

BE FLOOD SAFE

2006 Floodplain Owners' Manual



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INTRODUCTION

To Pierce County residents who own or live in a floodplain:

Natural water features contribute to Pierce County's scenery and recreation. Unfortunately, rain and runoff also leave us at risk for floods every year.

This manual is a guide for you, the owner or resident of property in a designated 100-year floodplain. The tips and information contained here are designed to help you be prepared in case of a flood. You are at risk for a flood every year, whether you experienced flooding last year, many years ago or never before.

For the safety of your family and protection of your property, you need to be prepared. Reading this manual is a good place to start. Please keep it handy and refer to it for ideas to be flood safe during this year's flood season.

And be sure to check out the reply

card. You can use the card to request a floodplain map of your property or additional flood-related information.

Be flood safe this year.

WHAT EVERY FLOODPLAIN OWNER SHOULD KNOW

- What a floodplain is, and what type exists on your land (pg. 2)
- The level of flood risk on your property (pg. 3)
- How to buy insurance that will offset your flood losses (pg. 6)
- Where to get Pierce County Flood Alert information (pg. 12)
- How to prepare for a flood emergency (pg. 12)
- Who to contact in an emergency (pg. 22)
- Where to get more detailed information (pg. 23-24)

Be sure to return the enclosed reply card for more information on specific topics and to receive a custom floodplain map of your property.



WHAT IS A FLOODPLAIN?

Simply defined, floodplains are lowland areas that can fill with water during floods. Floodplains may be mostly dry until a flood occurs. Entire valleys can be flooded under some circumstances. Sometimes a blocked culvert or catch basin can cause a localized flood.

FLOODPLAIN BASICS

Did you know?

- Floods are the most common—and costly—natural disaster.
- Since 1985, Pierce County has been declared a federal disaster area five times due to flooding. Flooding in Pierce County typically occurs from rivers and streams. Many areas can flood due to groundwater. Flooding can happen along marine shorelines as well.
- In Western Washington, flood season

is usually mid-October through mid-April.

- Homeowners' and renters' insurance doesn't cover floods. Only flood insurance covers floods.
- Floods can happen anywhere, even in areas no one believes to be high risk.
- Heavy rains, a blocked creek or inadequate drainage can all lead to floods. And you're left with damaged walls and floors, drenched rugs and furniture, mud and debris.
- Twenty-five percent of flooding occurs outside areas formally mapped or designated as being flood prone or floodplain.
- About 25 to 30 percent of all flood insurance claims are paid to people in low- to moderate-risk flood zones. Are you willing to gamble your home, your possessions and your financial well-being on a flood?

The 100-Year Floodplain

The term "100-year flood" does not describe a flood that happens only once every 100 years. An uncommonly big flood can happen any year. The term "100-year flood" is really a statistical designation meaning there's a 1-in-100 chance that a flood this size will happen during any year. Perhaps a better term would be the "1-in-100 chance flood."

The actual number of years between floods of any given size varies greatly. Big floods happen irregularly because the climate naturally varies over many years. Sometimes we get big floods in successive years when the rain is heavy, as we saw in 1996 and 1997.

(Source: USGS Fact Sheet 229-96)

KNOW YOUR FLOOD RISK

You and your property may have a high risk of being flooded if you are within a 100-year floodplain. Even people outside the designated 100-year floodplain could be at risk.

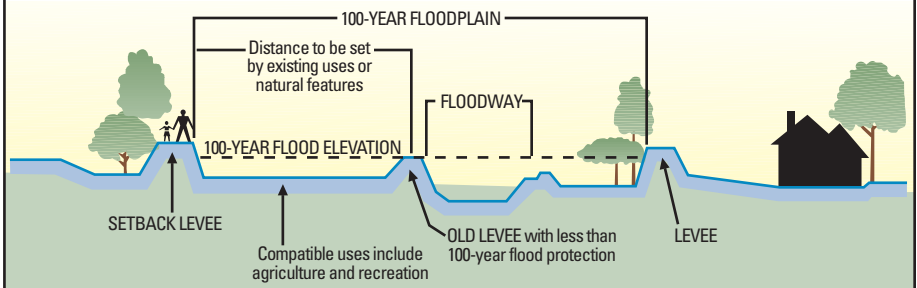
How much risk is there? What's being done to manage it? What do you need to know and do to protect yourself and your investment?

Your chances of being flooded are much greater than other risks you face daily.

- During the life of a 30-year mortgage, there is a greater than 25 percent chance you will be flooded if you live in a 100-year floodplain.
- In a high-risk area, your home has a 26 percent chance of being damaged by a flood during the course of a 30-year mortgage, compared to a 4 percent chance of fire.
- Residences, business and public facilities inside the 100-year floodplain have a 1 percent chance of significant flooding every year.

FLOOD WORDS

100-Year Flood	The flooding resulting from a storm which has a 1% chance of occurring in any given year.	Floodway	The main river channel and surrounding area which is needed to convey the flood flows. No filling or development is allowed in the floodway.
Floodplain	An area which is covered by water during a flood, i.e. "the 100-year floodplain." Development within this area is regulated. The floodplain may also be considered a "floodway."	Levee	A flood-control facility designed to protect an area from flooding. Levees are often rated by the "level of protection" they offer.
Setback Levee	A levee that is set away from the river in a manner to allow the river channel to migrate in the areas between levees.	Revetment	A flood-control facility that reduces erosion along a riverbank and may act as a levee during smaller floods. (Not shown.)



REDUCING YOUR FLOOD RISK

It's true—a flood could come your way

If you live or own property in a flood-plain, you can take steps to reduce your risk of impact from major floods. Perhaps the biggest challenge is believing that a flood really could happen to you.

