Cuyahoga Valley Initiative Idea Package Summary Working River

Once a symbol of industrial strength and the consequences of environmental degradation, the Cuyahoga today promises a future where quality of life and healthy natural systems are realized as integral components of industrial vitality.

This idea package is about the working river and how it can work best to support industrial expansion, natural systems restoration, public realm building and recreational activities.

Overview

Used to ship tons of raw materials to industrial plants and products to market, to dilute waste and flush it to the Lake, to cool factories and to process raw materials, the river has long been working in service to our community. Confined to a navigable channel with steel bulkhead, the river is dredged and straightened to accommodate huge freighters. Operable bridges traverse its width to accommodate land traffic while the freighters travel upstream.

The Valley has provided a land base for expansive industrial complexes that have been predominantly river dependent. The areas of the Valley not directly adjacent to the river have been used for supporting industrial and commercial uses. These include storage areas and transportation and infrastructure corridors. The contributing tributary ravines have been a receptacle for fill to create more developable land and as a convenient depository for waste.

With the decline in large industrial operations and shifts in land uses within the river valley, the working river is in a transition period. The bulk heading is in need of significant improvement, bridges are in constant need of repair and maintenance, pressure for recreational use is increasing, significant portions of the river edge are underutilized, and concern for environmental cleanup increases.

Once considered the western boundary of the settled world and more recently regarded as a dividing line between the east and west sides of Cleveland, the Valley is just now emerging as geographic district appreciated as a natural system with valuable water and air quality functions.

It is the objective of this Idea Package to consider the activities of the working river both natural and commercial as a wholistic system. The goal is to improve the health of these systems and consequently the whole by generating resource optimization opportunities. The vision is an integrated network functioning for mutually beneficial economic, environmental and social health improvement objectives.

This Idea Package explores the feasibility of strengthening and expanding river dependent businesses and restoring the ecological functions of the river.

Current Conditions

Navigation/Shipping

As stated earlier the Cuyahoga River channel is one of many waterways in the Great Lakes used for shipping and commerce and is the busiest port on Lake Erie. The Cleveland port is unique as it serves both the waterfront as well as the Cuyahoga River channel for port activities. The channel also has a turning basin at a width of 800 feet located 4.8 miles above the mouth of the river. Typically, 1,000 foot ships are used for maritime shipping purposes. Due to the narrowness of the Cuyahoga River, 660 foot ships are used to serve this port and other river ports such as the Detroit.

The Lake Carriers Association reports the Cuyahoga River brought 715 ships through the channel in 2002. This is lower in comparison to average years that generally bring over 900 ships according to the Association. This drop is due to the temporary shutdown of ISG and the loss of shipment activity to that production.

The activity for the Cuyahoga River involves 1400-1800 transits which are the in and out trips for a ship for the season which is mid-March to beginning of January. This averages out to four transits a day of shipping activity for the river channel. Clearly this is a viable activity for the river, even in the slow economic times of today.

Port Activities

The piers, wharves and docks for the Port of Cleveland receive the bulk material that the ships bring in to the region. The Cuyahoga River has 14 and 16 facilities along the right and left banks of the river respectively to receive materials. Additionally, the Old River Channel has six facilities along its banks. The present utilization of these dock facilities is high and are generally used for four purposes; receiving materials for adjacent manufacturing processes and production, distribution centers and storage for transport to the regional industries, marinas, and safety and port operation management services.

The Distribution of goods to the region for industries such as construction and auto manufacturing accounts for the majority of activity along the docks which include close to 20 facilities. There are three major distribution centers in which serve as outposts for intermodal transportation networks of rail and truck for production and consumption within a 75- mile radius. These areas are the 1)

north end of Main Avenue near West 3rd Street, 2) south side of Whisky Island, 3) ISG. The goods received spend an average of __ days at these distribution centers prior to the transport on truck or rail.

These distribution and production areas are largely scattered throughout the Lower Cuyahoga River and constitutes a large portion of land capacity for the river valley north of Harvard Road. Developing a strategy to continue the port as a strong destination market, encourage new shipping industries and to expand new uses and landscapes to the valley, an understanding of utilized properties for transient uses is needed. This will allow for the opportunity to consolidate operations in specific areas of the valley to provide ample transportation routes for truck and rail, set areas for new shipping industries, and provide areas to restore and connect public access areas for the community.

Dredging

The Cuyahoga River is one of nearly 130 navigation related projects within the Great Lakes Basin, that the U.S. Army Corps of Engineers is authorized to maintain. To maintain the navigation function, the channel is dredged which involves "the periodic removal of accumulated bottom sediments from waterways." The Cuyahoga River has been dredged since the early days of shipping and continues to be a heavily used shipping channel. To continue to retain this shipping commerce, the navigation channel which begins at the mouth of the Cuyahoga and Lake Erie shore and extends upstream 5.8 miles, just north of Harvard Avenue in Cleveland. The Old River channel just south of Whiskey Island is also dredged for shipping purposes.

