

Photo courtesy of The Wetlands Conservancy

SMART FLOODPLAIN MANAGEMENT IN OREGON

CONVENING REPORT

October 2015

SMARTER
FLOODPLAIN
MANAGEMENT





WILLAMETTE PARTNERSHIP



**United States
Department of
Agriculture**

Natural Resources Conservation Service

TABLE OF CONTENTS

OVERVIEW OF SMART FLOODPLAINS PROJECT AND CONVENING WORK 2

CONVENING INTERVIEWS – FINDINGS AND THEMES..... 3

 1. DESCRIBING A VISION FOR SMART FLOODPLAIN MANAGEMENT IN OREGON..... 3

 2. SUBSTANTIVE ISSUES AND KEY CONCERNS..... 4

 3. BARRIERS TO SMART FLOODPLAIN MANAGEMENT 5

 4. THE ROLE OF MITIGATION BANKING AS A STRATEGY FOR SMART FLOODPLAIN
MANAGEMENT 7

 5. OUTREACH AND COMMUNICATION WITH STAKEHOLDERS 9

 6. POTENTIAL STRATEGIES TO SUPPORT SMART FLOODPLAIN MANAGEMENT 10

 7. VISIONS OF SUCCESS..... 11

 8. NEXT STEPS/MOVING FORWARD..... 12

APPENDICES 14

APPENDIX 1. CONVENING INTERVIEW QUESTIONS..... 14

APPENDIX 2. ADDITIONAL EXPERTS/ROUND 2 CONTACTS 15

APPENDIX 3. GOOD EXAMPLES/MODELS TO RESEARCH..... 16



OVERVIEW OF SMART FLOODPLAINS PROJECT AND CONVENING WORK

Effective floodplain management can create unique opportunities for communities and landowners interested in conserving and restoring floodplain functions. Improved floodplain management can bring ecological, economic, and social benefits, but it requires tools that can help navigate the regulatory and scientific complexity surrounding floodplains.

Willamette Partnership is working with local governments, state agencies, private landowners, local conservation implementation groups, and others to find better ways to identify and incentivize these opportunities. The Partnership is leading a three year initiative to combine the best available science with innovative policy approaches to create a package of tools that urban and rural communities in Oregon (including governments, landowners, and conservation implementation groups) can use to better manage their floodplains.

PROJECT TEAM MEMBERS

- Sara O'Brien, Willamette Partnership
- Nicole Maness, Willamette Partnership
- Kaitlin Lovell, City of Portland
- Fletcher Beaudoin, PSU Institute for Sustainable Solutions
- Julia Bond, The Freshwater Trust
- Representatives from OWEB, ODFW and ODOT

ADVISORY GROUP MEMBERSHIP

The project is convening an advisory group of key thought leaders around innovative approaches to integrated floodplain management. The composition of the group is not exhaustive nor is it fixed but attempts to capture a broad range of expertise that exists in the regulatory, science and engineering, and conservation fields. Advisory Group organizations include:

- American Rivers
- Association of Oregon Counties
- CARDNO
- City of Portland, Bureau of Environmental Services
- Lane Council of Governments
- League of Oregon Cities
- The Nature Conservancy
- National Marine Fisheries Service
- Oregon Department of Land Conservation and Development
- Pacific Habitat Services

CONVENING INTERVIEWS

Designing a smart approach to floodplain management in Oregon will require identification, understanding and consideration of the full suite of issues, challenges and needs that will ensure the outcomes from this initiative are useful and effective. In order to achieve that goal, Willamette Partnership undertook a series of convening interviews with key thought leaders in floodplain management during the month of May 2015 (see Appendix 1 for interview questions). Results from these semi-structured interviews were coded by theme, synthesized, and are presented in this report.

This convening report provides a summary of the issues, challenges and barriers that need to be addressed as well as solutions, strategies and the identification of successful outcomes for this project. These ideas have been reviewed and vetted by the Advisory Group and others to



ensure it accurately captures the intent of the interviewees and represents the best thinking and information on these issues.

