Building Community Adaptive Capacity

A Holistic Approach to Improving Resilience

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Abstract

The project advances best practices in regional sustainability by integrating professional and local knowledge in community health, education, and resilience. The project team and collaborators engaged directly with communities to explore how tighter integration of local institutions, planning activities, technologies, and social networks can support both improved disaster resilience and overall community well-being. A particular focus was initially placed on schools as community hubs likely to serve as shelters, triage centers and information centers during a disaster; and on health care providers and systems that serve essential outreach and support functions in every-day community life as well as during disasters. The project built on an existing federally funded community self-assessment pilot project in Laurelhurst, Seattle. Bullitt Foundation funding extended that existing project work to two additional Washington State communities: a lower-income urban neighborhood in South Park, Seattle, and a rural Pacific coastal community, Westport/South Beach, in Grays Harbor and Pacific Counties. The project levered further successful funding from the National Science Foundation, the U.S. Department of Transportation Center for Safety and Equity in Transportation, and the Architectural League of New York to advance, promote and develop the project's findings and significance through public information, additional research, and pilot interventions in information and telecommunications technology.

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Rationale

The Emerald Corridor is a vibrant and attractive place to live, work and play, and for several decades has supported rapid economic and physical urban growth. Although this growth and urban expansion has provided opportunities to develop more sustainable urban development practices, the resultant reliance of urban areas on complex and interdependent infrastructures has also increased vulnerability to natural and man-made threats such as earthquakes and climate change. At the same time, the gap in well-being and vitality between urban centers and rural communities is growing, leaving rural communities even more vulnerable. The standard approach to anticipating and dealing with such threats is to mitigate them by strengthening existing structures and systems. We proposed that a locally-driven approach to whole-community resilience – one that helps communities deal creatively with everyday disruptions as well as potential large-scale disasters – is a necessary part of an effective regional resilience strategy involving anticipatory transformation and a rebalancing of regional integration with local self-reliance.

As a leader in environmental stewardship, the Bullitt Foundation works to develop and disseminate best practices for guiding the Emerald Corridor's sustainable development and enhancing residents' well-being. Our proposal aligns with these values and objectives in that we seek to make explicit the relations between sustainability, health, education, and resilience. Seattle, a participant in the Rockefeller Foundation-supported 100 Resilient Cities initiative, is expanding its inter-departmental coordination for emergency preparedness, recovery and mitigation planning as well as for developing creative approaches to a wide range of chronic threats, from climate change to housing affordability. Our study was tailored to inform these efforts and expand them to the larger region. In approaching the process of building and strengthening community partnerships, we engaged community-based organizations, public health and clinical medical professionals, local schools, UW School of Medicine researchers, and

City of Seattle and other local governmental departments to avail ourselves of multiple perspectives and diverse disciplinary expertise.

Research was participatory, and included outreach to community leaders and residents with scientific information on earthquakes and response. This process of engagement and education helped enable communities to build adaptive capacity by identifying assets and gaps in resources and services; raising awareness of earthquake hazards; improving coordination with government entities; envisioning new roles for community educators and health service providers; and developing pilot programs. As a University-based team, we embraced our role as a facilitator of partnerships between communities and local government. We remain committed to authentic engagement and to understanding and accurately representing local needs and values in the creation and implementation of policy decisions that affect community resilience.

A forward-looking and sustainable approach to building community resilience would embrace uncertainty and emphasize opportunity by enabling community *adaptive capacity*, or the ability to absorb shocks or reconfigure and transform in response to or anticipation of change. In this project, we sought to better understand how existing and emergent community assets can be leveraged to enable adaptive and self-organizational capacity in the face of disruptions (such as earthquakes) or other long-term changing conditions (such as rapid urban growth or technological change), in ways that also improve everyday community well-being. Sources of adaptive capacity can include goods and services, choice of transportation modes (e.g. car sharing or walking/biking), trusted institutional resources like schools and clinics, and having diverse social connections both within and outside the community. Adaptive capacity not only enhances a community's resilience to disasters; it can also improve everyday quality of life regardless whether or not a disruption occurs. By addressing resilience at the scale of the community, we hypothesized that adaptive capacity can be enabled through innovative, localized strategies that build on existing physical and social resources to improve community well-being and self-sufficiency without sacrificing connectedness with the larger region. Our team is already developing a new survey and workshop protocol for community resilience self-assessment, with funding from TOMNET, a USDOT-funded multi-University Transportation Center. Through interviews and workshops with community members, the protocol aims to identify community values (quality of life, developmental aspirations) and assets – including both physical (public facilities, transportation systems, food resources) and social resources (community organizations, public institutions, specialized skills or knowledge, relations of trust) – and how these values and assets contribute to everyday quality of life as well as likely responses in an emergency.

This information would help community members and researchers create a place-based profile of local strengths and values, including attitudes towards existing or desired assets (e.g. perceived value, willingness to share, ability to substitute) that might contribute to – or hinder – community adaptive capacity; and assist community participation in Seattle's Community Emergency Hubs program and Auxiliary Communications Service (ACS), and other emergency preparedness programs in more isolated locales. These include adaptations to a transforming natural environment, such as the Project Safe Haven tsunami vertical evacuation program as well as Indigenous tribal village relocation and land use adaptation plans that anticipate tsunamis, as at the Quinault, Quileute and Makah reservations, or climate change-driven sea-level rise as at the Swinomish Indian Reservation. With this grant, we initially focused on how the community self-assessment could inform possible interventions in cyber and physical infrastructure for accessibility to health services and particularly medicine delivery.

Telehealth, as a particular kind of cyber-based service, provides both medical and emotional support and addresses medical and mental health needs through electronic information exchange in the form of online consultations and monitoring between patients and providers as well as among providers seeking

advice on patient cases. Designed to improve health care in isolated and rural settings, Project ECHO, for example, supports learning communities among disparately-located health professionals (Scott et al., 2012). Patients need not be referred as often, and do not need to travel as far, to centers with more specialized care than their local community provides. Telehealth thus supports the everyday survival-in-place of individuals and communities that might otherwise find spatial isolation too difficult to bear given the much greater accessibility of resources in cities. However, the system is dependent on internet and cellular communications that are vulnerable to disruptive events, and as currently conceived, telehealth is not designed to identify or connect *local* (place-based) resources. Even under normal circumstances, the most isolated of rural localities, especially Indigenous communities, frequently have difficulties attracting long-term resident healthcare providers. Both urban and rural communities also face challenges providing healthcare to migrant populations whose own residential status is unstable.

During a disaster, the provision of community health care can be further complicated by disrupted infrastructure systems, moving populations (both patients and medical providers), and time-sensitive needs for specialized resources, diagnosis and treatments. However, if integrated into a disaster preparedness program, telehealth may also act "hyper-locally" to help provide care and build professional relationships among community providers before a disaster, thus enhancing local self-reliance during a disaster and accelerating longer-term recovery afterward. NWHRN is assisting Seattle King County Public Health in their Alternate Care Systems planning. This includes identifying emergency community neighborhood healthcare centers that would respond together to aid those locally in a disaster. Telehealth is one of the technologies that could become extremely useful when providers are either limited by number or location, by providing assistance remotely. But in order to be useful, telehealth must not only overcome its inherent vulnerability to internet and cellular service disruption; it should also function beyond individualized service, to support collective everyday community wellness.

We proposed extending the telehealth model by envisioning the integration of low and high telecommunications technologies; and identifying and leveraging a more holistic set of local resources (social, technical and environmental) than are usually accounted for in hazards mitigation and emergency preparedness planning approaches. Low- and high-tech telecommunications could include low-power FM broadcast stations, ham radio cooperatives, dynamic ad-hoc networks like wifi direct and mesh networks, and TelePharmacies (both fixed internet/cell-enabled prescription-dispensing kiosks as well as mobile vans). Schools provide a particularly promising setting for the integration of local resources with telehealth. As community hubs, schools serve as important sites of community risk awareness, disaster preparedness and recovery, and are likely to serve as shelters, triage centers and information centers during disaster (Ronan and Johnston, 2005; Shoaf et al., 2014). Schools are a naturally appropriate host for low-power community FM, ham radio clubs, and local network development. Low-power FM has become particularly popular in the Pacific Northwest since Congress passed the Local Community Radio Act, co-sponsored by Sen. Maria Cantwell, in 2010 (Broom, 2015; Johnson, 2018). Our project explores how these technologies can enhance school activities and curricula as well as health and emergency information flows for the larger community.

The costs of implementing most (but not necessarily all) of these technologies exceed the grant for which we are applying here; however, the first step towards determining the local appropriateness of any combination of these approaches was to conduct a community self-assessment of existing resources, and to do so in a way that accounts for their potential multi-functionality and adaptability between normal and emergency circumstances. This community self-assessment comprised the bulk of this proposal's scope. Using an appreciative-inquiry-based participatory workshop protocol, the self-assessment revealed how these assets and values function differently under normal and emergency circumstances; how they substitute for, or are substituted by, others; and how these adaptations are

interrelated (Freitag et al., 2014). For this proposal, we held self-assessment workshops with a previously-tested public participatory Geographic Information Systems (PPGIS) component to map assets and values spatially (Bennis, 2016). The workshop was to be augmented with preliminary surveys of individual community members and stakeholders focused on gathering data necessary to integrate telehealth and other everyday and emergency healthcare provision with appropriate combinations of communications technologies.

Project Goals

The project had three overarching goals:

1. Assist communities and higher-level emergency and environmental management agencies to better align hazard mitigation planning and policy with local developmental goals and values.

2. Identify available community and household resources important to coping with a disaster; assess households' willingness and ability to share resources, improvise strategies, and lever social relationships to cope with emergency situations; and provide findings to local organizations seeking to build community relations and strengthen emergency preparedness.

3. Assess potential for improving the robustness of telehealth technology through integration of low and high telecommunications technologies with local social networks and trust relationships, and key community place-based assets such as schools, churches, stores, and other important spaces of goods and information exchange.

We achieved these goals to a greater or lesser extent in three partner communities as described below. This report includes details of how goals were pursued in each of the partner communities; what was learned; and then concludes with descriptions of ongoing research and policy and research needs.

Summary of Activities and Progress

Confirming participant communities and refining research protocol – Since the approval of our pre-proposal, the UW team has confirmed partnerships with WA State Emergency Management Division (EMD); Northwest Healthcare Response Network (NWHRN); King County Public Health; City of Seattle Office of Emergency Management (OEM); Seattle Public Schools (SPS); UW School of Social Work Indigenous Wellness Research Institute (IWRI); Laurelhurst Earthquake Action Preparedness (LEAP, since renamed Laurelhurst Emergency Action Plan) in Seattle; Sea Mar Community Health Center, Aberdeen; and Calawah Medical Clinic, Forks. We also established partnerships and contacts with Grays Harbor County Emergency Management; the City of Aberdeen Community Development and Public Works departments; and Makah, Swinomish, Quileute and Quinault tribal governments and planning agencies.

The research team engaged three characteristically different Washington State communities in public outreach initiatives: two Seattle neighborhoods, Laurelhurst and South Park; and Westport, a small city located on the Pacific coast in primarily rural Grays Harbor County (Figure 1). Each of the three communities had expressed interest in the topics of disaster preparedness and community resilience.

Figure 1: Locations of the three study communities

We specifically chose the three study communities along spectra of urban-rural and higher and lower socioeconomic status (Figure 2) in order to capture variation in both urban character and access to resources. In terms of those criteria, each community represents a typology to some extent. However, each remains unique in terms of its local values and context.

For the purposes of this research study, "community" was defined by a combination of clear identity and well-established physical boundaries.

In this process, we engaged community-based organizations, tribes, university-based geohazards and climate scientists and public policy experts, local public health and clinical medical professionals, local schools, UW School of Medicine and Public Health researchers, and emergency management agencies at local, county and state levels. We devoted an autumn quarter planning studio course at the UW to organize and conduct a participatory GIS-enabled series of multi-scenario workshops and presentations on coastal hazards in Westport, including

Figure 2: Study communities along spectra of SES and urban-rural. (MHI: Median annual household income)

both tsunami and sea level rise; implemented a survey of participants; and completed a draft set of recommendations on integrating the Grays Harbor County Hazard Mitigation Plan strategies with Westport's upcoming Comprehensive Plan Update. These activities comprised the first step towards implementing a representative-sample survey to assess community adaptive capacity.
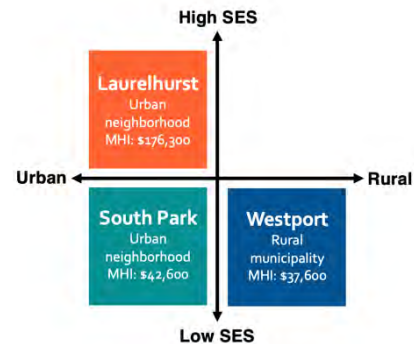
Beginning in June 2018, we reached out not only to Westport, but also to the Shoalwater Bay Tribe and Quinault Indian Nation. As described in our initial proposal, the tribes have made great strides in planning for both sea level rise and tsunami threats, including deeply adaptive strategies such as moving housing and certain community facilities to higher ground and undertaking resilient and locally self-sufficient energy and infrastructure projects, and improvements to telecommunication for emergency response as well as participation in telehealth programs. Nevertheless, Westport was most prepared to move quickly to establish a partnership and undertake the kind of assessment we proposed. Having already built North America's first tsunami vertical evacuation structure – and done so as part of a school construction project of the Ocosta School District – Westport and the larger South Beach community (roughly co-terminous with the Ocosta School District) was an ideal partner for this project. Moreover, as Shoalwater Bay Tribe is also served by the Ocosta School District and the South Beach Regional Fire Authority, the Tribe would also be able to participate in the activities. In July, we set up a table for Shoalwater Bay Tribe's Yellow Brick Road Tsunami/Health walk (a combined evacuation practice, emergency preparedness and wellness services fair), and also presented the project to Westport's City Council. In August, we met with Westport's Tsunami Safety Committee to discuss how the project could help the City incorporate hazards resilience into its upcoming Comprehensive Plan Update. In September 2018 we signed a Memorandum of Understanding with the City of Westport's Mayor Robin Bearden to partner in this Coastal Resilience Project.

In autumn 2018 Daniel Abramson devoted his advanced planning studio course to carrying out the first (workshop) stage of the project with Westport/South Beach. Katherine Idziorek and Lan Nguyen, both doctoral students in Urban Design & Planning, assisted in running the studio, which included seven students enrolled for credit: Catharina Depari (PhD in Urban Design & Planning); Pegah Jalali (PhD in Forest & Environmental Sciences); Yiran Zhang (PhD in Civil & Environmental Engineering); Sreya Sreenivasan and Helen Stanton (Master of Urban Planning); Charlotte Dohrn and Lauren Kerber (Master of Marine & Environmental Affairs). Sophia Nelson, a Senior dual-majoring in Community, Environment & Planning and Geography, assisted the studio's use of the weTable participatory GIS tool (Yusuf et al.

2018). The studio was exceptionally multi-disciplinary and unusual for the range of students at different levels of education. It included multiple trips to the community, including one by a visiting group of three planning faculty from Japan to present lessons learned from the Tohoku earthquake and tsunami of 2011 at the Ocosta School. It also included exchanges with and guest lectures by WA state emergency management and mitigation officials, professional tribal planners, and Westport partners, and a weTable demonstration at the UW College of the Environment EarthLab's "Labs Unlocked" event. UW "M9" project scientists provided state-of-the-art modeling data and maps of coastal hazards and engaged with the studio extensively to discuss their interpretation.

The highlight of the studio was a two-day sequence of workshops on November 16-17, which adopted the appreciative inquiry-based protocol described in our initial proposal, combined with multi-scenario tabletop exercises for expert stakeholders using weTable, and for members of the general public using printed maps. The workshops communicated uncertainties in the science of earthquake, subsidence and tsunami hazards (two different scenarios) as well as different time horizons of sea level rise; educated the participants in best practices of emergency preparedness and response; and elicited local knowledge of community values, assets, needs and aspirations, and strategies for multi-hazard mitigation that also achieve everyday co-benefits. On December 8, 2018, the studio group held a public open house to present posters illustrating initial recommendations for the City's Comprehensive Plan Update, based on the workshops' deliberations (Appendix A). Details of the studio process and products are publicly available through the UW Institute for Hazards Mitigation Planning and Research (Abramson et al. 2018). Following the studio, we provided the City of Westport with 22 layers of GIS-ready new mapped data. Two Masters of Urban Planning (MUP) students from the studio proceeded to write theses developing the studio's findings: one focused on drafting the Comprehensive Plan Update itself (Stanton 2019), which was adopted by the Westport City Council on July 21, 2021 (Appendix B); the other on how mitigation and adaptive strategies envisioned by the studio might be realized through urban design (Sreenivasan 2019), which a second studio of UW MUP, Architecture and Landscape Architecture students further explored in Winter 2021.

In early 2019 conversations with our Advisory Committee of stakeholders helped us identify our third community partner in addition to Laurelhurst and Westport: the South Park neighborhood in Seattle. These conversations began with Profs. Abramson and Chen and doctoral research assistant Katherine Idziorek giving presentations to the Seattle and King County emergency management agencies' and stakeholders' Community Outreach Workgroup meeting on "Community Engaged Resilience Planning: Theory Meets Practice" (November 15, 2018). The Workgroup members, particularly City of Seattle Office of Emergency Management's Community Relations, connected us to public health and emergency preparedness *promotoras* in South Park, to promote and organize a workshop. Two Spanish-speaking MUP students, Asela Chavez Basurto and Andres Arjona, assisted with background research on the community's previous planning initiatives; setting up a table for outreach and initial qualitative data gathering at the Duwamish River Festival; running a workshop at the South Park Community Center with outreach help by the *Villa Comunitaria* community organization; and writing up a plan for further engagement.

Changes in Direction, Scope and Pace

The above activities informed our community adaptive capacity assessment surveys as proposed, and largely according to the proposed schedule. While the project proposal did not originally envision conducting the surveys themselves – this was in the scope of a proposal for a larger National Science Foundation Smart & Connected Communities grant – in fact the Bullitt Foundation's grant was sufficient, in combination with U.S. Dept. of Transportation TOMNET funding, to implement the full surveys in all

three partner communities. We also conducted follow-on surveys to capture changes under COVID-19 restrictions. More details of our engagement with all three communities, and initial survey results, are provided below and in Appendix C, the brochures we shared with the survey respondents who had indicated they wanted a report of the study results. We also shared them with additional stakeholders/community leaders, and with interviewees.

With the exception of this expanded scope, the project proceeded largely as initially proposed. However, we were not able to involve local school students in pre-workshop map-making, nor were we able to conduct a pre-workshop survey of participants, which we found unnecessary. School involvement is now planned instead through a synergistic outgrowth project described below. NSF did not fund our initial Smart & Connected Communities full proposal, and therefore we were not able to include an emphasis on schools and telehealth as we initially envisioned. Advice from the Northwest Healthcare Response Network and interviews with Westport's few healthcare providers and King County Public Health workers in South Park, informed questions about healthcare access in the survey, as well as our successful recommendation that the Westport Comprehensive Plan Update include an entirely new element on Health and Wellbeing.

Proposal Participants

Bullitt Foundation: Steve Whitney
United States Senate: Maria Cantwell, Senator from Washington State
Washington State Emergency Management Division: Maximilian Dixon, Earthquake Program Manager
Northwest Healthcare Response Network: Vicki Sakata, Senior Medical Advisor
King County Public Health: Alison Levy, Acting Director for Preparedness and Response
City of Seattle Office of Emergency Management: Erika Lund, Recovery and Mitigation Coordinator;
Laurelhurst Emergency Action Plan (LEAP): John Temple, Founder; Jeannie Hale, Laurelhurst Community
   Club President
University of Washington School of Social Work Indigenous Wellness Research Institute: Prof. Tessa
   Campbell, Co-Director

Subsequent Key Project Participants

City of Seattle Office of Emergency Management: Matt Auflick, Community Relations Manager
South Park community public health *promotoras*: Xochitl Garcia, coordinator
Grays Harbor County: Hannah Cleverly, Emergency Manager
City of Westport: Robin Bearden, Mayor; Kevin Goodrich, Director of Public Works
Westport Tsunami Safety Committee: Harry Carthum, Chair, and all committee members
Ocosta School District: Heather Sweet, Superintendent; Jon Harwood, science teacher
Shoalwater Bay Indian Tribe: Lee Shipman, Emergency Manager

Key Findings and Outcomes

For each of the three (action-)research goals initially envisioned for the project listed above, we obtained the following key findings and outcomes.

Goal 1. Assist communities and higher-level emergency and environmental management agencies to better align hazard mitigation planning and policy with local developmental goals and values.

As the most action-oriented component of the research, our assistance to local communities and their associated higher-level agencies depended on the different needs, capacities and institutional

relationships of each of the three communities with whom we partnered, and therefore varied significantly from community to community. This assistance was an important motivator for both the research team and the community partners to collaborate, and ultimately led to the survey that was primarily designed to obtain comparable and somewhat generalizable research findings, even as the questions for each survey were to some extent tailored to address community-specific conditions and priorities. (See Goal 2, below, for findings from the survey itself.)

Even the different forms of assistance, however, produced some over-riding qualitative findings. Key among these is that measures to mitigate hazards, reduce disaster risk, and prepare for emergencies are most acceptable to communities when they *also help communities meet everyday needs and achieve "blue-sky" aspirations*, and when community members see them as *aligning closely with community identity and shared values*. Another related finding was that *community disaster resilience depends on improved hyper-local self-reliance and strengthened relationships among neighbors*. Major disruptions such as storms and earthquakes typically isolate neighborhoods and put stress on centralized response systems. Acknowledging this, government *emergency management programs that support community collective preparedness, including general community cohesion, may be at least as effective as those that emphasize individual/household preparedness*.

Laurelhurst

In the case of Laurelhurst, the Laurelhurst Emergency Action Plan (LEAP) leadership first approached us as they had heard of our work with disaster resilience. LEAP was eager to explore a university partnership to assist its internal community organization and mobilization efforts as well as its coordination with City-wide government and non-governmental programs, such as the Seattle Emergency Hubs program and the Office of Emergency Management's training and outreach programs. A key goal for LEAP's leadership, however, was also to take emergency preparedness organizing as an opportunity to build neighborly relations, mutual assistance capacity, and community cohesion in general. The Community Emergency Hubs is a government-endorsed, non-governmentally organized auxiliary program that strives to supplement individual with collective preparedness by creating and equipping gathering spaces in neighborhoods with emergency supplies, communications, and trained local volunteers. LEAP was concerned, however, that governmental emergency managers put too much emphasis on individual/household-level preparedness.

Laurelhurst's sense of neighborhood identity is quite strong, based on a stable and affluent population of homeowners, clearly delineated physical boundaries (much of the neighborhood sits on a peninsula), and an active Community Club that was founded in 1920. However, many of the very qualities which residents cherish in normal times may put the community at risk in an earthquake. Its secluded, overwhelmingly residential character puts many of its homes at some distance from many services. Its waterside location, steep slopes, and adjacent liquefactable soils put it at risk of geographic isolation ("islanding"). Finally, even the affluence which enables its residents normally to live secure, independent and well-resourced lives, connected separately with their own far-flung social networks, might leave the community ill-prepared for the close neighborly sharing of resources and communication needed in the wake of a disruptive and spatially isolating event.

Through the workshops organized by this project, LEAP identified six broad themes for further action, backed up by findings from the community survey described below. Since the community is generally well-served and has relatively few needs on an everyday basis, most of the types of preparedness LEAP prioritized were quite emergency-focused: more training; local alternative power sources; emergency hygiene and sanitation; and alternative transportation and communication modes. However, two themes did focus on everyday relationships and needs: neighborhood- or cluster/block-level inventories

of resident skills, tools and needs; and community-building activities that would help neighbors get to know and trust one another better.

Another outcome was a shift in the focus of LEAP away from earthquakes alone, to emergencies more broadly, reflected in the group's change of name to Laurelhurst Emergency [changed from "Earthquake"] Action Plan [changed from "Preparedness"]. Still, their focus remained on hazards and emergencies, rather than on the integration and alignment of hazards mitigation and emergency preparedness with broader developmental goals and values, such as sustainability – even though some of the measures being considered *would* align with those goals and values, such as off-grid solar cells and bicycle mobility. We believe the lack of an explicit expression of such alignment in LEAP's justification for preparedness may be a reflection of the existing comfortable status quo for most residents' daily lives; LEAP members themselves may have found this alignment attractive, but it seemed not to be considered useful to emphasize in communications. However, this is a question requiring further exploration.

Westport/South Beach

Of the three partner communities, the City of Westport made the mostly explicit effort through our project to link emergency preparedness and hazard mitigation planning and policy with local developmental goals and values. This took the form of the City's Comprehensive Plan Update, approved by the City Planning Commission (Appendix B), which incorporated hazard mitigation priorities and strategies from the Grays Harbor County Hazard Mitigation Plan, and which called for a broad range of actions to strengthen community identity and cohesion as well as local self-reliance and infrastructural integrity in the face of sudden isolation.

This outcome was remarkable on many levels. First, it is rare that communities of any size and wealth achieve this form of integration. Hazard mitigation plans are by nature defensive, seeking to protect what exists from anticipated severe threats. Municipal comprehensive plans by contrast tend to be aspirational, even optimistic, envisioning what the community desires to be – usually prosperous and sustainable – and regulating or even promoting development to achieve that goal. The idea that mitigating or adapting to hazards can be a means of achieving more sustainable prosperity, and *vice versa*, is still quite radical.

One explanation for Westport's embrace of this cutting-edge planning approach probably is related to the fact that the city is not mandated by state law to have a comprehensive plan at all. Being outside any urban growth boundary makes such a plan entirely voluntary, and free to take a form that mandated plans may not. Westport's plan is missing a number of elements mandated by the Washington Growth Management Act, such as the housing element and the capital facilities plan. However, through this project, the Update added a telecommunications sub-element to the Transportation and Circulation element, as well as an entirely new element for Health and Wellbeing.

Another factor in Westport's innovation is the existentially severe nature of the hazards it faces, as well as the on-going stresses it experiences from environmental change and over-exploitation. The City, with its surrounding unincorporated community of South Beach in Grays Harbor and Pacific Counties, is low-income; its average household income is about half that of Washington State's overall. Its sparse population faces greater isolation and even annihilation from a Cascadia subduction megaquake and tsunami. On-going environmental changes, including sea level rise, powerful forces of erosion and sedimentation, ocean warming and acidification, deforestation, habitat degradation, and fisheries depletion threatens many of the industries that have supported its economy from generation to generation. As one of the earliest incorporated municipalities in the region, however, Westport has developed strong values of self-reliance and weathered a great deal of change already. This history

provides a basis for belief in the community's continued viability into the future. The strongest evidence for this set of values is the construction of the Ocosta School tsunami vertical evacuation structure (VES), which was not only the first to be built in North America but was funded entirely from local property taxes, as it pre-dated any federal or state program to subsidize such structures. The school thus demonstrates a remarkable commitment to future safety and community longevity as well as the pressing current needs of community youth.

Inspired by, and building on, these achievements, the assistance our project provided to Westport and South Beach extended beyond planning for additional VESs and other tsunami-resilient infrastructure, and incorporating new elements in the Comprehensive Plan; it also introduced an integrated multi-hazards approach to community resilience planning. The Plan Update, and the workshop protocol that generated it, also began to account for the interacting impacts of earthquake subsidence, tsunamis, and climate change-driven sea level rise. The scientific modeling of these forces and their interactions is ongoing, and mentioned below under Synergistic Outgrowth Projects.

South Park

As detailed below under Partner Community Profiles and Engagement, our engagement with South Park was the least extensive of the three, but even the difficulties we encountered there help to confirm the findings highlighted at beginning of this section. Without the resources of Laurelhurst, or the autonomy of Westport, South Park partners were the least able to engage in new planning activities. Other recent planning and action initiatives in the neighborhood have focused on pollution mitigation and ecological restoration along the Duwamish River; sea level rise and flood resilience; green open space; and environmental justice and equitable development. Although our proposed activities differed in methods and goals from these prior initiatives, and we worked with Spanish- and Vietnamese-speaking facilitators, community capacity to participate in these additional activities was still limited by language diversity, overburdened community leadership, and probably other factors, including the general precarity and instability of community membership (compared with Laurelhurst and Westport) and the relative lack of urgency ascribed to future natural hazards (earthquakes, tsunamis and sea level rise) compared to the currently pressing problems of gentrification, displacement, job insecurity, and poor accessibility.

To deal with these concerns, community organizations in South Park have approached resilience differently from Laurelhurst, whose everyday stresses are relatively minimal, and residents have more opportunity and perhaps more inclination to anticipate rarer but highly consequential acute disruptions. South Park faces a combination of both chronic and acute threats by building a robust array of mutual aid networks, focusing on food systems and public health, through network-building rather than making sure residents all have the right material resources for occasional disruptions.

Nevertheless, South Park, like the other two communities, is vulnerable to isolation in the event of a disaster, and does face severe flooding and liquefaction hazards from an earthquake in the future. Its only way to prepare for these hazards is to take appropriate actions that *also* help to mitigate on-going current threats to wellbeing. To determine what these actions are, a more extensive engagement is required, and to this end our student team drafted an outreach plan. South Park's situation clearly highlights why it is important that city agencies responsible for emergency and environmental management need to coordinate more closely with programs that focus on current needs such as public health, housing, transportation accessibility, and community and economic development.

Goal 2. Identify available community and household resources important to coping with a disaster; assess households' willingness and ability to share resources, improvise strategies, and lever social relationships to cope with emergency situations; and provide findings to local organizations seeking to build community relations and strengthen emergency preparedness.

The differences between our experiences with planning assistance in each of the partner communities notwithstanding, that assistance provided us the basis for developing and implementing comparable surveys of community members' resources, willingness to share them, and social relationships among other factors related to adaptive capacity. Our findings suggest that *resource matching during a disaster scenario will depend on community members' knowledge about where to obtain resources locally as well as individuals' willingness to share resources with others in the community*. Our analysis reveals that most *respondents expect to seek resources from two sources in the event of a disaster: social ties (family, friends, or neighbors) and the store*. We also find that *willingness to share resources depends on the strength of social tie with recipient and varies according to the type of resource in question*.

We interpret these findings as *support for the development of localized alternatives for obtaining basic resources in a disaster scenario* (e.g., community resource caches, exploration of renewable resource alternatives). We also suggest that *initiatives that enhance community relationship- and trust-building initiatives could be framed as disaster preparedness activities*. Finally, we would like to call attention to the need to address the resource-seeking "unknowns," i.e., to *provide direction for obtaining those resources that respondents were most uncertain about how to obtain in a disaster scenario*.

Research design

The study adopted a mixed methods sequential research design (see Figure 3), beginning with community engagement through public workshops and other participatory activities. We then implemented a community sample survey in each community, followed by analysis of the survey data.

Figure 3: Mixed methods sequential research design

Sample survey

In order to build a nuanced understanding of the attitudes, actions, and social connections within our study communities, we designed and implemented a sample survey at the scale of the individual community. Because the effects of large disasters are inherently place-based, we were interested in understanding how information and resources might be shared via community-level social networks in the event of a disaster.

The survey instrument was developed with the help of feedback from members of the City of Seattle's Office of Emergency Management, the Northwest Healthcare Response Network, Washington State's Emergency Management Division, and the University of Washington Medical Center, as well as being reviewed by members of Laurelhurst Emergency Action Preparedness (LEAP) in Seattle and by Kevin Goodrich, Director of Public Works for the City of Westport.

Figure 4: The South Park community resilience sample survey

The sample survey included questions about community social relationships, social attitudes (such as trust and willingness to share), and community-level disaster preparedness. Exploratory in its nature, the survey instrument elicited information from community members not only about how they might be prepared for a disaster materially, but also about how their attitudes and social connections might contribute to preparedness at both the household and community scales.

Survey response and descriptive statistics

The survey response rate varied among the three communities: 35.1% in Laurelhurst, 17.4% in South Park, and 16.3% in Westport (see Table 1). The average size of respondents' social networks was highest in Laurelhurst (30). The average social network size in South Park and Westport was 12 and 21, respectively. Average level of trust also varied among the three communities, with Laurelhurst being the highest, followed by Westport and then South Park.

Table 1: Survey response rate and descriptive statistics by study community

	Laurelhurst	South Park	Westport
Survey response rate	35.1%	17.4%	16.3%
Age (mean)	56 years	46 years	62 years
Race/ethnicity (% respondents)			
White/Caucasian	86.4%	60.3%	91.8%
Black/African American	0.0%	0.0%	0.5%
Hispanic/LatinX	5.0%	11.0%	0.0%
Asian American	0.4%	6.2%	1.5%
Native American/Pacific Islander	1.6%	9.1%	0.5%
More than one	4.3%	10.0%	3.1%
Gender female (% respondents)	49.2%	69.2%	62.1%
Home ownership (% respondents)	79.8%	67.9%	81.5%
Size of community social network (mean)	30	12	21
Level of trust[1] (mean, scale -6 to 6)	1.48	-0.07	-0.04

[1] Trust measures adapted from the General Social Survey

Survey analysis

In the survey analysis we explored two primary research questions related to resource sharing within communities:

1. *Resource seeking:* Where do people anticipate getting needed resources in a disaster scenario?
2. *Willingness to share:* How does willingness to share resources vary according to strength of social tie? How does it vary by resource? By community?

Resource seeking

In an open-ended question, we asked respondents where they expected to go to obtain ten essential resources (water, food, medications, power, shelter, first aid supplies, warmth, sanitation, communication, and transportation) in the event of a large-scale disaster, like an earthquake. Respondent answers were inductively coded and grouped into thirteen categories (see Figure 5).

Social ties and "the store" were the most common responses across all three communities. Many respondents also don't know where they would go to seek these essential resources in a disaster.
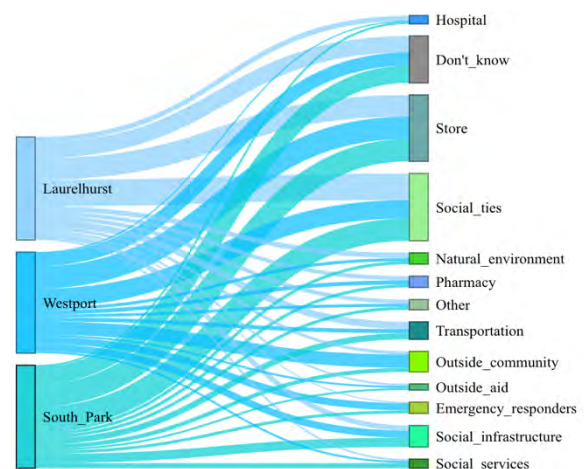
Figure 5: Resource seeking summary by study community

Willingness to share

We also asked survey respondents with whom they would be willing to share the same ten resources according to their social relationship with the potential recipient, whether that recipient was a close friend or family member (a strong tie), an acquaintance (weak tie), or a stranger. We found that willingness to share varied depending on resource and study community (see Figure 6). While most respondents in all three communities anticipated being willing to share a resource like first aid supplies with anyone in need, having a preexisting social tie with the recipient was more important for resources like sanitation (toilet facilities) and water. Respondents were least willing to share medications.

Figure 6: Respondent willingness to share resources by study community

We then examined how level of trust and network characteristics correlated with willingness to share resources (see Table 2). Trust was important across all three communities, indicating it plays a key role in willingness to share resources. The relevance of social network characteristics varied by context; only in South Park was the association between the two variables statistically

Table 2: Correlation analysis – trust, social network size, and willingness to share resources

Correlation between anticipated willingness to share resources and:	Laurelhurst		South Park		Westport	
	r	p-value	r	p-value	r	p-value
Trust	0.34	0.000***	0.31	0.000***	0.26	0.000***
Size of total neighborhood social network	0.03	0.69	0.20	0.004**	0.07	0.35
Size of neighborhood strong tie network	0.01	0.84	0.16	0.028*	-0.02	0.81
Size of neighborhood weak tie network	0.03	0.64	0.17	0.017*	0.08	0.28

Strength of association (r)
0.5 = moderate positive relationship
0.2 = weak positive relationship
-0.2 = weak negative relationship
-0.5 = moderate negative relationship

significant, suggesting that other community characteristics may play a role in the relationship between social network size and willingness to share.

Study Limitations

The study is not without limitations. In the survey, we asked people about their *anticipated* sharing behavior in a hypothetical disaster scenario. There are many uncertainties associated with this question. We do not know exactly what will happen in the case of a disaster, and people cannot necessarily make an accurate prediction about how they will behave in such an uncertain scenario. We also recognize the potential for social desirability bias regarding the willingness to share question. We attempted to address this by carefully framing the questions so that respondents would feel comfortable providing an honest answer. Our finding that people stated different willingness to share for different kinds of resources does suggest that respondents carefully considered each resource and that there are at least some reliable *relative* differences in willingness to share depending on the resource in question, which can help to inform prioritization of resource readiness as well as disaster preparedness education.

Goal 3. Assess potential for improving the robustness of telehealth technology through integration of low and high telecommunications technologies with local social networks and trust relationships, and key community place-based assets such as schools, churches, stores, and other important spaces of goods and information exchange.

As mentioned above, telehealth and telecommunications technology did not remain a focus of the project. However, the workshop and survey findings did provide insights on social networks and trust relationships, as well as key community place-based assets, and these insights are relevant to the development of locally adaptive information and telecommunications strategies. An important outcome of the project in this direction was our successful application to NSF for a Smart & Connected Communities Planning Grant (smaller than the full proposal we initially submitted). Further details on this subsequent project are below, under Synergistic Outgrowth Activities.

Partner Community Profiles and Engagement

Laurelhurst

Laurelhurst, the first community with which we worked, initially approached the research team with an interest in partnering on disaster preparedness research. The neighborhood's grassroots disaster preparedness organization, Laurelhurst Emergency Action Preparedness[1] (LEAP), was in the process of establishing a community emergency hub to aid the neighborhood in disaster response as well as organizing each of its 1,753 households into a community-wide system of "clusters" for emergency networking and communication. LEAP works to increase awareness, knowledge, and connections within the community to help minimize the potential for injury and damage in the case of a major disruptive event, such as an earthquake. LEAP is an active participant in the Seattle Emergency Hubs network, a citywide coalition of neighborhood organizations that work together on strategies for disaster preparedness, response, and resilience.[2] LEAP members indicated they would be interested in working together on designing and implementing a community resilience survey to help support their local organizing efforts.

History and sociodemographic context

Located in northeast Seattle adjacent to the University of Washington campus, Laurelhurst is a relatively wealthy urban neighborhood of approximately 5,000 residents (Seattle Office of Planning & Community Development n.d.).[3] Once a seasonal campground for the Duwamish native peoples, the wooded peninsula on which present-day Laurelhurst is located was christened by real estate developers in 1906 and annexed by the City of Seattle in 1910 (Rochester 2001). Laurelhurst developed as a primarily residential community known for its tight-knit character and the quality of its schools as well as its status as the residential choice for many prominent Seattleites, including the Gates family (Harville 2009). Many residents also have associations with nearby University of Washington, either as current or former administrators or faculty members. The Laurelhurst Community Club (originally the Laurelhurst

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[1] When the team began working with LEAP in 2017, the name of the organization was "Laurelhurst Earthquake Action Preparedness." In 2019, they changed the name to communicate their interest in focusing more broadly on disasters and disruptions beyond just earthquakes.

[2] See http://seattleemergencyhubs.org/about-us/mission/

[3] Because the boundaries of the Laurelhurst neighborhood as self-identified by its residents do not align precisely with designated Census tracts or block groups, it is not possible to obtain an exact population count.

Improvement Club) was founded in 1920 and is still active today, working to build community, address local concerns, and collaborate with civic and governmental organizations (Rochester 2001; Harville 2009). The Laurelhurst Community Club is the umbrella organization with which LEAP is associated.

Laurelhurst residents are highly educated and both economically and socially mobile. They are predominately White, with a median income of $122,333 and a high life expectancy among the highest of Seattle neighborhoods (Seattle Office of Planning & Community Development n.d.; Institute for Health Metrics and Evaluation, n.d.). Those living in the neighborhood have access to a range of health care services within and adjacent to the neighborhood, including specialist care. Located near the University of Washington's Seattle campus, the neighborhood is within close range of the University of Washington Medical Center, a nationally renowned hospital. Located within the neighborhood is the main campus of Children's Hospital and Regional Medical Center, one of the nation's top children's hospitals, as well as a handful of small businesses offering a range of health care services.

Table 3: Sociodemographic characteristics for Laurelhurst and Sand Point

2013-2017 American Community Survey 5-Year Estimates for Laurelhurst/Sand Point[4]		
Subject	Estimate	Percentage of neighborhood population
Gender and age		
Male	5,503	49.5%
Female	5,615	50.5%
Median age (years)	38.7	
Race and ethnicity		
One race	10,537	94.8%
White	8,830	79.4%
Black/African American	393	3.5%
American Indian/Alaskan Native	0	0%
Asian	1,271	11.4%
Native Hawaiian/Pacific Islander	16	0.1%
Hispanic/Latino (of any race)	204	1.8%
Two or more races	581	5.2%
Housing		
Single family housing units	2,912	68.4%
Owner-occupied units	2,891	67.7%
Renter-occupied units	1,381	32.2%
Median value (dollars)	$908,950	
Occupation		
Management, business, science, arts	3,951	74.8%
Service	408	7.7%
Sales and office	776	14.7%
Natural resources, construction, maintenance	58	1.1%
Production, transportation, material moving	87	1.6%

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[4] See previous note regarding Census data for Laurelhurst; this data table includes both Laurelhurst and Sand Point.

Built environment context

The neighborhood sits on a hilly peninsula that extends into Lake Washington and Union Bay, which bound the community on the east and south, respectively. Its western border comprises the University of Washington campus and the University Village shopping center, and the neighborhoods of Bryant and Windermere lie to the north. With views of Mt. Rainier and Lake Washington as well as relatively easy access to downtown Seattle, the University, top-tier medical facilities, and amenities such as parks, trails, and waterfront access, Laurelhurst residents enjoy a high quality of life.

There are approximately 1,890 households within Laurelhurst, more than 90% of which are single family homes.[5] Many are large homes, and the median home value is $908,950 (compared to $663,000 for the city overall) (City of Seattle Office of Planning and Community Development 2019b; United States Census Bureau 2019). A handful of apartment buildings are located on the periphery of the neighborhood near Sand Point Way, and some condos and townhomes can be found in the northeast portion of the community. Land use within Laurelhurst is primarily residential, but some commercial uses are located nearby on Sand Point Way and within the University Village complex. Neighborhood institutional uses include Children's Hospital, the Villa Academy private school, the Laurelhurst Beach Club, and a handful of religious entities. Public amenities include Laurelhurst Playfield Park, Laurelhurst Community Center, the Union Bay Boglands, and a number of small parks that provide access to Lake Washington.

Surrounded primarily by water and a mix of institutional and region-serving commercial uses, Laurelhurst is a somewhat isolated neighborhood. Its street network comprises a mix of an orthogonal urban grid and winding suburban-style streets. Residents describe the community as a great place to walk and encounter neighbors, but anecdotes suggest that Laurelhurst can be difficult for non-residents to navigate. For example, drivers of the neighborhood's few bus routes sometimes get lost in the areas dominated by curving and meandering streets. Although the Husky Stadium light rail station is located relatively nearby on the edge of the University of Washington campus and provides access to high-capacity regional transit, it is not easily reached from the neighborhood by pedestrians.

According to the data provided by the Seattle Hazard Explorer, some areas of Laurelhurst near the shoreline are susceptible to either liquefaction or landslide hazards (City of Seattle 2015). In the event of a high-magnitude earthquake, areas near the shore might be affected by seiches (City of Seattle Office of Emergency Management 2021). Because of its inland location and steep topography, Laurelhurst is unlikely to be affected by sea level rise. LEAP has been instrumental in designating a Community Emergency Hub – a designated place for neighbors to meet and share information in the event of a disaster – at St. Stephen's Church, including the purchase of emergency communication equipment and supplies.[6]

Engagement activities with Laurelhurst

The research team first connected with LEAP members in the fall of 2016, at which time the two groups discussed their mutual interest in community-scale disaster preparedness. Discussions focused on better understanding how community assets can be leveraged to enable resilience in the face of disruptions (such as earthquakes) or other long-term changing conditions, in ways that also improve everyday community well-being. The research team began to join LEAP meetings, which led to collaboration on

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[5] The total number of households and percentage of households are based on sampling frame data gathered by the research team as neighborhood boundaries do not align precisely with Census blocks (see previous note).

[6] For more on Seattle's Community Emergency Hubs, see https://www.seattle.gov/emergency-management/prepare/prepare-your-neighborhood/community-emergency-hubs

the design of a community workshop to learn more about assets and values within the Laurelhurst neighborhood.

Participation in LEAP activities

Between the fall of 2017 and the spring of 2019, the research team participated in several of LEAP's monthly meetings. At these meetings, LEAP members discussed the planning and implementation of their ongoing disaster preparedness initiatives. At the time of the team's participation, these activities were focused on developing organizational structures for disaster-related information sharing within the neighborhood (which took the form of "clusters" of households), organizing educational workshops and trainings for the community, and establishing a community "emergency hub" at St. Stephens Church that would serve as a gathering place and resource center in the event of a disaster.[7]

The research team was invited to participate in the meetings and share their perspectives on community resilience and disaster preparedness as well as contribute to the development of LEAP's initiatives and activities. Daniel Abramson was invited to give a public presentation of his research on community disaster preparedness and lessons learned from communities around the world, including Christchurch, New Zealand, which experienced major earthquakes in 2010 and 2011. Members of the research team also participated in public disaster preparedness trainings and presentations organized by LEAP, including a general disaster readiness course provided by the City of Seattle and a "Stop the Bleed" workshop provided by local health care professionals. We also engaged LEAP in the development of several grant proposals for community disaster preparedness research.

Survey development

LEAP provided oversight during the process of developing the sample survey. The research team shared the draft survey with LEAP and facilitated a meeting in which LEAP members provided detailed feedback on the draft survey document, which helped to guide the development of the final survey instrument (see the section on *Survey Design and Development* in Chapter 3 for more details on this process). Before implementing the survey, the research team obtained formal approval for the survey project from the Laurelhurst Community Club, a long-standing neighborhood improvement organization with which LEAP is affiliated.

Organizational ethnography

Based on participant observation and interviews with LEAP members, undergraduate research assistant Jenny Phan developed an organizational ethnography of LEAP in 2018 (Phan and Idziorek 2018).The document describes LEAP's organizational goals, documents its history and culture, and its outreach activities and future trajectory. The ethnography was well-received by members of LEAP, who found it to be a useful documentation of the organization's early evolution and core activities.

Community workshop

The research team and LEAP partnered to plan and co-host a public disaster preparedness workshop, which took place on November 7, 2018 (Appendix D). Held at the Laurelhurst Community Center, the workshop created a forum for neighborhood stakeholders to discuss, via participatory group activities, the qualities that contribute to a resilient community. The purpose of the workshop was twofold: 1) to help LEAP recruit new members by spreading the word about the community emergency preparedness

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[7] In 2020, LEAP was successful in raising $15,000 from neighbors to build and equip an emergency communications hub at St. Stephen's Church, which will operate using ham radios in the event of a catastrophic emergency.

work they are doing; and 2) to build a better understanding of the unique community values and assets that might contribute to strengthening community resilience in Laurelhurst. Several community members, a handful of LEAP team members and the UW team participated in the workshop.

The planning and implementation of the studio provided an opportunity to engage UW students who were participating in Daniel Abramson's Fall 2018 community resilience urban planning studio. The studio students and teaching assistants helped to facilitate the workshop activities. LEAP member Amy Fouke visited the studio class in advance of the workshop to talk with the students about LEAP's general goals for community-led disaster preparedness as well as its neighborhood cluster strategy.

The workshop itself comprised three primary activities: asset mapping, zone mapping, and a disaster preparedness resource matching game. In the asset mapping activity, participants worked in small groups to identify, on a map, the assets that contribute to Laurelhurst's unique identity, quality of life, and strengths as a neighborhood. Participants were encouraged to think broadly about what might constitute a community strength or asset. The Community Capitals Framework (Emery and Flora 2006) was used as a prompt for participants to consider natural, cultural, human, social, political, financial and built capital in the exercise.

The zone mapping activity provided an opportunity for community members to determine how neighborhood clusters should be formed and organized into umbrella "zones" based on their knowledge about the physical and social characteristics of the neighborhood. Participants in this workshop activity were asked to consider how many clusters should make up a zone as well as the characteristics that should define a zone (e.g., topography, land use, distribution of resources, local hazards). Groups outlined potential zones by drawing on large maps of the neighborhood showing LEAP's already-designated clusters and were provided with additional maps showing local hazards and neighborhood topography to help inform the discussion and mapping.

The final activity involved a disaster preparedness card game in which groups worked as teams to creatively match skills and resources with hypothetical challenges that might arise in the case of a disaster. After the game, teams were asked to reflect on additional skills or supplies beyond those on the cards might be helpful in solving disaster challenges as well as which of the community's existing values and assets would help in solving the kinds of problems presented by the disaster challenges.

In the workshop's closing discussion, several broad themes emerged that could potentially help to inform future LEAP actions and initiatives. These included the need for better disaster preparedness through training; addressing vulnerability to the loss of power; providing education about health and sanitation practices in disaster scenarios; uncertainty about transportation and communication service availability in disaster scenarios; creating cluster-level resource inventories; and holding more social events within the neighborhood to further community-building. The workshop activities and outcomes were documented in detail in a summary report (Idziorek 2018) and shared with LEAP.

Gathering this information in the workshop helped the research team to better understand Laurelhurst's unique neighborhood context, which in turn helped to shape the survey instrument. For example, the different neighborhood "zones" outlined on a map contained within the survey instrument were created using guidance from a workshop conversation about how LEAP might organize its 20-household clusters into larger zones that could collaborate internally on disaster preparedness efforts. We were also able to learn about which places or establishments within the community are important to community members and might serve as resources in a time of need. The information gathered during the workshop also helped with interpretation of survey responses, particularly in providing context for answers to some of the open-ended questions. After the workshop, the research team met

with LEAP to review the survey instrument and received helpful feedback that was integrated into the questionnaire for the pilot study.

South Park

One of the goals of the research project was to work with communities across a range of spectra from urban to rural and from low to high socioeconomic status to better understand how issues and responses related to community disaster preparedness and longer-term resilience might vary based on community characteristics. The research team partnered with Matt Auflick, the Community Relations Manager within the City of Seattle's Office of Emergency Management (OEM) to engage South Park, an underserved urban community in southeast Seattle. OEM had historically had difficulties engaging South Park residents in disaster preparedness activities and so was interested in trying out a different approach to its typical preparedness trainings. The UW team provided support for community outreach as well as planning and facilitation support for the community workshop, and OEM was able to provide the translation and interpretation services needed for working within the multilingual South Park neighborhood as well as expertise in community-specific disaster preparedness.

History and sociodemographic context

Located on the west bank of the Duwamish River, the area currently known as the South Park neighborhood of Seattle was once home to the Duwamish tribe of Native Americans, who relied upon the river and its surrounding habitat for sustenance over thousands of years (Wilma 2001). Settlers first staked claims to the land in 1851 (Veith 2009). The City of Seattle annexed South Park in 1907, and it was settled by Italian and Japanese farmers who sold produce at Pike Place Market (Wilma 2001). In 1913, the process of rechannelizing the Duwamish River began in an effort to control seasonal flooding, which enabled ocean-bound ships and barges to navigate the waterway and attracted industry to what had previously been a residential neighborhood. During World War II, the Boeing Airplane Company and several shipyards made the community of Georgetown, located just across the river from South Park, a major center of defense industry employment (Veith 2009). The neighborhood was rezoned for industrial use in the 1960s, but resident protests succeeded in changing the zoning designation to low-density residential (Wilma 2001), resulting in what today is an unusual combination of residential and industrial uses in close proximity to one another.

Today, South Park is an ethnically diverse community of approximately 4,000 residents, including many immigrants. Approximately 40% of the neighborhood's voting-age population are not U.S. citizens (2013-2017 American Community Survey 5-Year Estimates). More than 45% of residents identify as Hispanic or Latinx, and 50% speak languages other than English at home, including Spanish, Vietnamese, Somali, and many others (City of Seattle Department of Neighborhoods 2019). More than one quarter of the neighborhood's residents live on incomes below the poverty level, and 90% of the children living in the neighborhood qualify for free or reduced-price meals at school (City of Seattle Department of Neighborhoods 2019; Turnbull 2020). One of Seattle's most diverse communities, South Park has a history of social activism (Turnbull 2020) and is home to many neighborhood-based organizations, such as the South Park Area Redevelopment Committee, the South Park Arts Council, the South Park Housing Coalition, and South Park Safety Partners. The neighborhood also hosts a number of annual festivals, including Fiestas Patrias, the South Park Music Festival, and the Duwamish River Festival, during which community members come together to celebrate South Park's rich cultural heritage.

Table 4: Sociodemographic characteristics for South Park

2013-2017 American Community Survey 5-Year Estimates for South Park		
Subject	Estimate	Percentage of neighborhood population
Gender and age		
Male	2,028	54.5%
Female	1,691	45.5%
Median age (years)	34.1	
Race and ethnicity		
One race	2,957	79.5%
White	1,697	45.6%
Black/African American	200	5.4%
American Indian/Alaskan Native	17	0.5%
Asian	362	9.7%
Native Hawaiian/Pacific Islander	156	4.2%
Hispanic/Latino (of any race)	1,285	34.6%
Two or more races	762	20.5%
Housing		
Single family housing units	1,010	65.5%
Owner-occupied units	561	39.7%
Renter-occupied units	852	60.3%
Median value (dollars)	$287,100	
Occupation		
Management, business, science, arts	428	25.6%
Service	451	27.0%
Sales and office	352	21.1%
Natural resources, construction, maintenance	137	8.2%
Production, transportation, material moving	302	18.1%

The legacy of pollution caused by area industry has had a profound effect on the quality of the environment in the Duwamish Valley as well as on the health and wellbeing of residents in South Park and other nearby communities. Over time, the activities of shipping and other industry in the area contaminated the Duwamish Waterway. Pollution control measures were enacted in the 1980s, and a 5.5-mile stretch of the Lower Duwamish was listed as a superfund site by the Environmental Protection Agency in 1991 (Veith 2009), prompting the development of the Duwamish River Cleanup Coalition, a grassroots organization with a mission centered on health and environmental justice.

Although contaminant levels have been reduced somewhat as a result of cleanup actions, health advisories remain in place as seafood from the waterway is not safe to consume (City of Seattle Office of Sustainability & Environment 2018). In addition, multiple studies have demonstrated that Duwamish Valley communities are exposed to higher levels of air and noise pollution and have lower life expectancies than most areas of the city – on average, South Park's residents live 13 fewer years than Laurelhurst's – while also experiencing less access to amenities like open space and basic necessities like healthy and culturally appropriate food (City of Seattle Office of Sustainability & Environment 2018; Nelson 2019).

In addition to detrimental effects on resident health caused by the contaminated waterway, noise pollution from the flight path overhead, and air pollution from adjacent highways, the neighborhood has historically experienced a pattern of disinvestment in regard to City services and projects (City of Seattle Office of Sustainability & Environment 2018). In recent years, the City of Seattle and other public agencies have made efforts to address institutional racism and race-based disparities in South Park through initiatives such as the 2011 South Park Action Plan, a 2013 Health Impact Assessment, and the 2018 Duwamish Valley Action Plan.[8]

Built environment context

The South Park neighborhood is located along Seattle's southern municipal boundary, bordered on the north and east by the Duwamish Waterway industrial corridor, on the west by WA State Route 509, and on the south by a zone of industrial land. Another busy highway, WA State Route 99, bisects the neighborhood. South Park and Georgetown, located to the northeast across the Duwamish Waterway, are Seattle's only two riverfront neighborhoods. South Park and Georgetown are among Seattle's lowest-income neighborhoods and have many other shared characteristics, including their industrial history and character, as well as their relative isolation from surrounding communities. The two neighborhoods often collaborate on planning, environmental justice, and community health initiatives.

South Park has a mix land uses, with residential areas located in the center of the neighborhood and industrial uses located to the north and south. Many of the neighborhood's small businesses are located along South Coverdale Street and 14th Avenue South, South Park's primary commercial corridors. There are approximately 1,500 households in South Park, more than 60% of which rent their homes (City of Seattle Office of Planning and Community Development 2019a). The median home value in South Park is $287,100 (compared to $663,000 for the city overall (City of Seattle Office of Planning and Community Development 2019a; United States Census Bureau 2019).

The neighborhood is home to the South Park Community Center, SeaMar Medical Clinic, a local branch of the Seattle Public library, and a City of Seattle transfer station. South Park is also home to Marra Farm, the city's last remaining working farm, which provides education on organic produce cultivation, hosts a P-Patch community garden, and serves as home for several community-based organizations. Although South Park has a handful of parks and playgrounds, they amount to only 40 square feet of accessible open space per person (compared to the city average of 387 square feet per person), which has driven the development of the South Park Green Space Vision Plan to help address this inequity (Seattle Parks Foundation 2014).

Because of its location along the Duwamish and wedged between busy transportation corridors, South Park's street grid is not well-connected to neighboring areas of the City. The South Park Bridge crosses the Duwamish Waterway to link the neighborhood to the City of Seattle to the north, and only two streets connect South Park to areas west – neither of which provides convenient access to resources or amenities. When the bridge is open or out of commission, as it was between 2010 and 2014 due to deterioration and earthquake vulnerability, the neighborhood is effectively isolated from the rest of the city. The neighborhood is served by only two bus routes, which are not always dependable in challenging weather. During a 2019 snowstorm, South Park went without public transit service because although the neighborhood is relatively flat, the bus lines that serve it traverse steep hills in adjacent areas and had to be re-routed (Lindblom 2019).

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[8] For a more complete list of South Park planning initiatives, see
http://www.seattle.gov/Documents/Departments/Neighborhoods/Districts/Neighborhood%20Snapshots/South-Park-Snapshot.pdf

In addition to the chronic hazards faced by South Park residents in connection with the area's environmental vulnerability, the neighborhood is also vulnerable to a host of physical hazards. The neighborhood is located just to the north of a suspected fault line and most areas of the neighborhood are highly susceptible to both flooding and liquefaction as a result of the loose fill soils that lie under South Park's heavily engineered landscape (City of Seattle 2015). The neighborhood experiences ongoing drainage and flooding problems, which have prompted the City of Seattle to construct new drainage infrastructure and a pump station to divert stormwater runoff during high tide events (City of Seattle 2019).[9] South Park has two designated Community Emergency Hubs: one at the Marra Farm P-Patch, and one at the South Park Neighborhood Center. The South Park Neighborhood Center hub has emergency communication equipment and capabilities, but the Marra Farm one does not (City of Seattle Office of Emergency Management 2018).

Engagement activities with South Park

The research team first connected with OEM during the spring of 2019, based on a common interest of working with the South Park community on disaster preparedness issues. Through the partnership with OEM, we hoped to implement the community workshop and sample survey protocol that had been tested first in Laurelhurst and Westport. In part because neither the research team nor the Office of Emergency Management had close ties to the South Park neighborhood, engaging with the community at the level achieved in either Laurelhurst or Westport proved to be a challenge. We learned that members of the South Park community are often overburdened and tend to operate within their own, well-established community networks to address local issues rather than engage in city-led processes. Our team was also not able to support the sustained nature of engagement achieved in the other two communities in the South Park neighborhood. However, we did build some relationships with community members and organizations, laying the groundwork for future resilience-related engagement within the neighborhood.

Meeting with Promotoras and SPIARC

In July of 2019, OEM organized a meeting including City staff, members of the research team, South Park *Promotoras* (volunteer community health workers – typically women – who provide culturally competent education regarding issues of health and emergency response to members of the South Park Latinx community) and members of the South Park Information and Resource Center (SPIARC), a local nonprofit that seeks to respond to the diverse needs of the community, to discuss the possibility of implementing the workshop and survey protocol in South Park.[10] Xochitl Garcia, a leader of the *Promotoras*, expressed interested in both the workshop and the survey and offered to help promote the event.

OEM and the UW team shared a tentative agenda and tentatively suggested the date of October 2, 2019 for the workshop, to be held at the South Park Community Center. The group discussed strategies for advertising the workshop and reaching potential attendees, including having a presence at the upcoming Duwamish River Festival and reaching out to local businesses. We also discussed logistics for the workshop, including the need to provide appropriate translation in both Spanish and Vietnamese as well as providing childcare and meals for attendees.

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[9] These projects are in the planning stages as of early 2021.

[10] For more information on the South Park *Promotoras* and the South Park Information and Resource Center (now known as *Villa Comunitaria*) please see https://villacomunitaria.org/about-us/.

Tabling at Duwamish River Festival

On August 17, 2019, research assistant Asela Chavez Basurto represented the UW research team as part of a tabling outreach event at the Duwamish River Festival, an annual event organized by the Duwamish River Cleanup Coalition that celebrates the Duwamish River Basin community through river-related activities, cultural presentations, information booths, food, and entertainment. The City of Seattle's Office of Emergency Management took the lead in setting up an information booth to share disaster preparedness resources and to advertise the upcoming community workshop. The booth included an interactive mapping activity in which people who stopped by were asked to identify places that serve as important resources within the neighborhood and to describe values that characterize the South Park neighborhood.

Important places noted by participants included the local institutions such as the library, and community center; local parks, trails, and playfields; local businesses such as breweries, coffee shops, and stores; the local food bank, bus stops/routes, and the senior center. Neighborhood values identified included sense of community; arts and culture; diversity, family, resistance, pride, and Hispanic values, among others. Participants also noted the relative isolation of the neighborhood due to the scale of the infrastructure surrounding it and the lack of access to medical services. One participant that grew up in the neighborhood commented that she felt South Park was a tight-knit community, perhaps in part due to its isolation. Participants also stated a desire for better access to grocery stores and well-maintained open spaces (Chavez Basurto 2019).

Meeting with King County Public Health

On August 21, 2019, members of the research team met with two employees of Seattle King County Public Health who were familiar with the South Park community: Michelle di Miscio, a community health worker who lives in South Park, and Bradley Kramer, a health services Program Manager. Michelle, who has worked closely with the *Promotoras*, noted that the neighborhood was very interested in disaster preparedness issues as well as preparedness for other potential kinds of disruptions related to immigration issues (e.g., if a person or family needed to suddenly leave the community due to fear of deportation). The UW research team described the community resilience survey and workshop protocol, which Michelle and Brad felt would be appropriate for implementation in South Park. They made some suggestions regarding how to promote the workshop and the survey and suggested it would be important to share the results of the survey with the local community. The group also discussed the possibility of using some of the research funding to pay the *Promotoras* to help with outreach related to the workshop and survey.[11]

Community workshop

The South Park Community Resilience Workshop was designed to engage community members in thinking broadly about what resilience means for their specific community, both in terms of disaster preparedness and as related to longer-term quality of life and well-being. The workshop was organized and co-hosted by the University of Washington's Department of Urban Design and Planning and the City of Seattle's Office of Emergency Management. Three University of Washington graduate research assistants assisted with facilitation. Two of those students conducted outreach in South Park as well as the nearby Georgetown neighborhood, distributing fliers to businesses and local institutions and organizations to promote the workshop. OEM provided interpreters for both Spanish and Vietnamese

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[11] Although the research team later contacted the *Promotoras* regarding this idea, no response was received, and outreach was conducted primarily by UW research assistants and OEM.

speakers, and all workshop materials were translated into Spanish and Vietnamese. Daycare and food were provided for workshop participants.

The workshop took place during the evening of Wednesday, October 2nd, 2019 at the South Park Community Center. The activities of the workshop were designed to gather information about assets within the South Park community, to identify gaps in disaster preparedness, and to build new social connections within the community while simultaneously building upon previous community planning work that had taken place within the neighborhood.

After introducing the workshop agenda and objectives, the facilitation team reviewed the community values maps and comments that had been gathered at the Duwamish River Festival event. Workshop participants validated the information, indicating they did not have anything to add or change. The facilitators then provided a brief overview of previous planning work that had taken place in the South Park/Georgetown community, sharing that previous plans had highlighted values such as creating a healthy environment, providing parks and open space, and supporting affordable housing.

The facilitators then asked the participants to work together in two small groups to map assets within the community, once again using the Community Capitals framework for guidance (Emery and Flora 2006). Participants located place-based assets on paper maps, and facilitators recorded lists of non-place-based assets that were mentioned in the conversation. Participants most frequently mentioned assets that fit within the built capital, human capital, and social capital categories. In some cases, assets provided more than one type of capital (e.g., specific locations/buildings like a school also provide social and human capital benefits). Participants emphasized the importance of institutions providing core services like education, health care, and community support, as well as local businesses and community leaders. Gaps that emerged during the discussion included a lack of local grocery stores, limited public transportation options, a lack of quality open space, and environmental pollution.

Matt Auflick from OEM then presented information about hazards to which South Park is particularly susceptible as well as likely effects of a major disaster and what the neighborhood should expect in terms of hazard response from the City of Seattle. Matt described the potential impacts of five hazards most relevant to the South Park neighborhood: flooding, sea level rise, earthquakes/liquefaction, tsunami inundation, and landslides. He then provided an overview of the types of impacts that might be expected from these types of hazards, including damage to infrastructure and utilities; scarcity of resources; and failure of utilities and communications. Matt suggested several strategies for improving household and community preparedness for these types of disasters, including becoming familiar with nearby community emergency hubs, carrying personal property insurance, stocking first aid supplies, and participating in emergency aid training.

Following the hazards presentation, groups worked on a resource matching exercise using the same community asset map from the previous exercise overlaid with potential hazard areas. Participants worked together to identify relevant community assets or strategies identified in the previous exercise that might be applied to help deal with communication, structural damage, and health and wellbeing impacts in the event of a disaster. At the end of the activity, groups summarized their discussions in the form of a narrative, or story, and shared them with participants from the other group. The first group noted that the neighborhood has both structural vulnerabilities (e.g., liquefaction, flooding) and assets in the form of places that would be accessible in times of emergency (e.g., Marra Farm) and expressed interest in designating more emergency hubs within the neighborhood. The second group described assets that could be built upon to help serve the neighborhood in a disaster, including a sense of neighborliness that could help to strengthen social networks within the community, as well as areas of vulnerability or opportunity such as strengthening technologically enabled networks like Facebook groups.

Several overall themes emerged during the workshop activities and discussions. South Park's relative isolation was discussed repeatedly, both in the physical sense, such as being dependent on bridges for access to grocery stores and basic services, but also in the social sense, due to challenges like language barriers. On the other hand, South Park's strong sense of community and its residents' ability to be adaptable, flexible and improvisational in the face of challenges was identified as an asset that could be leveraged in disaster response. Local businesses and institutions such as SPIARC and the SeaMar clinic were identified as organizations that could contribute to local disaster preparedness efforts. Participants also identified opportunities to strengthen community bonds and promote resource sharing through events like block parties and improved online communication among neighbors. The details of the workshop activities and discussions were summarized in a report and shared with OEM (Arjona and Chavez Basurto 2019).

Community outreach plan

As one response to the low community turnout for the workshop, Abramson and Idziorek guided research assistants Asela Chavez Basurto and Andres Arjona in the creation of a Community Outreach Plan for Disaster Resilience in South Park, comprising a set of guidelines for conducting disaster preparedness outreach in the neighborhood (Arjona and Chavez Basurto 2019). Asela and Andres made multiple visits to the neighborhood, reviewed existing South Park planning documents, reviewed literature on outreach best practices, assessed current local and statewide outreach plans, and conducted phone interviews with liaisons involved in community outreach efforts in South Park and elsewhere in Seattle. The audience for the document includes public officials, organizations, and academics who would like to achieve an inclusive public outreach process in the South Park neighborhood.

The authors noted that an outreach plan for South Park is expected to take significant time to implement because of the attention that needs to be given to the various groups within the community, including Hispanic, Vietnamese, Khmer, and Somali immigrant groups. The recommendations of this outreach plan are grounded in information gathered from the interviewees who routinely engage in community improvement efforts in South Park. Primary recommendations include building relationships; engaging topics relevant to the community's realities; meeting the community where they are; paying people for their time; letting the community select the meeting location and amenities; assigning roles and responsibilities; and following up personally. Although our research funding and timeline did not allow for this kind of community engagement process, we recognize it as a best practice and an ideal to strive for in future work with this and other multiethnic communities.

Westport/South Beach

The research team approached the City of Westport both because of its rural location and its distinction as the first location in North America to construct a tsunami vertical evacuation facility (Lubell 2016). During the summer of 2018, members of the research team met with Kevin Goodrich, Westport's Public Works director, to discuss a potential partnership with the City of Westport that would focus on integrating hazard mitigation planning and long-term community planning. Kevin and other community leaders, including the local Tsunami Safety Committee, viewed the research team's proposal to convene a public workshop and implement a local community resilience survey as aligned with their own long-term goals, and short-term desire to update the City's Comprehensive Plan and, in the process, incorporate and adapt measures prescribed by the County's Hazard Mitigation Plan. Daniel Abramson also proposed developing a graduate-level urban planning studio course for the Fall of 2018 that could explore as-yet-unvetted strategies for both short-term and long-term coastal resilience in the specific

context of Westport. The Coastal Resilience studio played a key role in helping to support the community engagement activities in Westport (see *Engagement activities* below). The research team also initiated a relationship with the Shoalwater Bay Tribe, whose reservation is located in Tokeland, to the south of Westport on another low-lying peninsula. Although we did not work closely with the tribe in the activities outlined below, we did participate in their annual Yellow Brick Road Tsunami Health Walk, and the tribe's Emergency Manager participated in the Community Partners Workshop described below. Moreover, the larger South Beach community, whose Regional Fire Authority and Ocosta School District serves both the City of Westport and Tribe, became a focus of the project.

History and sociodemographic context

Located on the south shore of Grays Harbor on Washington State's Pacific coast, the peninsula now known as Westport was once part of Chehalis tribal lands and the location of an important indigenous fishing village that at times had a population of up to 5,000 individuals (McCausland 1998). Devastated by smallpox introduced by white settler-colonizers in the mid-1800s, these Native peoples were eventually forced to move to an inland reservation (Kershner 2014). Westport was incorporated in 1914. Westport's connection to the Pacific Ocean has played a key role in shaping its identity throughout its history, as it has functioned as a destination for marine recreation, a lumber shipping hub, a Coast Guard outpost, and a base for commercial and charter fishing over the years. Fishing and maritime industries such as seafood canning have always been important to Westport's economy. Beginning in the 1970s, legislation protecting Native American tribes' salmon fishing rights limiting commercial fishing caused the city's economy to diversity, including growth of recreational activities such as surfing and whale-watching (Kershner 2014; McCausland 1998). Westport Shipyard, Inc., which was founded in 1964 to build fishing boats, has expanded into the production of recreational and luxury vessels. Today, Westport's economy is primarily based on tourism, commercial fishing, and seafood processing. Home to the largest coastal marina in the Pacific Northwest, the city boasts Washington State's largest charter fishing fleet and the west coast's top commercial fishing fleet by volume (Port of Grays Harbor 2021). Annual events and festivals such as the Blessing of the Fleet, Rusty Scupper's Pirate "Daze," and Santa by the Sea celebrate the area's maritime heritage.

Westport is a community of approximately 2,100 year-round residents, but its population often swells in the summer due to seasonal tourism. U.S. Census data indicates that median annual household income in Westport is $42,439 and that the city has a poverty rate of 17.5%. The median age in Westport is 49.7, more than ten years higher than the U.S. median age of 38.1 (United States Census Bureau 2018). The majority of Westport residents (94.6%) are White, and 98.4% of all residents report speaking English only at home (Ibid). According to 2019 Washington State county health data, Grays Harbor County ranks 36 out of 39 in overall health outcomes; 35 out of 39 in social and economic factors affecting heath such as income inequality and unemployment; and 38 out of 39 in health behaviors such as adult smoking and adult obesity (Robert Wood Johnson Foundation 2021). Westport's percentage of residents with a disability (22.3%) is nearly double the national average of 12.6% (United States Census Bureau 2018).

Built environment context

Westport is located within the South Beach area of Washington State's Pacific coast, which also includes the communities of Ocosta, Grayland, North Cove, and Tokeland. The city itself is located entirely on a low-lying peninsula at the mouth of Grays Harbor, where the Chehalis River meets the ocean. Because of its sandy composition and relatively unprotected location, Westport's peninsula has historically experienced shifting landforms due to powerful tides and storms. As shipping and fishing became

important to the local economy at the end of the 19th century, engineering, dredging, and fill projects, including jetties and breakwaters, were initiated to help stabilize both the land and shipping lanes (McCausland 1998). Many of these structures have experienced a cycle of failure and reconstruction over the years, and land loss due to coastal erosion continues to be an issue in the South Beach area today (Ruggiero et al. 2012).

Table 5: Sociodemographic characteristics for Westport

2019 American Community Survey 5-Year Estimates for Westport		
Subject	Estimate	Percentage of population
Gender and age		
Male	1,011	55.6%
Female	806	44.4%
Median age (years)	49.7	
Race and ethnicity		
One race	1,739	95.7%
White	1,718	94.6%
Black/African American	1	0.1%
American Indian/Alaskan Native	5	0.3%
Asian	15	0.8%
Native Hawaiian/Pacific Islander	0	0.0%
Hispanic/Latino (of any race)	78	4.3%
Two or more races	78	4.3%
Housing		
Single family housing units	936	59.2%
Owner-occupied units	527	62.4%
Renter-occupied units	317	37.6%
Median value (dollars)	$188,900	
Occupation		
Management, business, science, arts	221	35.2%
Service	76	12.1%
Sales and office	127	20.3%
Natural resources, construction, maintenance	144	23.0%
Production, transportation, material moving	59	9.4%

Westport has a range of land uses, including residential, commercial, and industrial. Residential areas are located primarily on the southern and easter parts of the peninsula, with some small beach-front communities and one multi-structure condominium development located along the Pacific coast. Most of the city's commercial development, including hotels, surf shops, the Shop'N Kart grocery store, and a range of other local businesses, is located along South Montesano Street and State Highway 105, Westport's primary north-south streets. The marina is located at the northernmost end of the peninsula facing Grays Harbor and serves as home to the commercial fishing fleet as well as the Washington Crab and Ocean Gold seafood processing plants. The northwest quarter of the peninsula is comprised of Westhaven and Westport Light State Parks, which total approximately 190 acres and feature public beach access as well as recreational trails among the dunes. The Grays Harbor Lighthouse, which began service in 1898 is located near the southern edge of Westport Light State Park (McCausland 1998). Local

institutions include the Westport Timberland Library, the South Beach Clinic, Westport Maritime Museum, and the Port of Grays Harbor.

Located on a peninsula between the Pacific Ocean and Grays Harbor, Westport is relatively physically isolated from surrounding communities. Aberdeen, the nearest city offering regional services such as a hospital, is located 20 miles northwest of Westport. The smaller South Beach communities of Grayland, North Cove, and Tokeland are located several miles to the south. The nearest high ground is located to the east in Ocosta, across a bridge over Grays Harbor's South Bay and along Washington State Route 105, the designated tsunami evacuation route.

Westport is served by Grays Harbor Transit Route 70, which provides limited daily public bus service to Aberdeen, Hoquiam, and Grayland. Grays Harbor Transit also provides Dial-a-Ride transportation as well as accessible Specialized Van Service within the fixed-route service area. Westport also has a single-runway public-use airport, which opened in 1963 to accommodate small planes. Owned by the City and located between the marina and the commercial district, the airfield is constructed on fill to avoid frequent flooding (McCausland 1998).

In addition to being vulnerable to the kinds of seismic events threatening communities across the Pacific Northwest, coastal cities like Westport faces tsunami hazards from both local Cascadia subduction zone and distant Pacific Rim earthquakes (Freitag, El-Anwar, and Kasprisin, n.d.). Approximately 1.2 square miles of Westport, comprising 99% of the city's development and home to 89% of its population, are located within the tsunami inundation zone (Washington State Emergency Management Division et al. 2013). In addition, like many other coastal communities in Washington State, Westport lacks high ground to which residents could evacuate quickly in the event of a tsunami (Freitag, El-Anwar, and Kasprisin, n.d.). Recognizing the potential long-term consequences of this exposure, the Ocosta School District, which serves Westport and much of the surrounding South Beach community, taxed itself to fund the construction of a tsunami vertical evacuation facility as part of a new elementary school (Doughton 2016).[12] The structure, which was completed in 2015, can hold up to 2,000 people on its rooftop and is stocked with emergency food and supplies. Westport and the surrounding South Beach area, as the first community in North America to build a tsunami vertical evacuation structure has demonstrated leadership and political will in the development and implementation of this forward-looking hazard mitigation strategy ("Localizing Hazard Mitigation: Draft Recommendations for Westport's Comprehensive Plan Update" 2019).

Earthquake and tsunami hazards are identified as the top two ranking hazards of concern in the City of Westport Annex to the 2018 plan, receiving a vulnerability rank of "high" (Bridegeview Consulting 2018). Other "high"-ranking hazards include erosions and flooding, while severe weather is classified as "medium" and several additional hazards, including climate change, drought, volcano, wildfire, and landslides, receive a vulnerability ranking of "low." The Westport Annex of the plan additionally identifies severe storms and semi-yearly flooding in the marina district as natural hazard events of concern that have occurred in Westport's past.

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[12] The City of Westport is currently pursuing the design and construction of a second vertical evacuation facility located closer to the end of the peninsula to serve more of the city's residents. This initial vertical evacuation project paved the way for other, similar coastal hazard mitigation projects. For more background on the design and implementation of vertical evacuation structures in Washington State, see the Project Safe Haven report at https://mil.wa.gov/asset/5ba41ffbdc444 (University of Washington College of Built Environments and Washington State Emergency Management Division n.d.).

Engagement activities

During the summer and fall of 2018, the City of Westport and the University of Washington Department of Urban Design and Planning (UW) developed a partnership to create recommendations for enhancing the resilience of the Westport/South Beach community. Engagement with the Westport community took many forms, including a presentation by visiting resilience scholars from Japan and multiple activities conducted as part of a quarter-long urban planning studio course in the fall of 2018: two public resilience workshops and an open house to share recommendations based on the workshops. The team has presented this work and the further development of recommendations for integrating the Grays Harbor countywide hazard mitigation plan into the City of Westport's Comprehensive Plan update to Westport's City Council and its Planning Commission.

Visiting Tohoku resilience scholars presentation

On September 24, 2018, visitors from the International Research Institute for Disaster Science (IRIDes) at Tohoku University shared tsunami recovery research and experiences from Japan in a public presentation at Ocosta Elementary School. The event was promoted broadly throughout the Westport and South Beach area to generate interest about tsunami hazard planning as well as to share information about the community resilience workshops planned for November 2018. Presenters shared real life experiences and lessons learned from the 2011 magnitude 9.0–undersea megathrust earthquake and tsunami and engaged in conversation with community members about tsunami preparedness planning.

Studio course

Daniel Abramson led the development of an urban planning studio course in which a multidisciplinary group of students would review Westport's existing long-term planning goals and the Grays Harbor County Hazard Mitigation Plan and find ways to adapt the county-wide hazard mitigation strategies specifically to Westport for integration into its Comprehensive Plan. The studio team collaborated with Westport area leaders to engage partners and community members in hazard resiliency planning. A key part of this process was the organization of a series of community workshops and open houses focused on building capacity for coastal resilience (see *Community workshops* below).

Shared goals for the studio's engagement with the Westport community were established in a Memorandum of Understanding, which was developed in collaboration with Kevin Goodrich and the Tsunami Safety Committee. The MOU was signed in September 2018 by Westport Mayor Robin Bearden and Daniel Abramson on behalf of the UW Department of Urban Design and Planning and studio team (University of Washington Department of Urban Design and Planning and City of Westport 2018). The goals outlined in the MOU included:

- Engage a broad range of local community members as well as municipal and agency stakeholders, including residents, the City of Westport, Shoalwater Bay Tribe, Grays Harbor County, Pacific County, State and local emergency management agencies, Federal representatives, and other stakeholders representing coastal ecology, transportation, public health, education, local businesses and historic resources

- Support ongoing efforts to improve community resilience in the City of Westport and surrounding areas, including collaborative efforts among multiple coastal communities

- Identify opportunities for integrating equitable and just localized hazards planning with general community development planning, urban design and public health via the City's Comprehensive

Plan update and other infrastructural improvements, including transportation and telecommunications

- Learn from the successes won and challenges faced by the City of Westport and its residents to inform ongoing policy decisions around hazard planning and to share lessons learned with other communities both within our region and beyond

During September and October of 2018, the studio team participated in three planning meetings with a Westport-based Steering Committee to plan the public workshops and to discuss the studio deliverables. One of these meetings was held on-site in Westport, which enabled students to experience the community firsthand and meet with project stakeholders in person. The studio group was hosted on tours of the Westport Marina and the Ocean Gold seafood processing plant and also visited Westport Maritime Museum and Westhaven State Park.

Community workshops

The studio team, along with researchers from the M9 research team, planned and implemented two coastal resilience workshops took place in Westport in November of 2018. In each workshop, participants identified values and assets of the Westport/South Beach community; discussed scenarios of change and vulnerabilities related to potential hazards; and worked to envision creative strategies for adaptation. Workshop goals included:

- Building on the City of Westport's prior earthquake and tsunami preparation efforts

- Helping the City of Westport to update its Comprehensive Plan to include local values and needs related to hazard mitigation

- Raising public awareness about hazard preparedness and encouraging community support of hazard mitigation efforts

- Discovering everyday value in preparing for rare and uncertain future events

The studio leaders trained the students to help run the workshop, and they took on the roles of facilitators, note-takers, and GIS technicians.

Community Partners Workshop

The partners workshop, which took place on Friday, November 16, 2018, focused on making hazard mitigation more meaningful and actionable for the Westport community. The workshop was held at McCausland Hall and engaged 24 hazard mitigation experts, including agency staff from the City of Westport, Grays Harbor County, and Washington State as well as representatives from the Shoalwater Bay Tribe, Ocosta School District, Westport's Tsunami Safety Committee, among others. Participants discussed Westport's values and assets, reviewed sea level rise projection scenarios and tsunami inundation maps and discussed vulnerabilities as well as opportunities for adapt to such hazards. Workshop participants engaged in mapping activities using participatory GIS, specifically, a technology known as weTable that enables participants to enter geocoded information on a projected map (Mikulencak and Jacob 2011).

