

FLIP

Foster Road Flood Mitigation Strategy Executive Summary

Background

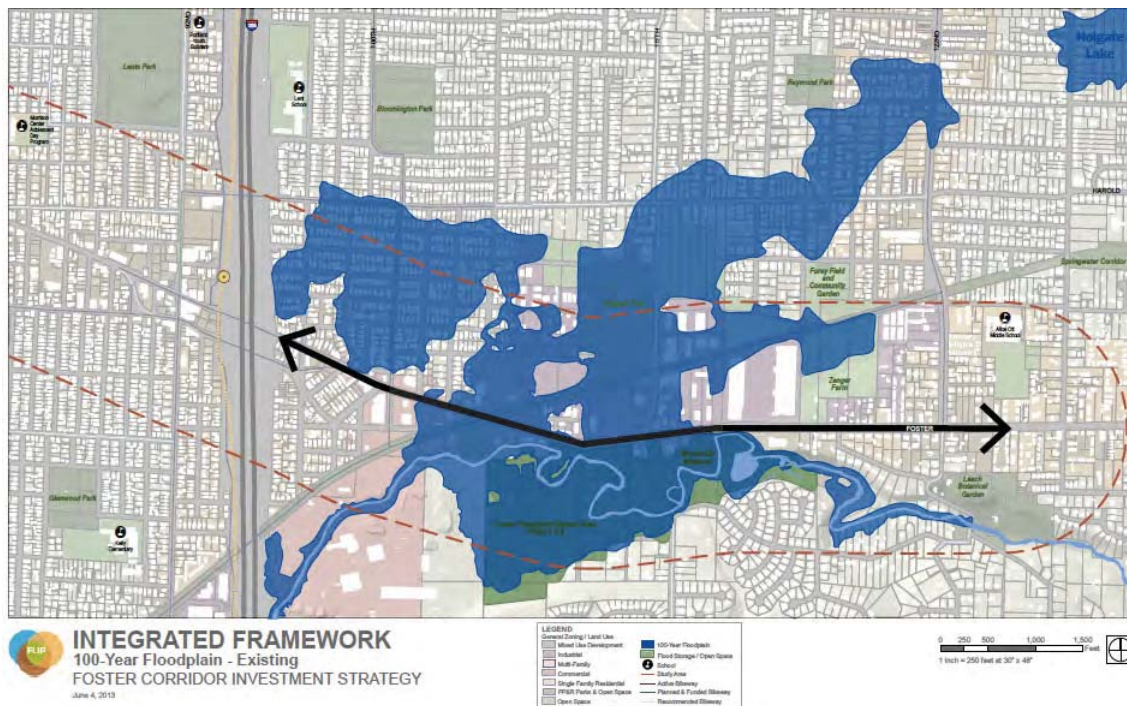
In 2012, BES completed the Foster Floodplain Natural Area (formerly known as the East Lent Restoration Project) that restored a 63-acre floodplain south of Foster Road between the Freeway Land Company Site and SE 110th Drive to reduce Foster Road flooding as well as flooding to about 132 acres¹ of adjacent industrial, commercial and residential lands. The project involved a significant purchase of private land – mostly homes – to restore floodplain functions and reduce the incidence of nuisance flooding (those with a 10% probability of happening in any given year). The project also enhanced in-stream habitat for threatened salmonids, riparian, wetland and upland habitat for a number of sensitive species including red-legged frogs (a State-listed species of concern) and bald eagle.

Prior to completion of the Foster Floodplain Project, heavy rainfall would cause Johnson Creek to flood Foster Road and adjacent industrial, commercial and residential properties an average of every other year. Flooding would damage buildings, disrupt business operations and affect transportation connectivity between I-205 and the industrial areas and communities to the east. The habitat quality of this portion of Johnson Creek was also limited because of alternations by the Works Progress Administration in the 1930s, which rock-lined the creek in an unsuccessful attempt to reduce local flooding. Loss of in-stream and riparian habitat is one of the factors leading to the listing of several salmonid species as ‘threatened’ on the federal Endangered Species Act.