Pierce County's hazard mapping may show that your property is located in a flood-prone area. With this information you can evaluate your risk and make sound financial decisions. Existing homes can be retrofitted to make them



Keep drains clear of leaves and debris to minimize flood damage.

more flood-proof. (For more details, see FEMA's Homeowner's Guide to Retrofitting at www.fema.gov/rebuild/mat/fema312.shtm)

New or rebuilt homes can be situated outside of the flood area or above the flood elevation. Moving to different property not in the flood zone may be the safest choice. These actions can

Free map!

Use the enclosed reply card to request a custom map of your property showing the relative risk of flooding.

reduce the potential for loss of property and life.

No matter where you live, emergency preparedness may someday be the key to your survival or well being. You should plan to be self sufficient for a minimum of three days after a flood or other disaster hits (five days is better). There is no substitute for being prepared, even if it turns out to be years in advance.

Take time now to prepare for a flood emergency at your home or business. For more information on how to prepare, see page 12 or get the 2005 Flood Emergency Preparedness Manual online at www.piercecountywa.org/flood.

WATCH OR WARNING?

Flood watch means the risk of a flood has increased significantly, but it is uncertain whether a flood will actually occur.

Flood warning means flooding is imminent or already occurring and there is a serious threat to life or property.

HOW DO YOU VIEW YOUR FLOOD RISK?

MYTHS

- Floods only happen to other people.
- It has never flooded here, so it never will.
- There was a flood problem, but it has been fixed.
- If flooding were a problem, someone would have told us. That's why we pay taxes.
- It's only water. It's no big deal to be flooded.
- The government will bail me out.
- My homeowners' policy will cover any flood damage.
- We just had a "100-year flood" so my family will be safe from future floods for the rest of their lives.
- I'm not in a mapped flood hazard area so I can't buy flood insurance.

FACTS

- We can't predict when floods will occur, but we can usually tell where they will occur.
- Just because it hasn't flooded in the past doesn't mean it won't in the future.
- Just because you had a flood does not mean it won't happen again soon.
- It is almost impossible to "fix" a flood problem.
- Real estate agents usually don't know whether flooding has ever occurred on the property.
- Government assistance after a flood is usually limited to loans that have to be repaid.
- Figuring out how to cope with a flood is your responsibility.

Source: Assessing Your Flood Risk, The Flood Safety Education Project.



Watson's Nursery on Pioneer Way near Puyallup, January 2006.

DON'T LET YOUR DREAMS GET WASHED AWAY—BUY FLOOD INSURANCE!

Question: Let's say the river or stream near your home overflows its banks after an excessive rainfall, causing severe damage to your home and its contents. Does your homeowners' insurance takes care of all related costs?

Answer: **Not at all!** Flood damages are specifically excluded from all homeowners' policies. You need a separate flood insurance policy to cover flood damages.

Flood insurance is the only way to obtain flood damage coverage if you live in flood-prone areas, and even for those in low- to moderate-risk areas. Also be aware that while homeowners' insur-

ance is designed to restore your home and its contents to the same condition it was in before the loss, flood insurance is catastrophic insurance, only meant to get you back on your feet.

History of flood insurance

Before the 1960s, flood insurance was unavailable because it was too costly for private insurers to offer. The national response to flood disasters was generally limited to constructing flood control structures such as dams, levees and sea walls. If you were a flood victim, the only recourse you had was the remote possibility of disaster relief.

In 1968, Congress established the National Flood Insurance Program (NFIP) with two objectives in mind. The first goal was to give property owners the opportunity to purchase insurance



South Prairie Creek floods across State Route 162, November 2006.

protection for flood losses. The second goal was to encourage communities to implement and enforce measures to reduce future flood risks in Special Flood Hazard Areas (SFHAs).

Flood insurance today

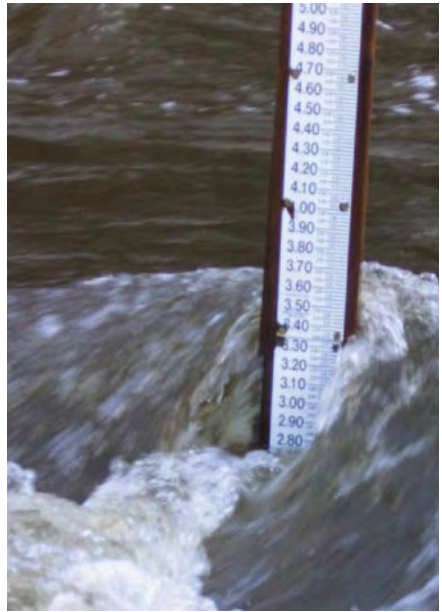
Pierce County citizens can get lower flood insurance rates, sometimes up to 25 percent lower, because of the county's flood management and education efforts. About 1,050 Pierce County residents have NFIP flood insurance, which equals about \$218 million of insurance coverage to the community.

Do I need flood insurance?

Don't let the fact that you don't own riverfront property lull you into a sense of false security. If you live in a high risk or Special Flood Hazard Area you should seriously consider buying flood insurance—you have a 26 percent chance of flood loss over the course of a 30-year mortgage.

Typically, flood insurance is required as a condition of granting a mortgage if your lender determines that your home is in a SFHA.

Even if you live in a low flood hazard area your property may still be at risk. Each year, about 25 percent of all paid flood claims are for property located outside high-risk areas. The good news: a Preferred Risk program offers substantial premium discounts for homes located in low-hazard areas.



