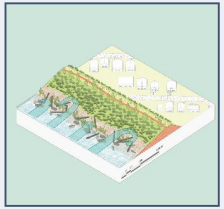
Appendix 5a: Nature-Based Solutions Poster

Nature-Based Solutions | Soluciones Basadas en la Naturaleza

Strategies for managing flooding related to river overtopping or stormwater

Medidas de protección contra inundaciones causadas por el desbordamiento del río o aguas pluviales

Vegetated Levee
Dique con Vegetación



FOR RIVER OVERTOPPING: Earthen mounds with vegetation that are aligned parallel to rivers to block water from overtopping the river during floods or high tides.

PARA DESBORDAMIENTO DEL RÍO: Montículos de tierra con vegetación alineados paralelamente a los ríos para evitar que el agua los desborde durante inundaciones o mareas altas.

Floodplain Restoration
Restauración de Llanuras

FOR RIVER OVERTOPPING: Low-lying land next to the river that is converted to a vegetated open space to allow for temporary storage of floodwater from the river.

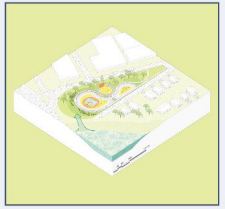
PARA DESBORDAMIENTO DEL RÍO: Terreno bajo junto al río que se convierte en un espacio abierto con vegetación para permitir el almacenamiento temporal del agua de inundación del río.

Natural Buffer
Restauración de Riberas

FOR RIVER OVERTOPPING: Strips of vegetation along river bank to absorb floodwaters and stabilize the bank.

PARA EL DESBORDAMIENTO DEL RÍO: Franjas de vegetación a lo largo de la ribera para absorber las aguas de inundación y estabilizar la ribera.

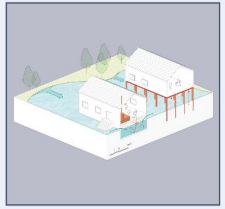
Floodable Park
Parque Inundable



FOR STORMWATER OR RIVER OVERTOPPING: A park with a shallow basin to hold water from the river or stormwater from the neighborhood, depending on design.

PARA AGUAS PLUVIALES O DESBORDAMIENTO DEL RÍO: Un parque con una cuenca poco profunda para contener el agua del río o las aguas pluviales del vecindario, según el diseño.

Floodable Buildings
Edificios Inundables



FOR ALL ROOT CAUSES OF FLOODING: Adapting a building for flooding by moving utilities to a higher floor, using flood-resistant materials, or raising a building

PARA TODAS LAS CAUSAS FUNDAMENTALES DE INUNDACIONES: Adaptar un edificio para inundaciones trasladando los servicios públicos a una planta superior, utilizando materiales resistentes a inundaciones o elevando el edificio

Contructed Wetlands
Humedal Construido

FOR STORMWATER FLOODING: Reconstructed wetland habitat on low-lying land to store stormwater from nearby buildings and streets.

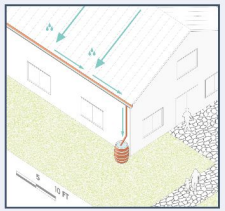
PARA INUNDACIONES POR AGUAS PLUVIALES: La reconstrucción de un humedal como ecosistema donde se pueden almacenar aguas pluviales de los alrededores.

Street Trees
Árboles de Calle

FOR STORMWATER FLOODING: Trees planted along streets to absorb stormwater and reduce the amount of it that enters the drainage system during storms.

PARA INUNDACIONES POR AGUAS PLUVIALES: Árboles plantados a lo largo de las calles para absorber las aguas pluviales y reducir la cantidad que ingresa al sistema de drenaje durante las tormentas.

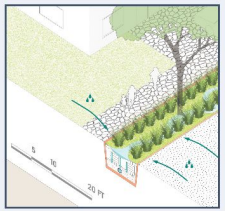
Rain Barrels
Barriles de Lluvia



FOR STORMWATER FLOODING: Storage containers placed near buildings to collect and store stormwater from roof downspouts when it rains.

PARA INUNDACIONES POR AGUAS PLUVIALES: Recipientes de almacenamiento ubicados cerca de edificios para recolectar y almacenar el agua pluvial de los bajantes de los techos cuando llueve.

