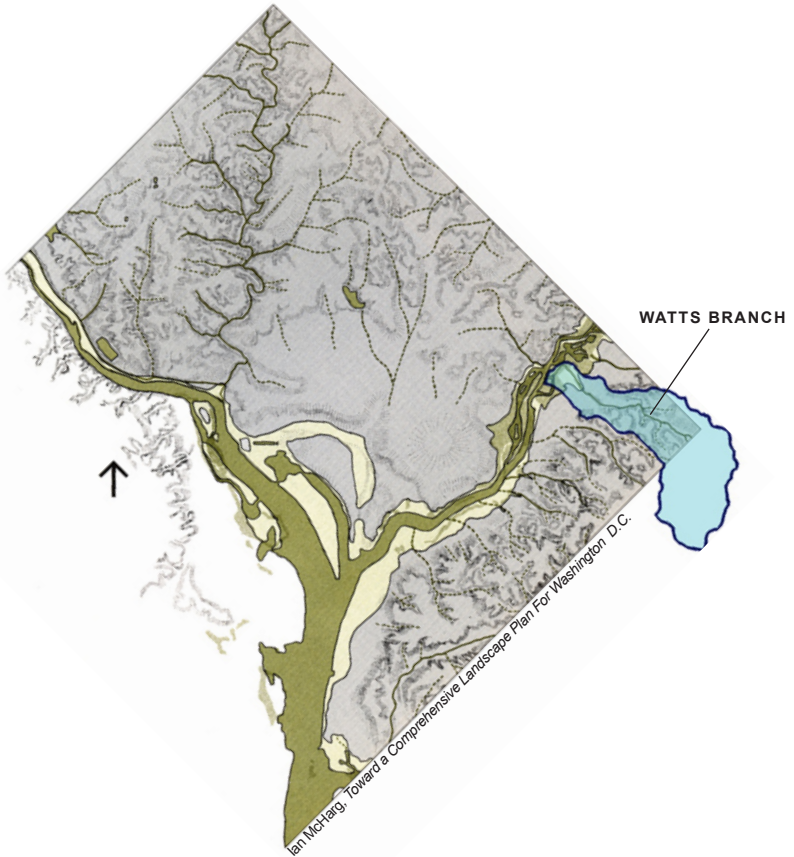# GREEN WATERSHED GREEN NEIGHBORHOOD

FIELDGUIDE FOR INTEGRATING TREE PLANTING
AND ECOLOGICAL RESTORATION WITHIN THE
WATTS BRANCH CULTURAL CORRIDOR

WATTS BRANCH

Ian McHarg, Toward a Comprehensive Landscape Plan For Washington D.C.

WATTS BRANCH STREAM VALLEY, WASHINGTON, D.C.
AUGUST 15, 2006

University of Virginia
School of Architecture

CaseyTrees
ENDOWMENT
WASHINGTON DC

table of contents

GREENING WATTS BRANCH

Watts Branch is located in the northeast corner of Washington D.C and Prince Georges County, Maryland. It is the largest D.C. tributary of the Anacostia River. The stream is 4.2 miles long and its watershed covers 2,405 acres, divided almost evenly between the District (47%) and Prince Georges County (53%). The watershed supports a population of close to 30,000 inhabitants. The District portion of the watershed includes over a dozen neighborhoods, 10 charter and public schools, and a host of congregations. Only 12% of the watershed is forested.

This field guide offers some ideas about how green infrastructure could improve the quality of life in the Watts Branch stream valley. The proposals that follow are intended to provide a framework, or jumping-off point, for community tree plantings and greening efforts.

Information about Casey Trees mission and programs, and the partner organizations assisting with this effort, is located at the end of this document.
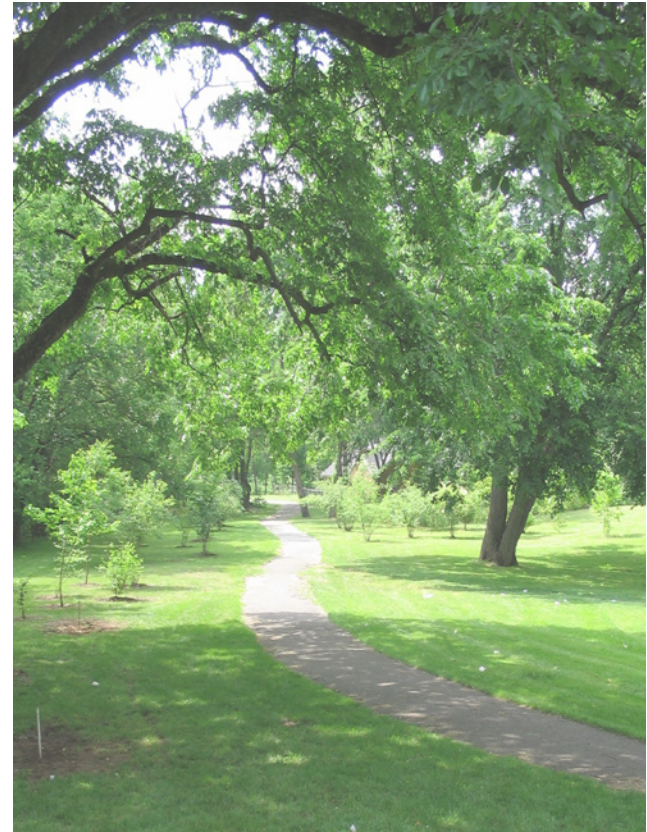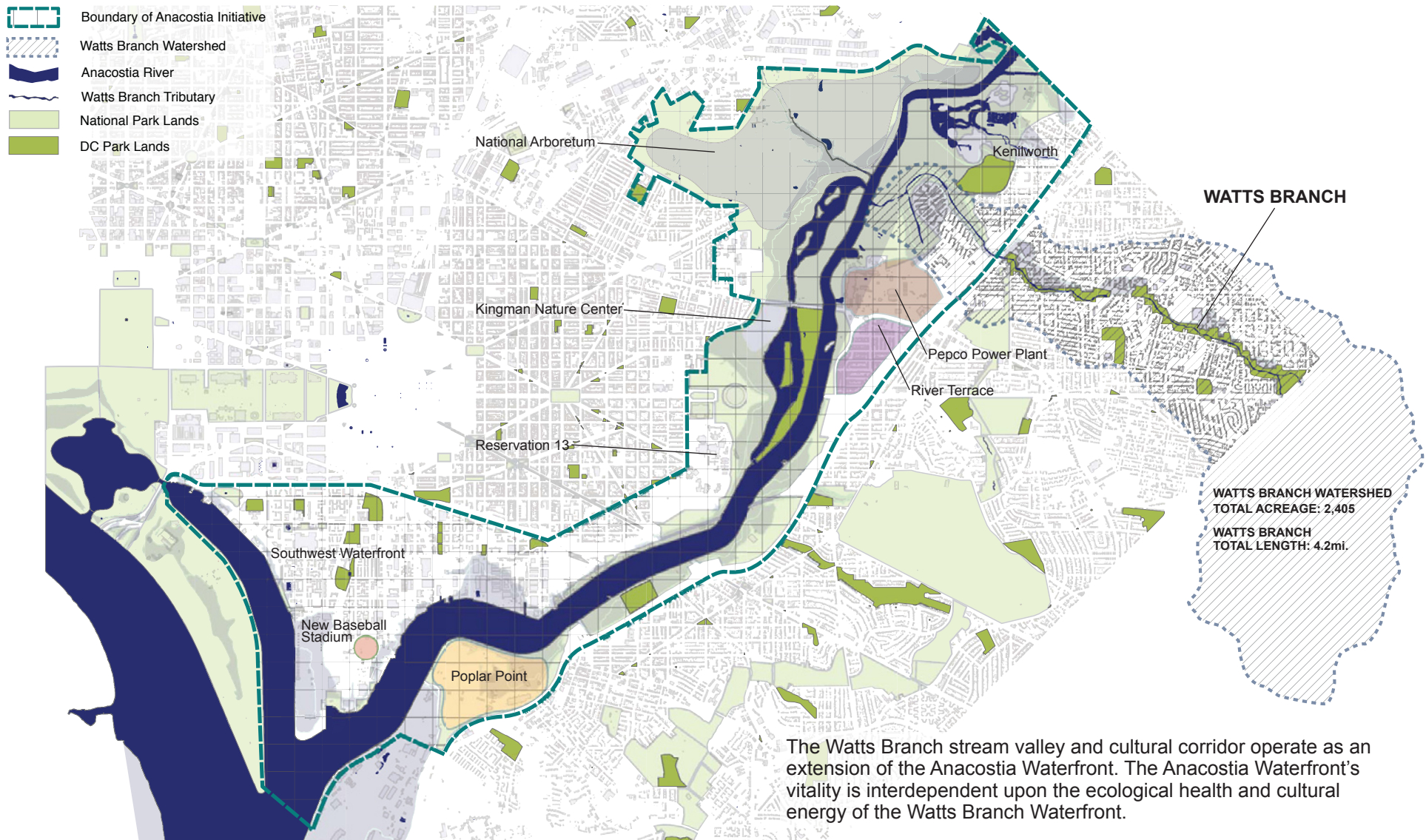

Mature canopy and newly planted trees, Marvin Gaye Park, Washington D.C.

AWC & Watts Branch: INCLUSIVE WATERFRONT

Legend:
- Boundary of Anacostia Initiative
- Watts Branch Watershed
- Anacostia River
- Watts Branch Tributary
- National Park Lands
- DC Park Lands

National Arboretum

Kenilworth

WATTS BRANCH

Kingman Nature Center

Pepco Power Plant

River Terrace

Reservation 13

**WATTS BRANCH WATERSHED
TOTAL ACREAGE: 2,405**

**WATTS BRANCH
TOTAL LENGTH: 4.2mi.**

Southwest Waterfront

New Baseball Stadium

Poplar Point

The Watts Branch stream valley and cultural corridor operate as an extension of the Anacostia Waterfront. The Anacostia Waterfront's vitality is interdependent upon the ecological health and cultural energy of the Watts Branch Waterfront.
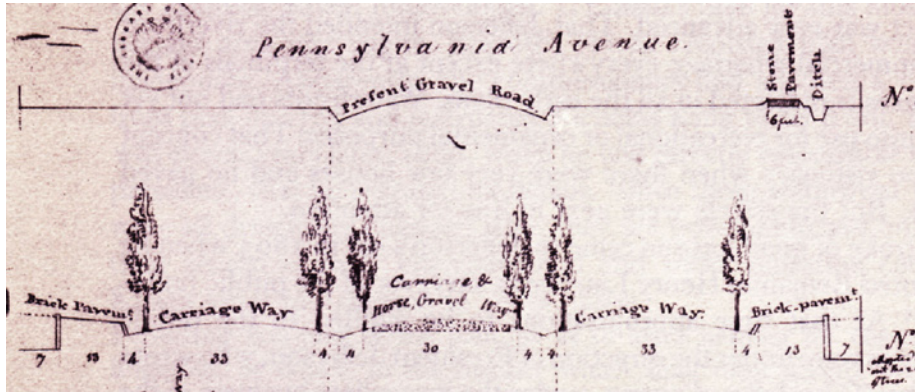
Watts Branch: A District Neighborhood Model
A Green Infrastructure Canopy supporting an Inclusive City

City Of Trees

Satellite images of the District reveal a 64 percent decrease in the city's tree cover since 1973. The city has budgeted $9 million for its tree planting and removal program this year.

Tree/canopy cover
- Less than 20%
- 20%-29%
- 30%-39%
- 40%-49%
- 50% and higher

IMAGES COURTESY OF AMERICAN FORESTS

One the earliest visions for a Washington, D.C. public space was a proposed Pennsylvania Ave street section, drawn by our third President Thomas Jefferson. The drawing depicts a well-drained dirt boulevard, with stone curbs flanked by grand trees shading pedestrian walks. This is an image of the one of the first American urban boulevards. This drawing is matched by numerous other early paintings depicting the urban landscape of a fledgling capital, a proud Congressional Building, buildings surrounded a by a skyline of majestic oaks and verdant pastures.

Throughout the history of urban planning in Washington, D.C. the city views marking its distinguished skyline, master planning policies and public spaces are dominated by planted forms of trees, such as tree-lined boulevards, prospects parks, stream greenways, and grand malls. In Washington D.C. the tree and urban forest have been integral to civic and utilitarian infrastructure, providing economic and ecological benefits to both the Federal core and District neighborhoods. This is a model that many other American cities have followed.

In 1999, the Washington Post newspaper published two satellite images of the District, the first from 1973 and the second from 1997, along with results from a study conducted by American Forests. During that time, areas with heavy tree cover in the District were reduced by 65%. Reacting to this startling set of images, Mayor Williams stated, "trees are a metaphor for public space." Expanding this concept, the stability and health of public space and their tree canopy, stand as an indicator of how well residents in this unique democratic community come together and reach across the boundaries of difference. The loss of the urban forest—a fundamental civic, cultural and utilitarian infrastructure—has had major, negative impacts upon the image, health, safety and welfare of the nation's capital and the District neighborhoods.

Casey Trees has led a number of major citizen-based programs to assess the District's tree canopy, engaging residents, governmental agencies and the private sector in the task of rebuilding a productive and protective urban forest. Efforts have been made to plant trees as part of street and boulevard improvements, and to enrich public parks and non-profit housing developments as well. Heavy emphasis has been placed upon boulevard street trees in planning efforts by the District; given that it is 100 degrees outside in Washington on the day of this writing, more shade on the sidewalks and parks would be a welcome relief. Streets and parkland represent one fourth of the city's urban landscape.

introduction

This field guide outlines how the local community, constituent agencies and private sector interests can collaboratively rebuild Watts Branch green canopy and stream into a District model. This model can be used by other District neighborhoods as they upgrade their basic natural and utilitarian systems into cultural corridors that stimulate the natural ecology and enhance the social and cultural life of the place.