Community (Public) Workshop

On the day following the Community Partners workshop, the team hosted a public workshop at Ocosta Elementary School open to all members of the Westport/South Beach community. More than 30 people

attended the workshop, where participants mapped community assets (on paper rather than using the weTable), discussed opportunities for supporting and strengthening the community in ways that reflect local values, and identified ways to plan for and adapt to changing conditions. Participants also learned about emergency safety, shared stories from past hazard experience, participated in a raffle, and toured the vertical evacuation tower at the school. The workshop concluded with a storytelling exercise in which community members voiced visions for the future of Westport, building upon the local strengths and assets noted in earlier exercises and thinking forward to how future planning efforts might help to support long-term resilience and well-being.

What the Westport/South Beach Workshops Revealed

The workshops provided a valuable opportunity for community members to discuss and exchange ideas and for the project team to learn from members of the Westport community. The public workshop participants also indicated via a brief post-event survey that participating in the workshop helped them to gain a greater understanding of the possible impacts of sea level rise or a Cascadia subduction zone earthquake and tsunami on their community.

Key takeaways from the workshops included the following:

- *Values and assets:* Members of the Westport/South Beach community value their community for many reasons, including resilient people, strong social bonds, abundant natural resources, small-town character, and affordability. Many local assets support these values, including fisheries and aquaculture, parks, downtown businesses, and places – like schools and neighborhood gatherings – where people meet.

- *Vulnerabilities and uncertainty:* Community members discussed potential vulnerabilities in the community, highlighting transportation and communication systems as specific challenges. Participants also discussed the difficulties of planning for uncertain events like hazards.

- *Preparedness:* Workshop participants discussed plans for increasing outreach within the community to help encourage people to prepare for hazards. They also discussed practical approaches like gathering supplies and establishing meeting points.

Community Open House

On December 8, 2018, The UW project team hosted a public open house at the Tackle Box in Westport to share preliminary recommendations for integrating hazard mitigation strategies into Westport's Comprehensive Plan update. The recommendations were based on ideas and feedback from the workshops and other meetings with Westport/South Beach stakeholders. The students presented the recommendations in the form of posters that provided a discussion point during the open house and were then left with the City after the event for their own use and reference.

A final report documenting the studio work and the planning recommendations can be found online at: http://mitigate.be.uw.edu/research-and-practice-2/research-and-practice/. One of the students went on to develop the recommendations into a Comprehensive Plan Update proposal for the City of Westport as the focus of her Master of Urban Planning thesis project (Stanton 2019). Further engagements with Westport are outlined below.

Synergistic Outgrowth Projects

CSET Community-embedded Drone Project

Daniel Abramson became a Co-PI for two successful applications for Center for Safety Equity in Transportation (CSET) funding for context-sensitive transportation solutions that address the safety needs of rural, isolated, tribal and indigenous (RITI) communities, given changing social and environmental climates. In its latest phase, the project is partnering with the Ocosta School District to develop a technology program that will introduce high school students to the use of drones for a wide range of STEAM educational applications, including community mapping and modeling, environmental and infrastructure monitoring, emergency rescue operations, and coastal hazards data gathering.

American Roundtable

Funded by the Architectural League of New York, Robert Hutchison and Daniel Abramson co-led a team to write a profile of South Beach, WA, for the American Roundtable project, https://archleague.org/event/dynamic-landscapes-south-beach-washington/

NSF CoPe EAGER "Coastal Hazard Planning in Time"

Daniel Abramson became lead PI on one of NSF's pilot Coastlines and People (CoPe) projects to work with communities on both the Pacific and Salish Sea coasts of Washington to develop geo-narratives as new public communication tools for long-term adaptive planning and urban design and short-term hazard responses, including evacuation, emergency management, and post-disaster relief and diagnostics. https://www.nsf.gov/awardsearch/showAward?AWD_ID=1940024

NSF Smart & Connected Communities Planning Grant "Socially-integrated Technological Solutions for Real-time Response and Neighborhood Survival After Extreme Events"

Cynthia Chen became lead PI with Daniel Abramson (Co-PI) and a partnership of engineers and planners at UW and Nagoya and Tohoku Universities, Japan, to develop communications and information-sharing technologies appropriate to local places and social networks in partner communities to ensure that initial technical prototype ideas have real, place-specific relevance and applicability. https://www.nsf.gov/awardsearch/showAward?AWD_ID=1951418

ArcDR3 Built Environments Studio

In the winter of 2021, Daniel Abramson partnered with Prof. Ken Tadashi Oshima of the UW Department of Architecture to lead a multidisciplinary Disaster Resilience studio building upon previous Bullitt-foundation-supported studio work with a focus on community design for tsunami- and sea level rise-resilient structures, landscapes, and urban systems in South Beach, WA.

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Appendix A – Localizing Hazard Mitigation: Recommendations for Westport's Comprehensive Plan Update

The Executive Summary, Full Report, and Workshop Documentation Appendix follow this page.

Localizing Hazard Mitigation

Recommendations for Westport's Comprehensive Plan Update

EXECUTIVE SUMMARY

Prepared for the City of Westport, WA, by the University of Washington Urban Design & Planning Studio "Community Engagement for Coastal Resilience," URBDP 508B, Autumn 2018

A Report based on Community Responses to Tsunami and Sea Level Rise Scenarios for purposes of Integrating the Grays Harbor County Multi-Jurisdiction Hazard Mitigation Plan with the City of Westport Comprehensive Plan

November 21, 2019

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Project Summary

As the first community in North America to build a tsunami vertical evacuation structure (at the Ocosta Elementary School), the Ocosta School District and larger Westport-South Beach community has demonstrated extraordinary political will, community spirit, and long-term thinking. The City of Westport is considering additional vertical evacuation structures within the city limits, as necessary for the safety of its residents, visitors and employees. To ensure that these structures are cost-effective, function in a variety of possible emergencies, and also enhance daily life in the community, the City has partnered with the University of Washington's Department of Urban Design and Planning (UW Team) in a Coastal Resilience Project. Project goals were established in a Memorandum of Understanding signed in September 2018 by Westport Mayor Robin Bearden and Prof. Abramson on behalf of the UW Team:

- Engage a broad range of local community members as well as municipal and agency stakeholders, including residents, the City of Westport, Shoalwater Bay Tribe, Grays Harbor County, Pacific County, State and local emergency management agencies, Federal representatives, and other stakeholders representing coastal ecology, transportation, public health, education, local businesses and historic resources.
- Support ongoing efforts to improve community resilience in the City of Westport and surrounding areas, including collaborative efforts among multiple coastal communities.
- Identify opportunities for integrating equitable and just localized hazards planning with general community development planning, urban design and public health via the City's Comprehensive Plan update and other infrastructural improvements, including transportation and telecommunications.
- Learn from the successes won and challenges faced by the City of Westport and its residents to inform ongoing policy decisions around hazard planning and to share lessons learned with other communities both within our region and beyond.

In accordance with these goals, the attached full report provides detailed recommendations for integrating hazard mitigation strategies (from the Grays Harbor County Multi-Jurisdiction Hazard Mitigation Plan) into the City of Westport's Comprehensive Plan (Comprehensive Plan). Although the scope of the Comprehensive Plan is broader than hazard mitigation, the recommendations focus on opportunities to incorporate hazard mitigation into the plan and highlight potential co-benefits of these strategies. The recommendations should be viewed as possible answers to the question: How can mitigating coastal hazards in Westport also help the community achieve its everyday goals for development? Westport will need to complement these recommendations with other considerations related to community development and resilience when updating the Comprehensive Plan.

Process

An interdisciplinary group of students and faculty from the University of Washington's Department of Urban Design and Planning (UW team) developed the recommendations through a Coastal Resilience Project conducted with the Westport Tsunami Safety Committee and other community members. The Project involved reviewing the Comprehensive Plan and the Grays Harbor County Multi-Jurisdiction Hazard Mitigation Plan (County HMP), conducting additional research, including an extensive, quarter-

long community engagement process in Autumn 2018. Engagement activities included two workshops held in Westport in November and a public open house in December.

The County HMP identifies earthquake, tsunami, erosion, and flooding as the top hazards of concern for Westport, though Steering Committee members asked the UW team to consider severe weather and climate change as possibly also deserving high priority attention. For discussion in the workshops, the UW Team prepared maps of multiple tsunami scenarios and sea level rise (SLR) scenarios, reflecting a range of severity and likelihood of different kinds of hazards facing Westport. Input from the workshops, open house and other follow-up meetings, and pre-workshop site visits are discussed throughout the full report. Appendix A to the full report includes detailed documentation of the workshops themselves.

Recommendations

The County HMP Westport annex listed six initiatives which can conceivably align with different elements of the Comprehensive Plan: (1) Vertical Tsunami Evacuation Structure; (2) Public Outreach Program; (3) Emergency Management Plan; (4) Emergency Communications Plan; (5) Critical Facilities Evaluation; (6) Transportation and Right of Way Improvements. The Comprehensive Plan currently includes six elements: Land Use, Transportation and Circulation, Economic Development, Community Appearance and Natural Resources, Area-Wide Development, and Shorelines Goals and Policies, as well as other chapters focused on overarching goals and objectives and implementation. The UW Team has drafted recommendations for updating each of the six existing elements, as well as adding a new element, Health and Well-Being:

- **Land Use Element:** Highlights opportunities to utilize land use-related tools and approaches to increase resiliency to flooding and other hazards. The section emphasizes approaches including land acquisition and strategic location of critical facilities, hazard-resilient buildings and infrastructure, and water management as key opportunities to mitigate hazards.
- **Transportation, Circulation, and Telecommunications Element:** Identifies opportunities to strengthen existing transportation plans and infrastructure to support evacuation and disaster response. This section also recommends including Telecommunication and proposes innovative technologies for improving internet access and other forms of communication.
- **Economic Development Element:** Describes areas of alignment between hazard mitigation and Westport's economic development goals. Recommendations include renovating existing structures to provide multi-purpose benefits, e.g. both vertical evacuation and event space.
- **Community Identity and Natural Resources Element:** Recommends dividing the current Community Appearance and Natural Resources Element into two new elements, with "community appearance" broadened to "community identity ". Recommendations describe creative opportunities for introducing new development and infrastructure that improves hazard resilience while maintaining and enhancing Westport's character and image.
- **Area-Wide Development Element:** Incorporates regional considerations into hazard mitigation planning and opportunities for accessing regional assets to increase hazard resiliency.
- **Shoreline Master Program:** Outlines opportunities to incorporate sea level rise (SLR) projections while promoting best practices for conservation and use of Westport's shoreline.
- **Health and Well-Being Element:** Proposes a new element focused on health and well-being of Westport residents, for both emergency response, hazard mitigation and long-term resilience.

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Table 1 below includes a summary of key crosscutting recommendations; check marks indicate elements that include a recommendation relevant to the crosscutting themes identified. The full report includes more detail and specificity regarding strategies.

Table 1. Summary of Recommendations and Alignment among Elements

Crosscutting Recommendations	Land Use	Transp. & Telecom.	Econ. Devel.	Identity	Area Wide	Shore.	Health
Implement climate-smart and hazard resilient development and zoning based on best-available sea level rise/flood data, including in the Marina District	✓		✓	✓	✓	✓	✓
Build multi-use vertical evacuation structures that are integrated with community and economic development goals	✓		✓	✓	✓		✓
Develop innovative transportation and accessibility solutions		✓	✓	✓	✓	✓	✓
Consider securing access to higher ground, including assessing feasibility and identifying possible near-term uses	✓		✓	✓	✓		✓
Identify and implement creative adaptation solutions and land uses for low lying areas	✓		✓	✓	✓		
Improve evacuation/emergency response planning, training, preparedness, and communication		✓		✓	✓		✓
Support transportation infrastructure improvements (e.g., critical roads, bridges, airport) and transportation management		✓	✓		✓		✓
Strategically site/relocate critical facilities to low-risk areas within Westport	✓			✓	✓		
Improve drainage and stormwater infrastructure	✓			✓		✓	
Improve communications capacity and technology		✓	✓		✓		✓
Implement economic, community, and cultural development initiatives			✓	✓			✓
Promote sustainable land and natural resources management			✓	✓	✓		
Establish community health center	✓	✓					✓
Improve availability of community demographic and health needs data							✓
Support resilient, local food systems	✓		✓	✓			✓

Table 2 below includes a summary of crosscutting recommendations and provides a snapshot of the specific focus of each element relating to the crosscutting recommendations.

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Table 2.Summary of Recommendations and Alignment among Elements (continued on following page)

Crosscutting Recommendations	Land Use	Transportation, Circulation & Telecommunication	Economic Development
Implement climate-smart and hazard resilient development and zoning using best-available sea level rise/flood data	Climate/hazard resilient building codes and infrastructure investment		Resilient infrastructure in the Marina; new cultural district
Build multi-use vertical evacuation structures that are integrated with community and economic development goals	Additional multi-use vertical evacuation capacity		New or retrofitted vertical evacuation infrastructure (e.g., Chateau Westport)
Develop innovative transportation and accessibility solutions		New ferry routes and vessel technology	New ferry and high ground trail network
Consider securing access to higher ground, including assessing feasibility and identifying possible near-term uses	Purchase, acquisition, or annexation of higher land		Acquisition of higher ground land
Identify and implement creative adaptation solutions and land uses for low lying areas	Funding to change use patterns in flood prone areas		Relocation of homes and restoration of flood-prone areas
Improve evacuation/emergency response planning, training, preparedness, and communication		Evacuation drills and route planning, emergency radio infrastructure, and emergency planning	
Support transportation infrastructure improvements (e.g., critical roads, bridges, airport) and transportation management		Improvements to key routes	Reconstruction of key roads/bridges
Strategically site/relocate critical facilities to low-risk areas within Westport	Research and evaluation of critical facilities siting		
Improve drainage and stormwater infrastructure	Improvements to storm and wastewater drainage		
Improve communications capacity and technology		Telecommunication improvements (e.g., LTE, low power radio)	Improved internet and cellular connectivity
Implement economic, community, and cultural development initiatives			Improved web presence and local art shops
Promote sustainable land and natural resources management			Conservation of open space for public use and ecosystem services
Establish community health center	Co-locate with vertical evacuation structure	Co-locate with broadband internet access	
Improve availability of community demographic and health needs data		Enhanced disaster medical response	
Support resilient, local food systems	Zoning for community food gardens		Community garden produce market

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Community Identity and Natural Resources	Area-Wide Development	Shoreline Master Program	Health and Well-Being
Flood-smart building design	Zoning and policies that promote resilient development; evaluate critical facilities exposure	Inclusion of sea level rise projections and focus on adaptation opportunities	Land use planning updates and protection of important habitat (e.g., oyster beds)
Retrofitting existing and/or building new vertical evacuation structures	Network of vertical evacuation structures		Community health center with vertical evacuation capacity
New ridge trail	New ferry, ridge trail system, logging/forest road access	Earthquake resistant beach access and trail connections	Opportunities for physically active living
Development of resorts on hilly land outside the city	Assessment of feasibility and possible uses for higher ground outside city		
Wetland resort development and open space	Identification of new economic development opportunities	Preservation of coastal vegetation	
Emergency evacuation route signage	Regional collaboration with county and private sector on evacuation planning		Coordinating volunteer organizations to support emergency aid
	Transportation infrastructure improvements	Incorporation of sea level rise into infrastructure planning	
Relocation of critical facilities	Feasibility of relocating critical facilities		
Blue-green stormwater infrastructure		Vulnerability assessment of wastewater treatment and mitigation needs	
	Improved cellular and internet connectivity		Regional telehealth programs
Potential aerial tourism opportunities			Walking-friendly environment; affordable housing
Coastal resources mapping	Protection of open spaces and ecosystem services		
			New telehealth system and improved health outreach
			Health service providers and knowledge of community needs
Gardens and markets for neighborhood identity			Increase healthy food options and local self-sufficiency

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Mutually Supporting Area-wide Development Strategies

The overlap among strategies and elements illustrates the importance of taking a comprehensive, integrative approach to increasing community resilience and mitigating hazards in Westport. The overlap also illustrates the principle that a robust and effective strategy should not only mitigate a hazard (and ideally more than one hazard scenario) but also provide multiple benefits to the community on an everyday basis, regardless when or whether the hazard manifests itself or not. In this way, robust strategies account for the uncertainties and unpredictability of the timing and severity of future possible hazardous events and ensure the protection of the highest community values (e.g. human life), while allowing the community to realize other values (e.g. economic development) under normal "blue sky" conditions. Finally, the integration of mitigation strategies with everyday life helps to ensure that such strategies are well-understood and internalized by community members, making them more effective.

One key hazard mitigation consideration for the city may be the acquisition of land (or at least access to land) at higher elevations both within and outside the city limits, such as the dune ridges on the Westport peninsula, uplands in Bay City across the Elk River or atop the bluffs in the direction of Grayland. Relocation of important public and emergency facilities, and possibly some housing, to the dune ridges on the peninsula would help protect them from the more likely but less severe hazards such as sea level rise, even if it does not protect them from the most severe (but much less likely) tsunami events. Building these facilities as vertical evacuation structures would allow them to serve at least as life-saving protection in a severe tsunami. Combining vertical evacuation with frequently used facilities such as the school, City Hall, the fire and police stations, clinics, hotels, etc., would also help community members and visitors become familiar with where to go in such an emergency, and potentially support the HMP's Public Outreach Program initiative. Including vertical evacuation in new hotel and event space construction could lever Economic Development to support mitigation, and vice versa. Designing such a facility to function as a highly visible landmark (e.g. on high ground) could both enhance Westport's city image (Community Identity and Appearance) and also serve as a form of Public Outreach, raising awareness of where to evacuate.

Acquiring even higher ground outside the current city limits would function as a form of "insurance" against a future with higher water caused by sea level rise, or by the rare but possible inundation and subsidence associated with an earthquake and tsunami. This is a nascent idea that would require considerable research into the feasibility and community desire to pursue it. Several sections below reference this idea, and it is important to note that at this stage, land acquisition is not recommended for relocating Westport now; rather, the city could pursue options including annexation, land swaps, easements, or other mechanisms to gain access to higher ground for a variety of uses.

Low-lying, flood-vulnerable critical facilities and even residential properties could be bought-out for relocation to higher ground, and redeveloped for near-term profitable commercial development.

Higher ground outside the city limits could be developed to provide economic opportunities in the near-term and used more directly by the city over the long-term. What might be useful (and even profitable) in normal times as an ecologically low-impact camping area, hunting lodge, educational and research facility, or resort development, may serve as an emergency refuge and resettlement area after a major disaster.

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Figure 1. Land and development rights swaps for resilient long-term land use (map by Sreya Sreenivasan)

In sum, the UW Team developed these recommendations after considering the following questions, based on the above overarching considerations and principles, and after reviewing the County HMP, the Comprehensive Plan, and all community input:

1) How many different hazard scenarios does each strategy mitigate, given the nature, severity, timing and likelihood of the hazard? (The more hazards it mitigates, the more robust the strategy.)
2) Which Comprehensive Plan Element goals can each mitigation strategy help to achieve? (The more, the better.)
3) What additions or revisions to the Comprehensive Plan goals does each mitigation strategy suggest? (The more alignment, the more resilient the community's development will be.)
4) What additions or revisions to the Comprehensive Plan goals would better reflect community values? (An important reality check to inform the validity of the answers above as well as priorities for implementation.)

As the City's Planning Commission considers these recommendations, the UW Team invites further dialogue on these questions, and looks forward to further revising the recommendations as necessary.

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Localizing Hazard Mitigation

Recommendations for Westport's Comprehensive Plan Update

Prepared for the City of Westport, WA, by the University of Washington Urban Design & Planning Studio "Community Engagement for Coastal Resilience," URBDP 508B, Autumn 2018

A Report based on Community Responses to Tsunami and Sea Level Rise Scenarios for purposes of Integrating the Grays Harbor County Multi-Jurisdiction Hazard Mitigation Plan with the City of Westport Comprehensive Plan

November 21, 2019

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Preface and Report Contributors

As the first community in North America to build a tsunami vertical evacuation structure (at the Ocosta Elementary School), the Ocosta School District and larger Westport-South Beach community has demonstrated extraordinary political will, community spirit, and long-term thinking. In one of the lowest-income areas of the state, taxpayers voted overwhelmingly to approve the bond that funded the extra cost of designing and building this unprecedented structure. Westport's achievement has since inspired federal authorities to enable new funding for additional such structures, and thus has led the way for many other coastal communities to build similar structures. It has also inspired the University of Washington (UW) team that prepared this report to assist the community to broaden its efforts in planning for a safe and resilient future. The team thanks all the members of the public from Westport, South Beach, and Grays Harbor County who participated in the community workshops and otherwise shared their local knowledge with each other and the team. This report is dedicated to them and their community.

The UW Autumn Quarter 2018 Urban Design & Planning 508B studio team consists of the course instructor, Prof. Daniel Abramson; doctoral research assistants Katherine Idziorek and Lan Nguyen, who researched and provided a framework for hazards integration into comprehensive planning; and the students who each researched and drafted an element of the recommendations as follows:

- Helen Stanton (Master of Urban Planning): *Land Use Element*
- Yiran Zhang (PhD in Civil & Environmental Engineering): *Transportation, Circulation and Telecommunications Element*
- Pegah Jalali (PhD in Environmental and Forest Sciences): *Economic Development Element*
- Sreya Sreenivasan (Master of Urban Planning): *Community Identity and Natural Resources Management Element*
- Charlotte Dohrn (Master of Marine & Environmental Affairs): *Area-Wide Development Element*
- Lauren Kerber (Master of Marine & Environmental Affairs): *Shoreline Master Program Element*
- Catharina Depari (PhD in Urban Design & Planning), *Health and Well-being Element*

Dan Abramson (lead), Katherine Idziorek (asset mapping) and Lan Nguyen (community engagement and disaster preparedness) designed the workshop protocol. Community, Environment & Planning (CEP) major Sophia Nelson provided GIS expertise and WeTable support, and also produced the City's first set of GIS data layers and sea level rise hazard maps. CEP alumna Kiana Ballo provided community outreach support. Charlotte Dohrn and Dan Abramson compiled and edited the report for consistency.

The team is grateful for the support, guidance and contributions of many people, and would like particularly to thank the following partners and participants: Mayor Robin Bearden and the City Council of Westport; Kevin Goodrich, Westport Director of Public Works, and other members of the Westport Tsunami Safety Committee, Paula Akerlund, Molly Bold, Harry Carthum, Leslie Eichner, Kurt Hilyard, Tracy Rosenow and John Shaw; Ocosta High School Principal Heather Sweet and science teacher Jon Harwood; South Beach Regional Fire District Chief Dennis Benn; Grays Harbor County Emergency Manager Hannah Cleverly; Shoalwater Bay Tribe Council Chair Charlene Nelson, and Emergency Manager Lee Shipman; WA State Parks Ranger Miles Wenzel; WA State Emergency Management Division Earthquake, Tsunami and

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Volcano Program Manager Maximilian Dixon and Mitigation Strategist Derrick Hiebert; and Glenn Coil. UW Institute of Hazard Mitigation Planning and Research Co-Director Bob Freitag coordinated his Floodplains Management course with the studio, and provided expertise based in the experience of Project Safe Haven tsunami vertical evacuation and other community resilience planning in the region. UW Prof. Alison Duvall and other M9[1] project faculty supported the participation of doctoral student Lan Nguyen, and contributed time and expertise themselves, including the following: Frank Gonzalez, Randy LeVeque and Loyce Adams ran GeoClaw models of tsunami scenarios, produced maps of tsunami flooding depth and land subsidence, and helped interpret them for community use; Brian Atwater helped interpret coastal geo-history and assisted with community outreach; Ian Miller of WA Sea Grant provided localized probabilistic data on sea level rise and helped with its interpretation; Ann Bostrom and David Schmidt provided insight on the communication of seismic scientific uncertainty and risk, and assisted with WeTable setup. Cynthia Chen and Xuegang Ban provided transportation systems expertise and supported the participation of doctoral students Katherine Idziorek and Yiran Zhang.

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[1] The M9 Project is a UW-based team of experts whose goal is to reduce catastrophic potential effects of a Cascadia megathrust earthquake on social, built, and natural environments through the advancement of seismic ground motions simulation and co-seismic hazards for early warning, structural design, and community planning.

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Localizing Hazard Mitigation
DRAFT Recommendations for Westport's Comprehensive Plan Update

1. Introduction

This report provides recommendations for updating the City of Westport Comprehensive Plan (Comprehensive Plan) to increase community resiliency by identifying opportunities to integrate hazard mitigation strategies with planning goals. An interdisciplinary group of students and faculty from the University of Washington's Department of Urban Design and Planning (UW team) developed these recommendations as part of a collaborative Coastal Resilience Project conducted with the Westport Tsunami Safety Committee, which comprised of the local Steering Committee for this project, and other community members. The UW team conducted this project as the focus of an Autumn 2018 urban planning studio class. The UW team developed these recommendations by reviewing the Comprehensive Plan and the Grays Harbor County Multi-Jurisdiction Hazard Mitigation Plan (Grays Harbor County HMP), conducting additional research, and orchestrating an extensive, quarter-long community engagement process. The community engagement process included Coastal Resilience Workshops held in Westport in November 2018 that served as an opportunity for collective visioning of community resilience. Appendix A includes detailed documentation of the workshops; however, we integrated input from the workshops, follow-up meetings, and pre-workshop site visits throughout this report.

1.1. Project and Report Goals

This section provides a brief overview of overarching Coastal Resilience Project goals and the goals of this report. Project goals were established in a Memorandum of Understanding signed in September 2018 by Westport Mayor Robin Bearden and Prof. Abramson on behalf of the UW Department of Urban Design and Planning and studio team. The goals include:

- Engage a broad range of local community members as well as municipal and agency stakeholders, including residents, the City of Westport, Shoalwater Bay Tribe, Grays Harbor County, Pacific County, State and local emergency management agencies, Federal representatives, and other stakeholders representing coastal ecology, transportation, public health, education, local businesses and historic resources
- Support ongoing efforts to improve community resilience in the City of Westport and surrounding areas, including collaborative efforts among multiple coastal communities
- Identify opportunities for integrating equitable and just localized hazards planning with general community development planning, urban design and public health via the City's Comprehensive Plan update and other infrastructural improvements, including transportation and telecommunications
- Learn from successes won and challenges faced by the City of Westport and its residents to inform ongoing policy decisions around hazard planning and to share lessons learned with other communities both within our region and beyond

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As a primary output of the project, this report is intended to guide the City of Westport when updating and/or implementing the current Comprehensive Plan. The report provides recommendations for localizing hazard mitigation strategies identified in the Grays Harbor County HMP and aligning these strategies with the broader goals and values of the Westport community to increase resilience. It is important to note that the scope of the Comprehensive Plan is broader than hazard mitigation; however, this report focuses on opportunities to incorporate hazard mitigation into the plan and highlights potential co-benefits of these strategies. The recommendations should be viewed as possible answers to the question: How can mitigating coastal hazards in Westport also help the community achieve its everyday goals for development? Westport will need to complement these recommendations with other considerations related to community development and resilience when updating the Comprehensive Plan.

1.2. Report Overview

This section outlines the content of this report, provides an overview of how recommendations were developed, and describes the information included in each report section. The current Comprehensive Plan includes six elements: Land Use, Transportation and Circulation, Economic Development, Community Appearance and Natural Resources, Area-Wide Development, and Shorelines Goals and Policies, as well as additional chapters focused on overarching goals and objectives and implementation. This report includes a section providing recommendations for updating each of the six existing elements, as well as a proposed new element; an overview of each section update is provided below.

- **Land Use Element:** Highlights opportunities to utilize land use-related tools and approaches to increase the resiliency to flooding and other hazards. The section emphasizes approaches including land acquisition and strategic location of critical facilities, hazard-resilient buildings and infrastructure, and water management as key opportunities to integrate hazard mitigation into the Comprehensive Plan.

- **Transportation, Circulation, and Telecommunications Element:** Identifies opportunities to strengthen existing transportation plans and infrastructure to support evacuation and disaster response. In addition, this section recommends including telecommunication as a component of this element of the Comprehensive Plan and proposes innovative technologies for improving internet access and other forms of communication.

- **Economic Development Element:** Describes areas of alignment between hazard mitigation and Westport's economic development goals, including proposing new opportunities for bolstering the local economy while enabling hazard mitigation. Recommendations include renovating existing structures to provide multi-purpose benefits including vertical evacuation and conference/event space.

- **Community Identity and Natural Resources Management Element:** Recommends dividing the current Community Appearance and Natural Resources Element into two new elements focused on community identity and natural resources management. Recommendations related to these topics describe creative opportunities for introducing new development and infrastructure that improves hazard resilience while maintaining Westport's character.

- **Area-Wide Development Element:** Highlights the importance of incorporating regional considerations into hazard mitigation planning and opportunities for accessing regional assets to increase hazard resiliency.

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- **Shoreline Master Program:** Outlines opportunities to update the Shoreline Master Program to incorporate sea level rise projections while promoting best practices for conservation and use of Westport's shoreline.
- **Health and Well-Being Element:** Proposes a new element focused on health and well-being of Westport residents, including identifying key health and well-being considerations of hazard mitigation and long-term community resilience.

The recommendations presented in this report draw from four primary sources: the Comprehensive Plan, the Grays Harbor County HMP, community input, and other relevant cases and research. Westport adopted its Comprehensive Plan in 1998 and updated it in 2013; the plan provides a policy guide for the physical, economic, and social development of the city. Grays Harbor County updated its HMP in 2018; the plan describes county-wide hazards and mitigation initiatives and also includes a Westport-specific annex (and annexes for other jurisdictions). The Grays Harbor County HMP identifies earthquake, tsunami, erosion, and flood as the top hazards of concern for Westport (Table 10-7 in the HMP Westport Annex), though Steering Committee members asked the UW team to consider severe weather and climate change as possibly also deserving high priority attention. To mitigate the risks associated with these and other hazards, the Westport annex listed six initiatives, which are referenced throughout this report: Vertical Tsunami Evacuation Structure; Public Outreach Program; Emergency Management Plan; Emergency Communications Plan; Critical Facilities Evaluation; and Transportation and Right of Way Improvements.

To further localize these initiatives, and consider what additional ones may be desirable, the UW team gathered input from the Steering Committee and community members during site visits, in-person and telephone interviews and meetings, and community stakeholder and public workshops. The UW team facilitated two Westport/South Beach Coastal Resilience Workshops on November 16th and 17th, 2018. The workshops used an "appreciative inquiry" and asset mapping approach to encourage participants to first identify community values and assets before discussing the impacts of different hazard scenarios and what mitigating strategies would be appropriate for them. While the studio did not focus on assessing community needs and priorities for development in general, beginning the workshop discussions with an appreciative inquiry provided a "reality check" on the validity and priority of both Comprehensive Plan goals and HMP strategies, and also helped to prompt new and creative ideas for recovery and resilience.

In the workshops, each table of discussants focused on one of three specific hazard scenarios – sea level rise, and two potential near-source Cascadia Subduction Zone (CSZ) earthquake scenarios with tsunami flooding and ground subsidence. The sea level rise scenarios showed participants projections for the years 2060, 2080 and 2100 with probabilities in each year of the sea rising to different elevations. The earthquake scenarios included a moderately severe magnitude 8.9 (M1), CSZ earthquake similar to what last occurred in 1700, and a more severe "maximum considered" magnitude 9.0 (L1), CSZ earthquake that is currently the basis for the State's tsunami inundation maps, evacuation planning, and critical facilities structural design. Both scenarios showed maximum tsunami wave depth and post-earthquake coastline change due to seismic ground subsidence (see *Appendix A* for more information regarding the workshops). Although the workshops did not equally consider all relevant hazards (e.g. coastal erosion, distant-source tsunamis, and many seismic hazards including shaking, liquefaction and landslides), the outcomes are broadly relevant to hazard mitigation. The UW team also gathered input through feedback on draft recommendations presented to the Westport Steering Committee and other key stakeholders on December 7th, 2018, and at a community open house on December 8th. A full timeline of community engagement activities prior to and during the studio is included in Section 1.3 below.

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In addition, the UW team engaged hazard experts and conducted additional research throughout the quarter to inform the development of recommendations. Each section of this report follows the same general structure, described below.

- **Introduction:** provides an overview of the current Comprehensive Plan Element, including goals and objectives
- **Opportunities for Integration:** highlights opportunities for integrating the existing six hazard mitigation initiatives from the Westport Annex of Grays Harbor County HMP with the Comprehensive Plan Element
- **Community Input:** summarizes community input relevant to the specific Comprehensive Plan Element gathered during workshops and other engagements
- **Recommendations:** presents synthesized recommendations based on integration opportunities and input for updating the Comprehensive Plan Element
- **References Cases and Further Relevant Information:** describes relevant examples and/or case studies and provides references for the sources cited within each section

1.3. Timeline of 2018 Engagement Activities

July 19   – Collaboration proposal to Westport City Council
August 3   – Collaboration proposal to Westport Tsunami Safety Committee
September 5   – Mayor Bearden and Prof. Abramson signed Memorandum of Understanding
September 26   – Public forum on Japanese experience of 2011 earthquake and tsunami
October 12-13   – Workshop mid-planning meeting and community site visit, McCausland Hall
November 5   – Scenario review and protocol design meeting, via Zoom
November 16   – Partners Workshop w/ WeTable, McCausland Hall
November 17   – Public Workshop, Ocosta Elementary School
December 7   – Presentation to Steering Committee, McCausland Hall
December 8   – Poster Open House, Tackle Box

1.4. Overarching Considerations

While each section of this report provides targeted recommendations for updating each element of the Comprehensive Plan, there is significant overlap in the strategies that emerged from the Grays Harbor County HMP initiatives and integrating community input across elements (see Table 1). The overlap among sections illustrates the importance of taking a comprehensive, integrative approach to increasing community resilience and mitigating hazards in Westport. The overlap also illustrates the principle that a robust and effective strategy should not only mitigate a hazard (and ideally more than one hazard) but also provide multiple benefits to the community on an everyday basis, regardless when or whether the hazard manifests itself. In this way, robust strategies account for the uncertainties and unpredictability of the timing and severity of future possible hazardous events and ensure the protection of the highest community values (e.g. human life), while allowing the community to realize other values (e.g. economic development) under normal "blue sky" conditions. Finally, the integration of mitigation strategies with everyday life helps to ensure that such strategies are well-understood and internalized by community members, and thus enhances their effectiveness.

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In sum, we asked the following questions, based on the above overarching considerations and principles, and after reviewing the Grays Harbor County HMP, the Comprehensive Plan, and all community input:

1) How many different hazard scenarios does each strategy mitigate, given the nature, severity, timing and likelihood of the hazard? (The more hazards it mitigates, the more robust the strategy.)
2) Which Comprehensive Plan Element goals can each mitigation strategy help to achieve? (The more, the better.)
3) What additions or revisions to the Comprehensive Plan goals does each mitigation strategy suggest? (The more alignment, the more resilient the community's development will be.)
4) What additions or revisions to the Comprehensive Plan goals would better reflect community values? (Not the main focus of the studio, but an important reality check to inform the validity of the answers above as well as priorities for implementation.)

For example, one key hazard mitigation consideration for the city may be the acquisition or annexation of land (or at least emergency access to it) at higher elevations within or outside the city limits, such as the dune ridges on the Westport peninsula, uplands in Bay City across the Elk River or east of Grayland. Relocation of important public and emergency facilities, and possibly some housing, to the dune ridges would help protect them from the more likely but less severe hazards such as sea level rise or moderate tsunamis. Building these facilities as vertical evacuation structures would allow them to serve at least as life-saving protection in a severe tsunami. Combining vertical evacuation with frequently used facilities such as the school, City Hall, the fire and police stations, clinics, hotels, etc., would also help community members and visitors become familiar with where to go in such an emergency, and potentially support the Grays Harbor County HMP's Public Outreach Program initiative. Including vertical evacuation in new hotel and event space construction could lever economic development to support mitigation, and vice versa. Designing such a facility to function as a highly visible landmark could both enhance Westport's city image (community identity and appearance) and also raise awareness of where to evacuate.

Acquiring even higher ground outside the current city limits would function as a form of "insurance" against a future with higher water caused by sea level rise, or by the rare but possible inundation and subsidence associated with an earthquake and tsunami. This is a nascent idea that would require considerable research into the feasibility and community desire to pursue it. Several sections below reference this idea, as summarized in Table 1, and it is important to note that at this stage, land acquisition is not recommended for relocating Westport now; rather, the city could pursue options including annexation, land swaps, easements, or other mechanisms to gain access to higher ground for a variety of uses, as discussed in more detail in the Area-Wide Development element. As detailed in the recommendations for each Element below, higher ground outside the city limits could be developed to provide economic opportunities in the near-term and used more directly by the city over the long-term, depending on the needs. What might be useful (and even profitable) in normal times as an ecologically low-impact camping area, hunting lodge or resort development, may serve as an emergency refuge and resettlement area after a major earthquake and tsunami. As an example of this approach, the nonprofit Ducks Unlimited recently partnered with the Washington Department of Fish and Wildlife to acquire 1,100 acres of land just south of the Westport city limits for habitat and recreation. Westport is working with the nonprofit and the state to ensure that the city can maintain easements on this property for critical water infrastructure and aquifer access for residents and businesses now and in the future. This case provides one example of how the city can leverage land access to help ensure a sustainable, resilient future while enhancing daily life in the community according to its values.

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Table 1. Summary of Alignment and Overlap between Comprehensive Plan Goals and Grays Harbor County HMP (and other) Resilience Strategies/Initiatives

Crosscutting Recommendations	Land Use	Transportation, Circulation & Telecommunication	Economic Development
Implement climate-smart and hazard resilient development and zoning using best-available sea level rise/flood data	Climate/hazard resilient building codes and infrastructure investment		Resilient infrastructure in the Marina; new cultural district
Build multi-use vertical evacuation structures that are integrated with community and economic development goals	Additional multi-use vertical evacuation capacity		New or retrofitted vertical evacuation infrastructure (e.g., Chateau Westport)
Develop innovative transportation and accessibility solutions		New ferry routes and vessel technology	New ferry and high ground trail network
Consider securing access to higher ground, including assessing feasibility and identifying possible near-term uses	Purchase, acquisition, or annexation of higher land		Acquisition of higher ground land
Identify and implement creative adaptation solutions and land uses for low lying areas	Funding to change use patterns in flood prone areas		Relocation of homes and restoration of flood-prone areas
Improve evacuation/emergency response planning, training, preparedness, and communication		Evacuation drills and route planning, emergency radio infrastructure, and emergency planning	
Support transportation infrastructure improvements (e.g., critical roads, bridges, airport) and transportation management		Improvements to key routes	Reconstruction of key roads/bridges
Strategically site/relocate critical facilities to low-risk areas within Westport	Research and evaluation of critical facilities siting		
Improve drainage and stormwater infrastructure	Improvements to storm and wastewater drainage		
Improve communications capacity and technology		Telecommunication improvements (e.g., LTE, low power radio)	Improved internet and cellular connectivity
Implement economic, community, and cultural development initiatives			Improved web presence and local art shops
Promote sustainable land and natural resources management			Conservation of open space for public use and ecosystem services
Establish community health center	Co-locate with vertical evacuation structure	Co-locate with broadband internet access	
Improve availability of community demographic and health needs data		Enhanced disaster medical response	
Support resilient, local food systems	Zoning for community food gardens		Community garden produce market

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Community Identity and Natural Resources	Area-Wide Development	Shoreline Master Program	Health and Well-Being
Flood-smart building design	Zoning and policies that promote resilient development; evaluate critical facilities exposure	Inclusion of sea level rise projections and focus on adaptation opportunities	Land use planning updates and protection of important habitat (e.g., oyster beds)
Retrofitting existing and/or building new vertical evacuation structures	Network of vertical evacuation structures		Community health center with vertical evacuation capacity
New ridge trail	New ferry, ridge trail system, logging/forest road access	Earthquake resistant beach access and trail connections	Opportunities for physically active living
Development of resorts on hilly land outside the city	Assessment of feasibility and possible uses for higher ground outside city		
Wetland resort development and open space	Identification of new economic development opportunities	Preservation of coastal vegetation	
Emergency evacuation route signage	Regional collaboration with county and private sector on evacuation planning		Coordinating volunteer organizations to support emergency aid
	Transportation infrastructure improvements	Incorporation of sea level rise into infrastructure planning	
Relocation of critical facilities	Feasibility of relocating critical facilities		
Blue-green stormwater infrastructure		Vulnerability assessment of wastewater treatment and mitigation needs	
	Improved cellular and internet connectivity		Regional telehealth programs
Potential aerial tourism opportunities			Walking-friendly environment; affordable housing
Coastal resources mapping	Protection of open spaces and ecosystem services		
			New telehealth system and improved health outreach
			Health service providers and knowledge of community needs
Gardens and markets for neighborhood identity			Increase healthy food options and local self-sufficiency

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2. Land Use Element

2.1. Introduction

The Land Use Element is perhaps the most important element of the Comprehensive Plan as it guides the desired distribution of land use, population growth, and urban/economic development. The Land Use Element addresses land use issues that apply to the area within the Westport city limits. The Land Use Element is found in chapter four of the plan and is described as representing the foundation to the entire plan. Land use goals, objectives, and policies identified in this element consider long-term implications of land use decisions and work towards a pattern of development that can be sustained for future generations. This chapter identifies opportunities to shape the physical development of Westport while considering the community's history, existing land use patterns, characteristics of the existing built environment and aesthetics, and long-term safety and hazard mitigation strategies of the community.

The Land Use Element is currently presented in two parts in Westport's Comprehensive Plan. Sections A through H contain general goals, objectives, and policies divided into broad land use categories; overall goals and objectives, residential, commercial, industrial, public and semipublic, land use policies, and groundwater, storm water runoff/drainage. Section I discusses the land use map and zoning classifications. There is also reference to the land use map in Appendix A of the Comprehensive Plan. The overarching goals of the section listed in Section A are:

1. To promote the establishment of appropriate population densities and concentration that will contribute to the wellbeing of persons, the city, and the preservation of the environment.
2. To promote an efficient and orderly pattern of land use which protects the unique seaside character of Westport, its environmental amenities, and the integrity of its residential neighborhoods while providing a flexible approach to the development of commercial and industrial lands.

An additional 13 more goals are detailed in subsequent sections relating specifically to the relevant subsections.

Sections A through F are comprised of goals and objectives relevant to each subsection, section G states ten land use policies, and section H includes goals, objectives and strategies related to groundwater, storm water runoff/drainage. Hazard mitigation strategies, in particular with reference to emergency preparedness for a tsunami, are already discussed in sub-section E, in public and semipublic land use, with goals related to development of additional mixed-use vertical evacuation structures. This aligns with Initiative #1 of the Westport Annex of the Grays Harbor County HMP: Vertical Tsunami Evacuation Structure. There is also mention of improvements to storm water drainage systems in the groundwater, storm water run-off subsection that is intrinsically linked to hazard mitigation and aligns with Initiative #5 of the Westport Annex of the Grays Harbor County HMP: Critical Facilities Evaluation. Further opportunities for integration of hazard mitigation strategies with the Land Use Element are discussed below.

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2.2. Opportunities for Integration

The Westport Annex of the Grays Harbor County HMP identifies ten possible hazard types for the city of Westport. The top five are earthquake, tsunami, erosion, flood and severe weather, all with high or medium vulnerability rankings. It should be noted that climate change is also listed in sixth position, but is given a low vulnerability ranking. Of the identified hazard types in the Comprehensive Plan, only tsunami and flooding are acknowledged in the Land Use Element. There is an opportunity to expand on these hazard types and incorporate the other hazard types identified in the Grays Harbor County HMP.

Tsunami hazard mitigation is incorporated into the Land Use Element through goals of development of elevated evacuation structures with mixed-used capacity. This could be further integrated with location-specific goals for these structures. The Grays Harbor County HMP defines the Marina District as the location for the planning and construction of a vertical evacuation structure. The Comprehensive Plan could include this as well as strategies to revisit the location decision-making process for additional future structures. Based on walking speed radius coverage for the entire Westport-Grayland South Beach area, Project Safe Haven in 2011 identified nine sites for vertical tsunami evacuation structures, including those at Ocosta School and the Marina. A more detailed feasibility study would likely refine the locations for such structures, based on additional factors including: locally specific walking conditions; neighborhood characteristics and identity (e.g. which groupings of residents would be most able to help each other reach safe evacuation sites); more detailed models of wave behavior and impacts (e.g. current speeds, locally specific flooding depths, scouring of ground surface, effects of vegetation and buildings, and impacts of debris, hazardous materials and fire, etc.); geotechnical requirements for seismic structural design; property ownership and access; and opportunities for investment that could include vertical evacuation, such as a new combined police-fire-city services building, a berm for a playfield, a hotel and event space, etc. Project Safe Haven provides a model for the kind of public activity (e.g. design charrette) that could test the feasibility of these ideas, but at a more site-specific scale.

Flooding hazard mitigation is also incorporated into the Land Use Element in the storm water runoff section with the goal of an efficient and effective storm water drainage system. This aligns with the mitigation strategy in the Grays Harbor County HMP of "Conduct analysis of existing storm water drainage system and implement recommended improvements". This could be further elaborated upon to include planning for impacts of flooding due to SLR and coinciding storm water surges. This would also incorporate the hazard of climate change, which although identified as a low vulnerability ranking, is closely related to flooding, as well as other high-vulnerability hazards for Westport such as erosion and severe weather, through increased storms, rainfall and tidal surges. Mitigation for these types of events would involve many similar practices for flood mitigation. (There are other possible threats to Westport's future sustainability related to climate change that do not manifest themselves as flooding, erosion or severe weather, such as ocean warming and acidification, which still affect economically important sea life, but this report does not address those.)

Earthquake hazard mitigation strategies are in some circumstances tied to tsunamis, but whether they generate tsunamis or not, earthquakes involve other hazards of shaking damage to buildings, roads, bridges and other infrastructure; landslides; and liquefaction. This type of hazard is less incorporated into land use planning in Westport. The Grays Harbor County HMP's liquefaction susceptibility map for Westport (Figure 10-3 in the Annex of the HMP) is based on a simplified classification of soil type. More

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detailed studies of differential seismic behavior of filled areas, wetlands, dune ridges (Figure 2), and areas of varying histories of sediment deposit are required in order to determine locally appropriate earthquake mitigation actions, including structural requirements for critical facilities, evacuation routes and refuge sites, restrictions on development and refinements to building codes. Overlaying more nuanced maps of seismic landslide and liquefaction hazards with maps of flood- and erosion-prone areas would further help identify priority sites for restricting development and even buying out at-risk properties.

Erosion can be tied to climate change impacts because SLR can cause soil erosion and coastline change. However, erosion due to non-climate-change-related forces, such as ocean and river currents, have always posed a threat to settlement in Westport. This is not currently addressed in the Comprehensive Plan. There is the opportunity to integrate this into the Land Use Element when addressing issues of land vulnerable to SLR and coastal erosion. Strategies such as buy out of at-risk properties in low-lying areas help address the hazard of erosion.

As well as incorporating new strategies and goals into the land use section of the Comprehensive Plan to address the hazards identified in the Grays Harbor County HMP, it is important to discuss how the initiatives from the Grays Harbor County HMP can be integrated into the Comprehensive Plan. Table 2 below summarizes how the existing hazard mitigation initiatives identified in the Grays Harbor County HMP may align with goals in the Land Use Element, as well as what conflicts or obstacles they face with respect to land use goals.

Table 2. Aligning hazard mitigation initiatives and the Land Use Element

Hazard Mitigation Initiative	Opportunities for Alignment with Land Use	Conflicts with or Obstacles to Alignment with Land Use	Hazards Mitigated
Vertical Tsunami Evacuation Structure	• Existing overlap with goal under public/semipublic subsection: "*Pursue improvements in emergency preparedness, such as the development of elevated evacuation structures which provide mixed recreational or commercial uses during regular day to day activities, to better meet the health and safety needs of the city if an emergency should occur.*" • Specify locations for future vertical evacuation structures	• Appropriate locations and uses of structures may be in conflict with existing/proposed uses and/or ownership • May require public acquisition of private land, demolition of existing structures, provision of public access or infrastructure service, and other interventions	• Tsunami • Flooding • Severe Weather
Public Outreach Program	• Create publicly available maps to be included in the comprehensive plan showing locations of high ground and vertical evacuation structures • Create public outreach programs to assist with accessing where people spend time in Westport and where vertical evacuation structures should be constructed • Public workshops to identify community assets that can be enhanced and made more resilient	• May be difficult to determine which community assets require most attention to improving resilience • Timely and costly to plan multiple evacuation towers that are accessible to all in Westport	• Earthquakes • Tsunami • Flooding • Coastal Erosion • Severe Weather

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Hazard Mitigation Initiative	Opportunities for Alignment with Land Use	Conflicts with or Obstacles to Alignment with Land Use	Hazards Mitigated
Emergency Management Plans	• Include a map of community assets that will be utilized during an emergency • Relocation of critical facilities to higher ground within the city limits and consider options outside city limits • Consider improved access to uphill areas outside city limits	• Difficult to include all possible assets on one map, some assets not able to be mapped • Many assets may be outside Westport city limits (land use only covers within city limits) • Limited higher ground within city limits • Relocation can incur high costs	• Earthquakes • Tsunami • Flooding • Coastal Erosion • Severe Weather
Emergency Communications Plan	• Include map identifying evacuation routes, shelter locations and emergency facilities	• Will need to be maintained and frequently updated	• All Hazards
Critical Facilities Evaluation	• Existing overlap with goal under public/semipublic subsection: *"To ensure that public facilities and services are high quality, fully maintained and cost effective"* • Overlap with groundwater, stormwater runoff/drainage goal: *"An efficient and effective storm water drainage system, which is safe, and which eliminates or reduces the problems and inconveniences associated with the existing system"* • Identify and map hazard prone areas and critical facilities located within these areas	NA	• All Hazards
Transportation and Right of Way Improvements	• Coordinate with updated tsunami evacuation map • Encourage development in areas more accessible to tsunami evacuation routes • See Transportation, Circulation and Telecommunications Element for routes that require seismic reinforcing	• Difficult to determine areas for development with no/low hazard risk of any sort	• Earthquakes • Tsunami • Flooding

2.3. Community Input

Existing land use patterns in Westport greatly affect how space is used, where people gather, and places of significant importance to the community. Existing land use maps for Westport show clear divides between the marina industrial district, mixed used tourism commercial zones, residential zones, and parks, recreational spaces and natural landscapes. There are also many places and zones outside the City of Westport's borders that although outside of the city limits are within the community space that is in the wider Westport/South Beach area. The city limits are not immediately obvious when entering Westport, the school and many residential housing units lie outside the city limits without a clear distinction. Therefore, when community members talk about Westport, they do not refer to an area

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defined by the city limits even though the Comprehensive Plan applies only to space within the city borders.

From the community workshops it became clear strong values associated with land use included access to nature and state parks; forward thinking of city officials to create safe spaces from natural hazards such as the vertical evacuation structure; opportunities for employment, entrepreneurship and access to seafood in the Marina District; and the quiet, safe and laid-back life style of the community. Table 3 summarizes these themes.

Table 3. Community input related to the Land Use Element

Strategy Theme	Strategy Examples
Community Safety	• Ensure vertical evacuation structures are accessible to all members of the community • Start planning for SLR of one foot now and look at relocating at-risk properties • Expansion of city limits to include uphill areas for evacuation • Ensure wetlands, parks, and outdoor green spaces are protected from development
Community Identity	• Relocation of critical facilities within Westport on higher ground along the dunes • Limit high rise buildings and consider medium rise for vertical evacuation structures • Maintain rural seaside community character with development • Elevate roads with marina access to ensure key asset of the community is protected as best possible
Asset Enhancement	• Protect the Marina District by improving infrastructure such as floating docs and building elevations • Purchasing of land vulnerable to sea level rise and convert into wetlands/public space • Encourage development that can include infrastructure such as hotels with conference centers that can also be used as vertical evacuation structures

2.4. Recommendations

Based on discussions within the class studio; analysis of the Westport Annex of the Grays Harbor County HMP; the community workshops on November 16 and 17, 2018; presentations to City of Westport staff on December 7; and a public open house on December 8; the following recommendations for updates to the land use section are summarized in Table 4. These recommendations are specific to the Land Use Element. Although they may overlap with other recommendations provided later in this report (such as the Area-Wide Development Element), the Land Use Element helps guide the rest of the chapters in the Comprehensive Plan.

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Table 4. Recommendations for updating the Land Use Element

Source	Recommendation	Hazard Mitigation Benefits	Co-Benefits
Community Workshops	Purchase/acquire land outside the Westport city limits that is on higher ground and less likely to be flooded by a tsunami.	• Provides access to safe areas during a tsunami • Allows for emergency supplies to be stored at a higher ground • Lays foundation for retreat to higher ground	• Land can have multiple uses (e.g. hiking trails, campground, hunting) • New tourism opportunities with land development (e.g. hotel, viewpoint, Seabrook-like housing)
Community Workshops	Research and evaluate relocation opportunities of Westport's critical facilities to higher ground within the city limits along dune ridges.	• Allows critical facilities to stay within city limits • Keeps critical facilities safe during tsunami or flooding events	• Concentration of public facilities for easier access • Modernization and integration of public facilities for possible smoother operations and communications between services • Opportunities for new facilities such as health care providers
Community Workshops/Studio Discussions	Research federal and state funding opportunities for purchase or land exchange of at-risk properties in lowland coastal areas at risk of sea level rise and convert space to wetlands/public open space or to flood-resilient non-essential facilities.	• Relocates at-risk home and business owners to safer land • Retreats from SLR; adapts to changing coastline	• Allows for creation of more pervious surfaces from acquired land; improves stormwater drainage • Additional public/open space • Natural habitat restoration • Potential revenue generation
Grays Harbor County HMP/ Westport Comprehensive Plan	Continue to develop additional multi use vertical evacuation structures in other parts of the city and encourage future medium/high-rise development to include vertical evacuation opportunities in infrastructure.	• Provides safety during tsunamis and flooding events • Provides access to more community members, tourists and temporary workers	• Benefits of multiuse structures such as new parking lot or hotel • New facility for the community • Opportunity for investment with private/public partnerships
Studio Discussions	Adoption of climate/hazard resilient building codes and development restrictions in hazard prone areas.	• Restricts development in low lying areas prone to SLR • Restricts restorations that are below climate resistant building codes • Encourages development that has mixed use capacity of a vertical evacuation structure	• Stronger, safer infrastructure for the community • Additional vertical evacuation structures

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Source	Recommendation	Hazard Mitigation Benefits	Co-Benefits
Studio Discussions/ Community Workshops	Reinvest in resilient infrastructure in the Marina District such as floating docks and elevated/amphibious infrastructure.	• Strengthens marina infrastructure making it more resilient to SLR, extreme weather events, earthquake shaking, and minor (distant-source) tsunamis • Protects the key economic seafood industry of Westport	• Creates a safer environment in the Marina District • Job creation for renovations • Improves climate change vulnerability of Marina District
County HHMP/ Westport Comprehensive Plan	Improvements to drainage systems for storm and wastewater with attention to increasing water levels as a result of SLR.	• More pervious surfaces land coverage to improve drainage • Counters some of natural land loss from coastal erosion and sea level rise • Better equipped system to handle increases in extreme weather events and subsequent flooding	• Protects infrastructure from flooding • Creates more wetlands and open space for the public. • Improves excess water and pooled water on path and roadways
Community Workshops	Consider expanding Westport's city limits to annex land further south of city including Ocosta High School and other areas along the higher dune ridges.	• Allows for more high ground to be utilized in hazard mitigation planning • Provides more opportunities for relocation	• A larger tax gathering revenue for the city • A more inclusive comprehensive plan for the wider Westport community

2.5. Reference Case and Further Relevant Information

An example of excellent integration of a county hazard mitigation plan and a city comprehensive plan can be seen in the case study of Snoqualmie, Washington. Snoqualmie 2032 is the official comprehensive plan adopted by the Snoqualmie City Council with most recent updates being in 2014. The plan contains detailed overlap with the King County Hazard Mitigation Plan in particular with sections of flooding hazard management.

Several of the hazard mitigation plan's forty-five strategies coincide with strategies in the Snoqualmie 2032 plan. Flooding is the biggest hazard of concern for the area and overlapping strategies between the plans in this area include: at risk property acquisition, participation in a community rating system, exceeding National Flood Insurance Program standards, floodplain map updates, and funding mechanisms for elevating houses. In addition, upland timber industry property has been developed for new housing and neighborhood services, providing the town with an increased tax base and a new outlet for growth and possible retreat/relocation options. (Further study on the impacts of this development on community identity may also provide information useful for Westport's reference.) Many of these strategies emerged in the comprehensive plan under a separate subsection under the land use element specifically for flood hazard mitigation. The City of Westport has an opportunity to learn from integration such as seen in Snoqualmie to update sections of the Comprehensive Plan and help envision a stronger and more resilient city in the future.

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2.5.1. Westport Topography
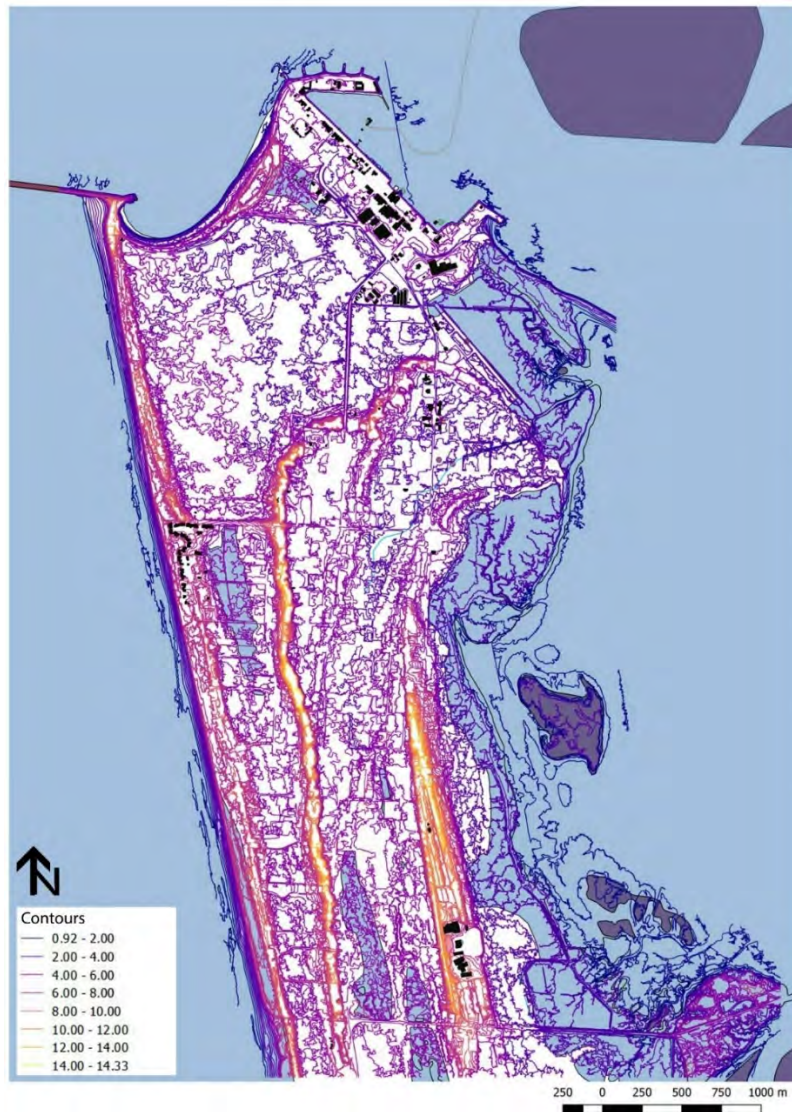
Figure 1. Relief map showing high ground areas on the Westport peninsula including ridgelines and dunes

2.5.2. Section References

Snoqualmie City Council. (2014). Snoqualmie 2032: City of Snoqualmie Comprehensive Plan. Retrieved from: http://www.ci.snoqualmie.wa.us/161/Comp-Plan

Tetra Tech, Prepared for: King County Office of Emergency Management. (2014). King County Regional Hazard Mitigation Plan Update. Retrieved from: https://www.kingcounty.gov/depts/emergency management/emergency-management-professionals/regional-hazard-mitigation-plan.aspx

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3. Transportation, Circulation, and Telecommunication Element

3.1. Introduction

Transportation and circulation is a vital and major determinant of land use development within an area and should be addressed when updating the Comprehensive Plan. The smooth operation of the transportation system provides an opportunity to improve the effectiveness of emergency response and hazard mitigation. This section covers two major parts of the Comprehensive Plan: Transportation and Circulation (including both general traffic and airport circulation) and proposes a new sub-element: Telecommunications. Telecommunication is highly linked with transportation, as both are essentially forms of connectivity within the community and between it and other places. This new sub-element guides future development of wireless communication, and helps maintain connectivity during a disaster. New technologies of transportation and telecommunication increasingly affect each other's demand for services and both function for many similar goals.

The design, plan and construction of transportation and telecommunication requires coordinating with land use planning, economic development, and urban design. This section also provides suggestions for relocation and/or reinforcement of current transportation facilities. One obvious benefit of this is to ensure safety and efficiency in the event of an evacuation (e.g., tsunami, earthquake). However, the cost of reconstruction might be a barrier to achieving some suggested goals.

The current goals of Transportation and Circulation Element are:

To maintain and improve the City of Westport's circulation and traffic to address the following:

1. Provision of safe, adequate, and improved access;
2. Improvement of traffic flow;
3. Needs of those using differing modes of transportation are served;
4. Compatibility of transportation types is enhanced;
5. Provision of efficient access for Police, Fire and EMS response;
6. Transportation and circulation is coordinated with the goals and objectives of the other elements of this plan, especially land use; and
7. To develop a transportation and circulation system which serves all types of users in the most economical, efficient, and compatible manner possible, and which minimizes the costs of transportation facilities to the taxpayer.

Current goals of airport circulation:

1. An all-weather airport facility with adequate length to accommodate the needs of area businesses and aviation-based tourism traffic that is located in an area compatible with an airport and its associated activities;
2. Ensure that individuals who live, work, or own property near the airport enjoy a reasonable amount of freedom from noise and other undesirable impacts;

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Proposed goals of telecommunication:

1. Develop city-wide communication tools to improve efficiency of local public services and private sector activity
2. Increase regional data connectivity to reduce dependence on out-of-town trips for some services;
3. Increase diversity and redundancy in wireless communication options, both to enhance daily life and to ensure functional telecommunication during emergencies when normal connections are compromised.

3.2. Opportunities for Integration

Table 5 below displays the six hazard mitigation initiatives from the Grays Harbor County HMP and describes opportunities and obstacles for aligning hazard mitigation strategies with the transportation, circulation, and telecommunication goals.

Opportunities and obstacles described below focus on aspects of hazard mitigation that are relevant to transportation, circulation, and telecommunication, including the goals which exist in the current Comprehensive Plan (e.g., evacuation route, pedestrian safety, conflict between pedestrian and vehicle, the transportation design associated with EMS, etc.). The Grays Harbor County HMP has addressed the importance of reliable evacuation during a disaster. Hence, we recommend addressing emergency response planning during evacuation in the Comprehensive Plan.

In addition, Westport should also consider the reliability of the current transportation infrastructure. For instance, the Elk River SR 105 bridge would be damaged based on current tsunami models; hence, reinforcing the existing infrastructure in the transportation system is necessary.

Table 5. Aligning Hazard Mitigation Initiatives and the Transportation, Circulation, and Telecommunication Element

Hazard Mitigation Initiative	Opportunities for Alignment with Transportation, Circulation, and Telecommunication Goals	Conflicts with or Obstacles to Alignment with Transportation, Circulation, and Telecommunication Goals
Vertical Tsunami Evacuation Structure	• Identify evacuation routes both internal and external for vehicles and pedestrians. • Install resilient telecommunications hubs at vertical evacuation sites	• The evacuation route to vertical evacuation may not be reliable due to ground shaking, liquefaction, flood and wave force during tsunami.
Public Outreach Program	• Educate the public regarding evacuation (evacuation route, method), including vulnerable populations (the elder, ADA, , non-English speakers) (revised) • Improve tsunami evacuation street and trail signage • Use official website/Facebook/Twitter in Westport to spread information about evacuation, tsunami/storm warning (revised)	• The outreach program may fail to reach all of Westport and the wider community.
Emergency Management Plans	• Transportation facilities should apply appropriate design principles to protect adjacent residential areas. Design of transportation facilities should include input from representatives of the Public Safety and Emergency Management staff to improve access for these services.	• High cost for reinforcement/re-engineering.

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Hazard Mitigation Initiative	Opportunities for Alignment with Transportation, Circulation, and Telecommunication Goals	Conflicts with or Obstacles to Alignment with Transportation, Circulation, and Telecommunication Goals
	• Design new evacuation route for new vertical evacuation building. • Consider Police, Fire, Coast Guard and EMS roles in transportation management after disaster • Plan transportation improvements for emergency events, e.g. upgrading of Elk River Bridge	
Emergency Communications Plan	• Consider applying telecommunication technology for emergency communication inside/outside of City of Westport during disaster.	• The quality and service of wired and cellular connections may be limited under emergency situations such as disaster (tsunami, earthquake).
Critical Facilities Evaluation	• Ensure the location of new transportation infrastructure not within the hazardous area (e.g., erosion, inundation).	• The cost of new transportation infrastructure will increase.
Transportation and Right of Way Improvements	• The City of Westport should develop and maintain a pedestrian system providing safe, adequate, and efficient access to all areas of the community, particularly to major nodes and centers of activity. • Pedestrian and vehicular flow should, be improved in the business district, with particular attention to minimizing vehicular and pedestrian conflict.	• Expanding development and public facilities/infrastructure into new areas would require additional coordination with Grays Harbor County, WSDOT (e.g., signal control, crosswalk).

3.3. Community Input

Citizens of Westport are resilient, hard-working, self-sufficient, and many have outdoor survival experience. They have practical skills to repair boats, cars, houses, and other equipment. During a disaster, residents will likely be able to fix equipment (e.g., ham radio, boats). Many residents know how to hunt, fish, and live outdoors. In addition, the social bonds are tight, people are willing to help each other, and they have a strong sense of belonging, which is an asset in a disaster response and evacuation situation. Westport is abundant in seafood, berries, mushrooms, and other natural food resources for the community. These resources will help provide supplies for residents during disaster, which also requires a sound logistics transportation system. All these elements make it possible for the community to survive during disasters in Westport. The following quote from a Westport resident highlights these values:

> *"We value our small community, the feeling of closeness that you can only have in a small town. We value our fishing industry and the jobs that it provides, diverse cultures and people coming together, the cranberry industry, our schools, and our community gardens."*

We obtained many helpful suggestions from Westport residents regarding transportation, circulation, and telecommunication during the community engagement activity. Participants in Westport suggested ideas, including: strengthening the bridge over the Elk River; using a ferry to travel to Ocean Shores/Hoquiam/Aberdeen; elevating the current land area; building higher buildings; and relocating the current airport because it is at risk of flood impacts under many hazard scenarios.

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Community members also suggested using a hovercraft for ferry transport since it can prevent issues with stranding in shallow areas that ferries may experience. The route of the ferry to Ocean Shores is suggested to be modified from the north of Ocean Shores to Downtown Ocean Shores due to the low elevation of northern Ocean Shores and the high possibility it may be inundated during the tsunami. In addition, community members provided suggestions regarding telecommunication including apply broadband internet in the rural areas, use 600 MHz to bring extended range LTE[2]; improve the LTE coverage and capacity in Westport; use HughesNet.com as Satellite internet for communication during disaster. Table 6 below summarizes the community input we gathered.

Table 6. Community input related to the Transportation, Circulation, and Telecommunication Element

Strategy Theme	Strategy example
Strengthen weak points in existing regional transportation connections	• Relocate the Westport airport to higher ground • Supplement airport with emergency use of other potential airfields, as in Grayland • Rebuild the SR 105 bridge over Elk River to withstand earthquake and tsunami impacts
Diversify regional transportation connections	• Use 'hovercraft' (capacity with 40-46 persons) to deal with the shallow draft needs • Widen SR 105 bridge over Elk River to increase foot and bicycle capacity • Develop upland bike and foot trail to Grays Harbor College and Aberdeen
Supplement and integrate transportation systems with telecommunication	• Expand broadband internet in rural area • Establish 600 MHz LTE to increase LTE coverage and capacity, lay the foundation for 5G to increase the network quality • Use HughesNet.com satellite (Gen 5 satellite system) for internet communication when regular broadband or cellular systems are disrupted • Support and train ham radio operators for emergency communications

3.4. Recommendations

3.4.1. Transportation and Circulation

One of the key tsunami evacuation routes is along Montesano Street (the red solid line shown in Figure 2) from the Marina District to the north residential area in Westport. However, the route may be vulnerable to liquefaction and/or ground subsidence from a CSZ earthquake. Furthermore, the route as it passes the airport is vulnerable to the more extreme CSZ earthquake subsidence and SLR scenarios due to its low elevation.

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[2] Long-Term Evolution; a 4G mobile communications standard.

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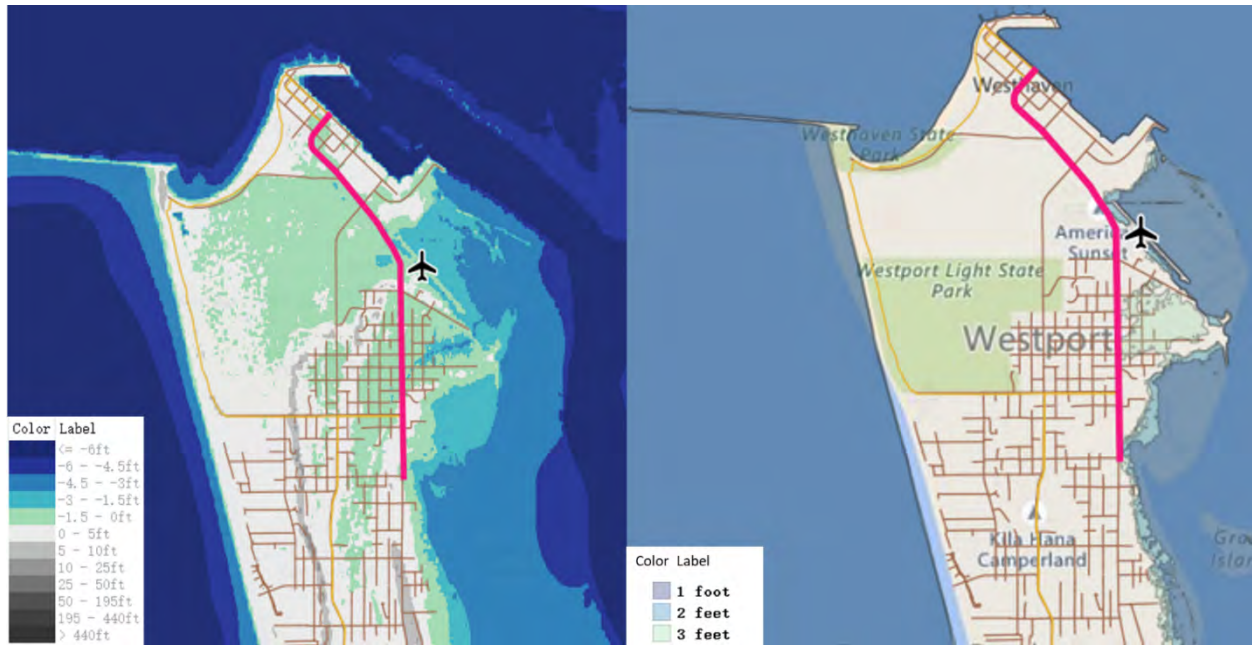
Figure 2. Key evacuation route along Montesano St in L1 CSZ earthquake subsidence (right) and SLR (left)

We recommend testing the soil composition and liquefaction hazard under this section of Montesano St., for possible need to reinforce, rebuild and/or elevate the road with deep-pile structural support to ensure its function under impacts of strong ground motion, tsunami wave force and scouring/erosion, liquefaction, and flooding due to storms, sea level rise, and co-seismic subsidence. Additionally, we recommend arranging supplemental support for emergency situations from the nearest neighboring airfield site on high ground (above 200 feet elevation) in Grayland, shown in Figure 3.

The ferry route could be redesigned to support rescue efforts after an earthquake and tsunami. However, some concerns remain including impact to shellfish beds and other natural resources along the ferry route, as well as stranding in shallow areas.
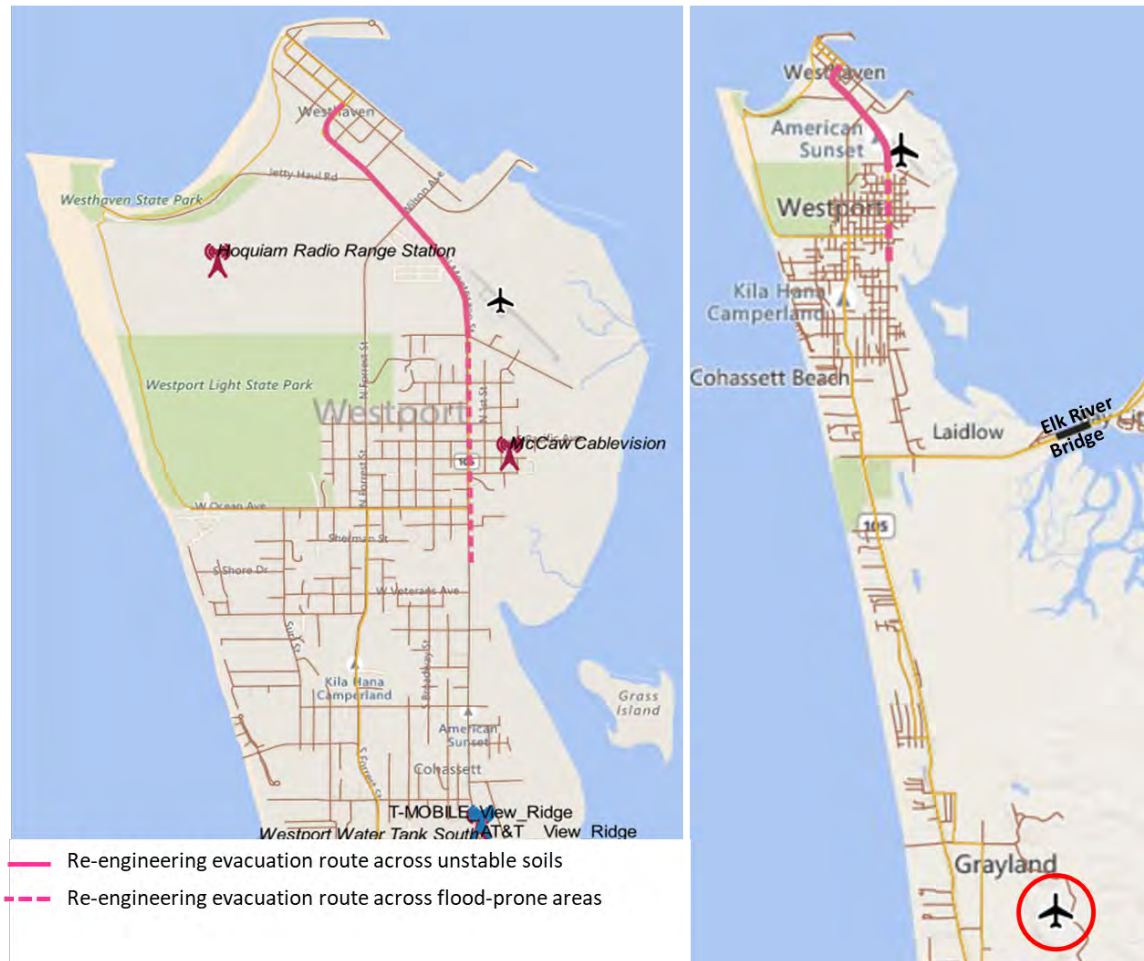
Figure 3. Suggested reengineering area (left) and suggested auxiliary airport in Grayland (right)

3.4.2. Telecommunication

Figure 3 also displays the current locations of cell and communication towers in the City of Westport. Given that these networks may be vulnerable in a major earthquake, we recommend augmenting them with a range of alternative technologies. Residents may use ham radio to transmit SOS messages and call for search and rescue from the state, county, and neighboring cities, as well as to receive information about the regional situation. In addition, the Federal Emergency Management Agency (FEMA) recommends one method to support state and local emergency communication functions: the ARRL (American Radio Relay League) for amateur radio operators to offer electronic communications for state and local government (Coile, 1997).

For additional diversity of communication inside the City of Westport, Low Power FM radio (LPFM) can serve as emergency communication during/post disaster. LPFM stations can be heard about 3.5 miles if there is no blocking from topography, a bigger station or other obstacles. Washington state has the second-highest concentration of low-power FM radio stations in the country with 68 stations for 7.4 million people. LPFM is low cost and low-tech, and easily managed by small groups of enthusiasts, students and other amateurs. The establishment of a LPFM station at a vertical evacuation site would enhance communication in the community. It is important to consider the daily function of such a station,

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in order to build familiarity with the technology. The Ocosta School, for example, might incorporate the station in its vertical evacuation building, and also use it to train students in the technology and practice of broadcast media, announcing events and providing the community with sportscasting, news and other educational information including occasional emergency tips.

Higher-tech wireless or mobile ad hoc networks can also add options to strengthen a community's self-sufficient and adaptable communication when regional systems with fixed hubs or routers break down. "Sonnet" is one technology being developed as the most advanced off-grid mobile mesh network; it brings the long-range wireless communication of the walkie-talkie to the smart phone, allowing the user to send text message, voice recording, and GPS coordinates between smartphones up to 9 miles apart, even without cellular coverage or satellite internet access. This section recommends exploring a range of such options, that in combination with lower-tech ham radio and LPFM, may increase the community's resilience to telecommunication disruption, even as the region overall experiences improved normal connectivity through rural broadband.

The introduction of rural broadband, including the possibility of a trans-Pacific fiber-optic cable landing station in Grays Harbor County, will greatly increase normal connectivity in the region. Westport/South Beach should consider how this connectivity may change every day social and economic activity in the community, including changes in travel behavior, and how connectivity (and the activities it supports) may be disrupted in a disaster. For example, healthcare access (recommended as a new Element in the Comprehensive Plan), may benefit from rural broadband by participating in regional telehealth systems, reducing residents' need to visit health clinics and hospitals. Telehealth may also facilitate long-distance triage and other emergency medicine provision in a disaster. To do so, however, it is dependent on a robust telecommunications system. The integration of locally self-reliant and robust systems as described above with new regional connectivity technologies can reduce such vulnerabilities.

Based upon the opportunities from the Grays Harbor County HMP integration and community input described above, as well as case study and advanced practice research, Table 7 below summarizes recommendations related to transportation, circulation, and telecommunications.

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Table 7. Recommendations for Updating the Transportation, Circulation, and Telecommunication Element

	Strategies	Hazard Mitigation Benefits	Co-Benefits for Community Values
County Hazard Mitigation Plan	Provide education and training of evacuation information (e.g., evacuation route, ham radio operations) for local residents, students and employees in Westport	Increase Public knowledge of evacuation	• Promote neighborhood social ties
	Include support/backup from Fire, Police, Coast Guard and EMS in transportation management	Complete and clarify the responsibility of each department	• Clarify the duty and correlation of each department during emergent event
	Explore increasing capacity, reliability and geotechnical strength of existing key evacuation and access routes (e.g. Elk River bridge)	Increase the reliability of the current evacuation route	• Increase the resilience and sustainability of the transportation infrastructure
	Make telecommunication access more robust in the event of cellular disruption during disaster (Low-power FM radio, ham radio, Wi-Fi direct/WMN)	Ensure basic telecommunication functions during disaster	• Better wireless connection in Westport • Promote neighborhood social ties • Enhance telecom technology literacy among community members
	Explore ferry routes to Ocean Shores, Hoquiam and/or Aberdeen	Additional evacuation options for climate change, erosion, tsunami, earthquake, flood	• Greater connectivity to other Grays Harbor communities • Tourist and recreational attraction • Increased diversity of port function
	Arrange emergency/auxiliary service by neighboring upland air field in Grayland	Additional evacuation and supply option for tsunami, earthquake, flood	• Increased accessibility for possible new upland development
Community Input	Relocation of airport to upland site in Grayland	Improve the sustainability and resilience of the airport when facing climate change, erosion, tsunami, earthquake, flood	• Improve the traffic connection (e.g., new route/trail will be built towards the airport)
	Use 'hovercraft' for ferry evacuation to prevent stranding in shallow area	Safe, smooth and efficient ferry evacuation during tsunami, earthquake and flooding	• Possible increase in tourism • Diversity in transportation modes
	Establish 600 MHz LTE to increase LTE coverage and capacity; lay the foundation for 5G to increase the network quality	Improve the reliance and quality of telecommunication during disaster (tsunami, earthquake, flood)	• Increase the quality of services and enhance the signal of the cell phones for daily usage
	Apply HughesNet.com as satellite (Gen 5 satellite system) internet for telecommunication	Ensure basic telecommunication with satellite during disaster	• Increase the quality and resilience of satellite-connection
	Establish evacuation plans for elder/ADA people, in coordination with enhanced public transit	Ensure the safety of the elder/ADA people during disaster	• Diversify transportation service in Westport (e.g., shuttle, bus)
	Road re-engineering for current key evacuation and access route. (e.g., Montesano St)	Improve the sustainability and resilience of the road when facing climate change, erosion, tsunami, earthquake, flood	• Mitigate traffic congestion

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	Strategies	Hazard Mitigation Benefits	Co-Benefits for Community Values
Other Cases/Practices	Provide education and training of evacuation information (e.g., evacuation route, use of ham radio, LPFM radio) for local residents, students, employees and vulnerable population (the elder, ADA, tourists, non-English speaking natives)	Increased awareness from people in Westport of the evacuation information to ensure their cooperation during tsunami, earthquake, flood evacuation as well as their safety	• Promote neighborhood social ties • Improve community inclusivity
	Mobilize Ham Radio network for communication between Westport and state/county/neighbor cities in the event of cellular disruption	Ensure communication with places outside Westport during earthquake, tsunami (sending SOS message, asking support request from state/county/neighbor cities)	• Enhance regional and global connectivity • Provide outlet for or training in technical expertise
	Explore establishing LPFM Station	Provide disaster warning information and maintain broadcast function within Westport during earthquake, tsunami and other events of cellular disruption	• Enhances community identity and strengthens community relations • Provide outlet for or training in technical expertise
	Explore applicability of mobile mesh networks, direct or ad-hoc Wi-Fi and other off-grid networks for smartphones and personal computers, such as Sonnet, WiFi-Opp, etc.	Provide person-to-person communication within Westport during earthquake, tsunami and other events of cellular disruption	• Improve the network quality and service • Promote the development of e-commerce
	Use telecommunication systems to participate in regional telehealth programs	Ensure a reliable telemedicine system during tsunami, earthquake, flood	• Improve regular access to healthcare

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3.5. Reference Cases and Further Relevant Information (Telecommunications)

Below are two case studies from the UK and Japan. The studies were selected based on two published examples of a small rural community employing a Wireless Mesh Network (WMN) and the major role FM stations can play during a disaster. These examples provide more detailed information on how WMN (known as a communications network made up of radio nodes in a mesh topology) can be applied to improve the local internet connection at low cost, adding telecommunications system redundancy to enhance resilience in case of a disruption to normal telecommunications.

