A. Introduction

The Tacony-Frankford River Conservation Plan (RCP) is a major component of a greater effort to improve the overall health and environment of the Tookany/Tacony-Frankford Watershed. The RCP focuses on reconnecting watershed residents with the parks, historical and cultural sites and natural areas in their communities. The most important outcome of the RCP process is to improve watershed amenities so that residents feel that the Tacony and Frankford Creeks and surrounding parks and cultural centers are clean, safe and accessible places to visit and enjoy.

B. Study Area Location

This watershed hosts a stream with many names. The name "Tookany Creek" identifies the creek as it flows through the upper portion of the watershed in Cheltenham and Abington Townships in Montgomery County. After the creek crosses Cheltenham Avenue and enters the city of Philadelphia, it is referred to as the Tacony Creek. The stream assumes yet another name, the Frankford Creek, as it flows through the Juniata Park golf course. The Frankford Creek refers to the stream below the confluence of the Wingohocking, now encapsulated in a combined sewer, and Tacony Creek.

This plan focuses on the portion of the Tookany/Tacony-Frankford Watershed that lies within the city of Philadelphia. The study area encompasses an area of 19 square miles and represents 41.5 percent of the Tookany/Tacony-Frankford Watershed. The creek flows in a southeasterly direction through a highly urbanized environment and joins the Delaware River just south of the Betsy Ross Bridge. Figure 1. shows the regional context of the study area

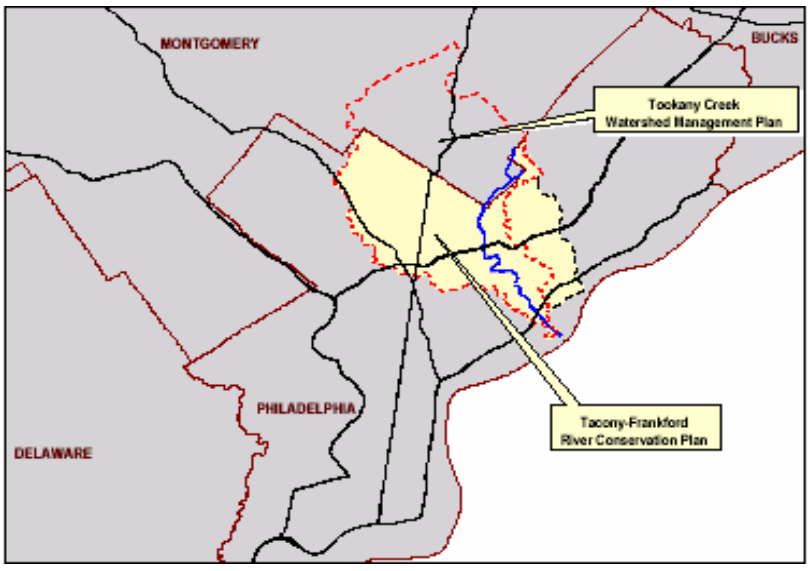

Figure 1. Tacony-Frankford Creek RCP Study Area

This plan focuses on the portion of the Tookany/Tacony-Frankford Watershed that lies within the city of Philadelphia. The study area encompasses an area of 19 square miles and represents 41.5 percent of the Tookany/Tacony-Frankford Watershed.

C. Planning History

In 2000, a group of municipalities, Philadelphia City agencies and concerned citizens formed the Tookany/Tacony-Frankford (TTF) partnership with the goal of creating a watershed management plan to improve the health and quality of the Tookany/Tacony and Frankford Creeks. One of the goals of the TTF Public Participation Committee was to include the residents' hopes and desires for the watershed as an integral part of the watershed management plan. However, partnership members were hearing that residents were concerned about a myriad of issues that went well beyond the responsibilities of a management plan - the condition of their neighborhood's recreation centers and recreational opportunities, vacant lots and redevelopment, safety in their neighborhoods, just to name a few. When the partnership learned about the scope of river conservation plans, and its strong emphasis to obtain community feedback on a host of environmental and quality of life issues, the partnership realized that tackling such a plan simultaneously with its watershed management plan, would allow the partnership to broaden its own scope and include a larger segment of the watershed community, simply by addressing their particular concerns and incorporating these into its management plan process.

Approximately 32 miles of the historical tributary streams of the Tacony-Frankford Creek have been encapsulated in combined sewers throughout the nineteenth and twentieth centuries to facilitate residential and industrial development of the city of Philadelphia.

