Providence St. Peter Hospital's Annex to the Natural Hazards Mitigation Plan for the Thurston Region

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Placeholder for Adopting Resolution

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Hospital Profile
Providence St. Peter Hospital

(360)491-9480
www.providence.org/swsa/facilities/St_Peter_Hospital

Background

About: Providence St. Peter Hospital is a Providence Health and Services Southwest Regional Hospital. Providence St. Peter is a 390-bed, not-for-profit regional teaching hospital founded by the Sisters of Providence in 1887. Located in Olympia, the state capital, Providence St. Peter Hospital offers comprehensive medical, surgical and behavioral health services.

Governance: Southwest Washington Service Area

St. Peter Hospital Campus (sq mi.)[1]	0.25

Staff

Employees[2]	
Number of Employees	2300
Number of Active Medical Staff	275

Services

Services

- Adult Family Medicine
- Regional Cancer Center
- Chemical Dependency Center
- Boldt Diabetes Center
- Diagnostic Imaging
- Employee Assistance Services
- Endocrinology
- Regional Heart Center
- Sleep Center
- Tattoo Removal Services
- Ultrasound
- Women's Services
- Internal Medicine
- Lactation Equipment
- Maternity
- Neuroscience Center
- Neurosurgery Clinic
- Orthopaedic Healing Center
- Outpatient Surgery
- Pediatrics
- Physical Medicine and Rehabilitation
- Psychiatry Services
- Senior Services
- Sexual Assault Clinic

Our Mission
As people of Providence, we reveal God's love for all, especially the poor and vulnerable, through our compassionate service. Our mission is carried out by employees, volunteers, physicians and others who work together in a spirit of service that reflects our core values.

Our Core Values
We honor the following core values:

Respect: Affirming the God-given dignity and worth of each person.

Compassion: Caring for each person as part of our family.

Justice: Working for a fair and equitable society.

Excellence: Continually improving all that we do.

Stewardship: Wisely caring for and sharing human, environmental and financial resources held in trust.

Sources
[1]Thurston Regional Planning Council
[2]Providence St. Peter Hospital

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Providence St. Peter Hospital Plan Development Process

Hazard Mitigation Plan Development Staff

The following staff served as Providence St. Peter Hospital hazards mitigation planning development team:

Title	Representative
Emergency Preparedness Coordinator, Project Lead	Mike Presswood
Security Manager	Fred Millius
Facilities & Technology Director	Geoff Glass

Hazard Mitigation Plan Development

The following activities supported the development of Providence St. Peter Hospital local hazard mitigation planning process:

Date	Location	Activity	Subject
June 6, 2008	TRPC	Meeting /Work session	TC Hazards Mitigation Plan
July 24, 2008	TRPC	Meeting /Work session	Review of the Natural Hazards Mitigation Plan for the Thurston Region and PSPH Annex
January 7, 2009	PSPH	Meeting /Work session	PSPH Hazard Mitigation Plan Annex Planning Process
January 21-22, 2009	WA EMD, Camp Murray	Hazard Mitigation Planning Training	Staff attended FEMA/Washington State Natural Hazard Mitigation Planning Training
February 11, 2009	TRPC	Meeting /Work session	TC Hazards Mitigation Planning Process
July 13, 2009	PSPH	Meeting /Work session	PSPH Hazard Mitigation Plan Annex Development

Mitigation Initiative Prioritization Process

Four of five mitigation initiatives were completed since the plan was adopted. No new initiatives were identified. The remaining initiative, PSPH-EH 1, subsequently is the priority project for Providence St. Peter Hospital.

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Providence St. Peter Hospital Risk Assessment

Introduction

The risk assessment provides information about the hazards that threaten Providence St. Peter Hospital. This information provides the factual basis to identify and support a strategy that can effectively mitigate the effects of the hazards that threaten this jurisdiction's safety and challenge its ability to perform essential functions.

The content and structure of this plan's risk assessment was developed using the Federal Emergency Management Agency's (FEMA) 2008 "Local Multi-Hazard Mitigation Planning Guidance." Table 1 shows the Disaster Mitigation Act (DMA) Risk Assessment Planning Requirements that must be met in order for this plan to receive a "satisfactory" score. Each of these planning requirements is met through the information contained in both the regional risk assessment and in this local annex.

Table 1: Disaster Mitigation Act Risk Assessment Planning Requirements

DMA Section	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 …
§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.
§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.
§201.6(c)(2)(ii):	[The risk assessment in all] plans approved after October 1, 2008 **must** also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.
§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 …
§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)(::)(A) of this section and a description of the methodology used to prepare the estimate …
§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.
§201.6(c)(2)(iii):	For multi-jurisdictional plans, the risk assessment **must** assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

In general the Federal DMA planning requirements with the words "**shall**" and "**must**" indicate that the item is mandatory and must be included in the plan, otherwise it will not be approved by FEMA. Regulations with the word "**should**" indicate that the item is strongly recommended to be included in the plan, but its absence will not cause FEMA to disapprove the plan.

Hazard Analysis Definitions

The adjective descriptors (High, Moderate, and Low) for each hazard's probability of occurrence, vulnerability, and risk rating are consistent with the terms used in the regional assessment.