3.5.1. Case Study - WMN (Wireless Mesh Networks) applied in Wray

In 2003, residents of Wray, a small village community in Lancaster, England, cooperated with Lancaster University to explore solutions for obtaining broadband internet access. The village's houses are clustered within one square mile, approximately 8 miles from Lancaster town. Initially, satellite, dial-up, or the school's radio link were the only choices for internet connectivity. The team decided that the radio connection could both handle interactive and high-bandwidth services as the school was on a hill, from which a signal could propagate across the whole village. Mesh nodes were placed as shown in Figure 4.

Within three years of deployment of community WMN, the network usage pattern of Wray changed from relatively low traffic to long-lived, high-bandwidth flow. The WMN technology not only developed broadband connectivity, but also enabled many social benefits. For example, e-commerce websites were initiated, transforming the local businesses into international markets. The farmers now use IT to register newborn calves.

This case study may be a good example for telecommunication development in the City of Westport. The implementation of WMN is low-cost and promises a more reliable internet quality and service. With a more reliable and sustainable system, people in Westport could open up online markets which can also develop the economy simultaneously.
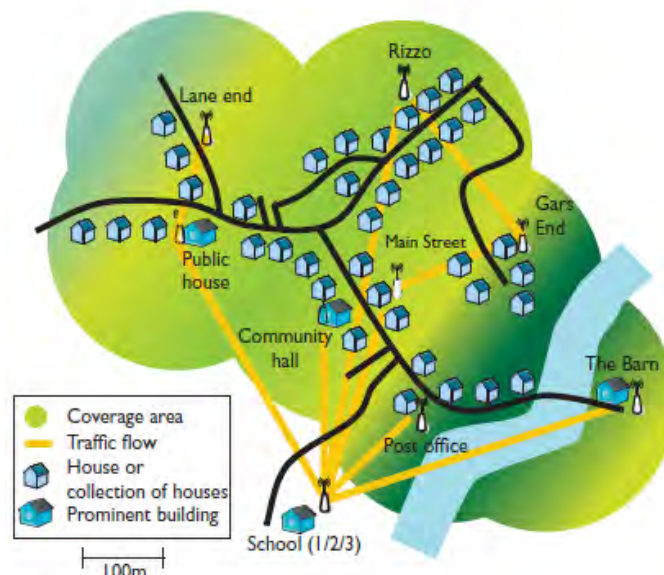
Figure 4. WiFi network topology and coverage area in Wray, UK

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3.5.2. Case Study – Community Radio (Wireless Mesh networks) applied in Tohoku

On December 1, 2011, the Japanese Ministry of Internal Affairs and Communications granted permission for the operation of emergency-broadcast FM stations, which are used to offer earthquake-related information to residents of 27 communities in the Tohoku and North Kanto regions (10 stations have used existing FM radio frequencies in the community for emergency broadcasting, 15 stations are newly set up by local government). FM stations play a vital role as a key source of detailed, real-time, disaster-related lifeline information for survivors and may help to unite people. The successful operation of FM stations helped make efficient disaster recovery more efficient following the Tohoku Earthquake of 2011. Having more such stations and programs in place before the earthquake may have helped mitigate the disaster.

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4.   Economic Development Element

4.1. Introduction

Economic development is a critical aspect of urban development that improves the well-being and quality of life of the community by creating jobs and business opportunities and building a tax base that supports social services.

Westport's economy traditionally has been heavily dependent upon commercial, charter and sport fishing and boating industries and the tourism activity associated with them. There is a need to diversify the city's economic base to reduce its reliance on seasonal sectors, as well as bolster its existing economy.

The current Comprehensive Plan has pointed out four general objectives for maintaining and improving the economy of the city:

- Work toward re-establishing the local economy while maintaining the seaside character and the maritime industries, especially those related to yacht/boat building, maintenance and repairs, commercial, and recreational fishing.
- A diversified tax base, as well as more diversified employment and industry, consistent with other elements of the comprehensive plan and community needs.
- A local economy which is stable, provides employment opportunities for all workers, and improves the community's standard of living.
- Encourage industry and businesses that will provide employment opportunities to attract and retain the younger populations, while reducing the outmigration of current populations.

   To achieve these general goals, the comprehensive plan provides eight objectives and several policy recommendations.

This section summarizes recommendations for integrating the Grays Harbor County HMP and the Comprehensive Plan, in consideration of the values, assets, and strategies proposed by community members during two workshops held in Westport November 16-17, 2018. It also discusses   the recommended strategies synthesized from community input and other research along with their co-benefits. This section concludes with the planning process that the City of Cedar Rapids, Iowa has gone through following the 2008 major flood and summarizes the lessons learned from that case.

4.2. Opportunities for Integration

Table 8 below lists the six initiatives from the Grays Harbor County HMP and describes opportunities and obstacles to alignment with the economic development goals currently outlined in the Comprehensive Plan .

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Table 8. Aligning Hazard Mitigation Initiatives and the Economic Development Element

Hazard Mitigation Strategy	Opportunities for Alignment with Economic Development	Conflicts and Obstacles to Alignment with Economic Development Goals
Vertical Tsunami Evacuation Structure	Building vertical evacuation structures can diversify the economic base by creating new jobs and business opportunities. They can also be designed to have everyday functions such as parking garages, shopping centers, hotels, event spaces, medical clinics, recreation, etc. Private sector investment can therefore cover some of the cost of land acquisition, design and construction. The presence of a vertical tsunami evacuation option in a neighborhood may also increase surrounding property values. Such structures may also function as landmarks and attractions in their own right, enhancing the City's image and "brand" as a destination.	• Costs of design and construction are high, adding upwards from 10% to the normal cost. • Funding and approval process can be lengthy and challenging, given special regulatory requirements
Public Outreach Program	Designing a new website for the city of Westport can enhance the city's competitive position within the region, especially in relation to tourism. It can also be used as a powerful tool to communicate to the public about hazards and disaster preparedness.	• Care must be taken to present hazards and disaster preparedness information in a positive, proactive way to residents, visitors and investors without obscuring the real risks to life and property
Emergency Management Plans	Consider relocating businesses from hazard prone areas in the long term to avoid possible damage costs. New businesses in areas that are exposed to the more probable SLR or tsunami scenarios should account for those risks in calculating return on investment. (Flood insurance does apply.)	• Moving businesses can be costly, more detailed feasibility studies will need to be done for each site • Business owners may resist moving
Emergency Communications Plan	Improving broadband internet and cell phone coverage can contribute to better emergency management as well as improve citizens' quality of life and encourage new businesses to invest in Westport. Improving the website can also contribute to emergency communication, especially if coordinated with the development of robust telecommunications as described in the Transportation, Circulation and Telecommunications Element.	• Same as above for Public Outreach
Critical Facilities Evaluation	Critical facilities that can service the development of industrial marina area are essential to ensure long-term economic vitality of Westport	• Complex multi-jurisdictional task; requires coordination with Port of Grays Harbor
Transportation and Right of Way Improvements	Improving the bridge, realigning the highways, and building floating docks to make them more resilient to both sudden and gradual changes in sea level will support long-term economic growth of the city as well as provides jobs in the short and medium term. Ferry to Ocean Shores and Aberdeen/Hoquiam can improve accessibility of the area to the tourists	• Costs of implementation may be high • Requires feasibility studies

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4.3. Community Input

The community pointed out many natural and social assets in the city of Westport that support quality of life and economic vitality. Scenic ocean views and access to water drive tourism along the beaches and Marina District. The local fisheries provide jobs for fishermen and the seafood is processed at the plants in the Marina District. The fisheries also attract charter companies for tourists who want to do deep sea fishing. The cool, wet climate and farmlands provide a place for cranberry bogs and a robust cranberry industry to thrive. Surrounded by the ocean, the city is an ideal place for boat-building and repair and marine outfitting. Hard-working, self-reliant people contribute to the stability and growth of the economy by providing their labor and skills to the community.

There are, however, challenges that should be addressed, including:

- The economic sector is very seasonal; tourist season is mainly throughout spring and summer, and during winter months, many shops are closed and there is less demand for hospitality
- Vacation rental buildings are prone to flooding and storm damage in winter months
- There are many for-sale and for-rent signs, which indicate a growing stock of residential real estate, but also out-migration and an oversupply of commercial real estate
- People want better cell phone coverage and broadband internet, especially for business purposes
- The seafood industry may also be affected by climate change in the future; oyster beds might also be threatened by SLR

In order to address the challenges stated above and support values that are important to the community, workshop participants suggested a variety of strategies to improve the economy of the city and make the community more resilient to both sudden and gradual coastal hazards. Table 9 and Figure 5 below include these strategies.

Table 9. Community Input Related to the Economic Development Element

Strategy Theme	Strategy Examples
Diversify the economic base	- A vertical evacuation structure in the form of a hotel with a conference room can attract tourists and support local and regional events. Other functionalities of vertical evacuation structures can include a parking garage or small shopping center. - Develop "Seabrook-like" resort community, but in beach town or seaport/marina-compatible style, to generate funds for relocation of critical facilities and long-term housing to higher ground - Improve critical infrastructure including bridges, roadways, highways, and airport. - Improve cellular and internet connectivity.
Retain, stabilize, and strengthen the traditional economic base sector	- Engage hotels, restaurants, and other services throughout the region to provide information about tsunami risk and evacuation. - Prepare to move oyster beds further inland with SLR. - Purchase/acquire land outside the Westport city limits that is on higher ground and consider moving regionally critical facilities there and prepare for post-disaster resettlement there. Explore near/medium-term development of such sites for recreational or resort-type development. - Purchase at-risk properties with federal funds to buy out homeowners to relocate.

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Strategy Theme	Strategy Examples
	• Reinvest in resilient infrastructure in the marina district such as floating docks and elevated infrastructure.
Enhance the city's competitive position within the region, especially in relation to tourism	• Make strategic infrastructure investments to improve the resilience of tourist attractions, seafood industry and other key businesses. • Conserve open spaces for ecosystem services and natural resource provisioning and possible future public use. • Maintain rural and seaside character throughout the region. • Develop new campsites at the state park and higher ground. • Develop a regional trail system

Figure 5. Economic Development strategies from community input

4.4. Recommendations

The city can make use of the strategies recommended by residents, as well as opportunities for integrating initiatives from the Grays Harbor County HMP to update the Economic Development Element of the Comprehensive Plan. These strategies aim at improving Westport's economy as well as making it more resilient in the face of natural hazards such as tsunami, flooding, and sea level rise.

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Table 10 summarizes the strategies proposed at the workshops, along with other research-based recommendations, how these strategies help mitigate hazards, and how they can provide economic and non-economic co-benefits to the community.

Table 10. Recommendations for Updating the Economic Development Element

	Strategies	Hazard Mitigation Benefits	Co-benefits for Economic Development
Grays Harbor County HMP	Build multi-use vertical evacuation structures (e.g., Parking garage, hotel and conference center, shopping center or market hall, zipline towers, "camping towers", etc.)	These structures make the city resilient towards earthquakes and tsunamis by providing safe and resistant buildings where people can seek refuge	• Contributes to stabilizing the economy and diversifying the economic base by providing new business opportunities • Serves as landmarks to "brand" Westport as a tsunami-ready destination • May serve as recreational facilities
Community Input	Reconstruct roads and bridges/ relocate the highway	New roads and bridges can provide resilience against sea level rise	• Creates employment opportunities • Improves connectivity
	Purchase land on higher ground outside city limits	Critical facilities can be moved to higher ground to make the city more resilient to tsunami and sea level rise. Can be used as emergency refuge and possible long-term resettlement in case of tsunami	• Can be used as tourist campground, hunting lodge and/or resort community in near/medium term
	Move oyster beds further inland as SLR advances	Oyster beds are threatened by sea level rise and moving them further inland can ensure their performance over the long run	• Strengthens the economic base by maintaining income from oyster beds
	Ferry to Ocean Shores, Aberdeen, and Hoquiam	May provide alternative accessibility in less severe cases of transportation route disruption following an hazardous event.	• Increases accessibility to/from Westport for tourists and residents
	Improve cellular and internet connectivity	Can improve emergency communication during earthquake or tsunami	• Provides incentives for businesses to locate or remain in Westport • Strengthens social ties
	Reinvest in resilient infrastructure in the Marina District	Improve resilience of important economic assets to flooding from sea level rise and less severe (e.g. distant-source) tsunamis	• Supports the economy by ensuring functionality of the marina
	Conserve open spaces for ecosystem services, natural resource provisioning and possible future public use	Makes the city more resilient to flooding, especially storm water floods, by increasing natural drainage	• Provides Ecotourism opportunities such as birdwatching, storm watch
	Purchase at-risk properties with federal funds to buy out homeowners to relocate; restore flood-prone areas to natural open space	Reduces residential and business vulnerability to flooding	• Same benefits as in conserving open spaces, above.

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	Strategies	Hazard Mitigation Benefits	Co-benefits for Economic Development
	Retrofit or rebuild Chateau Westport to be used as vertical evacuation	Chateau Westport is located on high ground and can provide refuge in case of tsunami if it becomes retrofitted to resist a large earthquake	• Supports tourism sector • The hotel can provide evacuation and preparedness information for tourists
	Invest in a new Westport website and Instagram page	Can be used for providing educational materials regarding natural hazards, as well as informing residents about public meetings and events	• Attracts more tourists to the area
Other Cases/Practices	Develop new "cultural district" in safe areas	Increases the resilience of artistic and cultural values to sea level rise	• Attracts tourists • Preserves the identity of the city
	Establish farmers market within walking distance of residences, integrated with vertical evacuation or other emergency refuge and supply storage site	Strengthens local social capital; acclimates residents to walking to place of refuge and emergency information and food supply	• Diversifies the economy for both residents and tourists • Provides fresh food options (see Health and Wellbeing Element for more details)
	Develop a new trail system to high grounds with exits to the beach that potentially connects vertical evacuation structures	Helps educate people about evacuation routes	• Provides outdoor recreation opportunities for residents and tourists; can go all the way to Aberdeen and be used as a bike trail

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4.5. Reference Case and Further Relevant Information

The City of Cedar Rapids, Iowa (Figure 6) updated its comprehensive plan after a major flood in 2008. Within days of the flood, the City Council outlined a series of strategic recovery goals. The City worked for 11 months with a broad public engagement process to transform flood-prone areas from non-ecologically functioning hazard zones to ecologically functional public amenities (the Greenway), and devised strategies such as a farmers' market along the Greenway to improve the economy.

In the "Business Revitalization" section of the Comprehensive Plan, the City identified the following priorities: Target new business opportunities for young and skilled employees; support small and local businesses; connect downtown with adjacent neighborhoods; strengthen walkable mixed-use districts; make downtown Cedar Rapids a regional destination point; and encourage high tech and industry growth along the Technology Corridor. Using the public feedback, they developed very specific strategies: Commercial District with a diversity of uses; a Mixed-Use Housing District within the Downtown Medical District; Riverfront Industrial Uses as prime riverfront redevelopment sites; and an expanded farmer's market venue.

They also integrated open space and environment priorities. These included the River Greenway which is an expanded buffer to enhance water and habitat quality, a Greenbelt which is a buffer around the City to limit sprawl and provide recreational amenity, a trail network for bicyclists and pedestrians, and a recreation center, which provides a central facility to serve the city from youth to seniors.
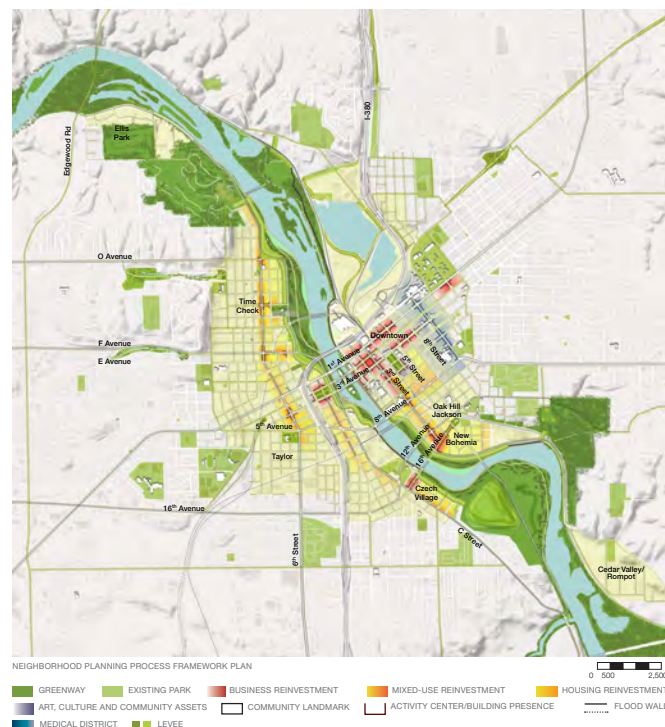
Figure 6. City of Cedar Rapids, IA. Source: City of Cedar Rapids Neighborhood Planning Process, 2009.

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4.5.1. Section References

City of Cedar Rapids Neighborhood Planning Process, September 2009, retrieved from: http://www.cedar-rapids.org/discover_cedar_rapids/flood_of_2008/neighborhood_reinvestment.php

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5. Community Identity and Natural Resources Element

5.1. Introduction

Chapter 7 of the current Comprehensive Plan is the Community Appearance and Natural Resources Element. This element focuses on the aesthetics and quality of the built and natural environment of the city to enhance the character of the city, quality of life for community well-being, and community attachment to place, as well as promoting tourist-oriented economic development. It also aims to recognize the importance of the natural resources, conserve them, and to improve the public awareness of these natural heritage features. We propose changing "Community Appearance" to "Community Identity," and including the following aspects:

- Community identity (as a social and functional as well as visual and aesthetic consideration)
- Urban resilience
- Hazard mitigation strategies
- Heritage conservation

Using "Community Identity" instead of "Community Appearance" broadens the scope of the Element and would also help to seamlessly incorporate the Historic Preservation for conservation and promotion of local culture into the Comprehensive Plan. The community identity element can also benefit from using urban design methods in various ways. Some of the common urban design methods that can be useful for Community Identity creation and preservation are as follows:

1) Cognitive/memory maps and city-image analysis (Lynch 1960)
2) Transect analysis
3) Placecheck
4) Observation of social life in public places; desire line mapping (Whyte 1980)

Natural Resources are also considered to be part of the community's identity. Therefore, it would remain a key focus of the Element.

The City of Westport's Urban Design Guidelines (UDG) would continue to exist as a separate document. Future updates to the UDG should be made based on the goals, objectives and policies established in the Community Identity and Natural Resources Management Element.

5.2. Opportunities for Integration

The city should consider the use of urban design methods (such as transect analysis, cognitive mapping and city image analysis) to identify and map optimum evacuation routes and places of refuge, to test public awareness of their existence; and to determine how that awareness is related to elements of Westport's urban form, including the layout of streets and other pathways, coastline and topography, land uses and ground cover, prominent buildings and other landmarks, and gathering places (Figure 9). Three key aspects of community identity derive from these elements which are also crucial to successful disaster preparedness:

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1) Legibility: the extent to which these elements help residents and visitors understand how the community is spatially organized and orient themselves in it (Lynch 1960)
2) Vitality: the extent to which these elements support social activity and life in general (Whyte 1980)
3) Meaning: the significance that residents and visitors individually and collectively attach to elements of urban form (Hester 1985)
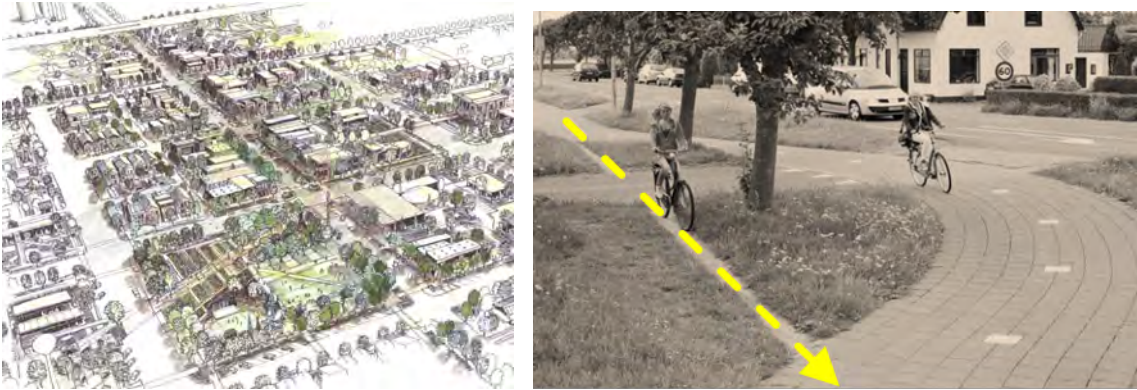
Figure 7. Urban Design Approach, City of Greensburg, Kansas (L); Desire lines to create evacuation route maps (R)

This section includes opportunities and obstacles for integrating hazard mitigation initiatives from the Grays Harbor County HMP with both the Community Identity and Natural Resources element and the Urban Design Guidelines (Table 11).

Table 11. Aligning Hazard Mitigation Initiatives with Community Identity, Natural Resources and Urban Design Guidelines

Hazard Mitigation Initiative	Opportunities for Alignment with Community Identity and Natural Resources, and Urban Design Guidelines (UDG)	Conflicts with or Obstacles to Alignment with Community Identity Goals
Vertical Tsunami Evacuation Structure	● The design of the vertical evacuation structures should correspond with the community appearance goals. These structures could contribute to identity creation of the community as well as serve as prominent landmarks for the city. ● Designing the structure in a setting that showcases or takes advantage of the natural resources of Westport (native plant and animal species, views of the ocean, the wetlands, etc.) could serve an educational function as well as attract visitors. ● If the structure were designed to be iconic, it could promote the economic vitality of the place by bringing in more tourists. ● The design of the vertical evacuation structures should correspond with the visual aesthetic guidelines prescribed by the UDG. ● The appearance of the vertical evacuation structures should correspond with the visual aesthetic guidelines prescribed by the UDG.	● Conflicts with parts of the Objective #3 (To preserve, as feasible, Light, Views, Privacy, Open space, Shorelines, Other natural features) ● Technical requirements of vertical evacuation may present challenges to enhancing legibility, vitality and meaning ● Involving an urban design firm specializing in design of iconic buildings could cause the cost of the vertical evacuation tower to rise. However, the conceptual design of the building could be decided through a design competition.

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Hazard Mitigation Initiative	Opportunities for Alignment with Community Identity and Natural Resources, and Urban Design Guidelines (UDG)	Conflicts with or Obstacles to Alignment with Community Identity Goals
Public Outreach Program	● Public outreach and education programs could be conducted at some of the well-designed public spaces including vertical evacuation structures. ● Educational tours or information plaques can be used to inform residents and visitors about the natural capital of the city as well as its hazards, and explain how natural assets and hazards are linked. ● Outreach and education planners should refer to UDG or work with urban designers to plan the outreach and education strategies. ● Include small structures (like pillars/obelisks/totems) into the landscape of Westport that can be used to disseminate information about hazards. These can become unique features (like the warning tower) around Westport, adding more character to the image of the city. ● Activities like "placecheck" or disaster preparedness tours, scavenger hunts or treasure hunts (spot the info obelisk or warning tower, etc.) during tourist season can be good education tools as well as economic opportunities.	● Hazards awareness and preparedness messaging may detract from Westport's image and attractiveness. Outreach messages and activities need to be positive, enjoyable and interestingly informative, and add to the attractiveness and appreciation of Westport by residents and visitors alike.
Emergency Management Plans (EMPs)	● Community appearance guidelines could be leveraged to highlight the location of some of the assets of the city, as identified by the EMP as well as evacuation routes. ● Strengthen natural high-ground such as the ridges and hills to serve as evacuation routes as well as to site evacuation towers. ● The UDG should include guidelines that consider the use of particular surface treatments of walls, pavements and streets that would aid ease of visual access to assets and emergency supplies. ● Urban design analysis methods can be used to identify evacuation routes. ● Find trivial (or seasonal) alternate purposes for back-up equipment that would be needed in an emergency.	● Moving or improving businesses can be costly ● High-ground evacuation sites or trails would require either purchase of multiple parcels of private land or the obtaining of access easements.
Emergency Communication Plan	● Provision to include distress signal devices (beacons, etc.) as part of the general urban design requirements of buildings could be made.	N/A
Critical Facilities Evaluation	● Improvements to capital facilities should incorporate new design guidelines aimed at emergency management and disaster preparedness. ● While retrofitting capital facilities, stormwater management systems incorporating native vegetation and the designation of open spaces for stormwater detention should be encouraged.	N/A

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Hazard Mitigation Initiative	Opportunities for Alignment with Community Identity and Natural Resources, and Urban Design Guidelines (UDG)	Conflicts with or Obstacles to Alignment with Community Identity Goals
	• Capital facility design in commercial zones must be in accordance with the new UDG. • Community identity features to be considered while retrofitting capital facilities.	
Transportation and Right of Way Improvements	• Signage in right of way (ROW) improvements must correspond to Design guidelines. Street-facing surfaces of buildings must also be designed to aid emergency evacuation and highlight the routes. • ROW improvements must include appropriate green stormwater management measures. • Make provisions to accommodate for both the commercial needs as well as hazard mitigation while avoiding visual clutter. • ROW improvements must follow guidelines for streets that would set a hierarchy in aesthetic design for street types in different zones.	• The UDG currently includes no specific guidelines for signage or street-facing surfaces of buildings. • This could possibly involve widening of streets.

5.3. Community Input

The workshops held in Westport with the community stakeholders in November 2018, provided many valuable insights; Figure 8 includes the most relevant community input that we received for this section of the Comprehensive Plan.

We value our……
- ✓ Social bonds
- ✓ Natural resources for food, recreation and economy

We need…..
- More housing
- Place for gathering (youth)
- Clean beaches
- Tourist and visitors education about hazards
- Drainage improvements
- Better access – bikes, pedestrians and seniors
- To Preserve Rural Character
- To conserve history and heritage
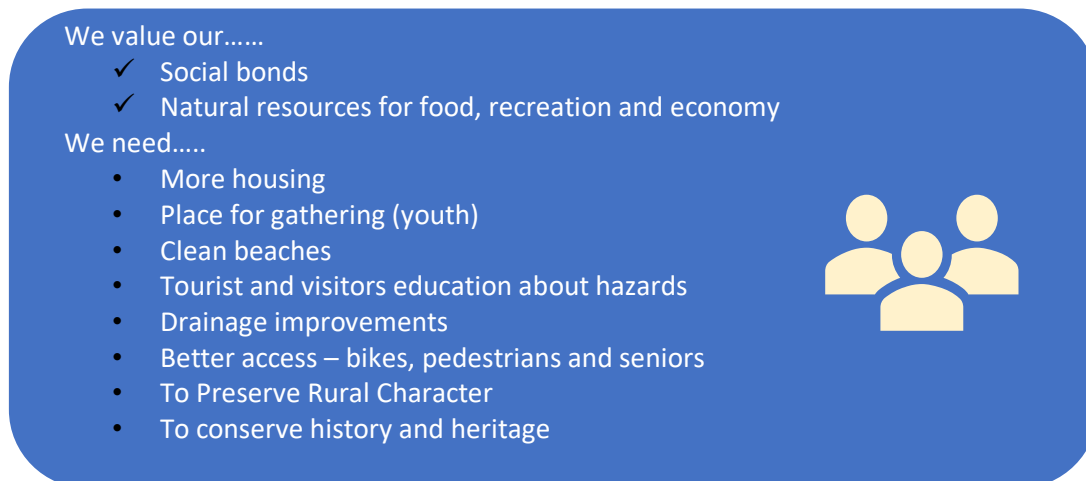
Figure 8. Summary of what we heard at the workshops in Westport

Table 12 below includes themes and examples of strategies relevant to community identity and natural resources emphasized by workshop participants. In addition, at the community report back event on 7th December 2018, community members expressed great interest in seeing a "Seabrook (near Ocean Shores) like development" in Westport. This suggestion can be incorporated but needs to be customized for Westport so as to ensure appropriate development.

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Table 12. Community input related to community identity and natural resources

Strategy Theme	Strategy Examples
Connectivity throughout the region	• Establish interconnected trail system network for bikes and pedestrians • Explore the use of seaplanes as alternative air transportation mode. • Improve and demarcate major evacuation routes throughout the city. This would help in easier identification of the routes as well as ease of access for emergency vehicles.
Information-sharing and preparedness	• Using special devices to communicate hazard information and warning. • Using signages and information boards to educate the public. • Integrate vertical evacuation structures and other evacuation sites into everyday routine of the public if possible. This habituates the residents with the evacuation procedures, routes and sites.
Balancing growth and resilience	• Building a community that can accommodate for increasing storm surges to a greater extent and leveraging it for economic growth • Adapt by building more safer housing in the form of mid-rise apartments to keep younger generation within the city once broad band systems are improved
Education of the public particularly tourists	• Installing signages and special devices for information dissemination (e.g., Haz-Mit Totems). • Coding the built environment through color and texture themes for way-finding.
Conservation of resources and identity	• Create programs for beach clean ups after peak tourist season. • Move important historic artefacts to higher altitude facilities. • Protect the natural environment and the character of the built environment.
Economic Improvement	• Improve tourism opportunities (e.g., themed resorts, activities, etc.) • More housing options to attract and/or to retain younger population.

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5.4. Recommendations

Table 13 below summarizes recommendations for updating this Element of the Comprehensive Plan based on integrating Grays Harbor County HMP initiatives, input from community members and additional information. Each strategy included in the table is explained in more detail below.

Table 13. Recommendations for the Proposed Community Identity and Natural Resources Element

	Strategies	Hazard Mitigation Benefits	Co-benefits for Community Identity and Natural Resources Values
County Hazard Mitigation Plan	1. Explore the option of designing a vertical evacuation tower as iconic structures	• Easier to locate the evacuation site	• Attracts more tourists and thereby improves the economy
	2. Implement innovative emergency evacuation route signage system	• Easier to identify the evacuation routes even if structures collapse due to an earthquake • Aids in evacuating tourists and visitors faster	• Adds to the unique identity of the city. • The implementation of these interventions can be integrated with regular building and street maintenance measures.
	3. Explore the use of special emergency management devices like Haz-Mit totem poles	• Can be used for information dissemination, as warning devices and to house small emergency supplies.	• Adds to the character of the city. • Can be used as part of tourist activity like 'treasure hunt' etc.
Community Input	4. Wetland resort development in the lowlands	• Acts as a buffer for city center businesses	• Allows maximum economic utilization of the land before sea level rise and/or a natural disaster makes it completely unusable
	5. Explore the option of building mid-rise apartments	• Can act as vertical evacuation structures	• Creates alternative housing options that can be designed to fit the character and design of a coastal community, appropriate to seasonal work and low-income households.
Other strategies	6. Resorts in the hills outside the city limits	• Ensures that a habitable refuge is available during and after major hazards like tsunamis • Can be used as a site for emergency supplies and vehicles including helicopters	• Improves the tourism driven economy. • Can be developed into the new city post a major disaster. • Can be used as the new site for important cultural/historic artefact for social resilience.
	7. Encourage flood accommodative building design.	• Houses are protected from flooding due to storm surges, king tides and possibly from minor tsunami events.	• Elevated resort buildings in the lowlands could be designed in a way which takes advantage of the tidal flooding and storm surges. This could contribute to tourism during storm season.

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	Strategies	Hazard Mitigation Benefits	Co-benefits for Community Identity and Natural Resources Values
	8. Chateau Westport retrofit/reconstruction	• Act as a vertical tsunami evacuation option • Strengthen it against seismic forces	• The retrofitting process could be used as an opportunity to include sustainability measures and improve the appearance of the hotel.
	9. Ridge Trail	• Serves as alternative emergency evacuation routes.	• Bike trails can act as green transportation modes. • Bicycle tours can be a tourist activity to get acquainted with the city.
	10. Implementing blue-green storm water infrastructure measures	• Reduces stormwater related flooding	• Contributes to improved appearance of the city. • Improves carbon sequestration • Creates more public spaces
	11. Mapping of natural resources	• Utilized to formulate natural hazard mitigation strategies	• Helps to identify, measure and locate the various natural resources which then helps conservation and prudent use of the resources.
	12. Using Coastal vegetation to mitigate storm surge impacts	• Reduces the impacts of waves	• Aids in the conservation of the local flora and fauna. • Would help in attracting wildlife enthusiasts.

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5.5. Reference Cases and Further Ideas

Additional detail and illustration for selected recommendations from the list above is as follows.

Design vertical evacuation towers as iconic structures: Vertical evacuation structures can be designed with iconic or unique forms that serve as tourist attractions and recreational facilities that reinforce the identity of Westport. Designing structures in such a way will also help in 'way-finding' (i.e., help in identifying evacuation destinations during emergency situations). More measures of tsunami resistance through architecture must be explored (Craven 2018).

Figure 9. Conceptual image of a vertical evacuation structure as a recreational physical activity center, buildable in phases.

Ridge Trail: Establish bike and hiking trail system that also connect to the vertical evacuation structures (Figure 14 and Figure 10). In the event that roads are inaccessible these could potentially serve as alternate routes. Also, they can be used as an economic resource (bike tours) as well as tourist education tools.

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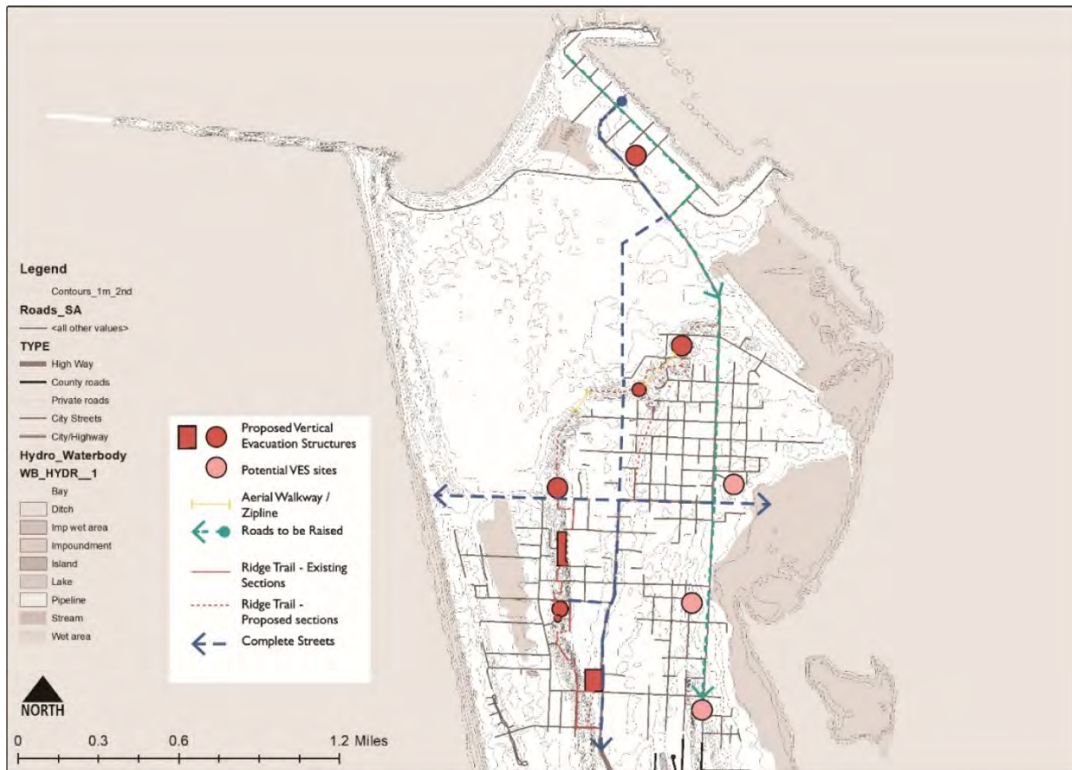
Figure 10. Proposed Vertical Evacuation Network for Westport,WA.

Explore the option of retrofitting hotels (e.g. Chateau Westport) and building mid-rise apartments as vertical evacuation sites: Apartments with four-plus stories can be built to provide affordable housing on limited higher ground. These can also serve as vertical evacuation structures. When building such structures care should be ensured that at least the top two levels of the building are wide enough and accessible to hold as many people as possible during an emergency situation. The city should ensure that such buildings be built only after appropriate geological and seismological studies are conducted. They should preferably be situated on locations on top of the ridges after sufficiently reinforcing the ridges. Care should also be taken in building only limited number of such structures as they can interfere with the small-town charm of the city, which is highly valued by its current residents. Potential sites are marked on Figure 10.
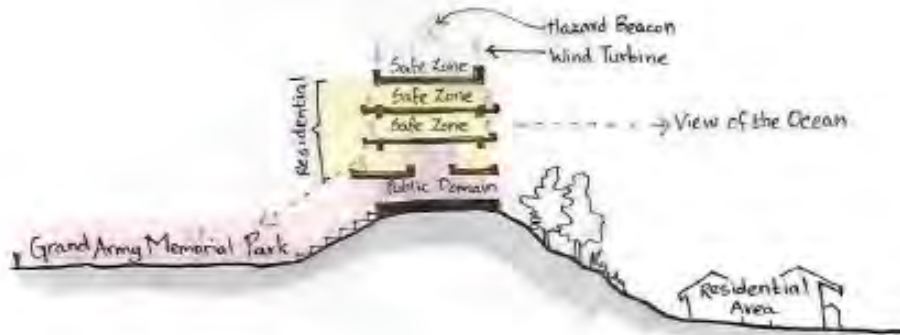
Figure 11. Multi-story housing on high ground as vertical evacuation.

Implement innovative emergency evacuation route signage system:

Roofs of buildings in evacuation routes painted one color

Emergency street lamps on Evacuation routes

Green Infrastructure

Evacuation route markers

Figure 12. Right of way interventions

Evacuation route signages should be better integrated into the built environment. Unlike a few sign boards, treating the entire stretch of an evacuation route would help better in communicating its purpose to the general public. For instance, if flooding occurs, it would be easier to tell people to follow the path with roofs painted red (Figure 12). Emergency lamps, powered by solar batteries, can light up the path during the night. Solar (or wind powered) street lamps would be beneficial for the city residents even in the winter months (as was heard during the open house conducted on December 8, 2018 at the Tackle Box).

Explore the use of special emergency management devices like Haz-Mit totem poles: These are devices that can be used to disseminate local hazard information. They can also be used to house small emergency supplies like a flare or a torch. If connected to a regional warning system, they may also be used as warning beacons. Totems can be designed and crafted by neighboring Shoalwater Bay Tribe. They can also be incorporated into tourist activities like "Spot the Haz-Mit Totem contest", which would ensure that the tourists are made aware of these structures. It would also draw their attention to the hazard information displayed by the device.

Figure 13. Concept of Haz-Mit Totem Pole (Art installation from Wawa Information center, Ontario, Canada.)

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Wetland resort development in the lowlands: The city could consider buying the low-lying lands, especially those that would be most susceptible to sea level rise, and lease back the land to private resort developers. However, the resort should be developed in a way such that it accommodates flooding. This can be achieved through building the resort cottages on stilts or piles. The king tide and storm surge waters would pass underneath the structures.

The benefit of such a development is that during the initial years there would be only minor seasonal flooding. They could even be used as retirement community homes. However, as the years progress and the global sea level rises, the resort land will be inundated with high tide water but the cottages themselves will be dry. This would prove as a unique 'living-on-the-water' experience that could attract tourists seeking such unique experiences. They could also be infused with some tourist focused recreational aquaculture. At this point permanent dwelling in these structures must be prohibited and only tourists/vacationers should be allowed to use these structures. Further into the future, the structures could probably serve as tourist facilities while the elevated pathways can serve as piers and docks. Eventually, the structures could be condemned for any type of housing purposes. For possible locations to site the wetland resort refer to Figure 14 showing potential ridge trail route and locations for wetland resorts.
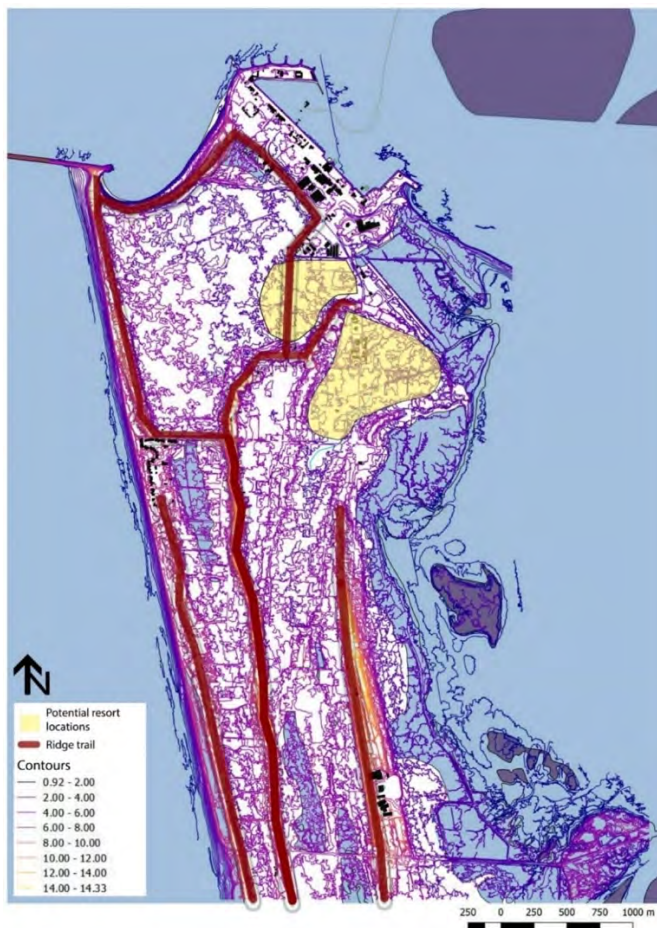
Figure 14. Potential locations for Wetland resort and potential ridge trail routes

Encourage flood accommodative building design: In the most basic sense, this means elevating structures above a minimally-obstructed ground surface. Floodwaters should be allowed to pass under the structure. Buildings within the 100-year FEMA floodplain should be encouraged to be elevated above the base flood elevation. Large sites could also include stormwater detention areas.

Figure 16. A wetland resort in Malaysia

Figure 17. Ecologically low-impact stormwater- and draught-tolerant environmental educational retreat at Islandwood, Bainbridge Island (Berger Partnership)

Figure 15. Moe Yun Gyi Wildlife Sanctuary & Wetlands Resort, Myanmar, when dry (L) and when water rises (R)

Resorts in the hills outside the city limits: The city should also explore the option of locating resorts outside the current city limits, as discussed in the Area-Wide Development Element. These can take the form of forest retreat facilities on what are currently private highlands. This again could be a public-private partnership endeavor. These could be made of a combination of eco-friendly structures and permanent structures. These permanent structures would be serviced by basic infrastructure. The design of the permanent structures could be such that it can be expanded in the future, should there be need for a more permanent residential establishment due to natural hazards. They can also act as temporary refuges during peak storm events for the resident community of Westport. Tree houses can be a potential lower-cost elevated housing option.

Figure 18. A tree house in Skamania County, WA

Mapping of natural resources: This strategy is aimed at taking advantage of the natural resources of the city. In order to be able to leverage the natural topography and vegetation for hazard mitigation purposes. This strategy involves documenting the bio-diversity and the land form of the city and nearby region. This would also help in conserving the natural resources better. Information from these studies and documentation can be used to make advertisement and information material for the tourists and nature enthusiasts.

Using coastal vegetation to mitigate storm surge impacts: Explore the option of using native vegetation for hazard mitigation purposes. Native grass species could be planted on sand dunes to reduce erosion from winds, storm surges and tides.

5.5.1. References and Additional Resources

Craven, Jackie. 2018. Architecture of tsunami resistant buildings. September 26. Accessed December 10, 2018. https://www.thoughtco.com/architecture-of-tsunami-resistant-buildings-177703.

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Grays Harbor County Emergency Management. "Project Safe Haven : Grays Harbor County," 2011. https://mil.wa.gov/asset/5ba41ffb35f02.

Hester, Randall. 1985. "Subconscious Landscapes of the Heart." *Places* 2(3), 10-22.

Lynch, Kevin. 1960. *The Image of the City*. The MIT Press.

Whyte, William H. 1980. *The Social Life of Small Urban Spaces*. Washington, D.C.: Conservation Foundation. See also the Project for Public Places, https://www.pps.org/.

Additional resources:

- The recovery plan of the City of Greensburg, Kansas, is a good document to observe the possibilities of use of urban design for hazard mitigation and sustainability. https://archive.epa.gov/region07/cleanup/greensburg/web/pdf/gb_ltcr_plan_final_hires070815.pdf
- Some information of Blue-green infrastructure can be found on the following website: https://ramboll.com/services-and-sectors/planning-and-urban-design/blue-green-infrastructure-design
- Some resources from FEMA for elevating structures in floodplains: https://www.fema.gov/media-library/assets/documents/725
- FEMA manual for coastal construction is available at the following link: https://www.fema.gov/media-library/assets/documents/3293
- An example article that explains the use of desire lines: https://99percentinvisible.org/article/least-resistance-desire-paths-can-lead-better-design/
- A resource for transect analysis: https://transect.org/
- A resource for place check: https://placecheck.info/en/

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6. Area-Wide Development Element

6.1. Introduction

Chapter 8 of the Comprehensive Plan includes considerations, goals, objectives, and policies related to area-wide development. The Comprehensive Plan emphasizes that development issues and concerns in areas beyond the city limits are expected to become increasingly important in the future, and notes that many Westport residents and employees currently commute to or from places outside city limits. The chapter focuses on the importance of balancing increasing development and expansion opportunities with the ability to provide services to current and future residents. Figure 26 below shows the Westport city limits and the surrounding area.
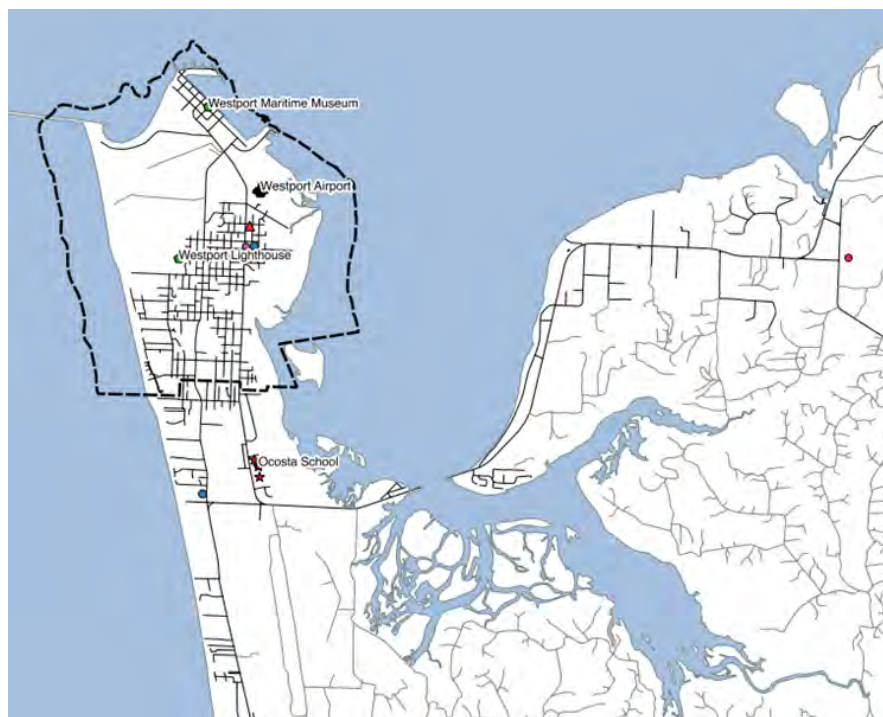
Figure 20. City of Westport indicated in black and surrounding area

The current goals of the Area-Wide Development Element are:

1. To promote an efficient and orderly pattern of development in the unincorporated area south of Westport which protects Westport's unique seaside character, the area's environmental amenities and natural resources, and the City's fiscal capacity.
2. To promote a development pattern in the unincorporated area south of Westport which maximizes the use of, and protects the integrity of the City's public facility investments while providing for efficient expansion and maintenance of the public facilities.

In addition, the plan includes four objectives focused on protecting Westport's important assets, promoting orderly expansion of the City's tax base and public services, and minimizing impact on sensitive areas while enhancing access and safety.

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6.2. Opportunities for Integration

Table 16 below lists the hazard mitigation initiatives from the Grays Harbor County HMP and describes opportunities and obstacles for alignment with the area-wide goals currently outlined in the Comprehensive Plan.

Opportunities and obstacles described below focus on aspects of hazard mitigation that are relevant to the wider region. This encompasses areas neighboring Westport such as adjacent census-designated or unincorporated areas (e.g., Grayland, Ocosta, etc.). Grays Harbor County departments (e.g., Planning Department, Emergency Management) are responsible for land use and emergency response in unincorporated areas of the county. However, given the regional scope of hazards highlighted in the Grays Harbor County HMP and residents' ties throughout the region, Westport city divisions should, to the extent possible, collaborate with county and non-county entities to support a coordinated, regional approach to hazard mitigation. Opportunities for collaboration include supporting implementation of vertical evacuation structures for the peninsula, engaging residents throughout the region through public outreach, and including regional considerations in emergency and transportation planning.

Table 14. Aligning hazard mitigation initiatives and the Area-Wide Development Element

Hazard Mitigation Initiative	Opportunities for Alignment with Area-Wide Development Goals	Conflicts with or Obstacles to Alignment with Area-Wide Development Goals
Vertical Tsunami Evacuation Structure	• Consider potential locations and capacity of future vertical evacuation structures in the context of new development • Identify opportunities to incorporate vertical evacuation into future expansion of public facilities and/or renovation of existing structures	• Vertical evacuation structure planning and construction is costly and time intensive • Expanding development in low-lying areas outside of Westport without adequate evacuation possibilities would expose residents/visitors to risk
Public Outreach Program	• Identify opportunities to collaborate with neighboring areas on public outreach regarding hazard mitigation (e.g., workshops in Grayland, materials circulated to South Beach Christian Center or other community gathering places) • Coordinate with county or community facilities that can serve as hubs for public outreach in neighboring areas	• Reaching residents of neighboring areas will require a more extensive public outreach program that will require coordination with county/state agencies (e.g., Emergency Management Planning Committee)
Emergency Management Plans	• Assets and capabilities located in unincorporated areas should be considered in planning emergency response • Key emergency response service providers (e.g., South Beach Regional Fire Authority and Grays Harbor County Hospital) have facilities outside of Westport city limits and should be included	• Population (existing and potential new residents) in unincorporated areas adjacent to Westport may rely on the city for emergency response and could stretch response capacity and resources for Westport residents
Emergency Communications Plan	• Support identifying an institution south of Westport that can serve as the radio point of contact for coordination (e.g., Grayland	• Population of residents and/or businesses (existing and/or new) in neighboring areas could burden

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Hazard Mitigation Initiative	Opportunities for Alignment with Area-Wide Development Goals	Conflicts with or Obstacles to Alignment with Area-Wide Development Goals
	station of South Beach Regional Fire Authority) • Collaborate with county to streamline emergency communications plans to ensure alignment and minimize confusion	communication systems during emergence response
Critical Facilities Evaluation	• Many critical facilities are located outside Westport city limits; collaborate with county to secure results of a critical facilities evaluation for adjacent unincorporated areas	• Critical facilities evaluation for buildings outside Westport would be outside the City's responsibility, but would be an important element of minimizing risk to residents and visitors in these areas
Transportation and Right of Way Improvements	• Provide input on county projects regarding tsunami evacuation markers and other transportation signage to align with Westport transportation and right-of-way needs/goals • Unincorporated areas may include critical evacuation and access routes (e.g., forest/logging roads may provide overland access and evacuation) • Advocate for strengthening of the State Route 105 bridge and other critical transportation infrastructure	• Expanding development and public facilities/infrastructure into new areas would require additional coordination with Washington State Department of Transportation (WSDOT) on tsunami evacuation routes and signage • Westport may be dependent on county and state agencies for transportation improvements

6.3. Community Input

Community members emphasized that Westport is not defined by its city limits; people identify with a broader geographic area including South Beach, Ocosta, Grayland and other nearby areas. Many of the values described by Westport and South Beach community members encompass the wider region and are linked to area-wide development considerations. For example, community members highlighted rural character, natural resources contributing to economic vitality, and natural features for recreation among their values. These values could be compromised by unorganized or significant development of unincorporated areas around Westport, which would also pose challenges related to implementing hazard mitigation strategies. Furthermore, community members value the quality of public services they receive, including emergency services, education, and the affordability of housing in the region. These values are potentially vulnerable to expansion and growth in the region. However, expansion of facilities and services could be supported by increasing Westport's tax base through annexation, if appropriate opportunities were to arise.

Community members described clean air and water, undeveloped beaches and natural areas, and lack of traffic and low population as examples of regional assets. In addition, community members highlighted some specific assets located beyond the city limits of Westport, such as South Beach Regional Fire Authority stations, the Grays Harbor Community Hospital, Ocean Spray cranberry processing facilities and

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farms, gas stations, a rural airport, Grayland Local Store, Twin Harbors State Park, oyster farms, and other assets.

Community members discussed the vulnerability of values and assets to different change scenarios and potential strategies to mitigate these vulnerabilities. Table 17 below includes themes and examples of strategies relevant to area-wide development emphasized by workshop participants. It is important to note that many strategies identified below are cross-cutting; they may provide hazard mitigation as well as long-term resiliency and immediate co-benefits to residents and visitors.

Table 15. Community input related to the Area-Wide Development Element

Strategy Theme	Strategy Examples
Connectivity throughout the region	• Explore options of "waterproof" transportation (e.g., ferry system) to increase connectivity to Ocean Shores/Hoquiam/Aberdeen, access for Coast Guard and first responders after an event, and long-term flood mitigation • Improve critical transportation infrastructure throughout the region including bridges, roadways, highways, and airport; add regional walking and biking trail system through higher ground, perhaps linking camping sites • Increase opportunities for community-building and engagement among residents of Westport and nearby areas
Information-sharing and preparedness	• Engage hotels, restaurants, and other services throughout the region to provide information about tsunami risk and evacuation • Improve access to emergency supplies throughout the region • Support creation of vertical evacuation structures, multi-story facilities, and evacuation routes to serve the wider region
Balancing growth and resilience	• Explore opportunities and assess community support for securing land on higher ground for the community to use as desired • Consider higher density development to increase capacity in higher elevation areas before and/or after event • Promote affordable housing and employment opportunities as a part of growth strategies • Conserve open spaces for ecosystem services and natural resource provisioning and possible future public use • Maintain rural and seaside character throughout the region (e.g., protect access to pristine natural areas, and prevent traffic/congestion)

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6.4. Recommendations

Table 16 below summarizes recommendations to consider when updating the Area-Wide Development Element, based on the opportunities for integrating hazard mitigation strategies outlined in *Section 6.2* and community input described in *Section 6.3.* Recommendations focus on four themes: growth and resiliency, geographic considerations, regional preparedness, and connectivity and transportation.

Table 16. Recommendations for Updating the Area-Wide Development Element

	Recommendations	Hazard Mitigation Benefits	Description of Co-benefits
Grays Harbor County HMP	Collaborate with the county so that new development outside Westport balances regional growth with resiliency and preserves local values/assets, including: • Promote and collaborate on expansion of vertical evacuation structure network • Support evaluation of critical facilities located outside city limits that serve Westport • Work with county on zoning regulations and other development policies that promote resilient development beyond city limits (e.g., higher density/vertical and affordable housing, hazard overlay to encourage appropriate land uses and structures) • Work with county to protect open spaces and important ecosystems outside Westport (e.g. dunes, wetlands, oyster beds, etc.) • Identify potential areas for new development that can create economic opportunities (e.g., wetland resort)	• Evacuation access and critical facilities outside city limits provide for current and potential new residents and visitors in the event of a hazard • New development is planned in consideration of hazards • Protected areas provide ecosystem services (e.g., buffering) that mitigate coastal hazards	• Creates opportunities for expanding rental/ affordable housing, employment access, economic growth without increasing hazard risk • Protection of Westport's character and values (i.e., rural/seaside character) • Healthy ecosystems and natural resources

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	Recommendations	Hazard Mitigation Benefits	Description of Co-benefits
Community Input, Additional Cases/Discussions	Explore and consider opportunities and partnerships to gain access to high ground outside city limits that provides near-term uses/co-benefits, including: • Assess community support for securing land on higher ground outside city limits as "insurance" against potential future SLR/tsunami flooding • Identify closest accessible and tsunami-safe high ground areas (e.g., dune ridges, land area immediately south and east of Westport) • Identify opportunities and feasibility of acquiring high ground outside city limits, including potential mechanisms or funding partners (e.g., annexation, land swap, lease agreements, easements, funding for outright purchase) • Identify near-term and long-term use goals of high-ground areas (see co-benefits), including in shortest term securing emergency access rights through currently locked private logging roads • Consider feasibility and desire to relocate critical services (e.g., fire department) to high ground near the city	• Provides access to an area that will be minimally impacted by tsunami or SLR that can be used to stage equipment and provide services to residents before/after an event	• Could be developed in the medium-to-long term for recreational or economic opportunities (e.g., hiking/camping, resort/retreat center, hunting lodge, etc.)
Grays Harbor County HMP, Community Input	Collaborate broadly on hazard mitigation planning and implementation (i.e., "resilient together" mindset), including: • Collaborate with the county to include areas outside Westport in public outreach and planning for emergency management and response (e.g., through South Beach emergency management case study) • Assist with engaging service industry (e.g., hotels and restaurants), community organizations, and emergency services throughout the region to provide information about tsunami risk and evacuation • Ensure that the city has adequate financial and human resources for hazard mitigation and response within Westport and as closest support for residents outside the city • Coordinate on evaluation of critical facilities and development of public facilities that are resilient to natural hazards	• Close collaboration with the county and other jurisdictions will help ensure that emergency response and communication plans are effective for the peninsula • Engaging businesses and organizations will improve communication with visitors and non-residents • Westport residents can access facilities and services outside the city that are resilient to hazards	• Planning efforts facilitate regional communication and network-building • Improved collaboration among hotels, restaurants, and businesses throughout the region • Increased or improved provision of public services and facilities

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	Recommendations	Hazard Mitigation Benefits	Description of Co-benefits
Grays Harbor County HMP, Community Input	Promote regional connectivity to increase hazard resiliency and economic and social benefits, including: • Explore opportunities for alternative transportation, including a possible ferry to North Beach (e.g., Ocean Shores or mid-peninsula) and other areas, a ridge trail system providing beach access and connecting to Aberdeen, accessible logging/forest roads • Advocate for improvements to critical transportation infrastructure throughout the region including bridges, roadways, highways, and airport • Pursue opportunities to improve cellular and internet connectivity throughout region • Support efforts to increase tsunami evacuation route signage throughout the region	• New docks, roads, and trails could provide access for Coast Guard and first responders after an event • Improved infrastructure will be less likely to sustain damages and more likely to support evacuation • Improved cellular and internet connectivity support will support hazard response • Clear evacuation routes can improve success of evacuation	• Improved regional transportation can increase opportunities for community-building and engagement among residents of Westport and nearby areas, as well as new economic opportunities • Better cell and internet can increase opportunities for remote work • Better marking of thoroughfares can reduce congestion during busy seasons

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6.5. Reference Cases and Further Relevant Information

When incorporating area-wide strategies into local hazard mitigation, Westport can draw from examples of other small communities that are looking outside their city limits to improve resiliency to flooding. For example, in the Skagit Valley, the City of Hamilton is incorporating land acquisition out of the floodplain into their comprehensive plan. The City is outlining a vision of renewed economic vitality, preserved rural character, and flood risk mitigation in their long-term planning process. The plan includes acquiring land and encouraging commercial development outside of the historic town footprint. Hamilton is working with a local land trust, nonprofits, and state agencies on acquiring land outside the floodplain, which could require annexing part of their urban growth area. In this approach, no home or business would be relocated immediately, but access to the land would provide option for the community over time (Terrel 2018). A key difference between Westport and Hamilton is that Hamilton currently floods regularly, so there may be a more immediate need to utilize acquired land rather than holding it as a form of insurance against future needs. In addition, Westport can look to lessons-learned from previous land swap agreements in the area when exploring potential opportunities to acquire land outside the city limits, if the city chooses to pursue this approach. See Section 1.4. Overarching Considerations for a conceptual illustration of such an arrangement.

6.5.1. Section References

Terrel, S. (2018, September 9). Hamilton seeks funding to plan move out of floodplain. Skagit Valley Herald. Retrieved from: https://www.goskagit.com/news/hamilton-seeks-funding-to-plan move-out-of-floodplain/article_2bd86566-ce4c-5986-a556-6656efa2dc52.html

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7. Shoreline Master Program

7.1. Introduction

The Shoreline Management Act was adopted in 1972 and requires most towns and cities to implement a Shoreline Master Program (SMP). SMPs are a document of local land-use policies and regulations intended to guide the use of both public and private uses of shorelines to prevent harm caused by uncoordinated development of coastal areas. They are intended to protect natural resources for future generations, provide for public access to public waters and shores, and plan for water-dependent uses.

The Westport SMP is located in Appendix C of the Comprehensive Plan and identifies eight main elements, each with their own goals. The summary goal for each individual element is described below.

- **Economic development:** to maintain and enhance shoreline related industry
- **Public access:** to maintain and improve existing public access to publicly-owned shorelines and to secure additional access
- **Circulation:** to create and maintain a circulatory network capable of delivering people, goods, services and emergency services at the highest level of convenience, safety, reliability and economy
- **Recreation:** to provide proper recreational opportunities for local citizenry and to maintain and enhance tourism resources
- **Land use:** to promote the best possible pattern of land use and devise a pattern beneficial to the natural and human environments
- **Conservation:** to identify the resources of the region, valuable (historic, cultural, scientific, educational) sites and restoration: sites located within the shoreline jurisdiction are identified and preserved
- **Historic, Cultural, Scientific, and Educational Sites and Structures:** Historic, cultural, scientific, and educational value should be preserved and maintained through park use or historic designation.
- **Restoration:** To encourage development in areas which have been previously impacted with development so that such areas may be renewed, restored, and refurbished by compatible new development.

Shoreline Policies in the Shoreline Master Program are organized into four sections:

- Activity and Development Policies (including agricultural practices, aquaculture, mining, landfill, dredging, clearing and excavation, waste disposal, public access, tourist and commercial activities, ports and water related industry, residential development, recreation, utilities, road and railroad design and construction, marinas, shoreline works and structures, and archaeological and historic sites)

- Natural System Policies (including accreted oceanfront lands, estuary, floodplains and marshes)

- Shoreline Environment Policies (including urban environment, rural environment, conservancy environment and natural environment

- Administration Policies.

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Because Westport has not yet included sea level rise in their SMP or Hazard Mitigation Plan, there is the opportunity to not only benefit from the best available science and most recent projections available, but to learn from what other cities and counties have already done. Comparing these other strategies with input from their own community and tsunami scenarios creates the opportunity for Westport to optimize their approach and increase resilience against multiple threats.

7.2. Opportunities for Integration

Because of Westport's geographic location and increased vulnerability as compared to inland cities within the same county, it is important to define the different risk scenarios using the best available science to inform hazard mitigation. In additional to maps and projections, including a more in-depth explanation of how each scenario will impact Westport will be valuable to all city planning going forward. For example, in Olympia's annex of the Thurston County HMP, they list what critical infrastructure will be impacted, what measures can be taken to prevent or mitigate the impact to the structure, and the approximate cost of such measures. Including similar risk assessments of Westport's most critical utilities within the shoreline jurisdiction, including roads and bridges, will localize the Grays Harbor County HMP to suit the unique needs as a coastal city and considerations for Westport's long-term planning efforts. Table 19 below lists the six initiatives in the current Westport Annex of the Grays Harbor County HMP and identifies alignment with the SMP as well as obstacles or conflicts.

Table 17. Aligning hazard mitigation initiatives and the Shoreline Master Program

Hazard Mitigation Initiative	Opportunities for Alignment with SMP Goals	Conflicts with or Obstacles to Alignment with SMP Goals
Vertical Tsunami Evacuation Structure	● Constructing one of the future tsunami structures near the beach and including a scenic viewing platform on the top floor would make beach recreation safer and provide opportunities for tourists and locals to enjoy an unobstructed view of the shoreline.	● It may be difficult to find a stable location with quick access to the beach because of unstable sediments and potential liquefaction.
Public Outreach Program	● Building a strong social media presence to educate residents and visitors about hazards and creating individual response plans. ● Having brochures related to tsunami safety easily accessible in hotels and tourist rental properties.	● This may not reach the most vulnerable audiences, such as the elderly and disabled.
Emergency Management Plans	● Include sea-level rise projections and their effect on storm surge and 100-year flood conditions in the risk assessment.	● Could require a costly outside consultant.
Emergency Communication Plan	● Effective signage at all beach access points for tourists and visitors who are unfamiliar with local conditions and navigation.	● May conflict with signage limitations in the SMP
Critical Facilities Evaluation	● Vulnerability assessment of the wastewater/stormwater treatment plant located near the shoreline.	● Associated costs.
Transportation and Right of Way Improvements	● Multiple earthquake-resistant walkways to the beach for better access and quicker evacuation.	● May be costly to engineer and construct walkways to resist earthquake damage.

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7.3. Community Input

Interacting with the community of Westport provided context for understanding how the residents prioritize their values and assets. This understanding made it possible to provide recommendations that residents would support implementing.

7.3.3. Strategies Suggested by Community Members

Table 20 below includes overarching themes and examples of potential hazard mitigation strategies recommended by community members during workshops.

Table 18. Community input related to the Shoreline Master Program

Strategy Theme	Strategy Examples
Navigation and evacuation to neighboring communities	• Replace the Westport bridge, which is vulnerable under the 2-3 feet sea level rise scenario. • Reroute State Route 105 and raise/reinforce main evacuation road in Westport. • Relocate the airport.
Emergency Preparedness	• Have information available in hotels and rental homes near the shoreline about potential hazards and evacuation plans. • Build additional vertical evacuation structures that serve multiple purposes.
Balancing growth and resilience	• Tax breaks or incentives for people to build outside of hazard areas and on high ground. • Build a full-service resort near the beach with conference room to attract tourism and boost the economy. • Build an apartment building so that workers have a place to live in Westport without buying a home.

7.4. Recommendations

The following recommendations include changes to the Westport Annex of the Grays Harbor County HMP, policy recommendations, recommendations based on community input and one additional recommendation identified as a gap when comparing the SMP goals with the Grays Harbor County HMP objectives.

The most important of these, as it informs all planning in the shoreline jurisdiction, is to create a new goal in the SMP that addresses sea level rise. The goal should include recognition and monitoring the potential effects of sea level rise as additional scientific information becomes available. It should suggest minimizing the impacts of sea level rise on the shoreline environment with strategies that meet the existing goals of the SMP; to protect shoreline ecological functions, allow water-dependent uses and provide public access.

Including the most recent projections and maps of sea level rise scenarios in the SMP would provide information to planners and developers needed to decide what standards to meet when building in vulnerable areas, or encourage them to build outside of these vulnerable areas. It would also inform any changes to policy, such as incorporating sea level rise projections into the permitting process. For example, having certain elevation requirements or setback requirements for new construction. At the

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next major update of the SMP consideration should be given to additional specific policies and regulations based on the newest scientific projections.

Recommendations from the community are based on conversations about the value they place in having easy access to neighboring communities via the Westport bridge and State Route 105. These are both vulnerable to floods resulting from sea level rise or tsunami and it is recommended to assess the feasibility, timeline, and cost of replacing the Westport bridge with one more capable of withstanding earthquakes and liquefaction. Similarly, an assessment of the feasibility of rerouting State Route 105 to a path further inland is recommended.

As an alternative to relying on uncertain future projections of sea level rise, it might be beneficial to devise action items based on benchmarks of sea level rise. This could be put in place as an overall strategy as well as having a timeline of strategies for individual structures. For example, using the wastewater treatment plant as a case study, it might look like:

- At 6 inches of sea level rise, seal the plant with waterproofing and create protective berms.
- At 12 inches of sea level rise, install valves or switches to prevent back flow of water through pipes.
- At 18 inches of sea level rise, elevate the structure and begin researching a new location for the plant.
- At 24 inches of sea level rise, begin construction of the new plant and decommission current plant.

This strategy is most useful when planning for infrastructure that already exists and for incorporating future policies. When building new structures, future projections become more important when mitigating against future conditions.

Finally, to combine the intention of the SMP goal to provide access to the beaches and the Grays Harbor County HMP objective to improve emergency response, it is recommended to construct earthquake resistant walkways to the beach from the main trail/road. Having these walkways go over the top of the dune vegetation will protect it from people cutting paths through the vegetation, which provides the important ecosystem service of strengthening the dunes and protecting from erosion. These walkways will also help people evacuate the beach more quickly and provide a more stable path for those who have trouble walking or require a wheelchair. Table 21 includes recommendations for updating the SMP.

Table 19. Recommendations for Updating the Shoreline Master Program

	Strategies	Hazard Mitigation Benefits	Co-benefits for Community
Grays Harbor County HMP	New goal for SMP: Recognize and monitor the potential effects of sea level rise as additional scientific information becomes available.	Prevents damage to infrastructure by providing building standards that protect against sea level rise. Added benefit of increasing resilience to flooding associated with a tsunami.	Protects community from loss of critical utilities.
	Include most recent projections and maps of sea-level rise scenarios in the Grays Harbor County HMP.	Provides planners with a hazard profile and what they could expect over the lifetime of newly constructed projects.	Prevents loss of access to and benefits of built capital that might have otherwise been damaged by sea level rise.

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	Strategies	Hazard Mitigation Benefits	Co-benefits for Community
	Establish benchmarks for sea level rise amounts rather than planning for uncertain timelines.	Creates a framework for planning for existing infrastructure and possible modifications to building codes as needed.	Impacts potential taxes on residents and costs to builders on an as-needed basis rather than preemptively.
Policy	Provide information about sea level rise to development permit applicants or include sea level rise into the permitting process (example: requirements for elevation of structures).	Ensures new infrastructure is built to certain standards and more resilient to sea level rise or tsunami impact.	New buildings and homes more capable of withstanding certain hazards.
	Modify setbacks or encourage location of new or replacement development outside of areas vulnerable to sea level rise, associated flooding and tsunami.	Ensures new infrastructure is built to certain standards and more resilient to SLR or tsunami impact.	New buildings and homes more capable of withstanding certain hazards.
Community Input	Assess the potential timeline of new bridge construction as compared to the sea level rise projections and probabilities from the WA coastal network (www.wacoastalnetwork.com).	Increases the reliability of one of the most crucial evacuation routes.	Ensures that access to neighboring cities will not be cut off.
	Conduct vulnerability assessment of wastewater treatment plant to determine need for mitigation of saltwater intrusion or system overload due to sea level rise and storm surges.	Prevents loss of services and pollution to the coastal waters due to discharge of untreated water if treatment plant is overwhelmed.	Protects community from potential health hazard and ensures availability of wastewater treatment services.
Other Cases/Practices	Construct earthquake resistant walkways to the beach which go over the dune vegetation to provide more convenient beach access and multiple quick routes for evacuation to Westport Light.	Allows residents and tourists to evacuate from the beach more quickly.	More convenient access to the beach and built walkways are more easily traveled by those who are elderly or disabled.

7.5. Reference Case(s) and Further Relevant Information

Adopted in 2015, the current version of Olympia's Shoreline Master Program was their first major update since 1994. This seven-year process involved "extensive public participation." An introductory paragraph in the Olympia Shoreline Master Program states the following:

> *"New scientific data and research methods have improved our understanding of shoreline ecological functions and their value in terms of fish and wildlife, water quality and human health. This information also helps us understand how development in these sensitive areas impacts these functions and values. The new Shoreline Guidelines, upon which this SMP is based, reflect this improved understanding and place a priority on protection and restoration of shoreline ecological functions."*

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Below outlines the specific ways that Olympia incorporated sea level rise into their Shoreline Master Program:

Box 1. Excerpt from Section 2.4 of Olympia's Shoreline Master Program Document
Box 2. Excerpt from Section 2.9 of Olympia's Shoreline Master Program Document

SMP Section 2: Goals and Policies; 2.4 Shoreline Use and Development Policies:

D. The City should continue to develop information about the impacts of sea level rise on the shoreline and other affected properties; the City should develop plans to address the impacts of sea level rise in collaboration with impacted property owners, the community and the Department of Ecology. These plans should include at minimum flood prevention approaches, shoreline environment impact considerations and financing approaches. The City should amend the Shoreline Master Program and other policy and regulatory tools in the future as necessary to implement these plans.

E. The City should consider the impacts of sea level rise as it plans for the rebuild of Percival Landing and other shoreline improvements and it should be designed to provide for a reasonable amount of sea level rise consistent with the best available science and the life cycle of the improvements.

SMP Section 2: Goals and Policies; 2.9 Marine Recreation Management Policy:

G. The City recognizes that the Marine Recreation shoreline (Reach 5C) and the adjoining Urban Conservancy/Urban Intensity shoreline in Reach 6A provide a variety of benefits to the community including boat moorage, utility transmission, transportation, public access, water enjoyment, recreation, wildlife habitat and opportunities for economic development. These benefits are put at risk by continued shoreline erosion. The City recognizes that there exists a need to develop a detailed plan for shoreline restoration and stabilization for Reaches 5C and 6A and encourages the Port to partner in this effort.

1. This plan may include:

a. Measures to enhance shoreline stabilization through the introduction of bioengineered solutions.

b. Measures to incorporate habitat restoration water-ward of the OHWM. c. Measures to incorporate public access and use through trails, public art, parks and other pedestrian amenities.

d. Measures to incorporate sea level rise protection.

e. Setbacks, building heights and building design considerations.

Specific projections and maps are not included in Olympia's Shoreline Master Program and are instead grouped in with their "Floods" portion of their annex in the Thurston County HMP. They include an explanation of three scenarios as follows:

- A one-foot sea level rise could result in localized flooding on some city streets and low-lying structures during extreme high tides which occur once or twice a year.

- A two-foot sea level rise combined with a high tide would overwhelm some stormwater utility pipes' ability to handle run-off from storm events causing more widespread flooding. Higher sea levels could cause a reverse flow in stormwater drainage systems resulting in sea water flowing out of some street drains onto city streets.
- A three foot-rise would cause seawater to crest over some shoreline segments during extreme high tides and flood a large portion of the downtown. Higher sea levels could further lead to seawater infiltrating wastewater pipes through infiltration and flows into combined storm drains and stress the treatment capacity of the region's LOTT wastewater treatment facility.

The Olympia Annex of the Thurston County HMP goes on to individually list the most vulnerable infrastructure, including roads, railway, bridges and parks. Each item includes an explanation of the specific impact rising waters would have on the structure, the planned measure for mitigation and the estimated cost. The "Flood" category with sea level rise included is listed with high probability, moderate vulnerability, and high-moderate risk.

7.5.1. Section References and Maps

Lawrence, J., Bell, R., Blackett, P., Stephens, S., Allan, S. (2018). National guidance for adapting to coastal hazards and sea-level rise: Anticipating change, when and how to change pathway. *Environmental Science & Policy,* 82, 100-107.

Ruggiero P., Hacker S., Seabloom E., Zarnetske P. (2018) The Role of Vegetation in Determining Dune Morphology, Exposure to Sea-Level Rise, and Storm-Induced Coastal Hazards: A U.S. Pacific Northwest Perspective. In: Moore L., Murray A. (eds) Barrier Dynamics and Response to Changing Climate. Springer, Cham

Thurston County Hazard Mitigation Plan. (2017. Retrieved from https://www.co.thurston.wa.us/em/Plans_Reports/FEMA_HazardsMitigationPlan_June2017_Final.pdf

Grays Harbor Hazard Mitigation Plan. (2018). Retrieved from http://www.co.grays harbor.wa.us/Emergency%20Management/Hazard%20Mitigation%20Planning/GraysHarborCotyHMP_Vol2_Jurisdictional_Annex_Draft_2018.pdf

WASHINGTON COASTAL HAZARDS RESILIENCE NETWORK. (2018). Retrieved from http://www.wacoastalnetwork.com

City of Kenmore Critical Areas Regulations and Shoreline Master Program Gap Analysis and Recommendations. (2018). Retrieved from http://www.cityofkenmore.com/sites/default/files/Community_Development/Kenmore%20Finl%20Gap%20Analysis%208.30.18.pdf

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RELATIVE SEA LEVEL PROJECTIONS FOR RCP 8.5 FOR THE COASTAL AREA NEAR: 46.9N, 124.1W (WESTPORT, WA)

Projected average sea level magnitudes, in feet, for different assessed likelihoods and time periods.

	Assessed Probability of Exceedance:									
	99%	95%	90%	83%	50%	17%	10%	5%	1%	0.10%
2010	-0.1	-0.1	-0.1	0	0	0.1	0.1	0.1	0.2	0.2
2020	-0.1	-0.1	0	0	0.1	0.2	0.2	0.2	0.3	0.4
2030	-0.1	-0.1	0	0	0.2	0.3	0.3	0.4	0.5	0.6
2040	-0.2	0	0	0.1	0.3	0.4	0.5	0.6	0.7	1.1
2050	-0.2	0	0.1	0.2	0.4	0.7	0.8	0.9	1.1	1.7
2060	-0.1	0.1	0.2	0.3	0.6	0.9	1	1.2	1.5	2.6
2070	-0.1	0.2	0.3	0.4	0.8	1.2	1.3	1.5	2.1	3.6
2080	-0.1	0.2	0.4	0.6	1	1.5	1.7	2	2.7	5
2090	-0.1	0.3	0.5	0.7	1.2	1.9	2.1	2.4	3.4	6.2
2100	-0.1	0.4	0.6	0.8	1.5	2.3	2.6	3	4.3	7.8
2110	0.1	0.5	0.7	0.9	1.6	2.4	2.8	3.3	4.9	9.2
2120	0.1	0.6	0.8	1.1	1.9	2.9	3.3	3.9	5.9	10.8
2130	0.1	0.6	0.9	1.2	2.1	3.3	3.8	4.5	6.9	13.3
2140	0.1	0.7	1	1.4	2.4	3.7	4.3	5.1	8	15.1
2150	0.1	0.7	1.1	1.5	2.7	4.2	4.9	5.9	9.2	17.6

For more information about these projections go to www.wacoastalnetwork.com/wcrp-documents.html

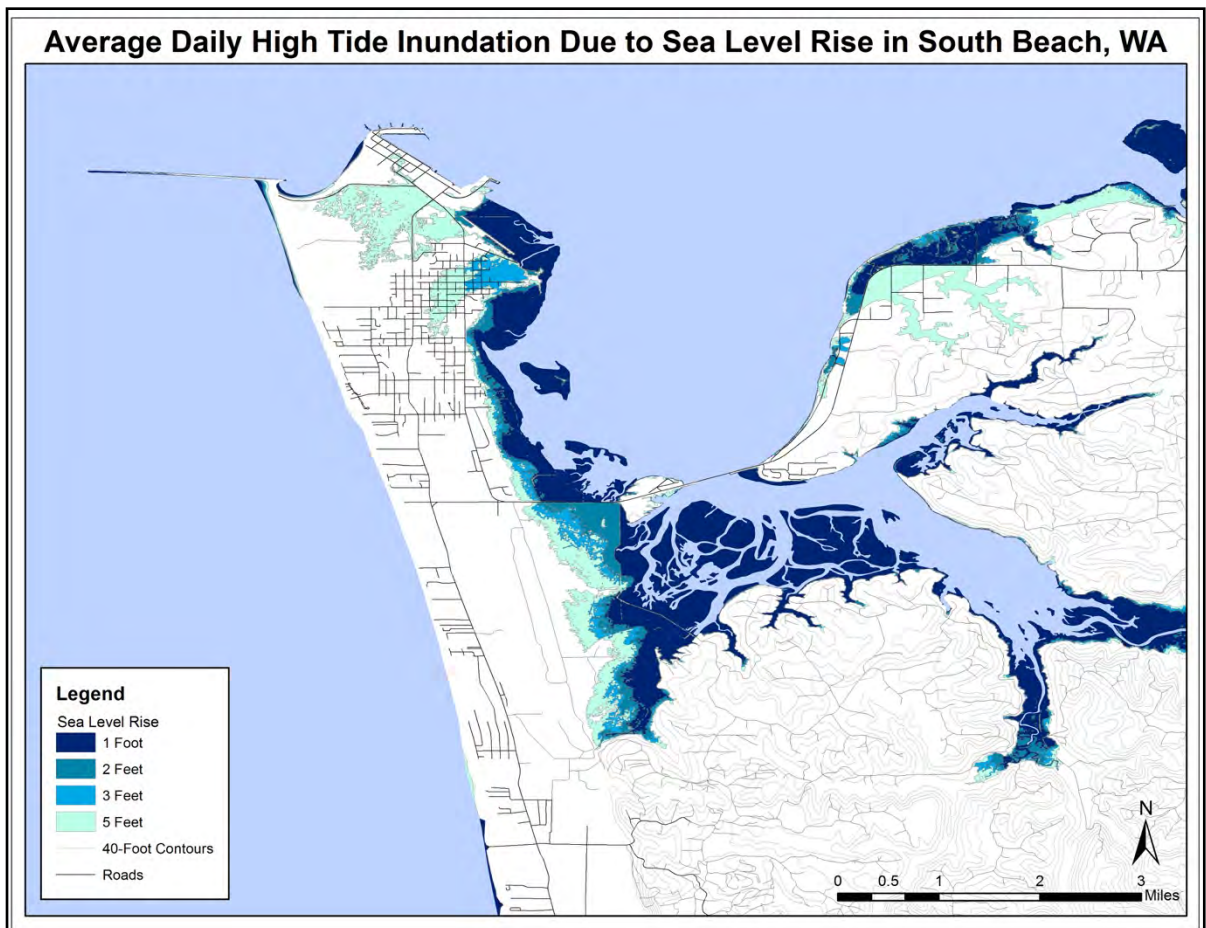*Figure 22. Sea Level Rise Projections for Westport (Climate Impacts Group)*

Figure 21. Projected Inundation at Daily High Tide under 1-5 Feet of Sea Level Rise

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8.   Health and Well-Being Element

8.1. Introduction

Westport has become one of the most hazards-conscious coastal cities in Washington with the highest economic impacts in the county (The Port of Grays Harbor, 2018). However, the community relies only on a few health service providers, and residents often go to hospitals or community health centers outside the city. This convinced our team that Westport should consider the integration of a health and well-being element into the city's future Comprehensive Plan. To improve its resilience toward hazards, particularly tsunamis, the Westport community should strive to expand access to health care, capable of delivering primary emergency aid as well as on-going services to the community effectively.