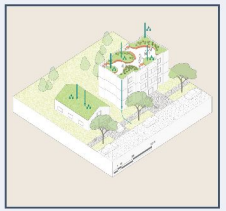
Bioswale/Rain Garden
Biocanal/Jardín de Lluvia



FOR STORMWATER FLOODING: Shallow, planted depressions located along streets, parking lots, or open spaces to capture stormwater.

PARA INUNDACIONES POR AGUAS PLUVIALES: Depresiones poco profundas y plantadas ubicadas a lo largo de calles, estacionamientos o espacios abiertos para captar aguas pluviales.

Green Roof
Techo Verde

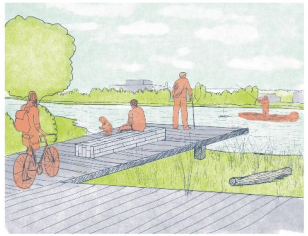


FOR STORMWATER FLOODING: Plants installed on top of building roofs to retain stormwater and reduce the volume of it that enters drainage system during storms.

PARA INUNDACIONES POR AGUAS PLUVIALES: Plantas instaladas sobre los techos de los edificios para retener las aguas pluviales y reducir el volumen que ingresa al sistema de drenaje durante las tormentas.

Appendix 5b: Visioning Activity Poster

Below are quotes from South Park residents interviewed by the Living with Water project. Please contribute your own vision!



"My hope would be that whatever we design would allow the community to continue to access both physically and visually the river."

"Espero que cualquier estrategia que diseñemos nos asegure acceso físico y visual al río."

Imagine the best possible future for South Park in 20 years: how are people working with nature to manage flooding?

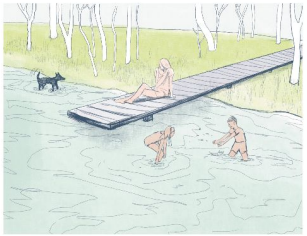
Imagínese que en 20 años se logra el mejor futuro para South Park: en su opinión, como usaríamos la naturaleza para la protegernos de la inundación?

"In my personal vision, I would love to be moved away and have a townhome away from the river - something small."

"En mi visión personal, me encantaría mudarme a una casita en hilera lejos del río."

"I would hope that my children... could go swimming in the Duwamish, that they could fish..."

"Espero que mis hijos algún día podrán nadar en el río Duwamish...podrán pescar..."



"I would love the thought that I could take my niece and nephew to go swimming. I could play fetch with my dog and throw it in the water, and go get it, and come back."

"Me encanta la idea de llevar a mis sobrinos a nadar en el río. Jugaría a traer el palo con el perro."

Appendix 5c: Summary of Mapping Exercise Discussions

Duwamish Waterway Park

Discussion language(s)	Flood adaptation solutions of interest	Priorities raised	Needs, concerns, and remaining questions
English and Spanish	*English* ● Floodplain restoration ● Wetlands around SPU's pump station ● Wetlands on properties near the pump stations (e.g., Unity Electric site) to create a network of restoration areas ● Converting the lawn space of the Park into a wetland ● Underground cisterns	*English* ● Public access to the river ● Improving salmon habitat ● Tribal partnerships in restoration efforts ● Lasting solutions that eliminate the need to worry about flooding ● Combining ecological and infrastructural functions	*English* ● Concern about the lawn space in the Park being underused due to safety issues, contamination, and poor maintenance ● Safety and equity concerns, including the lack of cleanup after renovations, graffiti, and people living in vehicles near the park entrance (inhibit families from using the space) ● Need for better public communication about sea level rise and the effectiveness of NBS
	Spanish ● Natural buffer ● Floodable park	*Spanish* ● Prioritized areas for implementing NBS include the riverfront, sidewalk greenery, center of the Park ● Benefits of a vegetated levee outweigh the loss of land	*Spanish* ● Curiosity about the constructed wetland solution

South Park Plaza

Discussion language(s)	Flood adaptation solutions of interest	Priorities raised	Needs, concerns, and remaining questions
English	● Locate NBS on the lots of residents willing to move from the “Sliver by the River” area ● Vegetated levee near the industrial area ● Green roofs in industrial areas ● Bioswales in industrial areas ● “Bump-outs” made of trees and/or bioswales near the road around the Plaza; could also help to slow traffic ● City could extend Plaza into the triangle area to the north and install a wetland or dog park ● Trees (add as many as possible) ● Stormwater infrastructure anywhere it would fit	N/A	● Concern about sediment after floods in paved areas of floodable parks

