APPENDIX A:
LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: Pierce County (Region 5)	**Title of Plan:** Region 5 Hazard Mitigation Plan – City of Tacoma	**Date of Plan:** September 2014
Local Point of Contact: Katie Gillespie	**Address:** 2501 S. 35th Street, Suite D Tacoma, WA 98409	
Title: Program Coordinator		
Agency: Pierce County Department of Emergency Management		
Phone Number: 253 798-3311	**E-Mail:** kgilles@co.pierce.wa.us	

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region ***(insert #)***		
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved		

SECTION 1:
REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Process Section pp. 1-8 to 1-12 Base Plan pp. 1-11, 27-31 Plan Maintenance pp. 7-9		
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Process Section pp. 1-10 to 1-11		
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Process Section pp. 1-6 to 1-7 Base Plan pp. 1-8		
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Capability Section pp. 3-3 to 3-8		
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Plan Maintenance Section pp. 7-7 to 7-8		
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Plan Maintenance Section pp. 7-3		

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A: REQUIRED REVISIONS			
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Risk Assessment Section pp. 4-6 to 4-17		
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Risk Assessment Section pp. 4-9 to 4-17		
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Risk Assessment Section pp. 4-9 to 4-17		
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	N/A		
ELEMENT B: REQUIRED REVISIONS			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Plan Maintenance Section pp. 7-4 Mitigation Strategy Section pp. 5-10 Capability Section PP. 3-3 to 3-7		
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Mitigation Strategy Section pp. 5-10		
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Mitigation Strategy Section pp. 5-10 to 5-47		
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Mitigation Strategy Section pp. 5-14 to 5-47 Capability Section pp. 3-3 to 3-7		

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Mitigation Strategy Section pp. 5-10 to 5-47		
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Plan Maintenance Section pp. 7-4 Mitigation Strategy pp. 5-10 Process Section pp. 1-10		
ELEMENT C: REQUIRED REVISIONS			
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Process Section pp. 1-6 to 1-8 Infrastructure Section pp. 6-3 to 6-26 Profile Section pp. 2-5		
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Plan Maintenance Section pp. 7-4 Mitigation Strategy pp. 5-47 to 5-52		
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Plan Maintenance Section pp. 7-4 Mitigation Strategy pp. 5-10		
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Appendix A		
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Appendix A		

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2:
PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

How does the Plan go above and beyond minimum requirements to document the planning process with respect to:

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

Element B: Hazard Identification and Risk Assessment

In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:

1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

Element C: Mitigation Strategy

How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

B. Resources for Implementing Your Approved Plan

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1												
2												
3												
4												
5												
6												
7												
8												
9												

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

Section 1

Plan Process Requirements

Planning Process---Requirement §201.6(b):

An open public involvement process is essential to the development of an effective plan.

Documentation of the Planning Process---Requirement §201.6(b):

In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Documentation of the Planning Process---Requirement §201.6(c)(1):

[The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

- Does the plan provide a narrative description of the process followed to prepare the new or updated plan?
- Does the new or updated plan indicate who was involved in the current planning process? (Who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)
- Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)
- Does the new or updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?
- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?
- Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?

SECTION 1
REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
CITY OF TACOMA
PROCESS SECTION

Table of Contents

Changes To Jurisdiction Plan in this Document

This Process Section for the City of Tacoma Hazard Mitigation Plan includes the following changes that are documented as a result of a complete review and update of the existing plan. The purpose of the following change matrix is to advise the reader of these changes updating this plan from the original document approved in November 2008.

The purpose for the changes is three-fold: 1) the Federal Law (Code of Federal Regulations (CFR), Title 44, Part 201.4) pertaining to Mitigation Planning has changed since the original Plan was undertaken; 2) the Local Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 201.6 (d) (3) Plan Review states Plans **must** be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for HMGP project grant funding. This document when completed and approved will become the City of Tacoma Hazard Mitigation Plan.

Change Matrix

This Matrix of Changes documents the pertinent changes made from the November 2008 City of Tacoma Plan for the Region 5 Hazard Mitigation Plan; 2013-2018 Update. Most of the changes are a matter of additional detail, more information provided, some reformatting to the current Pierce County DEM format and in some cases a response to new requirements. This 2013 version represents a complete review and update by Pierce County Department of Emergency Management using a detailed process for development and following an established format. During this procedure, all web links have been verified and updated.

Change Matrix – City of Buckley Region 5 Hazard Mitigation Plan 2013 Update

Section 1 – Plan Development, Process Section	
Section or Part of Plan	**New in 2013 Plan**
Section 1 – Process Section	Section 1 – Process Section
	The 2013 Process Section contains this Change Matrix Table.
	The 2013 Process Section contains a revised Risk Section to include nine (9) Technological Hazards.
	The 2013 Process Section contains a description of the new process to define goals and objectives for this jurisdiction in the Mitigation Strategy.

Section 1 – Plan Development, Process Section (Continued)	
	The 2013 Process Section contains a Mitigation Measure Matrix that reviews all the prior Mitigation Measures and shows those complete, those still viable and those no longer retained for further action.

Section 2 – Participating Jurisdiction Profiles		
Section or Part of Plan	**Previous**	**2013 Plan**
Section 2 – Profile	Information was current as of 2000 Census Data.	The 2013 version of the Profile has been updated using 2010 Census Data and most current GIS information from Pierce County.

Section 3 – Capability Identification		
Section or Part of Plan	**Previous**	**2013 Plan**
Section 3 – Capability	The Capability Tables shown in the previous plan are in a similar format.	The 2013 Capability Section has been improved and updated to show current information from the jurisdiction.

Section 4 – Vulnerability, Risk Analysis	
Section or Part of Plan	**2013 Plan**
The previous version of the plan contained a chart for previous history of disaster declarations broken down into Geological and Meteorological Hazards.	The 2013 Risk Section includes this same chart but it has been updated to show all additional declarations and expanded to include Technological Hazards as well.
The previous version of the plan contained four hazard maps.	The 2013 Risk Section includes updated maps and may contain additional hazard maps according to the specific jurisdiction's hazards.
The previous version included specific analysis showing vulnerability of population, land and infrastructure according to Census 2000.	The 2013 Risk Section includes completely updated tables showing vulnerability of population, land and infrastructure using Census 2010 data.

Section 5 – Mitigation Strategy	
Section or Part of Plan	**2013 Plan**
The previous document used the standard goals as outlined for the entire project.	The 2013 Mitigation Section was drafted using specific goals and objectives written by the jurisdictions to their specific hazards and concerns.
The previous document contained a Mitigation Measure Matrix chart followed by written descriptions of each individual measure.	The new document uses the same format as the original plan but with emphasis on new goals and objectives. New measures have been added to both the Matrix and the individual measure descriptions. Measures completed in the past five years have been deleted with explanation of same in the Process Section.

Section 6 – Infrastructure	
Section or Part of Plan	**2013 Plan**
The previous plan used a full table with detail on each piece of infrastructure as well as summary information on hazards and dependencies.	The 2013 plan uses the same table but with additional technological hazards now included. This table has been completely updated as have the accompanying tables.

Section 7 – Plan Maintenance	
Section or Part of Plan	**2013 Plan**
The previous Plan Maintenance for the jurisdiction was very similar in format to the newer version for 2013.	The 2013 version of the Plan Maintenance borrows from the format and content of the original; however the entire document has been reviewed and updated to current information.

Section 8 – Other Changes	
Section or Part of Plan	**2013 Plan**
The previous document contained three Appendices.	The 2013 Plan contains three Appendices including place for the final resolution and approval letter from FEMA and also the team members for the jurisdiction and a chart for any changes. The Acronym list appears in the Base Plan for the entire project.

Plan Process

The Region 5 Hazard Mitigation Plan Process Section is a discussion of the planning process used to update the Region 5 Hazard Mitigation Plan (Pierce County is Region 5 for Homeland Security (HLS) in Washington State, including how the process was prepared, who aided in the process, and the public involvement.

The Plan update is developed around all major components identified in 44 CFR 201.6, including:

- **Public Involvement Process**;
- **Jurisdiction Profile**;
- **Capability Identification**;
- **Risk Assessment;**
- **Mitigation Strategy**;
- **Infrastructure Section**; and,
- **Plan Maintenance Procedure**.

Below is a summary of those elements and the processes involved in their development.

Public Involvement Process

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions.

> "Involving stakeholders who are not part of the core team in all stages of the process will introduce the planning team to different points of view about the needs of the community. It will also provide opportunities to educate the public about hazard mitigation, the planning process, and findings, and could be used to generate support for the mitigation plan."[i]

In order to accomplish this goal and to ensure that the updated Region 5 Hazard Mitigation Plan be comprehensive, the seven planning groups in conjunction with Pierce County Department of Emergency Management developed a public participation process of three components:

1. A Planning Team comprised of knowledgeable individual representatives of HLS Region 5 area and its hazards;
2. Hazard Meetings to target the specialized knowledge of individuals working with populations or areas at risk from all hazards; and
3. Public meetings to identify common concerns and ideas regarding hazard mitigation and to discuss specific goals, objectives and measures of the mitigation plan.

This section discusses each of these components in further detail below with public participation outlined in each. Integrating public participation into the development of the Region 5 Hazard

Mitigation Plan update has helped to ensure an accurate depiction of the Region's risks, vulnerabilities, and mitigation priorities.

Planning Team

The Planning Team was organized early in 2012. The individual Region 5 Hazards Mitigation Planning Team members have an understanding of the portion of Pierce County containing their specific jurisdiction, including how residents, businesses, infrastructure, and the environment may be affected by all hazard events. The members are experienced in past and present mitigation activities, and represent those entities through which many of the mitigation measures would be implemented. The Planning Team guided the update of the Plan, assisted in reviewing and updating goals and measures, identified stakeholders, and shared local expertise to create a more comprehensive plan. The Planning Team was comprised of:

Table 1-1 Planning Team – City and Town Group

NAME	TITLE	JURISDICTION
Brian Hartsell	Executive Assistant	City of Bonney Lake
Don Morrison		City of Bonney Lake
Alan Predmore	Fire Chief/Emergency Manager	City of Buckley
Jim Arsanto	Chief of Police	City of Buckley
Bob Sheehan	Fire Chief	City of DuPont
Ed Knutson	Chief of Police	City of Edgewood
Kevin Stender	Community Development Senior Planner	City of Edgewood
Mark Mears	Assistant Police Chief	City of Fife
John Cheesman	Chief of Police	City of Fircrest
Mike Davis	Chief of Police	City if Gig Harbor
Paul Rice	Building and Fire Safety Director	City of Gig Harbor
Christine Badger	Emergency Management Coordinator	City of Lakewood
Dana Herron	Building Official	City of Milton
Jim Jaques	Assistant Chief	City of Milton/East Pierce Fire and Rescue
Mark Bethune	City Manager	City of Orting
Karen Yates	Mayor	City of Roy
Bill Llewellyn	Council Member	City of Roy
Ryan Windish	Planning Manager	City of Sumner
Ute Weber	Emergency Manager	City of Tacoma
Tricia Tomaszewski	Clerk-Treasurer	Town of Carbonado
Daillene Argo	Town Clerk	Town of Carbonado
Bob Hudspeth	Fire Chief	Town of Eatonville
Doug Beagle	Town Administrator	Town of Eatonville
Kerry Murphy	Public Works	Town of Eatonville
Peggy Levesque	Mayor	Town of South Prairie
Marla Nevil	Town Clerk	Town of South Prairie
Paul Loveless	Town Adminstrator	Town of Steilacoom

Melanie Kohn	Clerk/Treasurer	Town of Wilkeson

The Planning Team held 10 Planning Team Meetings for the following Planning Groups: City and Town Group, Fire Group, School Group, Special Purpose Group, and Utility Group for a total of 50 meetings from March of 2012 to February of 2013.

Table 1-2 Planning Team Meetings – Cities and Towns Group

Planning Team Meeting #1 - Pierce County Library Administration Bldg-March 21, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: Introduction of Planning Team, Review of the history of the Grant Application, Defining the Planning Requirements, How We Establish the In-Kind Match, Benefits of Developing a Plan, Defining the Planning Process, Establishing the Planning Team Meetings, Elected Official Meetings and Public Comment Meetings, reviewing each jurisdiction's profile information, and defining next steps.
Planning Team Meeting #2 – Pierce County Emergency Operations Center-May 1, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: Introduction of Planning Team as there were new members present, review of items presented at previous meeting, Defining the Planning Requirements, Defining the Process, Establishing the Planning Team Meetings, Elected Official Meetings and Public Comment Meetings, and explaining the next steps. This meeting focused on continuing review of the Profile Section, an introduction to begin thinking about mitigation strategies to include a review of what measures from their original plan have already been completed and thinking about new measures they may like to add, and a review of existing infrastructure for accuracy or necessary changes. It was explained how the Homeland Security sectors correlate with the information on the Infrastructure Forms and the potential uses of the information as a means of populating a database of resources for future use. There was also information handed out on dependencies and how important it is to know who depends on you and who you depend on. Everyone was reminded to set up their Elected Official meetings. Everyone was given a copy of their original Section 6 – Infrastructure Information.

Planning Team Meeting #4 - Pierce County Emergency Operations Center-July 10, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: Reminder to set up Elected Official meetings. There was a recap of the Infrastructure Forms and the information necessary and some forms were collected at the meeting. Because this group missed one meeting in April, there were two areas of focus for this meeting; the Capability Section and the Risk Section. There was a discussion on how to recognize capabilities that already exist within the jurisdiction. Copies of existing Capability Sections were handed out and a discussion followed regarding making this section more comprehensive for everyone. The discussion continued, focusing on an explanation of the Risk Assessment and beginning to look at the local hazards for each jurisdiction. There was also some discussion about hazard maps and jurisdiction hazard maps were shown for the first time since they were updated. These now include technological hazards.
THERE WERE NO PLANNING TEAM MEETINGS IN JUNE OF 2012

Planning Team Meeting #5 - Pierce County Emergency Operations Center-Aug 7, 2012
Planning Team members Katie Gillespie and Debbie Bailey, along with special guest Casey Broom from State EMD, conducted the meeting and the Planning Team discussed the following items: State EMD Mitigation Coordinator, Casey Broom was present at this meeting to lead the discussion on goals and objectives. The primary discussion for this meeting was a review of how to write goals and how to move forward in developing objectives to address the goals as a part of the Mitigation Strategy for the project.
Planning Team Meeting #6 - Pierce County Emergency Operations Center-Sept 4, 2012
Planning Team members Katie Gillespie and Debbie Bailey, along with Casey Broom, conducted the meeting and the Planning Team discussed the following items: Casey led the discussion continuing with Goals and Objectives for each jurisdiction. There was also a lot of discussion regarding good mitigation measures and how they need to address the objectives identified.
Planning Team Meeting #7 - Pierce County Emergency Operations Center-Oct 2, 2012
Planning Team members Katie Gillespie and Debbie Bailey, along with Casey Broom, conducted the meeting and the Planning Team discussed the following items: The jurisdiction hazard maps (base map as well as hazard maps) and other administrative items were discussed. The majority of the meeting was dedicated to a discussion revolving around developing new mitigation measures and having 'shovel-ready' projects included in all plans. A general discussion was productive in finding new measures that others might also be able to include.
Planning Team Meeting #8 - Pierce County Emergency Operations Center-Nov 6, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: There was a call for questions on all sections completed thus far and any final cleanup of sections as necessary. The majority of the meeting was dedicated to continuing discussions about mitigation measures and answering all the questions regarding new measures and how they will be added to the plans. The jurisdictions were briefed and given guidance on how to prioritize their mitigation measures.
THERE WERE NO PLANNING TEAM MEETINGS IN DECEMBER OF 2012
The month of December was dedicated allowing the Plan Coordinators time to catch up on documentation for the 78 jurisdictions.
REGIONAL PLANNING MEETINGS WERE HELD IN JANUARY OF 2013 (See Table 1-15)
The month of January was dedicated to eight Regional Meetings where the groups were divided into geographical districts rather than their normal groups in order to develop potential regional measures together.
Planning Team Meeting #9 - Pierce County Emergency Operations Center-Feb 5, 2013
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: The primary discussion, besides a general review once more, was about the Plan Maintenance section and how that will be updated by the jurisdictions. Each jurisdiction was given copies of their existing section and we discussed possible changes and improvements. Those jurisdictions that still had outstanding sections of documentation brought those forward at this time.

Joint Planning Requirement

The City of Tacoma has the following identified plan which must collaborate with the mitigation plan; these plans are identified in the table below and must be updated within the predetermined timeline.

Plan	Next Update
Comprehensive Emergency Management Plan	2019

[i] State and Local Mitigation Planning How-to Guide, Getting Started: building support for mitigation planning, FEMA 386-1, September 2002, p. 3-1.

SECTION 2
REGION 5 HAZARD MITIGATION PLAN
2014 – 2019 UPDATE
CITY OF TACOMA
PROFILE SECTION

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Mission Statement

The Mission of the City of Tacoma is as follows:

We provide high-quality, innovative and cost-effective municipal services that enhance the lives of our citizens and the quality of our neighborhoods and business districts.

The Vision of the City of Tacoma is as follows:

Tacoma is a livable and progressive international city, regarded for the richness of its diverse population and its natural setting.

Services Summary

The City of Tacoma was incorporated in 1884.

The City provides the following services through their own capabilities:

Table 2-1 City Services[1]

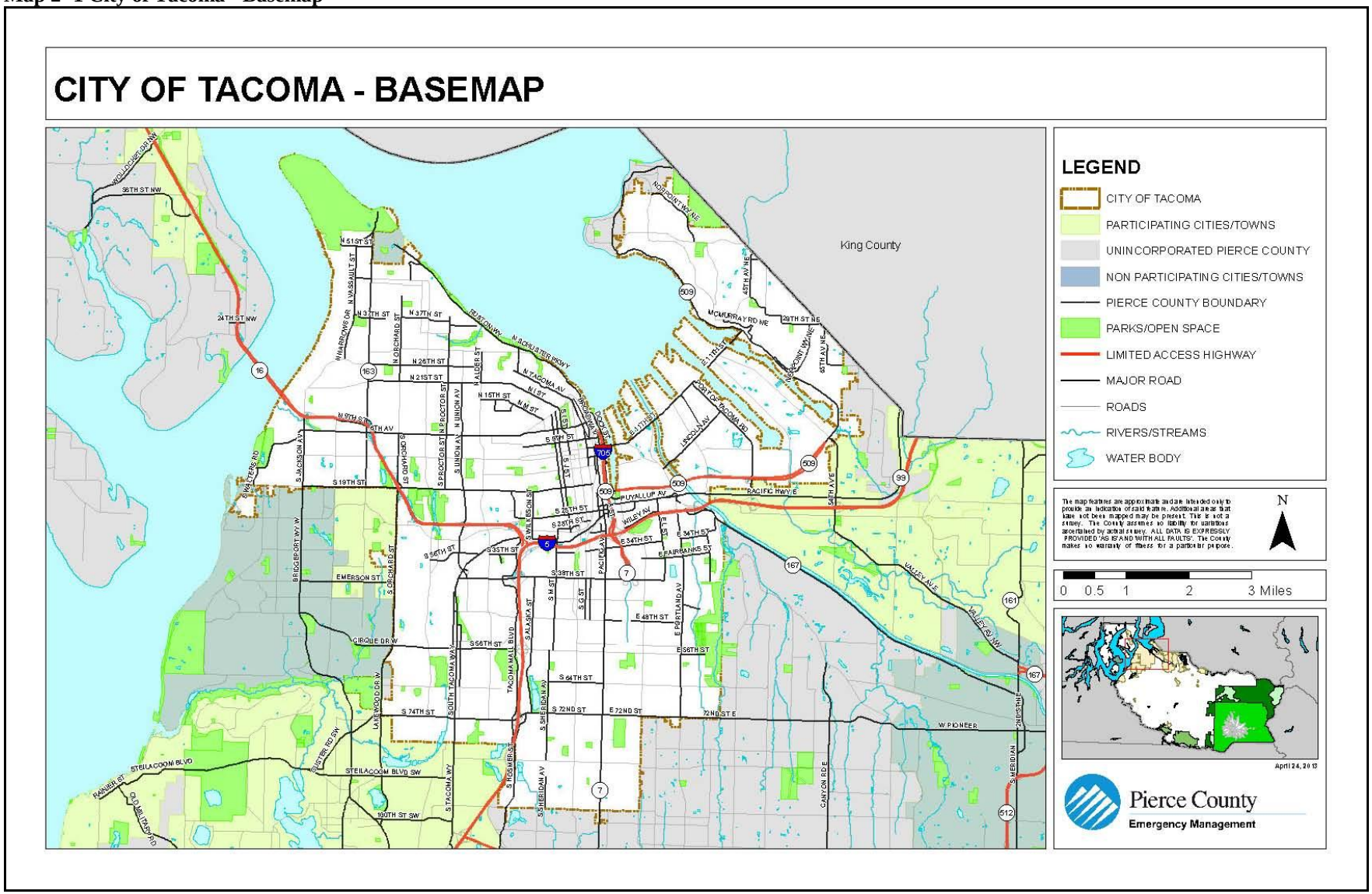
CITY SERVICES			
Service	**Yes**	**Service**	**Yes**
Mayor/City Manager	Yes	Municipal Airport	No
City Attorney	Yes	Municipal Court	Yes
City Clerk	Yes	Public Works/Improvements	Yes
City Treasurer	Yes	Comprehensive Planning	Yes
Sheriff or Police	Yes	Parking Meter Revenue	Yes
Parks Commissioners	No	Construction and Operation of Boat Harbors, Marinas, Docks, etc.	No
City Council	Yes	Issue Bonds and Levies of General Tax	Yes
License and Tax Fees	Yes	Fire Department/EMS	Yes
Non-Polluting Power Generation	Yes	Parking, Off-street Facilities	Yes
Hydroelectric Resources	Yes	Sanitary Landfill/Refuse Service	Yes
Radio Communications	Yes	Sidewalks	Yes
Streets	Yes	Storm Drains	Yes
Waste Water Treatment	Yes	Streets/Alleys	Yes
Water Utility	Yes	Parks and Parkways	No
Public Transportation Systems	No	Water Pollution Abatement	Yes
Residential Care Facilities	No	Local Improvement Districts	Yes
Child Care Facilities	No		

Geo-Political Summary

Table 2-1 Geo-Political Summary[2]

Jurisdiction	Area (sq mi)	Elevation Range (ft.)	Major Water Features	Regional Partners	
				Shared Borders	Land Use Authorities
City of Tacoma	49.41	0-500	• Puyallup Watershed • 1-Browns Dash Point Basin • 3-Clear/Clarks Creek Basin • 4-Hylebos Basin • Chambers Clover Watershed • 2-Chambers Bay Basin • 6-Clover Creek/Steilacoom Basin • 18-Tacoma West Basin	• University Place • Fircrest • Lakewood • Ruston • Fife • Unincorporated Pierce County • Federal Way (KC) • Unincorporated King County • Puyallup Tribe • Port of Tacoma	• Tacoma • University Place • Fircrest • Lakewood • Ruston • Fife • Unincorporated Pierce County • Federal Way (KC) • Unincorporated King County • Puyallup Tribe

Map 2- 1 City of Tacoma - Basemap



Population Summary

Demographics

Table 2-2 Population[3, 4, 5, 6]

Jurisdiction	Population	Population Density (people/sq mi)	Population Served	Projected Year 2022 Population Change (%)	Projected Population Density	Projected 2022 Population Served
City of Tacoma	198,337	4,014	198,337	28.69%	5,166	255,240
Region 5	795,225	440	795,225	-18.39%	359	648,895

Special Populations

Table 2-3 Special Populations[7]

Jurisdiction	Population	Population 65 Plus	% of Total	Population Under 20	% of Total
City of Tacoma	198,337	22,358	11%	51,387	26%
Region 5	795,225	87,770	11%	220,351	28%

The Cities' overall population has increased from 193,570 to 198,337 people. There is an identified 1,230 people per square mile decrease in population density which reduces their vulnerability. The 65+ population has decreased while populations ages of 20 and under has slightly increased. The City of Tacoma has an identified growing population that increases their vulnerability whereas the decrease in the 65+ population reduces their vulnerability in comparison to the previous update.

Infrastructure Summary

General

Table 2-5 Parcel Summary[8]

Jurisdiction	# Parcels	Land Value	Average Land Value	Improved Value	Average Improved Value
City of Tacoma	74,111	$7,152,771,700	$96,514	$12,614,015,780	$170,204
Region 5	319,165	$29,742,651,792	$93,189	$49,650,950,160	$155,577

Jurisdiction	Total Assessed Value	Average Assessed Value
City of Tacoma	$19,766,787,480	$266,719
Region 5	$79,393,601,952	$248,766

Table 2-6 Housing Summary[9]

Jurisdiction	# Houses	Housing Density	Avg Year Built	Avg Year Built (%)
City of Tacoma	85,789	1,736	• <1939: 22,917 • 1940 – 1979:38,665 • 1980 – 2004: 21,447 • 2005>: 3,028	• <1939: 26.6% • 1940 – 1979: 44.9% • 1980 – 2004: 24.9% • 2005>: 3.5%
Region 5	291,983	162	• <1939: 34,368 • 1940 – 1979: 126,363 • 1980 – 2004: 139,894 • 2005>: 22,830	• <1939: 10.6% • 1940 – 1979: 39% • 1980 – 2004: 43.2% • 2005>: 7.1%

Jurisdiction Infrastructure

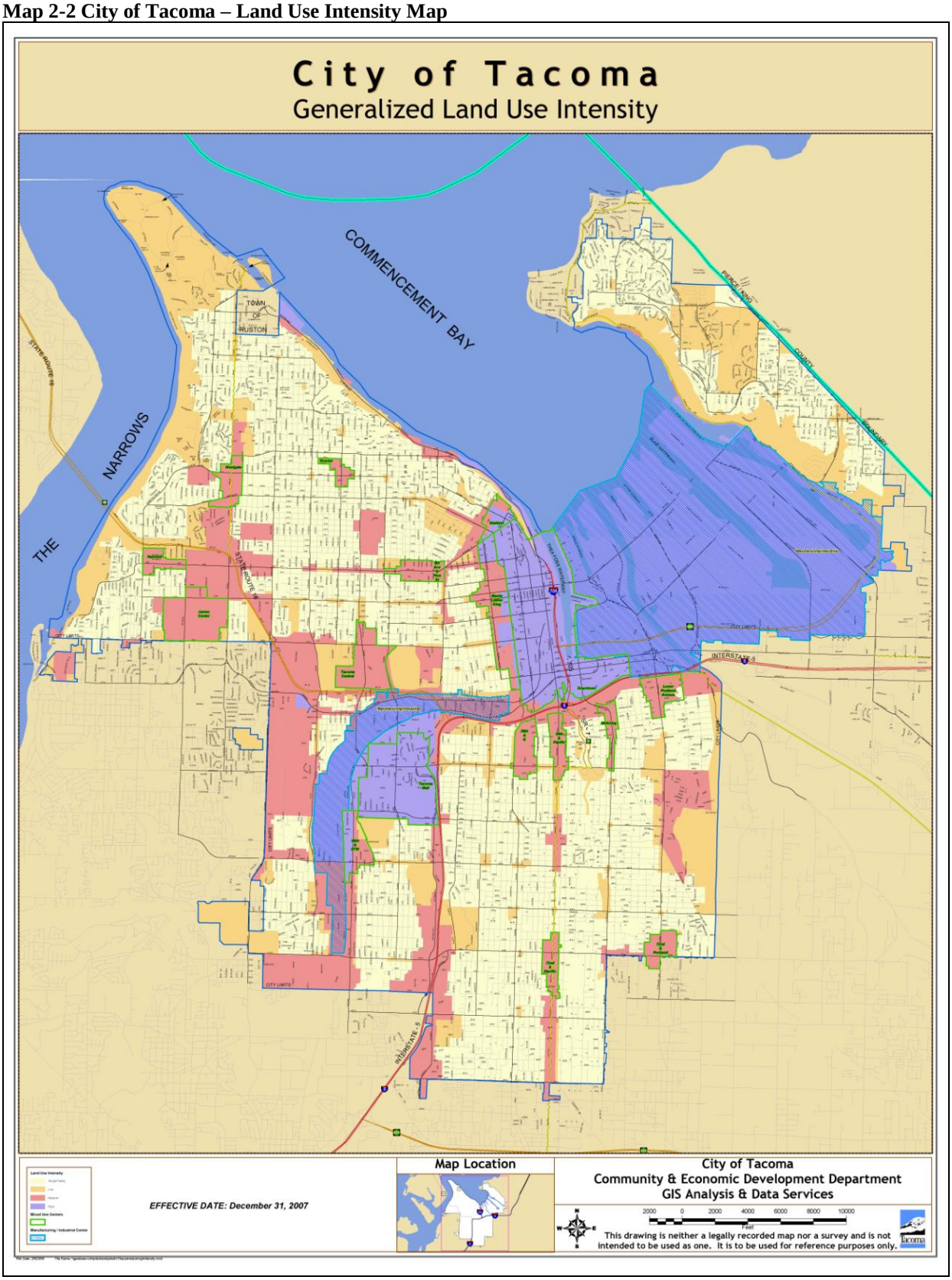
The following table shows the overview of infrastructure owned by the City of Tacoma. The infrastructure is categorized according to the infrastructure sectors as designated by the Department of Homeland Security. This table is intended as a summary only.

For further details on Department of Homeland Security infrastructure sectors, please see the Process Section 1.

Table 2-7 Owned Infrastructure[10]

Total Infrastructure	Emerg. Services	Tele-comm	Transpor-tation	Water	Energy	Govern-ment	Comm-ercial	Total Value ($)
366	32	11	51	170	78	24	0	$704,693,330

Map 2-2 City of Tacoma – Land Use Intensity Map



Economic Summary

Table 2-8 Fiscal Summary[11]

Jurisdiction	Operating Costs (per month)	Operating Budgeted Revenues[12]	Operating Budgeted Expenditures[13]	Fund Balance as % of Operating Cost	Avg Fund Balance (5 yrs)
City of Tacoma	$16,607	$199,286,000	$199,286,000	21%	$41,642,000

Table 2-9 Employment Profile[14]

Employment Category (SIC)	City of Tacoma	Pierce County
Agriculture, Forestry, Fishing, Mining and Hunting	647	2,532
Construction	6,556	29,441
FIRES (Finance, Insurance, Real Estate, and Services)	5,587	21,862
Wholesale Trade	2,848	13,064
Transportation and Warehousing and Utilities	5,383	21,796
Manufacturing	8,238	35,050
Retail	10,051	43,247
Education, Health and Social Services	21,508	76,821
Professional, Scientific, Management, Administrative, Waste Management	9,654	31,890
Public Administration	5,192	22,860

Table 2-10 Unemployment Rate[15]

Jurisdiction	Unemployment Rate
City of Tacoma	10.7%
Region 5	9.6%
WA State	8.4%

Resource Directory

Regional

- **City of Tacoma**
  http://www.cityoftacoma.org

- **Pierce County Government**
  http://www.piercecountywa.org/PC/

- **Pierce County DEM**
  http://www.piercecountywa.org/pc/abtus/ourorg/dem/abtusdem.htm

- **Pierce County PALS**
  http://www.co.pierce.wa.us/pc/abtus/ourorg/pals/palshome.htm

- **Municipal Research & Services Center of Washington (MRSC)**
  http://www.mrsc.org/

National

- **US Census**
  www.census.gov/

Endnotes

[1] Information from survey completed by the City.
[2] Information from Pierce County GIS application, CountyView Pro (2013/14).
[3] "Population" from Census 2010, Office of Financial Management. It should be noted that current (as of July 2013) population of City of Tacoma is reported by the Office of Financial Management as 201,700.
[4] "Projected Population Change (%)" from Pierce County Buildable Lands Report, Dec. 2007.
[5] "Projected Population Density" is based on an assumption of the jurisdiction maintaining the same geographic area and boundaries. It does not consider changes in annexation, district mergers, etc.
[6] "Projected 2022 Population" from Pierce County Buildable Lands Report, Dec. 2007.
[7] "Special Population" from Census 2010, Office of Financial Management.
[8] Information from Pierce County GIS application, CountyView Pro 2013/14.
[9] Information from Census 2010, Office of Financial Management.
[10] Information obtained from Jurisdiction from Infrastructure Matrix.
[11] Information obtained from the Budget of the jurisdiction.
[12] Non-Capital
[13] Non-Capital
[14] Information from Census 2010, Office of Financial Management.
[15] Information from Census 2010, Office of Financial Management.

Section 3

Capability Identification Requirements

Planning Process---Requirement §201.6(b):

An open public involvement process is essential to the development of an effective plan.

Documentation of the Planning Process---Requirements §201.6(b):

In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?

Assessing Vulnerability: Analyzing Development Trends---Requirement §201.6(c)(2) (ii)(C):

[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.]

- Does the plan describe land uses and development trends?

Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance---Requirement ***§201.6(c)(3)(ii):***

[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?

SECTION 3
REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
CITY OF TACOMA
CAPABILITY IDENTIFICATION SECTION

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Legal and Regulatory

Table 3-1 Legal and Regulatory

Regulatory Tools (Ordinances and Codes)	Yes or No
Jurisdiction Capabilities	
Building Construction/Design Construction Codes	Yes
Flood Damage Prevention Ordinance	Yes
Growth Management Ordinance	Yes
Critical Area Ordinance	Yes
Hazard Setback Requirements	Yes
Hillside and Steep Slope Ordinance	Yes
Land Use and Regulatory Codes	Yes
Mechanical Codes	Yes
Plan Review Requirements	Yes
Plumbing Codes	Yes
Real Estate Disclosure Requirements	Yes
Storm Water Management	Yes
Subdivision Ordinance or Regulations	Yes
Tax and License Codes	Yes
Wildfire Ordinance	No
Zoning Ordinance	Yes

Administrative Capability

Table 3-2 Administrative Capability

Administrative Tools (Agency, Departments or Programs)	Yes or No
Jurisdiction Capabilities	
Architectural Review Board/Historic Review	Yes
Board of Adjustments/Hearing Examiner	Yes
Building Official	Yes
Chamber of Commerce	Yes
City/Town Council	Yes
City/Town Meetings	Yes
City/Town Planning Commission	Yes
City/Town Website	Yes
Commercial Fire Safety/Code Inspection Program	Yes
Community CPR/First Aid Program	Yes
Community Emergency Response Teams	Yes
Downtown Revitalization Committee	Yes
Economic Development Board	Yes
Emergency Manager	Yes
Engineers	Yes
Families First Coalition	No
Fire and Injury Prevention Program	Yes
Fire Chief	Yes
Fire Safety & Disaster Classes in Schools	Yes
Flood Plan Manager	No
Government TV Access	Yes
Grant Writers	Yes
Home Safety Council	No
Information included in Utility Bills	Yes
Lahar Warning System	Yes
Planners	Yes
Planning Commission	Yes
Police Chief	Yes
Police Department	Yes
Public Utility	Yes
Public Works Department	Yes
Safe Streets Program	Yes
Safety Fairs	Yes
Stream Team	Yes
Surveyors	Yes

Table 3-3 Administrative Capability (Con'd)

Administrative Tools (Agency, Departments or Programs)	Yes or No
Regional Capabilities	
Local Business Districts	Yes
Local Department of Emergency Management	Yes
Local Fire Agencies plus Mutual Aid with others	Yes
Local Hospitals	Yes
Local Law Enforcement Agencies and Mutual Aid with others	Yes
Local Neighborhood Associations	Yes
Local Neighborhood Emergency Teams (NET)	Yes
Local Newspapers	Yes
Local Parks Commission/Board	Yes
Local Power Companies	Yes
Local Parent Teacher's Association	Yes
Neighboring Counties	Yes
Pierce County Department of Emergency Management	Yes
Pierce County Fire Chiefs Association	Yes
Pierce County Neighborhood Emergency Teams (PCNET)	Yes
Pierce County Police Chiefs Association	Yes
Pierce County Safe Kids Coalition	Yes
Pierce County Sheriffs Department	Yes
Puget Sound Clean Air Agency	Yes
Puget Sound Energy	Yes
Puget Sound Regional Council	Yes
Puget Sound Water Quality Management Plan	Yes
Service Organizations	Yes
Tacoma/Pierce County Health Department	Yes
Tribes	Yes

Technical Capability

Table 3-4 Technical Capability

Technical Tools (Plans and Other)	Yes or No
Jurisdiction Capabilities	
After Action Reports of Any Incident	Yes
Capital Improvement Plan	Yes
Comprehensive Emergency Management Plan	Yes
Comprehensive Plan	Yes
Continuity of Governmental Services and Operations Plan (COOP and COG)	Yes
Critical Facilities Plan	Yes
Drainage Master Plan	Yes
Economic Development Plan	Yes
Emergency Evacuation Plan	Yes
Emergency Response Plan	Yes
Generator Placement Plan	Yes
Habitat Plan	Yes
Hazardous Materials Response Plan	Yes
Lahar Evacuation Plan	Yes
Pandemic Flu Plan	Yes
Post-Disaster Recovery Plan	Yes
Sewer/Wastewater Comprehensive Plan	Yes
Storm Comprehensive Plan	Yes
Water Comprehensive Plan	Yes
Regional Capabilities	
Coordinated Water System Plan and Regional Supplement 2001	No
Local and Regional Emergency Exercises – All Types	Yes

Fiscal Capability

Table 3-5 Fiscal Capability

Fiscal Tools (Taxes, Bonds, Fees, and Funds)	Yes or No
Jurisdiction Capabilities	
TAXES:	
Authority to Levy Taxes	Yes
BONDS:	
Authority to Issue Bonds	Yes
FEES:	
Fees for Water, Sewer, Gas or Electric Service and Cable	Yes
Impact Fees for Homebuyers/Developers for New Developments/Homes	Yes
Local Improvement District (LID)	Yes
FUNDS:	
Capital Improvement Project Funds	Yes
Enterprise Funds (water and power)	Yes
General Government Fund (Departments)	Yes
Internal Service Funds	Yes
Special Revenue Funds	Yes
Withhold Spending in Hazard-Prone Areas	Yes
Regional Capabilities	
Pierce County Land Conservancy	Yes
Cascade Land Conservancy	Yes

Specific Capabilities

Table 3-6 Specific Capabilities

Jurisdiction Specific Capabilities
Legal & Regulatory
Administrative & Technical
Emergency Management Exercises and Drills
Blair Waterway Evacuation Plan
Specific Traffic Plans for Tacoma Dome and Tacoma Mall
Emergency Operations Plans for each Police Sector and Headquarters
Multicare/Franciscan
Tacoma's Neighborhood Districts
Tacoma's Business Districts
Tacoma's Community Council
Hilltop Action Coalition
West Slope Homeowner's Association
CERT Graduates
Fiscal

Section 4

Risk Assessment Requirements

Identifying Hazards--- Requirement §201.6(c)(2)(i):

[The risk assessment **shall** include a] description of the type … of all natural hazards that can affect the jurisdiction.

- Does the new or updated plan include a **description** of the types of **all natural hazards** that affect the jurisdiction?

Profiling Hazards---Requirement §201.6(c)(2)(i):

[The risk assessment **shall** include a] description of the … location and extent of all natural hazards that can affect the jurisdiction. The plan **shall** include information on previous occurrences of hazard events and on the probability of future hazard events.

- Does the risk assessment identify (i.e., geographic area affected) of each hazard being addressed in the new or updated plan?
- Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the new or updated plan?
- Does the plan provide information on previous occurrences of each hazard addressed in the new or updated plan?
- Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the new or updated plan?

Assessing Vulnerability: Overview---Requirement §201.6(c)(2) (ii):

[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.

- Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?
- Does the new or updated plan address the impacts of each hazard on the jurisdiction?

Assessing Vulnerability: Addressing Repetitive Loss Properties---Requirement §201.6(c)(2) (ii):

[The risk assessment] **must** also address the National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

- Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?

Assessing Vulnerability: Identifying Structures---Requirement §201.6(c)(2) (ii)(A):

The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas…

- Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

Assessing Vulnerability: Estimating Potential Losses---Requirement §201.6(c)(2) (ii)(B):

[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate…

- Does the new or updated plan estimate potential dollar losses for vulnerable structures?
- Does the new or updated plan describe the methodology used to prepare the estimate?

Assessing Vulnerability: Analyzing Development Trends---Requirement §201.6(c)(2) (ii)(c):

[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

- Does the new or updated plan describe land uses and development trends?

SECTION 4

REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
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RISK ASSESSMENT SECTION

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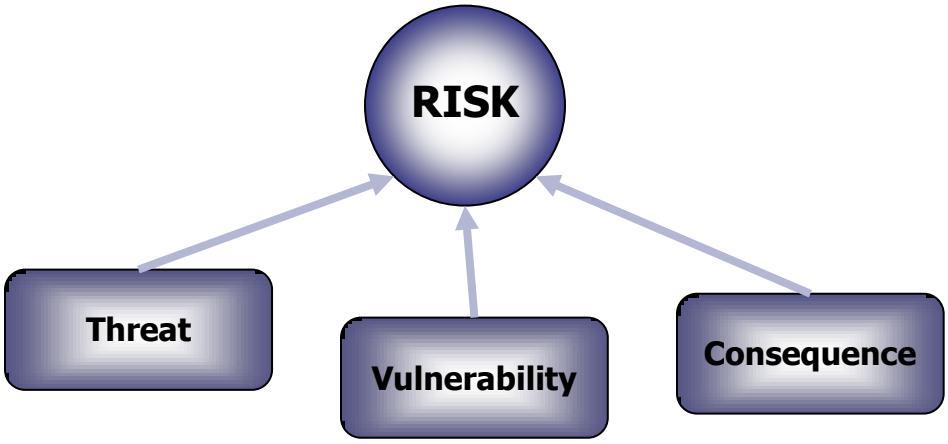
Section Overview

The Risk Assessment portrays the threats of natural hazards, the vulnerabilities of a jurisdiction to the hazards, and the consequences of hazards impacting communities. Each hazard is addressed as a threat and is identified and profiled in the Hazard Identification. The vulnerabilities to and consequences of a given hazard are addressed in the Vulnerability Analysis. Vulnerability is analyzed in terms of exposure of both population and infrastructure to each hazard. Consequences are identified as anticipated, predicted, or documented impacts caused by a given hazard when considering the vulnerability analysis and the characteristics of the hazard as outlined in its identification.



The WA Region 5 **Hazard Identification** was used for this plan. Each jurisdiction's Vulnerability and Consequence Analysis are based on the Region 5 Hazard Identification. The Region 5 Hazard Identification can be found in the Base Plan. Each hazard is identified in subsections. The subsections are grouped by hazard-type (i.e., geological and meteorological hazards) and then alphabetically within each type. A summary table of the WA Region 5 Hazard Identification is included in this section as Table 4-1a and Table 4-1b.

The **Vulnerability Analysis** is displayed in six tables:

- **Table 4-2 General Exposure**
- **Table 4-3 Population Exposure**
- **Table 4-4 General Infrastructure Exposure**
- **Table 4-5a Consequence Analysis Chart – Geological**
- **Table 4-5b Consequence Analysis Chart – Meteorological**
- **Table 4-5c Consequence Analysis Chart – Technological**

Each jurisdiction has its own Vulnerability Analysis, and it is included in this section.

