

Water Where?
Permeable Landscape Sidewalk Projects &
their affect on Environmental Awareness &
Social Interactions on Urban Residential Streets



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December 2007



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Introduction

Water Where is a look at one method of stormwater mitigation that has become increasingly popular in several urban environments. With a heightened awareness of the importance in stormwater retention and mitigation as well as greening of the city, this type of project responds to both trends. This study looks at the benefits of permeable landscape sidewalk projects in the city of San Francisco. Using thePlantSF program as a guide for selecting our sites, we studied three recently constructed projects to determine if the plantings were creating a greater sense of environmental awareness as well as promoting social interaction among neighbors.

The three sites are located in urban residential areas where a main project coordinator was responsible for organizing neighbors around the project. We conducted an analysis of each of the selected blocks to better understand the existing socio-economic and physical conditions. In addition, we distributed surveys to all residents along the study blocks and conducted interviews with the each project coordinator. Our results concluded that the permeable landscape sidewalk projects and environmental awareness are linked by social interaction, reinforcing the framework style of planning.

Greening: A Trend in American Cities

The initiative to “green cities” is becoming more visible in political and physical arenas. Mayors in cities around the country are making notable commitments to improving environmental conditions by planting trees, reducing greenhouse gas emissions, and improving water quality. Mayor Thomas M. Menino of Boston announced on April 28, 2007 that Boston would plant 100,000 trees over the next 13 years, with the bulk of the plantings to take root in the city’s least green neighborhoods¹. Likewise, in New York City, Mayor Bloomberg launched a GreenNYC campaign to reduce greenhouse gas emissions by 30% by 2030. This plan commits city funds to improve and create open spaces throughout the city and planting trees as well as offering New Yorkers a list of energy saving activities they can practice in their own lives.

Greening: The Specifics of San Francisco

San Francisco Mayor Gavin Newsom launched, in association with World Environment Day in 2005, a Livable City Initiative, which features greening components throughout the city. An interesting part of this initiative is that it aims to “Empower residents and business with new programs that allow them to take the lead in greening efforts.”² The initiative states that it hopes to “take a green approach to how we manage our city infrastructure, ensuring that greening not only beautifies, but increases public safety, reduces noise and airborne pollution, cuts city maintenance costs, improves resource efficiency, reduces our water consumption, and enhances our ability to manage wastewater.”³ Several city officials, such as Dan Sider, the Director of City Greening, and grant programs help this initiative gain appreciable momentum.

This initiative works on the local level, and supports many local environmental programs such as Green Connect and Community Challenge Grants. Green Connect is a partnership between government, nonprofit organizations, and San Francisco residents and businesses to support the greening of San Francisco’s streets, parks, and public spaces. Community Challenge Grants is a matching grant program to fund residents’ ideas for public space, landscaping, public art and maintenance improvements.

Greening: PlantSF

In preliminary research, we learned about a program called PlantSF, which was started by Jane Martin around 2005. PlantSF’s mission is “to promote permeable landscaping equally as sustainable urban infrastructure practice and as a beautification effort; by providing information to the public and by partnering with city and neighborhood organizations.”⁴ In short, this organization enables individuals to use an existing permitting process to “convert areas of the public right-of-way (sidewalks) to exposed-earth gardens.”⁵ PlantSF is a tremendous resource for individuals; the website has information that can help an individual select plants and permeable pavers, and it connects project initiators with local landscape architects and contractors who are potentially interested in working on the project.

1 http://www.boston.com/news/local/articles/2007/04/28/a_plan_takes_root_city_to_plant_more_than_100000_trees/

2 <http://www.sfenvironment.com/livablecity/index.htm>

3 <http://www.sfenvironment.com/livablecity/index.htm>

4 <http://plantsf.org/MissionStatement.html>

5 <http://plantsf.org/MissionStatement.html>

There are many factors that would lead an individual to replace part of the sidewalk with permeable landscape, including city enforcements to replace damaged sidewalks, the desire to beautify and create green space, and the augmentation of areas for stormwater infiltration.

In San Francisco, it is the responsibility of the property owner to maintain the sidewalk in front of one's property. When expanding tree roots or water damage a sidewalk, the owner must make improvements. PlantSF offers permeable paving as an alternative procedure to replacing damaged sidewalks with more concrete. Permeable materials, according to this organization, include trees, plants and rocks and can be natural or man made.

Martin worked with the city to create a streamlined and cost effective permit for these projects. The 'Sidewalk Landscaping Permit' is now available from the San Francisco Department of Public Works for a reduced fee of \$160-\$215 (it used to be \$800). The estimated cost of the total project is \$1-\$10 per square foot for the completed project, depending on labor and materials.⁶ While this might appear like a costly upfront investment, "potential cost savings include how much it costs to repair/replace damaged concrete initially and over time (especially where tree roots repeatedly heave and crack sidewalks) and related root pruning of trees."⁷

The impetus for replacing the extraneous right of way with permeable materials can also come from the desire to 'green' the block. Jane Martin asserts that many PlantSF projects have been initiated by the desire of individuals to increase the green space on the block. People can use the space for small gardens and play areas, and have the potential to create a sense of place and increase property values.

These projects also serve a hydrological function: "permeable landscaping is part of the sewer system for stormwater."⁸ In San Francisco, rain runoff is channeled into storm sewers and is combined with the sewage system. In large storm events, the system can get backed up and cause flooding. PlantSF projects help allay this problem by providing areas where water can infiltrate into the soil instead of going directly to the storm water sewers.

Testing a bias

Our group was especially interesting in the "empowering grassroots greening" section of the Livable City Initiative in San Francisco. As students in the Landscape Architecture and Environment Planning and City Planning departments, we have the bias that grassroots empowerment in the environmental realm is critical. We believe that the top down approach to environmentalism must be balanced with the bottom up approach, and that contact with the natural environment will lead to a greater understanding and respect for valuable resources. We are very excited about mayoral initiatives, but want to make sure this not just green washing rhetoric. To that end, we were interested in generating empirical data to support (or refute) the importance of the PlantSF initiative.

6 <http://plantsf.org/HowTo.html>

7 <http://plantsf.org/HowTo.html>

8 <http://plantsf.org/PermeableLandscaping.html>

Literature Review and Precedent Studies

Before we began our field research, we surveyed the literature to understand prior work and precedents.

Past 241 Studies

We began looking at past reports to brainstorm testable hypotheses. The report, "Street Trees and Seasonal Change in the Urban Environment,"⁹ hypothesized that people who live on urban residential streets lined with deciduous trees are more perceptive of seasonal changes. We were interested in building upon this hypothesis, and investigating whether people who live on streets with permeable landscape projects have a heightened sense of environmental awareness.

The report, "Street Design and Residential Satisfaction,"¹⁰ hypothesizes that there is more resident interaction on neighborhood streets willfully designed to create a pedestrian public realm. In the same vein, we were interested in studying whether the deliberate installation of PlantSF projects had an effect on interaction between neighbors.

Theory: Epistemological Map for Urban Design:

The field of environmental research design refers to the concepts of etic and emic. Emic study derives its source information from the people who inhabit the space through surveys or cognitive mapping, for example. Etic study derives its source information from the simulacrum of the expert through field measurements and behavior mapping. In general, one uses emic research to verify the etic. In our methodology, we used surveys and interviews – emic data – to verify and support our field measurements and behavior mapping – etic data. Several past studies have laid the theoretical foundation upon which we worked.

The Epistemological Map for Urban Design study, put together by Anne Vernez Moudon, classifies several categories of urban design studies. Our study fits into several of these categories, such as the Image Study category, which investigates "how people see and understand cities."¹¹ Appleyard and Lynch are amongst many researchers who contributed to this classification. Our study goal was to measure and understand how people react to physical elements in their city. Specifically, we were studying the effects that the landscape elements have on people's environmental awareness and social interactions with neighbors.

Our study also falls into the Environment Behavior Studies category, which looked at "how people perceive, use and interact with the built environment."¹² Kaplan, Appleyard, Francis, and Marcus all conducted experiments that made contributions here. Our study relates to this area of work in that we were curious to see if the presence of the plantings had an effect on a person's everyday sustainable practices and behavior.

Lastly, our study relates to the Nature Ecology Studies done since the 1980s, which involve the "natural forces and the built environment." Some of the contributors include McHarg and Van der Ryn and Calthorpe. Just as McHarg studied the different layers of a site, we mapped the different 'layers' present on the study blocks, like permeable and impermeable areas.

9 2000, J. Dinh, H. Kiers, N. Lozier

10 2003, H. Errazuriz, C. Sensenig, M. Tunte

11 1992, A. Vernez-Moudon

12 1992, A. Vernez-Moudon

Current Articles

“The Psychology of Sustainability: What Planners Can Learn from Attitude Research”

This article, written by Alice Jones and published in the *Journal of Planning and Educational Research*, discusses the origin of behavior and provides insight into the connection of local and global concepts of sustainability and environmental awareness. The author states that behavior is the result of an attitude that is generated by subjective norms. The individual has a distinct understanding of the concept of geographical scales. Thus, to understand and measure behavior, researchers must begin with measuring and observing attitudes about these different scales. For example, people generally understand, “The national landfill shortage is a conceptually separate notion from the city’s solid waste, which is, in turn, conceptually distinct from my kitchen garbage can.”

We used this concept of global and local attitudes translating into distinct behaviors as a foundation for a part of our survey. We asked a series of questions about local behavior and a series of questions about global behaviors, and then analyzed the results to see if there was a connection between the fundamental attitudes.

“Green Infrastructure BMPs for Treating Urban Storm Runoff: Multiple-Benefit Approaches”

In this article, Bill Wenks discusses the environmental value that best management practices have at different scales. “Although the implementation of water quality facilities is important at all scales, current practices tend to emphasize on-site treatment... Although this approach may be sound science and engineering, it can result in a fragmented urban landscape with limited aesthetic appeal or civic value.” Interestingly, this critique of parcel by parcel landscaping was the main critique of Dan Solomon’s article (see interviews in the appendix).

Wenks goes on to offer that an approach that “integrates a linked hierarchy of BMPs that range from the tertiary to regional, with a stronger emphasis on consolidated treatment, has a greater potential to realize the civic value of a stormwater system that is fully integrated into the city’s urban fabric.” This opinion made us think that while the grassroots approach to stormwater management is important, it should be just one component under a citywide wastewater planning and monitoring system. To this end, we were excited that Rosey Jenks attended our review earlier in the semester and spoke briefly about the city’s overarching water management goals. She noted that small-scale projects like PlantSF really do not solve the issues of flooding and barely address pollution. The stormwater calculations we did as part of our measurements also support the idea that the permeable landscape projects do not have the capacity to adequately manage the rainfall.

Precedent Studies

Green Streets Program and 12th Street in Portland

We studied the policy and design of Portland’s Green Streets Program in our preliminary research in order to place PlantSF in the context of landscape architecture and city planning. While the three sites that we chose have environmental and social conditions that differ significantly from Portland, it was beneficial to see Portland’s approach.

In April 2007, the Portland City Council approved a Green Street Resolution, which promotes and documents the use of green streets in public and private developments. Because “Portland is a leader in using strategies that manage stormwater runoff, enhance community and neighborhood livability, and strengthen the local economy”, we feel that this is a significant piece of literature¹³.

13 www.portlandonline.com/bes/index

The City defines a green street as a street that uses “vegetated facilities to manage stormwater runoff at its source.”¹⁴ Portland promotes “the use of green street facilities for the protections they afford to valuable water resources and public health, as well as for the multiple community benefits they provide, including green space and habitat connectivity, enhancement of bicycle and pedestrian environment, and neighborhood livability and vitality.”¹⁵

Portland established a technical City Stormwater Advisory Team (SWAT) to develop standard details for vegetated stormwater facilities. These include details for planters with and without parking, swales, and curb extensions. Just like PlantSF, SWAT thinks that guidelines will help facilitate the process of designing and implementing these environmentally sensitive alternatives.

In this 2007 report, Portland also evaluated potential options for implementing a broader Green Streets Program. It looked into different locations that could be appropriate for this treatment, launched demonstration projects to educate the public, and formalized a connection with the Capital Improvements Program (CIP) to ensure adequate funding for these projects.¹⁶

Specific outreach tools suggested and evaluated in this report include presentations to the public, forums that follow-up on presentations, a green streets tour schedule, a green streets doorhanger that was developed to provide a mode of regularly communicating with property owners living in close proximity to the projects, and signage markers that identify the projects and help education the public about them.¹⁷ We find this especially interesting, as it is not an emphasized component in the PlantSF initiative, and will make recommendations regarding outreach in our conclusion.

Evolving out of a Phase I recommendation, the City created a Green Streets Profile Notebook during the Phase II discussions that catalogues successful green streets facility designs and details. “Notebook users will be able to identify a broad spectrum of appropriate designs for planning, design, and implementation for their site specific needs.”¹⁸ We feel that this idea is valuable for a grassroots initiative because it would provide information about successful parts of each project. Jane Martin has begun to do this with the “Featured Projects” tab on the PlantSF website.

The Green Streets Program sought out funding in an organized and generally successful manner. Phase 2 developed a “one time provision of \$1 million in funding to help offset the incremental costs of implementing green street facilities when doing City “retrofit” work in the public right of way.”¹⁹ This source of funding essentially helped jumpstart the retrofit portion of the Green Streets Program; since it was only valid for one year, the Program had to be expedient in using it. Additionally, the Bureau of Environmental Services (BES) has applied to the Environmental Protection Agency for approximately \$3 million for fiscal year 2008 to continue the Green Streets Implementation Program.²⁰ The Phase 2 Task Force is also working on calculating the “incremental cost” of these projects, which may shed light on the long-term savings of the projects.

14 www.portlandonline.com/bes/index

15 Green Streets Cross-Bureau Team Report, Phase 2, March 2007

16 Green Streets Cross-Bureau Team Report, Phase 2, March 2007, page 7

17 Green Streets Cross-Bureau Team Report, Phase 2, March 2007, page 9

18 Green Streets Cross-Bureau Team Report, Phase 2, March 2007, page 28

19 Green Streets Cross-Bureau Team Report, Phase 2, March 2007, page 33

20 Green Streets Cross-Bureau Team Report, Phase 2, March 2007, page 33

In addition to the overall Green Streets Program, specific projects in Portland are worthy of note. In 2006, the SW 12th Avenue Green Street project in Portland won the General Design Award of Honor from the American Society of Landscape Architects. 12th Street functions by disconnecting the “street’s stormwater runoff from the storm drain system that feeds directly into the Willamette River and manages it on-site using a landscape approach.”²¹ The goals of this project are to 1) be low cost in design and execution 2) benefit the environment and foster community livability and 3) provide a model for other jurisdictions in addressing local and national stormwater regulations.²² The project was commended for its way it transformed a pedestrian zone into an area that can manage stormwater runoff, and its success in being functionally and aesthetically integrated into the urban fabric of Portland.

Site Selection Process and Methodology

Our first challenge in selecting sites was to decide whether to compare three sites that all had permeable landscape projects, or compare sites with these projects to sites without these projects. We decided on the former because this would help us generate more data about the actual green grassroots movement.

We looked closely at the PlantSF, Bureau of the Urban Forest, and Friends of the Urban Forest websites for possible study sites. We initially crossed off all projects that were not on urban residential streets, such as the Guerrero/San Jose Boulevard project, which is on a main connector road. We also crossed off all projects that had been installed in the past three months, such as the Shrader Street project. Finally, we crossed out projects that had negligible amounts of permeable surface area, such as 201 22nd Street in Noe Valley.

