

# 1999 Dam Safety Inspection Reports

PUB 1.2  
Attachment G

## Cape Broyle/Horsechops Development

# NEWFOUNDLAND POWER

June 27, 2000

Memorandum From: J. P. Halliday

To: M. C. Hunter

Subject: 1999 Dam Safety Inspection Reports  
Cape Broyle / Horsechops Development

File: 401.01.03.17.01

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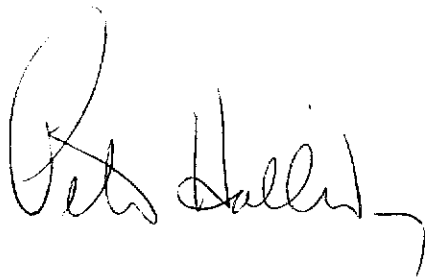
Attached is a copy of the Dam Safety Inspection Report for structures located in the Cape Broyle / Horsechops Development. In general, the structures in this system are in good condition and should operate safely with some minor repairs and maintenance.

The major items requiring work in this development have been included in the 2000 capital budget. Projects include

- Replacement of Horsechops penstock,
- Rehabilitation of concrete at Horsechops spillway,
- Replacement of Northwest Blackwoods spillway,

In addition to the items listed above, general repairs to dams at Blackwoods is scheduled for 2002. As well, significant leakage at West Ragged Hills spillway and Cape Broyle Forebay spillway should be addressed.

SH/sa  
Attach:



## DAM SAFETY INSPECTION

Northwest Blackwoods Freeboard Dam

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (11:00 AM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 400 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

## INSPECTION CHECKLIST FOR EMBANKMENT DAM

### EARTHFILL DAM

#### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

#### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>Ponded water should be drained.</u>
Unusual conditions	<u>None observed</u>

#### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement

None observed

**Crest**

Surface cracking

None observed

Settlement

None observed

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

Some ponded water

Estimated flow(s)

Nil

Color (staining)

Clear

Toe drain and relief wells

Ponded water should be drained

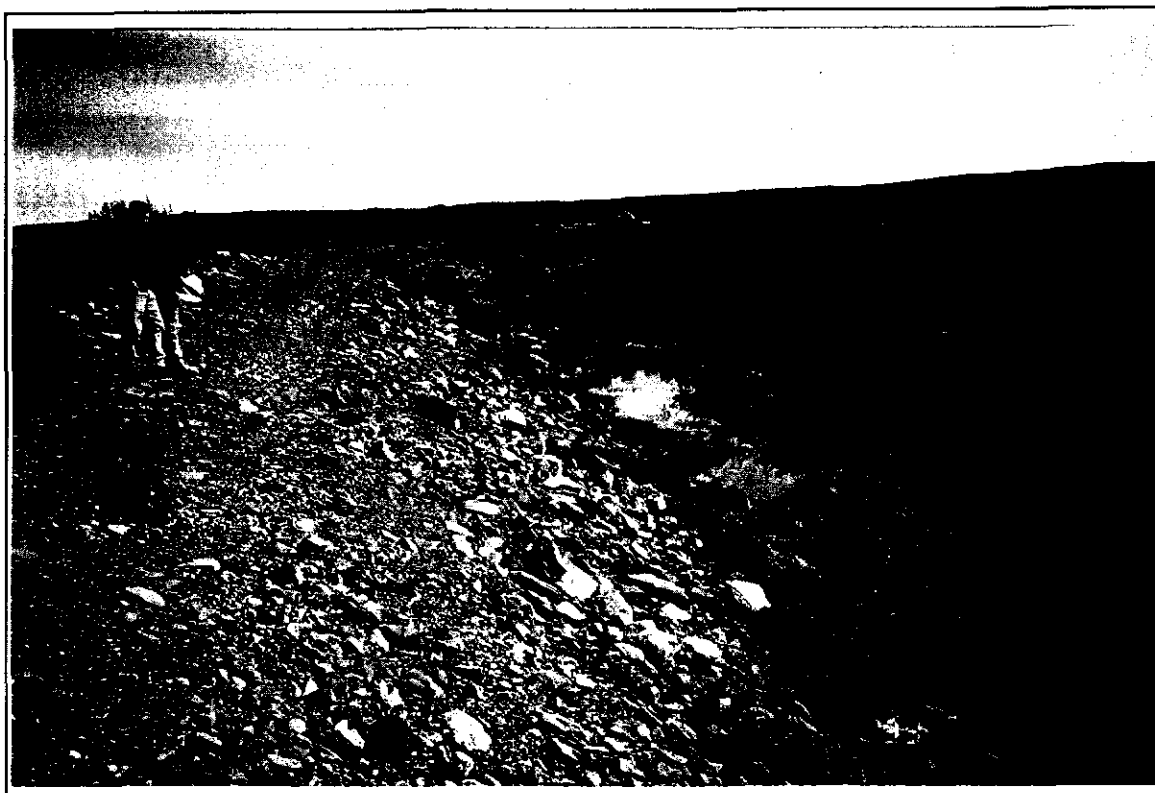
**Remarks:** Structure is in good condition.

Development : Cape Broyle/HorseChops

Structure : Northwest Blackwoods Freeboard Dam



View of dam from right abutment.



Wet areas along downstream toe.

## DAM SAFETY INSPECTION

Northwest Blackwoods Diversion Dam

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (10:45 AM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 400 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## EARTHFILL DAM

### Upstream Face

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### Downstream Face

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>Couple of areas with a small amount of seepage. Ponded water should be drained.</u>
Unusual conditions	<u>Few trees should be cleared</u>

### Abutments

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>



Slides None observed

Signs of movement None observed

**Crest**

Surface cracking None observed

Settlement None observed

Lateral movement None observed

Camber None observed

**Seepage and Drainage**

Locations(s) Several locations

Estimated flow(s) Small amount of seepage

Color (staining) Clear

Toe drain and relief wells Ponded water should be drained

**Remarks:** Structure is in good condition.

Development : Cape Broyle/HorseChops

Structure : Northwest Blackwoods Diversion Dam



Upstream face showing riprap.



Crest and downstream slope view from right abutment.

Development : Cape Broyle/HorseChops

Structure : Northwest Blackwoods Diversion Dam



Downstream slope viewed from center of dam.



Ponded water at toe of structure.