The following terms are used in this plan to analyze and summarize the risk of the hazards that threaten this jurisdiction:

Figure 1: Risk is a subjective estimate of the combination of a hazard's probability of occurrence and a community's vulnerability.

Risk Rating:

An adjective description (High, Moderate, or Low) of the overall threat posed by a hazard is assessed for the next 25 years. Risk is the subjective estimate of the combination of any given hazard's probability of occurrence and vulnerability.

- High: There is strong potential for a disaster of major proportions during the next 25 years; or History suggests the occurrence of multiple disasters of moderate proportions during the next 25 years.
- Moderate: There is medium potential for a disaster of less than major proportions during the next 25 years.
- Low: There is little potential for a disaster during the next 25 years.

Probability of Occurrence:

An adjective description (High, Medium, or Low) of the probability of a hazard impacting the jurisdiction within the next 25 years.

- High: There is great likelihood that a hazardous event will occur within the next 25 years.
- Moderate: There is medium likelihood that a hazardous event will occur within the next 25 years.
- Low: There is little likelihood that a hazardous event will occur within the next 25 years.

Vulnerability:

Vulnerability can be expressed as combination of the severity of a natural hazard's effect and its consequential impacts to the community. An adjective description (High, Medium, or Low) of the potential impact a hazard could have on the community. It considers the population, property, commerce, infrastructure and services at risk relative to the entire jurisdiction.

- High: The total population, property, commerce, infrastructure and services of the community are uniformly exposed to the effects of a hazard of potentially great magnitude. In a worse case scenario, there could be a disaster of major to catastrophic proportions.
- Moderate: The total population, property, commerce, infrastructure, and services of the community are exposed to the effects of a hazard of moderate influence; or the total population,

property, commerce, infrastructure, and services of the community are exposed to the effects of a hazard of moderate influence, but not all to the same degree; or an important segment of population, property, commerce, infrastructure and services of the community are exposed to the effects of a hazard. In a worst case scenario there could be a disaster of moderate to major, though not catastrophic, proportions.

- Low: A limited area or segment of population, property, commerce, infrastructure, or service is exposed to the effects of a hazard. In a worst case scenario, there could be a disaster of minor to moderate proportions.

Summary Risk Assessment

Based on the regional risk assessment and the local risk assessment in the subsequent section, the following hazards pose the greatest threat to Providence St. Peter Hospital.

Hazard	Probability of Occurrence	Vulnerability	Risk
Earthquake	High	High	High
Storm	High	High	High
Flood	High	Moderate	Low
Landslide	N/A	N/A	N/A
Wildland Fire	Moderate	Moderate	Moderate
Volcanic Event	Low	Moderate	Low

Local Risk Assessment

A comprehensive risk assessment of the major natural hazards that threaten Providence St. Peter Hospital was developed for this plan through the regional risk assessment process described in Chapter 4.0. The regional risk assessment and its hazard profiles serve as the foundation for this jurisdiction's risk assessment. A list of all of the potential natural hazards that could impact this jurisdiction is located in Chapter 4. Chapter 4 includes six natural hazard profiles for earthquake, storm, flood, landslide, wildland fire, and volcanic events. Each profile defines the hazard and describes its effects, severity, impacts, probability of occurrence, and historical occurrences. The regional profiles describe this jurisdiction's local vulnerabilities in terms of the portion of the jurisdictions land base or service area, population, employment, dwelling units, jurisdiction-owned assets, and critical facilities that are within each hazard zone.

This section of the plan provides additional details or explains differences where this jurisdiction's risks for each hazard vary from the risks facing the entire planning area. Maps of the hazards that affect Providence St. Peter Hospital are scaled to local boundaries and are included in this section.

Earthquake

Severity

High

Impacts

High

Probability of Occurrence

High

Historical Occurrences and Impacts Specific to this Jurisdiction

Thurston County is located in a seismically active region. Each year, since 1980, the Pacific Northwest Seismograph Network has recorded an average of more then two thousand earthquakes in Washington and Oregon. Providence St. Peter Hospital is part of the county critical infrastructure and plays an important part in providing healthcare to a population of over 500,000. The Nisqually earthquake of 2001 was an eye-opener for us and a future damaging one could have a catastrophic impact on this hospital and our surrounding region

Summary Assessment

History suggests a high probability of occurrence of another damaging earthquake Sometime in the next 25 years. With the 2001 Nisqually earthquake still fresh in the region's memory, it is important to note that it was not the largest earthquake event possible in the Puget Sound Region. Damage from the 1949, 1965, and 2001 earthquakes indicate that a large earthquake could have a catastrophic impact on Providence St. Peter Hospital suggesting high vulnerability. Accordingly, the high risk rating is assigned.