We then spent three days walking and driving around San Francisco scouting the remaining sites on our list. Seeing the sites was infinitely beneficial to helping us understand the physical presence of the projects and demographics of the blocks.

In the end, the three sites we selected were Shotwell Street between 17th and 18th Streets, Scott Street between Oak and Page Streets, and Alhambra Street between Pierce and Mallorca Streets. While we are aware that there are variables amongst the three sites we ultimately chose, we are confident that these sites have the most similarities of all the sites we examined. If this study project is repeated in the future, we think that there will be more of a selection of projects, and thus the variables can be minimized.

Comments of Note from the Final Review

The comments we received during the final review were extremely valuable, especially in offering ideas for how our study can be best used looking forward. Marcia McNally suggested our information could be used as a starting point to create a matrix of types of streetscape designs and how they fit into different neighborhoods. For example, how would a neighborhood like Mission Bay react to the permeable planter typology from Shotwell?

Neil Hrushowy mentioned that the city could provide support for this project through community meetings and education programs.

21 www.asla.org/awards/2006/06winners

22 www.asla.org/awards/2006/06winners

After much preliminary research, followed by discussions about definitions, we settled on the hypothesis that would steer our semester-long experiment.

HYPOTHESIS

The presence of permeable landscape sidewalk projects motivated by storm water mitigation is likely to increase environmental awareness of neighborhood residents.

SUB-HYPOTHESIS

The presence of permeable landscape sidewalk projects motivated by storm water mitigation is also likely to foster social interactions between people that live on the block.

DEFINITIONS

Social Interaction: The social action, both accidental and planned meetings, that occurs between groups or individuals. These actions help contribute to sense of connection to neighbors, pedestrian safety, overall perceived safety, and unique sense of place.

Environmental Awareness: Overall knowledge of the benefits of reducing the rate at which the storm water reaches the sewer lines during rainfall events. Connecting practices that are environmentally sensitive on the local and global levels.

Permeable Landscape Sidewalk Improvements: The replacement of impermeable concrete with materials that allow rainwater to infiltrate into the soil layer instead of flowing directly to the storm sewer. Permits for these improvements are granted for areas of the sidewalk that are underutilized or have fallen into disrepair.

CONSTRAINTS

- Presence of projects where permeable sidewalk landscaping has been installed (elements include existing sidewalk cut, new sidewalk installation, planting and other materials)
- Resident motivator who organized project (Jane Martin on Shotwell, Lisa Zahner on Scott, landscaper on Alhambra)
- Residential streets with similar density
- Maintenance done by block resident(s)
- Timeframe of project completion within one year
- Traffic configuration--stop signs at both ends of blocks

VARIABLES

- Socio-economic status
- Physical cross section of the street – street width, parking, sidewalk, building setbacks, building types
- Length of residence
- Presence of families and children
- Existing neighborhood groups

Environmental Observation/Measurements



Shotwell Street
between 17th & 18th
in the Mission



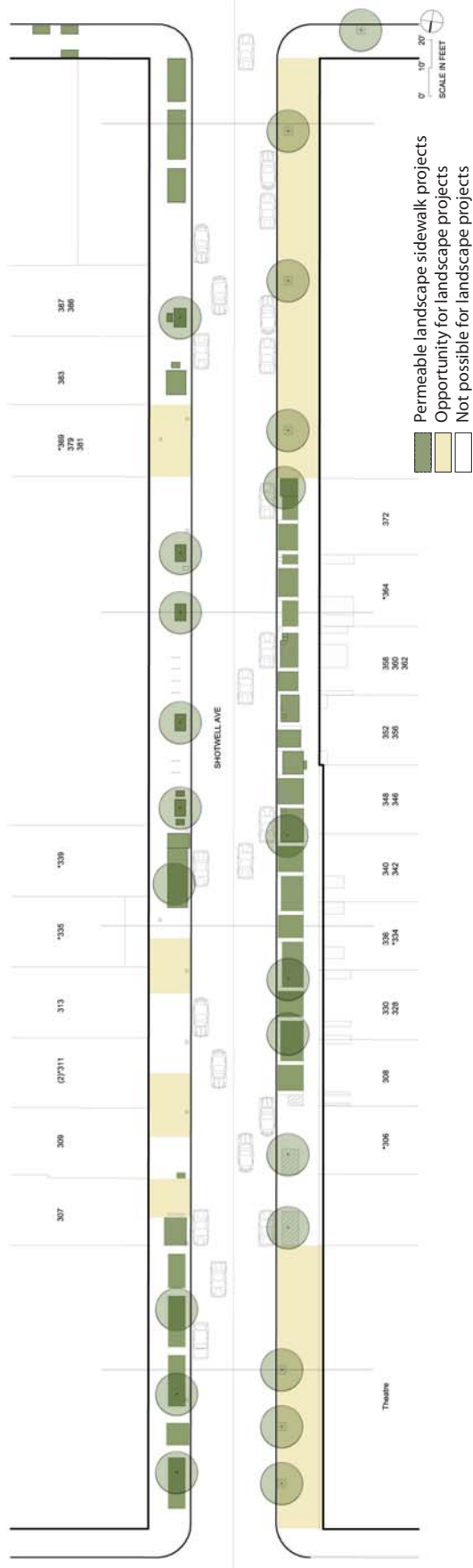


Plantings sketch

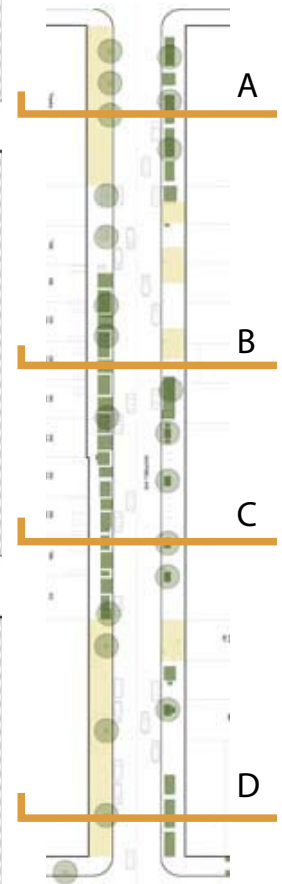
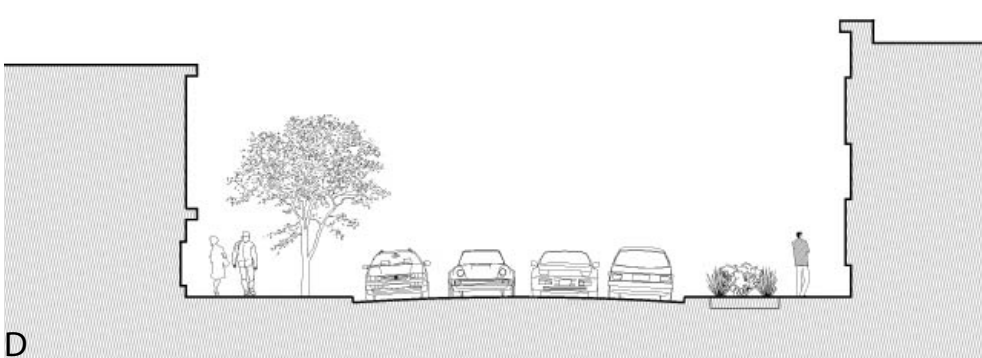
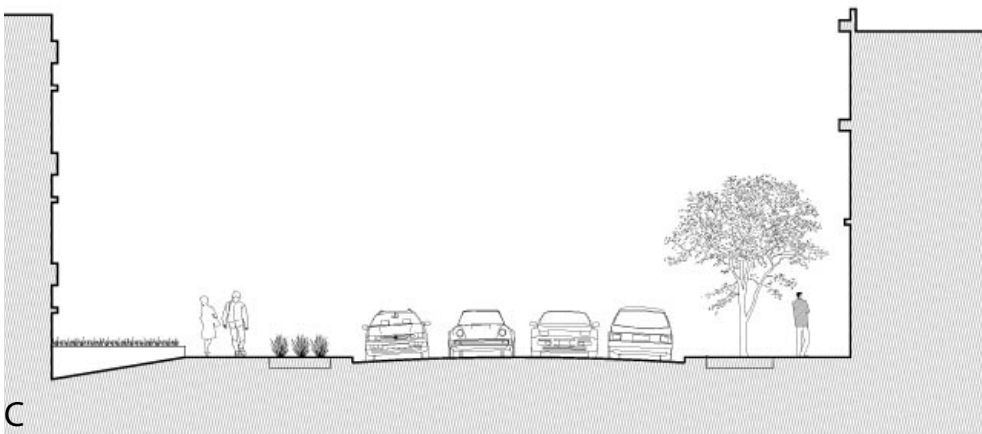
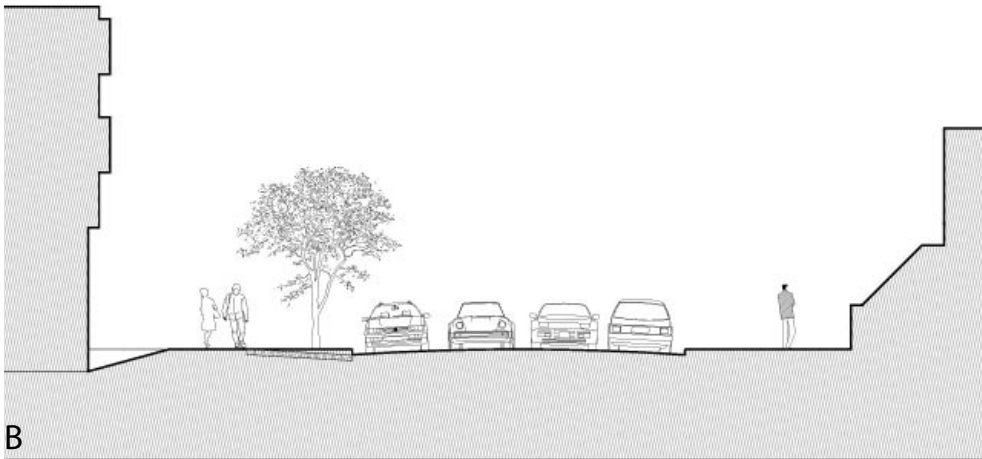
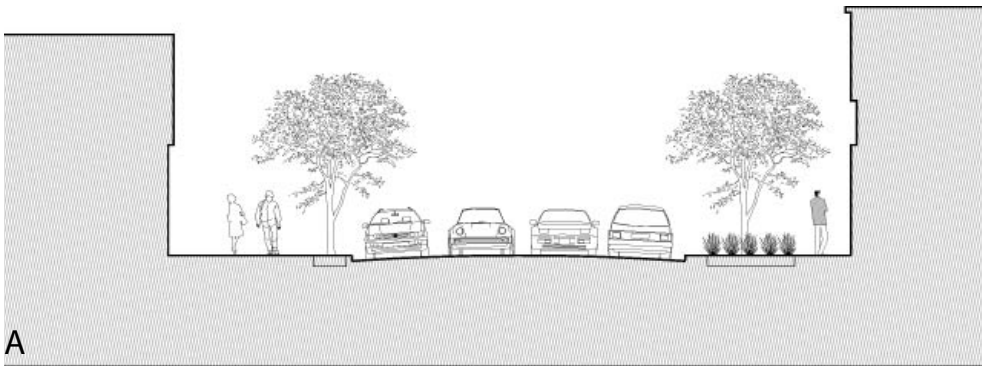
Drought tolerant and abuse resistant plantings on one side of sidewalk with plantings 10" to 36" in height. Plantings are along both sides of most of the street. Buildings are 2-4 stories high. Several mixed use buildings.



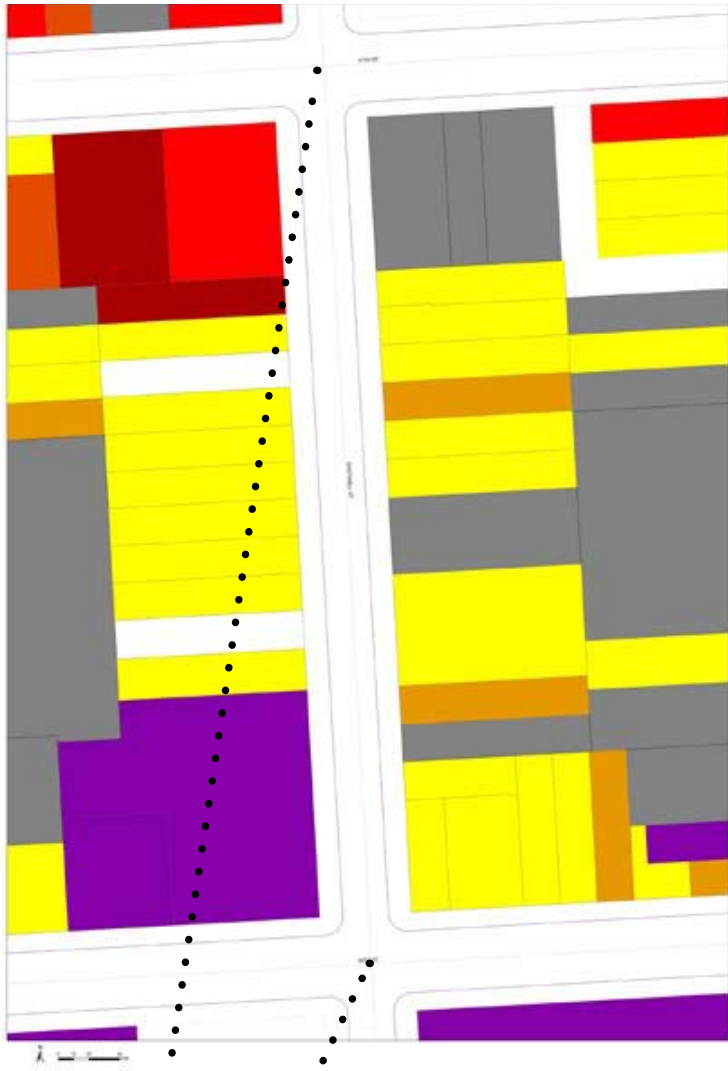
Surrounding blocks, area of study in orange.



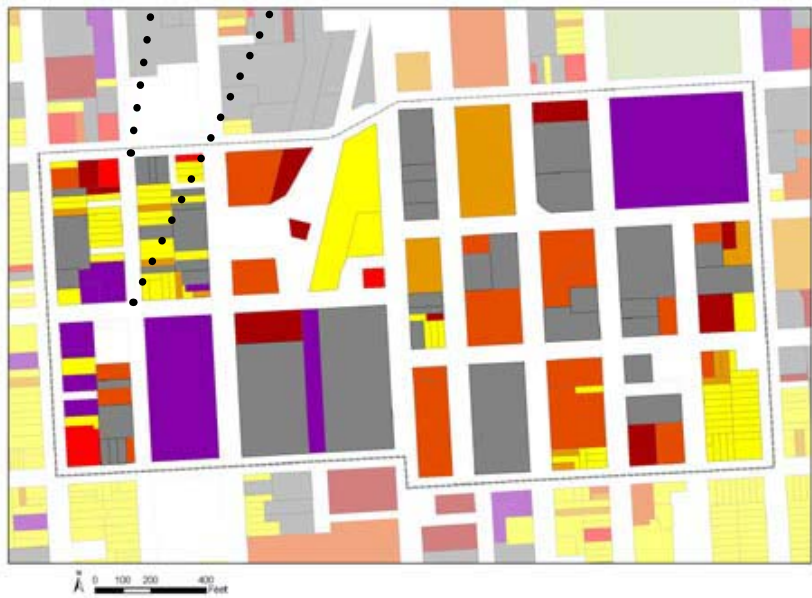
*Asterisk indicates survey respondent location



Street Sections -
Two lanes of traffic with parking on both sides of the street. Narrow sidewalks.