THE BIG IDEAS IN SMART FLOODPLAIN MANAGEMENT

The development and implementation of smart floodplain management in Oregon will require new tools and approaches. The following summarizes the key findings and themes of “smart floodplain management” in Oregon. The project team heard four big ideas that experts believe would create significant change and opportunity for something new and different to happen in the state.

The Big Ideas: What we need for smart floodplain management in Oregon

- 1) Program for function-based mitigation
- 2) Technical support/services/extension for communities to support integrated, comprehensive planning delivered at a regional scale
- 3) Restoration funding for project planning and implementation
- 4) Land-use/watershed planning tools and processes backed by integrated policies.

Elements of these ideas are found throughout the body of the report below which describes a proposed vision for smart floodplain management, identifies key issues and barriers for moving forward, defines opportunities and challenges for floodplain function mitigation banking, discusses stakeholder engagement needs and articulates visions of success.

CONVENING INTERVIEWS – FINDINGS AND THEMES

1 DESCRIBING A VISION FOR SMART FLOODPLAIN MANAGEMENT IN OREGON

Willamette Partnership has articulated a vision of smart floodplain management for Oregon built on strategies and tools that have been shown to reduce risk to communities and to support the beneficial functions of healthy floodplain systems. The vision is based on the following strategies (adapted from White, 1942 and ASFPM Foundation, 2007):

- **Land use:** Limit new development in very high-risk areas; voluntary buy-outs to allow people to frequently flooded areas when they are ready.
- **Watershed restoration:** Restore the natural functions of floodplains wherever possible, from green infrastructure in highly developed areas to large-scale habitat rehabilitation.
- **Building:** Use Low Impact Development standards for development in and around floodplains, and remove policy and insurance incentives for land elevation.
- **Engagement:** Build community awareness of the importance of floodplains and a realistic understanding of the risks associated with building and living in floodplains.
- **Structural solutions:** Use levee setbacks and renewals to help increase community resilience to floods. Allow new protection structures only as a last resort and only for defense of existing development.
- **Disaster relief:** Develop holistic community preparedness and post-disaster plans.

There was general consensus that the vision is realistic if communities, local governments, the state and federal partners (e.g. FEMA and NMFS) are willing to invest the time and money needed to get there. Responses and recommended additions to the proposed vision include:

- o While all elements of the proposed vision are important, **land use** is the principal factor influencing floodplain management in Oregon.



- The addition of **building codes and zoning the language** to the Building section would strengthen it. These factors are more basic to floodplain management than LID or green infrastructure.
- Including **non-structural approaches** (removing houses and buildings) in Structural Solutions would highlight the importance of this strategy.
- The vision entirely misses an **environmental justice component**: development may impact disadvantaged communities unfairly.

In addition, the implementation of a smart floodplain management approach will require improved tools for:

- **Mapping** flood hazard areas and areas of future risk.
- **Planning**, including decision support tools that quantify natural functions in a way that can be used in benefit cost analysis, prioritization decisions, and comprehensive planning.
- **Policies and programs** that limit new development in high-risk areas, incentivize buyouts and restoration, and provide an integrated path for communities to meet their regulatory requirements.

2 SUBSTANTIVE ISSUES AND KEY CONCERNS

While smart floodplain management is a desirable objective for addressing the suite of ecological and policy oriented challenges, there are a number of high level concerns and issues that need to be addressed to enable smart floodplain management. These include:

A. Watershed scale analysis and implementation: Effective floodplain management needs to take place at the watershed scale. A watershed approach should improve the spatial and temporal elements of planning and lead to more consistent consideration and evaluation of the cumulative impact of development on floodplain functions. Hydrological modeling and engineering expertise are important resources for communities to be able to access when developing integrated floodplain management plans. They can help communities identify where on the landscape are most/more appropriate locations for either impacts or restoration, however, this remains a significant gap in current planning, quantification and analysis efforts.

B. Goals and targets: One of the challenges associated with developing effective floodplain management strategies is the lack of metrics or indices of floodplain function. For example, how much cold water refugia is "enough"? How do we come up with effective targets to operationalize goals? And how do we measure progress towards meeting that target? What baseline should we be measuring against? There is a need for a comprehensive literature review on potential floodplain function metrics.

