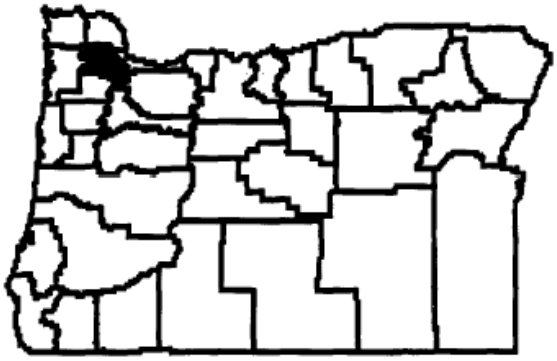
FLOOD INSURANCE STUDY



Volume 1 of 3

WASHINGTON COUNTY, OREGON
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BANKS, CITY OF	410239
BEAVERTON, CITY OF	410240
CORNELIUS, CITY OF	410261
DURHAM, CITY OF	410263
FOREST GROVE, CITY OF	410241
GASTON, CITY OF	410242
HILLSBORO, CITY OF	410243
KING CITY, CITY OF	410269
NORTH PLAINS, CITY OF	410270
SHERWOOD, CITY OF	410273
TIGARD, CITY OF	410276
TUALATIN, CITY OF	410277
WASHINGTON COUNTY UNINCORPORATED AREAS	410238



REVISED: OCTOBER 19, 2018

Federal Emergency Management Agency

Flood Insurance Study Number
41067CV001B

NOTICE TO

FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by a Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS report components.

Users should refer to Section 10.0, Revisions Descriptions. Section 10.0 is intended to present the most up-to-date information for specific portions of this FIS report. Therefore, users of this FIS report should be aware that the information presented in Section 10.0 supersedes information in Sections 1.0 through 9.0 of this FIS report.

Initial Countywide FIS Effective Date: November 4, 2016

Revised FIS Report Date: October 19, 2018

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PUBLISHED SEPARATELY

Flood Insurance Rate Map Index

Flood Insurance Rate Map

FLOOD INSURANCE STUDY
WASHINGTON COUNTY, OREGON AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Washington County, including the Cities of Banks, Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, North Plains, Sherwood, Tigard, and Tualatin; and the unincorporated areas of Washington County (referred to collectively herein as Washington County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that the Cities of Rivergrove, Tualatin, and Wilsonville are geographically located in Washington and Clackamas Counties. The City of Tualatin is included in its entirety in this FIS report. The flood-hazard information for the Cities of Rivergrove and Wilsonville are mapped entirely within Clackamas County. See the separately published FIS report and Flood Insurance Rate Map (FIRM) for Clackamas County, OR and Incorporated Areas.

Please note that the Cities of Lake Oswego and Portland are geographically located in Multnomah, Clackamas, and Washington Counties. The flood-hazard information for the City of Lake Oswego is mapped entirely within Clackamas County. The flood-hazard information for the City of Portland is mapped independently. See the separately published FIS reports and FIRMs for Clackamas County, OR and Incorporated Areas, and the City of Portland, OR.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence, and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS report are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers (USACE), Portland District, for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement Nos. H-7-76 and H-10-77. This work, which was completed in November 1980, covered all significant flooding sources affecting Washington County.

The Unincorporated study was revised on March 18, 1987, to incorporate existing conditions on overbank areas adjacent to Cedar Mill Creek between Southeast Murray Boulevard and Southwest Jenkins Road (Cross Sections H and J). The width of the floodway for this reach was narrowed by 64 feet at Cross Section H and by 6 feet at Cross Section I. In addition, the corporate limits of the county were revised on the FIRMs and Flood Boundary and Floodway Map (FBFMs) to indicate areas annexed by the City of Beaverton. These annexations placed a reach of Willow Creek just south of Interstate Highway 26 within the City of Beaverton.

The final coordination meeting for the original study for the Tualatin River was held on February 1, 1981, and was attended by representatives of FEMA, the Study Contractor, and the Washington County Departments of Public Works and Planning. No requests for changes were made at that time. A coordination meeting, attended by representatives of the USACE, Portland District, and FEMA, was held on July 20, 1984. This meeting resulted in the reanalysis of the Tualatin River and Nyberg Slough.

