"One Creek at a Time"

Case Study:
The Paradise Creek Model
For Urban River Restoration

June 30, 2008

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Making restoration a reality.

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Made possible by:

Chesapeake Bay Small Watershed Program
National Fish and Wildlife Foundation
US Environmental Protection Agency
Chesapeake Bay Program

Summary

Imagine green space and a plethora of wildlife sightings throughout a 2.9-square mile watershed that also features vibrant neighborhoods and thriving industrial businesses, small and large, all of which embody the notion that nature and human activity can peacefully co-exist. The Elizabeth River Project embarked on a full-scale restoration of Paradise Creek with this vision for the tributary of the Elizabeth River and the Chesapeake Bay in Southeastern Virginia.

Paradise Creek's mix of businesses, residences, government facilities, past environmental abuses and promise for improvement made it a microcosm of the larger Elizabeth River. The non-profit Elizabeth River Project chose the winding creek, still lined with lush wetland grasses in between the modest homes and industrial smoke stacks, for a new approach to restoring the Chesapeake Bay - "One Creek at a Time." While most major tributaries, like the Elizabeth, are too large for citizen-led efforts to address comprehensively in a short time, a creek can be a showcase for getting all players on board to make a difference. A Community Legacy Grant from the Small Watershed Program of the Chesapeake Bay Program in 2002 launched "Paradise Found" - an initiative to restore Paradise Creek, shore to shore, in five years. A facilitated stakeholder team representing all creek interests reached consensus on a watershed plan for the creek in 2003.

Artist's rendering of Paradise Creek Nature Park - a legacy beyond any original reckoning. The land has been purchased to provide public access to the creek and inspire lasting stewardship.

Implementation results confirm "One Creek at a Time" as an effective approach for creating a powerfully concentrated energy for transformation of an urban river. Virtually all creek players, from industries to citizens and government, accepted roles in restoring the creek, thanks to the manageable size of the effort.

- The US Navy won White House recognition for efforts above and beyond its original cleanup plans for three Superfund landfills on the creek. Instead of paving the landfills over as parking lots, the Navy responded to The Elizabeth River Project's stakeholder planning team by digging up the contamination at several of the landfills and restoring healthy wetlands in their place, and capping another with warm season grasses to create a 70-acre wildlife mecca.

- On a smaller scale, visiting door-to-door to all homeowners directly on the waterfront was relatively easy for The Elizabeth River Project, with less than 50 homes to contact. Most of those answering the door accepted our offer of free native trees and flowers, an inexpensive investment given the small target audience, in return for signing "Creek Hero" stewardship commitments.

- Virtually all creek industries joined The Elizabeth River Project's River Stars program, taking on new environmental efforts ranging from wetland restoration to stormwater improvements and pollution prevention. The Southeastern Public Service Authority's Refuse Derived Fuel Plant made perhaps the most dramatic turnaround; during the five years achieving international certification of its improved environmental management efforts. SPSA received ISO 14001 certification in 2005, the top standard for environmental management to reduce impacts throughout the facility.

- Meanwhile, every level of government did its part. NOAA, the National Oceanic and Atmospheric Administration, funded the restoration of a half-acre oyster reef toward the mouth of the creek through the Small Watershed grants program, and citizens grew native oysters off their docks to seed it. The City of Portsmouth worked with The Elizabeth River Project to install the largest rain garden in the region, nearly an acre, to treat runoff before it reaches Paradise Creek. The Virginia Department of Conservation and Recreation funded the rain garden, while the Virginia Department of Environmental Quality started a monitoring program to track creek water and sediment quality. The US Army Corps of Engineers began a study of how to address contamination in the creek sediments. And the US Environmental Protection Agency became involved in regulatory action to clean up PCB contamination at a private site.

Residents clean the creek shore for Earth Day – reclaiming a forgotten creek to once again deserve its name, "Paradise."