The **Consequence Identification** is organized by Threat. Each threat page summarizes the hazard, graphically illustrates exposures from the Vulnerability Analysis, and lists corresponding Consequences. Each jurisdiction has its own Consequence Identification and it is included in this section: avalanche, earthquake, landslide, tsunami, volcanic, drought, flood, severe weather, and wildland/urban interface fire.

Specific information and analysis of a jurisdiction's owned (public) infrastructure is addressed in the Infrastructure Section of its Plan.

Table 4-1a WA Region 5 Hazard Identification Summary – Geological

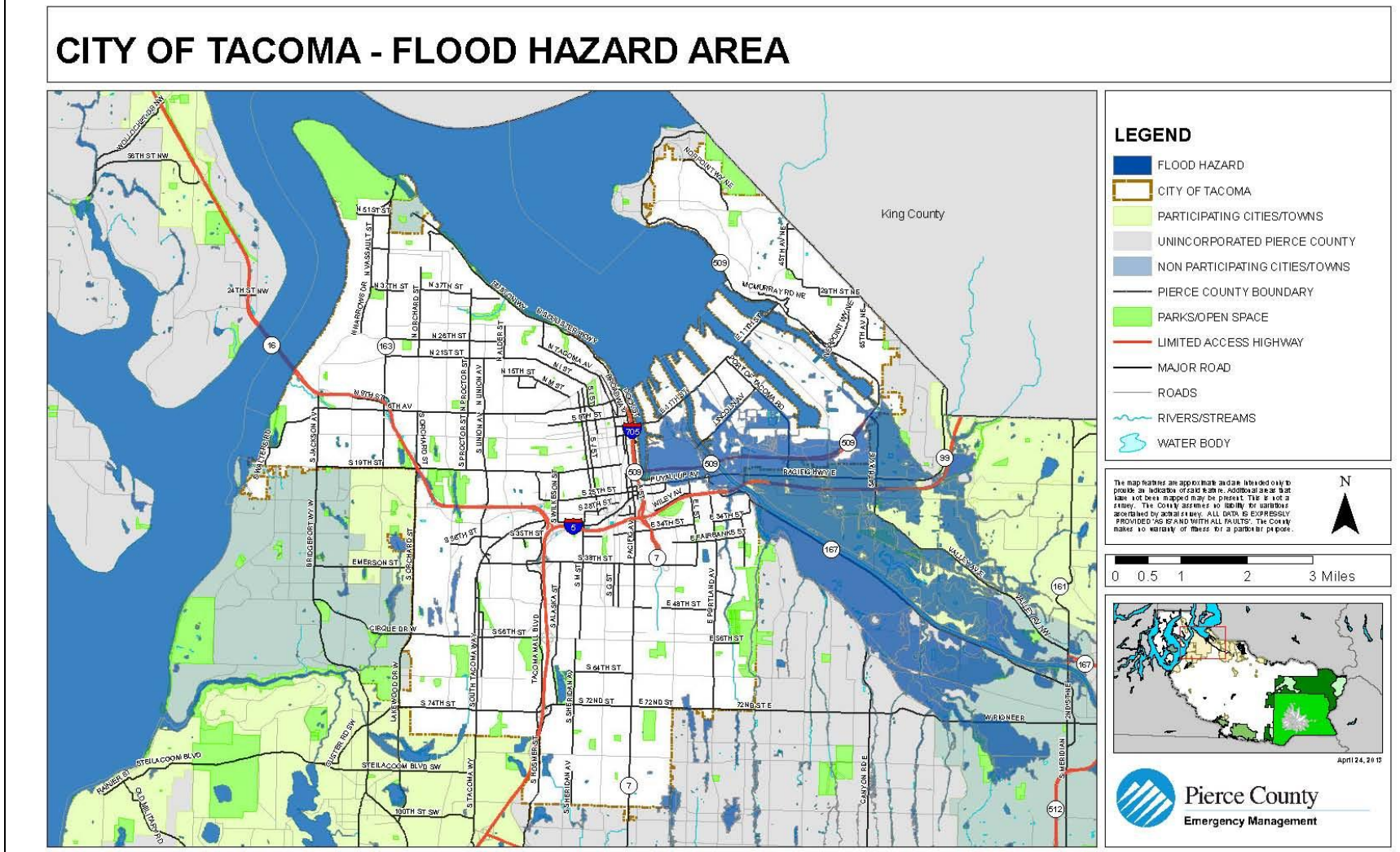
	THREAT	DECLARATION # DATE/PLACE	PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Geological	**AVALANCHE**	Not Applicable	Yearly in the mountainous areas of the County including Mt. Rainier National Park and the Cascades.	Slab Avalanche Areas Vulnerable to Avalanche Pierce County Avalanches of Record
	EARTHQUAKE	N/A--7/22/2001 Nisqually Delta N/A--6/10/2001 Satsop DR-1361-WA--2/2001 Nisqually N/A--7/2/1999 Satsop DR-196-WA--4/29/1965 Maury Island, South Puget Sound N/A--4/13/1949 South Puget Sound N/A--2/14/1946 Maury Island	Magnitude 4.3 Magnitude 5.0—Intraplate Earthquake Magnitude 6.8—Intraplate Earthquake Magnitude 5.8—Intraplate Earthquake Magnitude 6.5—Intraplate Earthquake Magnitude 7.0—Intraplate Earthquake Magnitude 6.3 40 years or less occurrence Historical Record—About every 23 years for intraplate earthquakes	Types of Earthquakes Major Faults in the Puget Sound Basin Seattle and Tacoma Fault Segments Pierce County Seismic Hazard Major Pacific Northwest Earthquakes Notable Earthquakes Felt in Pierce County Salmon Beach, Tacoma Washington following Feb 2001 Earthquake Liquefaction Niigata Japan-1964 Lateral Spreading – March 2001
	LANDSLIDE	DR-1159-WA--12/96-2/1997 DR-852-WA--1/1990 DR-545-WA--12/1977	Slides with minor impact (damage to 5 or less developed properties or $1,000,000 or less damage) 10 years or less. Slides with significant impact (damage to 6 or more developed properties or $1,000,000 or greater damage) 100 years or less.	Northeast Tacoma Landslide January 2007 Pierce County Landslide and Soil Erosion Hazard Pierce County Shoreline Slope Stability Areas Notable Landslides in Pierce County Ski Park Road – Landslide January 2003 SR-165 Bridge Along Carbon River – Landslide February 1996 Aldercrest Drive - Landslide
	TSUNAMI	N/A--1894 Puyallup River Delta N/A--1943 Puyallup River Delta (did not induce tsunami) N/A--1949 Tacoma Narrows	Due to the limited historic record, until further research can provide a better estimate a recurrence rate of 100 years plus or minus will be used.	Hawaii 1957 – Residents Explore Ocean Floor Before Tsunami Hawaii 1949 – Wave Overtakes a Seawall Puget Sound Fault Zone Locations, Vertical Deformation and Peak Ground Acceleration Seattle and Tacoma Faults Tsunami Inundation and Current Based on Earthquake Scenario Puget Sound Landslide Areas and Corresponding Tsunamis Puget Sound River Deltas, Tsunami Evidence and Peak Ground Acceleration Salmon Beach, Pierce County 1949 – Tsunamigenic Subaerial Landslide Puyallup River Delta – Submarine Landslides Puyallup River Delta – Submarine Landslides and Scarp Damage in Tacoma from 1894 Tsunami
	VOLCANIC	DR-623-WA--5/1980	The recurrence rate for either a major lahar (Case I or Case II) or a major tephra eruption is 500 to 1000 years. The recurrence rate for either a major lahar (Case I or Case II) or a major tephra eruption is 500 to 1000 years.	Volcano Hazards Debris Flow at Tahoma Creek – July 1988 Douglas Fir Stump – Electron Lahar Deposit in Orting Landslide from Little Tahoma Peak Covering Emmons Glacier Tephra Types and Sizes Lahars, Lava Flows and Pyroclastic Hazards of Mt. Rainier Estimated Lahar Travel Times for Lahars 10_7 to 10_8 Cubic Meters in Volume Ashfall Probability from Mt. Rainier Annual Probability of 10 Centimeters or more of Tephra Accumulation in the Pacific NW Cascade Eruptions Mt. Rainier Identified Tephra, last 10,000 years Pierce County River Valley Debris Flow History

Table 4-1b WA Region 5 Hazard Identification Summary – Meteorological and Technological

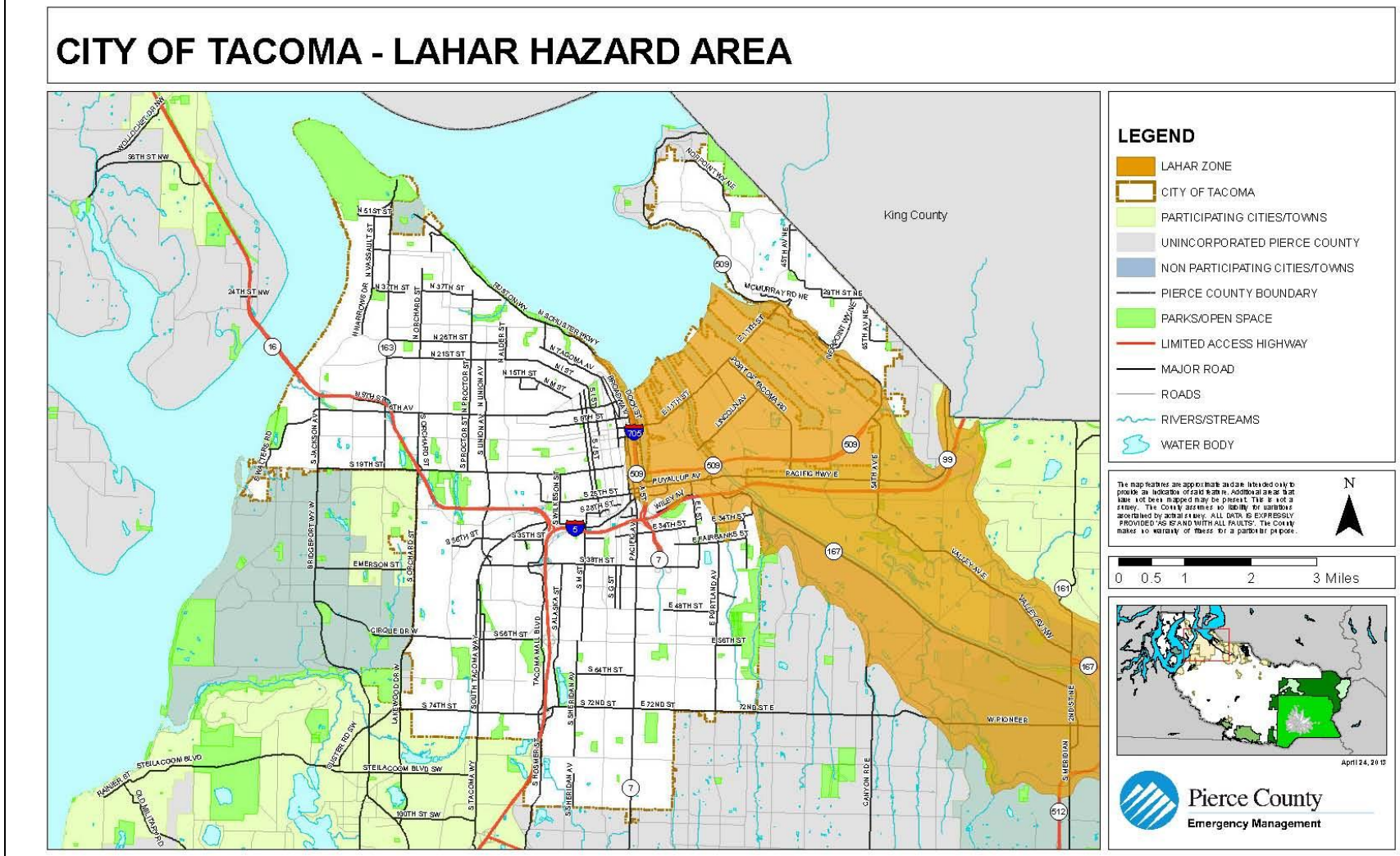
	HAZARD	FEMA DECLARATION # DATE/PLACE		PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Meteorological	**CLIMATE CHANGE**	Not Applicable		Not Applicable	Global Temperature Change: 1850 to 2006 Recent and Projected Temperatures for the Pacific Northwest Comparison of the South Cascade Glacier: 1928 to 2003 Lower Nisqually Glacier Retreat: 1912 to 2001
	DROUGHT	Many dry seasons but no declarations		50 years or less occurrence	Sequence of Drought Impacts Palmer Drought Severity Index Pierce County Watersheds %Area of Basin in Drought Conditions Since 1895 %Time in Severe to Extreme Drought: 1895-1995 %Time in Severe to Extreme Drought: 1985-1995 Notable Droughts Affecting Pierce County Columbia River Basin USDA Climate Zones – Washington State
	FLOOD Since 1978 3 Repetitive Loss Areas have produced 83 Claims totaling Nearly $1.78 Million Dollars.	DR-WA 1817--01/2009 NA-11/2008 DR-1734-WA--12/2007 DR-1671-WA--11/2006 DR-1499-WA--10/2003 DR-1159-WA--12/96-2/97 DR-1100-WA--1-2/1996 DR-1079-WA--11-12/1995 DR-896-WA--12/1990 DR-883-WA--11/1990	DR-852-WA--1/1990 DR-784-WA--11/1986 DR-545-WA--12/1977 DR-492-WA--12/1975 DR-328-WA--2/1972 DR-185-WA--12/1964	5 years or less occurrence Best Available Science--The frequency of the repetitive loss claims indicates there is approximately a 33 percent chance of flooding occurring each year.	Pierce County Watersheds Pierce County Flood Hazard Pierce County Repetitive Loss Areas Clear Creek Basin Repetitive Flood Loss Aerial Photo Flood Hazard Declared Disasters Feb 8, 1996 Flooding – Del Rio Mobile Homes Along Puyallup River Nov 2006 Flooding River Park Estates – Along Puyallup River Nov 2006 Flooding State Route 410 – Along Puyallup River Nov 2006 Flooding Rainier Manor – Along Puyallup River
	SEVERE WEATHER	DR-4056-WA – 01/2012 DR-1825- WA – 12/2008 – 01/2009 DR-1682-WA--12/2006 DR-1159-WA--12/96-2/1997 DR-1152-WA--11/19/1996	DR-981-WA--1/1993 DR-137-WA--10/1962	The recurrence rate for all types of severe storms is 5 years or less.	Fujita Tornado Damage Scale Windstorm Tracks Pierce County Severe Weather Wind Hazard – South Wind Event Pierce County Severe Weather Wind Hazard – East Wind Event Notable Severe Weather in Pierce County Snowstorm January 2004 Downtown Tacoma Satellite Image – Hanukkah Eve Windstorm Before/After Tornado Damage Greensburg KS May 2007 Public Works Responds 2005 Snowstorm Downed Power Pole February 2006 Windstorm County Road December 2006 Windstorm Tacoma Narrows Bridge – November 1940 Windstorm
	WUI FIRE	Not Applicable		Based on information from WA DNR the probability of recurrence for WUI fire hazard to Pierce County is 5 years or less.	Washington State Fire Hazard Map Pierce County Forest Canopy Industrial Fire Precaution Level Shutdown Zones Carbon Copy Fire August 2006 Washington State DNR Wildland Fire Statistics: 1973-2007 DNR Wildland Response South Puget Sound Region: 2002-2007 Pierce County DNR Fires

	HAZARD	FEMA DECLARATION # DATE/PLACE	PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Technological	**ABANDONED MINES**	Not Applicable	Based on Information from WA DNR The Pierce County Sheriff's Department reports that they have had very few incidents of citizens entering the abandoned mines in east Pierce Co. Isolated issues of minor subsidence have occurred, typically following flood events in 2009/2010	Pierce County – Mine Hazard Areas MapBased on WA DNR Information Schasse, Koler, Eberle, and Christie, The Washington State Coal Mine Map Collection: A Catalog, Index, and User's Guide, Open File Report 94-7, June 1984 Pierce County 2009 HIRA
	CIVIL DISTURBANCE	Not Applicable	Looking at the historical record, major civil unrest is a rare occurrence. Movement of military supplies from Port of Tacoma to Joint Base Lewis McChord	Pierce County Civil Disturbance Map Pierce County 2009 HIRA Hilltop Riots Tacoma 1969, 1991
	DAM FAILURE	Not Applicable	No occurrences in Pierce County 50+ years recurrence	Table D-1 PC Dams that Pose a High or Significant Risk, Pierce County 2009 HIRA Table D-2 Dam Failures in WA State
	ENERGY EMERGENCY	Not Applicable	• January 2009 Loss of electricity to Anderson Island (underground [water] cable) Power Outage is the most frequent energy incident, via natural hazards (storms, ice) Recurrence Rate – 5 years (storms) Recurrence Rate – 50+ years (major)	Pierce County 2009 HIRA Tacoma Power Outage 1929, USS Lexington provide power Anderson Island January 2009 Underwater power cable broke
	EPIDEMIC	Not Applicable	Pandemics • 2009-2010 "Swine Flu Recurrence Rate – 20 years	Pierce County 2009 HIRA Tacoma Pierce County Health District Pan Flu Plan Measles, State of WA, 1990 E Coli, January 1993, September 1998
	HAZARDOUS MATERIALS	Not Applicable	• Dalco Passage oil spill of October 13, 2004 • Chlorine Spill Port of Tacoma February 12, 2007 Large Incidents 5 year recurrence Small Incidents 1 week recurrence	Pierce County 2009 HIRA Table HM-1 Reported Releases (in lbs.)of all chemicals, for Pierce Co. in 2008, all industries Chlorine Spill in the Port of Tacoma (February 12, 2007) Dalco Passage oil spill (October 13, 2004) Illegal methamphetamine sites (A high of 258 sites in 2001-56 sites in 2009
	PIPELINE FAILURE	Not Applicable	• Northwest Pipeline Corporation natural gas incident May 1st 2003, in Sumner 10 years recurrence	Map P-1 Pierce County Pipelines Pierce County 2009 HIRA
	TERRORISM	Not Applicable	Minor PC Incident –Recurrence 1-year Major Incident – Recurrence 100 years	Pierce County 2009 HIRA Tacoma's Model Cities and Human Rights Offices burned 1972 African American church burned 1993 White Supremacy Group Hate Crimes, 1998 Westgate Family Medicine Clinic bombed, 2011
	TRANSPORTATION ACCIDENT	Not Applicable	Minor Incidents occur daily Major Incidents rare Recurrence Rate – 10 years	Pierce County 2009 HIRA Rail: Freight Derailment, Steilacoom 1996 Freight Train Derailment, Chambers Bay, 2011

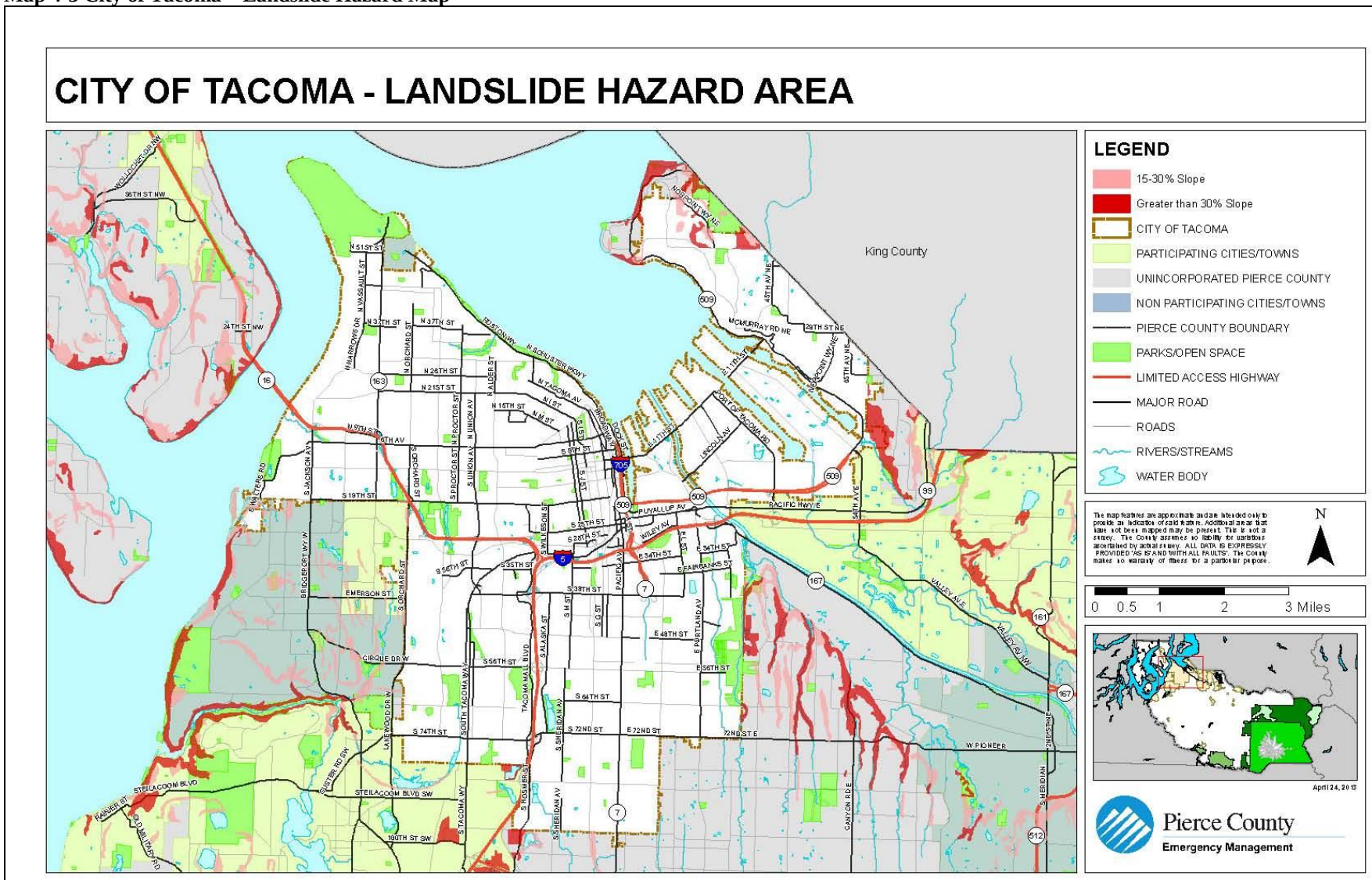
Map 4-1 City of Tacoma – Flood Hazard Map



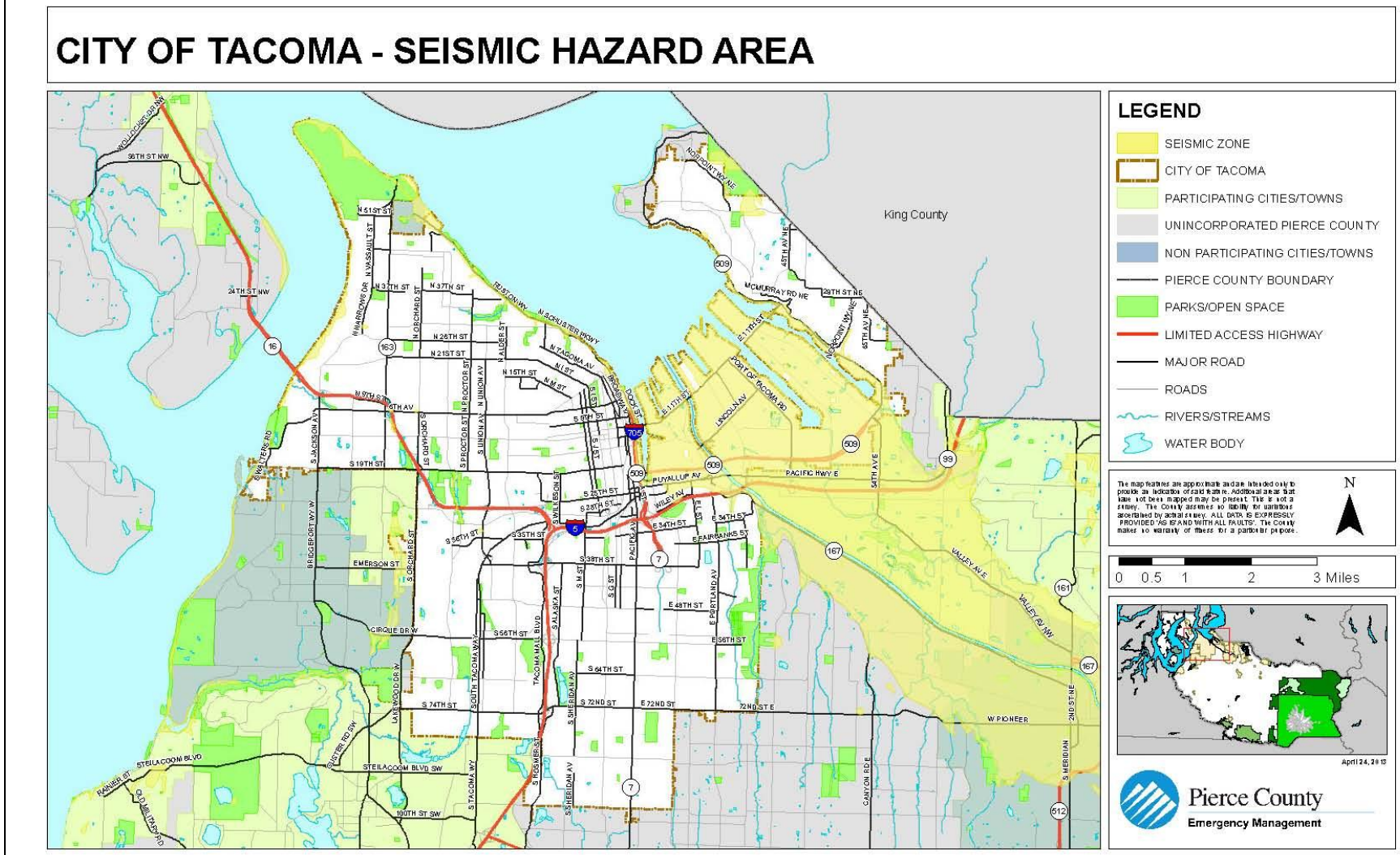
Map 4-2 City of Tacoma – Lahar Hazard Map



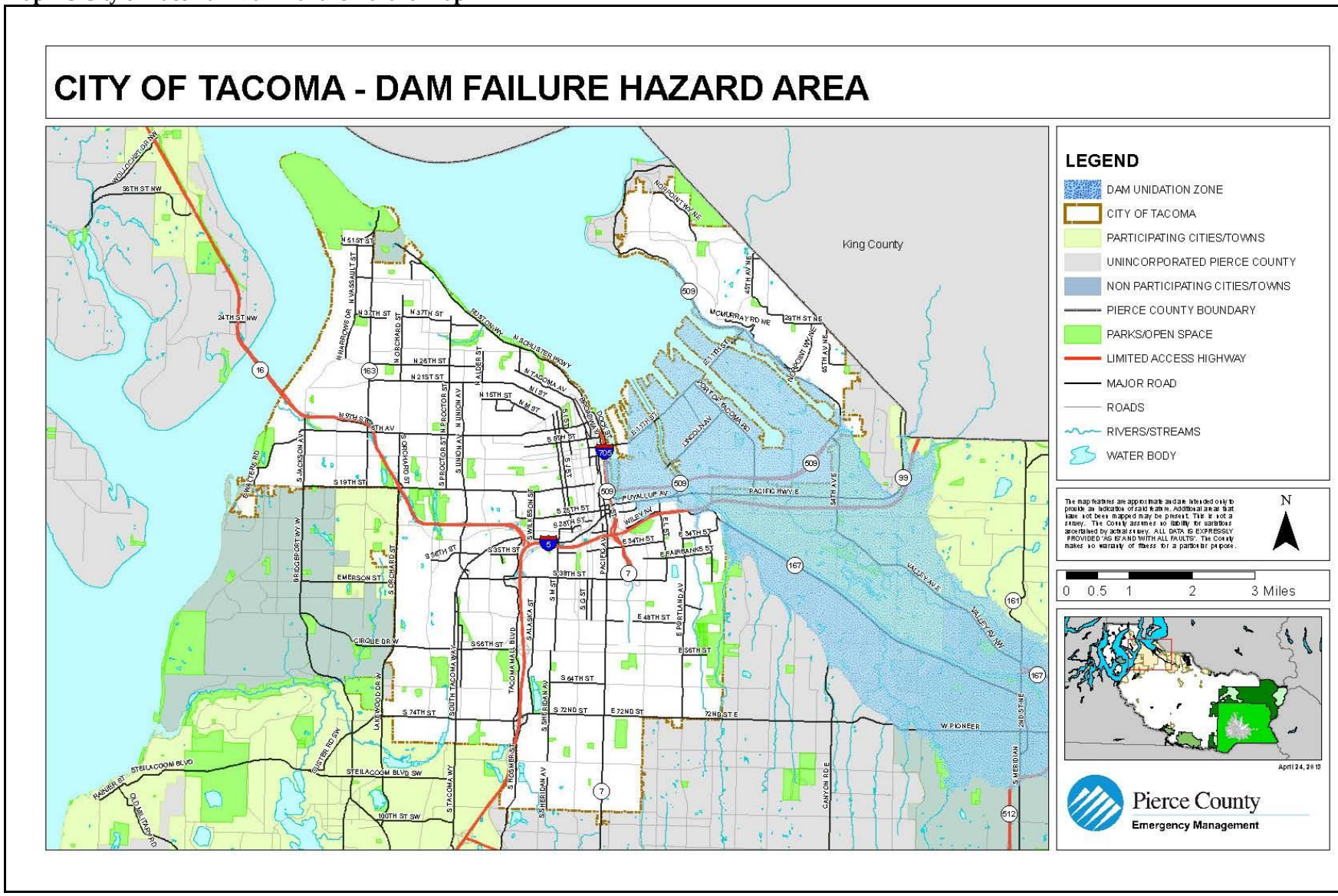
Map 4-3 City of Tacoma – Landslide Hazard Map



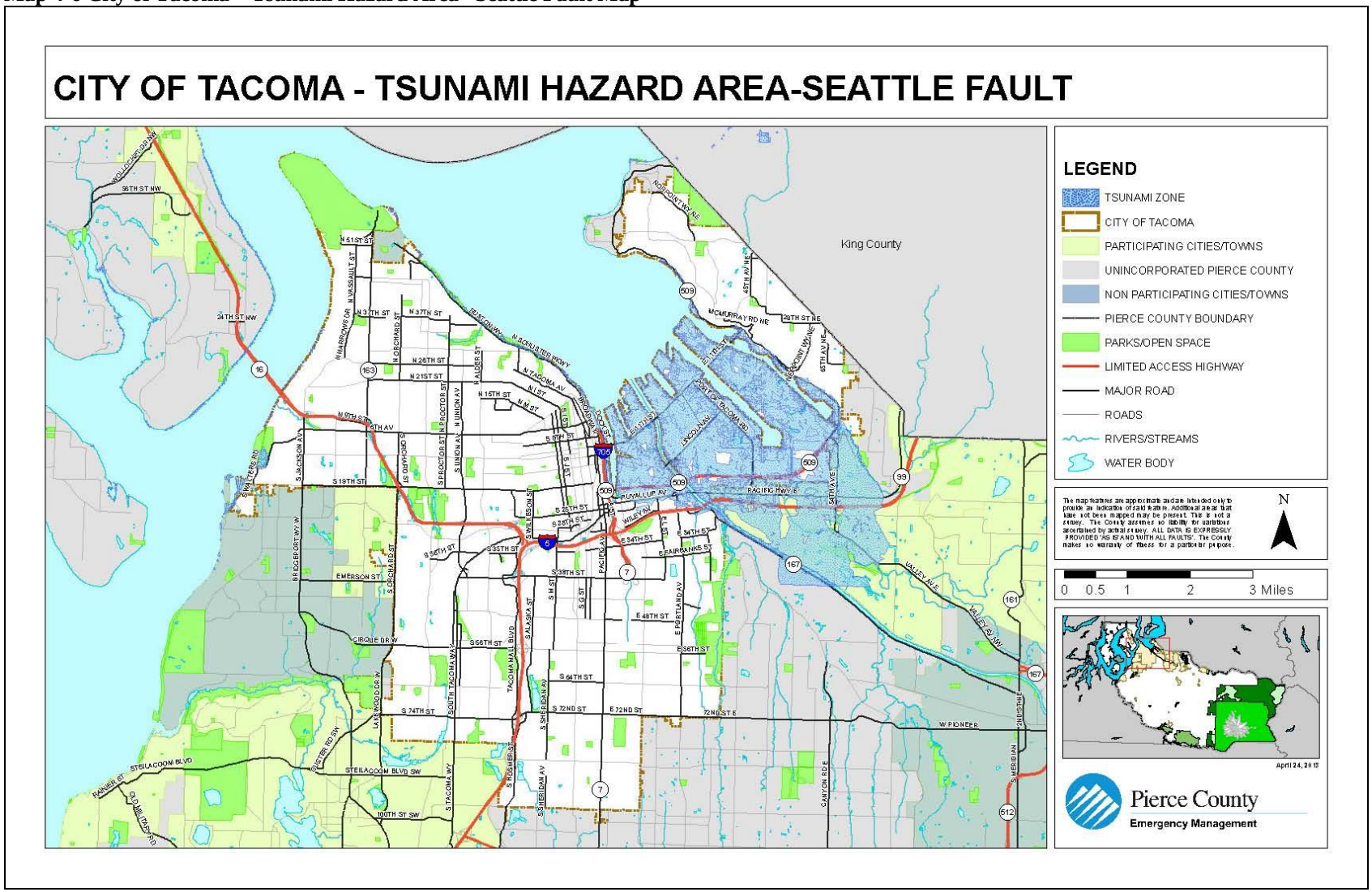
Map 4-4 City of Tacoma – Seismic Hazard Map



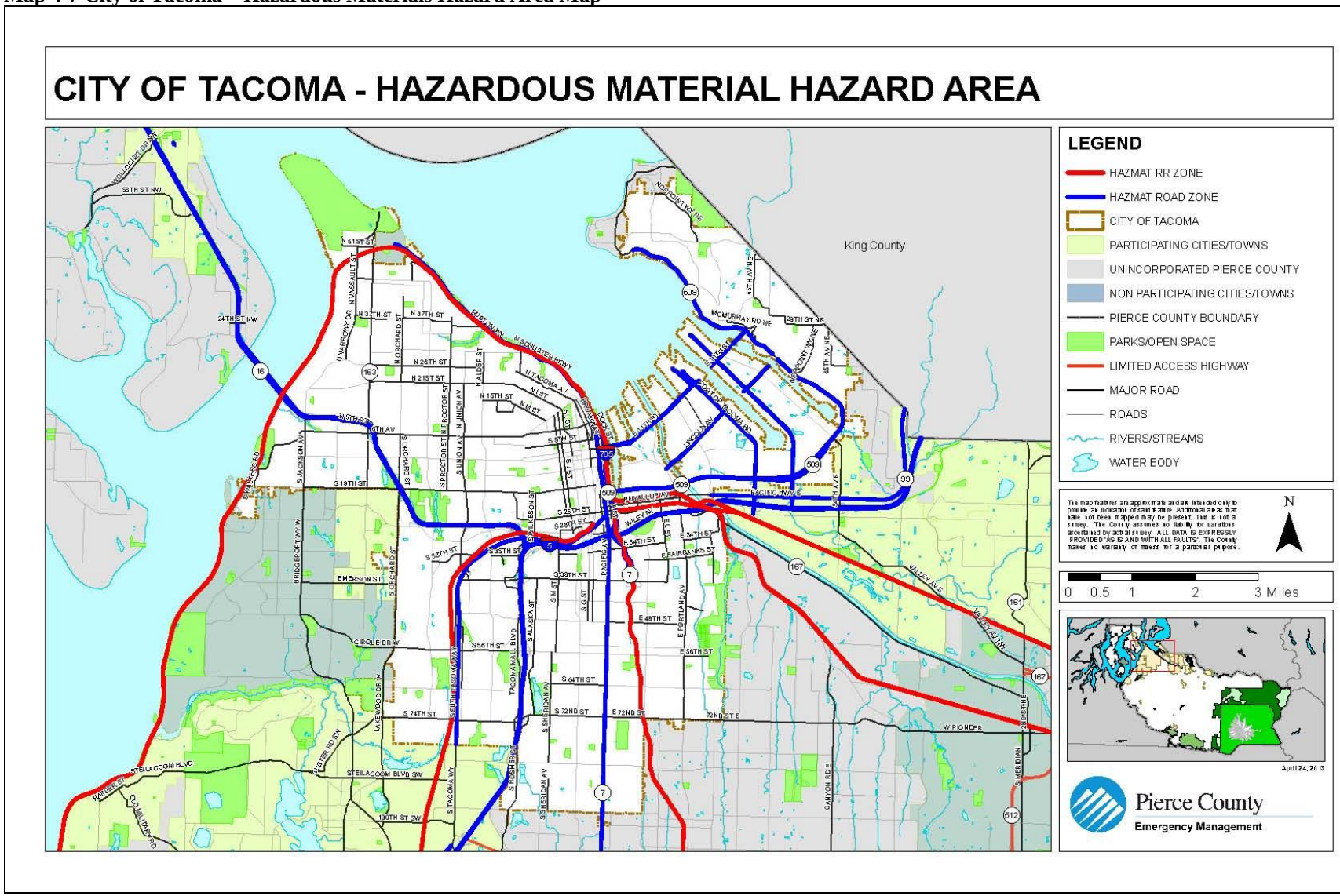
Map 4-5 City of Tacoma – Dam Failure Hazard Map



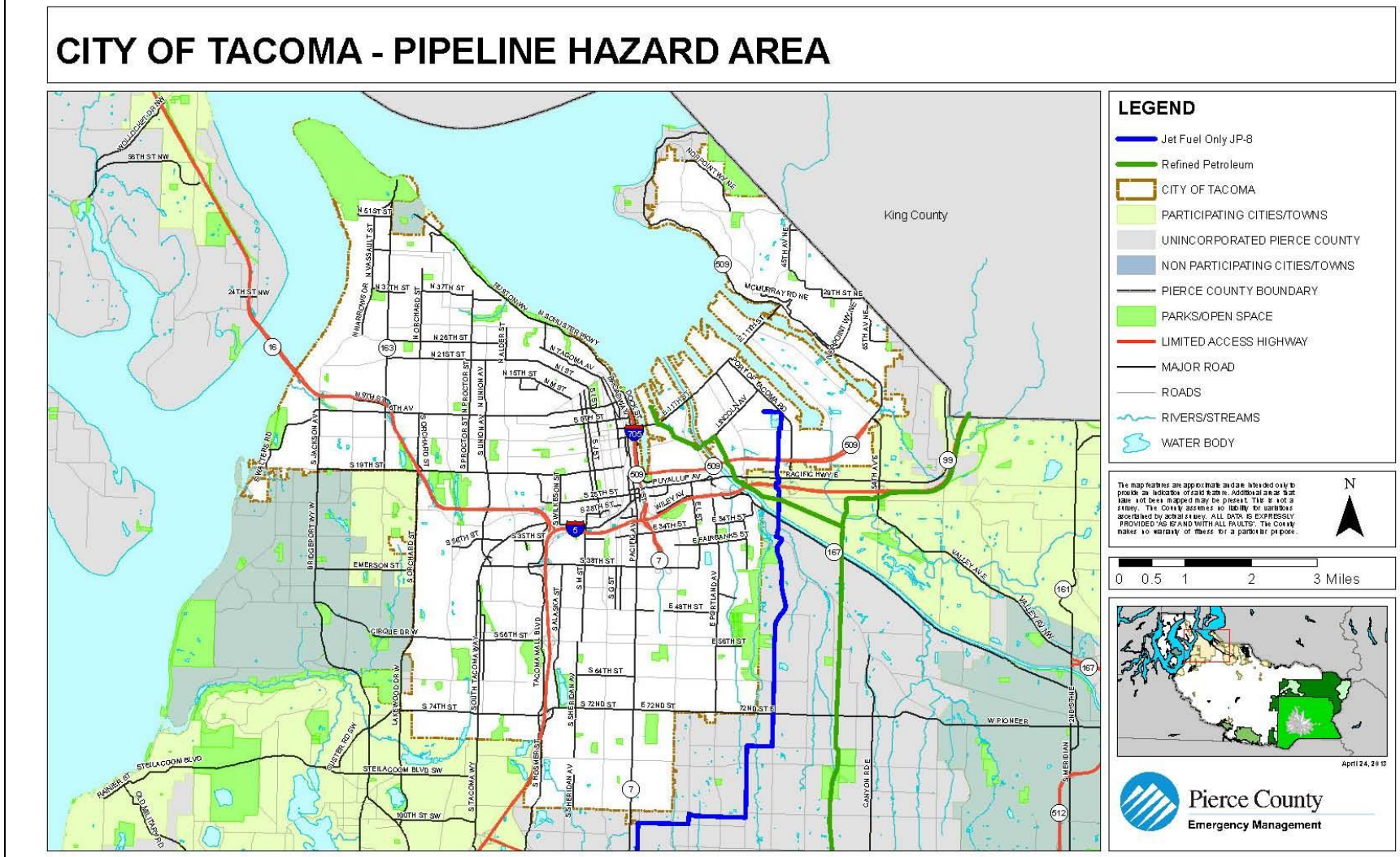
Map 4-6 City of Tacoma – Tsunami Hazard Area –Seattle Fault Map



