

FINAL REPORT:

Multnomah County Drainage Districts  
Issue Assessment

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# Section 1: Executive Summary

In March, 2013, the Executive Director and select staff from the Multnomah County Drainage District (MCDD) approached the Hatfield School of Government's Center for Public Service (CPS) and Oregon Solutions (OS) seeking assistance in addressing the issues of maintaining accreditation and recertifying the levees under their jurisdiction. Of immediate concern is US Army Corps of Engineers (USACE)'s certification<sup>1</sup> of levees in Peninsula Drainage Districts #1 and #2, which expire in August 2013. The loss of this certification risks loss of levee accreditation under the Federal Emergency Management Agency (FEMA)'s National Flood Insurance Program (NFIP). Less immediate, but no less important, is a similar recertification requirement for levees in Multnomah County Drainage District #1 (MCDD#1) and the Sandy Drainage Improvement Company, the current evaluation findings of which reach the end of their maximum period of validity in June 2017.<sup>2</sup>

The cost of bringing the levees to required standards is very high. Furthermore, in the event the districts cannot find the needed funds and elect to dissolve, the responsibilities for these costs pass to the legal "map holders" in accordance with FEMA regulation. The map holders in this case are the cities within whose boundaries the various levees lie or Multnomah County for levees located on unincorporated land. Although there is no legal requirement for anyone to fund the needed repairs, the loss of NFIP accreditation carries the loss of eligibility for federally subsidized flood insurance.

The consequences of the loss of NFIP accreditation and subsidized federal flood insurance eligibility would be severe. As of 2010, the four districts contained over 2000 landowners and over 12,000 acres of improved land (MCDD 2010). The levees protect about ten percent of the jobs in Multnomah County (US Census Bureau 2011) and many businesses, along with several residential neighborhoods. Loss of access to subsidized federally backed insurance would result in many residents being unable to afford flood insurance. Those whose loans or mortgages require flood insurance could risk losing their property altogether should those loans be called. Property values would likely decrease dramatically as a result.

Oregon Solutions accepted an assignment for the first requirement. OS conducted an assessment for a potential collaborative process to address needed improvements to the levee system in Peninsula Drainage Districts #1 and #2. These improvements are needed to maintain accreditation of the levees and protect both properties (in the event of a flood event) and property values behind the levees. The findings of the OS effort are presented in

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<sup>1</sup> The term "certification" has varied meanings within the two levee programs administered by USACE and FEMA. Under FEMA's NFIP, "levee certification" is the term used for levees certified by USACE prior to 2010. In August of 2010, USACE issued Engineering Circular (EC) 1110-2-6067. The EC replaced the "levee certification" terminology with the term "NFIP Levee System Evaluation" for the process undertaken by USACE to satisfy the requirements of FEMA's NFIP. Consequently, when referring to USACE NFIP related actions, this report uses the term "certification" when referring to pre-2010 USACE actions and "evaluation findings" for those conducted under the provisions of EC 1110-2-6067. See Section 4.2, Appendix 4, and FEMA 2012 for further discussion.

<sup>2</sup> The acronym "MCDD" potentially carries three meanings, depending on context. It may either refer to Multnomah County Drainage District #1 as one of the four districts and supervisory boards included in this study; the staff of Multnomah County Drainage District #1 in their role of managing and operating the levees and facilities for all four districts; or as a collective reference to all four districts (as in "Multnomah County Drainage Districts"). For purposes of clarity, we use "MCDD#1" when referring to Multnomah County Drainage District #1 or its supervisory board, "MCDD" when referring to the district staff, and "the districts" when referring to all four districts.

a separate report (see Greenwood, 2013). The CPS assignment was broader in scope, intended to address the similar levee issues in the other two districts as well as longer-term issues related to governance and management. This report presents the findings of that broader effort.

The authors conducted fifteen interview sessions. They interviewed representatives from the MCDD staff, members of three of the four drainage districts supervisory boards, two neighborhood associations, Portland city officials, the Portland District of the US Army Corps of Engineers (referred to in this report as "USACE"), the Federal Emergency Management Agency (FEMA), the Port of Portland, and local business owners and representatives. The results of those interviews and information obtained from relevant documents, most of which were provided by interview respondents, are the sources from which the findings of this report are drawn. See Section 2 for a more detailed discussion of our methods. A full list of contact information for the interviewees is available in Appendix 3.

Over the course of the interviews, interview respondents identified three significant events that served as catalysts for a review of the districts' governance. The first is the need for levee recertification and to maintain accreditation as introduced above. The second is a 2007 effort to remove trees identified by USACE to encroach on a levee in Peninsula District No. 2 and the general dissatisfaction with how MCDD staff handled that event. The third is a 2012 initiative by the City of Portland to assume control of stormwater fee assessments previously determined, charged, and collected by the four drainage districts.

These three events sparked a growing awareness among respondents of five broader trends within which these three specific events occurred. These were characterized as (1) changing demographics and associated interests within the districts; (2) changing regulatory regimes within which MCDD operates; (3) changing sensitivities regarding the effects of levee operations on ecological processes; (4) a growing interest in incorporating recreation uses into levee planning and operations; and (5) recognition of the city-wide benefits the districts provide for stormwater management and flood control and interest in allocating associated costs accordingly.

In addition to these broader trends, respondents identified several activities occurring external to the districts that could profoundly affect future MCDD operations. These were potential flow regime changes due to the Columbia River Treaty review process and/or climate change; potential construction of the Columbia River Crossing; potential new restrictions or requirements under the Endangered Species Act and/or other federal, state, Metro, and city laws, regulations, or ordinances; and earthquake preparedness.

Consistent with the Oregon Solutions assessment (Greenwood, 2013), we found an almost universal endorsement of the competence and flexibility of MCDD's leadership and staff and strong support for the MCDD staff to maintain a central role in levee planning, operations, and management. We found equally strong support for a collaborative process to address the combination of specific events, emerging trends, and external effects and events. Although a large majority of respondents do not believe that changes to the districts supervisory board structures are necessary, there is an interest in at least identifying alternative management and decision making arrangements and analyzing the implications of those alternatives.

Finally, we found significant differences in the perspectives and factual awareness of the respondents. Each is understandably focused and well informed of those issues of greatest relevance to their respective interests and position. However, there is an asymmetrical understanding among respondents of basic facts, such as USACE and FEMA levee programs, the implications of those programs, and the stormwater issue. Consequently, MCDD would

be well served by expanding its current information and outreach program and methods to ensure a broader common understanding among its partners and stakeholders of all the issues, trends, and implications facing the districts.

Section 2 introduces general background information on the drainage districts, the purpose of this report, the problems it addresses, and the potential consequences of not addressing those problems in a timely fashion. Section 3 outlines our methodology. Section 4 provides a detailed discussion of the findings. We provide suggested next steps and additional inquiries in Section 5.

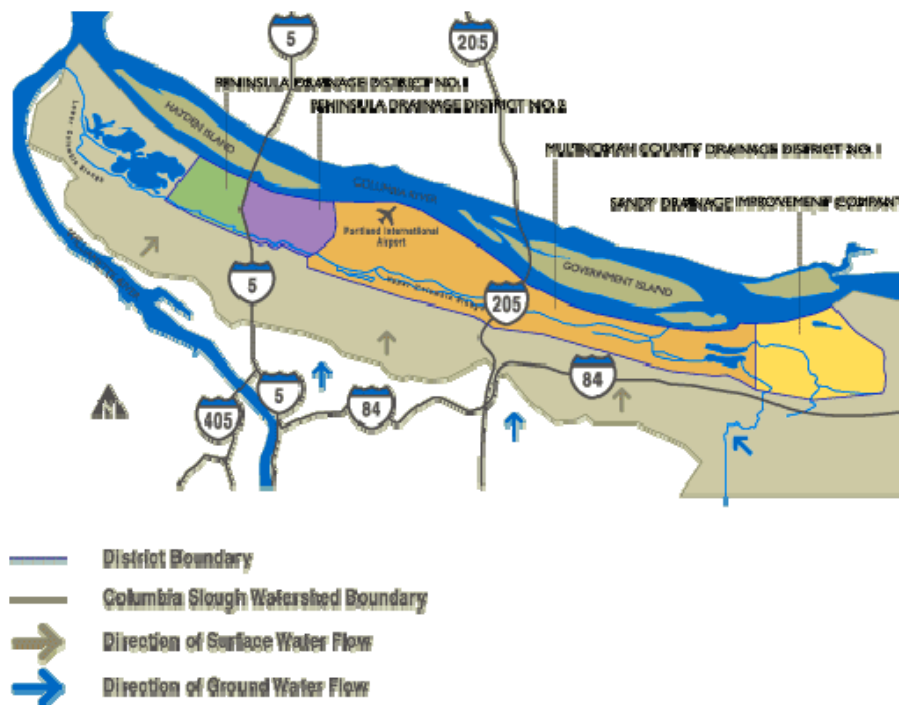
## Section 2: Introduction

### 2.1 | Background: The Multnomah County Drainage Districts (“the Districts”)

Euro-Americans began settling within the area encompassed by this report in the early-to-mid 1800s, drawn by opportunities in fishing and agriculture. Several historic buildings remain, having survived the flood-of-record in 1896 and the Vanport Flood of 1948. The local post office dates to 1890 and the oldest homes to the early 1900s.

In 1917, property owners established four drainage districts to protect their property from Columbia River flooding and to remove stormwater. Collectively referred to as the Multnomah County Drainage Districts, the districts are generally bounded by the Columbia River to the north, the Sandy River to the east, the Columbia Slough to the south, and Heron Lakes to the west as illustrated in Exhibit 1. From west to east, these districts are the Peninsula Drainage District No. 1 (Pen 1), Peninsula Drainage District No. 2 (Pen 2), Multnomah County Drainage District No. 1 (MCDD#1), and Sandy Drainage Improvement Company (SDIC). (MCDD 2007).

*Exhibit 1: Map of the Multnomah County Drainage Districts*



Pen 1, Pen 2, and MCDD#1 are special purpose local governments organized under Oregon Revised Statute (ORS) Chapter 547. SDIC, although initially constituted as a similar entity in 1939, incorporated in 1998 under ORS 554. The landowners in each district form the legal constituency. Each district elects an unpaid three-to-five person board of supervisors or directors that provides governance, assesses fees, and collects revenue. (MCDD 2007).

The districts manage their portion of the Columbia River floodplain to prevent flooding of landowners from high water levels in the Columbia River and from stormwater runoff. To protect against external flooding, the districts maintain approximately 31 miles of levees and floodwalls, 18 of which run directly alongside the southern bank of the Columbia River. The rest border the Columbia Slough or low areas and drainage ditches within the area. USACE built most of the levees, with others built by state, county, or private landowners. All district levees have previously been accredited by FEMA. The Districts manage internal flooding from stormwater runoff with a closely monitored system of 11 pumping stations, and 35 miles of ditches and culverts. (MCDD 2007 and 2010).

Pen 1, Pen 2, and SDIC delegate administrative management for the levees in their districts, through annual contract, to the fourteen-person staff established within MCDD#1. The MCDD#1 staff (MCDD) thus provides uniform planning, management, maintenance, and operations for all four districts. MCDD also coordinates activities, on behalf of the four district boards, with state agencies and local governments in the area (Portland, Gresham, Fairview, Wood Village, Troutdale, Multnomah County, and the Metro Regional Government) in accordance with ORS Chapters 190 and 195. (MCDD 2007).

Recent years introduced new elements to the districts' traditional levee maintenance role. Increased development in and around the districts' service area brought an increased stormwater impact. As of 2010, there were over 2000 landowners and over 12,000 acres of improved land within the districts' service area (MCDD 2010). As a result of this development, between 1995 and 2010, stormwater flows in the District increased by seventy-five percent. By 2020, development within the four Districts is anticipated to increase by an additional twenty-five percent with peak flows doubling over 2010 levels (MCDD 2010).

Changing societal interests and demographics brought changes in values. Private residents have a growing awareness of the ecological connection between the Columbia Slough, ponds, and groundwater and a growing interest in recreational opportunities. Furthermore, as the populations of the adjoining municipalities grew, so too did the effects of actions within the districts on the residents of those municipalities and vice versa. As a result, the districts now operate under a more complicated regulatory regime when permitting new or routine work due to federal and state laws and regulations and local government ordinances regarding the environment.

Additionally, the districts face the effects of 2005's Hurricane Katrina on federal levee programs. Although USACE historically updated its flood protection policies as new information became available – and a number of changes were underway prior to Katrina - Hurricane Katrina prompted a wide-ranging review of USACE levee requirements in support of FEMA's National Flood Insurance Program and the USACE Levee Safety Program, resulting in both stricter interpretation of existing regulations and promulgation of new requirements.

In 2010 USACE revised its requirements for levee evaluations in support of the National Flood Insurance Program. In January 2013, USACE's Portland District notified Pen 1 and Pen 2 that the levee certifications issued in 2007 and 2008 were found to be inconsistent with the revised requirements. As a result, the districts' 2007 certification becomes invalid in August 2013 (USACE 2013a and 2013b). MCDD#1 and SDIC received similar letters, with their certifications terminating in June 2017 at the end of their maximum ten-year period of validity (USACE 2013c and 2013d).

In 2007, USACE required removal of trees it believed encroached on the levees near the Bridgeton neighborhood under its Rehabilitation and Inspection Program. MCDD dutifully



carried out the removal, but the manner in which it did so generated a great deal of anger and resentment on the part of Bridgeton residents.