## Northwest Blackwoods Spillway

**Date & Time of Examination:** 99-03-25 @ 11:00am

Reservoir Water surface elevation 400 mm Below FSL

Releases \_\_\_\_\_

Weather Conditions Sunny, 15°C

Water in storage \_\_\_\_\_

Recent Seismic Events None

G. Humby  
S. Hancock  
J. Curran  
E. Maloney

## INSPECTION CHECKLIST FOR TIMBER-CRIB DAM

### Structure

Timber Structural Members	<u>Severely rotted</u>
Timber Planking	<u>Poor condition</u>
Crib Contents	<u>N/A</u>

### Upstream Face

Alignment	<u>Tilted near left abutment</u>
Sinkholes	<u>None observed</u>
Debris	<u>None Observed</u>
Unusual conditions	<u>Structure very deteriorated.</u>

### Downstream Face

Slide movements	<u>None observed</u>
Signs of movements	<u>Displacement in some areas.</u>
Cracks	<u>Prevalent</u>
Seepage or wet areas	<u>Boggy area downstream with ponded water</u>
Unusual conditions	<u>Poor condition</u>

### Abutments

Seepage	<u>None Observed</u>
Cracks, joints, and bedding planes	<u>None Observed</u>
Slides	<u>None Observed</u>
Signs of movement	<u>None Observed</u>
Unusual Conditions	<u>None observed</u>

### Crest

Surface cracking N/A

Settlement N/A

Lateral movement N/A

**Seepage and Drainage**

Locations(s) None observed

Estimated flow(s) N/A

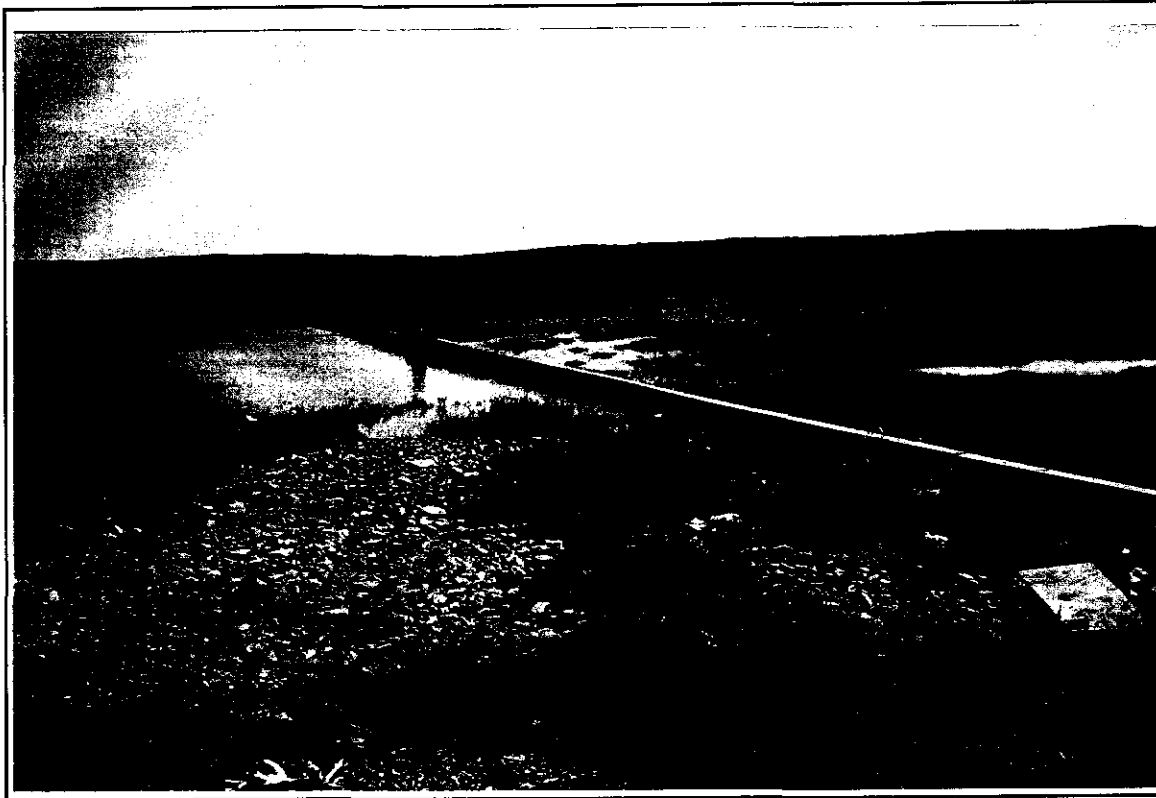
Colour (staining) N/A

Toe drain and relief wells None

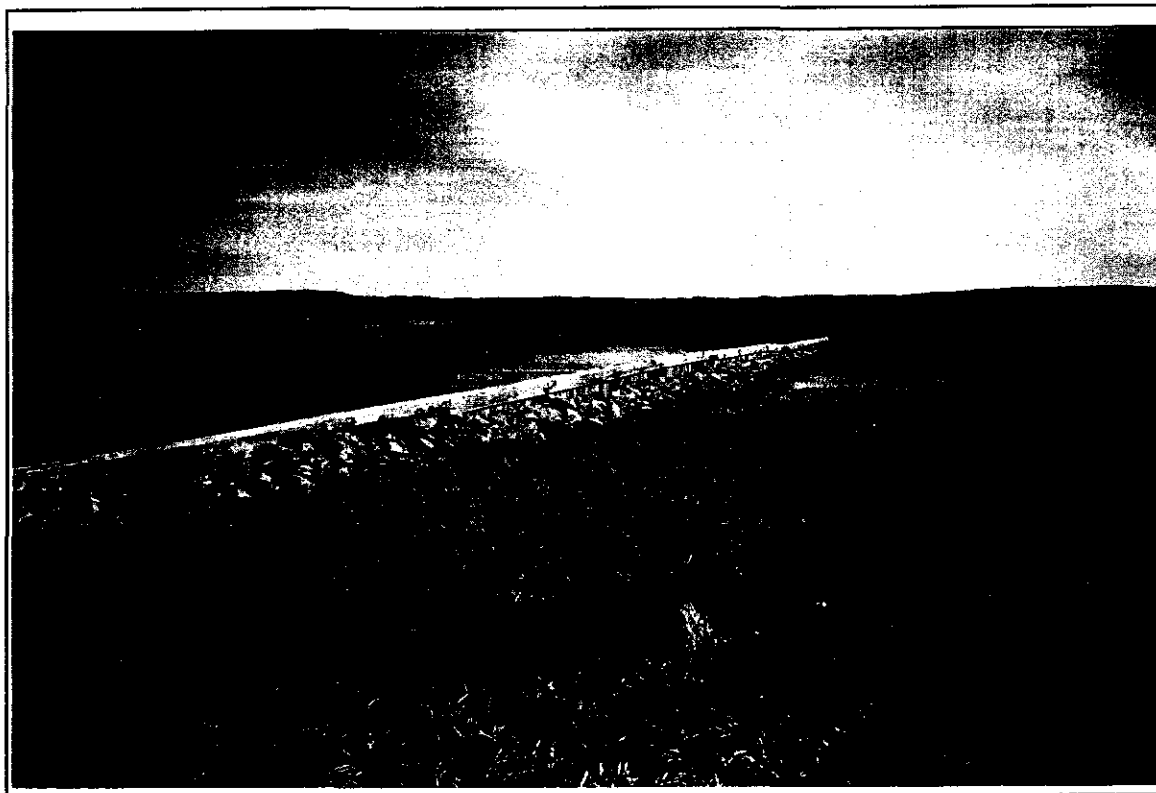
**Remarks** Structure should be replaced.