Land Use Map
 From 2000 Census
 Median Income: \$37,083
 Family Size: 3.86
 Density: 79 persons/acre
 20 units/acre

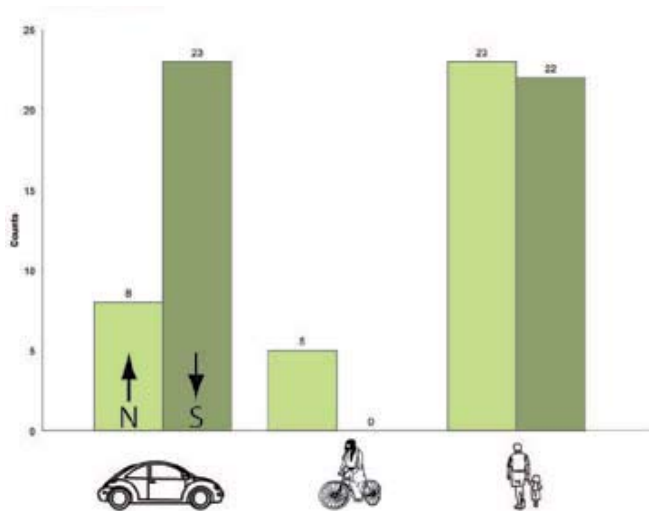


- LANDUSE**
- CIE
 - MIPS
 - MIXED
 - MIXRES
 - OPENSOURCE
 - PDR
 - RESIDENT
 - RETAIL/ENT
 - ROW
 - VACANT
 - VISITOR

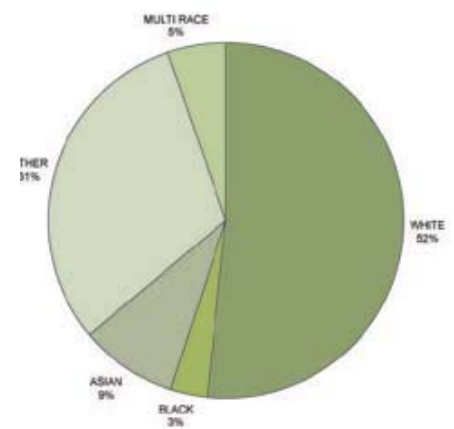


Year of Permit
 2003
 2005
 2006
 2007

Sidewalk Landscape Permit Propagation Map - 1/4 mile radius from project site



15-minute Traffic Count
 High south bound traffic. High pedestrian traffic.



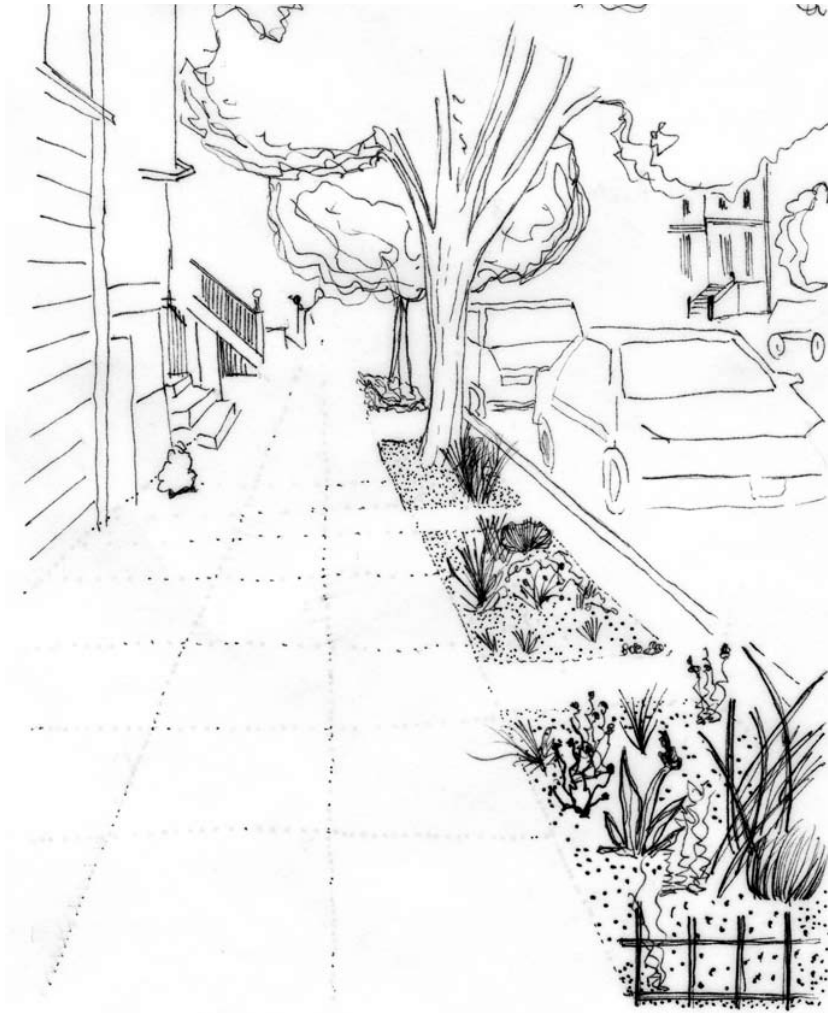
From 2000 Census

Distribution of Race
 High Diversity



Scott Street
between Oak & Page
in the Lower Haight





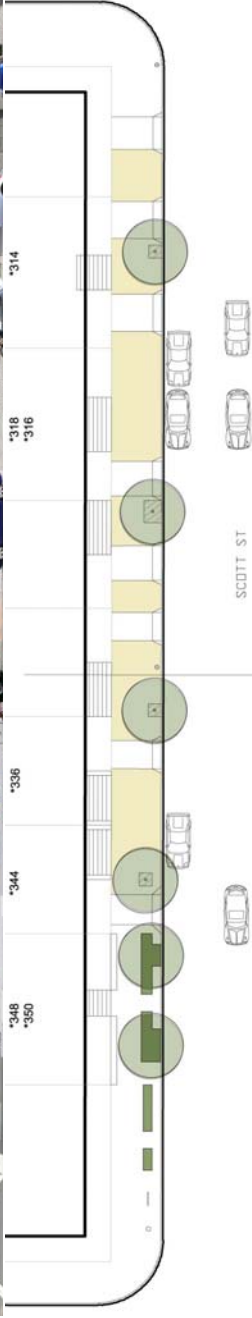
Plantings sketch

Drought tolerant and annual plantings interspersed with rocks line both sides of the sidewalk. Plantings are 10" to 30" in height.

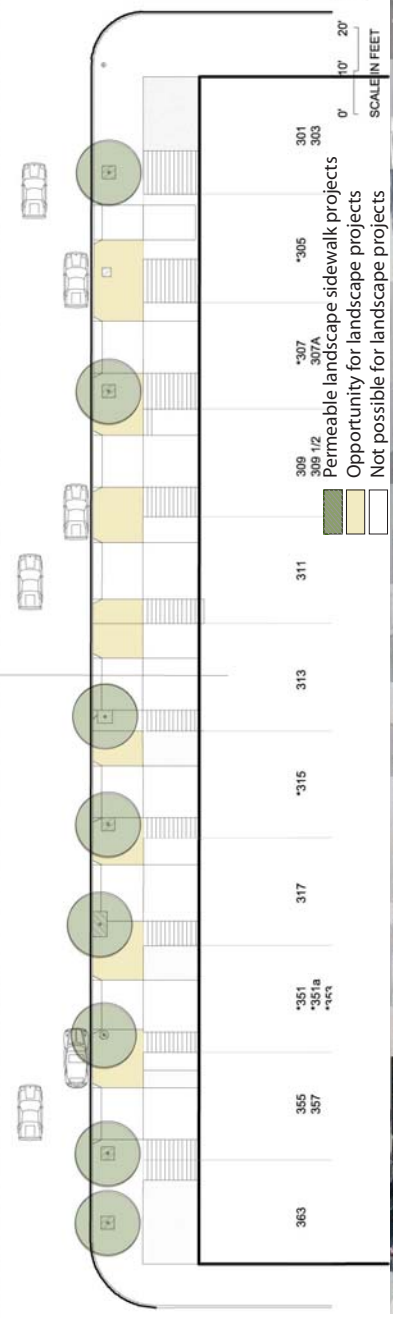
Buildings heights are 2-4 stories. Mostly residential buildings.



Surrounding blocks, area of study in blue.

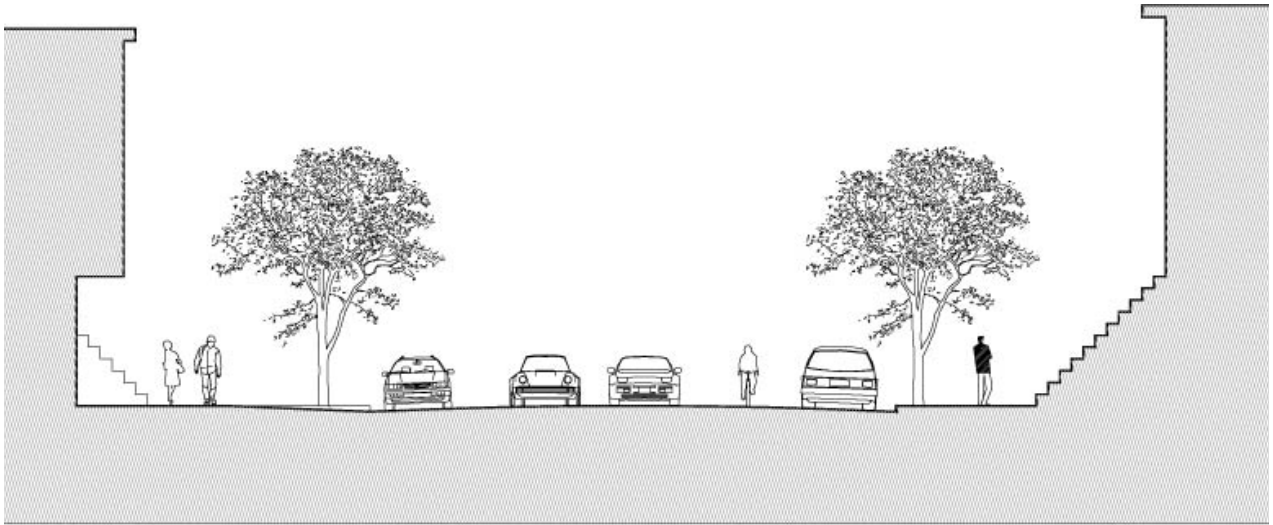


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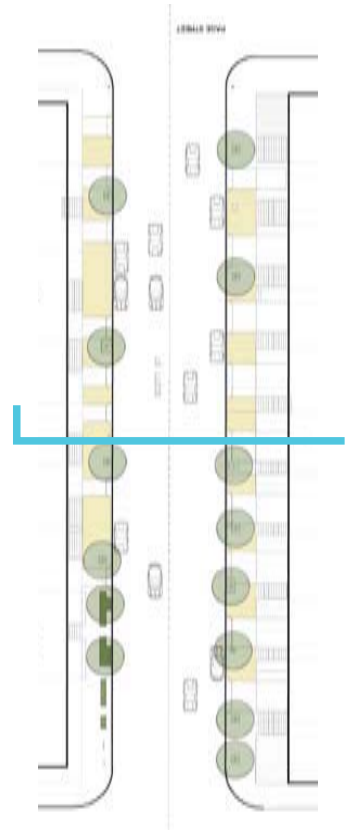


- 309 1/2
 - 309
 - *307
 - 307A
 - *305
 - 301
 - 303
- Permeable sidewalk projects
Opportunity for landscape projects
Not possible for landscape projects

*Asterisk indicates survey respondent location



Street Section -
Two lanes of traffic with parking on both sides of the street. Bike lane on east side of street.
Narrow sidewalks.





Land Use Map

From 2000 Census

Median Income: \$37,083

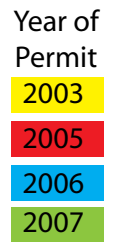
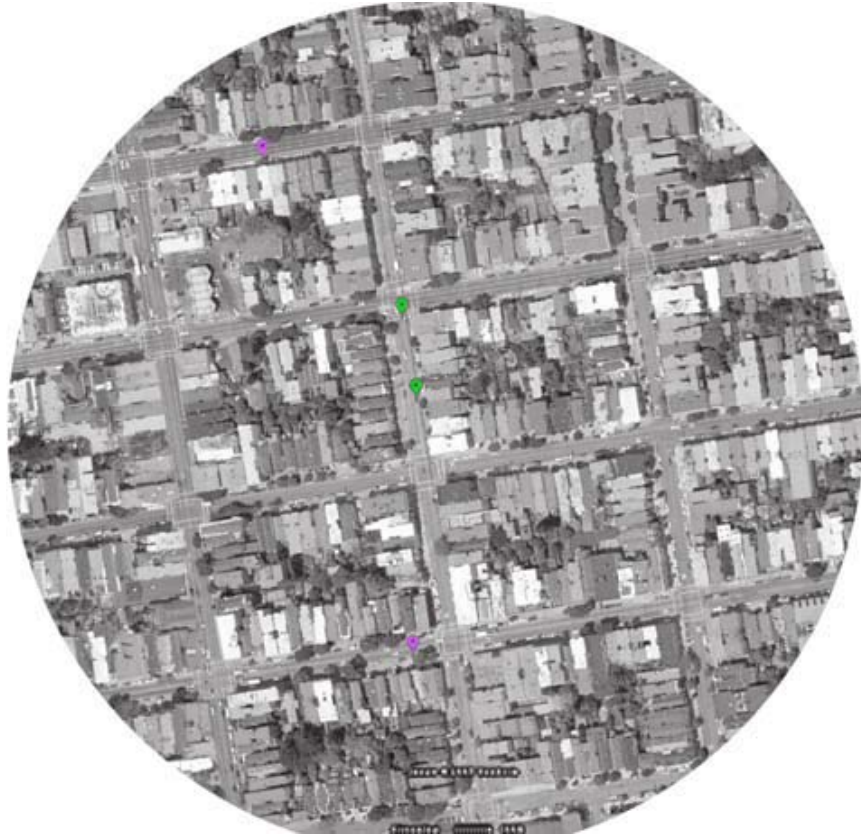
Family Size: 3.86

Density: 79 persons/acre
20 units/acre

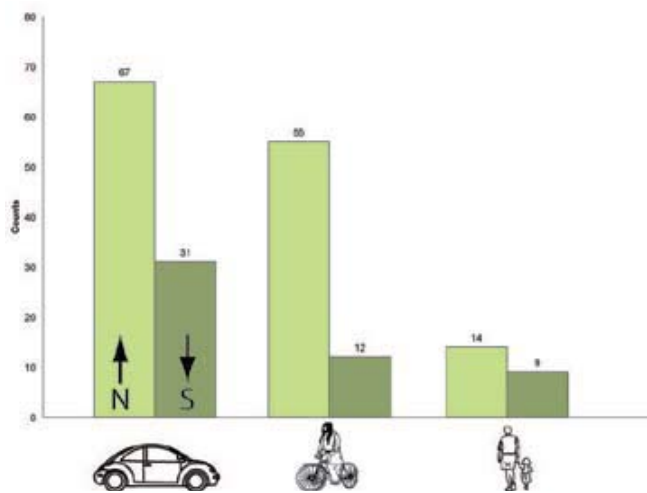


LANDUSE

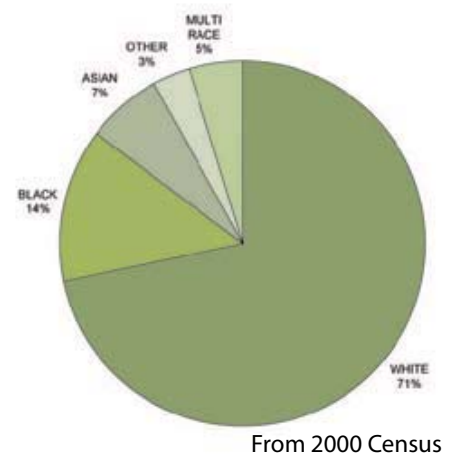
-  CIE
-  MIPS
-  MIXED
-  MIXRES
-  OPENSOURCE
-  PDR
-  RESIDENT
-  RETAIL/ENT
-  ROW
-  VACANT
-  VISITOR



Sidewalk Landscape Permit Propagation Map - 1/4 mile radius from project site



15-minute Traffic Count
High northbound vehicular and bicycle traffic.