In 2000, the City of Portland entered into an intergovernmental agreement (IGA) with the districts that allowed the districts to collect fees for stormwater services normally collected by the city. The duration of the IGA was to be ten years, with the intent of creating a new ten-year agreement after five years. The IGA could be renewed at five-year intervals, with automatic renewal if no formal notice was given to discontinue the agreement. In 2007, negotiations with the City broke down over the amount of revenue to be collected and the City gave notice of its intent not to renew the agreement. The IGA expired in 2012. The City then proposed to bill the districts' residents directly for on- and off-site stormwater services.

## 2.2 | Problem Statement

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In August 2013, the USACE NFIP certification expires for the levees in Pen 1 and Pen 2. Consequently, the issue facing these two districts is immediate and the consequences could be severe if not adequately addressed. Furthermore, the timeline that FEMA will follow once the certifications expire is uncertain. That timeline depends on FEMA funding and initiating their process to modify the districts' Flood Insurance Rate Map (FIRM). The FIRM modification process could be completed in as soon as two years, which means that recertification and accreditation would need to be complete before then, including any needed updates and repairs to the levees.

MCDD#1 and SDIC face similar FEMA National Flood Insurance Program issues. The ten-year period of validity for their 2007 evaluation findings ends in 2017.<sup>3</sup> As a result, while no less severe, the situation facing these two districts is less immediate.

In sum, maintaining levee accreditation is a matter of urgent concern to those located within all four districts' service areas.

Coupled with the consequences not maintaining FEMA NFIP accreditation is the cost of required levee repairs. If the districts should choose to dissolve due to an inability to raise the needed funds (or for any other reason), responsibility for those costs passes to the municipalities in which the levees are located or to Multnomah County for levees situated on unincorporated land. Although there is no legal requirement for anyone to fund the levee repairs, the loss of NFIP accreditation would render residents and businesses within the levee system ineligible for federally subsidized flood insurance.<sup>4</sup>

The process established for the Pen 1 and Pen 2 will inform the process for MCDD and SDIC. Based on the issue with tree removal on the levees in the past, and because of the magnitude of costs and potential changes that may have to be made, it has become clear to MCDD that stakeholder participation and buy in will be a necessary component in this accreditation process. The process that emerges for Pen 1 and Pen 2 will inform the process for maintaining accreditation in the MCDD#1 and Sandy districts.

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<sup>3</sup> USACE uses the term "maximum period of validity" rather than an expiration date to emphasize the fact that the certification can be revoked at any time prior to the end of the maximum period of validity should conditions change.

<sup>4</sup> The foregoing refers to FEMA map holder requirements only. Other local ordinances or state statutes may apply to such issues of assumption of responsibility for district debt and assets, contractual obligations, etc.



In addition to the critical issue of levee accreditation and the costs of associated repairs, the districts are facing an array of other issues – such as the City's stormwater fees - and emerging trends for which their traditional management practices may not prove adequate. However, there is no common or clear understanding of what these other issues and trends are, let alone what the districts should do to address them.

## 2.3 | “Worst Case Scenario”: Failure to Maintain Levee Accreditation

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The “worst case scenario” would be a failure to take the actions necessary to meet the accreditation requirements for FEMA's National Flood Insurance Program.

FEMA's insurance program puts the burden on the applicant (in this case, the districts) to demonstrate compliance with FEMA's regulations. Once FEMA decides to fund its next mapping of flood hazards in the districts' service area, they will request documentation that certifies the levees meet required standards. The loss of FEMA NFIP accreditation carries three serious consequences.

First, failure to re-certify the levees under the NFIP program would result in de-accreditation and the loss of eligibility for federally subsidized flood insurance. Without federal eligibility, many homeowners and businesses required to purchase flood insurance would have to do so at prevailing, non-subsidized market rates.

Second, most mortgage lenders require that buildings identified by FEMA as being within Special Flood Hazard Area (SFHA) carry flood insurance.<sup>5</sup> Lenders can call in the loans for those property owners unable to comply with their mandatory flood insurance requirements. Consequently, those unable to afford non-subsidized flood insurance could potentially lose their property.

Finally, failure to find an equitable solution may result in one or more of the districts supervisory boards to dissolve. Should that occur, the legal “map holder” under FEMA regulations would assume responsibility for the dissolved district's levee maintenance and operations. Levees within the areas that were incorporated into municipalities (City of Portland, City of Gresham, and City of Troutdale) become the responsibility of those municipalities; levees located on unincorporated land become the responsibility of Multnomah County.<sup>6</sup>

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<sup>5</sup> “Lenders are mandated under the Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 to require the purchase of flood insurance by property owners who acquire loans from federally regulated, supervised, or insured financial institutions for the acquisition or improvement of land, facilities, or structures located within or to be located within an SFHA.” (FEMA, 2011, p. 11).

<sup>6</sup> Participation in any of these programs (RIP or NFIP) is voluntary, and so there is no legal obligation for the map holder to take any actions. This is only an identification of the proper authority to do so should the districts dissolve. However, should the districts or map holders not take action, residents with the districts' service area could lose their eligibility for federally subsidized flood insurance.

## 2.4 | Purpose of This Report

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The criticality of the pending expiration of the districts' levee certifications, coupled with the tree removal and stormwater issues and the sense of a changing operating environment prompted MCDD to contact both Oregon Solutions and the Hatfield School of Government's Center for Public Service for assistance.

MCDD contracted with Oregon Solutions to assess the levee recertification issue facing Pen 1 and Pen 2. The resulting OS report is limited to the issues in Pen 1 and Pen 2 directly related to the upcoming expiration USACE's certification for FEMA's National Flood Insurance Program. It is a companion to this report and is included herein by reference.

MCDD also contracted with CPS to conduct a broader assessment of the issues regarding (1) maintaining levee accreditation for the Multnomah and Sandy districts and (2) longer-term sustainability and governance issues facing all four drainage districts. The goals of this broader assessment included (1) determining the full range and scope of issues facing the four districts, (2) identifying how the stakeholders interviewed view those issues, (3) identifying the full range of stakeholders, (4) identifying who can provide resources to help resolve the situation, and (5) offering alternatives for moving forward.

This report meets all of these assessment goals with the exception of (4). Although the question of resource opportunities was asked and discussed during the interviews, no specific recommendations were provided beyond the obvious of city and county budget and current funding structures (see Section 4.7). Further discussions to identify or design innovative funding strategies should be included as part of any follow-on actions (see Section 5).

MCDD intends this report to serve as the beginning of a collaborative process that gains stakeholder support in resolving the levee certification and other issues facing the districts.

## Section 3: Methodology

We conducted 15 interviews, starting with a list of suggested contacts provided by MCDD, to gain an idea of the scope of stakeholder interests and issues. Four of the interviews (with USACE, FEMA, and two with MCDD) were for background information purposes. The rest were with representatives from groups affected by the levee accreditation process.

All interviews were conducted on a “non-attribution” basis. Consequently, sources for findings and other information obtained through the interview process are not cited. We do cite information obtained from documents and official websites as applicable. Appendix 1 identifies the references used.

Using a non-attribution approach will invariably raise questions in the minds of some readers as to how prevalent a given comment was among respondents. We deliberately make no effort to quantify the support for any given comment beyond characterizations of “one respondent,” “some respondents,” “most respondents,” or “all respondents.” We also do not judge the substantive merits of any suggestion or suggestion or present evaluative comparisons between options. We do this for three reasons.

First, although we believe the information presented herein is representative of people and the various institutional entities the districts serve, we do not present them as all-inclusive. Discussions with others may well identify additional concerns and issues.

Second, although we used a standard set of questions to open each discussion, the open nature resulted in discussions with respondents often moving in different directions. Consequently, the fact that one respondent offered issues not brought up by the others cannot be construed as either agreement or disagreement with that particular issue.

Third is MCDD’s intent in commissioning this report. MCDD views this report as the beginning of a collaborative process to resolve the immediate issues facing the districts and guide future decision-making. Consequently, we leave judgments as to the merits of any issue to those who will participate in the new process.

As noted above, we used a uniform introduction and set of questions to initiate and guide each interview discussion, listed in Appendix 2. While our goal was to make sure the questions identified were answered, we allowed the conversations to take an organic path in directions other than those identified by the questions. This was encouraged to ensure we captured the issues considered important to the respondents. As a result, the discussions often opened leads or avenues of inquiry not originally anticipated when we first developed the questions. For example, we would not have been aware of the importance of the stormwater billing issue but for this approach.

We were able to interview everyone identified to us, either in person or by phone, with one exception. Despite several attempts, we were unable to make contact with a representative from the Portland’s Bureau of Environmental Services. The list of interviewees is presented in Appendix 3. The interviews lasted from 45 minutes to 1½ hours.

All interview respondents are in positions of leadership within their various communities of interest, and all have been in their positions for multiple years. Consequently, we believe the perspectives identified provide a reasonably representative sample of the issues and interests within the districts.

We categorized the issues identified through the interviews into themes as suggested by the nature of the issues raised. Section 4 presents these themes and associated issues. Although we obtained the information sought through the interview questions, as noted above, our discussions revealed additional relevant information not originally anticipated. Consequently, the findings presented in Section 4 do not necessarily align with the interview questions, but rather tracks the information provided.

## Section 4: Findings

Consistent with the OS report (Greenwood, 2013), we found strong support for a continued central role of MCDD staff in the management and operation of the districts' levee systems. The reasons for this support are presented in Subsection 4.1.

Interview respondents identified three recent events that served as catalysts for a review of the districts' governance. The most prominent is the need to maintain levee accreditation under FEMA's Flood Insurance Program. The second is a 2007 effort to remove trees identified by USACE to encroach on a levee in Peninsula District No. 2 and the general dissatisfaction with how MCDD staff handled that event. The third is a 2012 initiative by the City of Portland to assume control of stormwater fee assessments previously determined, charged, and collected by the four drainage districts. These events are discussed in Subsections 4.2, 4.3, and 4.4 respectively.

In addition to the questions raised regarding governance, the three events sparked a growing awareness of five broader trends within which these three specific events occurred. These were characterized as (1) changing demographics and associated interests within the districts; (2) changing regulatory regimes within which MCDD operates; (3) changing sensitivities regarding the effects of levee operations on ecological processes; (4) a growing interest in incorporating recreation uses into levee planning and operations; and (5) recognition of the city-wide benefits the districts provide for stormwater management and flood control and interest in allocating associated costs accordingly. Discussion of these emerging trends is presented in Subsection 4.5.

In addition to these broader trends, respondents identified several activities occurring external to the districts that could profoundly affect future MCDD operations. These were potential flow regime changes due to the Columbia River Treaty review process and/or climate change; potential construction of the Columbia River Crossing; potential new restrictions or requirements under the Endangered Species Act and/or other federal, state, Metro, and city laws, regulations, or ordinances; and earthquake preparedness. Discussion of these external effects is presented in Subsection 4.6.

Issues of funding and funding equity are presented in Subsection 4.7. Subsection 4.8 presents findings and options regarding the districts' governance system.

We conclude this introduction by noting a significant difference in perspective and factual understanding among the respondents. Each is understandably focused and well informed of those issues of greatest relevance to their respective interests and position. However, we found an asymmetrical understanding among respondents of basic facts, such as USACE and FEMA levee programs, the implications of those programs, and the stormwater issue. Consequently, MCDD would be well served by expanding its current information and outreach program and methods to ensure a broader common understanding among its partners and stakeholders of all the issues, trends, and implications facing the districts.

### 4.1 | Support for and Confidence in MCDD

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Respondents provided an almost universal endorsement of the competence and flexibility of MCDD's leadership and staff and voiced strong support for the MCDD staff to maintain a central role in levee planning, operations, and management. The three primary reasons

given were confidence in the executive director, appreciation of the manner in which MCDD carries out its duties, and cost.

MCDD recently hired a new executive director. Those interview respondents who served on the interview and hiring panel stated that a primary selection criterion was the ability to effectively engage in complex collaborative processes. All respondents stated that, to date, the new executive director has amply displayed those skills.

Respondents identified two aspects of the manner in which MCDD staff traditionally carry out their duties they wish to have continued. The first was phrased as a “good neighbor” approach to district related work. When working on a job site, MCDD staff and equipment operators are willing to do other needed public work as pointed out by residents or business owners in the vicinity. The second aspect is the multiple skillsets employed by the MCDD staff. If a job site requires, for example, heavy equipment, plumbing, and simple electrical work, many of the MCDD staff possess the skills to do all three tasks. Respondents compared this to what might be the approach from the unionized City of Portland workforce, where workplace rules may require three separate individuals be called to the site (equipment operator, plumber, and electrician) thereby increasing the amount of time needed to complete the work.

Respondents also expressed concerns that labor costs and the time to complete needed tasks will increase should the City of Portland assume responsibility for the functions now performed by MCDD staff, with corresponding effects on assessed fees. This concern is based on the perceived higher wages and more structured approach to work associated with the unionized City bureaus.<sup>7</sup>

Confidence in the new executive director, the cooperative and efficient manner in which MCDD staff approach their work, and a desire to minimize costs result in strong support for the MCDD leadership and staff maintaining a central role in the districts’ levee operations.

