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**WFO PORTLAND, OREGON RIVER AND FLOOD
INFORMATION WEB PAGE**

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Introduction

The National Weather Service in Portland, Oregon, has developed two Web pages containing river and flood data, watches, warnings, forecasts, and other relevant hydrologic information. The office's hydrologic Web page development team has completed work on a page designed for emergency managers, to be used in daily river and flood decision making. A page for public access gives similar information.

Emergency Managers Hydrologic Web Page

The emergency manager's hydrologic Information Page can be accessed at:

<http://www.wrh.noaa.gov/Portland/em>

username: em
password: flood

This site contains specific information on each river gage in the Portland hydrologic service area (HSA). A frame on the left of the page allows easy access to four different river basin areas in the HSA as well as recent flood products and quantitative precipitation forecasts. The main page displays a map of the HSA with the four basin areas highlighted, allowing access to more detailed maps showing gages in each area. Scrolling down the main page reveals an alphabetical summary list of all river gage sites. This allows for a quick overview of all the gages in the HSA.

A user may select a basin area which will display a map showing all the rivers and gages in that area of the HSA. Official forecast points are highlighted in yellow. Clicking on a river point name on the left-hand frame, or on the gage desired on the map, will display a detailed page with specific data, watches, warnings and forecasts for that point.

Each river point data page contains detailed information. At the top, river name, flood stage, bankfull stage, and cooperater agency information are displayed. When watches or warnings are in effect, a headline and full product text link are displayed prominently near the top of the page. A quick access navigation line contains links to recent flood products issued by WFO Portland, a hydrograph, tabular data, impact statements, and explanation of the page.

Watch/Warning Section

Current Watches and Warnings that apply to the site will be displayed near the top of the page. Examples of watch and warning products will be available on the page through December 2000. Examples of watches can be seen by selecting the "Willamette River at Portland" in the "Willamette Mainstem" basin. A sample warning can be found by selecting the "Naselle River at Naselle" in the coast basins or the "Willamette River at Salem" in the "Willamette Basin."

Recent Flood Products

A page containing a listing of all recent flood products is linked from each river site page. This page will display a list of links to flood watch (PDXFFAPDX), flood warning (PDXFLWPDX), and flood statements (PDXFLSPDX) grouped by basin areas in order of their bulletin number issuance. The most recent product is at the top of each list. These sections display only when recent bulletins exist. A link at the end of the page will display all flood products in the reverse order they were issued (most recent first).

Hydrograph

A detailed hydrograph shows observed data from 48 hours in the past to the present (marked by vertical "current time" line) in blue. If the river point is an official river forecast point, a green line shows the NWRFC guidance forecast 48 hours into the future. The official flood and bankfull stages were available, as well. These guidance forecasts may not reflect the official NWS forecasts or warnings shown at the top of the page.

At sites where a rating curve exists, data are plotted in a flow linear format with the flow displayed in units of cubic feet per second on the left scale. A flow linear graph allows for easier visualization of impacts of additional rainfall and runoff to the curve. Equivalent stage is shown on the right scale of the hydrograph. Where applicable the gages USGS id and vertical datum are shown at the top of the graph. The vertical datum is the reference above mean sea level of the zero stage. Therefore, the datum may be used to determine the observed and forecast stages above mean sea level by adding the datum to the stage.

Summary lines at the bottom of the hydrograph show the latest stage and flow reading and time, the percent of flood flow, the maximum and minimum forecast, and observed stage and flow values. Below the hydrograph is a link to another hydrograph. The second hydrograph contains only observed data which is scaled differently to provide more detail.

Tabular Data

Below the hydrograph is a section containing a text listing of the observed, and where available, the forecast data for the site. The observed data column is ordered from latest (most recent) to earliest. The forecast data column is ordered from earliest to latest. All times and dates are in Universal Coordinated Time (aka UTC, GMT or Z time).

Impact Statements

The final section of the gage page contains the river level impact statements for official forecast points. The impact statements are taken directly from the WHFS INFORMIX database.

Public Web Hydro Web Page

A Web site similar to the emergency managers hydrologic Web site has been established for public access to river and flood information in the WFO Portland Hydrologic Service Area (HSA). This site contains limited NWRFC guidance forecasts (only the Lower Columbia River Points) and contains no impact statements. This site is found at:

http://www.wrh.noaa.gov/Portland/public_hydro

Software

All software used for the production and display of the Web pages runs on AWIPS and the Western Region Web server. The software uses the WHFS INFORMIX database as a data source and is compatible with the AWIPS WHFS Riverpro application. Software was written in "c", "esql c", perl and HTML.

There are 10 software modules involved in the display and production of the hydrologic Web pages. In addition, there are numerous HTML and gif images used. The documentation of this software is beyond the scope of this Technical Attachment. Further software documentation can be found in the document "Hydro Web Page Software Documentation" by William R. Schneider, available at WFO Portland, OR, and the "RiverDat" documentation, by Eric Dewhurst, available from the AWIPS LAD.

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WFO Portland, OR, Hydrologic Web Page Development Team

William R. Schneider (Science and Operations Officer) - Team leader, page design and function, hydrograph software design and maintenance programmer, watch/warning software development, cgi software, html software.

Andy Bryant (Service Hydrologist) - Page design, HTML software, Arcview images, emergency manager outreach, WHFS maintenance, Riverpro templates.

Dan Keeton (Warning Coordination Meteorologist) - emergency manager outreach, page design advisor.

Eric Dewhurst (Programmer) - Hydrograph software programmer.