Development : Cape Broyle/HorseChops

Structure : Northwest Blackwoods Spillway



Upstream side



Downstream side

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.1

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (11:30 AM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney



# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## EARTHFILL DAM

### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>Ponded water should be drained.</u>
Unusual conditions	<u>None observed</u>

### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement

None observed

**Crest**

Surface cracking

None observed

Settlement

None observed

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

Some ponded water

Estimated flow(s)

Nil

Color (staining)

Clear

Toe drain and relief wells

Ponded water should be drained

**Remarks:** Structure is in good condition.

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.2

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (11:30 AM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## EARTHFILL DAM

### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Small but good condition</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement

None observed

**Crest**

Surface cracking

None observed

Settlement

None observed

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

None observed

Estimated flow(s)

Nil

Color (staining)

Clear

Toe drain and relief wells

None observed

**Remarks:** Structure is in good condition although riprap could use regarding.

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.3

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (11:45 AM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## EARTHFILL DAM

### Upstream Face

Slide movements	<u>None observed</u>
Slope protection	<u>Good condition</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### Downstream Face

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>Some ponded water at toe</u>
Unusual conditions	<u>None observed</u>

### Abutments

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement

None observed

**Crest**

Surface cracking

None observed

Settlement

Low point in section of crest

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

Ponded water along toe

Estimated flow(s)

Nil

Color (staining)

Clear

Toe drain and relief wells

Drain ponded water

**Remarks:** Structure is in good condition.



## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.4

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (11:50 AM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

## INSPECTION CHECKLIST FOR EMBANKMENT DAM

### EARTHFILL DAM

#### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Large and irregular</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

#### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>Some ponded water at toe</u>
Unusual conditions	<u>None observed</u>

#### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement	<u>None observed</u>
<b>Crest</b>	
Surface cracking	<u>None observed</u>
Settlement	<u>None observed</u>
Lateral movement	<u>None observed</u>
Camber	<u>None observed</u>
<b>Seepage and Drainage</b>	
Locations(s)	<u>Ponded water along toe</u>
Estimated flow(s)	<u>Nil</u>
Color (staining)	<u>Clear</u>
Toe drain and relief wells	<u>Drain ponded water</u>

**Remarks:** Structure is in good condition.

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.5

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (11:55 AM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## EARTHFILL DAM

### Upstream Face

Slide movements	<u>None observed</u>
Slope protection	<u>Good but irregular</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### Downstream Face

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>Vegetation along toe should be cleared and water drained</u>

### Abutments

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement

Appears to be some erosion at  
right abutment. Should be  
monitored.

**Crest**

Surface cracking

None observed

Settlement

None observed

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

Ponded water

Estimated flow(s)

Nil

Color (staining)

Clear

Toe drain and relief wells

Good

**Remarks:** Structure is in good condition.

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.6

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (12:00 PM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

## INSPECTION CHECKLIST FOR EMBANKMENT DAM

### EARTHFILL DAM

#### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

#### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>None observed</u>

#### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>



Signs of movement

None observed

**Crest**

Surface cracking

None observed

Settlement

None observed

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

None observed

Estimated flow(s)

Nil

Color (staining)

Clear

Toe drain and relief wells

Good

**Remarks:** Structure is in good condition.

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.7

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (12:10 PM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

## INSPECTION CHECKLIST FOR EMBANKMENT DAM

### EARTHFILL DAM

#### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

#### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>Ponded water should be drained</u>

#### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement

None observed

**Crest**

Surface cracking

None observed

Settlement

None observed

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

Ponded water

Estimated flow(s)

Nil

Color (staining)

Clear

Toe drain and relief wells

Good

**Remarks:** Structure is in good condition.

## DAM SAFETY INSPECTION

East Blackwoods Dam/ Spillway

Dam Type: Rockfill Overflow Spillway

Date & Time of Examination: 99-03-25 @ 12:30 pm

Operational Status at Time of Examination:

Reservoir Water surface elevation	<u>100 mm below spill</u>
Releases	<u></u>
Weather Conditions	<u>Sunny, 15°C</u>
Water in storage	<u></u>
Recent Seismic Events	<u>none</u>

Examining Party

G. Humby

S. Hancock

J. Curran

E. Maloney

# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## DAM / SPILLWAY

### Upstream Face

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>Small amount of driftwood.</u>
Unusual conditions	<u>None observed</u>

### Crest

Surface cracking	<u>None observed</u>
Settlement	<u>None observed</u>
Lateral movement	<u>None observed</u>
Camber	<u>None observed</u>
Other	<u>None observed</u>

### Downstream Face

Slide movements	<u>None observed</u>
Signs of movements	<u>Some spaces between large pieces of riprap</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>Few minor leaks through cutoff</u>

wall noted

Unusual conditions

Slope is fairly steep at toe

**Abutments**

Seepage

None observed

Cracks, joints, and  
bedding planes

None observed

Slides

None observed

Signs of movement

None observed

**Approach Channel**

Debris

None

Slides above channel

None

Channel side slope stability

Good

Log boom

N/A

Slope protection

Good

**Outlet Channel**

Slope Protection

N/A

Stability of side slopes

Good

Vegetation or other  
obstructions

Excavated bog piled up behind  
dam may restrict flow. Should be  
removed if necessary

**Seepage and Drainage**

Locations(s)

Several leaks through cut-off

Estimated flow(s)

Not measured

Colour (staining)

