



ENGINEERS & CONSULTANTS

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September 11, 2009
Project No. 09-4157

Mr. Dennis Miller
Lockheed Martin
2890 Woodbridge Ave #209
Edison, NJ 08837

TRANSMITTAL
ASSESSMENT OF DAM SAFETY OF
COAL COMBUSTION SURFACE IMPOUNDMENTS
FIELD ASSESSMENT CHECKLISTS FOR
SITES 24 (MITCHELL) AND 30 (BRUCE MANSFIELD)

Dear Mr. Miller:

Transmitted herewith are copies of the Field Assessment Checklists for the inspections of the management units located at Sites 24 and 30.

If you have any questions or require any additional information, please contact me at (412) 856-9700, ext. 1008, or john.osterle@rizzoassoc.com.

Respectfully submitted,
Paul C. Rizzo Associates, Inc.

John P. Osterle, P.E.
Vice President
Dam & Water Resource Projects

JPO/KRC/lck/kef

cc: Stephen Hoffman – USEPA

U.S. OFFICE LOCATIONS
•Monroeville PA (Corp.HQ)•Oakland CA•St.Louis MO•Tarrytown NY•Columbia SC•
INTERNATIONAL OFFICE LOCATIONS
•Buenos Aires Argentina•Mendoza Argentina•Santiago Chile•Lima Peru•
•Abu Dhabi UAE•Brisbane Australia•Plzen Czech Republic•St. Petersburg Russia•



Site Name: Bruce Mansfield Power Station	Date: 09-01-2009
Unit Name: South Low Dissolved Solids (LDS) Pond	Operator's Name: First Energy
Unit I.D.: NA	Hazard Potential Classification: High <input type="checkbox"/> Significant <input checked="" type="checkbox"/> Low <input type="checkbox"/>
Inspector's Name: John Osterle / Kevin Cass	

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		Quarterly	18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?		760 ft	19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?		NA	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		759.5± ft	Is water entering inlet, but not exiting outlet?		NA
5. Lowest dam crest elevation (operator records)?		762 ft	Is water exiting outlet, but not entering inlet?		NA
6. If instrumentation is present, are readings recorded (operator records)?		NA	Is water exiting outlet flowing clear?		NA
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?	X		From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?	X		From downstream foundation area?		X
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		NA
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?		X	23. Water against downstream toe?		X
17. Cracks or scarps on slopes?		X	24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

<u>Inspection Issue #</u>	<u>Comments</u>
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- #1. Quarterly inspection is performed by GAI Consultants, Inc. Fourth quarter inspection includes summary for entire year. PADEP performs an inspection every 2 years.

- #2. Daily water level readings are recorded by operations department for LDS ponds only.

- #3. The decant pipe and intake structure has been deactivated (18" dia. vitrified clay pipe).

- #4. Spillway consists of a weir which flows between the North LDS Pond and the South LDS Pond. One pond is always drained so that it can store discharge from the other pond. Water is discharged from the pond via pumping.

- #6. No instrumentation.

- #8. According to First Energy, the foundations were excavated to rock. Ponds were constructed prior to the operation of the plant. Therefore, there was no fly ash available during construction.

- #10 & #17. Minor cracks were observed in the top asphalt layer. These cracks do not extend into the bottom asphalt layer or the embankment.



Coal Combustion Waste (CCW) Impoundment Inspection

Impoundment NPDES Permit # NA Date 09-01-2009

INSPECTOR John Osterle / Kevin Cass

Impoundment Name South Low Dissolved Solids (LDS) Pond
Impoundment Company First Energy
EPA Region III
State Agency (Field Office) Address Pennsylvania Department of Environmental Protection
909 Elmerton Avenue, Harrisburg, PA 17110

Name of Impoundment
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New Update X

Is impoundment currently under construction? Yes No
Is water or ccw currently being pumped into the impoundment? Yes No