How does the act of planting trees add-up and contribute to the larger process of enriching natural and cultural environments? It begins by seeing that the tree and its various planted form assemblages act as a primary building block in the planning, design, and building of affordable homes and safe neighborhoods, in upgrading basic city infrastructure and in achieving the District's goal of becoming more ecologically effective, culturally attractive, economically enticing and operationally efficient.

The process of collaborative cultural and ecological revival begins by recognizing that the task is to build two green tree canopies—the urban forest and environment of the watershed, and the parks, sidewalks, courts, yards and gardens of the neighborhood landscape.

Watershed Canopy ~ "shed"

Neighborhoods occupy over three quarters of the District's land area. Their urban forest and natural environments are defined by the topography and natural physiography of many small watersheds. Each District neighborhood is defined by the unique hydrologic flows of these watersheds, which are interwoven with the neighborhoods' cultural settings of history and land-use. The overlap of natural systems and cultural setting make smaller streams and wetlands ideal not only for small parks, but also centers of cultural activity. This potential is evident in places like Heritage Green in Marvin Gaye Park, where commercially active Division St. follows the path of a historic tributary to Watts Branch. At this same point, the park meanders past the Riverside Center community building—previously the Crystal Lounge where Marvin Gaye performed early in his career—and adjacent to H.D. Woodson High School and nearby Clay Terrace and Lincoln Heights residential neighborhoods.

Where the human neighborhood is defined by the geometry of property boundaries, pedestrian and automobile movement patterns and the aggregation of homes and

buildings, the natural neighborhood is defined by its topographic shape, the flows of animals, plants, seeds that follow water and air movement within the cell of each hydrologic room, and enhanced by the volumetric mass of tree crowns and diversity of the planted form that creates microclimate for diverse habitats. The urban watershed, or "shed" for short hand, is a rich community that supports flora and fauna, but acts as a governor and moderator reducing climatic impacts upon urban infrastructure systems.

The health of the large-scale Watershed Canopy depends on the significant act of individuals planting trees to restore and enrich, not only single projects, but also the broader urban forest of the District and local watershed. For example, along Watts Branch stream hundreds of volunteers cleared invasive vegetation and removed tons of trash while planting native trees creating a highly visible sign of community revitalization. In support of the tremendous efforts of Washington Parks & People, Casey Trees has contributed to the neighborhood by planting hundreds of native trees.

Neighborhood Canopy ~ "hood"

Each neighborhood can be defined in human terms as that city landscape composed of streets, parcel boundaries, land-use activities and movement systems that establish communities' activity centers, and the aggregated group of neighbors and shared interests—what can be called the "hood." For example, the wide range of community planting initiatives, such as lining large boulevards and smaller side streets, shading parking lots and water channels, spreading across housing complexes and dotting front yards act to make a neighborhoods safer and healthier.

The shed and hood overlap each other in both positive and negative ways. A stand of big trees shade residents in their homes on a hot summer day, helping them to
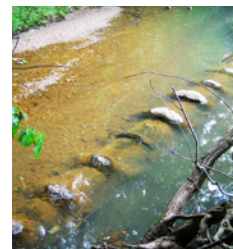
reduce electrical costs for mechanical cooling. When sewer lines are not maintained and uncontrolled storm water digs away at these old pipes, it can release raw sewage into the neighborhood stream and park systems. This overlap or interplay between hood and shed systems, a pair of neighborhood landscapes, is revealed in the ongoing history of the place. For example in Watts Branch, the music of Marvin Gaye—inspired by the natural degradation

that he experience of his own neighborhood environment—produced a nationally recognized song inspiring many others to see the connections between cultural tolerance and natural stewardship.

Great Streets

Washington DC has two types of great streets. The most familiar are the civic and commercial corridors, such as Connecticut Avenue, Pennsylvania Avenue and Minnesota Avenue. They stretch across the District's urban landscape, defined by continuous parallel street plantings, pedestrian sidewalks and an architectural building wall street.

The second type of great street reaches down and through the plains and valleys beyond the Federal core. Nannie Helen Burroughs Boulevard is of this type. It is an intra-neighborhood cultural corridor that is anchored by historic corners, and a set of intersecting side streets that reach into adjacent neighborhoods and natural systems. It is a local arterial linking the cultural environment of schools, homes, churches and businesses with the ecological environment of public gardens, parks, tributaries and trails.

Natural Greenways and Cultural Corridors
A Capital Greenway System

Washington, D.C. has a long tradition of building and maintaining linear greenway corridors. They take two forms, linear and circular. The most famous linear greenway is Rock Creek parkway and park. This beautiful canyon weaves its stream ecology and recreational systems across the District to the Potomac River. The second is the circular parkway and greenway system that was laid out in the 1900's, connecting civil war fort sites and parks located on the heights that overlook the central federal terrace. These greenways are part of the National Capital network.

District Cultural Corridors

There exists a third type of greenway that is best represented by Watts Branch. This smaller scale linear park and stream corridor operates as a cultural corridor, connecting the District neighborhoods into the larger capital greenway and street networks. These local cultural corridors foreground the diverse ecological and ethnic neighborhood cultures that comprise the "background" of Washington's urban landscape. For example, the music of Watts Branch native Marvin Gaye gives the existing marginal stream ecology public prominence and energizes citizens to work for a richer natural ecology, and a safe, active greenway. In Watts Branch, nature is a source of economic hope and ecological stability—an indictor habitat or sign to the larger region that this neighborhood is a historic landmark and a culturally active, economically vital and safe contributor to the District and metropolitan area.

New Communities in the "Hood and Shed"

In the District's new comprehensive plan, the Inclusive City, there is a focus on developing mixed income mid-density housing along major transit arterials, such as along East Capitol St. This is a very important planning and neighborhood stability strategy, supporting neighborhood or "Hoods" that are experiencing demographic changes and increased access to goods and services.

Watts Branch is home to a specific type of mixed-use mid-density arterial development: mixed-income and mid-density housing situated on an upland or terrace of a major urban watershed, or "shed." For example, Lincoln Heights gets its name, "heights" from its location on top of the upland hills which surround Watts Branch's watershed and define its central valley. Although Lincoln Heights is within a 10 minute walk to transit facilities along East Capitol St., cultural activities indicate that its regional address is tied to the arterial workings of Watts Branch: residents use the bicycle and pedestrian trail and frequent the parks and shady spots along the stream; they also participate in the economic life on Nannie Helen Burroughs Avenue and Division Street. Here in Watts Branch, the Hood and Shed create a dual function artery, a central focus that works in parallel with more traditional civic boulevards such as East Capitol Ave.

AWC Waterfront: "On and Of the River"

The focus of Anacostia Waterfront planning effort has been on development located along the edge of the river's main channel. This is a critical planning step

in the process of foregrounding the Anacostia River as a cultural asset in public view. To take the next step, one must recognize that the waterfront of this tidal river reaches beyond its main channel through stream branches that extend eastward into adjacent District neighborhoods. Watts Branch is the largest of these tributaries in the District and supports a broad flood plain corridor. Watts Branch and the Anacostia River share a long cultural history in which they formed a linear, cultural waterfront connecting a diverse set of neighborhoods.

The full reach of the Anacostia River can be experienced in two ways. The first is to be "on" the river's main channel: recreating in a public park, living in a new condominium near the shoreline, or viewing the river from the city's new baseball stadium. The second experience is had by communities adjacent to the river's watershed. These residents can be "of" the river by connecting to the river's tributary streams or branches. Like the branches of a tree, tributaries such as Watts Branch reach into neighborhoods carrying their stream ecology into the economic and cultural life of these richly diverse communities.

Working Zones and Design Actions

To continue the process of collaboration along the Watts Branch cultural corridor, we have organized the individual programs, projects and plans into a set of four working zones and three design actions.

Working Zones:

A working zone is a method of subdividing and aggregating work efforts along the diverse corridor environment into manageable areas of common ground. A working zone boundary is loosely defined and differs from a planning district or political boundary. A zone can expand and contract over time as projects are added or finished. The working zones form the basis for attracting and grouping individual projects, forming working relationships to leverage funds and coordinate program efforts as they seek to enhance the overall environment of Watts Branch. The working zone approach to project implementation is based on the idea that digging up the landscape once to serve four different agendas is less disruptive and

cheaper than digging up the same landscape four different times. This method of bundling projects and efforts is extremely important to the survival of new tree plantings, enhancing ecological functions and reducing negative economic and social impacts upon surrounding neighborhoods. The second reason is that bundling projects allows organizations such as Casey Trees to provide wider benefit to a larger group of people because they can plant larger groups and a wider variety of trees. Finally, it is an effective way to organize neighborhood volunteer efforts and local ownership.

Working zones are identified by mapping past, present and future development activity, ecological patterns and community input. The boundaries and shape of these areas or zones are defined by two criteria — one, the distinctive physical features of the watershed and neighborhood, and two, the convergence of local and District initiated projects. In the following sections, Watts Branch is categorized into four working zones. Each working zone title recalls the two scales of work effort; one, connection to the larger ecological canopy of the watershed and two, the neighborhood's orientation toward the stream valley. Within each working zone are key signature elements or landmarks that define the natural and cultural geography of each zone.

Design Actions:

Each working zone contains a number of large and small projects and potential opportunities. Based upon design research and community input three design criteria or actions have been identified to help translate the corridor cultural and ecological agenda into actual spaces and places. These design actions are illustrated on pages 20-21. They define the primary formal, functional and operational agenda of taking the assets of green infrastructure—underpinned by a rich urban forest—into the everyday development of community land uses. These include commercial and residential development, as well as infrastructure systems, such as roads, and storm water lines. The design actions also set the stage for regenerating Watts Branch as a cultural corridor where the activities and flow of people, water, animal habitat and environmental process engage and support one another.

working zones: PHYSICAL FEATURES
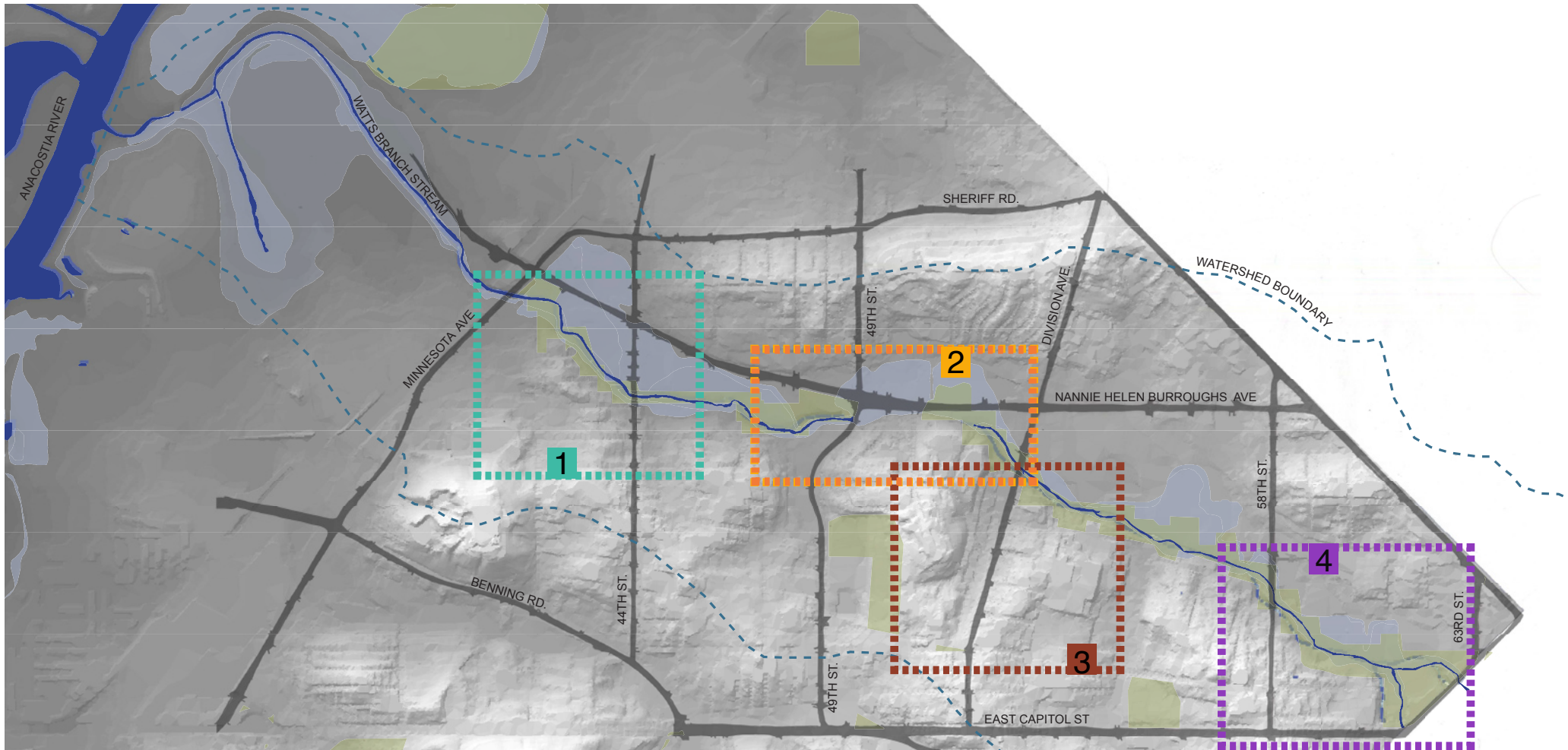
1 **FRONT DOOR**
lower watershed

The Watts Branch stream valley opens into the broader flood plain of the Anacostia River, Marvin Gaye Park touches the D.C. Landmark of Fort Mahan, and local roads meet large arterials.