The navigation channel is dredged annually to 27 feet deep. The U.S. Army Corps has estimated the annual removal of dredged material of 250,000 cubic yards. Due to the chemistry differences in sediment between Lake Erie baseline sediment and the Cuyahoga River sediment, the material cannot be disposed of directly into the Lake. The dredged sediment is transferred to a CDF or combined disposal facility off the shores of Lake Erie.

The Cuyahoga sediment contains three major chemicals that requires this transfer, PAH"s (poly aromatic hydrocarbons), pesticides, and heavy metals. Most of these chemicals are a result of historical or present land use within the valley and the highly erodable nature of the soils and bedrock .

The trends of sediment accumulation within the navigation channel tend to show increased sediment buildup in the upper 1,000 feet of the channel due to higher erodability and increased runoff of sediment.

The cost for the dredging activity for the Cuyahoga navigation channel is approximately $1.5 million annually and is conducted in the spring for a duration of 2- 3 months.

Bulkhead

The Cuyahoga River's stream banks utilize a bulkhead system to sustain a stable bank for shipping and navigation purposes. The Cuyahoga River's bulkhead is typically steel piles that have been in place in some places for close to fifty years. Due to this age of the bulkheads, they are beginning to expire their life expectancy and are corroding at various degrees along

the channel. Estimated bulkhead costs for new sheet pile replacement are estimated at $3,750 per linear foot and are typically required by the property owner. This estimate can amount to $20,000 to over $2 million for bulkhead replacement costs by land-owners.

The current bulkhead and replacement system consists of an engineered sheet piling system. This design limits the capacity to restore and provide habitat for water quality improvement and is largely expensive to serve a single purpose for the river. The U.S. Army Corps will be developing a Habitat Feasibility Study this year to re-design the sheet piling approach for more ecologically viable solutions. Developing an initiative to advance these ideas and to retain the commerce viability for the river channel should be explored.

River Dependent Industries

Industrial and Construction Businesses

The raw materials received via ship for industries along the channel create a necessity for business operations along its riverbanks. According to the Lake Carriers Association, there are four main commodities received for businesses along the river; iron ore, limestone, cement and salt. Most notably is the ISG Steel Plant receiving iron ore and limestone for production and processing purposes. Additionally, limestone and cement are received to the channel for the construction industry throughout the region. The channel serves as a distribution center for this material to the regional suppliers. Lastly, salt from the Cargill Salt Mines is exported throughout the Great Lakes for use as road salt.

Bulk Storage Activities

As mentioned earlier, the bulk storage activity for processing and distribution is a large industry for the valley. Many of these activities utilize the floodplain that is largely not compatible for other structural uses. These bulk storage activities include areas used for large railroad container storage, asphalt, stone, and salt. Some of these areas are used as staging areas for the winter season when transportation routes are limited.

Marinas/Boating support services

As the a major tourist attraction for the summer months, there are three marinas along the river channel that serve the boating community for docking, repair and service of recreational boating equipment. Several marine related repair and maintenance services are located along the river as well as Samsel Supply, an immense hardware and marine supply store on Old River Road.

Water Quality

The Cuyahoga River has greatly improved from the early 1970's due to increased regulation of industrial business operations, and upgrade of the region's sewer systems by the NEORSD and Valley communities. However, the river is still limited for full attainment by OEPA standards to achieve "fishable, swimmable and drinkable" quality.

As reported by OEPA, the river has four high magnitude causes that limit this attainment; 1) Organic enrichment/Dissolved Oxygen, 2) Toxics, 3) Habitat alterations and 4) Unionized Ammonia These causes have been attributed to eight high magnitude sources; 1) Combined

sewer overflow, 2) major municipal point source 3) Contaminated sediments, 4) Dredging/Development, 5) Marinas, 6) Spills, 7) Urban runoff/Storm Sewers and 8) Streambank modification/destabilization. (Source: OEPA) These sources cumulatively continue to impact the biological resources of the river and restrict the restoration of the valley.

Additionally, due to the combined sewer overflows and old municipal sewer systems, fecal coliform levels were in violation of secondary recreation contact limits with 13 sites over 5000 colonies/100 ml fecal coliform bacteria and 18 sites over 576 colonies/100ml of E.coli bacteria.

Finally, a fish consumption advisory is in effect for the Cuyahoga River that recommends a "one meal per month" consumption for carp, largemouth bass and white suckers, 11 inches and larger.

Waste Water Disposal
The Northeast Ohio Regional Sewer District (NEORSD) operates two wastewater treatment facilities within the Cuyahoga Valley. These treatment facilities serve communities throughout the region for wastewater treatment and disposal of biosolids. The NEORSD currently utilizes an incinerator and disposal process to remove the biosolids from their facilities. In 2001, the Southerly facility, located on the river near East 49th Street produced 63,000 wet tons of biosolids with 18,671 wet tons of ash resulting from incineration. The Westerly plant, located on the lakeshore, produced 16,000 wet tons of biosolids and 2,000 wet tons of ash. A portion of the ash at the Southerly plant is used for cover for an old sludge lagoon (monofill) and contains 50% solids. This monofill will be capped and sealed in 2006. The District is investigating beneficial reuse options for the disposal of its ash.