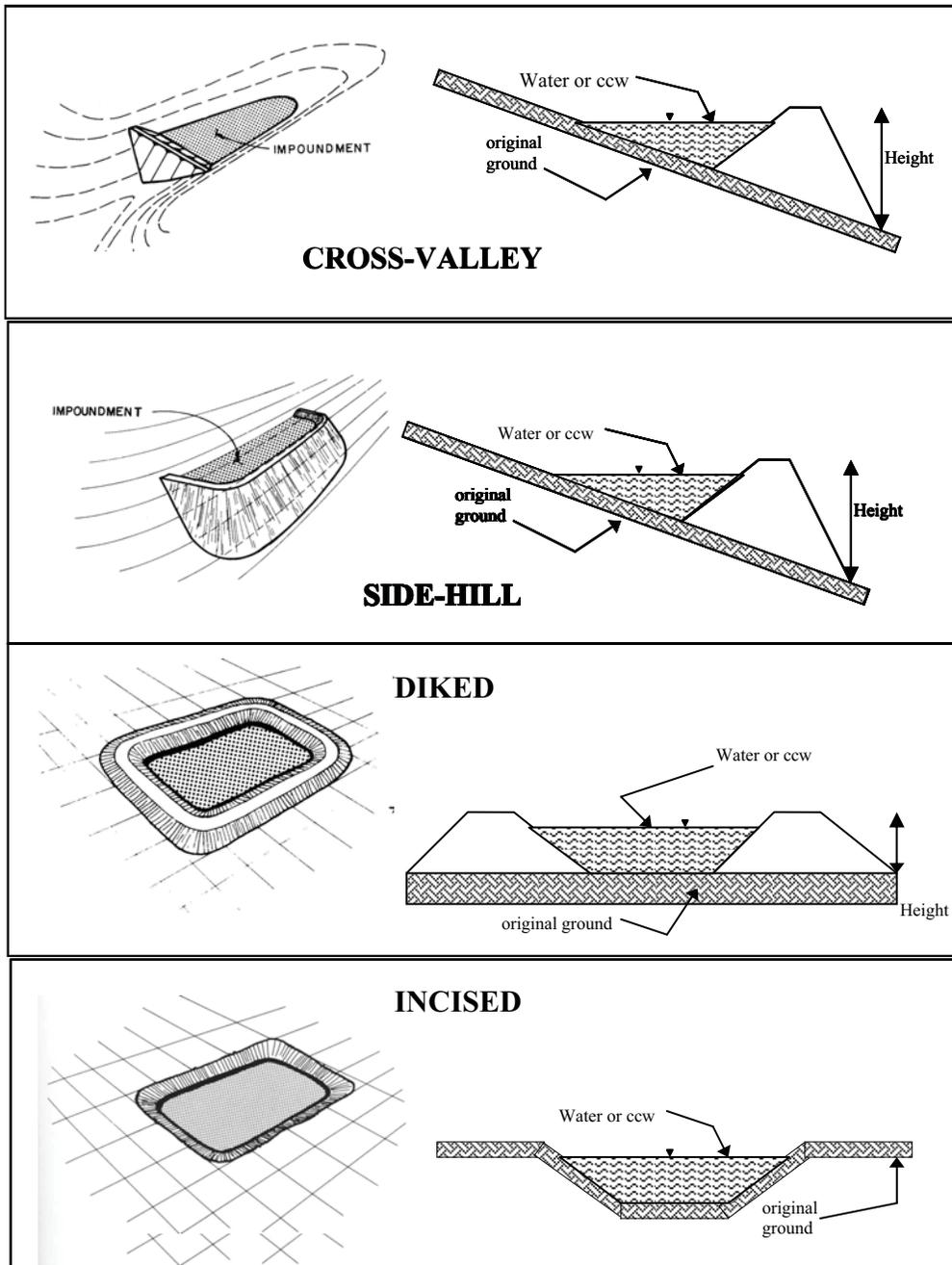
IMPOUNDMENT FUNCTION: Primary: Ash Storage, Secondary: Sedimentation, Tertiary: Waste

Nearest Downstream Town : Name Midland, PA
Distance from the impoundment about 2 miles downstream
Impoundment Location: Longitude 40 Degrees 38 Minutes 9.73 Seconds
Latitude 80 Degrees 24 Minutes 45.24 Seconds
State PA County Beaver

Does a state agency regulate this impoundment? YES X NO

If So Which State Agency? Pennsylvania Department of Environmental Protection, Bureau of Waterways Engineering, Division of Dam Safety.