2 **FRONT YARD**
middle floodplain

The floodplain widens where Watts Branch and N. H. Burroughs Ave. intersect. The upland of Lincoln Heights helps form a lowland valley room, home to the Merritt School and Aiton Elementary.

3 **FRONT PORCH**
residential uplands

The bluffs and uplands above Watts Branch support large residential communities. Division Ave, once a stream tributary, still acts as a tributary of human flows and stormwater runoff.

4 **BACK YARD**
community headwaters

Two branches of the stream emerge from Maryland culverts and meet in a wide floodplain at the D.C. boundary. This residential zone includes the site of Marvin Gaye's boyhood home.

ANACOSTIA RIVER

WATTS BRANCH STREAM

MINNESOTA AVE

49TH ST.

DIVISION AVE

NANNIE HELEN BURROUGHS AVE

WATERSHED BOUNDARY

44TH ST.

BENNING RD.

58TH ST.

63RD ST.

EAST CAPITOL ST
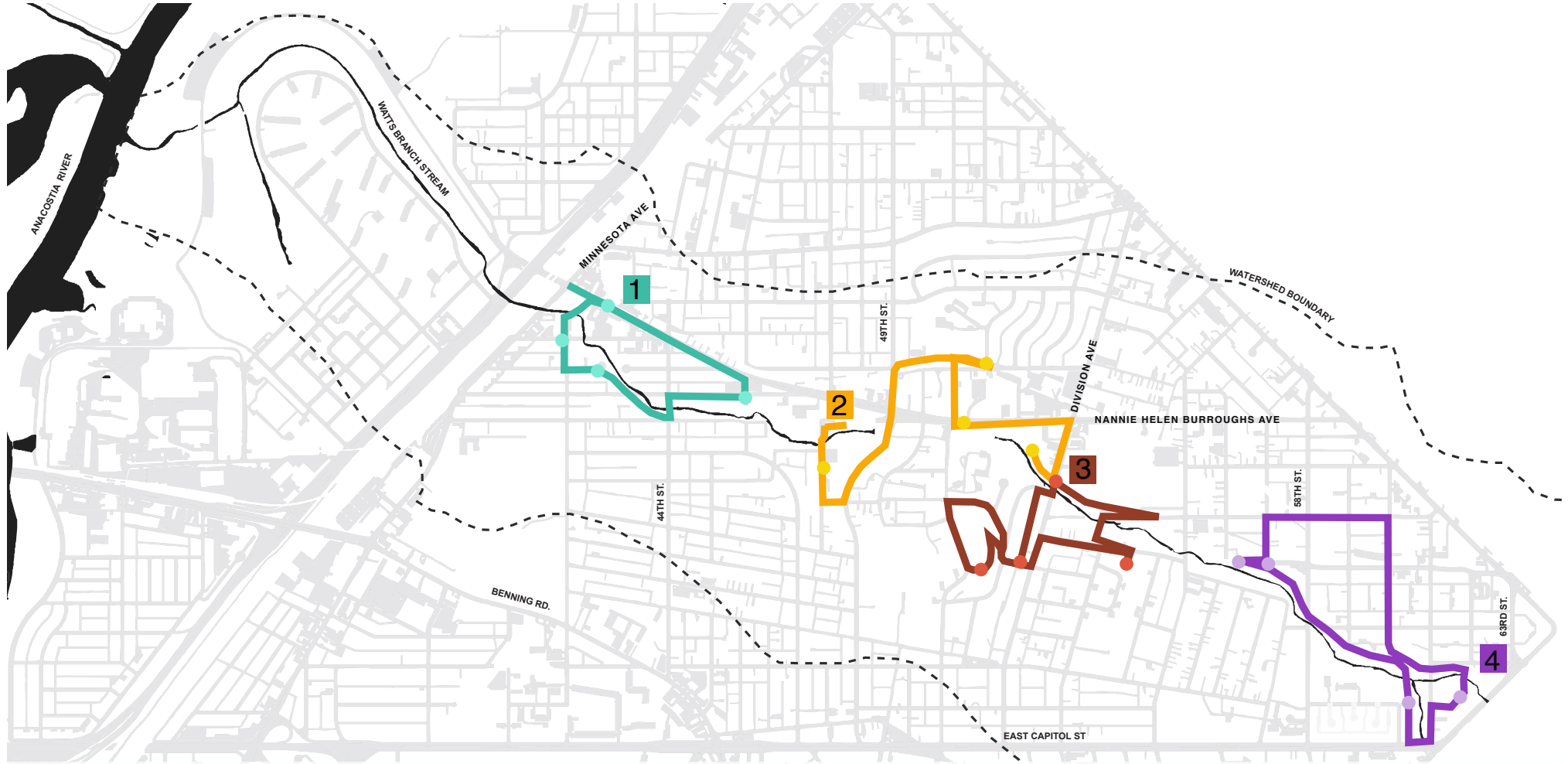
1
F R O N T   D O O R
lower watershed

(A) PARKSIDE COMMERCIAL
(B) DISTRICT LANDMARK
(C) DEAD ENDS / LIVE ENDS
(D) COLLECTIVE GROUND

2
F R O N T   Y A R D
middle floodplain

(A) STREAMSIDE CLASSROOMS
(B) FLOODPLAIN HERITAGE
(C) STREAM VALLEY STREET
(D) STREAMFRONT

3
F R O N T   P O R C H
residential uplands

(A) HEALTHY OUTFALL
(B) ROAD AS TRIBUTARY
(C) BUILDING ON THE BLUFF
(D) THE PARK REACHES

4
B A C K   Y A R D
community headwaters

(A) NEIGHBORHOOD SOURCES
(B) PARK FRONT
(C) NEIGHBORHOOD REACH
(D) BACKYARD HABITAT

green infrastructure: DESIGN ACTIONS

SETTING:

The **setting** is a composite of the cultural history and contemporary land-use and man-made features of a place, projected onto the natural landscape—heights, valleys, tributaries and streams—that form a community's watershed. Projects should acknowledge and manifest the cultural context of their working zone. This includes communicating community histories and facilitating positive social dynamics, leveraging natural features to enrich cultural relationships.

Nannie Helen Burroughs

Parade for the groundbreaking of the new trail in Marvin Gaye Park, June, 2006

Historic Strand Theater

FLOWS:

Every community is composed of dynamic environments that host a series of natural, economic, social and cultural processes, activities and rituals. From the daily work commute, to the passage of a stream through a neighborhood, these overlapping networks are a community's **flows**. Projects should consider both cultural and natural flows, including their deep layers and subsurface infrastructure, and how activity on the surface contributes to social and ecological health in the stream valley.

Watts Branch after a storm
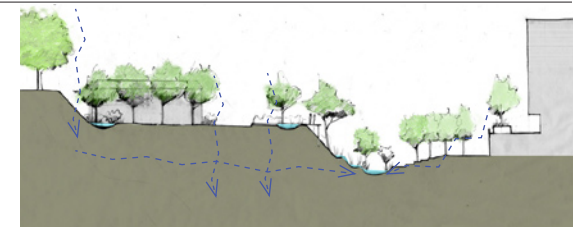
Flows of both water and people connect the park with surrounding neighborhoods

CANOPY:

The goal of green infrastructure is to bring both the human and natural landscape together under one productive, protective neighborhood and watershed **canopy** composed of tree tops and buildings' green roofs. Projects should use planted form to create significant places and contribute the many benefits of trees and green vegetation outlined by Casey Trees. Planting should serve multiple functions and be productive, rather than simply ornamental.

Canopy trees at Marvin Gaye Amphitheater

Planted parking areas serve multiple functions for the community

i n t e g r a t i n g   i d e a s :   D E S I G N   A C T I O N S

A community meeting at the Riverside Center, Marvin Gaye Park, Watts Branch.

On July 13, 2006, this fieldguide was "field tested" in the four working zones along WATTS BRANCH established by the University of Virginia Design Research Team.

Members of the community and representatives from local government agencies and non-profit groups participated in walks through each "room" of the stream valley, becoming acquainted with the physical features of the watershed, and the signature elements of the neighborhoods.

Following the walks, participants suggested strategies for "greening" the landscape and invigorating the cultural and economic environment in each Watts Branch working zone. These ideas are encorporated in this updated version of the workbook as DESIGN ACTIONS, with photographs and drawings to show current conditions, and photo-renderings to show visions of what could be.

The questions asked on the following pages represent the kinds of questions one should ask about *any* project happening in this community's neighborhoods and watershed. Use this workbook as a tool to understand the cultural and ecological landscape of this community, and to develop questions and visions of your own. We have left room for your ideas and words.

This is now your workbook.

1

lower watershed / FRONT DOOR

This working zone highlights the intersection of the local neighborhood and local watershed with greater Washington D.C and the larger Anacostia River watershed. The Watts Branch Stream Valley opens up into the broader floodplain of the Anacostia and the local "Great Street" of Nannie Helen Burroughs Avenue meets Minnesota Avenue and the Anacostia Freeway. The "Front Door" to Marvin Gaye Park, Lady Bird Johnson Meadows anchors these intersections.

1

How do we integrate Minnesota Ave./ Nannie Helen Burroughs Ave. Great Streets Initiative and Anacostia waterfront planning into a Neighborhood Gateway?

How do businesses become a constructive part of the park and corridor?

KANE PL

SHERIFF RD

MINNESOTA AVE

43RD PL

45TH PL

46TH ST

47TH ST

A

HUNT PL

NANNIE HELEN BURROUGHS AVE

44TH ST

46TH ST

B

42ND ST

HAYES ST

C

HAYES ST

GAULT PL

D

GRANT ST

FOOTE ST

Legend:

- - - - Watts watershed

▪▪▪Ⓐ▪▪▪ Walking tour

Flood plain

○ ○ ○ Storm sewer outfalls

Historic railroad line

Storm sewer lines

D

C

B

A
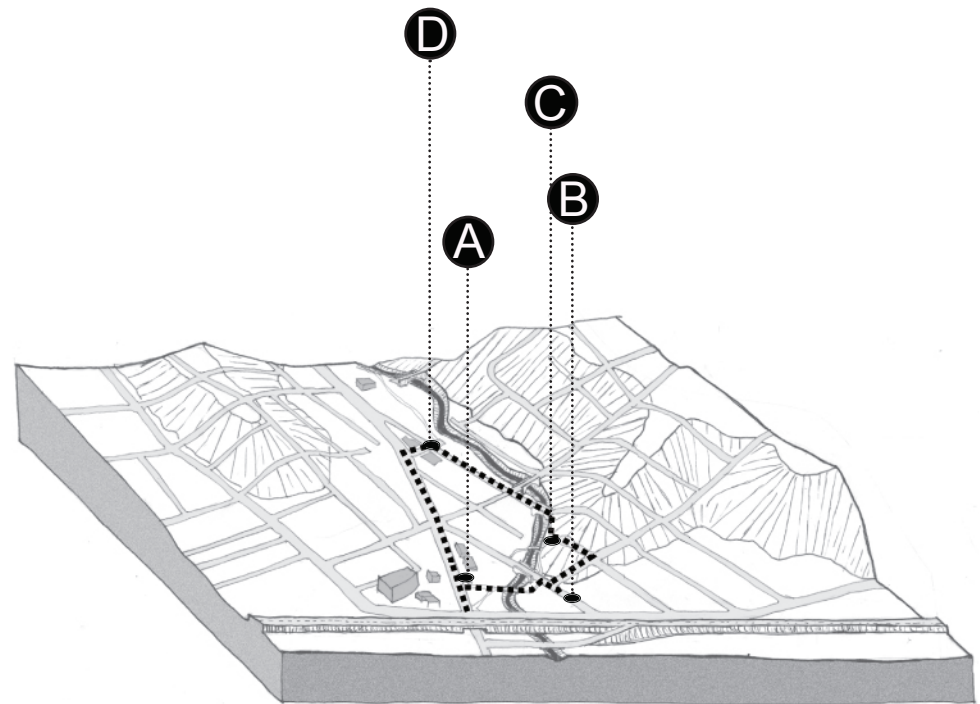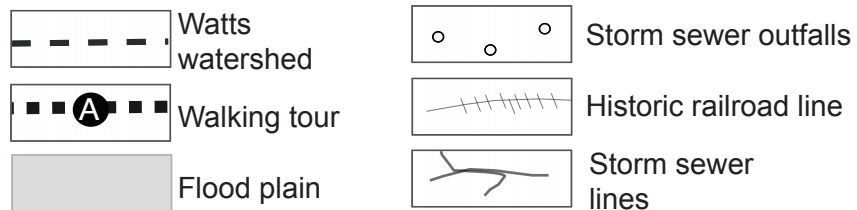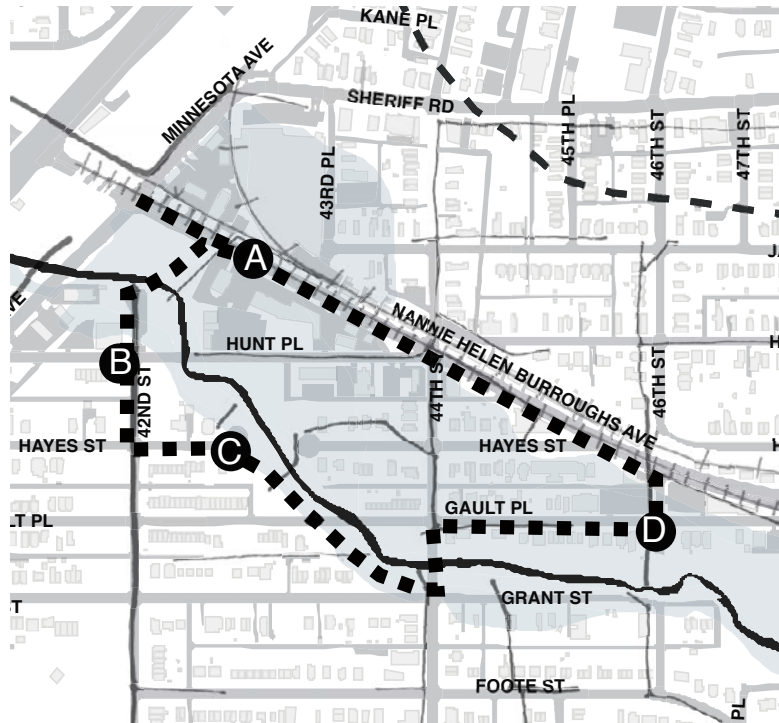
Ⓐ PARKSIDE COMMERCIAL

Ⓑ DISTRICT LANDMARK

Ⓒ DEAD ENDS / LIVE ENDS

Ⓓ COLLECTIVE GROUND

1A PARKSIDE COMMERCIAL

What can businesses do to improve stream valley ecology?
How can the commercial corridor and the park become a collective corridor?

what we have:

Marvin Gaye Park and L.B. Johnson Meadow

commercial zone

Minnesota Ave.