In fact, out of the momentum emerged a project beyond any initial reckoning: Paradise Creek Nature Park. The stakeholder planning team for the project had recommended finding a spot to create the first public access to the prosaic little creek where many residents had played, illegally and unsafely, as children, trespassing beneath bridges. No one quite imagined the park that would emerge. Nestled in the midst of the Elizabeth River's industrial corridor, Paradise Creek Nature Park will be Portsmouth, Virginia's third largest park: 40 acres of canoeing, kayaking,

walking and biking through one of the last mature forests left on the Elizabeth River. The canoe trails will meander through 10 acres of planned tidal wetlands to be restored where they were filled in during the last century. Education displays will tell the story of "One Creek at a Time" along with demonstrations of paving that absorbs runoff, native plants that provide habitat for wildlife and other stewardship practices. Home-based at the park will be a one-of-a-kind floating classroom, "The Learning Barge," which one its University of Virginia designers the Education Award in May 2008 from the American Institute of Architects.

"Peel me off the ceiling," said Dottie Wyatt, past president, Cradock Civic League, when she first visited the park site. The Elizabeth River Project completed a $1.2 million purchase of the land in 2007 thanks to funding from Virginia Land Conservation Foundation, Virginia Port Authority and The Virginian-Pilot. The City of Portsmouth has agreed to operate and maintain the park. Virginia Port Authority will restore wetlands there. The Elizabeth River Project is considering establishing headquarters at the park in an off-the-power-grid interpretive center, powered by sun and wind. The "One Creek at a Time" model created so much synergy in this part of the Elizabeth River that we now want to operate from this place of inspiration and hope for urban rivers.

The "One Creek at a Time" model created synergy here and can serve as a model for other urban rivers.

Some problems will take more time than the five years we allotted for achieving Paradise Found. We did not solve the intractable challenge of urban runoff, but made a modest start. Our partnership has not yet cleaned up the contaminated creek bottom. We expect this to come to pass in the next five years, since the effort is now begun.

As proof of our faith in the "One Creek at a Time" model, The Elizabeth River Project already has repeated the Paradise Creek planning and restoration approach at Money Point on the Southern Branch of the Elizabeth River. While not a creek per se, the Money Point section of the river represented a similarly definable area of the Elizabeth that represented a complex intertwining of needs, best addressed through diverse stakeholder planning and involvement. The Money Point Revitalization Plan, completed in 2006 using the Paradise Found model, has led to $15 million in restoration efforts underway by diverse partners.

The Elizabeth River Project is grateful to the Small Watershed Grants program of the Chesapeake Bay Program, administered by the National Fish and Wildlife Foundation, for core funding each year of the Paradise Found initiative.

The "One Creek at a Time" Model

1) **Select a creek, or similarly manageable area of less than five square miles,** which represents a microcosm of the larger river or bay you are trying to improve -- or that represents a priority area for restoring the larger waterway.

2) **Begin with at least one major partner already on board to invest in environmental improvements.** This partner will be the catalyst to inspire others to sign on.
    - On Paradise Creek, the initial major partner was the US Navy; under federal directives to clean up Superfund-level landfills on the creek and looking for community involvement.
    - At Money Point, the Living River Restoration Trust, a sister non-profit to Elizabeth River Project, planned to invest $5 million in an off-shore contamination cleanup. Like the Navy on Paradise Creek, the Trust welcomed complimentary community projects to improve the likelihood of long-term success.

3) Engage the full diversity of interests in a facilitated planning process to determine the most serious environmental problems in the target area and the most acceptable and effective approaches for addressing them. Citizens, industries and government agencies not only lend important points of view. They are more likely to participate in a plan that they helped fashion, and less likely to try to stop it.
    - The Elizabeth River Project obtained planning grants and hired professional facilitation for a one-year planning process for Paradise Creek and a two-year effort on Money Point before beginning full-scale improvements.

4) Take advantage of the small target area to ask virtually every homeowner, industry and government interest to do their part. Go in person and just ask – most people will say yes, even busy industry leaders.
    - The Elizabeth River Project completed more than 20 projects, with so many partners that we lost count, in our five year focus on Paradise Creek. We estimate that about 250 acres of urban creek habitat are now in conservation or restoration, thanks to willing partners.

5) Include a project to provide public access to the creek or target waterway. You will be surprised at how this will galvanize the community to remain involved into the future.
    - Paradise Creek Nature Park, while not the most critical environmental project, is the most popular project we spearheaded on the creek.
    - The Learning Barge grew out of interest in creating public access to Money Point, a privatized, industrial shoreline. Designed for The Elizabeth River Project by the University of Virginia, the floating classroom has achieved national media attention and nearly a dozen awards.