## 4.2 | Levee Accreditation and Recertification

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Respondents presented a range of understandings regarding USACE and FEMA’s levee programs and the reasons behind apparently recent policy changes. While most understood the need, a few suggested that recent changes appeared to be knee-jerk and unnecessary reactions to Hurricane Katrina and other recent flood events. One mentioned a mood among some members of the public that it might be time to “go political” for the purpose of overruling what appear to be arbitrarily imposed new requirements.

Those we talked to from FEMA and USACE were aware of these views. They responded by noting that USACE and FEMA regularly review their policies, programs, and technical procedures as new information becomes available or new lessons are learned from annual

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<sup>7</sup> The degree to which rates for district businesses and residents would increase is unclear. Most respondents believe that labor costs would likely increase given the unionized nature of city workers and associated work rules. The degree to which these costs would increase requires further examination and quantification. Moreover, even if the total cost of labor did increase, the impact on fees for individual payers within the districts would depend on how those costs were distributed among the cities and county’s tax bases. Conceivably, the rates for individual ratepayers could go down given distribution across a much broader base. This, too, requires further examination and quantification.

flood events.<sup>8</sup> And Katrina did result in changes to some policies and stricter enforcement of others. But many changes that some members of the public attributed to Katrina were initiated long before that event occurred. For example, USACE's Portland District issued a regulation in 1980 that limited levee encroachments to "only those appurtenant installations that provide a flood control function." Exceptions were to be allowed only in cases where "the encroachment is considered to be in the public interest." (USACE Portland District 1980, p.2).<sup>9</sup> In 2000, USACE Headquarters issued a revision to Engineer Manual 1110-2-1913 that, among other changes, reversed previous policy of encouraging pipelines to be constructed through the "freeboard zone" at the top of the levee and announced discontinuation of the term "freeboard" as a technical design term for purposes of USACE programs (see Section 8.3, USACE 2000).<sup>10</sup> Modifications to FEMA's mapping protocols were also initiated prior to Katrina. From USACE and FEMA perspectives, these changes and others are grounded in empirical findings and incorporate important, substantive improvements to levee integrity justified in the interest of public safety. Furthermore, the districts' residents can reasonably expect additional changes in the future as conditions warrant and new information becomes available.

Obtaining stakeholder buy-in and support for a collaborative path forward requires all involved to share a common, accurate understanding of the programs and requirements involved. A robust education and outreach program by MCDD, in coordination with FEMA and USACE, is strongly recommended to that end.

The information presented below outlines relevant USACE and FEMA programs affecting the districts' levee situation and the accreditation and recertification requirements they face. It is not all-inclusive.

## A. Key USACE and FEMA Programs

The USACE Levee Safety Program and its associated Rehabilitation and Inspection Program (RIP) and FEMA's levee accreditation requirements under the National Flood Insurance Program are intended to meet different purposes and focus on different scale flood events. These differences and associated terminology is illustrated in Exhibit 2. The programs are explained in greater detail in Appendix 4.

USACE designs and builds levees to provide protection from the full range of possible flood events that threaten an authorized area.<sup>11</sup> The most severe historic flood is referred to as the "flood of record." For Portland, the flood of record is the flood of 1896. USACE refers to the anticipated floodwater surface level to which a levee is designed as the Design Water Surface.

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<sup>8</sup> USACE became involved with flood studies in the lower Mississippi River in the 1850s and the construction of flood control infrastructure in the 1910s. Since then, USACE routinely studies flood events and adopts technical lessons learned accordingly in the interest of public safety. It will likely continue to do so. See *The U.S. Army Corps of Engineers: A History* (USACE 2007), pages 57-66.

<sup>9</sup> Quoted from Portland District Regulation 1130-2-5. Although this regulation is technically still current, several of its provisions have been superseded by later USACE regulations and policies.

<sup>10</sup> Note, however, that FEMA still uses "freeboard" for purposes of NFIP accreditation. FEMA requires at least three feet of freeboard clearance as measured from the anticipated base flood water surface elevation to the top of the levee embankment.

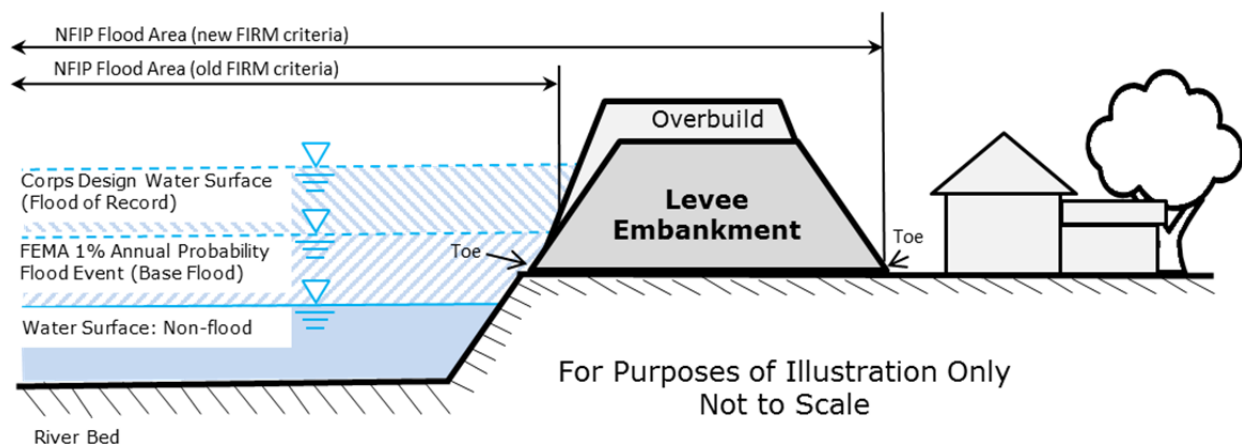
<sup>11</sup> There is no single design for a levee as designs may vary in order to meet local conditions. For a discussion of the various levee designs found within the districts, see the MCDD website (1997) at <http://www.mcdd.org/MCDDleveedesign.html>.



The USACE Levee Safety Program is intended to ensure that the levees are capable of providing the level of protection for the range of flood events to which they are designed, up to and including the flood of record. RIP is a component of the Levee Safety Program. Levees that meet USACE RIP requirements are eligible for federal funding to repair levees damaged by flood events (Public Law 84-99; USACE undated).

Through the accreditation process, FEMA makes property within a levee-protected area eligible for subsidized coverage under NFIP in accordance with the provisions of 44 CFR § 65.10. FEMA accreditation provides minimum requirements for flood zone designations on Flood Insurance Rate Maps. Part of its accreditation process involves receiving and reviewing documentation that the levees will protect the property behind them from flood events that have a one percent probability of occurrence in any given year (referred to by FEMA as the “base flood” event).<sup>12</sup> FEMA accreditation is thus focused on flood events of less severity but greater statistical frequency than USACE’s Levee Safety Program. FEMA accreditation makes property owners within the levee-protected area eligible for federally subsidized flood insurance under NFIP. (FEMA 2005, 2007, 2008, 2010a, and 2012).

### *Exhibit 2: Levels of Flood Protection and Selected Terminology*



In making determinations for their respective programs, USACE and FEMA focus on the core levee structure, referred to as the “levee embankment.” “Overbuild” is material added by non-federal parties to the top and/or sides of the levee embankment to enhance protection or for other purposes.<sup>13</sup> For example, a parking area on the levee near the Bridgeton neighborhood was built on overbuild.

<sup>12</sup> The “one percent probability of occurrence” flood event was previously referred to as a “one-hundred-year” flood event. Both USACE and FEMA moved away from the one-hundred-year terminology believing it misleading. The implication of the old terminology is that such an event is likely to occur only once per century. In reality, there is a one percent statistical probability that such a flood could occur in any given year. The revised “one percent” terminology better reflects this reality.

<sup>13</sup> USACE refers to additional material it adds to an existing levee as a “levee enlargement.” Once construction is completed, the enlargement is considered part of the levee embankment. See EM 1110-2-1913, section 8.12 (USACE 2000).

The USACE and FEMA programs do not operate in complete isolation from each other. For example, FEMA may review findings from USACE RIP inspection reports in making NFIP determinations.

As noted above, FEMA requires documentation certifying that the levee system will protect from base flood events as part of its NFIP accreditation process (FEMA 2005, 2008, and 2012). This documentation may be prepared by a licensed civil engineer hired by the applicant (FEMA 2010b). In some cases, the applicant may request USACE to prepare this documentation where certain requirements, such as a federal sponsor within the jurisdiction, are met. USACE's Engineering Circular 1110-2-6067 (EC 6067), issued in 2010, provides the levee system evaluation procedures to be followed by USACE under such circumstances.

## B. MCDD Levee Accreditation and Recertification for NFIP

FEMA last updated its Flood Insurance Rate Map for the districts' service area in 2007. In preparation for this update, MCDD contracted with USACE to prepare its NFIP certification documentation for all four districts. USACE certifications were completed and MCDD levees accredited under NFIP.

2010's EC 6067 required USACE field offices to review levee system status and documentation for levee systems for which USACE was on record with FEMA as having provided a positive NFIP evaluation. During this required review of the levees in Pen 1 and Pen 2, USACE identified that Pen 1 and Pen 2's previous certification did not meet the intentions of the revised engineering circular.

USACE subsequently informed Pen 1 and Pen 2 that their NFIP levee certifications would expire in August 2013. MCDD#1 and SDIC received similar notices stating that their certifications for the NFIP will reach the end of their maximum period of validity in June 2017. (USACE 2013a, 2013b, 2013c, and 2013d).

The termination of USACE certifications does not mean that the districts' levees will automatically lose their accreditation under FEMA's NFIP. The levees will continue to be accredited under the NFIP program until FEMA completes a new FIRM. Once the FIRM remapping process is initiated, FEMA will request NFIP certification documents from the districts in order to accredit the levees and show the levees as providing base flood protection on the new FIRM. As of this writing, MCDD anticipates hiring a licensed civilian engineer to prepare that documentation.

As of this writing, FEMA's timeline for initiating a FIRM remapping process and requesting the NFIP documentation is uncertain. Once initiated, FEMA has indicated that this process usually takes between two and three years, but that it may be completed within as little as two years. Therefore, it is imperative to begin the NFIP certification process immediately to ensure continued accreditation by FEMA.

All four districts received letters in February or March of 2011 regarding the results of a Periodic Inspection under USACE's RIP. Each of those letters indicated that there were deficiencies of concern to USACE that may affect the NFIP certification process. However, each district received a "Minimally Acceptable" rating in the Periodic Inspection, indicating that they continue to be eligible for federal flood assistance under PL 84-99. (USACE 2011a, 2011b, 2011c, 2011d).

FEMA has notified MCDD that it is reviewing its flood mapping criteria. One recent change is the extension of the "flood area" on the FIRM from its previous boundary at the levee's

waterside toe to the landside toe. This change places any buildings on the levee within the flood area. (See Exhibit 2 above.)

If the levee systems lose their FEMA NFIP accreditation, areas behind the levee will be mapped as high-risk areas. Property owners would lose their eligibility for federally subsidized flood insurance and would be required under federal law to carry flood insurance where property is mapped within a Special Flood Hazard Area.<sup>14</sup> In addition, accreditation clarifies requirements for new development and redevelopment in areas that would otherwise be regulated as floodplain. Accreditation will maintain current economic development and encourage new economic growth in the districts.

In summary, Pen 1 and Pen 2's NFIP certification will expire in August 2013. MCDD has elected to hire a professionally licensed engineer to complete the new certification documentation and identify the scope and amount of levee work needed. In order to maintain NFIP accreditation, Pen 1 and Pen 2 will need to demonstrate compliance with the provisions of 44 CFR § 65.10. MCDD#1 and SDIC face the same but less immediate issue when their certifications reach the end of the maximum period of validity (ten years) in August 2017.<sup>15</sup>

Several respondents expressed a desire to go beyond the minimum standards required by USACE and FEMA. They suggested that the district boards should look more strategically to execute a broader corrective plan, taking things beyond minimal standards in the interest of public safety to ensure the entire levee system continues to provide "solid," dependable protection. They also recommended that the districts develop a broader plan that collaboratively and holistically addresses environmental issues, potential changes in the Columbia River Treaty with Canada, ecosystem improvements, and other potential issues that the districts may face.

Appendix 5 presents a timeline of events related to MCDD's NFIP certification and accreditation.

### 4.3 | 2007 Tree Removal and Its Impact on MCDD's Approach to Business

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The second significant event is related to the levee accreditation issue but precedes it chronologically.

As noted above, MCDD employed USACE in 2007 to complete an evaluation required to seek levee accreditation. During this evaluation, USACE determined that tree roots growing on the levee near the Bridgeton neighborhood in Pen 2 were not compliant with established guidelines and threatened levee integrity. USACE directed their removal as a condition should MCDD choose to pursue accreditation. With approval of the Pen 2 Board of

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<sup>14</sup> Lenders may require purchase of flood insurance even where property is located outside of the SFHA (FEMA, 2011, p.11).

<sup>15</sup> The foregoing is a simplified discussion of very complex, technical requirements and processes. Consequently, comments herein should not be taken as complete authoritative descriptions of either USACE or FEMA programs or requirements. For specific requirements, readers should consult appropriate USACE and FEMA policy and guidance documents or contact those agencies directly.

Supervisors, MCDD performed a number of actions toward accreditation, to include complying with USACE's direction to remove the trees.

