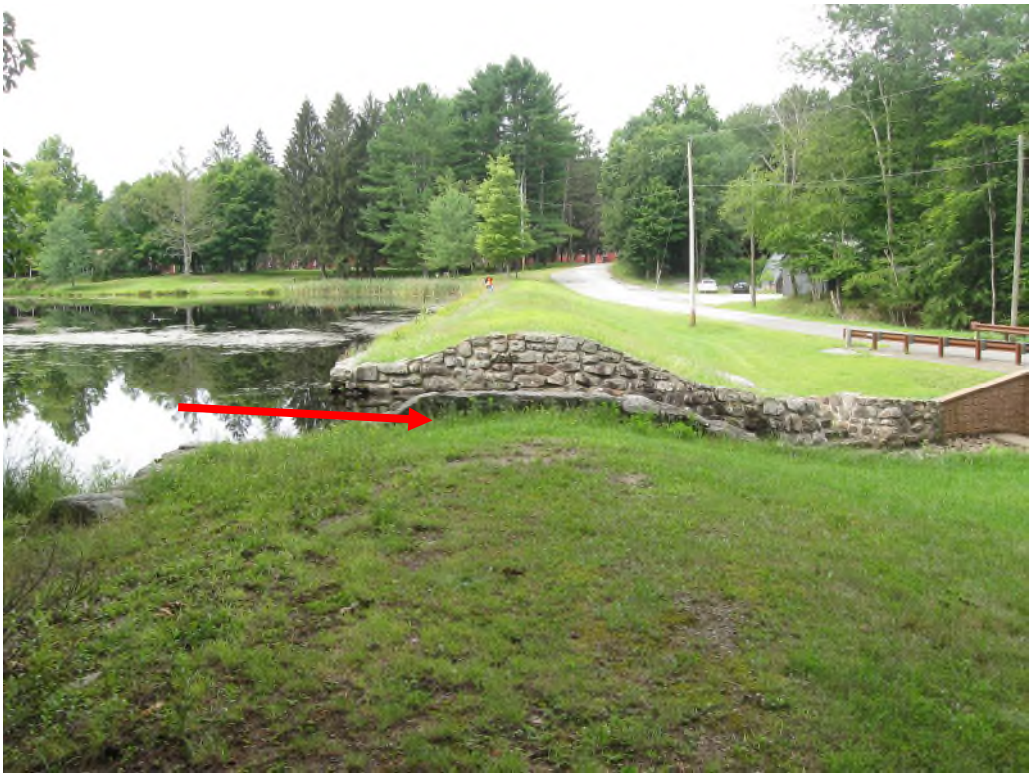

**Photo No. 1: Right side crest of the dam looking left toward the spillway. Note the sparse grass cover on the crest and the low area adjacent to the right training wall.**

**Photo No. 2: Right side crest of the dam looking toward the right abutment. Note the sparse grass cover on the crest.**

