

## **PROCEDURES FOR MANAGING NATURALLY OCCURRING LARGE WOOD IN KING COUNTY RIVERS**

### **I. Purpose**

The purpose of this document is to define and document procedures that the Department of Natural Resources and Parks (Department) and the King County Sheriff's Office (KCSO) will follow in order to:

- a. Investigate reports of naturally occurring large wood in King County rivers that may pose a hazard to persons, property or infrastructure;
- b. Develop, document and implement action recommendations to address hazards to public safety associated with natural wood;
- c. Document existing habitat conditions and changes resulting from actions taken to address hazards to public safety associated with natural wood.
- d. Establish a mechanism for addressing public safety issues in the design, monitoring, maintenance and continuing management of all Department capital projects that may affect the recruitment, mobility and accumulation of natural large wood in King County rivers.
- e. Inform and receive feedback from the public on County projects that may affect the recruitment, mobility and accumulation of large wood in King County rivers.

### **II. Applicability**

These procedures apply to all reports to the KCSO and Department of potentially or known hazardous natural wood in rivers and to all Department projects that may affect the recruitment, mobility and accumulation of large wood in King County rivers. These procedures are an update and replacement for the "King County Protocol for Responding to Reports of Naturally-Occurring Large Woody Debris in Navigable Rivers and Streams", developed in 2008 and included as Appendix D in the "Report Addressing Public Safety in Placement of Large Wood in King County Waterways".

### **III. Definitions**

**Large wood:** Trees or tree parts larger than four inches in diameter and longer than six feet, and root wads, wholly or partially waterward of the ordinary high water line (WAC 220-110-020 (57)). Large wood is also known as large woody material, logs, large woody debris, coarse woody debris, snags, and large organic debris.

**Naturally-occurring large wood (Natural Large Wood):** Large wood that has not been deliberately placed as part of any publicly or privately sponsored project.

**Large wood recruitment:** The action of wood deposition or accumulation by natural river processes. This action results from the delivery of natural large wood from: 1) existing individual trees or stands of trees that are downed by tree death and toppling, bank undercutting, wind-

throw and breakage, avalanches, or landslides; and 2) upstream reaches via transport by water and subsequent trapping by shoals and bars, boulders, trees, and other channel obstructions (naturally occurring or otherwise).

**Emergency:** A situation that poses an imminent threat to life or critical infrastructure.

**King County Rivers:** For purposes of this procedure, King County Rivers are those segments of rivers and streams within King County where recreational use or infrastructure are known to be prevalent or could be expected. A list of waterway segments covered, which may be subject to change pending updated information about use or river conditions, includes the following:

- ⊖ South Fork Skykomish River, County Line to Foss River Confluence (RM 19.7)
- North Fork Snoqualmie River, Mouth to Big Creek (RM 12.1)
- Middle Fork Snoqualmie River, Snoqualmie Falls (RM 41) to Taylor River (RM 65)
- South Fork Snoqualmie River, Mouth to Franklin Falls (RM 27.9)
- Lower Snoqualmie River, Mouth to Snoqualmie Falls (RM 40)
- Lower Tolt River, Mouth to Forks (RM 8.7)
- North Fork Tolt River, Mouth to above Yellow Creek (RM 15)
- South Fork Tolt River, Mouth to Dam (RM 21)
- Raging River, Mouth to State Route 18 (RM 8)
- Sammamish River, Lake Washington to Lake Sammamish
- Cedar River, Mouth to Landsburg Dam (RM 21)
- Green River, Mouth to Tacoma Headworks (RM 61)
- Miller River, Skykomish River to confluence of East and West Forks
- White River, King-Pierce County Boundary (RM 5.5) to Greenwater River (RM 46) excluding the Mud Mountain Dam reservoir (RM 29.5 – RM 35)
- Greenwater River, White River confluence to Twentyeight Mile Creek (RM 5.5)
- Issaquah Creek, Mouth to SE 56<sup>th</sup> Street (RM 1.2)