Clear

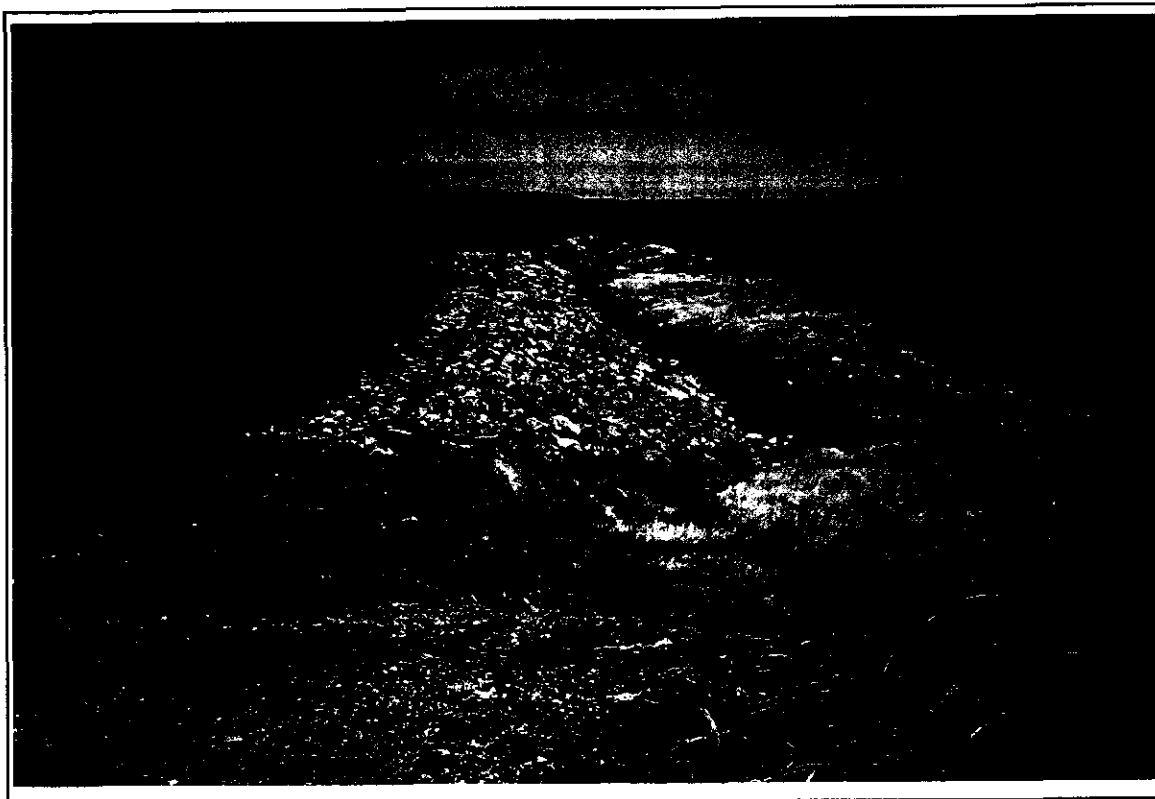
Toe drain and relief wells

N/A

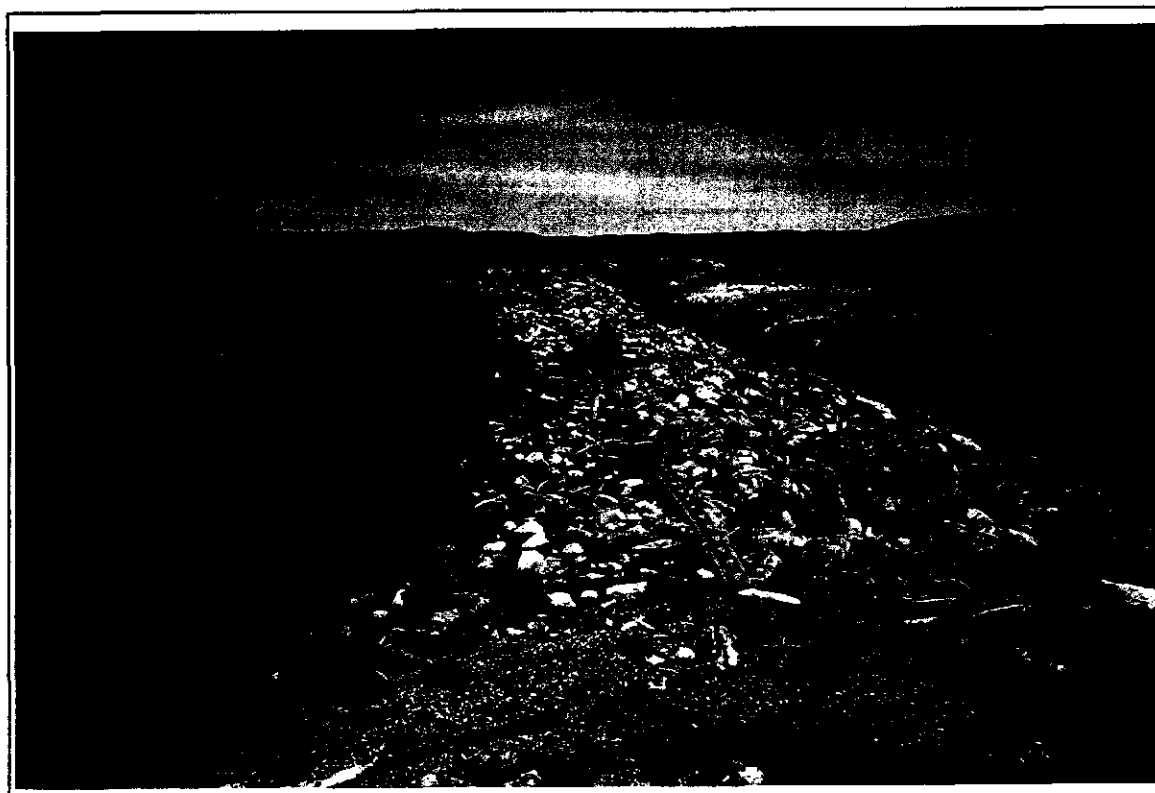


Development : Cape Broyle/HorseChops

Structure : East Blackwoods Spillway



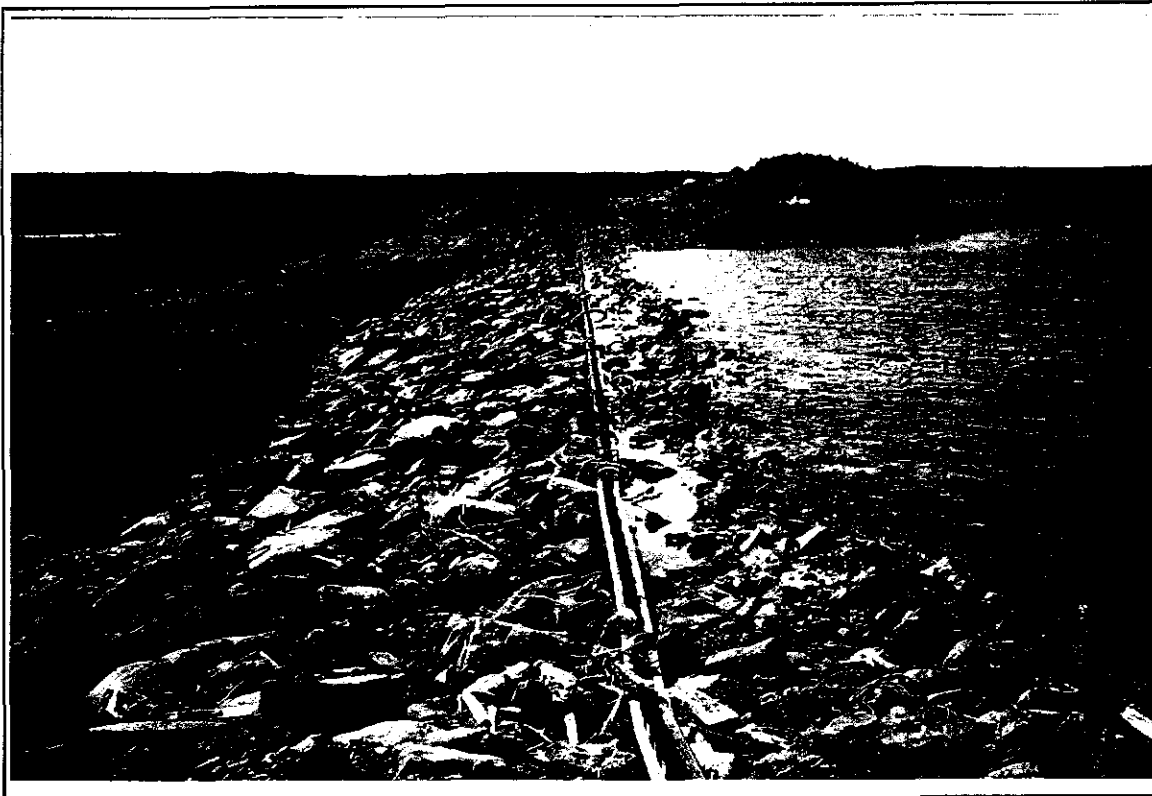
General view of spillway



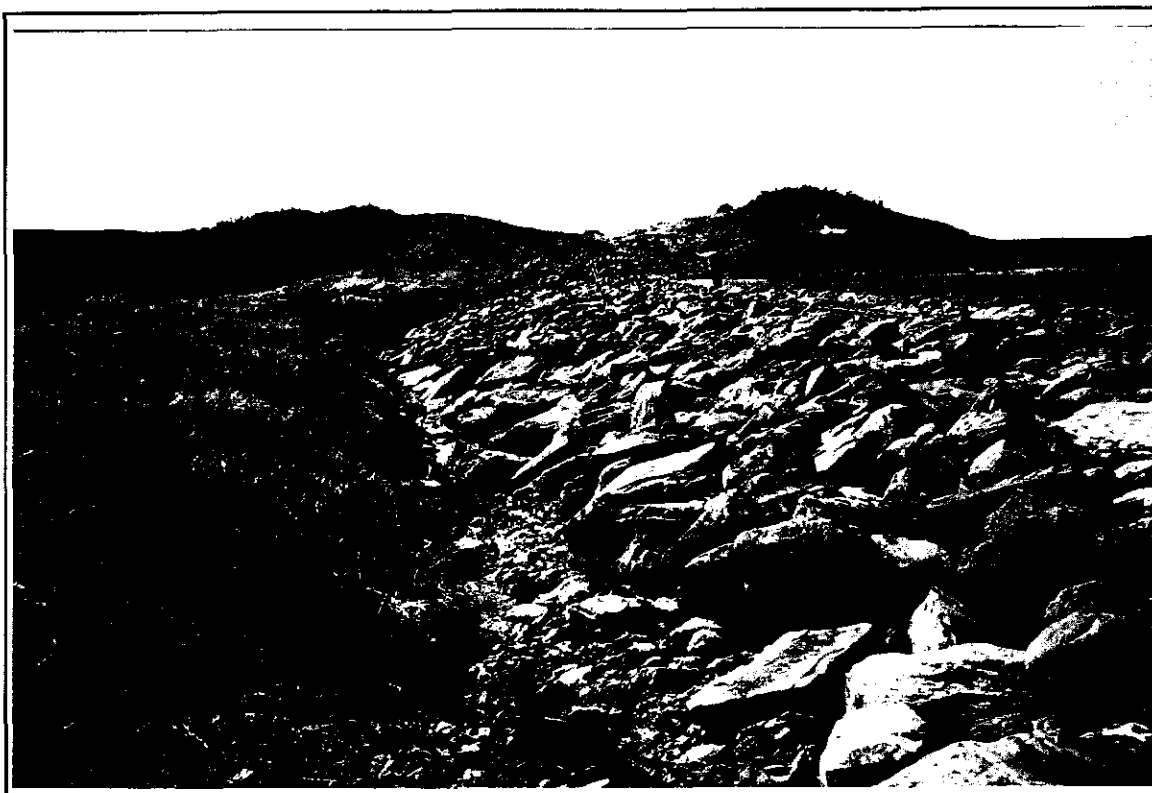
View from right abutment. Note mound of bog downstream which may restrict spill flows.

Development : Cape Broyle/HorseChops

Structure : East Blackwoods Spillway



View from left abutment.



Downstream slope from left abutment.

Development : Cape Broyle/HorseChops

Structure : East Blackwoods Spillway



Downstream slope from right abutment.

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.8

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (12:50 PM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