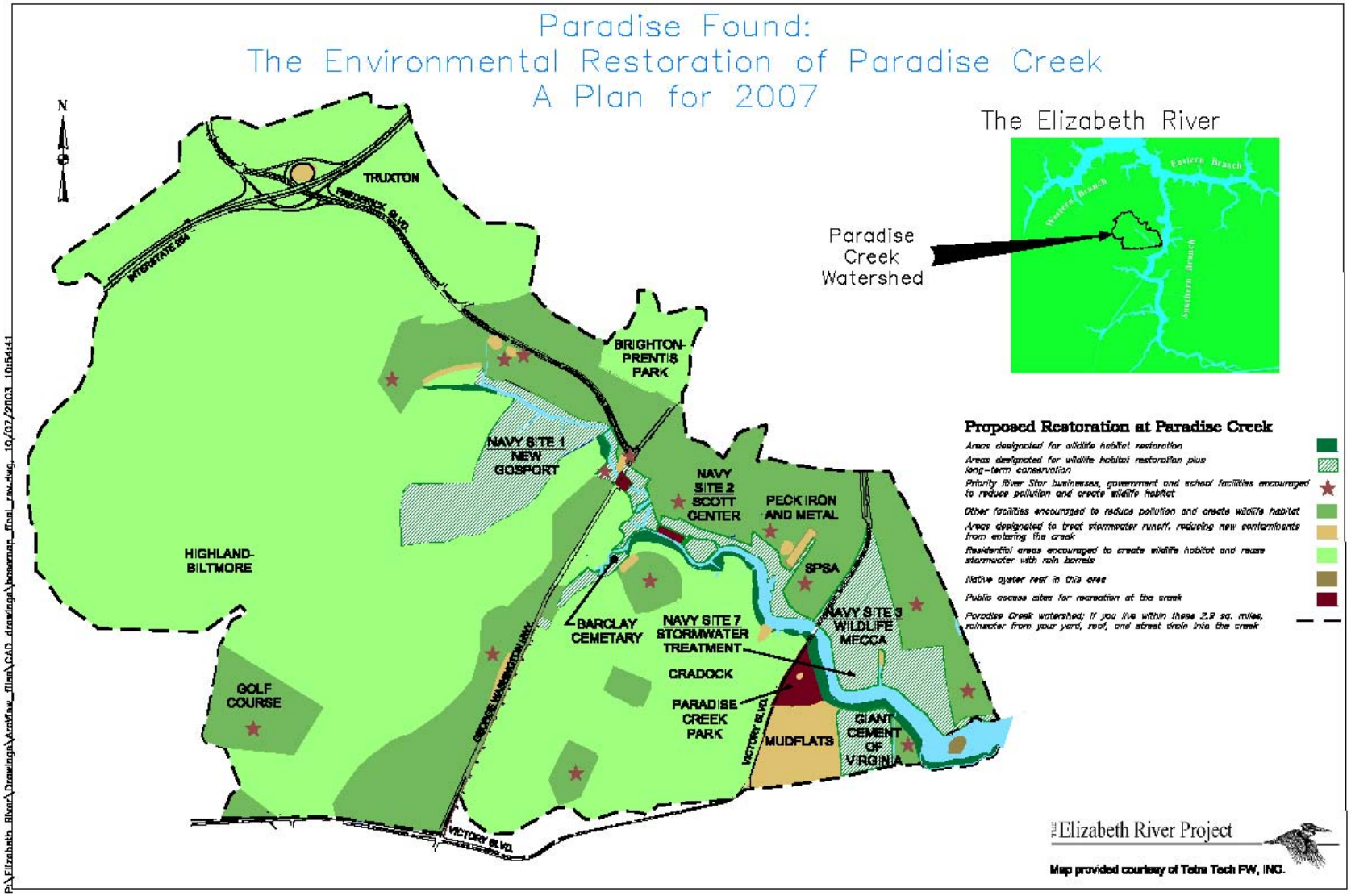
Step 1 - Chose a small area that represents your challenges.