Community health centers are one focus of this new recommended Element for the Comprehensive Plan Update. Such centers aim to provide multiple health services to a community, particularly those whose members live in poverty and are medically underserved. Having a community health center or clinic that meets the needs of Westport residents and employees will enhance the community's health and well-being, strengthen the City's attractiveness to new residents and workers, and also enhance the City's resilience to uncertain environmental changes and hazards. Given the community's small population and rural and relatively isolated location, however, providing comprehensive health services locally is not feasible. Therefore, this Element also recommends developing a robust telehealth system capable of functioning even in times of transportation and telecommunication systems disruption. Coordination with Grays Harbor County Public Health and Social Services is of course essential for all health-related policies.

8.2. Opportunities for Integration

8.2.1. Health and Well-being as a New Element

To improve the Comprehensive Plan, we recommend Health and Well-being as a new element, particularly after reviewing the post-disaster experience of New Orleans after Hurricane Katrina. New Orleans' Plan for the 21st Century: New Orleans 2030. Although New Orleans is a much larger population center than Westport, its new Master Plan paid particular attention to the viability of small neighborhood-based communities and also emphasized health and well-being. Some potentially useful elements in that plan for consideration by Westport and Grays Harbor County Public Health and Social Services (GHCPHSS):

1. Engage the community clinics and community groups into health and well-being planning
2. Coordinate partnerships between health and human service providers
3. Provide a policy of offering incentives to encourage the community-based health service providers
4. Establish a partnership with health insurance companies to ensure its coverage for all residents, especially for the elderly and low-income communities
5. Develop evaluations and assessment to increase the quality of health services and their delivery

Although health and well-being is not yet included as a chapter of the Comprehensive Plan, the need for this Element has been expressed both in the Grays Harbor County HMP and the Comprehensive Plan. Brief descriptions about health and well-being element can be found in the following sections and pages :

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1. In the Grays Harbor County HMP, brief descriptions about health and well-being are located in the *Critical Facilities and Infrastructure Section* on page 3.10 and page 3.14, and the *Community Profile – Defining the Planning Area Section* on page 3.21 and page 3.24
2. In the Comprehensive Plan, the descriptions are located in the *Public and Semi-Public Land Use Section* on page 4.5.

Facilities that accommodate health and well-being include hospitals, clinics, outpatient care centers, and specialized care centers, such as birthing centers and psychiatric care centers (U.S. National Library of Medicine, 2018). Based on our review of the HMP, medical and health facilities in the county are located primarily in the cities of Aberdeen, Elma, Hoquiam and McCleary (Figure 31) (Bridgeview Consulting, LLC., 2018, p. 14). Westport has some health care service providers whose facilities are concentrated in the city center – a physician, pharmacy, optician, dentist, licensed massage practitioner, and alternative medicine provider. For obtaining multiple health services, most of Westport community go to hospital in Aberdeen, which is located about 21 miles from Westport's city center and includes a drive over the State Route 105 bridge.

Table 3-2
Grays Harbor Countywide Critical Facilities

Jurisdiction	Medical and Health	Government Functions	Protective Functions	Schools	Hazmat	Other*	Total
Unincorporated Grays Harbor County	0	6	34	28	24	0	92
Aberdeen, City of	3	6	12	27	19	4	71
Cosmopolis, City of	0	2	2	1	3	0	8
Elma, City of	2	2	2	4	2	0	12
Hoquiam	1	6	5	10	9	3	34
McCleary	1	1	3	3	1	0	9
Montesano	0	9	7	5	4	2	27
Oakville	0	1	2	4	0	0	7
Ocean Shores	0	1	2	1	2	0	6
Westport	0	3	3	0	9	1	16
Total	**7**	**37**	**72**	**83**	**73**	**10**	**282**

Figure 23. Number of critical facilities in Grays Harbor County Jurisdictions (Bridgeview Consulting, LLC, 2018)

8.2.2. Identifying the Health and Well-being Element Opportunities for Integration

Table 22 below includes the six hazard mitigation initiatives identified in the Grays Harbor County HMP, as well as opportunities and potential obstacles to integrating these initiatives with health and well-being priorities. The six initiatives of the hazard mitigation strategy became our basis to analyze the opportunities of health and well-being element integration into the Comprehensive Plan. For this new element, we used literature from academic publications and feedback from public engagement to analyze the opportunities for integrating health and well-being considerations.

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Table 20. Aligning Hazard Mitigation Initiatives and the Proposed Health and Well-Being Element

Hazard Mitigation Initiative	Opportunities for Alignment with Health and Well-being Development	Conflicts with or Obstacles to Alignment with Health and Well-being Development Goals
Vertical Tsunami Evacuation Structure	● Establishing vertical building structures integrating living wall or garden design can enhance physiological, environmental, and aesthetic benefits that contribute to health (Pérez-Urrestarazu, Fernández-Cañero, Franco-Salas, & Egea, Vertical Greening Systems and Sustainable Cities, 2016, pp. 7-8). In Westport, vertical tsunami evacuation structure with living wall can encourage positive feelings that increase health, enhance people's pride, promote social interaction, provide space for community garden's creativity and movement, increase seacoast biodiversity and environmental quality, and provide alternative foods supplies for resilience in Westport. ● Including medical clinic space with telehealth capacity in a multistory building built also as a tsunami evacuation center. Such space could be integrated with any new ambulance and fire department or other critical facility of priority to the city, with capacity to respond to a major disaster and support recovery of people who shelter there or nearby.	● Feasibility study needed to assess green vertical evacuation center installation and sustainability. ● City inventory of vegetation is required for green vertical planning. ● High cost associated with green infrastructure
Public Outreach Program	● Improving the broadband connection quality and networks to support a telehealth system can ensure access to healthcare, reduce cost of care, enhance quality of care health programs to reach community (Cho, Mathiassen, & Gallivan, 2008, pp. 1-2), and allow hazards warning notification and primary emergency care particularly for people living in remote areas. ● Improving the health and well-being program outreach for elderly in Westport by adopting door-to-door outreach can ensure that the elderly obtain health care services information, develop social interaction with social workers, and obtain complete information related to resilience (FEMA, 2014, p. 1).	● Networking with telecommunication service providers can be challenging. ● Elderly and other populations less familiar with technology may require social workers or volunteers for outreach programs.
Emergency Management Plans	● Developing integrated care that responds to the unique needs of diverse medically underserved areas and populations in Westport can improve the health service delivery to geographically and culturally isolated communities (minorities), strengthen neighborhood's social bond and pride, and allow the delivery of multiple medical cares to community during and after hazards (Jackson & Gracia, 2014, p. 58). ● Developing healthcare systems that meet population's drivers and needs in Westport through Community Health Needs Assessment can help the city to address population health by prioritizing the most vital needs of the community, and help the city to allocate resources in time of needs or hazards (The Center for Health Design, 2016, p. 4; Centers for Disease Control and Prevention, 2015, pp. 1-4).	● Developing healthcare center requires designers and facility planners. ● Encouraging community-based health service providers may need incentives, government's supports related to infrastructures, community-based planning, and

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Hazard Mitigation Initiative	Opportunities for Alignment with Health and Well-being Development	Conflicts with or Obstacles to Alignment with Health and Well-being Development Goals
	• Building health service networks and collaborations between health service providers in Westport (e.g. physician, optician, dentist, alternative healers, pharmacies, drug stores), and those outside the city, such as medical and Indian tribal wellness centers in Shoalwater Bay and Tokeland, hospitals in Aberdeen, Olympia, Shoalwater Bay, can promote consortium of health services across all communities, strengthening socio-cultural relationships between cities, increasing high-quality health services for all community and improving coordination in health services delivery during hazards and resilience of wide-scale regions toward hazards (Tasmanian Government, 2018). • Improving the local food pantries by engaging foods producers and stakeholders in Westport: seafood producers, oyster producers, community gardens, and others, to promote food resilience in the face of hazards (Food and Agriculture Organization, IFAD, & World Food Programme, 2015, pp. 2-3; Green & Cornell, Regional Market Analysis of Food Security and Regional Resilience: Whole Community Preparedness through Local Food Production and Distribution in Washington State, 2014, pp. 45-46; Hodgson, 2012).	professionals in health service and have cultural competency. • City's demographic data, categorization of vulnerable groups of people and their population distributions need to be updated. • Cross-regional agency, provide, and insurance coordination for health services networks is complex.
Emergency Communication Plans	• Creating a voluntary database with a web form can help to identify individuals who require primary health assistance in time of hazards. This requires eligible individual or community to voluntarily assist vulnerable individuals/ communities. For Westport, it can help to update its demographic database, decide prioritization for emergency aid, and allocate resources efficiently before, during, and after hazards. For the community, it can strengthen the social bonds based on trust among peers (Centers for Disease Control and Prevention, 2015, p. 6).	• City's demographic data, categorization of vulnerable people, and distributions of high-risk people especially homeless, need to be updated.
Critical Facilities Evaluation	• Establishing a community health evaluation and assessment tool can help policy makers to effectively identify, plan, and implement needed policy, systems, and environmental changes, monitor changes over time, recognize the needs of community in terms of health improvement, and increase the quality of health services in Westport. This tool will help the Westport community to obtain updated health services due to environmental changes and increase resilience to hazards (Community Health Assessment and Group, 2010, p. 1).	• Infrastructure and human resources for running the evaluation tool as periodic activity need to be prepared.
Transportation and Rights of Ways Improvements	• Improving the safety level of the route connecting health care providers in Westport to residential, marina district, critical facilities (fire department, police department), and other areas, improve evacuation during hazards (Weerasinghe, Hokugo, & Ikenouchi, 2011, p. 169). • Integrating pedestrian friendly design into Westport's streets system connecting health care service providers, food resources and other areas can enhance social interaction, positive feelings, and health. (Ewing, 1999, p. 2; Braun & Read, 2015, p. 6).	• Requires extensive assessment of city's street system and infrastructure quality. • Funding and expertise for on-going assessment process is challenging.

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8.3. Community Input

8.3.1. Workshops

The Westport community has provided our team with valuable information to help develop our recommendations for the Comprehensive Plan. The community identified important values and assets and suggested inspiring ideas to withstand specific types of hazards. Described below are the themes of community input that we identified relevant to this element in relation to the city's social, built, and natural assets, and community's hazards mitigation strategies.

- **Social Assets:** The Westport community has social assets that include community clinics, community gardens, seafood processing workers, oyster farmers, commercial and recreational crabbers, and people who are generally hardworking, self-sufficient, resourceful, and outdoor survivalists, with strong social bonds, and support from local and regional public agencies.
- **Natural Assets:** Westport community has an abundant amount of healthy foods mainly provided by the ocean.
- **Built Assets:** Westport community has affordable housing.

In addition, the Westport community provided us ideas about how they would adapt to environmental changes particularly sea level rise and tsunamis:

- Update land use zoning due to climate changes/hazards to protect oyster habitats
- Support people's reliance on local clinics and hospital located in Aberdeen
- Improve public access to fresh foods provided by oceans
- Protect critical infrastructures from hazards, including the fire department, water and electrical services

8.3.2. Field and Literature Studies

Westport's Assets and Vulnerabilities

Based on the UW team's observations and discussions with Westport's local government, and workshops in November 2018, we identified professionals in health and human services who have serve the community. Table 23 shows the city's health care services providers in Westport and those in Grays Harbor County.

Table 21. Types of Healthcare and Social Services Providers in the City of Westport in 2018

Group	Services
The Beach Clinic	Physician, family medicine
South Beach Vision Clinic	Optician
South Beach Dental Clinic	Dentist
Massage therapy	Licensed massage practitioner
Star Song Healing	Alternative medicine
Veterans of Foreign Wars Post 2057	Veterans, seniors, community space
Twin Harbor Drug	Medicines, health supplies and prescriptions

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Interviews with some of these providers and local residents suggests that the Westport community, whose population in 2017 was about 2,115 people (Bridgeview Consulting, LLC., 2018), needs a broader range of types of health services inside the city limits. To obtain multiple health services, the Westport community goes to health care facilities in Shoalwater Bay and Tokeland, or to hospitals in Olympia, Elma, and Aberdeen. In the time of hazards, this condition reflects a disadvantage in which Westport community cannot obtain adequate emergency care from the available health care service providers in the city. Travelling on land after hazards to reach hospitals outside Westport, could also increase the risks. Westport can improve its resilience to hazards by evaluating its environmental capacity to withstand the worst hazards and establish critical facilities, including a community health care center and/or increased telehealth capacity.

Westport may also have a disproportionate share of vulnerable residents with limited resources to evacuate, stockpile food, store medications, and shelter in place (Bridgeview Consulting, LLC., 2018, p. 27). The median age is about 44 years old, older than the median age of the county and state population. The poverty rate is estimated at 23.5%, with household median income only 53% of the state's (Deloitte, Macro Media, & Datawheel 2018). Mobile homes, trailers and other non-standard housing units account for 10% of all housing units in Westport, but interviews suggest the share of the population living in such units may exceed 27% (State of Washington Office of Financial Management Forecasting & Research Division, 2019, Table 8, p.31). Most such units are concentrated in RV parks in low-elevation locations. Vulnerable populations have limited access to media of communication and knowledge of evacuation routes. Obtaining information on the number and distribution of homeless or transient residents, seasonal workers, and other vulnerable members of the community is challenging, but effective hazard mitigation and emergency preparedness plans must account for these populations.

Community Input for the Health and Well-Being Element

The strategies listed in Table 24 are based on what we learned from community of Westport, field studies, the class studio, and literature studies. The community input was gathered from our workshops in November 2018, final presentation, and open house in December 2018, discussions, while the other findings came from our site visits and additional research.

Table 22. Community Input Related to Health and Well-Being

Strategy Theme	Strategy Examples
Improving access to high-quality health services	● Promote telehealth technology to improve health service delivery especially for elderly, disabled and others facing mobility challenges.
Building networking and social capital in health development	● Establish collaborations between health service providers in Westport with those in Aberdeen, Olympia, and Shoalwater Bay to promote a consortium of health services for all communities, strengthen socio-cultural relationships between cities, and improve resilience of wide-scale regions to withstand disaster ● Promote networks with Shoalwater Bay and Tokeland communities in health services, including the Indian Tribe's health services providers to improve coordination during hazards in wide-scale regions, knowledge and lesson learned towards disaster mitigation, social-cultural bond between cities, local knowledge of Tribe's medical and health services ● Encourage long-term partnerships between health service providers in the city, employers/business owners, and health insurance companies to ensure affordable and high-quality health services for elderly, low income people, minorities and children

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Strategy Theme	Strategy Examples
Engaging the community in comprehensive health and well-being planning	• Provide support for the current health service providers (physician, optician, dentist, licensed massage practitioner, alternative medicine) in Westport to enhance their health services to the community • Provide opportunities for local people to help with outreach regarding the health programs especially to elderly residents through door-to-door outreach • Improve the community's involvement in actively updating their information for the city's demographic database to enable resilience planning; updating vulnerable groups of people and categorizations, and prioritizing/allocating resources.
Improving access to fresh and healthy foods	• Increase opportunities for public events especially food festivals, farmers markets, fishing groups to take place in the city center to increase public awareness and appreciation of natural resources • Increase community awareness of the city's natural resources through cultural/sport events: hunting games, fishing games, or tourism of community gardens, organic farms, seafood processing, oyster beds, crabs, cranberry, mushrooms, to build food resilience
	• Update Shoreline Master Program to protect shellfish habitats and farms from uncertain environmental changes especially hazards
Securing critical facilities and lifeline system	• Relocate community health service providers to high ground area in Westport to ensure health services availability for Westport community before and after hazards • Relocate critical facilities such as Emergency Medical Services and the fire department to high ground areas within the city limit to cope with sea level rise and liquefaction risk • Consider establish critical facilities (e.g., Emergency Medical Services, fire department) on high ground areas in vacant land outside the city to cope with tsunami risks • Evaluate and strengthen the bridge structures connecting cities of Westport and Aberdeen to improve public safety and accessibility • Secure lifeline facilities: water, electricity, radio telecommunication
Improving the environmental quality to support physical and mental health	• Encourage walking experience and outdoor activities to improve health and well-being, by improving Westport's trail connectivity to the city's important assets: the Marina District, marina seafood, viewing tower, light house, Westport's City parks, and other city's assets, and maintaining the rural characteristics and low traffic-streets • Improve pedestrian friendly design of the street system, connecting the city's public facilities, especially for elderly (e.g., crosswalks around city's main facilities including Ocosta school)

8.4. Recommendations

The following recommendation for the proposed Health and Well-Being Element of the Comprehensive Plan are based on synthesis of the community's input received during workshops in November 2018, field surveys, discussions, and best practices identified from New Orleans' comprehensive plan. Table 25 presents these recommendations, which are further discussed below.

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Table 23. Recommendations for the Proposed Health and Well-Being Element

	Strategies	Hazard Mitigation Benefits	Co-benefits for Community Related to Health and Well-Being Values
Grays Harbor County HMP	Establish vertical tsunami evacuation structures that integrate living wall or roof garden design	Providing alternative foods supplies for resilience	Enhancing positive feelings that increase health, pride, social interaction, biodiversity and environmental quality
	Improve the broadband connection quality and networks to support telehealth	Allowing primary emergency care delivery to reach the isolated and high priority communities	Allowing people-centered health services to reach more isolated and mobility-challenged populations.
	Improve the health and well-being program outreach for elderly through door-to-door outreach	Allowing the elderly to obtain complete information related to improving resilience	Ensuring the elderly to obtain health care services information and develop social interaction with social workers
	Develop integrated care that respond to the unique needs of diverse medically underserved areas and populations in Westport	Allowing the delivery of multiple medical cares to community during and after hazards	Improving the health service delivery to geographically and culturally isolated communities (minorities), neighborhood's social bond and pride
	Develop healthcare systems that meet population's drivers and needs in Westport through Community Health Needs Assessment	Allowing the allocation of resources in the time of hazards	Allow the city of Westport to address population health by prioritizing the most vital needs of the community
	Improve health services and medical care assistance for elderly by promoting affordable housing for elderly with close proximity to the health service providers and involving local's competent workforces	Allowing the delivery of emergency medical cares to elderly during and after hazards	Promoting health, life quality, positive feelings for social interaction
	Build health service networks and collaborations between health service providers	Providing multiple types of primary emergency cares and support recovery	Providing a comprehensive, high-quality and variety of health services
	Encourage partnership between community health center, health service providers, employers, and health insurance companies with supports from the city to state level governments	Ensuring the delivery of affordable and high-quality emergency aids for these groups after hazards	Ensuring the delivery of affordable and high-quality health services especially to low income community, homeless and elderly, improve their positive feelings, and health
	Improve the local's food pantries throughout Westport by engaging the community gardens, seafood, oyster producers, and other food stakeholders	Improving Westport's food resilience in the face of hazards	Reducing malnutrition and hunger for people living in extreme poverty, increasing community's well-being, social bond, and sense of community

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	Strategies	Hazard Mitigation Benefits	Co-benefits for Community Related to Health and Well-Being Values
	Improve volunteer database with a web form	• Creating prioritization plan for emergency responses • Improving capability to allocate resources efficiently before, during, and after hazards	• Improving city's demographic database with updated information • Strengthening social bonds based on trust
	Establish community health evaluation and assessment tool	This tool will help the Westport community to obtain updated health services due to environmental changes and increase resilience towards hazards	Improving opportunities to effectively identify, plan, and implement needed policy, systems and environmental changes, monitor changes over time, recognize the community's needs in health and increase the quality health services in Westport
	Integrate pedestrian friendly design into Westport's streets system connecting health care service providers, food resources, and other areas	Supporting evacuation process during hazards	• Enhancing social interaction • Promoting positive feelings and physical activity
	Integrate health services facility with new tsunami vertical evacuation structure on high ground	• Provides safer location for critical medical facilities • Expedite recovery process for its capacity of providing shelter for a large number of people, including medical and lifeline supports.	Upgrades delivery of health services to community
Community Input	Promote telehealth for health service delivery in Westport	Provides emergency remote medical assistance channel, e.g. triage (assuming telecommunications tech is adequately robust)	Improving health service delivery especially for elderly and disabled
	Integrate official hazards warning system to surfers' website forum	Provides hazards warnings to surfers and other tourists on Westport's coastal areas	N/A
	Integrate emergency medical services website to surfers' website forum	Ensuring an effective allocation of first aid/emergency medical services to surfers and other tourists on Westport's coastal areas	Improving self-esteem and trust to authority for having protection and access ton Westport's emergency medical services
	Establish collaborations between health service providers in Westport with those in Aberdeen, Olympia, and Shoalwater Bay	• Improving emergency services care and programs • Improving coordination to withstand hazards regionally	Promoting a consortium in health services, health services programs, and high-quality service delivery to communities

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Strategies	Hazard Mitigation Benefits	Co-benefits for Community Related to Health and Well-Being Values
Improve networks with Shoalwater Bay and Tokeland communities in health services, including the Tribal health services providers	Improving regional coordination during hazards to withstand hazards, and share knowledge and lesson learned regarding disaster mitigation	Improving social-cultural bond between cities, local knowledge of Tribe's medical and health services
Encourage long-term partnerships between health service providers in the city, employers/business owners, and health insurance companies	Ensuring emergency medical services delivery during and after hazards	Ensuring affordable and high-quality health services especially for elderly, low income people, minorities, children
Provide support for the current health service providers (physician, optician, dentist, licensed massage practitioner, alternative medicine) in Westport	Improving emergency medical services delivery during and after hazards to the community	Improving the delivery of high-quality health services to the community
Improve the community's involvement in updating their detailed information for city's demographic database	● Improving resilience planning by categorizing people based on vulnerability ● Allowing resources allocation based on vulnerability	Improving city's demographic database and updates
Increase opportunities for public events especially food festivals, farmers markets, fishing groups to take place in the city center	Improving social capital to withstand disasters	Increasing community's familiarity and appreciation to local natural resources for healthy foods
Relocate critical facilities and community health service providers to high ground area	Protecting community health service providers to provide assistance and medical aid for the community during hazards, trauma after hazards and expedite recovery process	Ensuring health services availability for the community's well-being
Integrate affordable multi-unit elder housing with new tsunami vertical evacuation structure on high ground	• Provides safer location for elder housing • Improving communications and accessibility to elder residents in time of emergency	Promoting social interactions, well-being and age-appropriate dwelling in Westport
Encourage walking experience and outdoor activities by improving Westport's trail, natural route/ways across the forests, urban areas, parks, beaches, Marina District, and other city's natural assets and maintaining the rural characteristics and low-traffic streets	Improving familiarity to neighborhood and city's environment that will support evacuation	Improving community's health, promoting social interaction, increasing pride, positive feelings, reducing stress, and encouraging aging in the city

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	Strategies	Hazard Mitigation Benefits	Co-benefits for Community Related to Health and Well-Being Values
	Integrate pedestrian friendly design into the city's street system connecting city's public facilities especially for elderly	Providing supports for evacuation especially of elderly	Ensuring safety for pedestrians especially for elderly, enhancing walking experience and positive feelings
Best Practice: New Orleans Case Study	Coordinate partnerships between health and human service providers and owners/tenants of publicly-accessible facilities to provide for the location of multiple health and human service providers in shared locations	Improving coordination to deliver health services	Strengthen social bond between the health service providers, build trust in peers
	Support and promote ongoing initiatives to convene a citywide health care consortium and a citywide human services consortium	Improve the quality of emergency services for community	Build trust in peers, improve health services through advanced programs
	Support and enhance efforts to increase health insurance coverage for all residents	Ensure access to emergency cares in time of hazards for low income people	Improve trust in authority, self-esteem, positive feelings, health
	Expand mental health and addiction-care services and facilities to meet current and projected need	Improve patient's recovery before and after hazards	Improve health services quality related to mental health
	Review need for and effective use of hospital facilities and emergency health care services and infrastructure according to data on projected population and need	Improve the facilities' capacity to accommodate emergency cares during and after hazards	Improve the facilities' capacity and capability to accommodate the current needs
	Promote business development for farmers and processors of locally grown food, and establish fresh produce retail outlets within walking distance of all residents	Improve food resilience by encouraging more food pantries and promote familiarity with location and content of foods storage for emergencies	Promote health and positive feelings
	Provide affordable paratransit service for seniors	Improve the quality of emergency services for elderly during and after hazards	Improve positive feelings and trust in community through social interactions, trust in authority

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8.5. Reference Cases and Further Relevant Information

8.5.1 Cases Relevant to the Health and Well-Being Element

The Fundamentals of Community Health Centers

Community health centers and associated community clinics aim to provide health and social services to people living in poverty and medically underserved communities. This type of health center is developed based on community empowerment philosophy, and usually funded by the federal government (Taylor, 2004).

Integral Green Buildings and Vertical Farms: New Urban Perspectives

Westport's aquifer-based water supply is limited, and yet its annual rainfall is a relatively untapped but potentially rich resource. There is a broad range of direct and indirect benefits to implementing rainwater catchment and vertical farms in buildings, including in tsunami vertical evacuation structures. Figure 38 depicts a modern conception of what a fully-integrated green building could be. This green construction would include green roofs, indoor and outdoor living walls, advanced monitoring systems, rainwater collectors, and wastewater treatment plants to reclaim greywater and reuse it for irrigation and food production (Pérez-Urrestarazu, Fernández-Cañero, Franco-Salas, & Egea, Vertical Greening Systems and Sustainable Cities, 2016, p. 14).
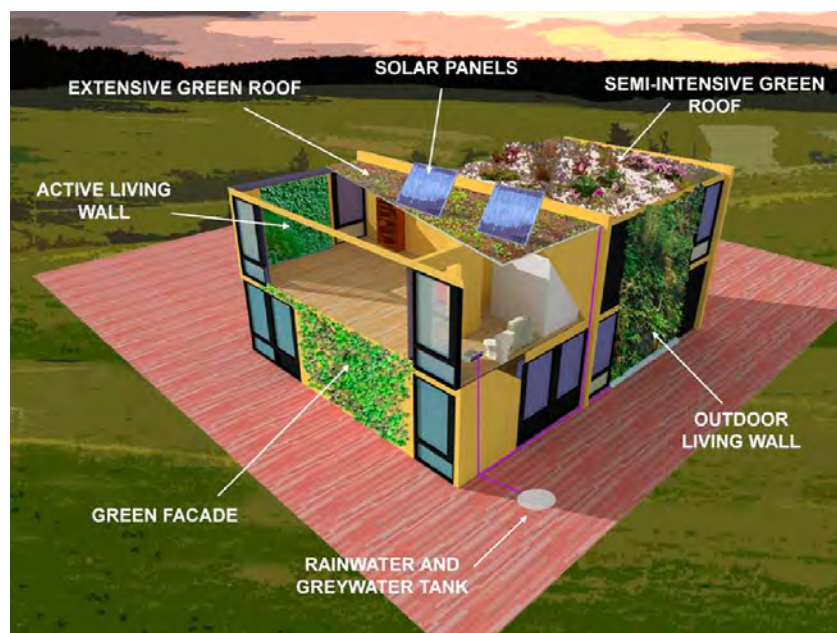

Figure 24. Concept of a green building

Strategies for Identifying At-Risk Groups

Use of Registries
A registry is "a voluntary database of individuals who meet the eligibility requirements for receiving additional emergency response services based on specific needs." Using a registry, you will be able to

identify people who require assistance before, during, or after an emergency. In addition, you will also know the specific form of help these individuals need.

Community Assessments for Public Health Emergency Response (CASPER)
CASPER is a public health tool used to gather information from households within a community. This effective epidemiologic method can be designed to provide planners and responders, such as emergency managers, with household-based information quickly and at low cost.
http://emergency.cdc.gov/disasters/surveillance/pdf/CASPER_Toolkit_Version_2_0_508_Compliant.pdf

Planning for Food Access and Community-Based Food Systems

The American Planning Association published a study of the experiences of 25 local governments in food systems planning (Hodgson, 2012). Food systems have increasingly become an integral part of comprehensive planning as well as emergency preparedness planning. Below are just a couple elements from the case of Minneapolis that may be considered by the City of Westport.

Food Asset Mapping
As part of the Homegrown Minneapolis project, the City of Minneapolis conducted a food asset assessment and created a food system asset map to identify the number and locations of food assets throughout the community, including: fresh food outlets, grocery stores, healthy corner stores carrying fresh fruits and vegetables, farmers markets (mini-markets, municipal markets, public markets), food producing community gardens, community kitchens, wholesale food businesses, mobile food vendors, food pantries, CSA drop-off locations, food co-ops, soup kitchens, and meal delivery programs. In addition to these food assets, the City of Minneapolis also mapped grocery store location, poverty concentration, and bus network data to identify inequities across the system (Minneapolis, MN, Homegrown Minneapolis, 2011).

Equal Access to Healthy Food Sources Analysis
As part of the City of Minneapolis' Urban Agriculture Policy Plan, the City conducted an analysis of geographic proximity and transportation access to healthy food sources (farmers' markets, existing community gardens, and full-service grocery stores) by mapping the location of healthy food sources and other socio-demographic, land use, transportation, and health data, including: population density, population change, location of public transportation network; poverty concentration; concentration of people of color; obesity; and car ownership (Minneapolis, MN, Urban Agriculture Policy Plan, Chapter 4: Issues and Opportunities, page 40-47).

Community Planning for Foods Resilience

Lesson 1. Food Life Line
Food Life Line is an independent non-profit corporation that works with the food industry and its surpluses to redirect food goods from manufacturers, farmers, grocery stores and restaurants that might otherwise go to waste

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Lesson 2. Food Pantries

Grays Harbor County is reported to have 16 food pantries (Figure 43), (places where food is regularly distributed to food insecure households.) The report, further explained that towns and cities in this county each have at least one pantry, with Aberdeen and Elma having multiple pantries. However, rural areas not on Routes 101 and 12, including Westport, may have limited access to these pantries due to long travel distances, isolated conditions, especially given damage risks to bridges and roads in major earthquakes or landslides (Green & Cornell, *Regional Market Analysis of Food Security and Regional Resilience: Whole Community Preparedness through Local Food Production and Distribution in Washington State* , 2014, hal. 30-33).

Figure 25. Food pantries and distribution centers in Grays Harbor County

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Appendix A: Workshop Documentation
Recommendations for Westport's Comprehensive Plan Update

Prepared for the City of Westport, WA, by the University of Washington Urban Design & Planning Studio "Community Engagement for Coastal Resilience," URBDP 508B, Autumn 2018

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A Report based on Community Responses to Tsunami and Sea Level Rise Scenarios for purposes of Integrating the Grays Harbor County Multi-Jurisdiction Hazard Mitigation Plan with the City of Westport Comprehensive Plan

November 21, 2019

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1. Coastal Resilience Workshop Summary

1.1. Document Overview

This document includes a summary and documentation of two workshops held in Westport on Friday and Saturday, November 16-17, 2018. It constitutes an appendix to the University of Washington (UW) Urban Design & Planning 508B Studio report of Recommendations for the City of Westport's Comprehensive Plan Update (Recommendations Report). UW faculty and students and members of the Westport Steering Committee or the project (Steering Committee) co-designed the workshops to engage partners and community members in hazard resiliency planning and gather input to inform the recommendations made in the Recommendations Report. This Appendix includes a summary of the workshop outcomes, as well as documentation from the discussions that took place both days. The workshops served as the primary opportunity for the UW team to gather input from a diverse representation of partners and community members, building on information gathered during previous meetings, site visits, and interviews.

1.2. Summary of Workshop Approach and Outcomes

This section provides a brief summary of the approach used during the two workshops and overarching themes that emerged from discussions. The two workshops consisted of (1) an invitation-only "Partners Workshop" for local leaders in planning and emergency management on Friday, Nov. 16, and (2) a "Community Workshop" widely advertised and open to the general public on Saturday, Nov. 17. More detail on the approach and outcomes for each day is provided below. Both workshops focused on the theme of making hazard mitigation more meaningful to the community and actionable in Westport and the larger South Beach area. Workshop goals included:

- Build on the community's already-significant accomplishments in preparing for a large earthquake and tsunami, including its construction of North America's first tsunami vertical evacuation structure;
- Help the City update its Comprehensive Plan Update, to include hazard mitigation in a way that reflects Westport/South Beach values and needs;
- Raise public awareness of households' needs and means to be prepared for emergencies, and encourage a culture of community self-reliance and mutual help;
- Discover everyday value in preparing for rare and uncertain future events, based on the use of complex and evolving scientific knowledge about multiple locally relevant hazards.

Though there were some minor differences between the two days, the workshops drew from the same general approach and organization of activities and discussion sessions, outlined in Figure 1 below.

Identify values and assets of the Westport/South Beach community → Discuss scenarios of change, vulnerabilities, and opportunities for strengthening → Discuss opportunities for adaptation to the "new normal"
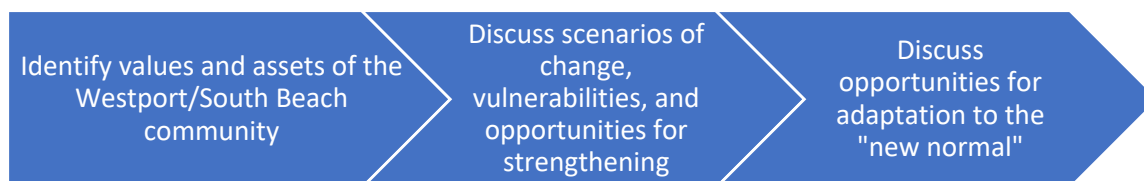
Figure 1. Overview of Workshop Approach and Structure

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1.2.1. Values and Assets

In both workshops, participants first considered Westport/South Beach community values and then identified and located assets that support those values. This "appreciative inquiry" approach, rather than beginning with a focus on hazards and vulnerabilities, encourages participants to think about changes as opportunities rather than threats and helps them develop a holistic set of criteria to use in identifying hazard mitigation strategies.[1] Values were defined as: "what makes Westport/South Beach a great place to live, work and play?" Participants were encouraged to think of values as more general qualities, such as "I like how everyone knows each other" or "the fishing and hunting are really good around here; I can earn a living doing these things and feed my family!" They might be even more basic such as "good healthcare". Assets, on the other hand, were intended to consist of specific places, groups or activities that support these values and can be identified on a map or associated with particular amenities, facilities, institutions, businesses, people or events.

While the identified assets and values varied among days and discussion groups, many participants identified common themes. Table 1 below includes a summary of values and assets highlighted by workshop participants.

Table 1. Westport/South Beach Community Values and Supporting Assets

Values	Description and Supporting Assets
People are resilient	The people are hardworking, self-sufficient, innovative, resourceful and outdoor survivalists. The know how to fix boats, car, house, equipment, hunt, fish, and live outdoors.
Social bonds	People meet each other on the docks, at school events, at church gatherings or in the neighborhood. They help each other out and people have strong sense of belonging, community, and cultural identity here.
Education	The Westport Timberland Library and Ocosta School District are valued for providing education and communal space for children and families.
Naturally available foods	The ocean and forests surrounding Westport provide an abundant amount of fresh seafood, elk, deer, berries, and mushrooms for the community to fish, hunt, and collect freely with the right permits and equipment.
Natural resources for economic vitality	The scenic ocean views, local fisheries and aquaculture, and cranberry bogs are the heart of the economy in this area. Scenic ocean views drives tourism along the beaches and in the marina district. The local fisheries provide jobs for fishermen, and the seafood is processed in plants in the marina district. The fisheries also provide charter companies with tourists who want to do deep-ocean fishing. The cool climate and farmlands provide a place for cranberry bogs and a robust cranberry industry to thrive. Surrounded by the ocean, the city is an ideal place for a boating development industry.
Natural features for recreation	State and local parks and beaches provide excellent recreational space for hiking, running, walking, and site seeing. The ocean provides a place for swimming and surfing. These natural features enhance community health and well-being.

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[1] An earlier version of the approach is discussed in Freitag, R. C., Abramson, D. B., Chalana, M., & Dixon, M. (2014). Whole Community Resilience: An Asset-Based Approach to Enhancing Adaptive Capacity before a Disruption. *Journal of the American Planning Association, 80*(4), 324-335.

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Values	Description and Supporting Assets
Rural, seaside, and small-town local character	The area's rural character provides clean water and air which allow the natural features to thrive and enable people to enjoy the outdoors. The city feels quiet and relatively safe, there is minimal traffic, and the area is not densely populated. The downtown area has mostly local, non-franchised businesses and maintains a seaside character. People appreciate the quality of life here.
Public services	Local and regional public agencies support and enhance community safety and security.
Affordability and employment opportunities	Affordable housing and high-quality food in the area make it an attract place to live while enhancing quality of life. The natural resources (e.g., fishing, oyster, seafood processing, cranberry farming) and downtown businesses provide employment opportunities for residents of the region.
Historical features	The people of Westport are proud of their heritage and history. The Grays Harbor lighthouse and Westport Maritime Museum encapsulate these values.

Figure 2 shows community members and UW facilitators building a list of values and assets during the Saturday, November 17, workshop.

Figure 2. Values and Assets Brainstorming and Mapping Discussion

1.2.2. Hazards Scenarios

Following discussions of values and assets, the UW team shared information about different potential hazard scenarios that Westport/South Beach could face. The workshops focused on flooding and coastline change associated with sea level rise (SLR), as well as tsunamis and land subsidence associated with two possible scenarios of Cascadia Subduction Zone (CSZ) earthquake. In each workshop, one or

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two table groups discussed the same set of SLR information, while two other table groups each discussed a different earthquake and tsunami scenario.[2]

The SLR information included projections for 2060, 2080, and 2100. Table 2 shows the SLR projections with different probabilities of coastal flooding for each time horizon.

Table 2. SLR Predictions and Associated Probabilities

Amount of SLR	2060	2080	2100
1 foot	11% probability	51% probability	77% probability
2 feet	0% probability	5% probability	27% probability
3 feet	0% probability	1% probability	5% probability

Source: table generated on 07/18/18 for the Washington Coastal Resilience Project, www.coastalnetwork.com/wcrp-documents.html

Both workshops also explored two near-source tsunami scenarios: one generated by a "medium" and "most shallow" Magnitude 8.9, or "M1", Cascadia subduction zone (CSZ) earthquake, which most resembles the last time a CSZ earthquake and tsunami occurred in 1700; and another generated by a "large" and "most shallow" Magnitude 9.0, or "L1", CSZ earthquake. Figure 3 shows how the M1 and L1 earthquake scenarios compare to other possible CSZ earthquake sources of tsunamis, in terms of: their magnitude (Mw); their depth below the ocean floor (most shallow, shallow, or deep); their likelihood of occurrence (i.e. if a CSZ earthquake occurs at all, what is the chance it will take one or another of these forms); and their associated amount (in meters) of uplift (red) or subsidence (blue) of the ocean bottom and land. Note that uplift and subsidence varies considerably at different distances from the fault offshore towards the land. (Contour intervals for uplift/subsidence are 3 meters, with reference to the tide level at Mean High Water.) These details of earthquake behavior are all very difficult to predict, not to mention the position along the 620-mile-long CSZ at which the next rupture might occur, and because they determine tsunami behavior at any one point on the coast, it is also difficult to predict *that* behavior, including the tsunami's time of arrival on the coast after the earthquake happens, the number and duration of waves, the depth and extent of flooding, the direction and speed of currents, etc.

Definitions and Acronyms

SLR = Sea level rise

MHW = Mean high water

CSZ = Cascadia Subduction Zone

L1 = Large and shallow magnitude 9.0 CSZ earthquake

M1 = Medium and shallow magnitude 8.9 CSZ earthquake

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[2] Initially it was intended to have table groups rotate, "World Café"-style, at the end of the workshop so that most participants would have a chance to discuss more than one scenario, but there was not enough time in the schedule to allow that. However, each table reported out to the room, and this appendix and the Comprehensive Plan Update recommendations themselves represent a synthesis of the workshop discussions.

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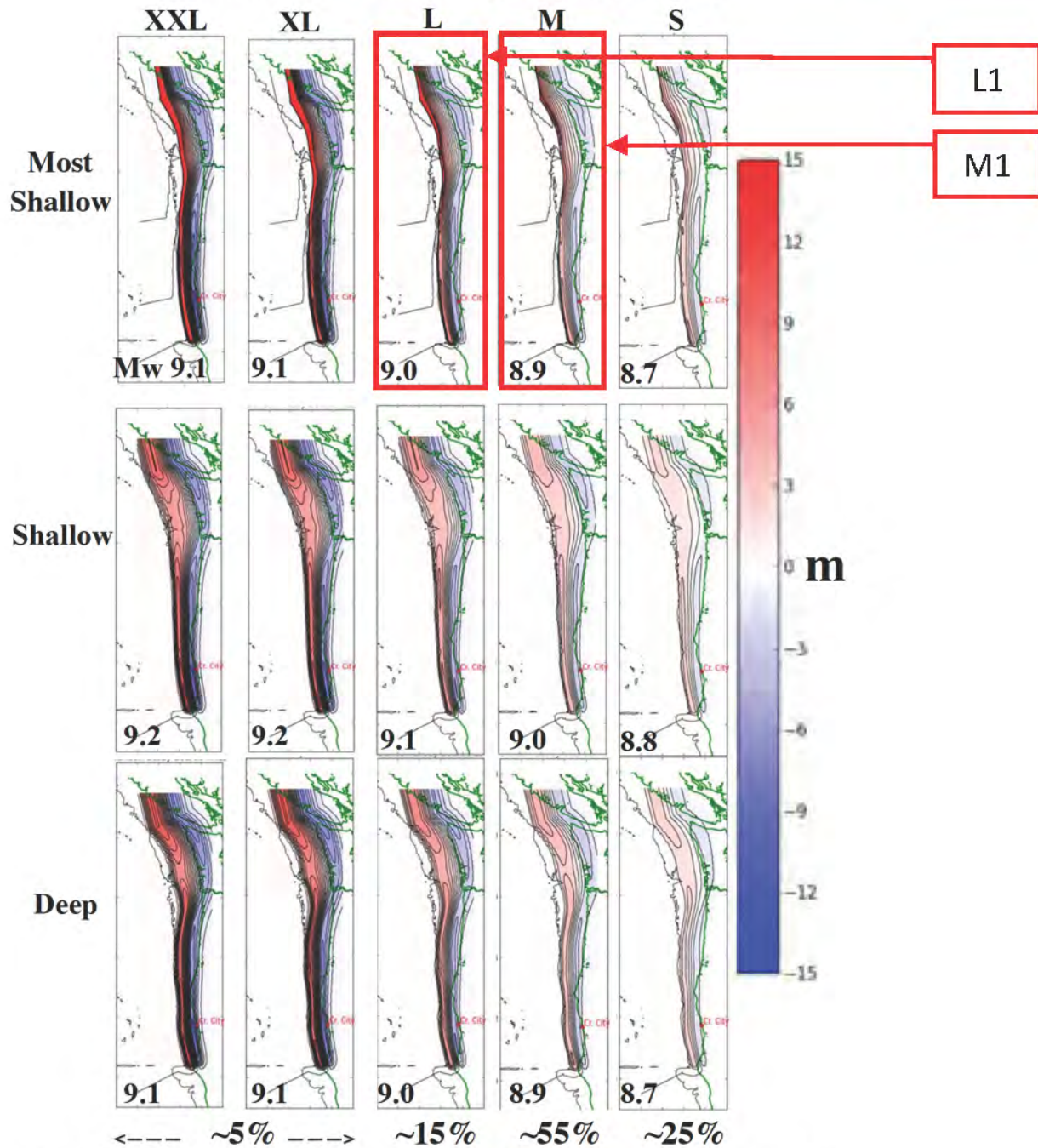
Figure 3. Suite of 15 Possible Cascadia Subduction Zone Fault Earthquakes. Source: Frank Gonzalez, based on a hazard assessment study for Bandon, Oregon. See Witter, Robert C, Yinglong Zhang, Kelin Wang, George R Priest, Chris Goldfinger, Laura L Stimely, John T English, and Paul A Ferro (2011): Simulating Tsunami Inundation at Bandon, Coos County, Oregon, Using Hypothetical Cascadia and Alaska Earthquake Scenarios. DOGAMI Special Paper 43 (July 11): 1–63.

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Presentation of these scenarios in the workshops emphasized that both earthquake and climate impacts modeling is probabilistic and uncertain, but it is based on an increasing amount of available historic data and sophistication of methods to analyze it. Not all possible CSZ earthquake scenarios were considered, nor were any distant-source earthquake-tsunami scenarios (such as the very large Alaska 1964 event). Still, working simultaneously with SLR and two near-source earthquake-tsunami scenarios enabled the participants to address both on-going, cumulative, and relatively more predictable if less severe changes (SLR) as well rarer, sudden, and less predictable but possibly more severe changes (earthquakes and tsunamis). Considering multiple scenarios has several benefits for the planning process, including:

- Helping to account for the uncertainty of future outcomes
- Encouraging forward-looking thinking beyond disaster response and survival, to mitigation, recovery and betterment
- Creating robust long-term strategies for land use and development, infrastructure and service investments, and environmental protection – i.e. strategies that work under multiple possible future scenarios of change
- Informing future decisions about prioritizing and implementing strategies

To inform discussion, the UW team developed several maps depicting flooding hazards and coastline change associated with the scenarios for both the Partners Workshop and the Community Workshop.[3] For each map, the UW team developed a version showing the full peninsula, and a version showing Westport. There was one SLR map depicting the 1-, 2- and 3-foot rise in sea level shown in Table 2 (Figures 4 and 5; same map showing Westport and the peninsula).[4]

Maps showing earthquake and tsunami hazards referred to both the "T-shirt sizes" of M1 and L1 earthquake scenarios depicted in Figure 3, but also referred to them in less specialized language, respectively: M1 = "Like the last time", i.e. what occurred in 1700; and L1 = "Maximum Considered" for official State emergency planning purposes.

For each of these earthquake scenarios, the UW team prepared two types of maps: one type showing the inundation areas and maximum flooding depths over land during the first four hours following an M1 earthquake (Figures 6 and 7) and an L1 earthquake (Figures 8 and 9); and one type showing loss of coastal land due to earthquake subsidence following M1 (Figures 10 and 11) and L1 events (Figures 12 and 13). The flooding depth maps were used only in the Partners Workshop, which addressed both immediate tsunami response as well as long-term mitigation, recovery, and adaptation to possible "new normal. The Community Workshop used only the subsidence maps as it focused primarily on anticipating these "new normals".

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[3] The maps were based on fine resolution Digital Elevation Models (DEMs) developed by the National Oceanic and Atmospheric Administration (NOAA) specifically for tsunami modeling on the Washington coast, and calculate elevations from Mean High Water (MHW). Available at https://catalog.data.gov/dataset/astoria-oregon-1-3-arc-second-mhw-coastal-digital-elevation-model

[4] Note that the SLR maps shown in the workshop contained an error, by depicting what is actually a 5-foot rise in sea level as a 3-foot rise. See the Erratum at the end of this Appendix that shows the correct areas flooded at 1-, 2-, 3- and 5-foot rise in sea level (Figure 36). Given that the two time-horizons for which workshop participants chose to discuss SLR effects – 2060 and 2080 – involved only 0% and 1% probabilities of 3-foot sea level rise respectively, the impact of this error on discussion was probably negligible.

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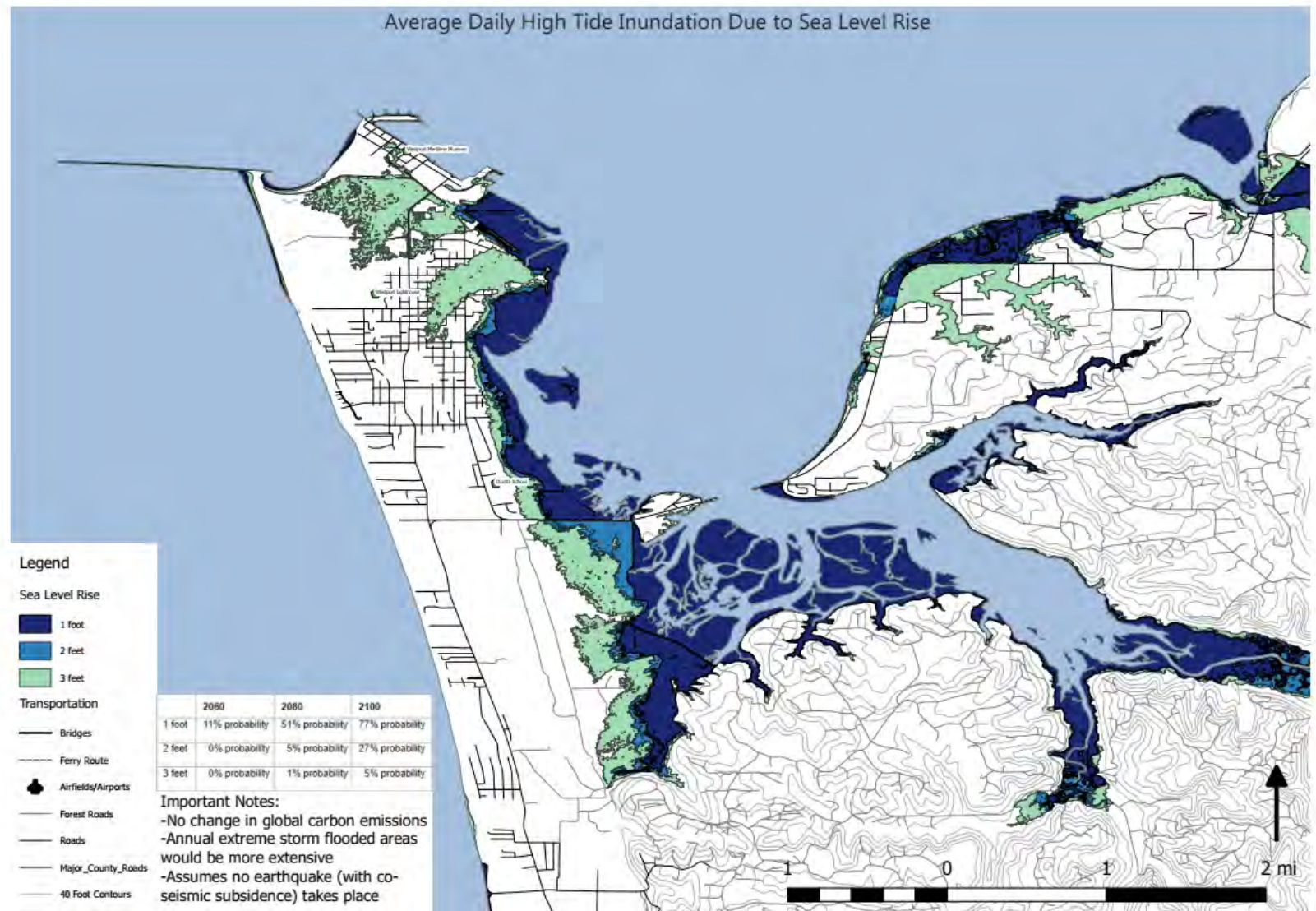
Figure 4. Regional Map of Average Daily High Tide Inundation under Different SLR Scenarios (1-3 feet)
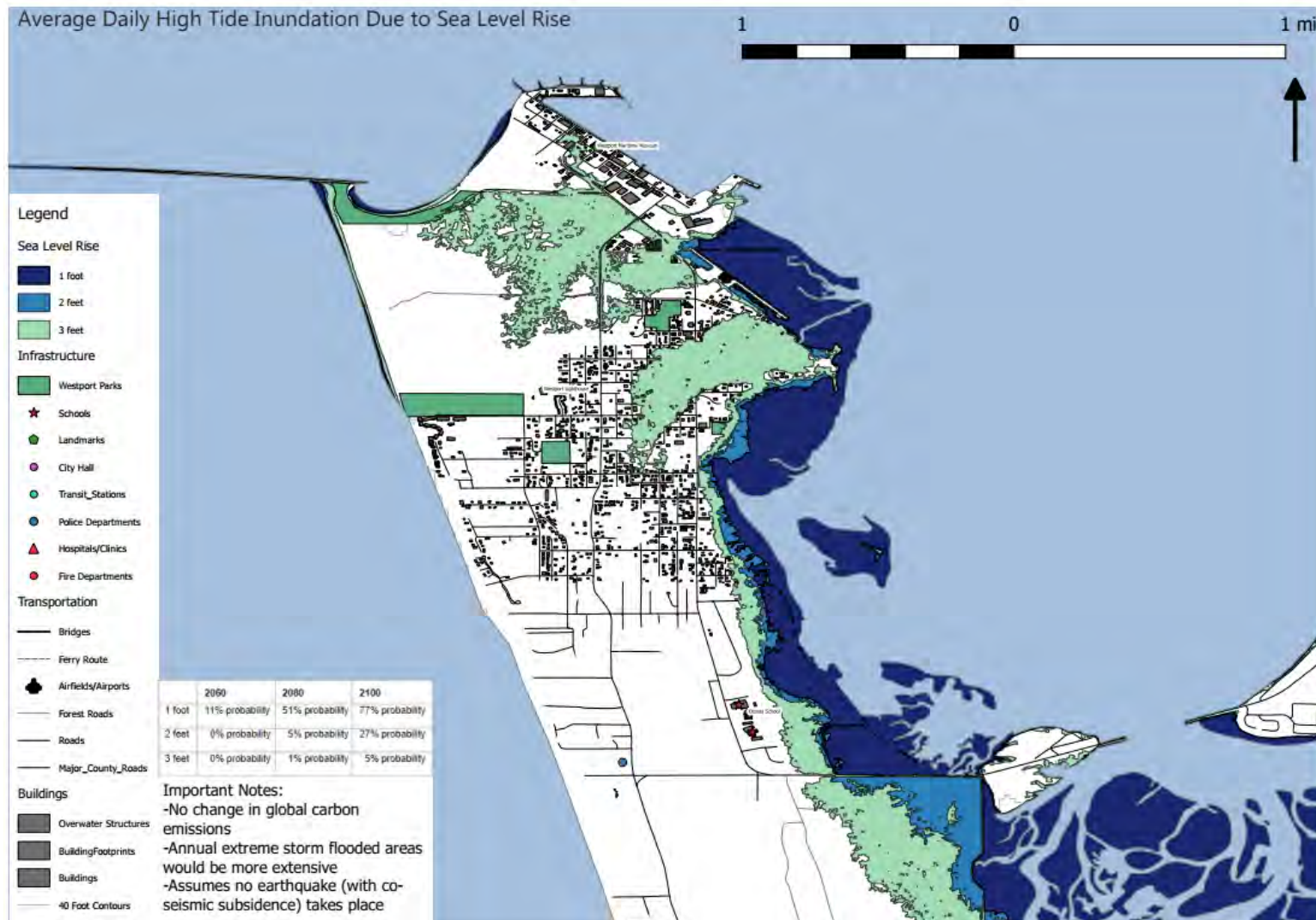
Figure 5. Westport Map of Average Daily High Tide Inundation under Different SLR Scenarios (1-3 feet)

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M1 Land Above and Below Average Daily High Tide
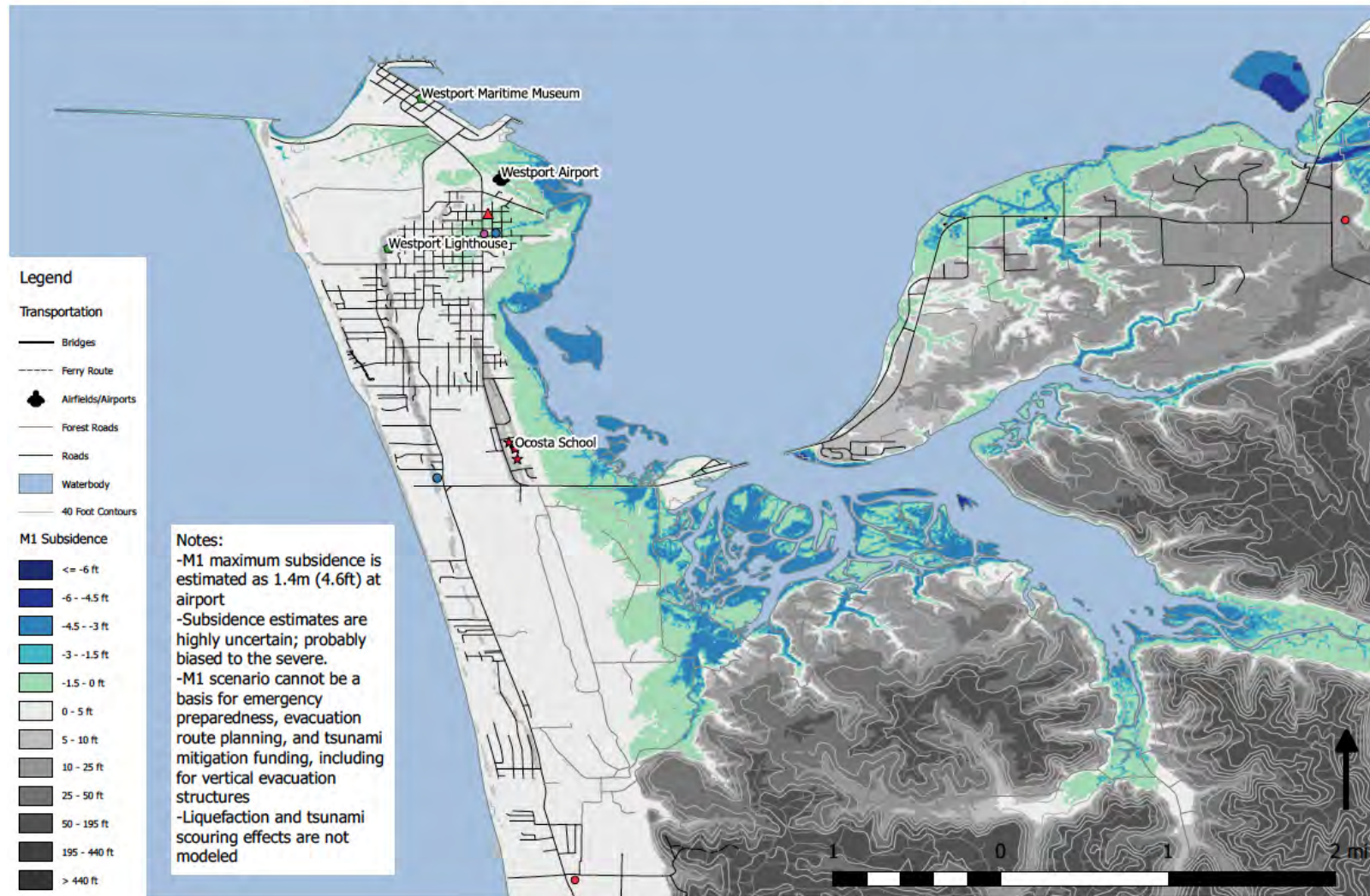
Figure 6. Regional Map Depicting Land Subsidence after an M1 Event

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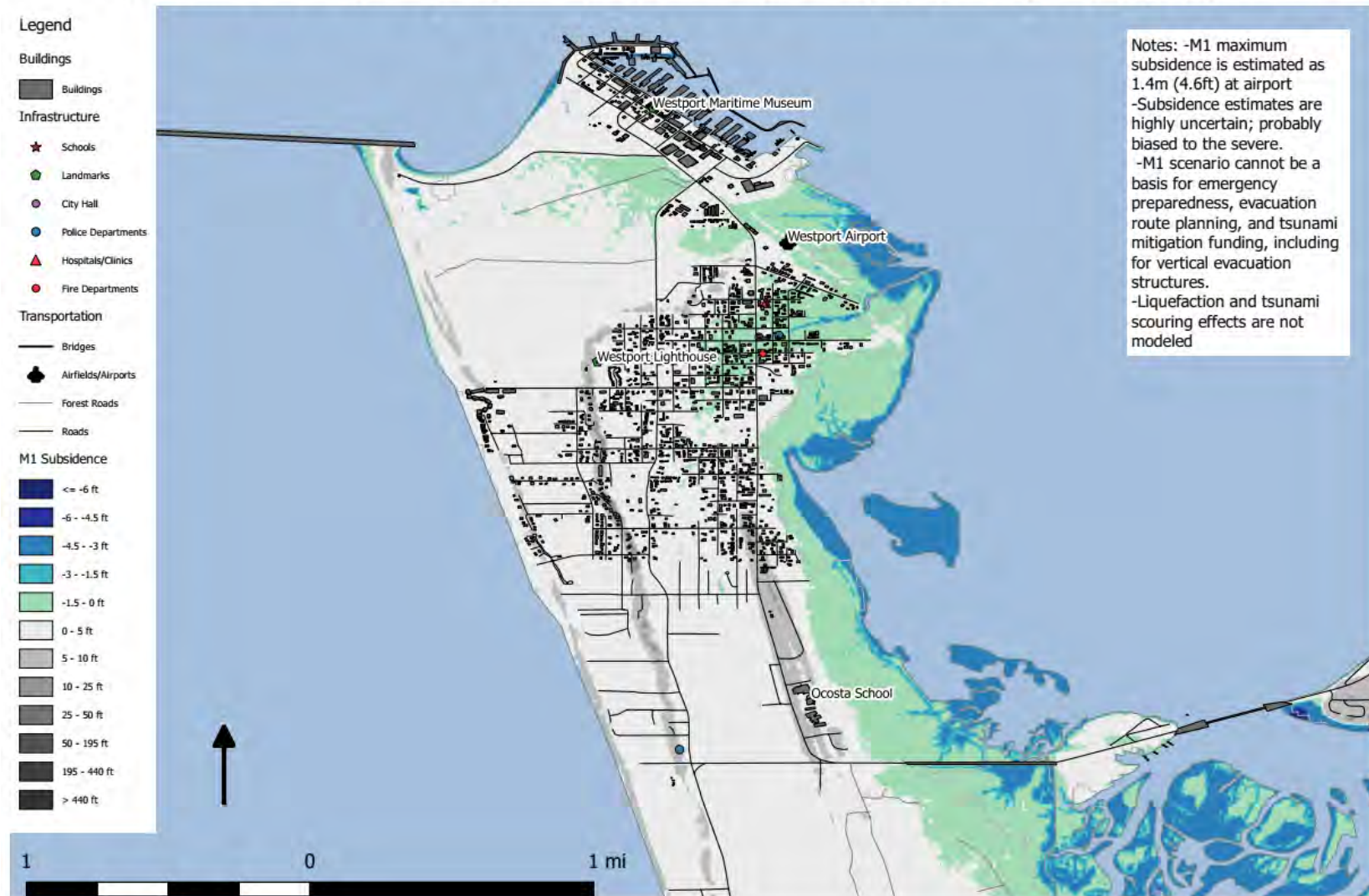
Figure 7. Westport Map Depicting Land Subsidence After an M1 Event
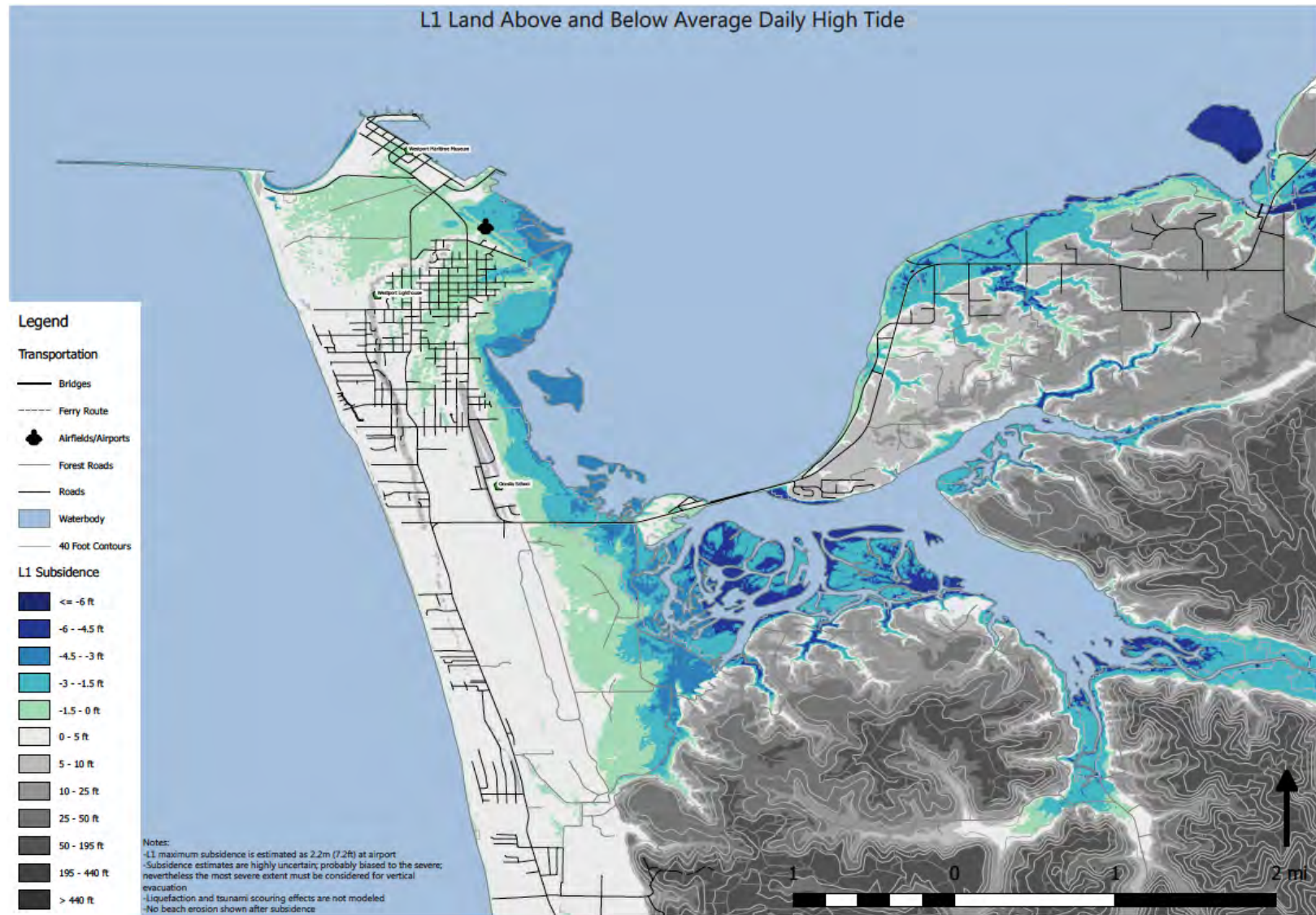
Figure 8. Regional Map Depicting Land Subsidence After an L1 Event

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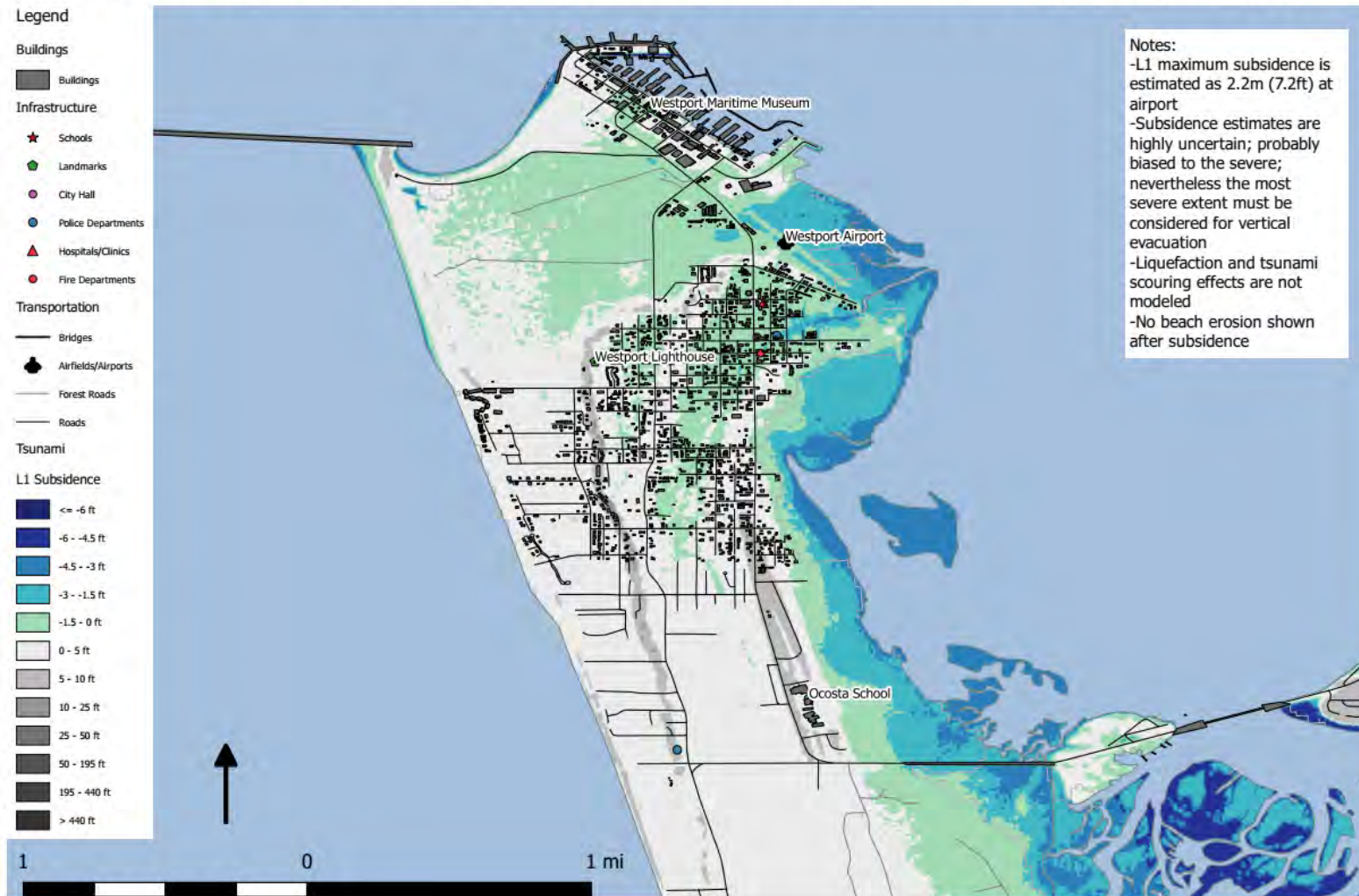
Figure 9. Westport Map Depicting Land Subsidence After an L1 Event

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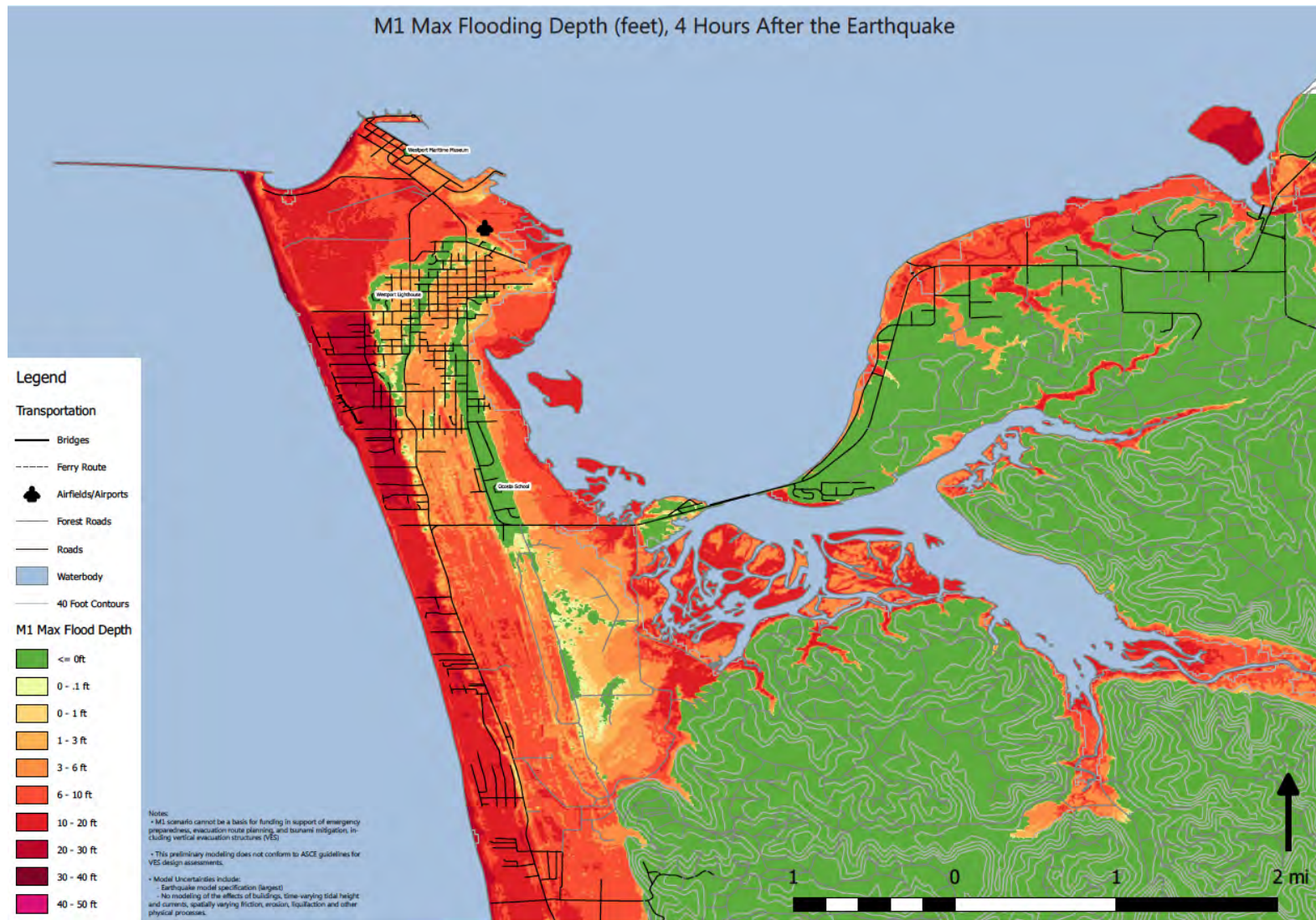
Figure 10. Regional Map Depicting Max Flooding Depth of M1 Event

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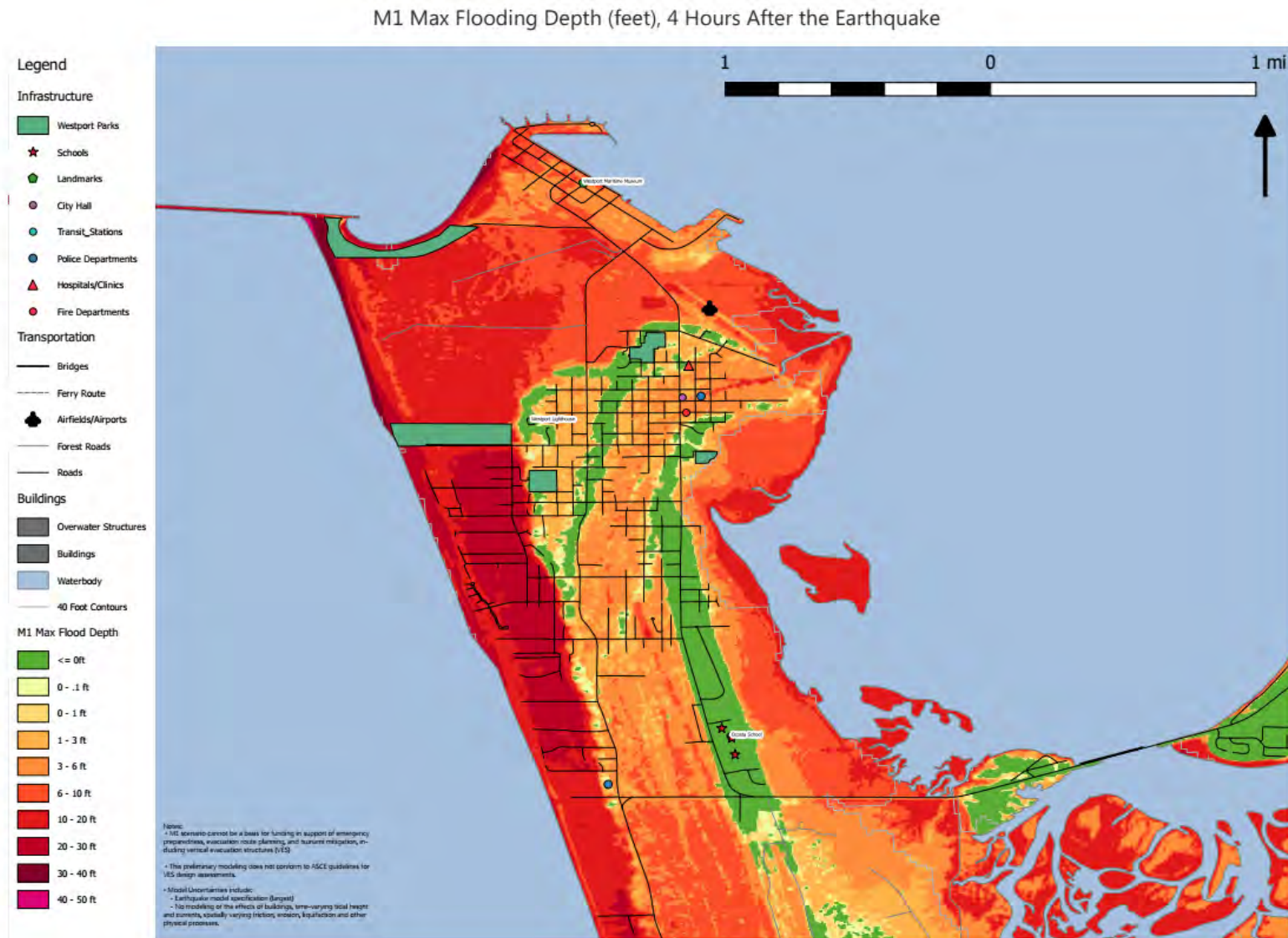
Figure 11. Westport Map Depicting Max Flooding Depth of an M1 Event

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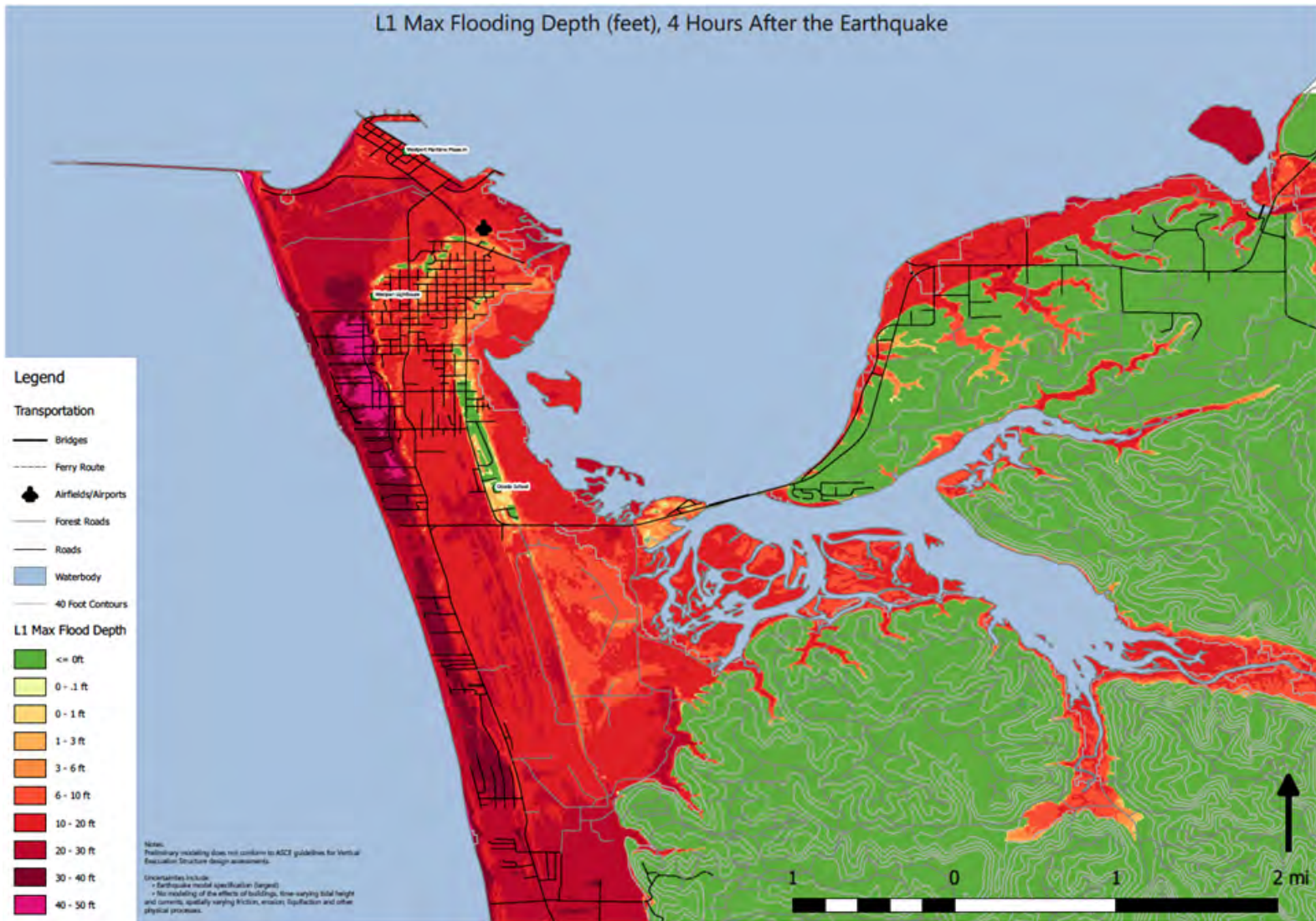
Figure 12. Regional Map Depicting Max Flooding Depth of an L1 Event
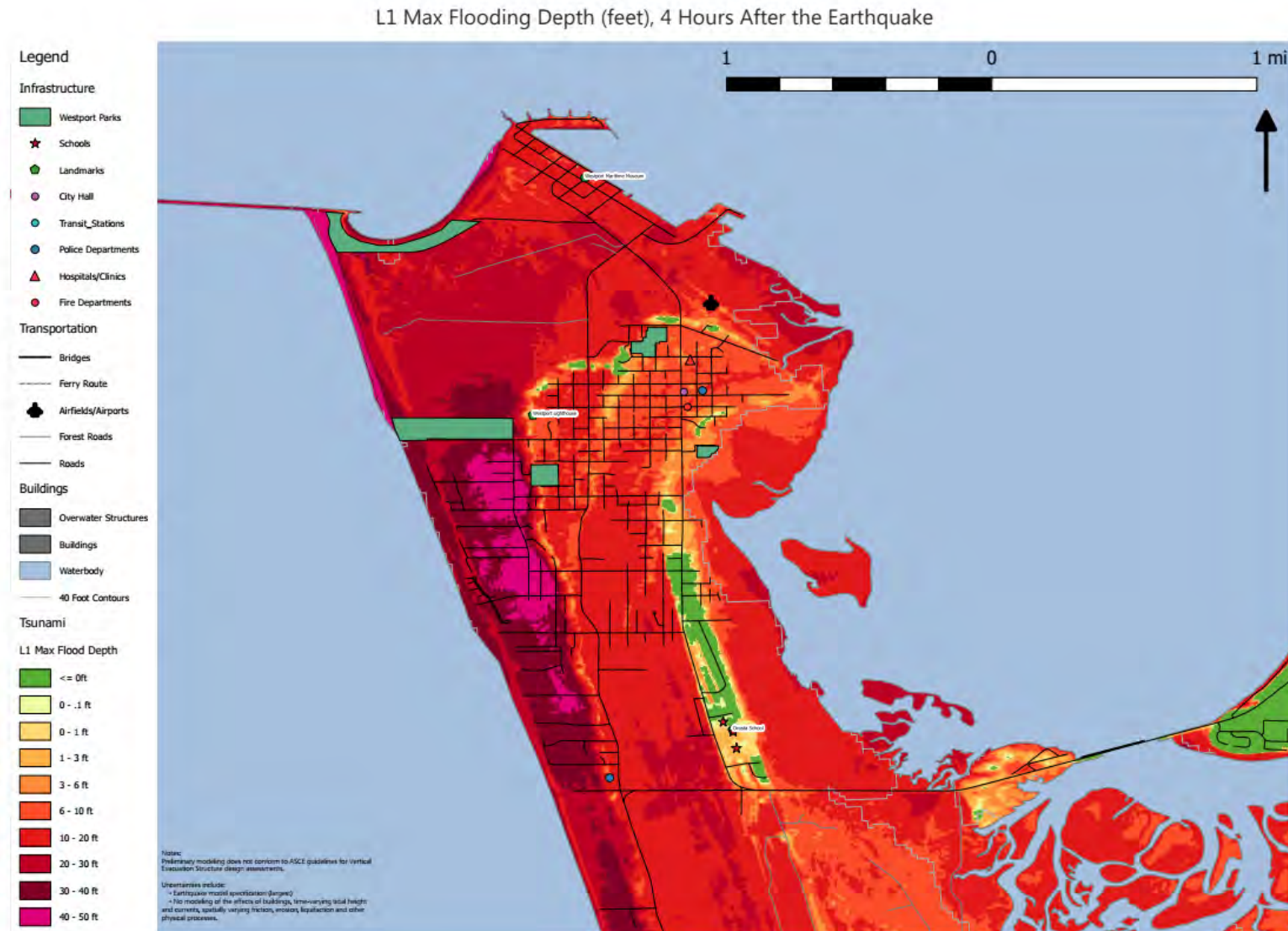
Figure 13. Westport Map Depicting Max Flooding Depth of an L1 Event

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To further prompt participants to think positively and creatively for the long term, the UW team also first presented some imagery of historic coastline change on the Westport peninsula, due to sediment deposit and erosion, dredging and filling, and construction of the Westhaven jetty (Figures 14-16), and asked participants to recall any memories they had of previous earthquakes and tsunamis. Participants were encouraged to consider how much change the community had already experienced over 150 years, how it had responded to that change as well as created much of it itself, and therefore how future changes could pro-actively achieve co-benefits of mitigation, as opposed to being just reactive to conditions outside of the community's control.
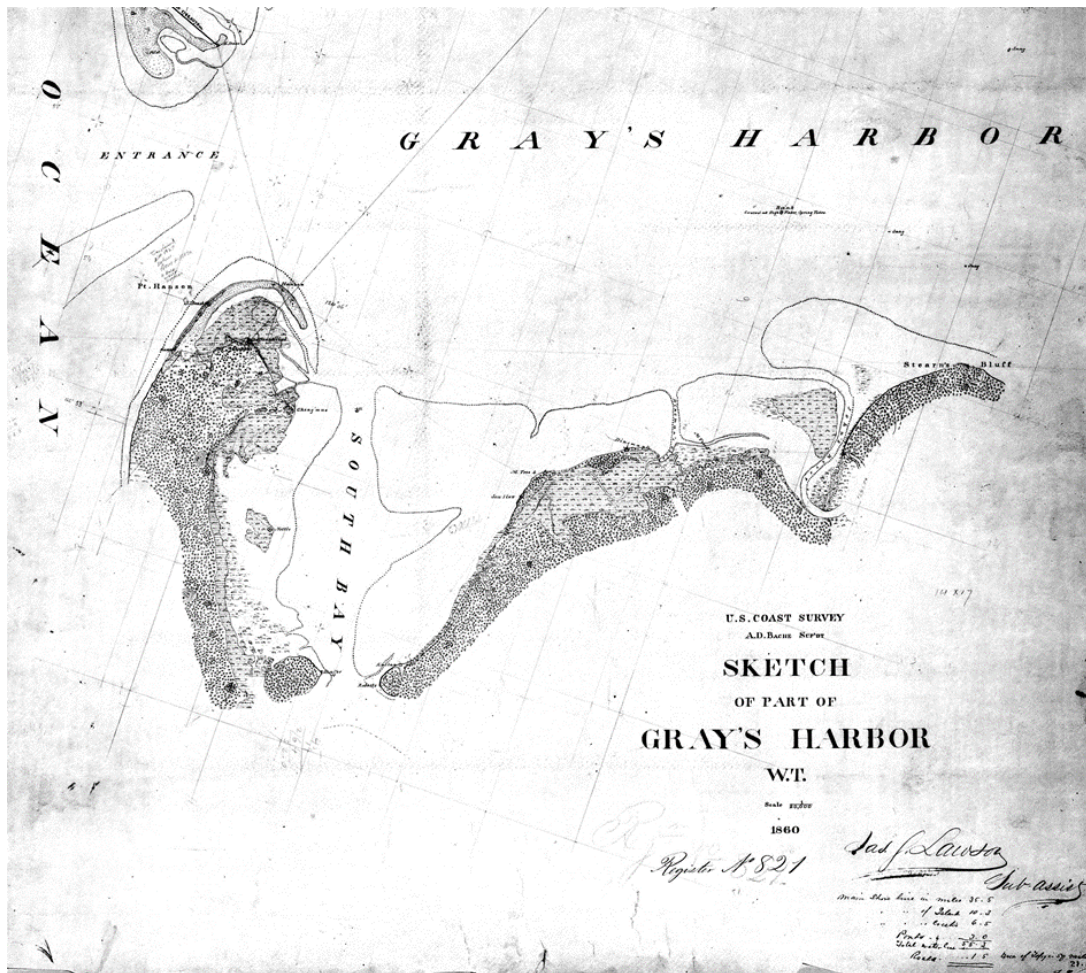
Figure 14. Imagery of Historic Coastline: 1860 Map of the Westport Peninsula and Grays Harbor. Map Source: NOAA Non-georeferenced NOAA Shoreline Survey Scans, https://nosimagery.noaa.gov/images/shoreline_surveys/survey_scans/T-821.jpg

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Figure 15. Imagery of Historic Coastline: 1910 Map of the Westport Peninsula and Grays Harbor. Map Source: NOAA Non-georeferenced NOAA Shoreline Survey Scans, https://nosimagery.noaa.gov/images/shoreline_surveys/survey_scans/T-3044.jpg

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Figure 16. Imagery of Historic Coastline: 1950 Map of the Westport Peninsula and Grays Harbor. Map source: : NOAA Non-georeferenced NOAA Shoreline Survey Scans

Some examples of common themes that emerged from discussions are described below; see *Sections 2 and 3* for more detail on discussions.