Staff gauge in Clover Creek near Parkland, January 2006.

If you think your home is at risk, consider contacting your local insurance agent or one from the Pierce County Flood Insurance Agents list (www.piercecountywa.org/floodinsco). Insurance agents must receive training and be certified by NFIP to write flood insurance policies.

Or, check out special flood insurance maps published by the Federal Emergency Management Agency (FEMA). These maps indicate a community's flood hazard areas and their associated degree of risk. The maps are kept on file at the Pierce County Annex and Environmental Services Building and are available for your review.

FEMA's next edition of floodplain maps are in production and will be in digital



Home near Shaw Road, south of Puyallup, January 2006.

format. Eventually they will be available via the Internet. (See floodplain mapping on page 16 for additional information.)

How can I get flood insurance?

About 85 private insurance companies sell and service the NFIP for the federal government. Your local insurance agent representative should be able to provide you with all the necessary information, or find an agent near you on the Pierce County online list of certified NFIP agents (www.piercecountywa.org/floodinsco).

Coverage requires a waiting period

Don't wait until the water's rising to decide that you need flood insurance. New applications and endorsements to existing coverage are effective only after a standard 30-day waiting period. If flood insurance is purchased as a condition for a mortgage loan, the insurance is effective on the date of the mortgage closing.

Be aware of coverage limits

Flood insurance is catastrophic insurance, which means there are limits on how much coverage will be provided. For example, residential buildings can

only receive up to \$250,000 in coverage; non-residential buildings up to \$500,000.

Contents in the building are limited to \$100,000 for residential and \$500,000 for non-residential locations. Items stored in basements may be excluded.

What's covered?

Direct physical losses by flood are covered. Also covered are losses resulting from flood-related erosion caused by a severe storm, flash flood or abnormal tidal surge, which result in flooding. Damages due to mudflows, if caused by flooding, are also covered.

Coverage is provided for flood damage to the building itself. This includes foundation elements, as well as posts, pilings, piers or other support systems for elevated buildings. Coverage is excluded for:

- Most buildings located entirely over water, such as boat houses.
- Structures other than buildings such as fences, retaining walls, swimming pools and underground structures.
- Items located outside the building like walkways, decks, driveways and patios.

FLOOD INSURANCE QUIZ

How much do you know about the National Flood Insurance Program (NFIP)? Test your knowledge with these questions.

Q: I'm NOT in a high-risk area; why do I need flood insurance?

A: Around 25 percent of NFIP claims come from people outside high-risk flood areas. You can get substantial premium discounts if you live in low- to moderate-risk areas. FEMA only maps large floodplain areas and you might live in a small basin that was too small to be mapped.

Q: I AM in a high-risk area. Can I buy flood insurance?

A: Yes! Almost anyone in NFIP participating communities can purchase flood insurance. In fact, this program was specifically created to help those in Special Flood Hazard Areas (SFHA) obtain coverage. Federally regulated lenders must require borrowers in SFHAs to buy flood insurance as a condition of their mortgage.

Q: Can I wait until the last minute to buy flood coverage?

A: No. Although you can buy coverage just prior to a flood, there is a 30-day waiting period after you have paid the premium before the policy becomes effective. Two exceptions to the waiting period are:

1. If the flood map for your community was revised in the last year.
2. If your initial flood insurance purchase is required to close a loan.

Q: Doesn't my homeowners' policy cover flood damage to my home and property?

A: No. Homeowners' policies rarely, if ever, cover flooding as a cause of loss. The only way to protect your home from loss due to flood damage is federal flood insurance.

Q: Can I buy flood insurance for my condo?

A: Yes. Coverage is available to protect homes, condos, apartments and commercial buildings.

Q: Our property was flooded once. Can I get flood insurance now?

A: As long as your community participates in the NFIP, you are eligible to buy flood insurance, regardless of how many times your property has been flooded.

Q: What about the stuff in my basement?

A: Flood insurance provides coverage for basement clean up and items used to service the building such as boilers, furnaces, hot water heaters, air conditioners, etc. Most contents and improvements to basements are not covered.

Q: Federal disaster assistance will pay for flood damage, right?

A: Probably not. Less than 50 percent of all flooding incidents are

FLOOD INSURANCE QUIZ *CONT'D*

declared federal disaster areas. The \$400 average annual flood insurance premium is much less costly than the interest on a federal disaster loan. Furthermore, recipients of federal disaster loans or grants must purchase flood insurance to receive disaster relief in the future.

Q: Is federal flood insurance purchased only through the NFIP directly?

A: No. Federal flood insurance policies are sold through certified private insurance agents and companies and are backed by the full faith and credit of the U.S. government. For a list of certified agents in Pierce County, go to www.piercecountywa.org/floodinsco.

Q: Does NFIP insurance cover flooding from winter storms or the overflow of rivers or tidal waters?

A: The NFIP does cover floods caused by storms or overflow of rivers or tidal waters. However, two or more acres or two or more adjacent properties must be affected. The policy defines flooding as a general and temporary condition during which the surface of normally dry land is partially or completely inundated. Flooding can be caused by:

- overflow of tidal waters or inland waters
- runoff, such as from rainfall
- mudflows caused by flooding
- collapse of land along a body of water from erosion exceeding normal levels

(What's covered? *cont'd*)

Coverage is also available for actual cash value of personal possessions located inside the building. However, coverage on valuable items such as artwork, rare books, jewelry and furs, and personal property used in business is limited to \$2,500 per item. A separate "valuable items" or "personal articles" policy (not part of a flood insurance policy) will insure your most treasured possessions

against many perils, including floods. Your insurance agent can tell you more about this type of protection.