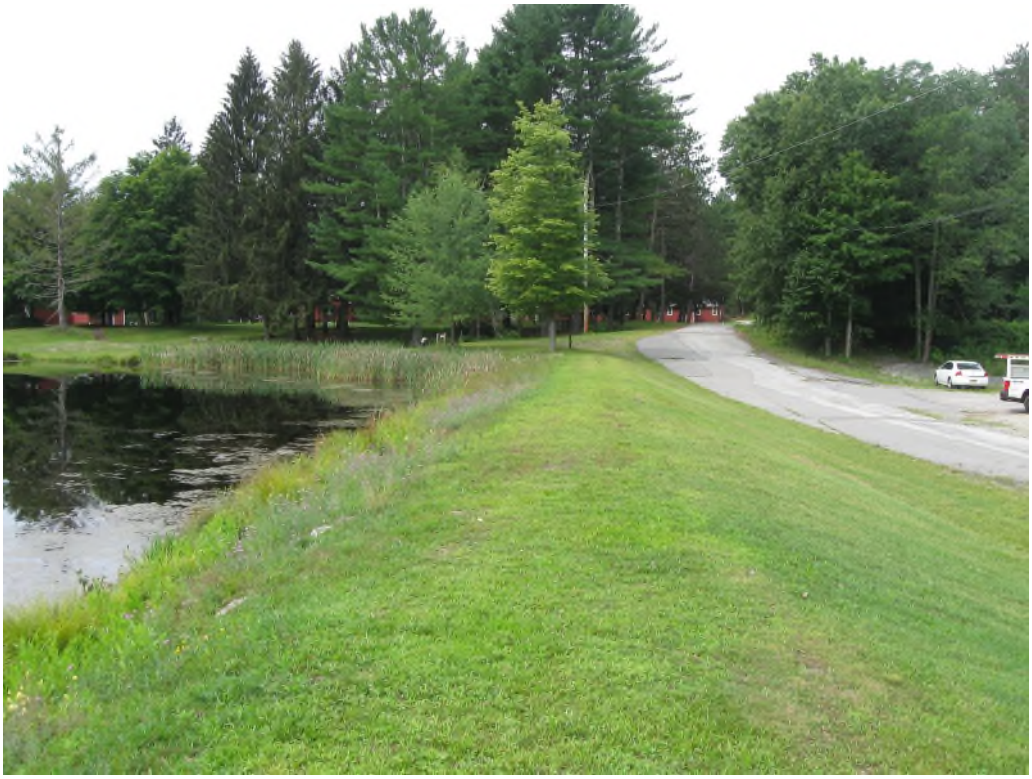

**Photo No. 3: Left side crest of the dam looking toward the left abutment from the low level outlet chamber.**

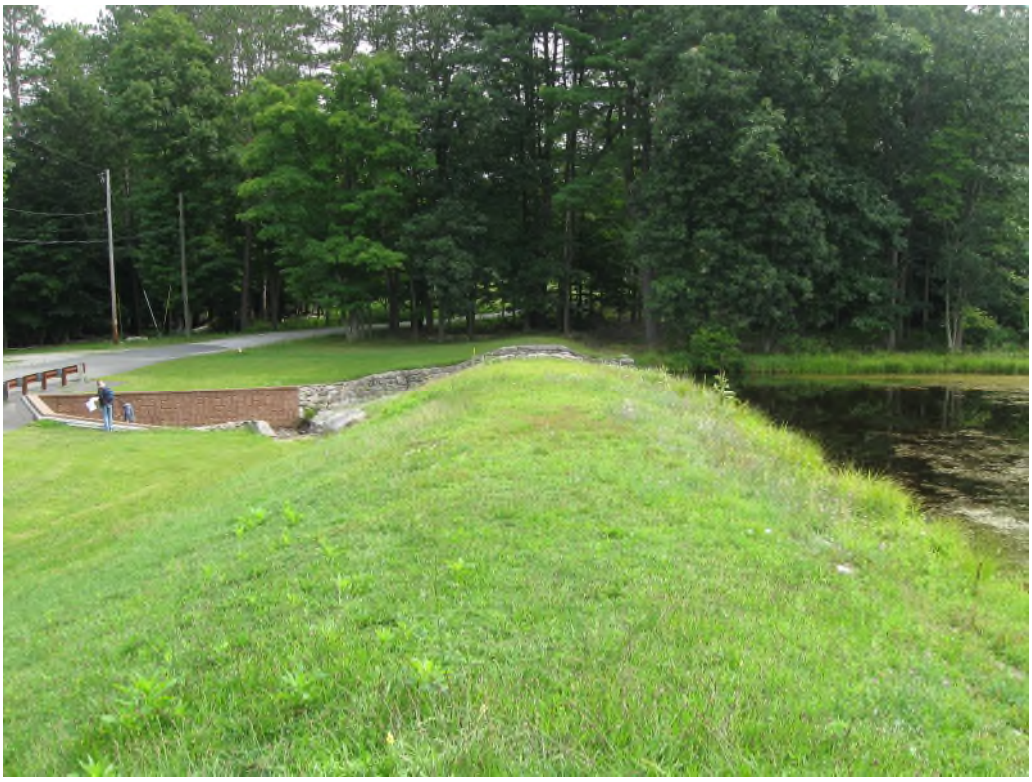

**Photo No. 4: Left side crest of the dam looking right from the low level outlet chamber.**

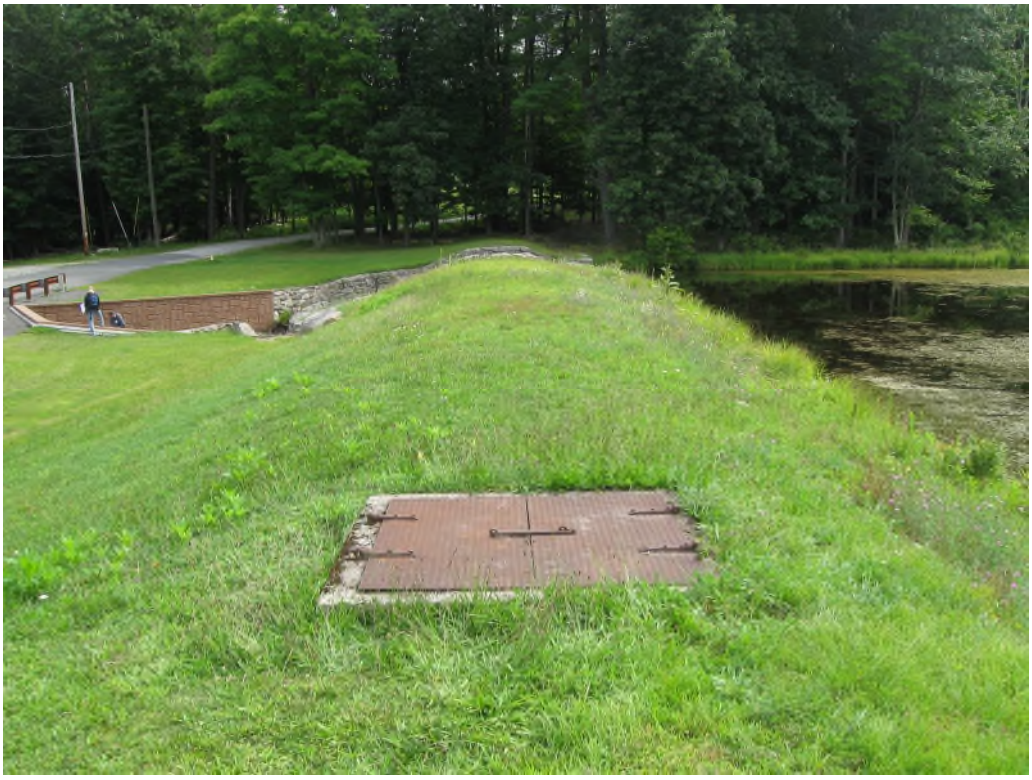

**Photo No. 5: Closeup of the low level outlet chamber on the left side crest of the dam.**

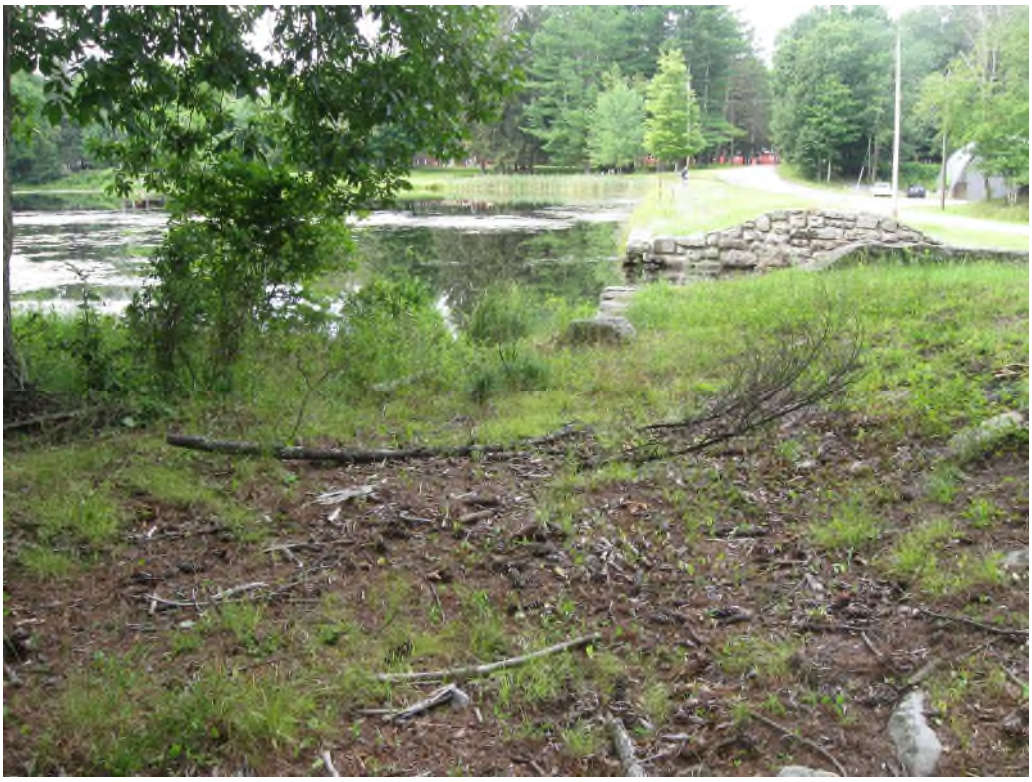

**Photo No. 6: Right side upstream slope of the dam looking left.**

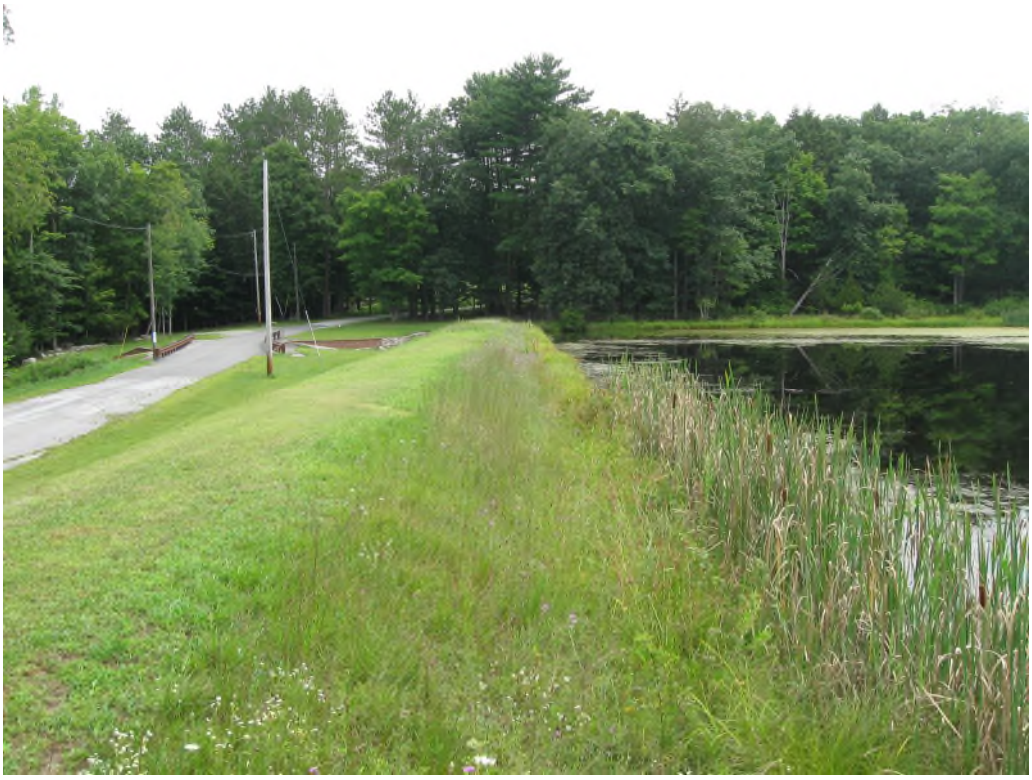

**Photo No. 7: Left side upstream slope of the dam looking right. Note the tall vegetation on the slope.**

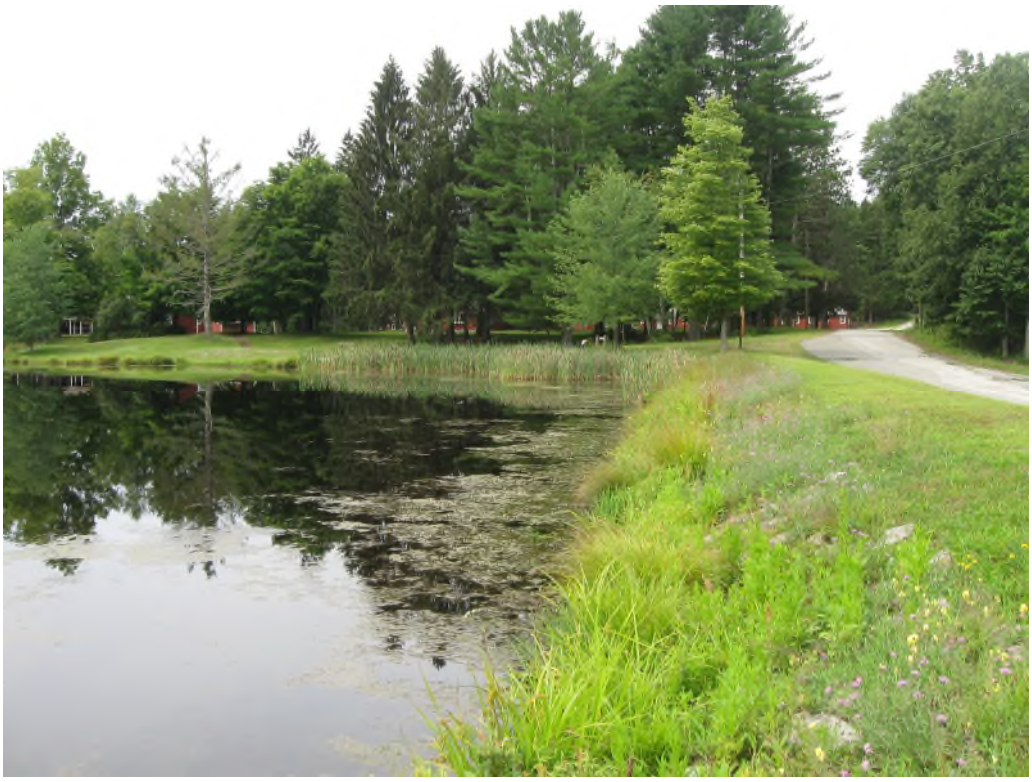

**Photo No. 8: Left side upstream slope of the dam looking left. Note the tall vegetation on the slope.**

**Photo No. 9: Closeup of the hand-placed riprap on the upstream slope.**

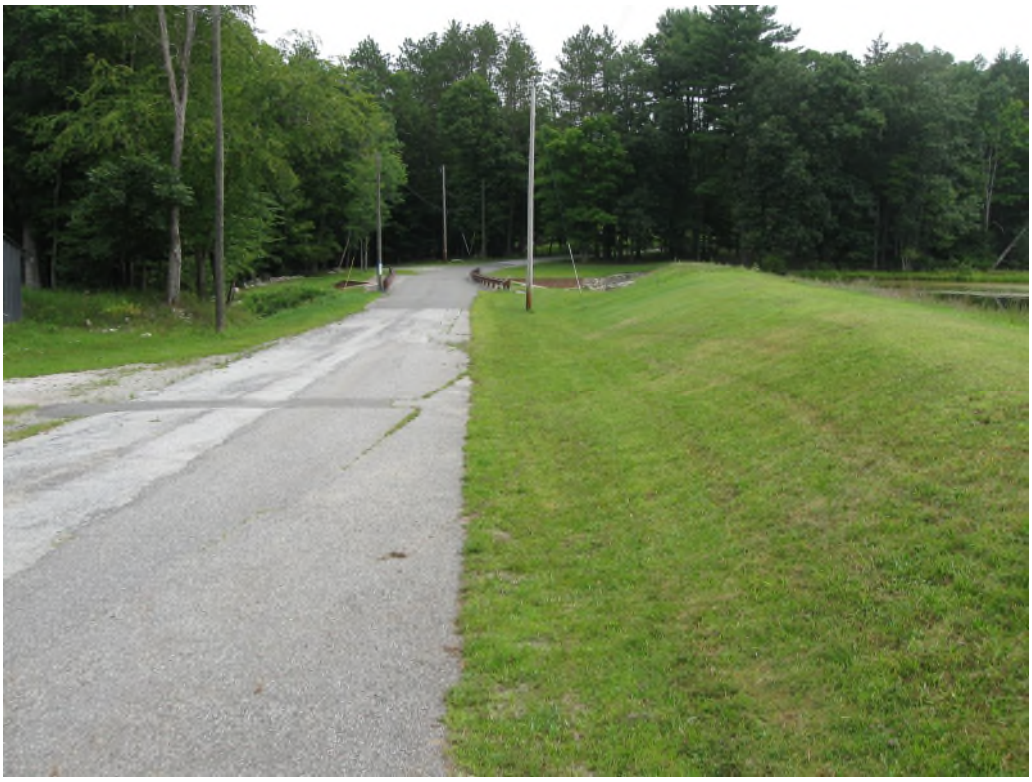

**Photo No. 10: Left side upper downstream slope of the dam and Skellenger Road looking right.**

**Photo No. 11: Left side upper downstream slope of the dam looking left. Note the large rocks along the bottom of the slope.**