#### **IV. Background and policy context**

Pacific Northwest rivers and streams have historically contained large amounts of naturally-deposited large woody materials recruited through bank erosion, channel migration, wind-throw and other causes. Wood plays a major role in channel forming, changing and stabilizing processes, including flow deflection and dampening of flood velocities, sediment and organic-matter storage, diversification of aquatic habitat conditions and the provision of flood refuge habitat for aquatic organisms. However, during the 19<sup>th</sup> and 20<sup>th</sup> centuries, logging, navigational improvements and flood control efforts resulted in the removal of most of the large wood from Pacific Northwest rivers, including those in King County. The historic removal of large wood

contributed to the degradation of fish and wildlife habitat, including habitat for species currently listed as threatened or endangered under the Endangered Species Act (ESA). It has become widely understood and accepted that encouraging large wood to recruit to and remain in local rivers is vital to the recovery of salmonid populations (a bibliography regarding the ecological role of large wood can be found on the County website). To restore some of these historic beneficial functions, some King County projects support, or actively encourage, natural processes of large wood recruitment, adjustment and deposition.

At the same time, boating and other water-oriented recreation activities have a long history in King County. Recreational users may come into contact with wood in King County's rivers and streams. It is widely recognized that riverine water sports, including fishing, wading, swimming, boating, and floating, can involve considerable risk. The level of risk is influenced by many factors, including location and positioning of instream elements, such as large wood, boulders, artificial structures and debris; flow levels, depth, turbulence, velocity, temperature, and bank form; the recreationist's health, maturity, level of experience, skill, and judgment; and the appropriateness of their vessel and associated safety equipment. Many recreational water users recognize wood as a natural feature of the river which, while requiring caution, can enhance their experiences – for example, wood can make river trips more interesting and aesthetically pleasing and can improve fishing opportunities.

Many County projects are intended to produce a more healthy, dynamic, and natural river. As a result, rivers may look and behave differently than they have in the recent past. The changes may pose unfamiliar challenges to both river managers and river users. The County is committed to maintaining public safety as a high priority in river management and to communicating with community members and stakeholders about specific projects as well as river management efforts in general. As historic practices of aggressive wood removal are understood to be inconsistent with contemporary policies and programs aimed at long term sustainability in river management, it has become clear that large wood and dynamic conditions should become more common in our waterways. In some locations, recreational use of a river may not be advisable for all users at all times as a result of the changes and dynamic nature of the river. Therefore, it is important that King County find ways to provide for public safety as rivers develop conditions more akin to what nature originally provided. The procedures outlined below represent one mechanism for King County to address that public safety need.

Specifically, these procedures explain the steps to be taken to address the risks associated with natural accumulations of wood through the combined efforts of the DNRP and KCSO. The procedures outline a systematic method for case-by-case evaluation of naturally occurring wood reported as a potential risk to public safety in our rivers. The *Wood Investigation Report* (see Attachment 1) has been developed as a standardized tool to provide consistency and guidance when KCSO and WLRD assess potential public safety risks due to natural wood in rivers.

In cases where the evaluation determines that the public safety risk is low, King County may choose not to modify naturally recruited wood. In cases where the evaluation determines that the wood poses a high risk to public safety, resulting in a recommendation to take mitigating actions that may include modifying or removing the wood, the actions taken by the county must be done in a manner that is consistent with all applicable federal, state, and local policies and regulations,

and may require mitigation. Actions to modify natural wood accumulations in a fish-bearing river or stream must be permitted in a Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW). As state law requires there be no net adverse impact to habitat, any changes resulting from the county's actions to modify wood will need to be described and quantified sufficiently to develop commensurate mitigation.