C. Tools: There is currently a lack of tools and standards to support integrated planning and quantification of ecological functions of floodplains.

D. Land use laws: There are several potential legal issues and land-use law arguments that may be associated with implementing a smart floodplain management approach. These include possible conflicts with Comprehensive Planning Goals (e.g. How can communities meet both Goal 5 - Natural Resources/Open Spaces and Goal 7 - Natural Hazards requirements and avoid conflict with Goal 9 - Economic Development requirements?)



3 BARRIERS TO SMART FLOODPLAIN MANAGEMENT

SOCIO-POLITICAL BARRIERS

Much of the current debate about floodplain management has become focused on “jobs vs environment”. As politicians, developers, and many planners tend towards short-term thinking, shifting this debate will require analysis to demonstrate that the long term cost of developing in the floodplains will outweigh the short term benefits. This goes beyond what could be achieved in a mitigation banking program; it requires that society as a whole rethinks and revalues the importance of floodplains. Key socio-political barriers that need to be addressed include:

A. Perception of Constraint

Most communities have limited options to restore or protect beneficial floodplain functions within their urban boundaries and there is concern that a more comprehensive or integrated approach to floodplain management simply equates to a constraint on growth. Solutions to flood risk reduction are not likely to be inexpensive; often they can be viewed as more expensive than the value of the land that is being protected.

B. Perception of Risk and Liability

There are challenges in communicating/imparting risk to communities who have not experienced a significant flood event in recent memory. Apathy and denial are core issues even in flood prone areas: research shows that individuals significantly i) underestimate their flood risk or the potential cost of damage caused by a flood event, and ii) overestimate how much they will receive in federal disaster relief funds; the maximum an insured resident can receive is \$32,000 while the average payout is \$5,000.

Contributing to common misperceptions of risk and liability is the term “100 year floodplain”. Most agree that it is an ineffective term both for planning and for communicating levels of risk to communities. A better approach may be, for example, to refer to how many times a property could flood over 30 years or the time frame of a typical mortgage or to use the term Special Flood Hazard Area.

C. Perception That ‘Enough’ is Being Done

At present, most floodplain planning and restoration is focused on fixing problems associated with flood damage, not on finding solutions or preventing what will lead to increased risk and reduced resilience to flood events. This has been a long time in the making, however, and reversing course won’t happen quickly. It will take time, resources, and the committed engagement of agencies, communities and stakeholders to develop and implement solutions. Experts noted that Floodplains By Design has made great strides in starting these types of conversations with landowners while ASFPM has done good work in focusing their efforts on mechanisms to limit or reverse development.

POLICY BARRIERS

There is a significant need for supportive policies to developing integrated floodplain management strategies. Key policy barriers to overcome and/or address:

A. Siloed Structure of Policies to Address Floodplain Management

From federal policies to congressional committees to communities, each element of floodplain management is currently dealt with by a different entity (e.g. *Banking, House and Urban Affairs* on NFIP, *Transportation and Infrastructure* on building and managing water projects and disaster relief, *National Marine Fisheries Services* on the Endangered Species Act). There is little to no



collaborative effort to develop an integrated policy environment and coupled with a lack of understanding about how the many different policies that come from every level of government work, what they do, and how they interact, makes management challenging. There is a real need to provide tools to help communities better understand the regulatory context they are operating in and mechanisms or models that bring all these components together in an integrated management plan.

"The way we currently handle flood insurance, county land use planning and permitting, and other regulations lead us to bad floodplain management."

B. Ineffective Land Use Policy

Growth in many communities in Oregon is constrained by urban growth boundaries that abut other jurisdictions. With limits on their ability to expand, there are no incentives for communities to give up buildable land within the floodplain. In addition, Oregon's land use system sets up an inherent conflict by prioritizing high-value farmland over everything. Can the state really require protection of farmland from sprawl even if it pushes sprawl into areas where public safety is at high risk? Finally, NFIP provisions and Oregon building and zoning codes make it legal for development to take place in areas considered to be at risk or hazardous.