Flood insurance will cover damaged property in your house.

The deductible is your share

A deductible is the amount you have to pay out of your own pocket before the insurance coverage kicks in. Standard flood insurance deductibles are \$500 and \$750. Higher deductibles are available to reduce policy premiums. Please be aware that with flood insurance your deductible will be applied separately to both your building and its contents.

This section is not intended to be a complete description of coverage. Your policy, independent agent or insurance representative can provide more information. Remember, flood insurance is not meant to restore your home to its original condition, just to cover damage not included on other policies. And it's much better than no coverage at all.

How to make a flood insurance claim

1. Call your insurance agent to report your claim as soon as possible. The agent will prepare a Notice of Loss form and an adjustor will be assigned to assist you.
2. If you can safely do so, photograph the outside and inside of your house showing the flooding and damage. If possible, take photos that indicate the highest water level.
3. Separate damaged property from undamaged property. If you can, arrange damaged property to make the adjustor's examination easier and more accurate.
4. Compile a room-by-room inventory



When rebuilding, make improvements that will protect your home from future flood damage.

of missing or damaged goods. If possible, include manufacturer names, model, serial number, dates of purchase, place of purchase and purchase price. Attempt to locate receipts, especially for large appliances. *Hint:* Plan ahead and store copies of receipts and essential information at an off-site location.

5. Photograph and describe items in writing so that you have documentation to give to the adjustor for claims against these losses.
6. Keep receipts for costs incurred when you are displaced from your home.
7. Let your adjustor know if you need advance or partial payments of loss.
8. Good records can speed settlement of your claim and make the process more efficient.

For more information, visit the FEMA Web site at www.fema.gov/business/nfip.

PREPARE YOURSELF

FLOOD WARNING SYSTEM IDENTIFIES POTENTIAL HAZARDS

Pierce County has a warning system in place to alert you of impending floods. This usually gives you time to take action to protect yourself, your family and your property before the flood. However, floods sometimes occur with little or no warning.

The warning system is in place for the Puyallup, Carbon and White rivers and major county stream systems. Weather forecasts, mountain snow pack, current weather conditions and river flow information are used to identify potential flood events as early as possible.

Using this data, the National Weather Service officially declares public flood watches and warnings. When you are alerted to a flood watch or flood warning, you are urged to follow the advisories and instructions from public officials.



North Fork Clover Creek at Brookdale Road, January 2006.

For more information on the technology behind the flood warning system and how to install your own model staff gauge, check the Flood Warning box on the enclosed response card and a copy will be sent to you. Also see the Internet resource guide on page 23 for Web sites with additional weather and flood information.

REAL-TIME FLOOD INFORMATION

When storm conditions increase the potential for a flood, Pierce County posts flood-related information online at: www.piercecountywa.org/flood. Check this site for weather forecasts, flood warnings and watches issued by the National Weather Service, and other important information.

Call the Pierce County Flood Information Line at 253-798-4274 for updated flood information or to report a flooding problem.

A FLOOD IS COMING—WHAT SHOULD I DO?

For information on getting prepared in case of an emergency, see the Pierce County 2005 Flood Emergency Preparedness Manual at www.piercecountywa.org/flood. When you are notified that a flood is imminent within 24 hours, it is time to put your preparedness plans into action.

- Make sure you know where your

switch and close the main gas valve if evacuation appears necessary. (*Note:* If you turn off the gas for any reason, a professional must turn it back on.)

- Move valuables, such as papers, furs, jewelry and clothing, to upper floors or higher elevations.
- Fill bathtubs, sinks and plastic soda bottles with clean water. Use bleach to sanitize the sink and tubs first. Rinse, then fill with clean water.
- Bring outdoor possessions, such as lawn furniture, grills and trash cans, inside or tie them down securely.

SANDBAGS: EFFECTIVE FLOOD FIGHTERS

Sandbagging is a simple, effective way to prevent or reduce flood water damage. Sand and empty sandbags are available to citizens at local fire station headquarters. Check your local telephone directory for the fire station headquarters near you. The county will not fill and deliver sandbags for you. If you decide to use sandbags, try to

plan ahead. Consider where you need to place them to protect features on your property. Estimate how long and how high the rows of bags need to be.

Nonprofessionals or inexperienced people should limit their sandbag placement to shallow areas up to 2 feet deep with slow-moving water.

For more details on how to use and place sandbags, check the sandbag box on the enclosed response card and a brochure will be sent to you.

THE FLOOD IS HERE—NOW WHAT?

The most important thing is to stay safe and avoid becoming a victim of flood hazards. Remember, it may take hours or days before help arrives. Follow these precautions:

- Don't drive through a flooded area. If you come upon a flooded road, turn around and go another way. More people drown in their cars than anywhere else.



Sandbags can help reduce flood damage. Fire station headquarters have sand and empty sandbags for residents' use.



The Puyallup River races under a water main near the 128th Street bridge, November 2006.

- Don't drive around road barriers—the road or bridge may be washed out, and the depth of the water is impossible to determine.
- If your car stalls, abandon it immediately and climb to higher ground. Many deaths have resulted from attempts to move stalled vehicles.
- Don't walk through flooded areas. As little as 6 inches of moving water can knock you off your feet.
- Stay away from downed power lines and electrical wires. Electrocutation is another major source of deaths in floods. Electric current passes easily through water.
- Watch out for animals that may have found their way onto your property. Use a stick to poke at any debris.
- If the waters start to rise inside your house before you have evacuated, retreat to the second floor, the attic, and if necessary, the roof. If your attic has no roof access, take an ax or other tool with you to cut a hole in the roof to avoid becoming trapped.
- Take dry clothing, a flashlight and a portable radio with you. Wait for help.
- Don't try to swim to safety; wait for rescuers to come to you.
- If outdoors, climb to high ground and stay there.

