An Integrated Approach to Revitalizing a Brownfield Site – Achieving Multiple Benefits Through Collaboration
NVF-Yorklyn, Delaware

ASWM Coordination Meeting
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John G. Cargill
Delaware DNREC
Site Investigation & Restoration Section & Watershed Assessment Section
What I Will Cover Today . . .

- History of NVF-Yorklyn
- A Vision & Interested Parties
- Site Assessment & Remediation
- Creating A Destination
- Private Development
- Funding
- 2018 and Beyond . . .
Site Location – Yorklyn, Delaware
History of NVF-Yorklyn

- 1763 – John Marshall built grist and saw mill on Red Clay Creek in PA.
- 1856 – John’s grandson, Thomas, converted grist mill to paper mill, thus beginning the family legacy in paper making.
- 1889 – Expansion into Delaware at Auburn Mills in Yorklyn, as the Marshall Brother’s Paper Mill.
- 1890’s – Customers were using paper to make vulcanized fiber, so the Marshalls got into the business, too.
- 1904 to 1921 – Much more expansion, onsite and into Kennett Square and Toronto, Canada as National Fibre and Insulation Company (NFIC).
- 1922 – NFIC and American Vulcanized Fibre Co. merge to form the National Vulcanized Fibre Company (NVF).
- 1953 – The last Marshall family member to operate the company dies, and the company starts to be managed by others.
1953 to 1961 – More expansion, into 6 states and 3 countries.

1966 – Victor Posner buys NVF Company stock and becomes majority shareholder; names himself president and chairman of the board.

1967 to 1993 – Posner uses NVF as holding company for other businesses. Places family and friends in managing positions. Many of the companies begin to fail.


1996 – Victor Posner buys NVF outright and operates it as a private company.

1999 – NVF files for Chapter 11 bankruptcy, again, due to shifting markets and competition from new products.


2007 – NVF files for Chapter 7 bankruptcy (liquidation). 1999 bankruptcy and major floods are cited as the cause.

2011 – The last of the NVF real estate is sold.
History of NVF-Yorklyn
History of NVF-Yorklyn

NVF-Yorklyn – 1950s - 1960s

NVF-Yorklyn

Original Marshall Paper Mills
From 1960 - 2003, 24/7 operations produced 40 million pounds of material annually.
Bankruptcy . . . This time for good !
Flooding Is Definitely a Problem

Flooding characteristics:

• little warning
• unpredictable severity
• high velocity = major damage
FEMA Involvement

Yorklyn Center for Creative Arts – Floodproofed in 2004 w/FEMA Grant

Garrett Snuff Mill repetitive flooding

NVF Main Production Building $3 million flood claims - demolished

NVF Corporate Office Building $1 million flood claims – purchased/demolished w/ FEMA grant

Marshall Brothers Paper Mill $400,000 flood damage
The Vision for the Future

• In November 2008, Marshall family donated mansion and car museum to the State.

• By the end of 2008, DNREC Parks & Recreation was managing 313 acres of conservation and cultural resources in the area (Auburn Heights and Oversee Property).

• What lies between these holdings . . . the former NVF facility!
Interested Parties

- DNREC’s Division of Parks & Recreation wanted to connect its properties;
- Private investors were interested in the creekside redevelopment potential;
- DNREC’s Division of Water (Watershed Assessment) was concerned about impacts to aquatic life in the Red Clay Creek;
- DNREC’s Division of Soil and Water Conservation was concerned about historic flooding problems and the hazards posed by an abandoned facility in the flood plain;
- DNREC’s Division of Waste & Hazardous Substances was concerned about hazardous materials and unknown environmental issues; and
- The surrounding community was concerned about ALL OF IT.
Around 2008-2009, DNREC put together a multi-divisional workgroup that began to secure the former NVF site and gather information about environmental conditions.

At the same time, DNREC Parks partnered with private developers to acquire the 119 acres of NVF Company land from the bankruptcy trustee. Several portions were set aside as conservation easements or were otherwise acquired by the State.

Through this unique partnership, DNREC assumed responsibility for environmental cleanup, while the private partners took responsibility for asbestos abatement and demolition of unwanted structures.

PROJECT TEAM MEETS BIWEEKLY AT THE SITE
What’s the big problem?

It's mainly about the zinc.
Site Assessment – Zinc in Red Clay Creek

Dissolved Zinc Conc. Red Clay Creek Yorklyn

Data collected pre-bankruptcy

NVF Company installed groundwater collection trench – modifying onsite wastewater treatment system

DNREC assumed O&M of zinc collection system after bankruptcy

Acute Criterion (dissolved) = 117 ppb at 100 mg/L hardness

Predicted immediately downstream from NVF Yorklyn

Recovery Trench Online

Zinc, (ppb)
Groundwater Recovery Trench/Zinc Precipitation
Site Assessment for RI/FS

Final RI/FS Issued for the site in 2015
Asbestos Removal

- Private developer(s) were responsible for asbestos removal prior to demolition activities.
DNREC spent significant funds to characterize and properly dispose of contaminated materials from inside the building structures prior to demolition.
Summary of Hazardous Material Removal

