



North Carolina Department of Environment and Natural Resources
Division of Energy, Mineral, and Land Resources
Land Quality Section

Tracy Davis, PE, CPM
Director

Pat McCrory, Governor
John E. Skvarla, III, Secretary

February 21, 2014

NOTICE OF INSPECTION

Duke Energy Carolinas
Attn: Mr. Tim Russell
P.O. Box 1551
Raleigh, NC 27601

RE: Sutton Steam Plant 1984 Ash Pond Dam, NEWHA-005
Sutton Steam Plant 1971 Ash Pond Dam, NEWHA-004
Sutton Steam Plant 1972 Cooling Pond Dam, NEWHA-003

Dear Mr. Russell:

The Dam Safety Law of 1967, as amended, provides for the certification and inspection of dams in the interest of public health, safety and welfare, in order to reduce the risk of failure of such dams; to prevent injuries to persons, damage to property, and to insure the maintenance of stream flows.

On February 20, 2014, staff of our office inspected the dams located off US 421 North of Wilmington, of New Hanover County. Only one, the 1984 Ash Pond dam is currently on the State's Dam Safety Inventory; the others, the 1971 Ash Pond Dam and 1972 Cooling Pond Dam were exempted by H.B. 119 in 2011, but all were inspected in order to ascertain the overall status of all Sutton Plant dams. The two ash pond dams were thoroughly inspected, but given the tremendous length of the cooling pond impoundment, we conducted a more cursory review from the top of that dam. Regardless, these inspections revealed the dams to be well maintained and in good order. We no specific recommendations of corrective steps outside of the general information listed below.

The following items are recommended items pertinent to continuous maintenance and operations of the dams:

1. Maintain a vegetative ground cover sufficient to restrain erosion on all earthen portions of the structure.

2. Periodically remove trees less than about six inches in diameter and thick undergrowth from the slopes and crest of the dam. This will serve to (A) prevent the formation of a root system which might significantly increase seepage through the dam which could ultimately result in failure of the structure, (B) reduce the possibility of damage to the dam due to the uprooting of trees by wind or other natural causes, and (C) facilitate ease of inspection and increase the likelihood of early detection of more serious problems connected with the dam.
3. Periodically remove all trees from the emergency spillway. This will reduce the possibility of its capacity being reduced by the entrapment of debris, should it become active.
4. Periodically check the operation of all drain valve facilities. This will insure satisfactory operation of the drains should an emergency situation arise.
5. Periodically monitor the dam for any deficiencies, which may result in failure of the structure. This is in light of the legal duties, obligations, and liabilities arising from the ownership of a dam.

During this inspection, we also investigated the potential for property damage and loss of life in the event that the dam was to fail. We continue to list this dam in the "Low Hazard" category.

Please be advised that though we make every reasonable effort to determine the safety of the dam, our resources limit us to superficial inspections. There is no certainty regarding the internal stability of the dam. Dams, and especially their spillways and conduits, deteriorate with age. Therefore, you are advised to keep a close watch on your dam and to notify us if you detect any changes, especially cracks, ground movements, or changes in seepage rate or color. Please understand that any major grading work proposed on the dam or plans to breach the dam must be approved by the State Dam Safety Program prior to being implemented.

Your cooperation and consideration in maintaining a safe dam is appreciated. Should you have questions concerning our inspection, please contact me at (910) 796-7215.

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel Sams", with a stylized, flowing script.

Daniel Sams, PE
Wilmington Regional Engineer
Land Quality Section

cc: Kent Tyndall, Safety, Sr. Environmental Spec., LV Sutton Energy Complex
State Dam Safety Engineer
Wilmington Regional Office File

DAM SAFETY INSPECTION REPORT

NAME SUTTON STEAM PLANT 1984 ASH POND		COUNTY NEW HAMPSHIRE	NO. 005	INSPECTED BY SAMS/CONWAY/LAMBE	DATE 2/20/2014
OWNER DUKE ENERGY CAROLINAS ATTN: T RUSSELL		ADDRESS PO BOX 1006, CHARLOTTE, NC 28201-1006			PHONE
TYPE DAM ☒ Embankment ☐ Concrete gravity ☐ Concrete arch ☐ Other ☐ Concrete buttress ☐ Stone masonry		TYPE INSPECTION ☐ Initial ☐ Followup ☒ Periodic ☐ Other		SITE CONDITIONS ☒ Dry ☐ Snowcover ☐ Wet ☐ Other	
HAZARD DESCRIPTION Low HAZARD				HAZARD CLASS ☒ Low (A) ☐ Intermediate (B) ☐ High (C)	
REMARKS The dam is well maintained. Some slope areas have sparse vegetation but no stability problems are noted. The dam is being phased out.		ACTION ☒ None ☐ Maintenance ☐ Monitoring ☐ Minor repair ☐ Engineering		RECOMMENDATIONS ☐ Inspection letter ☐ Deficiency letter ☐ RE notes ☐ Engineering study ☐ Inspection by RE ☐ Inspection by DSE ☐ Dam safety order ☐ Enforcement ☐ Periodic reinspection ☐ Other reinspection	