D. Planning Process

A Steering Committee for the RCP was established to direct the RCP team's efforts and review the plan's products and progress. The committee met regularly and provided critical input to shaping the plan.

Community participation was also critical to developing the RCP. Through a series of outreach events, interviews and meetings the Tacony-Frankford RCP incorporated residents' input to identify the important resources and issues in this watershed. Steering committee and public input guided the RCP team's effort to accurately characterize the watershed and develop management options that will benefit all watershed stakeholders.

E. Study Area Characteristics

This watershed is dominated by urban land uses. Residential land uses comprise the majority of land area. Industrial and commercial uses are prevalent in the lower reaches of the watershed.

Approximately 32 miles of the historical tributary streams of the Tacony-Frankford Creek have been encapsulated in combined sewers throughout the nineteenth and twentieth centuries to facilitate residential and industrial development of the city of Philadelphia. Subsequently 70 percent of the watershed's stream miles, mostly in the western portion of the study area, have no visible stream connecting residents to their watershed.

Topography and Geology

The middle and upper reaches of the study area are in the Northern Piedmont Ecoregion. The piedmont is characterized by ridges, hills and deep narrow valleys. Elevation can vary from 40 feet at the fall line to 400 feet at the ridge tops. The topography of the study area is level except for steep slopes along the banks of the Tacony Creek. This section of the watershed is generally underlain by metamorphic and igneous geologic formations, predominately the Wissahickon Formation with small areas of gneiss and hornblende. These formations are exposed where the Tacony Creek has eroded overlying sediments to the bedrock (PA DEP 2001).

Less than five percent of the watershed area is comprised of non-urban soils.

The lower portion of the watershed lies within the Middle Atlantic Coastal Plain Ecoregion. This is an area of low relief. Historically the coastal plain in the city of Philadelphia was tidal marsh. These marshes were filled and paved over for urban development (PA DEP 2001). The topography of the coastal plain is gently sloping with elevations from 0 to 40 feet above sea level. The coastal plain is mainly comprised of unconsolidated sand and clay, deposited during the current quaternary geologic period.

Soils

The soils throughout the study area are Urban Land or Urban Fill. Urban Land is created when native soils are disturbed or destroyed by the construction process of homes, industry or active recreation facilities such as golf courses or ball fields. Soil characteristics, such as erosion potential and drainage characteristics, of Urban Land are highly variable due to the disturbed nature of these soils. Urban fill can be comprised of a variety of disturbed soils, construction materials or in some instances ash and coal cinders. These materials have been used in this watershed to fill low-lying areas to make them level and more suitable for construction purposes. Less than five percent of the watershed area is comprised of non-urban soils.

The study area has lost approximately 8,600 people or 2.2 percent of the 1990 population.

Historical tributaries to the Tacony-Frankford Creek were in-filled with a variety of materials to facilitate the residential and industrial development of the watershed. Subsidence of these in-fill soils has led to the demolition of hundreds of homes since the 1930's.

Demographics

The population of the Tacony-Frankford Watershed within the study area is approximately 331,400 people. This results in a population density within the Philadelphia section of the watershed of 27-people/acre or 17,350 people/square mile. According to the 2000 Census, Philadelphia's population declined by 4.3 percent between 1990 and 2000. The study area has lost approximately 8,600 people or 2.2 percent of the 1990 population (see Figure 2.). A large portion of this population loss was in the Logan neighborhood,

due to the demolition of homes. Census trends indicate that neighborhoods in the western and northern portions of the watershed have been losing population while communities along the creek and in the eastern portion of the watershed have made modest gains in population.