The Foster Floodplain Project represents a new approach to flood mitigation – for Johnson Creek and for the Portland Metro region. Instead of using “grey” infrastructure to manage flooding by channeling water into large control pipes or armoring creek channels, which proved to be ineffective, the project uses “green” infrastructure solutions such as constructed wetlands, natural stream cross-sections and off-channel storage areas that not only mitigate flood impacts to streets and private property, but also provide water quality and habitat benefits for threatened salmonids and other sensitive species. East Lents utilizes natural solutions to manage flooding – by analyzing local conditions, the project uses a restoration approach that allows flooding in a public natural area.

¹ This figure is based on the inundation area of the 2005 flood on private property; that flood was about a five-year flood. The Foster Floodplain is designed to mitigate a slightly larger flood of about 6-8 year frequency.

Foster Floodplain has already shown its effectiveness locally – it managed a recent nuisance flood in Fall 2012 as designed – and serves as a model for managing flooding in a more sustainable manner in the future. While the Foster Floodplain Project makes significant improvements in the impacts of nuisance flooding and improves water quality and habitat, flooding is still an issue in East Lents. Flooding events greater than nuisance flooding (those that occur more than every 10 years) will still flood Foster Road and nearby properties creating significant and continued negative economic impact. Nearly 650 residential properties and 50 businesses still lie within the FEMA defined 100-year flood plain of Johnson Creek.



Outstanding flooding issues in East Lents are seen by many as one of the primary barriers to increased investment and redevelopment along Johnson Creek and Foster Road. Even in a region in need of large industrial lands, such as the 100-acre Freeway Lands property, industrial property may be underutilized as property owners have cited concern about flooding of private property and Foster Road as a reason for the low level of investment in their properties. In addition to clean up and repair costs associated with flooding, annual flood insurance costs to properties located within a 100-year floodplain average \$1,000 to \$2,000 for residential and commercial properties respectively. With the recent passage of the 2012 federal Flood Insurance Reform Act, rates for many properties will increase.

The goal of this project is to answer the questions:

- Could a “natural” flood mitigation approach manage the 100-year flood event in East Lents?
- In terms of flood mitigation, economic development and community vitality, would an investment of such scale generate the necessary returns to justify it?
- Does Portland have the organizational and leadership structure to accomplish a project of such scale?
- Would the East Lents community endorse this bold solution?

FLIP

The Foster Lents Integration Partnership (FLIP) was established in 2009 by the Portland Development Commission (PDC), Portland Bureau of Environmental Services (BES), Portland Bureau of Transportation (PBOT) and Portland Parks and Recreation (PPR) to explore innovative solutions requiring cross-bureau collaboration to increase the scale, pace and economic impact of public investments in Outer SE Portland. FLIP, at its core, is about creating community benefit through more sustainable and integrated planning, investment and project delivery.

This Executive Summary provides details on FLIP efforts related to:

- Technical analysis of potential flood mitigation alternatives (including cost estimates)
- Economic analysis of the potential costs and benefits of potential flood mitigation alternatives.
- Organizational recommendations for implementing large scale flood mitigation.

The FLIP working with their consultant team, found that increased economic development potential and environmental benefit may be realized from increased investment in flood mitigation. However, realizing these benefits will require new approaches to project funding, development and delivery.

