

## CCNPP3COLA PEmails

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**Sent:** Thursday, December 31, 2009 1:32 PM  
**To:** Chokshi, Nilesh; Quinn, Laura  
**Cc:** Gibson, Gregory T  
**Subject:** UniStar UN#09-530 Summary of Phase I vs Phase II  
**Attachments:** UN09-530 Summary Phase I vs Phase II.pdf

Good afternoon,

Per an NRC request on December 30, 2009 please find attached UniStar Nuclear Energy letter UN#09-530, "Summary - Refinements between the Phase I Mitigation Plan and the Conceptual Phase II Nontidal Wetland and Stream Mitigation Plan for Calvert Cliffs Nuclear Power Plant, Unit 3."

Thank you,

*Melanie Frailer*

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10 CFR 50.4

December 31, 2009

UN#09-530

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016  
Calvert Cliffs Nuclear Power Plant, Unit 3  
Summary – Refinements between the Phase I Mitigation Plan and the  
Conceptual Phase II Nontidal Wetland and Stream Mitigation Plan for Calvert  
Cliffs Nuclear Power Plant, Unit 3

References: 1) Greg Gibson (UniStar Nuclear Energy) to NRC Document Control Desk, letter  
UN#09-268, "Response to Request for Phase I Compensatory Mitigation Plan,"  
dated June 5, 2009.

2) Greg Gibson (UniStar Nuclear Energy) to Amanda Sigillito (Maryland  
Department of the Environment), letter UN#09-503, "Conceptual Phase II Non-  
Tidal Wetland and Stream Mitigation Plan for Calvert Cliffs Nuclear Power Plant,  
Unit 3," dated December 8, 2009

This letter responds to an NRC request on December 30, 2009 to provide a summary of the differences ("deltas") between the Phase I Mitigation plan identified in Reference 1 and the updated Conceptual Phase II Plan identified in Reference 2.

The enclosures provided with this letter contain summaries of (1) the difference between the Phase I and Phase II plan; (2) the Phase I plan; and (3) Phase II plan.

There are no regulatory commitments identified in this letter. This letter does not contain any proprietary or sensitive information.

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Dimitri Lutchenkov at (410) 470-5524.

*I declare under penalty of perjury that the foregoing is true and correct.*

Executed on December 31, 2009



Greg Gibson

- Enclosures:
- 1) Summary – Refinements between the Phase I Mitigation Plan and the Conceptual Phase II Nontidal Wetland and Stream Mitigation Plan, Calvert Cliffs Nuclear Power Plant, Unit 3, December 31, 2009
  - 2) Summary of Phase I Compensatory Mitigation Plan for Non-Tidal Wetland and Stream Impacts Associated with Calvert Cliffs Unit 3
  - 3) Summary – Conceptual Phase II Nontidal Wetland and Stream Mitigation Plan, Calvert Cliffs Nuclear Power Plant, Unit 3, December 2009
- cc:
- Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
  - Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
  - Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application (w/o enclosure)
  - Loren Plisco, Deputy Regional Administrator, NRC Region II (w/o enclosure)
  - Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
  - U.S. NRC Region I Office
  - Susan Gray – Power Plant Research Program

Enclosure 1  
UN#09-530

**Enclosure 1**

**Summary – Refinements between the Phase I Mitigation Plan and the Conceptual Phase II  
Nontidal Wetland and Stream Mitigation Plan, Calvert Cliffs Nuclear Power Plant, Unit 3,  
December 31, 2009**



**Summary – Refinements between the Phase I Mitigation Plan and the Conceptual  
Phase II Nontidal Wetland and Stream Mitigation Plan  
Calvert Cliffs Nuclear Power Plant, Unit 3  
December 31, 2009**

The Phase I Mitigation Plan was approved by the U.S. Army Corps of Engineers (USACE) on July 30, 2009 and the Maryland Department of the Environment (MDE) on March 30, 2009. The overall goal of the Conceptual Phase II Mitigation Plan is onsite, in-kind mitigation for the replacement of functions and values lost due to the proposed site development. A brief description of the major revisions between the Phase I and Phase II Mitigation plans are described below (**Bold items indicate the location where these refinements can be found in the Conceptual Phase II Mitigation Plan**).

