Reuse and the Benefit to Community

E.I. du Pont de Nemours & Co, Inc. (Newport Pigment Plant Landfill) Superfund Site

Executive Summary

The E.I. du Pont de Nemours & Co., Inc. (Newport Pigment Plant Landfill) Superfund site (DuPont-Newport site) is an area in Newport, Delaware, that was once impacted by chemical manufacturing operations. Collaboration and clear communication among the U.S. Environmental Protection Agency (EPA), the Delaware Department of Natural Resources and Environmental Control (DNREC), E.I. du Pont de Nemours and Company (DuPont), and other stakeholders led to the area's cleanup and helped facilitate ongoing and new uses at the site. A paint pigment manufacturing facility, now owned by BASF Corporation, has operated at the site for 112 years, providing jobs and employee income to the community. In 2003, DuPont donated part of the site (a former ballpark) to the Town of Newport; that land is now Ella Johnson Park. DuPont also partnered with the Wildlife Habitat Council to create a pollinator meadow and a 20-acre habitat area, among other efforts, on part of the site. The Wildlife Habitat Council issued a "Wildlife at Work" certification for the project in 2012 and recertified it in 2014. In December 2013, a solar development company leasing site property from DuPont successfully installed a 584-kilowatt solar array on part of the site. This case study explores the cleanup, continued use and reuse of the DuPont-Newport site, illustrating the opportunities and beneficial effects of Superfund redevelopment in action.

Beneficial Effects

- **Continued use of the BASF Corporation's industrial facility employs 600 people, providing annual employment income of $51 million to the community.**
- **In 2014, site properties generated over $260,000 in tax revenues. They have an estimated value of $11.6 million.**
- **The Newport Solar Project began operating in December 2013. It produces enough energy to power 60 homes. DuPont estimates that this renewable energy production reduces the community's greenhouse gas emissions by 350 tons per year.**
- **Part of the site is now a public park, providing a range of recreation opportunities for local residents.**

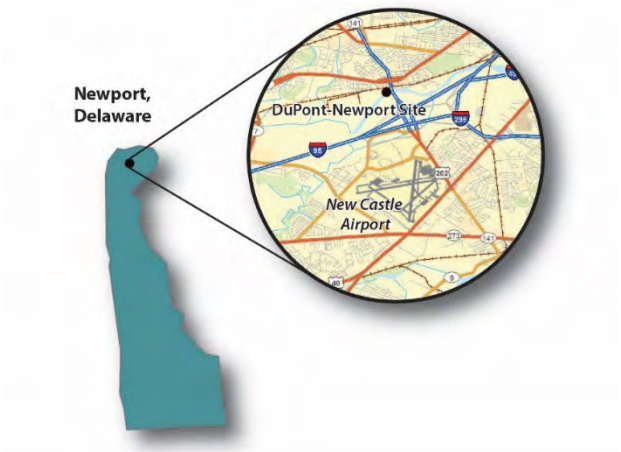

Figure 1: The site's location in Newport, New Castle County, Delaware

Introduction

Superfund cleanups restore value to properties and benefit surrounding communities. Once a property is ready for reuse, it can strengthen a local economy by supporting jobs, new businesses, tax revenues and spending. Cleanups may also take place while properties are in active use. This case study captures the beneficial effects on-site and in the community of both the new and continued use of the DuPont-Newport site.

The 120-acre area is located along the Christina River in Newport, New Castle County, Delaware (Figure 1). The site includes the active BASF Corporation paint pigment manufacturing facility, a ground water treatment facility in the former DuPont Holly Run Plant, the capped North and South Landfills, a public park, wetlands and portions of the Christina River (Figure 2). The site is easily accessed from State Highway 141 as well as Interstates 95 and 295; the Philadelphia Baltimore Railroad, a freight and passenger transport railroad line, is located along its northern boundary. According to 2013 Census data estimates, about 1,060 people live in Newport. About 550,000 people live in New Castle County.

Site History

In 1902, Krebs Pigment & Color Corporation began making a paint pigment called lithopone at the site. DuPont purchased the property in 1929 and continued lithopone production until 1952, when demand for lithopone declined. In addition to lithopone, DuPont manufactured other organic and inorganic paint pigments, as well as other products, including chromium dioxide.