- **Select a creek or similarly manageable area, ideally less than five square miles, that represents a microcosm of the larger river or bay you are trying to improve -- or that represents a priority area for restoring the larger waterway.**

Paradise Creek presents a microcosm of the Elizabeth River – within a manageable, 2.9 square mile sub-watershed. The Elizabeth River, in Southeastern Virginia, has been the harbor where America built and deployed the naval might of the free world. Norfolk Naval Shipyard on the Southern Branch of the Elizabeth has been making ships of war since before the Revolution, and Naval Station Norfolk, on the mouth of the Elizabeth, remains the world's largest naval base. Often touted as the world's largest natural ice-free harbor, the Elizabeth also has a long, proud history as a commercial port – and it hosts more than 500,000 residents, along with crabs, oysters, wading birds and fisheries of the tidal estuary it still is of the Chesapeake Bay.

All these diverse interests are found on a small scale on Paradise Creek – along with the environmental challenges they bring. The naval shipyard used the little creek as a dumping ground for its excess sandblast grit in the world wars – and now those landfills are "Superfund sites," under environmental restoration. A half-dozen industries cluster near the mouth of the creek, some of them taking advantage of access to the shipping channel. And homes of the historic Cradock community of Portsmouth, Virginia, look onto the creek that once earned its name from a bucolic plantation there before World War II exploded the housing need for miles around the naval shipyard.

Paradise Creek empties into the Southern Branch of the Elizabeth River in the midst of one of the busiest industrial harbors in the world. Lower right, Cradock neighborhood homes and a school face Naval housing and a fuel plant – a manageable microcosm of the larger river.



The planning team envisioned contiguous projects throughout the sub-watershed. Most have been realized – with Paradise Creek Nature Park actually expanding from 6 to 40 acres.

Step 2 - Identify at least one major partner already on board.

- **The ideal creek, or other target area, will have at least one major partner already interested in investing in environmental improvements. This partner will be the catalyst to inspire others to get on board, providing momentum and a sense of hope.**
- **On Paradise Creek, the initial major partner was the US Navy, which was under a federal directive to clean up Superfund landfills on the creek and was looking for community involvement.**

On Paradise Creek in early 2001, the US Navy and Norfolk Naval Shipyard were making plans to clean up seven Superfund level ("worst of the worst," by federal standards) contaminated landfill sites to meet regulatory requirements. The Navy's interest in community involvement played a large role in the selection of Paradise Creek for this model project, and in the ultimate success of the "One Creek at a Time" initiative.

Creek stakeholders plant a tree for Earth Day celebrations that kicked off Paradise Found.

The oldest shipyard in the nation and one of the largest employers in Southeastern Virginia, Norfolk Naval Shipyard shaped the history of world maritime industry with many firsts - first ironclad ship, first aircraft carrier built here on the Southern Branch of the Elizabeth, less than a mile north of Paradise Creek, to name a few. During both world wars, the creek played a less proud role, as a convenient dumping ground for sandblast grit from the shipyard's massive efforts to keep the nation's fleets in good repair. During the course of the Navy's participation in Paradise Found, shipyard workers and fellow navy engineers turned their ingenuity to restoring the creek's health in ways beyond the ordinary.

The White House Council on Environmental Quality presented the 2004 Coastal America Spirit Award to the naval shipyard and partners including the Elizabeth River Project for our

collaborative approach to restoration at Paradise Creek. The shipyard completed four wetland restorations totaling more than 10 acres at former contaminated landfill sites, and dedicated a former 70-acre industrial landfill along Paradise Creek to habitat conservation as a “wildlife mecca” with native warm season grasses and wildflowers.

New Gosport Wetland: "The Gateway to Paradise." Less than three miles from the main channel of the Elizabeth River, Paradise Creek reaches its headwaters as a rivulet between current and former naval housing sites. Under federal directives to remove contaminated "black beauty," or sandblast grit from this area of the creek, the Navy worked with advisors of The Elizabeth River Project to develop a win-win project at the former New Gosport naval housing development. Removing the contaminated material would leave a large hole with a potential high cost of filling it in. Instead, the planners decided to grade the excavated area to the proper elevations for planting tidal wetland grasses. Savings totaled more than $1.4 million. The result for Paradise Creek was 1.9 acres of new wetlands at its headwaters, later augmented with plantings of trees and shrubs. Among recognitions received, the shipyard won the 2001 Chief of Naval Operations Environmental Award for Environmental Restoration at a US Navy installation. On Earth Day 2002, Navy Admiral David Archtizel joined with Portsmouth Mayor James Holley, navy and community volunteers and The Elizabeth River Project Board to plant native trees and flowering vines at the New Gosport site as "the Gateway to Paradise," indicating the site's role in jump-starting the creek restoration.