Summary Risk Assessment for Earthquake in Providence St. Peter Hospital

Probability of Occurrence	Vulnerability	Risk
High	High	High

Storm

Severity

High

Impacts

Moderate

Probability of Occurrence

High

Historical Occurrences and Impacts Specific to this Jurisdiction

The entire county is vulnerable to the effects of a storm. Providence St. Peter Hospital campus is surrounded by large trees and power lines. High winds can bring down trees, down telephone and electrical lines, and interrupt transportation, communications and power distribution, leaving large areas without electric power. Prolonged heavy rains can cause the ground to be saturated, rivers and streams to rise, and result in local flooding and landslides in rural areas. In the urban area, city storm drains may be unable to handle the run-off. In the city of Olympia served by LOTT, there can be a loss of LOTT and damage communications links, damage to LOTT plant functions, flooding of streets and intersections, mudslides off steep slopes and costly street damage from these mudslides. This could have a serious impact on Providence St. Peter Hospital to provide healthcare to our county and region. Storms occur when rain falls out of a warm atmospheric layer into a cold one near the ground. The rain freezes on contact with cold objects including the ground, trees, structures, and power lines, causing buildings to collapse and power lines to break. This can have an impact on patients, EMS, and families being able to access PSPH.

Snow storms primarily impact the transportation system and the availability or timing of public safety services. Snow accumulations can also cause roofs to collapse. Snow accompanied by high winds is a blizzard which can affect visibility, cause large drifts and strand residents for up to several days. Melting snow adds to river loading and can turn an otherwise benign situation into a local disaster. PSPH as a critical access hospital requires a high priority to local roads and transportation, public works to keep main roads and streets clear to the hospital. Each of these when in combination with any other or if accompanied by freezing temperatures can exacerbate a storm's impact. Isolated residents without power are more likely to use wood fires to stay warm or to cook, possibly resulting in an increase in the number of structural fires. Residents without food or water may attempt to use impassable roads and thereby increase the potential rescues. Since stress can bring on medical problems, there tends to be an increase in calls for medical assistance. High winds, heavy snows, and heavy rains often result in increased automobile accidents as well.

Summary Assessment

Storm history suggests a high probability of occurrence in and around PSPH. Even with backup generator power, PSPH can suffer a damaging impact of our ability to provide critical healthcare to the community and region. Historical damage and cumulative costs of destructive storms suggest high vulnerability. Accordingly, a high risk rating is assigned.

Summary Risk Assessment for Storm in Providence St. Peter Hospital

Probability of Occurrence	Vulnerability	Risk
High	High	High

Flood

Severity

Low

Impacts

Moderate

Probability of Occurrence

High

Historical Occurrences and Impacts Specific to this Jurisdiction

Of all natural hazards that affect Thurston County, floods are the most common and, on an annual average basis, the most costly. They can occur at any time of the year, and at any time of day or night. Most injuries and deaths occur when people are swept away by flood currents, and most property damage results from inundation by sediment-filled water.

Several factors determine the severity of floods, including rainfall intensity (or other water source) and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A small amount of rain can also result in floods in locations where the soil is saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods.

Water run-off is greater in areas with steep slopes and little or no vegetative ground cover.

Frequency of inundation is affected by the climate, soil, and channel slope.

Four types of flooding occur in Thurston County: river or stream building floods, flash floods, tidal floods, and groundwater flooding. River and stream building floods occur because of prolonged heavy rainfall, a rapidly melting snow pack or a combination of these. Historically, Thurston County must experience two or three days of rainfall averaging 2-5 inches per day for this type of flooding to occur. Actual duration and rainfall amounts needed to cause flooding depend on the initial condition of the river or stream, groundwater conditions, and run-off conditions. The Olympia area is also vulnerable to events beyond our borders. Both the Nisqually River and the Chehalis River have flooded in Thurston County because of events in their watersheds outside the county. River and stream building floods are the most common in Thurston County because of our many rivers and streams, and development patterns along them.

Thurston County defines three levels of river flooding:

- Nuisance flooding: The river exceeds bank-full conditions at one or more locations, generally flooding fields and forests. Some roads may be covered but passable. There may be enhanced erosion of some river banks.

- Moderate flooding: Individual residential structures are threatened and evacuation is recommended for selected properties. Some roads may be closed. Moderate damage may be experienced.
- Major flooding: Neighborhoods and communities are threatened and evacuation is recommended for residents living on specified streets, in specified communities or neighborhoods, or along specified stretches of river. Major thoroughfares may be closed and major damage is expected. This type of flooding can have a sever impact on patients, EMS, and hospital workers being able to access the hospital.

Summary Assessment

Historically, flooding occurs along one or more of the county's waterways every year, suggesting a high probability of occurrence. Because of the relative land area and population affected, the county is exposed to moderate vulnerability. Although the vulnerability is moderate, the frequency of flooding, the potential for simultaneous flooding events, plus the historical record of recurrent flooding and cumulative costs, all suggest the assignment of a high risk rating. PSPH may not be directly impacted by flooding due to the surrounding landscape and drainage, but access to the hospital is critical to our community and region.