CONFIGURATION:



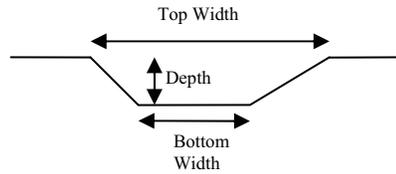
- Cross-Valley
- Side-Hill
- Diked
- Incised (form completion optional)
- Combination Incised/Diked

Embankment Height	<u>17</u>	feet	Embankment Material	<u>Soil with asphalt on crest and downstream slope</u>
Pool Area	<u>3.1</u>	acres	Liner	<u>Asphlat</u>
Current Freeboard	<u>2</u>	feet	Liner Permeability	<u>10⁻⁷ cm/s (estimated)</u>

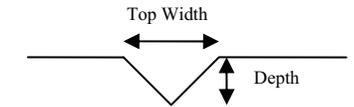
TYPE OF OUTLET (Mark all that apply)

- Open Channel Spillway**
- Trapezoidal
- Triangular
- Rectangular
- Irregular

TRAPEZOIDAL

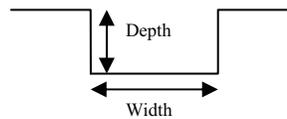


TRIANGULAR

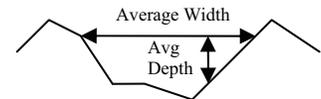


- 2.5 ft depth
- 5 ft bottom (or average) width
- 5 ft top width

RECTANGULAR



IRREGULAR

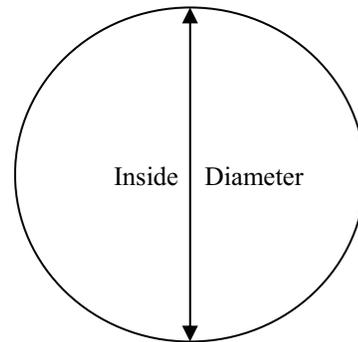


Outlet

inside diameter

Material

- corrugated metal
- welded steel
- concrete
- plastic (hdpe, pvc, etc.)
- other (specify) _____



Is water flowing through the outlet? YES _____ NO _____

No Outlet

Other Type of Outlet (specify) _____

The Impoundment was Designed By Commonwealth Associates, Jackson, Michigan

BRUCE MANSFIELD POWER STATION – SHIPPINGPORT, PA
SOUTH LOW DISSOLVED SOLIDS POND

Concerning the embankment foundation, was the embankment construction built over wet ash, slag, or other unsuitable materials? If there is no information just note that.

No.

Did the dam assessor meet with, or have documentation from, the design Engineer-of-Record concerning the foundation preparation?

No.

From the site visit or from photographic documentation, was there evidence of prior releases, failures, or patchwork on the dikes?

No.



Site Name: Bruce Mansfield Power Station	Date: 09-01-2009
Unit Name: West High Dissolved Solids (HDS) Pond	Operator's Name: First Energy
Unit I.D.: NA	Hazard Potential Classification: High <input type="checkbox"/> Significant <input checked="" type="checkbox"/> Low <input type="checkbox"/>
Inspector's Name: John Osterle / Kevin Cass	

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		Quarterly	18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?		783± ft	19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?		NA	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		NA	Is water entering inlet, but not exiting outlet?		NA
5. Lowest dam crest elevation (operator records)?		787 ft	Is water exiting outlet, but not entering inlet?		NA
6. If instrumentation is present, are readings recorded (operator records)?		NA	Is water exiting outlet flowing clear?		NA
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?	X		From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?	X		From downstream foundation area?		X
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		NA
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?		X	23. Water against downstream toe?		X
17. Cracks or scarps on slopes?		X	24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

<u>Inspection Issue #</u>	<u>Comments</u>
#1.	Quarterly inspection is performed by GAI Consultants, Inc. Fourth quarter inspection includes summary for entire year. PADEP performs an inspection every 2 years.
#2.	Daily water level are not recorded for the HDS pond. Only the LDS ponds.
#3.	The decant pipe and intake structure has been deactivated (18" dia. vitrified clay pipe).
#4.	Spillway consists of a weir which flows between the North LDS Pond and the South LDS Pond. One pond is always drained so that it can store discharge from the other pond. Water is discharged from the pond via pumping.
#6.	No instrumentation.
#8.	According to First Energy, the foundations were excavated to rock. Ponds were constructed prior to the operation of the plant. Therefore, there was no fly ash available during construction.
#10 & #17.	Minor cracks were observed in the top asphalt layer. These cracks do not extend into the bottom asphalt layer or the embankment.