EMERGENCY MANAGEMENT— THE LAST STEP

Waiting for so-called “first responders” to help you should be the last step of your flood preparedness plan. No matter what kind of natural disaster happens, you should expect to be self-reliant for at least three days; five is better. It might take three days or more for emergency response teams to reach you.

FLOODWAYS

Certain areas within floodplains are called floodways, which include the main river or stream channel plus surrounding areas that would be needed to move water during a flood.

There are different kinds of floodways, and all of them represent areas where flood hazards are the highest and create the most danger. For this reason, no development or filling is allowed in floodways.

FEMA flood maps show one kind of floodway: areas reserved to carry high flood flows. Two other types of floodways regulated in Pierce County are:

- **Deep and/or fast flowing floodway:**
An area where the depth and/or the velocity of the floodwaters makes it



New maps have increased the accuracy of the floodplain boundaries.

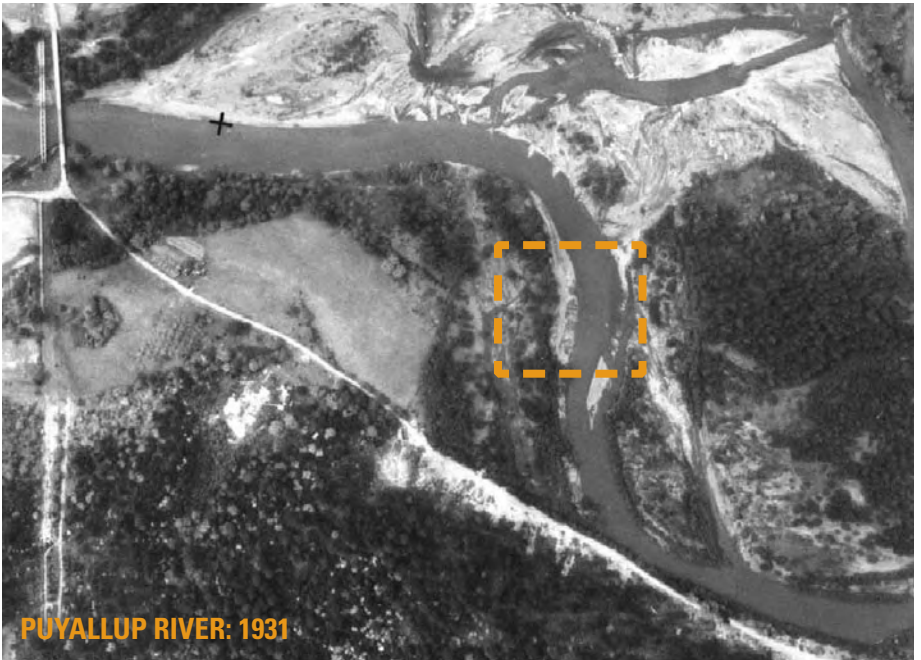
hazardous for people to evacuate and where structures are at greatest risk for catastrophic damages.

- **Channel migration zone floodway:**
The natural tendency of a river system is to shift, or migrate, the location of its channel. The migration zone is the area where the river has a high likelihood of moving to. The river can carve out a new channel and stay in this new location after the floodwater recedes, making it impossible to rebuild.

MAPPING HELPS DETERMINE FLOOD-RISK AREAS

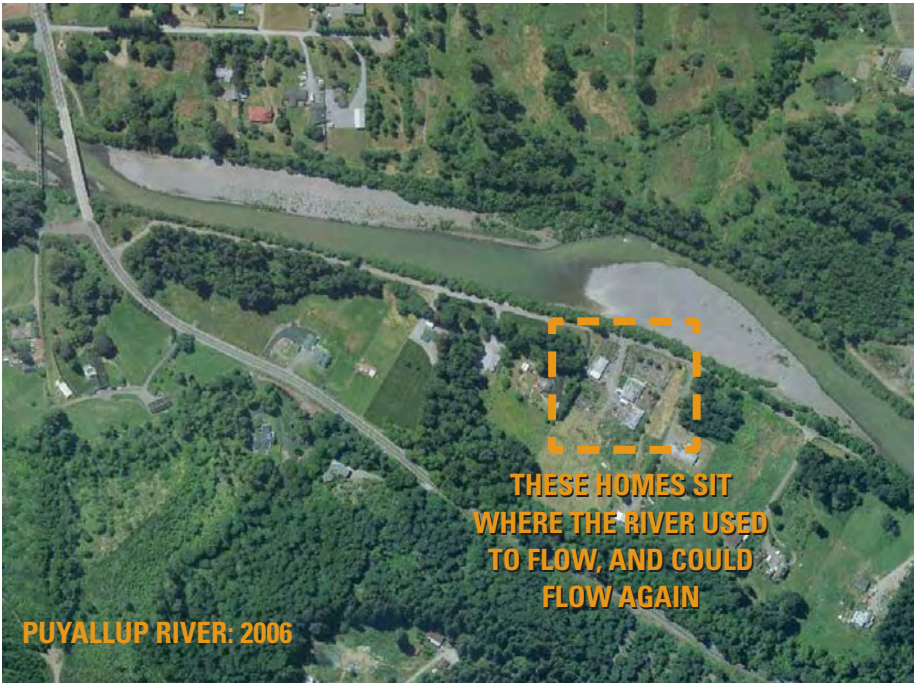
The Water Programs Division of Pierce County Public Works and Utilities is responsible for assessing the county's flood-prone areas and actively managing them. They prepare watershed basin plans that describe the type of flooding that could occur in given areas: flash floods, flooding after sustained rainfall and flooding from rising groundwater.