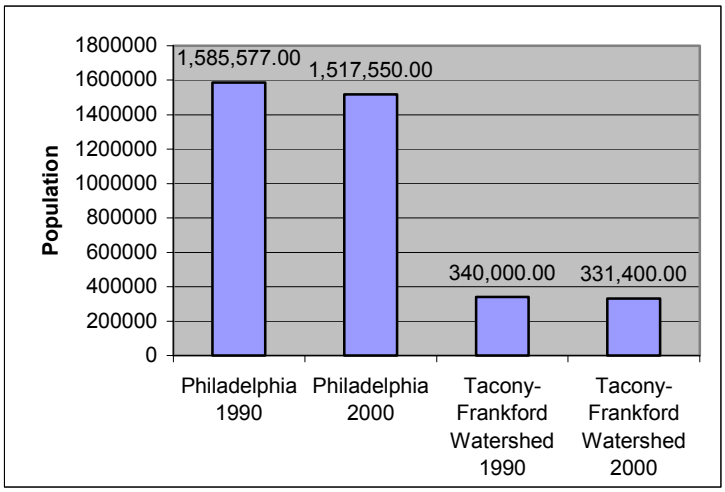

Figure 2. Population Change 1990-2000

The Tacony-Frankford Watershed contains wide variation in economic conditions and housing values. According to the 2000 Census, portions of Hunting Park and Olney have per capita incomes under $10,000 while portions of East Mount Airy have a per capita income over $35,000. Per capita income for the city is $16,509. The majority of owner occupied housing values, in the watershed, are between $50,000 and $100,000. Figure 3. shows the percentages of owner occupied housing values in the watershed.

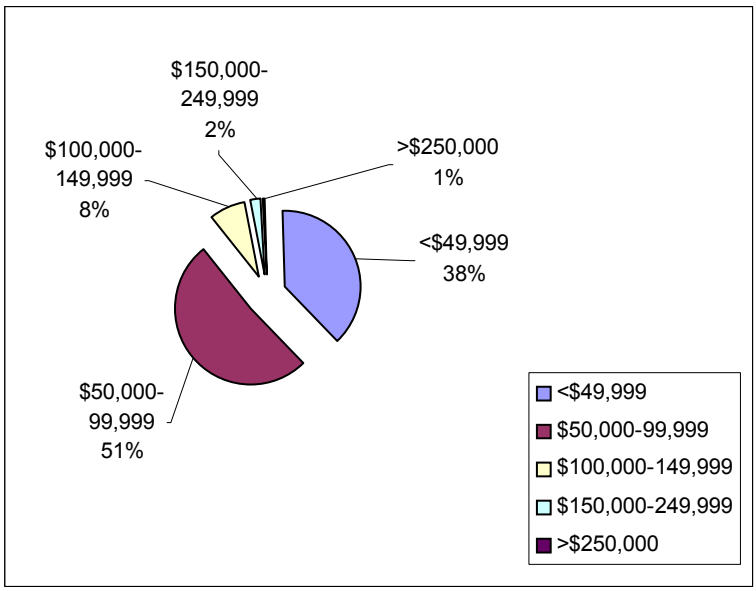

Figure 3. Owner Occupied Housing Values

There are 114,588 persons, 35% of the study area residents, under the age of 18 years old. There are 37,664 persons, 11 % of the study area population, over 65 years old. In comparison, 25% of the city population is under 18 years old and 14% of the population is over 65 years.

Black or African Americans (51% of the population) are the largest racial group in this study area, followed by whites at 22%, Hispanics at 12% and Asians at 5% of the study area population. Figure 4. details the racial diversity of the watershed.

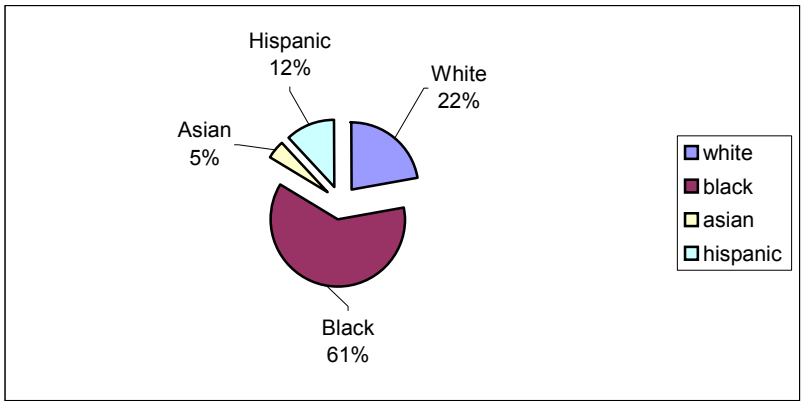

Figure 4. Racial Make Up of Study Area

Land Use/Zoning

The Tacony-Frankford Watershed, within the city of Philadelphia, is dominated by urban land uses. There are no agricultural land uses in this watershed. Wooded, recreational and park areas comprise approximately 1,210 acres or 9.9 percent of the land within the study area. Development within this portion of the watershed is redevelopment or in-fill development. Zoning categories describe the general land uses that are permitted in those zoning areas. Since the study area is mostly built out, zoning categories are a good indication of actual land use.