Coal Combustion Waste (CCW) Impoundment Inspection

Impoundment NPDES Permit # NA Date 09-01-2009

INSPECTOR John Osterle / Kevin Cass

Impoundment Name West High Dissolved Solids (HDS) Pond
Impoundment Company First Energy
EPA Region III
State Agency (Field Office) Address Pennsylvania Department of Environmental Protection
909 Elmerton Avenue, Harrisburg, PA 17110

Name of Impoundment
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New Update X

Is impoundment currently under construction? Yes No
Is water or ccw currently being pumped into the impoundment? X * Slurry is trucked in and dumped into HDS pond.

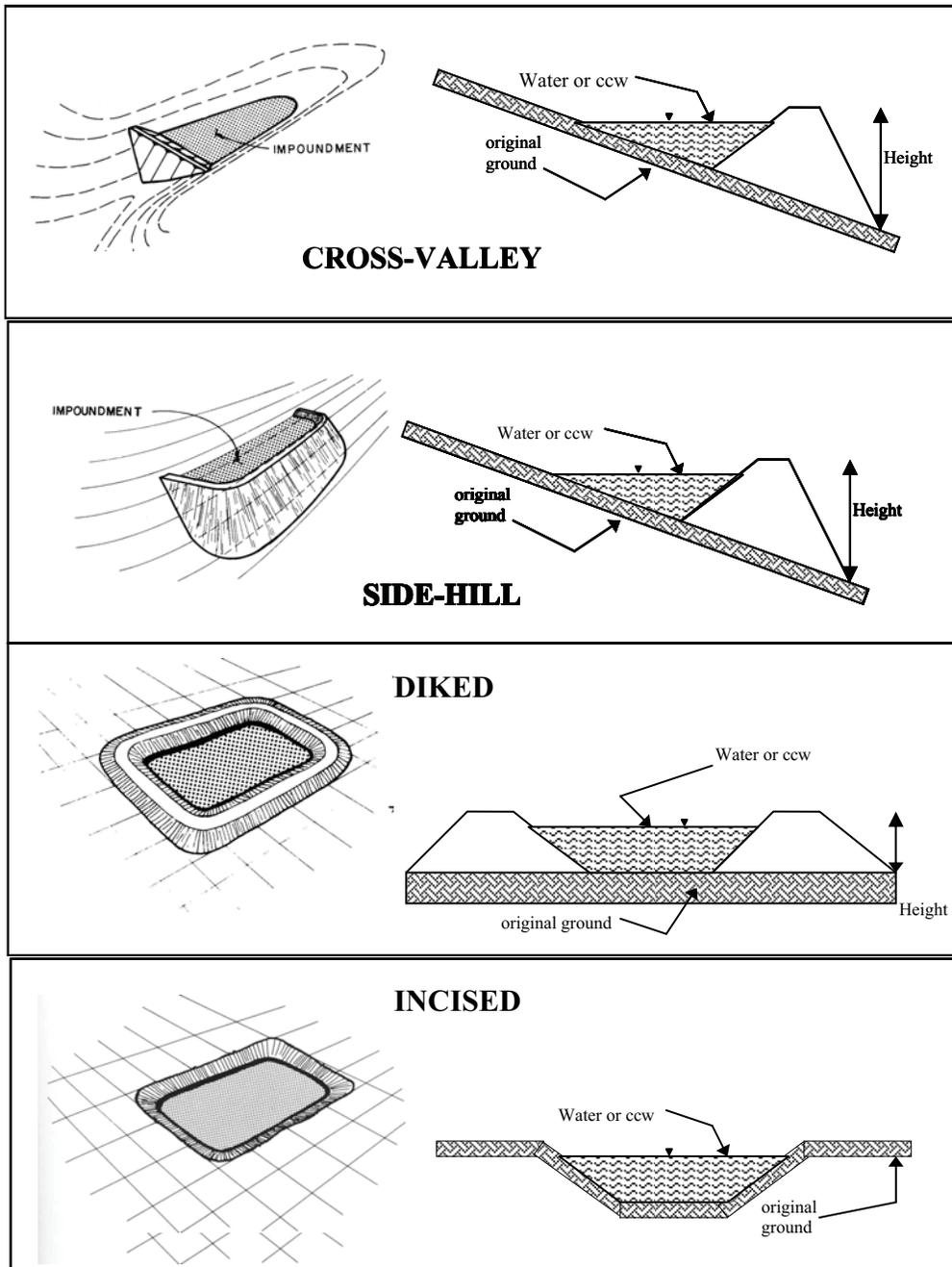
IMPOUNDMENT FUNCTION: Primary: Ash Storage, Secondary: Sedimentation