Nannie Helen Burroughs Ave.

what are the challenges:

short-lived street trees

Minnesota Ave.

businesses don't connect to park

impervious parking lots drains pollutants to stream
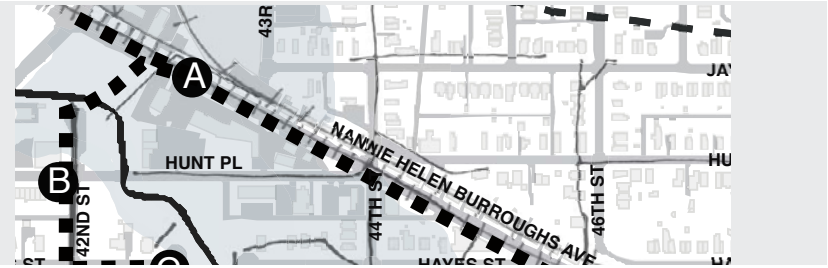
Nannie Helen Burroughs Ave.
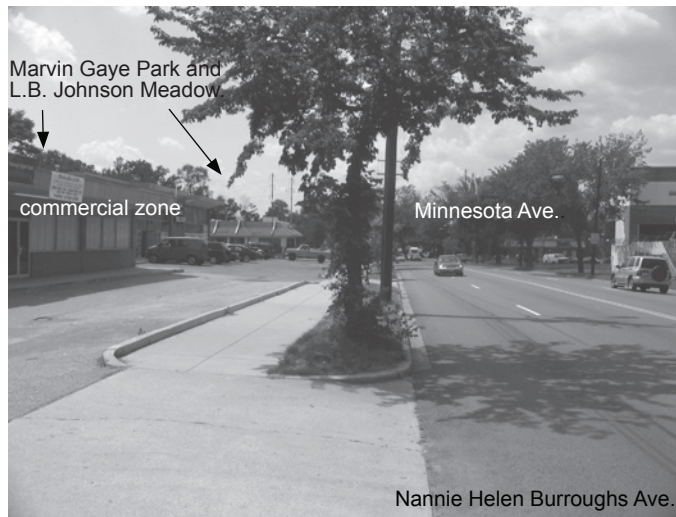
what could be:

Nannie Helen Burroughs Ave.
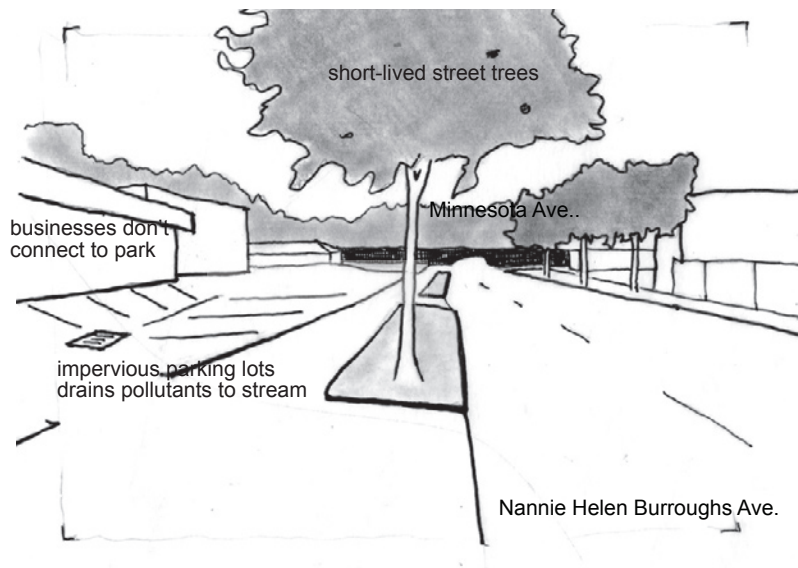
what are the design actions:

SETTING: Orient activity toward park as well as street, using parkside location as an asset. Intersection of Minnesota, Nannie Helen Burroughs, and park becomes "Great Green Intersection" and Front Door to the neighborhoods.

FLOWS: Create pervious parking surfaces and vegetated rain gardens to slow, capture and cleanse stormwater.

CANOPY: Plant new street trees and parking lot trees in adequate soil with a plan for ongoing maintenance.

1B DISTRICT LANDMARK

How can we strengthen the connections between Marvin Gaye Park and the larger National Park System?

what we have:

- healthy mature trees
- Fort Mahan
- National Park Service land
- surface drainage swale
- 42nd St.
- To Watts Branch and Lady Bird Johnson Meadow
- Hunt Place

what are the challenges:

- no strong connection to Fort Mahan
- under-used park land
- 42nd St.
- storm sewer channels runoff to Watts Branch
- Hunt Place

what could be:

Hunt Place
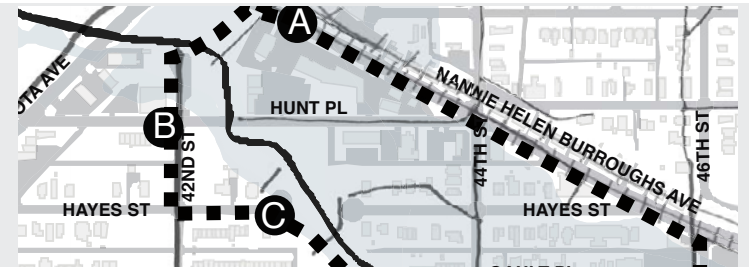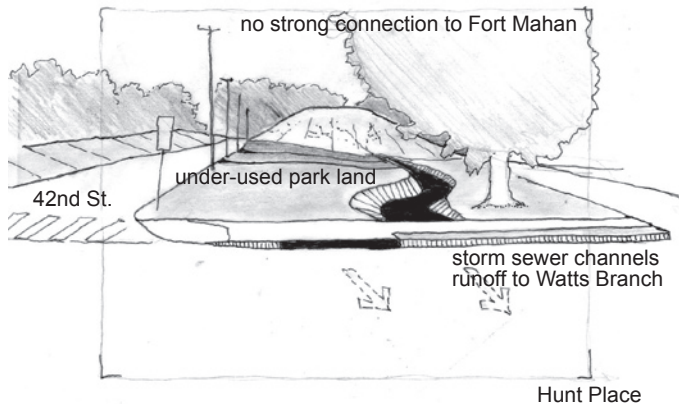
what are the design actions:

SETTING: Connect Marvin Gaye Park to Fort Mahan which is linked through views, history, and park systems to the District as a whole.

FLOWS: Enhance existing vegetated swale to slow and improve quality of runoff to storm sewer. Use sidewalk bump-outs for traffic calming and tree planters that double as water-retaining rain gardens.

CANOPY: Plant canopy trees to create gathering spaces and define paths to the Fort.

1c DEAD ENDS / LIVE ENDS

How can we make street ends into active connections to the park and community?

what we have:

healthy canopy

good shade

Watts Branch

Hayes Street

what are the challenges:

impervious asphalt, broken curbs cause bank erosion and pollution in stream.

eroded slope

Hayes Street

large, low-traffic cul-de-sac

what could be:

Hayes Street
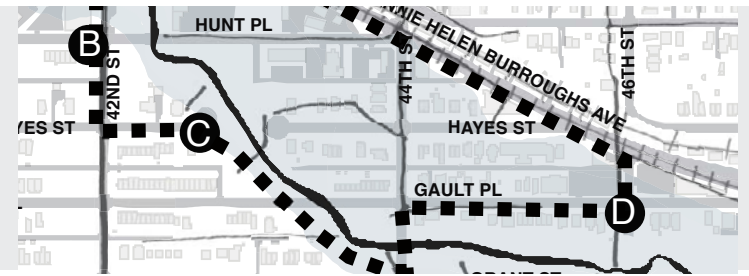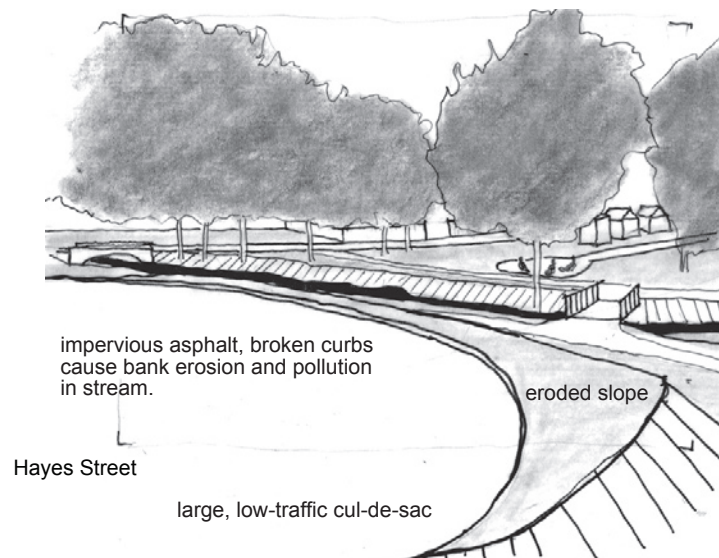
what are the design actions:

SETTING: Make places for seating and play to serve as community porches overlooking the park. Create community rain gardens to be tended by residents.

FLOW: Replace asphalt with pervious surface, such as grass pavers, in low traffic cul-de-sacs. Collect runoff from the street in rain gardens.

CANOPY: Define new neighborhood porch and park threshold with shade-giving trees.

1D COLLECTIVE GROUND

How do we create multi-use ground that facilitates the larger needs of the community throughout the week?
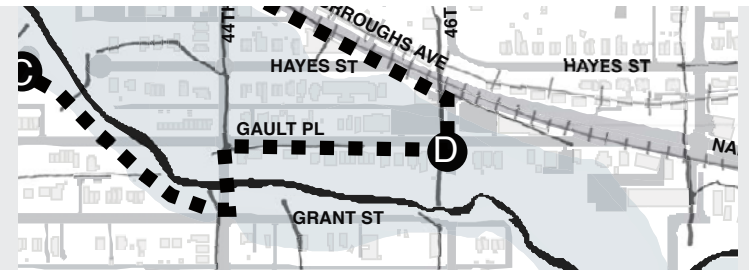
what we have:

Deanwood

porous parking surface

46th st.

old rail berm

Marvin Gaye Park and Watts Branch. One block

Gault Place

what are the challenges:

CHURCH

transformation of pervious surfaces to impervious.

impervious parking surface

46th st.

lack of parking lot trees and street canopy

Gault Place

what could be:

46th st.

Gault Place
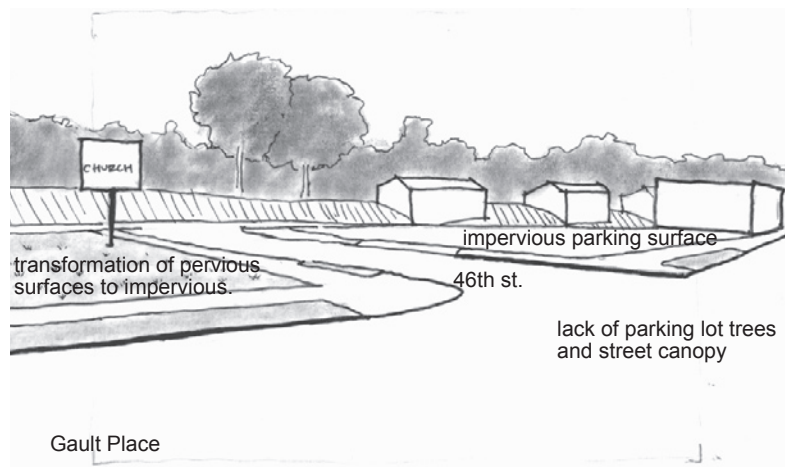
what are the design actions:

SETTING: In the future, church parking lots could be used as public space during weekdays. This is another great way congregations could contribute to the community. Extend the nearby park into the parking lot. Form links to Deanwood.

FLOWS: Use pervious surfaces in park + lots to decrease quantity and increase quality of runoff.

CANOPY: Plant trees to create shade, reduce heat island effect, connect to park canopy and shape space for multi-functioning community use.

2

middle floodplain / FRONT YARD

Aiton Elementary School

Lederer Center

*This design idea has not been reviewed or approved by D.C. Dept. of Parks and Recreation

In this lowland working zone, where Watts Branch and Nannie Helen Burroughs Avenue intersect, the floodplain widens and a rich cultural and natural history intersects with present-day educational and community centers. The Merritt School, Aiton Elementary, and the Lederer Youth Gardens and Education Center sit in or on the edge of the floodplain. The convergence of street, stream, park, and education offers opportunities for innovative curriculum and activities, including green enterprise, that foster stewardship of the watershed and economic vitality.