Map 4-7 City of Tacoma – Hazardous Materials Hazard Area Map



Map 4-8 City of Tacoma – Pipeline Hazard Area Map



Map 4-9 City of Tacoma – Transportation Emergency Hazard Area Map

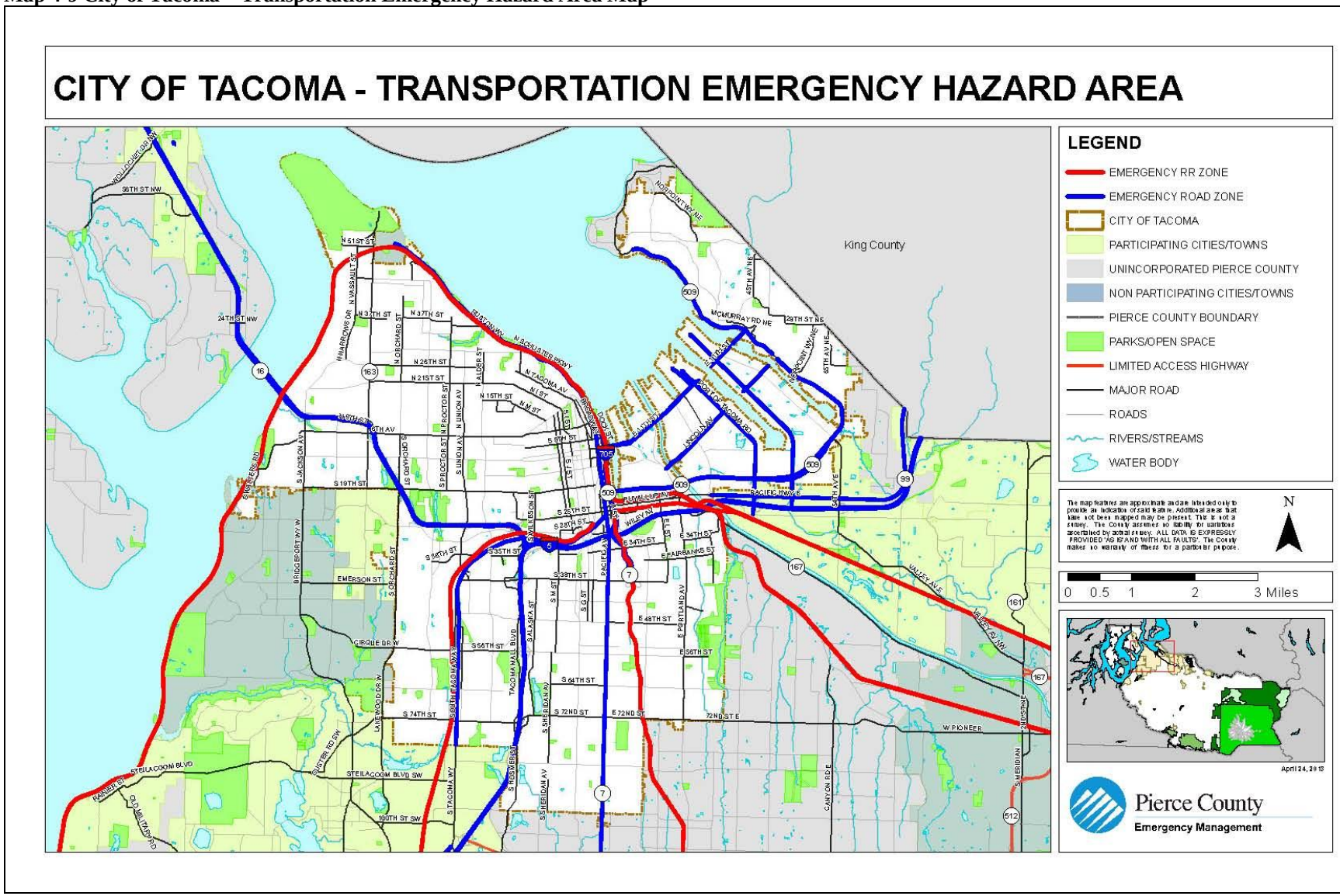


Table 4-2 Vulnerability Analysis: General Exposure[1]

THREAT[2]		AREA (SQ MI)		PARCELS	
		Total	% Base	Total	% Base
BASE		**37.53**	**100%**	**74,111**	**100%**
Geological	**Avalanche[3]**	NA	NA	NA	NA
	Earthquake[4]	8.76	23.3%	1,670	2.3%
	Landslide	1.32	3.5%	581	.8%
	Tsunami	8.04	21.4%	1249	1.7%
	Volcanic[5]	7.11	18.9%	2,183	2.9%
Meteorological	**Drought[6]**	37.53	100%	74,111	100%
	Flood	9.30	24.7%	1,065	1.4%
	Severe Weather	37.53	100%	74,111	100%
	WUI Fire[7]	NA	NA	NA	NA
Technological	**Abandoned Mines[8]**	NA	NA	NA	NA
	Civil Disturbance[9]	37.53	100%	74,111	100%
	Dam Failure[10]	6.68	17.7%	1,195	1.61%
	Energy Emergency[11]	37.53	100%	74,111	100%
	Epidemic[12]	37.53	100%	74,111	100%
	Hazardous Material[13]	25.51	67.9%	41,262	55.7%
	Pipeline Hazard[14]	1.75	4.6%	270	.3%
	Terrorism[15]	37.53	100%	74,111	100%
	Transportation Accidents[16]	25.51	67.9%	41,262	55.7%

Table 4-3 Vulnerability Analysis: Population Exposure

THREAT[2]		POPULATION			SPECIAL POPULATIONS (OF TOTAL EXPOSED POPULATION)			
		Total	% Base	Density (pop/sq mi)	65+ yrs		20- yrs	
					#	%	#	%
BASE		**198,337**	**100%**	**5,285**	**22,358**	**11%**	**51,387**	**26%**
Geological	**Avalanche**	NA	NA	NA	NA	NA	NA	NA
	Earthquake	10,775	5.4%	1,229.50	1646	7.4%	2,142	4%
	Landslide	9,467	4.8%	7,162.81	1,147	5.1%	2,650	5.2%
	Tsunami	7,612	3.8%	946	1022	4.6%	1,409	2.7%
	Volcanic	5,941	3%	835	411	1.8%	1,274	2.5%
Meteorological	**Drought**	198,337	100%	5,285	22,358	11%	51,387	26%
	Flood	17,726	8.9%	1,906.7	1,952	8.7%	4,654	9.1%
	Severe Weather	198,337	100%	5,285	22,358	11%	51,387	26%
	WUI Fire	NA	NA	NA	NA	NA	NA	NA
Technological	**Abandoned Mines**	NA	NA	NA	NA	NA	NA	NA
	Civil Disturbance	198,337	100%	5,285	22,358	11%	51,387	26%
	Dam Failure	4,278	1.3%	640.49	296	1.3%	802	1.6%
	Energy Emergency	198,337	100%	5,285	22,358	11%	51,387	26%
	Epidemic	198,337	100%	5,285	22,358	11%	51,387	26%
	Hazardous Material	118,161	59.6%	4,633	13,892	62.1%	29,043	56.5%
	Pipeline Hazard	198,337	100%	113,122.31	22,358	100%	51,384	100%
	Terrorism	198,337	100%	5,285	22,358	11%	51,387	26%
	Transportation Accidents	118,161	59.6%	4,633	13,892	62.1%	29,043	56.5%

Table 4-4 Vulnerability Analysis: General Infrastructure Exposure

THREAT[2]		LAND VALUE			IMPROVED VALUE			TOTAL ASSESSED VALUE		
		Total ($)	% Base	Avg. Value ($)	Total ($)	% Base	Avg. Value ($)	Total ($)	% Base	Avg. Value ($)
BASE		**$7,152,771,700**	**100%**	**$96,514**	**$12,614,015,780**	**100%**	**$170,204**	**$19,766,787,480**	**100%**	**$266,719**
Geological	**Avalanche**	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Earthquake	$1,594,278,100	22.3%	$950,673	$953,560,700	7.6%	$568,611	$2,547,838,800	12.9%	$1,525,652
	Landslide	$74,809,300	1%	$128,760	$153,878,300	1.2%	$264,851	$228,687,600	1.2%	$393,610
	Tsunami	$1,547,515,600	21.6%	$1,239,003.68	$881,765,100	7%	$705,976.86	$2,429,280,700	12.3%	$1,944,981
	Volcanic	$1,590,643,600	22.2%	$728,650	$1,382,552,500	11%	$633,327	$2,973,196,100	15%	$1,361,977
Meteorological	**Drought**	$7,152,771,700	100%	$96,514	$12,614,015,780	100%	$170,204	$19,766,787,480	100%	$266,719
	Flood	$1,468,976,000	20.5%	$1,379,320	$799,743,700	6.3%	$750,933	$2,268,719,700	11.5%	$2,130,253
	Severe Weather	$7,152,771,700	100%	$96,514	$12,614,015,780	100%	$170,204	$19,766,787,480	100%	$266,719
	WUI Fire	NA	NA	NA	NA	NA	NA	NA	NA	NA
Technological	**Abandoned Mines**	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Civil Disturbance	$7,152,771,700	100%	$96,514	$12,614,015,780	100%	$170,204	$19,766,787,480	100%	$266,719
	Dam Failure	$1,448,314,100	20%	$1,211,978	$861,571,200	7%	$720,980	$2,309,885,300	12%	$1,932,958
	Energy Emergency	$7,152,771,700	100%	$96,514	$12,614,015,780	100%	$170,204	$19,766,787,480	100%	$266,719
	Epidemic	$7,152,771,700	100%	$96,514	$12,614,015,780	100%	$170,204	$19,766,787,480	100%	$266,719

	Hazardous Material	$4,970,577,715	69.5%	$120,464	$7,850,995,124	62.2%	$190,272	$12,821,572,839	64.9%	$310,735.61
	Pipeline Hazard	$372,903,200	5%	$1,381,123	$321,626,200	3%	$1,191,208	$694,529,400	4%	$2,572,331.11
	Terrorism	$7,152,771,700	100%	$96,514	$12,614,015,780	100%	$170,204	$19,766,787,480	100%	$266,719
	Transportation Accidents	$4,970,577,715	69.5%	$120,464	$7,850,995,124	62.2%	$190,272	$12,821,572,839	64.9%	$310,735.61

Table 4-5a Consequence Analysis Chart – Geological[17,18]

THREAT		CONSEQUENCE	YES OR NO
Geological	**Avalanche**	Impact to the Public	No
		Impact to the Responders	No
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	No
		Impact to the Environment	No
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No
	Earthquake	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	Yes
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	Yes
	Landslide	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No
	Tsunami	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	No
	Volcanic[19]	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	Yes

Table 4-5b Consequence Analysis Chart - Meteorological

THREAT		CONSEQUENCE	YES OR NO
Meteorological	**Drought**	Impact to the Public	Yes
		Impact to the Responders	No
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	No
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	No
	Flood	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	Yes
	Severe Weather	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	Yes
	WUI Fire	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	No

Table 4-5c Consequence Analysis Chart – Technological[20]

THREAT		CONSEQUENCE	YES OR NO
Technological	**Abandoned Mines**	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Civil Disturbance	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Dam Failure	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	

		Impact to Reputation or Confidence in Jurisdiction	
	Energy Emergency	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Epidemic	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Hazardous Materials	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Pipeline Hazards	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Terrorism	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Transportation Accident	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	

The City of Tacoma is located in the Central North portion of Pierce County. The City is highly susceptible to six of the eighteen hazards we considered in this plan. The risks are Drought, Severe Weather, Civil Disturbance, Energy Emergency, Epidemic and Terrorism. The risks impact critical infrastructure of State Route 16, Interstate 5, Interstate 705, State Route 163, State Route 7, and State Route 167. The cross-county transportation in this area is a high priority to remain functional but could easily be blocked by any number of hazards. The temporary loss of essential facilities including water, power, hospitals and emergency services are at a high risk from many of these hazards. Critical facilities are located in Tacoma including bridges, and city and county governmental offices. The Port of Tacoma has a higher risk for most of these hazards and a significant number of large fuel tanks containing oil and other hazardous tankers located along the waterfront.

Endnotes

[1] Info obtained from Pierce County GIS application, CountyView Pro (12/09).

[2] Currently the expanding body of empirical data on climate change supports its basic premise that the long term average temperature of the earth's atmosphere has been increasing for decades *(1850 to 2008)*. This trend is continuing and will create dramatic changes in the local environment of Pierce County. Today, questions revolve around the overall increase in local temperature and its long term effects. Climate change today refers to variations in either regional or global environments over time. Time can refer to periods ranging in length from a few decades to other periods covering millions of years. A number of circumstances can cause climate change. Included herein are such diverse factors as solar cycles, volcanic eruptions, changing ocean current patterns, or even something as unusual as a methane release from the ocean floor. Over the past 150 years good temperature records have allowed comparisons to be made of global temperatures from year-to-year. This has shown an overall increase of approximately 0.7^{o} C during this period. An increasing body of scientific evidence implies that the primary impetus driving climate change today is an increase in atmospheric green house gases.

[3] Jurisdiction is not vulnerable to this hazard, therefore it is marked NA or non-applicable.

[4] It should be noted here that although all residents, all property and all infrastructure of the City of Tacoma are vulnerable to earthquake shaking, not all are subject to the affects of liquefaction and liquefiable soils which is what is represented here.

[5] The threat of volcanic ashfall affects the entire Region 5 however some jurisdictions are specifically threatened by lahar flows directly from Mt. Rainier; an active volcano.

[6] The entire jurisdiction is vulnerable to drought. There are three things that must be understood about the affect of drought on the jurisdiction: 1) Drought is a Region wide event. When it does affect Pierce County, it will affect every jurisdiction, 2) Drought will gradually develop over time. It is a gradually escalating emergency that may take from months to years to affect the jurisdiction. Initially lack of water may not even be noticed by the citizens. However, as the drought continues, its effects will be noticed by a continually expanding portion of the community until it is felt by all, and 3) Jurisdictions will be affected differently at different times as a drought develops. This will vary depending on the needs of each local jurisdiction. Some examples are: jurisdictions that have industry that requires a continuous supply of a large quantity of water; others have agriculture that requires water, but may only require it at certain times of the year; and, some jurisdictions have a backup source of water while others do not.

[7] According to the most recent information from the Department of Natural Resources, the City of Tacoma while undergoing development does not have large areas of forested land that could develop into a wildland/urban interface fire. Further study is needed to determine the extent of the area that could be affected.

[8] The definition of Abandoned Mines comes from the 2010 Pierce County HIRA: Abandoned mines are any excavation under the surface of the earth, formerly used to extract metallic ores, coal, or other minerals, and that are no longer in production.

[9] The definition of Civil Disturbance comes from the 2010 Pierce County HIRA: Civil Disturbance (unrest) is the result of groups or individuals within the population feeling, rightly or wrongly, that their needs or rights are not being met, either by the society at large, a segment thereof, or the current overriding political system. When this results in community disruption of a nature where intervention is required to maintain public safety it has become a civil disturbance. Additionally, the Region 5 Strategic Plan includes Operational Objectives 3 & 4: Intelligence Gathering, Indicators, Warnings, etc; and Intelligence and Information Sharing.

[10] The definition of Dam Failure comes from the 2010 Pierce County HIRA: A dam is any "barrier built across a watercourse for impounding water.[10]" Dam failures are catastrophic events "characterized by the sudden, rapid, and uncontrolled release of impounded water. The vulnerability analysis was based on the potential dam failure from Mud Mountain Dam and Lake Tapps using Pierce County's GIS data which originated from each of the dams emergency plans inundation maps.

[11] The definition of an Energy Emergency comes from the 2010 Pierce County HIRA: Energy emergency refers to an out-of-the-ordinary disruption, or shortage, of an energy resource for a lengthy period of time. Additionally the Region 5 Strategic Plan addresses Energy Emergencies in its Operational Objective 32, Restoration of Lifelines which addresses the restoration of critical services such as oil, gas, natural gas, electric, etc.

[12] The definition of epidemic comes from the TPCHD Flu Plan of 2005: A Pandemic is an epidemic occurring over a very wide area and usually affecting a large proportion of the population. Pandemics occur when a wholly new subtype of influenza A virus emerges. A "novel" virus can develop when a virulent flu strain that normally infects

birds or animals infects a human who has influenza; the two viruses can exchange genetic material, creating a new, virulent flu virus that can be spread easily from person-to-person. Unlike the flu we see yearly, no one would be immune to this new flu virus, which would spread quickly, resulting in widespread epidemic disease – a pandemic. (DOH Plan & U.S. Dept. of HHS).

[13] The definition of Hazardous Materials comes from the 2010 Pierce County HIRA: Hazardous materials are materials, which because of their chemical, physical or biological properties, pose a potential risk to life, health, the environment, or property when not properly contained. A hazardous materials release then is the release of the material from its container into the local environment. A general rule of thumb for safety from exposure to hazardous material releases is 1000ft; the Emergency Response Guidebook 2008, established by the US Dept of Transportation, contains advice per specific materials. The vulnerability analysis was broken into two sub sections for a better understanding of the hazard using Pierce County's GIS data with a 500 foot buffer on either side of the railroads and major roadways.

[14] The definition of Pipeline Emergency comes from the 2010 Pierce County HIRA: While there are many different substances transported through pipelines including sewage, water and even beer, pipelines, for the purpose of this chapter, are transportation arteries carrying liquid and gaseous fuels. They may be buried or above ground

[15] The definition of Terrorism comes from the 2010 Pierce County HIRA: Terrorism has been defined by the Federal Bureau of Investigation as, "the unlawful use of force or violence against persons or property to intimidate or coerce a Government, the civilian population or any segment thereof, in furtherance of political or social objectives." These acts can vary considerably in their scope, from cross burnings and the spray painting of hate messages to the destruction of civilian targets. In some cases, violence in the schools has also been labeled as a form of terrorism.

[16] The definition of Transportation Accident comes from the 2010 Pierce County HIRA: Transportation accidents as used in this assessment include accidents involving a method of transportation on the road, rail, air, and maritime systems within the confines of Pierce County. The vulnerability analysis was broken into three sub sections for a better understanding of the hazard using Pierce County's GIS data; Commencement Bay to include inland rivers and streams, railroads, and roads. A 200 foot buffer was applied to all the shorelines and a 500 foot buffer on either side of the railroads and roadways.

[17] In the Impact to Property, Facilities and Infrastructure, both Tables 4-5a and 4-5b, look at the impact to all property, facilities and infrastructure existing in the jurisdiction, not just to that owned by the jurisdiction.

[18] The consideration for each of these hazards, in both Tables 4-5a and 4-5b, as to whether an individual hazard's consequences exist, or not, is based on a possible worst case scenario. It must also be understood that a "yes" means that there is a good possibility that the consequence it refers to could happen as a result of the hazard, not that it will. Conversely "No" means that it is highly unlikely that that consequence will have a major impact, not that there will be no impact at all.

[19] While the major volcanic hazard from Mt. Rainier is from a lahar descending the main river valleys surrounding the mountain, it is not the only problem. Most jurisdictions could receive tephra in greater or lesser amounts, sometimes with damaging results. Consequence analyses in this section take into account the possibility of tephra deposition in addition to a lahar.

[20] The Technological Consequences are added herein to acknowledge the role of human-caused hazards in the health and safety of unincorporated Pierce County. The consequences noted are under the same criteria as natural hazards given their impacts to the departmental assets.

Section 5

Mitigation Strategy Requirements

Mitigation Strategy---Requirement §201.6(c)(3):

The plan **shall** include a strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

Local Hazard Mitigation Goals---Requirement §201.6(c)(3)(i):

[The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

- Does the new or updated plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards?

Identification and Analysis of Mitigation Actions---Requirement §201.6(c)(3) (ii):

[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance---Requirement ***§201.6(c)(3)(ii):***

[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

- Does the new or updated plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?
- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?
- Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

Implementation of Mitigation Actions---Requirement: §201.6(c)(3) (iii):

[The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

- Does the new or updated mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)
- Does the new or updated mitigation strategy address how the actions will be **implemented and administered,** including the responsible department, existing and potential resources and the timeframe to complete each action?
- Does the new or updated prioritization process include an emphasis on the use of **cost-benefit review to** maximize benefits?
- Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?

SECTION 5

REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
CITY OF TACOMA
MITIGATION STRATEGY SECTION

Table of Contents

Table 5-1 City of Tacoma Mitigation Strategy Matrix

Implementation Mechanism	Mitigation Measure *(Hazard(s))*[1]	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations Continuity	Partnerships	Natural Resources	Preparedness	Sustainable Economy
Startup	1. Existing Mitigation Actions *(E,L,T,V,D,F,WUI,SW, MM)*	Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
	2. Plan Maintenance *(E,L,T,F ,V,WUI,SW, MM))*	Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
	3. National Flood Insurance Plan *(F)*	Tacoma; Tacoma Utilities	Ongoing	✓	✓	✓	✓	✓	
HMF	1. Pierce County Hazard Mitigation Forum *(E,L,T,V,D,F,WUI,SW, MM)*	PC DEM; Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
Tacoma Fire	1. Capability Identification and Evaluation *(E,L,T,V,D,F,WUI,SW, MM)*	Tacoma	1-2	N/A					
	2. Remodel of Emergency Operations Center for City of Tacoma *(E,L,T,V,D,F,WUI,SW, MM)*	Tacoma Emergency Management	1-2	✓	✓	✓			✓
	3. Contract a Consultant to Perform a Seismic Stability Study *(E,SW)*	Tacoma Emergency Management	5	✓	✓	✓			
	4. Port of Tacoma Major Evacuation Plan *(E,L,T,V,F,SW,WUI,MM)*	Port of Tacoma with EM and Tacoma Police	1-2	✓		✓		✓	
	5. Fixed Generator Purchases *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Fire Department	Ongoing	✓	✓				
	6. Seismic Retrofit of Tacoma Fire Facilities *(E,SW)*	Tacoma	5	✓	✓				✓
	7. Continuity of Operations Plan (COOP) *(E,L,T,V,D,F,SW,WUI,MM)*	Tacoma	5	✓	✓	✓			✓
	8. Additional Engine Company Response to Murray Morgan Bridge Closure *(E,F,SW,MM)*	Tacoma Fire Department	1-2	✓	✓				
Public Education	1. EMT Training for Fire Department Personnel *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Fire Department	Ongoing	✓	✓				
	2. Annual Paramedic Training *(E,L,T,V,D,F,SW,WUI,MM)*	Tacoma Fire Department	Ongoing	✓	✓			✓	
	3. Required ICS Training *(E,L,T,V,D,F,SW,WUI,MM)*	Tacoma Fire Department	Ongoing	✓	✓			✓	
	4. ICS-300 and ICS-400 *(E,L,T,V,D,F,SW,WUI,MM)*	Tacoma Fire Training	Ongoing	✓	✓			✓	
	5. HazMat Training *(E,L,T,V,D,F,SW,WUI,MM)*	Tacoma Fire Training	Ongoing	✓			✓		
	6. Technical Rescue Team Training *(E,L,T,V,F,SW,MM)*	Tacoma Fire Training	Ongoing	✓	✓	✓			
	7. Structural Collapse Training *(E,L,T,V,F,SW,MM)*	Tacoma Fire Training	Ongoing	✓		✓			
	8. Continuation and Increase of CERT Program *(E,L,T,V,F,SW,MM)*	Tacoma Emergency Management and PC DEM	Ongoing	✓		✓		✓	
Tacoma Police	1. Tacoma Police Firing Range *(E,L,F,SW,WUI)*	Tacoma Police with Tacoma Facilities	5	✓	✓		✓		
	2. Microwave Link to Tacoma Public Utilities *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police with Tacoma Utilities	1-2	✓	✓	✓			✓

Implementation Mechanism	Mitigation Measure *(Hazard(s))*[1]	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations Continuity	Partnerships	Natural Resources	Preparedness	Sustainable Economy
Tacoma Police	3. Build Four Sector Sub-Station *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police, Tacoma Public Works and Metro Parks	1-2	✓	✓	✓		✓	
	4. Additional Parking Required at New Police Station *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police with Tacoma Facilities	1-2	✓	✓				
	5. Mobile CoMMand Unit for Police Department *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police with Multi-Agency Support	5	✓	✓	✓			✓
	6. Purchase Zurmo Air Shelter *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police Department	1-2	✓	✓	✓			
	7. Evacuation Plans for Citizens *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police with other City Agencies	1-2	✓	✓	✓			✓
	8. Threat Level Response Operational Plans *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police Department	Ongoing	✓	✓	✓			✓
	9. South Puget Sound Regional Law Enforcement Mobilization Plan *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police and Regional Partners	1-2	✓	✓	✓			
	10. Table Top Exercise with School Districts *(E,V,F,SW,MM)*	Tacoma Police with support from PC DEM	Ongoing	✓		✓		✓	
Public Education	1. Continue Specific Training in the Community *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police Department	Ongoing	✓	✓	✓			
	2. Continue Training Programs with Schools *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police Department	Ongoing	✓		✓		✓	
	3. Continue Required Patrol Officer Training *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Police Department	Ongoing	✓	✓	✓			✓
	4. WEB EOC Training and Support *(E,L,T,V,F,SW,WUI,MM)*	Pierce County DEM with support from Tacoma Police	Ongoing	✓	✓	✓			✓
	5. Special Training as Required *(E,L,T,V,D,F,SW,WUI,MM)*	Tacoma Police Department	Ongoing	✓	✓	✓			✓
	6. IMT, Type III Training *(E,L,T,V,F,SW,WUI,MM)*	Pierce County DEM to include Tacoma Police	Ongoing	✓		✓			✓
Tacoma Water Utility	1. Alternate Potable Water Supply System *(E,L,V,F,SW,MM)*	Tacoma Water Utility	1-2	✓	✓			✓	✓
	2. Trailer Mounted 350 KW Standby Generator *(E,V,F,SW,MM)*	Tacoma Water Utility	1-2	✓	✓				
	3. Seismic Retrofit of Hood Street Water Treatment Plant *(E,SW,MM)*	Tacoma Water Utility	1-2	✓	✓				
	4. Tacoma Water Pipeline 1 Replacement, Orting Valley *(E,V,F,MM)*	Tacoma Water Utility	1-2	✓	✓		✓		✓

Implementation Mechanism	Mitigation Measure *(Hazard(s))*[1]	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations Continuity	Partnerships	Natural Resources	Preparedness	Sustainable Economy
	5. Seismic Retrofit of Tacoma Water Transmission Pipelines *(E,SW,MM)*	Tacoma Water Utility	5	✓	✓				✓
	6. Tacoma Water EOC Upgrade *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Water Utility	5	✓	✓	✓			
	7. Tacoma Water North Fork Wellfield Backup Power *(E,L,V,F,SW,MM)*	Tacoma Water Utility	5	✓	✓				
Tacoma Public Works	1. Institute CoMMercial Occupancy Resumption Program *(E,L,V,SW,MM)*	Tacoma Public Works-BLUS	5	✓	✓	✓			✓
	2. Develop Backup Server *(E,L,T,V,F,WUI,SW,MM)*	Tacoma Public Works-BLUS	1-2	✓	✓				✓
	3. Update City Flood Plain Regulations *(L,F,SW)*	Tacoma Public Works-BLUS	1-2	✓		✓	✓		
	4. Provide Infrastructure Inspection Kits for Construction Division Staff *(E,L,V,F,SW,MM)*	Tacoma Public Works-Construction	5	✓	✓				✓
	5. Court 'E' Wall Repair at South 13th Street *(E,L,F,SW)*	Tacoma Public Works-Engineering	1-2	✓	✓				
	6. Eells Street Bridge Rehabilitation *(E,L,V,F,SW)*	Tacoma Public Works-Engineering	5	✓	✓				✓
	7. East 11th Street Bridge (Murray Morgan) Rehabilitation *(E,L,V,F,SW)*	Tacoma Public Works-Engineering	5	✓	✓				✓
	8. Create and Implement Standard for Ice and Snow Removal and Document Program *(E,L,V,F,SW,MM)*	Tacoma Public Works-Streets and Grounds	1-2	✓	✓				✓
	9. Pre-Positioning of Sand Bags *(F,SW)*	Tacoma Public Works-ES Operations/Maintenance	1-2	✓	✓				✓
	10. Environmental Services Emergency Operations Center *(E,L,V,F,SW,MM)*	Tacoma Public Works-ES & Engineering	Ongoing	✓	✓		✓		✓
	11. Central Treatment Plant Wet Weather Upgrade *(F,SW,MM)*	Tacoma Public Works-ES & Engineering	5	✓	✓		✓		
	12. Sewage Pump Station Backup Generators *(E,L,V,F,SW,MM)*	Tacoma Public Works-ES & Engineering	5	✓	✓		✓		
	13. Emergency Power Generator for Urban Waters Emergency Operations *(E,L,V,F,WUI,SW,MM)*	Tacoma Public Works-ES & Engineering	1-2	✓	✓		✓		
	14. Community Based Household Hazardous Waste Collection and Disposal *(E,L,V,F,WUI,SW,MM)*	Tacoma Public Works-Solid Waste	1-2	✓	✓	✓	✓		
	15. Regional Debris Management Plan *(E,L,V,F,WUI,SW,MM)*	Tacoma Public Works-Solid Waste	1-2	✓	✓	✓	✓		

Implementation Mechanism	Mitigation Measure *(Hazard(s))*[1]	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations Continuity	Partnerships	Natural Resources	Preparedness	Sustainable Economy
Tacoma Public Works	16. Fleet Services Emergency Call-In Plan *(E,L,V,F,WUI,SW,MM)*	Tacoma Public Works-Fleet Services	1-2	✓	✓				
	17. Seismic Analysis of City of Tacoma Fire Stations *(E,SW,MM)*	Tacoma Public Works-Facilities with Tacoma Fire	1-2	✓	✓	✓			
	18. Auxiliary Generator Maintenance and Load Bank Tests *(E,L,V,F,WUI,SW,MM)*	Tacoma Public Works-Facilities	Ongoing	✓	✓				
	19. Tacoma Municipal Building Roof and Envelope Evaluation *(E,V,F,SW,MM)*	Tacoma Public Works-Facilities	1-2	✓	✓				
	20. Maintain Facilities Management Phone Tree *(E,L,V,F,WUI,SW,MM)*	Tacoma Public Works-Facilities	Ongoing	✓	✓				
Public Education	1. Continue CERT Training *(E,V,F,SW,MM)*	Tacoma Fire with Public Works-BLUS	Ongoing	✓		✓		✓	✓
	2. Public Service Announcements on Lateral Building Strengthening *(E,L,SW,MM)*	Tacoma Public Works-BLUS	1-2	✓		✓		✓	
	3. ATC-20 Training of Public Works Staff *(E,L,SW,MM)*	Tacoma Public Works-BLUS	Ongoing	✓	✓				✓
	4. FEMA ICS-100 Training for All Employees *(E,L,T,V,F,WUI,SW,MM)*	Tacoma Public Works-ES & Engineering	Ongoing	✓	✓	✓			
Tacoma Power	1. Back Up Energy Control Center *(E,T,V,SW)*	Tacoma Power – Transmission & Distribution	1-2	✓	✓			✓	
	2. Generator for Administration Building South *(E,SW)*	Tacoma Power – Generation	1-2	✓	✓			✓	
	3. Distribution System Feeder Relay Replacement *(E,F,SW)*	Tacoma Power – Transmission & Distribution/Control Engineering	5	✓	✓	✓			
	4. Feeder Sectionalizing *(E,V,SW)*	Tacoma Power Transmission & Distribution	5		✓				✓
	5. LaGrande #1 and #2 100 kV Line Sectionalizing Switches *(E,SW)*	Tacoma Power – Transmission & Distribution/Line Engineering & Construction	1-2	✓	✓				✓
	6. LaGrande Powerhouse Seismic Retrofit *(E,F,SW)*	Tacoma Power – Generation	1-2	✓	✓			✓	✓
	7. Seismic Upgrade of Mayfield Transformers *(E,F,SW)*	Tacoma Power – Generation/Plant	1-2	✓	✓			✓	✓
	8. Microwave Link to Tacoma Police/Fire *(E,L,T,V,F,SW,WUI,MM)*	Tacoma Power Utilities with Tacoma Police	1-2	✓	✓	✓			✓

Implementation Mechanism	Mitigation Measure *(Hazard(s))*[1]	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations Continuity	Partnerships	Natural Resources	Preparedness	Sustainable Economy
Tacoma Power	9. Mobile Radio Improvements *(E,L,T,V,F,SW,MM)*	Tacoma Power – Transmission & Distribution with CoMMunications	5	✓	✓	✓			
	10. North and Henderson Bay Tower Replacement *(E,T,SW)*	Tacoma Power – Transmission & Distribution	5	✓	✓				
	11. Overhead to Underground System Conversion *(E,V,SW)*	Tacoma Power – Transmission & Distribution	5	✓	✓	✓	✓		
	12. SONET Upgrade *(E,L,T,V,F,SW,MM)*	Tacoma Power – Transmission & Distribution with CoMMunication	5	✓	✓				
	13. CoMMon Verbal Field and Dispatch with Tacoma Police and Fire *(E,L,T,V,F,SW,MM)*	Tacoma Power with Tacoma Police & Fire	5	✓	✓	✓			
	14. Transmission Tower Seismic Retrofit *(E,SW)*	Tacoma Power – Line Engineering and Construction	5	✓	✓			✓	
	15. Transmission Switch Replacement *(E,F,SW)*	Tacoma Power – Transmission & Distribution, Line Engineering and Construction	5		✓				✓
	16. Tree TriMMing Program *(E,SW)*	Tacoma Power – Line Construction	5	✓	✓				
	17. Vault Improvements *(E,T,F,SW)*	Tacoma Power – Line Construction, Downtown Network Group	5	✓	✓				
	18. WECC Compliance Study for Cyber Security *(MM)*	Tacoma Power – Transmission & Distribution	5	✓	✓	✓			

Startup Measures

Existing Mitigation Actions

Hazards: All

The City of Tacoma will integrate the hazard mitigation plan into existing plans, ordinances, and programs to dictate land uses within the jurisdiction. Further, Tacoma will continue to implement existing programs, policies, and regulations as identified in the Capability Identification Section of this Plan. This includes such actions as updating the Critical Area Regulations and any ensuing land use policies with best available science. It also includes continuing those programs that are identified as technical capabilities.

1. **Goal(s) Addressed** = Protect Life and Property, Ensure Continuity of Operations, Establish and Strengthen Partnerships for Implementation, Protect the Environment, Increase Public Preparedness for Disasters, Promote a Sustainable Economy
2. **Cost of Measure** = Staff time, materials, meeting resources
3. **Funding Source and Situation=** Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma (Planning and Community Development)
5. **Timeline =** Ongoing
6. **Benefit** = City-wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Plan Maintenance

Hazards: All

Tacoma will adopt those processes outlined in the Plan Maintenance Section of this Plan.

1. **Goal(s) Addressed** = Protect Life and Property, Ensure Continuity of Operations, Establish and Strengthen Partnerships for Implementation, Protect the Environment, Increase Public Preparedness for Disasters, Promote a Sustainable Economy
2. **Cost of Measure** = Staff time and other city resources
3. **Funding Source and Situation=** Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma (Executive Department)
5. **Timeline =** Ongoing
6. **Benefit** = City-wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

National Flood Insurance Program

Hazards: F

Tacoma will ensure that the City is compliant with the National Flood Insurance Program by updating floodplain identification and mapping, enforcing the flood damage prevention ordinance, and providing public education on floodplain requirements and impacts. The City of Tacoma will be an active participant in the Pierce County Flood Control District.

1. **Goal(s) Addressed** = Protect life and property; Ensure Continuity of Operations; Increase Public Preparedness; Increase and Strengthen Partnerships; Protect the Environment; Increase Public Preparedness
2. **Cost of Measure** = Staff time, special materials required, permits
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants
4. **Lead Jurisdiction(s) =** Tacoma (Community Development); PC PWU
5. **Timeline =** On-going
6. **Benefit** = City-wide; Regional
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Required ICS Training for All Levels of Fire Department

Hazards: E, L, T, V, D, F, SW, WUI[1], MM

IS-100, IS-200, IS-700, IS-800 are required for all fire department personnel.

1. **Goal(s) Addressed** = Protect life and property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = Staff time, materials and cost of instructors
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =**Tacoma Fire Department
5. **Timeline =** Ongoing
6. **Benefit** = Citizens and First Responders, surrounding communities and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

ICS-300 and ICS-400

Hazards: E, L, T, V, D, F, SW, WUI[1], MM

Required training for middle and upper management of the fire department.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = Staff time, materials and cost of instructors
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Fire Department - Training

5. **Timeline =** Ongoing
6. **Benefit** = Fire District, Citizens and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

HazMat Training (Hazardous Materials)

Hazards: E, L, T, V, D, F, SW, WUI[1], MM

Ongoing required training for the Tacoma Fire Hazmat Team.

1. **Goal(s) Addressed** = Protect Life and Property; Preserve or Restore Natural Resources.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** City of Tacoma Fire and Training
5. **Timeline =** Ongoing
6. **Benefit** = Tacoma Fire, Community, Businesses, regional partners and citizens
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Technical Rescue Team Training

Hazards: E, L, T, V, F, SW, MM

Required training for Tacoma Fire Department Technical Rescue Team.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** City of Tacoma Fire Training
5. **Timeline =** Ongoing
6. **Benefit** = Tacoma Fire, City of Tacoma, Citizens and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Structural Collapse Training

Hazards: E, L, T, V, F, SW, MM

Required Structural Building Collapse Training for the Tacoma Fire Department Technical Rescue Team.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** City of Tacoma Fire Training
5. **Timeline =** Ongoing
6. **Benefit** = Tacoma Fire, City of Tacoma, citizens and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Continuation and Increase of Community Emergency Response Teams (CERT) Program

Hazards: E, L, T, V, F, SW[1], MM

The Emergency Management Department maintains a program for citizen preparedness in the form of Community Emergency Response Teams (CERT). This program will continue to train citizens to prepare neighborhoods in response to future events.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** City of Tacoma - Emergency Management
5. **Timeline =** Ongoing
6. **Benefit** = City of Tacoma community and citizens, first responders, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Tacoma Police Department

Tacoma Police Firing Range

Hazards: E, L, F, SW, WUI[1]

The Tacoma Police Firing Range needs serious improvements such as bullet traps, lead traps, acreage and grounds improvements, upper range and lower range, buildings to be reconstructed and all based upon National Range Safety Standards to be compliant.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Preserve or Restore Natural Resources.
2. **Cost of Measure** = $1.1 million
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department with City of Tacoma - Facilities
5. **Timeline =** Long-term
6. **Benefit** = Police Department, City, citizens, regional partners
7. **Life of Measure** = 25 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Microwave Link to Tacoma Public Utilities

Hazards: E, L, T, V, F, SW, WUI[1], MM

This is a backup for fiber link using satellite or microwave link to TPU to provide a redundant feed into EOC at Police Station in the event the fiber link is compromised.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = $10,000 to $15,000 for link
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =**Tacoma Police Department with Tacoma Public Utilities
5. **Timeline =** Short-term
6. **Benefit** = TPD and entire city, citizens and regional partners
7. **Life of Measure** = 5 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Build Four Sector Sub-Station

Hazards: E, L, T, V, F, SW, WUI[1], MM

To replace old sub-station at 45th & McKinley Streets and would cost more to fix than to rebuild. Station will build at Stewart Heights Park at 56th and McKinley Streets area.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = $2.4 million, already approved
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department with Tacoma Public Works and Metro Parks
5. **Timeline =** Short-term
6. **Benefit** = TPD and citizens, regional partners
7. **Life of Measure** = 25 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Additional Parking Required at New Police Headquarters

Hazards: E, L, T, V, F, SW, WUI[1], MM

The new Tacoma Police Station on Pine Street is also the Police Fleet Maintenance and there is a severe shortage of parking at the facility. A study needs to be done to determine possible locations for additional parking and how that might look.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department with Tacoma Facilities Management
5. **Timeline =** Short-term
6. **Benefit** = TPD and Community, citizens, other county and city employees, regional partners
7. **Life of Measure** = 25 years
8. **Community Reaction** = the proposal would be somewhat controversial

Mobile Command Unit for Police Department

Hazards: E, L, T, V, F, SW, WUI[1], MM

This is an incident command field operations – mobile unit for police operations on scene. Current unit is old, out dated and too small.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation, Promote a Sustainable Economy.
2. **Cost of Measure** = $500,000 estimate
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department with Multi-Agency Support
5. **Timeline =** Long-term
6. **Benefit** = TPD and community, Pierce County DEM, fire and other regional partners
7. **Life of Measure** = 10 years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Purchase Zurmo Air Shelter

Hazards: E, L, T, V, F, SW, WUI[1], MM

Need an air activated shelter structure that would ultimately attach to existing structures owned by county DEM. This is to provide shelter for officers on duty at scene for protection from weather and cold and allow for meetings in a dry location.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = $15,000 per unit
3. **Funding Source and Situation** = Funding could be obtained through local budget or grant.
4. **Lead Jurisdiction(s) =** Tacoma Police Department
5. **Timeline =** Short-term
6. **Benefit** = TPD and community, regional partners
7. **Life of Measure** = 5 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Evacuation Plans for Citizens

Hazards: E, L, T, V, F, SW, WUI[1], MM

Traffic Plans for specific areas of the City and specific to the Port of Tacoma. Develop formalized evacuation routes and alternatives to relocate specific areas of the City in the event of a catastrophic occurrence.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time, materials and equipment
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department with support from other City agencies
5. **Timeline =** Short-term
6. **Benefit** = Community, citizens and businesses, first responders and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Threat Level Response Operational Plans

Hazards: E, L, T, V, F, WUI, SW[1], MM

This is Threat Level Response Operational Plans for Tacoma Police Department (COOP) and for Police Department as part of overall City Plans.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote A Sustainable Economy.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department
5. **Timeline =** Ongoing
6. **Benefit** = TPD and City of Tacoma, Citizens and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

South Puget Sound Regional Law Enforcement Mobilization Plan

Hazards: E, L, T, V, F, WUI, SW[1], MM

This is a working group to develop the South Sound Regional Mobilization Plan that is derived from the Fire Mob Plan and is now being adapted and rewritten for Police. This is in conjunction with Washington State Emergency Management Association (WSEMA) and is supported by them.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = Staff time and possible special equipment
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department and Regional Partners.
5. **Timeline =** Short-term
6. **Benefit** = TPD and regional partners, citizens and community
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Table Top Exercises with School Districts

Hazards: E, V, F, SW[1], MM

Each year the Tacoma Police Department designs and stages table top exercises for local school districts for lock down, active shooter and other related incidents. This has been a very successful program and will be continued into the future.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department with support from Pierce County DEM
5. **Timeline =** Ongoing
6. **Benefit** = Pierce County and City of Tacoma school districts, citizens and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Public Education Mitigation Measures - Police

Continue Specific Training in the Community

Hazards: E, L, T, V, F, SW, WUI[1], MM

NIMS required training for various personnel in the police department as well as training partners with DEM for the entire county required training in ICS to include ICS-100,-200,-300,-400,-700,-800 and ICS-701,-702,-703,-704.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = Staff time, materials and equipment
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department
5. **Timeline =** Ongoing
6. **Benefit** = TPD and regional partners, community and first responders
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Continue Training Programs with Schools

Hazards: E, L, T, V, F, SW, WUI[1], MM

Tacoma Police Department teaches ICS-100 and 700 for schools to the Public School Security staff and school police. They also do an annual orientation with local colleges and ICS-700 to college executives as required by NIMS.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department
5. **Timeline =** Ongoing
6. **Benefit** = School districts and colleges, students and community, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Continue Required Patrol Officer Training

Hazards: E, L, T, V, F, WUI, SW[1], MM

There is a 40 hour mandatory training for Patrol officers each year. In addition the following are also required: Domestic Violence, First Aid and CPR, Fire Arms, Personnel Training, Computer Training on Law Enforcement Database, Supervisor Training for some, Officer Certification (RCW) and Hazmat Team Training.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time, cost of training materials, special equipment required as well as class fees in some cases.
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department
5. **Timeline =** Ongoing
6. **Benefit** = Officers and department, citizens and community, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

WEB EOC Training and Support

Hazards: E, L, T, V, F, WUI, SW[1], MM

This is the County-wide WEB based tracking and support tool used during activations of the EOC and other incidents requiring ICS forms and interagency cooperation. All EOC responders and workers must be trained in the use of this tool and at a higher level officers help to design screens and input to the system.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Pierce County DEM with participation from Tacoma Police Department
5. **Timeline =** Ongoing
6. **Benefit** = TPD and Community, PCDEM, citizens and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Special Training as Required

Hazards: E, L, T, V, D, F, WUI, SW[1], MM

The Tacoma Police Department offers a full range of services which include specific training requirements for team members of Special Forces to include: SWAT Team, Explosive Ordinance Disposal, Mobile Command Unit/EOC Activation, Marine Service Unit, Search and Rescue, Disorderly Response Team, Bicycle Rapid Response and Fatal Accident Team.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = Staff time, materials and special equipment required
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Police Department
5. **Timeline =** Ongoing
6. **Benefit** = Community and first responders, TPD, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

IMT, Type III Training

Hazards: E, L, T, V, F, WUI, SW[1], MM

Tacoma Police Department has two team members on the Regional Type III IMT Team requiring specific training and equipment to remain compliant and available for activation.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time, special equipment required
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Pierce County DEM to include Tacoma Police Department members.
5. **Timeline =** Ongoing
6. **Benefit** = Entire region, local responders, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Tacoma Water Utility

Alternate Potable Water Supply System

Hazards: E, L, V, F, SW[1], MM

Develop equipment and methods to deliver potable water to citizens if the normal drinking water supply is unavailable.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = TBD, estimated $50,000
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Water Utility
5. **Timeline =** Short-term
6. **Benefit** = Tacoma Water customers, other citizens and community, regional partners
7. **Life of Measure** = 20 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Trailer Mounted 350 KW Standby Generator

Hazards: E, V, F, SW[1], MM

Purchase portable generator to provide backup power to potable water pump stations.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = $120,000
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants
4. **Lead Jurisdiction(s) =** City of Tacoma-Dept Public Utilities-Tacoma Water
5. **Timeline =** Short-term
6. **Benefit** = Water customers, community, regional partners
7. **Life of Measure** = 25 years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Seismic Retrofit of Hood Street Water Treatment Plant

Hazards: E, SW[1], MM

Seismic upgrade of 1930's era building which houses equipment used to treat potable water from South Tacoma wells.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = Estimated cost approximately $100,000
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** City of Tacoma-Dept. of Public Utilities-Tacoma Water
5. **Timeline =** Short-term
6. **Benefit** = Water customers, employees, first responders, community and regional partners
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Tacoma Water Pipeline 1 Replacement, Orting Valley

Hazards: E, V, F, MM

Replace above-ground Pipeline 1 across Orting Valley floor, including above ground river crossing.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Preserve or Restore Natural Environment; Promote a Sustainable Economy.
2. **Cost of Measure** = $6,800,000
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** City of Tacoma-Dept Public Utilities-Tacoma Water
5. **Timeline =** Short-term
6. **Benefit** = Tacoma water reliability, customers, first responders, citizens and regional partners
7. **Life of Measure** = 100 years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Seismic Retrofit-Tacoma Water Transmission Pipelines

Hazards: E, SW[1], MM

Seismically upgrade structures supporting above-ground transmission pipelines.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = Approximately $100,000 to $200,000
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** City of Tacoma-Dept Public Utilities-Tacoma Water
5. **Timeline =** Long-term
6. **Benefit** = Water system reliability, customers and regional partners
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal would benefit those affected with no adverse reaction from other.