- Anticipated temporary impacts to wetlands and stream channels during the mitigation construction activities are included in the Conceptual Phase II Mitigation Plan (**Last paragraph Section 3.2**). In addition to the permanent impacts associated with the site development, the mitigation activities are anticipated to temporarily impact no more than 1.75 acres of wetlands and 590 linear feet of stream channels. These impacts associated with the mitigation activity are temporary and will be removed upon completion of the mitigation construction. The anticipated temporary impacts are proposed for construction access (timber mats), temporary crossings (temporary pipes, pump-arounds, etc.), and other activities associated with ongoing construction activities (vegetation removal, minor grading, etc.).
- Based on comments received by MDE on December 2, 2009, it has been determined that forested wetland enhancement will yield mitigation credits at a 4:1 ratio. This determination of the 4:1 credit ratio was established after the review of the Conceptual Phase II Mitigation Plan by the agencies. The change from the 3:1 credit ratio proposed in the Phase I Mitigation Plan will be addressed in the next design submittal. This revision was captured in the **Conceptual Phase II Mitigation Summary dated December 15, 2009** and will not alter the proposed mitigation design moving forward.
- Stream mitigation practices proposed for the Conceptual Phase II Mitigation Plan include preservation and restoration. Enhancement strategies proposed in the Phase I Mitigation Plan were refined to be proposed in the Conceptual Phase II Mitigation Plan as coupled with restoration practices onsite and therefore, were not counted as standalone practices. Enhancement practices include the addition of vegetation to floodplain and riparian areas, as well as invasive species removal and other management practices (**Section 4.2**).

- The Conceptual Phase II Mitigation Plan proposes to obtain stream mitigation credit for stream preservation areas as discussed with the USACE during a field review meeting held on November 16, 2009 (**Section 4.2**).
- During the development of the Conceptual Phase II Mitigation Plan it was determined that the potential exists to obtain more mitigation credits on-site than are required for the proposed impacts. UniStar Nuclear Energy has elected to include the additional mitigation areas into this Conceptual Phase II Mitigation Plan in an effort to create a reserve of mitigation credits for potential future use for impacts that may arise for future projects and maintenance activities on-site (**Section 4.3**).

After review of existing data and field reconnaissance conducted by EA, some revisions to the locations for wetland and stream mitigation have been proposed. In addition to relocating the mitigation areas, the sizes of many of these areas were adjusted. The following is a list of refinements to the mitigation areas proposed in the Conceptual Phase II Mitigation Plan (**Sections 7.1 and 7.2**).

- WC-1: removed from the Camp Conoy area and proposed as a head water wetland system at the head of Woodland Branch, near the open field north of the old visitor center.
- WC-2: the configuration and layout were revised to utilize existing topography features, but the general concept remains the same.
- WC-3: added to Phase II to include additional forested wetland creation.
- WE-2: generally remains the same, but the limit of work was revised to include all areas of phragmites observed during field efforts.
- WE-3 and WC-4: added to the Conceptual Phase II Mitigation Plan to include the creation and enhancement of forested wetlands in the location of the old open water ponds located below Camp Conoy Pond.
- WE-4, WC-5, and WC-6: added to the Conceptual Phase II Mitigation Plan to include the creation and enhancement of forested wetlands along Johns Creek, in the area of two proposed stormwater management (SWM) outfalls.
- The following tables are a summary of wetland mitigation areas proposed in the Phase I Mitigation Plan (Table 1) and the Conceptual Phase II Mitigation Plan (Table 2).

**Table 1**  
**Summary of Wetland Mitigation Work Plan (Phase I)**

	Mitigation Area	Type	Acreage	Ratio	Credit
<b>Creation</b>	WC-1	Forest	4.6	2:1	2.30
	WC-2	Forest	7.2	2:1	3.60
	WC-2	Emergent	1.3	1:1	1.30
	WC-2	Open water	0.9	**	**
<b>Enhancement</b>	WE-1	Forest	2.4	3:1	0.80
	WE-2	Forest	15.7	3:1	5.23
<b>Total wetland credit =</b>					<b>13.23</b>

\*\* Open water creation is proposed to replace lost functions of existing impacts. However it is understood that no credit for wetland acreage is credited for open water creation areas.