In addition, these procedures make a distinction between natural wood accumulations, and natural wood accumulations that occur on, or as a result of, County-sponsored projects. Where a DNRP capital project may affect the recruitment, mobility and accumulation of natural large wood in King County's rivers, the success of a project may be affected by how wood is managed on the site. As a result, project outcome, grant funding, and the success of other County programs could be jeopardized by the decisions made in response to large wood recruitment on project sites. Therefore, the procedures outline a proactive approach for considering public safety in all phases of the project, including design, monitoring, maintenance and continuing management. Guidance is provided through a set of standardized tools used at key stages of project implementation:

- **Project Design:** An *Instream Project Design Checklist* (see Attachment 2) will be completed by the design team to address public safety during the design phase of any new project where recruitment of wood is an expected or intended outcome. In order to proactively plan for public safety in the design, an *Instream Project Design Checklist* will be used to compile relevant information about the project purpose and site characteristics, including instream and adjacent land uses, geomorphology, flood patterns and ecology.
- **Project Monitoring, Maintenance, and Adaptive Management:** The design team will prepare a *Public Safety Management Plan* (see Attachment 3) to define potential risks to public safety as the site evolves following construction, and to guide the County's adaptive management response to changes on the ground or in the water. This management plan will be implemented through the project monitoring and maintenance programs and in response to reports of potential log hazards.

Actions taken by the County must be done in a manner that is consistent with all applicable federal, state, and local policies and regulations. Examples of King County policies that pertain to large wood in rivers and streams, related primarily to the goals of flood risk reduction, salmon recovery, and watershed restoration, include:

- King County Comprehensive Plan policies E-405, E-406, E-408, E-422, E438, E-471, supporting watershed restoration and protection to support river and stream ecological processes;
- King County Council adopted salmon recovery plans for Water Resource Inventory Areas 7, 8, and 9 (King County Council Action 2005 and 2006) and Federally Approved Endangered Species Act Chinook Salmon Conservation Plan (2007);
- King County Flood Hazard Management Plan (King County Council Action 2007) policies G-3, G-9, G-10, PROJ-6, RCM-1, RCM-2, and other references.

This set of procedures and guidance tools is one element among several County efforts and interests related to public safety and management of our rivers, including flood hazard management, habitat restoration, and recreation. As to the safety of recreational users of rivers and streams in King County, it should be noted that the decision to recreate in rivers is ultimately the responsibility of each individual. Current and future efforts to enhance awareness through public education and outreach by the State, County, and non-governmental organizations will complement these procedures for addressing public safety needs, and are perhaps the most important strategy for reducing risks for recreational river users.

## **V. PROCEDURES:**

### **1. Reporting Concerns about Naturally-Occurring Large Wood in River Corridors**

All reports of potential public safety risks associated with large wood (LW) in a King County waterway should be directed to “911” if urgent, or (206) 296-3311 if not urgent. Reports will be forwarded to the designated point of contact in the King County Sheriff’s Office Marine Unit (KCSO).

### **2. Preliminary Assessment**

KCSO will make a preliminary assessment of the potential risk posed by the LW and determine if the situation requires an emergency or a non-emergency response.

If the location of the wood is outside of unincorporated King County, the KCSO will refer the report to the communications center for the appropriate jurisdiction. On request, King County will provide technical support to the local jurisdiction.

#### **A. Emergency Conditions**

- If the KCSO determines that there may be a life-threatening situation or an immediate threat to public or private property or infrastructure, requiring an emergency response, they will take immediate steps to secure public safety.
- Emergency measures may include, but are not limited to:
  - Dispatching rescue personnel,
  - Closing the waterway to recreational use until the emergency situation can be addressed,
  - Issuing public notification via web posting, signage and news outlets, and
  - Removing or relocating the wood.
- Emergency actions involving physical modifications of wood in and adjacent to rivers and streams require prior permit approval from the Washington Department of Fish and Wildlife (WDFW), and may also require subsequent mitigation actions.
  - WDFW may issue verbal HPA approval for emergency work to alter naturally recruited wood, and allow for completion of permit requirements after the emergency action. Emergency permit approval from WDFW may be obtained by calling (425) 775-1311 or contacting the Area Habitat Biologist during business hours or calling 360-902-2537 after hours. Contact information for the Area Habitat Biologist can be found at: <http://wdfw.wa.gov/conservation/habitat/ahb/>.
  - Photo-documentation showing the large wood positioning before and after physical modifications is recommended to provide a basis for development of appropriate mitigation actions.
  - Habitat conditions should be assessed to inform final permit approval, either as

part of the response or as a follow-up action.