The US Navy was one of the first key partners for creek restoration.

Scott Center Annex Landfill: Keeping the model going. The stakeholder planning team for Paradise Creek made visits with Navy engineers to all seven landfill sites in order to recommend strategies for the Navy to continue to move beyond the minimum in restoring the health of the creek. Action 5 of *Paradise Found, the Paradise Creek Restoration Plan*, called for "transforming Navy landfills," with specific recommendations for each landfill. The 1.7-acre Scott Center Annex Landfill had been used during the late 1950s for disposal of wastes from dry dock operations such as abrasive blast material, paint chips, sanitary waste, and

This site was a former toxic landfill slated to become a parking lot until planning team suggested a wetland restoration.

solvents as well as hydraulic fill, a waste consisting of fine sand, clay, and water from maintenance dredging of nearby waterways. Originally, Navy remediation plans called for paving the landfill as parking. Instead, responding to Team Paradise and its own advisory board, in 2004 and 2005 the Navy excavated the landfill, disposed of over 28,000 tons of landfill debris and affected marsh sediments, and created a 1.6-acre tidal wetland and a 0.4-acre riparian buffer at the site along Paradise Creek next to Scott Center navy housing.

Step 3 - Invite all interests to the planning table.

- **Engage the full diversity of interests in a facilitated planning process to determine the most serious environmental problems in the target area, and the most acceptable and effective approaches for addressing them.**
- **Citizens, industries and government agencies not only lend important points of view. They are more likely to participate in a plan that they helped fashion, and are less likely to try to stop it.**

Standing on the banks of Paradise Creek on July 29, 2002, US Environmental Protection Administrator Christie Todd Whitman handed over a $100,000 check for The Elizabeth River Project to prepare the model plan for Paradise Creek. In using the Small Watershed Legacy funds, Whitman said she would be looking for the Elizabeth River Project to continue its signature partnership approach: "Citizens, local government and industry working together to assure that economic prosperity and environmental protection go hand in hand."

Christie Todd Whitman and Senator John Warner arrive by boat to Paradise Creek to show support for Paradise Creek restoration efforts.

Those partners convened in fall 2002 as the stakeholders asked to plan the future of Paradise Creek. About 50 strong, they represented area universities, state, local and federal agencies including the Navy, as well as civic leagues and industries on the creek. In planning meetings that lasted nearly a year, "Team Paradise" set a high vision.

"We envision a restoration of Paradise Creek that:

- √ Celebrates and promotes awareness of the creek's diverse partnerships, its rich history and its abundant natural resources, all of which are a source of community pride;
- √ Demonstrates such powerful results in restoration and conservation that the creek enjoys national recognition as the model for watershed management that safeguards ecological health;
- √ Maximizes quality of life for humans, who experience Paradise Creek and its shores as a safe, marketable haven providing economic, recreational and educational benefits while preserving the beauty, peace and natural vitality that are among the creek's greatest gifts."

The team listened to area scientists present the river's environmental problems during an all-day workshop. They traveled to Port Isabel, an island in the Chespapeake Bay, for a two-day intensive planning retreat March 16 and 17, 2003, to reach agreement on what to do about the problems. Their criteria: "Effective, affordable, acceptable to the community" - time-honored planning criteria used by The Elizabeth River Project for the larger river.

Team Paradise reached consensus on these key goals of the plan:

- √ Develop a plan to clean up creek sediments determined to pose a serious risk to humans or the eco-system and begin implementation by 2008.

- √ Achieve a habitat corridor of restored and conserved open land, including wetlands, forests and meadows, for 100 feet inland on the north shore and on the southern shore as practical, with areas set aside as parks or nature preserves as practical.