2

How do the ecology of the floodplain, the economics of the stream and street corridor, and the education at the schools combine to make a generative regional attraction?

Legend:

– – – –	Watts watershed
••A••	Walking tour
(gray box)	Flood plain
o o o	Storm sewer outfalls
+++++	Historic railroad line
(lines)	Storm sewer lines
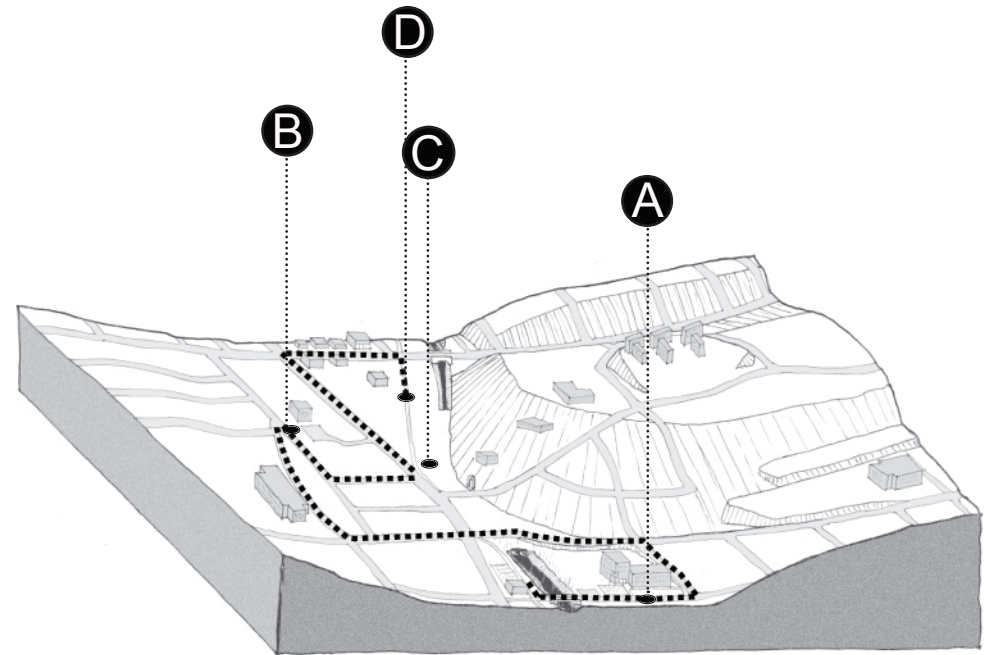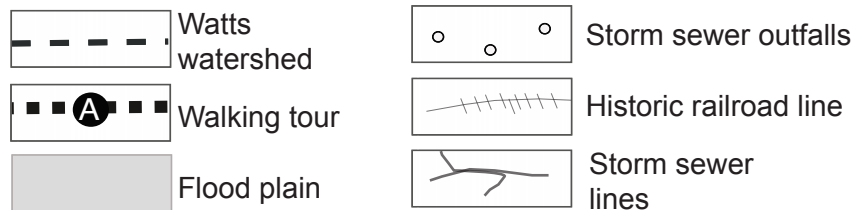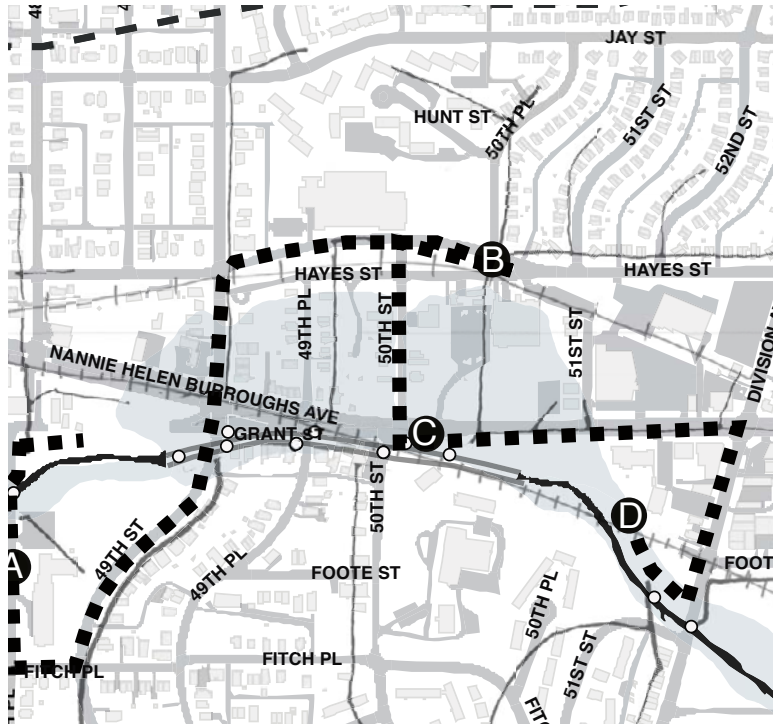
(A) STREAMSIDE CLASSROOMS

(B) FLOODPLAIN HERITAGE

(C) STREAM VALLEY STREET

(D) STREAMFRONT

2A STREAMSIDE CLASSROOMS

How do we create places to share information and build knowledge and skill to increase stewardship capacity?

GRANT ST
FOOTE ST
49TH ST
49TH PL
50TH ST
FOOTE ST
A
C

what we have:

Lederer Center

Aiton School

Watts Branch

habitat garden

48th place (historic stream tributary)

what are the challenges:

lack of strong visual, physical connection between Aiton and Lederer

Aiton School

hidden, piped tributary and unacknowledged flood plain

school habitat garden disconnected from stream habitat

48th place (historic stream tributary)

what could be:

vision to expand: facilitate all watt's branch schools

nannie helen burroughs blvd

large greenhouse

main office

small greenhouse

garden shed

apartment building

private work road

raise beds

eco-lab

stormwater flow

culvert

re-graded stream bank

control sedimentation

49 th st

aiton elementary

footbridges connects lederer to aiton

vacant lots = community gardens

Student Project, Spencer Haynsworth, U.Va.
*This design idea has not been reviewed or approved by D.C. Department of Parks and Recreation.
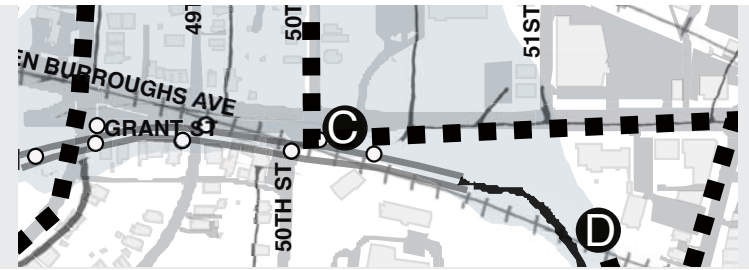
what are the design actions:

SETTING: Expand Lederer Center as both an economic and an educational resource, generating positive community scale commercial activity. Connect Aiton's curriculum with the floodplain.

FLOWS: Modify the stream channel to broaden the floodplain. Facilitate active pedestrian flows across the stream between Lederer, Aiton, and the neighborhood.

CANOPY: Continue to label tree species to create an educational canopy. Use new planting and selective clearing of understory vegetation to improve cross-stream connections and visibility of stream.

2B FLOODPLAIN HERITAGE

How can we build on pathways of cultural and natural history?
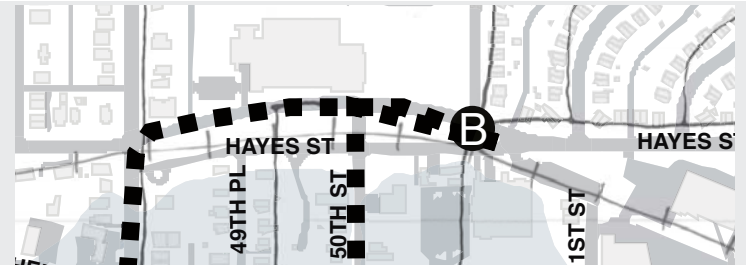
what we have:

- Merritt School (Suburban Gardens Amusement Park site)
- floodplain edge
- path of historic rail line
- storm drain
- Hayes Street

what are the challenges:

- under-used, exposed open space
- stormwater from school roof and roadway flows to stream
- rich natural and cultural site histories ignored
- Hayes Street

what could be:

Student Project, Bess, Wellborn, UVA.
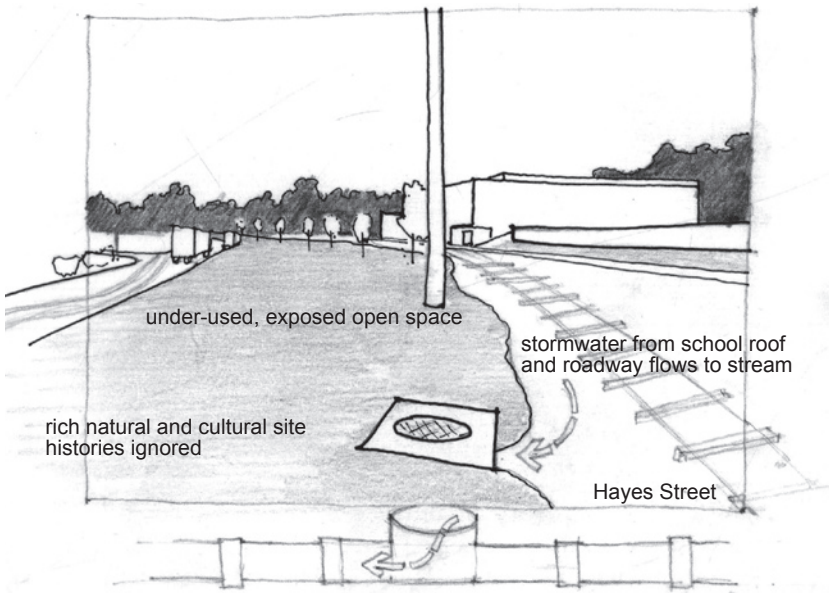
what are the design actions:

SETTING: Reveal traces of community and regional history of the Suburban Gardens site, a former locus of community activity.

FLOWS: Relink this piece of the floodplain with the cultural and hydrological corridor of Watts Branch and Nannie Helen Burroughs.

CANOPY: Employ native floodplain trees and vegetation to restore the site's stream valley identity. Use planted form to create outdoor classrooms for Merritt School.

2c STREAM VALLEY STREET

How can the street identify its place in stream valley?

what we have:

N.H. Burroughs Ave.

Floodplain

Marvin Gaye Park

what are the challenges:

park crosses street

N.H. Burroughs Ave.

Under-utilized section of Marvin Gaye Park.

what could be:

N.H. Burroughs Ave.

*This design idea has not been reviewed or approved by D.C. Dept. of Parks and Recreation

what are the design actions:

SETTING: Create a native tree nursery and green enterprise zone. In this stretch where Nannie Helen Burroughs Avenue and the park intersect, bring to light the history of Nannie Helen Burroughs as a figure of local heritage.

FLOWS: Convey the experience of traveling through a series of stream valley rooms as part of both a local street and district scale thoroughfare.

CANOPY: Plant floodplain varieties of street trees to help define the street/stream corridor and emphasize a stream valley orientation.

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CANOPY: Plant floodplain varieties of street trees to help define the street/stream corridor and emphasize a stream valley orientation.

2D STREAMFRONT

How do institutions, businesses and the stream benefit from each other?

what we have:

The Strand

Division Ave.

what are the challenges:

closed rear facade

The Strand

fence barriers

hidden stream
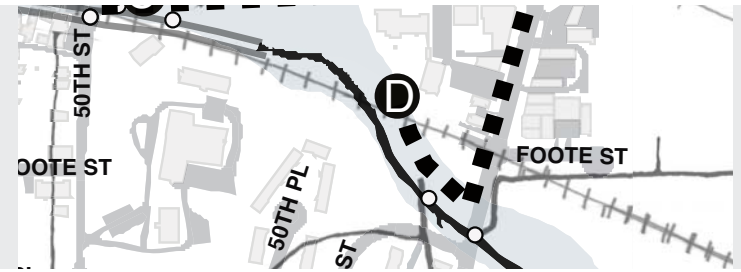
what could be:

Napa River Waterfront, *Landscape Architecture Magazine*, 1/05
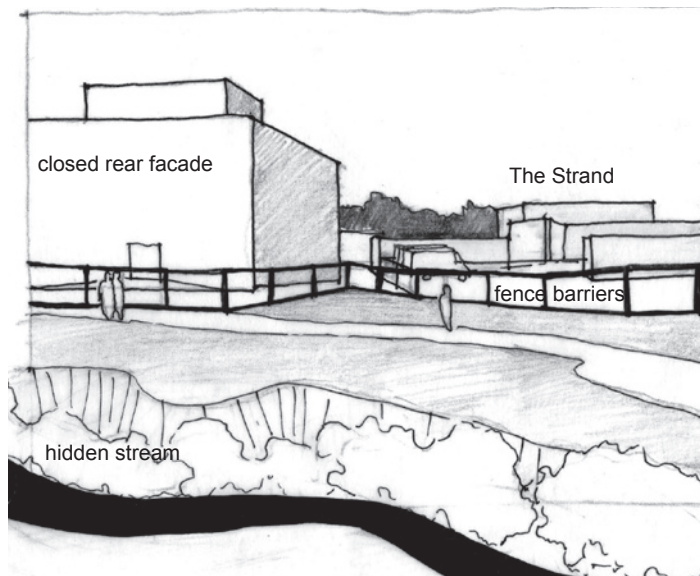
what are the design actions:

SETTING: In the long term, cultivate two sides to the commercial street by reorienting and opening to the stream.

FLOWS: Enliven and enhance the stream's social and ecological presence by fostering commercial and educational activity on the stream bank.