- The KCSO may request assistance from King County Water and Land Resources Division (WLRD) in conducting an emergency response.

## **B. Non-Emergency Conditions**

- KCSO will:
  - Perform an initial site investigation, verify the location of the wood, and make a preliminary assessment of the potential hazard;
  - Initiate a standard KCSO *Incident Report*;
  - Consider factors relevant to instream risks, such as position of the wood within the channel, threat to public and private property and infrastructure, flow conditions, typical recreational use and timing, adjacent land uses, and physical characteristics of the wood within the context of the site; and
  - Transmit a copy of the *Incident Report* to the designated point of contact in the Water and Land Resources Division (WLRD).

## **3. Evaluate Potential Public Safety Risks and Recommend Response Action(s)**

### **A. Risk to Instream Users**

If the KCSO's preliminary assessment determines that the wood poses a risk to public safety for instream users (e.g., recreationists), warranting action by the County:

- KCSO will:
  - Contact WLRD, provide information on the findings of the preliminary assessment, and set up a joint site inspection.
- WLRD will:
  - Determine if the wood is associated with a King County Project, and subject to guidance under a project-specific *Public Safety Management Plan*; and
  - Determine if wood is known, or appears, to be associated with a non-King County project, and if so, will consult with the project owner, to the extent feasible.
- KCSO and WLRD will:
  - Perform a joint site investigation (normally within 24-72 hours depending on level of perceived risk) to evaluate the risk posed by the wood using the *Wood Investigation Report*;
  - Estimate the expected longevity of the wood in its present configuration;
  - Jointly develop an action recommendation for reducing the risk - action recommendations should be guided by the *Public Safety Management Plan* for wood associated with a King County project, if applicable, or by findings of *Wood Investigation Report* for non-project related wood; and
  - Document the findings of the risk evaluation and the recommended action(s).

- Actions should be selected to mitigate the risk to public safety while minimizing disturbance to the river. Actions may include, in general order of preference, site monitoring, installation of informational or warning signs, pruning portions of the large wood pieces, closure of a river reach, or repositioning or relocation of large wood pieces.
- Geomorphologists, engineers, ecologists and permit agency staff, will participate in the site investigation to assist in site assessment, permitting, development of response alternatives and determination of commensurate mitigation, as necessary.

## **B. Risk to Adjacent Lands Affecting Residences, Businesses, or Infrastructure**

If the KCSO's preliminary assessment determines that risks to instream users posed by the wood are avoidable, but that the wood may pose a risk to other people, property, or infrastructure on adjacent lands:

- KCSO will:
  - Inform WLRD of their findings; and
  - Complete the *Incident Report*.
- WLRD will:
  - Initiate a *Wood Investigation Report*;
  - Perform a site investigation (normally within 24-72 hours depending on level of perceived risk);
  - Determine if the wood is associated with a King County Project, and subject to guidance under a project-specific *Public Safety Management Plan*.
  - Determine if the wood poses a risk to public safety (e.g., flood hazard) for infrastructure, critical facilities, people or property based on the *Wood Investigation Report*;
  - Estimate the expected longevity of the wood in its present configuration;
  - Develop an action recommendation, if warranted, for reducing identified risks; and
  - Document the findings of the risk evaluation and the recommended action(s).
- Actions should be selected to mitigate the risk to public safety while minimizing disturbance to the river. Actions may include, in general order of preference, site monitoring, installation of informational or warning signs, pruning portions of the large wood pieces, closure of a river reach, or repositioning or relocation of large wood pieces.
- Action recommendations:
  - Should be directed by a *Public Safety Management Plan* for any wood associated with a King County project; or
  - Should be determined by the findings of the *Wood Investigation Form* for non-project related wood.
- Geomorphologists, engineers, ecologists and permit agency staff, will participate in the



site investigation to assist in site assessment, permitting development of response alternatives and determination of commensurate mitigation, as necessary.