Future Flood Mitigation Alternatives

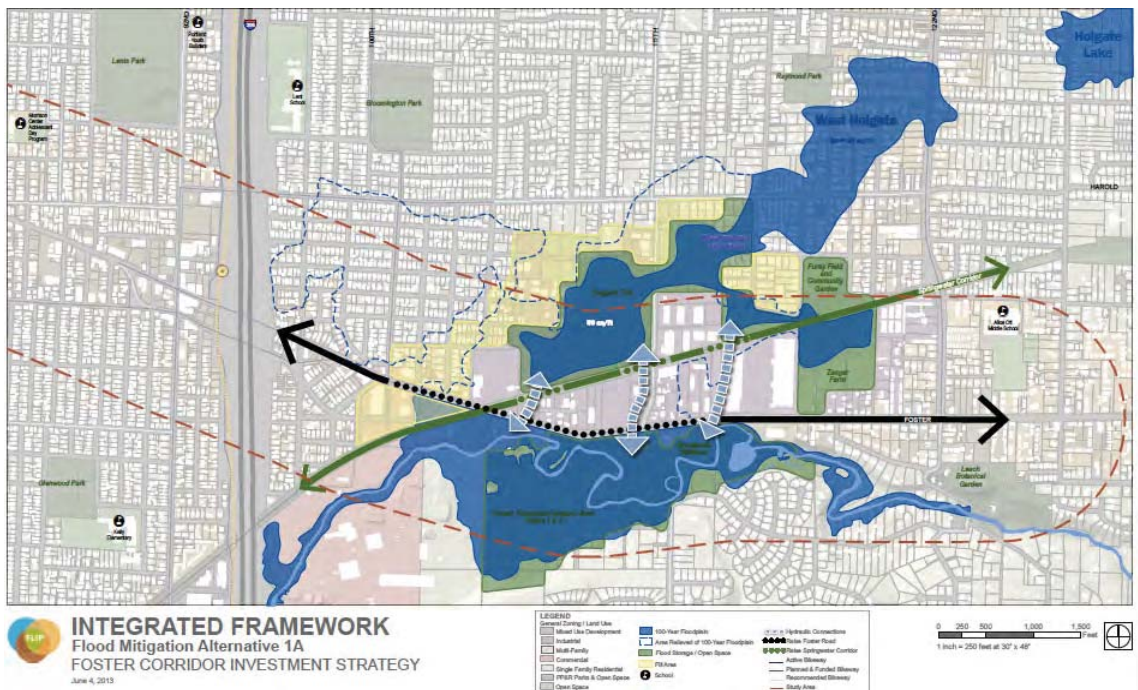
Building on earlier flood mitigation analysis on the Foster Floodplain Project, three flood mitigation alternatives were explored to reduce the extent of the 100-year floodplain. Each alternative was developed to meet the following goals:

- Natural System Approach – Expand on the natural flood mitigation approach established with the Foster Floodplain Project to reduce flooding to industrial, commercial and residential properties to the north of Foster Road.

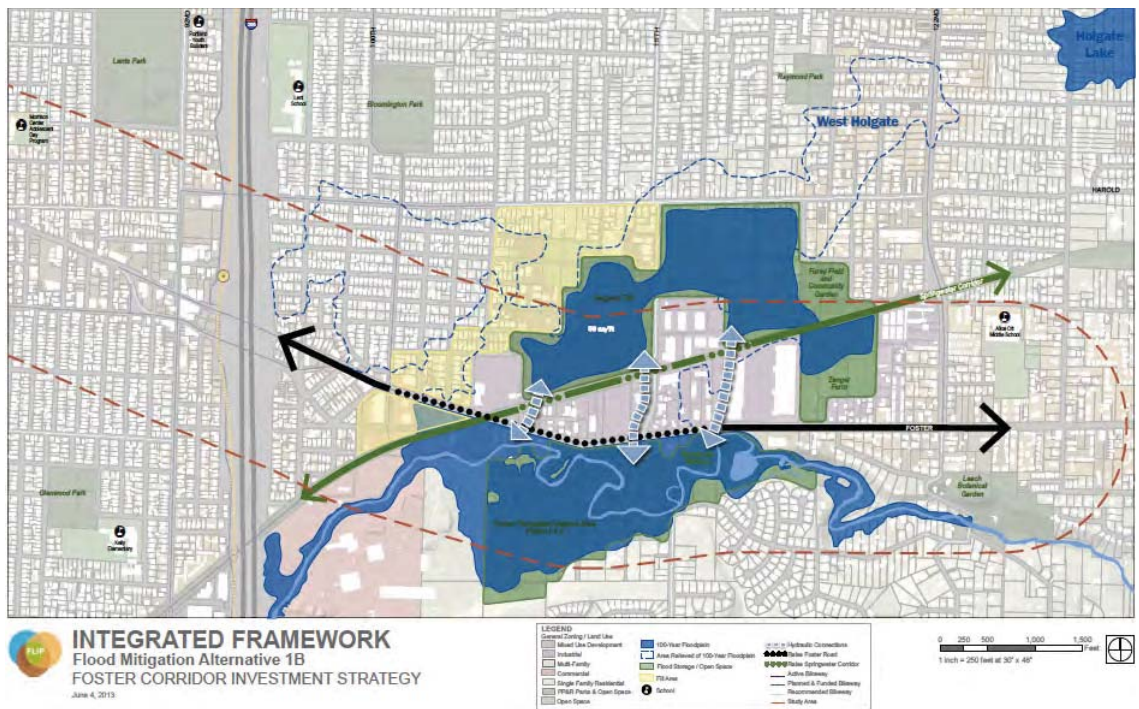
- Manage 100-year Flood to Minimize Property Impacts – Manage the 100-year flood so that homes and businesses are no longer within the boundaries of FEMA’s 100-year floodplain map.
- Configure Land to Restore Floodplain Function – Land configurations that are most valuable for restoring natural floodplain function were identified.
- Prioritize Re-Developable Land – Properties that may be more suitable for re-development were prioritized.

