

# A Sustainable Chesapeake

BETTER MODELS FOR CONSERVATION

*Edited by David G. Burke and Joel E. Dunn*

THE CONSERVATION FUND



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# A Residential Subdivision Designed for People and Wildlife

*Incorporating Wetlands Creation and Forest Protection on Cooke's Hope at Llandaff, Near Easton, Maryland*

This land development model remunerates the developer for significant conservation efforts and provides an alternative approach to “golf course” subdivisions for homeowners who want open spaces that feature wildlife refuges with wetlands, ponds, protected forests and waterfowl in abundance.

## CASE STUDY SUMMARY

Cooke's Hope at Llandaff (Llandaff) is a 284 acre development located just outside the town of Easton, on Maryland's Eastern Shore. Cooke's Hope, named for Major Miles Cooke who was granted the land by the Lord Baron of Baltimore in 1659, is a 26 lot subdivision of high quality, estate style housing developed by Trippes Creek LLC. Llandaff represents a smaller, rural residential component of the larger master planned community of Cooke's Hope. The parcel was originally a farm set on a bucolic peninsula alongside Peach Blossom Creek, a small tributary to the Chesapeake Bay.

The Llandaff development is truly unique to the Delmarva Peninsula because of its nature-based lot design, retention of forest buffers and creation of wildlife refuges throughout the community. Trippes Creek LLC designed the lots to blend with the natural landscape and lowered the housing density to 1 unit per 11 acres. They also protected or enhanced wildlife on over one-third

of the development —principally the endangered Delmarva fox squirrel (*Sciurus niger cinereus*) and numerous waterfowl species. Llandaff's thoughtful design provides current and future residents with a unique opportunity to live in a wildlife refuge with direct water quality benefits to Peach Blossom Creek.

Trippes Creek LLC has already recouped their capital and development costs, demonstrating the economic viability of this approach even in a difficult housing market. Typically, rural residential subdivisions on the Delmarva Peninsula are created from former agricultural lands and developers are rarely interested in restoring former

wetland and forest environments that were once a major part of the Eastern Shore landscape. Breaking free of this trend, Trippes Creek LLC's work at Llandaff is poised to make a



profit while achieving land and water conservation objectives that are important to conserving and restoring the Bay.

## RESOURCE MANAGEMENT CHALLENGE

Four major resource management challenges shaped Llandaff, including development restrictions, endangered wildlife habitat, nutrient runoff and the economics of housing developments.

First, approximately 41% of Llandaff is located within the development restricted zone of Maryland's Chesapeake Bay Critical Area—lying within 1,000 feet of the Bay's tidal waters. More than half of the restricted lands are located in the Resource Conservation Area designation and the remaining lands are in the Limited Development Area. The Resource Conservation Area designation allows for 1 unit per 20 acres while the Limited Development Area allows for the same housing density, character and permitted land uses as those allowed by local zoning regulations. In addition to density imposed restrictions, natural features like forestlands and a mandatory 100 foot buffer setback from tidal waters further constrained the physical layout of the site—necessitating a well thought out strategy to make the development aesthetically appealing and environmentally sound.

The second resource management challenge arose during the conservation assessment for the subdivision when it was discovered that the property contained habitat for the Delmarva fox squirrel, which is a federally listed endangered species. Larger and heavier than the Eastern gray squirrel (*Sciurus carolinensis*), the Delmarva fox squirrel is also slower moving and warier than it's cousin and is found principally on



*Habitat for the Delmarva fox squirrel (Sciurus niger cinereus), a federally listed endangered species, was found at Llandaff during the conservation assessment.*

the Eastern Shore of Maryland in portions of five counties. This remnant represents less than 10% of its apparent historical range. Delmarva fox squirrels were once found throughout the Delmarva Peninsula, southeastern Pennsylvania and southern New Jersey.<sup>1</sup> The forest habitat on the site was clearly a highly valued asset that would require careful management and protection.