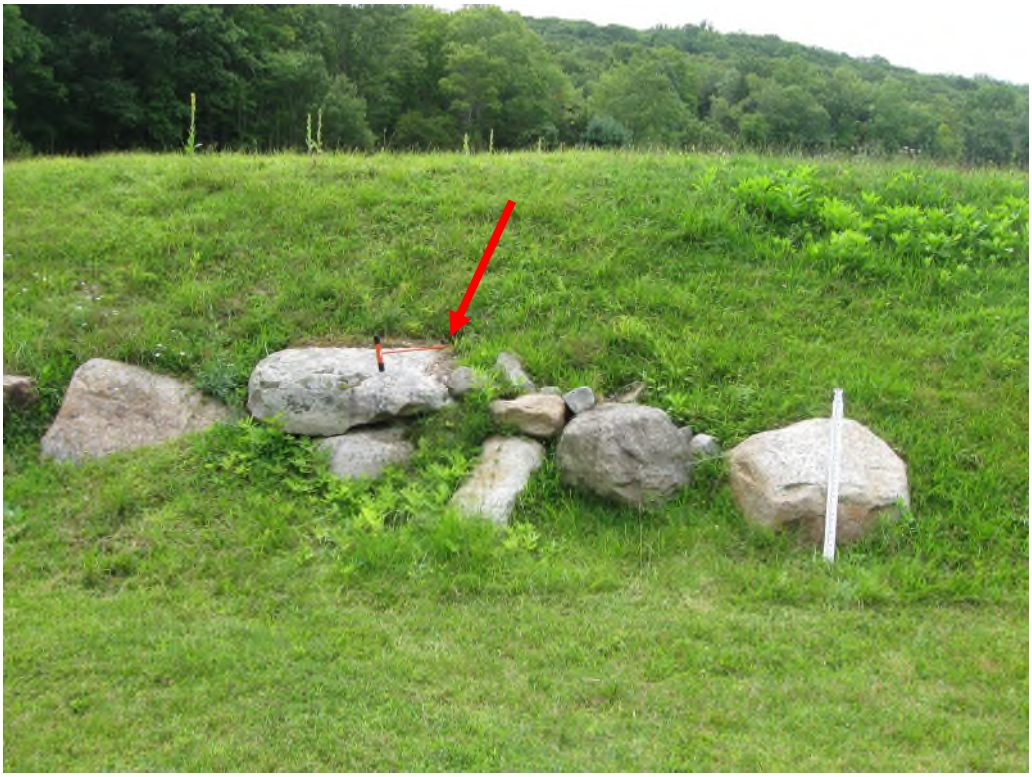

**Photo No. 12: Closeup of large rocks along the left side upper downstream slope. Note the burrow hole above the rock.**

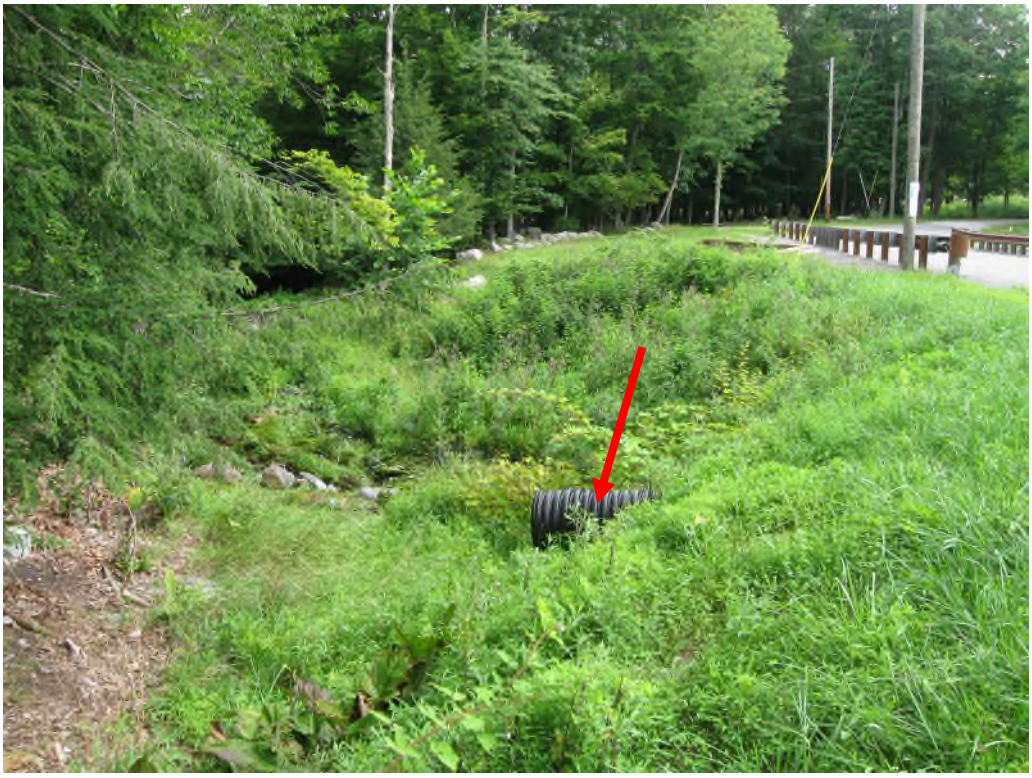

**Photo No. 13: Left side lower downstream slope of the dam looking right. Note the overgrown conditions throughout the slope. Note the storm drain discharge pipe through the slope.**

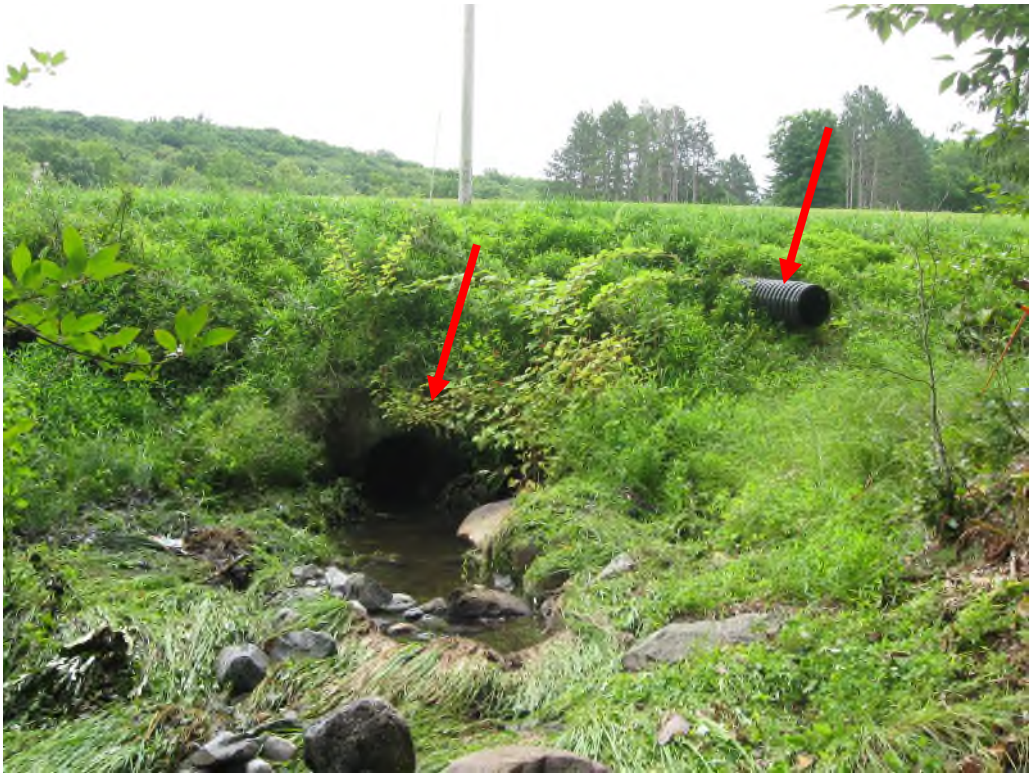

**Photo No. 14: Left side lower downstream slope looking upstream at the storm drain discharge pipe and the low level outlet headwall. Note the overgrown conditions on the slope.**