Figure 2. Site aerial view, 2014.

Chromium dioxide production expanded in the 1970s with construction of the Holly Run Plant. Ciba-Geigy Corporation (later Ciba Specialty Chemicals Company) purchased the main pigment manufacturing facility in 1984. DuPont continued to operate the Holly Run Plant, manufacturing chromium dioxide magnetic recording tape until 2000. BASF Corporation purchased the pigment manufacturing facility in 2009. It continues to operate the facility today. DuPont retains ownership of the former Holly Run Plant, the North Landfill, North Wetlands, South Landfill and South Wetlands portions of the site. In 2003, DuPont donated a former ballpark at the site – where the company had a baseball diamond for employees – to the Town of Newport for development of Ella Johnson Park.

In the late 1970s and early 1980s, DuPont and DNREC's analysis of ground water samples from on-site monitoring wells found elevated concentrations of heavy metals and volatile organic compounds. After

additional research, EPA proposed the site for listing on the Superfund Program's National Priorities List (NPL) in 1987. EPA placed the site on the NPL in 1990. Waste and contamination at the site is largely attributable to the operation and disposal practices of the lithopone production facility from 1902 to 1952.

Site Cleanup

EPA selected a cleanup plan in 1993. EPA considered current and potential future land uses at the DuPont-Newport site as part of the planning process. Due to the cooperative relationships and clear communication among EPA, DNREC and DuPont, the site's cleanup was more comprehensive than original requirements in the 1993 cleanup plan. The plan for contaminated ground water included installing vertical ground water barrier walls to prevent migration of contaminants to the Christina River, pumping and treating contaminated ground water, and connecting residences and businesses along Old Airport Road to the municipal water supply. EPA's plan for contaminated soils and sediments included disposing of these materials in the South Landfill and placing vegetated caps over the North and South Landfills to prevent infiltration of rainwater and runoff. DuPont completed most of these actions in 2002. DuPont also conducted extensive wetlands restoration. DuPont continues to operate the ground water treatment plant and monitor the site, with oversight provided by EPA and DNREC.

Identifying New Uses for the Site

The paint pigment manufacturing facility occupies only part of the 120-acre site. After completing most of the cleanup, DuPont researched productive ways to use vacant areas of the site. With restrictions in place across much of the site to prevent damage to landfill caps and sensitive wetland areas, DuPont had to choose carefully which projects to implement. As a company that values sustainability, DuPont was especially interested in identifying projects that would reduce greenhouse gas emissions, foster renewable energy technologies to power clean economies, and protect ecosystems.

Figure 3. Butterflyweed (*Asclepias tuberosa*) planted as part of DuPont's ecological restoration program. (Source: DuPont)

Ecological Restoration

DuPont partnered with the Wildlife Habitat Council to create a pollinator meadow and a 20-acre habitat area on the South Landfill. Today, a beetle program biologically controls invasive plants; wildflower seeding and planting has established three pollinator meadows; and houses, perches and platforms attract a variety of bird species to the site. The Wildlife Habitat Council issued a "Wildlife at Work" certification for the project in 2012 and recertified it in 2014.[1]

[1] The Wildlife Habitat Council's *Wildlife at Work* program "provides a structure for corporate-driven cooperative efforts between management, employees and community members to create, conserve and restore wildlife habitats on corporate lands." http://www.wildlifehc.org/programs/wildlife-at-work/

Solar Energy Development

For many years, installation of solar arrays on capped landfills would have required perforating or otherwise damaging the caps. However, thanks to advances in technology, solar arrays can now "float" on the surface without being anchored to the ground. Shallow, low-hanging panels attach to ballasted racks set on the ground surface. The lower profile of the panels decreases the likelihood of wind disturbances and the even distribution of concrete ballast on the surface adequately secures the racks on the ground.