Tacoma Water Emergency Operations Center (EOC) Upgrade

Hazards: E, F, T, L, V, WUI, SW[1], MM

Perform remodel Water Control Center to improve its ability to function successfully as Water's internal EOC.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Water Utility
5. **Timeline =** Long-term
6. **Benefit** = Tacoma water customers; part of Tacoma and portions of Pierce County, citizens and regional partners
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal would benefit those affected with no adverse reaction from others.

Tacoma Water North Fork Wellfield Backup Power

Hazards: E, L, V, F, SW[1], MM

Provide 1.5 MW genset to provide backup power to two North Fork wells.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Water Utility
5. **Timeline =** Long-term
6. **Benefit** = Water customers, first responders, community and regional partners
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal would benefit those affected with no adverse reaction from others.

Tacoma Public Works

Institute Commercial Occupancy Resumption Program

Hazards: E, L, V, SW[1], MM

CORP is a program to pre-certify private post-earthquake inspection of commercial structures by qualified licensed engineers. Pre-approved Engineers are authorized to post buildings with official City of Tacoma ATC-20 placards, before mutual aid arrives. The program is designed to speed up occupancy resumption, and thus hasten economic recovery.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time, materials, equipment
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-BLUS
5. **Timeline =** Long-term
6. **Benefit** = City staff, local businesses, community, first responders, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Develop Backup Server

Hazards: E, L, T, V, F, WUI, SW[1], MM

Develop a backup server for Public Works and install at the traffic signal shop/EOC location. The backup server will provide immediate access to essential information in the aftermath of a catastrophic incident. It will be sited at the signal shop, our backup headquarters in the event the Municipal Building is rendered inaccessible, and powered by emergency generator.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = Cost of equipment, labor and installation fees
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-BLUS
5. **Timeline =** Short-term
6. **Benefit** = Entire city, staff and citizens, regional partners
7. **Life of Measure** = 5-10 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Update City Flood Plain Regulations

Hazards: L, F, SW[1]

Update the City of Tacoma flood plain regulations to comply with FEMA requirements according to the newest guidelines.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Protect and Restore the Natural Environment.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-BLUS
5. **Timeline =** Short-term
6. **Benefit** = City and citizens, first responders, regional partners
7. **Life of Measure** = Until new guidelines from FEMA
8. **Community Reaction** = the proposal would be somewhat controversial.

Provide Infrastructure Inspection Kits for Construction Division Staff

Hazards: E, L, V, F, SW[1], MM

Provide "Go Kits" (bridge, road and sewer pipe damage assessment kits) which would include a weather resistant trunk, powerful flashlights, extra batteries, yellow caution tape, stapler, notebook, safety vests, hardhats, pens, list of all city bridges and lifelines routes, digital cameras. This equipment would be available at the Municipal Building during normal working hours and at employee homes for occurrences outside of normal working hours and when the Municipal Building is rendered inaccessible.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations, Promote a Sustainable Economy.
2. **Cost of Measure** = Approximately $12,000
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Construction
5. **Timeline =** Long-term
6. **Benefit** = City, staff and citizens, first responders, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Court 'E' Wall Repair at South 13th Street

Hazards: E, L, F, SW[1]

This is the reconstruction and repair of the failed retaining wall supporting Court 'E'. The severe rain storm in November 2006 caused pooling on Court 'E' which super-saturated the soil behind a 100 year old retaining wall causing it to fail. Its failure caused a portion of Court 'E' to also collapse closing the roadway.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = Cost of construction, labor and materials, engineering
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Engineering
5. **Timeline =** Short-term
6. **Benefit** = City and community, citizens, first responders, regional partners
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Eells Street Bridge Rehabilitation

Hazards: E, L, V, F, SW[1]

The Eells Street Bridge is a 2,500 foot long structure. The project would rehabilitate a 117 foot long segment of this bridge. The 117 foot segment is a steel truss that is deteriorating. The project would replace this bridge segment.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = Cost of materials and labor
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Engineering
5. **Timeline =** Long-term
6. **Benefit** = City and citizens, community, first responders, regional partners
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

East 11th Street Bridge (Murray Morgan) Rehabilitation

Hazards: E, L, V, F, SW[1]

Rehabilitate this existing bridge to allow standard truck loads across the bridge. The bridge is posted for a maximum load of 10 tons which is much less than the standard 40 to 50 ton tractor trailer. The reduced load limit is due to structural deficiencies in the bridge.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = Cost of labor and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Engineering
5. **Timeline =** Long-term
6. **Benefit** = City and citizens, community, first responders, city services, regional partners
7. **Life of Measure** = 50-75 years
8. **Community Reaction** = the proposal would be somewhat controversial.

Create and Implement Standard for Ice and Snow Removal and Document Program

Hazards: E, L, V, F, SW[1], MM

The activities in this manual pertain to procedures for the control of ice and snow. It will present general information such as ice and snow removal schedules, equipment, procedures for both normal and off-duty hours. It will also detail each operation such as anti-icing, sanding, snowplowing, and other with schedules for each and routes to be covered.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = $365,000/year for actual street maintenance in winter
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Streets and Grounds
5. **Timeline =** Short-term
6. **Benefit** = City and citizens, first responders, city services, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Pre-Positioning of Sand Bags

Hazards: F, SW[1]

Pre-position or stage pallets of loaded sandbags at selected pump stations to be ready in the event of flooding.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = $900
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Environmental Science Operations/Maintenance
5. **Timeline =** Short-term
6. **Benefit** = City staff, citizens and community, first responders and regional partners
7. **Life of Measure** = Annual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Environmental Services Emergency Operations Center

Hazards: E, L, V, F, SW[1], MM

During severe weather, flooding or other emergency situations as appropriate, an Emergency Operations Center is activated and all staff members are assigned emergency response roles, including incident command, telephone monitoring and dispatch, field inspection of known problem areas, claims investigation, catch basin clearing, etc.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Protect and Restore the Natural Environment; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time and materials or equipment
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Environmental Science & Engineering
5. **Timeline =** Ongoing
6. **Benefit** = City staff, citizens and community, first responders and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Central Treatment Plant Wet Weather Upgrade

Hazards: F, SW[1], MM

A ballasted sedimentation treatment system will be installed to increase treatment capacity during periods of severe rainfall from 75 million gallons per day (MGD) to 150 MGD. Doing so will help prevent system backups and overflows and will avoid bypass of treatment during periods of exceptional flow.

The disinfection system will be changed from chlorine gas to a sodium hypochlorite system, eliminating the need for chlorine gas storage onsite. If power is interrupted, emergency power will automatically employ, replacing a manual procedure.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Protect and Restore the Natural Environment.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Environmental Services & Engineering
5. **Timeline =** Long-term
6. **Benefit** = City and citizens, community and regional partners
7. **Life of Measure** = 25+ years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Sewage Pump Station Backup Generators

Hazards: E, L, V, F, SW[1], MM

Emergency power generators will be installed at each of 49 sewage pump stations to assure continued service and reduce the potential for sewage backups or overflows during extended power outages.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Protect and Restore the Natural Environment.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Environmental Services & Engineering
5. **Timeline =** Long-term
6. **Benefit** = City and citizens, entire community, regional partners
7. **Life of Measure** = 20 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Emergency Power Generator for Urban Waters Emergency Operations

Hazards: E, L, V, F, WUI, SW[1], MM

A new building that will house the Environmental Services laboratory, engineers and source control staff must be equipped with emergency power generation for operation of the Emergency Operations Center that coordinates Storm water flooding and sanitary sewer backup responses during flooding, severe weather or other emergencies.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Protect and Restore the Natural Environment.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Environmental Services & Engineering
5. **Timeline =** Short-term
6. **Benefit** = City and citizens, community and regional partners
7. **Life of Measure** = 20 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Community Based Household Hazardous Waste Collection and Disposal

Hazards: E, L, V, F, WUI, SW[1], MM

Tacoma Solid Waste has agreed to work with Pierce County to provide small scale Household Hazardous Waste (HHW) Collection services to localized areas affected by a natural disaster. Tacoma would use its satellite HHW facility to assist areas affected by floods or other localized impacts. This assistance could be used in the City of Tacoma, unincorporated Pierce County or one of the suburban cities. The main effort needed by Tacoma is to keep its satellite facility in good working order and to have an adequate level of staff available to provide the service. This service would not be of use in a large mass scale event affecting a large population or area.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations, Protect and Restore the Natural Environment; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = Cost of service determined by scope of operation
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Solid Waste
5. **Timeline =** Short-term
6. **Benefit** = City staff and citizens, community and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Regional Debris Management Plan

Hazards: E, L, V, F, WUI, SW[1], MM

Tacoma Solid Waste is working with other jurisdictions in Pierce, King and Snohomish Counties to prepare a regional debris management plan. Tacoma's current plan is outdated and unusable. The regional plan is the first step towards developing a working plan for Tacoma. The regional plan will outline operational details, regional cooperation opportunities, and training plans that meet FEMA guidelines. Local initiatives and specific debris management procedures will be determined after the regional plan is in place. The completion of the regional plan is expected by May of 2008, and local portions of the plan should be complete by the fall of 2008.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Protect and Restore the Natural Environment; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = Cost of service determined by scope of operation
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Solid Waste
5. **Timeline =** Short-term
6. **Benefit** = City staff and citizens, community and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Fleet Services Emergency Call-in Plan

Hazards: E, L, V, F, WUI, SW[1], MM

There is a need for a communications plan to notify and recall Fleet Employees in times of emergencies or disasters.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = Staff time
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Fleet Services
5. **Timeline =** Short-term
6. **Benefit** = City staff, citizens and community, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Seismic Analysis of City of Tacoma Fire Stations

Hazards: E, SW[1], MM

The City will evaluate City owned fire stations to determine which meet current code and determine their earthquake structural integrity.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Facilities with Tacoma Fire
5. **Timeline =** Short-term
6. **Benefit** = City staff and emergency personnel, first responders, citizens and regional partners
7. **Life of Measure** = 5 years for study
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Auxiliary Generator Maintenance and Load Bank Tests

Hazards: E, L, V, F, WUI, SW[1], MM

Maintain existing auxiliary generator maintenance including oil changes, fuel treatments, load testing, etc. Test each unit using a load bank to confirm electrical output.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Facilities
5. **Timeline =** Ongoing
6. **Benefit** = City staff and citizens, regional partners
7. **Life of Measure** = 20 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Tacoma Municipal Building Roof and Envelope Evaluation

Hazards: E, V, F, SW[1], MM

Evaluate Tacoma Municipal Building Roof and Envelope.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = Time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Facilities
5. **Timeline =** Short-term
6. **Benefit** = City staff and citizens, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Maintain Facilities Management Phone Tree

Hazards: E, L, V, F, WUI, SW[1], MM

Maintain phone numbers of all Facilities Management employees in the case of an off hour emergency or disaster.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = Staff time
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Facilities
5. **Timeline =** Ongoing
6. **Benefit** = City staff and citizens
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Public Education Mitigation Measures – Public Works

Continue CERT Training

Hazards: E, V, F, SW[1], MM

Community Emergency Response Team training prepares citizens to assist in emergencies.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters; Promote A Sustainable Economy.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Fire supported by Public Works-BLUS
5. **Timeline =** Ongoing
6. **Benefit** = Citizens, First responders, community and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Public Service Announcements on Lateral Building Strengthening

Hazards: E, L, SW[1], MM

Create and distribute public service announcements regarding lateral building strengthening. In recent years bolting of homes to foundations has received a great deal of attention, however the practice of removing interior walls in order to create large interior rooms has been largely ignored. The PSA would address this through a program entitled “House of Cards”.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = Staff time and cost of production and distribution
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-BLUS
5. **Timeline =** Short-term
6. **Benefit** = Citizens and community, first responders, regional partners
7. **Life of Measure** = 25 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

ATC-20 Training of Public Works Staff

Hazards: E, L, SW[1], MM

This is a continuing program with 40 staff trained and equipped to date. Each staff member is trained in ATC-20, and equipped with hard hat and case containing damage assessment tools and ATC placards for posting of buildings in the aftermath of an event. The kits are stored either in the employee's POV or home in the event City offices are rendered inaccessible.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time, cost of class and materials, equipment kits
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-BLUS
5. **Timeline =** Ongoing
6. **Benefit** = City staff, citizens and community, first responders and regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

FEMA ICS-100 Training for All Employees

Hazards: E, L, T, V, F, WUI, SW[1], MM

All employees have completed the independent study course, ICS-100, and received certification of completion.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = Staff time and materials (on-line course)
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Tacoma Public Works-Environmental Services & Engineering
5. **Timeline =** Ongoing
6. **Benefit** = City staff and citizens, regional partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Tacoma Power

Back Up Energy Control Center

Hazards: E, T, V, SW[1]

Design and build a back up Energy Control Center.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = $1,818,000
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution Operations
5. **Timeline =** Short-term
6. **Benefit** = Employees and customers, regional partners
7. **Life of Measure** = 40 years, maintenance will be needed.
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Generator for Administration Building South

Hazards: E, SW[1]

Design and install an adequate generator for the Administration Building South.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = $50,000
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Generation
5. **Timeline =** Short-term
6. **Benefit** = employees and customers
7. **Life of Measure** = 40 years, maintenance will be needed.
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Distribution System Feeder Relay Replacement

Hazards: E, F, SW[1]

Replace distribution system relays at various substations on various feeders.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = $350,000 per year for several biennium's.
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution and Control Engineer Group
5. **Timeline =** Long-term
6. **Benefit** = customers
7. **Life of Measure** = 40 years, maintenance will be needed.
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Feeder Sectionalizing

Hazards: E, V, SW[1]

Many of the lateral taps are connected directly to the main feeder. This project will provide for identifying unfused laterals and areas on the main line that have high exposure (typically tree exposure, wind, adverse weather, ice) and installing sectionalizing devices at those locations. This project proposes to install main line sectionalizing devices on 5 feeders and fuse sectionalizing on an additional 4 feeders every year across the entire system.

1. **Goal(s) Addressed** = Ensure Continuity of Operations, Promote a Sustainable Economy.
2. **Cost of Measure** = $300,000 per year for several biennium's.
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission and Distribution
5. **Timeline =** Long-term
6. **Benefit** = Customers
7. **Life of Measure** = Perpetual, with some maintenance.
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

LaGrande #1 and #2 100 kV Line Sectionalizing Switches

Hazards: E, SW[1]

Install transmission switches at a mid-point on the LaGrande lines. These switches will be equipped with motor operations to enhance operational capabilities.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = $300,000 in one biennium
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Power Trans & Distribution, Line Engineering & Line Construction
5. **Timeline =** Short-term
6. **Benefit** = Customers
7. **Life of Measure** = 40 years, with some maintenance
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

LaGrande Powerhouse Seismic Retrofit

Hazards: E, F, SW[1]

Upgrade necessary structures at the LaGrande Powerhouse to meet seismic requirements for earthquake damage prevention.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = $500,000
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Generation Department
5. **Timeline =** Short-term
6. **Benefit** = Employees and customers
7. **Life of Measure** = 40 years, with some maintenance.
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Seismic Upgrade of Mayfield Transformers

Hazards: E, F, SW[1]

Secure transformers at the Mayfield project from shaking loose and falling into the river during seismic events.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = $100,000
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Generation/Plant
5. **Timeline =** Short-term
6. **Benefit** = Employees and customers
7. **Life of Measure** = 40 years, with some maintenance.
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Microwave Link to Tacoma Police / Fire

Hazards: E, L, T, V, F, SW, WUI[1], MM

To provide backup for fiber link using satellite or microwave link to Tacoma Police and Fire to provide a redundant feed into EOC at TPU in the event the fiber link is compromised.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote A Sustainable Economy.
2. **Cost of Measure** = $10,000 to $15,000 for link
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power Utilities with Tacoma Police Department
5. **Timeline =** Short-term
6. **Benefit** = TPU and entire City
7. **Life of Measure** = 5 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Mobile Radio Improvements

Hazards: E, L, T, V, F, SW[1], MM

Replace mobile units of 900MHz radio system. Develop design alternatives for continued use of licensed 900 MHz radio channels. Maintain private radio system.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = $1,600,000 first biennium and $20,000 second biennium.
3. **Funding Source and Situation** = Funding could be obtained through local budgets and grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution and CoMMunications
5. **Timeline =** Long-term
6. **Benefit** = TPU and entire City.
7. **Life of Measure** = 5 years
8. **Community Reaction** = the proposal would be somewhat controversial.

North and Henderson Bay Tower Replacement

Hazards: E, T, SW[1]

Replace the eight (8) in water towers at Henderson and North Bays on the Potlatch transmission line with new galvanized steel towers being purchased with funds in 2006 at an estimated cost of $400,000.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = $5 Million per biennium for two biennium's
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution
5. **Timeline =** Long-term
6. **Benefit** = Customers and staff
7. **Life of Measure** = 80 years, with some maintenance
8. **Community Reaction** = the proposal would be somewhat controversial.

Overhead to Underground System Conversion

Hazards: E, V, SW[1]

This project is for the conversion of overhead power line to underground. This is time-consuming and therefore would need to be implemented in segments starting with the worst reliable parts of the system and progressing to the more reliable parts over the course of several bienniums.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Preserve or Restore Natural Resources.
2. **Cost of Measure** = $2.275 Million to underground about 0.5% of the system. That's $800k for city labor, $800k for materials and $800k for construction contracts.
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution
5. **Timeline =** Long-term
6. **Benefit** = Customers
7. **Life of Measure** = 30 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

SONET Upgrade

Hazards: E, L, T, V, F, SW[1], MM

Upgrade SONET Fiber Optic coMMunications rings to OC-3 from OC-1.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = $670,000
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution and CoMMunications
5. **Timeline =** Long-term
6. **Benefit** = TPU and entire City
7. **Life of Measure** = 4 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

CoMMon Verbal Field and Dispatch with Tacoma Police and Fire

Hazards: E, L, T, V, F, SW[1], MM

Connect with Tacoma Police and Fire via the telephone system for coMMon dispatch.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = $500,000
3. **Funding Source and Situation** = Funding could be obtained through local budgets and grants.
4. **Lead Jurisdiction(s) =** Tacoma Power with Tacoma Police & Fire
5. **Timeline =** Long-term
6. **Benefit** = TPU and entire City
7. **Life of Measure** = 5 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Transmission Tower Seismic Retrofit

Hazards: E, SW[1]

Upgrade necessary structures or towers on the Potlatch lines, LaGrande lines and/or other transmission lines to meet seismic requirements for earthquake or severe weather damage prevention.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = $2,000,000
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Line Engineering and Construction
5. **Timeline =** Long-term
6. **Benefit** = Customers
7. **Life of Measure** = 40 years, with ongoing maintenance.
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Transmission Switch Replacement

Hazards: E, F, SW[1]

Replace transmission system switches at various locations. Selected switches will be equipped with motor operators to enhance operational capabilities. 72 switches have been identified for replacement.

1. **Goal(s) Addressed** = Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = $1,260,000 for 72 replacements spread over four biennium.
3. **Funding Source and Situation** = Funding could be obtained through local budgets and grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution, Line Engineering and Construction
5. **Timeline =** Long-term
6. **Benefit** = Customers
7. **Life of Measure** = 40 years, with some maintenance.
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Tree TriMMing Program

Hazards: E, SW[1]

Maintain phone numbers of all Facilities Management employees in the case of an off hour emergency or disaster.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = $200,000 / biennium
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Line Construction
5. **Timeline =** Long-term
6. **Benefit** = Customers
7. **Life of Measure** = 4 years
8. **Community Reaction** = the proposal would be somewhat controversial.

Vault Improvements – Downtown Network and Tide Flats

Hazards: E, T, F, SW[1]

Improve vault resistance to water infiltration.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = $300,000
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Line Construction, Downtown Network Group
5. **Timeline =** Long-term
6. **Benefit** = Customers
7. **Life of Measure** = 20 years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

WECC Compliance Study for Cyber Security

Hazards: MM

Study entire system to determine any network system security problems.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = $25,000 for study
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Tacoma Power – Transmission & Distribution
5. **Timeline =** Long-term
6. **Benefit** = TPU and entire city
7. **Life of Measure** = 5 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

In comparison to the last update, City of Tacoma has added the National Flood Insurance Program as a mitigation strategy and has accomplished the Full Scale Exercise in 2008, "South Sound 2008." The City of Tacoma is continuing all of the other mitigation strategies as seen below in the table.

Mitigation Measure	New	Continuing	Accomplished	Removed from update (if applicable)
Existing Mitigation Actions *(E,L,T,V,D,F,WUI,SW, MM)*		X		
Plan Maintenance *(E,L,T,F ,V,WUI,SW, MM))*		X		
National Flood Insurance Plan *(F)*	X			
Pierce County Hazard Mitigation Forum *(E,L,T,V,D,F,WUI,SW, MM)*		X		
Capability Identification and Evaluation *(E,L,T,V,D,F,WUI,SW, MM)*		X		
Remodel of Emergency Operations Center for City of Tacoma *(E,L,T,V,D,F,WUI,SW, MM)*		X		
Contract a Consultant to Perform a Seismic Stability Study *(E,SW)*		X		
Port of Tacoma Major Evacuation Plan *(E,L,T,V,F,SW,WUI,MM)*		X		
Fixed Generator Purchases *(E,L,T,V,F,SW,WUI,MM)*		X		
Seismic Retrofit of Tacoma Fire Facilities *(E,SW)*		X		
Continuity of Operations Plan (COOP) *(E,L,T,V,D,F,SW,WUI,MM)*		X		
Additional Engine Company Response to Murray Morgan Bridge Closure *(E,F,SW,MM)*		X		
EMT Training for Fire		X		

Department Personnel *(E,L,T,V,F,SW,WUI,MM)*				
Annual Paramedic Training *(E,L,T,V,D,F,SW,WUI,MM)*		X		
Required ICS Training *(E,L,T,V,D,F,SW,WUI,MM)*		X		
ICS-300 and ICS-400 *(E,L,T,V,D,F,SW,WUI,MM)*		X		
HazMat Training *(E,L,T,V,D,F,SW,WUI,MM)*		X		
Technical Rescue Team Training *(E,L,T,V,F,SW,MM)*		X		
Structural Collapse Training *(E,L,T,V,F,SW,MM)*		X		
Continuation and Increase of CERT Program *(E,L,T,V,F,SW,MM)*		X		
Tacoma Police Firing Range *(E,L,F,SW,WUI)*		X		
Microwave Link to Tacoma Public Utilities *(E,L,T,V,F,SW,WUI,MM)*		X		
Build Four Sector Sub-Station *(E,L,T,V,F,SW,WUI,MM)*		X		
Additional Parking Required at New Police Station *(E,L,T,V,F,SW,WUI,MM)*		X		
Mobile CoMMand Unit for Police Department *(E,L,T,V,F,SW,WUI,MM)*		X		
Purchase Zurmo Air Shelter *(E,L,T,V,F,SW,WUI,MM)*		X		
Evacuation Plans for Citizens *(E,L,T,V,F,SW,WUI,MM)*		X		
Threat Level Response Operational Plans *(E,L,T,V,F,SW,WUI,MM)*		X		
South Puget Sound Regional Law Enforcement Mobilization Plan *(E,L,T,V,F,SW,WUI,MM)*		X		

Full Scale Exercise in 2008, "Sound Shake 2008"			X	
Table Top Exercise with School Districts *(E,V,F,SW,MM)*		X		
Continue Specific Training in the Community *(E,L,T,V,F,SW,WUI,MM)*		X		
Continue Training Programs with Schools *(E,L,T,V,F,SW,WUI,MM)*		X		
Continue Required Patrol Officer Training *(E,L,T,V,F,SW,WUI,MM)*		X		
WEB EOC Training and Support *(E,L,T,V,F,SW,WUI,MM)*		X		
Special Training as Required *(E,L,T,V,D,F,SW,WUI,MM)*		X		
IMT, Type III Training *(E,L,T,V,F,SW,WUI,MM)*		X		
Alternate Potable Water Supply System *(E,L,V,F,SW,MM)*		X		
Trailer Mounted 350 KW Standby Generator *(E,V,F,SW,MM)*		X		
Seismic Retrofit of Hood Street Water Treatment Plant *(E,SW,MM)*		X		
Tacoma Water Pipeline 1 Replacement, Orting Valley *(E,V,F,MM)*		X		
Seismic Retrofit of Tacoma Water Transmission Pipelines *(E,SW,MM)*		X		
Tacoma Water EOC Upgrade *(E,L,T,V,F,SW,WUI,MM)*		X		
Tacoma Water North Fork Wellfield Backup Power *(E,L,V,F,SW,MM)*		X		
Institute CoMMercial Occupancy Resumption Program *(E,L,V,SW,MM)*		X		
Develop Backup Server		X		

(E,L,T,V,F,WUI,SW,MM)				
Update City Flood Plain Regulations *(L,F,SW)*		X		
Provide Infrastructure Inspection Kits for Construction Division Staff *(E,L,V,F,SW,MM)*		X		
Court 'E' Wall Repair at South 13th Street *(E,L,F,SW)*		X		
Eells Street Bridge Rehabilitation *(E,L,V,F,SW)*		X		
East 11th Street Bridge (Murray Morgan) Rehabilitation *(E,L,V,F,SW)*		X		
Create and Implement Standard for Ice and Snow Removal and Document Program *(E,L,V,F,SW,MM)*		X		
Pre-Positioning of Sand Bags *(F,SW)*		X		
Environmental Services Emergency Operations Center *(E,L,V,F,SW,MM)*		X		
Central Treatment Plant Wet Weather Upgrade *(F,SW,MM)*		X		
Sewage Pump Station Backup Generators *(E,L,V,F,SW,MM)*		X		
Emergency Power Generator for Urban Waters Emergency Operations *(E,L,V,F,WUI,SW,MM)*		X		
Community Based Household Hazardous Waste Collection and Disposal *(E,L,V,F,WUI,SW,MM)*		X		
Regional Debris Management Plan *(E,L,V,F,WUI,SW,MM)*		X		
Fleet Services Emergency Call-In Plan		X		

(E,L,V,F,WUI,SW,MM)				
Seismic Analysis of City of Tacoma Fire Stations *(E,SW,MM)*		X		
Auxiliary Generator Maintenance and Load Bank Tests *(E,L,V,F,WUI,SW,MM)*		X		
Tacoma Municipal Building Roof and Envelope Evaluation *(E,V,F,SW,MM)*		X		
Maintain Facilities Management Phone Tree *(E,L,V,F,WUI,SW,MM)*		X		
Continue CERT Training *(E,V,F,SW,MM)*		X		
Public Service Announcements on Lateral Building Strengthening *(E,L,SW,MM)*		X		
ATC-20 Training of Public Works Staff *(E,L,SW,MM)*		X		
FEMA ICS-100 Training for All Employees *(E,L,T,V,F,WUI,SW,MM)*		X		
Back Up Energy Control Center *(E,T,V,SW)*		X		
Generator for Administration Building South *(E,SW)*		X		
Distribution System Feeder Relay Replacement *(E,F,SW)*		X		
Feeder Sectionalizing *(E,V,SW)*		X		
LaGrande #1 and #2 100 kV Line Sectionalizing Switches *(E,SW)*		X		
LaGrande Powerhouse Seismic Retrofit *(E,F,SW)*		X		
Seismic Upgrade of Mayfield Transformers *(E,F,SW)*		X		
Microwave Link to Tacoma Police/Fire *(E,L,T,V,F,SW,WUI,MM)*		X		

Mobile Radio Improvements *(E,L,T,V,F,SW,MM)*		X		
North and Henderson Bay Tower Replacement *(E,T,SW)*		X		
Overhead to Underground System Conversion *(E,V,SW)*		X		
SONET Upgrade *(E,L,T,V,F,SW,MM)*		X		
CoMMon Verbal Field and Dispatch with Tacoma Police and Fire *(E,L,T,V,F,SW,MM)*		X		
Transmission Tower Seismic Retrofit *(E,SW)*		X		
Transmission Switch Replacement *(E,F,SW)*		X		
Tree TriMMing Program *(E,SW)*		X		
Vault Improvements *(E,T,F,SW)*		X		
WECC Compliance Study for Cyber Security *(MM)*		X		

Endnotes

[1] Hazard Codes:

Where necessary, the specific hazards addressed are noted as follows:

A:	Avalanche
E:	Earthquake
F:	Flood
D:	Drought
T:	Tsunami
V(L OR T):	Volcanic (lahar or tephra-specific)
SW:	Severe Storm (wind-specific)
L:	Landslide
WUI:	Wildland/Urban Interface Fire
MM:	Manmade to include terrorism
ALL:	All hazards, including some man made. Where only natural hazards are addressed, it is noted.

Section 6

Infrastructure Requirements

Assessing Vulnerability: Identifying Structures---Requirement §201.6(c)(2) (ii)(A):

The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

- Does the new or updated plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?
- Does the new or updated plan describe vulnerability in terms of the **types and numbers** of **future** buildings, infrastructure, and critical facilities located in the identified hazard areas?

Assessing Vulnerability: Estimating Potential Losses---Requirement §201.6(c)(2) (ii)(B):

The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

- Does the new or updated plan estimate **potential dollar losses** to vulnerable structures?
- Does the new or updated plan describe the **methodology** used to prepare the estimate?

SECTION 6
REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
CITY OF TACOMA
INFRASTRUCTURE SECTION

Table of Contents

The **Infrastructure** for the **City of Tacoma** is displayed in following tables and graphics:

- **Table 6-1 Infrastructure Summary**
- **Table 6-2 Infrastructure Category Summary**
- **Table 6-3 Infrastructure Vulnerability – Dependency Summary**
- **Table 6-4 Infrastructure Vulnerability – Hazard Summary**
- **Table 6-5 Infrastructure Dependency Matrix**
- **Table 6-6 Infrastructure Table**

The tables and graphics show the overview of infrastructure owned by the City of Tacoma. The infrastructure is categorized according to the infrastructure sectors as designated by the Department of Homeland Security. These tables are intended as a summary only. For further details on Department of Homeland Security infrastructure sectors, please see the Process Section 1.

Table 6-1 Infrastructure Summary

INFRASTRUCTURE SUMMARY[1]	
TOTAL INFRASTRUCTURE (#)	366
TOTAL VALUE ($)	$704,693,330

Table 6-2 Infrastructure Category Summary

INFRASTRUCTURE CATEGORY SUMMARY[2]	
EMERGENCY SERVICES	32
TELECOMMUNICATIONS	11
TRANSPORTATION	51
WATER	170
ENERGY	78
GOVERNMENT	24
COMMERCIAL	0

Table 6-3 Infrastructure Vulnerability – Dependency Summary

DEPENDENCE	# DEPENDENT ON SERVICE	%
RELIANCE ON EMERGENCY SERVICES	25 of 366	6.8%
RELIANCE ON POWER	70 of 366	19%
RELIANCE ON SEWER	132 of 366	36%
RELIANCE ON TELECOMMUNICATION	117 of 366	31.9%
RELIANCE ON TRANSPORTATION	359 of 366	98%
RELIANCE ON WATER	147 of 366	40%

Table 6-4 Infrastructure Vulnerability – Hazard Summary

HAZARD	# IN HAZARD ZONE	%
DROUGHT	52 of 366	14.2%
EARTHQUAKE	366 of 366	100%
FLOOD	56 of 366	15.3%
LANDSLIDE	32 of 366	8.7%
TSUNAMI	84 of 366	22.9%
VOLCANIC	366 of 366	100%
WEATHER	366 of 366	100%
WILDLAND/URBAN FIRE	12 of 366	3.2%

Table 6-5 Infrastructure Dependency Matrix

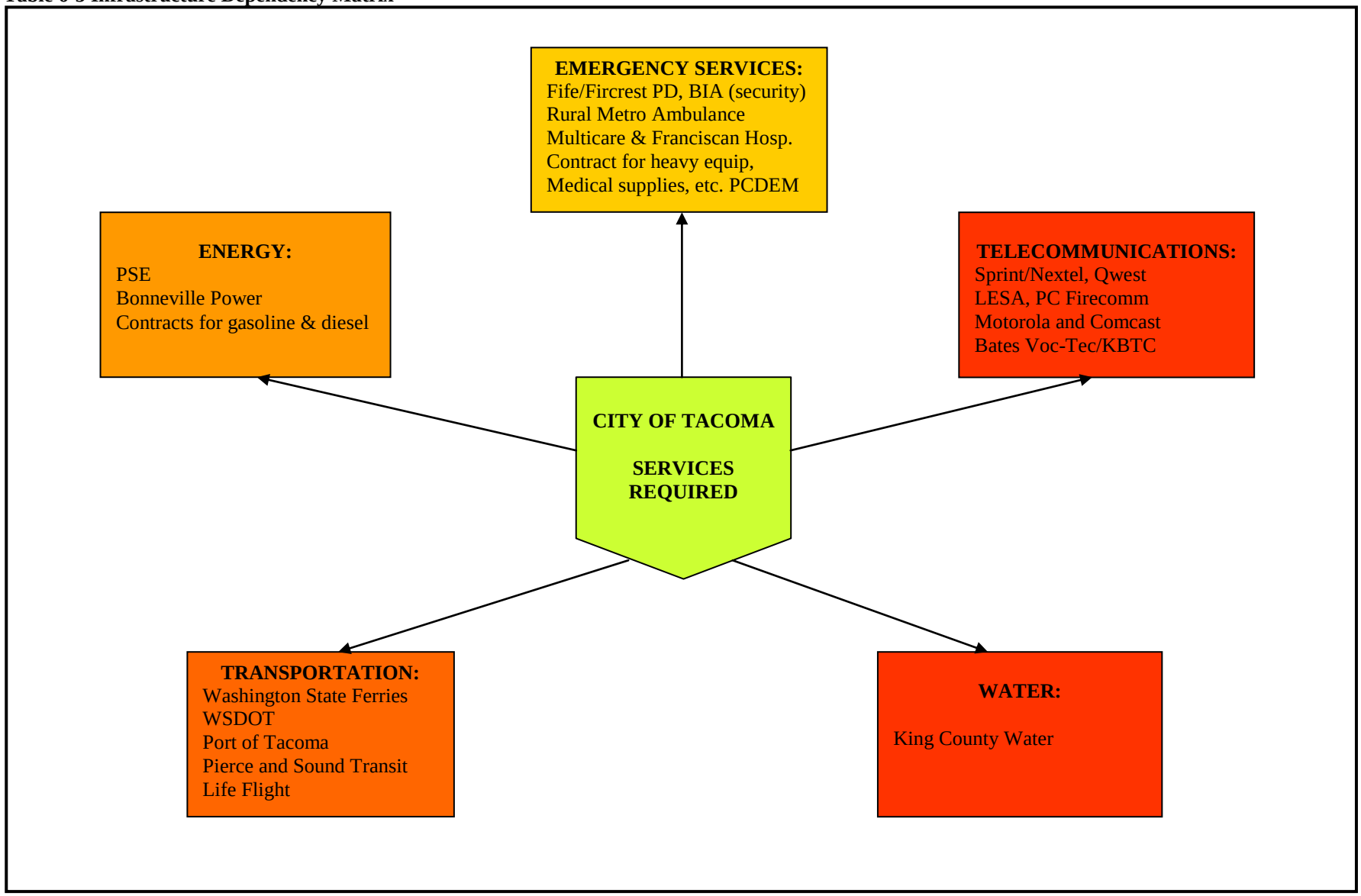


Table 6-6a Infrastructure Table – Tacoma Power

INFRASTRUCTURE[3]	BUILT[4]	FLOORS	UPGRADES[5]	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Tacoma Power Administration Complex (C,AP,8)	1954	5	various	$17,684,075	700 Both	0	0	2	0	0	0	0	1	1	0	0	1	1	2	1
Power Warehouse (C,AP,8)	1954	1	various	$4,078,968		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
GIS/Meter Reading (C,AP,8)	1954	1	various	$859,157		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Old Power Shops Building (C,AP,8)	1954	1	various	$596,749		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
New Power Shops Building (C,AP,8)	2005	1	NO	$7,740,000		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Fleet Office (C,AP,8)	1954	1	various	$268,486		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Other Shops - Fleet Building (C,AP,8)	1954	1	various	$263,895		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Fleet Garage/Parking (C,AP,8)	1954	3	various	$2,356,940		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Energy Control Center (C,AP,8)	1982	2		$2,602,375		0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Alexander Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Atlas Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Boise Cascade Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Brookdale Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Bridgeport Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Brown's Point Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Cedar Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Clement Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Clover Park Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Colling Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Cowlitz Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Crandall Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Crescent Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Croft Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Cushman Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Custer Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1

INFRASTRUCTURE[3]	BUILT[4]	FLOORS	UPGRADES[5]	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Defiance Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
East F Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Elk Plain Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Farwest Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Fife Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Flett Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Fort Lewis Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Central Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Fort Lewis South Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Frederickson Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Gove Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Graham Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Hawthorne Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Highland Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Hilltop Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Huson Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Hylebos Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Lacamas Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Lidford Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Lincoln Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Madigan Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
McChord Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
McNeil Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Menlo Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Nisqually Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
NE Substation (C,8)		NA	NA			0	0	1	0	0	0	2	2	2	0	0	1	1	2	1
Pioneer Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Ohop Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Old Town (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Olympic Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Orchard Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Pearl Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Pennwalt Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Plaza Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Polk Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	2	0	0	1	1	2	1
Portland Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Roosevelt Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Salishan Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Simpson Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Southwest Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Stadium Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Sunset Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Tideflats Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Union Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
University Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Wapato Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	1	0	0	1	1	2	1
Westgate Substation (C,8)		NA	NA			0	0	1	0	0	0	0	1	2	0	0	1	1	2	1
Transmission and Distribution Lines (C,8)	Various	NA	Yes, various			0	0	1	0	0	0	0	1	2	0	0	1	1	2	1
South Service Center (C,8)		1	Yes, various	$420,000	15	0	0	1	1	0	0	0	1	1	0	0	1	1	2	1

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Nisqually Hydroelectric Project (includes Alder & Lagrande Dams & Generators (C,8)	1945	NA	Yes, various	$24,400,000	15	0	1	1	1	1	1	0	1	2	0	0	1	1	2	1
Steam Station (5)		NA			8-Jun	0	0	2	0	1	0	2	2	1	0	0	1	1	2	1
Tacoma Rail (C,8)		1	Yes, various	$3,878,938		0	0	1	0	0	0	2	2	1	0	0	1	1	2	1
Click! Network Administration 795 miles fiber-optic (C,8)	1998	1	Yes, various	$376,502	100	0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network Headend (C,8)	2000	1		$345,556		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network Admin. SW Annex 2 (C,8)	1996	1		$79,591		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network Admin SW Annex 4 (C,8)	1999	1		$156,060		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network Converter Control (C,8)	1998	1		?		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network NW Hub (C,8)	1997	1		$481,349		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network NE Hub (C,8)	1998	1		$354,605		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network SE Hub (C,8)	1998	1		$354,605		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network SW Hub (C,8)	1998	1		$354,605		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network DTS (C,8)	1997	1		$406,388		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1
Click! Network DTN (C,8)	1997	1		$384,486		0	0	1	0	0	0	0	1	1	0	1	1	1	2	1