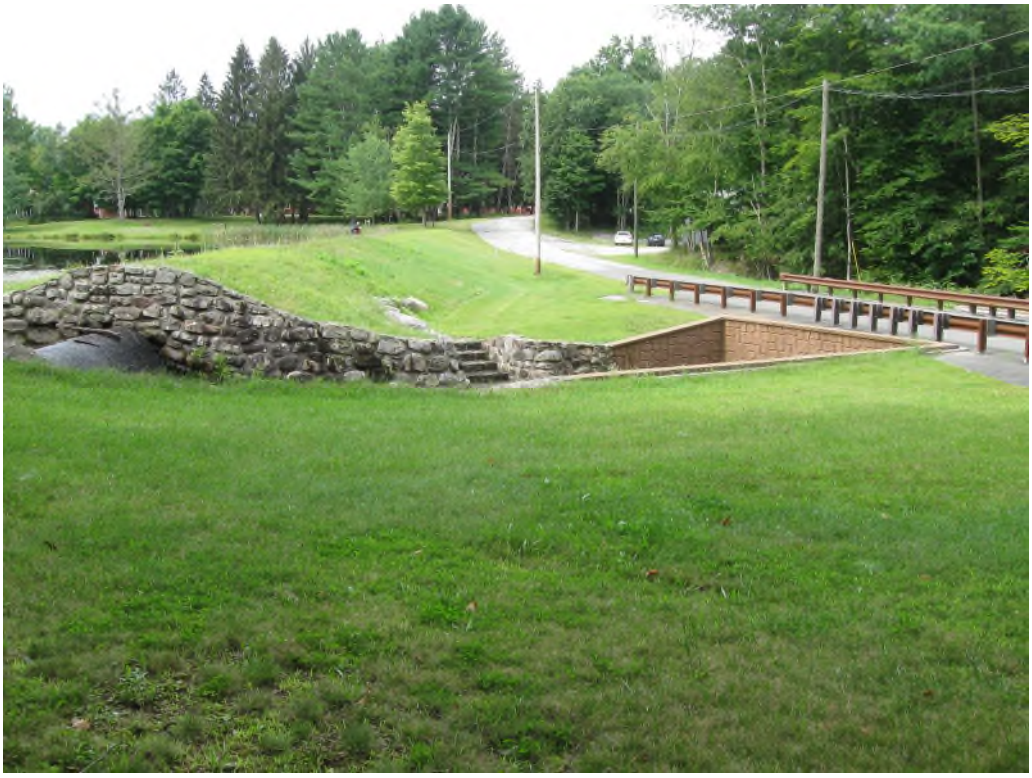

**Photo No. 15: Right side upper downstream slope of the dam looking left.**

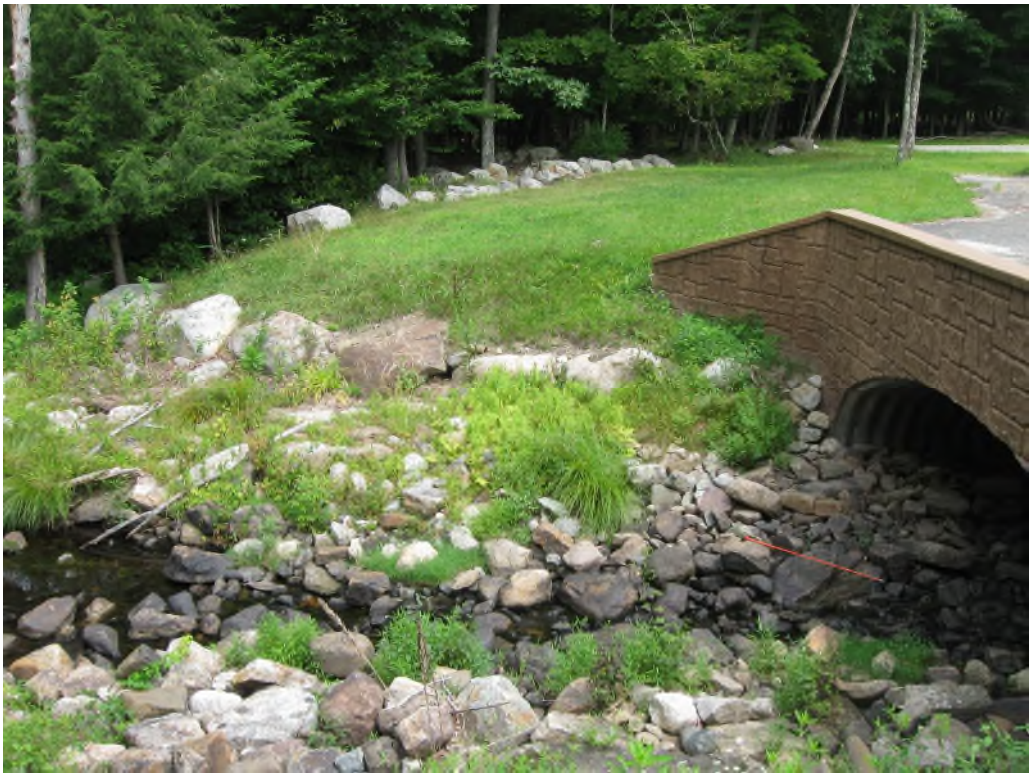

**Photo No. 16: Right side lower downstream slope of the dam looking right.**

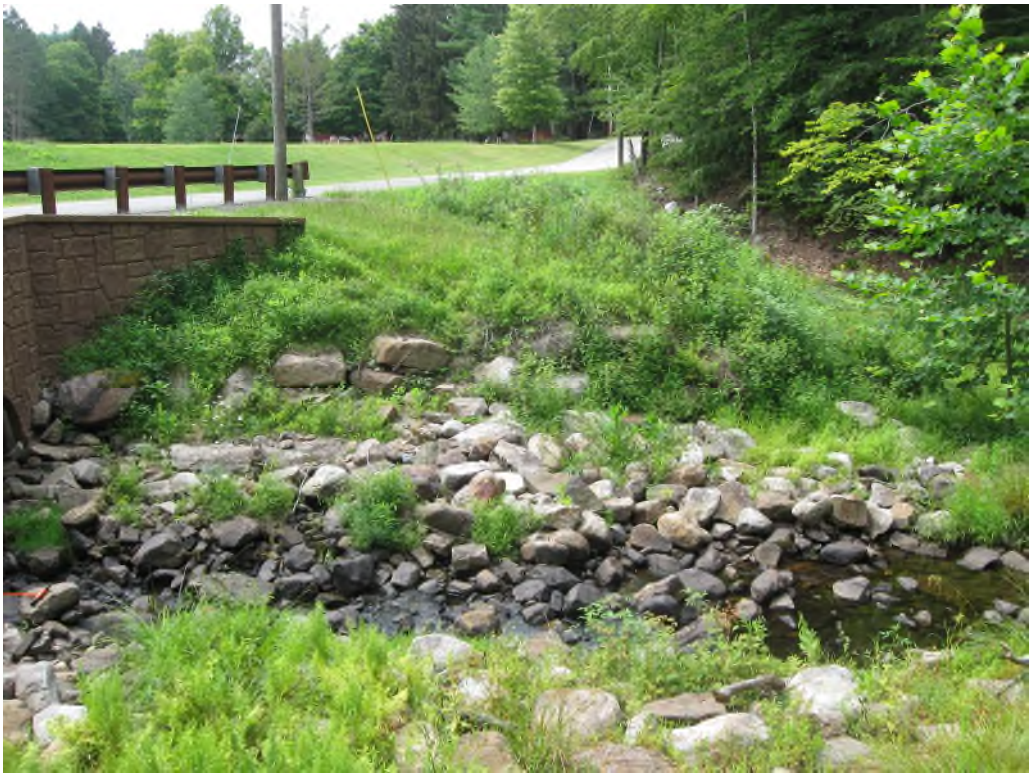

**Photo No. 17: Left side lower downstream toe of the dam looking left. Note the overgrown conditions throughout the toe area.**

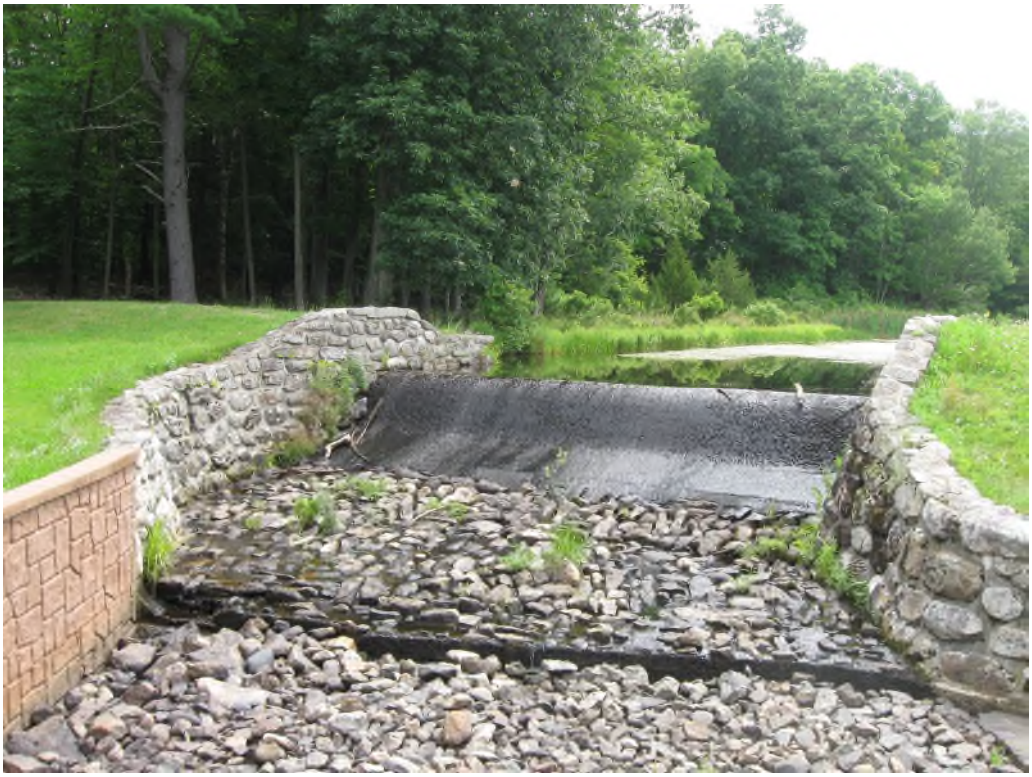

**Photo No. 18: Spillway weir, rock masonry training walls and downstream riprap apron looking upstream.**

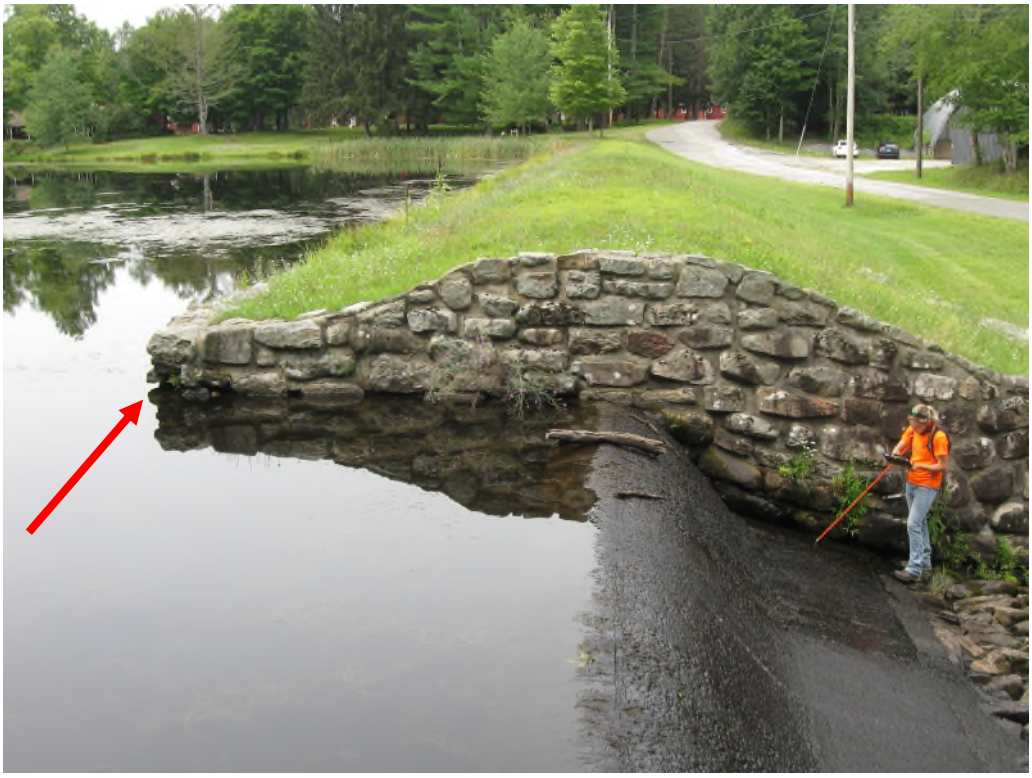

**Photo No. 19: Spillway weir and entrance channel looking toward the left training wall. Note the missing stones in the upstream return of the left training wall.**