2013:
- 143,530 lbs of zinc chloride containing solid waste
- 60,740 lbs of sodium hydroxide solid waste
- 2,382 lbs of hydrochloric and sulfuric acid waste
- 10 lbs of mercury containing solid waste
- 23,460 lbs of soda ash
- 800 lbs of paint related wastes

2014:
- 133,960 lbs of zinc chloride containing solid waste and old tanks
- 2,800 lbs of corrosive acidic waste
- 55 gallons of Hypochlorite
- 300 lbs of Aluminum Nitrate

2015/2016:
- 15.69 tons of treated timbers
- 750 cubic yards of asbestos containing materials (~20 large dumpsters) from the buildings prior to demolition.
Demolition

Site Motto: Don’t be surprised by surprises!
Final Plans of Remedial Action

OU-1: Excavate and dispose of impacted soils to water table, cap remaining soil, create flood storage wetland in excavated area. Operate the zinc groundwater recovery system; Deed restrictions.

OU-2: Clean to meet residential standards by removing PAH impacted soils (interim action). Protect creek during demolition; Deed restrictions.

OU-3: EPA Emergency Removal took care of zinc and mercury contamination. Additional work will be done based upon redevelopment plan; Deed restrictions.
Site Remediation – Groundwater

- September 2008 TMDL of 25.17 lbs/day established for NVF-Yorklyn.

- Since 2008 approximately 80,000 lbs of zinc have been removed from groundwater.

- System shutdown test promising with loads of 3.59 & 5.33 lbs/day calculated for January & February 2018 – attributed to soil remediation and wetland creation (source removal)
NVF-Soil Remediation/Wetland Creation

- Numerous foundations to remove
- Water management became an issue
- 170 tons of zinc was removed from soils

June 2016
January 2017
March 2017
April 2017
NVF-Soil Remediation/Wetland Creation

- Rain, Rain, Rain . . .
Wetland Creation – Almost Done
What else?

CONTINUING THE VISION

CREATING A DESTINATION
Auburn Heights Mansion & Marshall Steam Museum

- Mansion open to public on select dates, or by appointment
- Part of Delaware History Trail
Largest Steam Car Collection in the World

New trail systems built to be driven on by steam cars!
• Paper Mill being restored as a museum.
• Upper floor will contain retail, residential or offices.
• Historic homes on Benge Road being renovated for a Park Office and rental homes.
Wilmington & Western Train Station & Turntable
Trail Systems – 3.5 Miles and Counting
Pervious Pavers On New Roadway

New Gun Club Road – creating an aesthetic for future development AND considering flood controls
Historic Bridges – 3 so far

- Recently began a relationship with an Iowa non-profit that rescues historic bridges from demolition across the country.

- They created a proposal for a “bridge park” at NVF that would reuse historic bridges on trails rather than purchase new ones.

- Each bridge selected is unique in its design and location from where it came.

- The rescued bridges cost the State less than new ones purchased on standard projects.

- Bridges are from 1880 to 1910 era.
Bringing It All Together
PRIVATE DEVELOPMENT
Residential Development – Happening Now
Snuff Mills – Under Renovation

Dew Point Brewery – Opened in 2016
Amphitheater – In Design Phase
Funding

- **USEPA**
  - 1997 & 2001 Emergency Removals (while NVF was operating)
  - 2014 Brownfield Loan - $405,000 (demolition & asbestos)
- **FEMA** – Demolition of Flood Prone Buildings - $2,000,000
- **DNREC Parks & Recreation** – $12,000,000 and counting
- **DNREC – SIRS**
  - Brownfield Loan to Developer - $325,000 (demolition & asbestos)
  - HSCA Brownfield Grant – $225,000 (former gun club assessment)
  - HSCA Line Item Funding – $4,500,000 (assessment and GW)
- **CWSRF Loans**
  - To DNREC-SIRS - $3,000,000 (soil remediation & wetland creation)
  - To DNREC- Parks & Recreation - $1,000,000 (wetland creation)
- **Private Development**
  - $2M and counting
What’s Next?

2018 AND BEYOND
Second Annual Yorklyn Days
Trout Stocking in Red Clay Creek

From 2016 Stocking Study in Red Clay Creek, upstream of NVF Site:

- Water quality conditions have improved in RCC.
- Stocked trout will still accumulate PCBs, DDX, chlordane & dieldrin (from upstream sources).
- Rate of accumulation does not result in excessive health risks to trout anglers.
- TROUT STOCKING CAN COMMENCE in RCC (at 12 meals per year, per existing overall advisory for stocked trout) for first time in 30 years.
Wetland Planting

- Wetland planting event scheduled for April 25, 2018.

- Part of a series of wetland restoration training sessions (agency scientists and consultants).

- Delaware Wetland Monitoring and Assessment Program will monitor the wetland over time for functional success and any needed replacement of plants.
**Wetland Planting**

*Replaced Sweet Gum with Sycamore and Oaks*
*Replaced Groundsel with Sweetpepper Bush and Swamp Azalea*
Wetland Planting

Planting details by species and number
Continued Construction

- More trails
- Site Utilities
- Bridges
- Rail Rehabilitation
- Commercial Development
- Mixed Use Development
Bring on the Development
More Wetlands, too!