**Table 2**  
**Summary of Wetland Mitigation Work Plan (Phase II)**

	Mitigation Area	Type	Acreage	Ratio	Credit
<b>Creation</b>	WC-1	Forest	2.2	2:1	1.10
	WC-2	Forest	7.22	2:1	3.61
	WC-2	Emergent	1.61	1:1	1.61
	WC-2	Open water	0.9	**	**
	WC-3	Forest	0.5	2:1	0.25
	WC-4	Forest	1.33	2:1	0.67
	WC-5	Forest	0.72	2:1	0.36
	WC-6	Forest	0.4	2:1	0.20
<b>Enhancement</b>	WE-1	Forest	2.53	4:1	0.63
	WE-2	Forest	15.89	4:1	3.97
	WE-3	Emergent	1.08	4:1	0.27
	WE-4	Forest	0.09	4:1	0.02
<b>Total wetland credit =</b>					<b>12.69</b>

\*\* Open water creation is proposed to replace lost functions of existing impacts. However it is understood that no credit for wetland acreage is credited for open water creation areas.



- Stream mitigation areas generally remain the same; however refinements to the length of mitigation activity for each stream reach were adjusted based on field data collected. The following table depicts the areas of stream mitigation proposed in the Conceptual Phase II Mitigation Plan (**Section 7.2**).

**Tables 3a & 3b  
Detailed Stream Mitigation by Reach**

**Table 3a – Phase I**

	Mitigation Area	L.F.
<b>Restoration</b>	SR-1	2114
	SR-2	1534
	SR-3	1237
	SR-4	951
	SR-5	447
	<b>Total Restoration =</b>	<b>6283</b>
<b>Enhancement</b>	SE-1	1160
	SE-2	655
	SE-3	507
	SE-4	920
	SE-5	904
<b>Total Enhancement =</b>	<b>4146</b>	
<b>Total Stream Mitigation =</b>		<b>10429</b>

**Table 3a – Phase II**

	Mitigation Area	L.F.
<b>Restoration</b>	SR-1	2156
	SE-1	1218
	SE-2	900
	SR-2/SE-3	1671
	SE-4	976
	SR-4	1200
	SR/SE-5	1567
	<b>Total Restoration =</b>	<b>9688</b>
<b>Preservation</b>	SE-1	182
	SE-2	1079
	SR-2	477
	SR-3	800
<b>Total Preservation =</b>		<b>2538</b>
<b>Total Stream Mitigation =</b>		<b>12226</b>

- Vegetation proposed for planting within the mitigation areas was refined in the Conceptual Phase II Mitigation Plan to include species specifically for each mitigation area (**Vegetative Species Planting List**).
- The Conceptual Phase II Mitigation Plan includes a discussion on financial assurance (**Section 11.0**).

The most significant change between the Phase I and Conceptual Phase II Mitigation Plan is the amount of mitigation being proposed for the project. The tables on page 5 of this summary provide a comparison of wetland and stream mitigation credits proposed between the Phase I and II Mitigation Plans. The Conceptual Phase II Mitigation Plan still exceeds the required mitigation for the impacts to wetland and streams as proposed for the development of CCNPP Unit 3.

**Table 4a  
Phase I Wetland Mitigation Credits**

	Impacts	Mitigation	Credit ratio	Credit	
Forested wetlands	7.88	create 11.8	2:1	5.9	11.9
		enhance 18.1	3:1	6	
Emergent Wetlands	1.21	1.3	1:1	1.3	
Open Water	2.63	.9	**	**	
<b>Total</b>	<b>11.72</b>			<b>13.2</b>	

**Table 4b  
Phase II Wetland Mitigation Credits**

	Impacts	Mitigation	Credit ratio	Credit	
Forested wetlands	7.88	create 12.37	2:1	6.18	11.08
		enhance 19.59	4:1	4.90	
Emergent Wetlands	1.21	1.61	1:1	1.61	
Open Water	2.63	.9	**	**	
<b>Total</b>	<b>11.72</b>			<b>12.69</b>	

**Table 5a  
Phase I Stream Mitigation Credits**

Mitigation Type	Mitigation Amount (linear feet)	Mitigation Ratio	Mitigation Credit (linear feet)
Stream Restoration	6,283	1:1	6,283
Stream Enhancement	4,146	1:1	4,146
<b>Total Credit Amount = 10,429 linear feet</b>			

**Table 5b  
Phase II Stream Mitigation Credits**

Mitigation Type	Mitigation Amount (linear feet)	Mitigation Ratio	Mitigation Credit (linear feet)
Stream Restoration	9,688	1:1	9,688
Stream Preservation	2,538	1:1	2,538
<b>Total Credit Amount = 12,226 linear feet</b>			