DuPont reached out to several solar development companies. The goal was to install a solar array that could offset the power requirements of the BASF Corporation facility. Original plans had to be scaled back because some potential areas were located in the 100-year floodplain and thus could not be insured. DuPont's revised plan called for a smaller array, outside of the floodplain area. Solar developer Greenwood Energy entered into a 20-year solar land lease with DuPont. Another solar developer, Tangent Energy Solutions, would develop the solar array on part of the South Landfill area, across the Christina River from the BASF Corporation facility. While both energy companies were enthusiastic about the project, they were also breaking new ground. This would be the first utility-scale solar facility on a Superfund site in the mid-Atlantic region. The companies reached out to EPA to address their liability concerns and discuss how best to move forward.

Greenwood Energy and Tangent Energy Solutions formed a new limited liability corporation, DDHR Solar DE, LLC, to manage what would become the Newport Solar Project. Although not essential, the companies felt this step would limit the companies' potential Superfund liability in the future. EPA discussed the proposed project with DuPont and DDHR Solar DE, LLC and requested an updated maintenance and monitoring plan that would address the proposed uses and maintenance of the remedy in that area of the site. DuPont and DDHR Solar DE, LLC submitted a plan to EPA and demonstrated that the solar array would not affect the integrity or protectiveness of the landfill cap.

In addition, EPA Region 3 prepared a tenant liability comfort letter for DDHR Solar DE LLC, at the company's request. This

Federal Liability Protections for Tenants at Superfund Sites

In response to concerns that liability protection for tenants at formerly contaminated sites was not sufficiently clear to encourage development of renewable energy on Superfund and brownfield sites, EPA issued a guidance document in 2012 to broaden protections of tenants who meet certain criteria, even if a site owner does not qualify for protection as a bona fide prospective purchaser, or BFPP. The guidance document is called Revised Enforcement Guidance Regarding the Treatment of Tenants under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Bona Fide Prospective Purchaser Provision. Although prompted by concern about protection of tenants at sites hosting renewable energy facilities, the guidance applies across all types of sites and potential site uses.

Under the 2012 guidance, EPA can provide liability protections to tenants through the Agency's use of enforcement discretion under which certain tenants will be treated as BFPPs. A tenant can obtain BFPP status in different ways, including deriving it from an owner who satisfies and maintains compliance with the BFPP criteria, meeting BFPP criteria on its own when the landowner has lost its BFPP status, and meeting BFPP criteria even though the owner never had BFPP status.

BFPP protection is self-implementing. EPA generally will not participate in site-specific determinations of BFPP status or application of its enforcement discretion guidance. In limited circumstances, however, EPA may issue a comfort letter or status letter to a tenant to address concerns at a particular property. At the DuPont-Newport site, EPA provided a comfort letter at the request of DDHR Solar DE, LLC. The letter facilitated DDHR Solar DE, LLC's lease of the South Landfill portion of the site from DuPont, construction of the Newport Solar Project and continued maintenance of the area where the solar array is located.

was the first-ever use of this informational tool to support reuse in Region 3. After EPA provided the tenant liability comfort letter, DDHR Solar DE, LLC moved ahead with development of the 584-kilowatt Newport Solar Project.

Local Beneficial Effects

Today, the paint pigment manufacturing facility that began operating on site in 1902 remains active, providing jobs, employment income, and tax revenues for the community. In addition, the Newport Solar Project provides local part-time jobs as well as enough renewable energy to power 60 homes. The Town of Newport's first public park has also brought new recreational opportunities to the community. This section describes the beneficial effects of these operations in more detail.

BASF Corporation

BASF Corporation purchased the paint pigment manufacturing facility in 2009 as part of their acquisition of Ciba Specialty Chemicals Company. BASF worked proactively with DuPont to ensure the safe and continued operation of the facility. Today, BASF employs 600 people in pigment and paint manufacturing jobs on site. The BASF facility also houses an on-site credit union for banking and a safety equipment supply store[2]. Jobs at the BASF facility generate an estimated $51 million in income for the community each year. The facility's prominent location in the community makes its ongoing operation not only an important and continued investment in the community, but a source of community pride.