The third resource management challenge was nutrient and sediment runoff from the property. The land had previously been heavily cultivated in a high and low till agricultural operation, which typically produces nutrient and sediment loads that must be carefully managed to minimize water quality impacts. Conversion of the property into a series of wildlife refuges and suburban housing provided a valuable opportunity to manage riparian zones to reduce pollution. Riparian zones are areas adjacent to streams, rivers or shorelines and between the aquatic and upland terrestrial habitats. Riparian areas generally contain a disproportionately high number of wildlife species and perform vital ecological functions,<sup>2</sup> such as slowing

the flow of stormwater runoff, filtering pollution, protecting stream banks, and moderating water temperature.<sup>3</sup> Aggressive riparian area management also provided an opportunity to address some of the growing concerns over additional pollution from new suburban development.<sup>4</sup>

The final and most critical challenge was framed by the economics of this particular land development scenario and the competitive nature of the local housing market. Trippes Creek LLC had to address a host of resource management challenges; set a realistic price point for the lots and homes; carry the upfront design, permitting, land and infrastructure improvement costs; and ensure the overall profitability of the development through future sales revenue. The Llandaff subdivision concept carried some risks in its novel approach and represented a marked change from the rest of the Cooke's Hope community. Llandaff offers only single family homes ranging in size from 2-5 acres to upwards of 48-58 acres for the refuge/open space lots. The Cooke's Hope community hosts a much broader range of home choices from single family estates, carriage

style townhomes, and cottages. Cooke's Hope focuses on the essence of traditional planned communities with historic streetscaping including brick sidewalks, period style street lighting, and tree lined streets. Llandaff is focused on the restoration and protection of the natural environment and the maintenance and enhancement of water quality—not typical concerns of the average home buyer.

### CONSERVATION VISION

The principals of Trippes Creek LLC wanted to create an alternative-style subdivision with lower densities, signature wildlife features and a layout that respected the natural constraints and opportunities inherent to the site. They knew their vision would require a significant transformation of the featureless agricultural tract to produce a landscape that wildlife enthusiasts and open space lovers would buy. They were confident in their knowledge of what could be done and factored in strategic partnerships with an experienced contractual team that specialized in wetland habitat creation.

A key element of the vision for this project was the lowering of the allowable dwelling density. The zoning allowed for a development potential of 136 units. This equates to an overall allowable density of 1 unit per 2 acres. To execute the vision called for by the principals, the conservation-oriented site plan would require a density reduction to 1 unit per 11 acres. The plan would effectively decrease the number

of units to less than 1/5 the size of what would be allowed under existing zoning provisions. Based on the experience gained from developing and marketing the first phases of the highly successful Cooke's Hope community, Trippes Creek LLC believed they could also market the new Llandaff home sites and signature refuge lots for a 30% premium over comparable subdivisions in the nearby Oxford area of Talbot County.