## INSPECTION CHECKLIST FOR EMBANKMENT DAM

### EARTHFILL DAM

#### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

#### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>Ponded water should be drained</u>

#### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement None observed

**Crest**

Surface cracking None observed

Settlement None observed

Lateral movement None observed

Camber None observed

**Seepage and Drainage**

Locations(s) Ponded water

Estimated flow(s) Nil

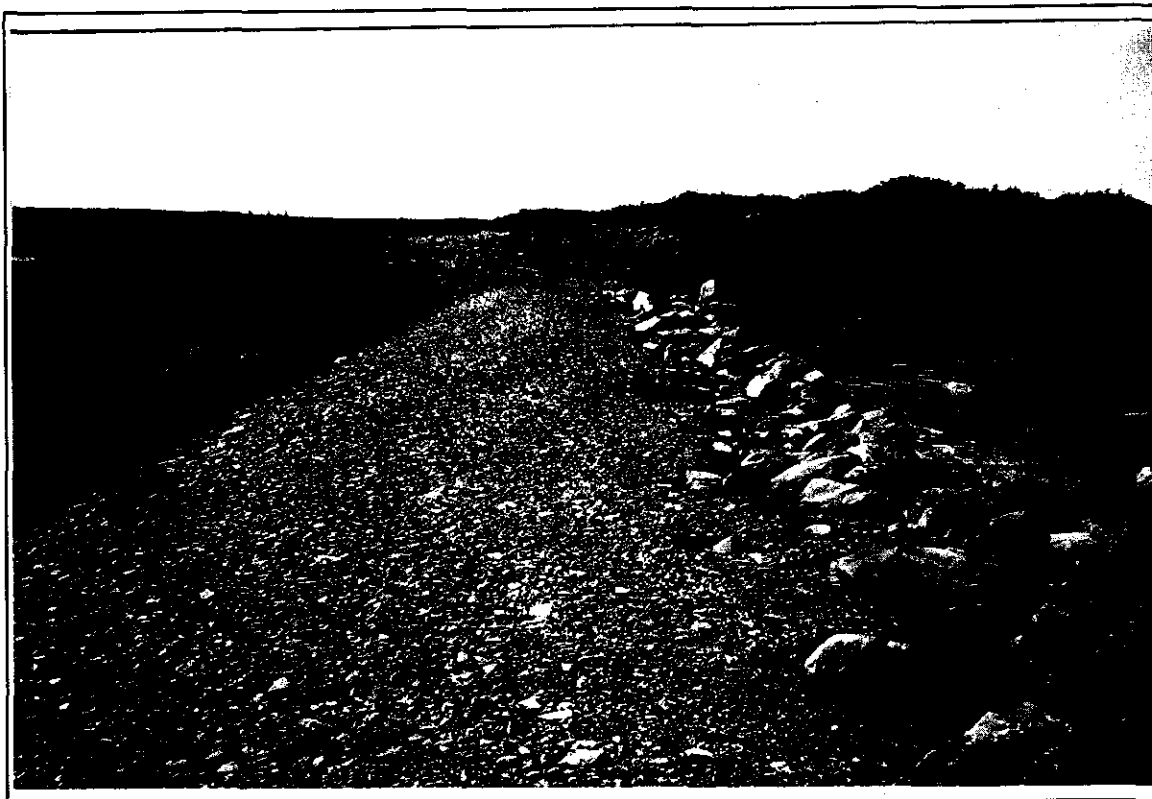
Color (staining) Clear

Toe drain and relief wells Good

**Remarks:** Structure is in good condition.

Development : Cape Broyle/HorseChops

Structure : East Blackwoods Freeboard Dam No. 8



View from left abutment.



Upstream slope.