Table 6-6b – Infrastructure Table – Tacoma Water

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Water Distribution Bldg & Water Control (C,AP,17)	1930	1	1990's seismic upgrades	$5,300,000	20--1	0	0	1	0	0	0	0	1	1	0	0	2	0	2	1
Water Transmission Mains (C,17)	1912 to 2005	N/A	ongoing		N/A	0	0	1	0	0	0	0	2	1	0	0	0	0	2	0
Water Distribution Mains under 24" dia. 1200 miles (C,17)	1900 to 2006	N/A	ongoing		N/A	0	0	1	0	0	0	0	2	1	0	0	0	0	2	0
8 Water Treatment Facilities (C,AP,17)	1930 to 2000	1	seismic upgrade late 1990		0	0	0	1	0	0	0	0	1	1	0	0	0	0	2	0
Potable Water Well 1-B (C,17)	1995	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	1	1	0	2	0	0	1	0
Potable Water Well 2-B (C,17)	1948	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	1	1	0	2	0	0	1	0
Potable Water Well 3-A (C,17)	1930	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	1	1	0	2	0	0	1	0
Potable Water Well 4-A (C,17)	1930	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	1	1	0	2	0	0	1	0
Potable Water Well 5-A (C,17)	1930	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	1	0	2	0	0	1	0
Potable Water Well 6-B (C,17)	2001	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0
Potable Water Well 7-B (C,17)	1988	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	1	0	2	0	0	1	0
Potable Water Well 8-B (C,17)	1990	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well 9-A (C,17)	1948	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0
Potable Water Well 10-C (C,17)	1990	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	
Potable Water Well 11-A (C,17)	1948	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0
Potable Water Well 12-A (C,17)	1960	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well 13-A (C,17)	1990	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well GPL #1 (C,17)	1965	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well GPL #2 (C,17)	1965	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well Tideflats (C,17)	1928	0	ongoing	$1,000,000	0	0	1	1	0	1	0	2	2	0	0	2	0	0	1	0
Potable Water Well UP-1 (C,17)	1988	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well UP-2 (C,17)	1967	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well PA-1 (C,17)	1988	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well SE-2 (C,17)	1947	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Portable Water Well SE-6 (C,17)	1966	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Potable Water Well SE-8 (C,17)	1970	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well SE-11 (C,17)	1985	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Well SE-11A (C,17)	1993	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0
Potable Water Wells North Fork 1-6 (C,17)	1977	0	ongoing		0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0
Potable Water Well North Fork 7 (C,17)	1995	0	ongoing		0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0
Prairie Ridge Springs - Tacoma Water (C,17)	1968	0	ongoing	$1,000,000	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0
Water Pump Station Alaska Street (17)		0	ongoing	$45,000,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Water Pump Station Alder Lane (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
Cumberland Pump Station (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	2	0	0	2	0
Frederickson Pump Station – Tacoma (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
Highland Pump Station – Tacoma (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	2	0	0	2	0
Hood St Pump Station – Tacoma (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	2	0	0	2	0
Indian Hill Pump Station – Tacoma (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Marine View Drive Pump Station (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	1	0	2	2	0	0	1	0	0	2	0
McMillin Pump Station #1-Tac (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
McMillin Pump Station #2-Tac (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
McMillin Spill Pump-Tacoma (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
McMurray Pump Station-Tacoma (17)		0	Out of Service	See Total	0															
Mildred Street Pump Station-Tacoma (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
North End Pump Station (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
Palmer Pump Station – Tacoma (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
Prairie Ridge Pump Station – Tacoma (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
South Tacoma Pump Station (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	2	0	0	2	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Westgate Pump Station (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
128th & Canyon Pump Station (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	2	0	0	2	0
128th & 62nd Pump Station (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
214th Avenue East Pump Station (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
83rd & Cirque Pump Station (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
356th St. Pump Station (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
Fennel Creek Pump Station-Tacoma (17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
198th Street Pump Station-Tacoma (C,AP,17)		0	ongoing	See Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
Headworks Control Station-Tacoma (C,AP,17)		0	ongoing		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Water Control Station (C,AP,17)		0	ongoing		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Alaska Street Reservoir (C,17)	1988	N/A	ongoing	$1,300,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Hood Street Reservoir (C,17)	1987	N/A	ongoing	$3,200,000	0	0	0	1	0	0	0	0	2	0	0	0	0	0	2	0
Four Indian Hill Reservoirs-Tacoma (C,17)	1950-1981	N/A	ongoing	$2,600,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Three McMillin Reservoirs-Tacoma (C,17)	1913-1956	N/A	ongoing	$45,000,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
North End Reservoir (C,17)	1990	N/A	ongoing	$3,200,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Headworks Reservoir-Tacoma (C,17)	1976	N/A	ongoing		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Portland Avenue Reservoir (C,17)	2003	N/A	ongoing	$5,300,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Two Prairie Ridge Springs Reservoirs (C,17)	1968	N/A	ongoing		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Prairie Ridge Reservoir – Tacoma (C,17)	1986	N/A	ongoing	$900,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Sunrise Terrace Reservoir – Tacoma (17)		N/A	Out of Service		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
South Tacoma Reservoir (C,17)	1937	N/A	ongoing	$800,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
University Place Tank No.6 (C,17)	1968	N/A	ongoing	$900,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Cumberland Reservoir – Tacoma (C,17)	1986	N/A	ongoing		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Bismark Standpipe – Tacoma (C,17)	1910	N/A	ongoing	$500,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Fletcher Heights Standpipe – Tacoma (C,17)	1908	N/A	ongoing	$700,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
J Street Standpipe – Tacoma (17)	1891	N/A	Out of Service		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
McMillin Standpipe – Tacoma (17)	1984	N/A	Out of Service		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
North End Standpipe – Tacoma (C,17)	1927	N/A	ongoing	$1,100,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Sunrise Standpipe – Tacoma (C,17)	1998	N/A	ongoing	$1,100,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
University Place Tank No. 5 – Tacoma (C,17)	1959	N/A	ongoing	$700,000	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0

Table 6-6c – Infrastructure Table – Solid Waste

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Solid Waste Transfer-Yard Waste Receiving (C,17)	1988	1	None	$7,000,000	2--0															
Solid Waste Transfer-Yard Waste Receiving (C,17)	1988	1	None	$7,000,000	2--0	0	0	2	0	0	0	0	2	1	0	0	0	0	2	0
Solid Waste-Main Receiving Bldg. (C,17)	1988	1	None	$7,000,000	3--0	0	0	2	0	0	0	0	2	1	0	3	0	0	2	0
Solid Waste-Office (C,17)	1988	1	None	$7,000,000	120--0	0	0	1	0	0	0	0	2	1	0	2	2	2	1	1
Solid Waste-Public Receiving Bldg. (C,17)	1988	1	None	$7,000,000	2--0	0	0	2	0	0	0	0	2	1	0	0	0	0	2	0
Solid Waste-Recycle Center (C,17)	1993	1	None	$7,000,000	6--0	0	0	1	0	0	0	0	2	1	0	0	0	0	1	0
Solid Waste-Truck Wash (C,17)	2006	1	None	$7,000,000	1--0	0	0	1	0	0	0	0	2	1	0	2	2	0	0	2
Solid Waste-Waste Processing (C,17)	1977	1	1988 addition	$7,000,000	8--0	0	0	1	0	0	0	0	2	1	0	3	0	0	2	0

Table 6-6d – Infrastructure Table – Street Maintenance

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Asphalt Plant Storage Yard (C,9)	1930	1	None	$29,000	12 - 0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
St. Maint. - Upper Lot (C,9)	na	1	None		18 - 0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
St. Maint - Gounds Section (Upper Shops) (C,9)	1906	2	None	$1,102,000	82 - 0	0	1	1	0	0	0	0	2	1	0	1	1	1	0	1
St. Maint. - Admin. (Barn) (C,9)	1887	2	None	$1,578,000	82 - 0	0	1	1	0	0	0	0	2	1	0	1	1	1	0	1
St. Maint. – Greenhouse (C,9)	Unk.	1	None	$363,000	8 - 0	0	1	1	0	0	0	0	2	1	0	1	1	1	0	1
Sign Shop (Cavanaugh's Warehouse) (C,9)	1928	1	None	$1,114,000	8 - 0	0	1	1	1	1	0	0	2	1	0	1	1	1	0	1
Traffic Signal Shop (C,9)	1911	1	None	$245,000	8 - 0	0	1	1	0	0	0	0	2	1	0	1	1	1	0	1
City Right of Ways (C,9)	1884	NA	Constant			0	0	1	0	0	1	1	1	2	0	0	0	0	0	0

Table 6-6e – Infrastructure Table – Tacoma Police

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Police Sector 3 Substation (C,AP,9)	2006	1	None	$2,000,000	20 and 5	0	0	1	0	0	0	0	1	1	0	2	2	0	2	2
Police Sector 2 Substation (C,AP,9)	2006	1	None	$2,000,000	20 and 5	0	0	1	0	0	0	0	1	1	0	2	2	0	2	2
Police Sector 1 Substation (C,AP,9)	2006	1	None	$2,000,000	20 and 5	0	0	1	0	0	0	0	1	1	0	2	2	0	2	2
Police Headquarters (C,AP,9)	2006	3	None	$35,000,000	400 and 5	0	0	1	0	0	0	0	1	1	0	2	2	0	2	2
Police Sector 4 Substation (C,AP,9)	1985	1	Remodel 2000	$2,000,000	20 and 5	0	0	1	0	0	0	0	1	1	0	2	2	0	2	2
Police Northeast Substation (C,AP,9)	2006	1	None	$2,000,000	20 and 5	0	0	1	0	0	0	0	1	1	0	2	2	0	2	2
Police Warehouse and Fleet (shared bldg) (C,AP,9)	1992	2	Remodel 2004	$12,000,000	50 and 20	0	0	1	0	0	0	0	1	1	0	2	2	0	2	2
Police Harrison Range (C,AP,9)	1953	1	Remodel 2000	$225,000	35 and 35	0	0	1	0	0	2	1	2	1	0	2	2	0	2	2

Table 6-6f – Infrastructure Table – Tacoma Fire

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Tacoma Fire Station 1 (C,7)	1968	4	None	$2,607,000	26--6	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 2 (C,7)	1893	2	1935	$1,416,000	5--5	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 3 (C,7)	1980	1	1980	$491,000	4--4	0	0	1	1	0	0	0	1	1	0	0	0	0	2	0
Tacoma Fire Station 4 (C,7)	1935	2	None	$605,000	5--5	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 5 (7)	1981	1	None	$516,000	5--0	0	0	1	0	1	1	2	2	1	0	0	0	0	1	0
Tacoma Fire Station 6 (C,7)	1964	1	None	$735,000	3--3	0	0	1	0	1	1	2	2	1	0	0	0	0	2	0
Tacoma Fire Station 7 (C,7)	1959	1	None	$360,000	3--3	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 8 (C,AP,7)	2003	2	None	$1,282,000	9--8	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 9 (C,7)	1965	2	None	$880,000	8--8	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 10 (C,7)	1928	2	None	$299,000	4--4	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 11 (C,7)	1909	3	None	$480,000	5--5	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 12 PCFD #10 (C,AP,7)		2	Yes, various	$1,727,000	9--9	0	0	1	0	1	0	2	2	1	0	0	0	0	2	0
Tacoma Fire Station 12(Old) (7)		1	None	0	0	0	0	1	0	1	1	2	2	1	0	0	0	0	1	0
Tacoma Fire Station 13 (C,7)	1911	3	None	$1,140,000	3--3	0	0	2	0	0	0	2	1	1	0	0	0	0	1	0
Tacoma Fire Station 14 (C,7)	1928	2	None	$591,000	3--3	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 15 (C,7)	1928	1	None	$570,000	3--3	0	0	1	0	1	1	0	2	1	0	0	0	0	1	0
Tacoma Fire Station 16 (C,AP,7)	1999	1	None	$1,118,000	5--5	0	0	2	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 17 Town of Fircrest (C,7)		2	None	NA	3--3	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Station 18 PW Enviro Staff (C,7)	1929	1	None	$255,000	0	0	0	1	0	1	1	2	2	1	0	0	0	0	1	0
Fire Communications (C,AP,7)	1929/1952	2	EOC 1999, elec. 2003	$1,660,000	5--3	0		1	0	0	0	0	1	1	0	0	0	0	1	0
Tacoma Fire Garage (C,7)	1982	2	None	$567,000	7--0	0		1	0	0	0	0	1	1	0	0	0	0	1	0
Fire Electrical Maintenance (AP,7)	1919	2	None	$825,000	4--0	0		1	0	0	0	0	1	1	0	0	0	0	1	0
Fire Training Center (AP,7)	1998	1	None	$1,460,000	9--0	0		1	0	1	0	2	2	1	0	0	0	0	1	0
Fire Prevention (7)	1955	1	1999	$1,050,000	12--0	0		1	0	0	0	0	1	1	0	0	0	0	1	0

Table 6-6g – Infrastructure Table – Waste Water Treatment Plant

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Central WWTP Aerobic digesters (12) (C,17)	1984 & 1988	0	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Anaerobic digesters (5) (C,17)	1952 & 1988	0	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Environmental Services (C,17)	1982	1	1988 remodel	See Total	2	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Digester Control Bldg (C,17)	1988	1	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Science & Engineering Bldg (C,17)	1952	2	1976 remodel	See Total	26	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Facilities Service (17)	1984	1	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Final Settling Tanks (6) (C,17)	1988	0	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Garden Center (17)	1982	1	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Gas Utilization Bldg. (17)	1990	1	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Grit Settling Tanks (4) (C,17)	1982	0	2006 upgrade	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Lab Annex (C,17)	1988	1	None	See Total	4	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Maintenance Bldg (C,17)	1982	1	2006 upgrade	See Total	44	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Old Digester Bldg (C,17)	1952	1	1980, 84, 88	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Operations Bldg (C,17)	1952	3	1982 remodel	$73,091,600	43--2	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Oxygen Production Bldg (C,17)	1988	1	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Oxygenation Tanks (16) (C,17)	1988	0	None	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Secondary Treatment Ops Ctr (C,17)	1988	3	None	See Total	4	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Sewer Transmission Maint. (C,17)	1991	2	2006 remodel	See Total	46	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Sludge Processing Bldg. (C,17)	1988	3	2005 remodel	See Total	3--2	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Source Control Bldg. (C,17)	1991	1	None	See Total	15	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Tagro Office (C,17)	2003	1	None	See Total	2	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
WWTP Tagro Storage Lagoons (2) (C,17)	1988	0	1993 canopy	See Total	0	0	0	1	0	1	0	1	2	1	0	3	0	0	0	0
North WWTP Admin. Office (C,17)	1969	1	None	$14,968,400	4	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
North WWTP Biofilter Solids Bldg (C,17)	1997	1	None	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
North WWTP Biofilter Tank (C,17)	1969	0	1997 converted	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
North WWTP Chemical Feed Bldg (C,17)	1969	1	None	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
North WWTP Chlorine Contact Tank (C,17)	1969	0	None	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
North WWTP Influent Pump Station (C,17)	1969	1	1997 remodel	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
North WWTP Grit Settling Tanks (3) (C,17)	1969	0	1997 additions	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
North WWTP Solids Holding Tank (C,17)	1969	0	1997 converted	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
North WWTP Water Storage Tank (C,17)	1969	0	None	See Total	0	0	0	1	0	0	0	2	2	1	0	3	0	0	3	1
AN1201 Pump Station (C,17)	1960	0	Being replaced	$3,200,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1202 Pump Station (C,17)	1978	0	None	$750,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1203 Pump Station (C,17)	1989	0	None	$750,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1204 Pump Station (C,17)	1983	0	None	$750,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1205 Pump Station (C,17)	1980	0	None	$1,000,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1301 Pump Station (C,17)	1981	0	None	$650,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1302 Pump Station (C,17)	1980	0	None	$750,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1303 Pump Station (C,17)	1986	0	None	$125,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN1304 Pump Station (C,17)	1990	0	None	$2,500,000	0	0	0	3	0	0	3	2	1	2	0	3	0	0	0	0
AN1305 Pump Station (C,17)	1990	0	None	$1,000,000	0	0	0	1	0	0	1	0	1	1	0	3	0	0	0	0
AN2101 Pump Station (C,AP,17)	1947	1 + 3 below	1988, 2004, 2006	$7,000,000	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
AN2102 Pump Station (C,17)	1972	0	None	$1,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN2103 Pump Station (C,17)	1961	0	None	$1,000,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN2104 Pump Station (C,17)	1972	0	None	$2,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN2105 Pump Station (C,AP,17)	1962	0	2004 new	$3,000,000	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
AN2106 Pump Station (C,17)	1963	0	None	$1,000,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN2107 Pump Station (C,17)	1980	0	None	$750,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN2108 Pump Station (C,17)	1990	0	None	1,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN2109 Pump Station (C,17)	1991	0	None	250,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
AN2110 Pump Station (C,17)	1991	0	None	$250,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN2111 Pump Station (C,AP,17)	1991	0	2006 new control	$3,500,000	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
AN2113 Pump Station (C,AP,17)	2001	0	None	$2,000,000	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
AN2201 Pump Station (C,AP,17)	1962	0	1985 generator	$4,500,000	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0
AN2202 Pump Station (C,AP,17)	1989	0	2005 updates	$6,500,000	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
AN2203 Pump Station (C,AP,17)	1989	0	2006 generator	$750,000	0	0	0	1	0	0	0	2	1	1	0	0	0	0	0	0
AN2204 Pump Station (C,AP,17)	1989	0	None	$8,500,000	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
AN3101 Pump Station (C,AP,17)	1978	1 + 2 below	2005 upgrades	$7,000,000	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0
AN3102 Pump Station (C,17)	1960	0	None	$1,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN3103 Pump Station (C,17)	1959	0	None	$1,500,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN3104 Pump Station (C,17)	1975	1 + 3 below	2006-2007 replace	$1,500,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN3105 Pump Station (C,AP,17)	1994	0	None	$1,750,000	0	0	0	1	0	1	0	1	2	1	0	0	0	0	0	0
AN4101 Pump Station (C,AP,17)	2001	0	None	$6,500,000	0	0	0	1	0	0	0	1	2	1	0	0	0	0	0	0
AN4102 Pump Station (C,AP,17)	1972	0	2007 replacement	$6,500,000	0	0	0	1	0	0	0	1	2	1	0	0	0	0	0	0
AN4103 Pump Station (C,17)	1972	0	2007 replacement	$6,000,000	0	0	0	1	0	0	0	2	2	1	0	3	0	0	0	0
AN4104 Pump Station (C,17)	1972	0	2003 upgrades	$2,000,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN4105 Pump Station (C,17)	1972	0	None	$1,500,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN4106 Pump Station (C,17)	1973	0	2002 upgrades	$4,500,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN4107 Pump Station (C,17)	1973	0	1998 upgrades	$2,300,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN4108 Pump Station (C,17)	1973	0	None	$2,500,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN4109 Pump Station (C,17)	1974	0	None	$1,750,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0
AN4110 Pump Station (C,17)	1974	0	None	$3,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN4111 Pump Station (C,AP,17)	1977	0	None	$3,000,000	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
AN4113 Pump Station (C,17)	1981	0	None	$2,000,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN4114 Pump Station (C,17)	1989	0	None	$2,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AN4116 Pump Station (C,17)	1977	0	None	$1,500,000	0	0	0	1	0	0	0	1	2	1	0	3	0	0	0	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
AB8201 Pump Station (C,17)	1979	0	None	$6,000,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AB8202 Pump Station (C,17)	1991	0	None	$8,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
AB8203 Pump Station (C,17)	1991	0	None	$2,500,000	0	0	0	1	0	0	0	0	1	1	0	3	0	0	0	0
AB8301 Pump Station (C,AP,17)	1988	1	None	$7,000,000	0	0	0	1	0	1	0	1	2	1	0	0	0	0	0	0
Stormwater Catch Basins-18,296 total (17)	Various	0	various		0	0	0	2	0	1	3	2	2	1	0	0	0	0	0	0
Stormwater Manholes - 9,925 total (17)	Various	0	various		0	0	0	2	0	1	3	2	2	1	0	0	0	0	0	0
Stormwater Sewer Pipe - 10,915 segments or 442 miles (17)	Various	0	various		0	0	0	2	0	1	3	2	2	1	0	0	0	0	0	0
Wastewater Manholes - 14,667 total (17)	Various	0	various		0	0	0	2	0	1	3	2	2	1	0	0	0	0	0	0
Wastewater Sewer Pipe - 18,502 segments or 680 miles (17)	Various	0	various		0	0	0	2	0	1	3	2	2	1	0	0	0	0	0	0

Table 6-6h – Infrastructure Table – Public Assembly Facilities

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Cheney Stadium (C,9)		NA	Unknown	$3,993,000	Varies	0	1	2	1	0	0	0	2	1	2	2	2	1	2	1
Tacoma Dome (C,9)		NA	Unknown	$55,997,000	Varies	0	1	1	1	0	0	0	2	1	2	2	2	1	2	1
Pantages Theater / Jones Bldg (C,9)		NA	Unknown	$12,460,000	Varies	0	1	2	1	0	0	0	2	1	2	2	2	1	2	1
Rialto Theater (C,9)		NA	Unknown	$2,947,000	Varies	0	1	1	1	0	0	0	2	1	2	2	2	1	2	1
Theater on the Square (C,9)		NA	Unknown	$8,431,000	Varies	0	1	1	1	0	0	0	2	1	2	2	2	1	2	1
Tacoma Bicentennial Pavilion (C,9)		NA	Unknown	$8,774,000	Varies	0	1	1	1	0	0	0	2	1	2	2	2	1	2	1
Greater Tacoma Convention Center (C,9)		NA	Unknown	$48,447,000	Varies	0	1	1	1	0	0	0	2	1	2	2	2	1	2	1

Table 6-6i – Infrastructure Table – Tacoma Bridges

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
PUYALLUP AVE. (9)	1910	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
E. 34th STREET PAC-A (9)	1937	NA	NA	TBD	NA	0	0	1	0	0	1	0	1	1	0	0	0	0	3	0
E. 34th STREET B-D (9)	1937	NA	NA	TBD	NA	0	0	1	0	0	1	0	1	1	0	0	0	0	3	0
E. 26th STREET (9)	1931	NA	NA	TBD	NA	0	0	2	0	0	0	1	1	1	0	0	0	0	3	0
E. 43rd STREET (9)	1981	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
E. 'L' STREET (9)	2006	NA	NA	TBD	NA	0	0	1	0	0	0	1	1	1	0	0	0	0	3	0
E. 23rd STREET (9)	1983	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
E. 15th & DOCK STREET (9)	1986	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
LINCOLN AVE. (C,9)	1929	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
PUYALLUP RIVER F16 (C,9)	1925	NA	NA	TBD	NA	0	0	2	0	1	0	1	1	1	0	0	0	0	3	0
RIVER STREET VIADUCT (9)	1973	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
RIVER STREET VIADUCT EXT. (9)	1973	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
HYLBOS CREEK E&W ROAD (C,9)	1994	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
S. 4th DOCK SREET (9)	1987	NA	NA	TBD	NA	0	0	1	0	1	1	1	1	1	0	0	0	0	3	0
N. 21st STREET (9)	1910	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
N. PROCTOR (9)	1927	NA	NA	TBD	NA	0	0	2	0	0	1	0	1	1	0	0	0	0	3	0
TAC SPUR STA WAY RAMP (C,9)	1974	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
SCHUSTER PKWY-RUSTON WAY (BAYSIDE) (9)	1974	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
S. YAKIMA AVE. (9)	1961	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
S. 'M' STREET (9)	1960	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
TACOMA AVE. S. (9)	1930	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
UNION AVE. VIADUCT (9)	1971	NA	NA	TBD	NA	0	0	2	0	0	0	0	1	1	0	0	0	0	3	0
S. 48th STREET (9)	1970	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
S. WILKESON STREET PED. (9)	1970	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
SKYLINE PED. (9)	1986	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
N. 23rd STREET PED. (9)	1910	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
Hylebos Bascule Bridge (9)	1939	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	1	0	0	3	0
11th St. Viaduct (9)	1930	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0
East 32nd Street (9)	2005	NA	NA	TBD	NA	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0
Chihuly Bridge of Glass (9)	2002	NA	NA	TBD	NA	0	0	1	0	1	0	1	1	1	0	0	0	0	3	0

Table 6-6j – Infrastructure Table – Community Centers

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Beacon Senior Center (C,9)	1941	1	1976	$559,000		0	1	1	0	0	0	0	2	1	1	2	2	0	2	2
Lighthouse Senior Activity Center (C,9)	1949	1	1981	$913,000		0	1	1	0	0	0	0	2	1	1	2	2	0	2	2
Point Defiance - Ruston Senior Center (C,9)	1960	1	Unknown	$474,000		0	1	1	0	0	0	0	2	1	1	2	2	0	2	2
TACID Building (C,9)	1978	1	NA	$799,000		0	1	1	0	0	0	0	2	1	1	2	2	0	2	2
Tacoma Learning Center (C,9)	Unknown	1	Unknown	$294,000		0	1	1	0	0	0	0	2	1	1	2	2	0	2	2
Brown Star Grill (C,9)	Unknown	2	Unknown	$910,000		0	1	1	1	0	0	0	2	1	1	2	2	0	2	2

Table 6-6k – Infrastructure Table – City Municipal Buildings

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
County City Building (C,AP,9)		11		$742,000		0	1	2	0	0	0	0	2	1	0	2	3	3	2	3
Municipal Service Center (C,AP,9)		2		$232,000	7-0	0	1	1	0	0	0	0	2	1	0	3	2	2	1	2
Tacoma Muni Bldg (No., So., & Garage) (C,AP,9)	1930	17	1980	$55,607,000	465-0	0	1	2	0	0	0	0	2	1	0	2	3	3	2	3

Table 6-6l – Infrastructure Table – Tacoma Narrows Airport

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Airport Residence (C,AP,16)	1962	1	Unknown	3,684,000	Various	0	1	1	0	0	0	0	2	1	1	0	0	0	0	2
Restaurant (C,AP,16)		1	Unknown	3,684,000	Various	0	1	1	0	0	0	0	2	1	1	0	0	0	0	3
Airport Office/CFR (C,AP,16)	1964	2	Unknown	3,684,000	Various	0	1	1	0	0	0	0	2	1	1	0	0	0	0	2
Hangar & Offices 1302 (C,AP,16)		2	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	2
Hangar 1402 (C,AP,16)		1	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0
Hangar 1412 (C,AP,16)		1	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0
Hangar 1422 (C,AP,16)		1	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0
Hangar 1524 (C,AP,16)		1	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0
Hangar & Offices 1620 (C,AP,16)		2	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	2
Hangar 1624 (C,AP,16)		1	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0
Hangar 1712 (C,AP,16)		1	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0
Hangar 1724 (C,AP,16)		1	2002	3,684,000	Various	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0

Table 6-6m – Infrastructure Table – Tacoma Parking Facilities

INFRASTRUCTURE	BUILT	FLOORS	UPGRADES	VALUE	OCCUPANCY	AVALANCHE	DROUGHT	EARTHQUAKE	WUI FIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
A Street Garage (AKA Tacoma Parking Garage) (9)	1987		no		526 Stalls	0	0	1	0	0	0	0	2	1	0	2	0	0	3	0
Convention and Trade Center (9)	2004		no		321Stalls	0	0	0	0	1	0	0	2	1	0	2	0	0	3	0
I-705 Parking Lots A, B & C. (Ground lease from Washington State) (9)		1 level	no		180 Stalls	0	0	1	0	1	0	0	2	1	0	2	0	0	3	0
International Glass Museum Garage (9)	2002	1 level	no	$4,821,000	63 Stalls	0	0	2	0	0	0	0	2	1	0	2	0	0	3	0
Municipal Building Garage (9)	1977	5 floors	no		73 Stalls	0	0	0	0	0	0	0	2	1	0	2	0	0	3	0
Municipal Parking Lot (9)	1978	1 level	upgrade-1987		495 Stalls	0	0	2	0	0	0	0	2	1	0	2	0	0	3	0
Park Plaza North Garage (9)	1969	4 floors	upgrade-1987	$4,494,000	381 Stalls	0	0	2	0	0	0	0	2	1	0	2	0	0	3	0
Park Plaza South Garage (9)	1969	3 floors	no	$3,329,000	74 Stalls	0	0	1	0	0	0	0	2	1	0	2	0	0	3	0
Carlton Center Garage (9)		2 floors	no	$2,654,000	526 Stalls	0	0	1	0	0	0	0	2	1	0	2	0	0	3	0

Table 6-7 Infrastructure Table Key – Hazard Ratings

HAZARD CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
Avalanche	0	The infrastructure is not located in a known avalanche prone area.
	1	The infrastructure is in an avalanche prone area but has no prior history of avalanche damage.
	2	The infrastructure is in an avalanche prone area and has experienced some limited avalanche damage in the past.
	3	The infrastructure is in an avalanche prone area and has experienced significant avalanche damage.
Drought	0	The infrastructure would not suffer any damage or operational disruption from a drought.
	1	The infrastructure could suffer some damage or minor operational disruption from a drought.
	2	The infrastructure has suffered damages or significant operational disruption from past droughts.
	3	The infrastructure has suffered damages or significant disruption from past droughts which has had serious community economic or health consequences.
Flood	0	The infrastructure is not located in a known flood plain or flood prone area.
	1	The infrastructure is in a flood plain or flood prone area but has no prior history of flood damage.
	2	The infrastructure is in a flood plain or flood prone area and has experienced some flood damage in the past.
	3	The infrastructure is in a flood plain or flood prone area and has experienced significant flood damage, or the property is an NFIP repetitive loss property.
Earthquake	0	The infrastructure is not located in an area considered to have any significant risk of earthquake
	1	The infrastructure is in an area considered as at risk to earthquakes but has no prior history of earthquake damage.
	2	The infrastructure is in an area considered as at risk to earthquakes, is located on soft soils, and has no history of damage OR In an area considered as at risk to earthquakes and has experienced some limited earthquake damage.
	3	The infrastructure is in an area considered as at risk to earthquakes, is located on soft soils and experienced significant earthquake damage.
Landslide	0	The infrastructure is not located in a known area considered vulnerable to landslides.
	1	The infrastructure is in area vulnerable to landslides but has no prior history of landslides.
	2	The infrastructure is in area vulnerable to landslides area and infrastructure has experienced some landslide damage.
	3	The infrastructure is in area vulnerable to landslides and infrastructure has experienced significant landslide damage.
Major U/I Fire	0	The infrastructure meets the current fire code, has adequate separation from other structures and good access, and is not close to heavily vegetated areas.
	1	The infrastructure meets the current code, is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk.
	2	The infrastructure does not meet current fire code, is in or adjacent to large vegetated areas, and has inadequate access and/or separation from other structures.

HAZARD CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
	3	The infrastructure does not meet the current code, is in or adjacent to vegetated areas, with access limitations or structure separation making fire suppression difficult.
Severe Weather	0	The infrastructure would not suffer any damage or operational disruption from severe weather.
	1	The infrastructure could suffer some damage or minor operational disruption from severe weather.
	2	The infrastructure has suffered damages or significant operational disruption from past severe weather.
	3	The infrastructure has suffered damages or significant disruption from past severe weather which has had serious community economic or health consequences.
Tsunami/or Seiche	0	The infrastructure is not located in or near a known area considered to be a tsunami or seiche inundation area.
	1	The infrastructure is located at the edge of a designated tsunami or seiche risk zone.
	2	The infrastructure is located just inside a designated tsunami or seiche risk zone, but has no prior damage.
	3	The infrastructure is located well inside a designated tsunami or seiche risk zone, and/or has experienced prior tsunami or seiche damage.
Volcanic	0	The infrastructure is not located in or near a known area with significant risk from volcanic hazards.
	1	The infrastructure is in or near an area that could receive some ashfall, but has no structural features, equipment or operations considered vulnerable to ash.
	2	The infrastructure is in or near an area where heavy ashfall or a debris flow could occur.
	3	The infrastructure is in an area known to have experienced heavy ashfall, debris flow or blast effects from past volcanic activity.

Table 6-8 Infrastructure Table Key – Dependency Ratings

EXTERNAL DEPENDENCY CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
Emergency Services	0	The infrastructure can maintain essential functions without emergency services.
	0	The infrastructure has ability to independently provide emergency services to all essential functions of infrastructure.
	1	The infrastructure would have to curtail operations somewhat without emergency services with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without emergency services with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without emergency services and significant economic/environmental/safety/health consequences will occur.
Power Outage	0	The infrastructure can maintain essential functions without electricity or gas supply.
	0	Infrastructure has ability to independently provide power to all essential functions of infrastructure.
	1	The infrastructure would have to curtail operations somewhat without gas or electrical supply, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without gas or electrical supply, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without gas or electrical supply and significant economic/environmental/safety/health consequences will occur.
Sewer Out	0	The infrastructure can maintain essential functions without sewer service
	0	The infrastructure has ability to independently provide wastewater or septic service to support essential functions.
	1	The infrastructure would have to curtail operations somewhat without wastewater service, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without wastewater service, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without wastewater service and significant economic/environmental/safety/health consequences will occur.
Telecomm Failure	0	The infrastructure can maintain essential functions without telecommunications.
	0	The infrastructure has ability to independently provide phone service or alternate/redundant communications systems to support essential functions.
	1	The infrastructure would have to curtail operations somewhat without telecommunication service, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without telecommunication service, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without telecommunication service and significant economic/environmental/safety/health consequences will occur.
Transportation	0	The infrastructure can maintain essential functions without transportation routes.
	0	Infrastructure has ability to independently provide alternate transportation, in the absence of transportation routes, to ensure all essential functions.
	1	The infrastructure would have to curtail operations somewhat without transportation routes with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without transportation routes with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.

EXTERNAL DEPENDENCY CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
	3	The infrastructure would have to stop its operations without transportation routes and significant economic/environmental/safety/health consequences will occur.
Water Supply	0	The infrastructure can maintain essential functions without its water supply.
	0	The infrastructure has ability to independently provide water to support essential functions.
	1	The infrastructure would have to curtail operations somewhat without water supply, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without water supply, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without its water supply and significant economic/environmental/safety/health consequences will occur.

Endnotes

[1] This is a total of infrastructure and the approximate value provided by the jurisdiction. If no value, then value was not provided or not available.
[2] These are the Homeland Security Infrastructure Categories which were used in completing the Infrastructure Tables in the plan.
[3] The following table explains the codes used in this column:

Code	Explanation
C	Infrastructure critical in first 72 hours after disaster
AP	Infrastructure has auxiliary or backup power
(#)	Homeland Security Infrastructure Category Number
S	Infrastructure is a designated community shelter

[4] The "built" column refers to the year in which the original infrastructure was constructed.
[5] This column addresses major remodels, upgrades or additions to the infrastructure in dollar amount and/or year of change

Section 7

Plan Maintenance Procedures Requirements

Monitoring, Evaluating, and Updating the Plan---Requirement §201.6(c)(4)(i):

[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

- Does the new or updated plan describe the method and schedule for **monitoring** the plan, including the responsible department?
- Does the new or updated plan describe the method and schedule for **evaluating** the plan, including how, when and by whom (i.e. the responsible department)?
- Does the new or updated plan describe the method and schedule for **updating** the plan within the five-year cycle?

Incorporation into Existing Planning Mechanisms---Requirement §201.6(c)(4) (ii):

[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate…

- Does the new or updated plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?
- Does the new or updated plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?
- Does the updated plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?

Continued Public Involvement---Requirement §201.6(c)(4) (iii):

[The plan maintenance process **shall** include a] discussion on how the community will continue public participation in the plan maintenance process.

- Does the new or updated plan explain how continued public participation will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)

SECTION 7
REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
CITY OF TACOMA
PLAN MAINTENANCE SECTION

Table of Contents

The planning process undertaken in the last two years is just the foundation of breaking the disaster cycle by planning for a disaster resistant City of Tacoma and Pierce County Region 5. This Section details the formal process that will ensure the City of Tacoma Hazard Mitigation Plan remains an active and relevant document. The Plan Maintenance Section includes a description of the documentation citing the Plan's formal adoption by the Administration. The Section also describes: the method and schedule of monitoring, evaluating, and updating within a five-year cycle; the process for incorporating the mitigation strategy into existing mechanisms; and, the process for integrating public participation throughout the plan maintenance. The Section serves as a guide for implementation of the hazard mitigation strategy.

Plan Adoption

Upon completion of the City of Tacoma Plan, it will be submitted to Washington State Emergency Management Division (EMD) for a Pre-Adoption Review. The EMD has 30 days to then take action on the Plan and forward it to the Federal Emergency Management Agency (FEMA) Region X for review. This review, which is allowed 45 days by law, will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201.6. In completing this review there may be revisions requested by the EMD and/or FEMA. Revisions could include changes to background information, editorial comments, and the alteration of technical content. Pierce County Department of Emergency Management (PC DEM) will call a Planning Team Meeting to address any revisions needed and resubmit the changes.

The City of Tacoma Administration is responsible for the Cities adoption of the Plan after the Pre-Adoption Review is completed. Once the Administration adopts the Plan, the Program Coordinator of the Mitigation and Recovery Division of Emergency Management will be responsible for submitting it, with a copy of the resolution, to the State Hazard Mitigation Officer at the Washington State EMD. EMD will then take action on the Plan and forward it to the FEMA Region X for final approval. Upon approval by FEMA, the City will gain eligibility for both Hazard Mitigation Grant Program and Pre-Disaster Mitigation Grant Program funds.

Appendix A will list the dates and include a copy of the signed Resolution from the jurisdiction as well as a copy of the FEMA approval of the jurisdiction’s Plan. In future updates of the Plan, Appendix C will be used to track changes and/or updates. This plan will have to be re-adopted and re-approved prior to the five year deadline of November 1, 2019.

Maintenance Strategy

The Cities maintenance strategy for implementation, monitoring, and evaluation provides a structure that encourages collaboration, information transference, and innovation. Through a multi-tiered implementation method, the City will provide its staff and students a highly localized approach to loss reduction while serving their needs through coordinated policies and programs. The method’s emphasis on all levels of participation promotes public involvement and adaptability to changing risks and vulnerabilities. Finally, it will provide a

tangible link between staff, students and the various levels of government service, ranging from community action to the Department of Homeland Security. Through this strategy, the City will attempt to break the disaster cycle and achieve a more disaster resistant community.

Implementation

In order to ensure efficient and effective implementation, City of Tacoma will make use of its capabilities, infrastructure, and dedicated population. The City will implement its mitigation strategy over the next five years primarily through its annual budget process and varying grant application processes.

The Emergency Programs Office will work in conjunction with those organizations identified under each mitigation measure to initiate the overall mitigation strategy. Each department or office responsible for carrying out the measures will play a role in self-monitoring and evaluating achievement of measures and objectives. Because the City has no land use or regulatory authority, it must rely heavily on collaboration with neighboring jurisdictions. For example, for density-related issues the City will work with partners Pierce County, and the Hazard Mitigation Forum to implement recommendations into the existing Pierce County Comprehensive Plan. Other measures will be implemented through collaboration with the identified jurisdictions/departments listed under each measure's evaluation.

These efforts fall under a broader implementation strategy that represents a county-wide effort. This strategy must be adaptable to change while being consistent in its delivery.

The mitigation implementation strategy is a three-tiered method that emphasizes localized needs and vulnerabilities while addressing City and multi-jurisdictional policies and programs. The first tier is implementation through individual citizen level—existing public education programs in the City. For example, programs at the individual level through safety presentations and evacuation drills). The second is a City-wide mechanism for implementation comprised of City employees implementing strategies from the Emergency Programs Office, Construction Management Office, Facilities Management Office, and Computing & Telecommunications through an ambitious building construction and remodel plan. This perhaps offers the greatest opportunity to implement mitigation opportunities. The third tier is a more external and multi-jurisdictional mechanism, the Hazard Mitigation Forum (HMF).

This method ensures that implementation speaks to unique vulnerabilities at the most local level, allows for coordination among and between levels, and promotes collaboration and innovation. Further, it provides a structured system of monitoring implementation. Finally, it is a method that can adapt to the changing vulnerabilities of the City, the region, and the times. These three levels and their means of implementation and collaboration are described below.

Public Education Programs

At the individual citizen level, Public Education Programs provide the City with a localized mechanism for implementation. This approach to mitigation can adapt to the varying vulnerabilities and needs within a growing region. Public Education Programs are also a means for involving the public in mitigation policy development. Currently the City pursues a variety of mitigation-related programs that help students, staff and citizens to better prepare for and respond to disasters.

Jurisdiction-Wide: Emergency Programs Office

The Emergency Programs Office will coordinate the maintenance and implementation actions with those departments and offices that must carry out the mitigation measures. The Emergency Planning Team, consisting of departments or offices with emergency responsibilities will review the direction of the Plan's implementation. The Emergency Planning Team will ultimately provide a mechanism for coordination among those groups engaged in mitigation to ensure that a comprehensive and efficient approach be undertaken in the Cities efforts at all-hazards mitigation. The Emergency Planning Team will be coordinated by the Emergency Programs Office.

The Emergency Programs Office will be responsible for the overall review of the plan and will designate mitigation measures to those departments responsible for their implementation. The Emergency Planning Team will monitor and evaluate the plan's implementation throughout the year. Recommendations will be made to coincide with the normal budgeting processes and provide an ample time period for review and adoption of any necessary changes to the implementation schedule. Members of the Emergency Planning Team and President's Council sit on the budgeting and projects committees and can advance mitigation measures through these annual processes.

The plan will be updated every five years with coordination from the Emergency Programs Office, participation by the Emergency Planning Team and approval from the Administration.

Hazard Mitigation Forum

The PC Hazard Mitigation Forum (HMF) represents a broader and multi-jurisdictional approach to mitigation implementation. The PC HMF will be comprised of representatives from unincorporated Pierce County and all jurisdictions, partially or wholly, within its borders, that have undertaken mitigation planning efforts. The PC HMF will serve as coordinating body for projects of a multi-jurisdictional nature and will provide a mechanism to share successes and increase the cooperation necessary to break the disaster cycle and achieve a disaster resistant Pierce County. Members of the PC HMF will include the following jurisdictions who have completed, or who have begun the process of completing, DMA compliant plans:

- City of Bonney Lake
- City of DuPont
- City of Fife
- City of Gig Harbor
- City of Milton
- City of Roy
- City of Tacoma
- Town of Eatonville
- Town of Steilacoom
- Pierce County
- East Pierce Fire and Rescue
- Graham Fire and Rescue
- Orting Valley Fire and Rescue
- Pierce County Fire District 14
- Pierce County Fire District 27
- West Pierce Fire and Rescue
- Clover Park School District
- Eatonville School District
- Franklin Pierce School District
- Pacific Lutheran University
- Puyallup School District
- Sumner School District
- University Place School District
- Crystal River Ranch HOA
- Herron Island HOA
- Pierce Transit
- Raft Island HOA
- Taylor Bay Beach Club
- Firgrove Mutual Water Company
- Graham Hill Mutual Water Company
- Lakewood Water District
- Ohop Mutual Light Company
- Spanaway Water Company
- Tanner Electric
- Cascade Regional Blood Services
- Dynamic Partners
- Group Health
- MultiCare Health System
- 76 Jurisdictions in this effort
- City of Buckley
- City of Edgewood
- City of Fircrest
- City of Lakewood
- City of Orting
- City of Sumner
- Town of Carbonado
- Town of South Prairie
- Town of Wilkeson
- Central Pierce Fire and Rescue
- Gig Harbor Fire and Medic One
- Key Peninsula Fire Department
- Pierce County Fire District 13
- Pierce County Fire District 23
- South Pierce Fire and Rescue
- Carbonado School District
- Dieringer School District
- Fife School District
- Orting School District
- Peninsula School District
- Steilacoom School District
- Tacoma School District
- American Red Cross
- Crystal Village HOA
- Metropolitan Park District
- Port of Tacoma
- River Community Club
- Clear Lake Water District
- Fruitland Mutual Water Company
- Lakeview Light and Power
- Mt. View-Edgewood Water Company
- Peninsula Light Company
- Summit Water and Supply Company
- Valley Water District
- Community Health Care
- Franciscan Health System
- Madigan Hospital
- Western State Hospital

PC HMF will meet annually in August and will be coordinated by PC DEM. The City will be an active participant in the PC HMF, and will be represented by the Emergency Programs

Manager. Only through this level of cooperation can these jurisdictions meet all of their mitigation goals.