Hazard mapping of Special Flood Hazard Areas (SFHA) produces very detailed and parcel-specific flood risk information that goes beyond the general mapping provided in watershed basin plans. Water Programs uses flood maps refined by state-of-the-art computer modeling to determine which properties are at risk and how much. The modeling can predict where land will flood, and the depth and speed of the flow. This



PUYALLUP RIVER: 1931

These photos of a channel migration zone along the Puyallup River show how the river has changed course from 1931 to 2006. Note that some homes in the recent photo sit where the river used to flow—and could flow again if the channel shifts. New regulations now prevent further development in such zones.



**THESE HOMES SIT
WHERE THE RIVER USED
TO FLOW, AND COULD
FLOW AGAIN**

PUYALLUP RIVER: 2006

information helps the county and property owners to be prepared and reduce the risk of damage when flooding does occur.

Water Programs has mapped additional hazards to identify properties in deep and fast-flowing areas where the force of water can knock down people and buildings. Trees and other debris move downstream with rapid speed and force in these areas. Other areas of great concern are the channel migration zones where large creeks and rivers can unexpectedly change course during significant floods.

NEWS YOU CAN USE: FLOODPLAIN MAPPING GOES DIGITAL

Flood maps are risk assessment maps. With new studies has come new understanding of the risk to people and property near the county's rivers and streams. The existing FEMA Flood Insurance Rate Map (FIRM) was published in 1987 and many of its floodplains are based on studies dating back to the 1970s. FEMA is now developing the Digital Flood Insurance Rate Map (DFIRM), a seamless countywide floodplain map that will be published in digital form and available for viewing on the Internet.



New detailed mapping has changed floodplain boundaries. Some homeowners are now in a different category and no longer have to pay the highest flood insurance premiums.

Like all FEMA floodplain mapping, the DFIRM is being created to support the federal flood insurance plan and identify areas at high risk of flooding.

DFIRM includes data from over 130 miles of recently completed hydraulic studies and more than 5,000 Special Flood Hazard Areas that have been reshaped to match modern topographic mapping.

COMING TO A STREAM NEAR YOU

Several streams have been studied for the first time, including Woodland, Diru, Canyon, Rody, Clear, Squally and Swan creeks. New floodplain areas around these streams are significantly narrower in most cases because there is a better understanding of how much water can flow in the stream and how it responds in its channel area. The flood risk near these streams may be less than previously thought.

In other places the new studies have shown a significant increase in flood risk. Most notable is in the lower Puyallup River with its 1917-vintage levees.

The preliminary DFIRM map is expected to be released in early 2007, followed by a 90-day public comment period. After all questions have been addressed, FEMA will publish the final map. Communities that wish to continue their NFIP participation must adopt the map within six months. DFIRM matches current floodplain conditions with much better



Parkland area, January 2006

accuracy and will enable some property owners to reduce their flood insurance premiums.

SPEAKING OF LEVEES ...

Pierce County maintains many river levees to protect land that could otherwise be flooded. But none of the levees completely eliminate the risk of future flood damage.

Long before Hurricane Katrina struck in 2005, the county has been working with the U.S. Army Corps of Engineers to evaluate county levees and dikes. The results show we are not as safe as we had hoped. Lowering the risk of levee failure continues to be a high priority.

For example, the levees in the lower Puyallup Valley are no longer certified to contain certain flood levels with an adequate margin of safety. Pierce County and the U.S. Army Corps of Engineers are looking at ways to improve this situation.

Meanwhile, many properties behind these levees are no longer considered risk free and are in a mapped floodplain or floodway.

PIERCE COUNTY'S APPROACH TO FLOOD MANAGEMENT

KEEPING AN EYE ON PUBLIC PROPERTIES

Pierce County owns property that could be at risk for floods, too. The county is working to assess risks to its own land and buildings so facility managers and emergency management specialists can make the most effective planning and construction decisions. This information can help predict if flood waters and debris will pose a risk to roads, bridges and other public structures.

The county has identified essential facilities such as fire stations, police stations, hospitals and roads that would be affected by a flood or would be critically needed during a flood emergency. Teams are assessing repair equipment and supplies such as trucks, backhoes and sandbags that would be used during a flood response.

Critical flood management facilities such as stormwater pump stations, floodwater storage reservoirs and



The Artondale culvert, completed in 2004, stabilizes the roadway and helps drainage.

levees also have been assessed for adequacy in responding to a flood.

Pierce County is taking a comprehensive approach to analyze flood risk and implement programs to protect public health, safety and the economy. Numerous departments are collaborating, including Public Works and Utilities, Planning and Land Services and Emergency Management.

Water Programs designs, builds and maintains flood drainage projects. In general, they are responsible for identifying public flooding concerns and for choosing construction projects that will provide the greatest public benefit. Flooding problems are a major deciding factor when prioritizing capital improvement projects.

PRIVATE PROPERTY BUYOUTS OFFER A SOLUTION

Water Programs can purchase, from voluntary sellers, properties and structures with a history of flooding or that have important floodplain functions. These properties are often in floodways where deep or fast-moving water may flow, or in areas threatened by serious bank erosion.