- **Transportation Infrastructure Improvements:** Participants frequently discussed their perception that Westport's key transportation infrastructure (e.g., highways, roads, bridges) may be vulnerable to hazards, there is a risk of "being cut off" in an event, and resilience needs to include infrastructure improvements, both for mobility and communication. Such improvements could bring the co-benefits of participation in rural broadband development and attraction of employment opportunities.

- **Increasing Preparedness:** Participants discussed the need to make sure other residents are aware of hazards and that all residents have a plan in place to respond to an event. They discussed increasing preparedness through outreach, as well as practical approaches like gathering supplies and establishing more evacuation/meeting sites where residents can go during/after an event. Co-benefits to such preparedness would be increased sociability among residents and greater "situational awareness" at an individual level.

- **Uncertain Response to Large/Rare Events:** Participants had difficulty envisioning adaptation to the "new normal" following a large (M1 or L1) type event, and what the city could do now to be resilience to the possibility of such an event. Some of the ideas in response to SLR, such as improvements to key bridges and highways leading to the peninsula, or restrictions on building in flood-prone areas, were noted as being useful also for mitigating impacts of an earthquake, tsunami, and land loss due to subsidence. A significant area of possible action included exploring

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the relocation of critical facilities and services facilities out of harm's way, to higher ground within the peninsula, and even outside Westport's city limits, which might bring opportunities for new investment and improved facilities. However, participants worried whether "Westport would still be Westport" if large parts of the community had to abandon the peninsula, either in anticipation of a major disaster, or in recovery from one.

2. Westport/South Beach Partners Coastal Resilience Workshop Documentation

This section documents the Friday, November 16, 2018 Partners Workshop, including an overview of the workshop and documentation of discussion sessions.

2.1. Partners Workshop Goal and Agenda

The Partners Workshop focused on the theme of making hazard mitigation more meaningful to the community and actionable in Westport. Overall workshop goals are described in the summary section above. The Partners workshop, however, as a gathering of local leaders and other experts in hazards mitigation and emergency planning, including members of the Westport/South Beach Tsunami Safety Committee who are currently leading the community's efforts to build more tsunami vertical evacuation structures, addressed information about tsunami inundation and flood depths that was not used in the Community Workshop.

The Partners Workshop included a combination of presentations, facilitated discussion/brainstorming exercises, and participatory mapping. Mapping exercises during the Partners Workshop were conducted using WeTable, a participatory geographic information system (GIS) platform that uses open-source QGIS software and a projector, allowing participants to digitize geographic information in real time using a calibrated pen and a tabletop map projection (Figure 17 17).

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Figure 17. Participants in the Partners Workshop use WeTable to Map Values and Assets

Participants sat at tables set up to discuss one of the three hazard scenarios (SLR, M1, L1, see Figure 18 18). The room was set up to allow some experts and observers to "float" but in fact nearly all participants joined one or another of the tables.

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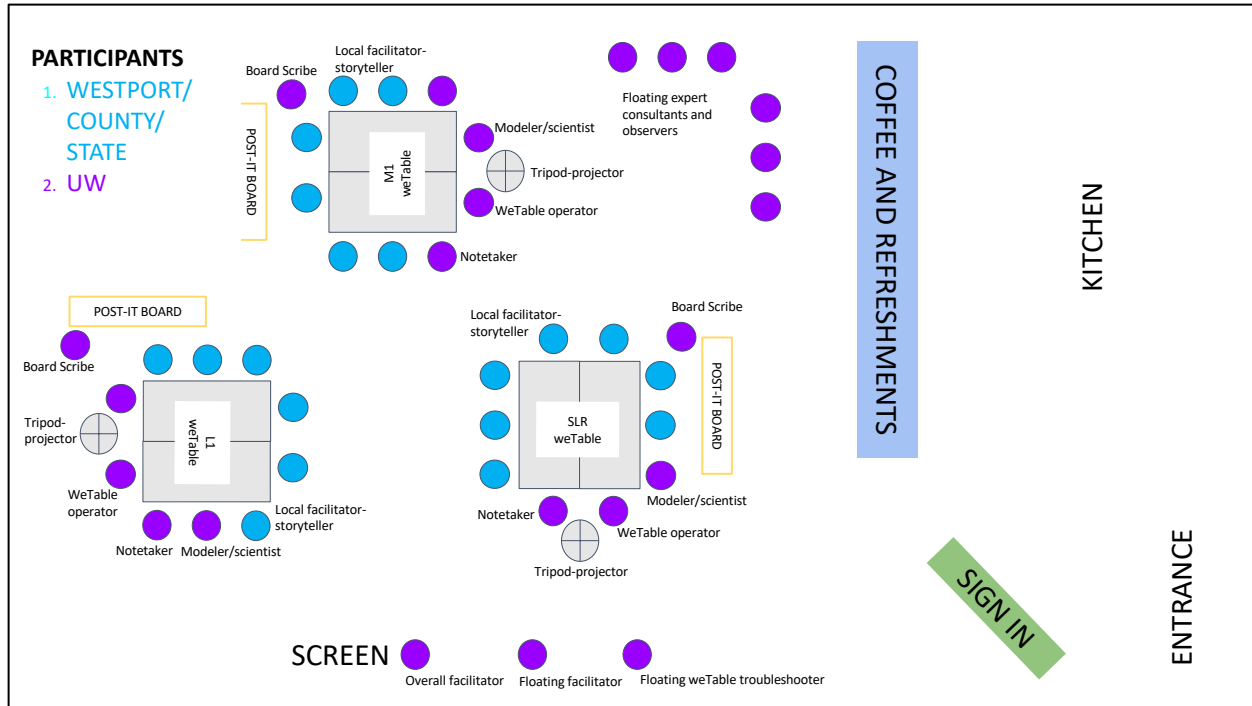
Figure 18. Partners Workshop Room Setup

Table 3 below includes the workshop agenda and approximate timing of the meeting. Sub-sections in this appendix are organized by scenario and roughly follow the agenda below.

Table 3. Partners Workshop Agenda

Approximate Timing	Agenda Item
2:30-3:00pm	Coffee and refreshments
3:00-3:10pm	Welcome and introductions
3:10-3:15pm	Overview of workshop goals and activities
3:15-3:45pm	Discussion Round 1: Values and asset mapping
3:45-4:25pm	Discussion Round 2: Scenarios of change and survival
4:25-4:45pm	Discussion Round 3: Strategies of adaptation to possible "new normals"
4:45-4:55pm	Report out: Storytelling
4:55-5:00pm	Next steps

2.2. Partners Workshop Participants

The Partners Workshop convened 24 individuals representing the city, county, and state agencies with expert knowledge regarding Westport and/or hazard mitigation planning in the region, as well as UW team members. Participants included representatives of the following organizations listed in Table 4 below.

Table 4. Participating Organizations

Organization Type	Represented Organizations
City of Westport/South Beach area	Department of Public Works, Police, Chamber of Commerce, South Beach Regional Fire Authority, Ocosta School, Tsunami

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Organization Type	Represented Organizations
	Safety Committee, Westport Property Development, Timberland Library, Westport-by-the-Sea condominiums
County Agencies	Grays Harbor County Department of Emergency Management,
State Agencies	Washington State Parks, Washington State Emergency Management Division
Other local stakeholders	Shoalwater Bay Tribe
UW Faculty and Students	Department of Urban Design & Planning, Dept. of Applied Mathematics, Dept. of Civil & Environmental Engineering, Dept. of Earth & Space Sciences, School of Forestry and Environmental Sciences, Pacific Northwest Seismic Network, US Geological Survey

2.3. Partners Workshop Discussion Documentation

As described in the *Summary of Workshop Approaches and Outcomes* section above, meeting participants first discussed values of Westport/South Beach. UW Facilitators prompted this discussion with the question: "What makes Westport/South Beach a great place to live, work and play?" In addition, facilitators provided lists universal quality-of-life values excerpted from the United Nations Millenium Ecosystem Assessment (e.g., shelter, food, etc.). Following the value-brainstorming exercise, facilitators asked participants to list community- and place-specific assets that support each value. Note-takers recorded the list of values and assets on poster paper. Figure 19 shows an example of the values-assets brainstorm. In addition to listing assets, participants marked the location of each asset on a projected map of the Westport peninsula; the geographic location of each asset was recorded using WeTable and saved to a map for each scenario group. The SLR, M1, and L1 subsections below include information from the values discussion and asset mapping exercise for each scenario.

After discussing values and assets, the UW team presented stories of coastal change, illustrating potential changes that Westport could face by presenting historical shoreline maps (Figures 14-16), maps of flooding depth and subsidence in an M1 earthquake and tsunami scenario, and maps of flooding depth and subsidence in an L1 earthquake and tsunami scenario. The UW team also presented information about earthquake
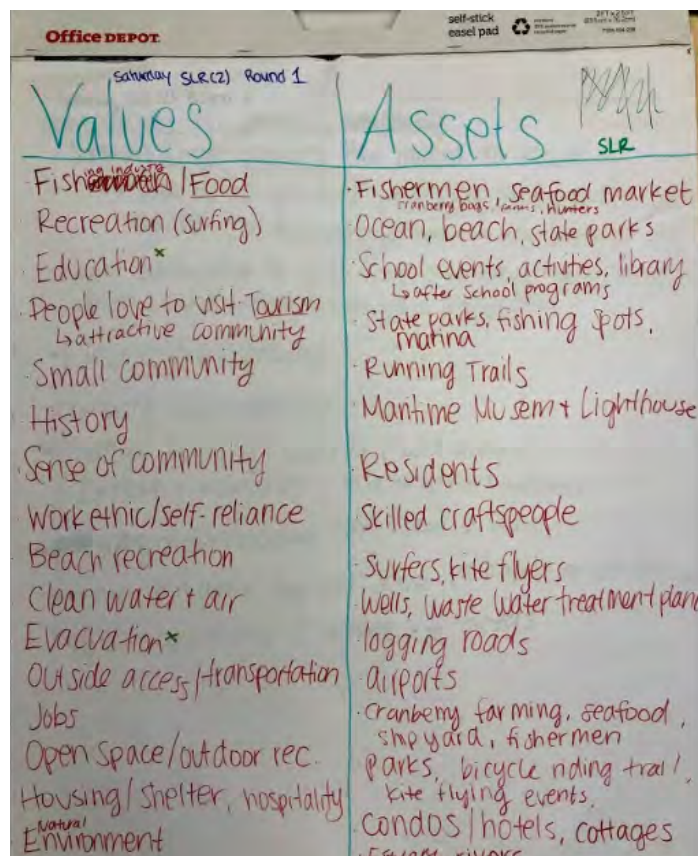
Figure 19. Example Values and Assets Brainstorm

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modeling uncertainty, liquefaction, and tsunami inundation areas and evacuation.

In addition to information on each scenario, the UW team asked respondents for memories of the 1964 Alaska Earthquake and tsunami. Participants recalled hearing news reports of the event, being afraid of a tsunami, and the evacuation process. They described how the whole Westport peninsula was evacuated to high ground where the school is now.

Following the presentation of the hazard scenarios, facilitators asked participants to identify assets that would be lost in an event and think about existing assets that could support community values in the place of lost assets. Finally, facilitators asked participants to imagine how the community could adapt to, prepare for, or take advantage of the "new normal" suggested by their scenarios, including brainstorming strategies that would help Westport/South Beach continue to support its values. The SLR, M1, and L1 subsections below also include information from these discussions.

2.3.1. Sea Level Rise (SLR) Scenario

The SLR discussion group identified and discussed the following values and assets included in Table 5. Figures 20 and 21 below show the assets that the SLR group mapped.

Table 5. Partners Workshop SLR Group Discussion of Values and Assets

Values	Assets
Outdoor recreational opportunities	Parks and beaches; ocean; Westport lighthouse; state parks, including the Grayland beach state park
Independence	None indicated
Education	School
Close-knit community	School
Strong family and friends ties	School
Vision and innovation	School
Access to fresh seafood	Ocean; Brady's Oysters, Westport Marina
Quality of life	Downtown, marina area, cranberry bogs
Natural beauty and history	lighthouse
Low crime rate	None indicated
Scientific opportunities	local clues to regional earthquakes/tsunamis (on the harbor/ shores/ intertidal zones); John's River
Tourism	None indicated
Health	None indicated
Good social relations	None indicated
Security	None indicated
Freedom of choice	None indicated
Other	Airport, highways, marina, police, fire department, homes

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Figure 20. Community Assets Identified by Friday SLR Group - Westport

Community Assets - Sea Level Rise
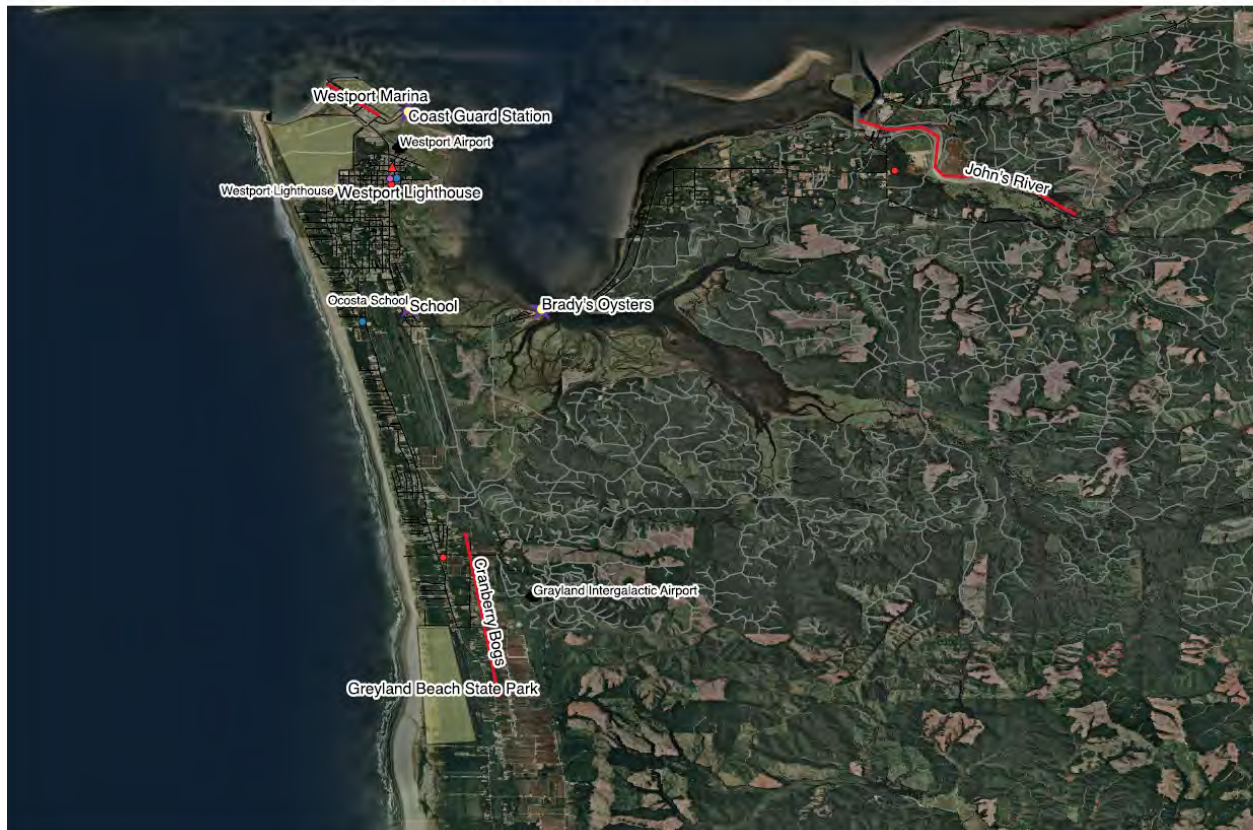
Figure 21. Community Assets Identified by Friday SLR Group - Regional

In addition to the values and assets listed above, the group discussed the following:

- Westport is an attractive destination for tourists; a lot of tourists visit the area and the outdoor recreation opportunities are a draw
- The area is rich in natural beauty and people statewide benefit from scientific evidence of past hazard events found in the Westport area
- Westport is a safe place without gangs or violence
- Downtown Westport is a business hub, most businesses are located there
- The cranberry bogs and related industry support values and family ties

After discussing values and assets and hearing the presentation about potential hazards, the group discussed vulnerabilities. Discussion focused on the themes listed below.

- **Transportation and public service infrastructure:** Participants identified the airport, highways (including to Aberdeen), police, and fire department as vulnerable to SLR. Participants discussed that access to the town will be compromised, including the highway to the south east, noting that even a bad El Nino year could cut off road access. They also noted that the airport and associated assets will be lost to SLR. The clinic is not vulnerable to SLR.
- **Marina/commercial district and businesses:** Participants observed that with 1 foot of SLR, the marina is not affected, but parts of the commercial district are. They noted that Brady's has high ground next to it.

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- **Residential areas:** Homes may be lost to SLR, but possibly not at only one foot of rise.
- **Other topics:** Participants expressed concern over replacing lost assets.

For the discussion of "new normal" and strategies to help support Westport's values, participants focused on the 2060 SLR scenario (1 foot; 11% probability). Discussion included the themes listed below.

- **Relocation:** Possible to buy out properties and move homes, though Taholah has been working on that for 20 years without much progress; need to move the airport
- **Infrastructure investments:** Need to address risk to the marina through a possible retrofit; can make periodic infrastructure investments with federal support; concern about safety of the bridge and need to plan a new bridge; bridge is outdated so there may be the possibility to gain political support for replacement; road could be rerouted through Ocosta; need for climate resilient building codes; need to reroute and elevate roads, including a possible levy system.
- **Political context:** Potential lack of political will to build something for 40 years from now; SLR in Westport may not be a top priority. City government is a strong asset for advocating for a new bridge or better road, because some decision-makers still deny SLR.
- **Other topics:** Assets overlap between sea level rise and subsidence, so strategies are relevant to both scenarios; Brady's oysters may be affected by SLR, but oyster beds could move further in. School will remain.

2.3.2. M1 "Like the Last Time (1700)" Earthquake and Tsunami Scenario

The M1 discussion group identified and discussed the following values and assets included in Table 6. Figures 22 and 23 below include the assets mapped by the M1 group.

Table 6. Partners Workshop M1 Group Discussion of Values and Assets

Values	Assets
Fishing industry; including a strong sense of belonging to the fishing industry	Ocean companies, including WA crab, ocean cold, Ocean Gold, Harn's, the docks and marina, the Tokeland marina, oyster processing facilities, the Westport shipyard, and the fishing fleet
Tourism industry, in the context of the tourism value being rooted in Westport being a unique place that people want to visit	Chamber of Commerce, small businesses
Education and school system are valued in this area, including successful athletic programs	Ocosta School, library, high school
Culture of community support and strong sense of community; one participant noted: *"Being not from the area, it's clear how much coastal communities have a strong sense of community. People stick together, fall and rise together, have strong bonds between neighbors."*	The community group called We Fish (a group of families that have helped to build community); Maritime museum, Marina, and port office; churches though they are sometimes not well attended; Stores and restaurants including the grocery store, the Hungry Whale and the Midtown Deli; community centers including the Westport Y, VFW and the Senior Center, the Grange Hall, the Rec Hall, and the Grayland Community Center; attractions like the observation tower

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Values	Assets
Access to parks, beaches, and nature	State Parks including Westhaven, Twin Harbor, Bottle Beach, Westport Light, and Grayland Beach; the Long Beach peninsula
Cranberry industry	None indicated
Self-reliance of residents	Access to hunting and fishing
Necessary material	Water infrastructure, including the north water tower and wastewater treatment plant, the south water tower; gas stations and stores; airports and rural runways
Health	One in-town doctor's office called the Beach Clinic that houses one doctor, one PA, one nurse practitioner; the main hospital is 30 minutes away in Aberdeen
Social relations	City Hall
Security	Fire department, some stations down south in Grayland; coast guard station; police department

Figure 22. Community Assets Identified by Friday M1 Group - Westport

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Community Assets - M1 Scenario
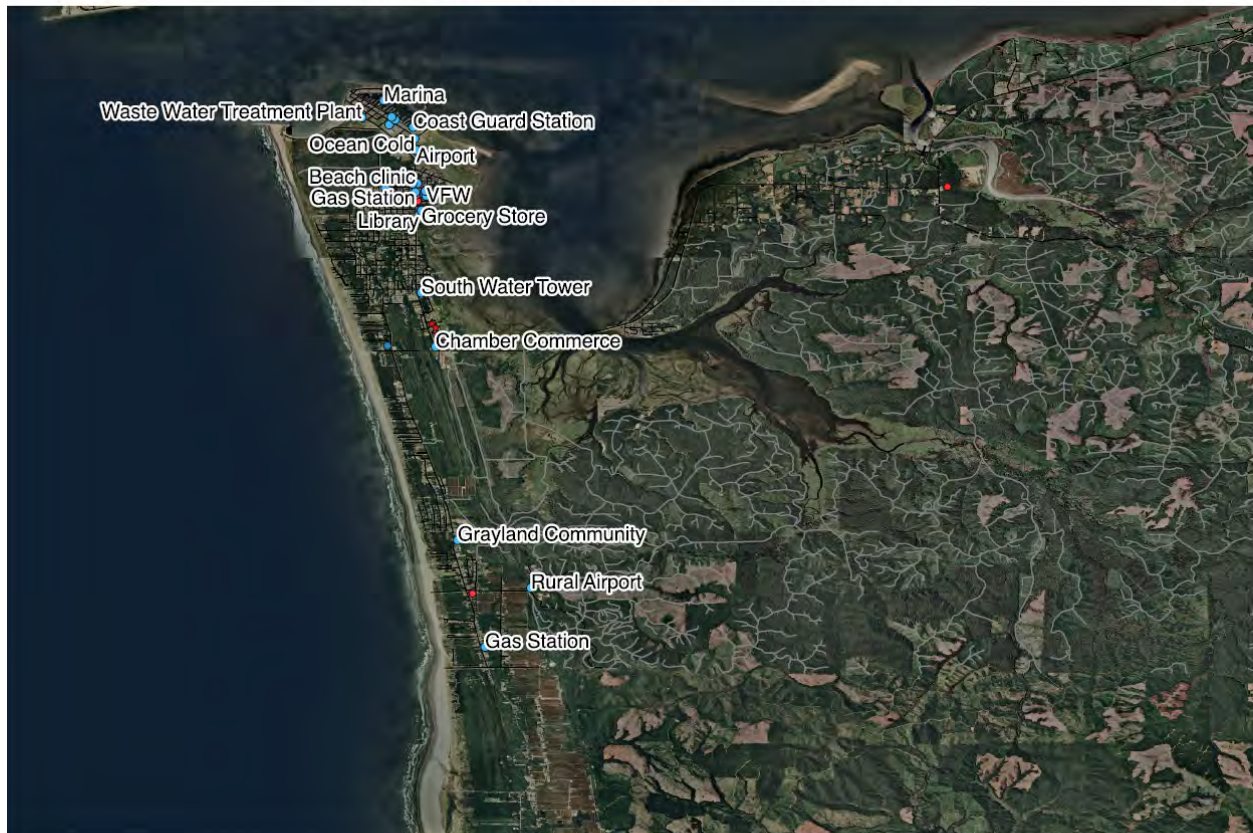
Figure 23. Community Assets Identified by Friday M1 Group - Regional

The M1 group discussed assets that are **vulnerable** to an M1 tsunami scenario, including:

- Assets that support the fishing industry, including seafood processing plants, docks and the marina, and the shipyard, boats
- The library could be affected, and the high school would be unlikely to survive; the old part of the elementary school would also be affected
- Assets that support Westport's sense of community would be affected, including the maritime museum and marina area, as well as grocery stores, restaurants, and community centers
- Assets that provide necessary resources, including gas, transportation infrastructure (e.g., roads and bridges), and water infrastructure (e.g., wastewater treatment)
- Routes to the vertical evacuation structure

The M1 group also discussed **adapting existing assets**, including:

- Chamber of commerce can be used to store and provide supplies
- Tsunami vertical evacuation structure at Ocosta School is a key asset for hazard response and is stocked with food, water, and some emergency supplies, but may need more.
- Preparing residents to have their own evacuation kits
- Using the water tower as another location for supplies
- Identify areas on high ground where the city can store supplies
- Areas that can provide opportunities to evacuate by air

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Discussion of adaptation to a "new normal" focused on the following:

- **Preparing and recovering from hazards:** need to develop evacuation routes, provide more vertical evacuation in accessible places, and gather more supplies (e.g., food, water, radios, and generators) to store in evacuation areas; need to work with state and county to ensure there is a plan for Westport in the event of a disaster
- **Improving transportation and infrastructure:** bridges may be destroyed by earthquakes; will need to re-establish the jetty after the event; need to identify logging roads that could be used for accessing Westport after an event; need to mitigate risks of tree fall and landslides on access roads; need more signage demarcating tsunami zones and evacuation routes
- **Education:** need to educate residents about risks; need to educate tourists who visit Marina district in the summer, other areas have brochures and outreach to hotels; need to make presentations to hotel and motel owners and do outreach to campers in the state park (county is working on these projects currently); need to provide information about how to respond to an earthquake and tsunami
- **Funding:** Need to identify sources of funding (e.g., FEMA) to help with preparedness
- **Multi-use evacuation structures:** could create vertical evacuation structures to be a tourist attraction, providing vertical evacuation and education; could also incorporate event center and multi-purpose area

2.3.3. L1 "Maximum Considered" Earthquake and Tsunami Scenario

The L1 discussion group identified and discussed the following values and assets included in Table 7. Figure 24 below show the assets mapped by the L1 group.

Table 7. Partners Workshop L1 Discussion Group of Values and Assets

Values	Assets
Going fishing (as a chance to meet people) and crabbing	beaches, ships, docks, jetty
Having a sense of community and strong social bonds	Residential areas and neighbors, State Parks and beaches, fishery, boats, marina; one participant noted: *"A lot of people know each other and when people do need help, everybody helps."*
Obtaining benefits from the local resources (natural and economic)	Fishery, oyster farms, beach, tourism industry, ship/boats industries, marina, businesses, restaurants, ship yards, fish processing; one participant noted: *"We do have everything here in Westport"*
Having unique waterfront businesses and rural character	Beaches, ships, fishery, marina and dock area, tourism (infrastructure), safe neighborhoods,
Having unique culture and strong cultural identity	Library is cultural, social, and educational asset; the school, along with its evacuation center is an important part of the community; include Tokeland and Shoalwater Bay Tribe as parts of the community; the 105 bridge; neighbors and community; marina and jetty; beaches and nature
Obtaining support from public service providers	Fire department; Chamber of Commerce because it provides us with natural, cultural, business/economic resources and policy; Police station for public safety; drugs store/pharmacy and clinic

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Community Assets - L1 Scenario

Figure 24. Community Assets Identified by L1 Group - Regional

Following presentation of the hazard scenarios, L1 group members discussed values and assets that are **vulnerable** to the L1 tsunami, including the themes described below.

- **Sense of community and social bonds:** residential areas will be affected, need to think about the structures that will exist after event
- **Cultural identity:** need to add life safety information to important cultural centers
- **Other values and assets:** key public services like the police department will be gone, school will be inundated; economy is strong but L1 will destroy many assets

The L1 group also discussed **adapting existing assets**, including:

- Planning for the worst, including that dunes and boats may not offer protection
- Strengthening access, including the need for access to relocate/move from the city and considering how and where to relocate if infrastructure is destroyed – could require "starting over"
- Need to ensure that people have insurance to help with rebuilding

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Finally, the L1 group discussed proactive strategies for adapting to a potential "new normal" post tsunami event, including the following themes.

- **Buying new land:** Participants noted that there might be a need to buy new land. Concerns included funding to purchase land after a devastating disaster, zoning considerations, potential lack of support from relying on the government, adjacent areas also being vulnerable, and possible FEMA funding
- **Moving infrastructure:** Participants brought up the possibility of moving the city's infrastructure to Tokeland, nothing that the Marina will be destroyed.
- **Relocating/moving to safer areas:** Participants noted needs for access to the south, need for a new bridge if destroyed, and need to somehow create cohesion if people need to be relocated; concern that without economy and resources, people will leave and not return; need for access to Aberdeen through timber lands.
- **Regaining the collective memory of recovery experiences**: need to draw from memory of rebuilding and survival after tsunami in 1964 for long-term planning and education

2.3.4. Workshop Summary: Telling the Story of Westport/South Beach

After the final group discussions of strategies for adapting to a "new normal," representatives from each group shared from their group discussions, using a storytelling format. This section includes the "stories" from each discussion group.

L1: "When we first started this project, I was very negative about L1, because what is left? But we've had good discussion about what can you do. Regarding long-term planning over the next 40-50 years, do you buy land and redevelop inland? This could be a good strategy. We will have a bit of land where we sit here, but the infrastructure will be gone. When we looked at values – sense of community, economy, shipbuilding, fishing, tourism, how community comes together and helps, rural character of Westport – why people chose to live here, because it's awesome to live here. In L1, everything goes away. How do we plan to keep these things in place? We talked about many things, but focused on how to make it over the bridge. The wastewater treatment and water tower are gone… do I go to city and ask for them to build a new one that won't be affected by L1? Can the city look for property outside the area and encourage people to move? But if we move out there then we lose these values that are tied to where Westport is and what it is. Long-term planning for L1 Cascadia scenario is very difficult. For example, if you don't have a school, people will not stay here… are we going to start building another school as a long-term strategy? Will be hard to convince community to do this, but would be a good idea because it will sustain our values. Do we move all the good stuff out of Westport? I don't know. Do we annex land for 15 miles? This is only the L1, there are bigger things that can happen. We encourage everyone to get flood insurance."

Comment: "There's another insurance product – parametric insurance, where the event itself triggers payout, not claims and damage assessment. If you are trying to get funding to rebuild quickly, parametric insurance is an option that could work. Flood insurance will cover individuals; but it is claims based. Parametric insurance can move more quickly. But it could be an insurance rabbit hole and you would need to consider if it's a good source of funds, but it can be mobilized more quickly. Say we have money to rebuild, are people going to choose to rebuild here? Is there going to be anywhere to rebuild here?"

M1: "We have a sliver of land, the elementary school, chamber, water tower, street of flags left after this event. We discussed how much storage and supplies we can cram into this area. How can we get more

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storage and supplies at the chamber and water tower? How can we prepare the rest of Westport that will be underwater? Vertical evacuation, evacuation routes… there are tourists who may just be here for the day and not know anything about tsunamis. Incorporating signage into tourist hot spots, campsites, hotels, observation tower, and preparing these locations. We talked about how to get out of here without a bridge, talked about logging roads, how we can get supplies and get people out of here."

SLR*: "Ours was pretty easy, ours assumes SLR of 1 ft. by 2060. As of now only 98% of world's scientists say this… we would lose virtually no homes, but would lose bridge, highway into Aberdeen, roads, marshlands. We would still have the school and housing. If we do have political will – our bridge is outdated, not built to current standards, no bike lane or pedestrian access. With political will, we could get the bridge redone. We have already had an instance where we had to reroute a road down south. Wouldn't be a hard sell to reroute through the Ocosta subdivision, which is high ground. We aren't worried [about our scenario]."*

3. Westport/South Beach Community Coastal Resilience Workshop Documentation

This section provides documentation of the Saturday, November 17, 2018 Community Workshop, including an overview of the workshop and documentation of discussion sessions.

3.1. Community Workshop Goal and Agenda

Building on the Partners Workshop held the previous day, the Community Workshop sought to more broadly engage community members from Westport and the wider South Beach area in Westport's hazard mitigation and long-term planning process. The workshop was designed to learn about community values, priorities, and gather creative suggestions at the intersection of hazard mitigation and long-term planning. The overarching Community Workshop goal was the same as the Partners Workshop: to make hazard mitigation more meaningful to the community and actionable in Westport.

Like the Partners Workshop, the Community Workshop included a combination of presentations, facilitated discussion/brainstorming exercises, and participatory mapping. Mapping exercises were conducted by asking attendees to mark values and assets on large paper maps of the Westport area depicting land subsidence and inundation for each scenario, rather than using WeTable. Participants sat at tables corresponding with each hazard scenario (SLR, M1, L1, Figure 25). To accommodate the larger and more diverse group of participants, four tables were set up, with two of them discussing SLR, and one of these staffed with local interpreters for Spanish speakers.

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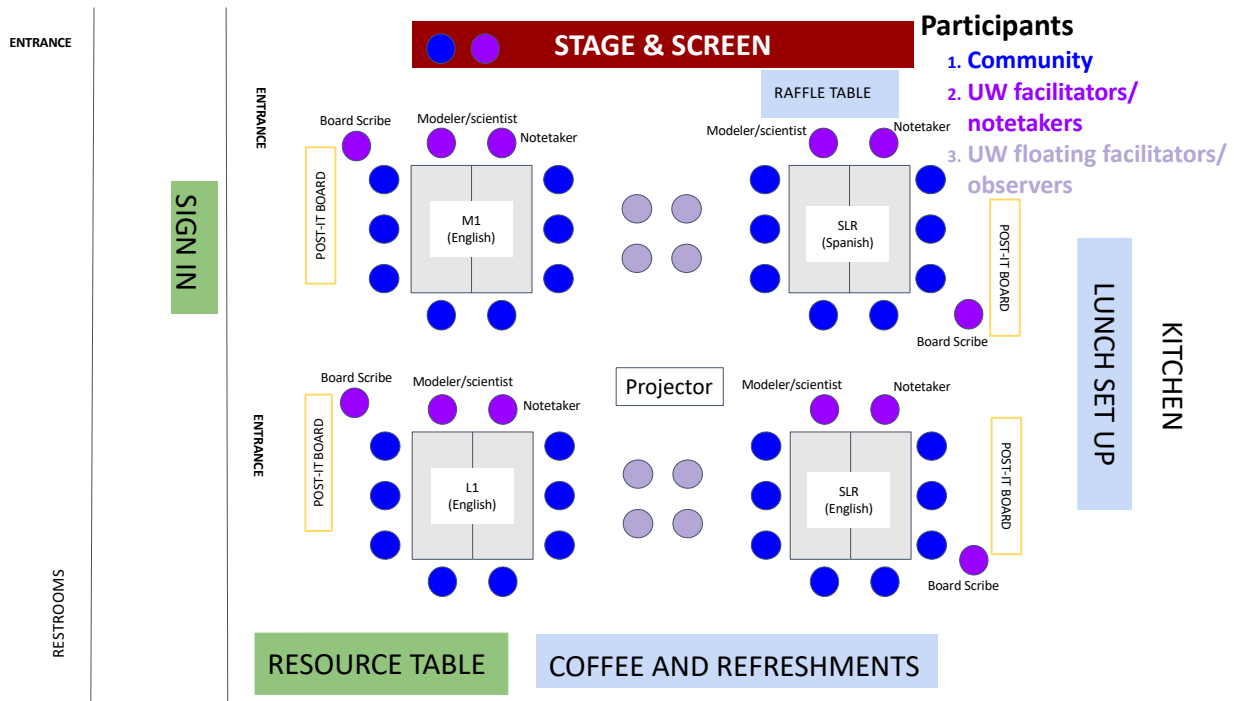
Figure 25. Community Workshop Room Setup

Error! Not a valid bookmark self-reference. includes the workshop agenda and approximate timing of the meeting; sub-sections in this appendix are organized by scenario and following the agenda below.

Table 8. Community Workshop Agenda

Approximate Timing	Agenda Item
9:30-10:00am	Coffee and refreshments
10:00-10:05am	Welcome and introductions
10:05-10:10am	Emergency safety protocols and raffles
10:10-10:20am	Purpose of the workshop and agenda
10:20-11:45am	Round 1: Values and asset mapping
11:45am-12:15pm	Social capital video, lunch break, and raffle
12:15-12:45pm	Round 2: Supporting values and strengthening assets
12:45-1:05pm	Stories of coastal change and survival
1:05-1:30pm	Round 3: Planning for a "New Normal"
1:30-1:50pm	Storytelling
1:50-2:00pm	Next steps
2:00-2:30pm	Vertical evacuation site tour

3.2. Community Workshop Participants

The community workshop was open to all residents and community members of Westport/South Beach. 30 Participants attended the workshop representing Westport, South Beach, Ocean Shores, and the surrounding area. Some participants attended both the Friday and Saturday workshops, including staff

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from City of Westport Public Works, Chamber of Commerce, Tsunami Safety Committee, Westport Property Development, Ocosta School District, Grays Harbor County Commission and Emergency Management, WA State Emergency Management Division, and residents of more distant communities in the County, such as Montesano and Ocean Shores. Four UW tsunami scientists attended both workshops, as did all the UW urban design and planning faculty and student facilitators and notetakers.

3.3. Community Workshop Discussion Documentation

The Community Workshop was structured similarly to the Partners Workshop, with some differences in the discussion themes and approaches. In general, there was a greater focus on identifying values and assets, and on adapting to "new normals," rather than on vulnerability to the impacts of tsunami inundation immediately following an earthquake. With the more diverse, and less technically expert group of participants, the Community Workshop replaced discussion of those vulnerabilities with a Round Two discussion on everyday quality of life needs ("Supporting Values and Strengthening Assets"). There was also more of an emphasis on education about preparedness and reminders of the work the community had already done to plan for tsunami vertical evacuation.

As in the Partners Workshop, participants started with a Round One discussion to brainstorm values and assets with someone else at their table and recording ideas on a post-it note, responding to the prompt regarding what they appreciate about Westport. After the post-it notes brainstorm activity, each table collectively built a list of values and assets on poster paper. Participants then used pens and large paper base maps of Westport and the surrounding area to locate assets (Figures 26 and 27), though in some cases, the . Finally, the Round ended with a "storytelling" report-out to the whole room, defining Westport in terms of its values and assets, related in Section 3.3.4 below.

Figure 26. Base Map of Westport Prepared for the Workshop

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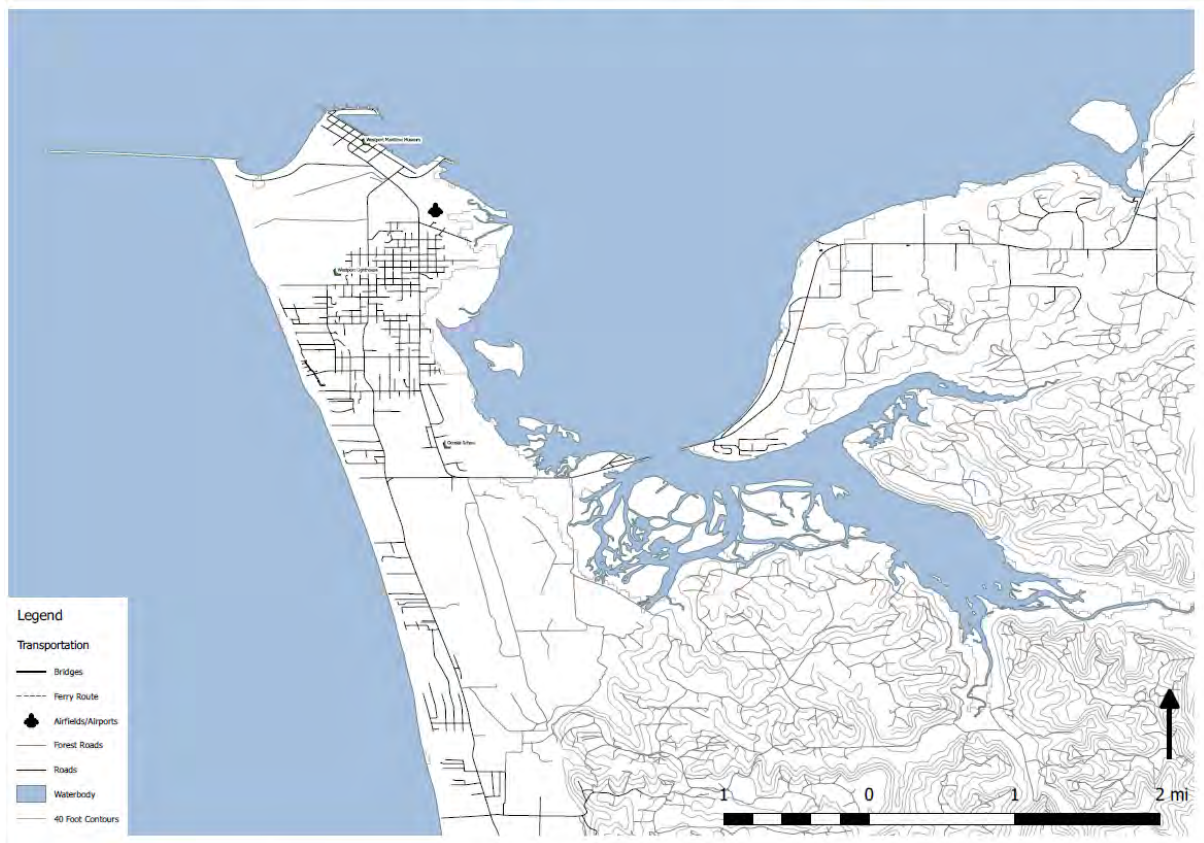
Figure 27. Base Map of the Peninsula Prepared for the Workshop

After the values and assets brainstorm, facilitators shared a video about social capital[5] and a brief presentation on emergency preparedness.[6] The Round Two discussion asked participants to review their list of values and assets, identify any values that are not adequately supported by existing assets, and brainstorm ways to strengthen assets to better support values.

The UW team then presented information about hazards, as "Stories of Coastal Change and Survival." This session included some very basic science on SLR, M1, and L1 hazards. Rather than show the simulations of M1 and L1 tsunami flooding depth used in the Partners Workshop, this session of the Community Workshop reviewed the State Department of Natural Resources' latest tsunami inundation maps (based on an L1 scenario) and reviewed Westport's prior work beginning with Project Safe Haven up through the construction of the new Ocosta Elementary School evacuation structure, and the role of this facility in hazard mitigation and life safety.[7]

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[5] Social capital video can be found here: https://www.fema.gov/preptalks/aldrich.

[6] Emergency preparedness presentation included the following FEMA videos on first aid response: Why You Need to Stop Bleeding Right Away, https://www.youtube.com/watch?v=z331Zcmropc; How you stop bleeding, https://www.youtube.com/watch?v=e1nR5stSZn0; You are part of the team, https://www.youtube.com/watch?v=i8Wc5VwksPU

[7] *Project Safe Haven: Tsunami Vertical Evacuation on the Washington Coast; Grays Harbor County*, 2011, report available at https://mil.wa.gov/uploads/pdf/emergency-management/haz_safehavenreport_graysharbor.pdf. Paula Ackerlund, who as Superintendent of Schools at the time led the effort to rebuild the school, gave a brief presentation of the school's features.

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As in the Partners Workshop, this session of the Community Workshop also presented images of historic coastal change, shown in Figures 14-16, and the UW team asked respondents for memories of the 1964 Alaska Earthquake and tsunami. Participants recalled their memories of the ground shaking and being afraid, including being woken up from sleep by the shaking. One participant reflected on how that experience made her more aware of the forces beyond our control, and that she is grateful for the opportunity to discuss preparedness.

For the final Round Three discussion, facilitators asked participants to imagine how the community could adapt to, prepare for, or take advantage of the "new normal" suggested by each scenario, including brainstorming strategies that would help Westport/South Beach continue to support its values, and even address some of the everyday needs identified in Round Two. The SLR, M1, and L1 subsections below include details from these discussions.

3.3.1. Sea Level Rise Scenario

The two SLR discussion groups identified and discussed the following values and assets included in Table 9. Figures 28 to 31 below show the assets that the SLR group mapped.

Table 9. Community Workshop SLR Discussion of Values and Assets

Values	Assets
Access to fresh food	Fishermen, seafood market, hunters, clam digging is a draw for visitors
Recreation opportunities and access to nature and open space	Surfing, ocean, beach access, roads/trails suitable for running, biking trail, city park
Quality educational opportunities	School, including events and activities, library, Ocosta School building
Desirable location that people enjoy visiting	Tourism opportunities, including state park and fishing opportunities
Small, quiet town	Small population
Rich maritime history	Museum, lighthouse
Sense of community and community values	Residents, strong work ethic, self-reliance, skilled craftspeople
Clean air and water	Wastewater treatment plan, wells
Access to the wider area	Airport, logging roads that could be used for evacuation
Employment opportunities	Cranberry bogs/industry, jobs provided by the shipyard, seafood industry
Availability of goods and services in Westport	Hospitality and accommodations, pharmacy (which sells some groceries), grocery store, good restaurants that draw visitors from the wider area (but may be closed during the week)

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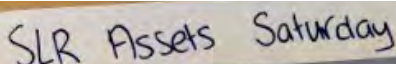
Figure 28. Community Assets Identified by Saturday SLR Group 1 - Region
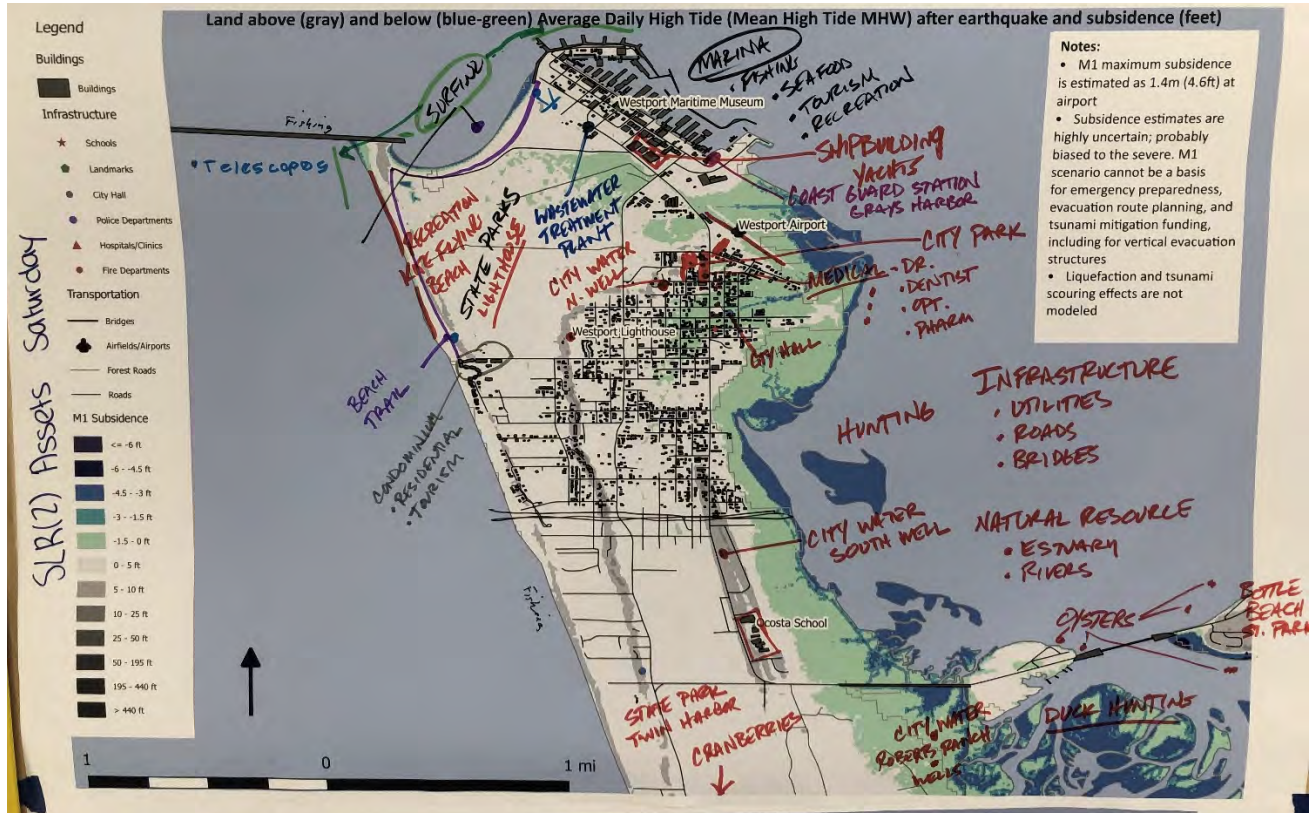
Figure 29. Community Assets Identified by Saturday SLR Group 1 - Westport

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Figure 30. Community Assets Identified by Saturday SLR Group 2 – Region

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Figure 31. Community Assets Identified by Saturday SLR Group 2 - Westport

In addition to the values and assets listed in Table 10, participants discussed the following during the values and assets brainstorming session:

- Westport is a place that has many assets – but it can be challenging year-round when restaurants and shops are closed in the winter
- The community has an "underdog spirit" that helps people band together; there is a sense of needing to face challenges and be able to be self-reliant (e.g., repair boats, cars, houses)
- While there are employment opportunities and industries that are valued, many people do not work
- There may be new recreation assets – such as potential campgrounds that the state park is developing

After discussing values and assets and hearing the presentation about social resilience, the group reviewed their list of values and assets, identified those that are not adequately supported, and brainstormed ways to better support these elements. Table 10 includes values and assets that participants identified as vulnerable, and opportunities for supporting these values and assets.

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Table 10. Community Workshop SLR Discussion of Vulnerable Values and Opportunities for Strengthening

Vulnerable Values and Assets	Vulnerabilities and Opportunities for Strengthening
Education and preparedness	• Many tourists will not know what to do in an earthquake or tsunami, need signage and meetings related to hazard preparedness, potentially through hotels and restaurants. • There may be a mentality that if people can make it to a facility that has supplies after an event, they will be taken care of. Need to promote individual preparedness so that people have supplies and are more self-sufficient.
Community involvement	Neighbor groups can enhance/provide community support; breaking down the community into smaller groups can help
Housing and lodging	Shortage of affordable housing needs to be addressed
Infrastructure	• Retrofitting bridges is needed now as a preparedness step, other improvements needed though infrastructure is generally pretty good. • Currently building a new water facility on higher ground that could hopefully withstand an M1 event
Access to wider region	Have logging roads that can be used for access if bridges are compromised, but there may be gates; need to work on gaining access, such as through conversations with forestry logging industry
Health/medical facilities	Have medical facilities in town, but could consider moving facilities and/or supplies to high ground
Services and amenities	Grocery stores close very early, could need to be addressed

Other topics discussed included:

- Response and planning are limited to within the City of Westport; people who live to the south will need to rely on the county; could consider someday annexing southern area where school is located
- It will be important to work with the county on expanding vertical evacuation; city needs more than one vertical evacuation location
- Need to coordinate with the county on mitigation

After the presentations of potential hazard scenarios and information about Westport's vertical evacuation structure, participants discussed how the community could adapt to, prepare for, or take advantage of the "new normal." The Saturday SLR group focused on the 2080 SLR scenario that has a 55% probability of occurring. Discussion included the following:

- Beach erosion needs to be incorporated into planning; SLR and erosion become more critical with storms, and storm surge will flood areas in the marina. Dealing with erosion can be a political issue – there may be a need to add more sand, but this is not permitted by the Department of Ecology.
- 100 years can go by pretty fast, meaning that SLR scenarios may be reality sooner that it seems. However, there is difficulty addressing SLR because of bureaucracy issues with the Army Corps of Engineers and general political environment where some politicians don't believe in global warming. There is a need to start planning today to address future SLR risk, but projections may change in the future.

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- Given that flooding will be significant, there may be a need to pass laws restricting new development in wetland areas, but there could be pushback and blaming of the city if restrictive new laws are passed. However, there is a need for new codes for flood-prone areas; some cities adopt international building codes, because usually FEMA decides the codes. Most of Westport is not in floodplain based on FEMA assessments, which could lead to political problems addressing flood risk. Flood-related regulations may mean that it will cost more to build homes and/or obtain insurance, which will have opposition.
- High priority risks include potential flooding of the highway, which would need to be moved, and the fact that saltwater will kill valuable cranberry bogs.

3.3.2. M1 "Like the Last Time (1700)" Earthquake and Tsunami Scenario

The M1 discussion group identified and discussed the following values and assets included in Table 11. Figures 32 and 33 below shows the assets that the group mapped.

Table 11. Community Workshop M1 Discussion of Values and Assets

Values	Assets
Local industries and employment opportunities (e.g., maritime industry, cranberry industry, etc.)	• Marina and seafood processing plants drive local revenue. The Westport shipyard, Washington Crab Producers, and Ocean Gold provide a ton of jobs and support the seafood industry • Ocean spray provides jobs and is located further south. The Markham factory is where they make craisins. The berries for juice and fresh are shipped to Henderson Nevada.
Supportive community and strong networks	Community organizations and support networks, including: • Christian outreach group, which provides free food, monetary resources to support those in need; is a cooperative of all the churches in the area. Located at the corner of Veterans Forest in the Living Hope Church building. • The Giving Freely Westport Facebook Group gives surplus stuff to neighbors, is a group of about 25 people, is also a way for neighbors to meet • Catholic Church • Food banks, where people donate and cook Thanksgiving for people in need
Supportive community and neighbors	Elementary school and high schoolers help each other, neighbors know each other
Access to fresh food and seafood	Community garden, clamming along the beach south of the jetty
Good services and security, government institutions	• Westport has the Coast guard, City Hall, fire department and ambulance and an engaged police department who actually checks in on people and businesses; people like the Police Chief are an asset • Citizen academy, crime watch • Emergency services/EMS
Historical character and livability of a small town	• Small town is comfortable and livable • Lighthouse, museum, etc.

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Values	Assets
Good access to nature and ocean	Beaches, lighthouse trail, walkable for the community, big state park
Mom n' pop character of local businesses	Local restaurants and stores
Clean water	Water treatment plant
Access to wildlife and shellfish	Clamming along the beach south of the justice
Access to the outdoors, nature, ocean and healthy lifestyles	• Campgrounds, twin harbors state park, national forest, lighthouse hiking trail that used to be a boardwalk • Open spaces, nature, some of the best air in the entire state • Temperate weather • Beaches
Sense of opportunity and affordability	• Affordable real estate and the sense that people can open businesses if they want to
Places that are attractive to tourists	Beaches, State Parks, etc.
Access to good education	Small schools

Figure 32. Community Assets Identified by Saturday M1 Group – Westport

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Figure 33. Community Assets Identified by Saturday M1 Group – Region

Table 12 includes values and assets that participants in the M1 discussion identified as vulnerable, and opportunities for strengthening values/assets.

Table 12. Community Workshop M1 Discussion of Vulnerable Values and Opportunities for Strengthening

Vulnerable Values/Assets	Vulnerabilities and Opportunities for Strengthening
Access to the outdoors; clean beaches	Need beach cleanups; beach is often a mess after the tourists come here
Fishing industry	• Marina is vulnerable to SLR and tsunami, would need to be reinforced • Vulnerable to regulatory impacts; people say that the town used to be twice as big as it is now, but have been hit hard by fishing regulations
Benefits from tourism economy	Need education for tourists and visitors about hazards
Supportive community organizations	• Need emergency supplies at the senior center and schools (ex: bottled water, blankets, cots) • Need food delivery for seniors because food is costly here • Need senior and accessibility transit
Infrastructure provisioning	• Water infrastructure needs strengthening • Need to improve drainage on the peninsula (e.g., state park has ponds that fill)

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	• Need to improve accessibility throughout the community. Currently, it's hard for seniors and disabled people to get around. Need bike lanes and crosswalks with lights.
Employment opportunities	• Need more connectivity to the wider region (e.g., Ocean Shores); Ferry to Ocean Shores is in progress; would need a supporting bus that runs on the weekends to make this effective • Need more housing and employment synergy to wider region, need more access to Ocean Shores for activities, particularly for young people
Historic buildings	Need earthquake triggered access doors to the lighthouse
Character of having local mom n' pop businesses	There are many for-sale signs, which gives the impression that there the town is dying; need to work on keeping businesses here.
Strong community	Need a place for young people to gather, like a skating rink to keep the kids busy
Emergency services and preparedness	• Need a response plan and triage approach • AEDs & medical supplies needed across locations • Need first aid and medical training, especially for seniors

Participants next discussed options for adapting to and preparing for the new normal, focusing on new strategies to support community values and assets and mitigation needs. Discussion included the following:

- **Transportation:** There is a need to address vulnerability of the bridge and options for getting in and out of the peninsula; this would be a first priority in recovering from an M1 event. There is discussion of adding a ferry system. The airport is critical for getting supplies in and out and could be moved to the other side of the peninsula to mitigate flood risk; if not possible, Westport could access the private airport.
- **Relocation:** If the M1 event were to occur, Westport could rebuild in a new location on high ground. Participants suggested rebuilding up on the hill in Grayland, and then where they would safe in the event of an M1 event happening again – the town could be "Grayport" or "Westland." Hills and high ground could provide a long-term option after a tsunami. However, participants expressed concern about abandoning Westport following an M1, because based on the subsidence map, they think the city could recover to some extent in its current location.
- **Hazard recovery assets:** The safe haven structure would probably still be standing, and the Coast Guard and military would help respond to an M1. There is a need to determine how these entities would access Westport (e.g., via a logging road because there would be no bridge).
- **Risk of isolation:** Westport is vulnerable to isolation; creative solutions like logging roads, a ferry system where the coast guard could land ships and access people at a dock, seaplanes/a water airport could all mitigate this risk.
- **Engineering solutions:** Participants discussed the possibility of raising sections of Westport using dredged material to elevate lowlands before an event creates a need to rebuild or requiring that new construction is built higher than the present level. Lessons could be learned from Alaska towns with regards to this solution. Other ideas included building levees to protect the marina and bringing in fill to pre-empt flooding hazards. Participants liked the idea of reinforcing the bridge and other areas as appropriate now to pre-empt an event. Some cited examples that the Army Corps is working on protecting other areas of the coast. However, some participants noted that these solutions can cause adverse impacts (e.g., dredging can cause loss of the dunes as is

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happening in Washaway Beach) and could be damaged by a tsunami wave. Furthermore, land gets built back up naturally after a tsunami event.

- **Rebuilding:** Participants noted that rebuilding could be difficult for the elderly and the rebuilding process might require that Westport change its appearance. Participants suggested that the city might need more high-rise buildings because there will be less land available for housing; older prefab homes will be gone, and the city will need housing to be rebuilt.
- **Local economy:** Some aspects will remain unchanged after an event. For example, Westport will still be primarily a fishing town, and will still need business and industries to support the fishing industry, which will recover. Participants discussed recovering Westport's economy after a tsunami, including that the city is unique now because of local businesses and a lack of franchising. Some participants emphasized that they would want to preserve local character; however, some noted that they may need to court franchises and investment to generate rebuilding efforts. They noted that Washington is growing and there could be pressure for expansion here. They agreed that the oyster growing business wouldn't be affected long-term, though the oyster beds would have to be re-established and/or re-zoned. The cranberry industry would be vulnerable because cranberries grow in peat bogs and don't like salt. Commercial fishing would still be available, but there may be a need to replace the Marina.

3.3.3. L1 "Maximum Considered" Earthquake and Tsunami Scenario

The L1 discussion group identified and discussed the following values and assets included in Table 13 below. Figures 34 and 35 below shows the assets that the group mapped. The discussions of values and assets in the L1 group were influenced by the magnitude of the event. Some participants had difficulty identifying values and assets in a pre-disaster context, and others focused on the magnitude of the potential wave and emergency response (e.g., fire department, coast guard, etc.).

Table 13. Community Workshop L1 Discussion of Values and Assets

Values	Assets
Strong community bond	Schools
Having skilled, hardworking, and open-minded residents	Human resources/people in the city: mechanics, seafood processing workers, fishermen; independent and resourceful individuals with skills
Having access to fresh foods	Forests, oyster farms, elks hunters, Marina docks
Having natural resources for recreations: hiking, walking on the beach and surfing	Camping grounds, blue sky, long beach walks, playgrounds, two surfing spots in the city, surf shops and surfing community, beach trails
Economy opportunity	Vacant lots in the business center, possibility of farming, possible new employment opportunities at the State Park, logging, fishing industry, cranberry industry
Safety and security provided by the city	Airport, Coast Guard, water towers (public and private owned), no traffic
Resiliency provided by the city	fire department, communication system, broadband technology

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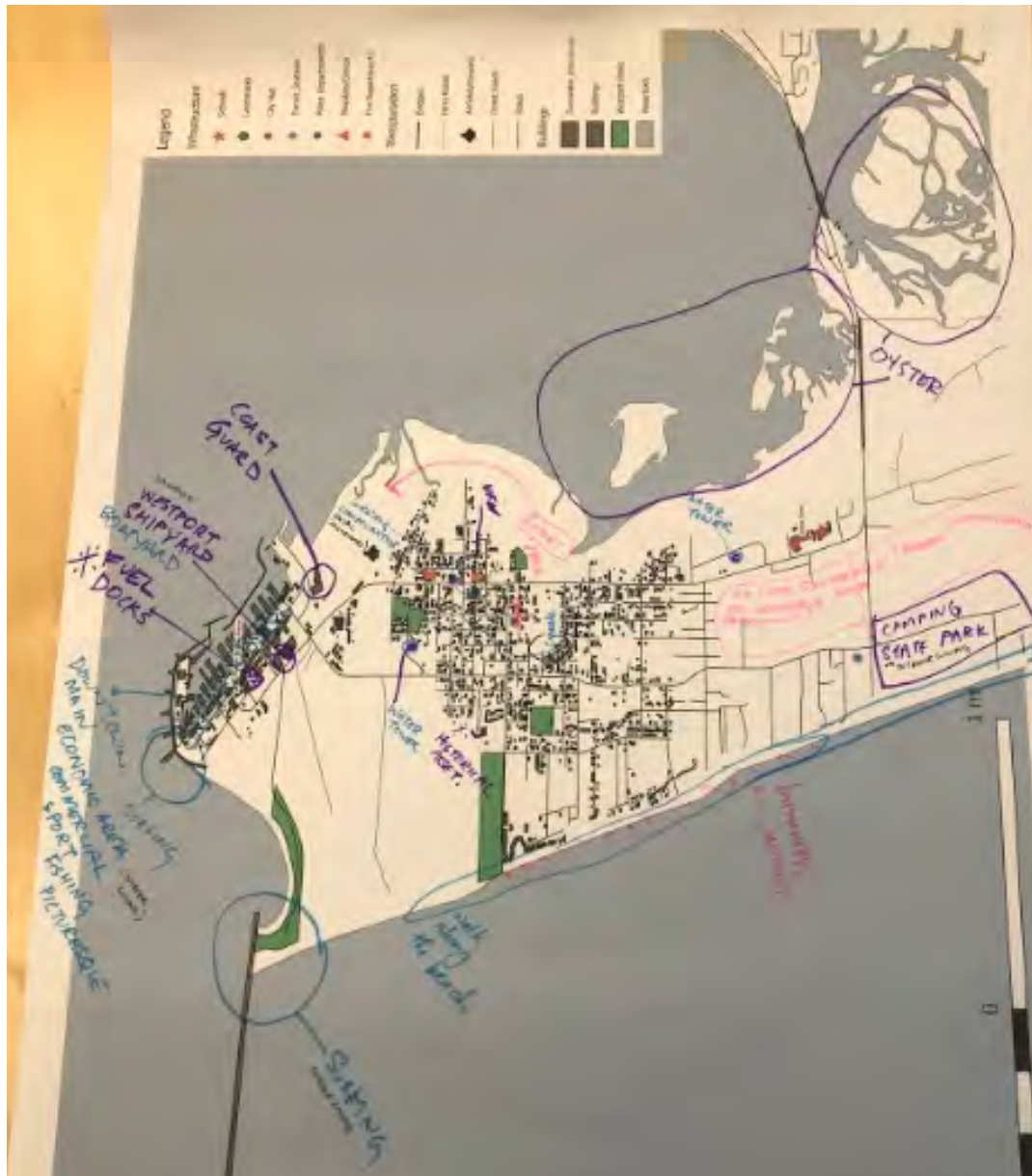
Figure 34. Community Assets Identified by Saturday L1 Group – Westport
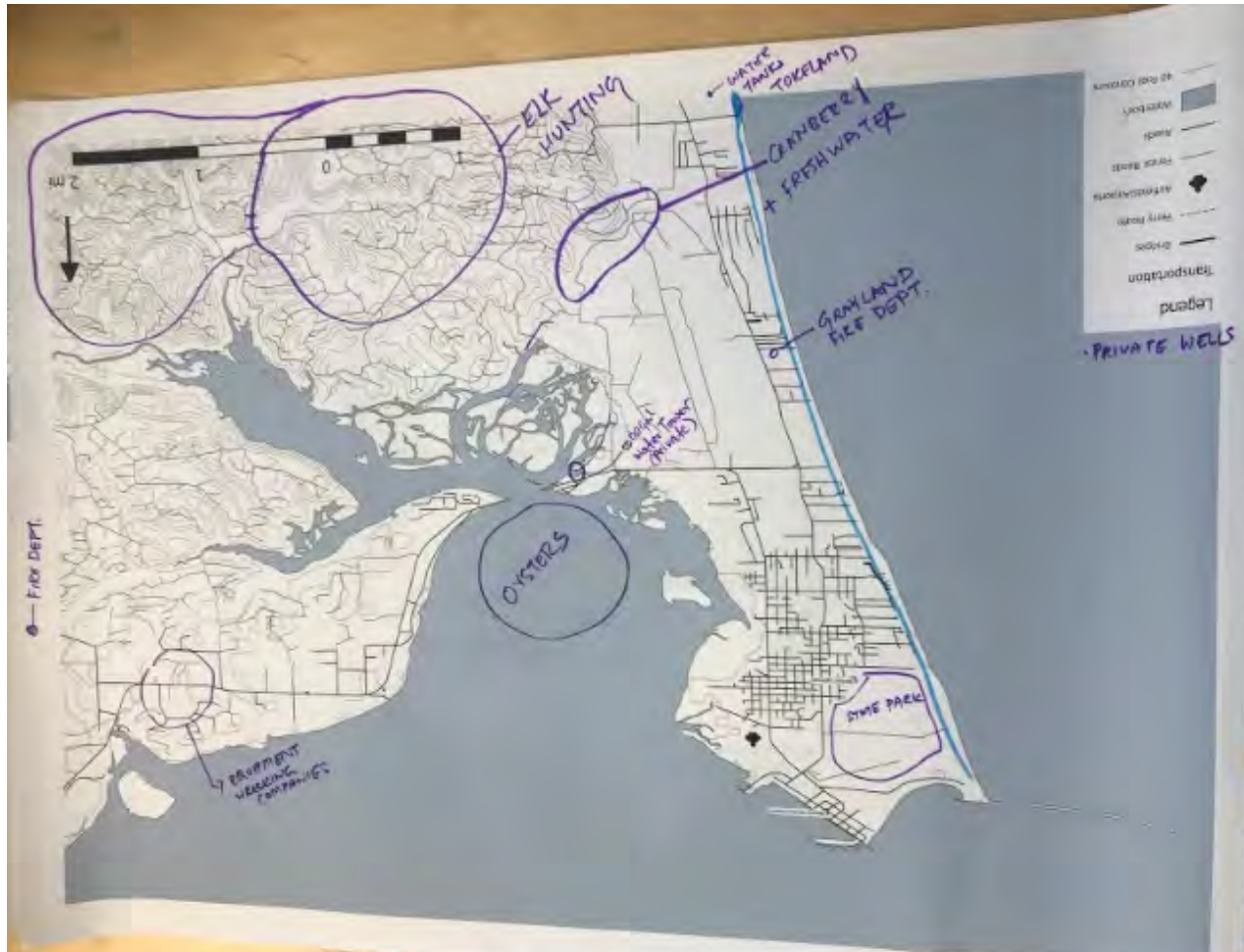
Figure 35. Community Assets Identified by Saturday L1 Group - Region

The L1 group then discussed values and assets that are vulnerable to hazards, identifying the following vulnerabilities:

- Communications systems, including internet access
- Economic diversity
- Vital facilities/services, including fire department and EMS, radios, powerlines, generators, port systems, signage, water resources, transportation system
- Tourism industry and visitors

With regards to adaptation to a "new normal," the L1 group focused on ideas including relocating the community to a safe areas and/or increasing the height/level of the road systems and bridge.

3.3.4. Values and Assets Storytelling

The Community Workshop had two opportunities for report-back and storytelling to the whole room. The first story-telling opportunity followed the values and assets discussions held at the individual tables in Round One. Values and assets stories shared by representatives from each group are included below.

Group 1: *"Once upon a time, along the coastal shores of Washington, there was an idyllic community called Westport. This place had blue skies, fresh water, razor clamming, and long beach walks. It became*

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not just a place for us to live, work, and play, but also became a playground for people from Portland and Seattle to come; these people appreciated that they could drive here on uncrowded roads and experience a quality of life that was not hectic. Here, we value our resiliency, independence, and helping and supporting one another. This community was worried because they found that they were subject to natural disasters, and due to the remoteness of the community and the distance from urban areas, the community would have to rely on itself. But the community had lots of assets and resourceful people who like to meet together and work on issues these. So, they met and discussed what they could do and prioritized strategies. This community had so much resilience and such a can-do attitude, and so much awareness, they built the first vertical evacuation structure in North America."

Group 2: *"Once upon a time in Westport, we valued our small community, the feeling of closeness that you can only have in a small down. We valued our fishing industry and the jobs that it provides, diverse cultures and people coming together, the cranberry industry, our schools, and our community gardens. We liked that we have lots of beaches where you can even see bald eagles; you wouldn't find that back home in Indiana. The weather here is so nice that the tourists come visit us – there's only 30 degrees variation during the year, and no snow. We liked that it's not heavily industrialized or commercialized, not tore up or denuded; it's still beautiful and untouched. There's green everywhere. You can see deer, see elk; you can go crabbing for dinner. Anyone here can go get a fresh seafood meal and it doesn't cost a fortune. You just have to take the time and go sit on dock with the other who are out there trying to catch their dinner. Everyone here is coming together to make things better, for us all to grow and prosper. And we value our traditions."*

Group 3: *"Once upon a time there was a sleepy fishing village with more salmon than they knew what to do with. As the resources dwindled, people didn't stop coming, so the town diversified. It added services, recreation opportunities, so that full time residency could be more convenient here in Westport. We value that we are a small town that has a can-do attitude and a working-class mentality. Westport has banded together not only for recreation services, but also health services, food services, and an operational marina which is pretty unique – not many communities have a big marina like that."*

Group 4: *"Once upon…. The traffic and stress of [the city] drove him out here, dragging his wife with him. They moved to a small community on the coast of Washington. He fell in love with the place that had one stoplight that was shut off after Labor Day and not turned back on until Memorial Day. They liked the beach, clean air, and schools – this was a surprise because they were coming from [a place with big schools and they weren't sure how it would compare]. They liked that everyone knew everyone; and people were independent – the fishermen were independent business people. They liked that there was a community value of hard work. Westport kids got up early worked harder than any other kids they had seen. There were seven and eight-year-old kids cleaning fish on the docks in the mornings, and the children of business people worked for the family business. This led to independence. They liked the general quality of life, it's probably the most giving community they had ever witnessed. When people need something, people rally around and get it to them. They didn't like that the community was resistant to change. Over the past 40 years, this has changed; this community now wants to move forward in every way possible. When you come down I-5 and turn the corner, your stress just drops… and by the time you get to the beach, it's gone."*

3.3.5. Adaptation Storytelling

Later during the meeting, participants had another opportunity to use storytelling to share the discussions from their table groups. The second storytelling session focused on adaptation and resilience to hazards.