- √ Implement innovative solutions to stormwater pollution to address those sub-watersheds with the highest impact on the ecosystem, and provide maximum practical stormwater treatments for new developments.

- √ Restore Navy landfill sites on Paradise Creek to productive use

- √ Return at least three Superfund and/or "brownfield" upland sites to productive use

- √ Implement a comprehensive public relations and outreach campaign to educate the citizens about creek restoration, history and stewardship opportunities.

Step 4 - Take advantage of the small area to ask virtually everyone to help.

- **The target area will be small enough for you to ask virtually every homeowner, industry and government interest to do their part.**
- **Go in person and just ask – most people will say yes, even busy industry leaders.**

Homeowners on Paradise Creek needed to do their part - but industries along the shore could have a larger impact, and government held the purse strings and the expertise for major projects. The Elizabeth River Project asked them all to help - and they did. Turn-downs were few and far between for the effort to restore Paradise, in part because the limited scope allowed us to go one-on-one with each request.

Industrial Partners: "River Stars"

The Elizabeth River Project's River Stars program was an effective tool for recruiting industrial partners. The River Stars program, initiated in 1997, provides free technical assistance and public recognition in exchange for industrial progress with preventing pollution and restoring habitat (see www.elizabethriver.org). Before Paradise Found, only two industries on the creek were River Stars - Southeastern Public Service Authority (SPSA) and the Norfolk Naval Shipyard. Both advanced considerably during the plan's implementation, while other creek industries joined the constellation. Three industries, SPSA, the naval shipyard and Giant Cement, reached Model Level for exemplary results in the program.

- **Giant Cement,** a small cement transfer facility at the mouth of the creek, was recruited for Paradise Found with an introductory letter followed by a visit from Elizabeth River Project staff. The plant manager, Ted Hinson, eventually became one of the more active members of the creek planning team and an avid environmentalist who hand-fed a fox, Lady, living in his no-mow zone. Elizabeth River Project staff recommended 22 unused acres be set aside for no-mowing for wildlife habitat along the creek, and Giant complied. Giant also converted a water-cooled compressor to air cooling to eliminate all industrial runoff from the site into the creek, and planted more than 700 native trees and shrubs in the no-mow zone as well as along the plant's entrance driveway. The cement company readily welcomed placement of an oyster reef in its near-shore waters.

This oyster reef at the mouth of Paradise Creek is one of the largest on the Elizabeth River.

- **SPSA's Refuse Derived Fuel Plant** collects garbage from across Hampton Roads for sorting and burning to convert to steam in a plant on Paradise Creek. Low on resources, SPSA's first project for Paradise Found was a one-acre planting to restore an urban forest as a buffer along the creek shore. Soon after, Small Watershed grant funds helped SPSA plant around a stormwater inlet for a more vigorous buffer. Meanwhile, SPSA management began improving its environmental management

practices, in 2005 earning international (ISO 14001) certification of its environmental management system - a major step forward. In a combination of employee awareness and physical improvements, initiatives included metal screens on curb drains; painting the drains bright green to increase awareness; installation of a liquid waste storage and disposal system, and a settling pond for wastewater. An "eddy current" system was installed to remove non-ferrous metals from the ash waste stream.

- **RADVA,** a protective packaging manufacturer on the creek, reached Achievement Level as a River Star for restoring two acres of wildlife habitat including a woodland garden, butterfly meadow and stormwater pond, all planted by 14 employee volunteers in September 2005 in cooperation with The Elizabeth River Project. In other efforts, RADVA invested $200,000 in a state-of-the-art recycling center. RADVA reduced raw material consumption by 12% and saved the company $180,000 annually.
- **Peck Land Company,** owner of several large parcels on the creek**,** partnered with The Elizabeth River Project to restore a one-acre tidal wetland at the former industrial "brownfield" site, Peck Iron & Metal. Volunteers planted 4,000 wetland grasses in May 2004. Peck also partnered with The Elizabeth River Project to restore three acres of riparian buffer adjacent to the restore wetland. Peck placed 6.2 acres of riparian buffer and wetlands into a permanent conservation with The Elizabeth River Project along 600' of shoreline at the former Peck Iron & Metal site. Peck also placed 6.5 acres of riparian buffer and wetlands of the nearby "Mudlfats" property on the opposite shore of Paradise Creek in conservation.
- **Beach Marine Services,** a small repair yard for military vessels, opened on the creek near the park during Paradise Found. Beach Marine first agreed to incorporate modest "green" recommendations into the site plan. The yard went on to restore 6,500 square feet of wetlands along its shore and enhance 33,000 square feet of riparian buffer of native trees in partnership with The Elizabeth River Project. The yard removed creek debris including 15 creosote piles for a total of over 12 tons of debris.