Summary Risk Assessment for Flood in Providence St. Peter Hospital

Probability of Occurrence	Vulnerability	Risk
High	Moderate	Low

Landslide

Severity

N/A

Impacts

N/A

Probability of Occurrence

N/A

Historical Occurrences and Impacts Specific to this Jurisdiction

None

Summary Assessment

None

Summary Risk Assessment for Landslide in Providence St. Peter Hospital

Probability of Occurrence	Vulnerability	Risk
N/A	N/A	N/A

Wildland Fire

Severity

Moderate

Impacts

Moderate

Probability of Occurrence

Moderate

Historical Occurrences and Impacts Specific to this Jurisdiction

Forest and wildfires are most likely to occur during the local dry season, mid-May through October, and anytime during prolonged dry periods causing drought or near-drought conditions. PSPH is surrounded by large trees on the hospital campus that could be affected by local wildfires. The probability of a destructive fire depends on weather, fuel conditions, topography, and human activities such as debris burning, land clearing, camping, and construction. Greater than four out of five forest and wildfires are started by people, often due to negligent behavior such as failure to properly extinguish smoking materials or campfires. There have been no major forest fires or wildfires in Thurston County. However, the existence of large tracts of public and private forest, increasing population, increasing recreational use of forested land, and possible changing climate patterns, all increase the likelihood of a major fire. Although nearly half of the County is forest land, three general areas are vulnerable to a major forest fire. These are Capital Forest in the west, Fort Lewis Military Reservation in the east, and large commercial tracts in the southeast. In each of these areas, development is prohibited or restricted. All areas of the county are vulnerable to a wildfire, especially those areas surrounded by brush and grass which tend to dry out in the hotter months. The threat of fire increases in years following those in which there is a large amount debris added to the forest floor and ground such as the summer of 1997 following the massive amounts of fuel added during the wind and ice storm of December 1996. The impact of a major fire would be amplified by collateral effects such as loss of ground cover which could exacerbate runoff, flooding and landslides, loss of commercial and aesthetic value of the forest, destruction of wildlife habitat, and damage to power lines, pipelines and the communications and transportation infrastructure.

Summary Assessment

Although not a historical problem, the existence of large forested areas, increasing population and recreational activities, and the uncertain impact of a changing climate combine to suggest a moderate probability of occurrence. The destruction of large tracts of forest land would have immediate economic impact to the community through lost jobs, reduced taxes, and increased public support while collateral economic and social effects could impact the County for years, suggesting moderate vulnerability. Accordingly, a moderate risk rating is assigned.

Summary Risk Assessment for Wildland Fire in Providence St. Peter Hospital

Probability of Occurrence	Vulnerability	Risk
Moderate	Moderate	Moderate

Volcanic Hazards

Severity

Low

Impacts

Moderate

Probability of Occurrence

Low

Historical Occurrences and Impacts Specific to this Jurisdiction

Cascade Range volcanoes in the U.S. have erupted more than 200 times during the past 12,000 years for an average of nearly two eruptions per century. At least five eruptions have occurred during the past 150 years. The last major eruption of Mt. Rainier was more than 1,000 years ago. The most recent eruptions in the Cascade Range are the well-documented 1980-1986 eruptions of Mount St. Helens which claimed 57 lives and caused nearly a billion dollars in damage and response costs. The effects were felt throughout the northwest. Thurston County was affected by extensive ash fall which damaged internal combustion engines,caused transportation problems due to reduced visibility, and was a general nuisance. There was also an economic impact resulting from the closure of I-5, which would have a serve impact on access to PSPH. Over the past 200 years, Mount St. Helens has erupted three times, suggesting a recurrence interval of about 70 years. An eruption at Mt. Rainier could seriously impact Thurston County. The greatest local threat is from mud, debris, and pyroclastic flows which could inundate the Nisqually Valley in a worst case scenario. A devastating collateral effect is the potential destruction of Alder and LaGrande Dams which would add significantly to the destructive impact of the debris flows. A more likely potential is the displacement of water in the Alder reservoir, caused by upstream debris flow, with potential flooding effects in the Nisqually Valley. Additional devastating impacts could result if winds move debris and ash toward Thurston County. This would disrupt transportation and other essential services, and cause buildings to collapse while particulates, toxic gases and acid rains could affect public health, water supplies, animal, aquatic and other plant life. Another eruption of Mount St. Helens would likely have an impact similar to that experienced in 1980.

Summary Assessment

History suggests a low probability of occurrence. There is a moderate to high vulnerability. Because Mt. Rainier has been quiet for the past 1,000 years with no indication of change, this hazard is assigned a low risk rating. Should this area suffer a volcanic eruption, the impact on PSPH would be devastating.

Summary Risk Assessment for Volcanic Events in Providence St. Peter Hospital

Probability of Occurrence	Vulnerability	Risk
Low	Moderate	Low

LINDELL RD NE
WOODARD GREEN DR NE
12TH AVE NE
PROVIDENCE LN NE
Providence St. Peter Hospital
10TH AVE NE
Woodard Creek
LILLY RD NE
8TH AVE NE
ENSIGN RD NE
APPLEHILL CT NE
MARTIN WAY E
STOLL RD SE

DISCLAIMER:
This map is for general planning purposes only. Thurston Regional Planning Council makes no representations as to accuracy or fitness of the information for a particular purpose.