Enclosure 2  
UN#09-530

**Enclosure 2**

**Summary of Phase I Compensatory Mitigation Plan for Non-Tidal Wetland and Stream  
Impacts Associated with Calvert Cliffs Unit 3**

## **SUMMARY OF PHASE I COMPENSATORY MITIGATION PLAN FOR NON-TIDAL WETLAND AND STREAM IMPACTS ASSOCIATED WITH CALVERT CLIFFS UNIT 3**

The proposed compensatory “in kind” mitigation for the scheduled impacts to wetlands and surface waters of the CCNPP Unit 3 project is intended to meet the mitigation requirements of the USACE Baltimore District, and includes the creation and enhancement of wetlands to conditions more suitable for use by wildlife species native to the region. Appropriate and practicable steps to minimize adverse impacts were conducted through analysis of multiple site development plan concepts. The mitigation areas were chosen following a mitigation site selection process. Four general mitigation strategies were initially identified: 1) on site and in kind; 2) on site and not in kind; 3) off site and in kind; and 4) off site and not in kind. The mitigation strategy chosen for the CCNPP Unit 3 project provides for on-site and in-kind mitigation, as this strategy, or mitigation action, would replace nontidal wetland acreage and functional losses more effectively than the other three strategies. The project was designed to adhere to the Code of Maryland Regulations (COMAR), Subsection 26.23.04.03 (COMAR, 2005).

### **WETLAND MITIGATION**

Compensatory mitigation for unavoidable impacts to approximately 11.72 acres of jurisdictional, nontidal forested wetlands, emergent (herbaceous) wetlands, and surface waters (including Camp Conoy Fishing Pond) (USACE and/or MDE jurisdictional) and 8,350 linear feet of stream will be required to satisfy Clean Water Act Section 404 standards and obtain regulatory authorization for CCNPP Unit 3 construction. After field reconnaissance and site walk-through of the CCNPP property in 2007 and 2008, including the CCNPP Unit 3 project area, specific locations were identified as having ecological lift potential for wetland enhancement, or as being suitable for the creation of wetland communities from upland landscape.

Among the group of wetlands that will not be impacted by development of the CCNPP Unit 3 facility, specific sites were selected that would benefit from mitigation providing for an increase in wetland values and functions. The wetland mitigation actions will include creation and enhancement within the Lake Davies Disposal Area (former sediment settling basins), the portion of Johns Creek to the south of the sediment basins, and an upland grassed field at the Camp Conoy area (wetland creation site). *Phragmites* (*Phragmites australis*) is found throughout the entire site, especially within the wetland sites proposed for mitigation. By eradicating *Phragmites*, the wetlands infested with this invasive nuisance species will have uplift for wildlife habitat and other important wetland functions. Increased diversification of native plant species will also be provided by planting these mitigation sites with native bottomland hardwood tree species and/or shrubs. Finally, by removing the *Phragmites* from the degraded wetlands, a more normal hydrologic regime will be established.

The wetland mitigation component of the compensatory mitigation plan includes the following proposed activities:

- The creation of approximately 4.6 acres of forested wetland habitat within the Camp Conoy area that lies within the CBCA (Mitigation Site WC-1);
- The eradication of invasive vegetation (*Phragmites*) and creation of approximately 0.9 acres of open water pond habitat, approximately 7.2 acres of bottomland hardwood forest, and approximately 1.3 acres of emergent wetland habitat within the middle manmade, abandoned, sediment basin of the Lake Davies Disposal Area (Mitigation Site WC-2);
- The eradication of invasive vegetation (*Phragmites*) and planting of approximately 2.4 acres of bottomland hardwood forest at a smaller manmade, abandoned, sediment basin within the Lake Davies Disposal Area (Mitigation Site WE-1);

- The eradication of invasive vegetation (*Phragmites*) and enhancement of approximately 15.7 acres of bottomland hardwood forested wetlands abutting a portion of Johns Creek and a linear drainageway extension occurring to the south of the Lake Davies Disposal Area (Mitigation Site WE-2);
- The use of soil material from impacted on-site wetland areas that do not contain phragmites as a supplemental growth medium within wetland creation sites (Mitigation Sites WC-1 and WC-2) (See attached Figure).

Following the on-site wetland creation and wetland enhancement activities for the CCNPP Unit 3 project, a five-year annual monitoring program will be implemented in accordance with the requirements of the *Mitigation and Monitoring Guidelines* (USACE) and the protocols in the *Maryland Compensatory Mitigation Guidance* (IMTF). Furthermore, the monitoring program will be conducted pursuant to the Maryland Department of the Environment, Water Management Administration (MDEWMA) mitigation monitoring guidelines and protocols.