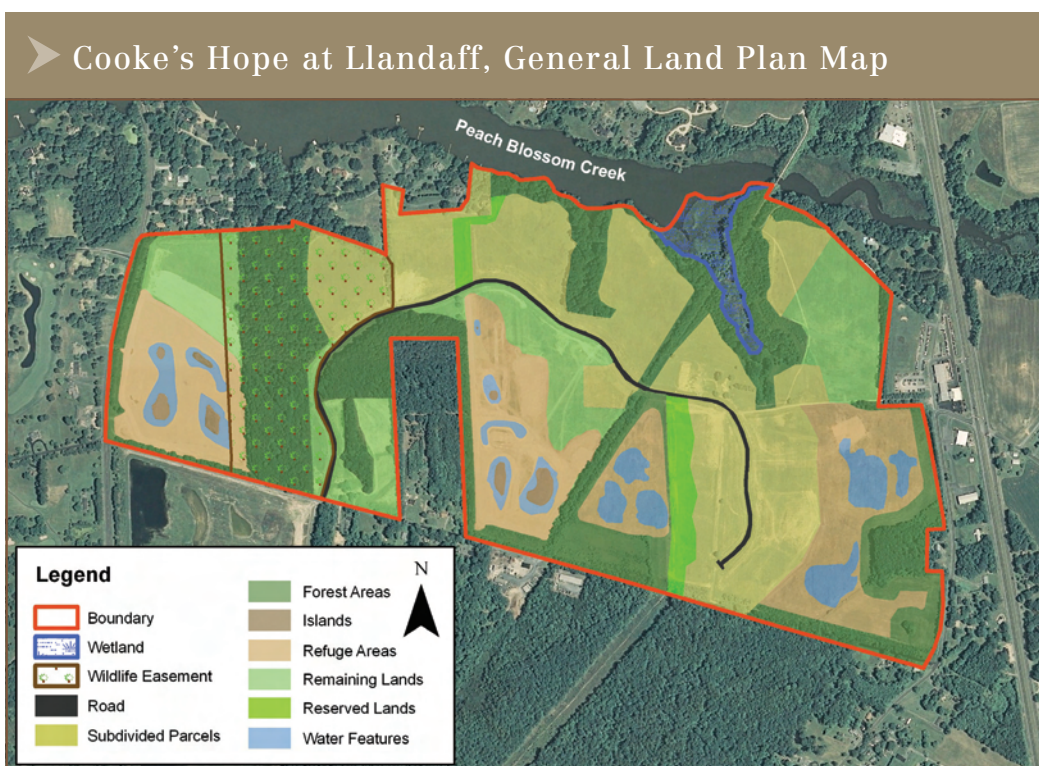
### IMPLEMENTATION RESOURCES

Llandaff is a privately financed endeavor that involved the purchase and conversion of an agricultural landscape to one with natural resource character that offered an attractive array of lot sizes, prices and open space amenities. Llandaff is composed of 26 lots, including 3 refuge and open space lots from 48-58 acres and 23 smaller lots from 2-5 acres, for a total of 220 acres. The lots range in price from \$310,000 to just under \$1 million (i.e. refuge lots), with an average price of \$514,000 per lot.

Trippes Creek LLC subcontracted the subdivision layout and engineering work to Lane Engineering LLC, a firm that performs civil engineering, land planning, and land surveying. Their work included the conservation assessment and general land plan. Trippes Creek LLC subcontracted the refuge construction, wetland creation and reforestation work to Conservation Development LLC, a firm that performs natural resource restoration, and Sweetbay Watershed Conservation, a general contractor that provides expertise in watershed restoration including planning and design, installation and post construction support. Finally, Trippes Creek LLC donated a permanent conservation easement on 32 acres to the Eastern Shore Land Conservancy, a nonprofit 501(c)(3) charitable corporation on Maryland's Eastern Shore, which enabled them to take a substantial tax deduction.

### CONSERVATION STRATEGY

When Trippes Creek LLC purchased the land, it consisted of 188 acres of



farmland and 32 acres of forest. The farmland was relatively flat with a limited diversity of wildlife species and ordinary landscape aesthetics. The conservation goals were to enhance water quality, protect existing and create additional wildlife habitat by redesigning portions of the landscape to increase the variability and diversity of plant communities and hydrological conditions. Llandaff set up a simple conservation strategy which integrated a conservation assessment and general land plan, wildlife refuge creation and a forest conservation easement.

**Conservation Assessment and Land Plan:** The development team did a thorough survey of existing wildlife features on the land and an evaluation of the soils, hydrology and elevation. They identified four locations that were best suited for the creation of wetlands and open water ponds for wildlife. This task involved consideration of several technical issues such as catchment area requirements and soil conditions needed to support wetlands.

Next, forested tracts on the property were delineated along with the most suitable locations for roads and

housing sites. A total of 26 lots were designated for homes, located primarily in the central portion of the property, which offered good access, a compact “footprint”, and a pleasant mix of viewscapes including agricultural lands, wetlands and forestland.

**Wildlife Refuge Creation:** Llandaff contains four wildlife refuges composed of forest, ponds and wetlands throughout the property. The refuges total approximately 68 acres of new habitat that serves local wildlife needs and offers migratory waterfowl an attractive resting site along the Atlantic Migratory Flyway. The refuges were carved out of the flat landscape using heavy duty equipment to shape deeper areas for permanent ponds; island features that offer a measure of isolation and protection for waterfowl; and shallow water environments that support both temporary and permanent wetland plant communities.