Nearest Downstream Town : Name Midland, PA
Distance from the impoundment about 2 miles downstream
Impoundment Location: Longitude 40 Degrees 38 Minutes 4.54 Seconds
Latitude 80 Degrees 24 Minutes 40.62 Seconds
State PA County Beaver

Does a state agency regulate this impoundment? YES X NO

If So Which State Agency? Pennsylvania Department of Environmental Protection, Bureau of Waterways Engineering, Division of Dam Safety

CONFIGURATION:



Cross-Valley
 Side-Hill *The South end of the impoundment is a concrete wall.
 Diked
 Incised (form completion optional)
 Combination Incised/Diked

Embankment Height 27 (max) feet Embankment Material Soil with asphalt on crest and downstream slope
 Pool Area 2.9 acres Liner Asphlat
 Current Freeboard 4± feet Liner Permeability 10⁻⁷ cm/s (estimated)

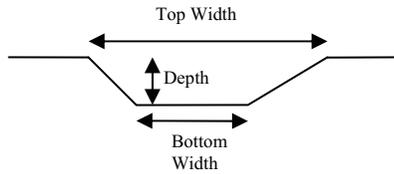
TYPE OF OUTLET (Mark all that apply)

 Open Channel Spillway

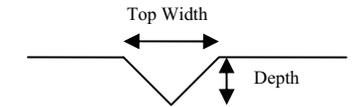
- Trapezoidal
- Triangular
- Rectangular
- Irregular

- depth
- bottom (or average) width
- top width

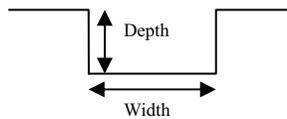
TRAPEZOIDAL



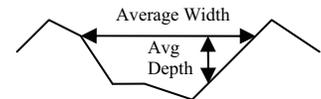
TRIANGULAR



RECTANGULAR



IRREGULAR

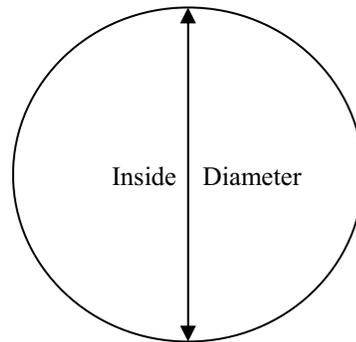


 Outlet

 inside diameter

Material

- corrugated metal
- welded steel
- concrete
- plastic (hdpe, pvc, etc.)
- other (specify) _____



Is water flowing through the outlet? YES _____ NO _____

 X **No Outlet**

 Other Type of Outlet (specify) _____

The Impoundment was Designed By Commonwealth Associates, Jackson, Michigan

BRUCE MANSFIELD POWER STATION – SHIPPINGPORT, PA
WEST HIGH DISSOLVED SOLIDS POND

Concerning the embankment foundation, was the embankment construction built over wet ash, slag, or other unsuitable materials? If there is no information just note that.

No.

Did the dam assessor meet with, or have documentation from, the design Engineer-of-Record concerning the foundation preparation?

No.

From the site visit or from photographic documentation, was there evidence of prior releases, failures, or patchwork on the dikes?

No.



Site Name: Bruce Mansfield Power Station	Date: 09-01-2009
Unit Name: North Low Dissolved Solids (LDS) Pond	Operator's Name: First Energy
Unit I.D.: NA	Hazard Potential Classification: High <input type="checkbox"/> Significant <input checked="" type="checkbox"/> Low <input type="checkbox"/>
Inspector's Name: John Osterle / Kevin Cass	

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		Quarterly	18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?		746 ft	19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?		NA	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		759.5± ft	Is water entering inlet, but not exiting outlet?		NA
5. Lowest dam crest elevation (operator records)?		762 ft	Is water exiting outlet, but not entering inlet?		NA
6. If instrumentation is present, are readings recorded (operator records)?		NA	Is water exiting outlet flowing clear?		NA
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?	X		From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?	X		From downstream foundation area?		X
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		NA
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?		X	23. Water against downstream toe?		X
17. Cracks or scarps on slopes?		X	24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