The NEORSD also manages a number of infrastructure projects that involve deep tunnels to upgrade the district's older infrastructure systems of the past and provide for the mandated separation of storm and sanitary waste. The NEORSD will determine in the next few months where the next tunneling projects will occur within the valley.

Akron CSO System
Although Akron is close to 30 miles south of Cleveland, the wastewater treatment systems and old infrastructure has limited the water quality improvements for the Cuyahoga River as a whole. Akron is currently working on this effort to remediate the pollution current sewer systems contribute to the river, however these efforts are projected to take 20-30 years to see results and improvements in the Cuyahoga.

Components

The following are the basic components or fundamental building blocks of the Working River Idea Package. These components establish the basic goals and objectives of the Idea Package and begin to identify components that are in common with other Idea Packages.

The aspects of the Working River Idea Package that needed to be included in the basic components are:

The navigable channel
- Bridges
- Dredging
- Bulk-heading

River dependent businesses
- Industry
- Marine services
- Bulk storage
- Recreation and entertainment

Water quality and the hydrologic regime
- CSO
- Non- point source contaminants
- Stream channels and riparian corridors
- Flood plain
- Ground water infiltration, impervious surfaces

The following are the main components of the Working River Idea Package. Components that are shared with other Idea Packages are noted below:

I. Creating Business Efficiencies (shared with the Business Innovation Idea Package)
- A. Locate businesses to best utilize infrastructure.
  1. Minimize transport time by placing business as near destination as possible, including highway interchanges, businesses further down (or up) supply chain, rail spurs, etc.
  2. Minimize length of river that has to maintain shipping channel depth.
- B. Least Cost Resource Planning
  1. Utilize closed-loop processes
     a. Energy
     b. Material
  2. Decrease waste of energy and material
- C. Take advantage of renewable energy resources
  a. Solar
  b. Wind
  c. Biomass
  d. Geothermal

II. Clean River and Tributaries (shared with the Healthy Valley Idea Package)
- A. Reduce or eliminate emissions at the source
  1. Air emissions (toxins, particulates)
  2. Water (toxins, thermal energy, CSO)
  3. Soil (brownfields, erosion)
- B. Re-create a naturally-functioning watershed
  1. Increase permeable surface area
  2. Daylight streams / reduce culverting
  3. Use natural bulkheading and shoreline where possible
  4. Preserve or create wetlands through bioremediation
  5. Connect elements to create an integrated watershed system.

III. Create an exit strategy for various land uses by envisioning future land use functions
- A. Landfills
- B. Dredging
- C. Industries
- D. Bulk shipping
- E. Soil Building

Opportunities

Dredging Benificial Use Research Initiative

Due to the Great Lakes Commission initiative underway, the utilization of this research applied to the Cuyahoga River is an opportunity. To create a topsoil product with the biosolids from NEORSD poses an opportunity to explore as a new business for the valley and to develop a beneficial use for these materials. The challenge will be to determine the treatment process for the dredged material as the chemical content is high. The utilization of phytoremediation to break down these contaminants is another alternative to be explored further. (See Case Studies – Milwaukee, Fox River Wisconsin, Toledo Port)

Cuyahoga County Recycling Center
As a new river dependent industry, local options are being explored for construction and debris recycling, the opportunity exists to limit the amount of debris that is being brought into the valley for dumping. (Architectural Salvage Program)

Bulkhead Replacement System to design for aquatic habitat viability as sections are restored.

River Dependent Business Consolidation
Potential to consolidate river dependent uses into a central area to improve efficiencies and achieve greater access to infrastructure and reduce the need for bridge, bulk head and dredge requirements.

Natural Functions Enhancement
Program to restore the rivers connection to its flood plain and reduce erosion of hillsides and stream banks and the natural function that this provides. Enhancement of riparian corridors and stream channels, upland reduction in storm run off.

Current Efforts

US Army Corps – Sediment Modeling Project
US Army Corps – Bulkhead Study
Cuyahoga RAP – Habitat Feasibility Study
Entrepreneurs for Sustainability
Flats Transportation Study
Flats Master Plan
NEORSD – Residual Management Plan
Tunneling Project Prioritization
Boyas Redevelopment
Garfield Heights Redevelopment
Lower Big Creek Study
Green Building Coalition and Solid Waste District Federal Courthouse Material Recycling Project
Port Authority of Cleveland Capacity Assessment

List of Technical Experts/Potential Partners

U.S. Army Corps – Scott Pickard or other
Great Lakes Commission – Victoria Pebbles
Jim Pressler – Flats Oxbow Association
Holly Harlan – Entrepreneurs for Sustainability
Kelvin Rogers – Ohio EPA – Cuyahoga RAP Coordinator
NEORSD – Lester Stumpe
Cuyahoga County Solid Waste District- Diane Bickett
Cuyahoga County Board of Health
Port Authority -
Cuyahoga Soil & Water Conservation District – Janine Rybka
Lake Carriers Association
Flats Industry – Jim Cox
Brownfields – Hull & Associates, Hemisphere Development Corp.
Rod Beals – Ohio EPA
Tim Donovan – Ohio & Erie Canal Corridor

Maps

River Activities

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