Several respondents viewed this as a key transition point in the relationship between MCDD and residents within the districts. Prior to this point, the management and operations of issues related to the levees was mostly carried out by MCDD without much community involvement or interest other than that expressed through the districts' supervisory boards. According to respondents, MCDD initially approached this task as a technical issue fully within MCDD's authority and, from MCDD's perspective, not requiring any public outreach.

Consequently, there was little communication with or explanation to the community by MCDD as to the reasons USACE believed the tree removal to be necessary. As one respondent phrased it, MCDD was initially "very cavalier" in its reaction to residential concerns. Neighborhood representatives reacted strongly to what was perceived as a heavy-handed, bureaucratic action that many in the neighborhood believed unnecessary. A number of angry meetings followed. Eventually, MCDD staff and the neighborhood negotiated a resolution, with new trees planted in an area behind the levee to mitigate for those removed.<sup>16</sup>

All involved – including the MCDD staff – believe this issue should have been handled in a more sensitive manner. The significance of the event is that it is the first time in recent memory that the general public became involved in seriously questioning a levee-related action. MCDD staff have subsequently come to appreciate non-technical interests in levee management, such as the increased interest in recreation opportunities and sensitivity to the impact of the levee operations on the environment. Nevertheless, despite MCDD's assurances of following more collaborative approaches in the future, hard feelings among some residents over the 2007 tree removal event still remain.

Moreover, 2007 does not mark the end of levee tree removal. USACE has identified other vegetation they believe encroach on levee integrity that must be removed.<sup>17</sup> However, such vegetation along the river and slough banks also provide food and cover for fish listed under the Endangered Species Act (ESA). Such removal may require consultation with the appropriate federal regulatory agency (for salmon, the National Marine Fisheries Service).

## 4.4 | Stormwater Fee Assessments

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The third significant event was a decision by the City of Portland to take over billing for stormwater services within the districts.

An intergovernmental agreement (IGA) was signed between MCDD #1, Pen 1, and Pen 2 and the City of Portland in 2000. Under the IGA, the City stopped billing individual residents for stormwater management services within those districts beginning July 1, 2000 (City of Portland 2000). Instead, residents and businesses located in the three districts within the

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<sup>16</sup> Despite a City of Portland ordinance requiring one-for-one mitigation of removed trees, only a fraction of the number of trees removed were planted, due to limited available land.

<sup>17</sup> USACE vegetation management standards for levees are found in document ETL 1110-2-571, *Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures* (USACE 2009). It is available online at [http://publications.usace.army.mil/publications/eng-tech-ltrs/ETL\\_1110-2-571/ETL\\_1110-2-571.pdf](http://publications.usace.army.mil/publications/eng-tech-ltrs/ETL_1110-2-571/ETL_1110-2-571.pdf).

City of Portland limits would pay a pre-specified amount to the City of Portland to be collected by MCDD.

The purpose of the original agreement was to achieve equity between stormwater customers within the jurisdiction of the districts and ratepayers within the jurisdiction of the city. It recognized the stormwater services provided by the three districts to the City and codified that payments from the districts to the City would constitute the full payment required from residents within the districts. The IGA was written to last ten years, with the option to renegotiate it at five-year increments. As part of each renegotiation, the IGA would be extended to last ten years from the date of the renegotiation. The parties were unable to reach agreement during renegotiations in 2007, and the City notified the districts that the agreement would expire on June 30, 2012. (City of Portland 2012).

The City asserted that restoring direct billing to citizens residing within the boundaries of the districts is necessary for equity and to fund off-site stormwater management costs that other Portland residents are required to pay. In acknowledging the services that the districts provide for stormwater management as well, the new ordinance states: "An equitable rate structure must reflect both of these contributions" (referring to the districts' stormwater services and property owners' on-site management of stormwater runoff). Direct billing by the City for stormwater services began July 1, 2013. Although customers in the districts' boundaries automatically receive a thirty-five percent discount through the Clean River Rewards stormwater discount program (City of Portland 2012), the change still represents a significant increase in stormwater fees charged to district residents.<sup>18</sup>

## 4.5 | Emerging Trends

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The three catalyzing events identified above—maintaining levee accreditation, the tree removal issue, and the stormwater fee issue—created an awareness among respondents of five broader trends within which these three specific events occurred. These were characterized as (1) changing demographics and associated interests within the districts; (2) changing regulatory regimes within which MCDD operates; (3) changing sensitivities regarding the effects of levee operations on ecological processes; (4) a growing interest in incorporating recreation uses into levee planning and operations; and (5) recognition of the city-wide benefits the districts provide for stormwater management and flood control and interest in allocating associated costs accordingly.

### A. Changing Demographics

The districts' levees were first built between 1915 and 1920 when local farmers wanted to provide local flood protection to allow them to farm year-round. They established Pen 1, Pen 2, and MCDD#1 in 1917 as special districts to assess equitable fees and maintain the levees. (MCDD 2007 and 2010).

At that time there were only 500 homes and most of the land was either unimproved or used for farming (MCDD 2010). However, by mid-century, residential neighborhoods became established, the residents of which worked in local manufacturing and other industrial activities. For example, the City of Vanport was established in 1943 as a public

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<sup>18</sup> Respondents also referred to a "graduated rate structure," a comment we did not pursue in the interest of time. However, given the interest in costs, it should be explored in greater detail and the explanation shared with district stakeholders.

housing project to house workers at the Kaiser Shipyards in Portland and Vancouver. At its peak, Vanport's population was about 40,000.<sup>19</sup>

This demographic shift away from agriculture to more commercial and residential land uses continued, bringing with it increases in property values. As of 2010, the four districts contained over 2000 landowners and over 12,000 acres of improved land. Only 50 acres of farmland remain. (MCDD 2010). The levees also protect about 43,000 jobs (US Census Bureau 2011) and many businesses along with several residential neighborhoods.

## B. Changing Regulatory Regimes

As the populations within the districts' service area and surrounding communities has grown, to too have the impacts of activities by one on the other. Consequently, the districts are faced with increasing regulatory and ordinance requirements. MCDD's *Strategic Plan 2011 - 2015* identified sixteen jurisdictions with some level of regulatory oversight over the districts' activities (2010, p.7). The increasing number of permits that must be obtained in order to complete work in various jurisdictions is evidence of both changing regulatory regimes and changing ecological sensitivities at the local, state, and federal levels. Some respondents noted frustration with increasing layers of regulations associated with getting work done. These overlapping jurisdictional responsibilities require a greater degree of interjurisdictional coordination and compliance in order to carry out district projects.

The Bureau of Development Services in the City of Portland has revised city ordinances and created memoranda of understanding to accommodate some of the more common work processes of MCDD to avoid repetitious permitting processes. However, this process requires a close working partnership between permitting agencies and the districts in order to be effective.

## C. Changing Ecological Sensitivities

The change in district demographics, coupled with shifts in national values beginning in the 1960s brought concerns over levee operation on the environment. Increased regulatory requirements related to water quality and fish and wildlife affected traditional district operations and practices. One respondent suggested that perhaps the districts could see their mission as more expansive in terms of habitat restoration activities. For its part, MCDD defines itself as secondarily an environmental organization. Most respondents identified this increased environmental awareness as a strength, and none expressed any opposition to it. Some board members expressed a feeling that MCDD makes a large effort to leave environmental areas in better condition than they were found. For example, efforts to plant trees, construct benching within ditches to encourage wetland formation, create meandering streams, and other improvements show an effort to be good stewards.

## D. Growing Recreational Interests

Land use reflects the role played by the area as a recreational destination for local residents and surrounding communities. Marinas, Metro's exposition center, public and private golf courses, the Portland International Raceway, and Portland Meadows Racetrack are major components of the Portland metropolitan area's recreational opportunities.

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<sup>19</sup> Vanport was located in the western half of the districts' current service area.



These facilities are consumers of (and fee payers to) the districts' flood protection and stormwater services. Of more direct impact to MCDD operations is the interest by some respondents in integrating recreational opportunities in the levees themselves. Hiking and biking trails exist or are proposed on and near the levees, and canoe and kayak launches are being developed along the Columbia Slough. One respondent would like the districts to expand their mission to include such levee-related recreation activities.

## E. Recognition of Stormwater and Flood Protection Benefits Provided to Surrounding Municipalities by the Districts

When first established, the districts' primary purpose was to protect farmland from external flooding from the river and internal flooding by stormwater. These functions occurred in relative isolation from the surrounding area.

As that area has become more developed, a growing amount of stormwater within the districts is the effect of runoff from nearby communities. Additionally, as recognized by Portland, stormwater fees collected by the districts from district residents did not account for indirect costs of the system (such as the Combined Sewer Overflow project) paid by other city residents.

In a similar vein, flood protection within the districts was largely seen as a local benefit. Inspired in part by Portland's interest in recovering a larger amount sewer and stormwater fees from district residents, MCDD noted that district flood protection provides benefits to the greater Portland area for which Portland and other local municipalities do not pay. Examples include protection to the Portland and Troutdale airports and Portland's emergency water supply wells.

As several respondents pointed out, there is now a need for a more equitable and integrated manner to allocate these shared costs and benefits.

## 4.6 | External Effects and Events

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Some issues identified by interviewees are driven by events or parties external to MCDD's normal business. These include the effects of climate change, the outcome of the Columbia River Treaty Review, the possibility of a large earthquake in the area, the proposed Columbia River Crossing project, and increasing environmental regulation.

### A. Climate Change

Climate change could impact sea level, rainfall and snow patterns, and seasonal water flows (ODOE, undated). Increased river levels due to climate change raises a question as to whether the levees will still be considered sufficient under the USACE and FEMA standards over coming decades. Changes in rainfall could also affect the capacity of the districts to manage excess internal stormwater flows. Some respondents raised questions regarding the height sufficiency of some of the levees. Such problems could be exacerbated by a rise in the river levels.

Floods in the Portland metropolitan area derive from precipitation falling as snow and rain. Snow-based flows are relatively predictable. Federal and state agencies carefully monitor the depth of snow that accumulates in the mountains each winter. The spring runoff occurs at fairly predictable rates. USACE and the Bureau of Reclamation operate those reservoirs that are designed and operated for system flood control in a manner that manages that



runoff. Additionally, the Columbia River Treaty with Canada provides additional spring flood protection from reservoirs located in Canada.<sup>20</sup>

Much less predictable are rain-based events. So-called “pineapple expresses” coming off of the Pacific Ocean or other major storms can dump large quantities of water in relatively little time, potentially overwhelming the reservoir system’s ability to respond. Most projections for the impact of climate change on the Pacific Northwest anticipate more rain and less snow, with a correspondingly greater variability in river flow rates.

## B. Columbia River Treaty Review

On May 30, 1948, a spring flood caused major damage from Trail, British Columbia, to Vanport, Oregon. The flood destroyed Vanport, at the time the second largest city in Oregon. As part of its response, the US government passed the Flood Control Act of 1950 and negotiated the Columbia River Treaty with Canada (US Entity 2009). The Flood Control Act authorized USACE to raise and strengthen the districts’ levees, projects that occurred between 1950 and 1961 (MCDD 2007). The treaty was signed in 1961 and implemented in 1964. The treaty brought significant flood control and power generation benefits to both countries. (US Entity 2009 and 2012).

In exchange for constructing the dams and providing sixty years of assured flood storage, Canada received a lump sum payment and entitlement to one-half of the increase in US generated electricity attributable to the treaty as estimated at the time. At any time after September 16, 2024, either Canada or the United States can terminate most of the treaty provisions provided they provide the other party with at least ten years written advance notice. Consequently, the earliest point at which any such notice may be delivered is September 16, 2014. Unless so terminated, most of the treaty’s provisions continue indefinitely. Among those that do not continue are the provisions on flood control. (US Entity 2009 and 2012).

The sixty-year purchase of assured flood storage ends in 2024. The Treaty gives the U.S. rights to storage in Canada after that time, but that operation fundamentally changes to a protocol referred to as “called upon” flood risk management. In essence, the US may call upon the Canadian government to provide flood control after making “effective use” of US flood storage capacity.<sup>21</sup> The US, in turn, would compensate Canada for the storage requested. (US Entity 2012).

Under effective use, some US reservoirs operations would change to primarily reduce flood effects. As a result, those reservoirs might be drawn to lower water levels more frequently than they are now. Canada would also likely operate its dams differently, such as to increase hydropower output or for other purposes. Due to the natural variability in river flows and how critical forecasting is to flood storage operations, implementing effective use may limit the ability to refill a US reservoir at the end of the spring runoff. Failure to refill could affect the ability to meet other needs later in the season, such as providing water for irrigation, summer fish flows, and/or recreation. (US Entity 2012).

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<sup>20</sup> The reservoirs in Canada provide about fifty percent of the Portland metropolitan area’s annual flood protection.

<sup>21</sup> A difference of opinion exists between the US and Canada on the meaning of “effective use.” The US asserts it only refers to US projects specifically authorized by Congress for Columbia Basin (or “system”) flood control. Canada asserts that it refers to all US dams in the Columbia River and its major tributaries.

The implication for the districts is the potential for an altered flow regime in the lower Columbia should the treaty be either terminated or significantly modified. Such changes, should they occur, may affect district levee operations and maintenance requirements. At this writing, ten US federal agencies, the states of Oregon, Washington, Idaho, and Montana, and fifteen Indian tribes, with input from regional stakeholders, are engaged in a collaborative process to develop a regional recommendation regarding the treaty's future. That recommendation is due to the Department of State no later than December 2013. The Department of State will then use the regional recommendation to inform its negotiations with Canada. Regardless of the outcome of this process, no operational changes under the treaty can be made until 2024.