Home buyouts provide a permanent solution to the risks and damages of repetitive flooding. Buyouts also significantly reduce the public costs



Pierce County built the Soldiers' Home set-back levee in Orting in 2006 to help reduce flood damage from the river.

associated with evacuations, providing emergency shelters and temporary housing. Buying and removing structures from the floodplain improves flood water storage and movement capacity and creates permanent open space for wildlife habitat and public recreation.

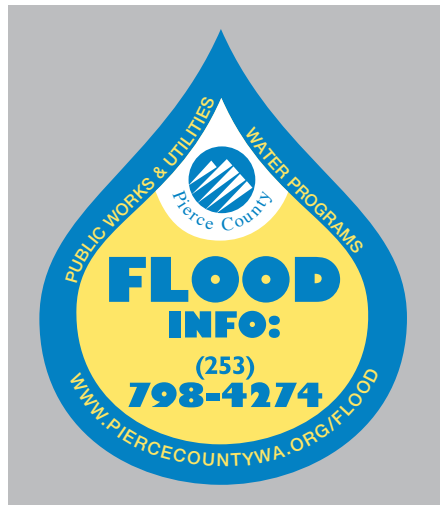
STRONG COMMUNITY PROGRAM REWARDED WITH LOWER RATES

Pierce County residents can save on flood insurance rates because the county has chosen to adopt and enforce more stringent floodplain management regulations than required by the federal government.

In accordance with the federal Community Rating System, Water Programs provides flood risk information and services to residents, including:

- History of flood events.
- Description of the flood type most likely to impact an area, such as a flash flood or groundwater flood.
- Impacts of flooding such as road washouts or mudslides.

- Magnitude of flooding; locations of deep and/or fast flood zones.
- Maps of flood-prone areas including emergency management support facilities such as fire, police, hospital, roads and maintenance facilities.
- Land use analysis of industrial, residential and vacant properties.
- Assessment of drainage and flood management facilities.
- Number and type of building structures in flood-prone areas and their associated value.
- List of repetitive flood loss structures (structures that have been repeatedly flooded).
- Flood insurance statistics including the total value covered by flood insurance and total cost of insurance.
- Public education and information on flood awareness and safety.



*Call the Pierce County Flood Information line at **253-798-4274** for updated flood information or to report a flooding problem.*

EMERGENCY AND INFORMATION CONTACTS

Pierce County

Flood Information Line.....253-798-4274
(Recorded message, can report problems)

Emergency Management
(24 hours).....253-798-7470

Sheriff (day).....253-798-4721
(evenings).....911

Public Works & Utilities:

Sewer Utility.....253-565-3440
Water Programs.....253-798-2725
Roads.....253-798-6000

Fire Department *(Refer to the Fire Department listings in the business section of the phone book for your closest fire station.)*

American Red Cross

Mount Rainier Chapter
1235 South Tacoma Way
Tacoma, WA 98409
Main Office:.....253-474-0400
Disaster/Emergency
Services.....253-474-0300

National Oceanic and Atmospheric Administration (NOAA)

Weather and Flood
Advisory.....206-526-6087

Federal Emergency Management Agency (FEMA)

Individual Assistance Center.....
.....1-800-621-3362
.....1-800-462-7585 (TTY)

Local Communities

Business line phone numbers provided here. **Dial 911 for emergencies.**

City of Buckley

Fire Dept.....360-829-1441
Police Dept.....360-829-3157
Public Works Dept.....360-829-1631

City of Fife

Fire Dept.....253-922-8424
Police Dept.....253-922-6633
Public Works Dept.....253-922-9315

City of Orting

Fire Dept.....360-893-2221
Police Dept.....360-893-3111
Public Works Dept.....360-893-2219

City of Puyallup

Fire Dept.....253-845-6666
Police Dept.....253-841-5415
Public Works Dept.....253-841-5505

Town of South Prairie

Fire Dept.....360-897-8433
Police Dept.....360-897-8878
Sewer/Water Dept.....360-897-8969

City of Sumner

Fire Dept.....253-863-5451
Police Dept.....253-863-6384
Public Works Dept.....253-891-3322

City of Tacoma

Fire Dept.....253-591-5737
Police Dept.....253-798-4721
Public Works Dept.....253-591-5525
Emergency Operations Center
(when activated).....253-404-3700

Flood Warning System, Weather and River Information

Pierce County Flood Alert Information:
www.piercecountywa.org/flood

USGS Real-Time River Gage Data:
http://wa.water.usgs.gov/realtime/rt_latest_map.html

NOAA Local and Mountain Weather:
www.wrh.noaa.gov/sew/

NOAA River Flow Forecast:
<http://ahps2.wrh.noaa.gov/ahps2/index.php?wfo=sew>

US Army Corps of Engineers River Flow:
www.nwd-wc.usace.army.mil/nws/hh/basins/puy.html

Flood Insurance and Homeowner Information

FEMA Web site: www.fema.gov

FEMA National Flood Insurance Program: www.floodsmart.gov

Publication: FEMA Homeowner's Guide to Retrofitting
www.fema.gov/rebuild/mat/fema312.shtm

Fact Sheet: Assessing Your Flood Risk
www.floodsafety.com/national/property/risk/index.htm

Publication: Dealing with Mold and Mildew in Your Flood Damaged Home (FEMA)
www.fema.gov/pdf/rebuild/recover/fema_mold_brochure_english.pdf

Removing Mold from Your Home:
www.fema.gov/rebuild/recover/mold.shtm

Publication: A Brief Guide to Mold, Moisture, and Your Home (USEPA)
www.epa.gov/mold/moldguide.html

Hazardous Waste Disposal Facilities:
www.piercecountywa.org/solidwaste
(click on Disposal Facilities or Hazardous Waste Disposal)