Street Ends

Discussion language(s)	Flood adaptation solutions of interest	Priorities raised	Needs, concerns, and remaining questions
English (discussed 2nd Ave, 5th Ave, and 8th Ave street ends) and Spanish (discussed 8th Ave street end only)	*English* ● Vegetated levee or wetland restoration in areas not being used by industry (e.g., 2nd Ave street end) ● Vegetated levee between 5th and 8th Ave street ends ● Green roofs on larger industrial buildings ● Phytoremediation to clean the soil of toxicants ● Trees on street ends ● Replace sandbags at 8th Ave street end with a higher park wall or convert to a floodable park	*English* ● Balance between building NBS on the shoreline and allowing it to be used by industry	*English* ● Concern about oil and industrial substances entering the river
	Spanish ● Vegetated levees	*Spanish* ● N/A	*Spanish* ● N/A

Residential Streets

Discussion language(s)	Flood adaptation solutions of interest	Priorities raised	Needs, concerns, and remaining questions
English and Spanish	*English* ● Trees or a meadow on the blackberry hill near SeaMar ● Bioswales (convert all of the parking strips next to the road) ● Green roofs on larger industrial buildings ● Add as many trees as possible and replant dying trees	*English* ● Plant native vegetation	*English* ● N/A
	Spanish ● Green roofs ● Floodable parks (houses that flood could be converted to floodable parks) ● Smaller stormwater NBS (e.g., rain barrels, bioswales, street trees) should be used wherever they can fit	*Spanish:* ● N/A	*Spanish* ● Remaining questions about which NBS should be pursued immediately and which NBS are most effective to address flooding on neighbors' particular streets

Appendix 5d: Summary Pamphlet

Community Engagement To Date

Focus Group - May 3rd

At this event, we heard from the community about their favorite spaces and places in South Park and which ones are most important to protect during flooding. We talked about the ways that South Park floods and heard community concerns about flooding.

Visioning Workshop - May 17th

What we've heard from the community so far about nature-based solutions:




Widespread Nature-Based Solutions

- Plant more trees
- Install bioswales in parking lots and streets
- Convert underused spaces into wetlands
- Use plants to clean polluted soil

Nature-Based Solutions and Industry

- Add green roofs to industrial buildings
- Create multi-use spaces that support industry and ecology
- Restore floodplain along vacant waterfront lots

Flood Management and Habitat Restoration

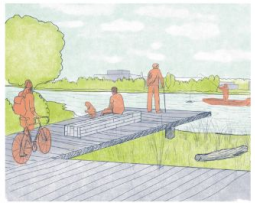
- Build vegetated levees along the river
- Floodplain restoration preferred for ecological benefits
- Support salmon habitat
- Create a continuous waterfront restoration corridor
- Develop wetlands at the "Sliver by the River"
- Some residents open to relocation
- Maintain access to the river

How to Get Involved

- Subscribe to our Newsletter
- Learn about the River by joining DRCC/TAG on a boat or land tour
- Volunteer with us!
- Support our work through a monetary or in-kind donation
- Visit our website at www.drcc.org