AREA	PROBLEMS	COMMENTS
UPSTREAM SLOPE / FACE	☒ 1. None ☐ 11. Displaced rip rap ☐ 2. Trees ☐ 12. Cracks ☐ 3. High bushes ☐ 13. Undermining ☐ 4. Burrows ☐ 14. Holes ☐ 5. Wave erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Sparse rip rap	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Asphalt ☐ Other The upper cell is no longer holding water.
TOP OF DAM	☒ 1. None ☐ 11. Cracks ☐ 2. Trees ☐ 12. Spalling ☐ 3. High bushes ☐ 13. Deteriorated joints ☐ 4. Burrows ☐ 14. Displaced joints ☐ 5. Ruts ☐ 15. Exposed reinforcement ☐ 6. Livestock damage ☐ 16. Other ☐ 7. Depressions ☐ 8. Uneven ☐ 9. Misalignment ☐ 10. Has overtopped	COVER: ☒ Vegetation ☒ Gravel ☐ Concrete ☐ Asphalt ☐ Other Well maintained gravel perimeter road.
DOWNSTREAM SLOPE / FACE	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Wetness	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other Vegetation is sparse in areas noted in previous inspections and the depressed area is still along the west slope, but there has been no deterioration of slope continues after years of observation and the dams are being phased out.
TOE CONTACT	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Undermining ☐ 10. Wetness ☐ 20. Other	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other No visible weeps or seeps.

AREA	PROBLEMS	COMMENTS
ABUTMENT CONTACTS	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Undermining ☐ 10. Wetness ☐ 20. Other	COVER: ☐ Vegetation ☐ Rip rap ☐ Concrete ☐ Other Not applicable, no abutments, complete ring impoundment.
PRINCIPAL SPILLWAY	☒ 1. None ☐ 11. Joint displacement ☐ 2. No trashguard ☐ 12. Undermined ☐ 3. Obstructed ☐ 13. Voids ☐ 4. Plugged ☐ 14. Erosion ☐ 5. Rusted ☐ 15. Holes ☐ 6. Damaged ☐ 16. Conduit collapsed ☐ 7. Gates leaking ☐ 17. Spilling ☐ 8. Joints leaking ☐ 18. Outlet undercutting ☐ 9. Cracks ☐ 19. Misalignment ☐ 10. Joint deterioration ☐ 20. Other	TYPE/SIZE: RISER / BARREL Water level too low for operation.
EMERGENCY SPILLWAY	☒ 1. None ☐ 11. Joint displacement ☐ 2. No ES ☐ 12. Undermining ☐ 3. Same as PS ☐ 13. Voids ☐ 4. Obstructed ☐ 14. Holes ☐ 5. Erosion ☐ 15. Exposed reinforcement ☐ 6. Displaced rip rap ☐ 16. Spilling ☐ 7. Sparse rip rap ☐ 17. Outlet erosion ☐ 8. Joints leaking ☐ 18. Misalignment ☐ 9. Cracks ☐ 19. Inadequate capacity ☐ 10. Joint deterioration ☐ 20. Other	TYPE/SIZE: NONE
DRAINS / OTHER OUTLETS	☒ 1. None ☐ 2. No bottom drain ☐ 3. Bottom drain inoperable ☐ 4. Subsurface drain dry ☐ 5. Subsurface drain muddy flow ☐ 6. Subsurface drain obstructed ☐ 7. No animal guard ☐ 8. Other	TYPE: BOTTOM DRAIN AT OUTLET.

SKETCHES/COMMENTS

DAM SAFETY INSPECTION REPORT

NAME SUTTON STEAM PLANT 1971 ASH POND		COUNTY NEW HAMPSHIRE	NO. 004	INSPECTED BY SAMS/CONWAY/LAMBE	DATE 2/20/2014
OWNER DUKE ENERGY CAROLINAS ATTN: TIM RUSSELL		ADDRESS PO Box 1006 CHARLOTTE, NC 28201-006			PHONE
TYPE DAM ☒ Embankment ☐ Concrete gravity ☐ Concrete arch ☐ Other ☐ Concrete buttress ☐ Stone masonry		TYPE INSPECTION ☐ Initial ☐ Followup ☒ Periodic ☐ Other		SITE CONDITIONS ☒ Dry ☐ Snowcover ☐ Wet ☐ Low (A) ☐ Intermediate (B) ☐ High (C)	
HAZARD DESCRIPTION Not on Inventory as of HB119				HAZARD CLASS ☐ Low (A) ☐ Intermediate (B) ☐ High (C)	
REMARKS The dam is well maintained and it is being phased out. The pond is dry and ash grading is being done on site.		ACTION ☒ None ☐ Maintenance ☐ Monitoring ☐ Minor repair ☐ Engineering		RECOMMENDATIONS ☒ Inspection letter ☐ Inspection by DSE ☐ Deficiency letter ☐ Dam safety order ☐ RE notice ☐ Enforcement ☐ Engineering study ☐ Periodic reinspection ☐ Inspection by RE ☐ Other reinspection	