CANOPY: Integrate riparian tree canopy into commercial and institutional landscapes, thereby supporting both healthy communities and healthy natural environments. Incorporate green buildings and green roofs as part of the extended canopy habitat.

3

residential uplands / FRONT PORCH

This upland working zone emphasizes the important relationship between communities on the bluffs above the stream, and in the valley below. Actions in the uplands have critical repercussions on the cultural and ecological health of the watershed. The regeneration of Lincoln Heights is an opportunity to forge a healthy interaction of upland and valley through green infrastructure: Storm water infiltration swales and new tree plantings can double as green "park reaches" connecting Watts Branch and the "Heights" communities through flows of water and people.

3

How does the stream's edge reach into the community?
How does the form of the neighborhood affect access to the park,
and the ecology of the stream valley?

Legend:

– – – –	Watts watershed
■■■A■■■	Walking tour
▢	Flood plain
∘ ∘ ∘	Storm sewer outfalls
+++++	Historic railroad line
⅄	Storm sewer lines
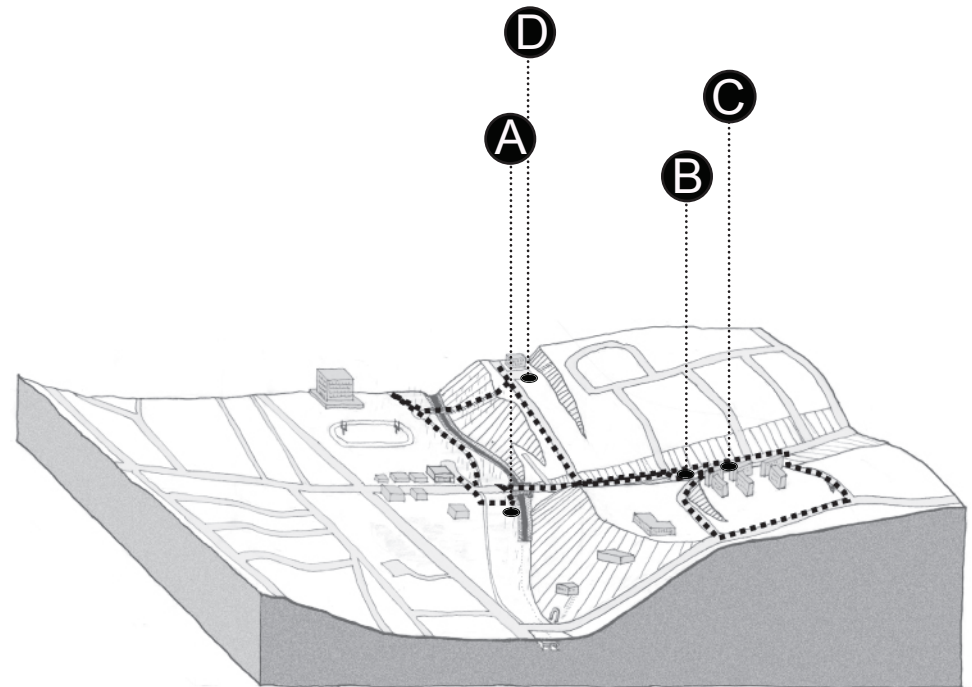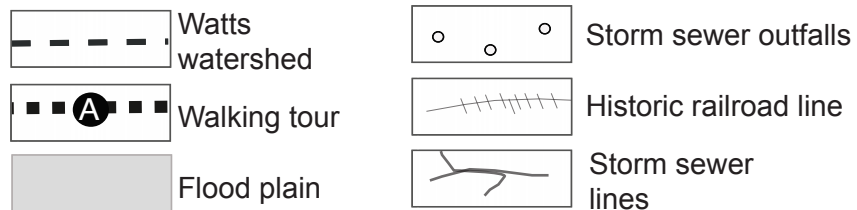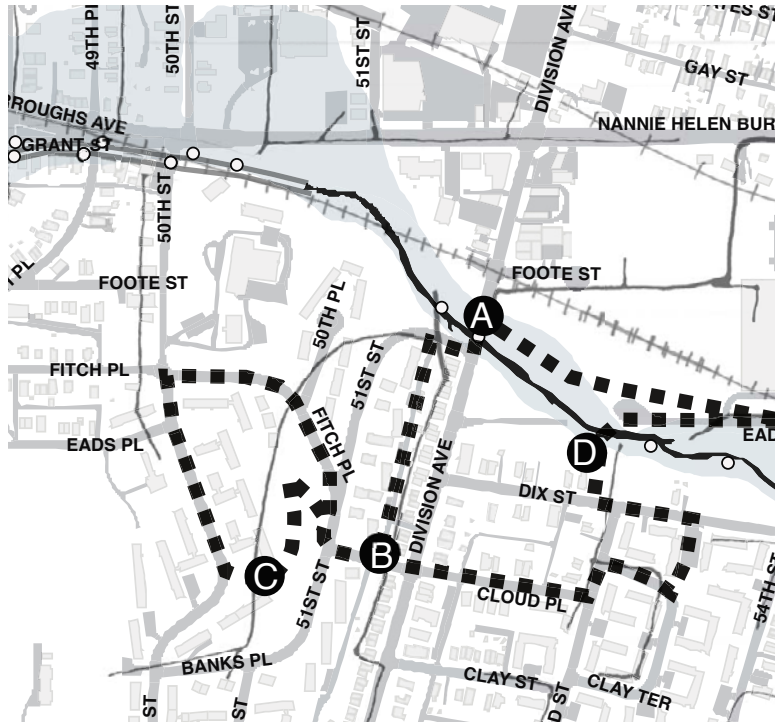
Ⓐ HEALTHY OUTFALL

Ⓑ ROAD AS TRIBUTARY

Ⓒ BUILDING ON THE BLUFF

Ⓓ THE PARK REACHES

3A HEALTHY OUTFALL

How can utilitarian infrastructure become a social and ecological asset?

what we have:

Division Ave.

Lincoln Heights

Watts Branch

what are the challenges:

Division Ave.

buried historic tributary
Lincoln Heights

major storm sewer outfall

eroded stream bank
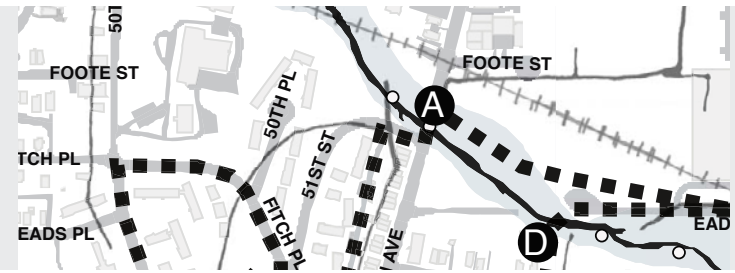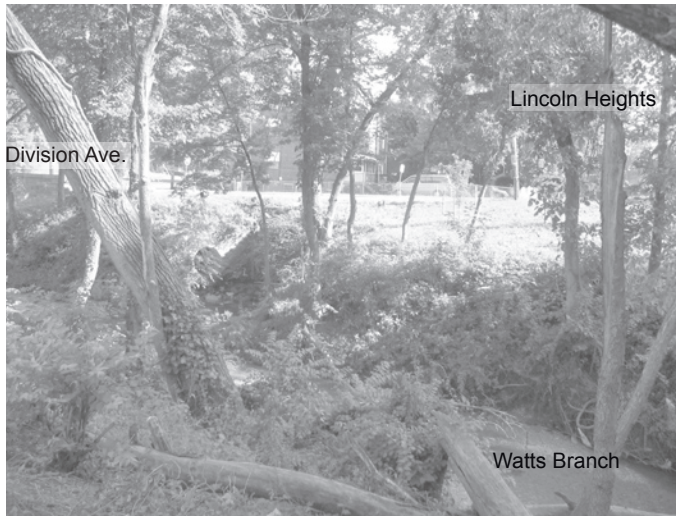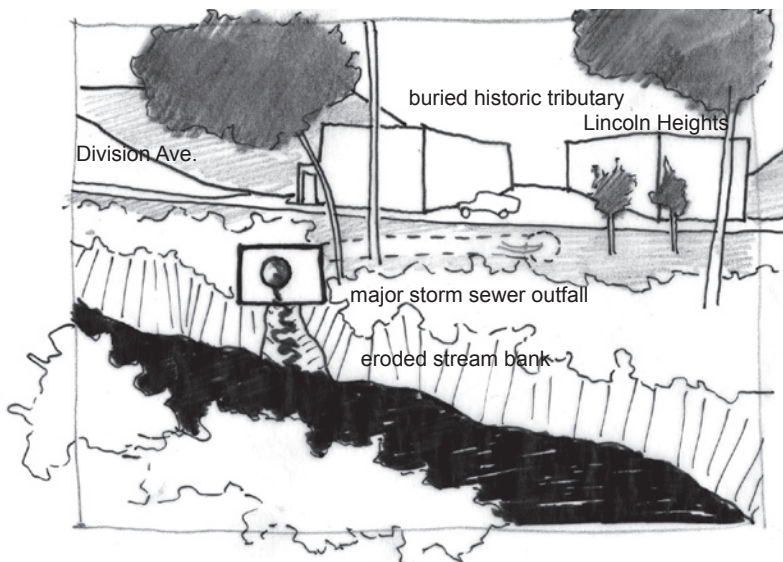
what could be:

Mill Race Park, *Design With The Land*, Michael Van Valkenburgh

what are the design actions:

SETTING: Reveal the infrastructure of the stream and its 32 storm sewer outfalls as evidence of the neighborhood sewersheds.

FLOWS: Create a system of monitoring at the storm sewer outfalls to encourage upstream responsibility.

CANOPY: Decrease upland flows to reduce damaging storm surges at the stream. New tree planting beyond the stream channel extends the space of the park into the neighborhood. Tree canopy helps decrease and slow runoff.

3B TRIBUTARY ROADS

How do roads reaching into the uplands resurrect their role
as tributaries?

Map showing area with streets: 50TH, 51ST ST, FITCH PL, EADS PL, DIVISION AVE, DIX ST. Labeled points A, B, C, D.

what we have:

Lincoln Heights

Watts Branch

Alley between Division and 51st.
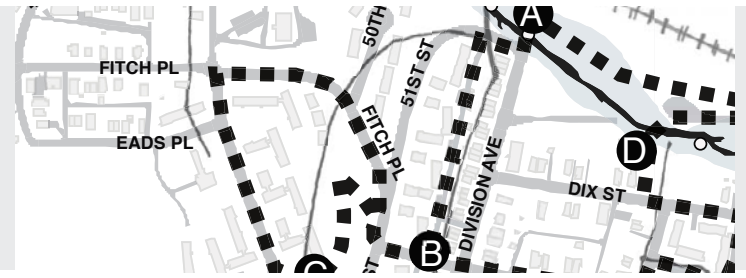
what could be:

what are the challenges:

Lincoln Heights

closed rear facade

buried historic tributary

impervious surface drainage

Alley between Division and 51st

storm sewer drains Lincoln Heights
(replaces the former tributary stream)
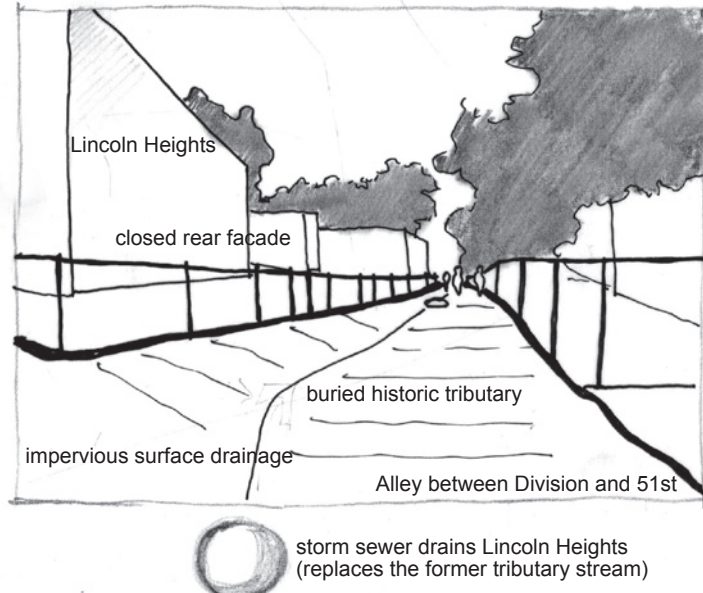
what are the design actions:

SETTING: Re-envision one of the stream's historic
tributaries as a "great side street"

FLOWS: Bring flows back to the surface as a
convergence of pedestrian, water, and habitat corridors.

CANOPY: In addition to protecting the canopy layer
of big trees, cultivate the understory by planting smaller
trees, and shrub and ground layers that each contribute
to water quality and habitat creation.

3c BUILDING ON THE BLUFF

How can the buildings operate as an extension of the bluff's natural system?

what we have:

Lincoln Heights

51st St.