Plan Evaluation and Update

It should be noted this planning process began in early 2012 following the then current CFR 201.6 Hazard Mitigation Planning Requirements. Based on new requirements in the Stafford Act, the City of Tacoma will evaluate and update the plan to incorporate these new requirements as necessary. Furthermore, if there are additional Stafford Act changes affecting CFR 201.6 in the coming years, the planning process will incorporate those as well.

The City of Tacoma Plan will guide the Cities mitigation efforts for the foreseeable future. City of Tacoma Representatives on the Planning Team has developed a method to ensure that regular review and update of the Plan occur within a five year cycle.

PC DEM will collaborate with the Emergency Programs Office and the PC HMF to help monitor and evaluate the mitigation strategy implementation. PC DEM will track this implementation through Pierce County's GIS database. Findings will be presented and discussed at the annual meeting.

The Emergency Programs Office will coordinate reporting of the Plan's implementation to the Emergency Planning Team which meets at least twice each year. Minutes of these meetings will be prepared and will include:

- Updates on implementation throughout the City;
- Updates on the PC HMF and mitigation activities undertaken by neighboring jurisdictions;
- Changes or anticipated changes in hazard risk and vulnerability at the City, county, regional, State, FEMA and Homeland Security levels;
- Problems encountered or success stories;
- Any technical or scientific advances that may alter, make easier, or create measures.

The Emergency Programs Office will decide on updates to the strategy based on the above information and a discussion of:

- The various resources available through budgetary means as well as any relevant grants;
- The current and expected political environment and public opinion;
- Meeting the mitigation goals with regards to changing conditions.

PC DEM will work with the Emergency Programs Office or the City to review the Risk Assessment Section to determine if the current assessment should be updated or modified based on new information. This will be done during the regularly scheduled reviews of the regional partners' Hazard Identification and Vulnerability Analyses and their Comprehensive Emergency Management Plans.

Additional reviews of this Plan will be required following disaster events and will not substitute for the annual meeting. Within ninety days following a significant disaster or an emergency event impacting the City, the Emergency Programs Office will provide an assessment that captures any "success stories" and/or "lessons learned." The assessment will detail direct and indirect damages to the City and its critical facilities, response and recovery costs, as part of the standard recovery procedures that use EMD Forms 129, 130, and 140. This process will help determine any new mitigation initiatives that should be incorporated into the Plan to avoid or reduce similar losses due to future hazard events. In this manner, recovery efforts and data will be used to analyze mitigation activities and spawn the development of new measures that better address any changed vulnerabilities or capabilities. Any updates to the Plan will be addressed at the ensuing regularly scheduled City Council Meeting.

As per 44 CFR 201.6, the City of Tacoma must re-submit the Plan to the State and FEMA with any updates every five years. This process will be coordinated by PC DEM through the Pierce County Hazard Mitigation Forum. In 2019 and every five years following at the Hazard Mitigation Forum, City of Tacoma and the Emergency Programs Office will submit the updated plan to PC DEM. PC DEM's Mitigation and Recovery Program Coordinator will collect updates from the Region 5 Plan jurisdictions and submit them to the State EMD and FEMA.

Continued Public Involvement

City of Tacoma is dedicated to continued public involvement and education in review and updates of the Plan. The City will retain copies of the Plan and will post it on the City of Tacoma website.[1] Announcements regarding the Plan's adoption and the annual updates to the Plan will be advertised on the City of Tacoma website.

The three-tiered implementation method provides an opportunity for continuous public involvement. Public Education campaigns are a means of informing the public on updates and implementation activities. Further, prior to submitting the Plan to WA EMD and FEMA for the five year review, the Emergency Programs Office and the Emergency Management Team will hold public information and comment meeting. These meetings will be advertised in the City through a variety of media, including the City webpage Continued Public Involvement

The City of Tacoma is dedicated to continued public involvement and education in review and updates of this plan. The City of Tacoma Emergency Management Department and the Planning Department will retain copies of the plan and will make it available to the public.

Prior to submitting the plan to WA EMD and FEMA for the five-year review, the City of Tacoma will hold public information and comment meeting. This meeting will provide citizens a forum during which they can express their concerns, opinions, or ideas about the City of Tacoma Hazard Mitigation Plan. This meeting will be advertised by the City through a

variety of media, including the local newspaper and our City Town Topics and a posting on the website.

The City of Tacoma will conduct a review on a yearly basis to ensure all elements of the mitigation plan are updated and accurate. Each of the 76 jurisdictions has been tasked with having to provide documentation on public involvement including a brief description for each public hearing held, a summary on attendance, any feedback received from the public and the an overall description of what was accomplished. Even further, the City of Tacoma will provide proof of their attempts for public involvement such as screenshots of websites including date ranges, flyers and other relevant material documenting the public involvement process. Lastly, the City of Tacoma will look for new innovative ways for public involvement.

Endnotes

[1] http://www.cityoftacoma.org/

APPENDIX B
REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
CITY OF TACOMA

Region 5 Hazard Mitigation Planning Team

City of Tacoma

NAME	TITLE	JURISDICTION-DEPARTMENT
Ute Weber	Emergency Management Coordinator	City of Tacoma - Fire Department, Emergency Preparedness & Fire Education

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APPENDIX C
REGION 5 HAZARD MITIGATION PLAN
2014-2019 UPDATE
CITY OF TACOMA

Plan Revisions

RECORD OF CHANGES			
Change Number	**Description of Change (with page numbers)**	**Date**	**Authorized by:**

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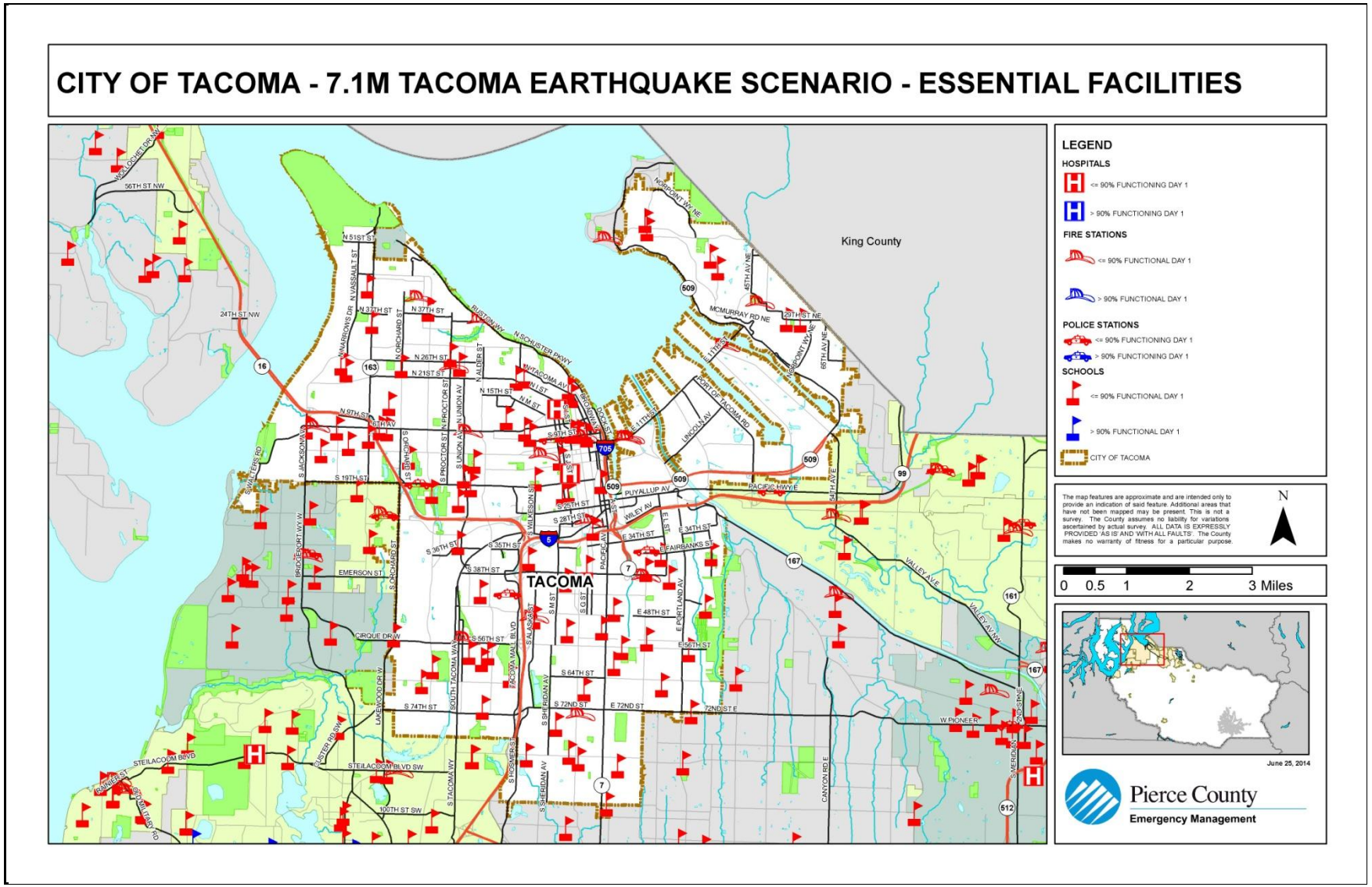
APPENDIX D

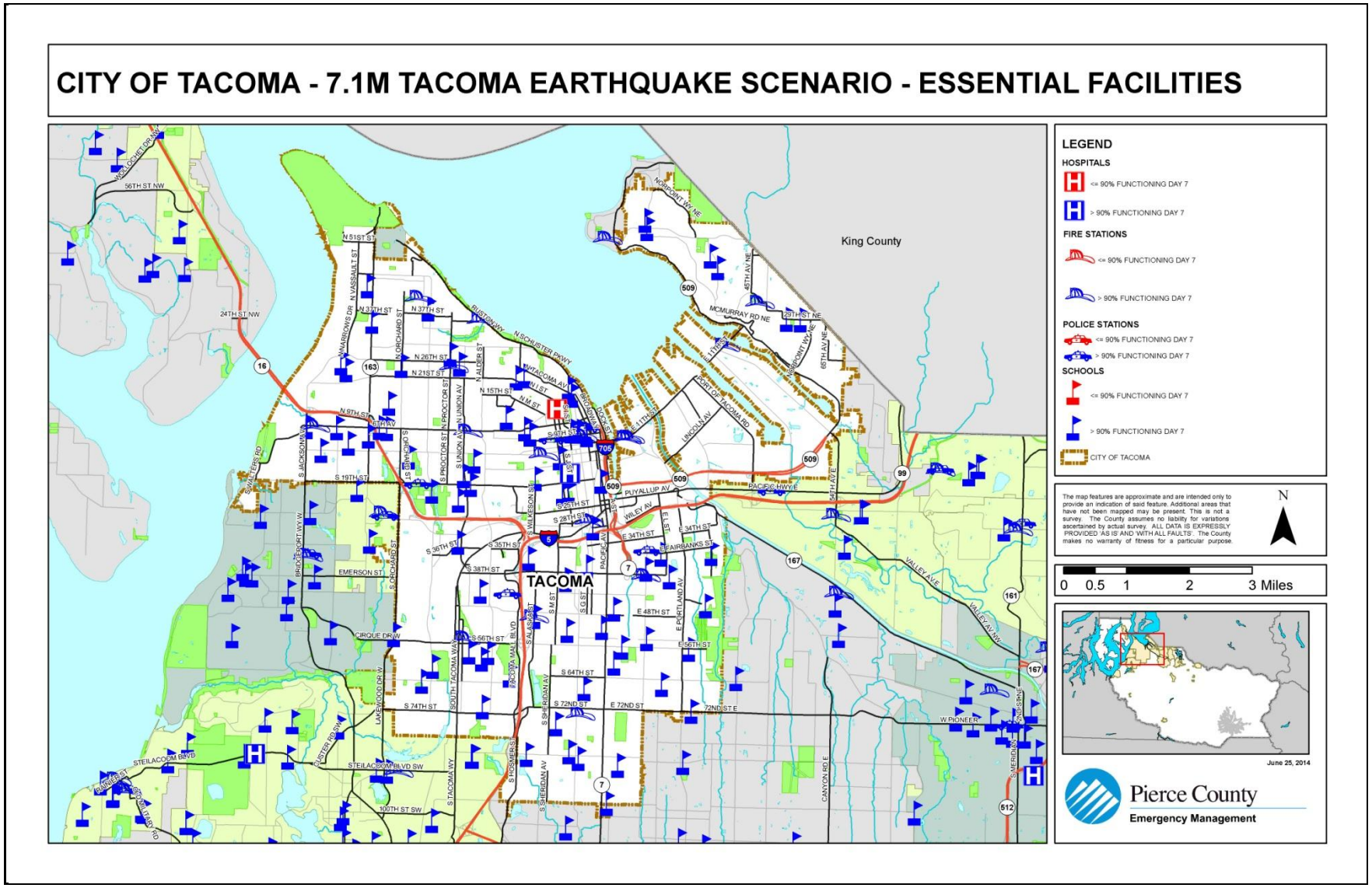
REGION 5 HAZARD MITIGATION PLAN
CITY OF TACOMA AND PIERCE COUNTY SCENARIO

This appendix contains the spatial results from the Hazus Earthquake Scenario results showing the Essential Facilities for a 90% functionality for Day 1 and Day 7 following an earthquake event based on three earthquakes scenarios. Information was based on ShakeMaps developed by U.S. Geological Survey for a 7.1M earthquake occurring on the Tacoma Fault, 7.2M earthquake on the Nisqually Fault and a 7.2M earthquake on the SeaTac Fault. There was a total of four Essential Facilities that were modeled; fire stations, police stations, schools and hospitals. Additional information can be found in the Risk Assessment Section of the Pierce County All Hazard Mitigation Plan.

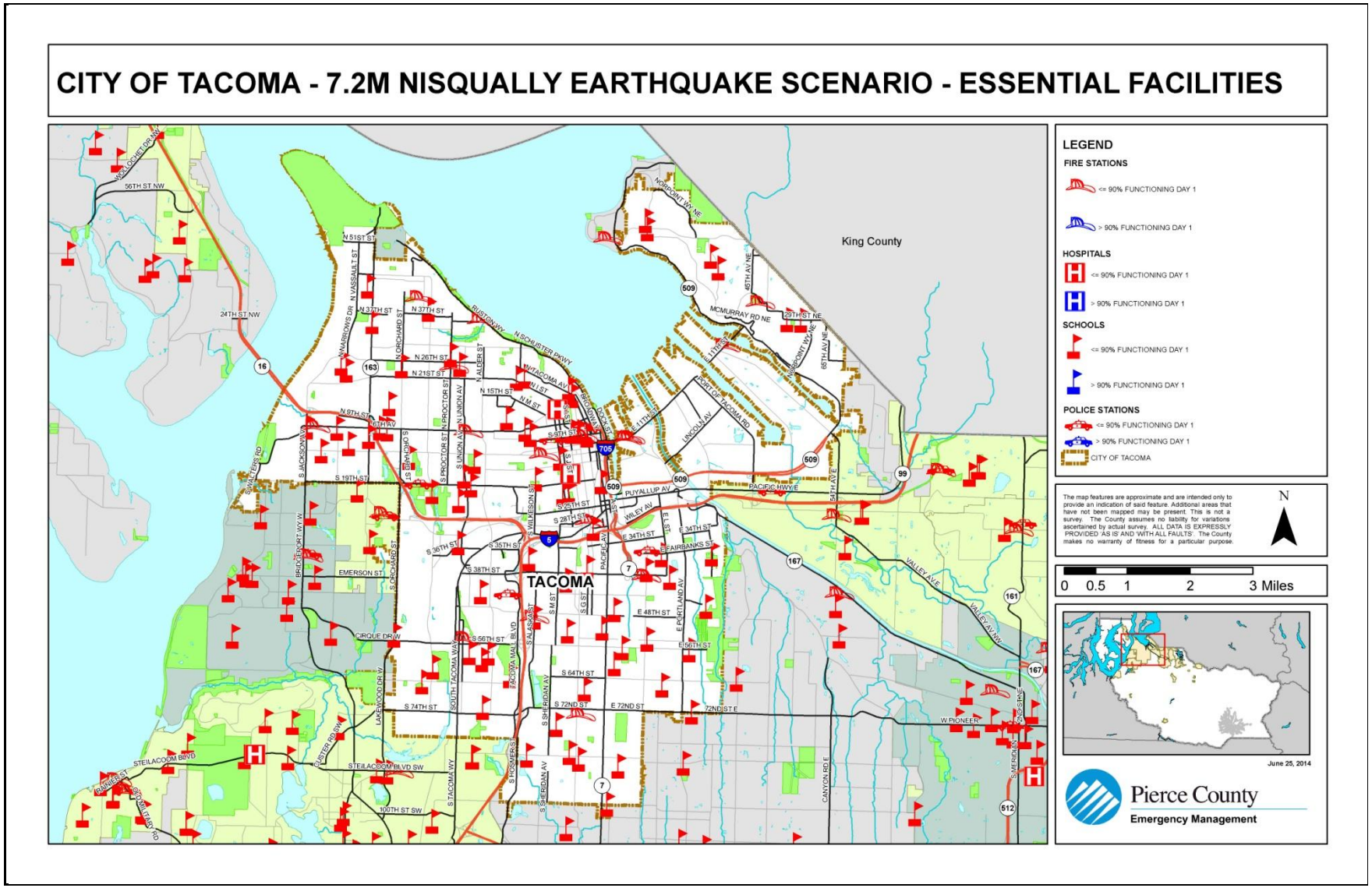
Map D-1 City of Tacoma Tacoma Fault Scenario Essential Facilities Day 1 Map



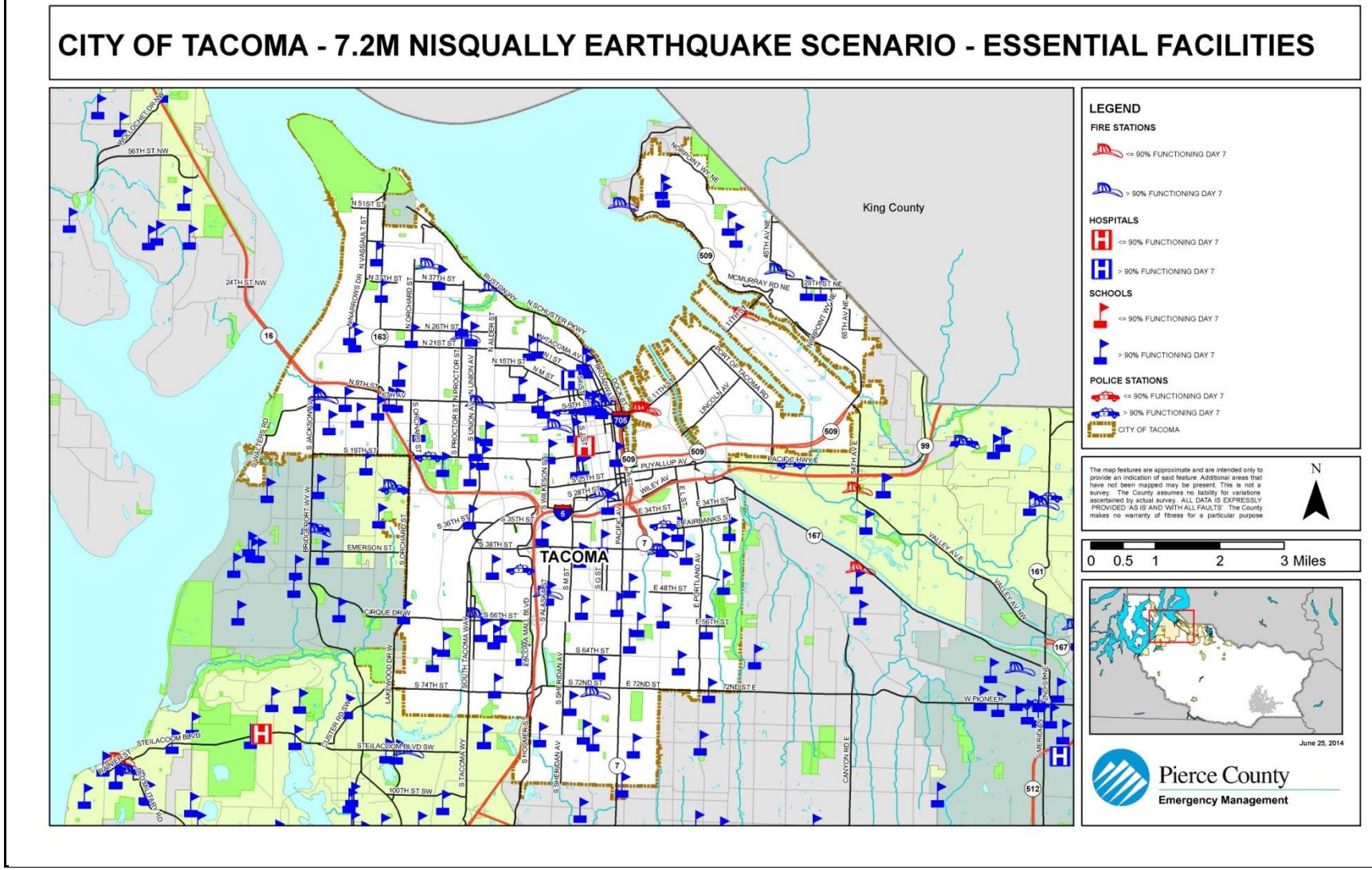
Map D-2 City of Tacoma Tacoma Fault Scenario Essential Facilities Day 7 Map



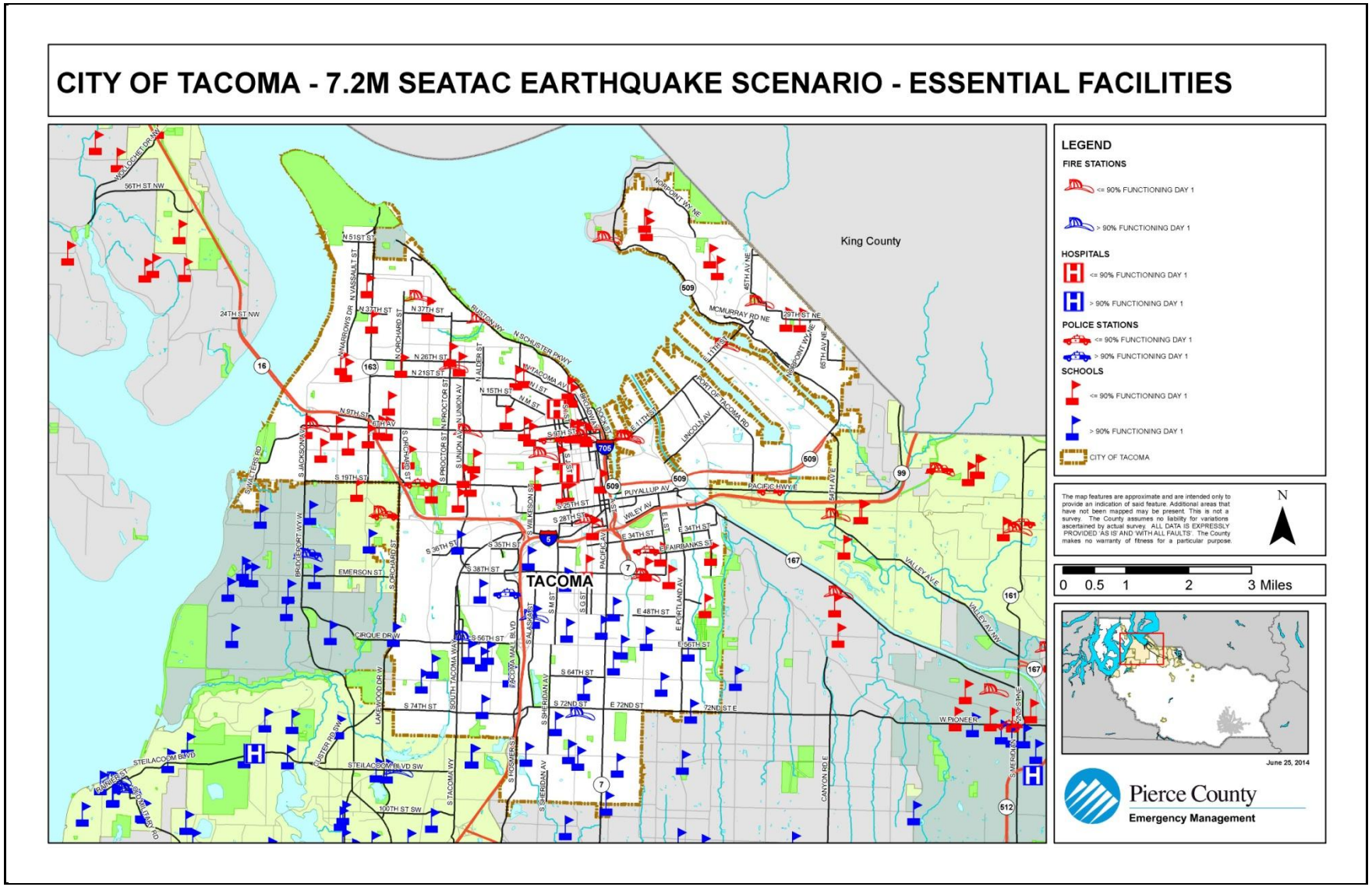
Map D-3 City of Tacoma Nisqually Fault Scenario Essential Facilities Day 1 Map



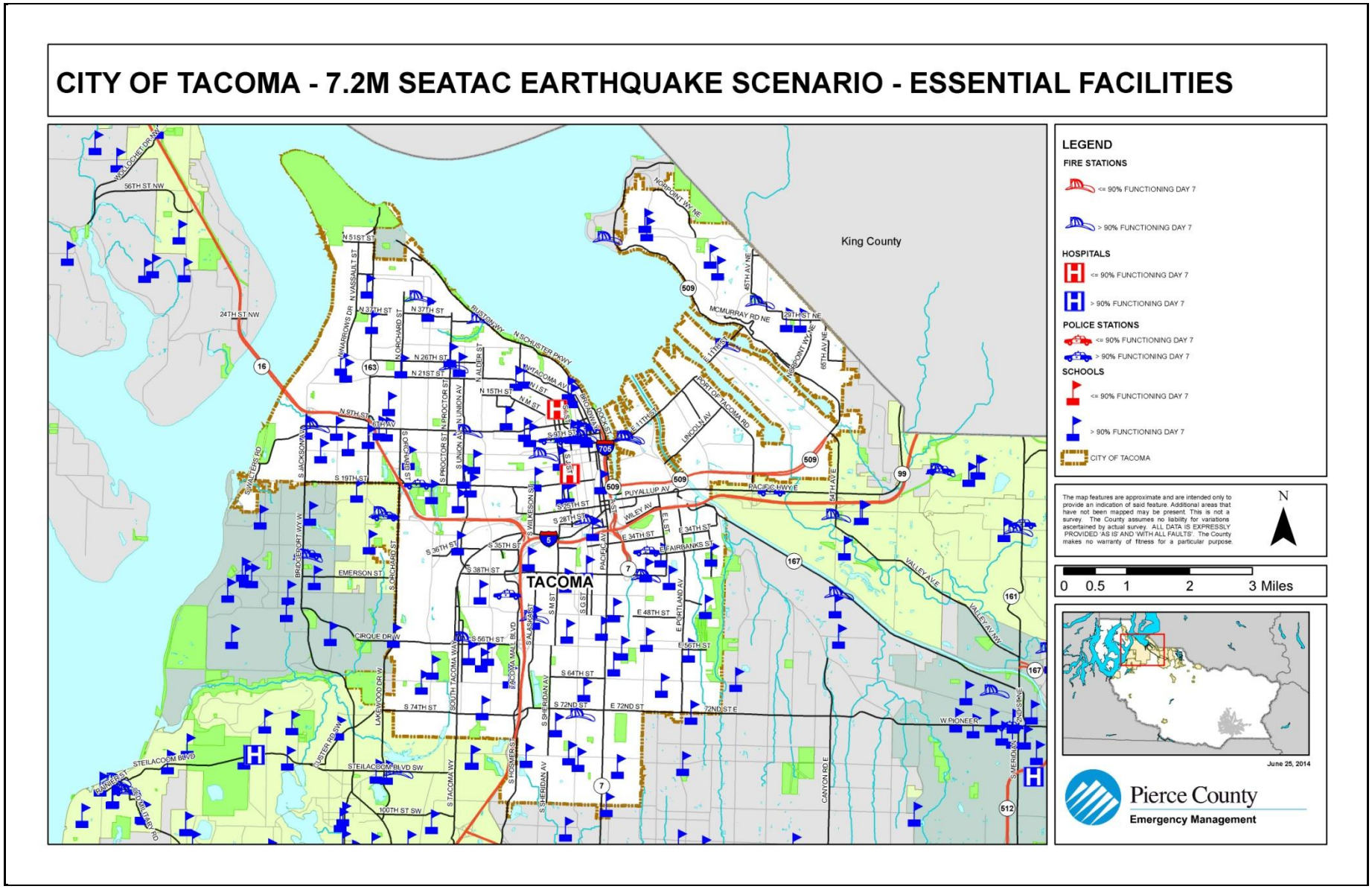
Map D-4 City of Tacoma Nisqually Fault Scenario Essential Facilities Day 7 Map



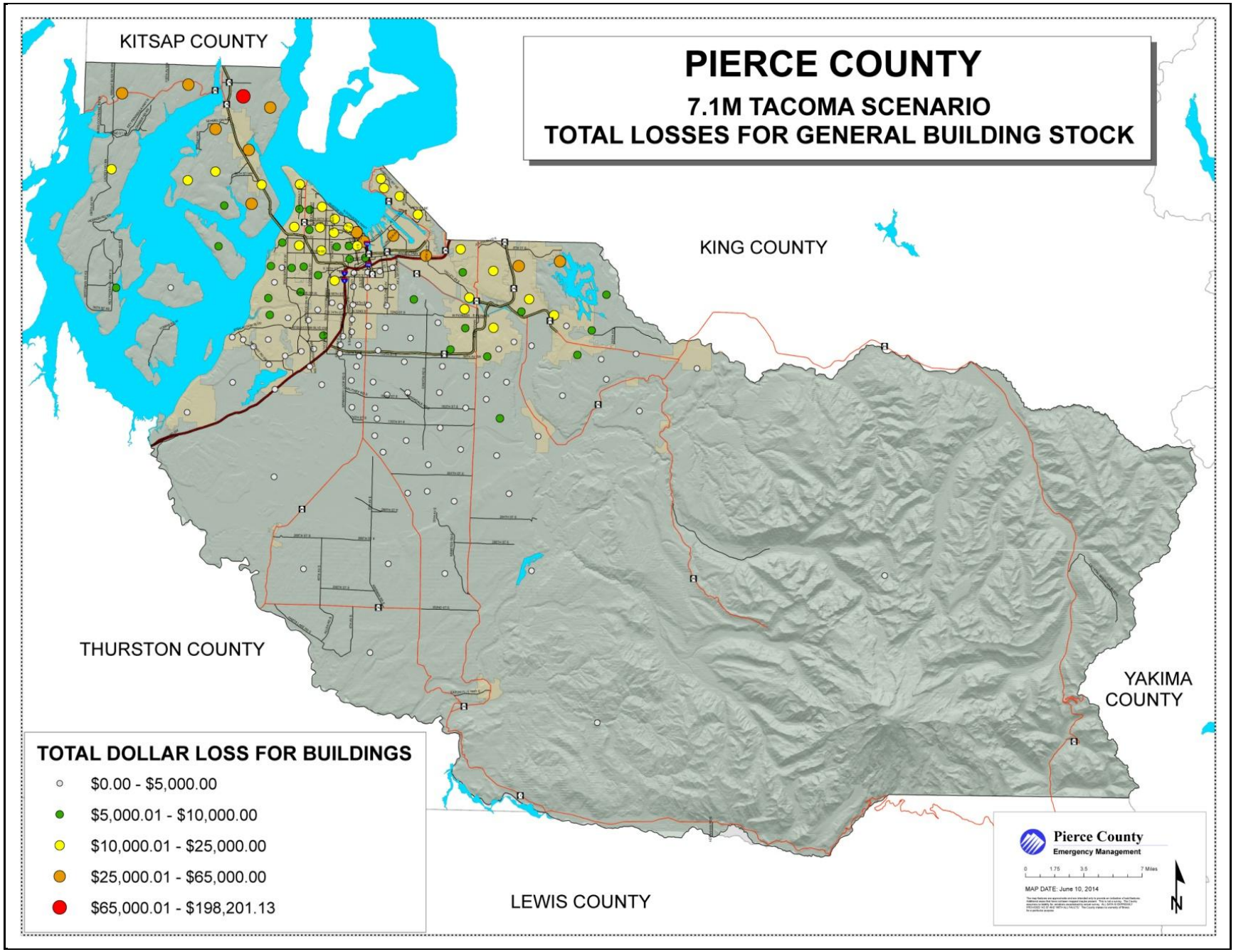
Map D-5 City of Tacoma SEATAC Fault Scenario Essential Facilities Day 1 Map



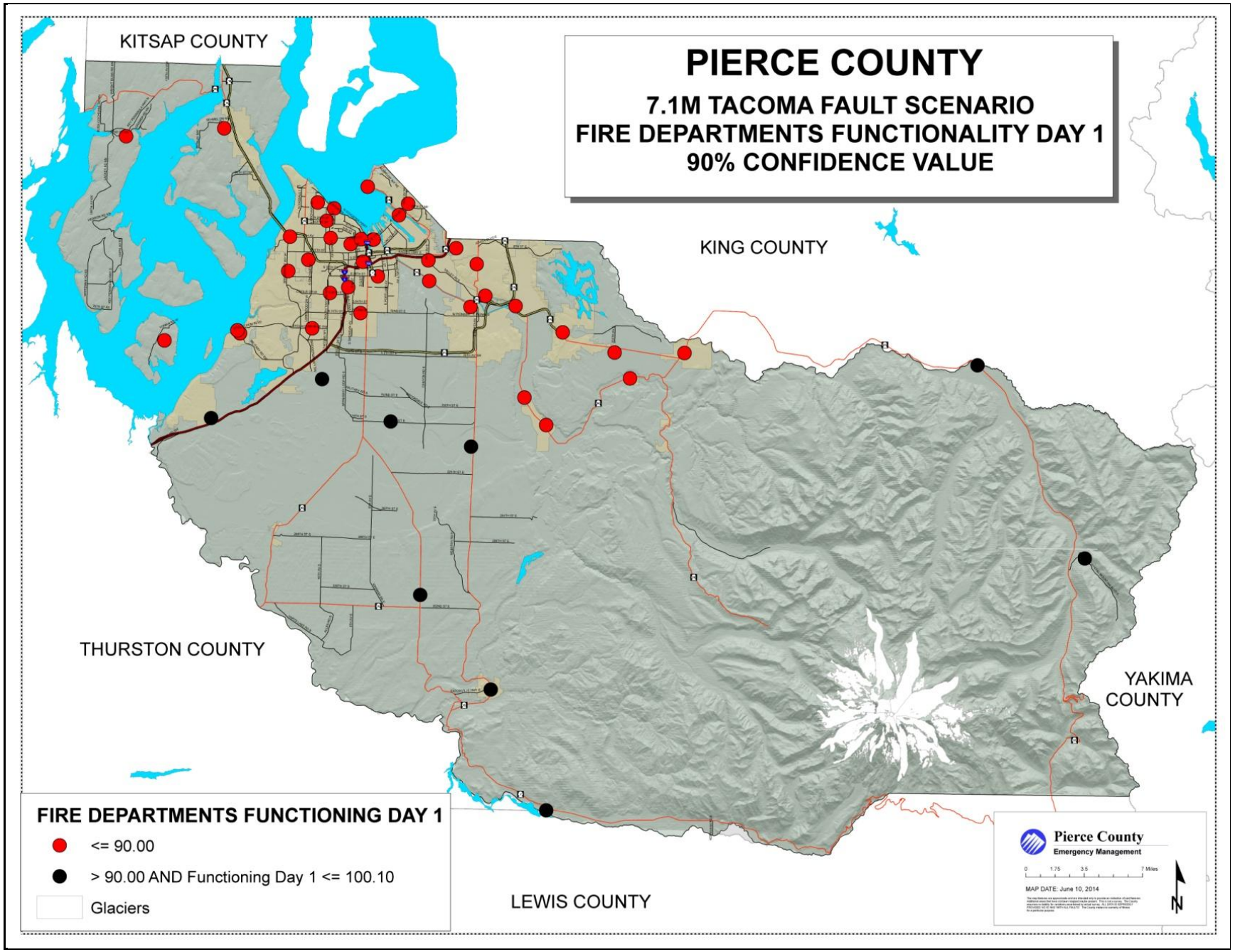
Map D-6 City of Tacoma SEATAC Fault Scenario Essential Facilities Day 7 Map



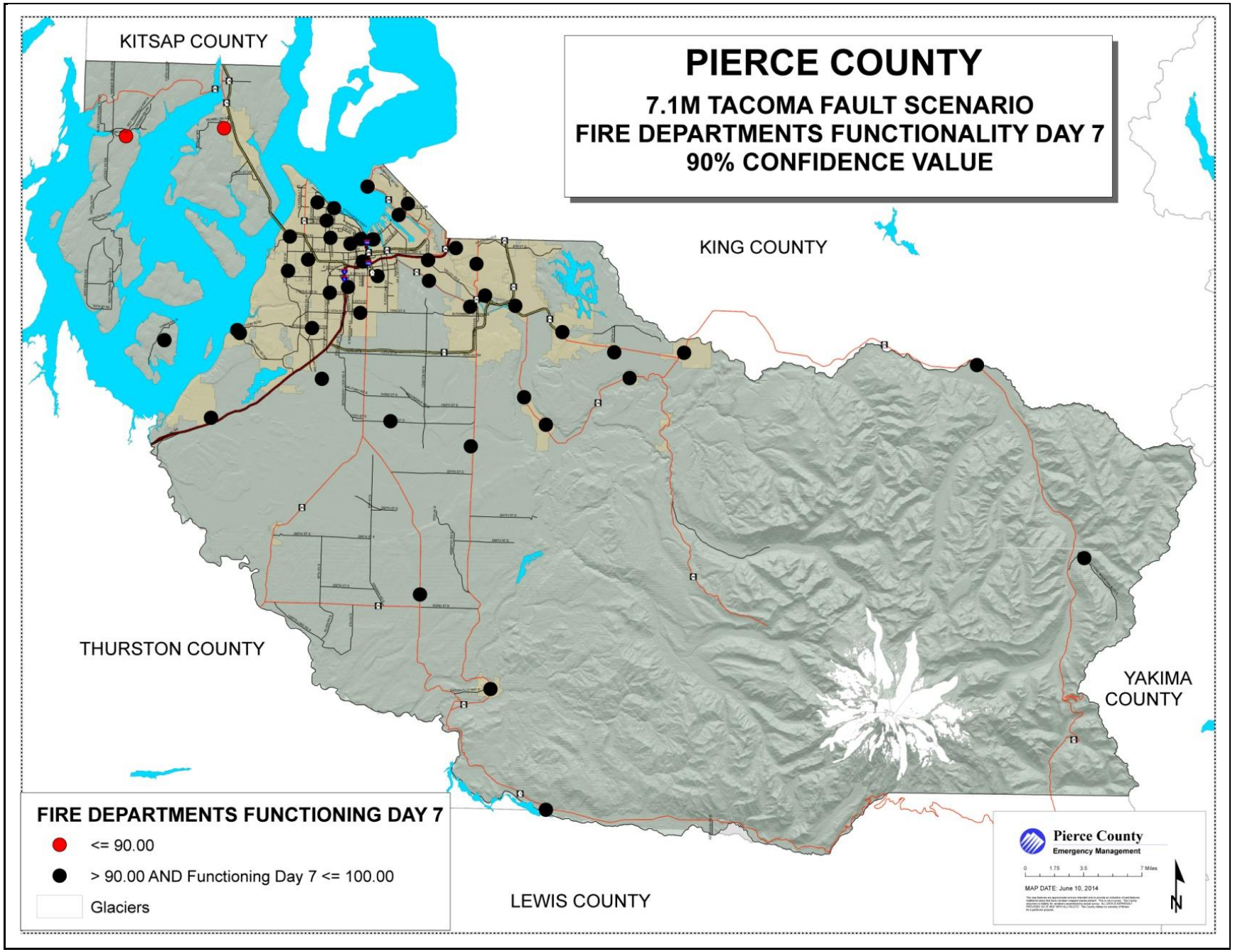
Map D-7 Pierce County Tacoma Fault Scenario Total Losses Map