C. Lack of Comprehensive Planning

For most Oregon communities, capacity to address the needs of smart floodplain management has and will continue to be a challenge. Many staff charged with floodplain management also have other responsibilities and/or have outdated data and maps to use in to support planning. Smaller communities often rely on or work closely with local watershed councils for technical support.

TECHNICAL BARRIERS - MAPPING

Convening interviews provided conflicting information and/or opinion as to how significant the technological/information gap is in implementing smart floodplain management in Oregon.

Some interviewees were confident that the majority of communities have the tools, information, and data needed to get the next generation of floodplain mapping done. Mapping undertaken by communities ranges in quality, usually dependent on whether there is a good city planner that understands the permitting system and that can efficiently pull the information together in a way that meets FEMA's mapping standards. Producing FEMA maps is expensive, and it tends to take a long time to get maps approved. DOGAMI and DLCD are supporting mapping work in Oregon communities but both agencies are resource-challenged and cannot provide the full scope of services and support that communities need. Some communities are side-stepping that barrier and using results from hydrological modeling and engineering analysis to produce maps that they use to regulate land use but don't submit to FEMA.

The release of the Oregon Biological Opinion (BiOp) and RPAs will clarify the requirements and key issues for floodplain mapping. Proactive mapping and remapping of 100 year floodplain and channel migration zone (CMZ) will be the next step in getting critical management areas identified for communities. Inundation mapping could be an effective management tool; data depends on where the flow meters are.

Other interviewees expressed concern that mapping is in fact a significant barrier to integrated floodplain management in Oregon. Challenges include the lack of agreement around the



definition of a floodplain (regulatory vs. historical vs. potential vs. where a community “wants it to be”) as well as lack of data needed to determine or identify where floodplains are, where levees are, and what condition they are in. This poses risks to landowners/communities who are behind levees they don’t know exist. For watershed assessments, this is critical information; it affects models, understanding of hydraulics. With that information, we could more readily identify floodplain restoration opportunities.

The US Army Corps has started an initiative to map levees. There is good data on where federal levees are and what condition they are in; that information is publicly available online. But the inventory of non-federal levees is lacking. States are reluctant to share that information and private landowners do not want to provide it. Both ASFPM and ASWM are supportive of the need to undertake a nationwide inventory of levees.

FUNDING AND RESOURCES BARRIERS

One of the more significant challenges that we face in implementing smart floodplain management is lack of resources. Lack of resources is the single biggest reason communities don’t enroll in CRS. Given the benefits, it could be effective to provide federal dollars to communities to assist in enrollment in CRS. Other significant resource issues include:

- Most county staff wear multiple hats and don’t have time, aren’t trained, and aren’t thinking about floodplain management from a broader perspective.
- Pre-disaster mitigation fund has only received about \$25 million over the last several years. Half of it is merit based, half equally divided among states, so each state only gets around \$500,000. Most gets spent on planning and general disaster preparedness.
- Other dollars that out there (e.g. Corps planning assistance for states for watershed studies) are limited and difficult to get.

4 THE ROLE OF MITIGATION BANKING AS A STRATEGY FOR SMART FLOODPLAIN MANAGEMENT

One of the key goals of the smart floodplain management project is to explore the role of mitigation banking as a tool to help communities address how they manage impacts to floodplains and potentially incentivize restoration of key floodplain functions. Objectives of mitigation banking are:

- Using a consistent approach to measuring impacts and benefits to floodplain function
- Evaluating where impacts and restoration should occur within a reach or watershed
- Increasing predictability and transparency for how development impacts are to be addressed
- Providing increased flexibility for how communities manage floodplains

There was general consensus that mitigation banking could be a powerful tool for communities developing integrated floodplain management, but that there are significant issues to address in the design and implementation of such a program.

CHALLENGES TO IMPLEMENTING FLOODPLAIN FUNCTION MITIGATION BANKING

An effective floodplain function mitigation banking program would need clear policies and protocols on several issues.