Mitigation credit ratios for activities designed to replace impacted forested wetlands functions and values are 2:1 for creation and 3:1 for enhancement. The use of a 3:1 mitigation credit ratio for enhancement is based on controlling *Phragmites* coupled with the planting of native bottomland hardwood species. The credit ratio for the mitigation activity to replace impacted emergent wetlands functions and values is 1:1 for creation.

### **STREAM MITIGATION**

The CCNPP Unit 3 site contains five proposed stream restoration reaches and five proposed stream enhancement reaches (perennial and intermittent) on site. The stream reaches proposed for mitigation activities are primarily contained within the Woodland Branch and Johns Creek watershed, and secondarily in the Camp Conoy area that lies within the CBCA.

The stream mitigation component of the compensatory mitigation plan includes the following proposed activities:

- The restoration of stream functions within the on-site portion of upper Woodland Branch (SR-2 – approximately 1,543 linear feet) and lower Woodland Branch (SR-1 – approximately 2,114 linear feet);
- The enhancement of stream functions within the middle reach of Woodland Branch (SE-2 – approximately 655 linear feet) and two un-named tributaries (SE-1 – approximately 1,160 linear feet, and SE-3 – approximately 507 linear feet);
- The restoration of stream functions within an un-named tributary to (SR-5 – approximately 447 linear feet) and a portion of the mainstem of Johns Creek (SR-4 – approximately 951 linear feet);
- The enhancement of stream functions within an additional un-named tributary to Johns Creek (SE-5 – approximately 904 linear feet);
- The restoration of stream functions within an un-named tributary to the Chesapeake Bay in the Camp Conoy area (SR-3 – approximately 1,237 linear feet); and

The enhancement of stream functions within un-named tributary to the Chesapeake Bay in the Camp Conoy area (SE-4 – approximately 920 linear feet) (See attached Figure).

The proposed stream restoration and stream enhancement measures are intended to compensate for the unavoidable, direct loss of physical, biological and/or riparian function of impacted streams. Stream function restoration will take advantage of opportunities to reconnect channels to their historic flow paths and restore active connection to wooded floodplains. Areas where degraded channels are abandoned will be designed to function as pockets of seasonal wetlands, ephemeral ponds, and oxbow lakes in the riparian zone. Techniques such as instream habitat structures (cover logs, lateral/longitudinal diversity and root wads), bank stabilization (vegetative and bioengineering solutions), and riparian wetland enhancements (hydraulic and vegetative) may be employed where appropriate to restore the streams functions. Stream enhancement activities, intended to improve existing stream physical and ecological

functions within the channel's current flow path include bank grading operations and floodplain creation at lower elevations, bank stabilization treatments, aquatic habitat improvements, and native riparian vegetation plantings.

The stream restoration and enhancement mitigation opportunities, combined with the proposed stormwater management plan, will offset losses to watershed functions by increasing the ability to provide floodwater storage, naturally recharge local aquifers, improve water quality, and maintain stream and riparian functions that support corresponding ecology.

The amount of stream mitigation proposed is based on a mitigation ratio of 1:1 for stream restoration and 2:1 for stream enhancement impacts.

The above mitigation projects will be monitored for a 5-year period and shall be protected in perpetuity through establishment of a legally binding protection mechanism.

Enclosure 3  
UN#09-530

**Enclosure 3**

**Summary – Conceptual Phase II Nontidal Wetland and Stream Mitigation Plan, Calvert  
Cliffs Nuclear Power Plant, Unit 3, December 2009**



**Summary – Conceptual Phase II Nontidal Wetland and Stream Mitigation Plan  
Calvert Cliffs Nuclear Power Plant, Unit 3  
December 2009**

The Conceptual Phase II Nontidal Wetland and Stream Mitigation Plan for the Calvert Cliffs Nuclear Power Plant, Unit 3 (CCNPP) has been prepared in accordance with the Final Compensatory Mitigation Rule issued by the USACE and the Environmental Protection Agency (EPA), published April 10, 2008. The Conceptual Phase II Mitigation Plan has been refined from the Phase I Mitigation Plan (MACTEC, 2009) which was approved by the USACE on July 30, 2009 and the Maryland Department of the Environment (MDE) on March 30, 2009.