Emergency and Family Preparedness

Pierce County 2005 Flood Emergency Preparedness Manual
www.piercecountywa.org/flood

Pierce County Neighborhood Emergency Teams (PC-NET):
www.piercecountywa.org/pc/abtus/ourorg/dem/penet.htm

Peninsula Emergency Preparedness Committee (PEP-C):
www.pep-c.org/homepage

Water Storage:
www.pep-c.org/storagetips/

Publication: Food and Water in an Emergency (FEMA)

www.fema.gov/pdf/library/f&web.pdf

Publication: Disaster Preparedness for People with Disabilities (American Red Cross): www.redcross.org/services/disaster/beprepared/disability.pdf

Publication: Preparing for Disaster for People with Disabilities (American Red Cross): www.redcross.org/services/disaster/beprepared/disability.pdf

Publication: Preparing for Disaster for People with Disabilities and Other Special Needs (American Red Cross): www.redcross.org/images/pdfs/preparedness/A4497.pdf

Publication: Are You Ready? (FEMA): www.fema.gov/areyouready/index.shtm

Publication: Floods and Your Family
The Flood Safety Education Project
432 Wagon Wheel Gap Road
Boulder, CO 80302
www.floodsafety.com

American Red Cross Web site:
www.redcross.org

Additional Copies

To get additional copies of this manual call us at 253-798-2725 or print a copy from our Web site:

www.piercecountywa.org/flood

FEMA Maps

Pierce County Annex
2401 S. 35th Street
Tacoma, WA 98409

Pierce County Environmental
Services Building
9850 64th Street W.
University Place, WA 98467

CREDITS

FEMA Web site: www.fema.gov

U.S. Geological Survey
Fact Sheet 229-96
<http://pubs.usgs.gov/fs/FS-229-96>

The Flood Safety Education Project:
www.floodsafety.com

U.S. Army Corps of Engineers
Region X (Seattle)
www.nws.usace.army.mil

Photo Credits:

Tyler Kalberg
FEMA
Pierce County Water Programs Division

EMERGENCY CONTACT FORM

IN CASE OF EMERGENCY, CALL 911

NON-EMERGENCY PHONE NUMBERS

Police _____

Fire _____

Sheriff _____

Other _____

FAMILY PHYSICIANS

Name _____

Phone _____

Name _____

Phone _____

LOCAL HOSPITAL

Name _____

Address _____

Emergency
Room Phone _____

INSURANCE COMPANIES

Home _____

Phone _____

Policy # _____

Life _____

Phone _____

Policy # _____

Auto _____

Phone _____

Policy # _____

NEAREST RELATIVE

Name _____

Phone (day) _____

Phone (evening) _____

LOCAL CONTACT

Name _____

Phone (day) _____

Phone (evening) _____

OTHER CONTACT

Name _____

Phone (day) _____

Phone (evening) _____

Quick Tips

IN A FLOOD EMERGENCY

- Move people to a safe place within your home or building, or to a public shelter if instructed to evacuate.
- Gather sturdy shoes, a change of clothing, a coat, water (1 quart minimum), non-perishable food, necessary medication, eyeglasses, a flashlight, portable radio, toothbrush and comb for each person in individual packs.
- Get your transportation ready to go.
- Listen to the radio for weather and flood updates.
- Sanitize and fill bathtubs, sinks and soda bottles with clean water.
- Turn off utilities at the main power breaker switch and close the main gas shutoff valve if evacuating or if flood water enters the building.
- Leave a note for others if you leave, saying who is with you and where you are going. If you can't leave a note, call someone outside the emergency area and leave a phone message.
- Tend to livestock and pets. Move livestock to high ground or take them to a safe place if time permits.
- Move valuables such as papers, computers, photos, furs, jewelry and clothing to upper floors or higher elevation.

Disaster Essentials Pack

These are things you will need most in an emergency, especially if you have to evacuate. They should be packed together in a medium-sized sports bag. Each family member should have his/her own bag.

- Sturdy-soled shoes and heavy socks
- Complete change of clothing
- Leather gloves
- Rain gear or poncho
- Warm hat and gloves or mittens
- Non perishable food
- Water (at least 1 quart)
- Mess kit
- Prescription eyeglasses or contact lenses and reading glasses
- Supply of routinely used prescription and non-prescription medications
- Small first aid kit
- Flashlight with extra batteries and spare bulb
- Whistle
- Battery-operated radio with extra batteries
- Matches in a waterproof container
- Disposable dust mask
- Pocketknife or Leatherman tool
- Sunglasses, sunscreen
- Shampoo, conditioner
- Deodorant/antiperspirant
- Bar of soap
- Razor, shaving cream
- Brush, comb
- Toothbrush, toothpaste
- Wash cloth
- Hand towel
- Lotion
- Lip balm
- Feminine hygiene
- Birth control supplies
- Book, small games
- Family Communication Plan/out-of-area contact information
- Emergency medical information
- Extra set of house and car keys
- Emergency cash, duplicate ATM card, credit card with available credit
- Personal identification
- Other items you think you might need or want

(Tear out and post)



Pierce County
Public Works and Utilities
Water Programs

PIERCE COUNTY EMERGENCY CONTACTS

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253-798-4274

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Sheriff (day)..... 253-798-4721

(evening)..... 911

Public Works & Utilities:

Sewer Utility..... 253-565-3440

Water Programs 253-798-2725

Roads 253-798-6000



Pierce County

Public Works and Utilities

Water Programs

Public Works Public Benefit

9850 64th St. W.

University Place, WA 98467

253-798-2725 / www.piercecountywa.org/water