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Group 1: *"A long time ago in a galaxy far away… there were lots of diverse opinions. In our group, we were looking at pre-planning and post-reality. Pre-planning, we were thinking about how we can prevent destruction. Maybe geotubes, levees, dykes, and vertical evacuation structures that have double and triple uses and roles. How do we minimize loss of life and community viability? We need to protect the economy, commerce, viable transportation, and utility corridors for power and transportation. Thinking about the post – scenario, how much destruction do you have to deal with and what are the realities?"*

Group 2: *"Once upon a time in Westport, with strength and determination, the town was able to regrow from a tsunami. They devised a water airport for supplies while the bridges were being rebuilt. Some people moved up on the bluffs to escape the congestion. They built high rises to house people. Our biggest asset is fishing industry and it was not affected. The oyster beds moved inland as the land receded, the docks are still there, much of our tourism is based on deep sea fishing and we would still have that. We would just need to move and shift a bit and I believe we would be fine. This town is strong, we are survivors, it's a close-knit community, and we would be strong in the face of adversity."*

Group 3: *"We are dealing with sea level rise in the year 2080. The challenges are both physical and political. The physical changes that would need to take place would need to be taken care of in a political manner. Flood plain inundation would be residential and commercial – the docks and marina would be affected. We would have to go through the political wrangle of why you would require stricter and more costly regulations, that would be more prohibitive of what you can and can't do with your property. Inundation would affect municipal and commercial infrastructure and would have effects on the residential areas and transportation corridor. We are in for another political wrangle."*

Group 4: *"We chose to focus on 11% chance of 1 foot of sea level rise by 2060. Recognizing the assumptions that these predictions are made based on current information of climate change, and projections could be different. Under this scenario, we would lose access to Aberdeen. The road would be under water in the Ocosta curve. Up by O'Leary Creek would also be under water and the bridge would be inadequate. We would lose the airstrip. The bridge would be a difficult situation. This is an opportunity because there are other reasons to replace the bridge and straighten the curve other than safety under SLR. In South Beach we have a history of successfully moving roadways because of encroachment."*

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4. Workshop Feedback Survey Results

Below are the results of a survey that the UW team circulated to workshop participants following the workshops to solicit their feedback and input.

Coastal Resilience Project – Westport Workshop Survey Results 11.16.2018

Instructions: Please answer the questions below using a 1 to 7 scale (1 = not at all to 7 = extremely).	
Questions	Response average
1. In general, would you say that people try to be helpful?	5.8
2. In general, would you say that people are looking out for themselves?	5.2
3. How concerned are you about sea level rise?	5.4
4. How concerned are you about a Cascadia Subduction Zone (CSZ) earthquake and tsunami?	5.9
5. After participating in this workshop, do you feel you have a greater understanding than before of the possible impacts of sea level rise or a CSZ earthquake and tsunami on your community?	6.3
6. How confident do you feel that your community will thrive even as sea level rises?	4.9
7. How confident do you feel that your community will recover from a CSZ earthquake and tsunami?	4.1
Two weeks after a Cascadia Subduction Zone earthquake and tsunami, who are you expecting to rely on for help? (Circle one for each)	
a. People in my home	6.0
b. People in my neighborhood	5.2
c. People from my church or faith-based group	3.6
d. Non-profit organizations	4.2
e. Fire, police, emergency services personnel	5.2
9. Describe what you expect the City government of Westport to do after a disaster.	
Take care of its people first!	
Emphasis on rebuilding and re-instate means to sustain life for the collective good. Be open to improvements! Thanks so much for this workshop!	
Volunteer guidance and assistance. Begin finding/assisting survivors and assisting evacuation accessibility for all who need it.	
Not much.	
Not much if anyone survives than (illegible)	
As much as their resources allow.	
Abandon (illegible)	
Provide shelter, other services. Locate survivors. Arrange for rescue.	
Help as best as they can with all that they have available.	
Communicate, request state/federal resources. Organize relief/recovery efforts.	
Provide fuel, tools, and equipment for locals to clear their areas.	
Implement a working disaster plan.	
Panic and be overwhelmed. Rescue operations (evac, medical). Infrastructure removal and repair.	
Set up emergency medical stations. Help with accessibility of finding people.	
Door to door/enlist Coast Guard.	
The best they can.	
Keep people calm and looting down. Implement measures agreed upon. Coast Guard and National Guard.	
Do their best to help EVERYONE in need.	
Keep up the plan on recovering already set by preparedness.	
Whatever possible for less able/disadvantaged.	

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5. Erratum: Corrected Map of Sea Level Rise Projections
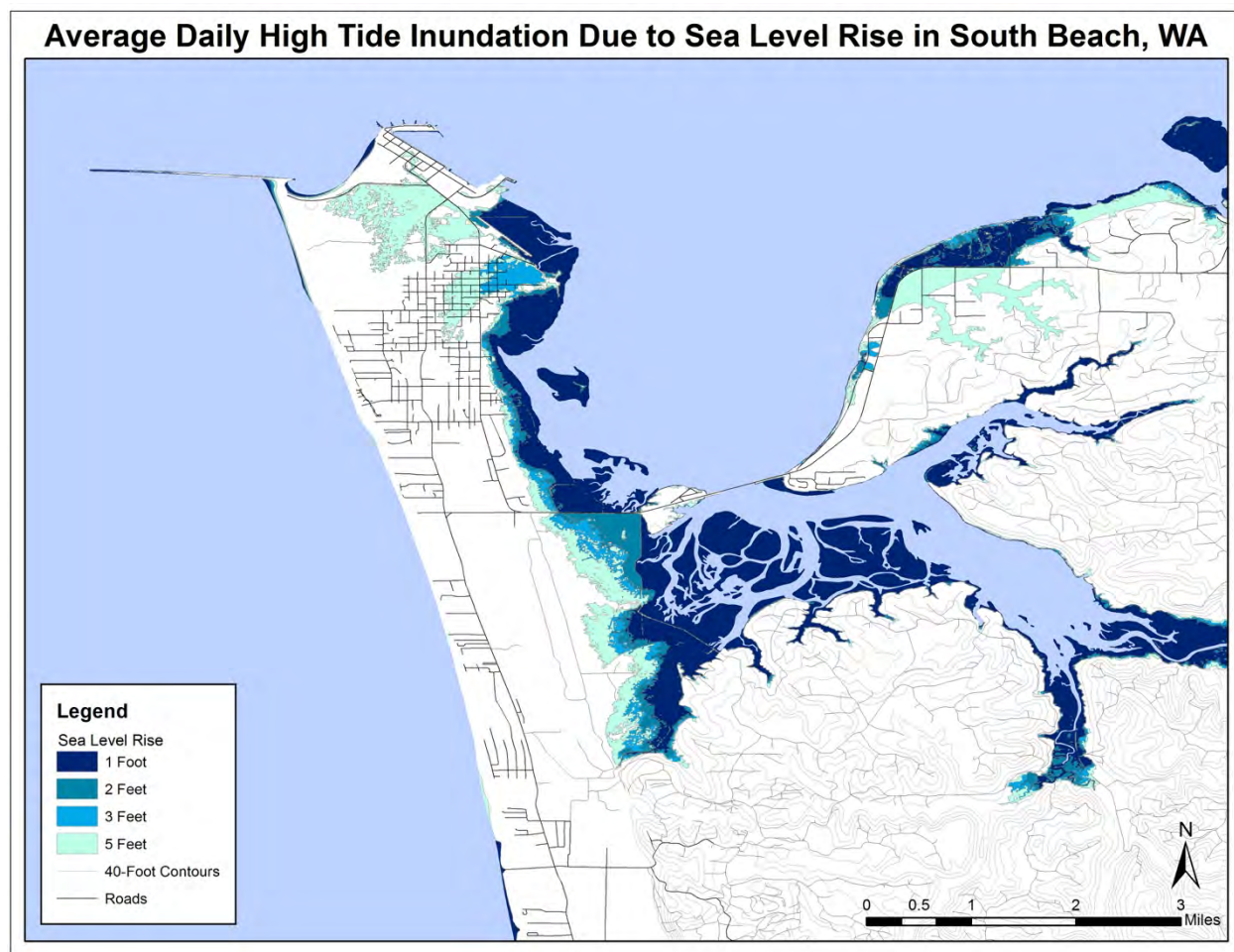
Figure 36. Sea Level Rise for Westport and South Beach, WA, corrected March 2019, post-workshop.

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Appendix B – Draft Comprehensive Plan Update as Approved by the City of Westport Planning Commission, January 2020

The Draft Comprehensive Plan Update follows this page.

COMPREHENSIVE PLAN

Adopted April 28, 1998
Revised February 23, 1999 by Ord. #1189 Last revised
(DATE) by Ord. #_____

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Prepared by:

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Rose Jensen
Jim Mankin
Jeff Pence
George Prigmore
Michelle Gooch, Secretary

Public Works Director
Kevin Goodrich

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TRANSPORTATION AND CIRCULATION ELEMENT MAP Reference-Appendix B

Comprehensive Plan Review and Update 2019

The City of Westport Planning Commission began their review of the draft update to the 2013 Comprehensive Plan that was put together in conjunction with the University of Washington Department of Urban Design in Planning in November 2019. This draft update was developed after an extensive year long partnership between the City of Westport and the University of Washington. The primary focus of this update was to integrate hazard mitigation strategies based on the Grays Harbor County Multi-Jurisdictional Hazard Mitigation Plan 2018 Update; Westport Annex. This was achieved through extensive analysis of the Grays Harbor County Hazard Mitigation Plan, community outreach in the form of multiple city staff and general public open houses, meetings, and workshops, and analysis of case studies of hazard mitigation integration

Since the completion of the tsunami vertical evacuation building at Ocosta Elementary School in 2016 the Westport City Council and the community has expressed interest in further planning for community resilience against natural disasters. In response to this a collaboration proposal was sent to Westport City Council from Prof. Abramson from the University of Washington Department of Urban Design and Planning in July 2018. The collaboration proposal was also sent to the Westport Tsunami Safety Committee in August 2018. A memorandum of understanding was signed by Mayor Bearden and Prof. Abramson on September 5th, 2018. From there the University of Washington Urban Design & Planning studio team began work in October 2018 on developing recommendations for the update of the City of Westport Comprehensive Plan.

The process for developing the recommendations included a great amount of community outreach and collaboration with City of Westport staff. This began with a public forum in September 2018, with visiting faculty and students from the University of XXX in XXX, Japan on the 2011 earthquake and tsunami. In October the studio team visited Westport and met with City staff and visit several locations in Westport. On November 5th, 2018, a virtual meeting was held to review hazard scenarios to be presented to the public and discuss the forthcoming public meeting. On November 16th, 2018 the first workshops was hosted at McCausland Hall in Westport. The workshop was a closed workshop for partners in the project and City staff and used WeTable as a platform to gather information. The second workshop with open to members of the public and was hosted at Ocosta Elementary School the following day.

Following the partners and public workshops in late November, 2018 the studio group returned to Seattle to regroup and analyze the data collected from the workshops. This data was collated and presented in the form of a group report, power point presentation, and individual posters for each element of the City of Westport Comprehensive Plan. This was presented to the steering committee of the project at McCausland Hall on December 7th, 2018. The following day the posters were presented to the public at a public open house at the Tackle Box in downtown Westport.

In the year since the final public engagement activity members of the studio team have been working to finalize the draft report of the recommendations for the City of Westport's Comprehensive Plan Update. This report has served as the basis for the update to the Comprehensive Plan. The draft recommended updates for the Comprehensive Plan were sent to the planning board on November 19th, 2019 for discussion at the planning board meeting on November 20th, 2019. Prof Abramson presented the draft Comprehensive Plan update during this meeting and took part in the discussion and question and answers session that followed.

It was agreed that further time was needed for members of the committee to provide comment on the proposed updates.

Following the initial review by the City of Westport Planning Commission (insert text based on next steps in Comprehensive Plan Update, 2019)

The schedule of meetings that were held is listed in Table 1 and the Commissioners and review committee are listed below:

- Commission members involved in the review and update of this plan included Chair William Leraas, , members Rose Jensen, Jim Mankin, Jeff Pence and George Prigmore. City Staff involved in the review and update included Public Works Director/City Administrator Kevin Goodrich, Secretary Michelle Gooch

TABLE 1

LEGISLATIVE BODY	DATE	TIME	Meeting Type
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Planning Comm			
Council			
Council			

PLANNING PROCESS, PUBLIC INVOLVEMENT AND LEGISLATIVE ADOPTION

In accordance with the Revised Code of Washington (RCW) 35A.63.070 through 35A.63.073 the process for approving any comprehensive plan amendments are as follows:

RCW 35A.63.070
After preparing the comprehensive plan, or successive parts thereof, as the case may be, the planning agency shall hold at least one public hearing on the comprehensive plan or successive part. Notice of the time, place, and purpose of such public hearing shall be given as provided by ordinance and including at least one publication in a newspaper of general circulation delivered in the code city and in the official gazette, if any, of the code city, at least ten days prior to the date of the hearing. Continued hearings may be held at the discretion of the planning agency but no additional notices need be published.

RCW 35A.63.071

Upon completion of the hearing or hearings on the comprehensive plan or successive parts thereof, the planning agency, after making such changes as it deems necessary following such hearing, shall transmit a copy of its recommendations for the comprehensive plan, or successive parts thereof, to the legislative body through the chief administrative officer, who shall acknowledge receipt thereof and direct the clerk to certify thereon the date of receipt.

RCW 35A.63.072

Within sixty days from its receipt of the recommendation for the comprehensive plan, as above set forth, the legislative body at a public meeting shall consider the same. The legislative body within such period as it may by ordinance provide, shall vote to approve or disapprove or to modify and approve, as modified, the comprehensive plan or to refer it back to the planning agency for further proceedings, in which case the legislative body shall specify the time within which the planning agency shall report back to the legislative body its findings and recommendations on the matters referred to it. The final form and content of the comprehensive plan shall be determined by the legislative body. An affirmative vote of not less than a majority of total members of the legislative body shall be required for adoption of a resolution to approve the plan or its parts. The comprehensive plan, or its successive parts, as approved by the legislative body, shall be filed with an appropriate official of the code city and shall be available for public inspection.

RCW 35.63.073

All amendments, modifications, or alterations in the comprehensive plan or any part thereof shall be processed in the same manner as set forth in RCW 35A.63.070 through 35A.63.072.

In addition, after the approval by the legislative body, the plan must be provided to the County Assessor's office according to the following:

RCW 35A.63.260

By July 31, 1997, a code city planning under RCW 36.70A.040 shall provide to the county assessor a copy of the code city's comprehensive plan and development regulations in effect on July 1st of that year and shall thereafter provide any amendments to the plan and regulations that were adopted before July 31st of each following year.

CHAPTER 1

INTRODUCTION

A comprehensive plan is the basic foundation for local planning. It lays out a community vision and priorities and describes where, how, and in some cases when development will occur. It is adopted by the city as flexible guidelines for policymakers, land managers, and land users about how to conserve, rehabilitate, or develop an area while addressing land use, transportation, economic development, parks and open space, urban design, and utilities.

The City of Westport Comprehensive Plan represents the official statement by the city council to be used as a policy guide for the physical, economic and social development of the city. The comprehensive plan establishes goals, objectives, and policies for the city upon which future decisions should be evaluated. Among other items, the comprehensive plan should be seen as policy, that is, the communication of the long term values and aspirations.

A. AUTHORITY

Washington State Law (RCW 35A.63.061) requires that a comprehensive plan with an element addressing land use and an element addressing circulation be required for every municipal code city. Chapter 2.24.030 (2) of the Westport Municipal Code states "The planning commission may prepare a comprehensive plan for the physical and other generally advantageous development of the town." This comprehensive plan functions as the guide to decision making in accordance with the requirements of the state law and municipal code.

B. RELATIONSHIP TO THE 2013 COMPREHENSIVE PLAN UPDATE

This plan reflects an update of the 2013 plan that has guided growth and development in the city for over the last decade. Comprehensive plans are designed to account for a planning horizon of around 20 years and are periodically updated.

This plan update was initiated by the need for Westport to plan for a safe and resilient future against natural hazards – especially the hazards identified as high priorities in the Westport Annex of the Grays Harbor County Hazard Mitigation Plan: earthquakes, tsunamis, erosion, and flooding. A major milestone towards creating a safer and more resilient community to natural hazards was achieved in 2016 when Westport-South Beach became the first community in North America to build a tsunami vertical evacuation structure (at the Ocosta Elementary School). This achievement serves as a key driver for the plan update, which aims to ensure that hazard mitigation planning, conventionally done at the county level, is adequately localized to suit community conditions and harmonized with city-level comprehensive planning. While much of the content of this plan is the same or similar to the 2013 update, there have been significant changes to incorporate further hazard mitigation strategies into each element's goals, objectives and policies, to bring the plan in line with current conditions, and to update the vision for the City's future.

C. CHARACTERISTICS OF THE COMPREHENSIVE PLAN:

The comprehensive plan has four general characteristics:
(1) Comprehensiveness, (2) Long Range, (3) Flexibility, and (4) Community Participation and Input.

1. <u>Comprehensiveness</u>

A comprehensive plan, by definition, should be comprehensive in both scope and purpose. The plan should coordinate policy on those geographical and functional elements which have a bearing on physical, social, and economic development.

2.   Long Range

Another characteristic of a comprehensive plan is that it is long range and future oriented. It should look towards advancing the community beyond the immediate, to those concerns and possibilities 15 to 20 years in the future. In effect, the comprehensive plan is a long range guide to current, short-range decisions.

3.   Flexibility

Because of the long range characteristic of the comprehensive plan, it should also be flexible and general to accommodate shifts in community preferences. The comprehensive plan is also flexible and general in that it only summarizes major policies and does not in itself establish detailed regulatory conditions. The comprehensive plan, however, should not be so general as to lack meaningful direction or guidance to future decision-making.

4.   Community Participation and Input

The purpose of the comprehensive plan is not for the elected or appointed officials to tell the citizens what the long term vision is for the development of the city, but to capture the citizens collective vision and implement it. It is essential that all aspects of the planning, development, and implementation of the comprehensive plan and all associated policies and actions actively seek and incorporate citizen participation and input.

D. PURPOSE

The purpose of the Comprehensive Plan is to provide a framework for guiding growth, development, and public decision-making within the City. The Comprehensive Plan is intended to serve a wide range of functions and purposes. The most critical of these are as follows:

1.   General Welfare

The Comprehensive Plan serves to promote the general health, safety, welfare, and morals of the community. It does this by establishing guidelines for development and facilitating the adequate provision of public services.

2.   Coordination

The Comprehensive Plan promotes and encourages rational, efficient, and coordinated developmental decision-making. Conversely, the comprehensive plan discourages piecemeal, incremental zoning, and subdivision actions. As a planning instrument, the Comprehensive Plan encourages anticipation rather than reaction, and coordination rather than competition. The Comprehensive Plan therefore anticipates and influences the coordinated development of land and buildings.

3.   Policy Statement

The Comprehensive Plan also serves as the basis for municipal policy on development, and provides those guiding principles, objectives, and techniques upon which the development of regulations can be

assessed and evaluated. The comprehensive plan, then, represents a long range policy statement by the city.

4. Communication

The Comprehensive Plan, as a statement of policy, represents the communication of values within the community. This communication provides all interested parties, whether other public institutions, private developers, businesses, and financial institutions with a general indication of the long range direction the legislative body has established for the community.

E. DEFINITIONS

In the context of this plan document, certain words take on more specific and more definite meanings. The following words are defined so that the reader of this plan may more exactly understand its intent.

1. May, Should, and Shall

    a. May: indicates that some action might be undertaken if the official body, after viewing the evidence, decides it is useful or desirable in keeping with this plan. It does not, however, confer any obligation upon the city to undertake, approve, or permit the action.

    b. Should: indicates that a particular action will take place unless the official body finds a compelling reason against it.

    c. Shall: indicates a mandate, i.e., the particular action must be done.

2. Goals, Objectives, Policies

    a. Goals: are the general statements outlining the desired long-term future state towards which the plan aims.

    b. Objectives: are the statements of the desired short-term aims of the plan, which reinforce and lend to the goals; the objectives should be taken to be more specific, clearly defined conditions which must be attained in order to accomplish the stated goals.

    c. Policies: outline and describe general directions for governmental action, both legislative and administrative, which would implement the preceding goals and objectives.

3. Appropriate: Refers to those actions, policies, locations, and other decisions which are in conformance with this plan.

F. IMPLEMENTATION

The success of this Comprehensive Plan will depend upon the City's commitment towards implementation. Specific steps which the city should take following adoption of the comprehensive plan are defined more fully in Chapter 11. Nonetheless, at the outset, it is important to emphasize that successful planning requires a continual, on-going process.

The successful implementation of this document will require continual monitoring of the citizen's needs and goals, the development or revision of necessary land use regulations to bring them in conformance with the goals of this plan, and the consistent referencing of this document whenever the legislative body engages in the decision-making process impacting the physical development of the city.

CHAPTER 2

PLAN ORGANIZATION

Given the previous discussion on the background and nature of the Comprehensive Plan, this chapter proceeds to outline in narrative form the content of this comprehensive plan document. While each chapter is prefaced with an introductory discussion, this chapter is intended to establish a setting of this plan's structure and content.

In general, Chapter 1 and this chapter establish the basic framework for this Comprehensive Plan document. These two chapters discuss the plan's need, intent, purpose, and content. As such, these chapters form the background and setting for the subsequent chapters.

The following eight chapters (3-10) specifically address goals, objectives, and policies of the City and, in doing so, represent the central point of reference in this plan. These chapters address specific functional areas which are either required by state law, or which the city has exercised the option to address due to their recognized importance to the community. The final chapter, Chapter 11, discusses the implementation of this plan. Chapter 11 offers recommendations and guidelines for the effective implementation of the goals, objectives, and policies established in the previous chapters.

The following provides a brief summary of each of the remaining chapters' contents.

Chapter 3: Chapter 3 contains the Comprehensive Plan's overall goals and objectives. These overall goals and objectives represent those thematic concerns and issues which pervade the development and rationale of the more specific, functional elements addressed in subsequent chapters.

Chapter 4: Chapter 4 is the Land Use Element which designates the general long term distribution, location, and intensity of land use for the city. This chapter is divided into two components: Goals and Objectives, and the Land Use Plan Map with Designations.

> Goals and Objectives: This component of the land use element establishes goals, objectives, and policies for general land use classifications and categories (e.g. residential, commercial). These goals establish the guiding principles for these general land use designations. In addition, beyond establishing goals, objectives, and policies for land use classifications, this section also defines goals, objectives, and policies for the city relating to ground water protection as well as for storm water drainage considerations.

> Land Use Plan Map and Designations: This section of the land use element proceeds to apply various land use designations to locations within the city. Thus, a comprehensive land use map (Appendix A) showing the long range intended land use of the City is developed in this part of the plan. For each land use designation, there is a narrative discussion on its purpose, examples of intended uses, and appropriate locations within the city.

Chapter 5: This chapter is the Transportation, Circulation, and Telecommunications Element which meets circulation planning requirements as required by state law. This element identifies the City's circulation goals, objectives, and policies, and also provides a map describing the general alignment, location, and extent of existing and proposed transportation routes. Because of the direct relationship between circulation improvements and land use development, this element should particularly be coordinated with the land use element. As a new feature in the 2019 Comprehensive Plan Update,

Telecommunication is added to this Element because it is increasingly linked with transportation. Many of the services and activities that conventionally involve movement of goods and people may be replaced, augmented, or stimulated by use of telecommunications infrastructure. These services include broadband, cellular, satellite, radio and other wireless transmission, and all their related voice, message, and other data applications.

Chapter 6: Chapter 6 is the Economic Development Element. After several years of stagnation and decline in growth during the end of the last decade, the last several years have seen a sharp decline in the Westport economy as well as that of the surrounding Grays Harbor County region. The need to establish goals and objectives that will enable the City of Westport to continue to support and retain its current businesses while also continuing to attract new businesses to the area is evident. Encouraging redevelopment as a means of improving the environment and diversity of the economy while preserving important undeveloped areas and ecosystem services should be a high priority. Being an optional element incorporated to this comprehensive plan, its inclusion indicates the City's recognized desire to address economic development within the long range comprehensive framework.

Chapter 7: Chapter 7 is the Community Identity and Natural Resource Element. Formerly called "Community Appearance and Natural Resource," the title of this Element is updated to address a broader and more basic set of concerns than appearance only. This element generally addresses the physical appearance of the City, both developed and undeveloped, but also some intangible and non-visual aspects of the community's identity, including its historic heritage and functioning natural ecology, and the way the environment supports social activities. Although perhaps not immediately evident, this element is related to the economic development element. Since the physical appearance, mental image, and values of the developed and undeveloped environment is closely tied to the City's appeal as a tourist oriented destination, it is important to address these aspects of identity as an element to this plan. The betterment of the physical environment, then, is seen as one major way of furthering economic development of the city. It is also important to properly manage the balance of developed and undeveloped areas to meet state and federal requirements, provide adequate protection for the functions and values of the undeveloped area and allow adequate area for development to provide for a healthy economy.

Chapter 8: Chapter 8 is the Area-Wide Development Element. This chapter provides goals, objectives, and policies intended to address the City's impact on the development pattern outside of the city limits, particularly directly to the south. These goals and objectives relate especially to the impact that may be placed upon the provision of public facilities as well as on the local tax base from development beyond the city limits. This Element also addresses the need to coordinate City services with the regional services that it enjoys, including transportation, the Ocosta School District, and the South Beach Regional Fire Authority, as well as certain economic and environmental benefits outside the city limits that are essential to Westport's well-being.

Chapter 9: Discusses the approved Shorelines Master Plan for the City. A copy of the current Shoreline Master Program is included as Appendix C. The master program is required by law to be in conformance with the State's Shoreline Management Act. Any proposed changes are required to be reviewed and approved by the Department of Ecology prior to implementation. The shoreline regulations are included with other zoning requirements in Title 17 of the Westport Municipal Code, and the shoreline goals and policies have been re-located with other goals and policies in this comprehensive plan. This chapter shall be updated in accordance with the schedule for master plan updates established by the legislature.

Chapter 10: Chapter 10 is the Health and Well-Being Element. This entirely new chapter is an opportunity to assess and plan for the health and well-being needs of the community. Prior to this update close attention had not been given to health needs such as access to primary health care

providers and as such planning opportunities for health and well-being were not fully explored. This chapter includes goals, objectives, and policies for addressing and planning for the health and well-being needs of the City's future.

Chapter 11: The final chapter of this document is, perhaps, the most important. This chapter addresses the implementation of this comprehensive plan and provides guidelines for the application of the goals, objectives, and policies established within this plan. Chapter 11 discusses processes for maintaining the timelines of the document, as well as on how regulatory devices should be maintained so as to best implement this comprehensive plan.

CHAPTER 3
OVERALL GOALS AND OBJECTIVES

Introduction:

The goals and objectives presented in this section represent the identified fundamental concerns and hopes of the community. It is these overall goals and objectives that should be interpreted as being the basis for the individual elements discussed in the following chapters. As such, these goals and objectives can be interpreted as the common themes pervading through the rest of this document, as well as presenting a foundation for individual goals, objectives, and policies within each of the following comprehensive plan elements.

GOALS:

An aesthetically pleasing and visually stimulating city, carefully integrated with the other functional elements of the physical environment.

To provide for projected increases in population and to encourage the retention and expansion in the character and level of the fisheries, tourism, boat building and maintenance, and other sectors of the Westport economy in an orderly yet flexible manner while protecting the unique seaside character of this fishing community and environmental amenities of the area.

To continue to promote Westport as a year round destination for both tourism and other forms of business activity.

To position Westport to take advantage of emerging science, technological advancements, and planning improvements to create sustainable development that creatively reduces or eliminates conflicts between different classifications of uses, reduces impacts to the natural environment with the least possible impacts to residents and businesses, and creates a sustainable city for future generations.

To promote community resilience against natural disasters; build on the success of the Ocosta School District in constructing the nation's first purpose-built tsunami vertical evacuation structure; plan for additional vertical evacuation structures within and outside the city limits, and to ensure that such structures are well-integrated into the environment and daily life of Westport, and work together as part of a comprehensive City-wide evacuation system; and consider other strategies of land use that would enable the City to prepare for disasters and adapt to environmental changes.

OBJECTIVES:

1.   To preserve and reinforce the unique seaside character of Westport.

2.   To encourage the development of housing of all types appropriate to the needs of the various population groups within the city.

3.   To work for the elimination of the effects of discrimination in housing based on race, color, religion, sex, or national origin and to provide safeguards for the future against such discrimination.

4.	To foster cooperation and understanding between the City of Westport and other local, county, state, and federal governmental entities and agencies of the City's unique environment, both physical and economic to provide for a stable and growing economic base. To encourage cooperation between the city and other agencies in the development of a stable and growing economic base.

5.	To protect the environmental amenities of the area to the extent that the attractiveness of Westport to tourists and the quality of life for residents is maintained and/or enhanced.

6.	To expand Westport's effective market for commercial services in the South Beach area.

7.	To develop policies, programs, and processes which will further the general health, safety, and welfare.

8.	To maintain and enhance the character of Westport's quality natural and physical environment and limited land area in a manner that provides for adequate protection without unnecessarily impacting the social, economic, and physical development of Westport.

9.	To manage future growth and development in a manner that supports existing developments while providing for future growth and diversification of Westport's economy.

10.	To develop a circulation system which serves all areas of the city and all users in the most economical, efficient, and compatible manner possible.

11.	To develop policies, programs, and processes that ensure that new development provided adequate mitigation for impacts to infrastructure and services to prevent burdening existing residents with increased costs or reduced services.

12.	To develop policies, programs, and processes that retain current businesses, attract new development, encourage redevelopment of existing properties, and develop infrastructure and amenities as a means to promote Westport as a year round destination.

13.	To develop policies, programs, and processes that encourage hazard mitigation strategies to be incorporated into development and redevelopment to make Westport a safer and more resilient community against natural hazards.

14.	To creatively apply best available science and technologies to prevent the set aside of large tracts of land as open space.

CHAPTER 4

LAND USE ELEMENT

Introduction:

A balanced land use pattern prevents sprawl, preserves and enhances residential neighborhoods, provides adequate open spaces, protects environmentally sensitive areas, protects people and property from environmental hazards, promotes economic development, and encourages community redevelopment at appropriate locations, resulting in a high quality physical environment for residents, workers, and visitors.

The land use element is probably the most important as it ultimately allocates and guides the desired distribution of land use over the length of this comprehensive plan. It describes how the goals of the other plan elements will be implemented through land use policies and regulations and describes the development goals for a 20 year period. Decisions on matters concerning subsequent elements should be reviewed for their consistency with the land use element. Furthermore, land use actions such as rezones, variances, and conditional uses should also be made with reference to their conformance with the goals, objectives, and policies of this element.

Consideration of existing land use patterns is necessary for a general understanding of the area and, at a more specific level, of the area's capabilities and possible sites for development. Where existing land use patterns are desirable and long-standing, it is appropriate for the comprehensive plan to provide for their continuation. Where new or projected needs or conditions and community desires indicate that a change in pattern should occur, the plan should provide for such change over time. For areas as yet undeveloped within or adjacent to the city, the plan should anticipate and guide their development consistent with the public interest, physical limitation of the land, and capacity of public services and facilities.

The land use element is also an important element as it contains many hazard mitigation strategies that create stand alone goals, objectives and polices but also guide and overlap with hazard mitigation strategies in subsequent elements. This element will focus on how land use decisions can build resilience to natural hazards, in particular those with the highest risk of occurrence in Westport that can be addressed with land use decisions, specifically tsunamis, earthquakes, and sea level rise. As noted in Chapter 2, this land use element is presented in two parts. Sections A through I are general, and serve to establish the land use goals and objectives for broad land use classifications e.g. residential, commercial, and industrial. They also establish general policies to be used in the development of implementing ordinances. Furthermore, as required by state law for the land use element, provisions are included to assist the City in the protection of the quality and quantity of ground water supplies; there is also a similar review of stormwater and drainage related concerns.

Section I of this land use element is a discussion of the land use plan map and designations. This section is preceded with a more detailed explanatory discussion of its content. For now, however, the general purpose of this section is to specifically allocate space for various land use designations throughout the city. In addition, each land use designation contains a policy-oriented discussion of its purpose, description, and appropriate locations.

Finally, the land use element must be especially coordinated with the implementing ordinances, that is, primarily the zoning and subdivision ordinances of the city. Such coordination is discussed and presented in more detail in Chapter 10 – Implementation.

A. OVERALL GOALS AND OBJECTIVES

General

Over the last two decades, Westport has seen several transitions, initially from an industrial economy focused on logging and commercial fishing, to a more diverse economy with strong seafood processing and yacht building industries coupled with a tourism and recreational activity based economy. Westport is also home to a large number of military personnel and their families, both active duty and retired. During the early 2000s, Westport was "discovered" and several large developments were proposed and some were completed. Although the severe economic conditions of the late 2007 to mid 2009 has delayed and possibly even ended some of these proposals, the economy has showed signs of turning recovery. In recent years several new businesses opened in Westport including new tourist accommodations types including cottages and hostel rooms, tourist souvenir and boutique stores, and new restaurants helping Westport become a more year-round destination for visitors and a more livable community for residents. During the last decade Westport has also shown great interest in building community resilience against natural disaster with the construction of the first vertical evacuation structure at Ocosta Elementary School and a continued community interest in further persuing additional vertical evacuation structures and other means to build a more resilient city. The goals and objectives included in the sections of this chapter are intended to position Westport to continue to take advantage of the economy as it recovers and allow for continued growth in a safe environment.

GOALS:

> To promote the establishment of appropriate population densities and concentration that will contribute to the well being of persons, the city, and the preservation of the environment.

> To promote an efficient and orderly pattern of land use which protects the unique seaside character of Westport, its environmental amenities, and the integrity of its residential neighborhoods while providing a flexible approach to the development of commercial and industrial lands.

> To promote new development and redevelopment strategies that incorporate hazard mitigation planning techniques to build a safer and more resilient community.

OBJECTIVES:

1. To plan for a projected population of 3,200 in the city of Westport, and a projected population of 4,100 for the Westport area by the year 2030.

2. To provide efficient land in suitable locations for the various uses needed to meet the demands of expected population increases and an expanded and stable economy.

3. To minimize land use conflicts and encourage compatibility between land uses through careful and attractive design and the use of appropriate open space.

4. Encourage the redevelopment of underutilized or dilapidated properties and areas.

5. To prevent overcrowding of land use in the city, thus providing for adequate air, light, and protection from fire and noise pollution.

6. To apply appropriate planning principles and techniques to guide the physical development of the city.

7.   Maximize the opportunities provided by Westport's unique seaside character.

8.   Encourage development in areas on higher, stable ground to mitigate against impacts of natural hazards such as sea level rise and earthquakes/tsunamis.

9.   Investigate climate resilient building code opportunities using best available science to ensure new development is long lasting and resilient to the impacts of climate change and sea level rise, or at least accounts for the cumulative impacts of sea level rise.

10.   Encourage the construction of multi-use vertical evacuation structures both in the public and private sectors that can be used both as places of refuge during an emergency event, and also for economic or social activities on a regular basis.

B. RESIDENTIAL LAND USE

Over the last decade, several new residential developments were permitted and/or completed within the city. These developments created the first traditional condominium style developments and proposed the development of small cottage style homes for lower income families. Change in state laws required that Westport allow Manufactured Homes in all zoning districts. Westport has always been a destination for the development of private vacation homes. The downturn in the economy created an increase in the number of residences that were turned into commercial vacation rentals and an increase in commercial home occupations in the residential areas. The city does not want to discourage these commercial uses but wants to ensure the impacts of them on traditional residences and neighborhoods are eliminated where possible.

Based on these trends, the types of multi-family residential developments has increased to include multiple units on a single parcel and combined units with between two and four units per building. These developments may include single family residences, condominium developments, and townhouse developments. The previous comprehensive plan created four land use classifications with varied standards to create a matrix of higher and lower densities and restrictions to provide adequate space for all types of residential development. Those original classifications are still adequate and appropriate. The following goals and objectives are intended to continue the mix of residential development while providing for the growing interest in commercial uses that are consistent with residential areas.

GOALS:

To provide sufficient space, protected from conflicting uses, and where possible natural hazards, for various residential uses, rent levels and property values while maintaining, to the extent possible, traditional residential cultural values.

To increase the City's stock of affordable housing.

OBJECTIVES:

1.   To separate various types of single-family structures including new-designated manufactured homes in order to optimize choice in neighborhood type.

2.   To allow new multiple-family structures within designated residential areas, provided the resulting density does not exceed eighteen (18) units per acre and provided each development is reviewed to insure compatibility with surrounding single-family residences. Denser development should be

prioritized on higher ground, where tsunami hazards are least severe, and include housing affordable to families and residents in particular need.

3.	To protect residential neighborhoods from the intrusion of incompatible commercial and non-residential land uses and prevent disruptive non-residential traffic.

4.	Maximize the availability of view property.

5.	To provide nearby pedestrian access to and encourage development of neighborhood parks and limited commercial services directly appurtenant to residential lifestyles within residential zones. Parks should be considered as places of gathering and refuge in an emergency, including storage of supplies accessible in an emergency, and integrated with tsunami vertical evacuation structures where appropriate.

6.	Minimize new residential development and redevelopment in areas prone to damage from sea level rise and flooding.

7.	Encourage multi-story residential buildings, including mid-rise condominiums, to have public rooftop access during emergency events such as severe flooding and tsunamis. Review the possibility of applying additional funds to design and construct such buildings as earthquake- and tsunami-resistant vertical evacuation structures, according to the best available scientific models of ground motion, liquefaction, and tsunami impacts, and according to guidelines approved by the National Tsunami Hazard Mitigation Program.

C. COMMERCIAL LAND USE

The last century has seen significant swings in commercial activities and trends created primarily from the economy. The early 2000s began with a commercial base focused primarily on fishing, both recreational and commercial. Most small businesses, including the lodging and retail segments, catered to the seasonal recreational fishing that attracted most of the visitors to Westport. When the national economy boomed, large commercial developments were proposed that included a golf course, convention center, and motels. A secondary effect was an increase in proposed expansions, redevelopment, and infill developments focused primarily in the Marina District. When the economy crashed, so did most of the proposed developments. Westport needs to be positioned to take advantage of the recovering economy to allow for the completion of the destination resort that was identified in the first comprehensive plan as a priority.

The attraction of Westport has expanded and diversified to include surfing, storm watching, the lighthouse, the maritime museum, and all of the natural beauty and wildlife that surrounds Westport. New commercial activities have moved to Westport including wineries and breweries, and businesses that cater to the expanding types of tourists. Westport is working to expand the tourism industry from seasonal to a year round industry. Additionally there is still a growing need for small businesses that focus on the needs of residences. Four classes of mixed use tourist commercial districts are intended to provide for these diverse needs. The City will need to continue to monitor the allowed uses in the zoning code to keep up with new and emerging uses and trends such as electric vehicles and recycling. With an increased awareness in the local community on safety and resiliency in natural hazards communicating this information and ensuring tourist populations and other business patrons are safe during hazard events is also necessary in commercial development. The following goals and objectives are intended to continue the expansion of commercial development within the city with a focus on a year round economy, while retaining the current traditional businesses.

GOALS:

To provide adequate areas, both in size and location, for commercial activities which will serve the present and future needs of the fisheries and tourism industries and local residents.

To encourage commercial development designed and located so that it is economically feasible to operate, where public services exist or can be provided in an economical manner, and that provide goods and services in a safe, convenient, and attractive manner.

Encourage commercial development and redevelopment that incorporates hazard mitigation strategies in planning and construction.

OBJECTIVES:

1.   To reinforce the basic character of the various commercial areas within Westport while allowing flexibility in location of uses.

2.   To allow development along main arterials of commercial uses compatible with adjoining residential uses.

3.   To encourage attractive and efficient commercial development, especially in the areas of Westhaven that serve tourists.

4.   To provide sufficient area for the expansion of Westport's effective market for commercial services in the South Beach area in areas that are presently designated as commercial areas.

5.   To provide for the development of suitable undeveloped areas in a manner that promotes Westport as a tourism destination.

6.   Areas immediately adjacent to the state highway should be designated to allow for a mixture of residential and commercial development compatible with a commercial area.

7.   The City should provide a full range of municipal services to meet the needs of expanding and new businesses in appropriate locations and should identify the type and level of public services appropriate to support future economic development.

8.   Redevelopment in the Marina District, in particular the tourist commercial areas, should include investment in resilient infrastructure such as floating docks and elevated/amphibious infrastructure.

D. INDUSTRIAL LAND USE

Industrial development in Westport has always and continues to be centered around the marina district and related fishing and boat building industries. These industries have weathered the downturn in the economy and have actually expanded over the last decade. Westport is home to the largest commercial fishing fleet on the Washington Coast and headquarters of one of the largest luxury yacht manufacturers in the nation. Westport needs to continue to focus on providing for the development of these industrial bases. There is not currently significant area for additional expansion or new industrial developments. The City will need to monitor this in the future to ensure it does not prevent future development, and when future development is necessary best practice are used to ensure infrastructure is resilient to the impacts of climate change. The City currently has one industrial zoning district. The allowed uses are focused on the fishing, seafood processing, storage, and sales, and boat manufacturing, sales, repair, both marine and land based shipping and trucking, and various other industrial activities related to the marina.

GOALS:

To provide space for industrial uses and related activities, protected from other uses and buffered from impacting other uses, which can benefit from Westport's marine location and encourages the continued development of marine-oriented uses.

OBJECTIVES:

1.   To allow industrial development that will enable the City to diversify its economic base.

2.   To allow industrial uses which minimize adverse impacts to the natural and human environment, and which minimally, if at all, disrupt the character of the community.

3.   Industrial uses should be grouped with similar uses in areas that limit land use conflicts, improve traffic flow and safety, and allow businesses to share public facilities and services.

4.   Industrial development and redevelopment should incorporate hazard mitigation measures to create more resilient infrastructure against natural hazards such as storm surges and sea level rise, and to mitigate environmental hazards due to flooding and tsunami impacts, including chemical spills, hazardous debris and fires.

E. PUBLIC AND SEMI PUBLIC LAND USE

Public and semi-public uses include infrastructure, utilities, facilities and services, whether public or semi-public in nature. High quality public and semi-public uses are vital to the overall wellbeing of the existing community and are critical factors in the City's ability to respond to and recover from natural and man-made disasters. It is therefore important to best protect public and semi-public critical facilities during a natural disaster that are relied upon immediately after the event has occurred, including especially first responders such as firefighting, ambulance, and police facilities. These same uses need to have adequate capacity to encourage and facilitate future growth both in terms of new development and redevelopment in the City.

GOALS:

To ensure that public facilities and services are high quality, fully maintained and cost effective.

Pursue improvements in emergency preparedness, such as the development of tsunami vertical evacuation structures which provide mixed recreational or commercial uses during regular day-to-day activities, to better meet the health and safety needs of the city if an emergency should occur.

To provide necessary facilities that can adequately serve development and future expansion without negatively impacting existing levels of service.

To provide adequate space for the location of state and federal government facilities which provide services to the community.

To ensure critical facilities are situated in areas least prone to impacts of natural disasters and are accessible and functional immediately following an emergency event.

OBJECTIVES:

1.   Define acceptable standards and prioritize funding for improvements to accommodate development and future expansion.

2.   Ensure that public and semi public facilities meet all state, federal and local standards and will accommodate future growth.

3.   Encourage the design and development of infrastructure, utilities and facilities that will survive, to the greatest extent practicable, anticipated natural disasters, and to provide places of refuge to the public during a disaster and recovery services after it is over.

4.   Encourage the use of parks and other appropriate open spaces as community gardens for local food production.

5.   Identify site-specific locations for construction of additional mixed-use vertical evacuation structures such as parking infrastructure that are accessible to high numbers of Westport residents and visitors.

6.   Research and evaluate opportunities for relocation of public critical facilities such as emergency services to higher ground within the city limits along the dune ridges or outside the city limits on higher ground as a measure of protection against natural hazards such as sea level rise and tsunamis.

7.   Invest in infrastructure for critical facilities that is able to withstand the impacts of climate change including extreme weather events, flooding, and natural disasters such as earthquakes and their associated hazards: ground shaking, liquefaction, landslides, ground subsidence, and tsunamis.

F. RECREATION

The recreational land use category includes a wide variety of uses including publicly and privately owned properties and businesses. Many of these provide access to or take advantage of the natural features of the area in and around the City of Westport. Public and privately owned facilities that provide recreational and entertainment opportunities, cultural and historic preservation, display and performance of the arts and other similar uses that enhance the vitality of the community are included in this land use category.

GOALS:

To maintain and develop a high-quality system of parks, trails, and public access that preserves and enhances the public's access to and enjoyment of the significant environmental resources located in and around the city.

To encourage the preservation and public enjoyment of historical features located within the city.

To encourage the development of businesses and properties with cultural, civic, and historic preservation uses to improve the sense of community in the City of Westport.

OBJECTIVES

1.   To provide high quality, low maintenance, convenient and accessible park and recreational facilities for all segments of the population and visitors to the city.

2.   To encourage the development of recreational facilities, both passive and active that provide increased access and improved health for the citizens of Westport and attract visitors.

3.   Provide and maintain trails to and along the ridgelines that can be reached for access to higher ground during emergency events such as a tsunami.

G. LAND USE POLICIES

1.   The city should encourage the provision of affordable housing to accommodate for changing demographics among the growing young and elderly populations in Westport. Units should be designed so as to integrate compatibly with the area, as well as be designed to instill pride among its residents.

2.   As mandated by legislative action taken in 2005, the City shall consider New- Designated Manufactured housing to be sited in any zone where a site-built single- family dwelling is permitted under Westport Municipal Code and in compliance with state law. Mobile homes are no longer built and may only be placed in mobile home parks in existence prior to July 1, 2005 in accordance with Westport Municipal Code 17.20A.035 (1).

3.   Multiple-family structures shall be considered within designated residential areas. Environmental review of such projects should consider, at a minimum, access to the site, including increased traffic volumes, and ingress and egress to the site, and the location and design of parking, overall density in the immediate neighborhood, and the adequacy of public facilities serving the site.

4.   A commercial zone should be established within the City's zoning ordinance to foster a mixed use zone serving commercial and tourist needs in the city. The commercial zone should attempt to recognize the differing character of commercial activities in the city, such as the community business district along Montesano Street and the tourist commercial area along the Westhaven/City waterfront area. Provisions for any zone should balance the maintenance and encouragement of the different character of these areas with the objective of allowing the greatest amount of flexibility in location and diversity of uses.

5.   Commercial uses may be allowed along existing and planned arterials and highways in the older areas of the city, provided such uses are not large traffic generators, do not disturb adjacent residential neighborhoods, and provide safe access for customers, employees, and suppliers.

6.   The City should encourage development of both private and public property into neighborhood parks and open spaces, and allow limited commercial development directly related to residential lifestyles such as neighborhood grocery stores and Laundromats in residential zones.

7.   The City should encourage developments within the commercial areas which increase and support pedestrian orientation, and special consideration should be given to major land use decisions in these areas.

8.	Industrial uses may be allowed in areas having good transportation access, which can be adequately buffered from negatively impacting surrounding or nearby land uses, and which minimizes creating economic hardship for adjacent landowners.

9.	Light industrial uses should be preferred to heavy industry. In either case, industry locating in Westport shall comply with all State and Federal pollution control standards.

10.	To ensure adequate space for future industrial uses, the City should encourage and approve proposed reclassification of property to Marine Industrial where appropriate.

11.	The City shall appropriately apply the city subdivision ordinances, master plan, and binding site plan process to the land use development process, with particular concern that adequate public facilities including, by way of representation but not by way of limitation, streets, drainage, open space, sewer, and water facilities are provided.

12.	The City should consider acquiring property along dune ridges within the city limits, at higher elevations. The acquired land can be reserved for trails and emergency access, and possible relocation of critical facilities and other building stock as a measure to mitigate the impacts of natural hazards such as tsunamis, sea level rise, and other causes of flooding.

13.	The City should restrict development and redevelopment in flood prone areas and areas subject to sea level rise hazards.

14.	The City should consider rezoning of low lying coastal areas prone to sea level rise and flooding, that permit development to Recreational Park (RP) Zones to prevent further development and encourage recreational/open space/wetland areas. Alternatively, Commercial zoning in these areas may be considered appropriate if construction and uses are flood-smart.

The City should encourage any development of multi-level structures to incorporate measures for rooftop access as a tsunami refuge area accessible to the public during an emergency event. Review the possibility of applying additional funds to design and construct such buildings as earthquake- and tsunami-resistant vertical evacuation structures, according to the best available scientific models of ground motion, liquefaction, and tsunami impacts, and according to guidelines approved by the National Tsunami Hazard Mitigation Program.

H. GROUNDWATER, STORMWATER RUNOFF/DRAINAGE

The land use development process impacts a variety of items; however particular concern is necessitated to issues relating to ground water and storm water/drainage. This emphasis on these issues within this comprehensive plan is recognized in state law (RCW 35A.63.061) which states in part, "The land use element shall also provide for protection of the quality and quantity of ground water used for public water supplies and shall review drainage, flooding and storm water run-off in the area ...." To address this requirement, the following establishes direction and provisions for the city in relation to ground water and storm water runoff/drainage.

Ground water

As stated in the Westport 2012 Comprehensive Water System Plan, Westport utilizes the ground water of the Westport Peninsula as its source of supply. Salient points identified in the plan regarding the ground water source include: (a) The Westport aquifer is potentially sensitive to saltwater intrusion resulting from over pumping; (b) No deterioration of the resource has occurred to date; (c) No estimates

have been made regarding the volume of the ground water resource. Thus, the City may have a system approaching aquifer capacity or, conversely, there may be substantially more water available without resource deterioration; and (d) the catchment basin (of precipitation recoverable by the wells) has not yet been defined.

With this and other information for the 2012 Water Comprehensive System Plan serving as background, the following goals, objectives, and policies have been developed relating to ground water protection.

GOALS:

        To protect the quantity and quality of ground water in the Westport area.

OBJECTIVES:

1.   To maintain high quality water by assuring that adjacent land uses are compatible with water source areas.

2.   To maintain an adequate volume of the ground water source for users by monitoring the impact new uses will have on water quantity.

POLICIES:

1.   Implement the current Comprehensive Water System Plan, especially those items relating to ground water quality and quantity.

2.   The City should protect aquifer recharge areas from development which may reduce or contaminate ground water resources. (See Wellhead Protection Map Appendix D.)

3.   The City should review and limit incompatible development in watersheds servicing public water supplies, and review development proposals for potential adverse impacts to those water supplies.

4.   Evaluate the potential impacts of major development, particularly industrial or processing, upon the quality and quantity of ground water in the Westport area. Particular attention should be given to the impact of those uses requiring quantities of water seriously affecting the capacity of the Westport water system.

5.   The City should use the State Environmental Policy Act (SEPA) review process as one means, but not necessarily the only means, of determining the impacts which major actions might have on the city's ground water resource.

6.   The City should continue to cooperatively plan with the Grayland water system concerning the area south of the city limits. Such planning may, for example, involve connecting with the Grayland water system if such a connection is deemed in the best interest of the City.

7.   The City should observe up to date sea level rise projections and pay close attention to the impacts this may have on saltwater intrusions.

Stormwater/Drainage/Flooding

The Westport area receives approximately 90-100 inches of rainfall a year, much of which occurs within a few months' period. The existing storm water drainage system is operating at or above capacity with heavy rainstorms resulting in drainage problems. It should be noted that the drainage ways in Westport also serve extensive areas of the unincorporated area outside the immediate city limits.

Recent progress in addressing drainage/flooding concerns has been made through the ditch system evaluation, and by creating an inventory list of culverts in need of replacement or repair. The City will continue to evaluate this list of aging culverts and replace or repair them as necessary to improve drainage and keep storm water moving. Additional drainage capacity should also be considered in response to impacts of climate change including increases in extreme wet weather events, storm surges and sea level rise.

GOALS:

> An efficient and effective storm water drainage system, which is safe and which eliminates or reduces the problems and inconveniences associated with the existing system.

> An efficient drainage system that is able to withstand increases in storm water drainage in the future as a result of climate change impacts.

OBJECTIVES:

1. To cooperatively plan for needed storm water drainage improvements and maintenance.

2. To review potential developments and their impacts upon the City's storm water runoff and drainage system.

3. To review potential sea level rise scenarios and the associated impacts on the City's storm water runoff and drainage system

4. To make needed drainage improvements that will further the public health, safety, and welfare.

POLICIES:

1. The City should review and apply for appropriate funding sources to improve the City's storm water drainage system.

2. The City should work with other agencies and organizations to maintain and operate adequate storm water drainage and retention systems in appropriate locations.

3. Seek to have a comprehensive drainage plan prepared, and develop a storm water sewer system in conformance with the recommendations of the drainage plan.

4. The City should review the need for and, if feasible, construct retention basin(s) where needed as a means of addressing drainage-related problems.

5. Major new developments involving significant areas of impervious surfaces should be reviewed, at a minimum, through the SEPA review procedure to determine their impact on storm water runoff and the drainage system.

I. LAND USE DESIGNATIONS AND LAND USE PLAN MAP

The current approved City of Westport Comprehensive Land Use, Shoreline and Zoning Map as it currently exists or is hereinafter amended, updated, or replaced by ordinance of the City Council of the City of Westport, is adopted by reference and included as Appendix A.

The land use plan map allocates space for the various categories of land use anticipated by this plan. It does so on the basis of the goals, objectives, and policies of the plan and, as such, the plan map implements these policies. The reader is cautioned that comprehensive plan decisions will be based on policies, not on any mapped illustrations of these policies. Development of property owned by the Port of Grays Harbor should be consistent with the provisions of the latest edition of the Master Plan as adopted by the Port.

The space set aside for each land use classification has been done broadly and the boundaries between each classification should be viewed as transitional between the various areas. Thus, the boundaries should be considered flexible rather than rigid, unless specifically stated. A more important consideration is whether or not they conform to and implement the policies of this land use element and the rest of this plan.

The following descriptions of the land use classifications are intended to clarify the intent of each classification and to aid in the development of appropriate implementation devices. These descriptions are particularly intended to assist in making day-to-day decisions affecting land use patterns. Since conditions may arise which will demand minor changes in the planned land use pattern, these descriptions have been made sufficiently broad to accommodate such changes without an amendment to the plan itself. However, any major deviation from the land use plan or plan map should be preceded by a considered amendment to this plan, looking at all aspects of the proposal and its impacts on all the integrated aspects of the plan.

The statements under each classification should be considered policies. Zoning applications consistent with these policies shall be considered in compliance with this plan, notwithstanding any other policy.

The following descriptions apply to the designations on the preceding land use plan map. Where conflicts arise between the map and the following descriptions, the latter should be followed.

1.   Residential (R1 and R2)

The single-family residential districts are residential zones requiring a low to medium density of population and providing protection from hazards, objectionable influences, building congestion, and lack of light, air, and privacy. Certain essential and compatible public service facilities are permitted in this district.

Generally, this designation should be located in the older and more geologically stable areas of the city, areas substantially developed as conventionally-constructed, single-family neighborhoods, and areas where residential amenities, such as views and forest cover, are found.

2.   Ocean Beach Residential (OBR1 and OBR2)

This designation is intended to provide flexibility and control over the development of presently undeveloped areas in the southwestern parts of the city, to encourage innovative design of major residential development, and to prevent premature or inefficient provision of city facilities in presently undeveloped residential areas. This designation should allow low-density urban residential development of up to six (6) units per acre, as well as recreational uses. The "ocean beach residential" designation should be applied to areas where land is available for residential development.

3.   Mixed-Use/Tourist Commercial (MUTC1 and MUTC2)

It is the intent of the Mixed-Use/Tourist Commercial (MUTC) zone that there be a mixture of tourist commercial and higher density residential uses in close proximity. Mixed use can include, but is not limited to, mixed use buildings with retail or office uses on the lower floors and residential above, or uses which mix commercial and residential structures in the same or neighboring parcels. Individual projects may be single purpose or mixed use.

The MUTC designation should be viewed as incorporating two significant sub areas; 1) a Community Business District; and 2) Tourist Commercial activity. Map reference: see areas designated on map identified as Appendix A.

4.   Tourist Commercial (TC)

The tourist commercial zone is intended to provide a zoning designation for a large tract of land which has previously been identified as an ideal location for a large planned development to include a diverse amount of commercial, recreational and residential uses.

5.   Marine Industrial (MI)

The marine industrial designation is intended to allocate space for the development of industrial uses and related activities which can benefit from Westport's marine location and character, and is intended to encourage the continued development of marine-oriented activities, protected from incompatible uses. Marine-related ferry, transport and storage, processing, construction, repair, and distribution activities are all encouraged. Shoreline areas and access should be reserved for water or marine-dependent activities.

The marine industrial area should be centered around the off loading activities near the Westhaven area. This includes the southeastern section of the Westhaven area. In general, then, this designation covers not only present areas of marine industrial or commercial-related activities, but also areas where expanded marine facilities would serve these activities.

6.   Recreation and Parks

The purpose of the recreation and parks district is to reserve suitable areas for a broad variety of outdoor recreational activities serving both local residents and visitors while protecting the unique natural recreation areas of the city, thereby enabling the long-term use, enjoyment and conservation of these unique areas.

7.   Government Lands

The purpose of the Government lands zoning district is to designate lands owned by the Federal Government which are not regulated under Westport land use jurisdiction.

Development of property owned by the Port of Grays Harbor should be consistent with the provisions of the latest edition of the Master Plan as adopted by the Port.

8.   Shorelines

This designation is intended to identify areas where compliance with state law affecting the shorelines and wetlands of Westport will regulate further development through the shoreline management process. These areas are designated in this plan so that development permits are handled in a smooth and expeditious manner. Map reference: see areas designated on the current City of Westport Comprehensive Land Use, Shoreline, and Zoning Map attached hereto as Appendix A. The designations appropriate for Westport are:

a.   Urban shoreline.
        The urban shoreline is an overlay zone for the Dune Protection, RP, R1, R2, MUTC, MI, OBR1, and Tourist Commercial zones in the City of Westport, which also fall within the "shorelines of the state," as that term is used in the State Shoreline Management Act, Chapter 90.58 RCW. The statement of intent in RCW 90.58.020 is incorporated by reference.

b.   Conservancy.
        Land extremely sensitive to development due to wetland or flooding characteristics, including all lands between the line of ordinary high water and the marram grass line on Pacific Ocean beaches. On Pacific Ocean beaches the conservancy zone is considered too unstable for development due to active ocean beach movement.

c.   Natural shoreline.
        Land which should remain free from human disturbances and be preserved and/or restored to its natural or original condition.

The conservancy shoreline environment includes the dune protection zone identified by the marram grass line of which the purpose is to regulate development on the ocean dunes between the line of ordinary high water and the marram grass line plus 200 feet shoreward.

J. PROCESS

Westport should develop processes for dealing with building permits, binding site plans, master plans, conditional uses and variances, short subdivisions, subdivisions, and such other processes as will facilitate project approval consistent with the goals of this Comprehensive Plan. Where possible the permit process should be coordinated to avoid unnecessary duplication.

CHAPTER 5

TRANSPORTATION,CIRCULATION,

AND TELECOMMUNICATIONS ELEMENT

Introduction:

As a significant and major determinant of land use development within an area, it is important that the transportation and circulation pattern of a city be addressed. The interrelationship between transportation improvements and land use is well recognized and often very pronounced. Transportation improvements serve to increase accessibility to various areas related to others and, as a result, will often make certain areas increasingly attractive for development. Additional land use intensity and increased traffic flow are some of the anticipated results from certain types of transportation improvements.

Not only is it important to address circulation in terms of land use impacts, but it is also important to recognize the wide range of transportation opportunities including, but not limited to, public transit, air, pedestrian, and bicycle. Because individuals have differing transportation preferences for mode of travel, and because many individuals have limited choices of travel alternatives (e.g. those without automobiles may rely principally on public transit or walking), it is important to address their needs as well.

While addressing transportation and circulation is it also becoming increasingly relevant in recent years to recognize telecommunications as an important part of daily life. Transportation and circulation are complementary to telecommunications. Telecommunications, in particular wireless communications, have greatly influenced transportation and circulation. For transportation wireless communications have changed the way both individual households and businesses order and have products and services delivered. Telecommunications also now serve as a primary message circulation service with increasing number of communications now being made via a wireless network as opposed to in person. It is for these reason that telecommunications will increasingly need to be planned for in the future and as such are included in this element of the Comprehensive Plan.

The Transportation, Circulation, and Telecommunications system also plays a critical role in the City's ability to provide for public safety response and in mitigation before, responding to, and recovery from, all levels of emergencies up to and including natural and man-made disasters. It is important to recognize that every response by law enforcement, fire and EMS uses and depends on the transportation, circulation and telecommunications systems. Because of Westport's location, the transportation system serves as the primary means of evacuation, and as a conduit for incoming assistance and supplies. It is therefore important that these critical roles are considered and provided for in all planning and development activities for use before, during and after emergencies.

Finally, it is important to recognize a circulation system's impact on economic development through the provision of an adequate flow of goods and services. For a tourist-oriented city such as Westport, this adequate flow includes the ease and comfort of travel afforded to tourists visiting the area, and the impression they have of the City's circulation system which may or may not encourage them to return in the future. This relationship between circulation and economic development also extends beyond the city limits since, as noted earlier; accessibility is a key factor in development. Should transportation improvements be made beyond the city limits which improve access to Westport, then the city may benefit as well.

This chapter, then, outlines the transportation, circulation, and telecommunications goals, objectives, and policies for tort in keeping with many of the issues just discussed. Attached to this plan, there is also a transportation and circulation map, identified as Appendix B. This circulation map shows the general location, alignment, and extent of proposed and existing major transportation routes through the city. Because of the strong interrelationship between land use and circulation, it is expected that these two elements will be closely coordinated with one another.

In addition, this chapter also includes a section addressing airport circulation. Because the existing Westport airport will be developed into an all-weather operating facility, with plans for future expansion and increased traffic, specific provisions have been included to provide guidance regarding the airport facility and its impact on land use development.

For the purpose of this plan, the definition of the Business Corridor incorporates three separate areas located within the Mixed Use Tourist Commercial zones:

The portions of the Mixed Use Tourist Commercial Zoning districts adjacent to both sides of Montesano Street from Wilson south to the city limits; Ocean Avenue between Montesano Street and SR 105 Spur (Forrest Street) and South along SR105 Spur (Forrest Street) to the city limits:

GOALS:

> To maintain and improve the city of Westport's circulation and traffic to address the following:

>> Provision of safe, adequate, and improved access;

>> Improvement of traffic flow;

>> Needs of those using differing modes of transportation are served;

>> Compatibility of transportation types is enhanced;

>> Provision of efficient access for Police, Fire and EMS response;

>> Provision of efficient emergency evacuation;

> Transportation and circulation is coordinated with the goals and objectives of the other elements of this plan, especially land use; and

> To develop a transportation and circulation system which serves all types of users in the most economical, efficient, and compatible manner possible, and which minimizes the costs of transportation facilities to the taxpayer.

> To maintain and improve the City's wireless telecommunications services to address the following:

Provide reliable wireless network connections to all businesses and individual households

Ensure reliable communication options for emergency services and first responders

OBJECTIVES:

1. To ensure appropriate circulation patterns that provide for the efficient and economical distribution of goods and services.

2. To ensure appropriate wireless communications are functioning in the City to provide businesses opportunities for e-commerce

3. To ensure appropriate circulation patterns in newly developed areas of the city.

4. To protect residential neighborhoods from the adverse affects of through traffic corridors.

5. To develop a circulation system which will encourage the conservation of energy.

6. To review and minimize the adverse social, economic, and environmental impacts and/or costs of transportation improvements or development.

7. To meet the transportation needs of those who do not principally rely on, or use, a private automobile.

8. To separate vehicular traffic from pedestrian/bicycle traffic by way of protected cycle lanes and sidewalks

9. To improve accessibility to and through the City of Westport; especially in and near the Westhaven Marina area.

10. To improve connections between the Westhaven Marina area and residential neighborhoods, natural and recreational amenities, and evacuation sites for tsunami, flooding, earthquake and other hazards.

11. To consider evacuation routes and disaster response system extensions and upgrades.

12. To explore options to increase capacity, reliability and geotechnical strengthening of existing key evacuation and access routes including the Elk River bridge.

13. Provide education and training of evacuation routes for local residents, and visitors in Westport through multiple communication avenues.

14. To encourage a well designed, aesthetically enhancing transportation system.

15. Increase diversity in wireless communication options, both to enhance daily life and to ensure functional telecommunication during emergencies when normal telecommunication connections are compromised.

16. Explore opportunities to encourage development and redevelopment to support bicycle transportation opportunities by providing incentives to include bike parking

POLICIES:

1.   Review available funding sources and continue to update the six-year Transportation Improvement Plan to encourage the paving of the various gravel and unimproved streets within the city.

2.   Monitor and, if determined feasible, seek funding sources which will assist the City in improving the various elements of the transportation system.

3.   Transportation improvements shall be made recognizing the impacts they might have on land use within the City of Westport and on their conformance with other elements of this plan.

4.   Road improvements shall be consistent with proposed land use densities.

5.   In the review of subdivision and other development proposals, the City shall ensure that adequate circulation will be provided within the proposed development and that such development will not restrict access to adjoining parcels.

6.   Transportation facilities should apply appropriate design principles to protect and enhance adjacent residential areas. Design of Transportation facilities should include input from representatives of the Public Safety and Emergency Management Departments to eliminate conflicts and improve access for these services.

7.   The City of Westport should develop and maintain a pedestrian system providing safe, adequate, and efficient access to all areas of the community, particularly to major modes and centers of activity. This includes, but is not necessarily limited to, the provisions and placement of sidewalks in appropriate locations throughout the city, the maintenance of crosswalks, appropriate placement of traffic signs and/or traffic lights, and monitoring appropriate speed limits on the city streets.

8.   The City should see that improvements for pedestrians are considered and that sidewalks be maintained in a safe, passable condition be the responsible party.

9.   Maintain existing bicycle paths and review the potential for additional bicycle lanes within the city.

10.   Support the operation and development of the public transportation system within Grays Harbor County.

11.   The City should coordinate with the local Transit Authority to see that public transit improvements such as bus stops are placed in desirable locations and contribute to the visual enhancement of the streetscape.

12.   Identify evacuation routes both internal and external for both vehicles and pedestrians and inform the public to minimize loss of life in a disaster.

13.   The City should ensure the city website is up to date with relevant emergency preparedness and evacuation routes, including locations of vertical evacuation structures.

14.   The City should coordinate with citizen groups and invest in multiple forms of communication technology useful in emergency/disaster response situations, including low-power FM radio, HAM radio, satellite internet communications, and local direct wifi hubs and mesh networks. Such technologies should be considered as working together where possible for robust function in an emergency.

15.   The City should review applicable regulations to allow use of drones for emergency preparedness and management, including as enhancements to situational awareness (e.g. detecting and reporting traffic conditions, condition of roads and bridges, people in need of assistance, and aids in finding and following optimal evacuation routes), delivery of emergency supplies, telecommunication, etc.

16.   The City should support efforts to develop a direct transportation link between the North Beach and South Beach areas.

17.   The City should explore opportunities to work together with the City of Ocean Shores to reestablish ferry connections between the two cities and other Grays Harbor ports.

18.   The City should support efforts to improve transportation accessibility, including multiple transport modes such as bicycle, bus and ferry, along the Washington Coast and from the coast to the interior, through coordination with other Pacific County and Grays Harbor County communities.

19.   Support efforts towards developing the Westport airport into an all- weather facility with adequate length to support the needs of area businesses and aviation tourists.

20.   The City should coordinate its transportation system with that of neighboring jurisdictions and with state and federal programs.

21.   Pedestrian and vehicular flow should, if possible, especially be improved along in the business district, with particular attention to minimizing vehicular and pedestrian conflict. The improvements that begun in the Marina District should be extended to the remaining business district as appropriate.

22.   The City shall continue in its efforts to expand and improve pedestrian access to trails, walking paths and other opportunities, including efforts to expand the ocean beach access path which currently extends from Ocean Avenue to Westhaven State Park.

23.   The City of Westport should only allow vacation of city rights-of-way after, upon reviewing requests on a case-by-case basis, determining there is significant public benefit to do so, and that development in the right-of-way will not likely prevent public access or installation and maintenance of utilities in the future. Utility locations, and appropriate easements, should be considered when reviewing such requests.

AIRPORT CIRCULATION

Although it is recognized that all aspects of Westport's circulation network are vital, special attention is provided in this element to air transportation, particularly as it relates to the development of an all-

weather airport facility. The city has developed an Airport Layout Plan approved by the State of Washington that includes proposed expansion and improvement projects, as well as recommendations to address land use related concerns and issues which may arise from the proposed expansion. The airport is designated as a critical facility in the City's approved Hazard Mitigation Plan. Because of the importance of the airport facility, this specific addition to the circulation element has been created.

GOALS:

An all-weather airport facility with adequate length to accommodate the needs of area businesses and aviation based tourism traffic that is located in an area compatible with an airport and its associated activities.

Ensure that individuals who live, work, or own property near the airport enjoy a reasonable amount of freedom from noise and other undesirable impacts.

A resilient airport facility with infrastructure resilient to natural disasters such as sea level rise and earthquakes that can still be operable and used in post disaster response.

OBJECTIVES:

1.   Restrict activities within the established safety zones which would create hazards or conflict with safe and effective airport operations. Such uses may include by way of representation, tall structures, uses which produce extensive visual pollution through smoke or dust, uses emitting transmission which would interfere with aviation communications and/or instrument landing systems, recreational drones, or other items creating hazards for low flying aircraft.

2.   Encourage land uses which would benefit from airport locations.

3.   The health, safety, and welfare of the general public should be primary concerns in the building, zoning, and subdivision decision-making process affecting the airport area.

4.   Sea level rise projections should be considered when developing or redeveloping airfield infrastructure

POLICIES:

1.   Complete the proposed studies, improvements, and maintenance projects included in the approved Airport Layout Plan.

2.   The City of Westport shall, review and update when necessary, the established airport overlay zone.

3.   The City shall review all proposed developments within the airport overlay zone for compatibility and compliance with height standards.

4.   The City shall monitor sea level rise projections and impacts specifically in the airport location and assess possible relocation opportunities if deemed necessary.

5.   Identify locations outside city limits that could function as auxiliary emergency airports under different hazard scenarios, and explore the cost and investments necessary to bring them up to at least an emergency level of functionality.

CHAPTER 6

ECONOMIC DEVELOPMENT

Introduction:

Although historically not what it once was, the city of Westport and the Westport Marina district is home to a variety of industries, marina users, commercial businesses and a growing number of residents. The industrial users in the area employ approximately 50% of the City's residents and the marina provides moorage for approximately 650 commercial, sport fishing, pleasure craft, and Washington's largest commercial and charter fishing fleets. Crabbing specifically is a larger contributor to Westport's economic tax base, particularly during the winter months when other industries slow down or cease operations all together. Westport is also home to numerous shops, restaurants, hotels, cold storage and fish processing facilities, and the Maritime Museum, all of which are part of what makes up Westport's economic base.

The fish processing and cold storage facilities are expanding and Westport has become the largest port for seafood processing in Washington as well as one of the busiest on the Pacific Coast. The commercial and recreational fishing industry is stabilizing, and the ship yard seems to be coming out of the economic downturn of the last decade. At the same time the development of new industry seems to be slowing; however, recreational fishing is stabilizing, which is part of a solid foundation of the Westport economy which should be reinforced and enhanced.

Upgrades to the municipal airport have increased its use and thereby the significant role it plays in economic development.

Westport's economy traditionally has been heavily dependent upon the charter and sport- fishing industries and the complementing tourism activity associated with them. Increasingly, special events and festivals continue to serve as attractions which bring more tourists into the city during the summer as well as winter months.

The evident need for the City of Westport, then, is principally twofold. First, the City must bolster those traditional economic sectors which have recently begun to expand. Secondly, and perhaps more important, there is a need to diversify the City's economic base and lessen its reliance on the one or two major sectors of the economy, and continue to expand the tourism segment into a year round industry instead of the seasonal industry it has historically been, in order to minimize the vulnerability to sudden economic downturns. In planning for economic development it is also important to consider strategies for hazard mitigation in terms of creating more diversified economy, more resilient infrastructure, improving emergency preparedness for business patrons and employees, and managing the impacts of climate change. This chapter establishes goals, objectives, and policies intended to address the need for economic stabilization and diversification.

GOALS:

> Work toward reestablishing the local economy while maintaining the seaside character and the maritime industries, especially those related to yacht/boat building, maintenance and repairs, commercial, and recreational fishing.

> A diversified tax base, as well as more diversified employment and industry, consistent with other elements of the comprehensive plan and community needs.

A local economy which is stable, provides employment opportunities for all workers, and improves the community's standard of living.

Work towards economic development and expansion that incorporates hazard mitigation strategies and practices in planning and development of new or retrofitted infrastructure.

OBJECTIVES:

1. Diversify the economic base.

2. Retain, stabilize, and strengthen the traditional economic base sectors.

3. Minimize the short- to long-term cyclical nature of the economy.

4. Develop Westport's tourism base so that it takes on an increasingly greater year-round orientation.

5. Coordinate the expansion of the economy with the development of the physical environment and the provision of needed public and social services.

6. To provide adequate locations for commercial and industrial development.

7. To enhance the city's competitive position within the region, especially in relation to tourism.

8. Coordinate with Area-Wide Development in a phased manner, to lever resources outside the current city limits, including through annexation where appropriate, to enable hazards-resilient economic development.

9. To encourage businesses and industries to provide employment opportunities that will attract and retain younger populations.

10. Encourage all multi-story development or redevelopment to also be able to be used as tsunami vertical evacuation structure facilities.

11. Encourage retrofitting of infrastructure in the Marina district to be more sustainable and resilient to the impacts of climate change, including sea level rise.

12. Encourage economic development and business expansion in areas less prone to the effects of climate change, in particular sea level rise and increased flooding instances.

13. Assist businesses to develop plans for the safety of their patrons, guests and employees in the event of an earthquake and tsunami.

14. Support and encourage continued development of the crabbing industry, particularly during the winter months when other businesses may slow.

POLICIES:

1. Encourage and provide opportunities for increased diversification of the local economy.

2.   The City should encourage the retention and maintenance of existing businesses and establishments which contribute to the diversification of the Westport economy.

3.   Implement other policies in the comprehensive plan which provides for commercial and industrial development locations.

4.   Encourage the development and maintenance of attractive commercial and tourist service areas, particularly along Westhaven Drive and Montesano Street.

5.   Conserve those natural resources upon which the local economy depends or upon which the local economy could benefit.

6.   The City should cooperate with all elements of the local economy, including labor, business, education, and government.

7.   Actively review and, if feasible, seek available funding sources oriented towards enhancing local economic development. Consider such enhancements as installing sidewalks, lighting and a center turn lane in the business district along Montesano Street.

8.   Provide appropriate information to individuals or organizations engaged in attracting economic development.

9.   To support public-private economic development partnership investments and involvement.

10.   To periodically review land use regulations to assess whether they create an undue burden upon economic development efforts; however, the city shall not ease land use regulations to the extent the public health, safety, and welfare is threatened.

11.   The City should make efforts to coordinate its economic development efforts with other local governments, special purpose governments, and other local organizations promoting economic development. Such organizations include, for example, the Port of Grays Harbor, the Grays Harbor Council of Governments, and Greater Grays Harbor Inc.

12.   Support an educational system that provides a well-trained labor force for economic expansion, that encourages young people to stay in the community, and that provides training for those wishing to change or advance their careers.

13.   To provide sufficient land through the comprehensive plan and zoning ordinance to allow for the reasonable expansion of business and industry.

14.   To establish zoning standards for the location of industry which attempts to balance the need for economic growth with the local environment and community appearance.

15.   The City should maintain a system of public facilities and services which encourages economic growth while maintaining reasonable costs to existing residents and businesses.

16.   To protect prime commercial and industrial areas for their respective best uses, with special attention given to areas especially suitable for water dependant uses.

17.   The City should support efforts to improve transportation accessibility along the Washington Coast, especially re-establishing the ferry service between Westport and Ocean Shores.

18. To encourage economic development opportunities and aviation related uses adjacent to the airport and promote the efficient mobility of goods and services region-wide consistent with the economic development element and regional transportation strategy.

19. The City should support economic development that incorporates hazard mitigation strategies in planning and infrastructure. Multi-story buildings should be encouraged where practical to be used as part of tsunami vertical evacuation structures. Conversely, tsunami vertical evacuation structures should be designed, built and managed to function also as contributors to the local economy, by accommodating businesses or other needed activities, and by enhancing the identity ("brand") of Westport and serving as recreational and touristic attractions.

20. The City should support efforts of the Port of Grays Harbor to implement its Comprehensive Plan for Port property within Westport.

21. The City should encourage development of industries that are more resilient and less prone to the effects of climate change.

22. The City should monitor economic activities that are prone to effects of climate change and sea level rise, including oyster and shellfish producers, and consider relocation opportunities for affected businesses if necessary.

23. The City should work with businesses and the hospitality industry to develop robust plans for evacuation and other protective action for employees, patrons and guests in the event of an earthquake and/or tsunami. Such plans should address the securing of fuel and other flammable and hazardous materials.

24. The City should explore creative land rights and investment tools to raise funds and acquire land for the construction of new housing and public facilities on the highest ground within or just outside city limits, while gradually relocating vulnerable uses from flood-prone areas and replacing them with more flood-tolerant, non-permanent, income-generating development.

25. The City should monitor and explore high forested land farther outside city limits for possible income-generating, environmentally low-impact camping, hunting and other recreational facilities attractive for residents and visitors, and capable of functioning as emergency refuge and shelter areas. Over the long-term, assuming an earthquake and tsunami do not strike sooner, income from higher-ground development can subsidize gradual reduction of vulnerable development on low-lying land while simultaneously providing for a possible need by the community to relocate.

CHAPTER 7

COMMUNITY IDENTITY AND

NATURAL RESOURCES ELEMENT

Introduction:

The physical appearance of a city has significant implications not only for the well-being of not only residents, but for effectiveness of City government as well. For residents, a well designed, aesthetically enriching city contributes significantly to quality of life and community attachment. For the city, the same well-designed features contribute towards economic development of attracting visitors and tourists to the community and facilitating a range of governance goals including hazard mitigation and emergency management.

This element addresses the issue of aesthetics in the city of Westport with focus on both the developed and undeveloped environment. The primary emphasis on the built environment is upon the commercial and tourist service uses since this is where attractive design to promote tourist-oriented economic development is necessary. In addition, commercial areas, because of the traffic generated (both vehicular and pedestrian) as well as the extensive advertising, necessitate special attention to physical design principles. Community identity also covers historic preservation and local culture in the Comprehensive Plan as these are also part of the character of a city and foster community well-being and attachment to place.

As for the natural environment, the intent is to recognize the importance of open space, vegetation, and wildlife. These assets contribute to the local quality of life and, again, are factors related to the City's attractiveness to visitors and tourists as well as its hazards resilience. The following establishes the goals, objectives, and policies for the appearance and specific resources of the community.

GOALS:

A visually enhancing and aesthetically pleasing built environment, particularly in the commercial and tourist service areas, based upon sound design and planning principles, that will enhance the city's character and quality of life for its residents.

The conservation of the unique natural features and heritage of the city, with development intended to capitalize upon and promote public awareness of such features.

A built and natural environment the community can be proud of, that offers safe spaces and protection of residents, workers, visitors, and community assets from natural hazards, while enhancing everyday life in the City and beyond.

A community identity that is robust and resilient enough to withstand even the rarer and more extreme possibility of earthquake and tsunami damage, as well as the less severe but more likely and frequent changes that accompany sea level rise, erosion, and climate events.

OBJECTIVES:

1.   The unique seaside character of the Westhaven area should be maintained and, if feasible, enhanced. The tourist related portion of the Westhaven area has been improved over the past

decade to include more pedestrian friendly sidewalks, and traffic revisions have improved as well as slowed down traffic flow. These improvements should be continued.

2.   A gradual diversification of the basis of community identity in Westport, to include possible, eventual relocation of community facilities and housing to higher ground outside city limits.

3.   A visually pleasing commercial and tourist service area.

4.   To preserve, as feasible, the following:

        a.   Light.
        b.   Views.
        c.   Privacy.
        d.   Open space.
        e.   Shorelines
        f.   Dune ridges and other high ground.
        g.   Other natural features.

5.   To avoid conflict of street and signage lighting with surrounding areas.

6.   To promote and increase awareness of the natural environment.

7.   To promote the compatible relationship of the built environment and the natural environment, including the shoreline and high ground..

8.   To continue to work toward carrying out the Master Plan for the Westport Marina District and the Marina District Parking Study, and to provide maximum public access to natural areas while minimizing impacts to the environment.

9.   Explore opportunities for integrating natural hazard and resilience awareness and education opportunities in the built environment in the form of evacuation route signage and landmark structures that indicate evacuation routes and destinations.

10.   Explore opportunities to integrate cultural monuments and landmarks with emergency preparedness in the form of tourist attractions or other iconic structures such as pillars, lampposts, kiosks, etc that can be used to disseminate information about hazards. These can become unique features (like the tsunami warning towers) around Westport, adding more character to the image of the city.

POLICIES:

1.   The City should encourage business owners to participate in design-oriented improvements which will improve the aesthetic quality of their establishment and surrounding establishments.

2.   Future development of the city, especially in the tourist service and commercial areas, should be based on sound design principles intended to enhance the visual quality and aesthetic pleasure of the community.

3.   Continue to improve street walkability and bike-ability through participation in Complete Streets and other such programs to build sidewalks, bike lanes and trails.

4.   Buildings should be oriented towards pedestrians using awnings, vegetation, and providing visual activity.

5.   Buildings on tsunami evacuation routes should be subject to having evacuation route signage on the street side frontages or rooftops, or other consistent coloring or identifying features.

6.   Establishments should be encouraged to rely primarily on the quality of its products or services as promotion, and not on attention attracting devices directed towards chance customers.

7.   Signs should be kept as simple as possible, relying on symbols to avoid needless clutter and complexity.

8.   Signs should be small and low level, oriented towards pedestrians; perpendicular or preferably flat to buildings.

9.   The City should study methods of sign regulation, compatible with aesthetic appearance and economic practicality.

10.   The City should consider adopting an outdoor advertising code: sensitive to the needs of business, residents, and visitors.

11.   Sign lighting should not be reflected or directed towards residential uses or areas.

12.   Street lights should be designed to provide comfort, safety, and security.

13.   Where feasible, the City should encourage and support efforts to place power and lighting utilities underground.

14.   The city should strictly enforce litter control, abandoned vehicle, animal control, and other ordinances pertaining to the visual appearance and character of the city.

15.   The City should encourage litter control as well as encourage community litter pick-ups and prevention programs.

16.   The City should preserve and/or incorporate scenic and aesthetic features as feasible into the development of public projects.