<u>Inspection Issue #</u>	<u>Comments</u>
#1.	Quarterly inspection is performed by GAI Consultants, Inc. Fourth quarter inspection includes summary for entire year. PADEP performs an inspection every 2 years.
#2.	Daily water level readings are recorded by operations department for LDS ponds only. Pond was drained at time of inspection, with 1 to 7 feet of slurry.
#3.	The decant pipe and intake structure has been deactivated (18" dia. vitrified clay pipe).
#4.	Spillway consists of a weir which flows between the North LDS Pond and the South LDS Pond. One pond is always drained so that it can store discharge from the other pond. Water is discharged from the pond via pumping.
#6.	No instrumentation.
#8.	According to First Energy, the foundations were excavated to rock. Ponds were constructed prior to the operation of the plant. Therefore, there was no fly ash available during construction.
#10 & #17.	Minor cracks were observed in the top asphalt layer. These cracks do not extend into the bottom asphalt layer or the embankment.



Coal Combustion Waste (CCW) Impoundment Inspection

Impoundment NPDES Permit # NA Date 09-01-2009

INSPECTOR John Osterle / Kevin Cass

Impoundment Name North Low Dissolved Solids (LDS) Pond

Impoundment Company First Energy

EPA Region III

State Agency (Field Office) Address Pennsylvania Department of Environmental Protection 909 Elmerton Avenue, Harrisburg, PA 17110

Name of Impoundment (Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New Update X

Is impoundment currently under construction? Is water or ccw currently being pumped into the impoundment?

Yes No X X

IMPOUNDMENT FUNCTION: Primary: Ash Storage, Secondary: Sedimentation, Tertiary: Waste