The limit of disturbance for the construction of the CCNPP Unit 3 facility has been designed to avoid and minimize impacts to natural resources to the greatest extent practical while still meeting the project needs. However, the construction of the project would not be possible without permanently impacting Waters of the United States, including federally regulated wetlands and streams. Therefore, the mitigation strategy chosen for the CCNPP Unit 3 project is onsite, in-kind mitigation.

The previously submitted permit application for the project proposes no more than 8,350 linear feet of stream impacts and impacts to no more than 11.72 acres of jurisdictional wetlands and open water ponds. A comprehensive description of the impact sites has been provided in the previously submitted wetland delineation report dated May 2007 and the Joint Permit Application (JPA) submitted on May 16, 2008. The overall goal of the Conceptual Phase II Mitigation Plan is to replace functions and values lost due to proposed development.

Nontidal Wetland Mitigation

To meet a “no net loss” goal of nontidal wetland mitigation, the nontidal wetland impacts caused by the construction of the proposed project must be mitigated by creating, restoring, or enhancing an equal area of nontidal wetlands. The Conceptual Phase II Mitigation Plan for the Calvert Cliffs Unit 3 project includes the creation of new wetland areas onsite as well as enhancing existing wetlands. The wetland creation areas will include creation of both forested and emergent wetlands. A portion of open water creation is also proposed in order to replace functions and values lost from the impacted areas, as well as create a wetland mosaic within the mitigation area.

The following is a list of the proposed wetland creation and wetland enhancement areas proposed to meet the mitigation requirements.

- WC-1 – Creation of an approximate 2.20-acre forested head water wetland system at the head of Woodland Branch, near the open field north of the old visitor’s center.
- WC-2 – The creation of approximately 1.61 acres of emergent wetland and approximately 7.22 acres of forested wetland within the middle man-made sediment basin of the Lake Davies



Dredged Material Disposal Area. In addition, this design will include the creation of approximately 0.90 acres of open water habitat.

- WE-1 – The enhancement of approximately 2.53 acres of existing wetland located within a smaller man-made, abandoned, sediment basin within the Lake Davies Area.
- WC-3 – The creation of two small forested wetland areas (0.5 acres) adjacent to WE-1.
- WE-2 – The enhancement of approximately 15.89 acres of existing wetlands located along portions of Johns Creek and a linear drainage way extension occurring to the south of the Lake Davies Area.
- WE-3 and WC-4 – The creation of approximately 1.33 acres of forested wetland and the enhancement of approximately 1.08 acres of forested wetlands in the location of the old open water ponds situated below Camp Conoy Pond.
- WE-4, WC-5, and WC-6 – The creation of approximately 1.12 acres and enhancement of approximately 0.09 acres of forested wetlands along Johns Creek, in the area of two proposed stormwater management (SWM) outfalls.

The following mitigation credit ratios are proposed for the Conceptual Phase II Mitigation Plan:

- Forested Wetland Creation = 2:1 credit ratio
- Wetland Enhancement = 4:1 credit ratio
- Emergent Wetland Creation = 1:1 credit ratio

Wetland enhancement will consist of the removal and control of common reed (*Phragmites australis*, commonly referred to as Phragmites), along with planting of native bottomland hardwood species within existing wetlands. Based on comments received by MDE on December 2, 2009, it has been determined that this technique will yield mitigation credits at a 4:1 ratio. Please note that this determination of the 4:1 credit ratio was established after the submittal of the Conceptual Phase II Mitigation Plan to the agencies for review, and this change from the 3:1 credit ratio proposed in the Phase I Mitigation Plan will be addressed in the next level of the design plans. This revision to the mitigation credit ratio will not alter the proposed mitigation design.

**Wetland Mitigation Credit Summary**

Mitigation Type	Mitigation Amount (acres)	Mitigation Ratio	Mitigation Credit (acres)
Forested Creation	12.37	2:1	6.19
Emergent Creation	1.61	1:1	1.61
Forested Enhancement	19.59	4:1	4.90
<b>Total Credit Amount = 12.70 acres</b>			

The proposed wetland creation and enhancement areas will be planted with native hydrophytic vegetation after excavation for the establishment of bottom elevations. The plant material selected to be installed will predominantly be representative of the species composition of the wetlands within the CCNPP property and native to the region. In addition, the plant material will include species that have been identified as suitable for installation on wetland mitigation projects by the Chesapeake Bay Critical Area Commission.