Land use within the study area is predominantly residential (over 57 percent of total land use). Most of the residential uses are either multi-family residential or attached single-family homes. Examples of attached single-family housing are twins and row homes. Pockets of detached single-family residential homes can be found in East Mount Airy, Germantown, Northwood, Ogontz and Oak Lane.

There are sections of heavy industrial zoning throughout the watershed but the least restrictive zoning categories can be found along the Delaware River and along the lower reaches of the Frankford Creek. Table 1. details the number of acres of permitted land uses based on zoning categories and the percentage of the study area they occupy.

Land use within the study area is predominantly residential (over 57 percent of total land use).

There are 843 acres of public park and recreational land within the study area. This represents 6.9 percent of the total study area.

Table 1. Land Use Statistics for the Study Area

Land Use	Acres	Percent of Total
Attached Single-Family Residential and Multi-Family Residential	6,423.1	52.8%
Commercial\Services	1,035.0	8.5%
Manufacturing	951.1	7.8%
Transportation	726.8	6.0%
Detached Single-Family Residential	658.4	5.4%
Community Service	536.7	4.4%
Recreation	511.0	4.2%
Cemetery	457.8	3.8%
Regional Park	332.0	2.7%
Wooded	284.1	2.3%
Military	5.6	<1%
Golf Course	83.3	0.7%
Water	83.9	0.7%
Utility	56.2	0.5%
No Data available	15.6	0.1%

Source: Philadelphia Water Department

Parks and Recreational Resources

Park and recreation facilities are under the jurisdiction of two different city governing bodies, the Fairmount Parks Commission (FPC) and the Philadelphia Department of Recreation. The FPC was established in 1867 by an act of assembly to protect and preserve city open spaces that are placed in the commission's charge. The FPC also provides recreational opportunities and maintains the parks' natural and structural resources. Sixty-three neighborhood and regional parks comprise Fairmount Park. The Philadelphia Department of Recreation, created in 1911, is charged with organizing and managing all recreation facilities not under the control of FPC or the Board of Education (Philadelphia Department of Parks).

There are 843 acres of public park and recreational land within the study area (Map 5). This represents 6.9 percent of the total study area. There are 26 recreational centers within the city portion of the watershed. No resident lives more than 0.75 miles from a park, playground or recreation center. Tacony Creek Park, a unit of Fairmount Park, is the largest park within the watershed. The park consists of 302 acres of land that form a narrow corridor of park along the Tacony Creek from the Montgomery County line to the Juniata Park golf course. One hundred fifty two acres of the park are considered natural lands. The park is used by residents for picnicking, running, walking, horseback

riding and fishing. FPC noted two popular sledding hills within the park. Although an illegal activity, people do swim in the creek in Tacony Creek Park. Unsanctioned uses of the park include all terrain vehicle (ATV) use, dumping, graffiti and drug activity.

Biological Resources

Stream Ecology

The biological community of the Tacony-Frankford Watershed is heavily impacted by its urban surroundings. The impaired state of the creek is a result of habitat deterioration and water quality degradation. High levels of urbanization, poor stream bank stability and flood control deeply influence the lower portion of the creek and watershed. These factors have resulted in a channelization of the creek, further inducing erosion and sedimentation problems.

The biological community of the Tacony-Frankford Watershed is heavily impacted by its urban surroundings. The impaired state of the creek is a result of habitat deterioration and water quality degradation

Habitat assessments of the Tacony-Frankford Watershed have determined much of the area to be non-supporting of a biological community. Eight sites within the watershed were assessed based on environmental features such as available vegetation and vegetative cover, riparian zones, stream bank stability, stream flow, riffles, pools, and other factors. Of these eight sites, six were determined to be lacking the attributes needed to support aquatic communities of organisms, while the other two were determined to be capable of partially supporting aquatic communities.

Studies of macroinvertebrate and fish communities in the Tacony-Frankford Creeks, conducted by the Philadelphia Water Department (PWD) and the Pennsylvania Department of Environmental Protection (PA DEP), reveal an ecosystem dominated by species that are both pollution tolerant and tolerant of extreme stream flow fluctuations.