Cloud Place

what are the challenges:

Poor pedestrian connections between upland community and stream valley

Lincoln Heights

extremely exposed site

eroding bluff

51st St.
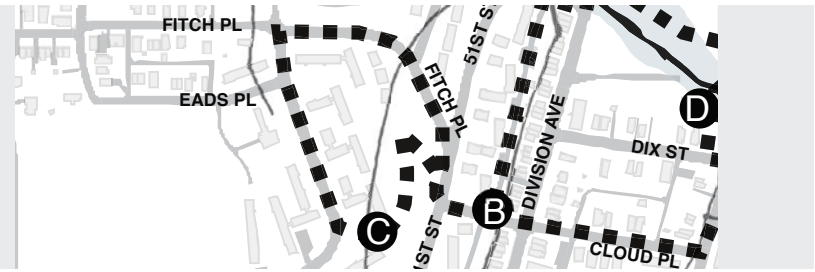
Cloud Place

what could be:

Cloud Place
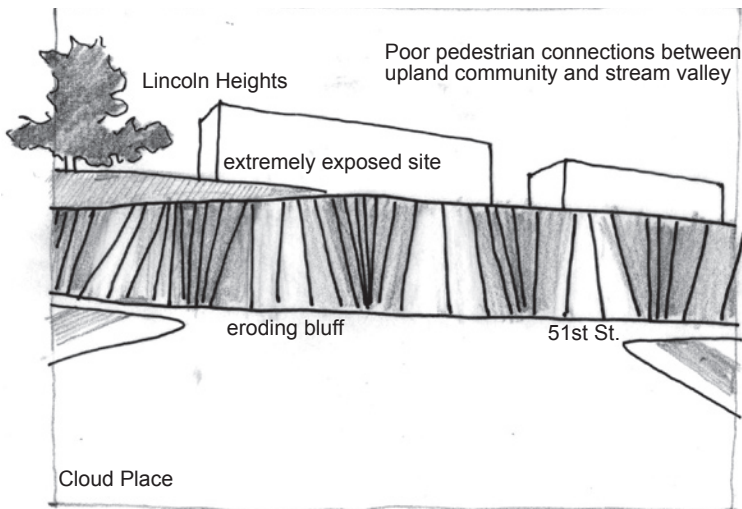
what are the design actions:

SETTING: As we increase density on the hill, consider ways to increase intensity of access to the stream's natural assets.

FLOWS: Expand the number of safe community and habitat connections. Use green roofs, water collection, bioswales and rain gardens to reduce peak flows and capture upland runoff.

CANOPY: Increase health, safety and sense of community ownership through tree planting. Amplify the forest, regulate indoor temperature and reduce heat island effect with green roofs.

3D THE PARK REACHES

How could the park's reach extend beyond its boundaries?

what we have:

Woodson H.S.

Marvin Gaye Park

Richardson Dwellings

what are the challenges:

Woodson H.S.

Marvin Gaye Park

impervious parking surfaces stop rainwater infiltration

dead trees

Richardson Dwellings

what could be:

Woodson H.S.

Richardson Dwellings

| the park bounds |
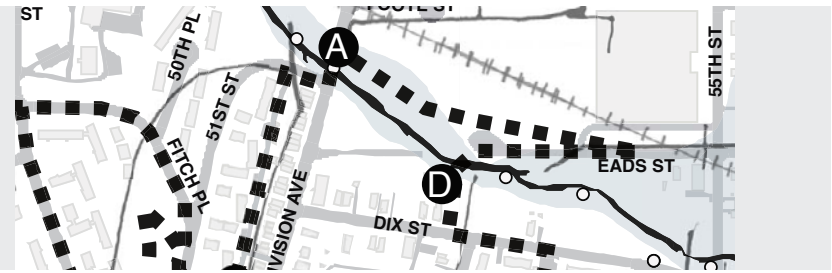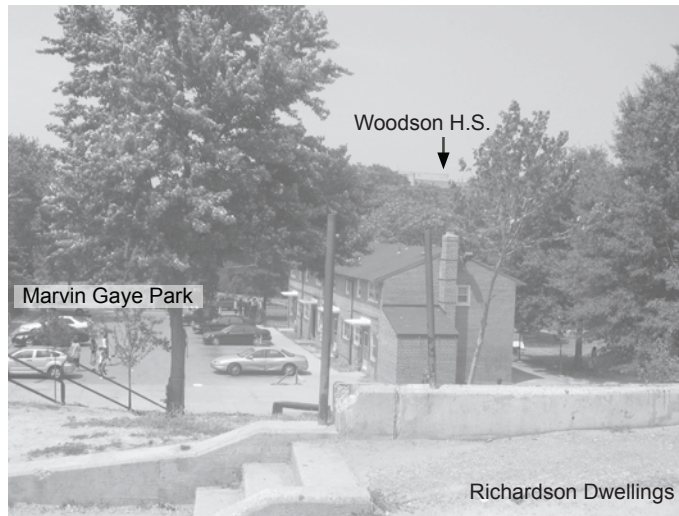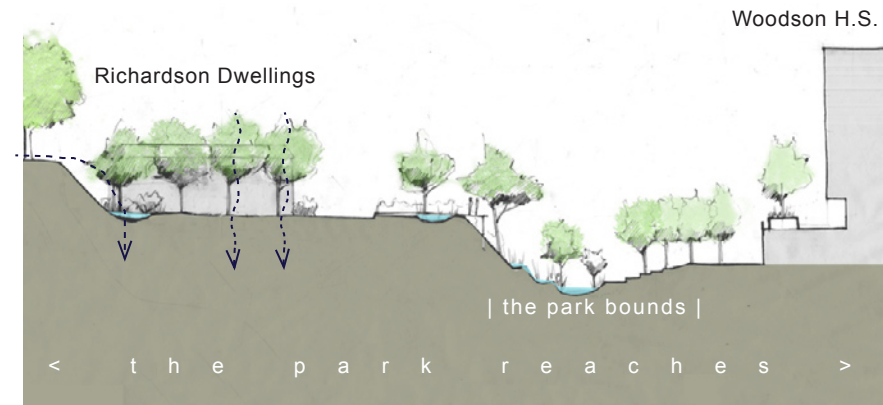
< the park reaches >

what are the design actions:

SETTING: Improve connection between the park and adjacent neighborhoods by including Woodson High School and Richardson Dwellings in the park's cultural, hydrological, and vegetative systems.

FLOWS: Capture Richardson's stormwater in the lower parking lot in rain gardens that also serve as community spaces. Use vegetated paving to reduce runoff and bring the park into the lot.

CANOPY: Use tree planting to extend the park across Dix street into Richardson Dwellings, defining comfortable social space. Implement interim tree plantings to create shade, reduce scale, and increase the comfort of Woodson's grounds.

4

community headwaters / BACK YARD

57th St.

Dix St.

Campbell's Green

*This design idea has not been reviewed or approved by D.C. Dept. of Parks and Recreation

This working zone looks at both the upper reach, or "backyard," of the Marvin Gaye Park stream corridor and the actual backyards of homes and businesses. Watts Branch will be the backyard to a large new Hope VI development. The stream is also the backyard of businesses, churches, and homes near Campbell's Green. This area was the backyard of Marvin Gaye's boyhood home. Can community outreach and education help residents, business owners, and congregations become stewards of the backyard watershed?

4

How can we put the neighborhood on the map as a source
of civic pride and local identity?

Watts watershed

Walking tour Ⓐ

Flood plain

Storm sewer outfalls

Historic railroad line

Storm sewer lines
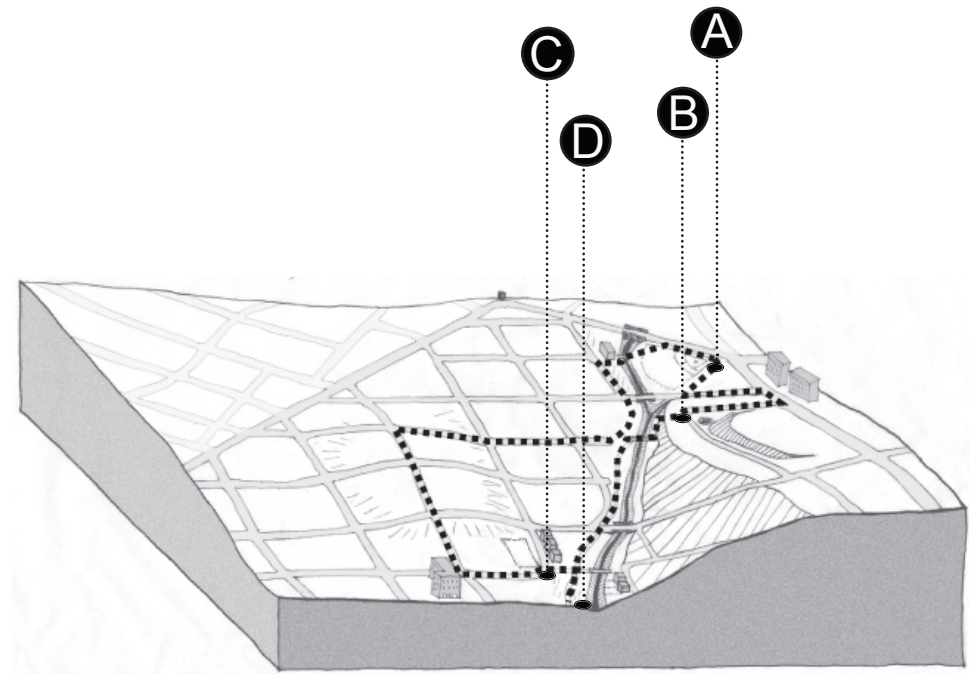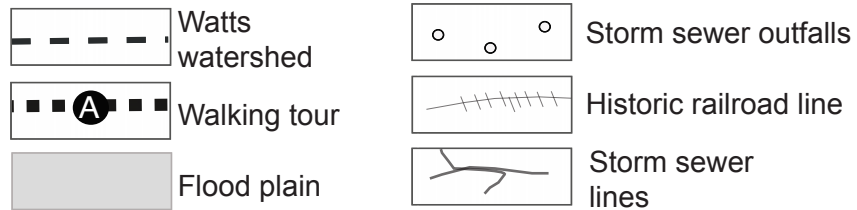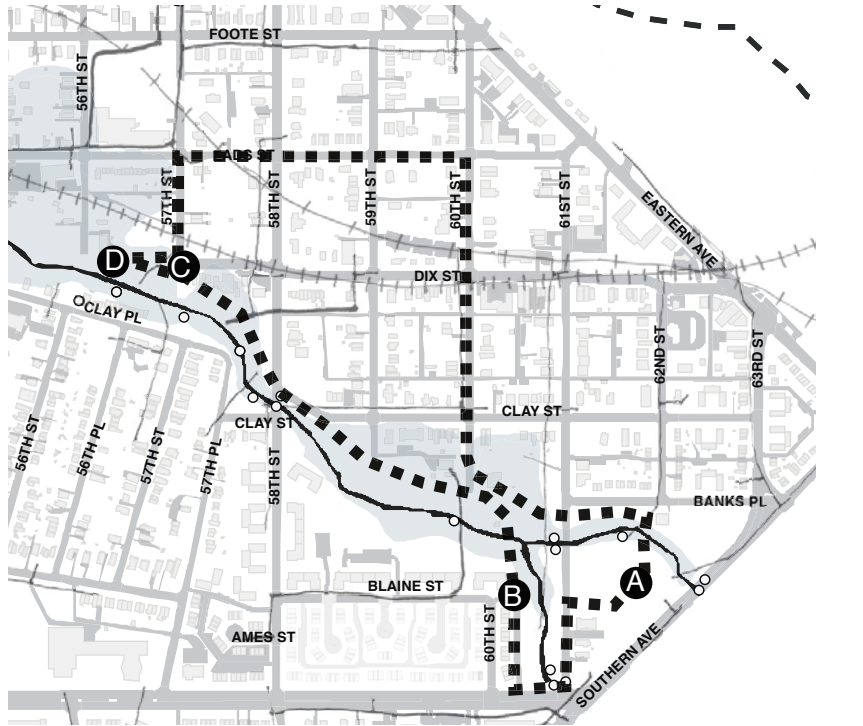
Ⓐ NEIGHBORHOOD SOURCES

Ⓑ PARKFRONT

Ⓒ NEIGHBORHOOD REACH

Ⓓ BACKYARD HABITAT

4A NEIGHBORHOOD SOURCES

How does the corridor begin as a cultural and natural system?

what we have:

stream branches converge
D.C./MD Border
Marvin Gaye Rec. Center
61st Street
flood plain

what are the challenges:

culverted half of Watts Branch emerges at District boundary

61st Street

61st St. divides large portion of park in two.

Lack of canopy along Southern Ave park edge.

what could be:

close 61st St. to unite park land

connect 60th St. to link neighborhood to park and stream

*This design idea has not been reviewed or approved by D.C. Dept. of Parks and Recreation

Student project, Susan Hughes, U.Va.

what are the design actions:

SETTING: Reveal the position of this site at the Eastern cornerstone of the District and the threshold between the local and county systems.

FLOWS: Address outflow into the water system as it meets the District watershed, monitoring and modulating flows from the two branches. Suggest closing 61st street to car traffic to facilitate greater pedestrian access, to make the streams more visible, and to unite separated pieces of the park.

CANOPY: Implement tree plantings that express the park's stature as a regional landmark and create a community canopy, linking neighborhoods to the stream and park.

4B PARKFRONT

How do residences become a part of the park?

what we have:

Hope VI under construction
assisted living community
park
stream

what are the challenges:

steep park-facing slope
poor connection to park
detention pond

what could be:

Highlands' Garden Village, Denver. In *Native to Nowhere*, Timothy Beatley

what are the design actions:

SETTING: Create a double front for Hope VI development that faces both East Capitol and the park. Commemorate the site of Marvin Gaye's boyhood home.

FLOWS: In future projects, consider site planning and grading that encourages a topographic and hydrologic relationship between the site, its residents, and the stream.

CANOPY: Use trees and other vegetation as a porous threshold between the park and neighborhood rather than a barrier or buffer. Plant a continuous, enveloping canopy of trees and plants from East Capitol, through residences, to the park.

4B PARKFRONT

How do residences become a part of the park?

what we have:

assisted living community

Hope VI under construction

park

stream

what are the challenges:

steep park-facing slope

poor connection to park

detention pond

what could be:

Highlands' Garden Village, Denver. In *Native to Nowhere*, Timothy Beatley

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CANOPY: Use trees and other vegetation as a porous threshold between the park and neighborhood rather than a barrier or buffer. Plant a continuous, enveloping canopy of trees and plants from East Capitol, through residences, to the park.