A. Service Area



The spatial scale of an offset or cap and trade approach to mitigation will be a significant determining factor in what functions can be mitigated and where. The 'service area' of a mitigation bank is determined by both ecological and economic factors. The appropriate scale for mitigation may differ when addressing impacts to ESA fish habitat (site scale) or to hydrological function (reach or larger scale). This will be especially important in demonstrating that impacts to habitat of ESA listed fish species are adequately mitigated where impacts to or development of lower floodplains tends to be the primary cause of habitat degradation (the prime factor for ESA listed species loss). A mitigation program would have to encourage preservation of pockets of prime habitat so that there is integrity throughout the riverine system – not just upstream.

In highly developed areas, function loss from floodplains tends to be flood storage and delay due to the expanse of impervious surface and modifications to the floodway. For communities with fully or close to fully built out urban areas, finding places to generate good mitigation projects will be a challenge; options tend to be extremely limited. Reestablishment of natural function in large cities will require land acquisition. For larger cities, it could appear as though they are "exporting mitigation" to less developed/rural areas.

B. Incentivizing Communities to Participate in a Mitigation Program

For small communities, limiting floodplain development equates to restricting revenue, which limits their ability to pay for services. In order for local jurisdictions to support a mitigation program, revenue stream would be an important criterion; a one-time payment for a (e.g.) fee in lieu with no future revenue would likely not be palatable. The mechanics/funding of creating advanced mitigation will be challenging, especially in small communities. There would likely need to be some kind of process that allows communities to identify areas of future mitigation without having to purchase in advance.

There will also need to be a way to address the disconnect between mitigation and beneficiaries: flood damage mitigation undertaken by communities directly benefits homeowners, while the benefit to local government is a reduction in risk or increased resiliency, that is not seen as a sufficient "reward" or incentive for that investment.

C. Creating a Strong Foundation for Assessment of Floodplain Function

Assessment will be an important component of an effective mitigation program; at a project and program level, need to be able to quantify and track what is being lost in terms of floodplain function when you allow impacts and be able to answer: Can that be mitigated? If so, at what spatial scale should mitigation take place (see Service Area discuss above)?

There was general agreement that it would be problematic to decouple/unbundle floodplain function (e.g. to mitigate for flood storage in one part of the system and habitat in another); we will need accounting tools to manage this.

Finally, current approaches to increasing flood storage are more of a "bathtub assessment" resulting primarily in changes of flood timing than actual elevation. There is a need to better to connect mitigation actions to flood attenuation and other outcomes.

MITIGATION AS AN OPPORTUNITY FOR COMMUNITIES

Communities can no longer afford to perpetuate the argument of jobs versus the environment when it comes to floodplain management. A mitigation banking approach can help shift the framing of debate in several ways.



Mitigation programs may provide income/revenue in communities where there aren't other sources of income to address floodplain restoration. By providing an opportunity to pay rural landowners to maintain land in undeveloped state (e.g. the Eugene Volunteer Incentive Program for floodplains), mitigation is potentially a way for rural jurisdictions to see themselves as a beneficiary, rather than an underdog.

In addition, the ability to start valuing the different functions and benefits of floodplains allows us to better balance the development versus environment debate. Valuation approaches (e.g. Earth Economics floodplain ecosystem valuation) means we can start costing out what it takes to produce floodplain benefits through restoration, which in itself is the precursor to the development of a market.

Finally, a market-based approach reframes the issue in terms of supply and demand. Supply is extremely limited. Demand is extremely high. We can start to make the argument that certain areas or specific functions will be very difficult/expensive to mitigate for, so we should leave it be. Any avoidance or minimization criteria that are in the final BiOp RPA will also serve that role.

"A lot of people still have the attitude that a swamp's not worth anything until you drain it. EcoNorthwest and Earth Economics have been doing work for King County, WA, and others putting a dollar value on the natural ecosystem values. Particularly for the decision-makers, they always hear a dollar figure from developers, but they don't hear the dollar value of what you're losing. If you lose that value, particularly in urban areas, they're pretty hard to replace. That's a tougher sell in eastern Oregon, where the replacement value is not as evident. But that stuff's now starting to get included in federal cost-benefit analysis, which is huge."