### C. Earthquake Readiness

Some respondents questioned whether the levees, in addition to meeting Corps flood-of-record and FEMA base flood requirements, would withstand earthquake damage. The Cascadia Subduction Zone is a fault line about 75 miles off the Oregon coast where two plates meet. Portland would be affected by an earthquake and aftershocks resulting from such seismic activity (Mesh 2010). The concern raised is the structural integrity and capacity of the levees, given their age, after a large magnitude quake. The specific question was whether FEMA and USACE standards meet seismic criteria and, if so, to what magnitude. Another question was whether any improvements to the levees would take into consideration the best available seismic readiness information.

### D. Columbia River Crossing (CRC)

For several years, the states of Oregon and Washington have been coordinating an expansion of the Interstate 5 highway across the Columbia River. As of this writing, it does not appear that the project as currently envisioned will be constructed. However, the need to improve traffic flow on Interstate 5 between Portland and Vancouver remains. Regardless of what form needed improvements eventually take, construction will likely occur within the Pen 1 area and potentially affect a Pen 1 levee. Consequently, MCDD will need to develop early and frequent coordination with bridge project managers and designers to ensure continued protection should a flood event occur during the construction period.

### E. Future Environmental Regulations

As global warming and development continue to affect the built and natural environment, environmental regulations will likely be modified in the future to adjust to changing conditions. Modeling for example, a flood protection level higher than the current one percent probability per year event is likely in the future, especially if flooding events become more common. Other environmental regulations that could affect levee maintenance may deal with effects on habitat for endangered or threatened species and stricter regulations dealing with water quality.

## 4.7 | Funding

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### A. Economic Reports from ECONorthwest

#### **Levee Fees Report**

In December of 2012, ECONorthwest completed a study for MCDD about levee fees under the new circumstances of changed levee regulations. The total costs associated with complying with the new regulations could be sufficient to deter economic development in the affected area. The report notes that the levees managed by MCDD protect several jurisdictions in the area as well as billions of dollars of local assets such as businesses, the Portland International Airport, reserve drinking water wells, and the Expo Center. ECONorthwest recommended identifying secondary beneficiaries of MCDD's services (i.e. those outside of MCDD's jurisdiction) and charging them proportionally for the amount of benefit received. (ECONorthwest 2012a).

The report identifies a "mismatch" between the beneficiaries of flood protection and stormwater services provided by MCDD and those who are paying for the costs of the services (p. 3). It recommends spreading costs of services to those who benefit from the services, but does not identify whether this is politically, legally, or administratively possible given the state and local laws. (ECONorthwest 2012a).

The costs associated with the FEMA process will come in three phases. The first phase is to identify the encroachments and structural issues with the levees that must be addressed. Phase II will include developing a long-term plan to address future levee encroachment issues. Phase three will be to actually implement the repairs and encroachment removals necessary for USACE and FEMA standards.<sup>22</sup> (ECONorthwest 2012a).

The current estimate for investigation for all four districts is about \$5.5 million. Pen 1 and Pen 2 represent about \$2.7 million of that amount.

#### **Stormwater Fees Report**

MCDD hired ECONorthwest to complete an additional report on stormwater fees that was also completed in December 2012. The districts' current capacity for stormwater is for a 100-year rain event, but the current design only addresses stormwater collected within the boundaries of the jurisdiction. This is a challenge because the districts also manage stormwater from surrounding communities that flows into the districts' jurisdiction and creates excess flooding risk for persons and property within the districts. Additionally, federal regulations require capacity to manage this excess stormwater, which will require additional costs. Such an upgrade would benefit only the City of Portland and its residents; the report recommends that the beneficiaries should pay for such an upgrade and for the proportion of stormwater management MCDD performs for them. (ECONorthwest 2012b).

The City of Portland contends that the city-wide stormwater system it maintains benefits all residents of Portland. The City recuperates the cost of this city-wide system through "transportation" stormwater fees (ECONorthwest, 2010b, p. 7). However, according to

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<sup>22</sup> The ECONorthwest report on levee fees contains a great deal of additional detail regarding specific assets and other financial information regarding property protected by the levees.

MCDD's calculations, around 50% of the volume of water during a 100-year rain event within MCDD's jurisdiction will originate from properties outside of the districts' boundaries.

## B. Current Funding Structures in the Drainage Districts

The districts currently assess landowners in the district based on acreage and a few other factors. For example, in Pen 1 the assessments are based on acreage only. In Pen 2, MCDD, and SDIC, there is a general assessment based on acreage plus two levels of stormwater assessments based on impervious area owned.

The current system is unable to assess fees on those outside the district that benefit from district stormwater and flood protection services.

According to some respondents, MCDD has worked hard to keep costs to landowners down, perhaps to their own detriment by creating an expectation of low assessments and not being able to amass large sums of money to pay for needed large projects. A common attitude of respondents was that, to be equitable, levee costs should be shouldered by all who benefit from flood protection and not just the landowners within the districts. By examining who benefits and potential sources of revenue, MCDD may be able to come up with enough money to make the repairs needed. In order to change the cost drivers, MCDD would need to receive permission from the county (currently the cost drivers include, for example, levees, overhead, and stormwater).

## C. Equity and Cost-Benefit Balance

After reflecting on the City's equity argument regarding stormwater fees, MCDD pointed out that the flood protection offered by the districts' levees and other facilities provided significant benefits to Portland residents for which those located outside the districts do not pay. For example, preventing flooding of Portland International Airport and the wells providing the City's emergency water supply benefit the entire City. Thus, in the interest of equity, the City should be willing to shoulder a proportional share of the expense of maintaining the levee system – especially given the anticipated cost of meeting the NFIP certification requirements.

The City acknowledged MCDD's contribution to stormwater services in its ordinance. It also acknowledged the validity of MCDD's flood protection argument. However, as of this writing, a mechanism for quantifying the value of the benefits and equitably sharing costs (through taxes, service fees, or some other approach) has not been established.

As noted above, the districts manage stormwater from areas outside of the districts. One potential avenue that should be evaluated by a legal professional is ORS 549.180, which prohibits a "person" from causing additional water to flow into a drainage district without reasonable compensation and permission. However, it is not clear whether this provision would apply to a governmental entity, which by its drainage system causes excess water to flow into the jurisdiction of the drainage districts.<sup>23</sup>

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<sup>23</sup> The text of the statute is as follows: "549.180 Bringing additional water into ditch without payment of compensation prohibited; civil liability. No person shall tap or bring additional water into any drainage district or drainage district ditch already dug without paying a reasonable compensation therefor and securing the written permission of district officials. The criminal penalty for violation of this section shall not relieve the defendant from civil liability for damages."

## D. Adequacy of Current Funding and Potential Costs

MCDD's budget is about \$3 million annually from assessments paid by constituents within the district. To contrast, the City of Portland's budget for 2013-2014 will be about \$2.62 billion. (City of Portland, undated). The accreditation process could potentially cost in the tens of millions of dollars. Thus it is obvious that MCDD's budget is not adequate on its own to pay for the costs of making the repairs necessary to maintain FEMA NFIP accreditation. Assessments would need to be raised several times over in order to raise enough money, and the amount is not yet certain. Based on the reaction of residents to the stormwater fees issue, raising rates in the districts by the amount necessary to cover accreditation would likely be cause for significant concern among residents if not properly explained and managed. Thus, outside sources of funding may need to be sought to help share the costs of accreditation equitably.

## E. Stormwater Fees

In addition to the stormwater fees controversy outlined above in 1.1.D, the drainage districts could tap an additional source of funding by charging for stormwater runoff management by users outside of the district boundaries. For example, MCDD#1 handles stormwater from the City of Gresham without charge. Further research needs to be completed to see if this is a viable source of revenue for the districts. The report from ECONorthwest (see Section 3.8.A.2) addresses this issue in more detail, but does not address the feasibility of making this change. Further research into this possibility would be needed prior to pursuing this avenue.

## 4.8 | Governance

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We found strong support for a collaborative process to address the combination of specific events, emerging trends, and external effects and events. As one respondent put it, MCDD has four strategic needs: (1) a capacity for flood fighting, (2) the ability to maintain the structural integrity of the levees and associated certifications and accreditations with USACE and FEMA, (3) a sustainable financial model, and (4) a governance structure that meets future needs and is not limited to the historic pattern. The majority of respondents do not believe that changes to the districts supervisory board structures are necessary. However, there is widespread interest in at least identifying alternative management and decision making arrangements and analyzing the implications of those alternatives to determine whether a better structure can be found.

This subsection begins with a description of the current governance structure. This discussion is followed by a listing of the strengths of and concerns with the current system as identified by interview respondents. Among the concerns was a question of whether other interests should be invited to participate in future collaborative processes. Respondent answers to that question are listed. We conclude with four governance alternatives identified by the respondents. These alternatives are not all inclusive or mutually exclusive. Other options likely exist, as does the option to combine elements of each.

### A. Description of Current Governance Structure

Pen 1, Pen 2, and MCDD#1 all date to 1917. SDIC was established in 1939. Four separate districts were established instead of one due to differences in the issues facing the area

landowners, differences in landowner debt load, and different capitalization requirements for each section of levees.<sup>24</sup>

At the time of establishment, most of the land within the districts' current service areas was devoted to farming. As stated in ORS section 547.005, the owners of at least fifty percent of "the acreage in any contiguous body of swamp, wet or overflowed lands or irrigated lands...may form a drainage district for the purpose of having such lands reclaimed and protected by drainage or otherwise from the effects of water, for sanitary or agricultural purposes, or when the same may be conducive to the public health, convenience and welfare or of public utility or benefit." The practice of assigning one vote per acre of land dates to that period based on the logic that those with the largest land holdings were most affected by levee operations and were bearing a corresponding burden of cost. Although land use shifted from agriculture to more commercial enterprises and residential uses over the years, the tradition of one-vote-per-acre has carried forward to this day.

Following a major flood in 1996 that originated in the Tualatin and Willamette River basins, USACE reviewed flood protection policies and procedures throughout the Portland metropolitan area. Within Pen 1 and Pen 2, USACE found instances of weak record keeping, a lack of staff capacity, and impermissible levee encroachments. The encroachments included utility lines, drainage pipes, and vegetation.

As a result of that review, Pen 1, Pen 2, and SDIC entered into service and management agreements with MCDD#1 in 1997. Those agreements allow MCDD#1's fourteen-person staff to perform planning, operations, maintenance, construction, finance, administrative, and interjurisdictional coordination functions for all four districts. (MCDD 2007).

Each district remains politically independent and has a separate Board of Supervisors or Directors elected by each district's property owners. Each board member must be a landowner within the district on whose board they serve. (MCDD 2007; ORS 547). Board supervisor and director positions are unpaid. These boards provide governance and assess fees for their respective districts. Due to the practice of one-vote-per-acre, board membership is and has been predominately comprised of private business owners or representatives of large public enterprises. In general, board members are well known to each other and considered politically well connected.

The districts' service area also includes many natural areas and the Columbia Slough is increasingly perceived to be an important ecological and recreational resource.

A discussion of each district and the procedures for inter-district coordination between boards follow.

### **Peninsula Drainage District No. 1**

Pen 1 is a special purpose local government organized under Oregon Revised Statute (ORS) Chapter 547. District landowners form its legal constituency.

Public entities own eighty percent of the land within the district's service area. The remaining twenty percent is owned by small businesses. The City of Portland and the metropolitan regional government (Metro) are the largest landowners. Among the public

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<sup>24</sup> Neither the interview respondents nor documents reviewed for this report provided greater detail as to what those historic differences might have been.



enterprises within Pen 1 are the Portland International Raceway, the Metro Exposition Center (EXPO), and Herons Lake Golf Course. (MCDD 2007).

Pen 1 is governed by a five-member board of supervisors. Current board members include representatives from EXPO, the City-owned raceway, and two private businesses. One seat is vacant.

### **Peninsula Drainage District No. 2**

Like Pen 1, Pen 2 is a special purpose local government organized under Oregon Revised Statute (ORS) Chapter 547. District landowners form the district's legal constituency.

The district contains a mix of commercial, residential, and farming uses. Developments inside the District include the Columbia Edgewater Country Club, Delta Park, Portland Meadows racetrack, several large trucking and trucking-related companies, and Federal Express. Residential areas make up 35% of the District's area. (MCDD 2007).

Pen 2 is also governed by a five-member board of supervisors. Current board members include representatives from two businesses, two residential representatives, and one member who is a business owner that also lives in the district. The board rotates in two year terms so that all of the positions are not up for election at the same time.

### **Multnomah County Drainage District No. 1**

MCDD#1 is also a special purpose local government organized under Oregon Revised Statute (ORS) Chapter 547. As with Pen 1 and Pen 2, local landowners form its legal constituency.

MCDD#1's service area includes the Portland International Airport, the City of Portland well fields, numerous businesses, and several residential areas around Blue and Fairview Lakes. The Port of Portland (owner and operator of Portland International Airport) is the largest landowner managing forty-seven percent of the district's land. (MCDD 2007). The levees in MCDD also protect the wells that provide Portland's emergency drinking water supply.

MCDD#1 is governed by a five-member board. Current board members are representatives from the Port of Portland, three business owners, and one homeowner. There is also one Port of Portland liaison to MCDD who is not a board member.