17.   The City should treat new tsunami vertical evacuation structures as landmarks that enhance the City's image and help visitors know where they are in the environment, as well as opportunities for recreation and tourist attraction. The design of vertical evacuation structures should correspond with community identity and appearance goals and objectives and City of Westport design standards and guidelines.

18.   Landscaping:

         a.   Should not significantly obscure waterfront views.

         b.   Should be encouraged in areas where it may serve to separate pedestrians from vehicles.

c.   Should be encouraged to buffer differing land use classifications from one another.

19.   The removal of trees should be minimized particularly when located on steep slopes; however, trees which are diseased or distressed, damaged or unstable should be removed at no cost to the City unless on City owned property.

20.   Enforce ordinances against unkempt property, especially grass and debris which may pose a fire hazard.

21.   The City should encourage the preservation and maintenance of historically significant structures and archeological sites in the area and consider moving important historic artifacts and archives to facilities at a higher elevation.

22.   The City should encourage recreational programs and activities which promote knowledge of the area's natural resources and raise awareness of natural hazards and how to take appropriate protective action in hazardous events. The City should explore community-based social marketing approaches to increase the effectiveness of these programs and activities. Pedestrian evacuation and other preparedness drills or tests of hazards and preparedness knowledge should be integrated into such activities.

23.   The City should encourage development which capitalizes on the scenic nature of the community, and which enhances the natural beauty of the community.

24.   The City should encourage flood-smart building, stormwater management, and other infrastructure design on properties that are currently subject to flooding or where future sea level rise projections suggest such flooding may occur.

25.   Public rights-of-way improvements must include appropriate green stormwater management measures.

26.   The City should seek to preserve and maintain the following open spaces:

a.   Land which serves as buffers between transitional land uses.
b.   Areas with unique rare or endangered vegetation or animals.
c.   Land which has potential for future recreational use.
d.   Land which has potential for future community gardening or farmers markets
e.   Areas of steep slopes.
f.   Areas prone to flooding and storm surges.
g.   High ground and other sites appropriate for emergency supply storage, tsunami vertical evacuation structures, or other places of refuge as well as potential trail routes between these sites.

27.   The City should pursue the development of increased public access to shoreline areas in conformance with the goals and policies of the Westport Shoreline Master Program.

28.   The City should coordinate its activities with those agencies who have the responsibility for maintaining or enhancing air and water quality.

CHAPTER 8

AREA-WIDE DEVELOPMENT ELEMENT

Introduction:

As time progresses, it is expected that the City of Westport will be increasingly confronted with development issues and concerns in areas beyond the immediate borders of the city, particularly to the immediate south, but also to higher ground farther away in Ocosta and Grayland. It is important to recognize that many citizens of Westport work in the area outside the city limits and there is a benefit to the City of continued development in these areas. While there are significant issues to manage, Westport should avoid an attitude of isolation. Significant issues include the degree to which municipal services should be provided and extended to residents beyond Westport's corporate limits and, secondly, the potential for expansion of the City's tax base through annexation.

In terms of public facilities, the City has the responsibility to see that the needs of its own residents are met first. In addition, the City should also be concerned with not overburdening its public facilities or jeopardizing natural resources such as ground water.

As for annexation, orderly area-wide development is of benefit to the City since, if annexed, those areas would become part of the City's tax base and responsibility in relation to public facility provision. Efficient area-wide development then, would facilitate Westport's responsibility to any area should it eventually become annexed.

Another point of consideration for this element is the fact that emergency evacuations involve Westport residents leaving Westport, often for higher ground outside the city limits. It is therefore important to consider what resources are available to residents once evacuated and where exactly residents are being evacuated to. In the most severe possibilities of earthquake and tsunami damage to the Westport peninsula, higher ground currently outside the city limits may be the closest land available for long-term resettlement after a disaster.

The following, then, outlines the goals, objectives, and policies concerning area-wide development in Westport with the issues primarily centered on public facility provision and annexation/tax base expansion.

GOALS:

To promote an efficient and orderly pattern of development in the unincorporated area south of Westport which protects Westport's unique seaside character, the area's environmental amenities and natural resources, and the City's fiscal capacity.

To promote a development pattern in the unincorporated area south of Westport which maximizes the use of, and protects the integrity of the City's public facility investments while providing for efficient expansion and maintenance of public facilities.

To create safe evacuation areas for all residents and visitors to Westport as a place of refuge from natural hazards, in particular tsunami evacuation.

To lever resources in the larger area of South Beach that may enhance Westport's economy.

To ensure the long-term viability of Westport as a community in the event of a large earthquake and tsunami, by preparing gradually for possible resettlement in areas outside the city limits.

OBJECTIVIES:

1.   To protect the character, environmental amenities, and natural resources of the Westport area.

2.   To promote the expansion of the City's tax base as public facilities are extended.

3.   To encourage the orderly and efficient expansion of public facilities.

4.   To minimize impact on sensitive areas through the review of development proposals in the Ocean Beach Residential zone and enhance the access to utilities and public safety.

5.   Encourage vertical evacuation structures outside city limits, such as that of Ocosta Elementary School

6.   Investigate opportunities to acquire additional undeveloped land outside the city limits to increase natural resources for the City and also serve as a possible city expansion or relocation site should the need arise in the future.

7.   Encourage preservation of important ecosystems outside Westport city limits including dunes, wetlands, forests, and oyster beds.

8.   Identify potentially accessible high ground areas (e.g., dune ridge, land area south east of Westport) that can be used as refuge from a tsunami.

9.   Collaborate with Grays Harbor County and private property owners to include unincorporated areas outside Westport city limits in public outreach and planning for emergency management and response.

10.   Support efforts to increase tsunami evacuation route signage throughout the region

POLICIES:

1.   The City shall plan for and promote a development pattern for the Westport area which will carry out the goals, objectives, and policies of this plan. The pattern shall be implemented through the City's land use regulations, public facilities improvements, and capital improvements.

2.   The City shall promote the protection of the character, the environmental amenities, and the natural resources, especially ground water resources of the Westport area.

3.   The City shall encourage the annexation of unincorporated areas to the extent capable of providing infrastructure and services including drainage.

4.   The City should not expand public services into unincorporated areas unless the full costs of the construction are borne by the property owner served or the expansion is deemed to be in the best interest of the City.

5.   In preparation for potential annexation, the planning commission should review the need to develop zoning regulations for those unincorporated areas which may potentially be annexed.

6.   The City should research land acquisition opportunities outside city limits, at higher elevations, for tsunami refuge and possible long-term relocation opportunities, beginning with critical facilities.

7.   The City should consider both short-term and long-term acquisition of accessibility and development rights to higher elevation land outside the city limits, both for direct safety and for economic development that enhances the City's resilience. This can include but is not limited to:

>   In the immediate term, private logging roads which provide access to higher ground suitable for evacuation and refuge, but which are currently gated and locked, should be openable and useable for emergency evacuation.

>   Short-to-medium-term acquisition of higher ground for hiking, biking, camping and hunting facilities areas that would also be suitable for emergency shelter and refuge. Gradual incorporation of higher-ground uses in the community's everyday life and identity can help prepare the City for relocation and resettlement if needed.

>   Medium-to-long-term investment in higher ground for income-generating resort development that would also be suitable for relocation of households and critical facilities in the worst case of an earthquake and tsunami.

CHAPTER 9

SHORELINES MASTER PROGRAM

The City of Westport has elected to implement the State Shoreline Management Act, Chapter 90.58 RCW through the adoption of Chapter 17.32 of the development regulations of the City of Westport's Municipal Code.

Shoreline regulations apply to all lands and waters in the City of Westport which are under the jurisdiction of the Shorelines Management Act of 1971. These lands and waters are shown on the City of Westport Comprehensive Land Use, Shoreline, and Zoning Map (see attached Appendix A).

State of Washington regulations require that all local government agencies with shorelines of the state within their boundaries develop and administer a Shoreline Master Program. The Shoreline Master Plan is required to better regulate the management, and enforce land use regulations for development, on shorelines of Statewide Significance to provide no net loss of existing wetlands, sensitive, and critical areas.

The legislature finds that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration, and preservation.

The timing of and process for review and approval of updates and amendments to the Shoreline Master Program are established by the State Legislature and codified in the Washington Administrative Code. Shoreline Master Program updates may or may not coincide with Comprehensive Plan updates. Any approved amendment or update of the Shoreline Master Program shall be considered as an update to the Comprehensive Plan and included as an addendum to the attached Appendix C.

In the original City of Westport Comprehensive Plan, adopted in 1998 and revised in 1999, funding was provided in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology.
This revision and update to the original document was not funded through this program.

The current approved City of Westport Shoreline Master Plan as it currently exists or is hereinafter amended, updated, or replaced by ordinance of the City Council of the City of Westport, is adopted by reference and included as Appendix C. While this is a separate document, adopted by reference, hazard mitigation strategies, in particular in response to sea level rise, will need to be considered in future updates of the Shoreline Master Plan. This may include but not be limited to updated maps and zones of areas that are now in shorelines, relocation of infrastructure including roads away from shorelines, and measures to protect vegetation and ecosystems encroached upon by sea level rise.

CHAPTER 10

HEALTH AND WELL-BEING

Introduction

The decision to incorporate a health and well-being element in the Comprehensive Plan was driven by the importance for adequate health services, especially to a community where the median age of the population is 43.8 years, and 19% of the population are aged over 65. Health and well-being is however important to all members of the community and therefore appropriate planning for future needs of human health and well-being are important.

Westport already has several health care services including a physician, pharmacy, optician, dentist, licensed massage practitioner, and alternative medicine provider. These facilities are likely being used by residents outside of Westport in the wider South Beach area. For health care services beyond those available in Westport and for emergency services Westport residents must travel to Aberdeen where the closest hospital (Grays Harbor Community Hospital) and a more complete pharmacy is located. It is important for Westport to retain its existing health care services, and to assess what additional community health care needs exist and how to meet them.

Mental health and physical health are also provided in a community by means other than primary health care services. Access to healthy food, pedestrian-friendly areas that encourage walking and physical exercise, and access to social spaces and activities also help promote health and well-being. As such this will also be addressed in goals and objectives of this chapter.

In addition to primary health care needs for the community it is also important to consider and plan for how these facilities and services can be utilized or replaced in emergency situations, in particular in response to natural hazards that cut off physical access to and from the City. Ensuring emergency response medical resources are available in a natural disaster situation are therefore of high importance for health and well-being planning purposes.

While Grays Harbor County Public Health and Social Services already has policies and practices that serve Westport and surrounding areas of the county, there are important aspects of public health that intersect with the various elements of the Comprehensive Plan, as well as with local strategies for hazards resilience. Those intersecting points are highlighted here, but this new element is not intended in any way to replace or conflict with County plans, policies or practices.

The following establishes the goals, objectives, and policies to address the above issues in health and well-being for the City of Westport.

GOALS:

> A broad range of health services that recognize the changing health and well-being needs of residents and are able to accommodate this through primary health care.

> An efficient and effective emergency response system to allow for adequate medical aid in response to natural hazards such as earthquakes and tsunamis.

A community that supports both physical and mental health and well-being through a combination of primary health care providers and access to other promoters of health and well-being such as physical exercise and access to healthy food.

OBJECTIVES:

1.   Encourage existing health care providers in Westport to continue operations in the future to continue to meet the health needs of the wider community

2.   Promote telehealth technology as a means to offer a broader range of services and increase access to health care while reducing dependency on travel to larger cities.

3.   Promote networking and communications between health care providers both within Westport and further afield to more specialized health care providers.

4.   Continue to assess the health care and well-being needs of the community through community outreach to ensure required health and well-being services are being provided where possible.

5.   Ensure that telehealth and networking communications are technologically and organizationally robust enough to function when regular broadband and cellular networks are disrupted by major storms or earthquakes.

6.   Consider relocating critical health care facilities to higher ground within the City of Westport, or nearby, to build resiliency from natural hazards such as sea level rise and tsunamis.

7.   Maintain emergency medical supplies in safe, secure locations that are accessible and usable after a natural hazard event.

8.   Encourage walking, physical exercise and outdoor activities by improving Westport's trails and pedestrian circulation through the residential areas, urban areas, parks, beaches and the Marina District.

9.   Promote access to healthy food through food pantries and community gardens maintained by the community that are functional in an emergency.

POLICIES:

1.   The City shall continue to work with Grays Harbor County Public Health and Social Services to monitor the health and well-being needs of the community and where possible ensure these needs are being met.

2.   In emergency preparedness planning the City should ensure there are adequate medical and food supplies that can be accessed in response to emergencies such as natural disasters, including in tsunami vertical evacuation structures.

3.   The City should encourage community gardens and farmers markets to promote access to healthy food.

4.   All new development should have pedestrian access to encourage walking as a mode of transportation.

CHAPTER 11

IMPLEMENTATION

Introduction:

For the comprehensive planning process to be effective, it must be integrated with a strong commitment towards implementation. This chapter outlines the process and procedure for the implementation of this comprehensive plan.

The planning process requires a framework of continual monitoring, reevaluation, reassessment, and corrective action. As this comprehensive plan is long range, there will probably be a need for refinement of goals and policies as new circumstances present themselves. The need for feedback and response, then, will be essential to the implementation of this plan. The following outlines a series of recommendations and standards geared towards assuring the effective implementation of this comprehensive plan.

1.   <u>Public Participation</u>

A comprehensive plan reflects the goals and aspirations of the community at large. As a result, the comprehensive plan requires that citizen participation is sustained within the planning process. The following presents standards for citizen participation for the comprehensive planning process.

Encourage maximum citizen participation in all phases of the local government decision making and comprehensive planning process, especially by those groups who have traditionally lacked access to the decision-making process.

The planning commission should be used aggressively as a means of addressing community development concerns, as well as formulating citizen concerns into policy recommendations.

The planning commission should be comprised of individuals who represent a wide range of interests within the community.

2.   <u>Intergovernmental</u>

It should be recognized that incorporated limits are geographical, not social, concepts. That is, social and economic relationships extend beyond the political, city limit boundaries. For this reason, the need for intergovernmental coordination in decision making to address mutual concerns should be recognized.

The city of Westport should promote inter-jurisdictional cooperation between itself and Grays Harbor County, other cities, special purpose governments, special districts, as well as with state and federal agencies.

The city of Westport should promote communication and coordination with other political entities to assure that plans and projects are consistent with the goals and objectives of one another.

3.   Plan Review

As a long-range planning document, the comprehensive plan anticipates needs and concerns which may present themselves in the future. The flexibility of this document is designed to allow room for changing needs. Nonetheless, uncertainty over future occurrences as well as changes in tastes and preferences may require modifications to this comprehensive plan. Thus, the following are recommended as a plan review monitoring technique.

The Planning Commission and City Council should, on an annual basis, review the comprehensive plan document to ensure that it functions as an accurate expression of community preferences.

The City should maintain an adequate staff to enable the effective implementation of the plan's policies, as well as to provide assistance in the plan review process.

4.   Regulatory Coordination

As state law notes,"...the comprehensive plan shall not be construed as a regulation of property rights or land uses." (RCW 35A.63.080). Instead, the comprehensive plan is a general guide and point of reference from which administrative and legislative action should be taken. This comprehensive plan, then, should be coordinated with the land use regulatory devices of the city of Westport as follows.

    a.   Zoning Ordinance:
        After development in 1997, this comprehensive plan document was followed by the adoption of a new zoning ordinance which was originally developed in 1973. The City of Westport shall, upon adoption of the comprehensive plan update, continue to periodically review and update the current zoning ordinance as a continuing process.

    b.   Subdivision:
        As the city subdivision ordinance affects land density and the provision of public facilities, subdivision documents should be reviewed for their consistency with the comprehensive plan. The city of Westport shall review subdivision ordinances and, if necessary, initiate amendments to bring them in conformance with the goals, objectives, and policies of the Comprehensive Plan.

    c.   Other Regulations:
        There are various other plans and regulations which impact the physical development of the city. The importance and effect of these documents in relation to this comprehensive plan must be considered. The City of Westport shall review those regulations impacting the implementation of the comprehensive plan. These include, but are not limited to, those plans currently adopted by reference and listed in section 7 of this chapter.

5.   Regulatory Implementation

State law requires the application and referencing of the comprehensive plan in the city's decision-making process for actions affecting the physical development of the city. In keeping with state regulation, the following standards are presented.

The City of Westport shall consult the comprehensive plan as a preliminary to the establishment, improvement, or vacation of streets, parks, public ways, public buildings, and public structures.

The legislative body of the City of Westport shall not accept the dedication of any street or other area for public use until the city staff has considered the location, character, and extent of the effect thereof with reference to the comprehensive plan.

In considering land use decisions such as variances, rezones, and conditional uses, the Land Use Hearings Examiner, Planning Commission, and/or City Council shall consult the Comprehensive Plan to see that their decision is consistent with the goals, objectives, and policies therein. Should any land use action be in conflict with any goal or objective in the Comprehensive Plan, that action shall not be approved. If the Land Use Hearings Examiner, Planning Commission, or City Council wishes to take action in conflict with the Comprehensive Plan, those goals and objectives in conflict shall first be deleted. Only after an amendment has been made shall final action be taken.

6.   Amendments

Should, as time proceeds, it become evident or necessary that amendments be made to the comprehensive plan, the City of Westport shall follow the amending requirements set forth in RCW 35A.63.073, or its successor thereafter.

7.   Adoption by Reference

In addition to the goals, objectives, and policies described in this comprehensive plan, the following previously adopted statements of goals, objectives, or policies, as they currently exist or as hereafter amended, are hereby adopted by reference to remain in effect as portions of the comprehensive plan. These include:

a.   City of Westport Parks and Recreation Plan.
b.   City of Westport Comprehensive Water System Plan.
c.   City of Westport Sewer Comprehensive Plan.
d.   Westport Municipal Airport Layout Plan.
e.   Master Plan for Westport Marina District.
f.   Marina District Parking Study.
g.   Transportation Improvement Plan.
h.   Shoreline Master Program.
i.   Hazard Mitigation Plan.
j.   City of Westport Design Guidelines and Standards

It is anticipated, over the course of the next 20 years from the adoption date of this comprehensive plan, that the City will have reviewed and adopted additional planning documents. Upon approval by the city of Westport, any such plans shall automatically be incorporated and adopted by reference as portions of the Comprehensive Plan.

CONCLUSION

This Comprehensive Plan has established goals, objectives, and policies which should guide the City's decision-making over the length of its effectiveness. As stated at the outset, this document is intended to allow the City the opportunity to anticipate its future aspirations, rather than react to day to day circumstances. This plan should also be seen as a coordination device, which will avoid competing and conflicting decision-making. The comprehensive planning process can, if effectively implemented, enable the City to operate in a much more orderly and rational manner, and promote decisions that represent the values and preferences of the community at large.

Appendix A
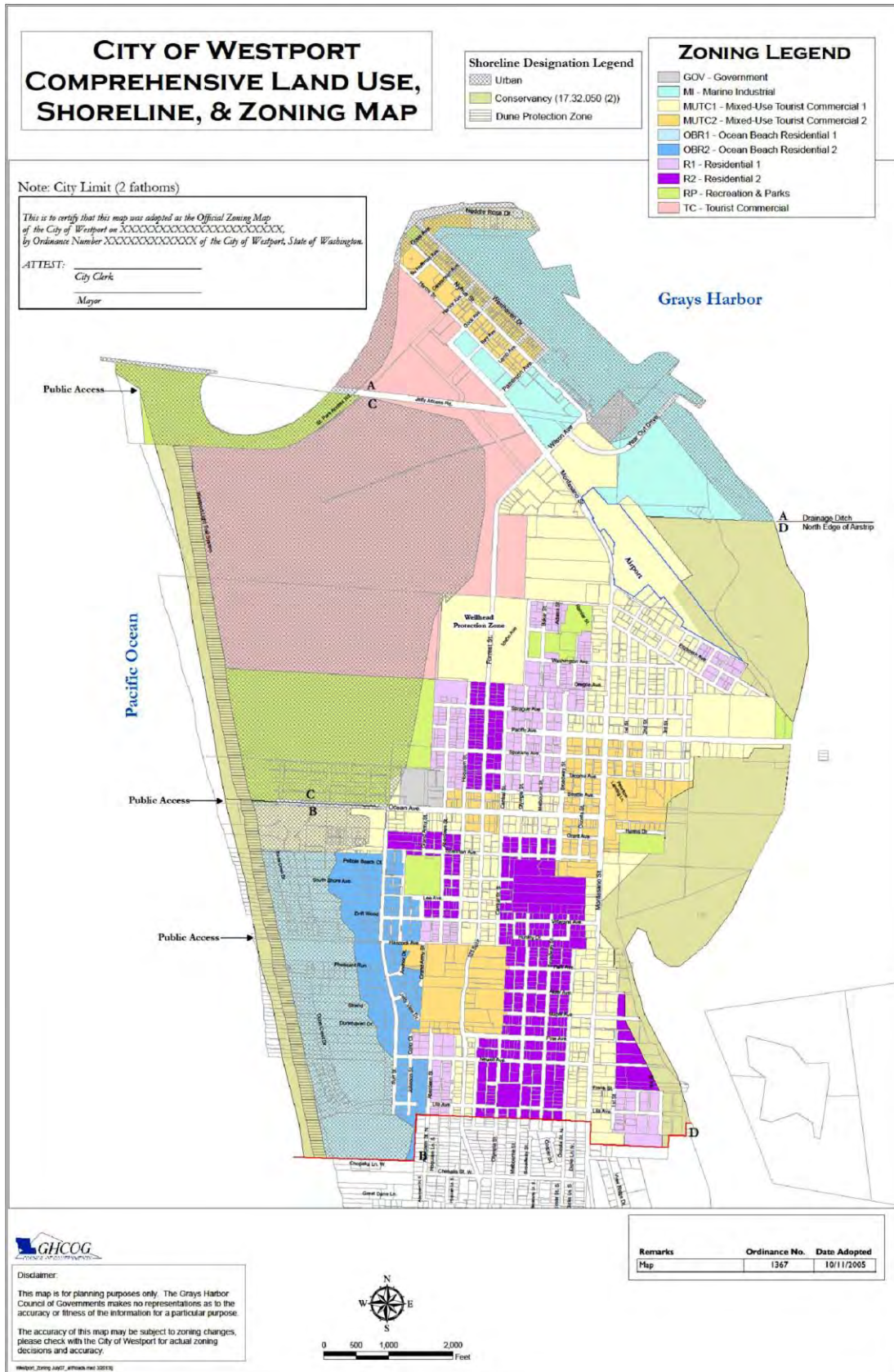
Appendix B
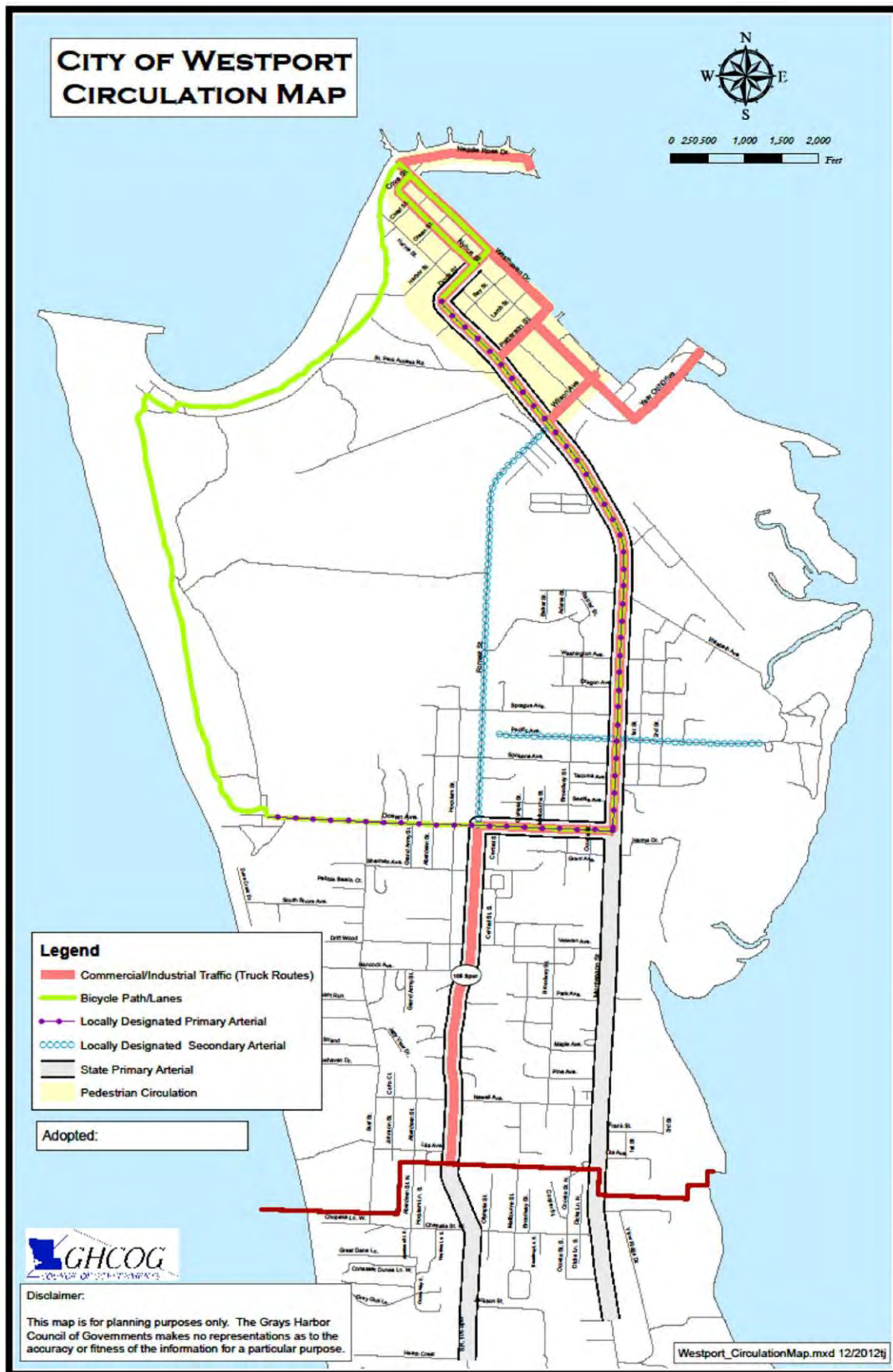
Appendix C

Shoreline Master Program

SHORELINES GOALS AND POLICIES

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INTRODUCTION TO THE SHORELINES MASTER PROGRAM
Introduction

The City of Westport has elected to implement the State Shoreline Management Act, Chapter 90.58 RCW through the adoption of goals and policies in Chapter 9 of the City of Westport's Comprehensive Plan, and Chapter 17.32 of the development regulations in the City of Westport's Municipal Code.

Shoreline regulations apply to all lands and waters in the City of Westport which are under the jurisdiction of the Shorelines Management Act of 1971. These lands and waters are shown on the City of Westport Land Use, Shoreline, and Zoning Map.
CHAPTER 1. SHORELINES ELEMENTS AND *GOALS*

Eight elements relating to Shorelines Management have been identified: Economic Development, Public Access, Circulation, Recreation, Land and Water Use Conservation, Valuable Sites and Structures, and Restoration. Each of these is described below and then appropriate goals are drawn.

A.   Economic Development

The primary sectors of the regional economy are forest products, fishing, and tourism. Forest products, fishing, and tourism have seasonal highs and lows, which affect the population and resources of the local economy. Expanding the local economy base is an important function of our shoreline assets.
Economic Development Goal:

To maintain and enhance our shoreline-related industry. To secure an adequate amount of shorelines of an appropriate nature for these industries, and to provide an adequate area for diversified shoreline-related industries as implemented through comprehensive plan maps and development. The City supports state-wide efforts for industrial sites of state-wide significance. No specific sites are identified in the City.

B.   Public Access

Recreation is often divided into two types: active and passive. The following goal is based on both types of recreation use and recognizes the need for this access to be compatible with the recreation and the private needs of local commerce and industry.
Public Access Goal:

To maintain and improve our existing public access to publicly-owned shorelines and to secure additional access for residential and general public use through land use plans identified in the comprehensive plan and development regulations.

C.   Circulation

In Westport, circulation is closely intertwined with the shoreline resource. Circulation also includes the various above- and below-ground utility systems such as electricity, water, and sewer. Our local economy is dependent on a network of roads, railroads, shipping, commercial and sport fishing, and air travel.

Circulation Goal:

To create and maintain a circulatory network capable of delivering people, goods, services, and emergency services at the highest level of convenience, safety, reliability, and economy. The secondary effects of circulatory system development must be accounted for in the planning of such systems to avoid undesirable side effects.

D. Recreation

Access to shorelines for passive and active recreation was included as a consideration in the Public Access Goal. Water-related recreation depends on access but also represents a specific activity or use of the water or the adjacent shorelines. This activity takes several forms and is noted in the Economic Goal as an integrated part of the regional economy.

Recreation Goal:

To seek and provide proper recreational opportunities for the local citizenry, to see that the at-home recreational needs are met. Further, to maintain and enhance our tourism resources, to stabilize these resources, and to guide resource development such that development enhances rather than detracts.

E. Land Use

Land use goals are designed to protect community resources and property values and to further provide for the overall development of the community in a cost-effective manner. The purpose of the shoreline program is to guide overall planning objectives.

Land Use Goal:

To promote the best possible pattern of land uses, to assure a minimum of conflict between uses, to assure that individual uses are placed on sites appropriate to such uses, to assure that lands and waters of specific natures are available to uses which need such special types of lands and waters, to see that all of the uses needed by the region have a place, and to generally devise a pattern beneficial to the natural and human environments, and to provide reasonable opportunity for residential, tourist, recreation, and water-oriented commercial and industrial uses on the shorelines of the City.

F. Conservation

As noted earlier, the local economy depends heavily upon local resources, especially the renewable ones, so for economic and social reasons conservation is important. The supply of the renewable and non-renewable resources is limited and must be conserved and used wisely.

Conservation Goal:

To identify the resources of the region including: fish, wildlife, timber, estuaries, shorelines, beaches, scenic areas, critical areas, land, water, and air. The City's development regulations are designed to enhance these goals.

G. Historic, Cultural, Scientific, and Educational Sites and Structures

Historic, cultural, scientific, and educational sites or structures located within the area under the jurisdiction of the Shoreline Act should be identified and preserved so that their values will not be lost to our or future generations.

Historic, Cultural, Scientific, and Education Sites and Structures Goal:

Historic, cultural, scientific, and educational value should be preserved and maintained through park use or historic designation.

H. **Restoration**

There are shoreline areas where there are structures and uses which are damaged or deteriorated. Reuse and rehabilitation of these areas are important. Direct development into those areas rather than encouraging the use of unused land is one way to encourage restoration.

Restoration Goal:

To encourage development in areas which have been previously impacted with development so that such areas may be renewed, restored, and refurbished by compatible new development.

CHAPTER 2. SHORELINE MANAGEMENT POLICIES

The City adopts the goals of RCW 90.58.020 as implemented statewide through Chapters 173-16 and 173-27 WAC and implements those policies specifically through this Comprehensive Plan and the associated development regulations.

A. **Master Program Concept**

The City of Westport Shorelines Master Program consists of this Chapter 9 of the Westport Comprehensive Plan and Chapter 17.32 of the City development code applicable within the shoreline area.

B. **Activity and Development Policies**

1. Agricultural Practices: Agricultural practices are those methods used in vegetation and soil management, such as tilling of soil, control of weeds, control of plant diseases and insect pests, soil maintenance, and fertilization. Within Westport agricultural practices consist of low - intensity activities such as pasture and grazing.

a. Buffer strips should be maintained where needed between cultivated lands and bodies of water to protect the aquatic environment.

b. Proper plowing patterns should be used to avoid excess runoff and erosion.

c. Diversion of waters for agricultural purposes should be done only in accordance with water right procedures.

d. The application of clean sand as a soil improvement measure to pastures and croplands may be permitted where the sand will not negatively impact aquatic vegetation or enter nearby waters.

e. Pesticides, herbicides, and fertilizers should be applied in a manner which minimizes direct or indirect entrance into nearby waters. Application of pesticides intended to abate mosquitos or similar water-related infestations should be administered in accordance with Environmental Protection Agency standards.

2. **Aquaculture:** Aquaculture (popularly known as fish fanning) is the culture or farming of food fish, shellfish, or other aquatic organisms.

   a. Aquaculture structures should conform to existing guidelines elsewhere in the Act. Potential sites are often in areas of high aesthetic value.

   b. Navigation should be routed, where possible, to minimize hazards to aquacultural projects.

   c. Areas which have the proper combination of characteristics needed for aquaculture should be identified for that purpose.

   d. Water quality in waters that circulate into aquacultural areas should meet standards that will insure the quality of aquacultural waters.

   e. Aquacultural enterprises should be given every encouragement as potential diversifying factors in the local economy.

3. **Mining:** Mining is the removal of naturally occurring materials from the earth for economic use.

   a. When rock, sand, gravel, and/or minerals are removed from shoreline areas, the adjacent waters should be protected from mine-generated sediment, debris, and deleterious effluent. This protection should include, but not be limited to, a buffer strip when appropriate.

   b. Excavations for the production of sand, gravel, and minerals should be done in conformance with the Washington State Surface Mining Act.

   c. The removal of sand and gravel from marine beaches may only be permitted to keep road accesses open. The removal of sand and gravel from marine beaches for any other purpose is prohibited.

   d. The removal of sand or gravel from the dune protection/conservancy zone is prohibited, except as provided in "c" above.

4. **Landfill**: Landfill is the creation of dry upland area by the filling or depositing of sand, soil, or gravel or other suitable materials into a shoreline area.

   a. Shoreline fills or cuts should be designed and located so that significant damage to existing ecological values or natural resources, or alteration of local currents will not occur, creating a hazard or significant injury to adjacent life, property, and natural resources systems.

   b. All perimeters of fills should be provided with suitable means for erosion prevention where appropriate and necessary.

   c. Fill material should be of such quality that it will not cause water quality degradation.

   d. Priority should be given to landfills for water-dependent uses and for public uses.

   e. Upland filling and structures are acceptable providing they do not detract from other goals and policies.

5. **Dredging:** Dredging is the removal of earth from the bottom of a stream, river, lake, bay, or other water body for the purposes of deepening a navigational channel or to obtain the materials for other uses.

  a. Dredging should focus on public access, transportation, and shoreline industry in identified industrial areas.

  b. Dredging should minimize damage to existing ecological values, natural resources, and the river system of both the area to be dredged and the area for deposit of dredged materials and shall also minimize water quality degradation.

  c. Dredging of bottom materials for the single purpose of obtaining fill material is prohibited, except for public repair or restoration projects.

  d. Ship channels, turning and moorage basins should be identified. New areas may be constructed to support industrial, terminal, or marine use.

6. **Clearing and Excavation:** Vegetative clearing including site-clearing, right-of-way clearing, grazing, and damage to vegetation from pedestrians and vehicles should be controlled to the extent required depending on soil type, steepness, etc. so that-erosion will not be- caused, shade will not be removed from shallow streams used by salmon and other fish sensitive to warm water, debris will not be released or rainwater runoff on slopes will be increased.

  Excavation including dredging of channels and marinas, removal of sand or gravel for construction of roads or fills, excavation of drainage ditches, and grading should be controlled to minimize potential impact.

7. **Waste Disposal**: Solid and liquid wastes are generated by recreational activities, industry, commerce, and residents. Waste disposal includes storage, collection, treatment, and disposal practices which if not appropriate can have detrimental impacts on shorelines.
  a. New solid waste landfills shall be prohibited in shoreline areas,

  b. All uses and activities which generate liquid wastes shall utilize public sanitary sewage systems for treatment. Hookup shall be required when a line is within 200 feet of any structure with a waste discharge within the shoreline area,

  c. Waterfront land uses shall include measures to adequately convey and discharge stoma water runoff. The storm water runoff shall be adequately treated to prevent the deterioration of surface or ground water quality.

8. **Public Access**

  a. The granting of public access by private property owners is an important public benefit, and public programs which enable the private owner to provide or continue to provide public access to publicly-owned shorelands should be encouraged.

  b. Residential and commercial development on shorelines of statewide significance should be encouraged to provide linear access ways along the shorelines where such trails are appropriate, as identified on City plans. Such access ways may only be required, however, consistent with state guidelines on acquisition of rights in private property or as mitigation for proposed development or as mitigation for proposed development.

c. Public access should be considered in the review of all private and public developments (including land division) with the exception of the following:

    i. One- and two-family dwelling units; or

    ii. Agricultural/marine industry activities; or

    iii. Where deemed inappropriate due to health, safety, and environmental concerns.

9. Tourist and Commercial Activities

a. The promotion of tourist and commercial activities in appropriate areas of the City's shoreline is central to accomplishing City planning goals and objectives.

b. City plans should encourage optimum use of valuable shoreline areas planned for commercial and tourist services to provide for the local economy and increase public use and access.

c. The City should require adequate public services and utilities in shoreline areas of intensive use.

d. The Port property in Westport is an appropriate location for a concentration of tourist activities.

10. Ports and Water-Related Industry: The Westport marina is a major small boat basin which serves the Grays Harbor estuary and the Washington coast. The marina serves fishing boats and to a lesser extent pleasure craft. Water-dependent and water-related industries served by the marina facilities include seafood trading, processing, storage, ship provisioning, and ship construction and repair.

a. Water-dependent industries which require frontage on navigable water should be given priority over other industrial uses.

b. The cooperative use of docking, parking, cargo handling, and storage facilities should be strongly encouraged in waterfront industrial areas.

c. Terminal and industrial docks and piers must be carefully planned to reduce the adverse impact of such facilities on other water-dependent uses and shoreline resources.

d. Preference for Port and water-related industry should be given to development and redevelopment of existing port areas such as the Westhaven area.

e. The Westport area is the focus for commercial fish harvesting, fish processing, and aquaculture within the Grays Harbor region. The continuation and enhancement of those operations should be encouraged. Support facilities for these harvest activities should be maintained and encouraged.

f. Industries and activities which support off-shore resource development and require water access or frontage are encouraged to locate in shoreline areas identified as suitable for such uses.

g. Continued maintenance of the navigation channel into the marina area is critical to the primary economic role of the Westport area. Maintenance of the channel will be encouraged.

h.   Navigation aids are appropriate to the area and should be constructed and maintained where needed.

11. **Commercial Development:** Commercial developments are those uses which are involved in wholesale and retail trade or business activities. They range from small businesses within residences, to major concentrations of commercial uses and include tourist, tourist support, and destination type activities.

   a.   Priority should be given to those commercial developments which are particularly dependent on shoreline location and which permit substantial numbers of people to enjoy the shoreline.

   b.   Commercial developments not requiring shoreline locations should be encouraged to locate upland.

   c.   Parking facilities should be placed inland away from the immediate water's edge and recreational beaches.

12. **Residential Development:** Residential development is the creation of residential building sites through land subdivision and also the construction of dwellings of all types. Residential development on residentially designated urban shorelines is a priority use under RCW 90.58.020 in areas of existing development. The City's OBR-I zones is specifically designed to address that priority.

   a.   Residential development should be designed with consideration given to shoreline protection and aesthetic enhancement.
   b.   Public access to shorelines should be encouraged in planning residential

developments.

   c.   Residential development shall have adequate provisions for sanitary sewage, water supply, and drainage control.

   d.   Infill within presently developed areas should be encouraged in order to utilize existing utilities.

   e.   Residences over water shall be permitted with adequate sewer and water only in appropriate urban shoreline environments.

   f.   Floating residences are permitted with adequate sewer only in appropriate urban shoreline environments.

13. **Recreation:** Recreation is the refreshment of body and mind through forms of play, amusement, or relaxation. The recreational experience may be either an active one involving boating, swimming, surfing, fishing, or hunting or the experience may be passive such as enjoying the natural beauty of a vista or a lake, river, or saltwater area. Residential uses designed for periodic use promote public access to and enjoyment of Westport's recreational shoreline amenities.

   a.   Developments which provide recreational uses facilitating public access to shorelines, and other uses dependent upon shoreline locations is encouraged.

b.	The linkage of shoreline parks and public access points on public shorelines through the use of linear access should be encouraged. Many types of connections can be used such as hiking paths, bicycle trails, and/or scenic drives.

c.	Whenever practicable, scenic views and vistas should be identified and incorporated into development proposals.

d.	Westport represents the major destination recreation center associated with sport fishing, surfing, and water-based sports as well as golf and conference activity.

e.	Recreational developments should be of such variety as to satisfy the diversity of demands and should be compatible with the environment designations.

14. Utilities: Utilities are services which produce and carry electric power, gas, sewage, communications, and oil.

a.	Development of utilities underground and along existing right-of-ways and easements should be required when infilling existing neighborhoods and in newly developed areas.

b.	Areas damaged by installation of utilities should be restored.

15. Road and Railroad Design and Construction: A road is a linear passageway, usually for motor vehicles, and a railroad is a surface linear passageways with tracts for train traffic.

a.	Roads and railroads should be located away from shorelands, except where necessary to meet the adopted transportation plan.

b.	Scenic corridors with public roadways should have provision for safe pedestrian and other non-motorized travel. Also, provisions should be made for sufficient viewpoints, rest areas, and picnic areas in public shorelines.

c.	The elevation of roads should allow safe access for ordinary and emergency vehicles in times of flood. Drainage openings should be sufficient to discharge flood flows without unduly increasing flood heights. v

d.	Road locations should fit the topography as much as possible, and natural conditions should be altered as little as possible consistent with functional requirements.

16. Marinas: Marinas are facilities which provide boat launching, storage, supplies, and services for small pleasure craft and commercial fishers.

a.	Marinas should be designed in a manner that will minimize damage to fish and shellfish resources and be aesthetically compatible with adjacent areas.

b.	Adequate parking should be provided and should be located as far upland as possible.

c.	The existing marina and support activities within Westport should be maintained and encouraged.

17. Shoreline Works and Structures: This term is used to cover: bulkheads, breakwaters, riprap, jetties, groins, shoreline protection works, piers, levees, docks, channelization works, berms, and the like. In Westport the most significant shoreline works and structures include the south jetty, the groins and rip-rap protecting Westhaven, and the works protecting the marina. The measures are necessary to protect both Westhaven and the harbor entrance channel. Note: SWS means "Shorelines Works and Structures."

a.   Maintenance and protection of the essential SWS should be encouraged and fostered.

b.   The highly altered banklines in the north and northeasterly portion of Westport should be maintained and are considered acceptable alterations.

c.   In-water structures are appropriate in existing developed areas and in direct support of transportation terminals, recreation, the fisheries industry, or other water-dependent businesses.

d.   Navigation structures and erosion control devices such as jetties and groins are acceptable uses in the Westport area.

e.   Where practical, open piling is preferred for piers and docks.

f.   SWS should minimize and/or compensate adverse effects on beach sand movement and further minimize alteration of the natural shoreline.

g.   Where both might be applicable, floating structures are preferred to non-floating types in order to not interfere with water life, currents, sand movement, and circulation.

18. **Archeological Areas and Historic Sites:** Archeological, scientific, historic, cultural, and educational structures, sites, and areas which have significant statewide, regional, or local value.

a.   Shoreline permits, in general, should contain special provisions which require developers to notify the local government if any possible archeological data are uncovered during excavations.

b.   The National Historic Preservation Act of 1966 and Chapter 43.51 RCW are hereby adopted as policies of this Master Program and their administration and enforcement is encouraged.

c.   Development in the vicinity of a valuable historic or cultural site or structure should be controlled to prevent incompatible use, or style, or functional conflict.

10. <u>Natural System Policies</u>
a.   **Accreted Oceanfront Lands**

a Because the foredunes or the vegetative buffer at the high tide mark are necessary to protect the upland ecological system, and because breaks in the dune or buffer by excavation, roadways, mining, etc. usually cause the erosion and deterioration of these natural areas, breaks in the foredune and the vegetative buffer area should be discouraged, and if allowed every precaution should be taken to insure that blow outs, and other detrimental changes do not result.

b.   Development in the OBR-I area shall be on City water and sewer to avoid local impacts to ground water.

c.   The areas between the dunes are important as recharge areas, and low density development is compatible in this area provided the wetland areas in the deflation plains are protected. If fill is used to create building sites outside of wetland areas, it and any

surface treatments shall be porous and adequate drainage shall be required. Filling of wetlands except for necessary utility and road crossings is prohibited.

b. **Estuary**

- The existing water area of the estuary will remain substantially in its present configuration. Minor alterations for maintenance of the existing bankline, protective structures, and the marina access `channel` will be permitted.

- The existing levels of water quality will be maintained to ensure the continued production of fish, wildlife, and oysters within the estuarine waters adjacent to the Westport area. Any new developments or discharges will be evaluated to determine any detrimental effects they might have on existing water quality.

- The natural bankline in the Half Moon Bay State Park area and in the southern portion of the Westport area shall be managed as a finite resource maintaining a natural configuration to as great an extent as possible.

- In areas subject to tidal flooding, development should be discouraged in presently undisturbed areas and encouraged where urban development has occurred or where landfilling and spoiling have altered the environment. The preferred practice is to elevate the sites above the ordinary high water line and/or use dikes and tidegates to protect development from tidal flood damage.

c. **Floodplains:** Development within shorelines areas should be consistent and coordinated with Westport's adopted floodplain management requirements.

d. **Marshes:** Marsh is the primary wetland vegetative type within the Westport area. Subject to the policies and the permitted uses and activities for specific environments and areas, the marsh areas will be maintained in all conservancy areas.

11. **Shoreline Environment Policies**

a. **Urban Environment**

- The purpose of the Urban Environment is to designate areas in which there is or should be a mix of compatible urban uses. A mix of urban residential uses, tourist, commercial, and industrial users should be encouraged consistent with the priorities of RCW 90.58.020. Statewide interests shall also be considered on shorelines of statewide significance. The City zoning designations as identified on the Comprehensive Land Use, Shoreline & Zoning Map provide the desired mix of uses to acceptable State priorities.

- Areas designated as Urban Environment shall be served with public water and sewage systems.

b. **Rural Environment**

The Rural Environment is inappropriate within the City limits due to the availability of City sewer and water service citywide. The City expects urban densities on net buildable lands within the urban area.

c. **Conservancy Environment**

- The purpose of the Conservancy Environment is to protect environmentally sensitive areas.

- Land uses within the Conservancy Environment should be limited to those which do not adversely impact the renewable resource management system, and permitted activities should take into consideration the ecological factors which must be protected in order to continue utilizing the resource in the future.

d. **Natural Environment**

- The purpose of the Natural Environment is to preserve and/or restore designated natural areas to their natural or original condition. Such areas are designed to remain relatively free of human influence and have severe restrictions on the intensity and type of use that is allowed.

- Aquaculture can be compatible with a Natural Environment if the intrusion into the environment is minimal and does not cause significant disruption,

- Within the vicinity of Westport, the only areas which meet the primary determinant for the Natural Environment set forth in policy 4(a) are the tidal marshes within the Elk River Slough south of the State Highway Bridge over Elk River.

12. Administration Policies

1. **General Administration:** The City shall administer the Shoreline Management Act through its land use permitting processes consistent with the requirements of Chapter 90.58 RCW and Chapters 173-16, 173-18, 173-22, 173-26, and 173-27 WAC. Responsibility for processin^g shoreline permits is designated in the City's development regulations.

2. **Areas Designated as Shorelines of Statewide Significance:** Within the City of Westport RCW 90.58.030(2)(e)(i) designated all marine shorelines, including the Pacific Ocean and the Grays Harbor Estuary, and their associated shorelands as shorelines of statewide significance.

Appendix

Site Location Map
Wellhead Protection Areas

Wellhead Facilities   Wellhead Protection Areas

▲   Well   ▭   Zone 1
▲   Future   ▭   Zone 2
■   Reservoir   ▭   Zone 3
■   Test Well   ▭   Zone 4
●   Sample Site   ▭   Buffer

Nyhus St Sample Site
Jetty Hall Test Well
Monitor Well
North Test Well
North Well #2
Future Production North Well #3
1.0 MG North Reservoir
North Well #1
North Forest Sample Site
Harm St Sample Site
Central Well #1
Central Well #2
Ocosta St Sample Site
Newel St Sample Site
Chopka Test Well
City Limits
1.1 MG South Reservoir
South Well #4
South Well #3
South Well #2
South Well #1
Whale Blow Sample Site
"C" Well
Roberts Ranch Well #2
Roberts Ranch Well #1
"A" Well

GHCOG

Disclaimer:
This map is for planning purposes only. The Grays Harbor
Council of Governments makes no representations as to the
accuracy or fitness of the information for a particular purpose.

WellheadProtectionZone_Jan2013.mxd 1/2013tj
Data sources: westport_whpa.shp & whpa2_dwg_Polyline_Project.shp
Jan2013 Robinson Noble, Inc.

Appendix C – Survey Results Brochures for Laurelhurst, South Park, and Westport

Survey results brochures follow this page.

Laurelhurst Community Resilience Survey results

The Laurelhurst Community Resilience survey included questions about how prepared Laurelhurst residents are for a disaster, how well they knew others in the community, how willing they might be to share preparedness resources with others, and where they thought they might go to seek resources in the event of a disaster. We hope this information can help you to better prepare yourself and your household as well as work together with others in your community. A list of disaster preparedness resources is included on the last page of this booklet.

Where would you go to get needed items in the event of a disaster?

Local social service organizations 2%

Transportation 9%

Hospital/clinic 6%

Friends/family 11%

Fire/Police/First responders 1%

Social infrastructure (e.g., schools, libraries) 7%

Store 26%

Pharmacy 4%

Neighbors 21%

Outside emergency aid (e.g., Red Cross, FEMA) 3%

Other 5%

Natural environment (e.g., Lake Washington) 7%
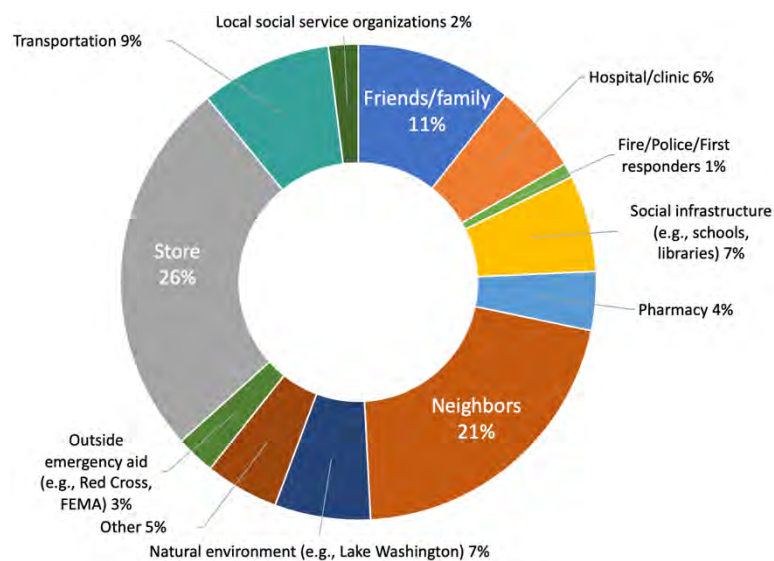
Most Laurelhurst respondents said they would **go to the store (26%)** or **turn to neighbors (21%) or family and friends (11%)** if they needed basic resources like food, water, shelter, warmth, or power.

What resources would you be most **willing to share**, and with whom?
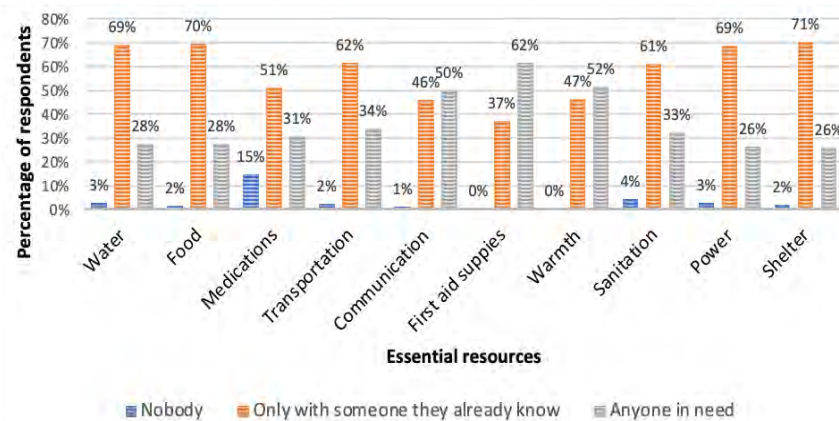
Laurelhurst respondents indicated they would be willing to share most resources in the event of a disaster. Willingness to share depended upon whether or not the recipient was someone they already knew (a family member, friend, or acquaintance).

Who were the **survey respondents?**

We contacted 933 Laurelhurst residents, and 338 (36%) completed the survey.

Neighborhood tenure On average, respondents had lived for:

16 years in their current home,

18 years in Laurelhurst,

30 years in Seattle, and

37 years in the Pacific Northwest.

Neighborhood social networks

On average, respondents knew **12 people** in the neighborhood they would consider to be family or close friends.

On average, respondents knew an additional **18 people** in the neighborhood they would consider to be acquaintances.
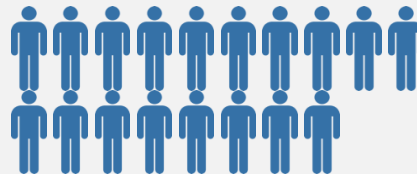
On average, respondents had spoken to **less than one (0.8)** neighbor about disaster preparedness in the past month.

Respondent gender

Approximately half (49%) of survey respondents identified as female, and approximately half (49%) identified as male.

Respondent race & ethnicity

The majority of respondents (89%) identified as White or Caucasian. Approximately 5% identified as Hispanic/Latinx, 2% as Native American or Pacific Islander, 0.4% as Asian American, and 4% as more than one race or ethnicity.

How concerned are you about being able to accomplish essential everyday activities in a disaster scenario?

Cooking
- 8% Not at all concerned
- 14% Slightly concerned
- 24% Somewhat concerned
- 33% Moderately concerned
- 21% Extremely concerned

Washing/bathing
- 7% Not at all concerned
- 21% Slightly concerned
- 23% Somewhat concerned
- 31% Moderately concerned
- 17% Extremely concerned

Staying healthy
- 11% Not at all concerned
- 22% Slightly concerned
- 25% Somewhat concerned
- 16% Moderately concerned
- 24% Extremely concerned

Staying warm (in winter)
- 7% Not at all concerned
- 15% Slightly concerned
- 15% Somewhat concerned
- 30% Moderately concerned
- 33% Extremely concerned

Staying cool (in summer)
- 49% Not at all concerned
- 24% Slightly concerned
- 11% Somewhat concerned
- 11% Moderately concerned
- 4% Extremely concerned

Staying safe and secure
- 11% Not at all concerned
- 25% Slightly concerned
- 22% Somewhat concerned
- 18% Moderately concerned
- 23% Extremely concerned

Communicating with family/friends
- 7% Not at all concerned
- 16% Slightly concerned
- 20% Somewhat concerned
- 31% Moderately concerned
- 26% Extremely concerned

Transportation (getting around)
- 5% Did not answer
- 15% Not at all concerned
- 25% Slightly concerned
- 27% Somewhat concerned
- 17% Moderately concerned
- 11% Extremely concerned

Legend:
- Did not answer
- Not at all concerned
- Slightly concerned
- Somewhat concerned
- Moderately concerned
- Extremely concerned

More than half of Laurelhurst respondents said they were either "moderately concerned" or "extremely concerned" about their ability to cook, stay warm (in winter) or communicate with family and friends in the event of a disaster. Respondents were least concerned about staying cool (in summer) if a disaster were to occur.

Household preparedness with disaster readiness items

Percentage of respondents reporting 7+ days household preparedness with different resources

Resource	Percentage
Water	25%
Food	36%
Medications	81%
Transportation	52%
Communication	34%
First aid supplies	47%
Warmth	86%
Sanitation	29%
Power	20%
Shelter	48%

Laurelhurst respondents were **most prepared** with resources like warmth (extra clothing and blankets) and medications. Respondents reported being **less prepared** with drinking water, sanitation (toilet facilities), and power. The Washington State Emergency Management Division recommends households be prepared to be on their own for **at least two weeks** in the event of a major disaster.

Be prepared: learn more about disaster readiness resources in your community

Laurelhurst Emergency Action Plan (LEAP) is a community-based organization that works to increase awareness, knowledge, and connections within the community to help minimize the potential for injury and damage in the case of a major disruptive event, such as an earthquake. To learn more about LEAP and ongoing activities, see:

https://www.laurelhurstcc.com/issues/LEAP.htm   *email:* LEAPlaurelhurst@outlook.com

The City of Seattle's Emergency Management website provides resources on current topics in disaster preparedness as well as information about specific hazards, a hazards mapping application, hazard plans, and hazard preparedness trainings and workshops.

https://www.seattle.gov/emergency-management

Information about how to prepare together with your community, including the **Seattle Neighborhoods Actively Prepare (SNAP)** program and **Community Emergency Hubs** (places where people can gather after a disaster to help one another), can be found at:

https://www.seattle.gov/emergency-management/prepare/prepare-your-neighborhood

South Park Community Resilience Survey results

The South Park Community Resilience survey included questions about how prepared South Park residents are for a disaster, how well they knew others in the community, how willing they might be to share preparedness resources with others, and where they thought they might go to seek resources in the event of a disaster. We hope this information can help you to better prepare yourself and your household as well as work together with others in your community. A list of disaster preparedness resources is included on the last page of this booklet.

Where would you go to get needed items in the event of a disaster?
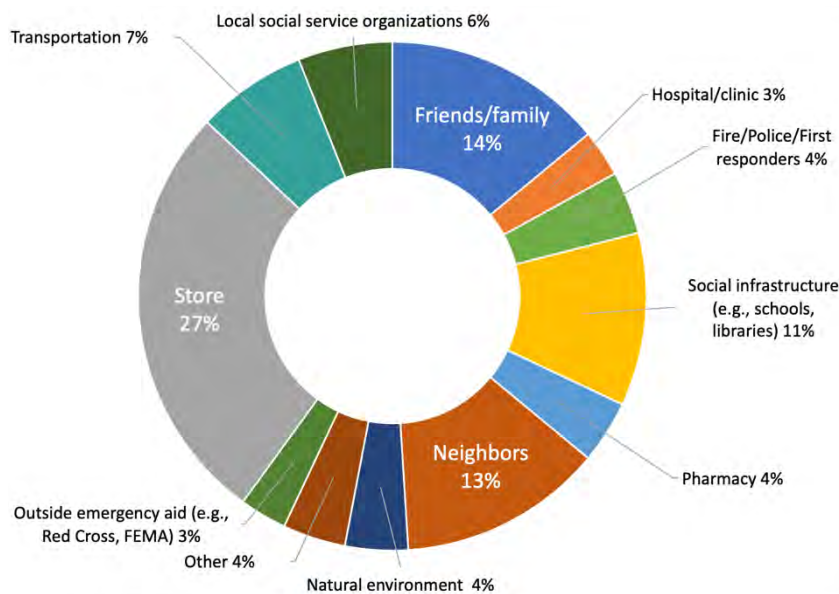
Most South Park respondents said they would **go to the store (27%)** or **turn to family and friends (14%) or neighbors (13%)** if they needed basic resources like food, water, shelter, warmth, or power.

What resources would you be most **willing to share**, and with whom?
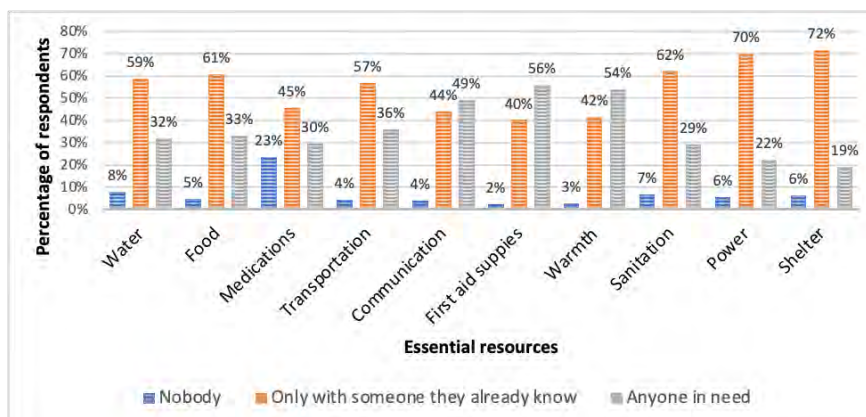
South Park respondents indicated they would be willing to share most resources in the event of a disaster. Willingness to share depended upon whether or not the recipient was someone they already knew (a family member, friend, or acquaintance).

Who were the **survey respondents?**

We contacted 1200 South Park residents, and 209 (17%) completed the survey.

Neighborhood tenure On average, respondents had lived for:

10 years in their current home,

**11 years** in South Park,

21 years in Seattle, and

37 years in the Pacific Northwest.

Neighborhood social networks

On average, respondents knew **7 people** in the neighborhood they would consider to be family or close friends.

On average, respondents knew an additional **14 people** in the neighborhood they would consider to be acquaintances.
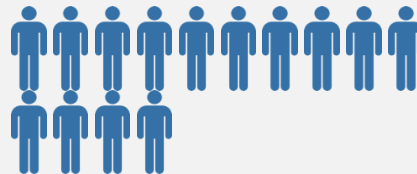
On average, respondents had spoken to **less than one (0.3)** neighbor about disaster preparedness in the past month.

Respondent gender

Approximately 63% of survey respondents identified as female, and approximately 35% as male.
Two percent of respondents did not identify as either female or male.

Respondent race & ethnicity

The majority of respondents (60%) identified as White. Approximately 11% identified as Hispanic/Latinx, 9% as Native American or Pacific Islander, 6% as Asian American, and 10% as more than one race or ethnicity.
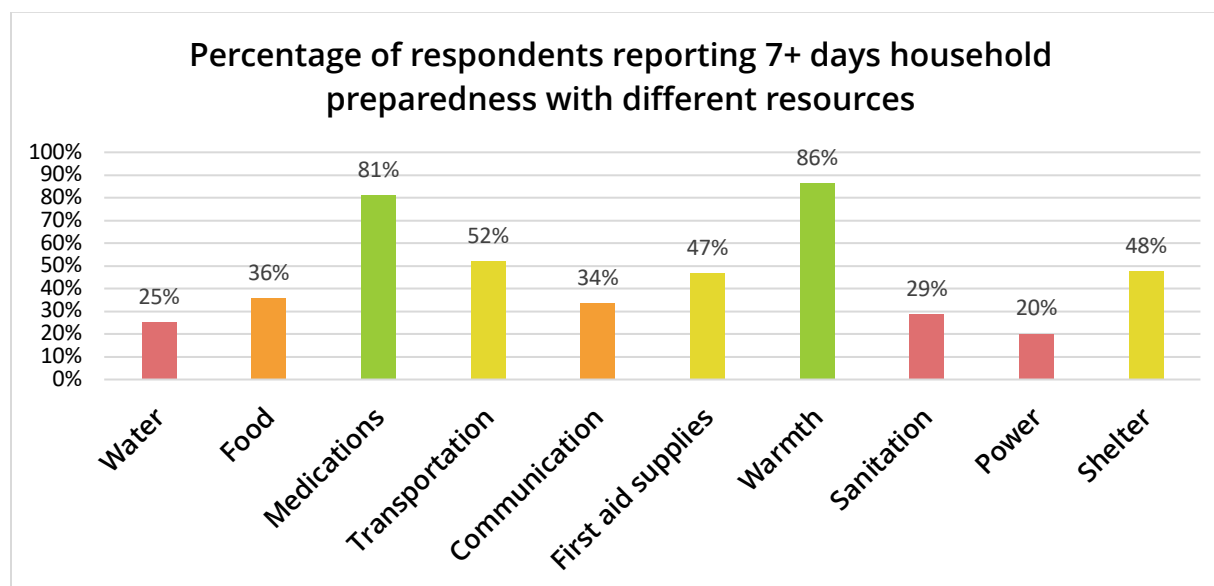
How concerned are you about being able to accomplish essential everyday activities in a disaster scenario?

Cooking
- 5% Not at all concerned
- 11% Slightly concerned
- 15% Somewhat concerned
- 28% Moderately concerned
- 40% Extremely concerned

Washing/bathing
- 3% Not at all concerned
- 12% Slightly concerned
- 22% Somewhat concerned
- 29% Moderately concerned
- 34% Extremely concerned

Staying healthy
- 8% Not at all concerned
- 14% Slightly concerned
- 20% Somewhat concerned
- 25% Moderately concerned
- 31% Extremely concerned

Staying warm (in winter)
- 4% Did not answer
- 9% Not at all concerned
- 19% Somewhat concerned
- 23% Moderately concerned
- 43% Extremely concerned

Staying cool (in summer)
- 34% Not at all concerned
- 22% Slightly concerned
- 18% Somewhat concerned
- 14% Moderately concerned
- 11% Extremely concerned

Staying safe and secure
- 15% Not at all concerned
- 22% Slightly concerned
- 17% Somewhat concerned
- 19% Moderately concerned
- 27% Extremely concerned

Communicating with family/friends
- 7% Not at all concerned
- 16% Slightly concerned
- 20% Somewhat concerned
- 31% Moderately concerned
- 26% Extremely concerned

Transportation (getting around)
- 23% Not at all concerned
- 21% Slightly concerned
- 22% Somewhat concerned
- 19% Moderately concerned
- 14% Extremely concerned

Legend:
- Did not answer
- Not at all concerned
- Slightly concerned
- Somewhat concerned
- Moderately concerned
- Extremely concerned

More than half of South Park respondents said they were either "moderately concerned" or "extremely concerned" about their ability to cook, bathe, stay healthy, stay warm (in winter) or communicate with family and friends in the event of a disaster. Respondents were least concerned about staying cool (in summer) if a disaster were to occur.

Household preparedness with disaster readiness items

Percentage of respondents reporting 7+ days preparedness with different resources

Water: 23%
Food: 46%
Medications: 72%
Transportation: 60%
Communication: 40%
First aid supplies: 43%
Warmth: 90%
Sanitation: 39%
Power: 17%
Shelter: 51%
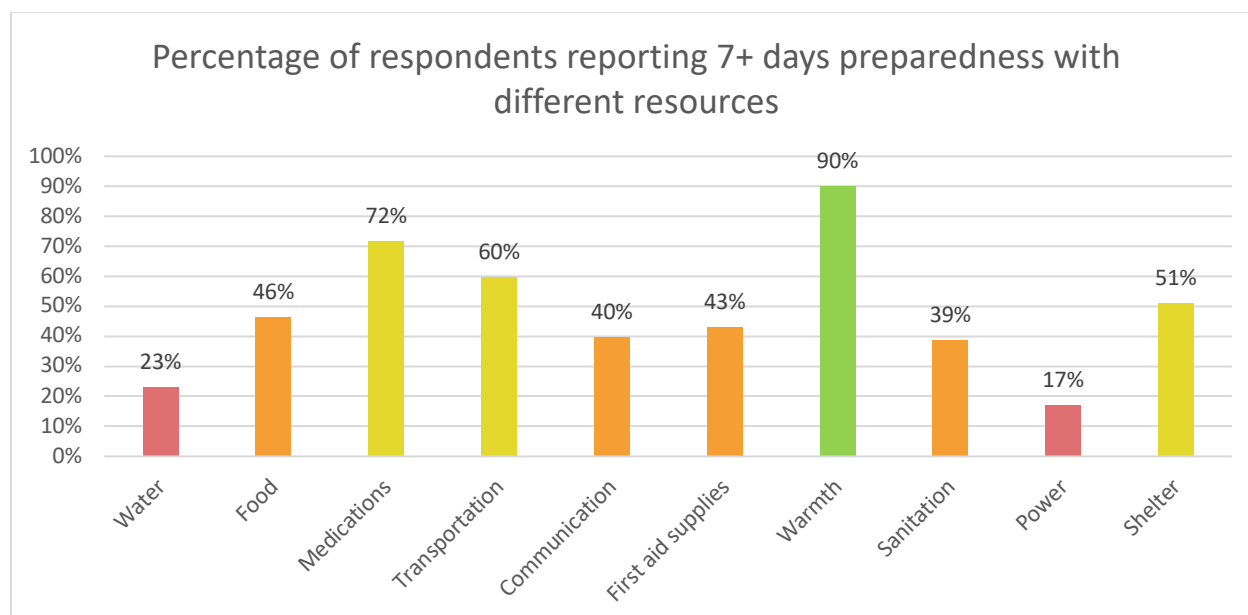
South Park respondents were **most prepared** with resources like warmth (extra clothing and blankets), medications, and transportation. Respondents reported being **less prepared** with drinking water, sanitation (toilet facilities), and power. The Washington State Emergency Management Division recommends households be prepared to be on their own for <u>**at least two weeks**</u> in the event of a major disaster.

Be prepared: learn more about disaster readiness resources in your community

The City of Seattle's Emergency Management website provides resources on current topics in disaster preparedness as well as information about specific hazards, a hazards mapping application, hazard plans, and hazard preparedness trainings and workshops.

https://www.seattle.gov/emergency-management

Information about how to prepare together with your community, including the **Seattle Neighborhoods Actively Prepare (SNAP)** program and **Community Emergency Hubs** (places where people can gather after a disaster to help one another), can be found at:

https://www.seattle.gov/emergency-management/prepare/prepare-your-neighborhood

Villa Comunitaria provides programs that respond to the diverse needs of the South Park neighborhood, including CPR workshops and education about health care issues.

https://villacomunitaria.org/

Westport Community Resilience Survey results

The Westport Community Resilience survey included questions about how prepared Westport residents are for a disaster, how well they knew others in the community, how willing they might be to share preparedness resources with others, and where they thought they might go to seek resources in the event of a disaster. We hope this information can help you to better prepare yourself and your household as well as work together with others in your community. A list of disaster preparedness resources is included on the last page of this booklet.

Where would you go to get needed items in the event of a disaster?
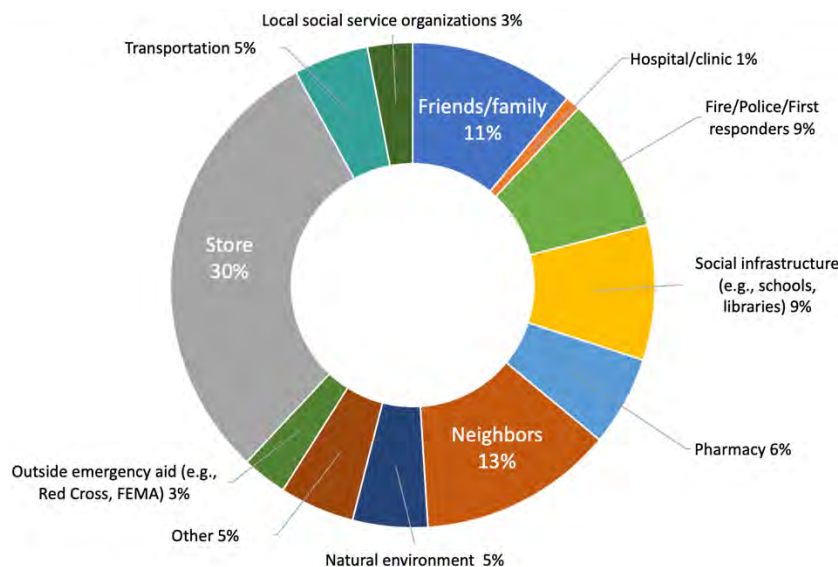
Most Westport respondents said they would **go to the store (30%)** or **turn to neighbors (13%) or family and friends (11%)** if they needed basic resources like food, water, shelter, warmth, or power.

What resources would you be most **willing to share**, and with whom?
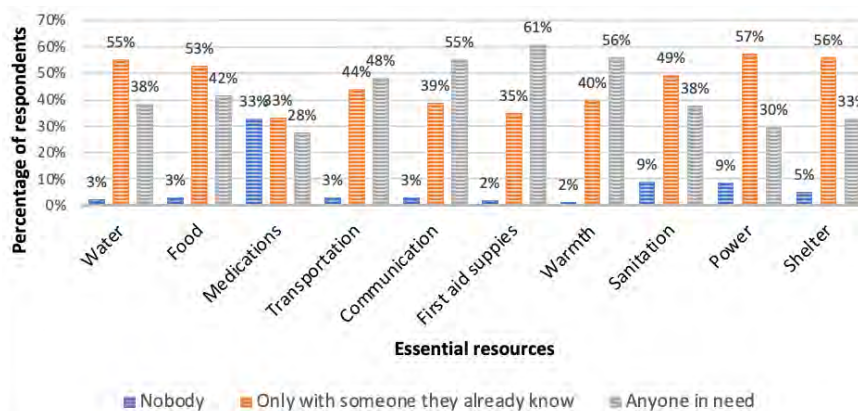
Westport respondents indicated they would be willing to share most resources in the event of a disaster. Willingness to share depended upon whether or not the recipient was someone they already knew (a family member, friend, or acquaintance).

Who were the **survey respondents?**

We contacted 1244 Westport residents, and 195 (16%) completed the survey.

Community tenure On average, respondents had lived for:

10 years in their current home,

16 years in Westport,

19 years in Grays Harbor County, and

44 years in the Pacific Northwest.

Neighborhood social networks

On average, respondents knew **8 people** in the neighborhood they would consider to be family or close friends.

On average, respondents knew an additional **14 people** in the neighborhood they would consider to be acquaintances.
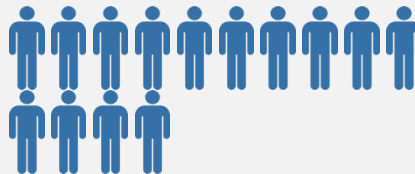
On average, respondents had spoken to **less than one (0.8)** neighbor about disaster preparedness in the past month.

Respondent gender

Approximately 62% of survey respondents identified as female, and approximately 31% as male. Seven percent of respondents did not identify as either female or male.

Respondent race & ethnicity

The majority of respondents (92%) identified as White. Approximately 0.5% identified as African American, 0.5% as Native American or Pacific Islander, 1.5% as Asian American, and 3% as more than one race or ethnicity.

How concerned are you about being able to accomplish essential everyday activities in a disaster scenario?

Cooking
- 17%
- 22%
- 19%
- 21%
- 20%

Washing/bathing
- 11%
- 21%
- 27%
- 18%
- 20%

Staying healthy
- 22%
- 19%
- 22%
- 12%
- 21%

Staying warm (in winter)
- 18%
- 20%
- 13%
- 18%
- 30%

Staying cool (in summer)
- 59%
- 11%
- 15%
- 9%
- 5%

Staying safe and secure
- 23%
- 20%
- 20%
- 19%
- 17%

Communicating with family/friends
- 18%
- 17%
- 25%
- 19%
- 21%

Transportation (getting around)
- 22%
- 17%
- 21%
- 20%
- 16%

Legend:
- ■ Did not answer
- ■ Not at all concerned
- ■ Slightly concerned
- ■ Somewhat concerned
- ■ Moderately concerned
- ■ Extremely concerned
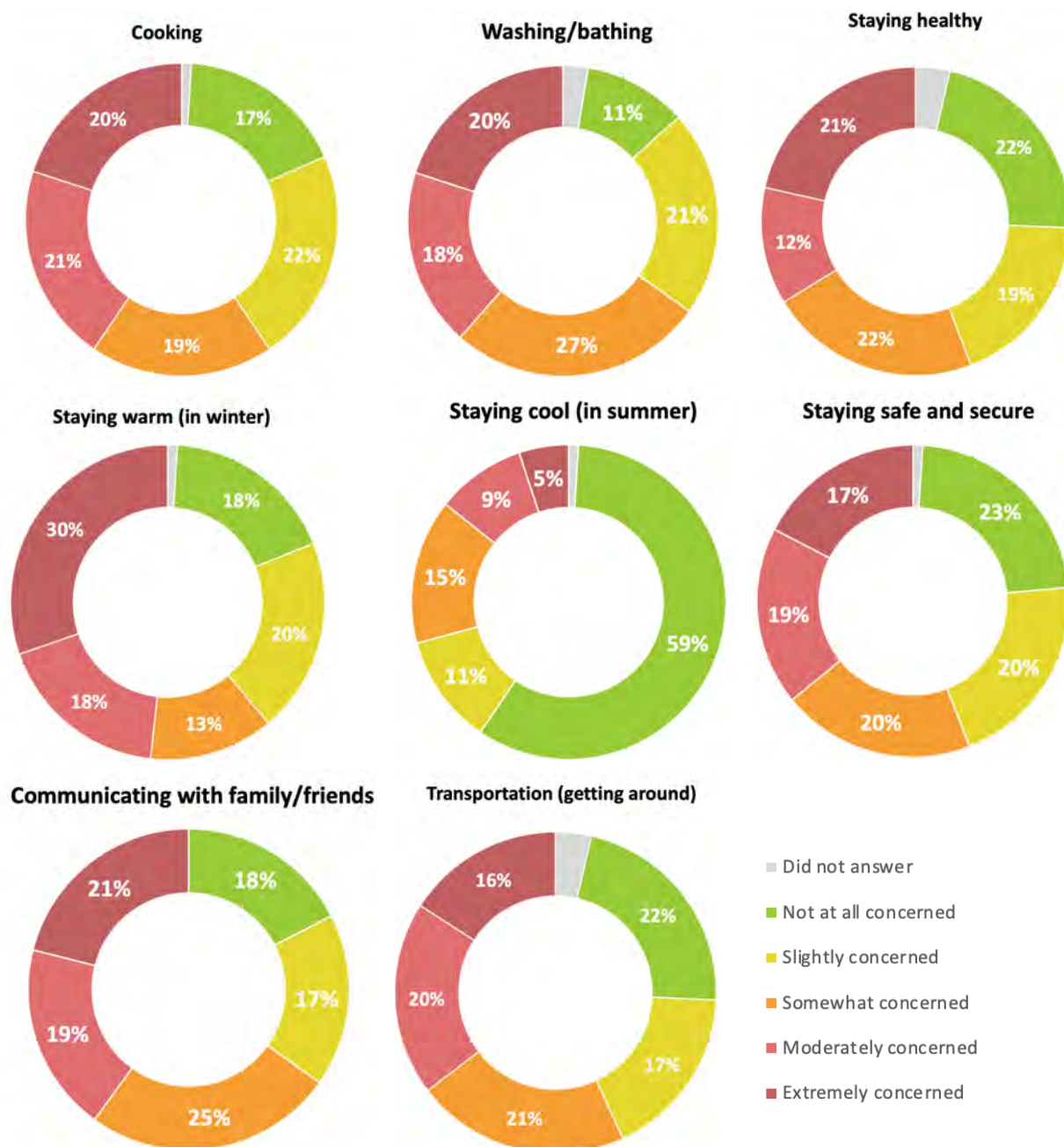
More than one third of Westport respondents said they were either "moderately concerned" or "extremely concerned" about their ability to cook, bathe, stay warm (in winter), stay safe and secure, or communicate with family and friends in the event of a disaster. Respondents were least concerned about staying cool (in summer) if a disaster were to occur.

Household preparedness with disaster readiness items

Percentage of respondents reporting 7+ days preparedness with different resources

Resource	Percentage
Water	30%
Food	51%
Medications	72%
Transportation	60%
Communication	49%
First aid supplies	57%
Warmth	86%
Sanitation	47%
Power	37%
Shelter	51%
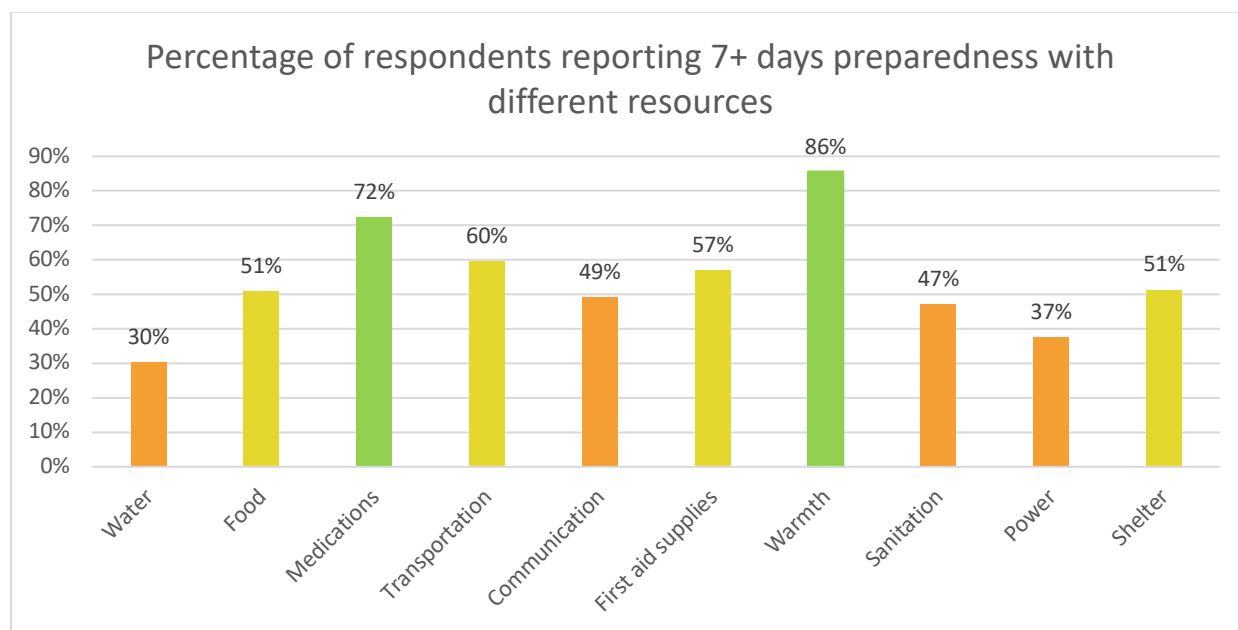
Westport respondents were **most prepared** with resources like warmth (extra clothing and blankets), medications, and transportation. Respondents reported being **less prepared** with drinking water, sanitation (toilet facilities), communications, and power. The Washington State Emergency Management Division recommends households be prepared to be on their own for **at least two weeks** in the event of a major disaster.