The three alternatives evaluated included:

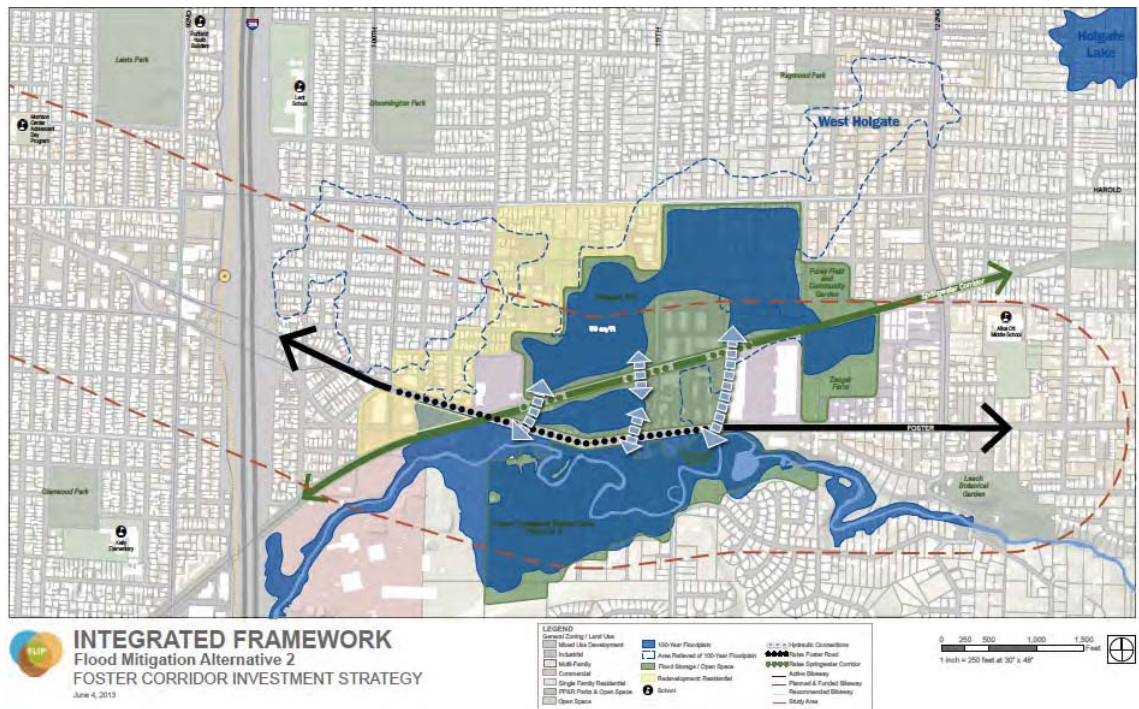
Alternative 1A – Flood mitigation Alternative 1A assumes that the land immediately adjacent to Foster Road will provide the greatest opportunity to create a coherent, vibrant and safe community that maximizes land values in the East Lents area. Accordingly, one storage basin is proposed north of the Springwater Corridor Trail, facilitating removal of 100-year floodplain on the land adjacent to Foster Road.



Alternative 1B – Alternative 1B is a variation of Alternative 1A that provides additional flood mitigation for the West Holgate area to further reduce flooding impacts on residential properties.



Alternative 2 – Flood mitigation Alternative 2 assumes that restoration of floodplain form and function is essential to address flooding and redevelopment in the area and prioritizes flood plain restoration over property development.