### **Sandy Drainage Improvement Company**

SDIC was originally established as a drainage district in 1939. In 1998, it reorganized and incorporated as a non-profit public corporation under the provisions of ORS 554. As with its sister districts, local landowners form SDIC's legal constituency.

The District contains many small to medium-sized businesses and the Troutdale Airport. It has over 800 acres of undeveloped vacant land. Jurisdictions include the cities of Troutdale and Fairview. (MCDD 2007).

SDIC is governed by a three-member board of directors. Current board members are representatives from the Port of Portland and two business owners.



## Cross-district Coordination

The four drainage districts originated as separate entities due to the unique geographic and economic circumstances facing local landowners and differences in capitalization requirements and debt load at the time. This historical legacy has carried through to the present day. A number of respondents indicated that, although the idea of consolidating the districts comes up every few years, differences in district costs, finance requirements, and the mix of interests and issues in each district perpetuated the independent four-district system. As one respondent put it, "debt and need kept the fences up." Consequently, except for the unifying influence of operations being consolidated under MCDD, no formal structure exists to foster effective coordination between the four districts.

Trends of a growing population, the evolution from agricultural to commercial and residential land uses, and growing interests in the environment and recreational pursuits challenged this traditional approach. Accordingly, as indicated by respondents, "about three years ago" the district boards adopted an informal process to collaborate on their common interests.

The boards initiated two sets of meetings. The first is an informal monthly meeting of representatives from the four boards. The purpose of these meetings is to share information and coordinate on issues that merit the joint attention of the district boards. These meetings are not open to the public.

The boards convene periodically for the second type of meeting.<sup>25</sup> Respondents stressed that the purpose of these meetings was information sharing, education, and training and not co-management. The periodic meetings are advertised and open to the public, but attendance by other than board members and the MCDD staff is usually low.

The levee certification and stormwater issues highlighted a need for better coordination between the districts. A few respondents suggested the levee certification crisis was a good thing in that it forced the issue of better district collaboration onto the table. One respondent summarized the situation as one where a clear need exists for everyone to work together because "either we all lose or we all win."

## B. Strengths and Concerns with the Current Governance System

We begin this subsection by again acknowledging the strong support and respect that the current MCDD governance structure enjoys among almost all interview respondents. As one respondent enthusiastically put it, MCDD is the "most efficiently run government in the world." That said, even the strongest supporters acknowledged room for improvement in the current governance system, especially as the districts look to future needs.

We also note the influence that the 2007 tree removal issue within Pen 2 has on governance discussions. There is little interest in returning to a process where the boards and MCDD carried out their duties unilaterally without some degree of public engagement.

The following bulleted lists present the strengths of the current system at least one respondent believed should be preserved and concerns that at least one felt should be

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<sup>25</sup> Respondents varied on their description of how often these periodic meetings occur. One said "once per quarter," another "four or five times per year," and yet another "once per year." We have not reconciled these response discrepancies. We surmise that the different responses are due to these meetings occurring with varying frequency each year.

addressed. Consequently, these do not represent consensus positions, and readers will note that several are inherently contradictory. We make no effort here to reconcile differences or judge the merits of one comment over another. Rather, we simply present the information as presented to us and defer the analysis and decision making to those who will engage in MCDD's envisioned future collaborative process.

### **Strengths to be preserved:**

- Compatibility with current land use. The current system is compatible with and responsive to the land use patterns within each district. For example, Pen 1's service area has no residential communities; Pen 2 and MCDD#1's do. Consequently, the interests, issues, and concerns in one district are different from the interests, issues, and concerns in another. The current structure of four districts respects and responds to these differences.
- Successful management of routine business. Historically, the four boards developed adequate budgets and assessed fees appropriate for the maintenance of flood protection and stormwater facilities within their respective districts. Up until the recent issue of levee certification and its potentially large levee improvement costs, the current structure and practices adequately met routine USACE and FEMA certification and accreditation requirements. Under this view, the current system works just fine for routine business.
- Voting and fee assessments based on acreage. District boards apportion stormwater fees among landowners based on the area of impermeable surface on each owner's land. The boards assess levee maintenance fees based on total acreage protected. The legitimacy of the historic practice of selecting board members on the basis of one-vote-per-acre is grounded in the perceived fairness that those with the most property at stake should pay the most for its protection and have a correspondingly greater say in decisions made. Large landowners believe this decision-making process to be fair and equitable. However, as noted below, this legitimacy is being challenged by the growth of residential communities and growing recreational and environmental interests who feel that the voting system is exclusionary.
- MCDD's low cost. Without exception, the district-based respondents want to preserve the low cost-of-service now provided by MCDD staff. They believe that transference of MCDD's responsibilities to Portland bureaus will result in substantially higher costs. The estimated amount of the anticipated increase varied among respondents, ranging from four- to ten- times the rates currently experienced. The primary reason given for these expected fee increases is the unionized nature of the City's work force, with associated higher labor rates and rigid work-rules.
- MCDD's responsiveness and competence. Coupled with MCDD's perceived lower cost structure is a high regard among district-based respondents for the MCDD staff's responsiveness and competence. MCDD critics and City bureau-based respondents share this perception alike.
- Positive working relationships. A number of district-based respondents cited the positive and constructive working relationships established by MCDD staff with the City of Portland, other local municipalities, Multnomah County, USACE, and FEMA. City-based respondents from Portland's bureaus also cited MCDD's reputation for cooperation, competence, and professionalism. All who made these comments strongly wish that those relationships be preserved.

- Unified approach to administration. Finally, respondents wish to preserve the unified approach to maintenance, operations, permitting, and other functions performed for the districts by MCDD staff.

**Concerns some respondents would like addressed:**

- Voting. Just as there are strong advocates for retaining the traditional vote-by-acre protocol, there are equally strong advocates for a shift to a vote-by-individual (or vote-by-household) process. Advocates for this change believe the vote-by-acre practice is an historic anachronism no longer applicable to changing demographics and interests within the districts. As one respondent noted, in one district, six large landowners can overrule the preferences of 312 residents. To these respondents, such a situation is not consistent with democratic principles.<sup>26</sup>
- Bias to business interests. Related to the critique of voting practices is the structural domination over district decision-making of public and private business enterprises. A few respondents expressed the concern that, despite the unquestioned good intentions of board members, residential and environmental issues can take a back seat to a general business interest in keeping costs low.
- Lack of transparency and oversight. One respondent stated that, when it comes to day-to-day oversight of MCDD activities, the boards move in an advisory rather than supervisory capacity. They are unable or unwilling to enforce sufficient accountability or control over MCDD. As a result, MCDD can act in a unilateral manner without coordination with affected parties. When asked, this respondent cited the 2007 tree removal as an example. Although this respondent noted that MCDD has operated in a more collaborative manner since, there are no structural measures in place to preclude such an approach from occurring again.
- Lack of holistic planning capacity. Although most respondents believed the current system does a good job with managing day-to-day business, it lacks the capacity for long range strategic planning. The individual district boards do not have the time or inherent expertise for such planning, and MCDD's structure is oriented to day-to-day operations.
- Lack of public awareness and interest. Most respondents acknowledged a general lack of engagement by the general population. Several estimated that up to ninety-five percent of residents were unaware of the issues facing the districts and show little interest in district governance. Interest increased in Pen 2 during the Pen 2 tree removal issue and the more recent levee certification and stormwater fee issues. Of those who commented, most believe that increasing public awareness and engagement pose a significant challenge.
- Limited opportunities for broader participation. Related to the lack of public interest is the lack of mechanisms for public participation and involvement. Although the periodic joint-district meetings are open to the public, there is no structural mechanism for involvement in more day-to-day activities.

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<sup>26</sup> It is not clear at this writing whether current state law would allow such a change in voting. ORS 547 specifically states that the decision to establish a drainage district is decided based on acreage owned. The legality of the proposed change will need to be explored further if such a change is to be considered. It may be necessary for the legislature to make a change or an exception to the law in order to pursue this option, if selected.

## C. Additional Groups and Interests

One of our interview questions probed whether the current governance structure adequately addressed the concerns of all of the institutional interests within the districts. This question in turn led to discussions as to who represents these other interests. As noted above, current board members predominately represent business and public enterprise interests.

Some respondents felt current practices, such as the “good neighbor” practices of MCDD and periodic joint board meetings, provided ample opportunity for people representing other-than-business interests to make their concerns known.

There was not a unified voice as to the breadth of desirable involvement by outside groups. Some respondents suggested there are several members and entities within the community that should be more involved in this process; others felt that the groups already involved were sufficient and that more participation would not enhance the process. Those who felt a more formal outreach to and inclusion of other groups named those shown in the following bulleted list. However, these suggestions were often accompanied by four caveats:

- First, not all of these groups necessarily have interests in the issues facing each individual district.
- Second, the additional groups would also not necessarily be interested in every issue collectively facing all four districts.
- Third, even if interested, these other groups may not be staffed to attend every meeting regarding every issue.
- Fourth, board members from any individual district will likely have limited interest or expertise in specific issues facing the others. Furthermore, board positions are voluntary and most board members have other jobs and responsibilities to which they must attend. It is probably unrealistic to expect them to devote the time needed to stay abreast of all issues in the other districts.

These cautions imply the need for a way to keep involved parties informed of the issues at hand and mechanisms for engagement should they choose to do so.

Respondents suggested the following organizations be considered (listed alphabetically) are:

- Business groups:
  - Columbia Corridor Association
  - Lenders (especially if NFIP certification is lost and banks threaten to call in their loans)
  - Insurance companies
- East Multnomah County Soil Conservation District
- Educational community. One respondent suggested that MCDD offered valuable learning opportunities in civics, community government, and public service. Specific suggestions:
  - Portland State University
  - Other local colleges

- Local schools
- Environmental organizations. The Columbia Slough Watershed Council already considers itself a constructive partner with MCDD on environmental and recreational issues. Other environmentally oriented organizations suggested include:
  - Columbia Riverkeepers
  - Audubon Society
  - Friends of Columbia River
- Federal Agencies:
  - USACE
  - FEMA
  - National Marine Fisheries Service (for ESA related issues)
- Metro
- Municipalities:
  - Troutdale
  - Fairview
  - Gresham
- Neighborhood Associations:
  - Bridgeton and East Columbia neighborhoods
  - Cully neighborhood
  - Others
- Portland City Bureaus. Several respondents believe that the City of Portland needs to be involved to a greater extent. For example, City regulations affect tree removal, setbacks, and other relevant issues that affect the levees and people who live near them. The City's ordinances have affected how those areas have developed and so some interviewees felt that greater participation would be appropriate. Specific bureaus identified were:
  - Bureau of Development Services
  - Bureau of Environmental Services
  - Bureau of Parks and Recreation
- State legislative delegation

## D. Alternative Governance Options

With the exception of one respondent, we found no strong support for changing the districts' current governance structure. The one respondent stated that major change is needed in

the makeup of the supervisory boards and the traditional practice of vote-by-acreage. As noted in Section 4.1, all respondents strongly supported MCDD continuing its central role in levee planning, coordination, maintenance, and operations provided it do so in a transparent and collaborative manner.

While there is general agreement in the efficacy of the current system, most respondents stated it worthwhile to at least examine alternative structures to see if improvements might be found. Interview respondents suggested four alternative governance arrangements. The first three included consolidation of the four districts, creation of a new planning district, and continuation the existing structure albeit with improved coordination.

Respondents also brought up a fourth option that would dissolve the existing drainage districts and integrate MCDD into the Portland city structure. However, none of the respondents from the districts, local businesses, or neighborhood associations supports this option. It was brought up only to acknowledge its existence as an option and - in the case of district respondents - to subsequently explain why it was unacceptable. These respondents recognize this option as a likely outcome should the "worst case scenario" identified in Section 2.3 come to pass.

Respondents who were city employees also acknowledged the consolidation of MCDD into one of the City bureaus as an option, but either did not voice an opinion as to its preferability or assumed that, if this were to occur, difficult conversations would need to occur to determine which bureau or bureaus would assume the responsibility. It was also suggested that because of how the bureaus in City of Portland are organized in contrast with the drainage districts, several bureaus may need to be involved due to their various responsibilities relating to the levees.

Several respondents noted that a key criterion for any new governance system is the ability to make authoritative decisions. Consequently, in their minds, those elected or selected to positions of leadership must be knowledgeable of the issues, options, and consequences involved in proposals brought up for consideration.

The discussion that follows identifies each of the four options identified by respondents and provides a short description of what each option entails. This is followed by a discussion of oversight and the potential advantages and disadvantages of each option. In this discussion, we depart from our protocol of only summarizing input from interview respondents. Rather, at the expressed request of MCDD, we combine respondent comments with our own thoughts as to the description and pros and cons of each proposal. We stop short, however, of making a specific recommendation. The intent is to provide sufficient information for a follow-on discussion by district residents as to how best to address the issues facing them.

### **Option 1: Consolidate the four district supervisory boards into one**

**Description:** This option entails dissolving the current four-district boards and replacing them with one board overseeing the current four-district area. This one board would perform the governance, fee assessments, and other functions currently performed by the four individual boards. The MCDD staff would continue to function as it currently does under the board's supervision. ORS chapter 198 governs consolidation of special districts.

**Oversight:** Board member election could be based on acreage owned or, if permissible under Oregon law, by popular vote. Alternatively, a hybrid approach could be followed. For example, a set number of seats (perhaps one each from the areas currently serviced by each of the current four districts) could be reserved for landowners to fill by election based on acreage owned. Another set of seats, perhaps allocated on the basis of one per neighborhood, could be filled by popular vote within those neighborhoods.