## DAM SAFETY INSPECTION

East Blackwoods Freeboard Dam No.9

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (1:10 PM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney



# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## EARTHFILL DAM

### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>Ponded water should be drained and brush should be cleared</u>

### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement

None observed

**Crest**

Surface cracking

None observed

Settlement

None observed

Lateral movement

None observed

Camber

None observed

**Seepage and Drainage**

Locations(s)

Ponded water

Estimated flow(s)

Nil

Color (staining)

Clear

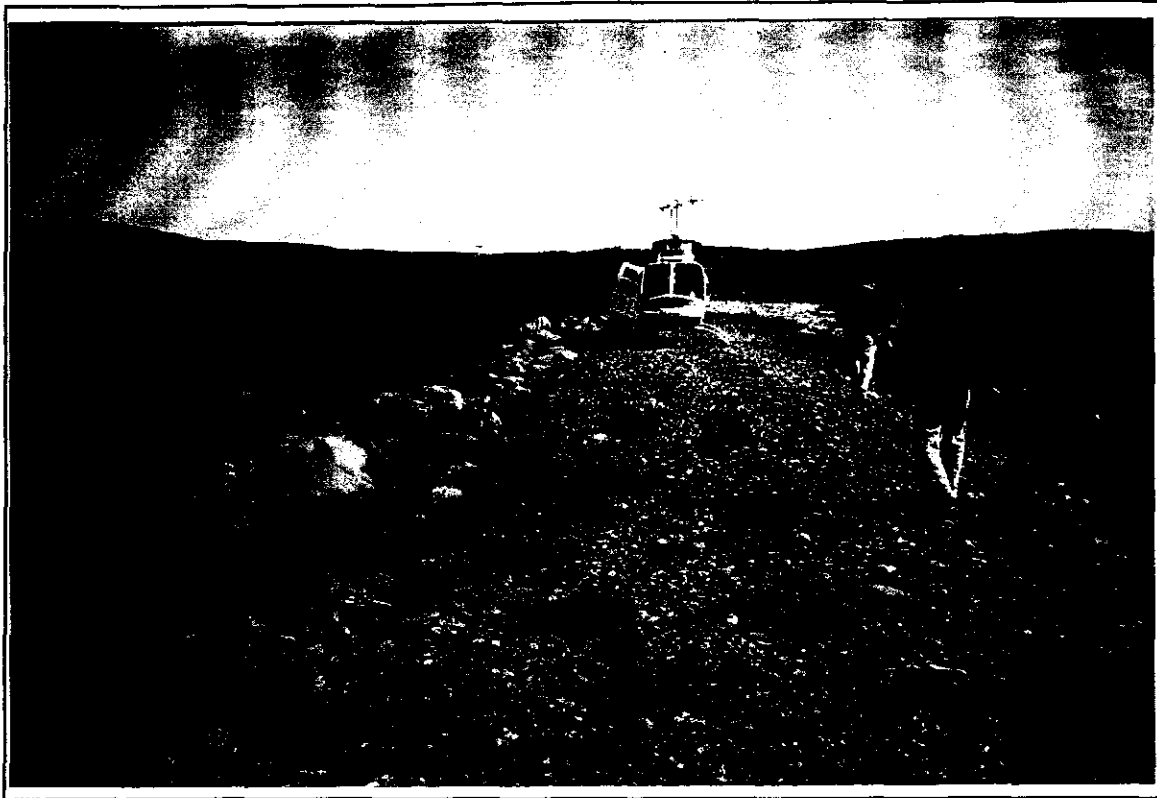
Toe drain and relief wells

Good

**Remarks:** Structure is in good condition.

Development : Cape Broyle/HorseChops

Structure : East Blackwoods Freeboard Dam No. 9



General view of structure

## DAM SAFETY INSPECTION

Fourth Blackwoods Freeboard Dam No.1

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (1:30 PM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney

# INSPECTION CHECKLIST FOR EMBANKMENT DAM

## EARTHFILL DAM

### **Upstream Face**

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

### **Downstream Face**

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>Brush should be cleared and ponded water drained</u>

### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement None observed

**Crest**

Surface cracking None observed

Settlement None observed

Lateral movement None observed

Camber None observed

**Seepage and Drainage**

Locations(s) Ponded water

Estimated flow(s) Nil

Color (staining) Clear

Toe drain and relief wells Good

**Remarks:** Structure is in good condition.

Development : Cape Broyle/HorseChops

Structure : Fourth Blackwoods Freeboard Dam No. 1



General view of dam.

## DAM SAFETY INSPECTION

Fourth Blackwoods Freeboard Dam No.2

Dam Type: Earthfill Dam

Date & Time of Examination: 99-03-25 (1:45 PM)

Operational Status at Time of Examination:

Reservoir Water surface elevation 100 mm below FSL

Releases Nil

Weather Conditions Sunny, 15°C

Water in storage

Recent Seismic Events

Examining Party

S. Hancock

G. Humby

J. Curran

E. Maloney



## INSPECTION CHECKLIST FOR EMBANKMENT DAM

### EARTHFILL DAM

#### Upstream Face

Slide movements	<u>None observed</u>
Slope protection	<u>Poor- minimal riprap</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>Brush should be cleared</u>

#### Downstream Face

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>
Cracks	<u>None observed</u>
Seepage or wet areas	<u>None observed</u>
Unusual conditions	<u>Brush should be cleared and ponded water drained</u>

#### Abutments

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>

Signs of movement None observed

**Crest**

Surface cracking None observed

Settlement crest very irregular

Lateral movement None observed

Camber None observed

**Seepage and Drainage**

Locations(s) Ponded water

Estimated flow(s) Nil

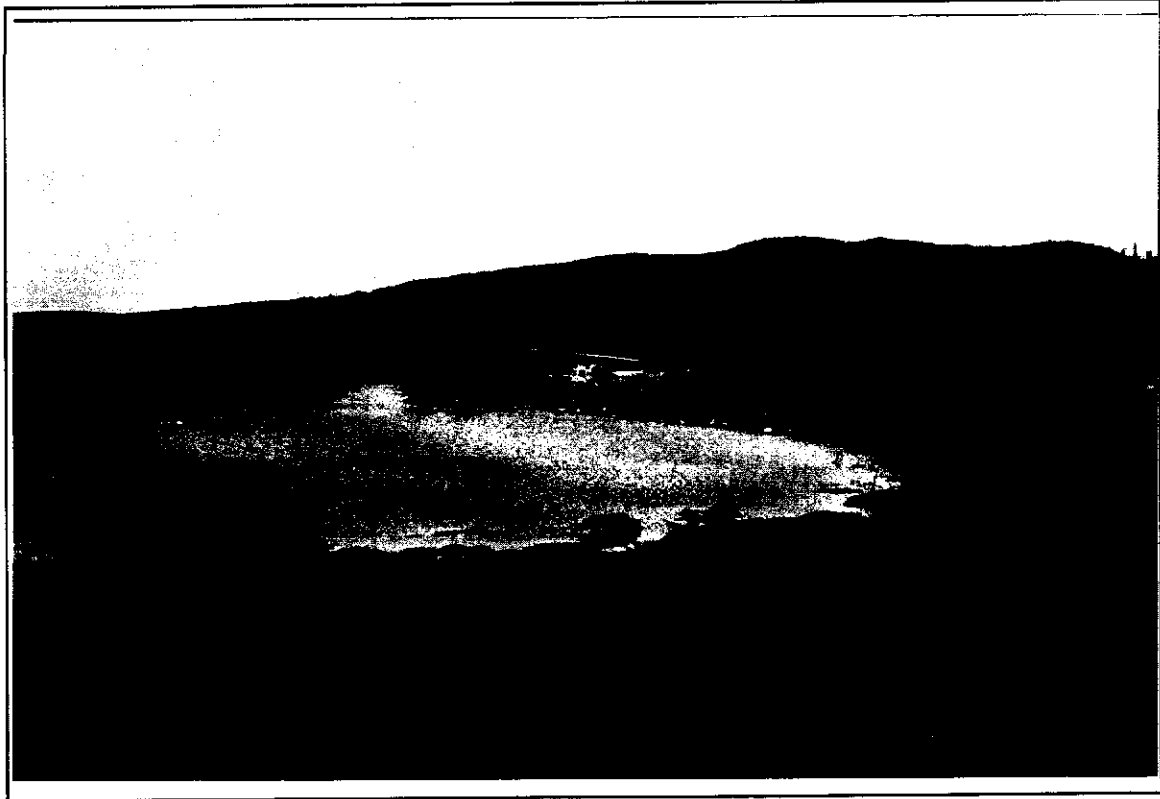
Color (staining) Clear

Toe drain and relief wells Good

**Remarks:** Structure is in poor condition and is poorly constructed compared to other structures in the system

Development : Cape Broyle/HorseChops

Structure : Fourth Blackwoods Freeboard Dam No. 2



General view of dam.