Consistent across all three options is the need to raise Foster Road and the Springwater Corridor to remove these key transportation corridors from the floodplain while providing beneficial flood conveyance and storage. Other variables include the amount and location of soil removal and fill work to provide flood plain restoration. For further detail on flood mitigation alternatives, including recommendations for further analysis, see *Technical Memorandum: Foster Road Flood Mitigation Concepts* (Arup, 2013).

Cost and Benefits of Future Flood Mitigation

For each alternative, a high-level cost benefit analysis was developed to better understand investment potential. Costs and benefits analyzed included:

- Floodplain restoration costs
- Costs to raise Foster Road (includes costs to construct transitions to existing streets connecting to Foster Road)
- Land acquisition costs
- Annual flood insurance cost avoidance
- Net new jobs and annual wages
- Properties removed from the floodplain
- Increased property value (including property tax generation)

A detailed table summarizing costs and benefits is attached. Highlights include:

Existing Conditions – Approximately 650 residential properties (20 of which are 2 to 4 unit multifamily properties that pay insurance on a per unit basis) and 40 businesses (generating almost 300 jobs). When Foster Road floods, the resulting negative economic impact was estimated at \$440,000 per day (not including flood damages paid by FEMA or property owners). Current annual flood insurance costs were estimated at \$770,000.²

Alternative 1A – Alternative 1A reduces a majority of the floodplain with minimal land converted to flood storage. The investment needed to raise Foster Road and the Springwater Corridor, restore floodplain, create floodplain connections and fund land acquisition is estimated at \$43.9M. Benefits from this investment include:

² The flood insurance costs represent the current estimated flood insurance cost for homes and businesses in the floodplain. The benefits are much higher because they estimate future costs (at double the current cost) taking into consideration FEMA flood insurance rate reform. It is unknown at this time what the new costs for high risk flood insurance will be for primary residences, although they are expected to increase substantially. FEMA has started phasing in increases in insurance costs starting this year and will allow costs to increase as much as 20 percent per year over the next five years. *Source: FEMA Talking Points HR 5740 and Section 100205 of BW-12.*

- 430 residential and 25 businesses removed from the floodplain resulting in a property value increase of \$106.2M.
- \$1M annual savings flood insurance costs.
- 540 new jobs and \$25M in new wages annually.
- \$728,000 in new property taxes annually.
- 8.7 acres of industrial land removed from industrial land inventory.

Alternative 1B – Alternative 1B eliminates the 100-year floodplain while maximizing industrial redevelopment. The investment needed to raise Foster Road and the Springwater Corridor, restore floodplain, create floodplain connections and fund land acquisition is estimated at \$61.3M. Benefits from this investment include:

- 560 residential and 35 businesses removed from the floodplain resulting in a property value increase of \$107.8M.
- \$1.3M annual savings flood insurance costs.
- 540 new jobs and \$25M in new wages annually.
- \$739,000 in new property taxes annually.
- 8.7 acres of industrial land removed from industrial land inventory.

Alternative 2 – Alternative 2 eliminates the 100-year floodplain while maximizing wetland and ecosystem connection between areas south and north of Foster Road. The investment needed to raise Foster Road and the Springwater Corridor, restore floodplain, create floodplain connections and fund land acquisition is estimated at \$71.9M. Benefits from this investment include:

- 560 residential and 25 businesses removed from the floodplain resulting in a property value increase of \$61.8M.
- \$1.3M annual savings flood insurance costs.
- 210 new jobs and \$10M in new wages annually.
- \$423,000 in new property taxes annually.
- 29 acres of industrial land removed from industrial land inventory.

Overall, each alternative generates positive economic, community and environmental return. For further detail on flood mitigation options, including methodology and assumptions, see *Economic Cost Benefit Analysis and Methodology for Foster Floodplain Redevelopment* (Leland Consulting, 2013).