TRPC
Thurston Regional Planning Council

Providence St. Peter Hospital

Providence St. Peter Hospital
Building Footprints (limited)

500 250 0 500 Feet

N W E S

Thurston County, WA

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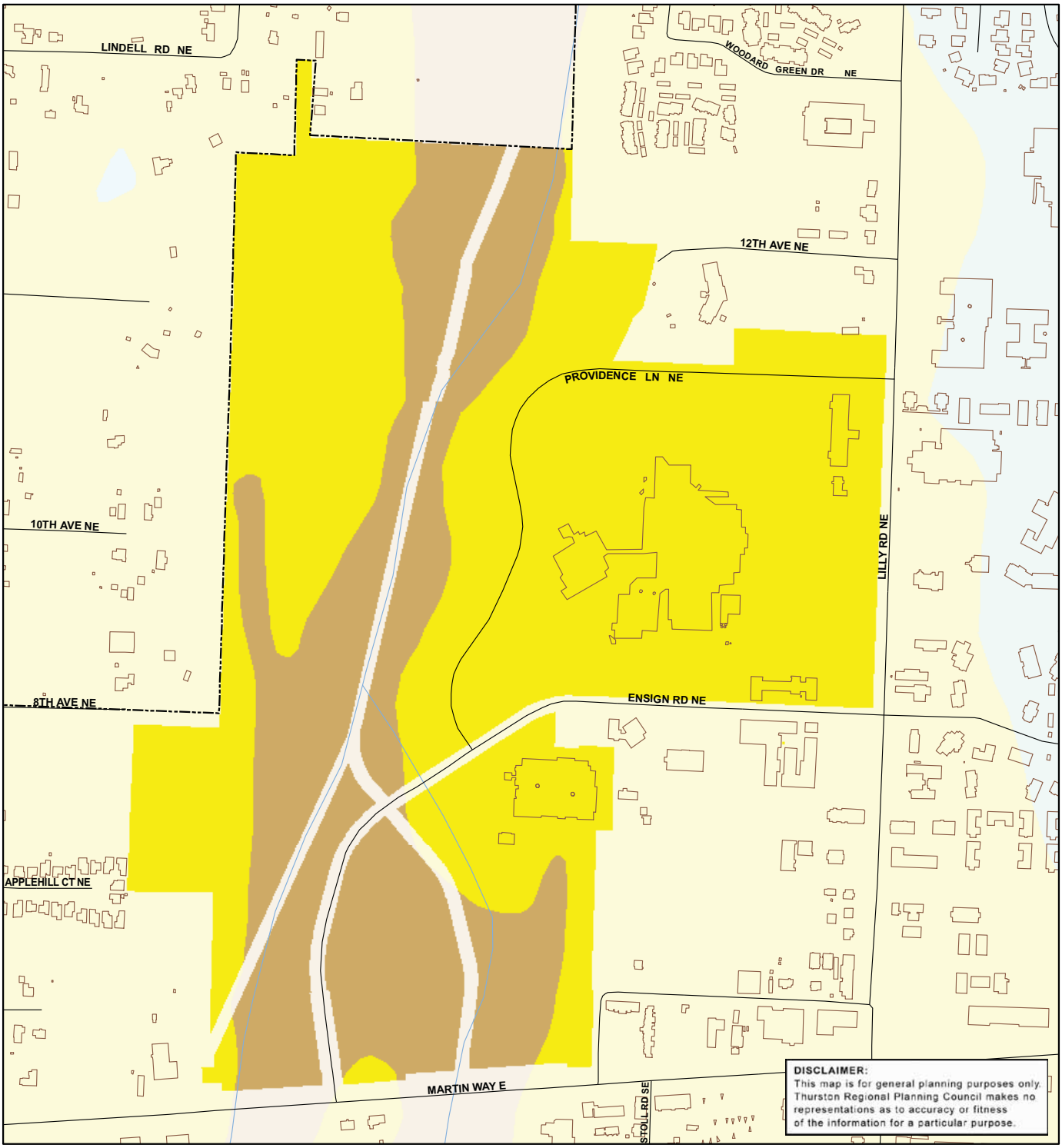

Providence St. Peter Hospital
Liquefaction Hazards

N W E S

City Limits
high
moderate to high
low to moderate
low
very low to low
very low
bedrock
peat
water