#### **4. Short Term Action Response**

If recommended actions will involve physical modification of instream or project-related features, such as repositioning wood or installing signage:

- WLRD will:
  - Implement interim river safety measures as needed;
  - Post hazard warning information on the King County website if the response action cannot be completed within one week of the determination;
  - Evaluate the ecological function of the wood within the context of the site or reach in order to inform the development of mitigation actions;
  - Seek applicable permit approvals to implement action recommendations;
  - Work with permit agencies to establish required mitigation actions;
  - Oversee construction or contracting for completion of the work; and
  - Notify the KCSO about anticipated timing and techniques involved in implementation.
  
- KCSO may choose to:
  - Issue bulletins or news releases or disseminate informational materials to advise the public of the potential risks of wood in the waterway - press releases issued by King County may be posted to King County's "Flooding Topics" web page at [www.kingcounty.gov/flood](http://www.kingcounty.gov/flood) and to the Regional Public Information Network (RPIN) at [www.rpin.org](http://www.rpin.org);
  - Use its authority, under King County Code 12.44, to close a waterway or portion of a waterway to recreational use, either temporarily or indefinitely, if they determine its use may pose a significant risk to public safety;
  - Contact the King County Office of Emergency Management (OEM) Duty Officer at 206 296-3830 (24-hour number) to notify of the wood situation; or
  - Request assistance from OEM for resources necessary to implement recommended actions.

King County will not perform actions without appropriate safety measures in place for employees. Permit approvals are required for modification of wood or other instream features, which includes but is not limited to an HPA from the WDFW and, where occurring in state-owned aquatic lands, consultation with Washington Department of Natural Resources. If it is determined that the recommended action is not feasible, does not meet permit requirements, or cannot safely be implemented, then WLRD and KCSO will select another course of action from the list of potential actions.

#### **5. Long Term Risk Mitigation**

KCSO and WLRD will work together to promote river safety over the long term through planning and outreach efforts that will include pro-actively considering the consequences of natural wood accumulation at a project site during project design; increasing public awareness about the presence, function and risks of wood in rivers; promoting the use of appropriate equipment and preparation when making recreational choices; and managing allowable uses within King County's waterways.

- KCSO and WLRD will coordinate efforts to:
  - Periodically monitor reported or placed wood that remains in the river to observe changes in condition over time - new conditions may warrant a new site investigation and re-evaluation;
  - Discourage or prevent risky behaviors in waterways through educational campaigns, media, websites, or other outreach tools; and
  - Inform the public of potential changes to river conditions that may affect recreation.

When designing projects that are expected or are likely to cause wood from onsite or elsewhere in the watershed to accumulate at the project site:

- WLRD will:
  - Complete an *Instream Project Design Checklist* to guide and document thorough evaluation of public safety considerations during project design and implementation;
  - Solicit public input at 30% design, as is done for placed wood per public rule;
  - Develop a *Public Safety Management Plan* to establish a proactive approach to monitoring, maintenance, and modification of the site over time in order to assure public safety and success of the project; and
  - Work with neighboring jurisdictions and the public to inform them of potential changes to river conditions that may affect instream or adjacent land uses.

## 6. Final Documentation

For all reports of potential large wood hazards:

- WLRD and KCSO will coordinate to:
  - Complete and maintain a record of all *Wood Investigation Report* and *Incident Reports*;
  - Contact the person who reported the wood, when known, to inform them of any action taken.

For reports of wood that is associated with a King County project:

- WLRD will:
  - Complete and maintain a record of the *Instream Project Design Checklist* and a *Public Safety Management Plan*.

**Attachments:**

1. Wood Investigation Report
2. Instream Project Design Checklist
3. Public Safety Management Plan Outline