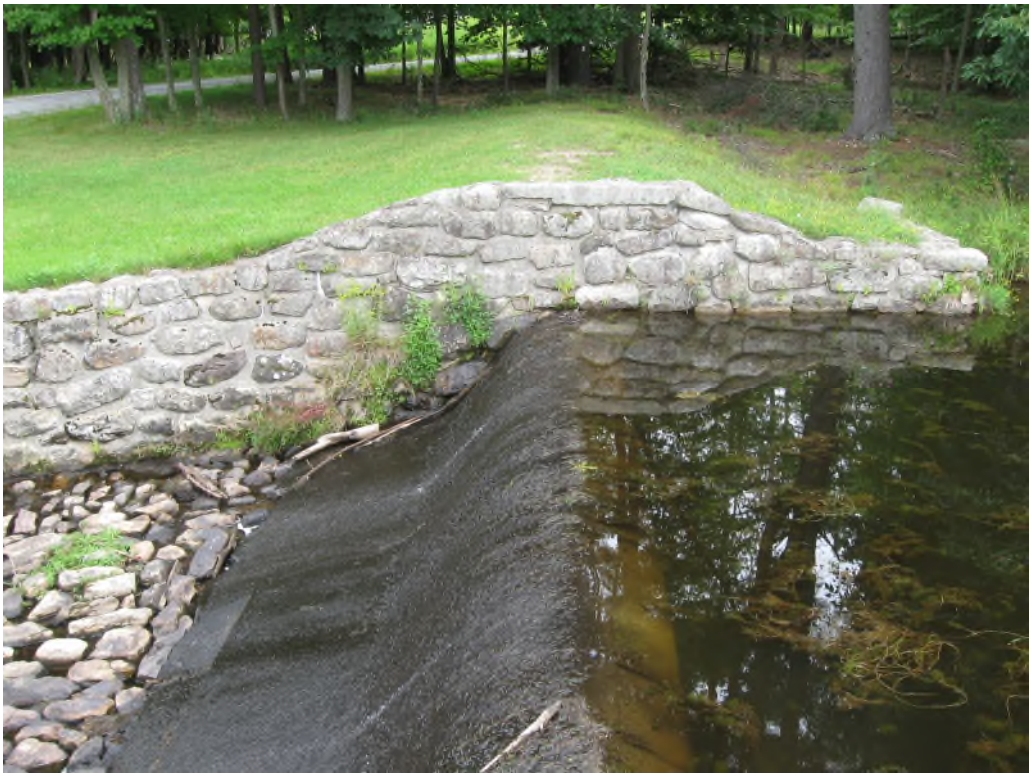

**Photo No. 20: Spillway weir and entrance channel looking toward the right training wall.**

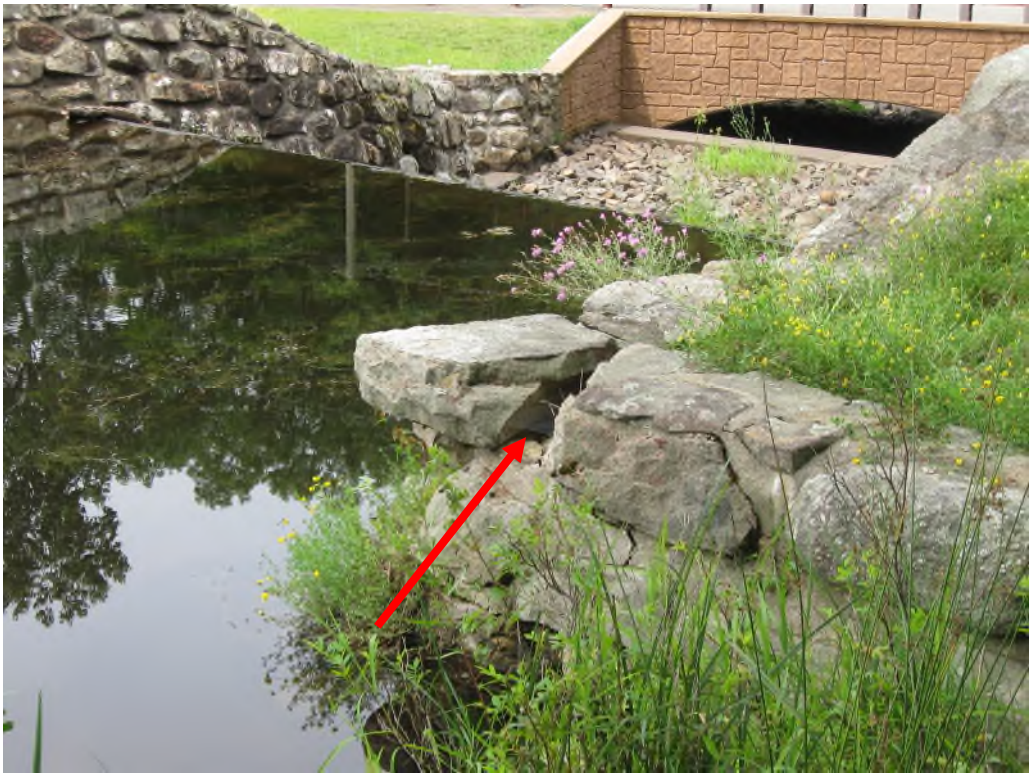

**Photo No. 21: Closeup of the horizontal displacement of the upstream right rock masonry wall. Note that one of the stones was dislodged.**

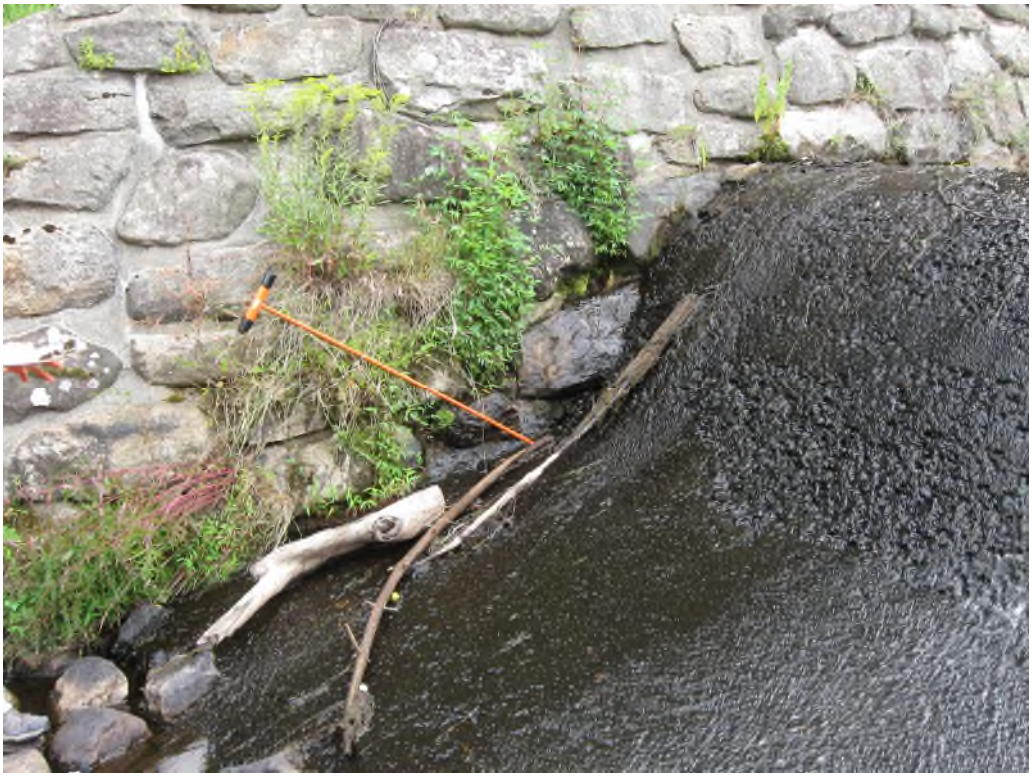

**Photo No. 22: Right side rock masonry spillway training wall at the contact with the spillway. Note that minor leakage was observed through the wall at the contact with the spillway.**

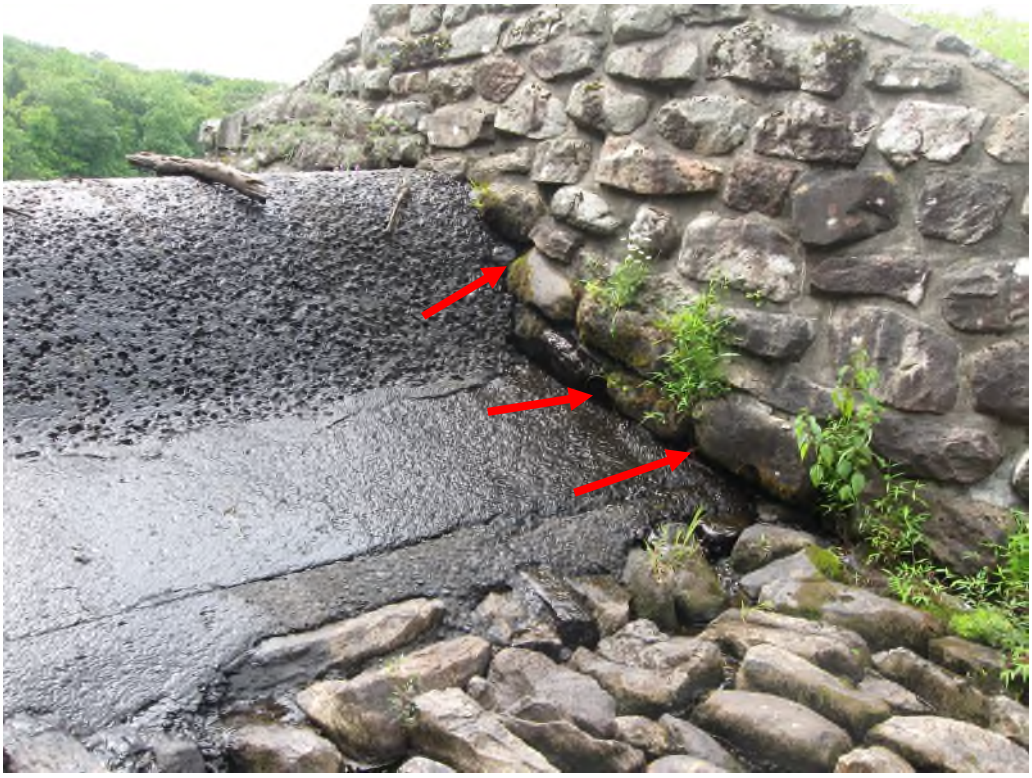

**Photo No. 23: Left side rock masonry spillway training wall. Note that undermining has occurred along the base of the wall.**