How does the park reach into neighborhood streets and blocks?
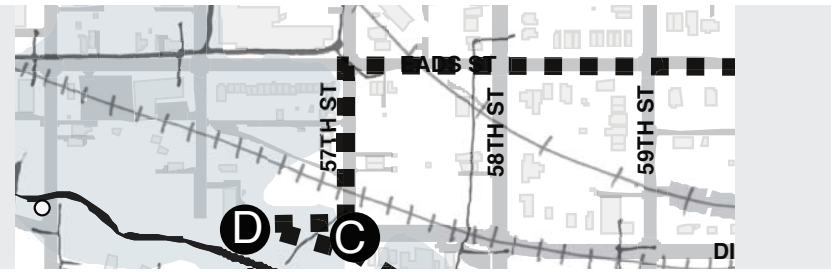
what we have:

what are the challenges:

what could be:

pervious surface parking grove allows natural water drainage

stream-oriented business enliven stream & park
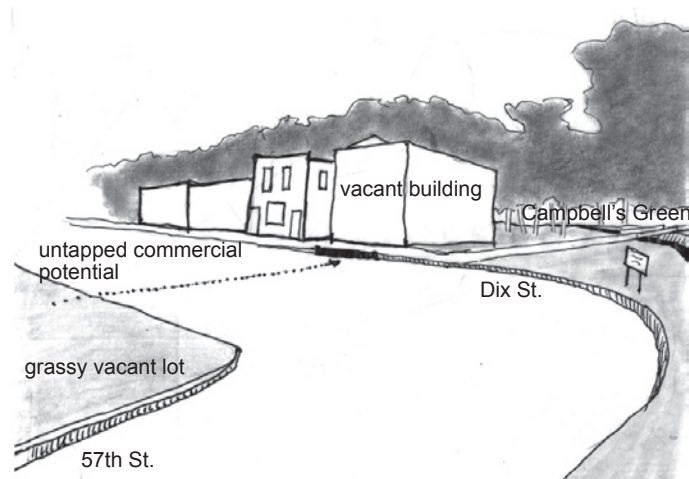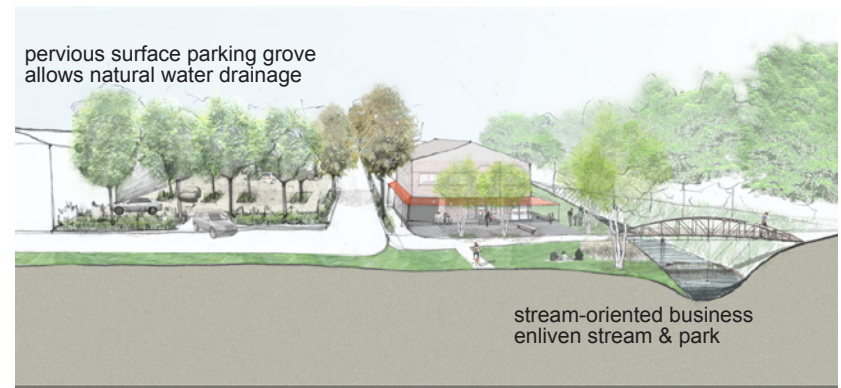
what are the design actions:

SETTING: Continue to champion Campbell's Green as a community hub. Consider this site as a potential center for local commercial activity.

FLOWS: Encourage church to create a multi-purpose park+lot for Sunday parking and diverse weekday activities. Use permeable surfaces in this new extension of the park. Accommodate the flow of pedestrians using the footbridge, children walking from Drew Elementary, and passengers on the bus route.

CANOPY: Transform the vacant lot into a productive grove where trees create shade, provide food, decrease the heat island effect, and shape a community room.

4D BACK YARD HABITAT

How can residents minimize water runoff to reduce erosion of soil into the stream?

what we have:

streamfront backyards

stream

what could be:

backyard canopy

pervious driveway

rain barrel

rain garden

stream

what are the challenges:

private residences

residential drainage

eroded banks
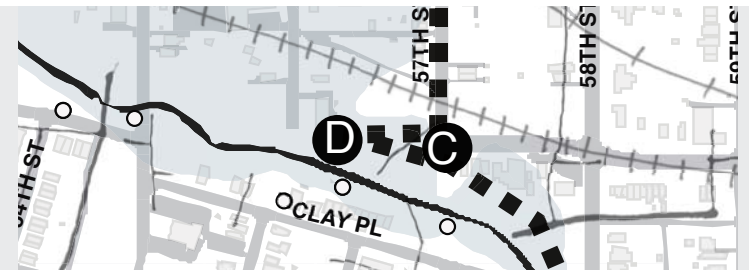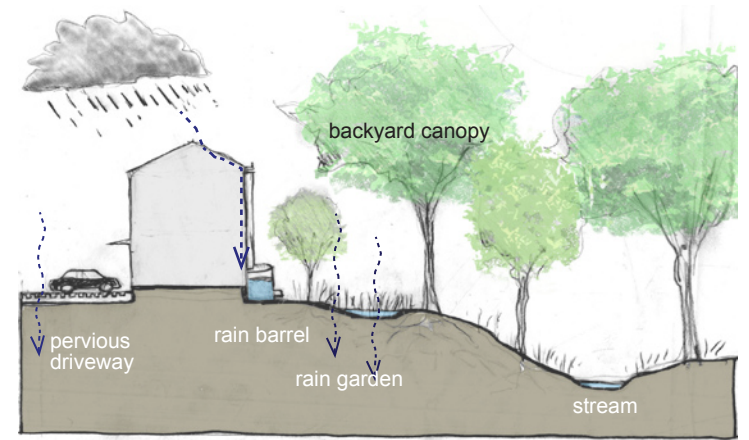
what are the design actions:

SETTING: Re-establish rightful boundaries between private yards and the park; a history of encroachment has decreased the number of park acres.

FLOWS: Encourage a more open flow between individual yards and the park as a system, finding ways to connect with the stream channel. Encourage homeowners to harvest runoff from roofs for garden use and create rain gardens to filter driveway water. In driveways, exchange asphalt for permeable paving.

CANOPY: Develop a purchasing and planting program for native trees. Offer education to residents regarding native and invasive plants, erosion, and stream health.

appendix 1(a)
GLOSSARY OF TERMS

ECOLOGY: the inter-relationships between plants, animals, humans and their physical and biological environment.

GREEN EDUCATION: education that uses the natural environment as a classroom and provides the awareness and knowledge required to foster stewardship of the environment.

GREEN ENTERPRISE: business that operate in a way that reduces damaging effects on our water, air, and resources. Business that are friendly to the natural environment.

GENERATIVE: having the ability to create new opportunities. A generative landscape might create new green enterprise opportunities. A generative building might create solar or wind power.

STEWARDSHIP: caring for land and resources and passing a healthy environment on to future generations. *Green Education* and *Green Enterprise* are *generative* activities that create the conditions for good *stewardship* of local *ecologies*.

appendix 1(b)
GLOSSARY OF TERMS

TOPOGRAPHY: the physical lay of the land in terms of the surface of the ground, elevation, and relationships between natural and human made objects in the landscape.

HYDROLOGY: the study of the movement of water on and below the earth's surface.

WATERSHED: the total land area from which water drains into a particular stream or river

FLOODPLAIN: the land area adjacent to the banks of a river or stream where water spreads out during heavy rain or because of the tide

TRIBUTARY: a waterway that feeds a larger waterway; a small creek that runs to Watts Branch is a tributary, and Watts Branch is itself a tributary to the Anacostia River

SWALE: a ditch or depression in the landscape; can be small, as in a bio-swale in a person's yard, or large, as in a swale between two hills

UPLAND: a location on the landscape which is comparatively higher than most other locations; uphill

appendix 1(c)
GLOSSARY OF TERMS

LOW IMPACT DEVELOPMENT: Building and landscape design that conserve natural land features, minimize development impacts, restore hydrologically natural stormwater drainage, and use many small scale infrastructural elements instead of a few large ones

PERVIOUS: (porous) a surface with gaps or holes which allow water to seep into the ground at about the rate water seeps into surrounding natural surfaces

IMPERVIOUS: (non-porous) a surface that does not allow water to seep through, into the ground; a surface that causes water to runoff into stormsewers

OUTFALL: the open end of a stormsewer system that directs stormwater runoff into waterways

GREEN BUILDING: a structure or method of construction that uses less energy and produces less water run off and fewer pollutants than comparable conventional buildings

VEGETATED BIO-SWALE, RAIN GARDEN: a landscaped area with specific types of plants and soils that allow rain water to seep naturally into the ground, rather than runoff into stormsewers

HEAT ISLAND EFFECT: the absorbing of solar energy by urban constructions such as buildings and pavement which causes urban air temperatures to be higher than those of surrounding forested and green areas

INFRASTRUCTURE: the underlying structures and facilities needed for the operation of a society or enterprise or system

STORMWATER: water from rainfall which flows over land and through stormsewer pipes; often washes pollutants like motor oil, fertilizer and garbage into waterways

Street tree planting details acting as rain gardens:
Green Streets, Portland, Oregon.

The Portland Green Streets initiative provides many examples of beautiful and functional street tree planters and sidewalk strips that double as rain gardens or bio-retention filters. These planters hold stormwater and allow it infiltrate into the ground. Overflow is allowed back into the conventional storm sewer system.

Source: www.portlandonline.com

Using permeable paving in parking lane:
Green Streets, Portland, Oregon.

The city of Portland has begun to install permeable paving in parking lanes in residential areas. These pervious surfaces allow street and parking runoff to infiltrate into the ground, keeping pollutants from rushing to local streams and rivers. These installations also add beauty to the street.

Source: www.portlandonline.com

Collect and retain stormwater in an attractive, vegetated wetpond:
Augustenborg Social Housing, Malmö, Sweden

Europe is no stranger to dense, ecological housing. In this social housing project in Sweden, stormwater run off from pathways, parking lots and rooftops, is directed into channels that feed several wetponds throughout the site. These ponds allow stormwater to filter slowly into the ground and reduce the negative impacts of directing rain water and pollutants into stormsewers.

Source: Photo by Jonah Chiarenza

Turning an outfall into a social and ecological asset:
Mill Race Park, Columbus, Indiana.

Michael Van Valkenburgh Associates show us in this project how to celebrate the flow of water by making it accessible and beautiful. Outfalls that slow and aerate water and allow sediment to settle improve the health of our waterways.

Source: Design With The Land, Michael Van Valkenburgh

Finding a way to play with and learn about stormwater in a public park:
Powhatan Springs Park, Arlington, Virginia.

Oculus Landscape Architects designed this park to make the slowing and retention of stormwater a focal point for play and learning. Stormwater from the site's structures and surfaces is collected in an underground cistern. Children can use a pump to bring water to the surface again, allowing it to fall through a series of flumes to a creek.

Source: *Landscape Architecture Magazine,* 3/06

Residential street manages stormwater on the small scale:
Sea Street, Seattle, WA.

Seattle's Sea street project reconfigured residential streets to accommodate large rain gardens and bio-filtration swales. This project demonstrates how green infrastructure can be integrated into existing streets. The project has been successful at reducing runoff and pollutants entering local streams, as well as calming traffic on previously dangerous streets.

Source: Photo Courtesy of Timothy Beatley

appendix 2(b)
CASE STUDIES

Orienting housing to park space:
Highlands' Garden Village, Denver, Colorado.

This 27 acre development is an example of new development that includes many green principles. Here, density, energy efficiency and use of native vegetation were a priority. Many of the homes front on green pathways and parks.

Source: *Native to Nowhere* by Timothy Beatley

Businesses and public institutions taking responsibility for stormwater:
Water Pollution Control Laboratory, Portland, OR.

This building and garden, open to the public, serves several functions: It educates the public about stormwater through its rain gardens and detention basins; it conducts monitoring research of its filtration gardens; and it treats the stormwater of a 50 acre adjacent residential and commercial area. Pollutants from the area, such as auto oil, pesticides, fertilizers, and animal waste settle in the detention areas, keeping them away from the nearby Willamette River.

Source: *Water Sensitive Planning and Design* by R. France.

Green building on a bluff:
Terrace Houses at Flamatt, Switzerland.

This early example of low impact development was built in the early 1960s. These housing blocks are nestled into a sloping site with minimal impact on the ground and surrounding forest. The green roofs reduce the buildings' footprint, and well-defined green space between the blocks allow for play and gathering.

Source: *The Series of Global Architecture*. #23

Implementing a Green Roof:
Green Roof Research Institute, Malmö, Sweden

The local government of Malmö, Sweden owns and oversees this research facility, where the capabilities of green roof materials and designs are tested in the local climate. Using a multitude of plant varieties and configurations, this facility offers advice to local business owners, builders, architects, and homeowners alike, about the latest green roof strategies and advancements.

Source: Photo by Jonah Chiarenza

Transforming a waterway into the town center:
Napa River Waterfront, Napa, California

The city of Napa has begun to reorient its downtown to the Napa River, to which access had previously been difficult. The city is in the process of developing a Napa River Trail system that includes both urban and semi-rural settings. Orienting businesses to the river and allowing access to the beautiful asset of a waterway is giving this urban area new life.

Source: *Landscape Architecture Magazine*, 1/05

Greening homes with grassroots green infrastructure:
Hyldespældet, Albertslund, Denmark

This low-income housing community south of Copenhagen took charge of its fate in a series of sustainable, green infrastructure projects. From building homemade green roofs over sheds, to creating a local recycling depot, to setting up compost stations behind every house, these residents have strengthened their community by developing a grassroots, green identity for themselves.

Source: Photo by Jonah Chiarenza

acknowledgements