Natural Areas/Wildlife Diversity

Awbury Arboretum, Burholme Park, Fisher Park, Friends Hospital, Wister Woods and Tacony Creek Park are the most significant natural areas within the city portion of the watershed. These areas contain the only natural habitats (woodlands, wetlands, meadows and streams) within the study area. Species diversity of birds, mammals and other taxa are directly related to the quality and size of available habitat. These natural areas are islands of habitat in the built environment. It is important to note that these habitats have been disturbed and are greatly affected by non-native invasive plant species.

A summary of these inventories reveals 39 bird species within the park, 36 of which are probable breeders.

The biological resources of Tacony Creek Park were extensively studied by the Academy of Natural Sciences in 1998. The results are detailed in the *Tacony Creek Park Master Plan* that was published by the Fairmount Park System Natural Land Restoration and Environmental Education Program Master Plan (NLREEP) in 2001. Results of this study indicate that Tacony Creek Park contains a diversity of species that are widespread and typical of disturbed areas. Since the park encompasses a variety of habitats including upland forest, shrubland, meadows and wetlands, wildlife within the park most likely represents the majority of species found within the study area.

A summary of these inventories reveals 39 bird species within the park, 36 of which are probable breeders. Low bird species diversity is attributed to the narrow nature of the park. Large woodlots, such as Friends Hospital, may contain more bird species diversity. Five species of mollusk were found within the park, two native Holarctic, two introduced and one native North American species. The native North American mollusk seemed restricted to habitat where larger forest remnants were present. Only three reptile species were found within the park. Green and Bullfrogs are reported as common. Fish diversity within the study area is limited, although some species are present in high numbers. The mainstem of Tacony Creek is the only fish habitat within the study area. NLREEP and the *Biological Assessment of the Tacony-Frankford Watershed* reports 15 species of fish found within the watershed. Species composition is variable with sampling location but no sampling location contained greater than 12 species of fish at any one sampling event. Angling is practiced within the park but with the exception of Bullhead Catfish, no large sport species were reported. Fish Consumption Advisories are in effect for the tidal portion of the Frankford Creek. Invasive species such as Japanese knotweed and kudzu as well as habitat fragmentation appear to be the major threats to native species biodiversity within the park (FPC Vol.2). Proposals to restore native vegetations were included in the *Tacony Creek Park Master Plan.*

Invasive species such as Japanese knotweed and kudzu as well as habitat fragmentation appear to be the major threats to native species biodiversity within the park

Pennsylvania Natural Diversity Index

The Pennsylvania Natural Diversity Inventory (PNDI) was established in 1980 as a cooperative project between the PA Department of Conservation and Natural Resources, Nature Conservancy and Western Pennsylvania Conservancy. The inventory identifies species or habitats that are endangered, threatened or has special concern and prioritizes the conservation of those resources. Historical PNDI species and habitats within the study area include:

Table 2. PNDI Species in the Tacony-Frankford Watershed

Scientific Name	**Common Name**
Andropogon gyrans	Elliott's Beardgrass
Baccharis halimifolia	Eastern Baccharis
Cuscuta campestris	Dodder
Cuscuta pentagona	Field Dodder
Ilex glabra	Ink-Berry
Lycopus rubellus	Bugleweed
Vernonia glauca	Tawny Ironweed
Woodwardia areolata	Netted Chainfern

Source: PNDI

It is important to note that none of these species was listed in the NLREEP inventory from 1998, however they may be present within the other listed natural areas such as Friends Hospital Property or Wister Woods. There is no federal or state threatened or endangered species found within the watershed.

Wetlands

Wetlands are areas that are seasonally or perennially wet. This situation can be due to replenishment of water from a groundwater source or the pooling of water due to poorly drained soils. Wetlands are often characterized by soil types, the presence of standing water for parts of the year and the plant communities that they support. They provide habitats for wildlife, often serving as breeding areas for amphibians and fish and can serve as important passive recreational areas for bird and wildlife viewing. Wetlands provide an additional benefit of improving water quality by filtering nutrients and other pollutants from the water and they can serve as a storage area for floodwaters and reduce the velocity of stormwater run-off. There are still several small wetlands remaining in the Tacony-Frankford Watershed and can be found along the creek, mostly within Tacony Creek Park. FPC reports that these wetlands are disturbed by stormwater runoff, invasion of exotic species, such as Japanese Knotweed and Phragmites, and proximity to landscaped facilities. (FPC Vol. I)

The approximately four acres of wetlands within the study area were identified by the National Wetland Inventory (NWI), which is a service provided by the U.S. Fish and Wildlife Service. The NWI identifies wetlands from aerial

The approximately four acres of wetlands within the study area were identified by the National Wetland Inventory...

photographs and is not field verified. As a result, data may be inaccurate or incomplete, and more formal verification is required for regulatory purposes.