AREA	PROBLEMS	COMMENTS
UPSTREAM SLOPE / FACE	☒ 1. None ☐ 11. Displaced rip rap ☐ 2. Trees ☐ 12. Cracks ☐ 3. High bushes ☐ 13. Undermining ☐ 4. Burrows ☐ 14. Holes ☐ 5. Wave erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Spars rip rap	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Asphalt ☐ Other The pond is mostly drained. Grading or vegetation stabilization is going to be necessary to decommission the dam.
TOP OF DAM	☒ 1. None ☐ 11. Cracks ☐ 2. Trees ☐ 12. Spalling ☐ 3. High bushes ☐ 13. Deteriorated joints ☐ 4. Burrows ☐ 14. Displaced joints ☐ 5. Ruts ☐ 15. Exposed reinforcement ☐ 6. Livestock damage ☐ 16. Other ☐ 7. Depressions ☐ 8. Uneven ☐ 9. Misalignment ☐ 10. Has overtopped	COVER: ☒ Vegetation ☒ Gravel ☐ Concrete ☐ Asphalt ☐ Other Well maintained gravel perimeter road.
DOWNSTREAM SLOPE / FACE	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Wetness	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other Overall vegetative slopes are in good shape.
TOE CONTACT	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Undermining ☐ 10. Wetness ☐ 20. Other	COVER: ☐ Vegetation ☐ Rip rap ☐ Concrete ☐ Other No visible weeps or seeps.

AREA	PROBLEMS	COMMENTS
ABUTMENT CONTACTS	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Undermining ☐ 10. Wetness ☐ 20. Other	COVER: ☐ Vegetation ☐ Rip rap ☐ Concrete ☐ Other Not applicable, no abutments, complete ring impoundment
PRINCIPAL SPILLWAY	☒ 1. None ☐ 11. Joint displacement ☐ 2. No trashguard ☐ 12. Undermined ☐ 3. Obstructed ☐ 13. Voids ☐ 4. Plugged ☐ 14. Erosion ☐ 5. Rusted ☐ 15. Holes ☐ 6. Damaged ☐ 16. Conduit collapsed ☐ 7. Gates leaking ☐ 17. Spalling ☐ 8. Joints leaking ☐ 18. Outlet undercutting ☐ 9. Cracks ☐ 19. Misalignment ☐ 10. Joint deterioration ☐ 20. Other	TYPE/SIZE: RISER / BARREL Pond drained, not in operation.
EMERGENCY SPILLWAY	☐ 1. None ☐ 11. Joint displacement ☐ 2. No ES ☐ 12. Undermining ☐ 3. Same as PS ☐ 13. Voids ☐ 4. Obstructed ☐ 14. Holes ☐ 5. Erosion ☐ 15. Exposed reinforcement ☐ 6. Displaced rip rap ☐ 16. Spalling ☐ 7. Spare rip rap ☐ 17. Outlet erosion ☐ 8. Joints leaking ☐ 18. Misalignment ☐ 9. Cracks ☐ 19. Inadequate capacity ☐ 10. Joint deterioration ☐ 20. Other	TYPE/SIZE: NONE
DRAINS / OTHER OUTLETS	☒ 1. None ☐ 2. No bottom drain ☐ 3. Bottom drain inoperable ☐ 4. Subsurface drain dry ☐ 5. Subsurface drain muddy flow ☐ 6. Subsurface drain obstructed ☐ 7. No animal guard ☐ 8. Other	TYPE: BOTTOM DRAIN AT OUTLET.