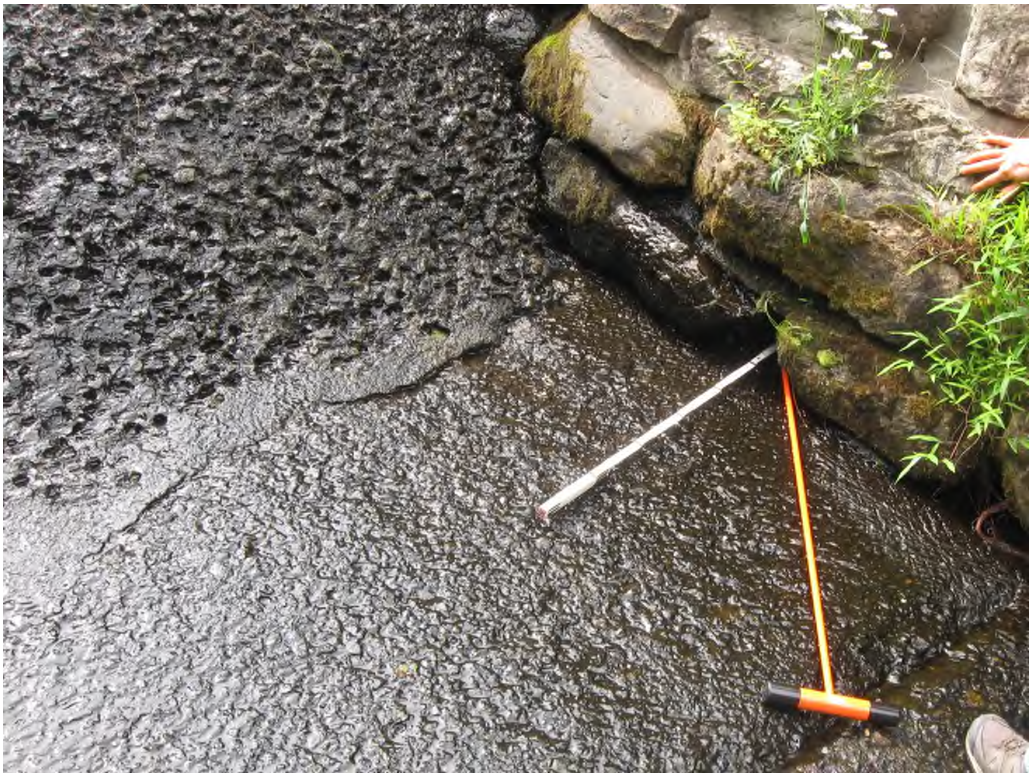

**Photo No. 24: Closeup of the undermining along the base of the left side rock masonry spillway training wall.**

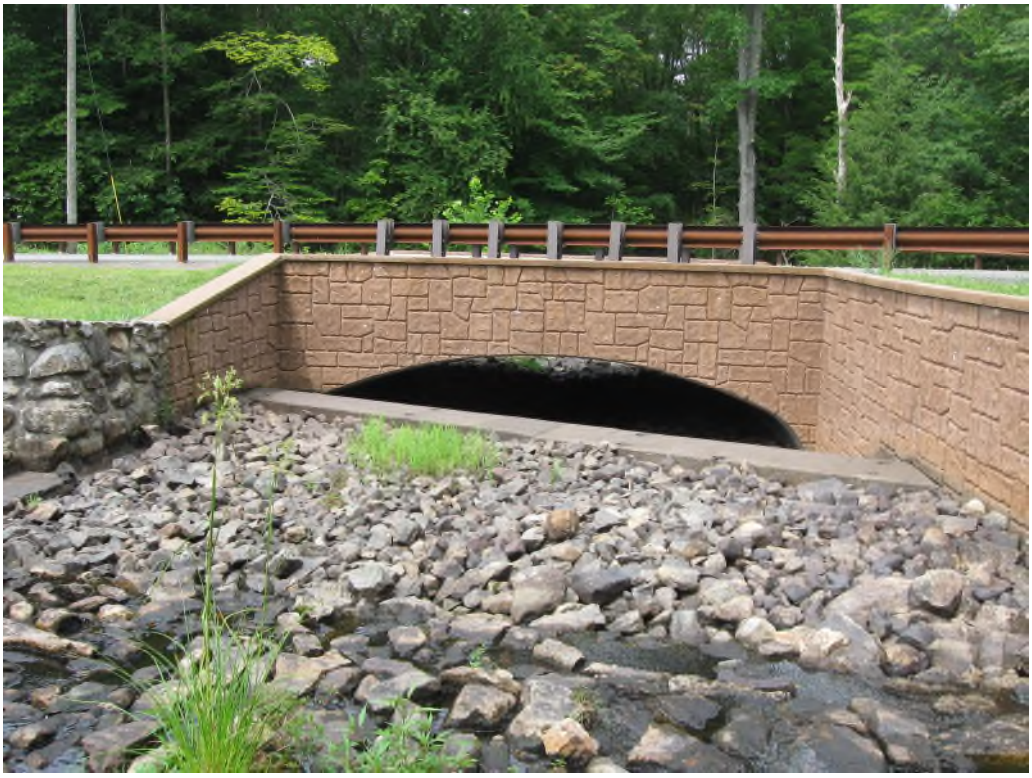

**Photo No. 25: Looking downstream at the downstream riprap apron. Note the vegetation within the apron.**

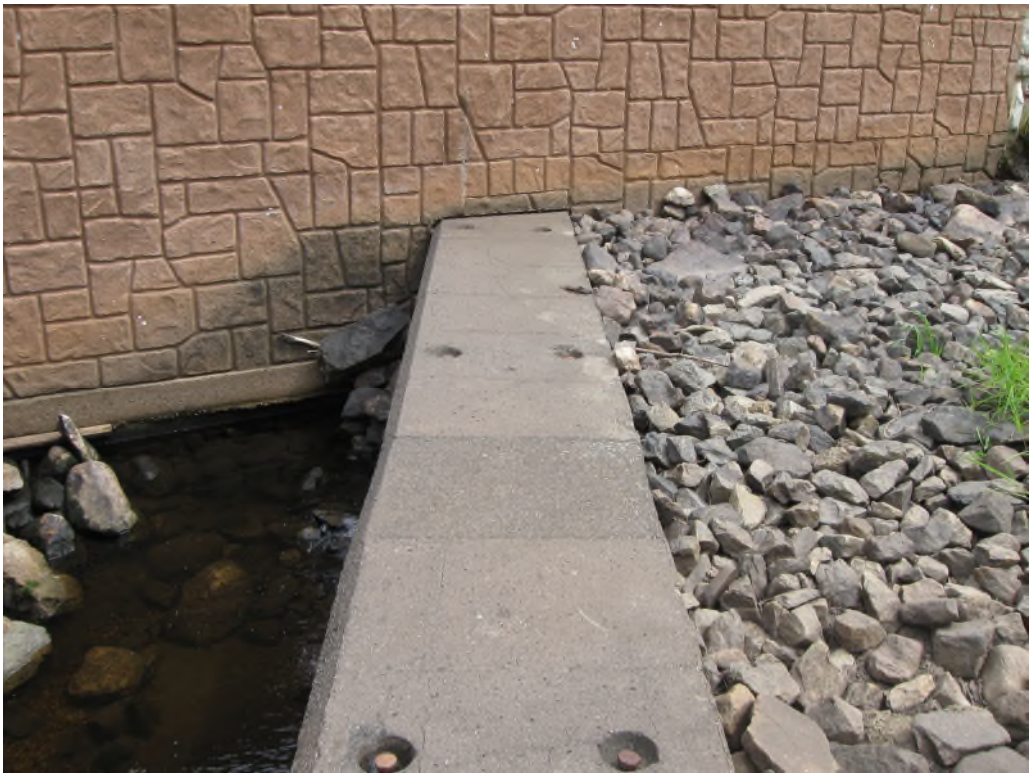

**Photo No. 26: Downstream concrete step leading to the culvert under Skellenger Road looking right.**

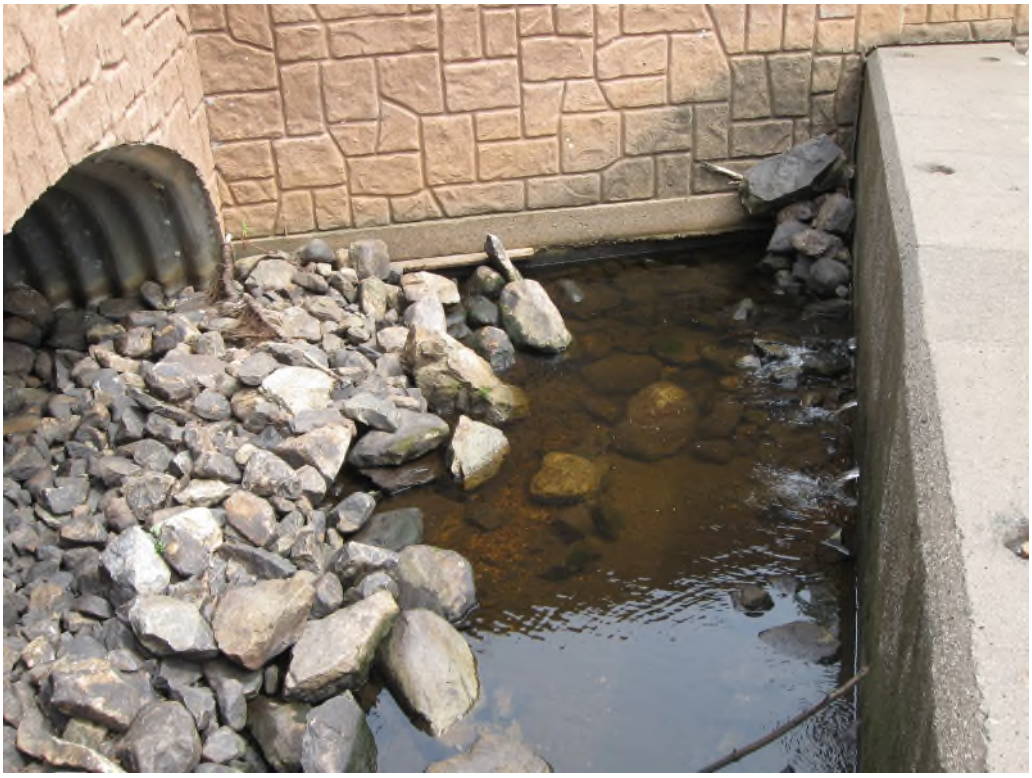

**Photo No. 27: Transition area between the concrete step and the discharge culvert looking right. Note the scour hole in this area.**