Distribution of Race
Medium level of diversity.



Alhambra Street
between Pierce & Mallorca
in the Marina





Plantings sketch

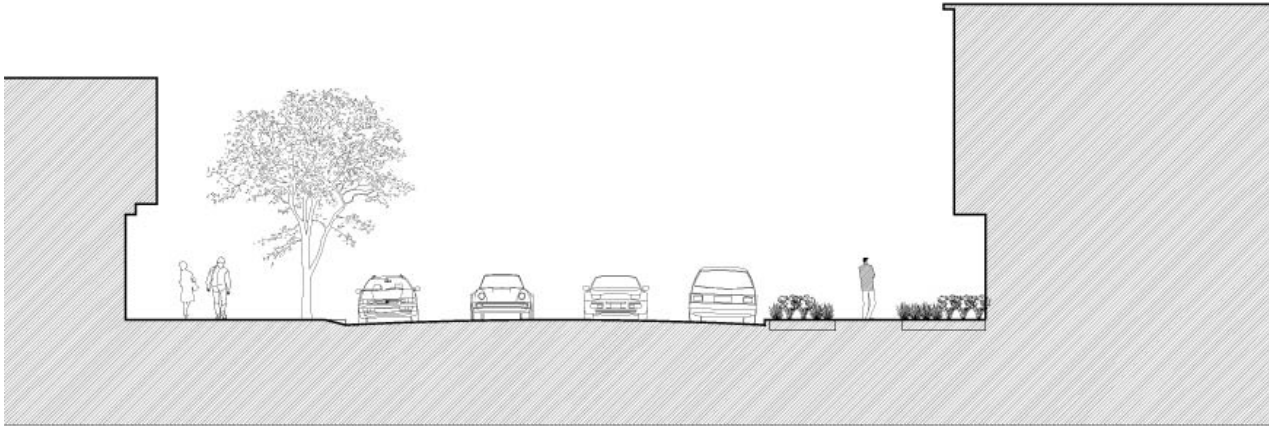
Mounded plantings on both sides of sidewalk with plantings 30" to 48" in height.



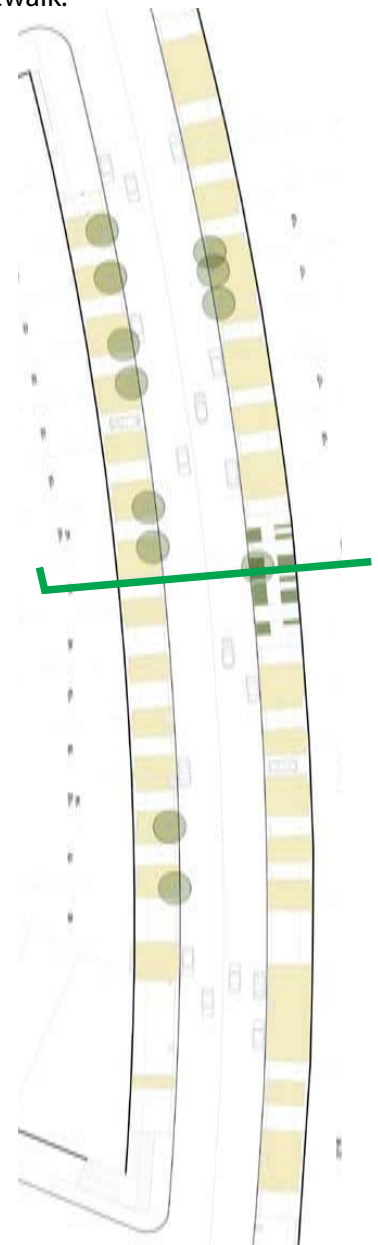
Surrounding blocks, area of study in green.



*Asterisk indicates survey respondent location



Street Section -
Two lanes of traffic with parking on both sides of the street. Wide sidewalk.





Land Use Map
 From 2000 Census
 Median Income: \$88,285
 Family Size: 2.38
 Density: 79 persons/acre
 33 units/acre

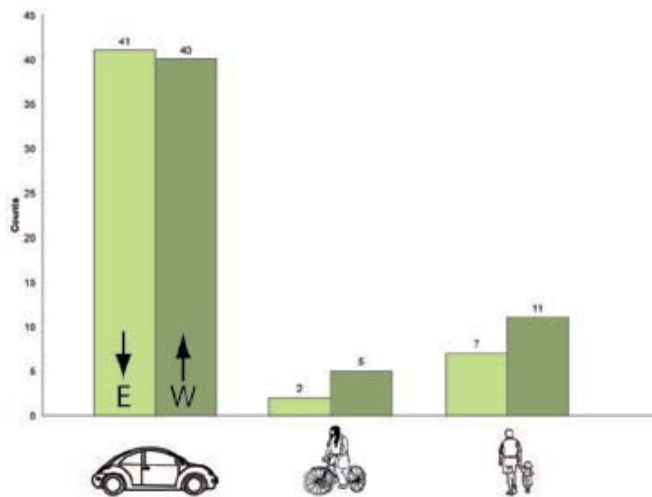


- LANDUSE**
- CIE
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 - VACANT
 - VISITOR

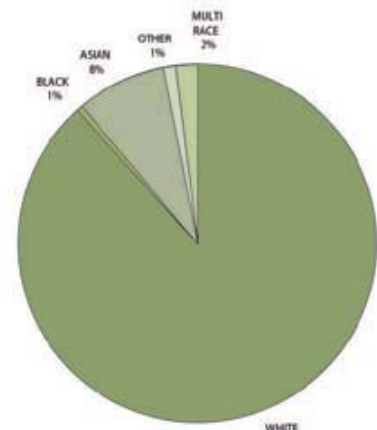


Year of Permit
 2003
 2005
 2006
 2007

Sidewalk Landscape Permit Propagation Map - 1/4 mile radius from project site



15-minute Traffic Count
 Medium traffic, low pedestrian and biker counts.



From 2000 Census

Distribution of Race
 Low diversity.

The Survey!

We hand-delivered surveys to all three streets on a Saturday. The following is an example of the survey given to all three streets' residents. In a sidebar commentary, we hope to provide an explanation as to why and how we chose our questions so that future studies can learn from and improve upon our process. The survey was 4 pages front and back on letter paper; it's been reduced here to provide for commentary.



November 9, 2007

Hello Scott Street Resident!

We are graduate students in the College of Environmental Design at UC Berkeley and we are conducting research on your block.

Certain areas of the sidewalk on your block that have been underutilized or fallen into disrepair have been converted to a zone for stormwater mitigation. Concrete has been replaced with materials that allow rainwater to infiltrate into the soil layer instead of flowing directly to the storm sewer. We are studying the effects of these **permeable landscape sidewalk projects**.

We would be grateful if you would take 10 minutes to fill out this survey. We will be in your neighborhood on Saturday November 17th between 11am and 1pm to collect the surveys. We ask that if you know you will not be home during these hours that you leave the survey tucked in your front door so that we may be able to retrieve it.

If you have questions, please contact us via email or our professor, Peter Bosselmann, Professor of Urban Design, at 510.642.3028.

Thank you,
Andrea Gaffney, agaffney@berkeley.edu
Kirsten Johnson, khjohnson@berkeley.edu
Trudy Garber, trudygarber@berkeley.edu

1. How long have you lived at this residence:

- Less than 12 months
- 1 – 3 years
- 3 – 7 years
- 7 – 12 years
- Greater than 12 years

2. Do you own or rent your residence?

- Own
- Rent

3. How many people live in your household? _____

Their ages: _____

We only attempted to collect and distribute surveys on Saturdays. We should have gone out during the week as well.

Tenure is important in determining sense of ownership on the street.

Ownership is also important in determining sense of civic responsibility.

For Question 3, we realized that the presence of children in a household impacts the household's environmental awareness, so we asked for ages.

4. The four pictures below are examples of "permeable landscape sidewalk projects" found in San Francisco. Please rank (1-4) your aesthetic preference, with 1 being your most preferred:



5. According to the following scales, how would you best describe your block? Circle the appropriate number.

- | | | | | | | |
|-----------|--------------|--------------|--------------|--------------|--------------|------------|
| Safe | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | Dangerous |
| Clean | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | Dirty |
| Beautiful | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | Ugly |
| Inviting | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | Uninviting |

6. How satisfied are you with the permeable landscape sidewalk projects on your block?

- Extremely satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Extremely dissatisfied
- Unaware of any permeable landscape sidewalk projects on the block

7. How does your level of satisfaction of the block compare now to before projects were implemented?

- Significantly more satisfied now
- Somewhat more satisfied now
- Neither satisfied nor dissatisfied
- Somewhat more dissatisfied now
- Significantly more dissatisfied now
- I did not live at this location before construction of the permeable landscape sidewalk projects

8. Check all activities relating to the permeable landscape sidewalk projects on your block in which you have been or are currently involved.

- Planning
- Construction
- Maintenance
- None

For Question 4, we debated on whether or not to ask people to identify their street. In the end, we decided that visual preference was more important being able to identify their own street. Whether or not they recognized their street might have affected the spread of results, but there was a clear preference for the same image on all three streets.

Question 5 established the residents' overall satisfaction on their block with respect to the identified issues.

Question 6 then further delves into satisfaction, specifically referring to the plantings. The introductory letter and the visual preference question define what are the permeable landscape sidewalk projects.

We had to ask Question 7 because the GSI was concerned we would have no other conclusive results. It's a good question to compare to numbers 5 and 6.

Question 8 was a very telling question. If you tie this back to tenure and ownership and whether or not they have plantings in front of their house (Question 16), then you begin to get a sense of the level of community interaction.

9. With regards to the permeable landscape sidewalk projects, where does your block fit along these scales? Please circle the most appropriate number.

- Illegally parking cars on sidewalk is:
Easy 1 2 3 4 5 Difficult
- Aesthetic condition of block is:
Positive 1 2 3 4 5 Negative
- Interaction between neighbors is:
High 1 2 3 4 5 Low
- Amount of garbage that collects on the street is:
A lot 1 2 3 4 5 Negligible
- Amount of water that stays on the street after it rains:
Significant 1 2 3 4 5 Negligible

10. Since the addition of the permeable landscape sidewalk projects on your block, have you noticed a difference in the amount of stormwater on your street after a rainstorm?

- Major decrease in the amount of water
- Minor decrease in the amount of water
- Neither a decrease nor increase in the amount of water
- Minor increase in the amount of water
- Major increase in the amount of water
- I did not live at this location before construction of the permeable landscape sidewalk projects

11. This is a list of several reasons why people have replaced the allowable width of sidewalk concrete with permeable landscape. Check all that would influence you to do the same on your block, assuming there is no cost to you:

- Neighbor encouragement
- Reduces potential for storm sewers to backup and flood
- Creates wildlife habitat
- Creates a place to garden
- Provides potential for urban farming
- Beautifies the neighborhood
- Creates opportunities for community interaction
- Deters crime
- Reduces the presence of homeless people
- Increases property values
- Reduces heat island effect by absorbing heat rather than reflecting it
- Increases oxygen production
- Recharges ground water

12. Disregarding cost, are you interested in replacing the allowable concrete sidewalk in front of your house with a permeable landscape? (Check all that apply)

- Yes
- No
- Already replaced
- Not possible because of infrastructure

13. Rate your overall awareness on the following topics:

- Climate change
Aware 1 2 3 4 5 Unaware
- Flooding and Drought
Aware 1 2 3 4 5 Unaware
- Water Pollution
Aware 1 2 3 4 5 Unaware

We derived the categories for Question 9 from our site observations. These issues were present in varying degrees on all three streets.

For Question 10, we calculated the actual reduction in stormwater for each of the streets so we wanted to compare our data to a perceived change. The percentage coverage of permeable landscape on a street is directly correlated to a perceived difference, so the percent coverage might be something to control for in future studies.

For Question 11, we copied this list directly from the PlantSF website << <http://plantsf.org/PermeableLandscaping.html>>> because we wanted to generate some feedback that directly corresponded to the organization.

Question 12 was another question aimed at generating feedback for PlantSF and the permitting process. It would be interesting to ask this question with and without cost considerations to measure how much people value the change created by replacing concrete with a permeable landscape.

Initially in Question 13 we asked about many more environmental issues, but we decided to narrow it down to issues directly related to stormwater. This question is meant to establish environmental awareness on a global level.

14. Check all of the following in which you participate:

- Recycle
- Use recycled paper products
- Compost (food waste and/or yard waste)
- Use compact fluorescent bulbs instead of incandescent
- Use low-flow showerheads
- Consider purchasing EnergyStar appliances
- Turn off lights when not in use
- Have Double-paned windows in house
- Consume responsibly harvested seafood
- Own a hybrid vehicle
- Commute using a transportation mode other than driving alone
- Hand water garden/plant
- Donate time or money to environmental organizations

15. Please briefly describe what you have learned from the presence of the permeable landscape that has been installed on your street within the last year?

16. Please indicate the proximity of your building to the permeable landscape sidewalk projects on your street. Mark all that apply.

- in front of my building
- across the street from my building
- within three properties' distance from my building
- greater than three properties' distance from my building
- not sure where they are located

In order to correlate the surveys to census data, we ask you to please answer the following questions. Your responses will be used for statistical purposes only and are anonymous.

17. Please estimate your household income for this year:

- Less than \$29,999
- \$30,000 - \$79,999
- \$80,000 - \$119,999
- \$120,000 or more

18. What is the highest level of education achieved within your household?

- High School: no diploma
- High school diploma
- 4-year university diploma
- Masters degree or higher

Thank you so much for your time! We really appreciate it!

Question 14 is intended to establish local practices of environmental awareness. We compiled the list from primary environmental issues noted on the websites of the Environmental Defense Fund and the Environmental Protection Agency. This is a paired-down version of the list.