Nearest Downstream Town : Name Midland, PA

Distance from the impoundment about 2 miles downstream

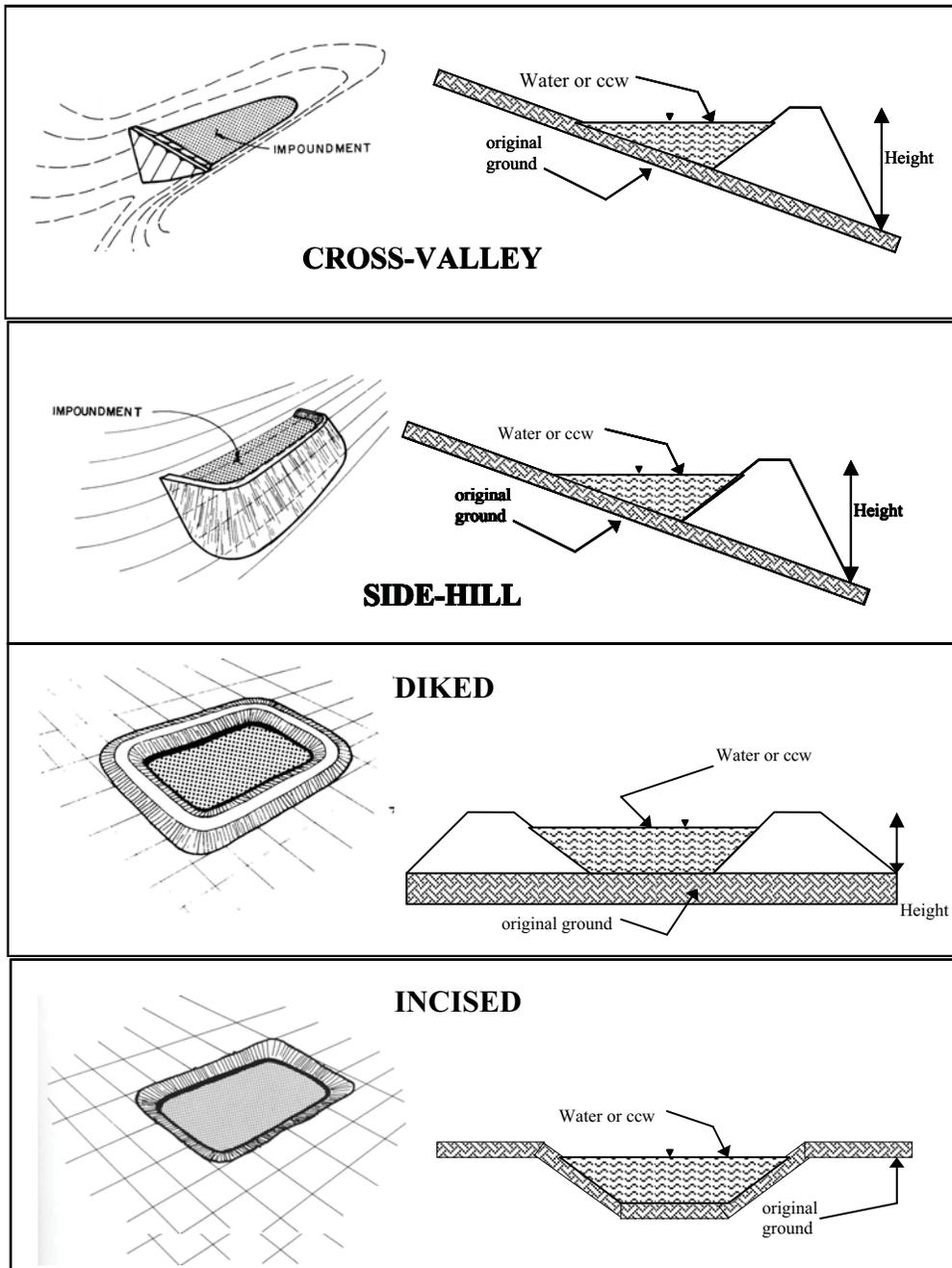
Impoundment

Location: Longitude 40 Degrees 38 Minutes 11.16 Seconds Latitude 80 Degrees 24 Minutes 47.92 Seconds State PA County Beaver

Does a state agency regulate this impoundment? YES X NO

If So Which State Agency? Pennsylvania Department of Environmental Protection, Bureau of Waterways Engineering, Division of Dam Safety

CONFIGURATION:



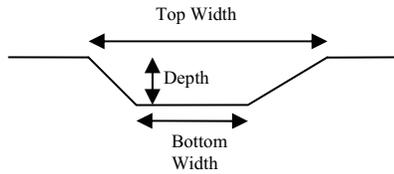
Cross-Valley
 Side-Hill
 Diked
 Incised (form completion optional)
 Combination Incised/Diked

Embankment Height 32 (max) feet Embankment Material Soil with asphalt on crest and downstream slope
 Pool Area 3.2 acres Liner Asphlat
 Current Freeboard 16 feet Liner Permeability 10⁻⁷ cm/s (estimated)

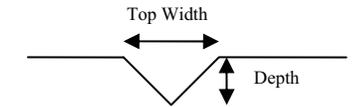
TYPE OF OUTLET (Mark all that apply)

- Open Channel Spillway**
- Trapezoidal
- Triangular
- Rectangular
- Irregular

TRAPEZOIDAL

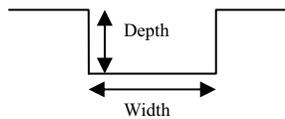


TRIANGULAR

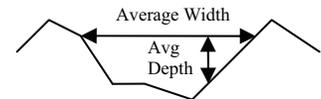


- 2.5 ft depth
- 5 ft bottom (or average) width
- 5 ft top width

RECTANGULAR



IRREGULAR

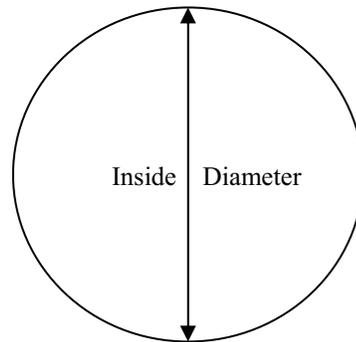


Outlet

inside diameter

Material

- corrugated metal
- welded steel
- concrete
- plastic (hdpe, pvc, etc.)
- other (specify) _____



Is water flowing through the outlet? YES _____ NO _____

No Outlet

Other Type of Outlet (specify) _____

The Impoundment was Designed By Commonwealth Associates, Jackson, Michigan

BRUCE MANSFIELD POWER STATION – SHIPPINGPORT, PA
NORTH LOW DISSOLVED SOLIDS POND

Concerning the embankment foundation, was the embankment construction built over wet ash, slag, or other unsuitable materials? If there is no information just note that.

No.

Did the dam assessor meet with, or have documentation from, the design Engineer-of-Record concerning the foundation preparation?

No.

From the site visit or from photographic documentation, was there evidence of prior releases, failures, or patchwork on the dikes?

No.