5 Outreach and Communication with Stakeholders

One of the key sets of barriers to implementing a smarter approach to floodplain management included the myths or misconceptions about the true risk that flooding poses to the economic health and personal safety of communities. Developing effective strategies for stakeholder engagement and outreach will be key for moving forward on smart floodplain management.

Critical stakeholders to target with specific outreach and communication strategies include:

- Development community
- Landowners
- Association of Counties and League of Oregon Cities
- City councilors and county commissioners

The development of effective messaging strategies for stakeholders should include some combination of the following ideas or arguments.

A. Lead with risk reduction and cost control

An important fact and persuasive message in encouraging a more integrated approach to floodplain management is an articulation of who benefits from floodplain development and who bears the long term costs. Developers are the short-term beneficiaries of building in floodplains and while communities benefit from an increase in the tax base, over the long term, local governments pay for the infrastructure protection and property owners and the federal government pay the costs of disaster relief and mitigation.



B. Use scientists and engineers to make the case

Results from hydrological modeling and historic channel migration maps can be neutral tools. Meetings with local planning commission can be effective with planners and engineers available to answer questions about environmental impacts.

C. Use public safety a hook

For city councilors and local planning commissions, concern about liability and how that might change/increase with the NFIP/ESA requirements is significant. Even communities that are following a floodplain ordinance, that have sent notice to FEMA, and have had a third party review, are still vulnerable due to lags in timeline between community work and FEMA process.

D. Valuation of the ecological benefits of functioning floodplains

Valuation can help to balance the economic argument of jobs/taxes versus the environment. Local governments/decision makers don't have information or data that puts value on what gets lost through floodplain development. This type of analysis is starting to be included in the federal cost-benefit analysis.

E. Communicate directly with landowners

Communication and outreach can happen through NRCS or watershed councils. Identifying and supporting a local leader to champion the issue has been a successful strategy in some communities.

Communication will be easier if public works directors and Indian tribe directors and fish & wildlife agencies are all messaging consistently about the need to support smart floodplain management (something WA is doing well). In addition, there are lessons to be learned from how the RPAs were rolled out in Washington where stakeholder outreach was conducted after the release of the BiOp.

WHO NEEDS TO BE AT THE TABLE?

The following stakeholders need to be participants in the development of model for smart floodplain management and in the development of specific plans and strategies for implementation at the local level (in no particular order):

- o Federal and state agencies that have some role in land management (e.g. NRCS, US Army Corps, FEMA, USFS, relevant state agencies)
- o Decision makers
- o Tribes
- o County planners
- o Engineers, hydrologists, biologists
- o Utilities
- o Academia
- o Landowners
- o Conservation community

6 POTENTIAL STRATEGIES TO SUPPORT SMART FLOODPLAIN MANAGEMENT

In addition to developing a mitigation banking program for floodplain functions, there are several opportunities for getting communities thinking about and implementing a more integrated approach to floodplain management.

A. Work at the Watershed Scale



Our policies, analysis, and management all need to address floodplains as part of a system; what is happening in the watershed and where is the water going to go/flow? It is inaccurate and risky to only evaluate flood risk for urban areas in terms of where flood damages may occur and build protective infrastructure to mitigate for that. Watershed planning along the lines of King County, WA in the late 80s/early 90s which conducted a full inventory of the system including flood hydrology, geomorphology, habitat, and stormwater management to inform watershed requirements could be a good model to follow. This type of analysis and information are already requirements for higher CRS ratings.

B. Tie to Incentive Structures/Co-Benefits

Tying integrated/smart floodplain management to property owner incentives (e.g. surface water rights, drinking water quality) to create a more tangible/anthropocentric connection to the benefits of floodplains in another strategy.

Floodplain preservation can also be a stormwater management strategy in a way that is less expensive than conventional approaches. Floodplain restoration also generates co-benefits such as flood water conveyance, improved water quality and habitat, open space amenity, and recreational amenity.