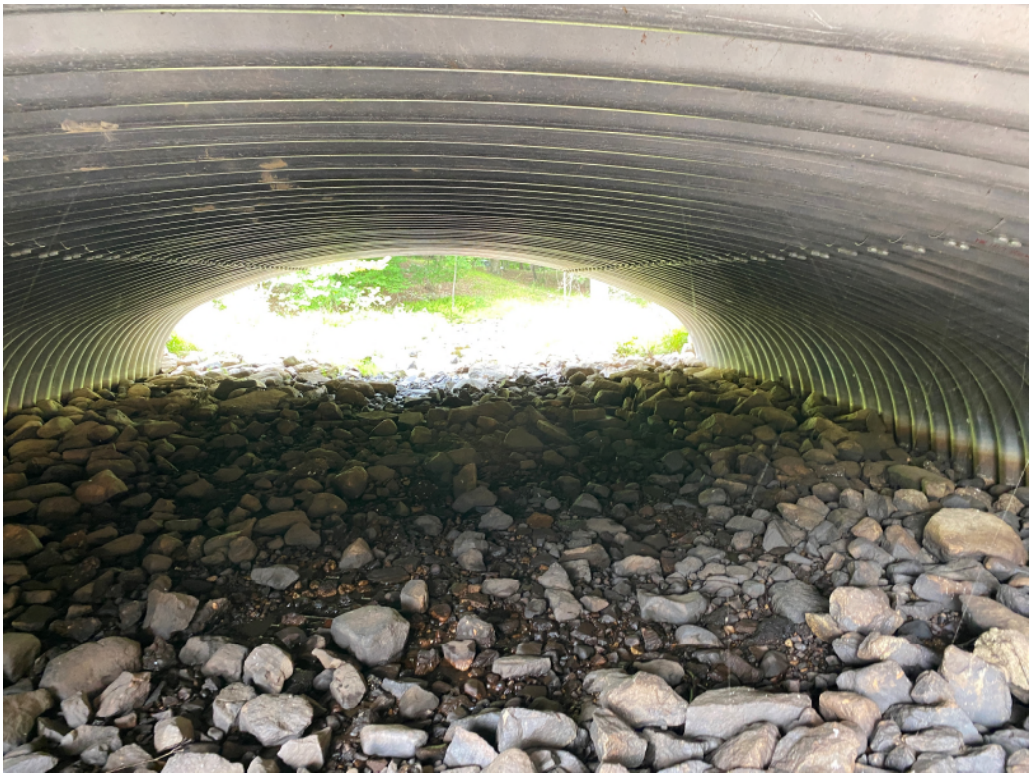

**Photo No. 28: Skellenger Road culvert looking downstream.**

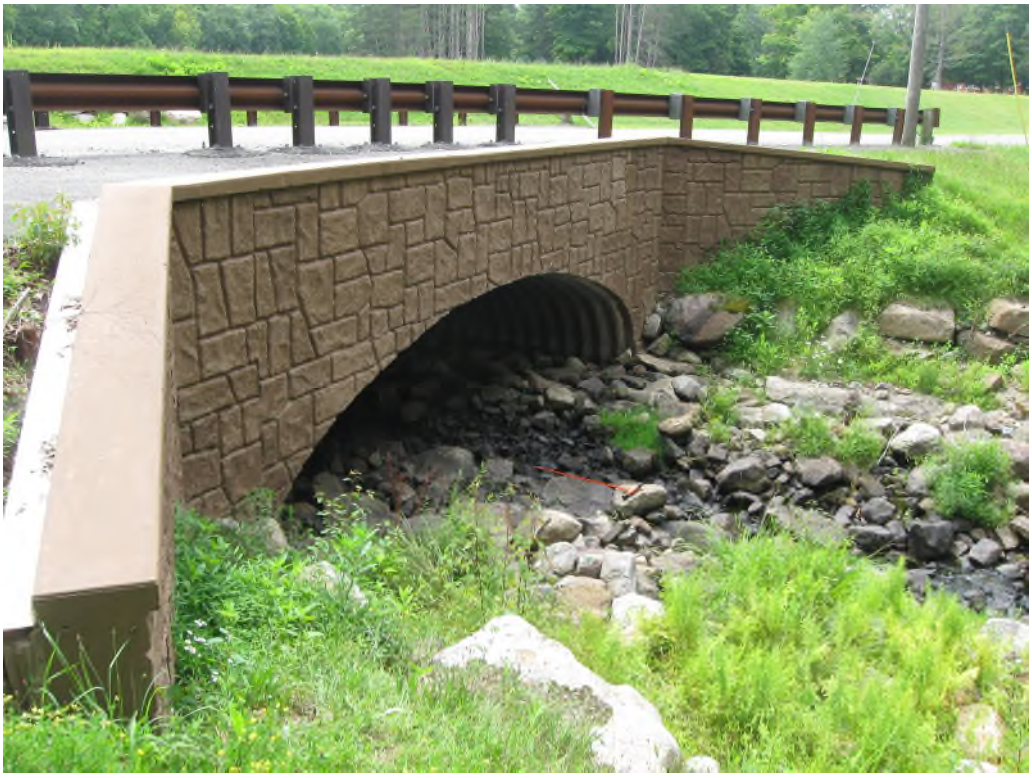

**Photo No. 29: Downstream side of Skellenger Road culvert looking left.**

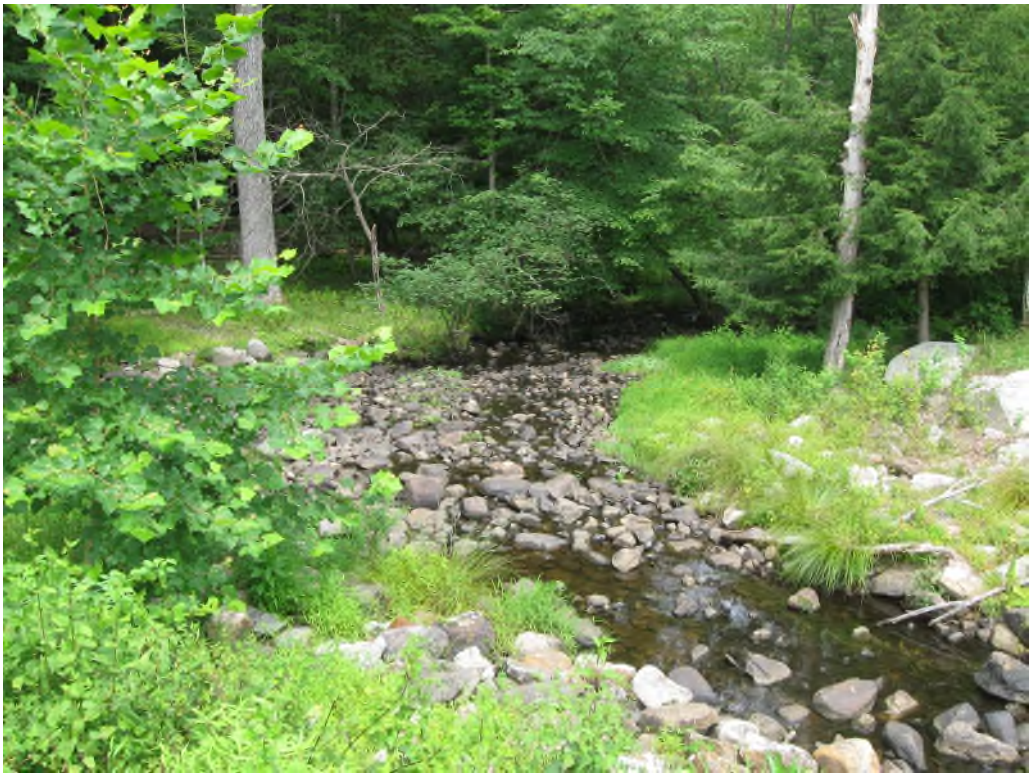

**Photo No. 30: Exit channel downstream of the Skellenger Road culvert.**

**Photo No. 31: Interior of the low level outlet chamber located in the crest of the dam.**

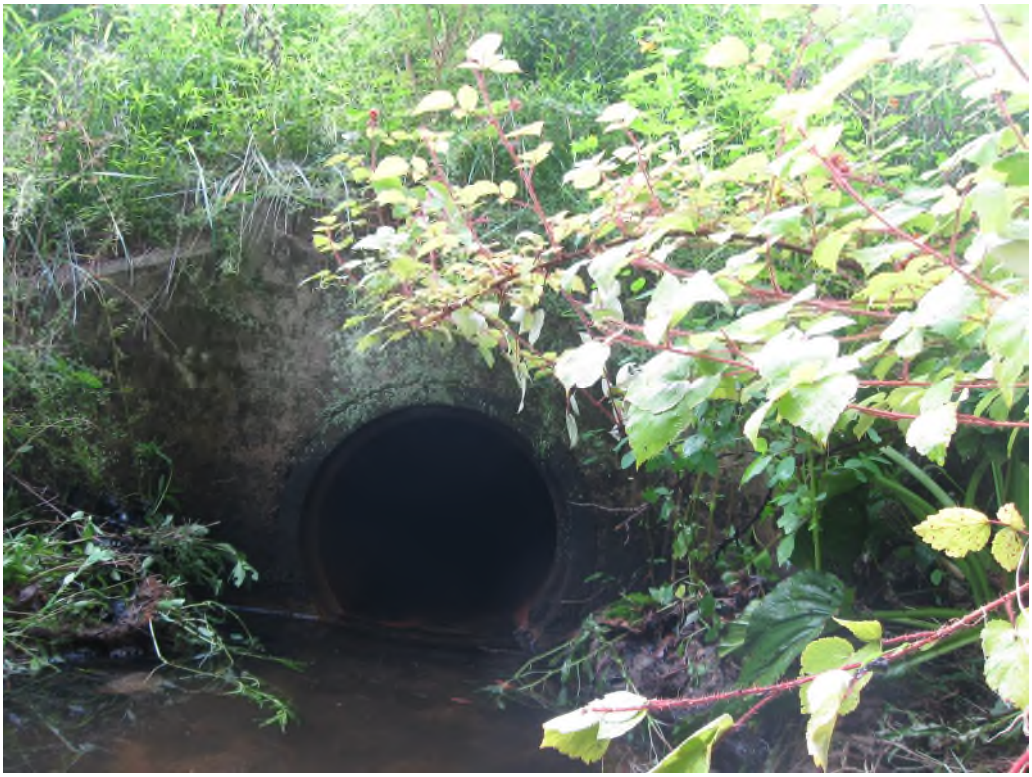

**Photo No. 32: Closeup of the 24-inch diameter low level outlet discharge pipe and headwall. Note the thick vegetation surrounding the headwall and the standing water downstream of the pipe.**