TRPC Thurston Regional Planning Council

500 250 0 500 Feet

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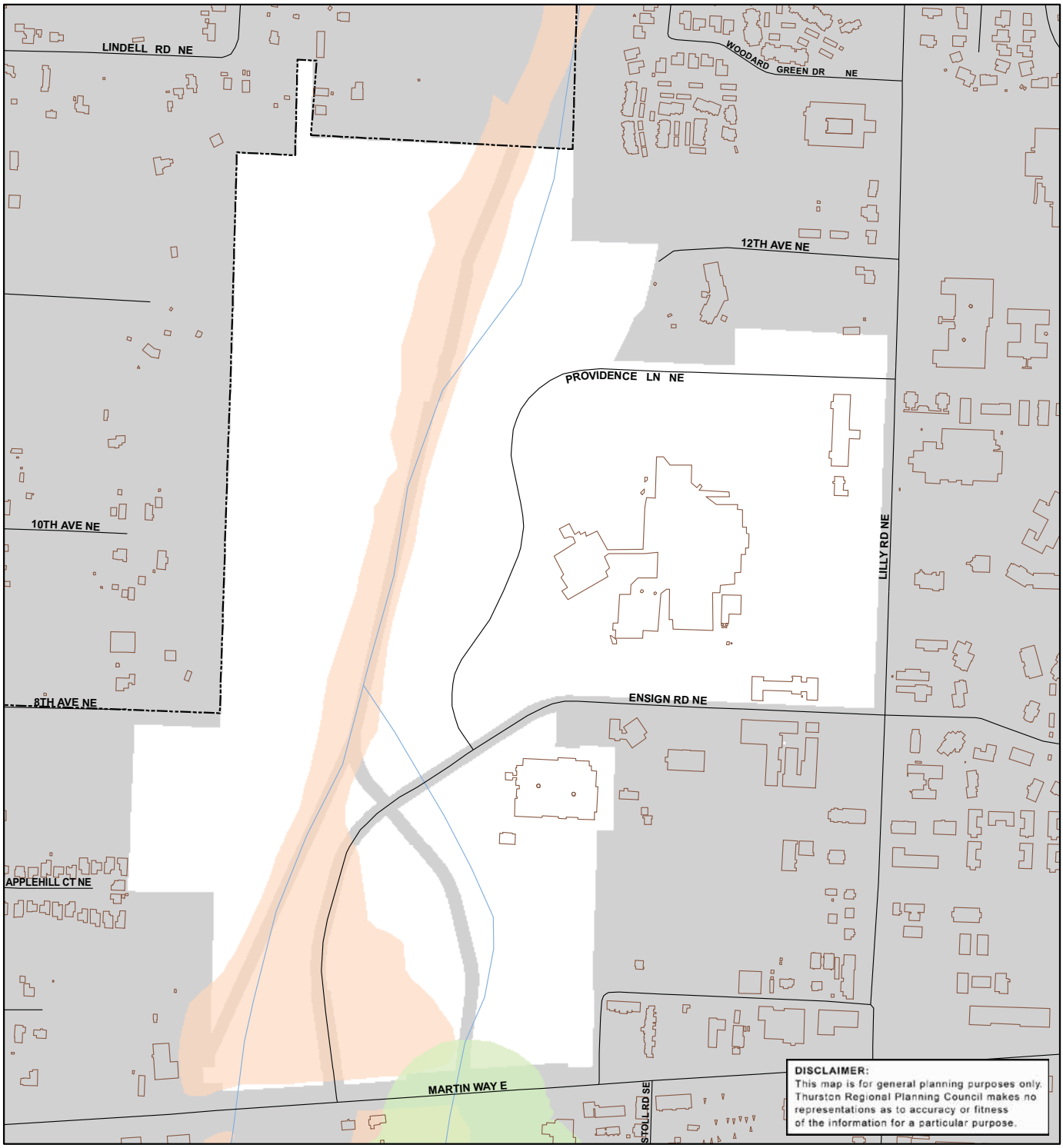

Providence St. Peter Hospital
Flood Hazards

N
W E
S

High Groundwater Flooding
100 Year Floodplain
500 Year Floodplain
Providence St. Peters
City Limits

500 250 0 500 Feet

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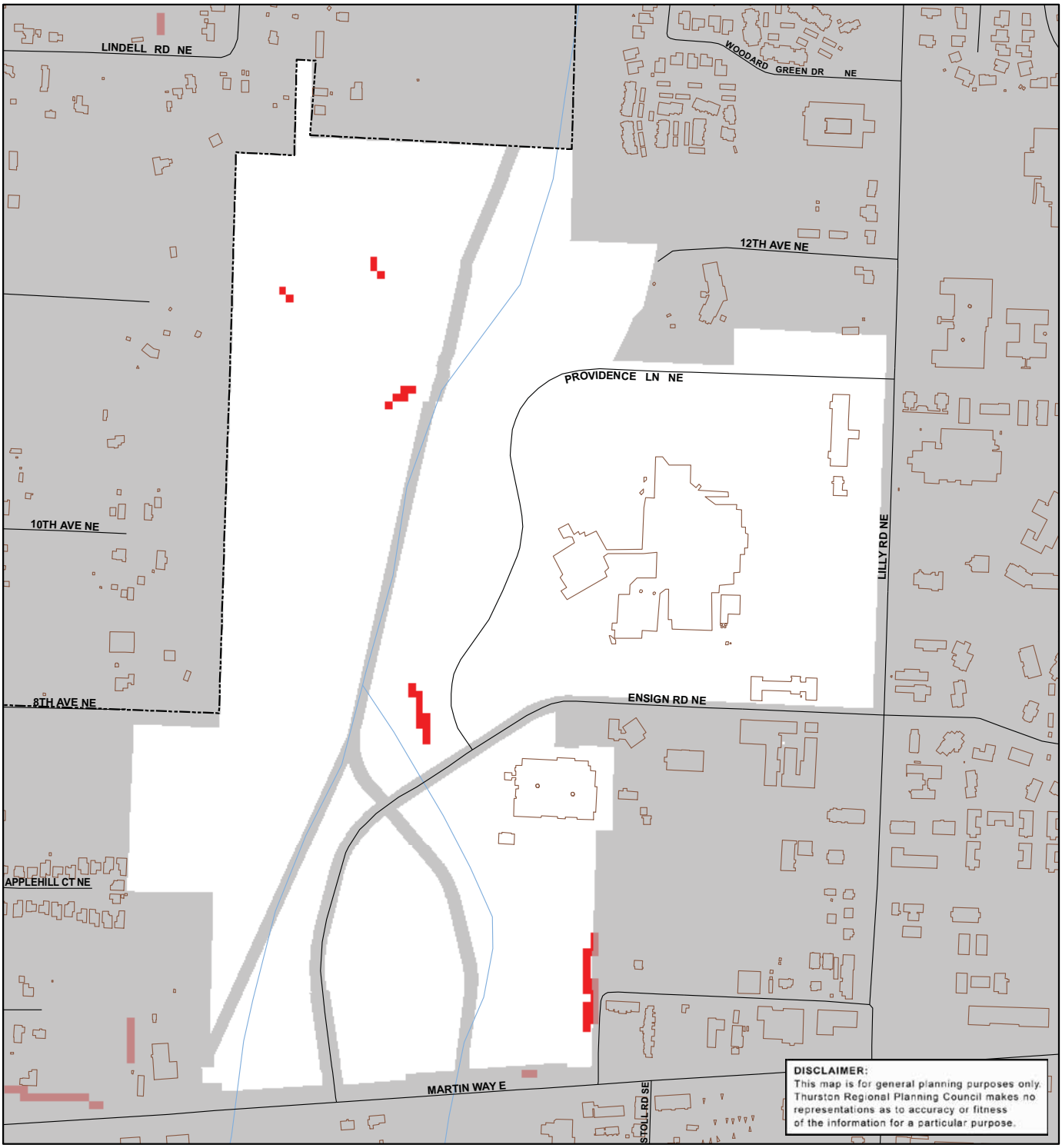