DDHR Solar DE, LLC Newport Solar Project

DuPont estimates that the Newport Solar Project will reduce the community's greenhouse gas emissions by 350 tons per year, in comparison with generation of conventional, non-renewable energy supplies. Initially, DDHR Solar DE, LLC sold energy from the solar project to Delmarva Power to help the utility develop a more sustainably sourced energy grid. Recently, DDHR Solar DE, LLC entered into a power purchase agreement with a large retailer to sell all of the solar project's power to one of the retailer's local stores.

Figure 4. Entry road to BASF facility.

Figure 5. The Newport Solar Project.
(Source: DuPont)

Figure 6. Newport Solar Project ribbon cutting participants included (left to right) Michael Betzen of DuPont, Joseph Sacks of Greenwood Energy, Linda Fisher of DuPont, Delaware Governor Jack Markell, EPA Region 3 Administrator Shawn Garvin and Sheryl Telford of DuPont.
(Source: DuPont)

[2] The on-site credit union is Newport Site Employees Federal Credit Union. Hagemeyer North America, Inc. operates the safety equipment supply store.

Construction of the Newport Solar Project created 32 temporary, part-time jobs with solar installer Evergreen Solar Systems and 29 temporary, part-time positions for electrical configuration with CMI Solar & Electric, Inc. Today, five part-time workers are responsible for the solar facility's ongoing operation and maintenance. Maintenance activities related to the solar project have also reduced overall operations and maintenance costs for the site.

Ella Johnson Park

In 2003, DuPont donated the site's former ballpark property to the Town of Newport for development of a new park. Dedicated in 2010, Ella Johnson Park is the first public park in Newport. It includes a walking trail, climbing boulders, fitness equipment stations, picnic tables and benches. The Delaware Land and Water Conservation Trust provided an $80,000 development grant for the park and Newport matched those resources.

Figure 7. Entrance sign at Ella Johnson Memorial Park, which includes several fitness stations visible in background.

Property Value and Tax Revenue

In 2014, site properties generated over $261,000 in total tax revenues, with an estimated property value of over $11.6 million.

Future Site Use

Looking forward, EPA and DuPont will continue to work with stakeholders to support existing reuse of the site, explore additional land use opportunities and ensure the long-term stewardship of site remedies.

Conclusion

Effective communication, strong collaboration and ready responsiveness among EPA, DNREC, DuPont and DDHR Solar DE, LLC have been crucial to the continued use of the DuPont-Newport site as well as new reuse opportunities. EPA and DuPont collaborated on the design and implementation of a remedy to protect human health and the environment. During cleanup, DuPont continued to operate its paint pigment manufacturing facility, an important source of local jobs. Today, BASF Corporation operates the facility, employing 600 people and providing about $51 million in annual income to the community. DDHR Solar DE, LLC operates the Newport Solar Project, which supported 61 temporary, part-time jobs during construction. The solar array is helping a large retailer meet its sustainability goals while keeping an estimated 350 tons of greenhouse gas emissions out of the atmosphere each year. A pollinator meadow and a 20-acre habitat area located on part of the site are also providing ecological benefits. In addition, land donated by DuPont to the Town of Newport is now a public park. With its sustainability goals in mind, DuPont continues to explore opportunities to safely reuse the site and other potentially underused DuPont properties.

For more information about EPA's Superfund Redevelopment Initiative (SRI), visit: http://www.epa.gov/superfund/programs/recycle.

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Technical Appendix

Employment Information for On-site Jobs

EPA obtained information on the number of employees and sales volume for on-site businesses from the Hoovers/Dun & Bradstreet (D&B) database. EPA also gathered information on businesses and corporations from D&B. D&B maintains a database of over 225 million active and inactive businesses worldwide, including public records, financials, private company insight, extensive global information, telephone numbers and physical addresses. The Data Universal Numbering System (DUNS) number is a unique nine-digit identification number assigned by D&B to each business and its location within the D&B database for identifying each business.

Wage and Income Information for On-site Jobs

EPA obtained wage and income information from the U.S. Bureau of Labor Statistics (BLS). The BLS is a governmental statistical agency that collects, processes, analyzes and disseminates essential statistical data to the American public, the U.S. Congress and other federal agencies in the broad field of labor economics and statistics. The data EPA obtained from the BLS has high standards of accuracy and consistently high statistical quality, and impartiality in both subject matter and presentation.