Beach Marine Services' shoreline has been enhanced with native wetland and buffer vegetation.

The small boat yard also features an enclosed paint gun cleaning system that recycles solvent and is a closed system. There is an oil water separator installed for the wash-down area (we found several tree frogs living there!) Energy-efficiency efforts include incorporating skylights to allow natural light in the sheds to reduce energy consumption, using an on-demand hot water heater and purchasing Energy Star computers.

- **Accurate Marine Environmental**, an oil spill response company on the north shore of the creek, earned River Star status with steps including adding "Safe Drains" to absorb runoff. The company installed three stormwater inserts, with filters for sediments and hydrocarbons, in three inlets. The Safe Drain features a valve that can be closed in the event of a spill. Accurate spent three years developing a pollution prevention plan with goals such as reducing office waste by 10 percent. Accurate planted native trees and shrubs in 2007 to provide habitat and filter runoff along the shore of Paradise Creek.
- **Norfolk Naval Shipyard** reached Model Level in the River Stars program for restoration efforts described earlier, along with exemplary progress in pollution prevention.

Government Partners: Oyster Reefs, Rain Gardens and… a Park!

Volunteers place oysters on the new three dimensional reef at the mouth of the creek.

It wouldn't be Paradise without oysters. Mid-way in the creek restoration, The Elizabeth River Project worked with the Virginia Marine Resources Commission and other partners to restore a 0.3 acre native oyster reef at the mouth of Paradise Creek. The June 2004 project was funded with NOAA and other funds through a Small Watershed grant. To replace lost habitat, the reef was built with 28,177 bushels of shucking house oyster shells. The shell was barged in to the site and placed in mounded structures.

A week later, the reef was seeded with 42,000 small oysters grown by volunteers from the community. To continue stocking the reef, another15,500 seed oysters were added in July 2006. In Virginia Marine Resources Commission annual surveys, the reef shows annual recruitment of new oysters on to the reef.

Reducing urban stormwater runoff - a modest start with a rain garden. Stormwater treatment systems are rare or non-existant in the 250-acre Paradise Creek watershed. A rain garden completed in December 2004 for Paradise Found now treats runoff along busy George Washington Boulevard. The rain garden was constructed on land owned by the Portsmouth School Board adjacent to former Cradock High School. Volunteers helped plant 500 native trees, shrubs, and grasses which will absorb runoff from approximately .5 acres and has a surplus capacity of about 1.5 acres. The rain garden features a 2,500 square foot surface area and the soil filter is 200 cubic yards of select sand, compost, and soil mix. The rain garden also features an under drain and overflow system. The under drain system helps to relieve the planting soil of excess water due to the close proximity of the seasonal water table as found in the lower land elevations of our coastal region. It is unlikely the overflow system will be needed but was added as a feature to provide drainage should a severe storm and associated flooding occur.

This patch of grass did little to filter runoff from the adjacent busy road.

Volunteers plant native species to filter runoff after attending a seminar on benefits of rain gardens.

Homeowners Pledge to be "Creek Heroes"

Native species can be a beautiful addition to any yard.

What to do to reach the homeowner on the creek with an enticing message of stewardship? The Elizabeth River Project decided on a door-to-door campaign, offering free native trees and flowers. Since fewer than 50 homes in the Cradock neighborhood abut directly on the waterfront, this seemed a manageable target area.