In 2005 a restudy was done to incorporate new floodplain data for Ash Creek, Fanno Creek, and Summer Creek, and to incorporate the channel improvement project within the reach of the Tualatin River. The hydrologic and hydraulic analyses for the Ash Creek, Fanno Creek, and Summer Creek restudy were performed by Pacific Water Resources Inc., for Clean Water Services (formerly Unified Sewerage Agency) of Washington County and submitted to FEMA under the Cooperating Technical Partners program. This restudy was completed on June 30, 2000. This revision was requested by Washington County because of the effects of the largest flood since 1980, which occurred along Fanno Creek in February 1996. The February 1996 flood had an estimated recurrence interval of approximately 25 years.

1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, the state, and the study contractor to explain the nature and purpose of a FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study. All problems raised at these meetings have been addressed in this study.

The dates of the initial and final CCO meetings held for Washington County and the incorporated communities within its boundaries are shown in Table 1, "Initial and Final CCO Meetings."

Table 1. Initial and Final CCO Meetings

Community	Initial CCO Date	Final CCO Date
Beaverton, City of	September 10, 1976	January 24, 2017
Cornelius, City of	September 8, 1976	January 29, 1981
Durham, City of	September 10, 1976	April 18, 1980
Forest Grove, City of	September 9, 1976	January 24, 2017
Gaston, City of	September 9, 1976	July 21, 1981
Hillsboro, City of	September 8, 1976	January 24, 2017
King City, City of	September 9, 1976	January 24, 2017
North Plains, City of	October 22, 1976	January 24, 2017
Portland, City of	September 25, 1974	April 30, 1980
Rivergrove, City of	June 1977	August 21, 1986
Sherwood, City of	September 10, 1976	January 29, 1981
Tigard, City of	September 9, 1976	January 24, 2017
Tualatin, City of	September 9, 1976	January 24, 2017

The results of this revised study were reviewed at two final CCO meetings. The first CCO meeting was held on November 6, 2007, and attended by representatives of Washington County and the cities of Banks, Cornelius, Forest Grove, Hillsboro, North Plains, and by FEMA's Region X representatives. The second meeting was held on November 7, 2007 and attended by representatives of Washington County and the cities of Beaverton, Durham, Sherwood, and Tualatin, and by FEMA's Region X representatives. All problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the geographic area of Washington County, Oregon, including the incorporated communities listed in Section 1.1. The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and the communities.

This initial countywide FIS (November 4, 2016) incorporated the determination letters issued by FEMA resulting in map changes (Letters of Map Change, or LOMCs). All Letters of Map Revision (LOMRs) incorporated into this FIS are summarized in Table 2. The Letter of Map Change (LOMC) actions for previously-issued LOMCs for Washington County are summarized in the Summary of Map Amendment (SOMA) included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

Table 2. Incorporated LOMRs

Community	LOMC Case No.	Flooding Source(s)	Date Issued	LOMC Type
Beaverton, City of	06-10-B213P	Fanno Creek	11/6/2006	LOMR
Tigard, City of	07-10-0375A	Redrock Creek	4/10/2007	LOMR-F
Hillsboro, City of	14-10-1241P	Waible Creek – South Tributary	8/15/2014	LOMR
Hillsboro, City of Washington County, Unincorporated Areas	14-10-1501P	Waible Creek, Waible Creek Tributary 1, Waible Creek Tributary 2	12/29/2014	LOMR

2.2 Community Description

Washington County is located in northwestern Oregon. It is bordered on the north by Columbia County, on the south by Yamhill and Clackamas Counties, on the west by Tillamook County, and on the east by Multnomah and Clackamas Counties. Because of its location adjacent to the City of Portland, Washington County experienced rapid growth during the mid-20th century; the population increased from 39,194 in 1940 to

215,000 in 1978 (Reference 1). Most of that increase occurred in the southeastern part of the county. The estimated population in 2010 was 529,710 (Reference 2).

All of the streams considered in this study are part of the Tualatin River drainage basin. The Tualatin River originates in the Coast Range at an elevation of 3,400 feet. The basin has an area of 711 square miles (sq. mi.) and is oval; it is approximately 40 miles long and 25 miles wide. The Tualatin River basin is located in central Washington County. The major portion of the Tualatin River floodplain is widest in the stream length located 7 miles upstream of the mouth to 70 miles upstream of the mouth.

The climate in Washington County is characterized by cool, wet winters and warm, dry summers. Maritime influences mostly dominate the area throughout the year. The average temperature in January is 38°F, and in July the average temperature rises to 66.5°F.

The average annual precipitation for the county is 38.0 inches, which primarily occurs during the months of October through March. Snowfall occurs only a few days each year. Snow on the ground does not last long, and depths seldom exceed 6 inches (Reference 1).