Providence St. Peter Hospital
Steep Slopes

N
W E
S

Slopes Over 40%

City Limits

TRPC
Thurston Regional Planning Council

500 250 0 500 Feet

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Providence St. Peter Hospital Mitigation Initiatives

Current Adopted Mitigation Initiatives

Current Mitigation Initiatives consist of actions that have not yet begun or require additional work. The current initiatives was carried over in its original form from the first edition of this plan.

Priority	I.D. Number	Category	Action	Status
1 of 1	PSPH-EH 1	Critical Facilities Replacement/ Retrofit	Emergency Water Source Well. Develop an emergency water source capable of producing water for emergency use. Design pumping and pipe construction system to include backflow protection, construct pumping and piping system and connect to hospital water network	Existing

Hazard Category Codes are as follows: EH=Earthquake Hazard; FH=Flood Hazard; LH=Landslide Hazard; MH=Multi Hazard; SH=Storm Hazard; WH=Wildland Fire Hazard; and VH=Volcanic Hazard.

Completed or Removed Mitigation Initiatives

Initiatives that were completed in the last five years are included in this plan to provide evidence of progress made. These initiatives are no longer relevant and no longer part of Providence St. Peter Hospital's adopted mitigation strategy. These initiatives are not ranked as they are no longer relevant.

I.D. Number	Category	Action	Status
PSPH-EH 2	Critical Facilities Replacement/Retrofit	Upgrade fire sprinkler bracing as a result of FM Global's seismic evaluation of the main buildings on PSPH hospital campus	Completed
PSPH-EH 3	Critical Facilities Replacement/Retrofit	Reduce the demand on existing sewer lift station for PSPH campus and modify sewer piping system within the main building so that effluent from floors 2 through 11 flows to the sewer main via gravity, rather than being pumped by the lift station. This will also have the effect of reducing dependency on the lift station	Completed
PSPH-MH 1	Hazard Damage Reduction	Contract with a tree specialist to perform an assessment of the health and stability of mature trees on Providence St. Peter Hospital campus. Perform a self-assessment of forest underbrush that could provide a fuel source for fire. Implement corrective actions (trim, removal, etc.) where appropriate and/or necessary	Completed
NTPS-SH 1	Hazard Damage Reduction	Complete an engineering structural assessment of telecommunications equipment on the roof of the patient tower at Providence St. Peter Hospital. Communicate any deficiencies to the owners of the equipment with a request for structural improvement	Completed

Hazard Category Codes are as follows: EH=Earthquake Hazard; FH=Flood Hazard; LH=Landslide Hazard; MH=Multi Hazard; SH=Storm Hazard; WH=Wildland Fire Hazard; and VH=Volcanic Hazard.

Priority: 1 of 1 Status: Existing

Hazard Addressed: Earthquake Hazard
Category: Critical Facilities Replacement/Retrofit

PSPH-EH 1: Emergency Water Source Well. Develop an emergency water source capable of producing water for emergency use. Design pumping and pipe construction system to include backflow protection, construct pumping and piping system and connect to hospital water network

Rationale: Loss of water is the greatest utility vulnerability risk for PSPH's continued operations. The City of Olympia runs the local water source and reports that the water distribution system to PSPH is vulnerable to an earthquake in excess magnitude of 6.8. Water is a critical utility for PSPH in that drinking, bathing, food service, and critical utility systems (i.e. heating, cooling, and medical vacuum) rely on a continuous source. According to the Washington State Department of Ecology (DOE), three on-site wells originally used by residential housing on the PSPH campus cannot be used as a source of emergency water to provide 5,000 gallons-per-day. The hospital actually uses 72,500 to 120,000 gallons per day. Loss of water to PSPH would have a catastrophic impact on the community and surrounding region.

Relates to Plan Goal(s) and Objectives: 3B, 5A, 7B

Implementer: Providence St. Peter Hospital facility and Technology Services Department.

Estimated Cost: $500,000

Time Period: When funds become available.

Funding Source: Unknown

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region.