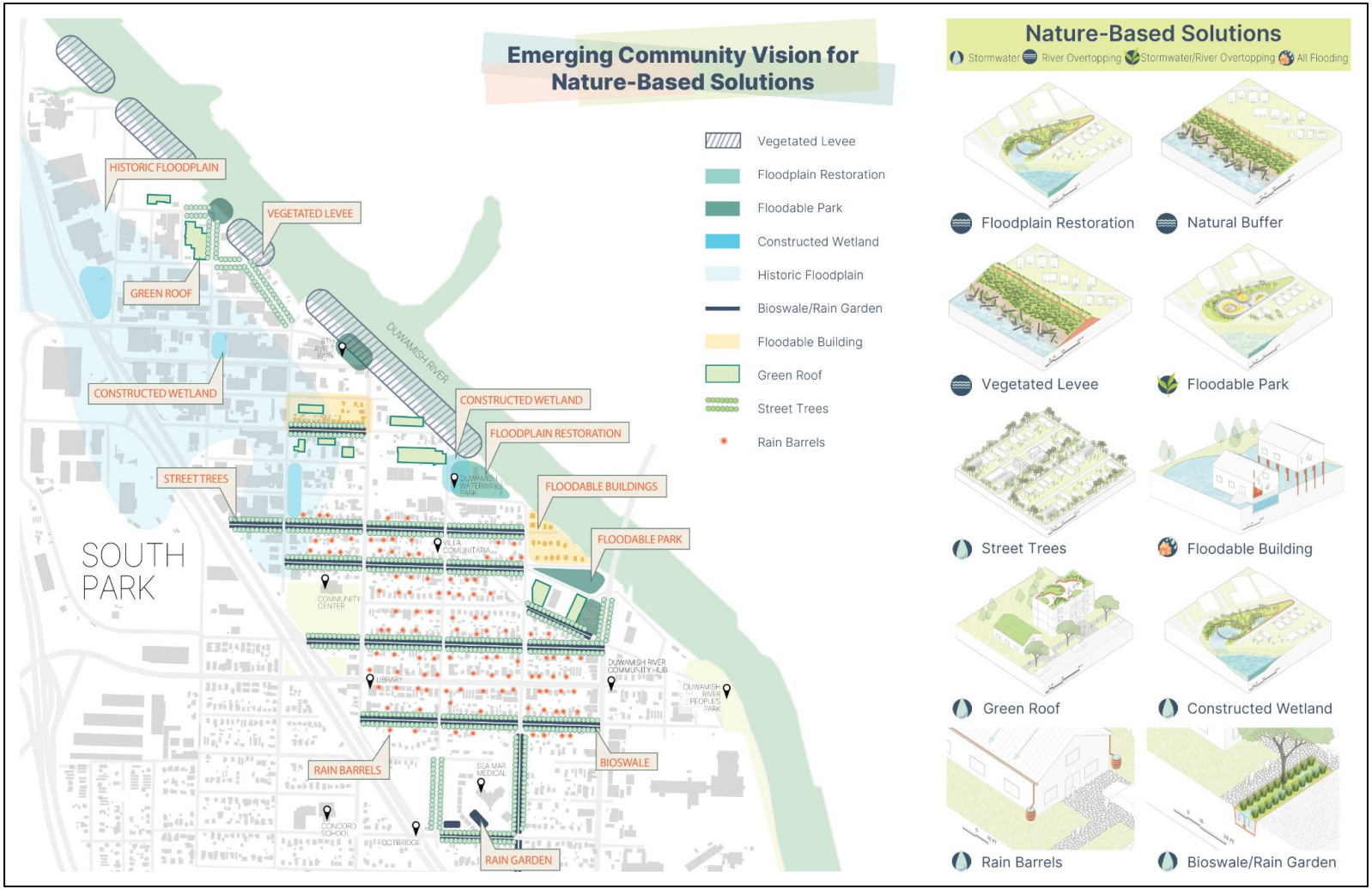
"I would hope that my children... could go swimming in the Duwamish, that they could fish..."

"My hope would be that whatever we design would allow the community to access both physically and visually the river."

Living with Water

Co-Developing Strategies to Protect Health While Adapting to Sea Level Rise in the Duwamish Valley


Emerging Community Vision for Nature-Based Solutions
HISTORIC FLOODPLAIN
VEGETATED LEVEE
GREEN ROOF
CONSTRUCTED WETLAND
DUWAMISH RIVER
CONSTRUCTED WETLAND
FLOODPLAIN RESTORATION
STREET TREES
FLOODABLE BUILDINGS
FLOODABLE PARK
SOUTH PARK
RAIN BARRELS
BIOSWALE
RAIN GARDEN
Vegetated Levee
Floodplain Restoration
Floodable Park
Constructed Wetland
Historic Floodplain
Bioswale/Rain Garden
Floodable Building
Green Roof
Street Trees
Rain Barrels
Nature-Based Solutions
Stormwater
River Overtopping
Stormwater/River Overtopping
All Flooding
Floodplain Restoration
Natural Buffer
Vegetated Levee
Floodable Park
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Constructed Wetland
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