It was useful to have one open-ended question in the survey. People didn't necessarily answer our question, but used it as an opportunity to vent. Perhaps leaving the question even more open would compel more people to write.

We wrote down the address on the survey when we collected it, so we knew the answer to this question, but it was a good question to judge people's awareness of their street.

We asked about income because we knew that the median income had changed since the 2000 census, and we wanted more accuracy.

We asked Question 18, the last question, because we wanted to see if there was a correlation between levels of education and environmental awareness.

The Results!

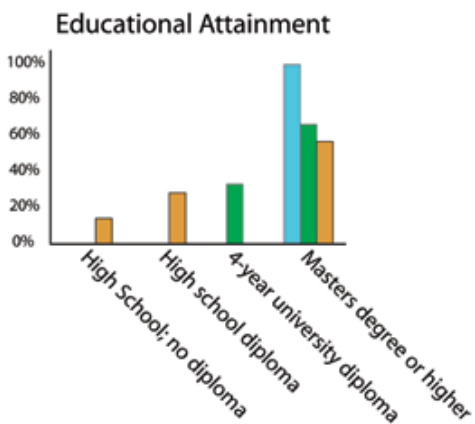
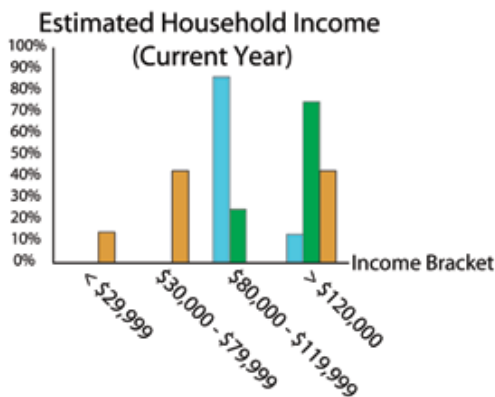
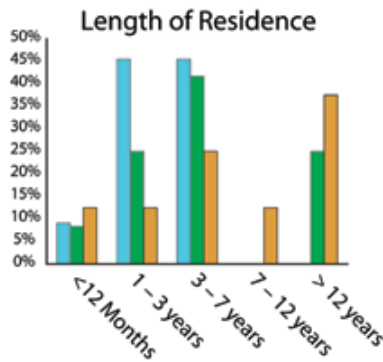
We were surprised by some of our results, but mostly they confirmed some of our initial thoughts. The major finding was that the survey results did not support our hypothesis that *the presence of permeable landscape sidewalk projects motivated by storm water mitigation is likely to increase environmental awareness of neighborhood residents.* However, our sub-hypothesis was spot-on: *The presence of permeable landscape sidewalk projects motivated by storm water mitigation is also likely to foster social interactions between people that live on the block.* Social interaction, for better or worse was clearly affected by the introduction of the permeable landscape, and is ultimately the lynch-pin between the plantings and fostering environmental awareness about stormwater mitigation.

Scott

Alhambra

Shotwell

Our rate of return on the survey was not great. Here are the specific numbers.
 Scott: 13 out of 40; Alhambra: 12 out of 60; Shotwell: 8 out of 50.

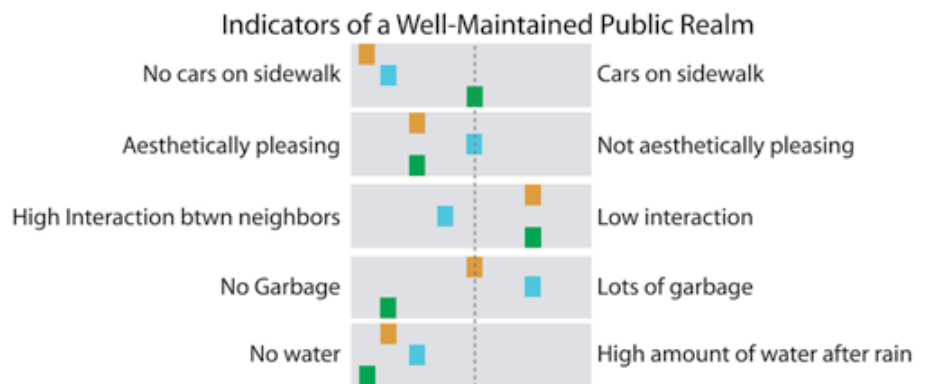
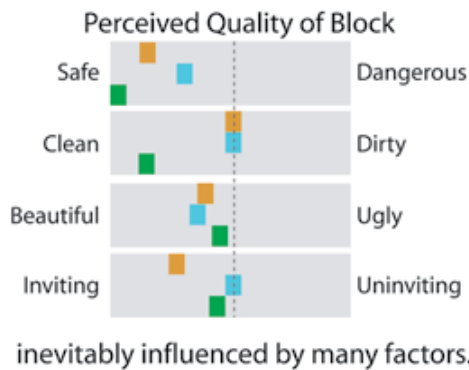


Our results from the demographic portion of the survey show that median income is slightly higher as compared to the census data from 2000. The length of tenure and mix of rental and ownership indicates a certain level of consistency and continuity among the residents' collective memory on the blocks. We were surprised by the number of people who achieved post-baccalaureate education, and we admit this is a bias in our results. The high school education results from Shotwell reflect the presence of a group home which reported six occupants with a reported annual household income of less than \$30,000.

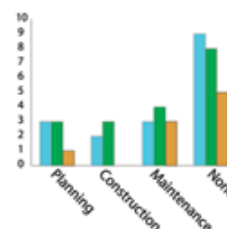
For the visual preference question, we showed four images of permeable landscape sidewalk projects. We desaturated the image with the exception of the plantings so it would be visually apparent on what we were asking them to focus. One image showed the Alhambra plantings, another showed the Shotwell plantings. The other two images were of plantings on streets not in our study. The Alhambra plantings was the overwhelming preference of all survey respondents. All three streets ordered their preferences in the same way. Below is the order.



Residents evaluated the perceived quality of their blocks as generally positive. These results set a datum on which to read other results concerning quality and satisfaction. The results indicating the level of public realm maintenance show results that respond to the performance of the permeable landscape sidewalk projects. There are specific maintenance issues associated with the plantings on each block, but residents on all three streets reported as being somewhat satisfied with the permeable landscape sidewalk projects on their streets. One noteworthy finding is that two-thirds of the respondents on Shotwell have a project in front of their residences, yet another two-thirds claim they have no maintenance responsibilities. This could be a reason why garbage is an issue for the plantings on the street.

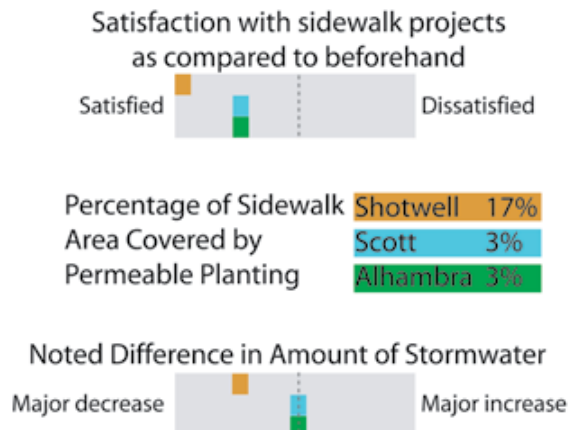


Residents' Project Involvement

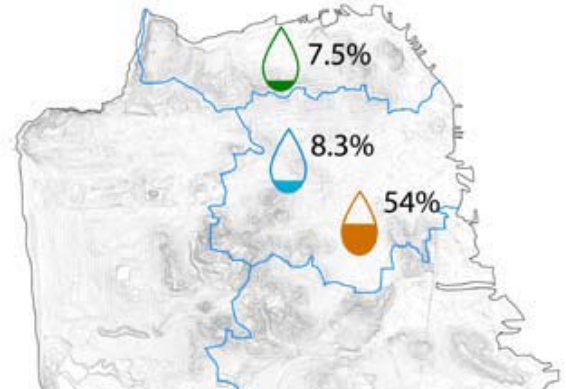


Shotwell
Scott
Alhambra

The level of change in respondent satisfaction of the sidewalk projects appears to correlate to the percent of sidewalk modified from concrete to a permeable landscape. The same correlation presents itself in the results noting the perceived difference in the amount of stormwater that stays on the street after it rains. We calculated the actual holding capacity of the permeable landscape sidewalk projects on each street to compare with the perception in the survey results. The surface holding capacity was calculated for a one-hour duration five-year storm event, looking only at the total capacity of the sidewalks. There is a clear correlation between percent coverage of permeable landscape, project satisfaction, and stormwater holding capacity. (Refer to the appendix for stormwater calculations.)



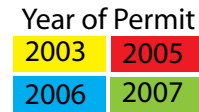
Difference in Permeable Surface Holding Capacity in 1-hour 5-year Storm Event



The Jane Martin Nexus

The founder of PlantSF, Jane Martin is the driving force behind the propagation of permeable landscape sidewalk projects in San Francisco. For our three streets, she had a varying degree of direct influence over the implementation of the projects. She coordinated the Shotwell project with a storm sewer upgrade project, so the plantings were paid for with public grants. Each project has a project organizer who has had contact with Jane Martin.

Sidewalk Landscape Permit Propagation in San Francisco

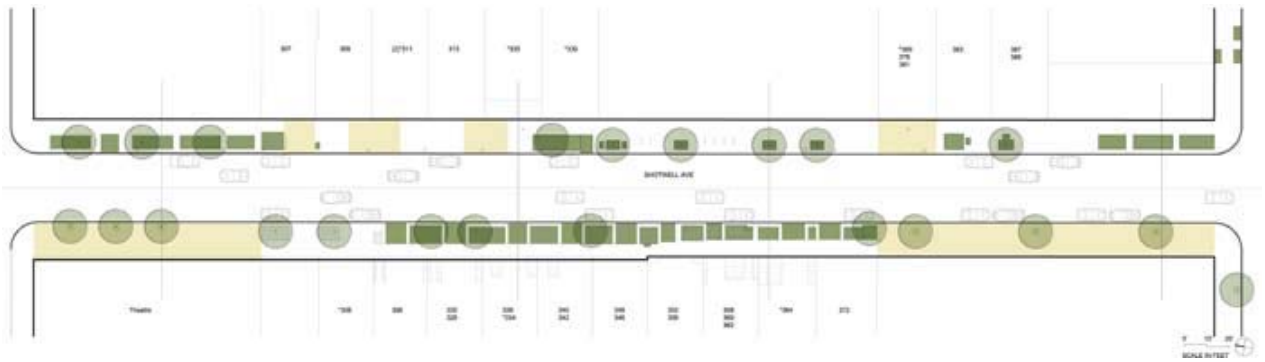


The list of issued permits indicates a trend of project organizers managing groups of permits in multiple areas around the city.



In my opinion - basically no change.

There are more birds, it looks a lot better walking down the street than before.



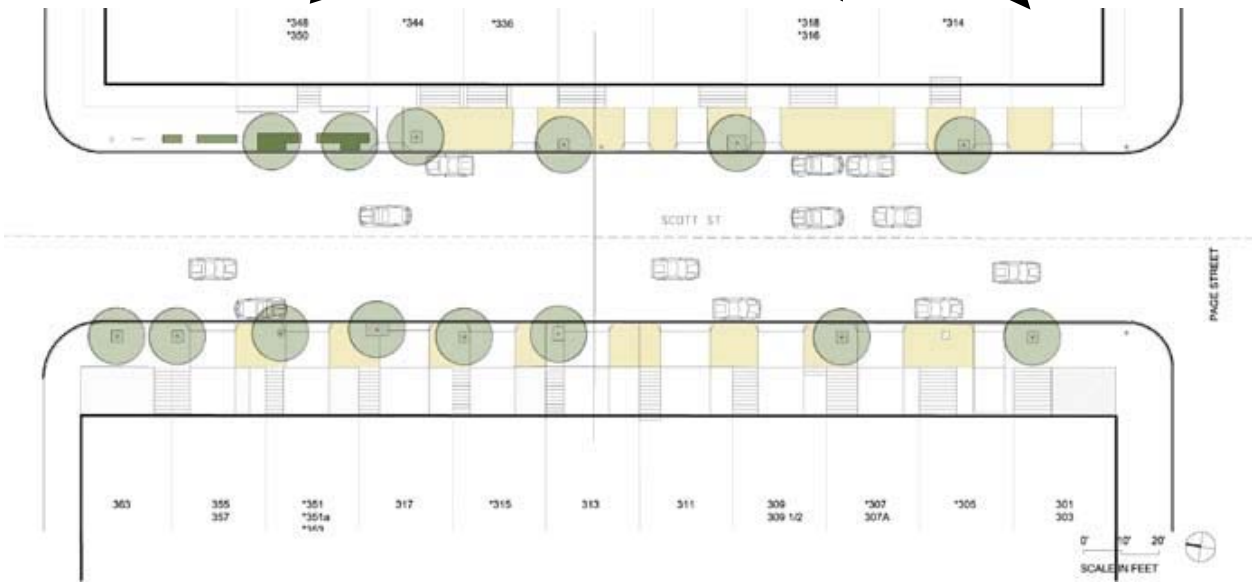
Dog owners use the garden patches as toilets for their pets - it is always full of newspapers, plastic bags, bottles, and cans. The plants are dying they are not beautiful.

We are more confident that if we get a heavy rain there will not be flooding.

The biggest benefit has been increase in neighbor interactions. My wife meets everyone while maintaining the front garden and gets lots of positive feedback.

Sorry, but I am unaware of any changes.

Looked great at the start but now it collects dead leaves and garbage.



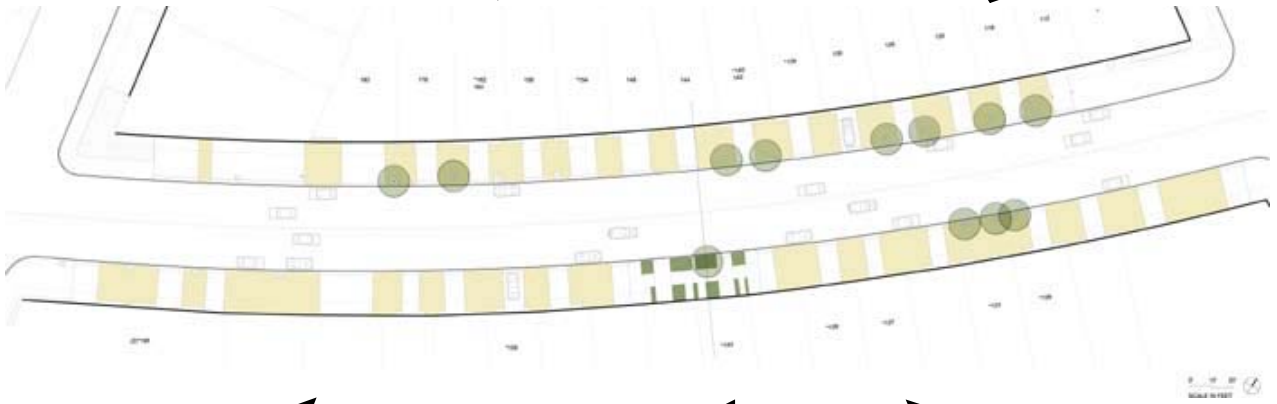
I applaud the concept from an aesthetic standpoint if it is done well, using sustainable materials, and is maintained.