EPA used the BLS Quarterly Census of Employment and Wages database to obtain average weekly wage data for the businesses located at the E.I. du Pont de Nemours & Co, Inc. (Newport Pigment Plant Landfill) Superfund site (DuPont-Newport site). Superfund site. Average weekly wage data were identified by matching the North American Industry Classification System (NAICS) codes corresponding with each type of business with weekly wage data for corresponding businesses in New Castle County. If not available at the county level, wage data were sought by state or national level, respectively. In cases where wage data were not available for the six-digit NAICS code, higher level (less detailed) NAICS codes were used to obtain the wage data.

To determine the annual wages (mean annual) earned from jobs generated by each of the selected businesses located at the E.I. du Pont de Nemours & Co, Inc. (Newport Pigment Plant Landfill) Superfund site (DuPont-Newport site). Superfund site, the average weekly wage figure was multiplied by the number of weeks in a year (52) and by the number of jobs (employees) for each of the businesses.

For more information on reuse at Superfund sites, please visit: http://www.epa.gov/superfund/programs/recycle.

Table 1: DuPont-Newport Site Businesses: NAICS Code and Title, Employees, Average Weekly Wage, Annual Wage per Employee, Total Annual Wages and Total Annual Business Sales

On-site Business	NAICS Code[a]	NAICS Title	Employees[b]	Average Weekly Wage (2013)[c]	Annual Wage (Mean Annual) per Employee	Total Annual Wages[d]	Total Annual Business Sales (2014)
BASF Corporation	3251	Synthetic Dye and Pigment Manufacturing	400	$1,846	$95,992	$38,396,800	NA
BASF Corporation	3255	Paint and Coating Manufacturing	200	$1,217	$63,284	$12,656,800	NA
Newport Site Employees Federal Credit Union	522130	Credit Unions	4	$698	$36,296	$145,184	$291,130
Hagemeyer North America, Inc.	423830	Industrial Machinery and Equipment Merchant Wholesalers	5	$1,142	$59,384	$296,920	NA
TOTALS			**609**			**$51,495,70451**	**$291,130**

[a] NAICS code provided in the D&B database.
[b] Data are from the D&B database.
[c] Average weekly wage per employee is based upon BLS 2013 Average Weekly Wage data.
[d] Total annual wage figures were derived by multiplying "Number of Employees" by "Annual Wage (Mean Annual) per Employee."
NA: Not available or not applicable.

Property Values and Local Tax Revenue Generated from Property Taxes

EPA obtained data on the most recently assessed values for property parcels at the E.I. du Pont de Nemours & Co, Inc. (Newport Pigment Plant Landfill)Superfund site in July 2014 through property records accessible through New Castle County's online property appraisal database (http://gis.nccde.org/gis_viewer) EPA also obtained 2014 property tax information for the site parcels.

Table 2. Property Value and Tax Summary for Taxes Payable in 2014

Parcel ID No.	Parcel Address	Land Market Value (2014)	Improvements Market Value (2014)	Total Market Value of Land and Improvements (2014)	Total Property Tax[a] (2014)
0704730108	301 South James Street	$260,800	$237,400	$498,200	$13,200
0704730117	0 South James Street	$170,900	$11,000	$181,900	$4,800
1000800001	0 South James Street	$131,000	NA	$131,000	$3,400
2000300083	205 South James Street	$371,000	$4,066,000	$4,437,000	$99,000

2000300108	205 South James Street	$175,400	$3,574,300	$3,749,700	$83,700
2000300109	205 South James Street	$385,400	$1,425,700	$1,811,100	$40,500
2000300110	205 South James Street	$223,000	$513,500	$736,500	$16,500
2000300111	301 West Ayre Street	$19,800	NA	$19,800	NA
	Totals:	**$1,737,300**	**$9,827,900**	**$11,565,200**	**$261,100**

[a] Property taxes include New Castle County and school taxes combined.
NA: Not available or not applicable.