Be prepared: learn more about disaster readiness resources in your community

City of Westport earthquake and tsunami preparedness: find resources on how to prepare yourself and your household for a disaster, tsunami evacuation maps, and links to additional online resources for disaster preparedness.

https://www.ci.westport.wa.us/tsunami.html

See the **Grays Harbor County Emergency Management** website for information on disaster preparedness, how to schedule public education trainings on emergency preparedness, and how to participate in disaster preparedness volunteer organizations.

https://www.co.grays-harbor.wa.us/departments/emergency_management/index.php

The **Tsunami Evacuation Map for Westport, Grayland, and Ocosta** provides information about different kinds of tsunamis, guidelines for packing an emergency kit, and instructions for evacuation.

https://www.ci.westport.wa.us/adobe/Westport.pdf

Appendix D – Laurelhurst Community Resilience Workshop

Laurelhurst community resilience workshop report follows this page.

Laurelhurst Community Resilience Workshop

Laurelhurst Community Center | Nov. 7, 2018

Prof. Abramson introduces the workshop activities and provides some background information on the ongoing UW/LEAP partnership.

Introduction and purpose

On November 7, 2018, Laurelhurst Earthquake Action Preparedness (LEAP) and a multidisciplinary research team from the University of Washington (UW) co-hosted a public workshop at the Laurelhurst Community Center, creating a forum for neighborhood stakeholders to discuss, via participatory group activities, the qualities that contribute to a resilient community. The purpose of the workshop was twofold: 1) to help LEAP recruit new members by spreading the word about the community emergency preparedness work they are doing; and 2) to build a better understanding of the unique community values and assets that might contribute to strengthening community resilience in Laurelhurst. Several community members, a handful of LEAP team members and the UW team participated in the workshop.

Partners and background

LEAP is a community-based organization in Seattle's Laurelhurst neighborhood that works to increase awareness, knowledge, and connections within the community to help minimize the potential for injury and damage in the case of a major disruptive event, such as an earthquake.

The multidisciplinary **UW research team** is led by Prof. Dan Abramson (Urban Design & Planning) and Prof. Cynthia Chen (Civil & Environmental Engineering). Other UW team members included doctoral student TAs Katherine Idziorek and Lan Nguyen as well as students in Prof. Abramson's Fall 2018 community resilience urban planning studio: Helen Stanton, Pegah Jalali, Lauren Kerber, Catharina Depari, Sreya Sreenivasan and Charlotte Dohrn. The students helped to facilitate the workshop activities.

LEAP and UW have been working together since the fall of 2017 to better understand how community assets can be leveraged to enable adaptive capacity in the face of disruptions (such as earthquakes) or other long-term changing conditions, in ways that also improve everyday community well-being.

Workshop activities

Prof. Dan Abramson and LEAP member Nancy Woods introduced the workshop purpose and background.

The workshop comprised three primary activities, explained in detail in the following sections:
1) Asset mapping
2) Zone mapping
3) Disaster preparedness resource matching game

Activity 1: Asset mapping

Participants sat in small groups at tables according to where they lived so that neighbors sat near one another. Groups were prompted with the following questions:

- What values or assets make your community unique?
- What are Laurelhurst's strengths as a neighborhood?
- What characteristics of the neighborhood contribute to everyday quality of life?

Participants were encouraged to think broadly about what might constitute a community strength or asset. The *Community Capitals Framework*[1] was used as a prompt for participants to consider natural, cultural, human, social, political, financial and built capital in the exercise.

Each table worked with a large map of the neighborhood that included space for both mapping (drawing) and listing assets and values. Each person was asked to quickly write down their "top three" ideas on sticky notes to get the activity started. Then, using pens and markers, groups spent about 20 minutes discussing community assets and values and recording them either on the map (for spatial assets/values) or on the list (for non-spatial assets/values).

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[1] Emery, M. and C.B. Flora. 2006. "Spiraling-Up: Mapping Community Transformation with Community Capitals Framework." Community Development: Journal of the Community Development Society 37: 19-35.
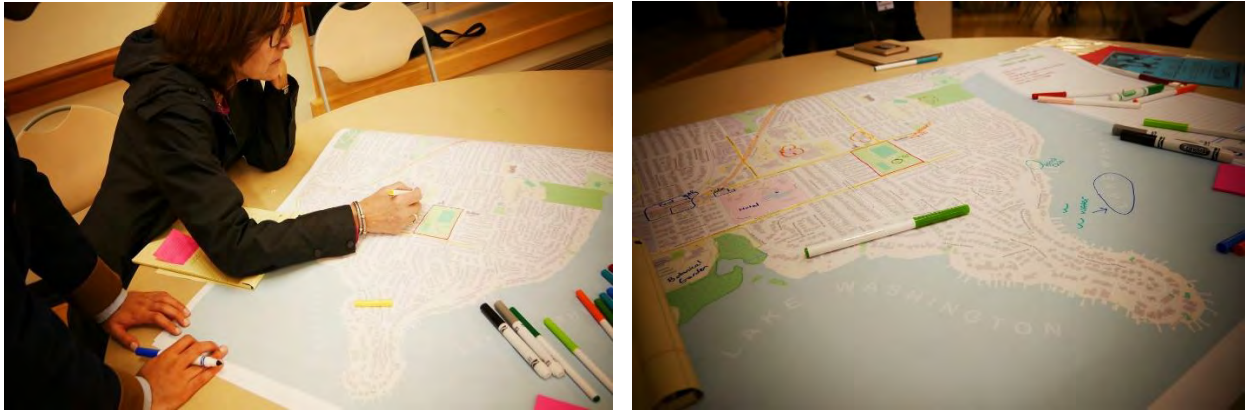
Participants recorded Laurelhurst values and assets by drawing on neighborhood maps (photos by Amy Fouke).

Assets listed and mapped during the exercise fell into the following broad categories:

- **Shops, restaurants and services:** Independent, small businesses in "business district" on Sand Point Way; University Village; grocery stores (PCC, Metropolitan Market, QFC); City People's, Katterman's Pharmacy, Sand Point Grill, hardware store, gym, good restaurants
- **Parks, nature, open space and recreation:** Burke Gilman trail; Laurelhurst Community Center (sports facilities, views, youth summer programs, meeting place, nature access); community-developed "Saving Urban Nature" pocket park (NE 47th & 47th NE); Magnusson Park nearby; Center for Urban Horticulture (offers birding, public open space, nature access, education, public meeting space, library, walking); green neighborhood; natural beauty
- **Institutions:** Beach Club, churches, private school/pre-schools, hospital in neighborhood, fire station, NOAA nearby, UW hospital, Children's Hospital (helipad), ties to UW ("education pride")
- **Transportation:** Light rail nearby (with just "ok" bus access), lots of bikes, road network (traffic at Montlake Cut mentioned as a negative aspect of neighborhood), water and boats
- **Neighborhood activities and communication outlets:** Crime watch, block parties, newsletter, community blog, NextDoor, Constant Comment, social media (e.g., "Buy Nothing")
- **Social character:** many generations live here, sense of community, people know their neighbors, neighbors are helpful and caring; "dogs on leashes" behavior, social ties, static/stable neighbors, feels safe, quiet
- **Political/financial/knowledge resources:** some residents involved in/have former experience in politics, many very politically active people (engaged in social issues and school funding), financial resources, owner-occupied homes, highly educated community, medical professionals, UW professors/retirees, health care and engineering "know-how"
- **Built environment:** multiple-family dwellings, accessory dwelling units, well-spaced-out houses, walkable area, gardens in the neighborhood, beautiful neighborhood, beautiful homes, visibility, no tall buildings, waterfront/water access with street end public access to waterfront in multiple locations

Although **values** tended to be more difficult to map than assets, several important neighborhood values were noted: cross-generational interaction; value of education; access to water and nature; sense of community; willingness to connect via social activities (block parties, welcoming new homeowners, "sidewalk friends"); ability to rely on trusted neighbors for communicating important information.

<u>Asset mapping discussion themes</u>

Several themes emerged during the group discussions as assets and values were mapped. They are presented here with suggestions for potential follow-up action items by LEAP:

1) **Coordination with local institutions**
   The groups discussed the role that several identified community institutions might play in a disaster scenario, including schools, churches, the hospital and the community center. Specific roles mentioned included:
   - Laurelhurst Community Center could support evacuation processes and logistics during a disaster
   - Seattle Children's Hospital might be a source of medical support in a disaster, including use of the helipad for evacuation
   - St. Stephen's Episcopal Church could potentially act as a neighborhood hub to provide shelter, power and communication in the case of a disaster

   Potential LEAP action items:
   - Coordinate (or continue to coordinate, as appropriate) with Laurelhurst Community Center, Seattle Children's Hospital and St. Stephen's Episcopal Church to understand how (and to what extent) those institutions are able to support the community in the case of a disaster

2) **Transportation and connectivity**
   Participants emphasized that they value the walkability of their neighborhood, including access to the Burke-Gilman and other trails. They discussed the proximity to downtown and the light rail as assets. They suggested that major neighborhood streets (47th Ave NE, NE 45th St., NE 41st St.) might support evacuation and delivery of medical aid in the case of a disaster. If cut off or isolated in a disaster situation, boats or kayaks could potentially be used for transportation.

   Potential LEAP action items:
   - Understand whether there are designated evacuation routes or strategies for the neighborhood and how to support community understanding of any designated routes or recommended actions (coordinate with relevant departments at the City of Seattle)
   - Further investigate how boats might be potentially useful for establishing connectivity with nearby areas or used as rescue conveyances in the case of a disaster

3) **Disaster skills communication and training**
   Participants appreciated the skills and knowledge resources of Laurelhurst residents (e.g., engineering, health care expertise) that could be very helpful in the case of a disaster if known and coordinated. It was noted that the role of cluster captains will be very important for maintaining coordination during a disaster via walkie-talkie (or other communication devices).

   Potential LEAP action items:
   - Increase neighborhood skills and knowledge by continuing to support trainings (e.g., first aid)
   - Create cluster-based "skills inventories" that could be used to understand what knowledge and skills are available locally and in what areas the community may need more education or training

4) **Engaging local businesses**
   Participants highlighted several businesses within or near the neighborhood they perceive as assets: a pharmacy, a hardware store, local restaurants, grocery stores and University Village. They noted Laurelhurst itself does not have a business core, but there are many shops and businesses within walking distance. Participants suggested that neighborhood shops and restaurants could provide logistics, food, or other basic needs for the community in a disaster.

   Potential LEAP action items:
   - Engage with area businesses; support disaster preparedness efforts of local employers

5) **Leveraging attachment to place**
   Place attachment, which refers to strength and basis of feelings for a specific place, was a common theme in several of the workshop conversations about values and assets. Neighborhood characteristics such as access to water and Laurelhurst's unique, hilly topography with views to green spaces evoke the natural beauty of rural areas. These are important features of the neighborhood that cannot be found in parts of the city dominated by tall buildings. Likewise, the calmness and quietness of Laurelhurst provide a reprieve from the noisier and more stressful "urban" areas of the city. Residents enjoy the unique experience of walking through Laurelhurst offered by its organic, curvilinear streets and the opportunities this degree of walkability creates to meet and greet neighbors on the sidewalk.

   Potential LEAP action items:
   - Organize neighborhood walks or tours to build social capital among neighbors and to help people get to know the neighborhood better with a focus on unique, place-based assets.

Activity 2: Zone mapping

LEAP member Louise Luthy provided background on the intent and importance of creating neighborhood "zones." LEAP is in the process of organizing the entire neighborhood into approximately 20-household clusters for the purposes of sharing information that might be useful in the case of a disaster. Each cluster has a designated captain or captains who are responsible for disseminating information to cluster members and organizing the cluster's own internal information and disaster preparedness resources. Because there are a relatively large number of clusters across the neighborhood (98 in total), LEAP is interested in creating "zones" that comprise multiple clusters to help provide another level of efficiency and organization between the clusters and LEAP itself. The workshop activity provided an opportunity to ask community members, based on their own knowledge of the neighborhood, what criteria should determine how clusters are grouped together to form zones.

Participants were given the following questions as a prompt:

1) How many clusters should be in a zone? How large should a zone be?
2) What characteristics should define a zone? (Topography? Transportation networks? Existing social connections? Land use? Distribution of assets/resources? Information about hazards?)

In small groups at tables, participants were asked to outline potential zones by drawing on large maps of the neighborhood showing LEAP's already-designated clusters. Groups were given additional maps showing local hazards and neighborhood topography to help inform their discussion and mapping.

Groups outline zones on maps of LEAP's neighborhood cluster system.

The groups discussed several factors that could be considered when deciding where zones should be located and how they should be organized (see Appendix for zone maps drawn by groups):

- **Personal relationships and social interaction:** When determining how to divide zones, participants considered which neighbors they interact with regularly, which can create an intangible "feeling of connection." Areas in which people tend to interact when walking (or walking their dogs), holding block parties, or sharing information (e.g., people that share an alley and communicate about parking, construction, etc.) could help to inform how the zones are created. Creating zones that connect already-connected block groups could also help to foster new social connections between and among clusters. One group suggested that already-established social connections should override any natural or physical boundaries when outlining zones.

- **Residential character and density:** Participants suggested that areas characterized by similar densities and development styles (single family homes vs. apartments/condos) should be grouped together in zones.

- **Zone size:** Groups discussed the ideal size of zones for efficient organization and management, suggesting that each zone should contain approximately 100-120 people or 4-6 clusters.

- **Access:** One group suggested zones might be formed based on common access because people might already know one another from habitually using the same travel and access routes. Physical accessibility between clusters could help to facilitate inter-cluster sharing and support.

- **Topographic and spatial boundaries:** Some neighborhood features create barriers between potential clusters, including topography (divisive ridgelines or location of the clusters with respect to a hill/slope), street type (boulevards, busy thoroughfares, etc.), housing typology (multi-family, single-family), orientation of houses (houses facing each other vs. houses facing away from one another) and presence of a parcel with a commercial or institutional use. Depending on topography, residents of some blocks tend to be "alley-dwellers" – to know their neighbors across the alley better than those across the street, while others, *vice versa*, are "street-dwellers".

- **Resident knowledge:** Multiple groups found it was easiest to determine how zones should be organized in the areas nearby where they live. It was more difficult to determine how zones should be organized in areas of the neighborhood with which they were less familiar. This suggests that geographically-based focus groups may be useful for outlining zone boundaries.

6

Activity 3: Disaster preparedness resource matching game

The final activity involved a disaster preparedness card game in which groups worked as teams to creatively match skills and resources with hypothetical challenges that might arise in the case of a disaster. University of Washington Ph.D. student Katie Idziorek explained the game and rules to the participants. Each group received a deck of game cards containing cards for "skills" as well as one for "equipment and supplies." The content of the skills and equipment cards was based on a Seattle Neighborhoods Actively Prepare (SNAP)[2] Neighborhood Block Watch Skills and Information questionnaire. A third deck of cards contained a set of "disaster challenges" based on scenarios that might arise in the case of an earthquake.

One group considers how to solve a "disaster challenge" by pooling together the skills and resources on their cards.

Content of cards:

- *Skills cards:* First aid/CPR, childcare specialist, search and rescue, crisis counseling/psychologist, damage assessment, disaster feeding, HAM radio operator, plumber, carpenter, electrician, firefighter, health care provider

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[2] https://www.seattle.gov/emergency-management/prepare/prepare-your-neighborhood/seattle-neighborhoods-actively-prepare

- *Equipment and supplies cards:* first aid and medical, spare bedding/tents, chain saw, generator, portable lights, camp grill/stove, walkie talkie, long ladder, crowbar/axe, strong rope
- *Disaster challenge cards*: widespread power outage, building damage, medical emergency/injury, communication need, transportation need, family separation, food/water need, fire, shelter need, sanitation need, landslide, missing person, medication need

Continuing to work in small groups at tables, participants each drew a card from each of the three stacks: skills, equipment/supplies and disaster challenge. Taking turns, participants posed their disaster challenge to the table, and group members worked together to use their skills and equipment cards to help solve the challenge. Participants were encouraged to be creative in their matching of disaster needs with resources.

Teams were prompted to discuss the following questions during the game activity:

1) How would you use your group's cards to solve each of the disaster challenges?
2) How many of the challenges do you feel your group was able to adequately solve (i.e., you have *all* the skills and equipment/supplies needed to realistically solve the challenge)?
3) Did anything surprise you in this activity? What was your group's most creative solution? What was the most difficult challenge to solve, and why?

At the end of the card game, teams were awarded disaster preparedness "prizes" (first aid handbooks, emergency blankets and headlamps) based on their ability to solve the most challenges or to develop the most creative solution.

Following are examples of some of the hypothetical disaster scenarios and the groups' responses:

Disaster challenge	Group response (skills/resources cards in **bold**)
After an earthquake, there is no longer running water and your cluster has run out of food	Use a **walkie talkie** to call for help; use **extra water** stored by some cluster members; for food, pick vegetables from the **community garden** and hunt rabbits within the neighborhood
Your cluster needs to communicate with areas outside the neighborhood to arrange for the delivery of critical supplies and "normal" communications systems are not working after an earthquake	Use a **bicycle** for transportation to reach areas outside the neighborhood
Some people within your cluster are missing after an earthquake	Make use of cluster members' **search and rescue**, **child care** and **first aid** skills; use a **crowbar** to help search damaged buildings for missing people
Some families in your cluster were separated during the earthquake	Use a **ham radio** to establish communication with outside areas

After the game, teams were asked to consider the following two questions:

1) What additional skills or equipment/supplies beyond those on the cards you drew would have been helpful in solving the disaster challenges?
2) Thinking back to the first activity of the evening, which of Laurelhurst's existing values and assets would help in solving the kinds of problems presented by the disaster challenges? What additional assets or values might be useful to develop to help solve these kinds of problems?

<u>Resource matching discussion themes: additional preparedness actions and items</u>
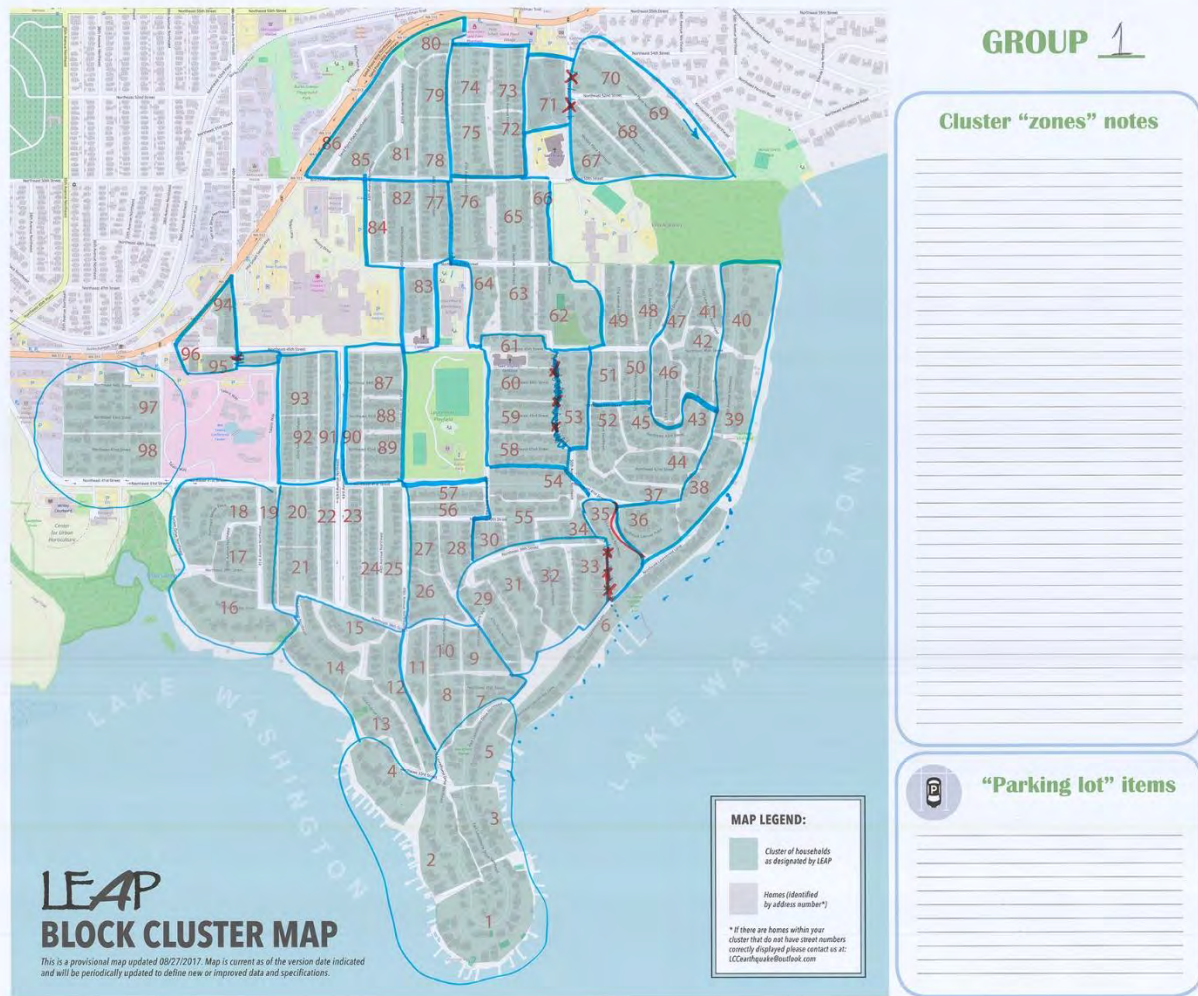
As participants discussed the questions posed during and after the resource matching activity, several broad themes emerged that could potentially help to inform future LEAP actions and initiatives, including some that overlap with or complement the themes discussed in the asset mapping exercise:

- **Preparation through training:** Some participants discussed having previous (childhood) experience with evacuation drills at school and suggested this kind of preparation could be very useful. Groups mentioned several specific skills development/training topics that might be helpful for boosting Laurelhurst residents' confidence in disaster response protocol, including:
    - Earthquake drills
    - Psychological support/psychological first aid for survivors
    - Medical first aid training
    - Fire response training
    - Waste disposal protocol
    - Water treatment protocol

- **Vulnerability due to loss of power:** Several participants expressed extreme concern about the loss of electricity and communication abilities during and/or after a disaster and agreed that generators are critical to resilience. Other alternative power sources mentioned included portable chargers, extra fuel, solar cells or other solar-powered equipment.
- **Health and sanitation:** Groups were unsure how to deal with issues of sanitation and water treatment in the event of an earthquake. Hygiene supplies ("toilets and trash"), water purification equipment and first aid kits were mentioned as important items to have on hand.
- **Transportation and communication:** Communication tools (e.g., ham radio, walkie talkies, drones) emerged as critical items for preparedness. Transportation also emerged as a primary need following a disaster. All-terrain vehicles (ATVs) or bicycles might be more easily used than cars if roads are damaged in an earthquake.
- **Neighborhood- or cluster-level inventories:** Many participants emphasized the need for a skills/tools registry, so they can be aware of what neighborhood resources are available to mobilize in an emergency response effort (for example, items such as boats or camping equipment could be inventoried). A skills inventory might document who knows how to provide medical care, or who has knowledge of plumbing or carpentry. Another form of inventory or registry might record special medical care needs.
- **Community-building:** In addition to the disaster skills and equipment needs outlined above, some groups suggested that holding more social events would help neighbors get to know one another better, facilitating the kinds of social connections that can be very important in disaster situations.

Appendix: Group maps

Group 1: Asset mapping activity

Group 1: Zone mapping activity

Group 2: Asset mapping activity

Group 2: Zone mapping activity

Group 3: Asset mapping & zone mapping activities (done on same map)
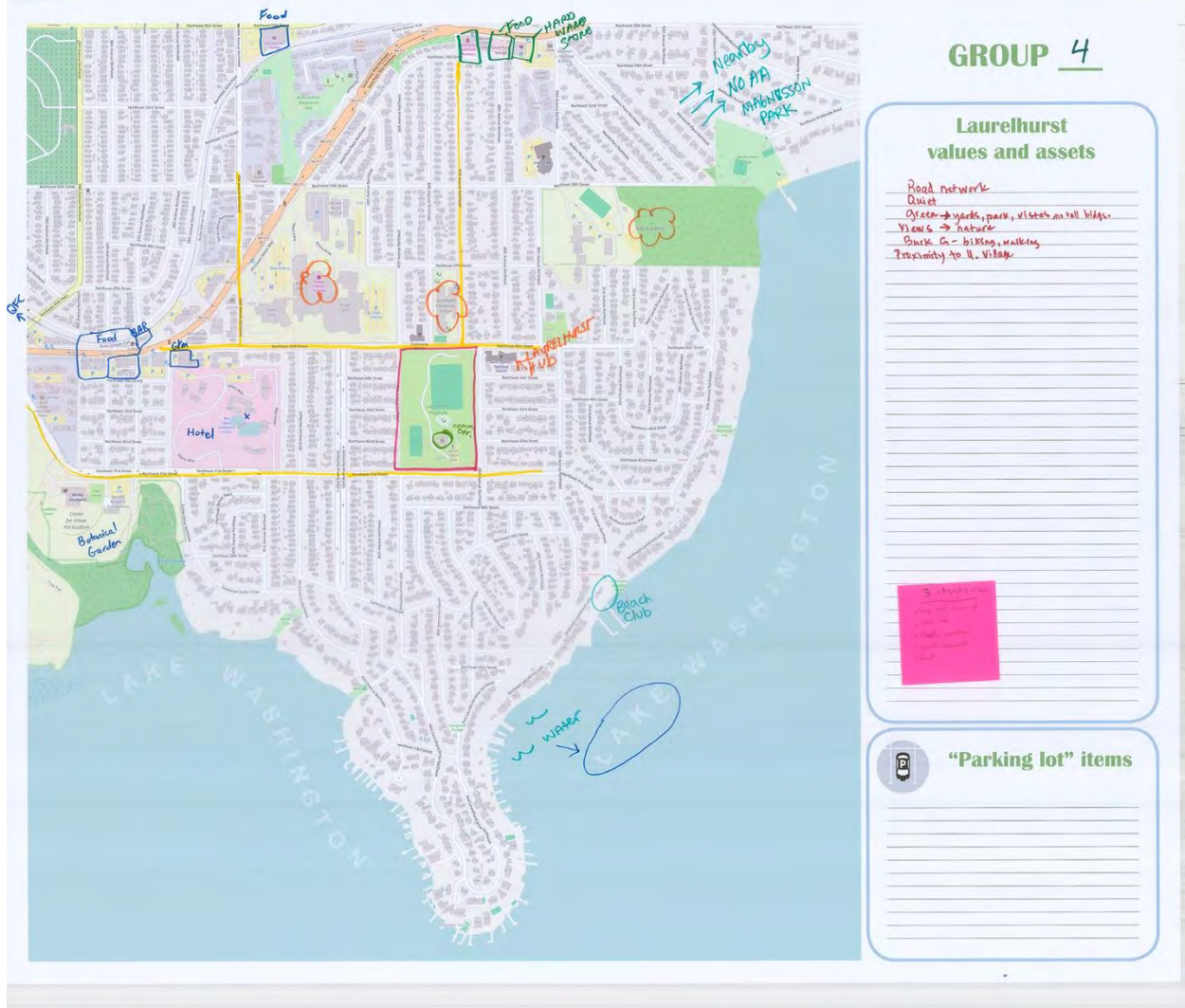
Group 4: Asset mapping activity

Group 4: Zone mapping activity

Appendix E – Community Outreach Plan for Disaster Resilience in South Park, Seattle

South Park community resilience outreach plan follows this page.

Community Outreach Plan for Disaster Resilience in South Park, Seattle

Andres Arjona

Asela Chavez Basurto

University of Washington, URBDP 600: Independent Research

Prof. Daniel B. Abramson

Table of Contents

Background

South Park is home to roughly 5,000 residents, of whom 40% speak one of 13 languages other than English. Between 34% and 46% of the population are of Hispanic descent, making it the largest ethnic group in South Park. 28% of residents are below the poverty level which brings South Park's median household income to $44,200, 22K below Seattle's median. But much like the rest of Seattle, 55% of the residents are renters. Additionally, South Park has twice as many children per household than Seattle at large.[1] The community is one of two neighborhoods in Seattle that have a riverfront. Their river, the Duwamish River, is a Superfund site that also functions as an industrial corridor. This river wedges South Park between multiple freight/industrial corridors - the Duwamish River, HWY 509, and HWY 99 cutting down the middle.

The combination of an adverse location and a historically underrepresented community contributes to an increase of City efforts to end institutional racism and race-based disparities in South Park through their Race and Social Justice Initiative. This initiative prompted a major outreach and engagement plan in 2017 that resulted in the Duwamish Valley Action Plan. This plan involved a lot of resources and time including over 60 City of Seattle officials from 13 different city departments and over 20 community partners. They were successful in outreaching and engaging with the South Park community, including with Latino, Vietnamese, and Somali residents. But not all outreach and engagement efforts will have the same time and resources as this action plan.

The goal of this document is to provide guidelines for how to conduct outreach in South Park for smaller disaster preparedness efforts. Towards this goal, we visited the neighborhood five times, reviewed existing plans for South Park, compiled literature about best practices, assessed current local and statewide outreach plans, assisted in a South Park community resilience workshop, and conducted phone interviews with liaisons involved in community outreach efforts throughout Seattle and South Park. The focus was to identify the various outreach processes, successful outreach techniques and promotion channels, and which practices to avoid when engaging with South Park. The combination of these sources was translated into a South Park outreach plan described further in this document so that it may be of value to public officials, organizations, academics and staff not familiar with South Park that want to achieve an inclusive public outreach process.

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[1] City of Seattle: Department of Neighborhoods. *South Park Snapshot*. August 2019.

Goals

- Improve understanding of disaster preparedness among residents in South Park.

- Foster strong relationships among residents and other stakeholders in South Park, relevant to improving the community's disaster resilience.

- Understand the current conditions of South Park's disaster preparedness.

Outreach Plan

An outreach plan for South Park is expected to take more time to implement than a traditional outreach plan because of the attention that needs to be given to the various groups within the community. South Park is a diverse community that includes various immigrant groups. These immigrant groups are primarily Hispanic, Vietnamese, Khmer, and Somali. 40% of the voting age population in South Park are not U.S. citizens.[2] Typically, there are many challenging layers involved in being an immigrant that include language barriers, upward mobility, housing stability, and fear of deportation. And while they may all share common challenges, each immigrant group has a unique relationship with outreach from governments and organizations because each group has its own preferred process of outreach. In order to identify each preferred process the government or organization must build a relationship with the community, identify their relevant topics, and together create the tools of engagement.

The recommendations in this outreach plan are grounded primarily in the feedback received from the interviewees that routinely work in community improvement efforts for South Park. Literature about outreaching was also used to support the primary feedback from the interviews. This literature includes existing plans and templates from the Washington State Department of Transportation (WSDOT), the City of Seattle, and the Federal Emergency Management Agency (FEMA) as well as in topic-specific outreach in relation to disaster outreach and Latino community outreach.

This plan is limited because not all of South Park's immigrant groups were represented in the interviews nor in the literature because of limitations to time and literature availability.

ACTION ITEM 1

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[2] 2013-2017 American Community Survey 5-Year Estimates

Build a Relationship

Why?

Key liaisons from the community and local organizations have already built trust in South Park and have a day-to-day understanding of what is relevant to the community and their main priorities. Establishing relationships with liaisons from each immigrant group will help gain trust and understanding to further outreach their specific community.
Be available, be there and take the time to grow local relationships.

Strategies

- Routinely meet with liaisons from each community (see chart below and contact list in appendix A).
- Connect with local leaders and ask to attend a couple of periodical meetings, like the monthly Neighborhood Association meeting or the Concord Elementary PTA meeting.

What we heard

"Be intentional, invest time to prepare"

"I would go to the Neighborhood Association meeting, the 12th (October) is the next meeting"

"It is hard to do outreach without a relationship, it is even more important than having a budget"

South Park Outreach Network
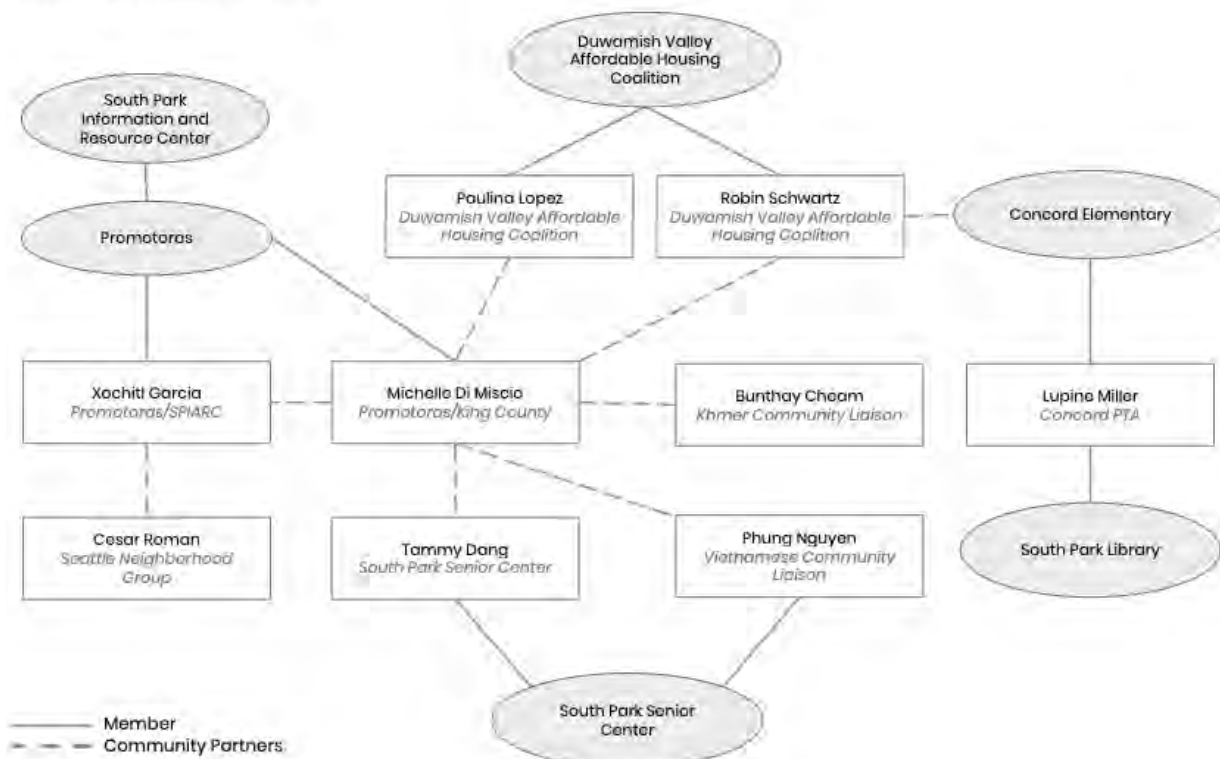
Engage Topics Relevant to the Community's Realities

Why?

Starting with a relevant topic for launching the discussion is crucial to the framing of any event. Without the community buying it will be difficult to engage the community. While earthquakes are the most threatening disaster in South Park, it is also the least tangible because of its infrequency. From the South Park Community Resilience Workshop it was apparent that because of recent events blizzards was the disaster most relevant on participants' minds. Other related topics that are not necessarily disasters but still dangers or threats relevant to South Park are air pollution, water quality and restoration of Duwamish River, and household proximity to contaminated site, superfund site, or freight corridor.[3]

According to interviewees, these priorities differ by immigrant and non-immigrant communities and will change over time in South Park. A relationship with a liaison will reaffirm today's main priorities.

Strategies

- Work with multiple community liaisons to identify topics relevant to their immigrant community.
- Build engagement tools with community liaison.
- Clearly explain how participating will be beneficial.
- Avoid academic/technical jargon such as resilience, preparedness, mitigation. Instead use "ability to recover."

What we heard

"Build trust with community leaders; explain goals, and see if its a priority for the community as well and try to put something together"

"The topic of natural disasters is very important. Maybe relate asthma with wildfire season and emergency preparedness"

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[3] City of Seattle: Department of Neighborhoods. *South Park Neighborhood Profile*. February 2019.

Meet the Community Where They Are

Why?

Getting endorsement from local organizations and social networks gives people a feeling of security and increases the credibility of the outreach process. This also contributes to participants being invited by people they know and trust. Relying on existing organizations could benefit both parties, as resources are shared and maximized.

Strategies

- Use existing channels of social media to promote the event. Among the South Park community, the Facebook group and Nextdoor app are very popular.
- Attend community events taking place at trusted venues: parent meetings at Concord Elementary, religious services, holiday festivals (Dia de Muertos, Fiestas Patrias, Marra Farm Fall Fest, Duwamish River Fest).
- Introduce yourself to as many community members as possible, find something in common and then extend personal invitations to connect.
- Outreach to local Spanish radio, to El Rey 1360 manager Jorge Madrazo to provide information on-air.

What we heard:

"I would hangout at the community center and talk to everyone that is coming by and give them a flyer"

"Tell people to invite friends and neighbors"

The translator needs vocabulary in advanced related to the topic

South Park Neighborhood Groups and Organizations[4]	
Neighborhood / Community Based Organizations • Concord Elementary • Consejo • Duwamish Valley Youth Corps • Marra Farm Coalition PPatch • SeaMar Community Health Center • South Park Area Redevelopment Committee (SPARC) • South Park Arts Council • South Park Housing Coalition • South Park Information and Resource Center (SPIARC) • South Park Neighborhood Association • South Park Senior Center • South Park Social Service Providers Network	**Business** • South Park Business Association • South Park Merchants Association Transportation / Environment • Environmental Coalition of South Seattle (ECOSS) • Duwamish River CleanUp Coalition • Duwamish Valley Safe Streets • Our Green/Duwamish • South Park Green Spaces Coalition **Public Safety** • Seattle Neighborhood Group • South Park Safety Partners • Southwest Precinct Advisory Council • Emergency Hubs & Block Watches

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[4] City of Seattle: Department of Neighborhoods. South Park Snapshot. August 2019.

Pay People for Their Time

Why?

The outreach work that liaisons and organizations do should be compensated fairly because they have expertise that is commensurate with the community trust they have built. They are the ones that will door-knock because they are already trusted by the members of their community. This experience that they have amassed should not be taken for granted. In the same way that traditional consultants charge high fees for their expertise, so should liaisons be compensated for their knowledge. From the interviews, there was a general feeling that liaisons are currently stretched too thin between projects and are low on time and resources.

Additionally, when asking community members to participate in an event, the event host should offer financial incentives that honor people's time. Incentives can be tangible items such as gift cards and prizes.

Strategies

- Compensate liaisons at a similar rate that the City of Seattle and King County Metro do for their community liaisons - $50 per hour.
- Provide a financial incentive for participating in events such as gift cards or prizes.

What we heard:

"I only engage if I can pay the community leaders"

"For promotoras and coalition this [outreach] is extra work, overtime"

Let Community Select Location and Amenities

Why?

Public engagement events need to seem culturally friendly to make participants feel welcomed. Communications should occur in languages appropriate to the community, include aspects of the culture (food, sports, dance) and feature leaders that not only understand but also adapt and make use of cultural elements of the community.

The environment should be supportive and comfortable to decrease uncertainty and make participants feel included. It is recommended to stay away from official-looking government buildings.

Make it easier for people to attend by providing services according to the day and their circumstances, like food, childcare and translation services. Literature suggests that outreach for the whole family to be considered, as this could help parents attend the event and feel less stressed.[5] However, the topic of disaster resilience is not always adequate for younger audiences. Consider involving them in elements of disaster preparedness adequate for their age i.e. helping prepare an emergency backpack.

Strategies

- Highlight cultural elements when advertising: language, activities, decorations, food.
- Choose locations where participants feel safe, that are easy to access and that are familiar to the community.
- Provide food for adults and children.
- Provide childcare.
- Provide translation services or ask members of the community to act as translators.

What we heard:

"Make events feel they are organized for the community"

"If this is an event for everyone, how do you know it is for you? What gives this idea?"

Spaces to Gather[6]
- Burdick Brewery
- Concord Elementary
- Museum of Flight
- Resistencia
- Seamar Latino Heritage Museum
- Seattle-Lite Brewing
- South Park Community Center
- South Park Hall
- South Park Library
- South Park Neighborhood Center
- South Seattle College Georgetown
- Spacefinder

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[5] Roger Bairstow, Holly Berry and Debra Minar Driscoll "Tips for Teaching Non-Traditional Audiences" Journal of Extension 40, no. 6 (2002) https://www.joe.org/joe/2002december/tt1.php

[6] City of Seattle: Department of Neighborhoods. South Park Snapshot. August 2019.

Assign Roles and Responsibilities

Why?

Implementation of this plan is dependent on all actors having clear roles and responsibilities. A shared ownership of the project is fostered when everyone has a responsibility.

Strategies

Below is a chart suggesting the following tasks listed in RACI (Responsible, Accountable, Consulted, and Informed). This chart is not all-encompassing and should be modified according to the tailored desires of each immigrant group.

Activity	UW	City Partner	Liaisons	Organizations
Customize tools of engagement for the event	R	I	A	C
Establish relationships with supporting liaison and organizations	R	I	C	A
Establish outreach timeline	C	I	R	A
Lead event	R	A	C	I
Lead ongoing outreach	I	C	R	A
Evaluate outreach	I	R	C	A

Key:
R = Responsible (Does the work)
A = Accountable (Provides final approval or signoff)
C = Consulted (Two-way communication – provides input)
I = Informed (One-way communication – kept in the loop)

Follow Up Personally

Why?

Increased presence increases familiarity and acceptance. Following up through personal methods of engagement, like face-to-face meetings and phone calls helps maintain a relationship and shows intentionality. It is also a way to report back to the community and an opportunity to broadly provide details or results. Relying on unannounced letters, flyers or cold emails might contribute little to keep the relationship going and to build trust.

Recognize that some people may have trouble saying no, they want to be polite with people in authority. So they could agree to engage without really meaning it. Following-up personally could provide a medium to explain things in more detail or to address concerns.

Strategies

- Meet in person with local leaders and participants, then follow-up with phone calls.
- Establish personal contact at least once before the engagement, and preferably multiple times before to remind participants.
- Make trusted leaders or well-known members of the community follow-up with participants, at the next meeting event or through direct calls. Thank them for attending and inform them about the next steps.

What we heard

"Door knocking is what is missing, this is the most effective form of outreach in South Park"

"Make sure the conversation keeps going."

Conclusion

South Park's challenging location and immigrant group dynamics contribute to the challenge of outreaching in this community. But with the right community liaisons and organizations a real relationship can be formed for future outreach plans.

Through this work we learned that showing commitment, taking the time to engage and collaborate with members of the community are key aspects for successful public engagement. Finding themes relevant to the members of the community that could be related to disaster preparedness and resilience could help increase participation.

Appendix A: Contact List

Organization	Role in Community	Individual Contact
South Park Neighborhood Council	Provide neighborhood voice	Aley Thompson - SPNAseattle@gmail.com
Duwamish Valley Affordable Housing Coalition	Prevent displacement through providing an action plan for affordable housing	Michelle Di Miscio - Michelle.DiMiscio@kingcounty.gov
Duwamish River Cleanup Coalition/ Technical Advisory Group	Educate community on clean up efforts	Paulina Lopez - Paulina@Duwamishcleanup.org Robin Schwarz - Robin@Duwamishcleanup.org (both contacts from Michelle, also both are part of the housing coalition)
Villa Communitaria (Formally known as: South Park Information and Resource Center [SPIARC])	Assist, educate and provide leadership programs and other services that serve the low income and diverse population.	Analia Bertoni – executive director – info@villacomunitaria.org
Liaison*	**Role in Community**	**Individual Contact**
Bunthay Cheam	Khmer Liaison	Bunthay.Cheam@gmail.com (contact from Michelle)
Lupine Miller	Family Liaison	Lupine Miller theconcordpta@gmail.com
Tammy Dang	Vietnam Liaison	ttdang74wa@gmail.com (contact from Michelle)
Phung Nguyen	Vietnam Liaison	pknguyen83@gmail.com (contact from Michelle)
Cesar Roman	Hispanic Liaison	cesar@sngi.org
Xochitl Garcia - Promotoras via Villa Communitaria	Hispanic Liaison	xochitlgspiarc@gmail.com

*Liaisons were identified through the interview process, not self-identified by the liaisons themselves.

Appendix B: Process

In order to understand the best practices for how to conduct outreach and community engagement in South Park, Seattle we conducted 30-minute interviews with Outreach Community Leaders. Five interviews were done to Matt Auflick from the Office of Emergency Management - City of Seattle, Michelle Di Miscio from King County Asthma Program, Cesar Roman from Seattle Neighborhood Group, Xochitl Garcia from South Park Information and Resource Center and Promotoras, and an anonymous employee from the City of Seattle. Four of the five interviews were conducted over the phone and one was in person at a coffee shop. Responses to the questions were typed as they were being said and as such there the verbatim response is not available, but an accurate recording was completed.
The questions asked were specific to outreach strategies in South Park. The goal was to attain what has been done, and what works best for outreaching the South Park community. These are the primary questions that were asked:

- What is your typical outreach plan?
- How do you advertise events?
- How do you collaborate with community leaders?
- How does the day of week/time of day work into your plan?
- What are some patterns that you see successful results with SP outreach? Patterns that have produced unsuccessful results?
- How much government outreach is done to SP?
  - Would you say they're overwhelmed with outreach?
- What has been your experience outreaching in SP?
- What types of outreach events are most popular in SP?
- If you had twice the budget to outreach, how would your outreach plan be different?
- What do you consider makes South Park a special neighborhood?
- What kind of amenities/services are needed for people to attend an event?
- Anything else you'd like us to know?

Below are quotes from the questions we asked organized by theme:

Taking the time to build a relationship with the community and following up.
　　　　"It's hard to outreach without a relationship"
　　　　"There needs to be more intentionality, more time in advance to prepare"
　　　　"You need to be available, be there, and take your time"
　　　　Find out "Something specific for the community in their life"
　　　　"Always try to report back to the community"

Recruit the help of trusted local organizations and paid community liaisons.
    "For promotoras and coalition, this [outreach] is extra work, overtime"
    "Leaders know which doors to knock and how to communicate"
    "I only engage if I can pay the community leaders"
    "Build trust with community leaders; explain goals, and see if its a priority for the community as well and try to put something together"
    "The Duwamish Valley Affordable Housing Coalition meets every 2 weeks on Tuesdays"

Successful outreach practices involve personal methods of recruitment.
    "To do effective outreach you need to talk to everyone in South Park"
    "Door knocking is what is missing, this is the most effective form of outreach in South Park depending on what you are trying to do."
    "Door knocking in apartment complexes"
    "I would hang out at the community center, talk to everyone that is coming by and give them a flyer"
    "Tabling at different events to take flyers."
    "Combine flyers with Facebook and Nextdoor post. Tell them to share with friends and neighbors."
    "The events that bring the most people in my experience are festivals."
    "The South Park neighborhood Facebook page is active." "Do specific invites to people."

Essential elements to be included in outreach events are childcare, food, cultural elements, and incentives.
    "Childcare in our language"
    "Thursdays in the evening and Saturdays have been the best for events."
    "Time is a major factor. Community members set day and time because it's for them"
    "Workshops are useful when there are gift cards."
    "Provide snacks for kids and adults"

Asthma as an idea to pair community resilience.
    "Connect climate change or community resilience with asthma effects"
    "Talk about what actually affects them"
    "The topic of natural disasters is very important. Maybe relate asthma with wildfire season and emergency preparedness"
    "Preparedness for immigration"

Multiple projects taking place in the community at the same time represent a challenge. Government agencies and departments would benefit from talking to each other and coordinating efforts.

> "There are lots of projects happening all the time at the city level and the neighborhood levels."
>
> "Possibly too much community engagement it's ongoing."
>
> "Every department does its own thing. Sometimes at the same time and same place happens within the government."

Additional Considerations

There was much feedback that was not reflected by the other interviewees that is also important to this analysis. Below are some of the comments that are relevant to outreaching in South Park:

- South Park is an urban neighborhood and as such it has a lot of external influence and is not as tight-knit as one might assume.
- Community engagement should be done per immigrant group because needs are different per group.
- Successful community engagement collaborates directly with community leaders on event design and the tools for engagement.
- There is no need to hire translators because the community can do that for themselves and it's more comfortable when the translator is someone of the community.
- The best day for events: Wednesday, Thursday, Friday, Saturday. Cold seasons like Autumn and Winter are better for bringing people inside.
- Organize events that are for the community: their culture, their translation, their interests - tailor topics and questions for them.

> These comments together are in agreement with each other. If community engagement should be done per immigrant group then it is supported by the comment of not being as tight-knit as one might assume. This means that successful outreach must duplicate work to tailor each group's culture, language and interests.

Appendix C: Literature Review

Outreach Plans

      The three major outreach plans that this literature review will focus on were developed by the Washington State Department of Transportation (WSDOT), the City of Seattle, and the Federal Emergency Management Agency (FEMA).

      The WSDOT Community Engagement Plan of 2016 says that to tailor the outreach to specific communities you must "identify a diverse group of community leaders."[7] According to WSDOT this is usually done through contacting human service coalitions, local government agencies, or universities for their community contact lists. Once a community leader has been identified you then access information about where and how to meet the community. Use popular communication methods to advertise the event per the community leader's recommendations. And for the meeting, do the best possible to pick a time outside traditional working hours, provide childcare if you expect families to attend, hire interpreters for the appropriate languages and cater meals from a local restaurant.

      Also the City of Seattle's "Inclusive Outreach and Public Engagement Guide" concurs with what WSDOT says and goes further in their specificity of engagement. In this guide they spell out the six essential strategies for inclusive engagement: 1) build a personal relationship with the target population, 2) create a welcoming atmosphere, 3) increase accessibility, 4) develop alternative methods for engagement 5) maintain presence with the community, and 6) partner with diverse organizations and agencies. They've provided examples for how you might accomplish these strategies such as attending community-driven events to maintain a presence in the community. Additionally, this document has a "quick guide" that is step-by-step for

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[7] WSDOT. WSDOT Community Engagement Plan 2016 Update. 2016.

inclusive public engagement. In order, the steps are defining the scope of work, identifying the stakeholders, defining roles, incorporate racially and culturally appropriate engagement activities, creating an inclusive public engagement plan, designate staff with project manager, outreach using consultation from community leaders, keep decision makers abreast, keep process open and accessible, and evaluate process.[8]

And lastly, we discovered an outreach template by FEMA around high water marking signs.[9] This plan, like the ones before, also address many of the same themes but in a matrix style. The template divides the target audience into homeowners and renters, kids, elderly, and local businesses, to identify key messaging and outreach tactics. There's also the identification of supporting organization and assigning roles and responsibilities for all the actors. The last two matrices are timeline of activities and an evaluation of the activities to assess their success.

The main takeaway from these outreach plans is that they all address tactics for outreaching to targeted communities and the main strategy for how to do community outreach is on the need to partner with trusted community leaders. This is generally the starting point for all outreach plans. The reason for doing this as the first step is to overcome the challenge of establishing community trust in the organization doing the outreach.[10] Without this element any outreach will inevitably have a difficult time gaining traction in the community.

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[8] City of Seattle, Office for Civil Rights. Inclusive outreach and public engagement guide. April 2009
[9] Federal Emergency Management Agency, Community Outreach Plan Template. nd.
[10] Christopher S, Watts V, McCormick AK, Young S. Building and maintaining trust in a community-based participatory research partnership. Am J Public Health. 2008;98:1398–1406.
46.

Despite extensive public participation in urban planning across the US, input in hazard mitigation planning remains low.[11] The public feels they lack ability and knowledge to make significant contributions and they remain more concerned with day-to-day issues.

Engaging diverse participants in public engagement processes can better inform decision making, reflect the population's interest, increase support and lead to successful implementation. Attracting, engaging and including participants that represent diverse backgrounds require additional effort from organizers.[12] This is also the case when engaging Latino communities. Sanoff identifies factors that commonly inhibit participation in the general population: personal need (or lack of resources), low sense of efficacy (lacking the skills), and suspicion of bureaucracy.[13] More specifically, Keidan argues that cultural barriers, language literacy, and distrust in public agencies and government prevents Latino individuals from participating.[14] To craft a successful outreach plan it is necessary to identify and understand these manifestations among Latino people.

In Latino culture, establishing personal relationships and developing trust is the most important strategy to ensure participation. [15] [16] Latino people are suspicious of "outsiders" but are also highly agreeable; they won't say no to people in authority to be polite.[17] Relying on impersonal methods of recruitment, like phone calls, letters, and flyers could have disappointing

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[11] Godschalk, David R., Samuel Brody, and Raymond Burby. "Public Participation in Natural Hazard Mitigation Policy Formation: Challenges for Comprehensive Planning." Journal of Environmental Planning and Management 46, no. 5 (2003): 733–54.

[12] Hobbs, Beverly B. "Latino Outreach Programs: Why They Need to Be Different." *Journal of Extension* 42, no. 4 (2004). https://www.joe.org/joe/2004august/comm1.php.

[13] Sanoff, Henry. *Community participation methods in design and planning*. 2000. New York: Wiley.

[14] Keidan, Greg. "Latino Outreach Strategies for Civic Engagement." *National Civic Review*, 2008.

[15] Hobbs, 2004

[16] Keidan, 2008

[17] ibid

participation results, as the tendency would be to show enthusiasm and consent without really meaning it. Overcoming this barrier necessitates personal contact techniques, like in-person meetings, outreach, and constant follow-up. Increased presence increases familiarity and acceptance.

Relying on existing networks, searching support from local organizations and getting endorsed by community leaders are other means to "enter" into the community; this increases the level of trust and willingness to contribute. Radio hosts, religious leaders, and NGOs are significant connections to have, as they have built legitimacy before the community.

Latino culture is also family-oriented. This means that in order to participate Latinos would evaluate if their time and effort would result in a benefit for their family; the intent and advantages of participating should be clearly stated.[18] This also reveals the need for including an adult component as well as a youth component in public engagement, as Latinos often participate in activities as a family.[19]

Public engagement events need to seem culturally friendly. Communications should be bilingual or Spanish only, include aspects of the culture (food, sports, dance) and feature leaders that not only understand but also adapt and make use of cultural aspects of Latino culture. Adults appreciate this respect towards their culture and will be interested that youth become more familiar and knowledgeable on aspects of their culture. Not all Latino audiences should be treated the same, cultural elements should also reflect traditions, beliefs and values of different country origins, age groups and generations.

Lastly, it is important to recognize the apprehension and constant fear that Latino communities feel towards immigration enforcement or deportation. Culturally Latinos do not

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[18] Keidan, 2008
[19] Hobbs, 2004

want to draw attention to themselves, concerned for the safety of their families and friends[20] thus locations need to be places where people feel safe, are easier to access, and are familiar to the community.[21] It is recommended to stay away from official-looking government buildings. The environment should also be supportive and comfortable, to decrease uncertainty and make Latinos feel included.

Latino culture is highly sociable, communal and friendly, thus the need to approach public engagement as an insider, building trust and taking advantage of the existing networks in the community.

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[20] Keidan, 2008
[21] ibid

Appendix D: South Park-Georgetown Community Resilience Workshop

October 2, 2019

5:30-8:30PM, South Park Community Center

OEM staff: Matt Auflick, Tey Thach, additional staff including interpreters

UW participants: Dan Abramson, Katie Idziorek, Asela Chavez Basurto, Andres Arjona, Charlotte Dohrn

The South Park Community Resilience Workshop was an event to engage community members to think broadly about what resilience means for the South Park/Georgetown area, both in terms of responding to disasters but also from a long-term community health and well-being perspective.[22] The workshop was organized by faculty and students from the University of Washington in partnership with City of Seattle's Office of Emergency Management. Activities of the workshop were intended to gather information on assets specific to the South Park/Georgetown area, to identify gaps in preparedness, and to build new connections within the community. The workshop took place on Wednesday, October 2nd, 2019 from 5:30-8:30pm at the South Park Community Center.

Introduction of workshop format and goals

Katie, and Dan provided an overview of workshop objectives and structure, and Matt described the Office of Emergency Management and participation in the workshop.

Workshop objectives:

- To build upon previous community planning work to think broadly about what resilience means for the South Park/Georgetown area – both in terms of responding to disasters but also from a long-term community health and well-being perspective
- To identify assets that are specific to the South Park/Georgetown area and to think about how those assets could be leveraged in the cases of a disaster or disruption
- To identify gaps in preparedness and potential resource for addressing those gaps
- To build new connections and strengthen existing connections within the South Park/Georgetown community and between the neighborhood and the City and University

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[22] Dohrn, Charlotte "South Park Community Resilience Workshop" (2019): 1

Visioning and assets activity
Visioning activity

Katie introduced the community values brainstorm, reading out the values compiled from the Duwamish River Festival and asking if anyone had anything to add or take off the list. Participants had no comments, so we moved on.

Andres and Asela provided a summary of visions for South Park/Georgetown gathered from input at the festival and reviewing previous South Park plans. Visions included a healthy environment, parks and open space, affordable housing, and others. They shared examples of assets that help support these visions, such as the South Park Plaza, local playgrounds, and others. They asked for input from the group on if any vision aspects were missing or outdates. The group also had no input on this topic.

Asset mapping activity

Katie introduced the asset mapping exercise. Assets are defined as resources that are valuable in the community. Participants located some assets (e.g., schools, businesses) on paper maps of the South Park/Georgetown neighborhood and surrounding area. One of the tables had a Spanish translator.

Asset mapping notes

Asset description and notes	Natural capital	Cultural capital	Human capital	Social capital	Political capital	Financial capital	Built capital
Examples of community capitals ->	*Rivers, wildlife, natural beauty, forests, weather*	*Festivals, heritage, multi-lingual population*	*Education, health, skills, youth, proactivity*	*Connections among people and organizations*	*Ability to influence, access to power*	*Financial resources, accumulation of wealth*	*Infrastructure, buildings, utilities, roads, trails*
Group raised question of if there are bike lanes on the map? Not on the map, but there is the Green River Trail out by the freeway, passes near Sea Mar, by Henderson St., passes by the library on to the street. How long is the trail? If it takes us to downtown Seattle, we wouldn't have to rely on the freeway.							✓ (existence of bike trail)
We need green areas – there's the Duwamish Waterway Park, but the plan is to build condos so the park will be turned into a dog park… I don't know if there's another park. There's also Cesar Park, by Cloverdale, but it's a tiny little park.	✓ (existing parks and lack of parks)						

Asset description and notes	Natural capital	Cultural capital	Human capital	Social capital	Political capital	Financial capital	Built capital
The Community Center is very useful, so is the school, the library, and Marra Farms. The South Park information center has a small plot at the p-patch. We don't have a farmers market – but Sea Mar has one day of the month where you can pick up fresh vegetables from the Marra Farm. This is access to fresh vegetables. The South Park Resource and information center, where I work, also has the food and clothing bank, the senior center – these are all in the resource center. The Duwamish Youth Corps meets there too, we share a space. Also, Concord elementary				✓ (usefulness/ connections fostered by orgs)			✓ (the locations themselves)
Q - Are there any festivals? Yes - 9/14 Fiestas Patrias is one of the festivals of the community. It's a Hispanic festival and parade. At the community center, agencies do tabling, there's the parade, horses, dancing. And they have health and dental screening, blood pressure, etc.		✓ (cultural festival)	✓ (health resources etc.)				
Q - What about businesses? Like right here there is a bakery – you guys know this bakery. La ideal, the deli, and a fruteria – a fruit and veggie store. We don't have any grocery stores except the Red Apple. The others are locally owned. There's one business that's really valuable, it's called Multi Servicios. It's been in the community for over 20 years. They do immigration, notary, income taxes for the community. They've been in the same place for over 20 years. Sea mar is one business or agency that's been around, and then that place.		✓ (local businesses)	✓ (services provided)				✓ (locations themselves)
Q - What about community organizations? There are different groups of promotores: the Promotores de South Park; promotores who work on the Duwamish River and the health of fish, and then the Marra Farm promotores who work on the farm and the land, planting and harvesting. Q- what about sports teams? My agency has basketball tournaments now, they last a couple months, 20 teams. They end October 20. Q – what about the arts? I see more art in Georgetown – there's a festival there, several festivals for the arts.		✓(arts in Georgetown)		✓(promotores and baseball tournament)			

Asset description and notes	Natural capital	Cultural capital	Human capital	Social capital	Political capital	Financial capital	Built capital
Q - Are there ice-skating rinks or bowling alleys? No. South Park has only two bus lines that run through here, and no grocery store – it's only the 60 and 132 bus.							✓ (and lack of)
Q - Where do you go outside the community for things? Have to go to Burien or White Center to groceries… get pretty much everything.							✓ (and lack of)
Q – where do kids go after elementary school? People go to go to Sealth and Denny. Q – what about preschools? Kids come here after school – the community center has before and after school care, children's services here at the community center.			✓ (childcare and education)				
[student] The river itself is pretty important. I heard some people talk about pollution around the river. Is anyone working on this? They started a couple years ago cleaning up the river from the Boeing pollution, they were taking out soil from under the river is the last I heard. There's the Duwamish River Cleanup Coalition, that focuses on the cleaning of the river, and the Duwamish Youth Corps that works on preventing pollution in the river, teaching the community how to not pollute, and they do clean ups on the river.	✓ (River)			✓ (community orgs)			
Q - Are there groups of People or even individual people who are valuable to the community, skilled, trusted, etc.? I was in the youth corps for a couple years, the one the one that organized it was Paulina and carmen Martinez, she lives on the house to the left of the parking lot. Carmen moved to the food bank. For teens, mostly carmen try to help out the most with us. Paulina is the main person.			✓(leader-ship)	✓ (community orgs)			
My favorite part is the library because it's safe. The library is accessible by bus. Son is in middle school and he goes to the library and he can contact mom.				✓ (communi-cation)			✓ (accessible)
Concord School is good because the teachers know English and Spanish		✓ (multilingual)	✓ (new skills)				

Asset description and notes	Natural capital	Cultural capital	Human capital	Social capital	Political capital	Financial capital	Built capital
I would like more trees.	✓ (trees)						
Marra Farm feels safe.							✓ (Marra Farm)
If you don't have a car the Duwamish trail is an easy path to direct yourself. Lots of trees and no traffic.	✓ (trees)						✓ (trail)
SeaMar is a reliable location that I can walk to							✓ (accessible)
We have limited access. We have metro and vans on demand. The van services 600 senior residents.							✓ (lack of)
I have experience in hand held radio communication but not sure who else does.			✓ (skills)				
A lot of us in the neighborhood know each other. Son is embarrassed to walk with mom because everyone knows her. That way her sons are always being watched and she can trust them.				✓ (social connections)			
You can walk to the store and therefore we are not car dependent. But there are few stores and we need more stores that have more things such as Target.							✓ (lack of)

Asset mapping summary

Participants most frequently mentioned assets that provide built capital, human capital, and social capital. In many cases, assets provided more than one type of capital (e.g., specific locations/buildings like a school also provide social and human capital benefits). Participants less frequently mentioned natural capital and cultural capital and did not discuss political or financial capital. Participants emphasized institutions that provide core services like education, health care, community support, as well as entities that are "local," like long-term businesses and local leaders. The table below lists examples of the assets that provide these resources in the community. Some gaps emerged during this discussion, including a lack of nearby grocery stores, and limited bus access/transportation options, a lack of parks/greenspaces, and river pollution.

Type of Community Capital	Examples of Community Assets
Natural Capital	Duwamish River, Duwamish Waterway Park, Cesar Park
Cultural Capital	Fiestas Patrias in South Park, local business like the fruteria and La Ideal bakery, art festival in Georgetown
Human Capital	Health resources provided at the clinic and community events, education and childcare provided by the community center and elementary school, support services provided by Multi Servicios, leadership from community members like Paulina Lopez and Carmen Rodriguez
Social Capital	Organizations that foster connections like Marra Farm, the South Park Information and Resource Center, the Duwamish River Cleanup Coalition, the Duwamish Valley Youth Corps; gatherings and events like the basketball tournament and festivals, the groups of promotores.
Built Capital	Bike trail, library, elementary school, Marra Farms, South Park information center, local businesses

Info on hazards, mitigation, City response

Matt gave a presentation on hazards in South Park, as well as mitigation and city response. He first highlighted the hazards in the community, beginning by noting that while there is a specific South Park/Georgetown neighborhood, the city understands that this can be broader, and people's definitions of the area can be different. When the city does hazard identification and vulnerability analysis for neighborhoods, they look at 18 possible hazards. Matt highlighted five hazards for South Park, listed below.

Flooding: Flooding happens because the neighborhood is on the Duwamish – South Park is one of few neighborhoods in Seattle that floods because it is actually on the river. The area has riverine flooding as well as urban flooding from heavy rain events.

Sea Level Rise: Expected to get 10 inches by 2050, 47 inches by 2150. Map shows flooding where the monthly high tide would be in 2090, which is where the annual high tide would be by 2050.

Earthquakes/liquefaction: In an earthquake, South Park may have liquefaction. This is something that occurs because of the soil. South park, Sodo, these areas are all prone to liquefaction because we filled in the tidelands. Liquefaction will cause damage to utilities and roads

Tsunami: There are tsunami inundation zones in South Park or Georgetown. Other parts of Seattle could have inundation with a worst-case scenario Seattle fault earthquake. This would affect the port, roads, bridges.

Landslides: The area is not prone to landslides, but some areas above hwy 509 could slide.

Matt then shared examples of the types of impacts that might occur due to hazards. He first highlighted that city planning focuses on earthquakes, and generally if we are prepared for an earthquake, we are prepared for other types of events. Impacts and city actions are listed below.

Infrastructure: We know there will be impacts to roads and bridges, which may result in places being isolated. The City is rebuilding and retrofitting bridges. The South Park bridge was replaced in 2014, for other reasons, but the City is regularly doing seismic upgrades. The City recommends preparing for routes to be affected by a major event.

Supplies: Stores could run out of supplies, and people will have trouble accessing food and water. The City will have a plan for feeding people, but it will take time to get set up.

Utilities: Will be affected, recommend that people know how to shut off utilities.

Communications: Communications will go down, will work with providers to restore service, but will take time.

Strategies for individuals and families to be prepared include being familiar with community emergency hubs. These are locations that have been identified by the community where you can go to start sharing services and information with community members. With regards to structural impacts, people should carry insurance (i.e., earthquake insurance, renters insurance, flood insurance). Emergency services will likely be overwhelmed. There is a fire station in South Park, and they have an earthquake route/plan, but they will have to triage and address the most important events. People should stock first aid supplies and get training.

Resource matching

Following the presentation of hazards, groups worked on a resource matching exercise, using the same community asset map overlaid with hazards as a reference. Participants worked together to complete an impacts and resources worksheet that asked them to think of relevant community assets or strategies and community gaps/concerns for communication, structural damage, and health and wellbeing impacts. The notes below are in order of this discussion but are focused on identifying themes rather than separating out strategies and gaps. Not all the

ideas included below were voiced by members of the South Park/Georgetown community, though most were. One of the language interpreters and the UW students provided some general input as well.

For this activity it was helpful to have the February 2019 snowstorms a reference of a small natural disruption that was recent in their minds. However this reference also blocked some of the participant's ability to consider what they would do in a more catastrophic event. The majority of the statements were around preparations with trust and adaptability being the second most common category of statements. The participant that lives in senior housing understands their precarious situation of being isolated and elderly and how it puts them at a disadvantage in the event of a natural disaster.

When asked if they know of restaurants that would help they said no; they said maybe a restaurant would be a resource, but didn't sound confident. The majority of the concerns were around food in regards to providing meals. There was also significant conversation around how to manage a natural disaster with children and the need to train them. There were also realizations of needing to be prepared in the form of questions.

Familiarity with hazards: *Knowledge of damaging events and their impacts*

Adaptability, flexibility and improvisation: *Finding emergency uses for things that normally have different everyday uses*

Preparations to enhance adaptation: *Activities that enhance the emergency utility of everyday items, places, or skills*

Sharing: *Willingness or ability to share items, goods or skills within and beyond the community*

Trust and privacy: *Belief in the willingness or ability of others to share information or resources*

Isolation: *Vulnerability of the community to transportation and communications disruption*

Relevant community assets or strategies	Familiarity with hazards	Adaptability, flexibility and improvisation	Preparations to enhance adaptation	Sharing	Trust and privacy	Isolation
Communication						
There are listservs, messaging apps, Nextdoor and the South Park listserv, but these would not usable in a crisis. Places people go would be the library, the information center, the community center. Also, churches, one on Thistle, the Baptist church on 8th, and the yellow one on Cloverdale, also might have meetings. Q: Where are places people would go talk to each other? The coffee shop La Resistencia, Red Apple, and Sea Mar are all places people could go. In an event, would go door to door, neighbor to neighbor, it's a pretty neighborly community, I know most of the People on my block… Things like a community website, block parties, these are things that help people get to know each other.			✓ *(well-known places to congregate and build community)*		*(going door to door)*	*(comms not useable)*
Also, you can know the strengths that each neighbor has – doctors, people with tools, etc., so we utilize each other's strengths. Q - Does this happen normally, or could this be strengthened? I think somewhat – I've been here a while, its part of why I know my neighbors, they look out for me, I look out for them… this took some time though. Now I know people through the school. Some other communities use Facebook groups to communicate, I wanted to bring that idea here. It would be nice if there were more of that [type of communication]. It would be good to have a holding document for where people can know peoples strengths, have a bit more cross-connection building. You may not know people but could get to know them and if they might need help or could give help.		✓ *(knowing and utilizing neighbors strengths)*	✓ *(communica-tion tools)*	✓ *(sharing/ helping)*	✓ *(knowing and utilizing neighbors strengths)*	
There's the community center, if people couldn't be in their homes, there are some places, if they aren't damaged. There are some concerns, this is getting into gaps - being isolated across the bridge, being in a place that might have more damage because of liquefaction. But there are places to go, the churches the school, the library, and a lot of community, interest in looking out for one another. What about designated meeting places – so that if people are missing, you can know and be aware if people need help or if there is a road blockage? Need more education and outreach about hubs. Could be a person in charge who could do a head count at a meeting place.	✓ *(liquefac-tion)*	✓ *(gathering places)*				✓ *(bridge going out)*

Relevant community assets or strategies	Familiarity with hazards	Adaptability, flexibility and improvisation	Preparations to enhance adaptation	Sharing	Trust and privacy	Isolation
Q – Are there any particular concerns of gaps regarding communication? I think language – there's a lot of knowing and getting to know neighbors, but there's some segregation, there could be improved communication across different groups. I'm connected with the groups – but there are ethnic and racial issues – block party is a way to address this, but its only once a year. Could have more and could make them more accessible. It's just a party, so not interpretation or translation, but maybe not well advertised across different communities. The idea of isolation would affect communication – if bridges are out, there's maybe not a good way to communicate with the rest of the city.				✓ (knowing and getting to know neighbors)		✓ (bridge going out, language barriers)
Structural Damage						
Are there any resources in the community people could use for building temporary shelters – like businesses? There's an architect across from the library, there's a roofing company. A lot of buildings could be damaged. How will we know if the buildings are safe to enter? Gaps regarding structural damage: we are in a very mixed residential commercial, there are a lot of businesses, but I just don't know them, so maybe getting community members to better know and understand what businesses there are could be helpful. Could be many more assets in the area that we just don't know about.		✓ (business that could help out after event)				
Health and Wellbeing						
Gaps and concerns for health and wellbeing – Sea Mar is a clinic where they do minor procedures, family clinic, they have other services, dentist, lab, pharmacy, etc. There are not many medical clinics, and no full hospital. Medical training could be strengthened. I occasionally think about redoing CPR, try to keep a look out for trainings, but would be good to get the word out more, and especially offer at free or low coast.			✓ (medical training)			
A gap is that I think there's more vulnerability and frailty here. You know we found out about people here not living as long as in other places. Historically, we are a more affordable neighborhood, could be a higher number of people with medical or other types of vulnerability. Don't want to overemphasize that because we are also a strong community.						

Relevant community assets or strategies	Familiarity with hazards	Adaptability, flexibility and improvisation	Preparations to enhance adaptation	Sharing	Trust and privacy	Isolation
What about access to food – knowing where food would be? Not a lot of options for groceries, the Red Apple is far. People go to Burien or White Center for groceries. It's difficult if not impossible for people to walk the hill though, because of the road.						✓ *(lack of access to groceries)*
Anything else						
Anything unique to this comm that wasn't mentioned? One reason I'm here, I am concerned about the liquefaction, and that's not about the community members, it's our land. And also flooding – extreme flooding – some streets prone to storm flooding which has been improved over the years. If there were massive events… the city would know it was happening.	✓ *(liquefac-tion and flooding)*					
Some strategies are having a medical supply box with dressings, creams, etc. and training people to make boxes. Having medications with you and knowing which medications you have or need. Are there assets already in the neighborhood? Sea Mar, but nothing else specifically medical – the information center on 10th has a defibrillator, maybe have a heartier first aid kit than households. Might be a place to go, but it's not a clinic. Getting to know neighbors is important.		✓ *(places that may have med supplies)*	✓ *(preparing kits)*			
Most local kids go to the elementary school in South Park, some kids go to school in West Seattle, STEM schools like Arbor Heights. But a relatively small number leave for school, and they bus or drive. Important to know school emergency plan. My kids go to the local school, there is an emergency plan, but I don't know much about it. This could be a combination of factors of me not finding out and the school not communicating about it. It's a bilingual school – which is another gap, if English is not a first language, this could be tougher… communications could be improved.						✓ *(language barriers)*
There used to be an all about South Park Facebook page, or website? It could be within the South Park listserv but might need something specific for resource sharing in an emergency… (Google translate can be used for translating Facebook page…)			✓ *(communica-tion tools)*			

Relevant community assets or strategies	Familiarity with hazards	Adaptability, flexibility and improvisation	Preparations to enhance adaptation	Sharing	Trust and privacy	Isolation
Retail						
I think food and water are most important.			✓ (supplies)			
have a problem because we're seniors.						✓(lack of access, connec-tions)
You have to leave the neighborhood to buy most food times for cheap.						✓ (no accessibi-lity)
She is prepared with canned goods and always swapping the expired food. Her kids ask about the process.			✓ (supplies)			
To keep warm wear layers of three pants		✓ *(solutions to weather)*				
We have usually have coals so we ready to grill.			✓ (cooking tools)			
Maybe of the 6 restaurants, maybe one might open, but I'm not sure that it would happen.					✓ (restaurants sharing resources)	
There's a food bank and they have food and a kitchen. I think they would help and that would be a good place because it's a big place and it has a basement.		✓ (organiza-tion provide help)				
It would be good to know where the city will deliver food. Where are the stockpiles?			✓ (resources in case of event)			
Transportation						
We have walkie-talkies to communicate between buildings. GMRS and amateur radio. I can act as the relay to get the message out. In an emergency you can use ANY radio you want and do not need a license. Trying to train community on how to use radio. (Arrowhead gardens)		✓ (communica-tion tool)		✓ (skill and knowledge sharing)		✓(in case of disaster)
I didn't prepare for the snowstorm. I went to WINCO and there wasn't much and long lines.	✓ (access to supplies)					
We need to follow what the news says better. If they say something is happening then we should listen.			✓(disaster preparedness)			

Relevant community assets or strategies	Familiarity with hazards	Adaptability, flexibility and improvisation	Preparations to enhance adaptation	Sharing	Trust and privacy	Isolation
Utilities						
Lightning Storms and snowstorms can kill the electricity. How are we going to cook and boil water, keep ourselves warm?	✓(snows torm)					
Drainage overflow problem and the apartment manager didn't care to fix the problem. But If you unite with other tenants you can bring change to the apartment complex					✓(fixing problem)	
I have renters insurance even though its not required.			✓ (preparedness)			
Arrowhead senior living has their own garden.		✓ (access to resources)				
Other neighborhood-specific impacts and consequences?						
Using snowstorms as an opportunity to find the positive side - i.e. playing in the snow with kids		✓ (entertain-ment)				
Earth can swallow you in the event of an earthquake	✓ (liquefac tion)					
Kids will get bored if they're no entertained. If there's no electricity we'll need to find other family activities to keep entertained and spirits up.			✓(entertainme nt)			
Go to a friend that has electricity if you do not.				✓ (knowing neighbors)		
Some gaps is getting to know you're neighbor through Facebook groups, block party, parents. Making sure that connection is made.					✓ (knowing neighbors)	
It's good to be prepared.	✓(disas-ter prepared -ness)					
Sharing: It might be good for the different buildings (senior living) to know how to share the other buildings if it's not livable.				✓ (share infrastruc-ture)	✓ (collaborat-ing with neighbors)	
I don't think you need to create friendships with people to act in kindness and open their home to you					✓(trust in neighbors)	

Storytelling and world café

Storytelling brainstorm

Before switching tables for the world café, the table group brainstormed their story, summarized below.

Summary: This is a community that has several structural vulnerabilities, liquefaction, flooding, and a history of vulnerability and frailty. It has many structural assets too, places that would be accessible in times of emergency. I would like a hub down here in South Park, where could we get a hub? There used to be a trailer at the end of the playground at the community center, could bring back the trailer. There are spaces, Marra farm, this playground could be good.

World café discussion

Groups then swapped places, and shared their story, summarized below.

Summary: We talked about South Park as a place with quite a few assets and special qualities that can be built upon to serve us in a crisis. We also talked about some areas of vulnerability or opportunity where finding more strengths would be important, and some are connected. We thought about how it's a place of neighborliness. People get to know each other over time, they stay and look out for each other, and then some ways that people might not get to know each other enough. People can be broken up by age, what's going on in their lives, language, ethnicity. We could get to know each other more, know who is where, who needs things, who might have knowledge and resources, who needs to be looked out for. We also thought about more technological things to do to prepare more. Like Facebook groups, internet communication, things we could do in advance to prepare more.

Discussion:

Q - How would you organize? Top down or bottom up?

I think its bottom up. I think there's a South Park neighborhood association.

Q - What would be the affinity for People to coordinate or work together? It's so diffuse… affinity helps. Would it be geographical or something else?

I though the whole South Park area – especially around emergencies. To me it makes a lot of sense to have an affinity boundary of the whole community. You live in Arrowhead Gardens, might be hard to get to you, and for you to get to us. We are kind of isolated.

I would go over towards South Park if I saw an opportunity to engage. I should try walking it… it's not good, not safe. There's a project to build a sidewalk that's underway or slated for the future.

Affinity wise – we talked about more block parties, socially, through neighborhood events. Socially and for sharing info.

The city sends out info about workshops, block parties. We had in mind increasing these communications to build more affinity, knowledge of where people are, who they are. If it's social, it has its own momentum.

At block parties, people could talk about the purpose of being together. They can see the importance of the block party – not just social, but also to build community infrastructure. Someone could make an announcement about the purpose of the block party. If they understand the importance, they may show up next time. It's a way to connect culturally, bring ethnic foods, etc.

In the other group discussion, there seemed to be a missing piece. No one said isolated, but it sounded isolated. People don't know their neighbors, hoped that neighbors would be friendly.

Important to create opportunities for people to get to know each other's cultures, values, important to breakdown stereotypes. Show appreciation and respect.

I was concerned about the basics and how you fulfill the basics – unless you are good at stockpiling, there's going to be a need to share information and find resources. Individually we have a narrow view of our world, but 50-100 people have a lot of information. You won't waste time trying to find something, someone knows where it is.

We also thought about this in this neighborhood, some spaces where there might be assets. Like Sea Mar clinic, but it's the only clinic and not full hospital, it's the only place to go and what if it were compromised?

Public buildings, like the library, this building are assets, but there may not be a neighborhood hub. There's an opportunity to build on what's here. Adding more emergency medical training for community members in multiple languages.

[Matt] There are two hub locations in South Park, but there may be ways to build them out. At the info center, there's an opportunity to educate people more.

We talked about the hubs being a place to share info and resources.

[Matt] there are opportunities for people to get trained on radio.

It's hard to get your arms around what would build momentum. ... just knowing about a resource doesn't change my behavior. I like the idea of using Facebook or Nextdoor. But Nextdoor is mostly about missing cats. Something like Nextdoor but not commercialized. Facebook has the capability but may not be designed for that. City uses Nextdoor to get information out. Some neighborhoods started and use Facebook groups. Would be nice if you could look at a map to find your group. Right now, everything is by invitation.

Matt provided info about the hub website – recognize that preparedness is not the thing that is going to bring people together. Something dynamic is really needed, people relate on a social level, not like what are you going to do in an emergency.

Buy Nothing could be a good model. This could be where the city comes in – here's a template that everyone can use for building community, knowing assets, reinforce each other's interest in the community non commercially. Provide a structure/framework, that the city doesn't run, and you could occupy a space that's yours to occupy. In a real emergency, city is going to be running around. Keep getting preached at that you are on your own. Either you are on your own, or you have your community and your network. This is a challenge of government – dozens of programs that are trying to do some element. Challenge is bringing all into one cohesive thing.

Resource matching summary

During the resource matching activity and world café discussions, several themes emerged. People frequently discussed the relative isolation of being in South Park and being dependent on bridges for access and communications, and limited access to things like grocery stores. Language barriers and other types of divisions within the community can also exacerbate vulnerability and isolation, though the participant who voiced this also wanted to stress that there is a lot of neighborliness and community strength. Adaptability, flexibility and improvisation were also frequently discussed. Participants talked about locations within the community that could be used as meeting places after an event, neighbors who may have strengths that could be tapped to respond to an event, and businesses (e.g., roofing company) and other locations (e.g., Sea Mar clinic, Information and Resource Center) that could have medical supplies. With regards to preparations for adaptation, discussion focused on getting to know neighbors, fostering community, and potential communication platforms that could be used to build community and exchange information (e.g., Nextdoor, Facebook), and medical and other trainings. In general, people felt like South Park has some unique vulnerabilities, but many assets in the form of local resources and community strengths. There are opportunities to strengthen community bonds and resource sharing through events like block parties, as well as through online communication.

Closing

After the resource matching activity and world café, the team raffled off prizes and discussed next steps. Matt clarified that there are two emergency hubs in South Park – the Information and Resource Center and the Marra Farm Ppatch. If people want to know more about amateur radio, they can talk to John W. The city has held several first aid and preparedness training, and are looking for ways to get more involvement. Following the meeting, a report and maps will be shared.

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