Having very few plants mixed with a lot of rocks is ugly. Better to plant more greenery within rocks.

That it is permissible beyond simple tree wells? We didn't even know the extent of the option.

They reduce stormwater into sewers.

I got back from vacation and thought someone was staging a tropical party.

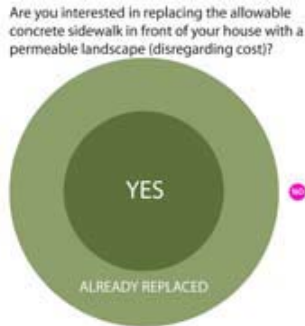


I think it is great to have trees and plants on the sidewalk as long as it's safe. It beautifies the street and neighborhood.

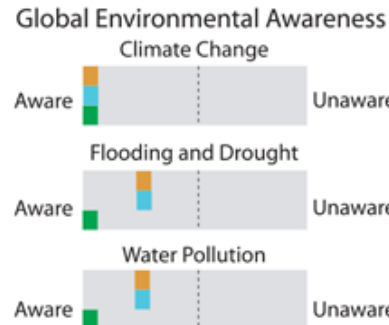
Beauty is an awesome addition to the neighborhood.

It makes the sidewalk more visually appealing... has potential to block sidewalk when multiple people/cars are maneuvering.

Overwhelmingly, respondents are interested in replacing their allowable area of concrete sidewalk with a permeable landscape. Their motivations vary in priority between economic, social and environmental factors. The relative font size of each factor indicates its relative categorical importance. The direction the triangle is pointing inside the circle indicates the primary motivation for installing a permeable landscape for each street.



Think Globally Act Locally!
The majority of respondents indicate they are mostly aware of environmental issues, and most of them demonstrated a significant practice of conservation. Below: The font size reflects frequency of practice, where the larger font represents a greater frequency of practice.



Scott environmental

Reduces peak flow
Creates wildlife habitat
Reduces heat island effect
Increases oxygen production
Recharges ground water



social

Neighbor encouragement
Creates a place to garden
Beautifies the neighborhood
Creates opportunities for community interaction
Deters crime
Reduces the presence of homeless people

economic

Provides potential for urban farming
Increases property values

Shotwell environmental

Reduces peak flow
Creates wildlife habitat
Reduces heat island effect
Increases oxygen production
Recharges ground water



social

Neighbor encouragement
Creates a place to garden
Beautifies the neighborhood
Creates opportunities for community interaction
Deters crime
Reduces the presence of homeless people

economic

Provides potential for urban farming
Increases property values

Alhambra environmental

Reduces peak flow
Creates wildlife habitat
Reduces heat island effect
Increases oxygen production
Recharges ground water



social

Neighbor encouragement
Creates a place to garden
Beautifies the neighborhood
Creates opportunities for community interaction
Deters crime
Reduces the presence of homeless people

economic

Provides potential for urban farming
Increases property values

Scott

- Recycle
- Use recycled paper products
- Compost
- Use compact fluorescent bulbs
- Consider purchasing EnergyStar appliances
- Turn off lights when not in use
- Have Double-paned windows
- Consume responsibly harvested seafood
- Commute using an alternate transportation mode
- Hand water garden/plant
- Donate time or money to environmental organizations

Shotwell

- Recycle
- Use recycled paper products
- Compost
- Use compact fluorescent bulbs
- Consider purchasing EnergyStar appliances
- Turn off lights when not in use
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- Consume responsibly harvested seafood
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- Hand water garden/plant
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Alhambra

- Recycle
- Use recycled paper products
- Compost
- Use compact fluorescent bulbs
- Use low flow showerheads
- Consider purchasing EnergyStar appliances
- Turn off lights when not in use
- Have Double-paned windows
- Consume responsibly harvested seafood
- Commute using an alternate transportation mode
- Hand water garden/plant
- Donate time or money to environmental organizations

Zig-zagging Toward Environmental Awareness

The survey results indicated a clear understanding of global environmental issues and evidence of local practices. If you string this awareness together with the demonstrated interest in replacing concrete with permeable landscapes, including the motives for replacement, you can create a web of evidence suggesting environmentally-motivated decisions for participating in these projects. However, environmentally-motivated decisions are not the same thing as increased environmental awareness generated directly from the plantings.

The primary component connecting permeable landscapes and environmental awareness is social interaction, which we discovered through interviews. Whether it's a conversation between people, an educational sign, or some other form of communication, it is social interaction that binds the physical to the conceptual. The framework style of planning, of which the sidewalk landscape permit is a component, inherently enables social interaction and community participation. Comprehensive planning with participatory process works well on large scale initiatives such as the ongoing Better Streets planning process, but the true level of citizen participation in the public realm accumulates through framework planning.



Recommendations for Future Studies

There are considerations that we feel it would be prudent for future researchers to consider when conducting this experiment or a variation. For one, when selecting a site, make sure to consider aesthetics, geography, and project costs. Our survey results showed that a main objection to the project on Alhambra Street was the aesthetic condition, while this complaint rarely came up on Scott Street. Also, in order to compare the environmental benefits of the project, make sure that the project sites are located in a similar part of a watershed. Shotwell is located in a swale and a considerable amount of water flows to this location, while Alhambra is located uphill from the point of concentration, and thus is in a very different hydrological place. Anecdotally, we heard from Shotwell residents that a significant amount of water pools on the street after a rain event, while no one on Alhambra mentioned this. Finally, we suggest that price be included in the survey questions; after all it is probably a major driving factor for individuals.

After doing the research, we think that opportunities for signage and education should be included in the study. It would be interesting to see the effect of a sign explaining the purpose of the project versus a site without a sign.

Finally, we encourage subsequent groups to more rigorously understand their initial personal bias. We were rather disappointed with our results when they did not lead us to confirm our hypothesis. In retrospect, this was counterproductive. One should try not to become too attached to a bias in order to ensure that the methods used are objective.

Appendix

Interview Notes

Hydrology Calculations

Survey Data

Interviews Notes

Saskia Lofti, 11.18.2007

Location: Saskia's apartment

Alhambra Street Plantings

Interned with FUF, so Saskia was familiar with the idea of permeable sidewalk landscaping and understood that she could do a project like this herself. Chris Buck helped her with the permitting process.

Met Jane Martin at a garden on Guerrero Street where Saskia used to work and Jane was a customer. JM told Saskia about PlantSF, and eventually sketched drawings for Alhambra. Saskia picked out the plants, with the idea that she wanted small, drought tolerant plants that would fill out.

Saskia sketched on the sidewalk before construction.

Saskia provided an informational letter to her neighbors before she started construction. She thought seriously about trying to rally support from her neighbors and trying to extend this project along the entire block, but in the end decided that being a project manager for a block-long project would be too ambitious. She had in the back of her mind that the project could always be expanded.

Unusual Design Elements: berming prevents dogs from peeing and people from trampling the project. Soil also does not run off on the sidewalk, but goes under the sidewalk (see diagram). This is technically illegal because berming is against the permit, but it serves the project very well. Other PlantSF projects are not bermed.

Response from neighbors was overwhelmingly negative after construction. One neighbor complained, "I got back from vacation and thought someone was staging a tropical party." Another elderly woman voiced a concern that people could pick up a rock from the project and through it through her window. Other neighbors complained that her plantings "broke the pattern of trees along the street." Another woman on the block who works as an interior decorator vocally expressed objections to the plants she chose. (There seem to be pairs of trees along the street, even though the trees are different species and much different aesthetic conditions.)

For the most part, Saskia found that the neighbors not willing to listen to her ideas. When they would call and yell at her, she would defend her own project, saying that she had indeed procured the appropriate permit and these projects were encouraged by the city. She never had a chance to "go into hippie mode" and be pedantic with her neighbors. Most of the neighbors that called to complain or saw her on the street and voiced concern were older. She understands that the demographic on the block has a lot to do with the negativity toward the project.

Saskia mentions that people might oppose her projects so vehemently because they are afraid of change and because they have worked so hard for their "American Dream" house and this becomes the "purple house on the block."

Saskia notes that this project does prevent people from driving cars on the sidewalk. It is common for people in her neighborhood to park in front of their own driveways and block themselves in, and then drive a car along the sidewalk when they are trying to get out of a garage.

History: At some point in the past (1960s?), homes in this neighborhood all had front yards like Avila Street. People concreted over their lawns, so this project is bringing back green, permeable space that used to exist.

While doing construction, Saskia discovered that there was a double sidewalk. Thus, she needed to do more excavation, which turned out to be a little more expensive. Because of this, the berming worked out very well.

Saskia has encountered many people who are excited about her project. For example, when she is out watering or tending to her garden, people on other blocks will walk by and say they like the project and ask how it can be done on their block. Many people in the SW apartment building have also expressed their appreciation for the plantings.

Saskia very much enjoys having this gardening space. She is excited about contributing to the "holistic" environment needs by providing space for water to run back into the earth instead of right into the sewers. She tries to understand what the earth needs, and she thinks water recharge is a big element. While the area in front of her house has never had a problem with puddles or stormwater flooding, the house next to her has. The woman who lives next door got the city to put in another storm drain and regrade the sidewalk. Saskia thinks that a permeable sidewalk project would have ameliorated the flooding problem.

Daniel Solomon Letter 11.20.2007
Alhambra Street Plantings

BEAUTIFICATION

When my brother and I were little boys, our mother would give us stacks of Colliers, Saturday Evening Post, and Life magazines to “beautify” We would occupy ourselves for hours, drawing moustaches on pretty ladies, blackening out teeth, adding Dracula fangs, great tufts of nostril hair and rivulets of gore dripping from the corners of mouths. Our beautification projects were critical acts – rebellion, such as little boys are capable of, against the established order of things

Recently a similar sort of beautification project appeared on the sidewalk across the street from our house. Weeks before, we had received a flyer from some realtors asking us to participate in the street beautification to the tune of \$2,000 to \$6,000. The flyer assured us that our property value would be enhanced and that the project had been designed with the help and guidance of an organization called Plant*SF and with the approval of the San Francisco City Planning Department.

Then it appeared. In the way that a terrarium replicates a vast primeval landscape of the imagination inside a jar, this does the same to a little patch of urban sidewalk. Stacks of boulders of many sizes in the tree wells, different sorts of trees unlike all others on the street scattered about, desert looking shrubs of various types and dimensions - so much stuff strewn onto this miniscule stretch of sidewalk that it looks as if the landscaper’s truck overturned on the way to a business park outside Phoenix. Apparently, this pile is intended as a polemic about detention and bio-filtration of storm water on San Francisco streets, appropriately hot topics in the new world of green.

Surely it is a good thing that someone is willing to make an effort and to spend some money on “beautifying” and “greening” a San Francisco street. A small intervention, particularly one done with goodwill, is not worth getting upset about, no matter how klutzy the execution. But when tiny interventions illustrate a conceptual confusion that could infect big undertakings, we should worry.

Several years ago Andres Duany put forth the big idea he called the Urban/Rural Transect and it has caught on around the country as a useful planning tool. The Transect divides the world into six zones, ranging from wilderness to the densest urbanity. The idea is that there are types of buildings, streets, infrastructure and landscape appropriate to each of the six zones. It is an oversimplification of everything that actually makes sense.

Initially the prescriptions of the Transect may seem mechanical and annoying. What does one learn about the splendors of Florence by placing it in a little box on a chart? Calling an urban neighborhood a T-5 is like calling a complex person a manic depressive. Urban neighborhoods, like people, are all a little different. That is what’s interesting about them. The act of classifying and pigeon holing them deprives one of any further insight about them.

The “beautification” of Alhambra Street, however, should be enough to convince anyone of the usefulness of the Urban/Rural Transect. The elegance of Duany’s Transect is that, unlike most other forms of regulation, it is *not* a set of universal prescriptions. Everything is systematically related to its context and a device to handle stormwater on an urban street in a dense city is not the same as one on a pastoral street in a small town. If nothing else, the Transect helps to unravel the confusion that occurs over and over again between environmentalism and anti-urbanism. If the term “green” refers to humans helping the earth to sustain itself, there is nothing greener than the urban. The smallest carbon footprint per capita in the United States is in Manhattan, despite its vast stock of overheated, overcooled, under-insulated buildings. Density and urbanity are the friends of green and the most essential element of the urban is the urban street.

Urban streets are public places, collective places. Along the streets of San Francisco, however, there has always been a strange scrambling of the public and the private. For fiscal and liability reasons, the City of San Francisco chooses to make planting on the sidewalk the domain of the private lot next to it, like front yards in Danville. Driveways and utilities are extensions of the private house as they cross the public sidewalk. Street trees are the responsibility of the property owner, not the City, and they have to be fitted around the uncoordinated utilities and driveways. Historically this has produced the characteristically ratty mish mash of San Francisco street trees, actually not so terrible because the consistency and strength of our bay windowed architecture makes up for scruffiness of the trees. But almost nowhere in the City is there the majestic *public* urban streetscape one finds in Vancouver, parts of Chicago and New York and on all the pages of Alan Jacobs definitive book on the subject, *Great Streets*.

The little “beautification” project on our block makes one shudder at what the current greening of San Francisco’s antediluvian storm water system might be like. Yes, absolutely our streets should be green and storm water doesn’t belong in the sanitary sewer. But green streets do not have to look like the edges of parking lots in a suburban business park with piles of fake nature in the 3 foot tree wells, designed one or two lot widths at a time.

Not just in San Francisco, but all over, urban designers, civil engineers and landscape architects are engaged with the issue of storm water detention and bio-filtration on urban streets. The EPA even has a design manual on the subject, with some predictably hideous suggestions. There are newly landscaped green streets in Portland, probably too suburban and northwest-ish for here, bit nice enough in green, wet Portland.

What San Francisco has now contributed to the debate is a truly striking example of how to do it wrong. We now vilify the traffic engineers and urban planners of the 1950’s and 60’s for turning streets into single-purpose conduits for cars. Storm water is another single purpose, susceptible to the same sort of monomania. Streets need to be a whole ensemble of things - beautiful, ennobling public spaces that include traffic and storm water – and utilities, parked cars, trees, lights and places to walk.

One has only to look at the gorgeous illustrations of *Great Streets* to see what coherent urban streetscapes can be. An urban street should be designed around the public space of the street, not the individual lot, and the smallest increment of design should be a city block – both sides of a city block. We love cities because they are urban, just as we love the countryside because it is not. No bio-swales on the Rue de Rivoli, thank you, and please, no more little rockeries on my block.

Daniel Solomon

Jane Martin 11.29.2007

Location: via email

PlantSF and Permeable Landscape Sidewalk Projects

1. Please briefly explain your motivations for initiating and implementing the sidewalk landscape projects on Shotwell between 17th and 18th Street.