### Advantages:

- Consolidation into one board could foster the opportunity for broad, strategic planning and improved coordination of issues facing the four land areas.
- A revised voting protocol would be potentially more responsive to a fuller array of interests within the area.
- The area would retain the low cost, responsiveness, and competence of the current arrangement with MCDD staff. Consolidation presents no inherent risk to continuing to successfully carry out routine business and the unified approach to administration under MCDD would continue.
- Consolidation offers no inherent risk to the constructive working relationships now in place.
- Consolidation offers potentially more flexibility and efficiency by consolidating the current four budgets.
- Other concerns, such as improved public outreach and providing a voice for other interests, would not be precluded under this option.

### Disadvantages:

- A change in voting process to a population-based system may require a change in or legislated exception to current Oregon statute.
- There may be a loss of economies of scale. Some research finds that the effectiveness and price advantage of special districts is directly related to their smaller size and ability to tailor services to the needs of the small area. As the jurisdiction increases, economies of scale are lost because the services provided by the district will not exactly match the needs of all the people in a larger district (ICMA, 1987).
- The four districts consist of very different constituencies. For example, the City of Portland owns most of the land in Pen 1. MCDD#1 is comprised of mostly businesses and the airport. Pen 2 has a higher percentage of land area devoted to residential purposes than the other districts. Additionally, the structural pieces of the stormwater and levee system vary between the four districts. Consequently, the districts facing different levels of work required and money needed to complete necessary upgrades. There will likely be resistance by residents or businesses in one of the former district areas to subsidizing work required in another.
- Consolidation presents the challenge of achieving equity – both between the previously separate districts and between large and small land owners. If a change to a more population-based voting system is not possible, then consolidating the districts would further distort the voting power of large landowners.

### **Option 2: Creation of a separate planning district**

Description: This option entails retaining the current four-district structure, with the districts continuing the functions as performed today. MCDD staff would also continue to perform joint administrative functions for all four districts. The MCDD staff would be expanded to include staff dedicated to support the planning responsibilities assigned to the new board. The difference is creation of a new special district specifically to perform strategic planning (and perhaps coordination and prioritization) for the four districts.



Oversight: Selection of district board members could either continue as currently practiced or adjusted as discussed under Option 1. Selection of board members for the new planning district could be done through several methods. One would be for each district to appoint a member from their respective board, with additional members either elected or appointed from the neighborhood associations, local municipalities, and Multnomah County. Another would be through election per one of the voting alternatives discussed in Option 1. Currently the laws governing creation of special districts do not include special planning districts as a governing option.

Advantages:

- This option retains all of the benefits enjoyed under the current structure.
- Its major advantage over the existing system is in addressing the lack of strategic and holistic planning capacity.
- It also offers the potential to address concerns regarding the current voting system if one of the voting alternatives discussed under option 1 can be legally adopted for the existing district boards and/or the new planning district.
- Other concerns, such as improved public outreach and providing a voice for other interests, would not be precluded under this option.

Disadvantages:

- The primary disadvantage is increased cost. This option would require expansion of the MCDD in order to support the new district's planning function. Alternatively, the district could be established with its own staff. Regardless of which is chosen, the expansion of paid staff would require an increase in fees assessed to district residents and businesses.

**Option 3: Improved coordination between existing district boards and the public (MCDD's current approach)**

Description: This option requires the least change to the status quo. It retains the current four-district structure, with the districts and MCDD staff performing the same functions as they do today. What is new would be establishment of mechanisms to foster better communications between district boards and engagement with residents and other interests. Such mechanisms could include an improved website, newsletters, and regularly scheduled public meetings.

Oversight: Selection of district board members could either continue as currently practiced or adjusted as discussed under Option 1. Selection of board members for the new planning district could be done through several methods. One would be for each district to appoint a member from their respective board, with additional members either elected or appointed from the neighborhood associations, local municipalities, and Multnomah County. Another would be through election per one of the voting alternatives discussed in Option 1.

Advantages:

- This option retains all of the benefits enjoyed under the current structure.
- The increased coordination would not require any changes to current structure and presumably only modest increases in the MCDD budget.

- It does not preclude a change to the current voting system as discussed under option 1 if such a change can be legally supported.

Disadvantages:

- This option only modestly addresses many of the concerns with the current system.

**Option 4: Integrate MCDD staff functions into the City of Portland bureau or Multnomah County structure**

Description: This option involves complete dissolution of the existing governance system. All four districts would be dissolved. The MCDD staff would either be dissolved, with its functions distributed among City bureaus, be reorganized under one of the Bureaus, be absorbed into the Multnomah County structure, or some combination of these. In the event that one or more of the districts do not voluntarily dissolve, ORS section 547.755 regulates the ability for cities to annex portions of drainage districts. This can only occur when three-fourths of the voters in the part to be annexed agree. The vote is tallied in the same way as currently practiced for elections (by acreage).

Oversight: Oversight would be provided by City bureaus and their respective Portland City councilors or by Multnomah County commissioners.

Advantages:

- This option would allow current district costs and benefits be more equitably integrated into City operations.
- From the perspective of district residents, the City (or county) would assume the cost of levee repairs to meet certification requirements, thus likely distributing those costs across a wider population base. The opposite is true, of course, from the perspective of the City or county.
- The City of Portland has a much larger budget than MCDD. For example, the MCDD budget is around \$3 million per year whereas the City's budget for 2013-2014 will be about \$2.62 billion. (City of Portland, undated). Thus, it is possible that City management of the levees could provide additional funding for needed work. However, cities are subject to certain funding limits that special districts are not. (See Burns, 1994, p. 14-16).

Disadvantages:

- District-based respondents see no advantages to this option. From their perspective it represents the worst-case scenario.
- This option would result in the loss of elected district boards from within districts. If the City assumes district operations, not all who are affected would be able to vote for city officials as they live outside the jurisdiction. Additionally, it is unclear whether officials who would manage levee issues are appointed or elected. Most likely, they would be appointed by the bureaus, thereby reducing democratic accountability.
- The most consistent concern expressed regarding Portland City management of the levees was cost. Respondents cited between four times and ten times the cost for work by the City versus work by MCDD. Additionally, MCDD and the boards' feeling of ownership over the budget and work done provide for an "entrepreneurial spirit" that fosters both a sense of community and efficiency. District-based respondents

believe these would be lost if integrated into the City. No landowners in the districts are eager to pay the added costs of City management of the levees.

## Section 5: Potential Next Steps and Additional Inquiries

Based on the information gathered from the interviews we conducted, we identified four categories of “next steps” that might be helpful to the overall process.

The first is to conduct a case study review of other flood management districts and systems in the U.S. This would include both examining other governance and funding structures as well as how other jurisdictions are managing the accreditation process.

Second, we suggest initiating a collaborative project involving affected stakeholders to address the issues facing the districts. This collaborative project would consist of four components:

1. Address the levee certification and accreditation issues facing Pen 1 and Pen 2.
2. Address the levee accreditation issues facing MCDD#1 and SDIC.
3. Address issues of fee and benefit equity regarding stormwater runoff and flood protection.
4. Address broader issue of governance, emerging trends, and the external events facing the districts.

The sequencing and process design for each component is to be decided through follow-on discussions between MCDD, OS, CPS, and the district boards.

The fourth is for MCDD to continue and perhaps expand its education and outreach to ensure district residents are kept informed.

Finally, during the course of this project we encountered a number of questions and issues that time did not permit us to fully answer. The fourth section identifies these other potential inquiries.

### 5.1 | Case Study Review of Levee Management Systems in the U.S.

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Following Hurricane Katrina and flood events in the Midwest and along the East Coast, flood control jurisdictions nationwide initiated reviews of their facilities, policies, and procedures. Several respondents noted the national reputation enjoyed by MCDD for efficient flood protection management. However, it may now be that these recent reviews yielded management solutions of relevance and applicability to the issues facing MCDD. Where once MCDD served as a model for others, it may be time to study what these other jurisdictions have to offer.

Such a review could include research into the funding mechanisms and potential of various districts; how they are governed and whether this affects funding or other important aspects; and how other districts are managing the new FEMA accreditation process.

Prior to Katrina, MCDD was often held up as a model for levee governance. With new regulations in place, are there other governance structures for levee management that have worked well?

In light of the governance options delineated above, what arguments exist for or against these structures for special districts? What are the consequences of dissolving (both legally and practically)?

Additionally, research into how other jurisdictions are managing the recertification and accreditation process would be valuable.

## 5.2 | Collaborative Project with Affected Stakeholders

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In order to facilitate a collaborative solution to the accreditation and certification issues facing all four districts, reaching agreement on an equitable funding agreement for stormwater and flood protection, and in addressing governance and the broader trends and issues, we suggest a collaborative project consisting of four components.

The first component is ensuring levee accreditation is maintained in Pen 1 and Pen 2. This component would address the technical requirements regarding the levee and finding a way to pay for needed repairs. Given the immediacy of the problem, this component should be designed and implemented as soon as practical. This component is specifically addressed in the OS report (Greenwood, 2013). Additionally, an option should be presented in which the levees lose accreditation through FEMA in order to give stakeholders a full range of options and consequences.

The second component is ensuring levee accreditation is maintained in MCDD#1 and SDIC. Although no less important than the problem facing Pen 1 and Pen 2, the fact that the current NFIP evaluations are valid until 2017 presents an opportunity to learn from the Pen 1 and Pen 2 process.

The third component consists of reaching an equitable allocation of the costs for levee maintenance and stormwater fee assessments with the City of Portland and other affected municipalities. This component can proceed in parallel with the first two. It will likely involve collaborative negotiations with the cities, county, and perhaps the state of Oregon to arrive at a result that funds both needed current repairs and future maintenance funding.

The fourth component involves a collaborative process to address issues of governance, emerging trends, and external events.

The recommended first priority is to design a process for the first component, to be led by Oregon Solutions. Process designs for the subsequent components can be developed consistent with MCDD staff workloads and availability of interested stakeholders and board members.

## 5.3 | Outreach and Education Program

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Based on our finding of a significant disparity in the factual understanding of the issues facing the districts by our interviewees, stakeholders would benefit greatly from an aggressive and continuous outreach and information-sharing program. MCDD has been working diligently at such a process and it has been, to date, quite effective. Continuation of those efforts, expanding them to include all of the districts, and continuing efforts to simplify and disseminate complicated information to encourage participation should be very effective and likely well received by the districts' residents.

## 5.4 | Additional Inquiries

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The following are questions that arose during the interview process relevant to the issues identified in this report. However, they either fell outside the scope of this project or would require time beyond that allowed by the budget. Further research into some of these inquiries could be beneficial in the longer-term sustainability of the levee system after the recertification and accreditation process.

- Many respondents expressed concern over a perceived significant cost increases should MCDD's current maintenance and operation functions be assumed by the cities. However, this will require further investigation to determine exactly what those cost differentials are. How would these costs be distributed against the affected cities' and county tax bases?
- Development of further hybrid governance models as well as alternative governance models that more comprehensively involve state governments. Such models could be developed from the case study research recommended in Section 5.1 above. This research should include assessment of feasibility and legal requirements for any options so identified.
- What is the feasibility of capturing stormwater and flood protection fees or other economic payment from beneficiaries of MCDD's services outside its jurisdiction? This inquiry should encompass questions of legal, political, administrative feasibility (see Cooper and Vargas, 2004).
- Is the Sustainable Development Feasibility Framework developed by Cooper and Vargas (2004) useful for guiding the accreditation process and/or determining the most appropriate governance model for the districts? Doctors Cooper and Vargas ground this framework in nineteen sustainable development principles developed from a set of compatible concepts that emerged during a decade of several sustainable development-related international agreements. There are seven feasibility considerations: Technical feasibility, legal feasibility, fiscal feasibility, administrative feasibility, political feasibility, ethical feasibility, and cultural feasibility.
- Does current Oregon law support a change in district voting practices from one-vote-per-acre to one-vote-per-person (or household)? If not, and if the districts wished to pursue such a change, what steps would be needed to either change the statutes or obtain an exception to their provisions?
- What are the benefits, costs, and implications of adopting a graduated rate structure for stormwater and flood protection fees?
- One respondent raised the question as to whether City bureau representatives serving on district supervisory boards can be considered proxies for the elected city councilors that oversee their respective bureaus. Opinions on this are apparently mixed.
- Do the districts have authority to assess taxes or fees for services provided to residents located outside district service areas? If so, how might such taxes be determined and collected?

- What is the full range of consequences for the county, municipalities, and the state should one or more of the district boards of supervisors / board of directors decide to dissolve their respective districts? Who assumes the district(s) debts, assets, and contractual obligations?
- To what degree do the levees meet seismic design criteria? Will future levee improvements take into account the most recent seismic readiness information?



# Appendices

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## Appendix 2 | Interview Introduction and Questions

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### Introductory Statement:

- Introductions.
- National Flood Insurance Program certifications for levees in the four Multnomah County Drainage Districts expire in August 2013 for Pen 1 and Pen 2, and in June 2017 for MCDD#1 and SDIC.
- Explain the roles of Oregon Solutions and CPS. Explain the scope of the assessments each is undertaking.
- Your organization is affected by the certification expirations and important to MCDD's interest in finding a solution. MCDD intends this assessment process as the beginning of a collaborative process to address the levee and other issues facing the districts.
- In today's discussion, we would like to hear your thoughts and suggestions as to your organization's interests and your impressions as to the full range of issues facing the districts.