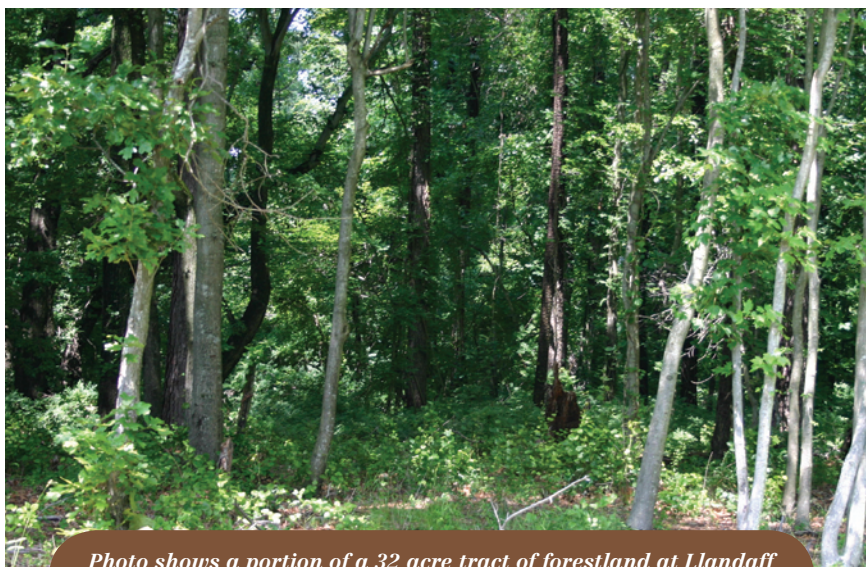
Approximately 75% of the graded areas were allowed to recolonize naturally and 25% were planted with a mix of herbaceous plants and shrubs native to the area and suited to various soil types and moisture regimes. About 4 acres of forest plantings

were also established. Natural buffer zones along Peach Blossom Creek were established that exceeded the 100’ Critical Areas requirement. The wetland and tree plantings had the added benefit of reducing nitrogen and phosphorous loading to Peach Blossom Creek and the Chesapeake Bay. Trails were developed for residents to traverse in and around the refuges for wildlife viewing and photography.

**Forest Conservation Easement:** Trippes Creek LLC knew they wanted to permanently conserve part of the landscape at Llandaff, so they contacted the Eastern Shore Land Conservancy early in the development proposal process and expressed an interest in a conservation easement. As assessments were completed on the property, Trippes Creek LLC determined that a 32 acre forested tract at Llandaff contained prime habitat for the endangered Delmarva Fox Squirrel. The US Fish and Wildlife Service required that reasonable and prudent measures be taken to protect the habitat; this included leaving nearly 14 acres in ungraded forestlands to minimize impacts to the squirrel. Trippes Creek LLC went above and beyond the regulations and donated a permanent conservation easement to the Conservancy on the entire 32 acres, preventing any future development of the critical habitat.

## RESULTS

Trippes Creek LLC conducted a thorough inventory of the natural resource and land characteristics at Llandaff and produced an environmentally sound general land plan for the property. After establishing 68 acres of wildlife refuges, including a 32 acre forest conservation easement and 13 water features, they established a housing density of less than 1/5 the allowable amount. Finally, they reforested four acres of former



*Photo shows a portion of a 32 acre tract of forestland at Llandaff which is permanently protected with a conservation easement.*



The Llandaff development on Maryland's Eastern Shore transformed a small farm operation into 4 separate wildlife refuges, which included 68 acres of habitat, and 26 residential home sites. A house built on one of the lots is pictured here (left) along with one of the wildlife refuges (right).

agricultural lands and reduced overall nitrogen loads by 50 percent.

As of the writing of this profile, 10 lots were sold, including one refuge lot. The refuge lot was sold as part of a package deal that included 3 lots for a total of \$1.4 million dollars. Two homes have been built and 5 homes will be built in next 2-3 years. Even with the slowdown in the current housing market Llandaff is bucking the trends and the current lots available will not have to be reduced in price to make this development profitable.

Another quantifiable result of the project is the reduction of nutrients going into the Chesapeake Bay. Converting approximately 187 acres of prior farmland into forest, wetlands and mixed open space reduced the amount of nitrogen going into Peach Blossom Creek by approximately 78 pounds per acre per year. The nutrient numbers are based on the Chesapeake Bay Program's Watershed Model Scenario Output Database, which is specific to the Eastern Shore of Maryland.