Water Quality

Numerous studies on the biological and chemical water quality have been conducted in the Tacony-Frankford Watershed. The three most recent comprehensive assessments that looked at water quality were the 1999 PA DEP *Unified Watershed Assessment Report*, the 1999 NLREEP *Tacony Creek Park Master Plan*, and the 2001 Philadelphia Water Department's *Tacony-Frankford Creek Watershed Assessment*.

Biological monitoring indicates that the whole Tacony-Frankford Watershed suffers from impaired aquatic habitat and does not meet its designated use as a warm water fishery.

Section 303d of the Clean Water Act required that states assess the quality of surface waters biannually. Streams considered impaired or not meeting their designated use are included on the "303d list". States must then prepare Total Maximum Daily Load (TMDL) plans for those stream's watersheds. The TMDL is designed to reduce the sources of impairments in the watershed by identifying specific causes of impairment and setting targets for the reduction of those inputs to the stream system. The Tacony-Frankford Creek is designated a warm water fishery and also designated to support migratory fishes such as the American eel.

Biological monitoring indicates that the whole Tacony-Frankford Watershed suffers from impaired aquatic habitat and does not meet its designated use as a warm water fishery. As a result, the whole length of the Tacony-Frankford Creek and its tributaries were listed PA DEP's 303d list of impaired waters in 1999. The tidal portion of the Frankford Creek remains unassessed as the biological assessment protocol is not applicable to tidal stream segments. This impairment is due to severe water flow fluctuations, habitat alteration, point and non-point source pollution from urban development, hydromodification, and combined sewer overflows (CSO)(PA DEP 2001).

Combined Sewer Overflows

Combined sewer systems convey both sanitary waste and stormwater in a common pipe. An intercepting sewer then carries these flows to a wastewater treatment plant. Combined sewers in the Tacony-Frankford Watershed convey sewage to the Northeast Wastewater Treatment Plant. In time of heavy rainfall, the capacity of the intercepting sewer can be overwhelmed, resulting in the discharge of untreated sanitary sewage directly into the Tacony-Frankford Creek. Historically, combined sewer systems were developed before water quality regulations prohibited the discharge of raw sewage into the water bodies of the United States. Retrofitting these combined sewers and separating the stormwater from sanitary sewer systems represents a monumental capital investment that would take the city of Philadelphia years to implement.

In order to address the CSO issue throughout the city, PWD has developed a Combined Sewer Overflow Long Term Control Plan (CSO LTCP). The CSO LTCP was submitted to the PA DEP in 1997 and is being implemented in three phases. The phases involve immediate implementation of a "Nine Minimum Controls" program, design and construction of 17 capital projects (five of which are within this study area) to improve performance of the CSO system and comprehensive watershed based planning and stream water quality analysis and monitoring.

The Nine Minimum control measures program utilizes practical, cost effective measures that can be implemented in a relatively short time frame. The program is meant to address actions that can be taken without requiring further study or major construction activities. The measures are:

1. Review and improvement of on-going operation and maintenance programs.
2. Measures to maximize the use of the collection system for storage.
3. Review and modification of PWD's industrial pretreatment program.
4. Measures to maximize flows to wastewater treatment facilities.
5. Measures to detect and eliminate dry weather flows.
6. Control of the discharge of solid and floatable materials.
7. Implementation of programs to prevent generation and discharge of pollutants at the source.
8. Measure to ensure that the public is informed about the occurrence, location and impact of CSOs.

comprehensive inspection and monitoring programs to characterize and report overflows and other conditions in the combine sewer system.

In order to address the CSO issue throughout the city, PWD has developed a Combined Sewer Overflow Long Term Control Plan...

Hydrologic Modification

The major tributaries of the Tacony Creek were encapsulated in combined sewers in the early 1900s and the stream valleys were filled in to facilitate the development of this area. Today the historical Wingohocking, Rock Run and Little Tacony Creeks are completely encapsulated.