Crest and upstream slope. Note irregular construction.

## DAM SAFETY INSPECTION

Fourth Blackwoods Dam/ Spillway

Dam Type: Rockfill Overflow Spillway

Date & Time of Examination: 99-03-25 @ 2:00 pm

Operational Status at Time of Examination:

Reservoir Water surface elevation	<u>100 mm below spill</u>
Releases	<u></u>
Weather Conditions	<u>Sunny, 15°C</u>
Water in storage	<u></u>
Recent Seismic Events	<u>none</u>

Examining Party  
G. Humby  
S. Hancock  
J. Curran  
E. Maloney

## INSPECTION CHECKLIST FOR EMBANKMENT DAM

### DAM / SPILLWAY

#### Upstream Face

Slide movements	<u>None observed</u>
Slope protection	<u>Good</u>
Erosion - beaching	<u>None observed</u>
Cracks	<u>None observed</u>
Sinkholes	<u>None observed</u>
Settlement	<u>None observed</u>
Displacement	<u>None observed</u>
Debris	<u>None observed</u>
Unusual conditions	<u>None observed</u>

#### Crest

Surface cracking	<u>None observed</u>
Settlement	<u>None observed</u>
Lateral movement	<u>None observed</u>
Camber	<u>None observed</u>
Other	<u>Metal wall has ben cut off and additional rock placed to an elevation higher than the top of the metal wall .</u>

#### Downstream Face

Slide movements	<u>None observed</u>
Signs of movements	<u>None observed</u>

Cracks	<u>None observed</u>
Seepage or wet areas	<u>Few minor leaks through cutoff wall noted</u>
Unusual conditions	<u>None observed</u>

#### **Abutments**

Seepage	<u>None observed</u>
Cracks, joints, and bedding planes	<u>None observed</u>
Slides	<u>None observed</u>
Signs of movement	<u>None observed</u>
Unusual conditions	<u>Abutment is narrow with no riprap protection and metal wall does not tie into abutments</u>

#### **Approach Channel**

Debris	<u>None</u>
Slides above channel	<u>None</u>
Channel side slope stability	<u>Good</u>
Log boom	<u>N/A</u>
Slope protection	<u>Good</u>

#### **Outlet Channel**

Slope Protection	<u>N/A</u>
Stability of side slopes	<u>Good</u>
Vegetation or other obstructions	<u>Road downstream of spillway may be damaged during flood</u>

**Seepage and Drainage**

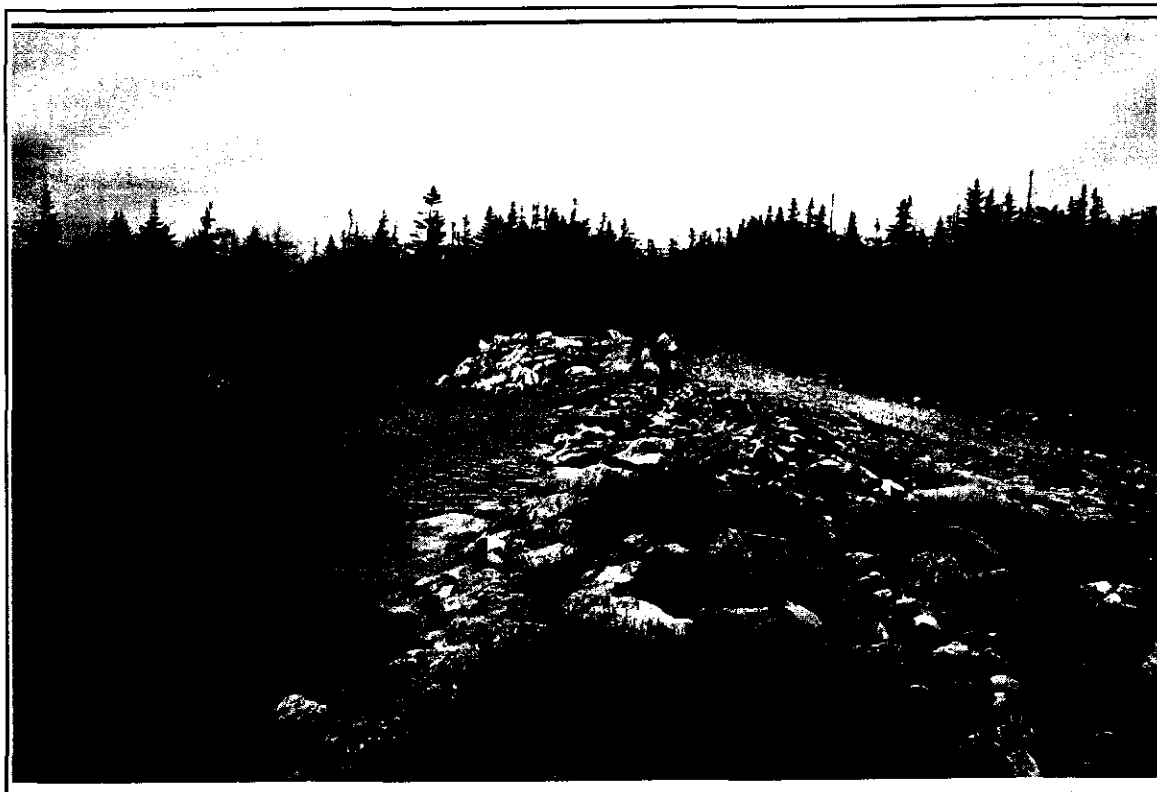
Locations(s)	<u>Several leaks through cut-off</u>
Estimated flow(s)	<u>Not measured</u>
Colour (staining)	<u>Clear</u>
Toe drain and relief wells	<u>N/A</u>

Development : Cape Broyle/HorseChops

Structure : Fourth Blackwoods Dam/Spillway



Spillway crest from left abument.



Spillway crest from right abutment.