Dense stands of Phragmites have been observed in the sediment basins of the Lake Davies Dredged Material Disposal Area, Johns Creek, and other forested wetland areas on the CCNPP Unit 3 site. The control of Phragmites through herbicide application, mowing practices, and flooding of the sediment basins is proposed under the compensatory mitigation plan for the wetland creation and enhancement areas presently containing the invasive species. Reducing Phragmites populations will replace the existing impacted plant community with a more diverse community through the planting and natural regeneration of more desirable native plant species.

Stream Mitigation

Stream mitigation credits will be achieved through restoration, enhancement, and preservation techniques with the goal of protecting and improving aquatic resource functions and returning natural/historic functions to degraded aquatic resources. The Conceptual Phase II Mitigation Plan includes 9,688 linear feet of stream restoration and 2,538 linear feet of stream preservation in order to obtain the required stream mitigation credits. Furthermore, the Conceptual Phase II Mitigation plan is also designed to reduce secondary impacts from the proposed development and promote habitat and the establishment of American eel populations on-site.

**Stream Mitigation Credit Summary**

Mitigation Type	Mitigation Amount (linear feet)	Mitigation Ratio	Mitigation Credit (linear feet)
Stream Restoration	9,688	1:1	9,688
Stream Preservation	2,538	1:1	2,538
<b>Total Credit Amount = 12,226 linear feet</b>			

Stream mitigation work is designed to meet the goals and objectives of this Conceptual Phase II Mitigation Plan in accordance with the guidance of regulating entities. In-channel work will be performed in intermittent channels during periods of little or no base flow, and work will be performed in accordance with an approved Erosion and Sediment Control Plan. The Conceptual Phase II Mitigation Plan proposes to utilize restoration and preservation techniques to meet the mitigation objectives and goals. Restoration practices throughout the project include Priority 1 restoration by introducing flow into abandoned floodplain channels, planting of riparian wetland species throughout the stream reaches, and the placement of log and root structures in an effort to raise groundwater elevations in some reaches and

reduce the entrenchment of existing reaches of stream. A similar technique to Regenerative Stormwater Conveyance (RSC) will be utilized in some stream restoration reaches. RSC is an infiltration practice that uses a series of open channel, sand seepage step pools and riffle weirs, through which stormwater flows are conveyed. The purpose of these systems is to reduce the commonly seen erosion in ordinary stormwater conveyances and convert stormwater to groundwater, mitigating nutrient pollution and thermal impacts to the receiving waters. This approach is similar to a Priority 1 stream restoration, which replaces an incised channel with a re-dimensioned channel at a higher elevation. Priority 1 restoration techniques are employed in this restoration plan, usually in re-establishing flow in an abandoned floodplain channel which meets the pattern and dimension criteria appropriate for the reach.

The Conceptual Phase II Mitigation Plan includes the creation and enhancement of nontidal wetlands, as well as the restoration, enhancement, and preservation of nontidal stream channels. The compensatory mitigation is proposed to be onsite and shall be protected in perpetuity through the use of a Conservation Easement or a Declaration of Restrictions.

After the onsite wetland creation and enhancement activities are complete, a 5-year annual monitoring program will be implemented in accordance with the *Maryland Compensatory Mitigation Guidance* (IMTF, 1994), and the guidance provided in RGL No. 08-03 (USACE, October 2008). Performance standards for the wetland mitigation monitoring program will be conducted in accordance with the MDE guidelines and with consideration of other permitting agencies as mandated by the State of Maryland.

Monitoring of the stream channels proposed within the mitigation plan will be performed in an effort to compare post-construction conditions to pre-construction baseline data, for the purpose of assessing the success of the mitigation in relation to the mitigation goals, and determine the degree of success the mitigation project has achieved in meeting the objectives of providing proper channel function and increased habitat quality. Monitoring data based on success criteria established in the Monitoring and Performance Plan will be gathered annually to document the success of the proposed mitigation. Monitoring reports will be submitted in accordance with the wetland mitigation monitoring requirements.

The Conceptual Phase II Mitigation Plan anticipates 12.70 acres of wetland credits and 12,226 linear feet of stream credits, creating a surplus of 0.98 acres of wetland credits and 3,876 linear feet of stream credits. UniStar Nuclear Energy has elected to include the additional mitigation areas into this Conceptual Phase II Mitigation Plan in an effort to create a reserve of mitigation credits for potential future use for impacts that may arise for future projects on-site.