The encapsulation of these historic streams has created a large fluctuation in the flow regimen of the Tacony Creek. These combined sewers can add large volumes of water to the creek shortly after storm events but because they are generally disconnected from the groundwater cycle, they contribute little or no base flow during dry weather. The age and condition of the sewer infrastructure does indicate that leaks and cracks in the sewer pipes does allow for inflow and infiltration of water, from the creek into the sewer system and leaking of sewage into the stream, where aging pipes flow under the creek. In the cases where there is low water pressure within the sewer pipe, water can infiltrate the pipe from the stream. In cases when a leaking sewer pipe is full and subject to higher internal water pressures, sewage can leak into the stream. Both of these events can occur throughout the course of the day as potable water use (and sewer demand) fluctuates.

In order to deal with the flooding that was associated with large influx of stormwater, the Frankford Creek was channelized and straightened in concrete. Historically the Frankford Creek took a ninety-degree bend on its way to the Delaware River in the Bridesburg neighborhood. In the late 1940s and early 1950s, this bend was bypassed to allow water to flow more quickly to the River just south of the Betsy Ross Bridge. This channel prevents interaction between the Frankford Creek and the groundwater system and eliminates streambed habitat needed to support aquatic life.

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Water Supply

Source: Philadelphia Water Department

Water supply for the study area is provided by the Philadelphia Water Department (PWD). PWD uses two surface water sources, the Delaware and Schuylkill Rivers. The western portion of the watershed receives drinking water that is treated at the Queen Lane Water Treatment Plant. The Queen Lane Treatment Plant, located in East Falls, draws water from the Schuylkill River and treats 70 million gallons of water per day (mgd). The eastern portion of the watershed receives water from the Baxter Water Treatment Plant in Torresdale, which treats 200 mgd of water from the Delaware River. The central portion of the watershed receives treated drinking water from a combination of these two sources (PWD 2001 CCR).

There are 46 individual properties listed on the National Register of Historic places found within the study area. In addition to the individual properties, there are three National Register Historic Districts.

Historical Resources

The Tacony Creek and surrounding valley was primarily developed as an area of agriculture and milling operations. The Tacony Creek was dammed several times for mills and became a center for industrial operations during the late eighteenth and early nineteenth centuries. Expansion of the city in the late 1800s converted farmland into residential neighborhoods. Active agriculture persisted in the upper watershed until the early 1900s (FPC Vol.2). Land for Tacony Creek Park was purchased by the city in 1915, while land was being consumed for the need for new housing. The park was added to in 1939, and now occupies 302 acres (FPC vol.2). High-density housing characterizes the development of the area after the 1940s.

There are 46 individual properties listed on the National Register of Historic places found within the study area. In addition to the individual properties there are three National Register Historic Districts. They are the Awbury, Germantown and Tulpehocken Historic Districts. The Philadelphia Historical Commission maintains a local list of historic properties.

Issues and Constraints

Issues and challenges facing the health of the Tacony-Frankford creek watershed have been gathered throughout the resource inventory and public outreach process. Below is a listing of the most commonly identified concerns for the watershed.

Invasive/exotic vegetation: Disturbed areas throughout the park and study area are susceptible to invasion by non-native exotic vegetation. Japanese knotweed, kudzu, purple loosestrife, Japanese honeysuckle, porcelain berry, Asiatic bittersweet and multiflora rose are identified as issues within this watershed.

Illegal trash dumpsites: Dumping of trash, cars and other appliances are an issue for Tacony Creek Park and vacant land. Secluded open areas are especially susceptible to dumping. Sites of abandoned cars often become targets for fire. Illegal dumping was identified anywhere there was a major road crossing over the Tacony Creek. Sights specifically identified include:

- Adams Avenue,
- Adams and Newtown Avenues,
- driveway connecting Adams Avenue to Godfrey Avenue,
- Castor Avenue near Wyoming Avenue,
- I and Ramona,
- F Street and
- Awbury Arboretum

Public Safety was ranked as the third most important task for improving community enhancement and enjoyment of the Tacony-Frankford Creek by the respondents to the public survey.

Illegal dumping ranges from trucks dumping construction materials and appliances to residents throwing trash directly into the creek. Public survey respondents ranked trash and litter as the primary source of pollution affecting the creek, dumping was ranked third.