Finally, not all activity in the floodplain needs to be off limits. Silviculture and agriculture are potentially better uses of the floodplain than high impact development. And agriculture, if done sensitively, still retains the capacity to be retired from its use and restored. Those kinds of activities could be evaluated differently than say permanent development when considering floodplain management strategies.

C. Harness Resources

Sharing resources (state and federal) could be helpful at a regional jurisdictional level to create economies of scale (could use something like the Irrigation District as a model for what scale would be effective). While many communities are either understaffed or under resourced, not every community needs to develop planning, mapping, modeling, policy, and facilitation expertise. Resources and technical support could be delivered in a way that is less regulatory and more extension/assistance driven. Candidates to deliver this technical services include OSU extension, Willamette Partnership, NRCS, an EWEB-type organization, or irrigation associations. Any such organization would need to have good relationships with landowners.

A regional GIS network would be an extremely valuable resource, especially for small communities. That person is wearing so many hats that they may not have time to do data clean up or update it very often.

"Integrative, comprehensive planning will always get a huge push-back from the tea party and development communities which will be a significant barrier to smart floodplain management. Need to get people to understand that what's in the BiOp makes sense to communities' financial bottom line in the long run. The big floods come and communities will be (more) resilient."

7 VISIONS OF SUCCESS

The following were identified as successful potential outcomes of a three year effort to design and test smart floodplain management in Oregon:



Development of an advanced floodplain function mitigation banking program

- “Ripe for development in Oregon.”
- “The best thing that could come out of this project.”
- “Could be a revolution if we can get [local] jurisdictions a viewing [smart floodplain management] as an opportunity rather than a constraint.”

Model ordinance supported by a suite of concrete and usable technical tools that communities can employ in a “plug and play” type way:

- Market or incentive based approaches
- Tools to make ESA assessments: a calculator or assessment methodology (like an ORWAP, but simpler) to evaluate impacts and benefits to ESA habitat and translate that into a management strategy.

“If we could get one large scale community to adopt a model ordinance that they would implement for development in the floodplain that had been vetted by scientific community and approved by the Commission – then that would be success.”

Additional funding and resources, including:

- Financing models that will support communities to fund buyouts of properties, implement mitigation/restoration projects, and limit/forgo short term revenue from floodplain development; (options for this include a Floodplains by Design type program, or FEMA community grants (which would require a realignment of FEMA’s mission and purpose with the needs of communities at risk)).
- Regional technical services support/GIS network: state and federal technical resources for communities to undertake mapping and watershed-scale planning delivered at a regional scale (larger than county-level, smaller than state).
- Resources/support could be delivered in a way that is less regulatory and more extension/assistance driven.

A comprehensive decision-making/planning framework that brings together the disconnected but importantly related issues around the regulation and management of floodplains and:

- Supports the design and implementation of management strategies that address a broad range of social goals and values.
- Ensures development and conservation decisions are made within the same context so they don’t cancel each other out or so that development does not constrain or limit restoration potential.
- Operates at the watershed scale (Floodplains by Design is attempting to get here).
- Provides flexibility for communities to balance economic and ecological needs

In a perfect world, [communities would] get all this funding to implement whatever they come up with, and after the next flood, they’d see less damage, an increases in habitat, etc. Reality is probably that if you can come up with your plans and what you want to do, then when the next big flood hits, you can use post-disaster mitigation funds to implement.”

8 NEXT STEPS/MOVING FORWARD

The potential barriers to and opportunities around developing and implementing a smarter approach to floodplain management in Oregon identified through this convening work suggest



WILLAMETTE PARTNERSHIP



Natural Resources Conservation Service

several strategies for moving this work forward. Key takeaways and priorities for next steps include:

1. Developing or supporting communication and outreach strategies that help communities and decision makers rethink floodplain development so that we get away from the job versus environment argument and encourage better measurement and valuation of the benefits that resilient floodplains provide.
2. Building tools and improving data to support better mapping, more spatially-based planning, broader valuation of floodplain functions, and mitigation banking for impacts to floodplain floodplains
3. Identifying resources that can supplement or incentivize community based planning including seed money for on the ground restoration work, technical support for planning, and funds to encourage communities to participate in or increase their standing in the Community Rating System for floodplains.