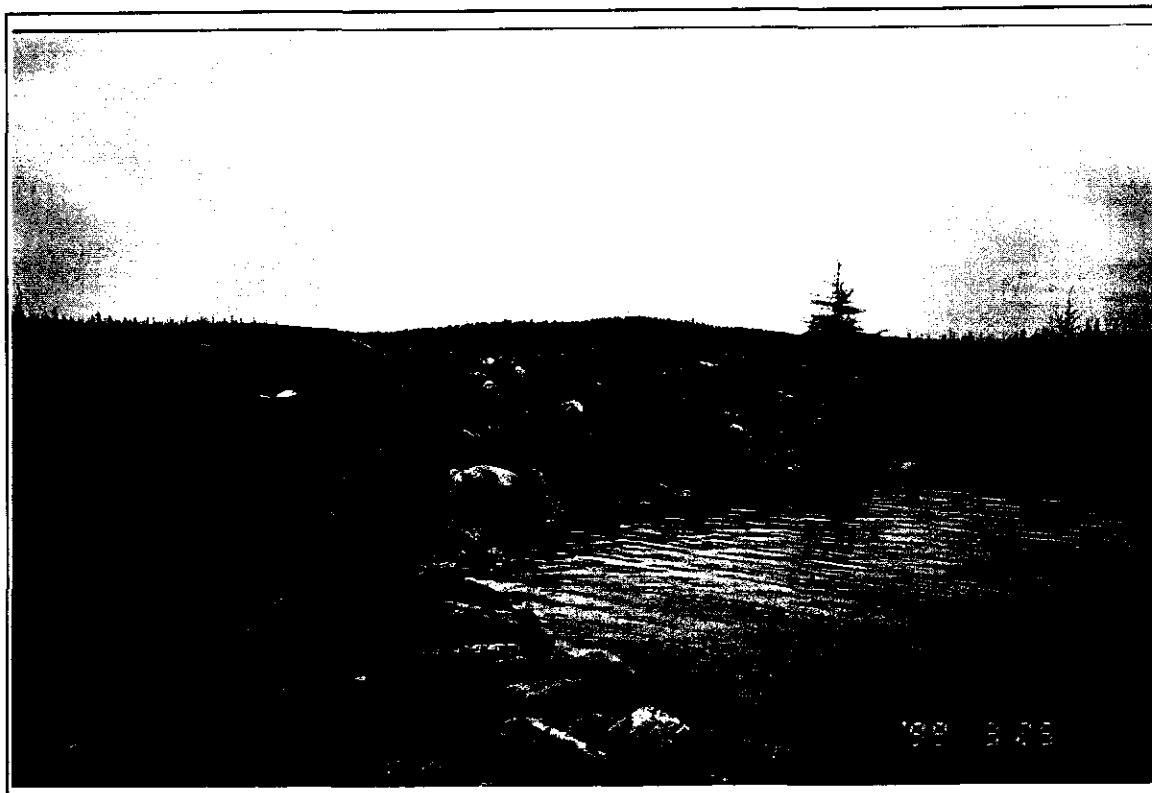


Development : Cape Broyle/HorseChops

Structure : Fourth Blackwoods Dam/Spillway



Downstream slope



Right abutment.

### Fourth Blackwoods Control Structure

**Date & Time of Examination: 99-03-25 @ 2:15 pm**

Reservoir Water surface elevation	<u>100 mm below spill</u>
Releases	<u>Free flowing over stoplogs</u>
Weather Conditions	<u>Sunny and warm</u>
Water in storage	<u></u>
Recent Seismic Events	<u>none</u>

Examining Party  
S. Hancock  
G. Humby  
J. Curran  
E. Maloney

## OUTLET WORKS

### **Control Facilities**

Gatehouse	<u>N/A</u>
Crane	<u>N/A</u>
Gate and controls (description)	<u>N/A</u>
General condition	<u>Good</u>
Operation at time of examination	<u>Logs partially removed</u>
Control System Mechanical items	<u>N/A</u>
Ventilation	<u>N/A</u>
Lighting	<u>N/A</u>
Stop logs	
General condition	<u>Good</u>
Seals	<u>Not visible</u>

### **Chute**

Debris	<u>None observed</u>
Walls	
Movement (offsets)	<u>None observed</u>
Settlement	<u>None observed</u>
Cracks or areas of distress	<u>Minor cracking in abutment concrete foundations</u>
Outlet Channel	
Slope Protection	<u>Good</u>
Stability of Side Slopes	<u>Channel excavated through rock</u>
Vegetation and other	

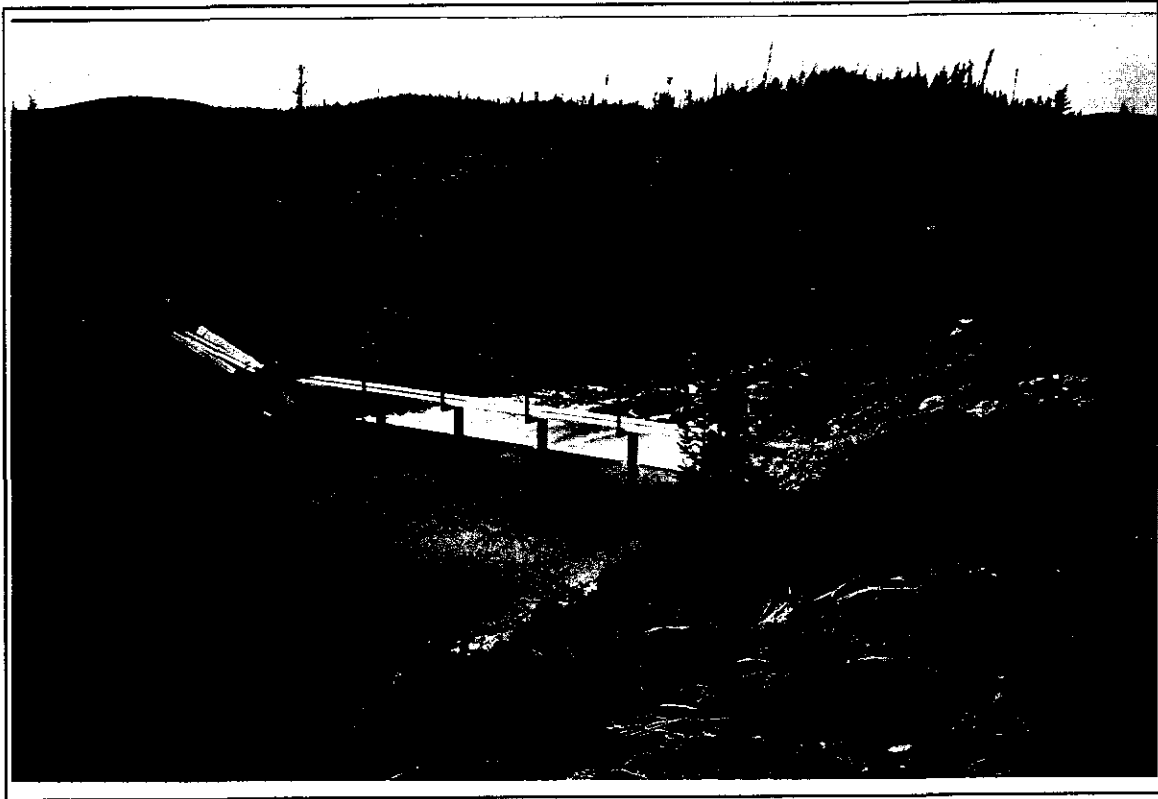
obstructions

None observed

**Remarks** Stoplog structure is in good condition. Cracks in concrete should be monitored.

Development : Cape Broyle/HorseChops

Structure : Fourth Blackwoods Control Structure



General view from upstream