Graffiti: Graffiti is a problem throughout Tacony Creek Park.

All Terrain Vehicle Use: ATV use, while illegal in Tacony Creek Park has had a very detrimental effect of the health of the park. Illegal trails disturb native vegetation and open habitat for invasives while contributing to erosion on slopes of the creek banks. ATV use was identified as a problem throughout Tacony Creek Park and especially at Awbury Arboretum.

Illegal/Unsafe Use: These sites in the park are used for parties, drug activities or other unsafe uses. Public Safety was ranked as the third most important task for improving community enhancement and enjoyment of the Tacony-Frankford Creek by the respondents to the public survey.

Flooding: Flooding and associated sewage smells were identified as problems at Wissahickon Lane under the R7 Bridge and at Juniata Park golf course.

Management Options and Goals

A series of goals for this watershed were developed for this plan by the steering committee and RCP team. Management options that support these goals were solicited from the steering committee, RCP team, key person interviews, stream visual assessments, public surveys and other outreach events. The following is a list of goals and their relevant management options.

1. Goal: Improve Stream Habitat and Living Resources
   - Routine Stream Cleans-ups *
   - Shopping Cart Program *
   - Support Awbury Master Plan *
   - Support efforts of "non-public" landowners to preserve green land *
   - Work with watershed management plan to address water quality issues *

2. Goal: Improve Instream Flow Conditions
   - Encourage development of vacant land/brownsfields (work with PIDC)*
   - Protect open space in communities *
   - Enforce building and zoning codes (stream buffers minimum 40 feet) *
   - Rain Barrell program expansion *
   - Demonstrate BMP projects for education and new ordinances *
   - FGM follow up to ACOE study

3. Goal: Water Quality and Pollutant Loads
   - Reduce Combined Sewer Overflows (CSOs) and Repair leaking sewers *
   - Remediate environmental pollution and contaminants *

4. Goal: Improve and Protect Stream Corridors
   - ACOE Floodplain Study
   - Invasive Species removal program *
   - FPC Master Plan Recommendations
   - Upstream Floodplain buffering
   - Get ATVs out of park areas – evaluate ATV trail establishment
   - Confiscate ATVs – use fines toward park restoration activities
   - Encroachment enforcement (backyards/business) *
   - Penn State "Weed Warrior" program provides training to adopt a stream and remove invasives *

5. Goal: Flooding
   - Address localized flooding issues *
   - Protect open space in neighborhoods (evaluate per location to planning initiatives and stream protection) *

- Streetscape plantings *
- Implement more stormwater Best Management Practices (BMPs) in development *
- Identify vacant land where available to incorporate floodplain management *
- Address "inappropriate" industrial land use – code enforcement/re-evaluate zoning of past use

6. Goal: Quality of Life
   - Improved lighting and well landscaped public right of way
   - Increase police/"Park Watch" presence
   - Create connection between parks, streams, rec centers and schools
   - "No Dumping" enforcement *
   - Preserve historic character of creek/community
   - Adaptive reuse of large industrial/historic structures
   - Gid rid of sewage odors along the stream *
   - Renovate playground areas
   - Enforce "No Swimming" in creek *
   - Add restrooms to park
   - More park rangers
   - Build barriers to stop dumping *
   - Hazard & toxic wastes legal disposal program*
   - Construction and landscaper debris program*
   - Support cultural/historical organizations like Frankford Historical Society

7. Goal: Stewardship, Communication and Coordination
   - Funding for a dedicated staff person to oversee plan implementation, coordination and funding (for staff position too) – RCP Implementation Manager
   - Develop model BMP ordinances *
   - Complement actions of Tookany RCP
   - Develop Master Plan for Tacony Creek *
   - Develop school programs connected to creek *
   - Encourage citizen monitoring *
   - Businesses – Adopt a Stream Program *
   - Establish a Watershed Wide Consortium *
   - Education programs focused on history of watershed *
   - Create a media campaign to raise awareness of issues *
   - Better signage
   - Create education center in watershed

- Host public/celebratory events to get people into parks and streams
- Involve politcal "gatekeepers" *
- Coordinate studies with universities *
- Partnership between schools and large "green" property owners
- Meet with CDCs (Germantown, Frankford, Logan, etc) to encourage green development *
- Creation of a civic/community group of residents who live along park border

* = can begin this work now. Don't need to wait for registry!