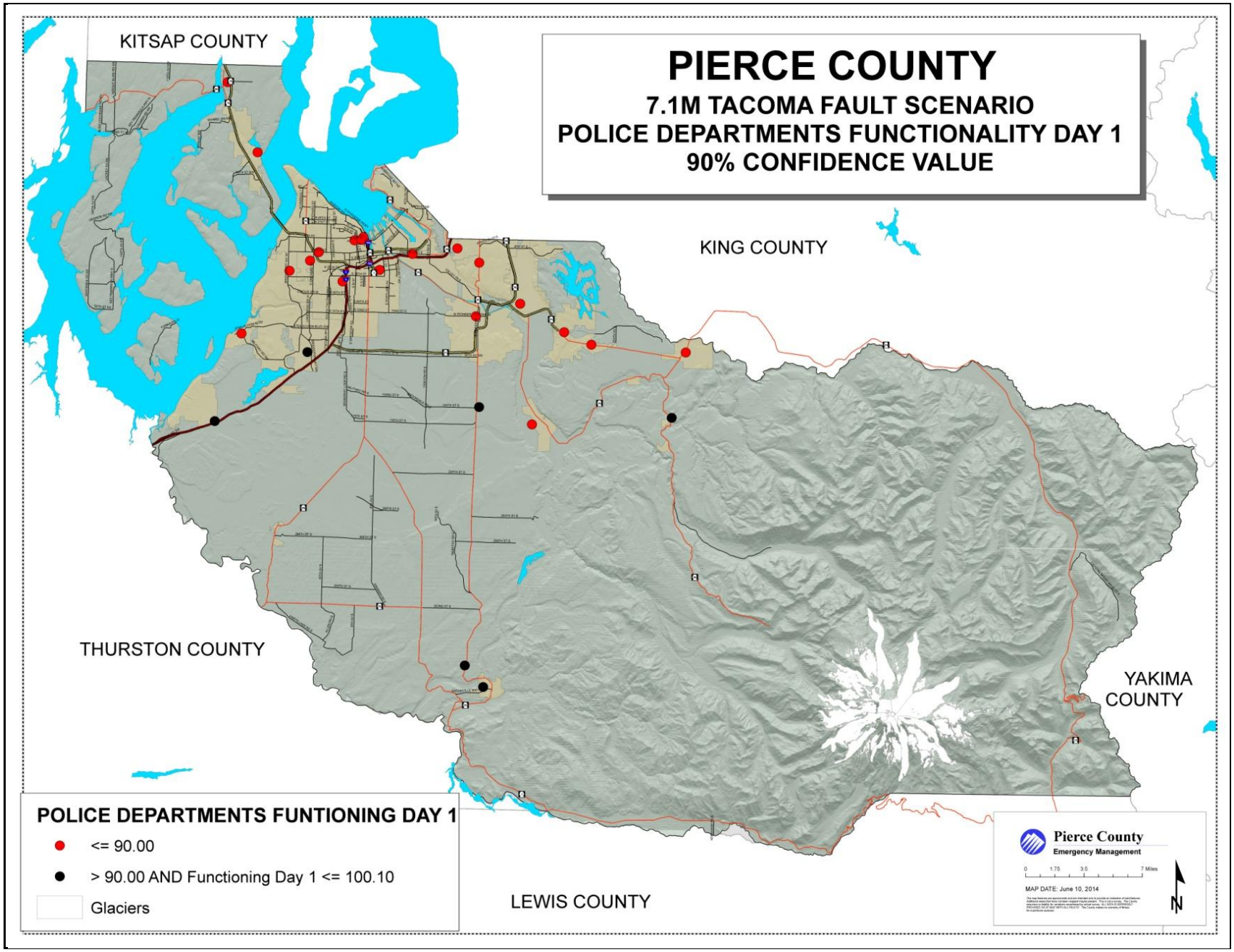
Map D-8 Pierce County Tacoma Fault Scenario Fire Department Functionality Day 1 Map



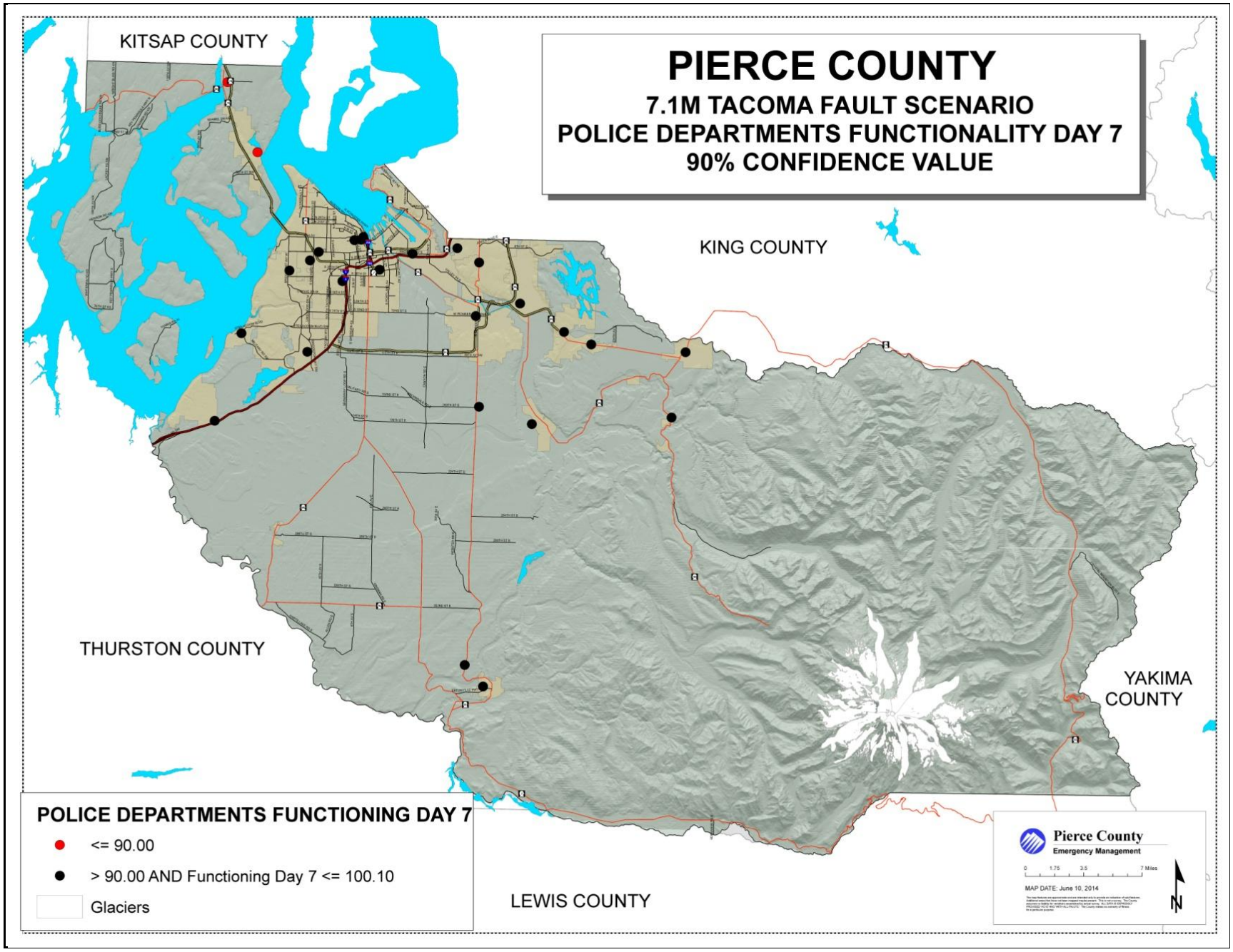
Map D-9 Pierce County Tacoma Fault Scenario Fire Department Functionality Day 7 Map



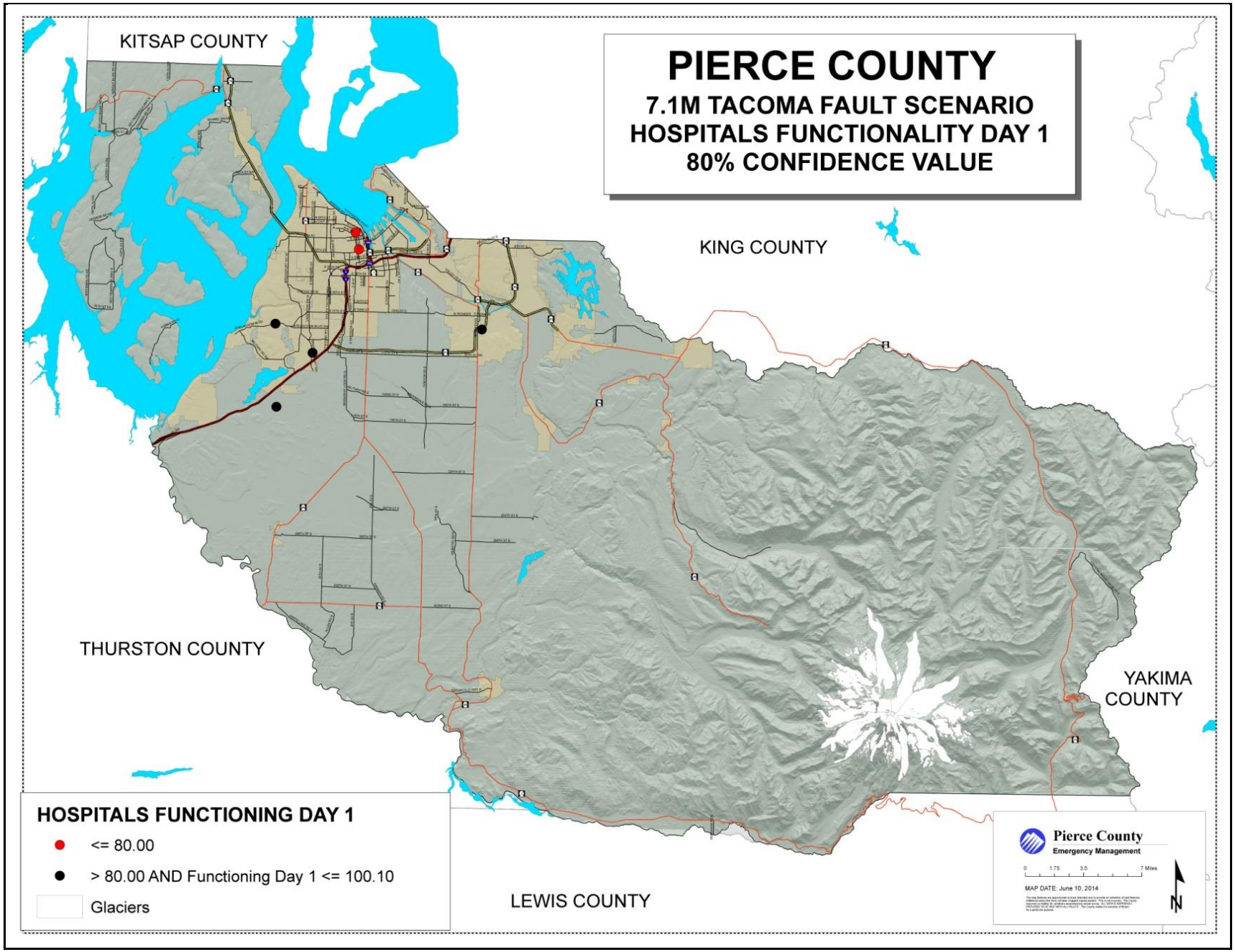
Map D-10 Pierce County Tacoma Fault Scenario Police Department Functionality Day 1 Map



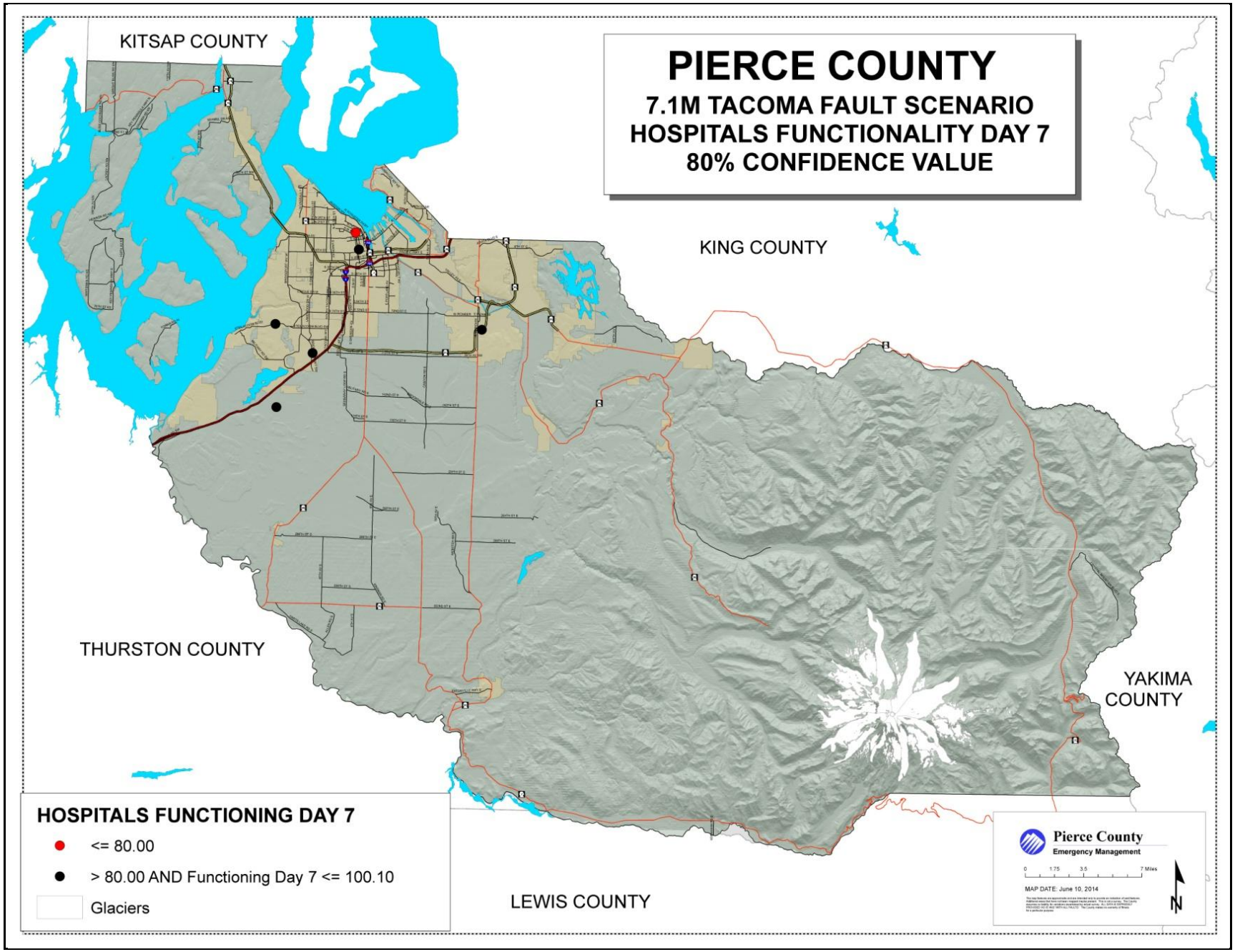
Map D-11 Pierce County Tacoma Fault Scenario Police Department Functionality Day 7 Map



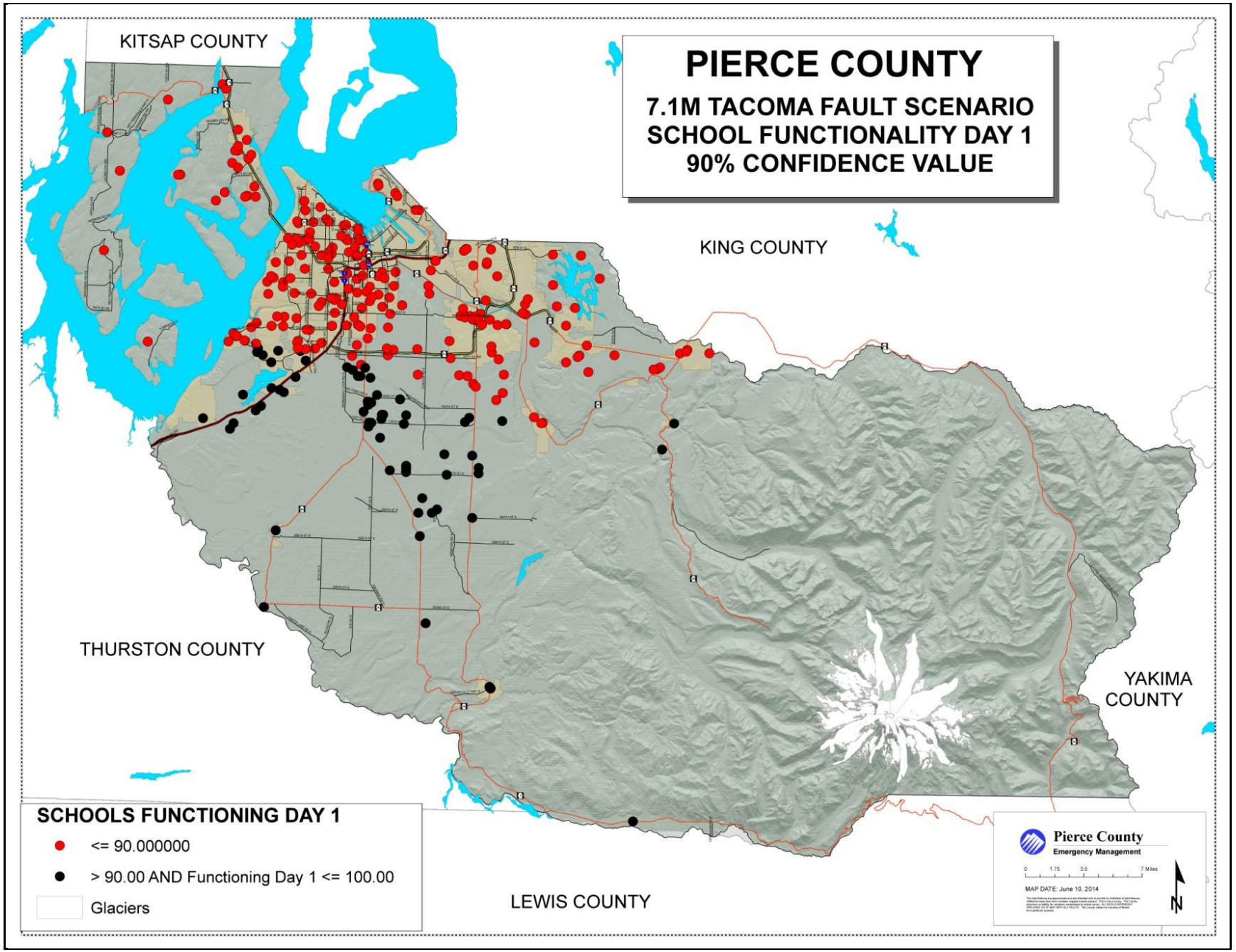
Map D-12 Pierce County Tacoma Fault Scenario Hospitals Functionality Day 1 Map



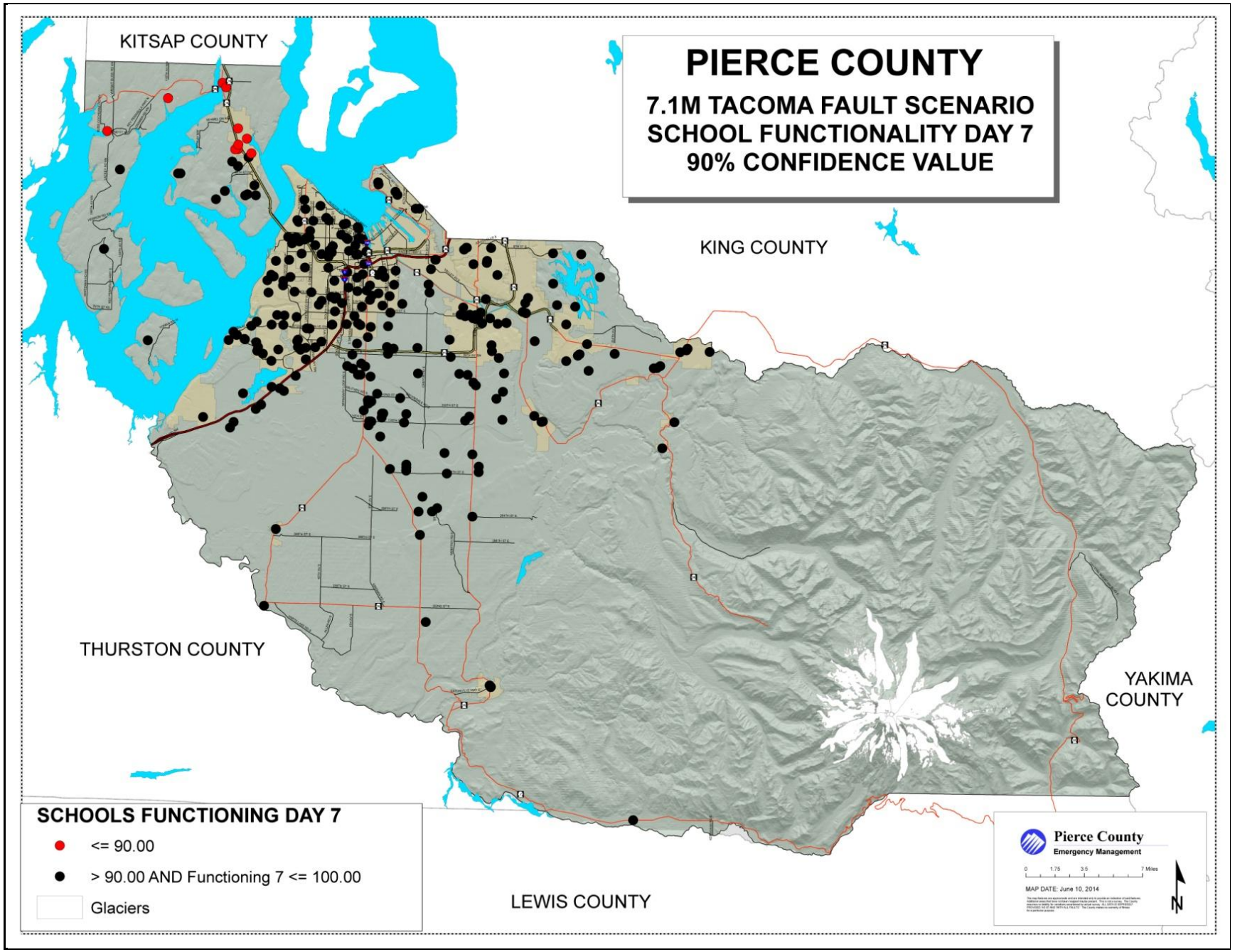
Map D-13 Pierce County Tacoma Fault Scenario Hospitals Functionality Day 7 Map



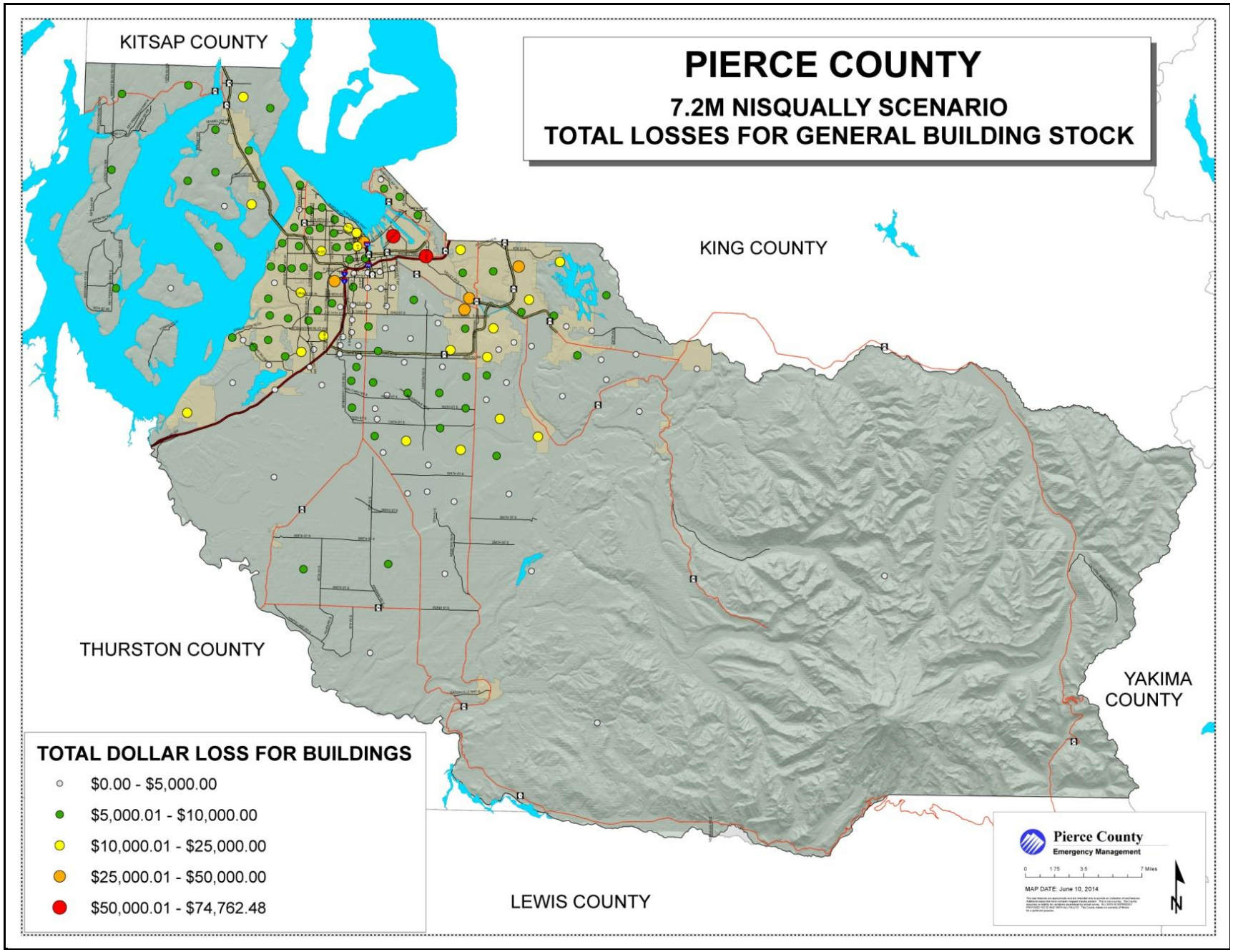
Map D-14 Pierce County Tacoma Fault Scenario School Functionality Day 1 Map



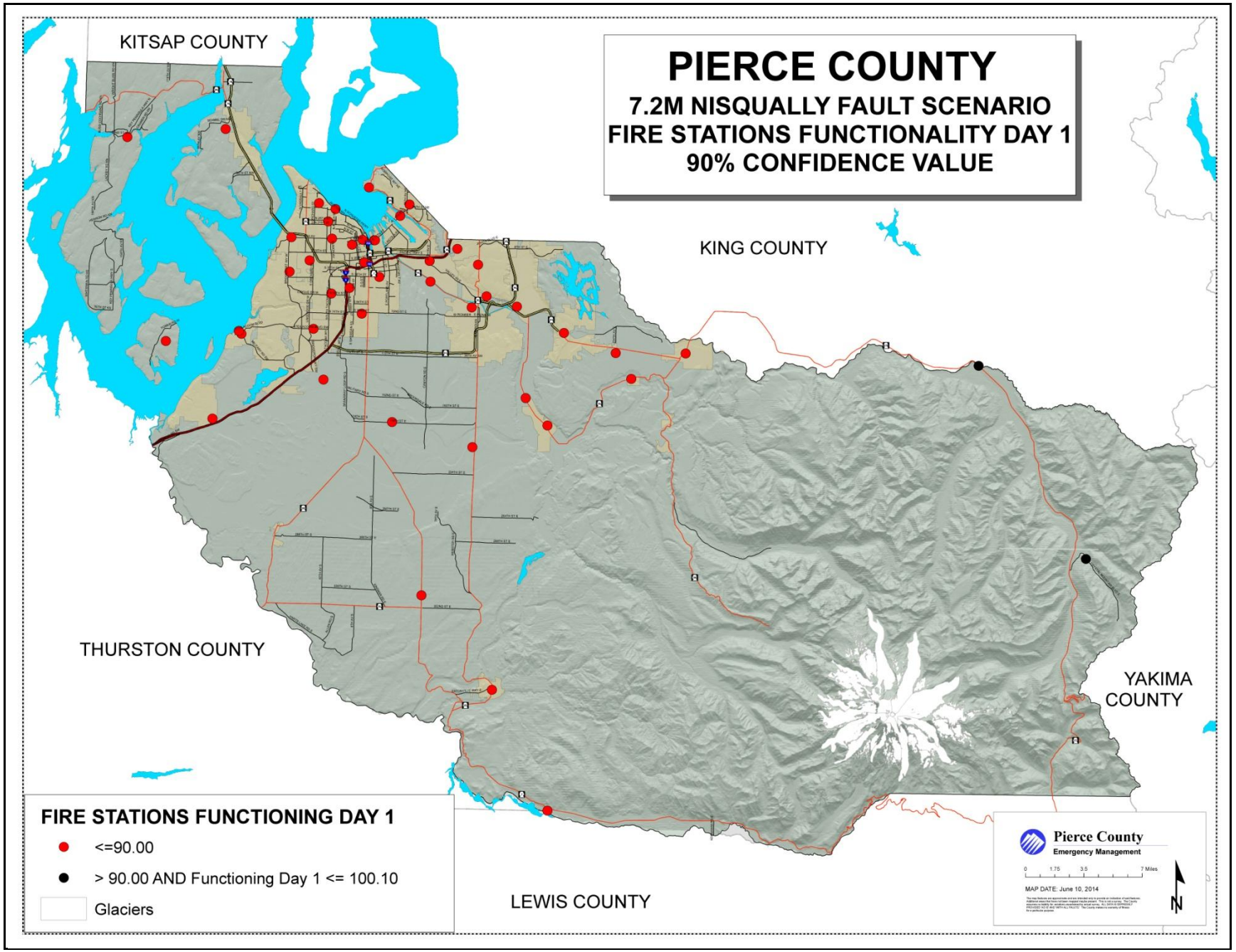
Map D-15 Pierce County Tacoma Fault Scenario School Functionality Day 7 Map



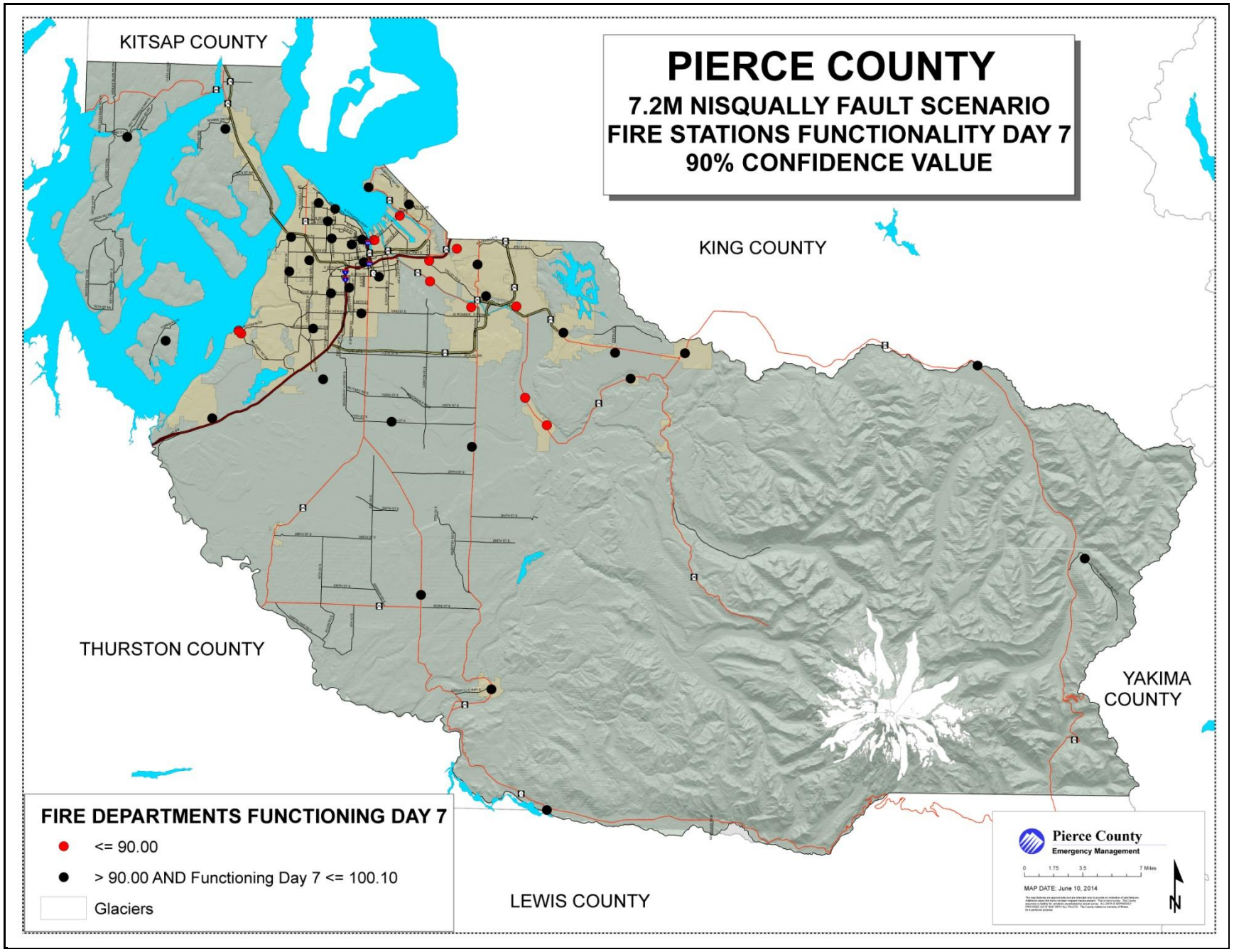
Map D-16 Pierce County Nisqually Fault Scenario Total Losses Map



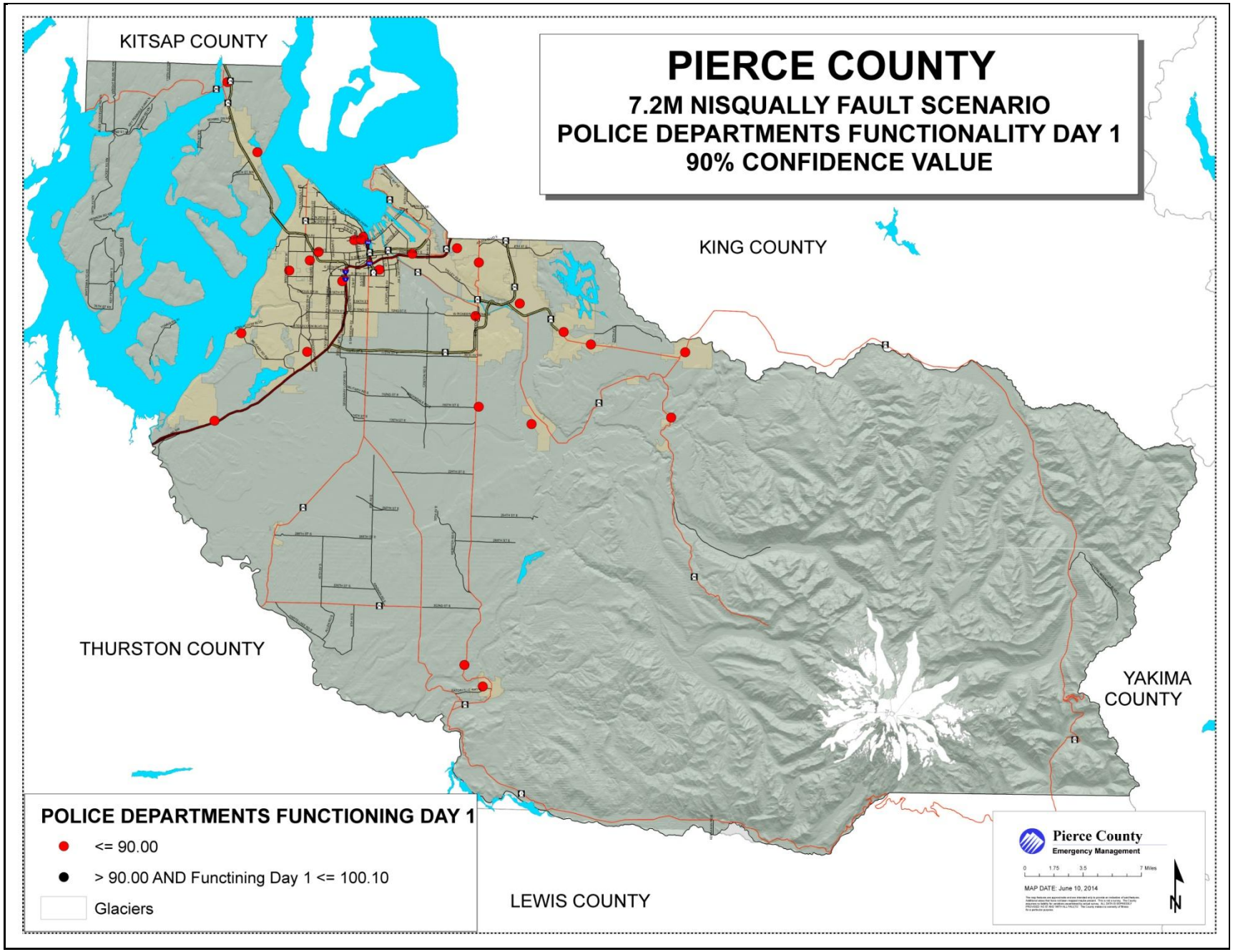
Map D-17 Pierce County Nisqually Fault Scenario Fire Stations Functionality Day 1 Map



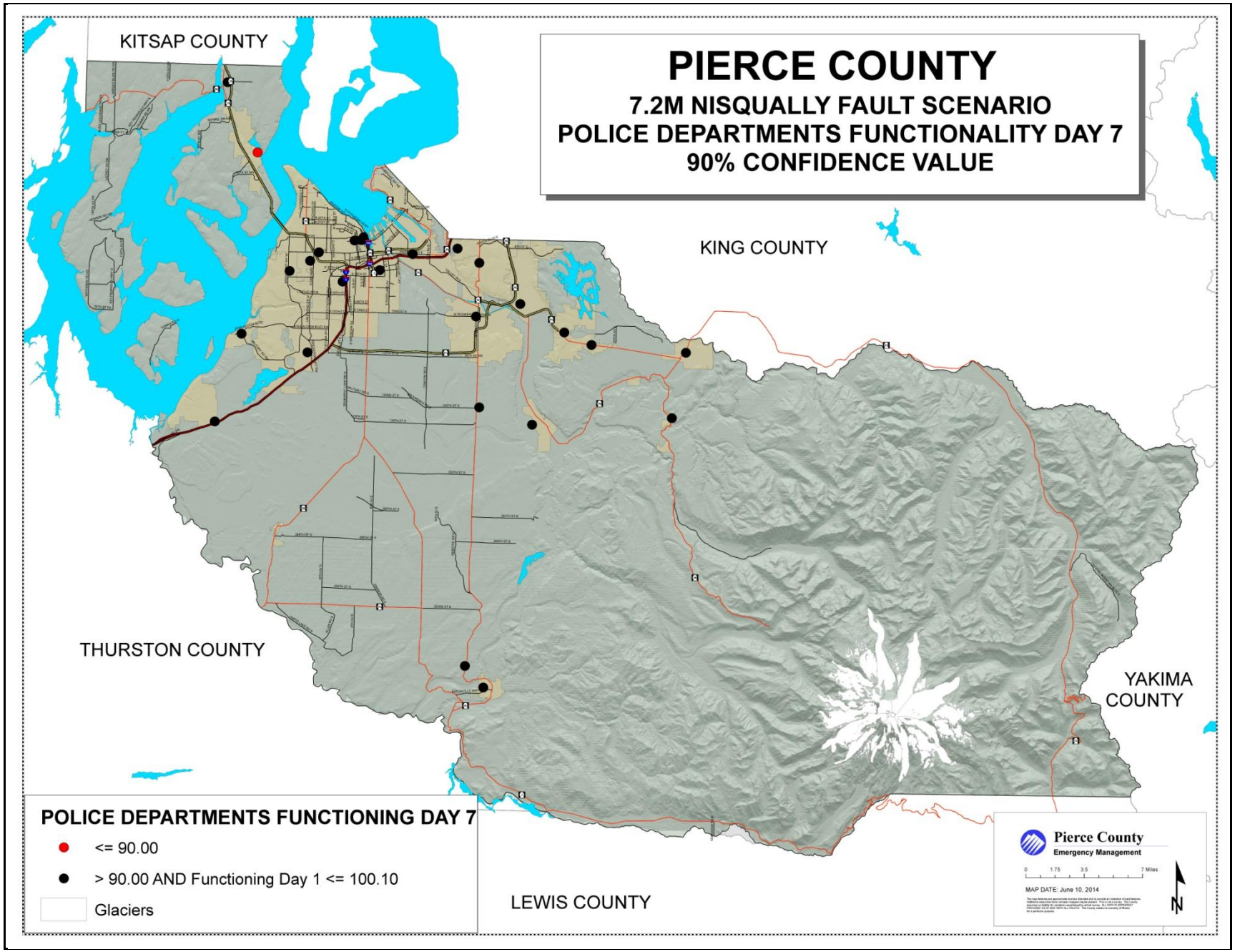
Map D-18 Pierce County Nisqually Fault Scenario Fire Stations Functionality Day 7 Map



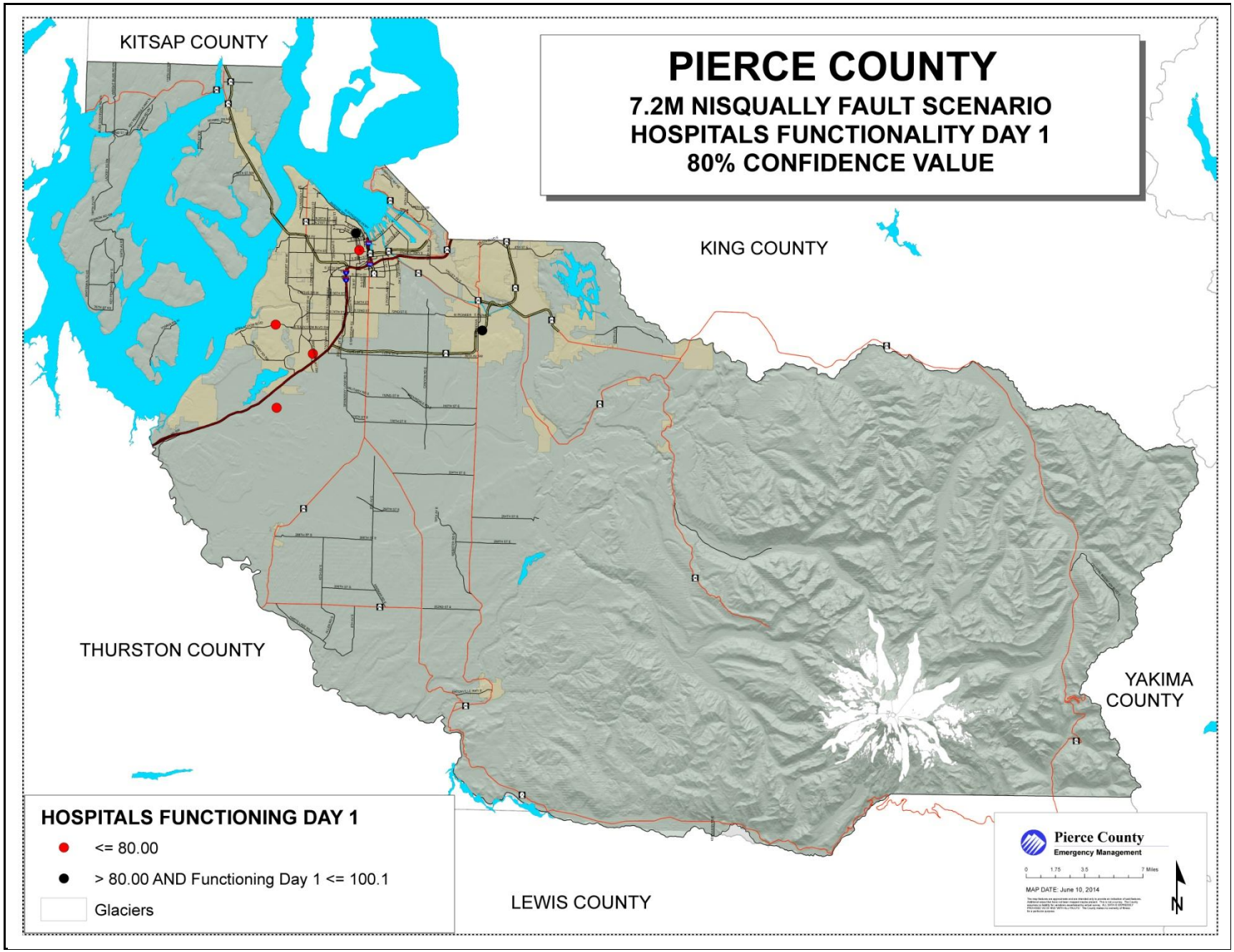
Map D-19 Pierce County Nisqually Fault Scenario Police Departments Functionality Day 1 Map