SKETCHES/COMMENTS

DAM SAFETY INSPECTION REPORT

NAME SUTTON STEAM PLANT 1972 COOLING POND		COUNTY NEW HAMPSHIRE	NO. 003	INSPECTED BY SAMS/CONWAY/LAMBE	DATE 2/20/2014
OWNER DUKE ENERGY CAROLINAS ATTN: TIM RUSSELL		ADDRESS P.O. Box 1006, CHARLOTTE, NC 28201-0006			
TYPE DAM ☐ Concrete gravity ☐ Concrete arch ☐ Other ☒ Embankment ☐ Concrete buttress ☐ Stone masonry		TYPE INSPECTION ☐ Initial ☐ Followup ☒ Periodic ☐ Other		SITE CONDITIONS ☒ Dry ☐ Snowcover ☐ Wet ☐ Other	
HAZARD DESCRIPTION NOT ON INVENTORY AS OF HB 119				HAZARD CLASS ☐ Low (A) ☐ Intermediate (B) ☐ High (C)	
REMARKS This inspection was cursory, but no concerns were noted. Existing wetland made close scrutiny of the dam too impractical.		ACTION ☐ None ☒ Maintenance ☐ Monitoring ☐ Minor repair ☐ Engineering		RECOMMENDATIONS ☒ Inspection letter ☐ Deficiency letter ☐ RE notice ☐ Engineering study ☐ Inspection by RE ☐ Inspection by DSE ☐ Dam safety order ☐ Enforcement ☐ Periodic reinspection ☐ Other reinspection	
AREA	PROBLEMS	COMMENTS			
UPSTREAM SLOPE / FACE	☒ 1. None ☐ 11. Displaced rip rap ☐ 2. Trees ☐ 12. Cracks ☐ 3. High bushes ☐ 13. Undermining ☐ 4. Burrows ☐ 14. Holes ☐ 5. Wave erosion ☐ 15. Spelling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Sparse rip rap	COVER: ☐ Vegetation ☐ Rip rap ☒ Concrete ☒ Asphalt ☐ Other Stepped concrete covered with Asphalt to the water's edge.			
	☒ 1. None ☐ 11. Cracks ☐ 2. Trees ☐ 12. Spelling ☐ 3. High bushes ☐ 13. Deteriorated joints ☐ 4. Burrows ☐ 14. Displaced joints ☐ 5. Ruts ☐ 15. Exposed reinforcement ☐ 6. Livestock damage ☐ 16. Other ☐ 7. Depressions ☐ 8. Uneven ☐ 9. Misalignment ☐ 10. Has overtopped	COVER: ☐ Vegetation ☐ Gravel ☒ Concrete ☒ Asphalt ☐ Other The dam top is a paved access road.			
DOWNSTREAM SLOPE / FACE	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spelling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Wetness	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other Maintenance on the dam face is in progress.			
	☐ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spelling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Undermining ☐ 10. Wetness ☐ 20. Other	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other Most of the dam toe is wetland and standing water making determinations of weeps and seeps difficult. No obvious problems were observed.			
TOE CONTACT					

AREA	PROBLEMS	COMMENTS
ABUTMENT CONTACTS	☒ 1. None ☐ 11. Seepage ☐ 2. Trees ☐ 12. Bolls ☐ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Undermining ☐ 10. Wetness ☐ 20. Other	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other The dam transitions into natural terrain over a long distance.
PRINCIPAL SPILLWAY	☒ 1. None ☐ 11. Joint displacement ☐ 2. No trashguard ☐ 12. Undermined ☐ 3. Obstructed ☐ 13. Voids ☐ 4. Plugged ☐ 14. Erosion ☐ 5. Rusted ☐ 15. Holes ☐ 6. Damaged ☐ 16. Conduit collapsed ☐ 7. Gates leaking ☐ 17. Spalling ☐ 8. Joints leaking ☐ 18. Outlet undercutting ☐ 9. Cracks ☐ 19. Misalignment ☐ 10. Joint deterioration ☐ 20. Other	TYPE/SIZE: SPILLWAY & WEIR
EMERGENCY SPILLWAY	☐ 1. None ☐ 11. Joint displacement ☐ 2. No ES ☐ 12. Undermining ☐ 3. Same as PS ☐ 13. Voids ☐ 4. Obstructed ☐ 14. Holes ☐ 5. Erosion ☐ 15. Exposed reinforcement ☐ 6. Displaced rip rap ☐ 16. Spalling ☐ 7. Sparse rip rap ☐ 17. Outlet erosion ☐ 8. Joints leaking ☐ 18. Misalignment ☐ 9. Cracks ☐ 19. Inadequate capacity ☐ 10. Joint deterioration ☐ 20. Other	TYPE/SIZE: NONE (PRIMARY SPILLWAY ACTS AS ONE)
DRAINS / OTHER OUTLETS	☐ 1. None ☐ 2. No bottom drain ☐ 3. Bottom drain inoperable ☐ 4. Subsurface drain dry ☐ 5. Subsurface drain muddy flow ☐ 6. Subsurface drain obstructed ☐ 7. No animal guard ☐ 8. Other	TYPE: NONE The elevation difference between the lake and the receiving Cape Fear River precludes it.
SKETCHES/COMMENTS		