IN 2003 I WANTED A PLACE TO GARDEN AT MY HOME (BETWEEN 17-18TH) AND TO PREVENT PEOPLE FROM BOTH PARKING AND DRIVING ON THE SIDEWALK. I USED AN EXISTING PERMIT PROCESS THAT WAS QUITE CUMBERSOME AND EXPENSIVE, AND WHICH WAS NOT TAILORED TO LANDSCAPING AT ALL. IT WAS THE MINOR SIDEWALK ENCROACHMENT PERMIT PROCESS, WHICH ALLOWS FOR PRIVATE USE OF PUBLIC SPACE FOR PRIVATE BENEFIT. THE IDEA OF IT IS TO ACCOMMODATE SLOPING DRIVEWAYS, RAILINGS OR STEPS THAT FOR ONE REASON OR ANOTHER CANNOT BE CONTAINED WITHIN THE PROPERTY LINE. THE NEIGHBORS LIKED MY GARDEN AND WANTED TO DO IT TOO, BUT THE PROCESS WAS VERY DISCOURAGING. I SET OUT TO MAKE THE PROCESS EASIER. I WAS MAKING HEADWAY ON THAT WHEN IN 2004 THE BLOCK WAS FLOODED WITH RAW SEWAGE RESULTING FROM A BACKUP DUE TO THE OVERLOADED COMBINED SEWER SYSTEM. (THIS IN FACT HAPPENED MULTIPLE TIMES.) DURING THAT EVENT I WAS BAREFOOT, KNEE-DEEP IN FECAL WATER AND REALIZED THAT THE GROUND BENEATH MY FEET (BELOW THE CONCRETE) WAS DRY. THAT WAS AN EPIPHANAL MOMENT FOR ME WHICH REALLY DROVE MY DESIRE TO ENABLE DE-PAVING. AS A RESULT OF THE SEWER BACKUPS I WAS INTRODUCED TO DIRECTORS OF THE DEPARTMENTS I NEEDED TO WORK WITH TO MAKE A NEW PERMIT PROCESS HAPPEN. COLLABORATION FOLLOWED AND THE NEW 'SIDEWALK LANDSCAPING PERMIT' WAS MADE AVAILABLE IN JUNE 2006.

18-19TH WAS DONE VERY RECENTLY AS A RESULT OF MY 'GOING TO THE NEIGHBORS' WITH THE IDEA TO EXTEND THE GREENWAY AND ALSO TO CLEAN UP A HISTORICALLY REALLY DIRTY/UNSAFE/UNSANITARY BLOCK. THE NEIGHBORS HAPPENED TO BE PG&E.

2. What were some significant challenges you faced when implementing the project on Shotwell? Were any residents particularly excited about or opposed to the project, and if so, why?

THE PROJECT SOLICITED NEIGHBORS TO SIGN ON TO IT. THOSE WHO WANTED TO DID AND THOSE WHO DID NOT DID NOT PARTICIPATE. THOSE WHO OPPOSED STATED THAT THEY LIKED TO PARK ON THE SIDEWALK, AND THE DANCE COMPANY STATED THAT IT WOULD TAKE UP TOO MUCH ROOM FOR THE NUMBER OF VISITORS TO THEIR BUILDINGS. MOST RESIDENTS WERE QUITE EXCITED TO SEE IT GO IN FOR ALL THE OBVIOUS REASONS. IT IS IMPORTANT TO NOTE THAT THIS PROJECT WAS DONE BEFORE THE PERMIT WAS AVAILABLE, SO IT WAS DONE AS A MODEL PROJECT - PAID FOR BY THE PUBLIC UTILITIES COMMISSION AND INSTALLED BY THE DEPARTMENT OF PUBLIC WORKS.

3. What are some of the differences between implementing this type of project in front of residences versus commercial lots (the dance studio or PG&E)?

COMMERCIAL PROPERTIES ARE GENERALLY LARGER AREAS, HAVE MORE INTERNAL PROCESS WHICH TAKES LONGER TO GET THROUGH. THE DANCE STUDIO DID NOT PARTICIPATE. I HAD TO BASICALLY BEG/INSIST THAT THEY DO THE SLIGHTLY EXPANDED TREE BASINS, BUT THEY WERE ACTIVELY QUITE INSULTING TO THE EFFORT. NO SUFFICIENT EXPLANATION HAS EVER BEEN GIVEN.

3. Sidewalk landscape projects obviously affect the aesthetic of street blocks. Do you have reason to believe they also affect the environmental awareness of residents on blocks? If so, why?

I CAN'T TELL YOU THE NUMBER OF PEOPLE THIS BRINGS A LITTLE BIT OF NATURE TO. IT'S ENORMOUS. OLD PEOPLE, SCHOOLKIDS, BABIES, HIPSTERS, HOMELESS, POOR, AFFLUENT - THEY ALL BENEFIT BY THE PRESENCE OF THE PLANTS AND ALSO THE BIRDS AND BUTTERFLIES THEY ATTRACT. I SEE THIS ON AN HOURLY BASIS. IT'S CONSTANT. PEOPLE STOP ALL THE TIME TO LOOK AT A LEAF, PICK UP A STONE, SMELL A FLOWER, ADMIRE A BUTTERFLY, STAND IN AWE OF A HUMMINGBIRD.

4. Can you evaluate the social interactions between Shotwell Street residents before and after the sidewalk landscape projects? In your opinion, did these projects influence the social qualities of the street? (Anecdotes might be helpful)

THIS BROUGHT PEOPLE TOGETHER ON SO MANY LEVELS. THE PROCESS WAS A PART OF IT, GIVING PEOPLE A REASON TO TALK TO EACH OTHER ABOUT SOMETHING POSITIVE. ALSO, IN PROJECTS WHERE THE NEIGHBORS ARE DOING (PART OR ALL OF) THE INSTALLATION IT HAS CREATED RELATIONSHIPS THAT WOULDN'T HAVE OTHERWISE EXISTED. IT BRINGS PEOPLE OUT, GIVES THEM SOMETHING POSITIVE TO COMMENT ON, AND JUST GOES FROM THERE.

I WAS STANDING AT THE NEW GARDEN A GROUP OF US PUT IN AT MY NEW NEIGHBORHOOD ON HARRISON STREET AT 23RD WITH A NEIGHBOR WHO HAS LIVED THERE 30 YEARS. A FELLOW STOPPED BY TO INTRODUCE HIMSELF AND SAY JUST HOW TERRIFIC HE THOUGHT IT ALL WAS. HE TURNED OUT TO BE A NEIGHBOR FROM ACROSS THE STREET WHO HAD ALSO LIVED ON THE BLOCK FOR 30 YEARS. HE AND I EXCHANGED NAMES AND THEN TURNING TO THE FIRST NEIGHBOR I SAID 'WELL YOU MUST ALREADY KNOW ...' - THEY BOTH JUMPED IN SIMULTANEOUSLY THAT THEY'D SEEN EACH OTHER FOR ALL THESE YEARS AND NEVER INTRODUCED THEMSELVES - THEN PROMPTLY SHOOK HANDS ON THE SPOT.

ONE DAY I WAS OUT AT A SIDEWALK GARDEN WHEN A YOUNG COUPLE WALKED BY SLOWLY. THEY WERE FAWNING OVER THE PLANTS, THEN INTRODUCED THEMSELVES TO MYSELF AND ANOTHER NEIGHBOR AND SAID HOW MUCH THEY APPRECIATED THE RECENT PLANTING. THE WOMAN THEN PULLED AWAY A LIGHT COVERING OVER A BUNDLE SHE HAD CLOSE TO HER AND INTRODUCED US TO THEIR NEW SON. AT FOUR DAYS OLD IT WAS HIS FIRST WALK OUT IN THE WORLD.

A HOMELESS GUY WITH A CART STOPPED BY ONE OF MY GARDENS ONCE A LITTLE SUSPICIOUSLY SO I STEPPED OUTSIDE TO MONITOR WHAT HE MAY DO. HE TURNED TO ME AND SAID 'DO YOU KNOW WHAT THIS IS? .. THIS IS A STACYS LANATA'. I HADN'T KNOWN THE BOTANICAL NAME FOR IT. WE TALKED.

ONCE WHEN I WAS MEASURING FOR A SIDEWALK GARDEN IN A BIT OF A SKETCHY AREA A TRANSIENT LOOKING WOMAN ON A BEAT UP BICYCLE WAS HANGING AROUND LOOKING LIKE SHE WAS GOING TO DO A DRUG DEAL OR SOMETHING. I KEPT AT MY BUSINESS WITH THE TAPE MEASURE AND NOTATIONS. AFTER A WHILE SHE CAME OVER AND ASKED ME WHAT I WAS MEASURING FOR. WHEN I SAID 'A GARDEN' HER WHOLE EXPRESSION CHANGED. I ASKED HER IF SHE HAD A FAVORITE FLOWER AND WITHOUT A MOMENT'S HESITATION SHE SAID 'LILACS - I JUST LOVE LILACS'. I SAID THEN SHE MUST NOT BE FROM HERE (BECAUSE LILACS NEED A FROST TO PRODUCE FLOWERS) AND SHE RESPONDED THAT SHE WAS FROM UPSTATE NEW YORK AND SHE JUST LOVED THE LILACS - BEFORE SHE MOVED HERE AND GOT HERSELF INTO TROUBLE. WE WISHED EACH OTHER A GOOD DAY AND WENT ABOUT OUR BUSINESS.

ONE AFTERNOON I WAS OUT AFTER A RECENT PLANTING WHEN AN ELDERLY MAN AND EVEN OLDER WOMAN WERE MAKING THEIR WAY VERY SLOWLY DOWN THE STREET WITH WALKERS. AT THE GARDEN THEY STOPPED AND SPENT A LONG TIME ADMIRING EACH INDIVIDUAL PLANT. WE SAID HELLOS AND THE MAN INFORMED ME THAT HE HAD BEEN OUT THE DAY BEFORE AND IT HAD MADE SUCH AN IMPRESSION ON HIM THAT HE BROUGHT OUT HIS WIFE WHO DOESN'T USUALLY LEAVE THE HOUSE. HE SAID THEY HAVE LIVED THE NEXT STREET OVER FOR OVER 40 YEARS, HAD SEEN THE NEIGHBORHOOD CHANGE TIME AND AGAIN, AND THAT IT WAS VERY MUCH APPRECIATED.

THERE ARE SO MANY INTERACTIONS I HAVE OBSERVED:

- POLICE CAR ROLLING BY SLOWLY (ON SHOTWELL) AND THE BEAT OFFICERS SAYING THEY GIVE IT TWO WEEKS AND ALL OUR WINDOWS WOULD BE BROKEN BY THE ROCK MULCH. THAT WAS IN 2005 AND (KNOCK ON WOOD) NO DAMAGE DONE BY ROCKS TO DATE. THE POLICE CAPTAIN LATER WROTE A LETTER IN SUPPORT OF SUCH PROJECTS STATING THAT THEY DETER CRIME - BY HAVING MORE EYES ON THE STREET AND SHOWING THAT THE NEIGHBORHOOD CARES.

- A THREE YEAR OLD BOY WHO WAS FASCINATED BY THE ROCKS AND GRASPING ONE, REFUSED TO GIVE IT UP. HIS MOTHER DECIDED IT WAS HIS DAY TO LEARN THE HARD LESSON NOT TO TAKE THINGS THAT DON'T BELONG TO YOU. AFTER A WHILE OF SCREAMING I WENT OUT AND TOLD HIM THAT THE NEXT TIME HE CAME BY HE HAD MY PERMISSION TO CHOOSE ONE.

- A FIVE YEAR OLD GIRL TRAILING AFTER HER FAMILY WALKING DOWN THE BLOCK. STOPPED IN HER TRACKS BY A LEMON GROWING ON A TREE. CALLING (IN SPANISH) FOR HER ENTIRE FAMILY TO COME BACK AND LOOK. AND THEY DID.

- BUTTERFLIES ARRIVING TO A SITE EVEN AS NEW PLANTS WERE GOING IN.

- HUMMINGBIRDS TAKING NECTAR FROM FLAX BLOSSOMS.

David Baker interview 11.26.2007

Location: SPUR Lecture

Shotwell Street Plantings

Three years ago there was a major flood on Shotwell. The storm sewer pipe had not been dredged and when it overflowed, the city would not open the bay discharge because of the fines they receive when they dump untreated contaminants in the Bay. The result was that Shotwell flooded to the point of watercraft navigability. The Shotwell block planting project was in coordination with the storm sewer upgrade that was installed as a result of the above mentioned flooding incident.

DB oversees most of the maintenance on the block.

Root barrier in the planters helps with weeding maintenance

ODC dancers all smoke and property owners were not interested in project.

Two people at other end of street take care of their plants.

Says most people have positive things to say when they pass by and see him outside tending to the planters.

He thinks the younger residents don't know how to properly dispose of their garbage and this is how most of the garbage ends up in the planters.

Jane is also responsible for the motorcycle parking that's located in front of the property. She has a penchant for pushing through bureaucratic entanglements.

DB recommended that we look at Bill Wenk's work for precedents.

Alhambra

Alhambra	
Pre-Improvements	Post-Improvements
Peak Flow	Peak Flow
$Q(\text{peak}) = C \cdot I \cdot A$	$Q(\text{peak}) = C \cdot I \cdot A$
$Q(\text{peak}) = (.85) \cdot (.8\text{in/hr}) \cdot (.6\text{acres})$	$Q(\text{peak}) = (.829) \cdot (.8\text{in/hr}) \cdot (.6\text{acres})$
$Q(\text{peak}) = .408 \text{ ft}^3/\text{sec}$	$Q(\text{peak}) = .398 \text{ ft}^3/\text{sec}$
Volume	Volume
$V = (Q_{\text{peak}}) \cdot (\text{Duration of Design Storm})$	$V = (Q_{\text{peak}}) \cdot (\text{Duration of Design Storm})$
$V = (.408 \text{ ft}^3/\text{sec}) \cdot (3600\text{sec/hr})$	$V = (.398 \text{ ft}^3) \cdot (3600 \text{ sec/hr})$
$V = 1468.8 \text{ ft}^3$	$V = 1432.8 \text{ ft}^3$
	Holding Capacity (assuming planters have 2" holding capacity)
	$HC = (.167\text{ft}) \cdot (641 \text{ ft}^2)$
	$HC = 106.8 \text{ ft}^3$
	$HC\% = (106.8 \text{ ft}^3) / (1432 \text{ ft}^3)$

$HC\% = 7.46\%$

Scott

$Q(\text{peak}) = .136 \text{ ft}^3/\text{sec}$	$Q(\text{peak}) = .13264 \text{ ft}^3/\text{sec}$
Volume	Volume
$V = (Q_{\text{peak}}) * (\text{Duration of Design Storm})$	$V = (Q_{\text{peak}}) * (\text{Duration of Design Storm})$
$V = (.136 \text{ ft}^3/\text{sec}) * (3600 \text{ sec/hr})$	$V = (.13264 \text{ ft}^3) * (3600 \text{ sec/hr})$
$V = 489.6 \text{ ft}^3$	$V = 477.504 \text{ ft}^3$
	Holding Capacity (assuming planters have 2" holding capacity)
	$HC = (.167 \text{ ft}) * (238 \text{ ft}^2)$
	$HC = 39.8 \text{ ft}^3$
	$HC\% = (39.8 \text{ ft}^3) / (477.5 \text{ ft}^3)$
	$HC\% = 8.34\%$

Shotwell

Shotwell	
Pre-Improvements	Post-Improvements
Peak Flow	Peak Flow
$Q(\text{peak}) = C \cdot I \cdot A$	$Q(\text{peak}) = C \cdot I \cdot A$
$Q(\text{peak}) = (.85) \cdot (.8\text{in/hr}) \cdot (.4\text{acres})$	$Q(\text{peak}) = (.731) \cdot (.8\text{in/hr}) \cdot (.4\text{acres})$
$Q(\text{peak}) = .27 \text{ ft}^3/\text{sec}$	$Q(\text{peak}) = .24 \text{ ft}^3/\text{sec}$
Volume	Volume
$V = (Q_{\text{peak}}) \cdot (\text{Duration of Design Storm})$	$V = (Q_{\text{peak}}) \cdot (\text{Duration of Design Storm})$
$V = (.27 \text{ ft}^3/\text{sec}) \cdot (3600\text{sec/hr})$	$V = (.24\text{ft}^3) \cdot (3600 \text{ sec/hr})$
$V = 972 \text{ ft}^3$	$V = 864 \text{ ft}^3$
	Holding Capacity (assuming planters have 2" holding capacity)
	$HC = (.167\text{ft}) \cdot (2775 \text{ ft}^2)$
	$HC = 462.5 \text{ ft}^3$
	$HC\% = (462.5 \text{ ft}^3) / (864\text{ft}^3)$
	$HC\% = 54\%$

Shotwell

How long have you lived at this residence:

Less than 12 months	1
1 – 3 years	1
3 – 7 years	2
7 – 12 years	1
Greater than 12 years	3

Do you own or rent your residence?