Findings of Flood Mitigation Efforts

Three primary findings resulted from the technical and cost/benefit flood mitigation evaluation efforts:

1. **Additional flood mitigation potential exists.** Areas for additional flood mitigation exist north of Foster Road to help remove properties from the 100-year floodplain.
2. **Continued investment in flood mitigation are projected to generate increased economic, environmental and community value.** Whether increased property value, job generation, or reduced flood insurance, all options estimate a positive return on public investment for enhanced flood mitigation. Depending on the design alternative, estimates for land acquisition, restoration, and road improvements are between \$44-72 million, while anticipated increases in property values range from about \$62-107 million. Estimated annual benefits for increased net wages and avoided flood insurance costs range from about \$11-26 million.
3. **Lack of flood mitigation investment has the potential to trigger disinvestment.** Even though East Lents struggles to attract investment due to flooding issues currently, future investment prospects could provide even more difficult. The National Flood Insurance Program is increasing insurance rates as the program moves to full cost recovery model and establishes a reserve fund. Insurance rates will increase for all flood insurance policyholders; rate increases will be especially significant for policies covering structures that were built prior to the establishment of flood insurance maps and located in, and potentially adjacent to, 100-year floodplains.

Recommendations

East Lents is poised for change. It may be possible for positive change to come-about through investment in large-scale floodplain restoration. An investment of this scale and magnitude is beyond the scope and capacity of BES alone. It would require an integrated, multi-bureau approach to fund, deliver and manage the project.

The following recommendations are proposed to help the City of Portland realize increased economic, environmental and community benefits in East Lents through an investment in large-scale floodplain restoration:

1. **Vision** – The floodplain alternatives identified should be further refined from technical, financial and community acceptance perspectives to determine a preferred alternative. Great care should be taken to shape the vision of the preferred alternative. Public agencies such as PDC, BES, PBOT, BPS, and PRR should collaborate to ensure that the preferred alternative meets planned investment and infrastructure needs for East Lents. State and federal agencies should be engaged to ensure

regulatory acceptance and provide funding. Private businesses and residents should provide input on how to implement the alternative to minimize disruption while maximizing positive impacts.

2. **Innovative Funding and Investment Model** – Funding to achieve an economically vibrant community through floodplain restoration will require a new model for public funding and private investment – a model that leverages funding across conservation, sustainability, community enhancement, public health and economic development resources.
 - a. Public – Public funding should be jointly provided by City, state and federal agencies. For example, the following potential funding sources could be aggregated:
 - i. Local: Portland BES, PDC, Parks, PBOT, and Metro.
 - ii. State: Oregon Watershed Enhancement Board, Oregon Department of Fish and Wildlife, and ODOT.
 - iii. Federal: US Housing and Urban Development’s (HUD) Community Development Block Grants (CDBG) and Brownfield’s Economic Development Initiative (BEDI) Grants, EPA Brownfields Grants, US Army Corps of Engineers, and the Federal Emergency Management Agency.
 - b. Private – Private investment should be made based on monetizing the ecosystem services generated by the water quality and riparian and upland habitat improvements created by floodplain restoration. Currently the Willamette Partnership is working with municipalities across Oregon – and the nation – to not only account for the benefits of ecosystem services but to also create the market mechanisms to allow for their transaction. As certainty builds around ecosystem service valuations and accounting standards, more opportunity will present itself for private capital investments in restoration. Other emerging private funding sources like the Ecotrust Natural Capital Fund should also be explored.
 - c. Non-Profit – As private ecosystem services markets continue to mature, large non-profit conservation organization and foundations should also be considered funding partners. Funding for a comprehensive approach to creating economic vibrancy and restoring urban natural areas may be available through sources like The Bullitt Foundation, Meyer Memorial Trust, The Wallace Foundation and The MacArthur Foundation.
3. **New Governance and Project Delivery Structure** – Because a project of this scale, benefit and cost lies beyond any one City bureau, a new project governance and delivery structure is needed to ensure political

and organizational support. Oregon Solutions brings together public, private and non-profit stakeholders to leverage resources and integrate programs for sustainable community projects. The initiative has had great success throughout Oregon. Portland should engage with Oregon Solutions to develop a project development pathway and partnership model for continued East Lents floodplain restoration.

4. **Will** – All stakeholders – public, private and non-profit – must be fully committed to the project vision, the funding and investment model, and project delivery structure for a project of this scale to be realized. In the short term, some families and businesses will be displaced. In the long term, significant flooding will no longer be an influence on development, residential neighborhoods will be safe and affordable and ecological benefit will be increased.

Attachment: Comparison of Foster Flood Mitigation Alternatives