Willamette Partnership's smart floodplain management project will contribute to the thinking in some of these areas, however, we need to identify other partners who can take ownership of and provide leadership on these issues. NORFMA and The Nature Conservancy may both be options to play this role.



APPENDICES

Appendix 1. Convening Interview Questions

1. Here are some of the elements we've uncovered through our research on Smart Floodplain Management (list components of Smart Floodplain Management for Interviewee).
 - a. When you think of smart floodplain management, what does that include? What speaks to you from this list? Why?
 - b. What's missing or how could it be improved?
2. What are some of the best examples in your mind of communities implementing some or all of this approach in Oregon? In the US?
 - If so, how/why have they been successful?
 - Are there specific elements/tools/lessons we should pull from?
 - If not, what are the barriers that communities face to being able to implement a strategy to achieve this vision?
3. What would you say are the top three barriers for communities (large and small) being able to implement smart floodplain management for each of these categories? What are some solutions to these problems? How might these barriers be overcome?
 - Policy barriers
 - Science/ecological
 - Process/social
4. What are some of the gaps or information needs that need to be addressed so that communities can implement standards for smart floodplain management?
5. If we were going to provide a way for Oregon communities and stakeholders to come together to help address some of these need and barriers together, what ideas, suggestions and recommendations might you have for conducting an effective, productive and successful stakeholder engagement process?
 - Who needs to be at the table?
 - Are there any particular issues to watch out for?
 - What are the characteristics you'd want to see in a convener for a process like this?
 - For you, what are the best ways to engage you?
 - If we were wildly successful after 12-18 months of working with people to overcome barriers to smart floodplain management, what would that success look like?
6. Who else should we talk to about this?



Appendix 2. Additional Experts/Round 2 Contacts

The following individuals/organizations were recommended as additional experts who could provide valuable insight/guidance on the issues identified through this convening work (in no particular order):

- o *Jeff Johnson, Watershed Science Engineering (Seattle)*
- o *Stephen Pfeiffer, Perkins Coie*
- o *Oregon City project: FEMA contact*
- o *Barry Gall, FEMA Region 10 Habitat Specialist*
- o *Rob Merkel, National Marine Fisheries Service*
- o *Michael Garrity, American Rivers*
- o *Pam Reber, Coast Fork Willamette*
- o *Dana Dedrick – Long Tom Watershed Council*
- o *USFS*
- o *BLM*
- o *ACWA*
- o *City managers or certified floodplain managers*
- o *Maggie Skendarian, City of Portland*
- o *Bob Carey, The Nature Conservancy*
- o *Christine Shirley, Department of Land Conservation and Development*
- o *Will Stelle, National Marine Fisheries Service*



Appendix 3. Good Examples/Models to Research

Southern Flow Corridor Project – Tillamook, OR - Multipurpose project driven by restoration of floodplain capacity in Tillamook. All the work is taking place in areas that are underdeveloped. They are pulling in other dimensions including habitat restoration and have tapped several buckets of funds including FEMA. Project has a lot of political support from local level to congressional delegation.

California – Levees pullback to reestablish floodplains; saw better summer temperatures and better flows because they got improved hyporeic flow.

Skagit, WA - Floodplains by Design success story

Hillsboro and Beaverton, OR - Master planning process looking at floodplain issues

Iowa – Funding scheme (bond or tax) after 2010 floods

Pierce and King Counties, WA - integrative planning that includes fish, flood risk, habitat, other values

Denver, CO - Flood control district

Charlotte, NC – Relocation after floods

Grafton, IL - Learned to live with pretty extreme flood regime

Olive Branch, IL - Major relocation after 2011 floods

Central Valley, CA – Large-scale flood management plans

Snohomish River, WA - Simulation to run through alternatives with stakeholders (tribes, mayors, F&W department)