Our tool box included "backyard habitat education packets" plus a Creek Hero commitment pledge, gift certificates for native trees from area nurseries and a delivery date for the free flowers, plus a competition for design and funding of a "Backyard Makeover." The education packets covered topics from landscaping with native plants to green lawn care and green car washing practices. A team of three Elizabeth River Project staff approached all residential homes along the Paradise Creek shore in the primary neighborhood of Cradock in April 2006. Thirty-nine residents accepted the packets and 17 pledged their commitments as "Creek Heroes." Staff toured a number of the backyards to provide advice on environmentally sensitive yard care practices as well as the importance of the buffers and wetlands. Two adjoining backyards won the Backyard Makeover. A professional design called for beautyberry plants, native azaleas, sweet pepperbush, hydrangeas, viburnum, and switch grass. With the food and shelter provided by the plants and the water available in the birdbath, this one-quarter-acre area along Paradise Creek will be a wildlife haven and a model for others to follow.

Step 5 - Provide public access to galvanize the community into the future.

- **Include a project to provide public access to the creek or target waterway. You will be surprised at how this will galvanize the community to remain involved into the future.**
- **Paradise Creek Nature Park, while not the most critical environmental project, is by far the most popular project we spearheaded on the creek.**
- **The Learning Barge grew out of interest in creating public access to Money Point, a privatized, industrial shoreline. Designed for The Elizabeth River Project by the University of Virginia, the floating classroom has achieved national media attention and nearly a dozen awards.**

The Nature Park

Public access will be the only key to long-term stewardship of Paradise Creek, the stakeholder planning team said from the start. The team also identified the general area - away from residential homes, separated from Cradock neighborhood by Victory Boulevard, an aging boatyard was for sale along with a dense patch of forest known locally as "the mudflats."

Resident, Dottie Wyatt said "peel me off the ceiling!" when she learned about the park.

The mudflats were once a part of the creek, filled in with dredge spoils in the mid-1950s. The squishy soil made the site unattractive for heavy industrial development. For a park, though, the attractions included:

- Location of the last privately held stand of mature forest;
- Potential area for large wetland restoration to bring back a former area of the creek;
- Connectivity of habitat to other restored habitat for maximum value. The Navy "wildlife mecca" was located directly across the creek and the oyster reef was restored just off shore, with participating River Star industries to left and right.
- Location within a mile of a new science center for Portsmouth schools – Victory Elementary.

The location was also compatible with City of Portsmouth planning efforts for 40 years to establish a public park in this quadrant of the city and upgrade its Southeast gateway to Portsmouth. Responding to Paradise Found, Portsmouth City Council voted unanimously, Earth Day 2003, to establish a park in perpetuity on Paradise Creek. Clough Harbour Associates prepared a Master Plan with guidance from a community steering committee, calling for two miles of trails through native flowers, across board walks through trees at canopy height and along a foot bridge crossing the mouth of 10 acres of restored wetlands. At the water's edge, visitors to Paradise Creek Nature Park will explore a "tidal garden" that turns wetlands into sculpture. Canoe trails will allow exploration of the creek and its restoration history by canoe and kayak. Guest artist Michael Singer, who works internationally on public spaces, included a terraced "earth works" sculpture to give a view of the creek and the nearby Elizabeth River from 50 feet in the air. Interpretive signage and an interpretive center will explain the porous paving, nearby River Star efforts and the Paradise Found model.

On December 22, 2006, The Elizabeth River Project purchased the first 24 acres using $500,000 from the Virginia Land Conservation Foundation. The remaining land was purchased in 2007 with $300,000 from the Virginia Land Conservation Foundation, $500,000 from the Virginia Port Authority, and $100,000, from The Virginian-Pilot.

This conceptual drawing of the Paradise Creek Nature Park highlights some of the park features such as educational exhibits, trails, and time mound in center for epic creek vistas.

Conclusion

While most major tributaries, like the Elizabeth, are too large for citizen-led efforts to address comprehensively in a short time, a creek can be a showcase for getting all players on board to make a difference. On Paradise Creek, a five-year effort by a small non-profit generated enough momentum to inspire the US Navy to transform 75 acres of Superfund-level contaminated landfills into wildlife meccas and engage seven industries in far-reaching environmental improvements on their sites. Meanwhile, 17 residents became "creek heroes" in exchange for native trees and flowers. Government partners conducted monitoring, restored native oysters and studied the river bottom. And the City of Portsmouth committed to keep Paradise Creek at the center of stewardship attention by operating Paradise Creek Nature Park.

Not every problem was solved. But not a bad start at restoring the Chesapeake Bay… "one creek at a time."