**Photo No. 33: Low level outlet exit channel looking downstream. The channel flows toward the spillway exit channel. Note the standing water in the channel from the earlier low level outlet operation.**

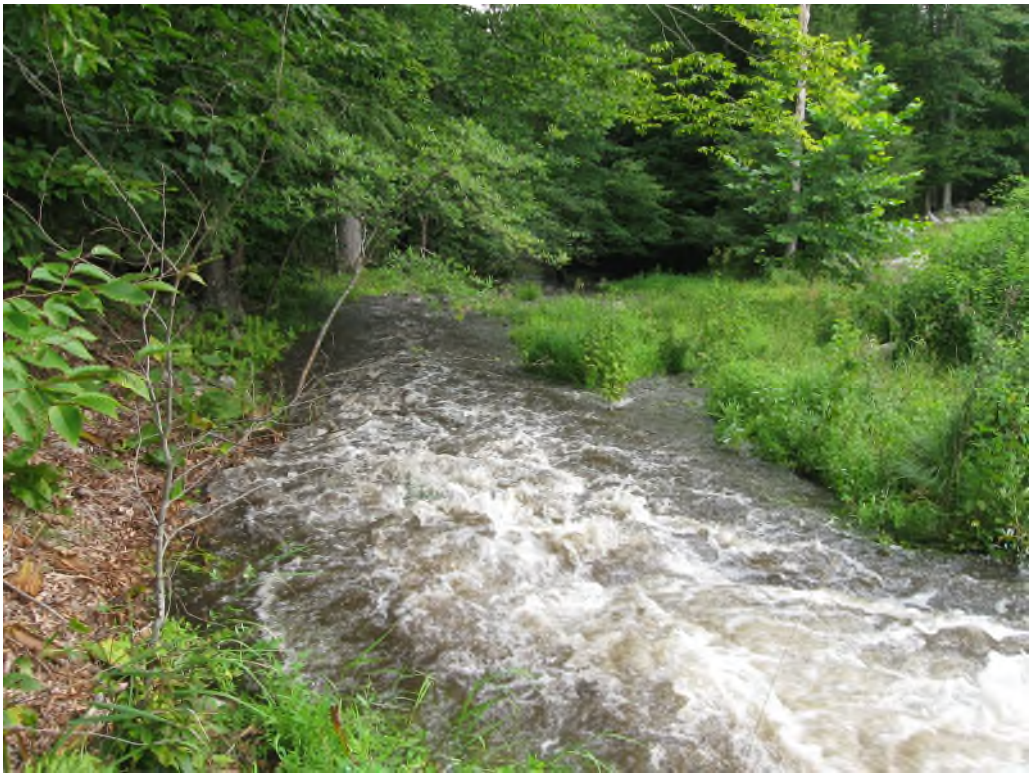

**Photo No. 34: Low level outlet exit channel looking downstream during operation of the low level outlet. Note that the exit channel is narrow and shallow and does not have the capacity to pass the full flow from the low level outlet pipe.**

**USE OF REPORT**

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of the Client for the stated purpose(s) and location(s) identified in the Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

**STANDARD OF CARE**

2. Our findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. Our services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

**DAM INSPECTION**

4. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.

5. In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection, along with data available to the inspection team. In cases where an impoundment is lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.

6. It is critical to note that the condition of the dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

**TYPES OF DAM INSPECTIONS PER NJDEP GUIDELINES**

7. Per NJDEP guidelines, a Regular Inspection is a visual inspection of a dam to detect any signs of deterioration in material, developing weaknesses, or unsafe hydraulic or structural behavior. A review of existing hydrologic and hydraulic analyses, stability analyses, and failure/inundation analyses is not part of the scope of a Regular Inspection.

8. Per NJDEP guidelines, a Formal Inspection is a visual inspection and a performance evaluation of a dam. Formal Inspections include a review of records on project design, construction, and performance.

**SUBSURFACE CONDITIONS**

9. If presented, the generalized soil profile(s) and description, along with the conclusions and recommendations provided in our Report, are based in part on widely-spaced subsurface explorations by GZA and/or others, with a limited number of soil and/or rock samples and groundwater /piezometers data and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

10. Water level readings have been made in test holes (as described in the Report), monitoring wells and piezometers, at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this

Report. Fluctuations in the groundwater and piezometer levels, however, occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, reservoir and tailwater levels, the presence of subsurface utilities, and/or natural or artificially induced perturbations.

**GENERAL**

11. The observations described in this report were made under the conditions stated therein. The conclusions presented were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the Client.

12. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein available to GZA at the time of the evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

13. Any GZA hydrologic analysis presented herein is for the rainfall volumes and distributions stated herein. For storm conditions other than those analyzed, the response of the site's spillway, impoundment, and drainage network has not been evaluated.

14. Observations were made of the site and of structures on the site as indicated within the report. Where access to portions of the structure or site, or to structures on the site was unavailable or limited, GZA renders no opinion as to the condition of that portion of the site or structure. In particular, it is noted that water levels in the impoundment and elsewhere and/or flow over the spillway may have limited GZA's ability to make observations of underwater portions of the structure. Excessive vegetation, when present, also inhibits observations.

15. In reviewing this Report, it should be realized that the reported condition of the dam is based on observations of field conditions during the course of this study along with data made available to GZA. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued inspection and care can there be any chance that unsafe conditions be detected.

**COMPLIANCE WITH CODES AND REGULATIONS**

16. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

17. This scope of work does not include an assessment of the need for fences, gates, no-trespassing signs, boat/swimmer barriers, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

**COST ESTIMATES**

18. Unless otherwise stated, our cost estimates are for comparative, or general planning purposes. These estimates may involve approximate quantity evaluations and may not be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over the labor and material costs required to plan and execute the anticipated work, our estimates were made using our experience and readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

**ADDITIONAL SERVICES**

19. It is recommended that GZA be retained to provide services during any future: site observations, explorations, evaluations, design, implementation activities, construction and/or implementation of remedial measures recommended in this Report. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

# *New Jersey Dam Safety Compliance Schedule Form*

| Dam Name: | Owner: NJDEP Division of Parks and Forestry | Owners Engineering Firm: |
|---|---|---|
| Skellinger Dam | Address: 501 East State Street | Name: GZA GeoEnvironmental, Inc |
| File No: 22-113 | Address: Trenton, NJ 08625-0420 | Address: 55 Lane Road, Suite 407 |
| | Phone: (609) 292-2733 | Address: Fairfield, NJ 07004 |
| | | Phone: 973-774-3300. |

The purpose of this form is to allow the dam owner, through consultation with their engineer, to establish a time line for addressing the deficiencies identified in the inspection report for the dam and bringing the dam into compliance with the New Jersey Dam Safety Standards, N.J.A.C. 7:20-1.1 et seq.

**Proposed time frame for submission of required information and implementation of recommended repairs:**
**(Engineer should check required sections and propose appropriate time frames. However, the Dam Safety Section reserves the right to require additional dates and/or information as needed.)**

☒ **Performance of maintenance and repairs not requiring approval from the Dam Safety Section** (Such work includes grass mowing, brush removal, debris removal, filling of animal burrows, minor concrete repairs, minor gate repairs, filling of areas of minor surface erosion, etc. The Dam Safety Section must be notified upon completion of these activities.)

**Work to be completed no later than: October 31, 2022**

☒ **Engineering Report / Studies** (This work includes any required hydrologic and hydraulic analysis, structural analysis, alternative analysis, geotechnical investigations or dam breach analysis that may be recommended by your engineer and/or required by the Dam Safety Section.)

**Studies to be submitted for review no later than: Conceptual design report to be submitted by March 31, 2023.**

❑ **Permit Application:** (A permit application must be submitted for any construction activity at the dam. The permit application must address all deficiencies as identified in the inspection report and the subsequent engineering report / studies.)

**Permit application to be submitted no later than _____ months after the date of the Dam Safety Section's approval of any required studies. (Please provide date if no studies are required.)**

❑ **Construction to start no later than _____ months after the date of issuance of the permit by the Dam Safety Section.**

☒ **Operation and Maintenance Plan (O&M):** (An O&M is required for all dams. O&M's should be submitted with the permit application or sooner if possible. Existing O&M's may need to be updated if a dam is being rehabilitated. Please indicate if an O&M has already been submitted and approved.)

**O&M to be submitted no later than: O&M to be updated by December 31, 2022.**

☒ **Emergency Action Plan (EAP):** (EAPs are required for all high and significant hazard dams and should be submitted as soon as possible. Existing EAPs should be reviewed on a yearly basis and revised as necessary. Please indicate if an EAP has already been submitted and approved.)

**EAP to be submitted no later than: March 31, 2022**

The dates provided above will be reviewed by the Dam Safety Section to determine if the schedule is acceptable to achieve compliance with the Dam Safety Standards. Requests for extensions to the accepted time frames outlined above must be submitted to this office in writing along with appropriate justification and will be considered on its merits on a case by case basis.

| John Cecil | 10/13/2021 | Jessica Bergmann | 10/13/2021 |
|---|---|---|---|
| **Signed: Dam Owner** | **Date** | **Signed: Owner's Engineer** | **Date** |

Additional information including Dam Safety Section forms, standards and inspection guidelines as well and EAP guidelines and a sample O&M is available at http://www.state.nj.us/dep/damsafety or contact this office via e-mail at Damsafety@dep.state.nj.us or telephone at (609)984-0859. Please submit the completed form to: NJDEP, Dam Safety Section, P.O. Box 419, Trenton, NJ 08625