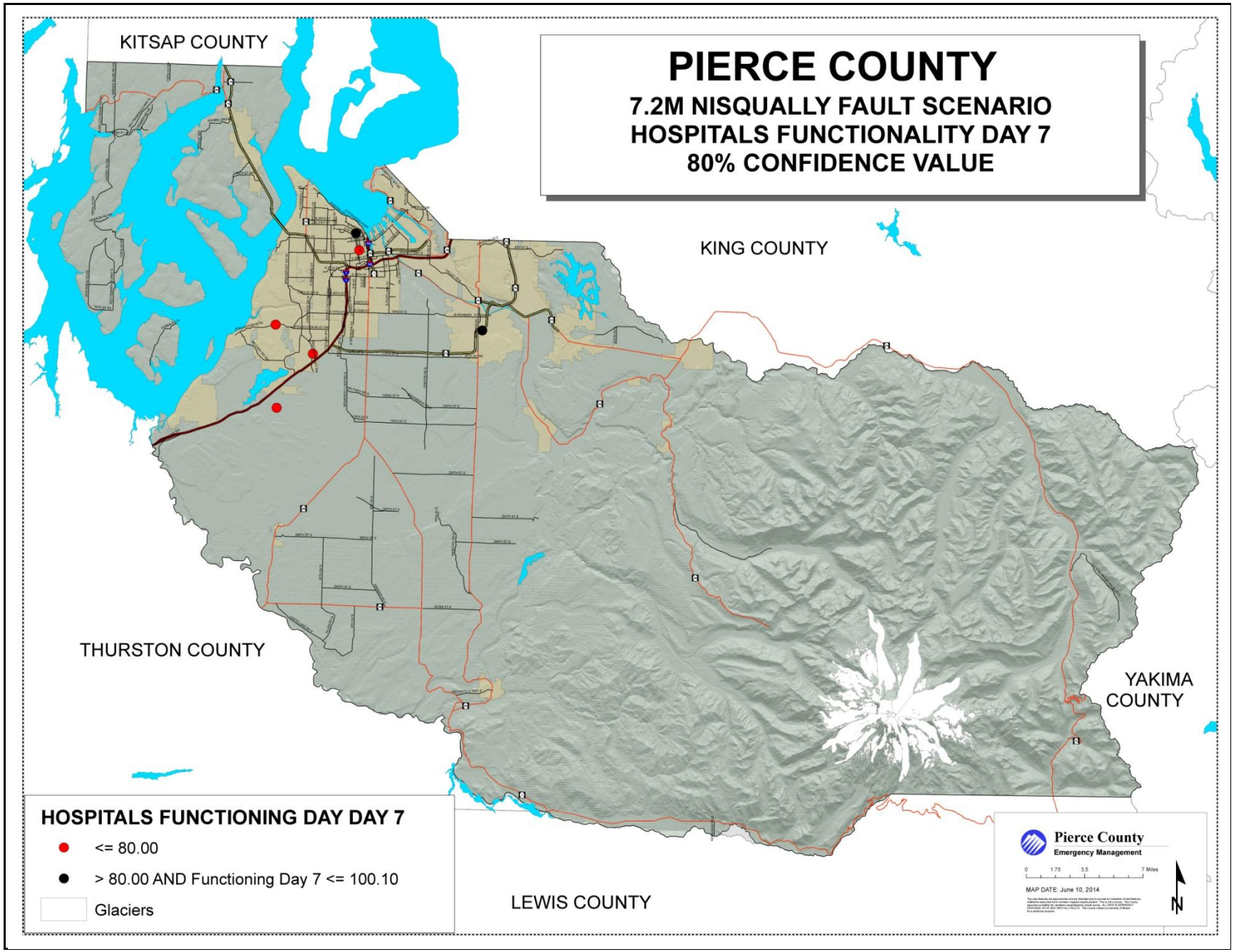
Map D-20 Pierce County Nisqually Fault Scenario Police Departments Functionality Day 7 Map



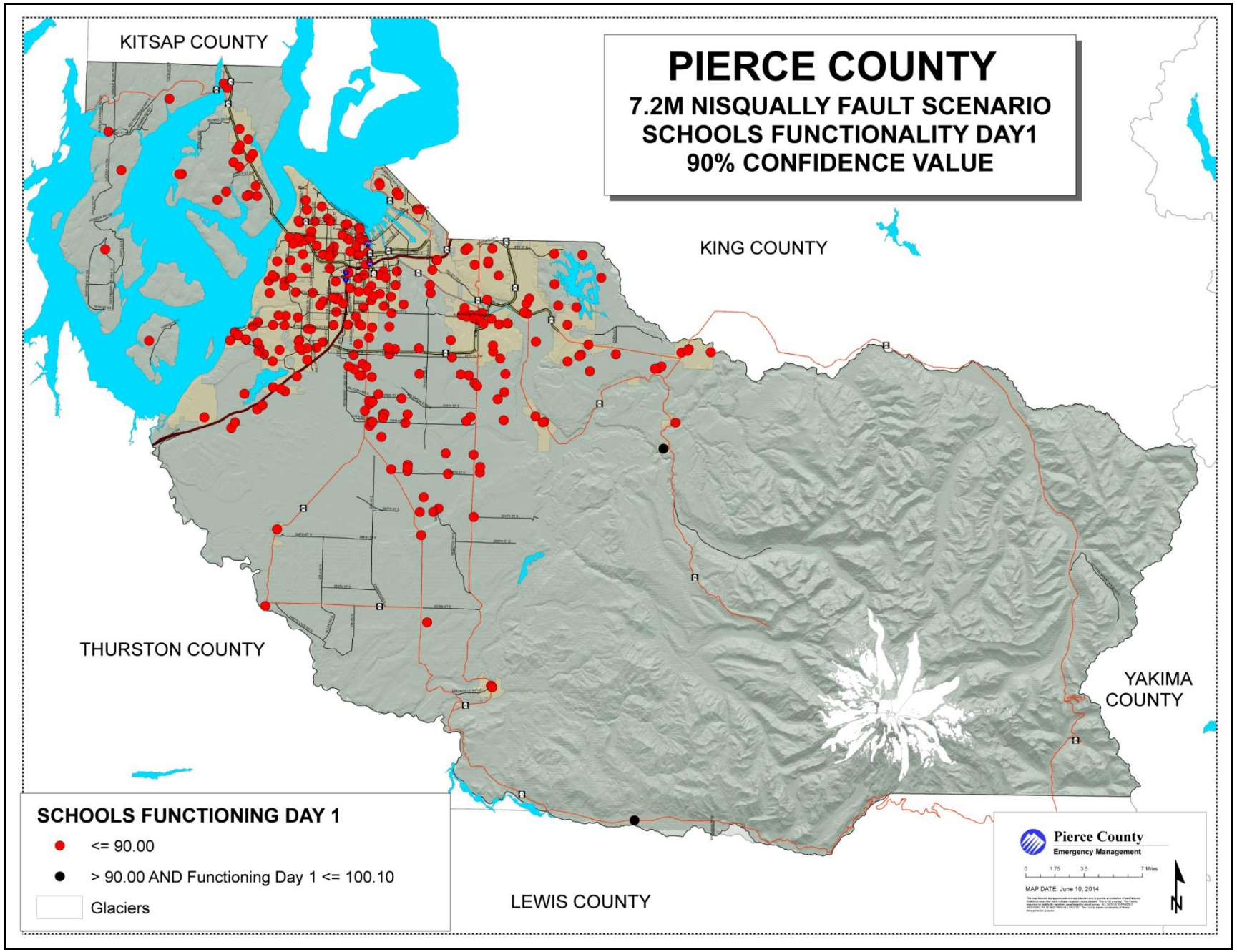
Map D-21 Pierce County Nisqually Fault Scenario Hospital Functionality Day 1 Map



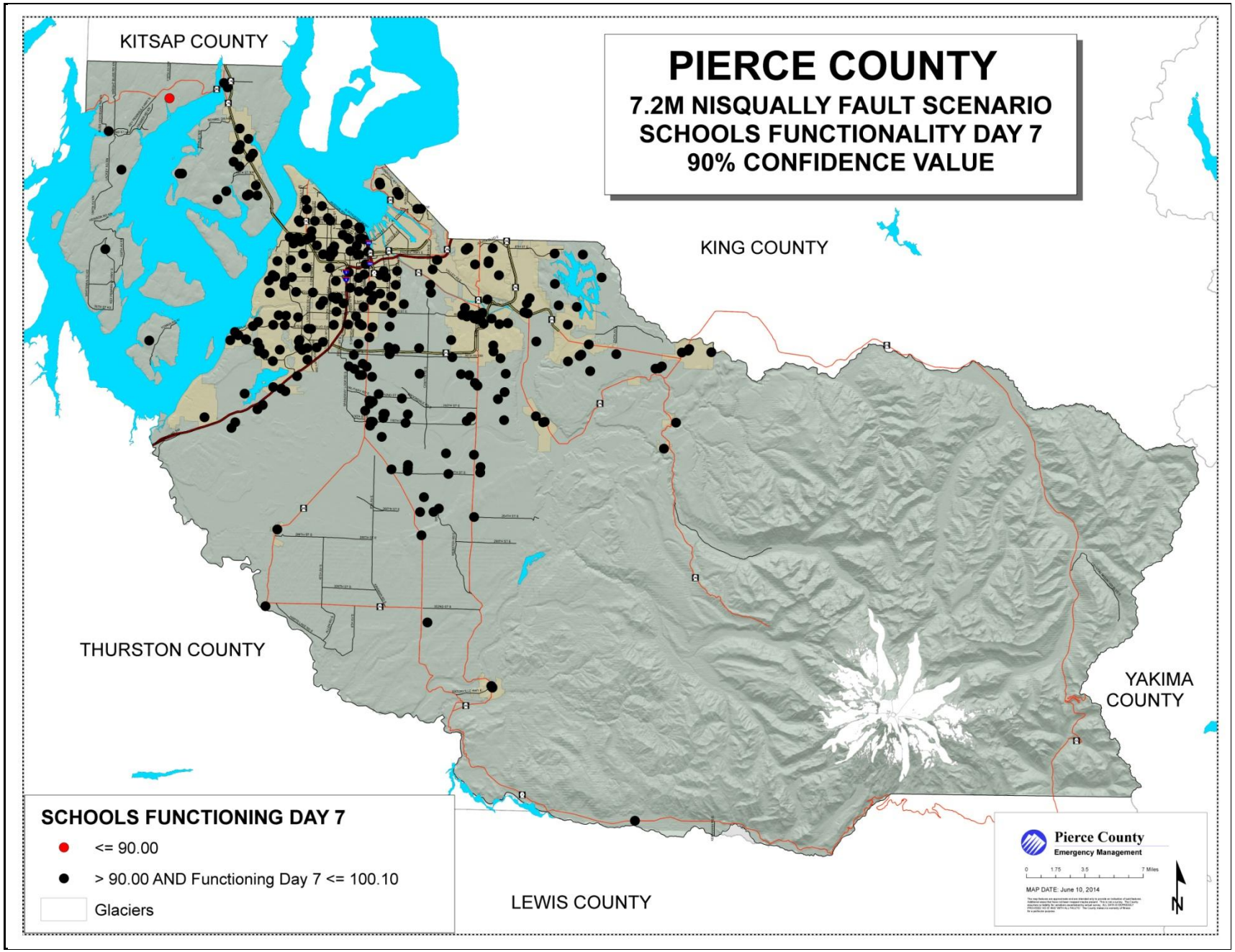
Map D-22 Pierce County Nisqually Fault Scenario Hospital Functionality Day 7 Map



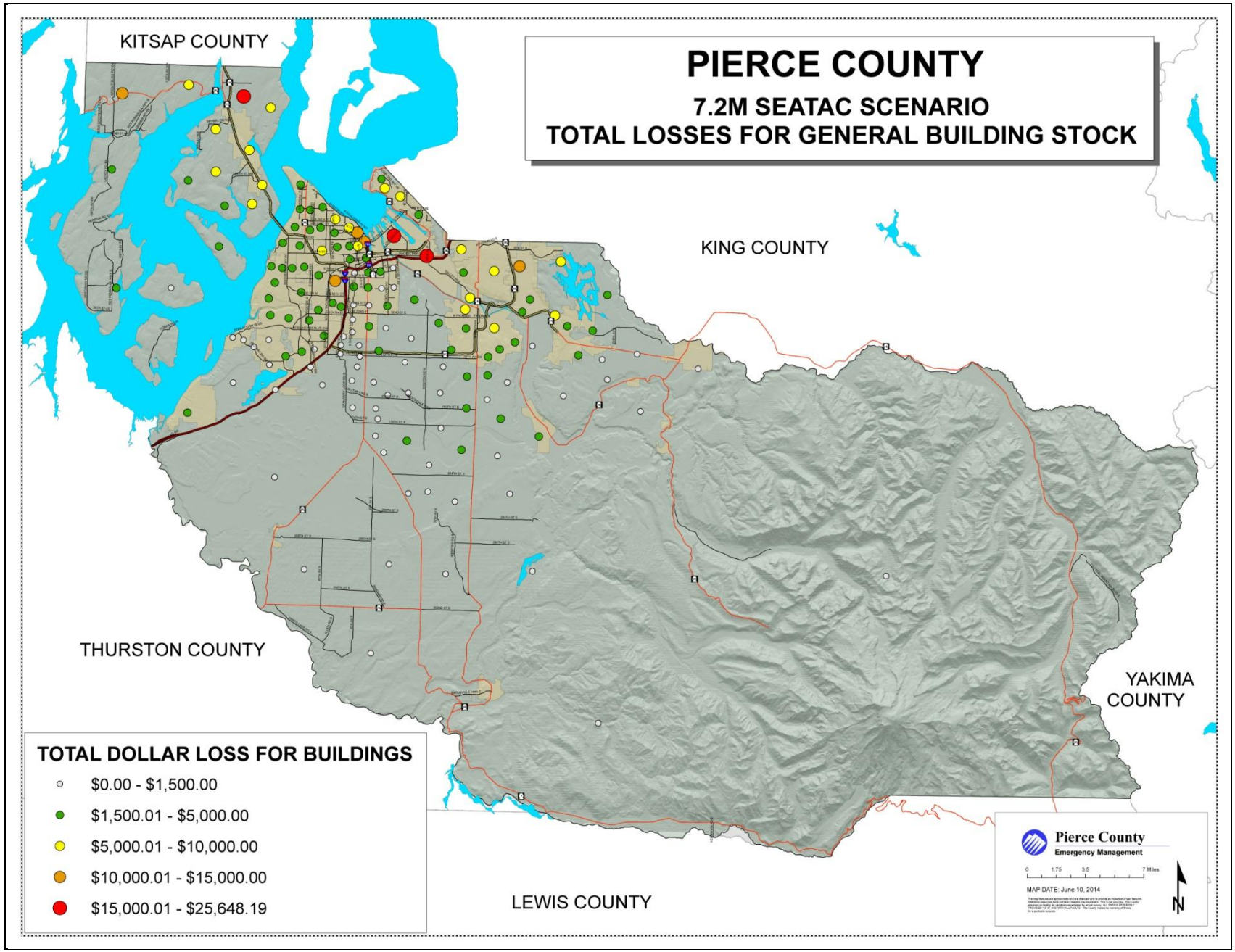
Map D-23 Pierce County Nisqually Fault Scenario Schools Functionality Day 1 Map



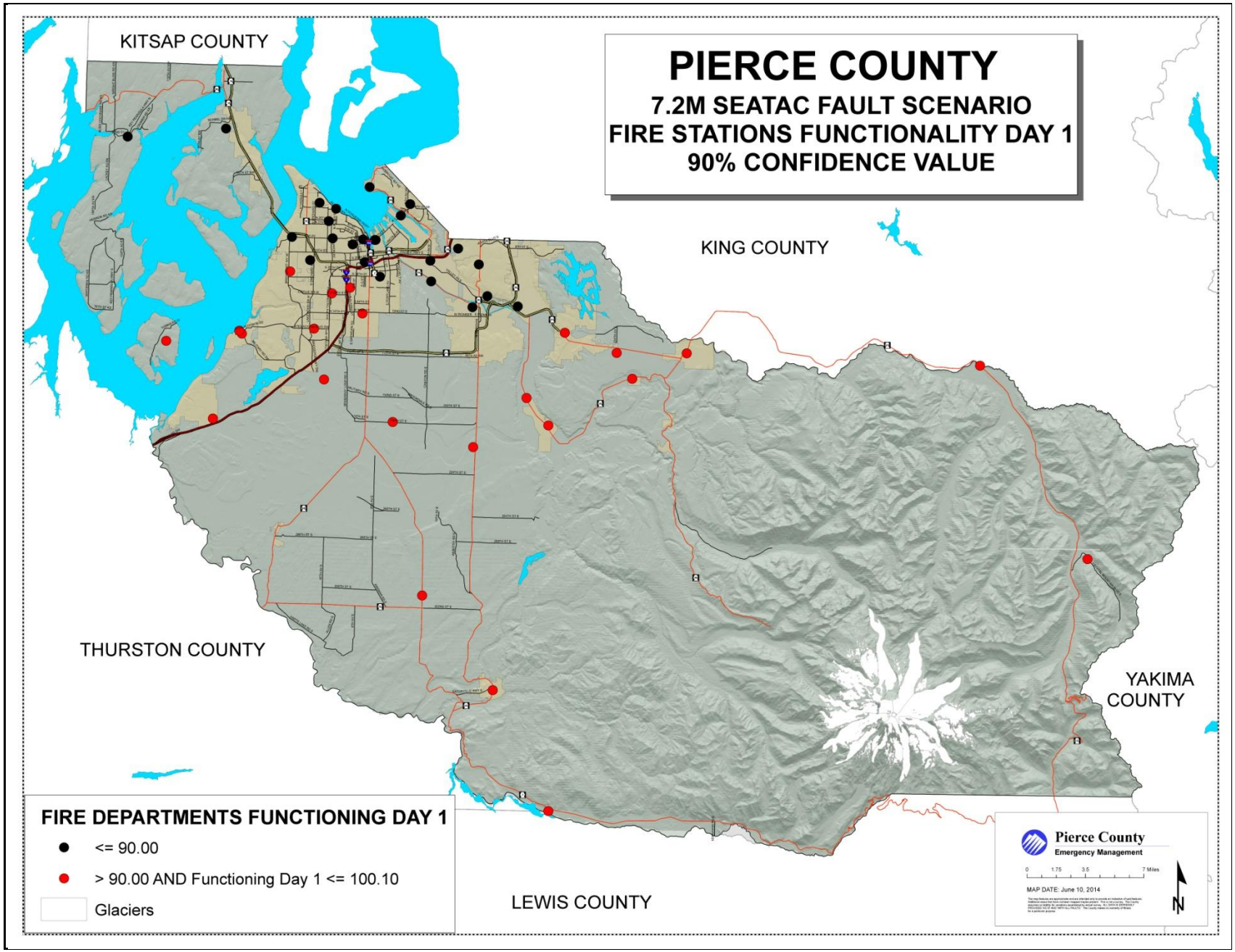
Map D-24 Pierce County Nisqually Fault Scenario Schools Functionality Day 7 Map



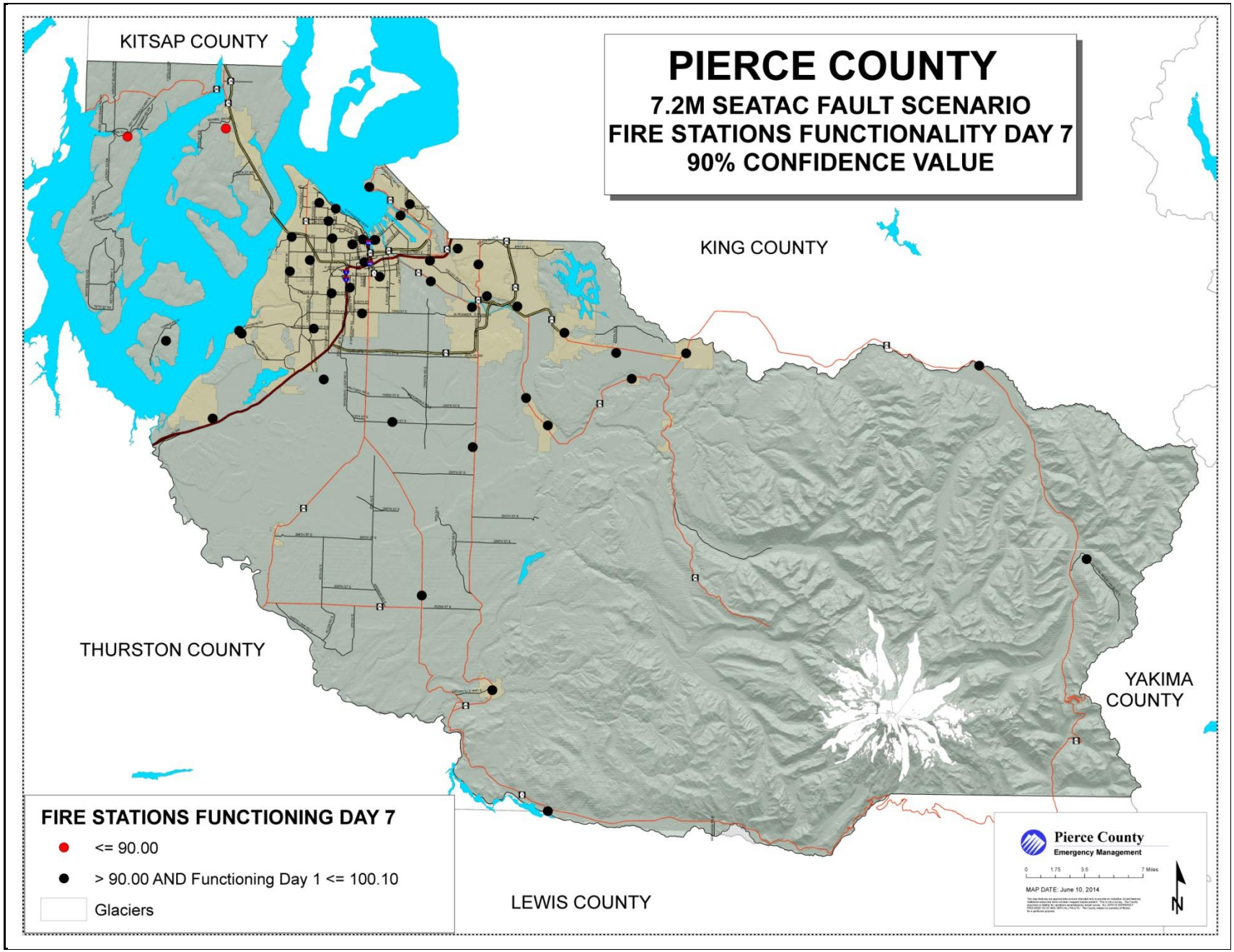
Map D-25 Pierce County SEATAC Fault Scenario Total Losses Map



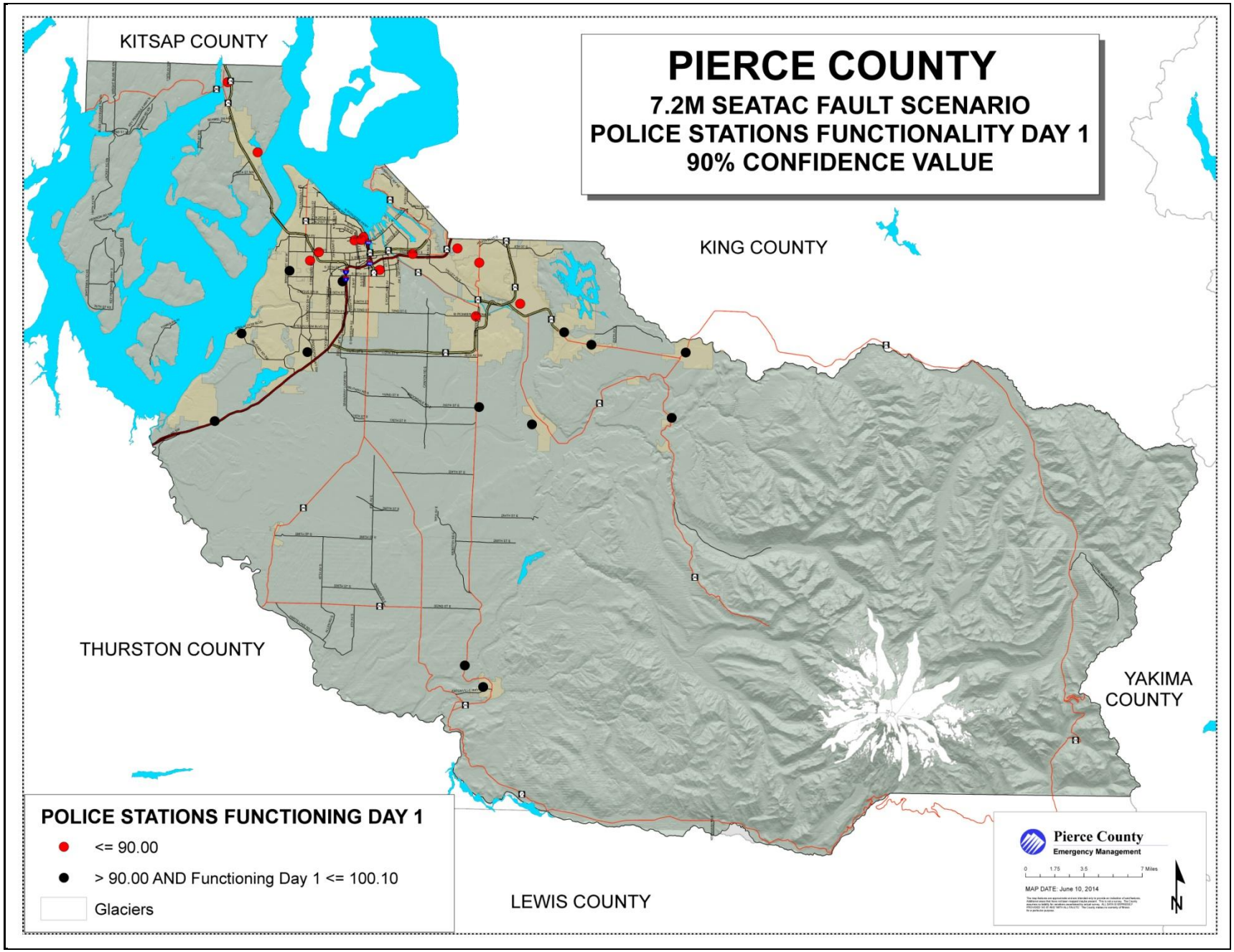
Map D-26 Pierce County SEATAC Fault Scenario Fire Stations Functionality Day 1 Map



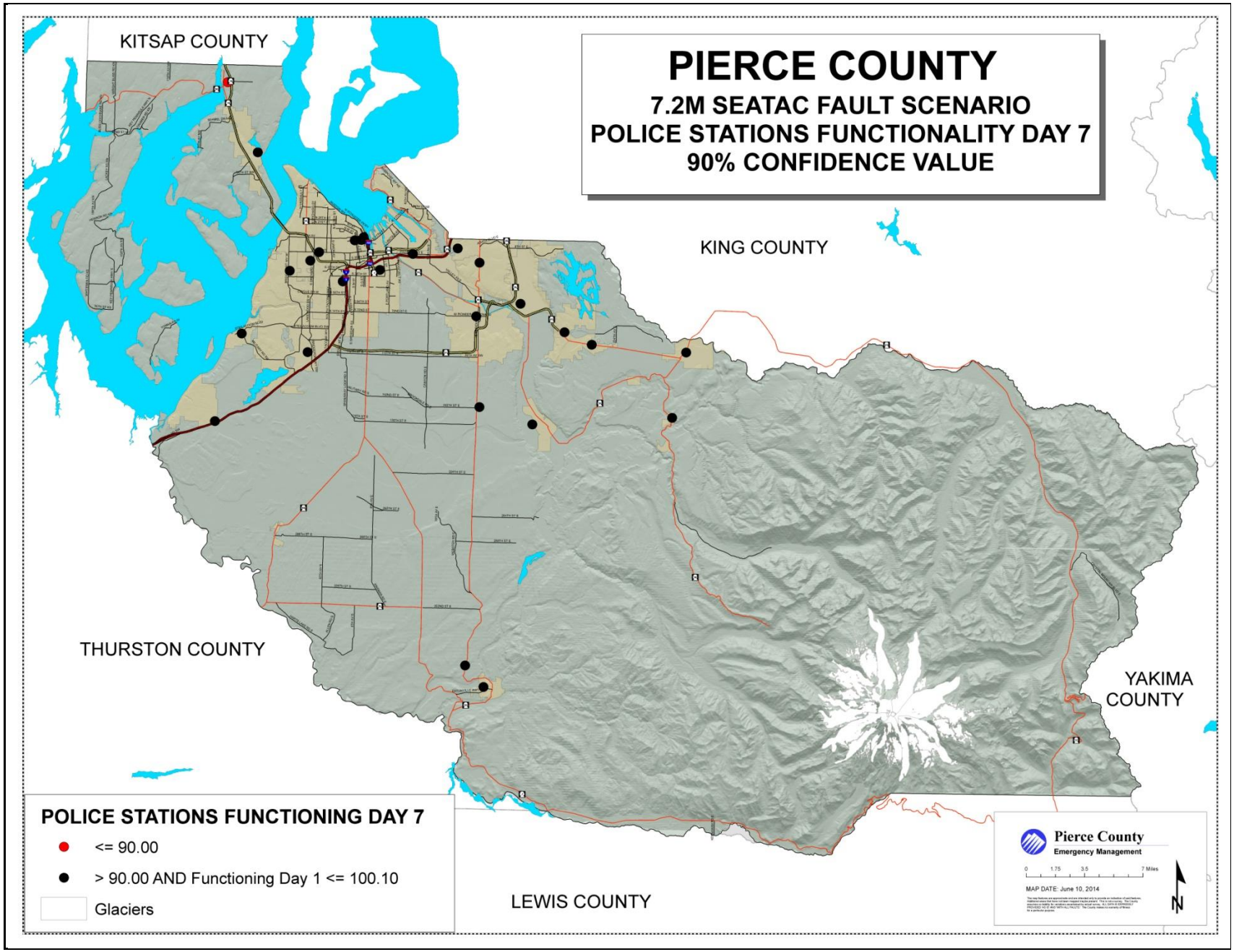
Map D-27 Pierce County SEATAC Fault Scenario Fire Stations Functionality Day 7 Map



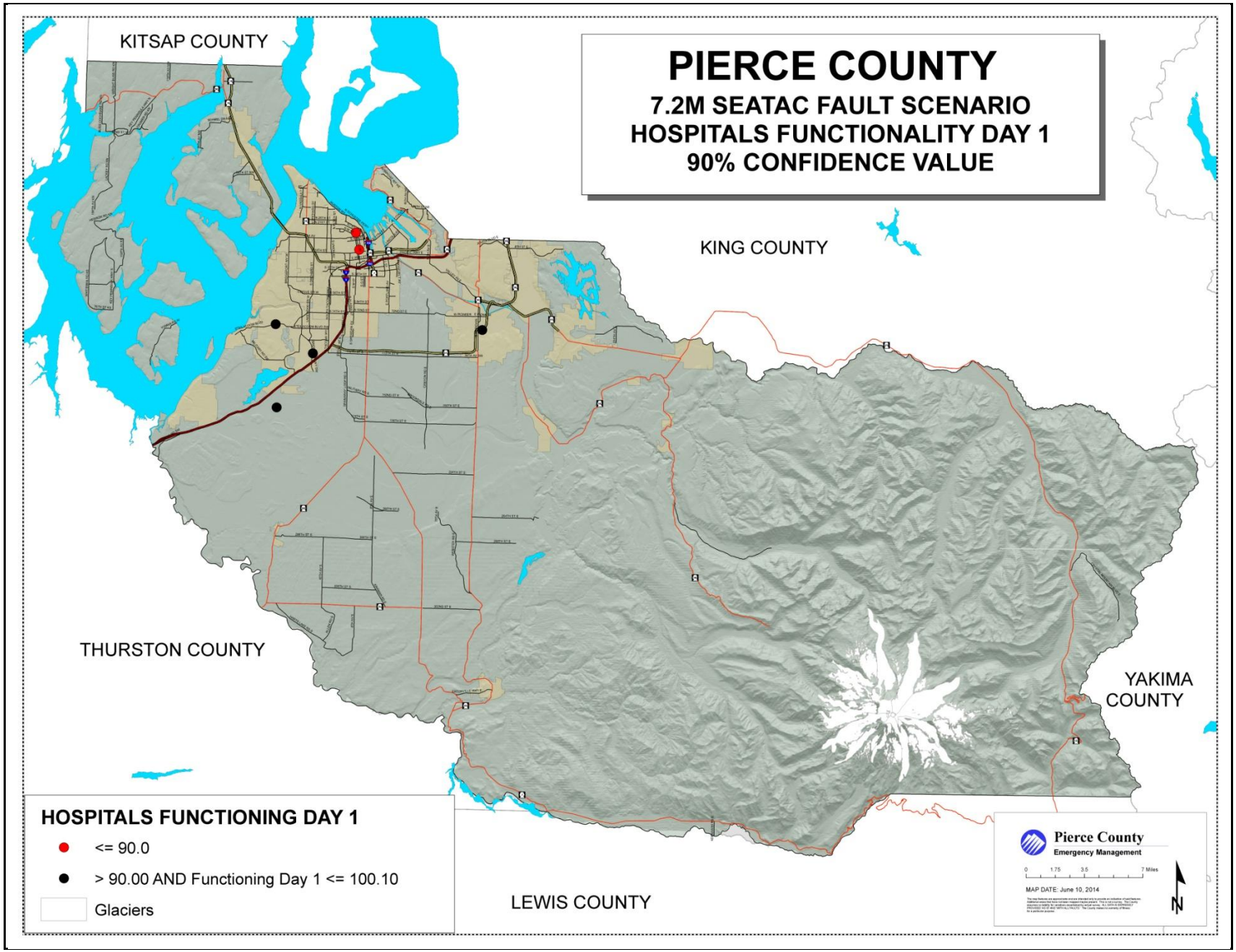
Map D-28 Pierce County SEATAC Fault Scenario Police Department Functionality Day 1 Map



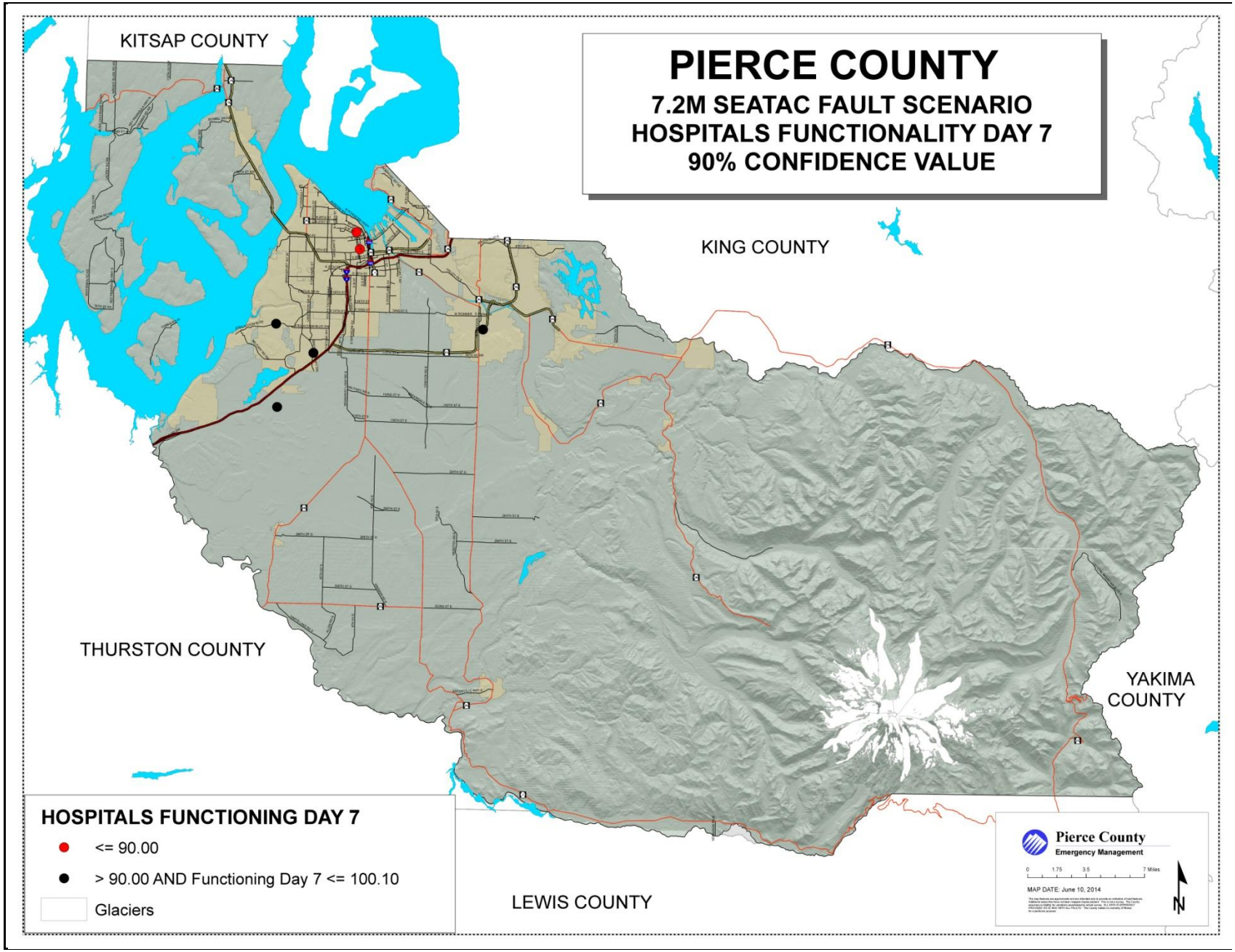
Map D-29 Pierce County SEATAC Fault Scenario Police Department Functionality Day 7 Map



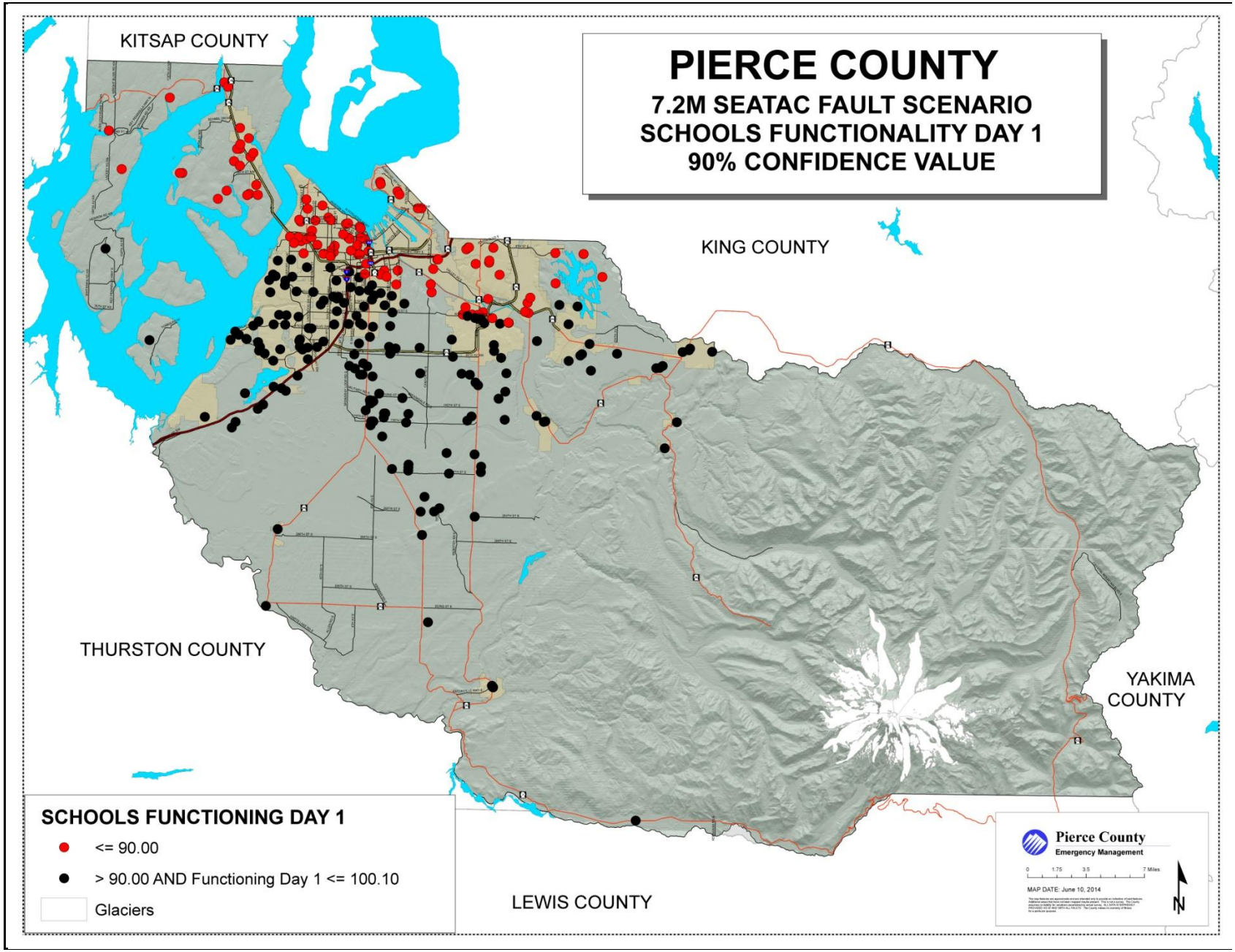
Map D-30 Pierce County SEATAC Fault Scenario Hospital Functionality Day 1 Map



Map D-31 Pierce County SEATAC Fault Scenario Hospital Functionality Day 7 Map



Map D-32 Pierce County SEATAC Fault Scenario Schools Functionality Day 1 Map



Map D-33 Pierce County SEATAC Fault Scenario Schools Functionality Day 7 Map