Own	4
Rent	4

How many people live in your household? 29

Their ages:

The four pictures below are examples of “permeable landscape sidewalk projects” found in San Francisco. Please rank (1-4) your aesthetic preference, with 1 being your most preferred:

	1	2	3	4
A	1	3	4	0
B	1	5	1	1
C	3	0	0	5
D	4	0	3	1

According to the following scales, how would you best describe your block? Circle the appropriate number.

	1	2	3	4	5
Safe/Dangerous	3	3	0	2	0
Clean/Dirty	0	1	5	1	1
Beautiful/Ugly	0	4	3	1	0
Inviting/Uninviting	1	4	2	1	0

How satisfied are you with the permeable landscape sidewalk projects on your block?

Extremely satisfied	1	1
Somewhat satisfied	2	4
Neither satisfied nor dissatisfied	3	2
Somewhat dissatisfied	4	0
Extremely dissatisfied	5	1
Unaware of any permeable landscape sidewalk projects on the block	0	0

How does your level of satisfaction of the block compare now to before projects were implemented?

Significantly more satisfied now	1	4
Somewhat more satisfied now	2	2
Neither satisfied nor dissatisfied	3	1
Somewhat more dissatisfied now	4	0
Significantly more dissatisfied now	5	0
I did not live at this location before construction of the permeable landscape sidewalk projects	0	1

Shotwell (cont'd)

Check all activities relating to the permeable landscape sidewalk projects on your block in which you have been or are currently involved.

Planning 1
 Construction 0
 Maintenance 3
 None 5

With regards to the permeable landscape sidewalk projects, where does your block fit along these scales? Please circle the most appropriate number.

	1	2	3	4	5
Illegally parking cars on sidewalk is: easy/difficult	0	2	0	1	4
aesthetic condition of block is: positive/negative	2	4	1	0	0
interaction between neighbors is: high/low	0	2	1	4	0
amount of garbage that collects on street is: a lot/ negligible	2	1	5	0	0
amount of water that stays on street after rain is: significant/negligible	0	0	1	3	3

Since the addition of the permeable landscape sidewalk projects on your block, have you noticed a difference in the amount of stormwater on your street after a rainstorm?

Major decrease in the amount of water	1	2
Minor decrease in the amount of water	2	4
Neither a decrease nor increase in the amount of water	3	0
Minor increase in the amount of water	4	0
Major increase in the amount of water	5	0
I did not live at this location before construction of the permeable landscape sidewalk projects	0	1

This is a list of several reasons why people have replaced the allowable width of sidewalk concrete with permeable landscape. Check all that would influence you to do the same on your block, assuming there is no cost to you:

Neighbor encouragement	5
Reduces potential for storm sewers to backup and flood	5
Creates wildlife habitat	5
Creates a place to garden	7
Provides potential for urban farming	3
Beautifies the neighborhood	7
Creates opportunities for community interaction	7
Deters crime	4
Reduces the presence of homeless people	4
Increases property values	5
Reduces heat island effect by absorbing heat rather than reflecting it	5
Increases oxygen production	6
Recharges ground water	5

Disregarding cost, are you interested in replacing the allowable concrete sidewalk in front of your house with a permeable landscape? (Check all that apply)

Yes	1
No	2
Already replaced	5
Not possible because of infrastructure	0

Rate your overall awareness on the following topics:

	1	2	3	4	5
Climate change: aware/unaware	4	0	3	0	1
Flooding and Drought: Aware/Unaware	2	3	2	1	0
Water Pollution: Aware/Unaware	3	4	1	0	0

Shotwell (cont'd)

Check all of the following in which you participate:

Recycle	8
Use recycled paper products	8
Compost (food waste and/or yard waste)	2
Use compact fluorescent bulbs instead of incandescent	8
Use low-flow showerheads	2
Consider purchasing EnergyStar appliances ⁵	
Turn off lights when not in use	6
Have Double-paned windows in house	3
Consume responsibly harvested seafood	3
Own a hybrid vehicle	1
Commute using a transportation mode other than driving alone	6
Hand water garden/plant	4
Donate time or money to environmental organizations	3

Please indicate the proximity of your building to the permeable landscape sidewalk projects on your street. Mark all that apply.

in front of my building	4
across the street from my building	3
within three properties' distance from my building	5
greater than three properties' distance from my building	5
not sure where they are located	0

Please estimate your household income for this year:

Less than \$29,999	1
\$30,000 - \$79,999	3
\$80,000 - \$119,999	0
\$120,000 or more	3

What is the highest level of education achieved within your household?

High School; no diploma	1
High school diploma	2
4-year university diploma	0
Masters degree or higher	4

Please briefly describe what you have learned from the presence of the permeable landscape that has been installed on your street within the last year?

Scott

How long have you lived at this residence:

Less than 12 months	1
1 – 3 years	5
3 – 7 years	5
7 – 12 years	0
Greater than 12 years	0

Do you own or rent your residence?

Own	7
Rent	3

How many people live in your household? 25

Their ages:

The four pictures below are examples of “permeable landscape sidewalk projects” found in San Francisco. Please rank (1-4) your aesthetic preference, with 1 being your most preferred:

	1	2	3	4
A	2	2	7	0
B	3	4	2	2
C	1	1	0	9
D	5	4	2	0

According to the following scales, how would you best describe your block? Circle the appropriate number.

	1	2	3	4	5
Safe/Dangerous	1	8	4	0	0
Clean/Dirty	0	3	7	3	0
Beautiful/Ugly	0	7	4	2	0
Inviting/Uninviting	0	3	9	0	1

How satisfied are you with the permeable landscape sidewalk projects on your block?

Extremely satisfied	1	3
Somewhat satisfied	2	6
Neither satisfied nor dissatisfied	3	2
Somewhat dissatisfied	4	1
Extremely dissatisfied	5	1
Unaware of any permeable landscape sidewalk projects on the block	0	0

How does your level of satisfaction of the block compare now to before projects were implemented?

Significantly more satisfied now	1	1
Somewhat more satisfied now	2	8
Neither satisfied nor dissatisfied	3	2
Somewhat more dissatisfied now	4	1
Significantly more dissatisfied now	5	0
I did not live at this location before construction of the permeable landscape sidewalk projects	0	1

Check all activities relating to the permeable landscape sidewalk projects on your block in which you have been or are currently involved.

Planning	3
Construction	2
Maintenance	3
None	9

Scott (cont'd)

With regards to the permeable landscape sidewalk projects, where does your block fit along these scales? Please circle the most appropriate number.

	1	2	3	4	5
Illegally parking cars on sidewalk is: easy/difficult	0	1	2	5	5
aesthetic condition of block is: positive/negative	2	2	6	3	0
interaction between neighbors is: high/low	1	4	4	2	2
amount of garbage that collects on street is: a lot/ negligible	1	6	1	4	1
amount of water that stays on street after rain is: significant/negligible	0	0	3	6	3

Since the addition of the permeable landscape sidewalk projects on your block, have you noticed a difference in the amount of stormwater on your street after a rainstorm?

Major decrease in the amount of water	1	0
Minor decrease in the amount of water	2	0
Neither a decrease nor increase in the amount of water	3	10
Minor increase in the amount of water	4	0
Major increase in the amount of water	5	0
I did not live at this location before construction of the permeable landscape sidewalk projects	0	1

This is a list of several reasons why people have replaced the allowable width of sidewalk concrete with permeable landscape. Check all that would influence you to do the same on your block, assuming there is no cost to you:

Neighbor encouragement	7	s
Reduces potential for storm sewers to backup and flood	5	en
Creates wildlife habitat	5	en
Creates a place to garden	7	s
Provides potential for urban farming	4	ec
Beautifies the neighborhood	12	s
Creates opportunities for community interaction	8	s
Deters crime	7	s
Reduces the presence of homeless people	4	s
Increases property values	7	ec
Reduces heat island effect by absorbing heat rather than reflecting it	4	en
Increases oxygen production	6	en
Recharges ground water	8	en

Disregarding cost, are you interested in replacing the allowable concrete sidewalk in front of your house with a permeable landscape? (Check all that apply)

Yes	9
No	0
Already replaced	4
Not possible because of infrastructure	2

Rate your overall awareness on the following topics:

	1	2	3	4	5
Climate change: aware/unaware	9	1	1	2	0
Flooding and Drought: Aware/Unaware	2	7	3	1	0
Water Pollution: Aware/Unaware	3	5	3	2	0

Scott (cont'd)

Check all of the following in which you participate:	13	
Recycle	13	+
Use recycled paper products	11	+
Compost (food waste and/or yard waste)	7	+
Use compact fluorescent bulbs instead of incandescent	12	+
Use low-flow showerheads	3	-
Consider purchasing EnergyStar appliances	9	+
Turn off lights when not in use	10	+
Have Double-paned windows in house	6	-
Consume responsibly harvested seafood	4	-
Own a hybrid vehicle	0	-
Commute using a transportation mode other than driving alone	9	+
Hand water garden/plant 5	-	
Donate time or money to environmental organizations	8	+

Please indicate the proximity of your building to the permeable landscape sidewalk projects on your street. Mark all that apply.

in front of my building	6
across the street from my building	6
within three properties' distance from my building	5
greater than three properties' distance from my building	1
not sure where they are located	1

Please estimate your household income for this year:

Less than \$29,999	0
\$30,000 - \$79,999	3
\$80,000 - \$119,999	2
\$120,000 or more	8

What is the highest level of education achieved within your household?

High School; no diploma	0
High school diploma	1
4-year university diploma	2
Masters degree or higher	10

Please briefly describe what you have learned from the presence of the permeable landscape that has been installed on your street within the last year?

Alhambra

How long have you lived at this residence:

Less than 12 months	1
1 – 3 years	3
3 – 7 years	5
7 – 12 years	0
Greater than 12 years	3

Do you own or rent your residence?

Own	6
Rent	6

How many people live in your household? 29

Their ages:

The four pictures below are examples of “permeable landscape sidewalk projects” found in San Francisco. Please rank (1-4) your aesthetic preference, with 1 being your most preferred:

	1	2	3	4
A	2	0	4	3
B	1	6	1	1
C	1	2	0	4
D	5	1	3	1

According to the following scales, how would you best describe your block? Circle the appropriate number.

	1	2	3	4	5
Safe/Dangerous	7	2	3	0	0
Clean/Dirty	6	5	1	0	0
Beautiful/Ugly	1	4	7	0	0
Inviting/Uninviting	1	4	7	0	0

How satisfied are you with the permeable landscape sidewalk projects on your block?

Extremely satisfied	1	2
Somewhat satisfied	2	5
Neither satisfied nor dissatisfied	3	2
Somewhat dissatisfied	4	2
Extremely dissatisfied	5	0
Unaware of any permeable landscape sidewalk projects on the block	0	0

How does your level of satisfaction of the block compare now to before projects were implemented?

Significantly more satisfied now	1	2
Somewhat more satisfied now	2	5
Neither satisfied nor dissatisfied	3	3
Somewhat more dissatisfied now	4	0
Significantly more dissatisfied now	5	0
I did not live at this location before construction of the permeable landscape sidewalk projects	0	1

Alhambra (cont'd)

Check all activities relating to the permeable landscape sidewalk projects on your block in which you have been or are currently involved.

Planning	3
Construction	3
Maintenance	4
None	8

With regards to the permeable landscape sidewalk projects, where does your block fit along these scales? Please circle the most appropriate number.

	1	2	3	4	5
Illegally parking cars on sidewalk is: easy/difficult	1	2	5	0	3
aesthetic condition of block is: positive/negative	3	5	4	0	0
interaction between neighbors is: high/low	1	2	2	4	3
amount of garbage that collects on street is: a lot/ negligible	0	1	1	5	5
amount of water that stays on street after rain is: significant/negligible	0	1	1	4	5

Since the addition of the permeable landscape sidewalk projects on your block, have you noticed a difference in the amount of stormwater on your street after a rainstorm?

Major decrease in the amount of water	1	0
Minor decrease in the amount of water	2	0
Neither a decrease nor increase in the amount of water	3	10
Minor increase in the amount of water	4	0
Major increase in the amount of water	5	0
I did not live at this location before construction of the permeable landscape sidewalk projects	0	1

This is a list of several reasons why people have replaced the allowable width of sidewalk concrete with permeable landscape. Check all that would influence you to do the same on your block, assuming there is no cost to you:

Neighbor encouragement	7
Reduces potential for storm sewers to backup and flood	4
Creates wildlife habitat	5
Creates a place to garden	5
Provides potential for urban farming	2
Beautifies the neighborhood	12
Creates opportunities for community interaction	6
Deters crime	2
Reduces the presence of homeless people	1
Increases property values	11
Reduces heat island effect by absorbing heat rather than reflecting it	4
Increases oxygen production	9
Recharges ground water	5

Disregarding cost, are you interested in replacing the allowable concrete sidewalk in front of your house with a permeable landscape? (Check all that apply)

Yes	9
No	0
Already replaced	4
Not possible because of infrastructure	0

Rate your overall awareness on the following topics:

	1	2	3	4	5
Climate change: aware/unaware	9	2	1	0	0
Flooding and Drought: Aware/Unaware	6	3	2	0	0
Water Pollution: Aware/Unaware	5	4	3	0	0

Alhambra (cont'd)

Check all of the following in which you participate:

Recycle	12
Use recycled paper products	11
Compost (food waste and/or yard waste)	6
Use compact fluorescent bulbs instead of incandescent	8
Use low-flow showerheads	5
Consider purchasing EnergyStar appliances	7
Turn off lights when not in use	11
Have Double-paned windows in house	4
Consume responsibly harvested seafood	4
Own a hybrid vehicle	0
Commute using a transportation mode other than driving alone	5
Hand water garden/plant	7
Donate time or money to environmental organizations	5

Please indicate the proximity of your building to the permeable landscape sidewalk projects on your street. Mark all that apply.

in front of my building	3
across the street from my building	5
within three properties' distance from my building	4
greater than three properties' distance from my building	2
not sure where they are located	0

Please estimate your household income for this year:

Less than \$29,999	0
\$30,000 - \$79,999	0
\$80,000 - \$119,999	2
\$120,000 or more	6

What is the highest level of education achieved within your household?

High School; no diploma	0
High school diploma	0
4-year university diploma	4
Masters degree or higher	8

Please briefly describe what you have learned from the presence of the permeable landscape that has been installed on your street within the last year?