Adopted Plan Number: PSPH-EH 1

Reference Page: Addendum 3-7

Initiative and Implementation Status: 2003 Natural Hazards Mitigation Plan for the Thurston Region. This initiative has been deferred from the previous due to lack of funding.

Priority: N/A Status: Completed

Hazard Addressed: Earthquake Hazard
Category: Critical Facilities Replacement/Retrofit

PSPH-EH 2: Upgrade fire sprinkler bracing as a result of FM Global's seismic evaluation of the main buildings on PSPH hospital campus

Rationale: Inadequately protected fire sprinkler pipe has a high likelihood of failing during an earthquake. A disruption in service or damage to the fire sprinkler piping could cause substantial water damage and affect the ability to suppress a fire. Either outcome could affect the hospital ability to provide care to patients in the community or region during for falling an earthquake.

Relates to Plan Goal(s) and Objectives: 3B, 5A, 7B

Implementer: Providence St. Peter Hospital facility and Technology Services Department.

Estimated Cost: $58,000.00.

Time Period: 2005.

Funding Source: Hospital Capital.

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region.

Adopted Plan Number: PSPH-EH 2

Reference Page: Addendum 3-8

Initiative and Implementation Status: This initiative was ranked 2 of 5 in the previous Natural Hazards Mitigation Plan for the Thurston Region. This initiative was completed in 2005.

Priority: N/A Status: Completed

Hazard Addressed: Earthquake Hazard
Category: Critical Facilities Replacement/Retrofit

PSPH-EH 3: Reduce the demand on existing sewer lift station for PSPH campus and modify sewer piping system within the main building so that effluent from floors 2 through 11 flows to the sewer main via gravity, rather than being pumped by the lift station. This will also have the effect of reducing dependency on the lift station.

Rationale: The sewer lift station on the PSPH campus handles all effluent collection from the main hospital and effectuates the pumping of the collected materials to the sewer main connected to LOTT. Piping failure, loss of power, or pit collapse due to a severe earthquake would cause immediate sewer backup and severely disrupt hospital operations. By changing the current configuration of the PSPH main building sewer system, all effluent from above-ground areas would be moved via gravity to the sewer main, thereby reducing the power dependency and amount of effluent backup caused by lift station failure.

Relates to Plan Goal(s) and Objectives: 3B, 5A, 7B

Implementer: Providence St. Peter Hospital facility and Technology Services Department.

Estimated Cost: $35,000.00.

Time Period: 2005.

Funding Source: Campus Renewal Bond Funding.

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region.

Adopted Plan Number: PSPH-EH 3

Reference Page: Addendum 3-9
Initiative and Implementation Status: This initiative was ranked 3 of 5 in the previous Natural Hazards Mitigation Plan for the Thurston Region. This initiative was completed in 2005.

Priority: N/A Status: Completed

Hazard Addressed: Earthquake Hazard
Category: Critical Facilities Replacement/Retrofit

PSPH-MH 1: Contract with a tree specialist to perform an assessment of the health and stability of mature trees on Providence St. Peter Hospital campus. Perform a self-assessment of forest underbrush that could provide a fuel source for fire. Implement corrective actions (trim, removal, etc.) where appropriate and/or necessary.

Rationale: The PSPH campus is wooded and, as such, has the potential for significant damage in the event of a severe windstorm. By ensuring the trees are healthy, stable, and free from diseased trunks and/or limbs the potential for disruption of hospital operations due to falling trees or branches (as a result of severe storm conditions) is reduced.

Relates to Plan Goal(s) and Objectives: 5A

Implementer: Providence St. Peter Hospital facility and Technology Services Department.

Estimated Cost: $8,000.00.

Time Period: 2005.

Funding Source: Unknown

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region.

Adopted Plan Number: PSPH-MH 1

Reference Page: Addendum 3-10

Initiative and Implementation Status: This initiative was ranked 4 of 5 in the previous Natural Hazards Mitigation Plan for the Thurston Region. This initiative was completed in 2005.

Priority: N/A Status: Completed

Hazard Addressed: Multi Hazard
Category: Hazard Damage Reduction

PSPH-SH 1: Complete an engineering structural assessment of telecommunications equipment on the roof of the patient tower at Providence St. Peter Hospital. Communicate any deficiencies to the owners of the equipment with a request for structural improvement.

Rationale: The telecommunications equipment (satellite dishes, repeaters, antennas, etc.) located on the tower roof of PSPH are critical to emergency service providers within Thurston County (i.e. Capcom and MetroCall), as well as other day-to-day service communication providers such as Qwest, Verizon, Sprint PCS, and NoahNet. Much of the telecommunication equipment on the

PSPH roof is owned and operated by these entities. In the event of a severe windstorm, critical communication between responders and emergency service providers could be interrupted by damage to the equipment.

Relates to Plan Goal(s) and Objectives: 3C ,7C

Implementer: Providence St. Peter Hospital facility and Technology Services Department.

Estimated Cost: $5,000.00.

Time Period: 2004.

Funding Source: Hospital Capital

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region

Adopted Plan Number: PSPH-SH 1

Reference Page: Unknown

Initiative and Implementation Status: This initiative was ranked 5 of 5 in the previous Natural Hazards Mitigation Plan for the Thurston Region. This initiative was completed in 2005.