#### KEYS TO SUCCESS

**Nature-based Development:** Llandaff has been successful because the developer's goals included wildlife conservation and restoration, and the maintenance and enhancement of water quality. In addition, the general land plan adhered to the natural constraints and opportunities of the site, which helped navigate some difficult resource management challenges and shaped the ultimate character of the development.

Nitrogen Delivered at Llandaff Before and After Construction*			
Land Use Type	Nitrogen Lbs/Acre/Year (by Land Use)	Land Use Acres (pre-construction)	Land Use Acres (post-construction)
Forest/Wetlands	0.029	89.48	158.14
High Till Agriculture	0.78	93.67	0
Low Till Agriculture	0.69	93.67	0
Mixed Open Space / Residential	0.34	6.15	122.58
Road (Impervious Urban)	7.92	1.28	3.53
Total Nitrogen Delivered			
Total Nitrogen Delivered	pre-construction = 152.53 Lbs/Acre/Year	post-construction = 74.22 Lbs/Acre/Year	reduction = 78.31 Lbs/Acre/Year

\*Land use acreage calculation for pre-construction is based on Google Earth 2009 imagery, and calculation for post-construction is based on NAIP 2007 imagery. Nutrient loadings used were for the delivered amounts.



**Construction of Wildlife Refuges:**

The inclusion of substantial wildlife refuge acreage, in close proximity to the home sites, provides residents with the highly desirable experience of having a traditional home that is surrounded by nature. It also demonstrates that the public is willing to pay for alternative open space amenities that are environmentally friendly and don't require extensive maintenance and energy requirements, like golf courses. This bold move helps establish a potential new niche in the residential development market that can also work well in areas that are inherently unsuitable for high density development.

**Partnerships:** Trippes Creek LLC partnered with three excellent firms with proven track records: Lane Engineering LLC, Conservation Development LLC, and Sweetbay Watershed Conservation. They also partnered with the Eastern Shore Land Conservancy to permanently protect vital habitat for an endangered species. This combination of expertise was a critical ingredient in the ultimate success of this conservation subdivision.

**Financial Viability:** Despite significant investment in land development and wetland construction and an unusual reduction in housing density, the project was financially viable and has already repaid the developers for their initial investment. There are still 16 lots for sale, ensuring the developers of a long term, profitable investment from this nature-based development.

**PHOTOS AND FIGURES**

Page 167: Photo, David Burke; figure, Burke Environmental Associates/The Conservation Fund

Page 168: Photo, Brian Gratwicke, Wikimedia Commons

Page 169: Figure, Burke Environmental Associates/The Conservation Fund, using Google Earth image

Page 170, 171: Photos, David Burke

**REFERENCES**

<sup>1</sup>United States Fish and Wildlife Service. 2009. Delmarva Peninsula Fox Squirrel (*Sciurus niger cinereus*): Species Fact Sheet. United States Fish and Wildlife Service, Chesapeake Bay Field Office. Available online at: <http://www.fws.gov/ChesapeakeBay/EndSppWeb/DFS/DFSFACTS.HTM>.

<sup>2</sup>Fisher, R.A. and J.C. Fischenich. 2000. Design Recommendations for Riparian Corridors and Vegetated Buffer Strips. U.S. Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory, Vicksburg, MS. 17 pp. Available online at: <http://www.dnr.state.wi.us/org/water/wm/dsfm/shore/documents/sr24.pdf>.

<sup>3</sup>Sprague, E., D. Burke, S. Clagget and A. Todd (editors). 2006. The State of Chesapeake Forests. The Conservation Fund, Arlington, VA. 114 pp. + appendices. Available online at: <http://www.na.fs.fed.us/watershed/socf.shtm>.

<sup>4</sup>Blankenship, K. 2007. Report Seeks Greater Efforts to Manage Pollution from Development. *Bay Journal* (October 2007). Seven Valleys, PA. Available online at: <http://www.bayjournal.com/article.cfm?article=3172>.

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