### Interview Questions:

- There are many people in organizations affected by how the levee system is managed. What is your understanding of how that management system is working and the current levee conditions?
- Describe how your organization is affected by the current state of the levee system.
- What is the relationship of your organization with the drainage districts?
- How would changes/improvements to the levees affect your organization?
- What concerns do you have about changes/improvements to the levees? (Short-term and Longer-term?)
- How would you describe the current governance structure for managing the levees?
- How does your organization interact with that structure?
- Who do you feel are the dominant participants in that structure?
- Do you think participation in a broader collaborative process would benefit your organization as the process for levee improvements continues?
- What outcomes are most important for your organization?
- Who else should be involved in a longer-term collaborative process?
- What information/resources would be helpful to you as the process continues?
- What resources might you be able to provide to ensure the process goes smoothly?
- What potential snags and benefits do you see in a broader collaborative process?
- Do you have any additional thoughts that might be helpful for our assessment?

## Appendix 3 | List of Interviews Performed<sup>27</sup>

Organization	Name(s)	Date	Location	Comments
Multnomah County Drainage District Staff	Dave Hendricks Reed Wagner Sunny Simpkins Kayla Mullis	March 8, 2013	College of Urban and Public Affairs (CUPA)	Introductory meeting; general background; project scoping
U.S. Army Corps of Engineers	Lance Helwig Guy Fielding Amy Echols	March 20, 2013	USACE Portland District Office	General background
Multnomah County Drainage District Staff	Dave Hendricks Sunny Simpkins Kayla Mullis	March 26, 2013	MCDD Office	General background
Federal Emergency Management Agency	David Ratte	April 9, 2013	Conference Call	General background
Port of Portland	Phil Ralston	April 22, 2013	CUPA	General Manager for Operations Environmental
Portland Bureau of Emergency Management (BEM)	Carmen Merlo Jonna Papaefthimiou	April 22, 2013	BEM Office	Carmen is BEM Director; Jonna is Planning & Preparedness Manager
East Columbia Neighborhood Association	Maryhelen Kincaid	April 24, 2013	CUPA	Executive Director
Portland Bureau of Parks and Recreation (PBPR) / Portland International Raceway (PIR)	Mark Wiggington	April 25, 2013	CUPA	Serves as PIR manager, an enterprise unit within PBPR
Columbia Corridor Association	Corky Collier	April 25, 2013	CUPA	Serves as Executive Director
Portland Bureau of Developmental Services (BDS)	Mike Hayakawa	April 29, 2013	BDS Office	Serves as supervisor for zoning & planning
Bridgeton Homeowners Association	Dustin Pruitt	May 1, 2013	Montgomery Park, Suite 340 (Dustin's office)	Serves as co-chair
Peninsula District #2 / Shafer Realty	Dick Shafer	May 3, 2013	CUPA	Pen 2 Board Chair; business owner
Office of Representative Tina Kotek	Michelle Rogelstad	May 6, 2013	State Capitol building H-296 (Rep. Kotek's office)	Legislative Assistant to OR State Representative Tina Kotek
MCDD#1 / Three Oaks Development Company	Tim Warren	May 13, 2013	CUPA	Serves as MCDD#1 Board Chair; land developer
Columbia Slough Watershed Council	Jane Van Dyke	June 6, 2013	Conference Call	Executive Director

<sup>27</sup> Listed in chronological sequence. We initially conducted interviews with entities as recommended by MCDD staff. The authors added others as warranted. The Portland Bureau of Environmental Services was only entity we wished to interview but were unable to schedule.



## Appendix 4 | Overview of FEMA and USACE Processes

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### A. Overview of FEMA's NFIP Accreditation Process

FEMA is the agency in charge of the National Flood Insurance Program (NFIP). The NFIP is a Federal program designed to mitigate flood losses through locally-enforced building and zoning ordinances and to provide federally-backed flood insurance protection at an affordable price for those with properties protected by levees. In support of the NFIP program, FEMA identifies flood hazard areas in a Flood Insurance Rate Map (FIRM) (FEMA 2011). FEMA is currently performing mapping updates in identified regions around the U.S. (FEMA 2010a). Participation in NFIP is voluntary unless mandated by state law as part of a flood plan. Participation makes residents protected by levees eligible for reduced price flood insurance (FEMA 2011).

The standard that FEMA maps to is the one percent annual probability of occurrence flood event. In other words, there is a one percent chance that a flood of that magnitude will occur in any given year. The standard to which USACE designs and to which levees under its programs must be maintained is the worst flood experienced since development, referred to as "the flood of record." For Portland, the flood of record occurred in 1896. There is potential that USACE would find the levees meet their standards while FEMA finds that they do not meet FEMA standards or vice versa. In other words, both FEMA and USACE view their standards as only partially overlapping.

FEMA's National Flood Insurance Program (NFIP) is separate from USACE's Rehabilitation and Inspection Program certification, although FEMA receives reports from USACE about their RIP inspections, which may inform FEMA's process.

FEMA indicated that they do not intend to fund remapping in 2013 and that they will likely make a decision about when to fund after having a clearer picture about how MCDD intends to handle the certification process for the NFIP. Generally, if initiated, the FEMA remapping process takes about two to three years, start to finish. Once FEMA decides to fund the remapping process, they will request certification documentation from MCDD. The burden is on the party seeking the certification to demonstrate compliance with the regulations. During this process, the status of the insurance is based on the effective maps. FEMA will then review the documentation compiled by MCDD under the standards of 45 CFR 65.10 and FEMA's various Procedural Memoranda (FEMA 2005, 2007, and 2008). After the screening, FEMA assigns a more detailed review either to a contractor (e.g. for geo-tech, freeboard, hydraulics, drainage analysis, etc.) or to USACE. The former has been the more common practice for the last 2-4 years. However, if USACE indicates deficiencies in its inspection reports, FEMA may be more inclined to have USACE do the in-depth review.

After this process, FEMA sends a letter accepting the certification documentation. De-accreditation occurs if FEMA has insufficient data to certify that the levee meets 45 CFR 65.10 standards.

### B. Overview of USACE's Rehabilitation and Inspection Program

USACE operates the Levee Safety Program, which is separate from FEMA's NFIP program. Under the Levee Safety Program, USACE directs the Rehabilitation and Inspection Program (RIP), through which it inspects those levees within the program on a regular basis to monitor the condition, deficiencies, and to confirm that maintenance work is being performed. In addition, the inspections determine whether levees are eligible for rehabilitation assistance under PL 84-99, the Flood Control and Coastal Emergency Act



(USACE, undated). In the event of a flood, levees satisfying minimum USACE standards (in other words, they have been designated as "Acceptable" or "Minimally Acceptable") for operation and maintenance are "Active" in the program and are eligible for PL 84-99 rehabilitation assistance if damaged during a flood. The RIP program and PL 84-99 details are available in ER-500-1-1, Chapter 5 (USACE 2001).

Under the RIP program, USACE performs Routine Inspections (RIs) every 1-2 years. This is a visual inspection that verifies and rates levee system operation and maintenance. For RIs, USACE first reviews previous inspection reports, operations and maintenance records, and Emergency Action Plan (EAP) Readiness. Second, they perform the visual inspection. Third, they provide the inspection report to the levee sponsor (in this case, MCDD). Then, depending on the overall rating, USACE will provide the inspection reports to the County Emergency Manager, the State Emergency Manager, FEMA, and Congressional delegation.

Additionally, a Periodic Inspection (PI) is generally performed every 5 years. The process for the PI is the same as a Routine Inspection except that the PI is a more rigorous inspection and assessment. The PI also includes a multidisciplinary inspection team and compares current design criteria to the criteria that were in place when the levee was built. The periodic inspection reports are what MCDD received for all four districts in 2011 indicating that all four were "Minimally Acceptable" under USACE's RIP requirements. "Minimally Acceptable" and "Acceptable" ratings allow the levee to remain "Active" under the RIP program. So long as the levee sponsor maintains "Active" designation under RIP, the levees are eligible for rehabilitation assistance under PL 84-99 in the event a flood damages the levees. However, the levees in all four districts only meeting "Minimally Acceptable" ratings will not be covered by Federal funds if damage and/or repairs needed are due to existing deficiencies in the levees. (USACE 2011a-d).

A list of several "Unacceptable" deficiencies was sent to each of the four districts. In order to maintain "Active" status under RIP, the unacceptable encroachments and deficiencies must be remedied. Additionally, USACE indicated that the deficiencies "may be used in conjunction with other information for a levee certification determination for the National Flood Insurance Program." (USACE 2011a-d). Although MCDD will be using a professional engineer to complete the NFIP certification process, FEMA receives the Periodic Inspection reports and so they may influence FEMA's determination as to the adequacy of the levees. Additionally FEMA may hire USACE to review the NFIP certification documentation prior to approving accreditation. Thus, the Periodic Inspection reports received by the districts have wide-reaching consequences.

## Appendix 5 | Timeline of Events Related to MCDD's NFIP Certification and Accreditation

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- 2007-2008: All levees managed by MCDD certified by USACE for FEMA's National Flood Insurance Program.
- 2010: Periodic Inspection conducted by USACE. MCDD provided with letters indicating that each district was "Minimally Acceptable" as a result of these inspections. The "Minimally Acceptable" rating maintains eligibility for federal rehabilitation funds under PL 84-99.
  - USACE conducts two types of inspections related to its levee programs. These are "Periodic Inspections" and "Routine Inspections." These inspections are conducted for purposes of the Inspection of Completed Works (ICW)<sup>28</sup> and RIP Programs. These programs allow eligibility under PL 84-99 for rehabilitation assistance.
  - It normally conducts Periodic Inspections every five years.
  - Routine Inspections occur every one-to-two years for the ICW and RIP Programs. These inspections are less rigorous than the five-year Periodic Inspections.
  - The information from the Routine and Periodic Inspections are used for the Risk Assessment program under USACE's Levee Safety Action Classification process.<sup>29</sup> LSAC risk assessments do not "directly" affect FEMA accreditation nor does it affect PL 84-99 eligibility. However, information obtained from the LSAC risk assessment process can be used to inform future inspections.
- September 2012: FEMA conducted "discovery" in Portland for the Tualatin and Willamette watersheds as part of the first phase of its map update project. The focus is not just flood hazards but mitigation for all types of hazards.
- 2013: Routine Inspection to be conducted by USACE.
- August 2013: USACE NFIP certifications for Pen 1 and Pen 2 expire.
- 2015: Scheduled Routine Inspection by USACE.
- June 2017: End of maximum period of validity for USACE NFIP certifications for MCDD#1 and SDIC.

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<sup>28</sup> The ICW Program provides inspection of projects originally constructed by USACE (as were the levees in the four districts) to ensure they are maintained to USACE standards by the levee sponsors (in this case, MCDD). The ICW program is not at issue for the purposes of this report.

<sup>29</sup> USACE uses LSAC as a way to identify risk during certain events such as a flood, storm, or earthquake. More information about LSAC can be found the Omaha District, US Army Corps of Engineers Fact Sheet (undated) entitled *Levee Safety Action Classification* at <http://www.nwo.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/2034/Article/10360/levee-safety-action-classification.aspx>.

## Author Biographies

### Eric T. (Rick) Mogren, Ph.D.

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Rick Mogren's professional career is a mix of practical experience as a consultant and Army engineer officer and academic study. His academic interest focuses on interjurisdictional governance in the Pacific Northwest. He is particularly interested in the way institutional culture and identity combine with personal values to shape the structure and products of regional governance networks.

Rick completed a 27-year career as an Army engineer officer in June 2001, retiring with the rank of Colonel. His final assignment was to serve as the Deputy Commander and Chief of Staff for the US Army Corps of Engineers' Northwestern Division, headquartered in Portland, Oregon. He provided oversight of USACE's hydropower and salmon recovery programs in the Pacific Northwest and managed relationships with regional Indian tribal governments and federal agencies.

One of the lessons he took away from this experience was that solutions to the complex natural resource policy issues in the Northwest rarely fall within the jurisdiction of any one agency or level of government. Rather, they require a coordinated network of government, non-profit, and private entities working together to develop mutually acceptable plans and actions.

In November 2003, he began consulting on Columbia Basin issues and formally established his own consulting practice in January 2004. He offers process management and facilitative leadership to multi-jurisdictional networks engaged in natural resource related issues. He also serves as a senior fellow of Portland State University's Center for Public Service and adjunct associate professor of public administration.

Rick holds a Ph.D. in Public Affairs and Policy from Portland State University; a Master of Science in Engineering from the University of Texas in Austin; a Master of Military Arts and Science from the US Army Command and General Staff College at Fort Leavenworth, Kansas; a Bachelor of Science in Environmental Studies from the State University of New York College of Environmental Science and Forestry, Syracuse, New York; and a Bachelor of Science in Forestry from Syracuse University.

### Kelly I.F. Sherbo, J.D.

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Kelly Sherbo is a Ph.D. student in Portland State University's Public Affairs and Policy program. Within the program, she has served as an Oregon Fellow through the Hatfield School of Government and received the Laurels Scholarship for academic merit.

She holds a J.D. from University of Oregon School of Law with Certificates of Completion in Ocean & Coastal Law and Environmental & Natural Resources Law. She received her Bachelor of Arts from Pacific Lutheran University, majoring in both Economics and Environmental Studies.