The Tualatin River valley is a broad synclinal valley, and the area of the valley floor represents a large percentage of the total watershed. The upland areas are underlain with basaltic lavas and volcanics, shale, sandstone, and conglomerates, all of which are deeply weathered and covered with loam and clay loam soils capable of supporting dense growths of vegetation. Exceptionally heavy and extended periods of rainfall cause excessive runoff and severe erosion, especially in cleared and burned areas. Two soil groups, the older valley filling and the recent alluvial soil, are represented on the valley floor where drainage, both on the surface and internal, varies from good to poor. Poor drainage at the lower end of the valley can be attributed, in part, to the existence of reefs or ledges of basaltic rock, which have established a temporary base level for the valley (Reference 3).

The uplands of the basin are generally covered with heavy fir timber that has a thick undergrowth and a mat of ferns. Extensive timber cutting has taken place in this part of the basin; however, after a few years, the previous undergrowth reestablishes itself and is supplemented by ferns and wild blackberry vines. Further down the slopes, the timber thins out on the valley floor until it is limited to small, scattered areas. Within the floodplain, scattered scrub oak trees with bands of willow, alder, and brush, as many as several hundred yards in width, parallel both banks of all major watercourses (Reference 3).

City of Beaverton

The City of Beaverton is on the eastern edge of Washington County. It is approximately 11 miles southwest of Portland, Oregon. The city, which was incorporated in 1893, grew to an estimated population of 89,803 in 2010 (Reference 2). Beaverton is bordered by the City of Tigard on the south and by the unincorporated areas of Washington County on all other sides.

Beaverton is a fast-growing community, with a diversified economic base centered around numerous offices and several light industries, including electronics and food processing. In addition, its proximity to Portland gives it many characteristics of a bedroom community. Commercial development is centered in the northern portion of Beaverton, specifically along Cedar Hills Boulevard, Tualatin-Valley Highway, Canyon Road, and Beaverton-Hillsdale Highway. .

City of Cornelius

The City of Cornelius is located in central Washington County. It is situated approximately 15 miles west of Portland. Cornelius was incorporated in 1893 and has grown from a population of 3,450 in 1978 to an estimated 11,869 in 2010 (References 4 and 2, respectively).

Very little development has taken place within the flood plains of Cornelius. The majority of development is south of Council Creek in east-central Cornelius. Commercial and industrial properties are primarily along major transportation routes. These routes include Tualatin Valley Highway, Burlington Northern Railroad, and Southern Pacific Railroad.

City of Durham

The City of Durham is located in the southeastern corner of Washington County. It is approximately 5 miles southwest of the City of Portland, Oregon. The city had an estimated population of 1,351 in 2010 (Reference 2).

The Tualatin River originates in the Coast Range at an elevation of 3,400 feet. The watershed has an area of 711 sq. mi., is oval in shape, and is approximately 40 miles long and 25 miles wide. The topography abruptly changes to a very flat valley and a wide floodplain in the area where Tualatin River emerges from the foothills. The river flows southeasterly through Durham, forming a portion of the southern corporate limits of the city.

Economic activity for this small community is diversified and characterized by non-retail commercial and light industrial uses. For

example, the headquarters for a building contractor and a distribution/trucking depot are located in Durham. In addition, several businesses and office park developments have been constructed on the east side of the Southwest Upper Boones Ferry Road, which serves as the principal transportation corridor through the city. Residential development is characterized by low density single family housing located primarily west of the Southwest Upper Boones Ferry Road. A high density 210 unit apartment development is located in southeast Durham. Floodplains are virtually undeveloped and are planned to remain as permanent open space for park and recreation purposes.

City of Forest Grove

Forest Grove is in central Washington County. It is approximately 21 miles west of Portland, Oregon. The city was incorporated in 1872 and has grown to a population of 21,083 in 2010 (Reference 2).

Forest Grove has a stable economic base, revolving around food processing and wood-products industries. Commercial development is primarily along Tualatin Valley Highway. Due to its proximity to Portland, Forest Grove has also developed into a suburban community. The flood plains are relatively undeveloped. Considerable open space for future development exists outside of the flood plains of Tualatin River, Gales Creek, and Council Creek.

City of Gaston

Gaston is located on the southern border of Washington County. It is approximately 29 miles west of Portland, Oregon. The City of Gaston was incorporated in 1914. The population in 2010 was estimated to be 637 (Reference 2). It is bordered by unincorporated Washington County land to the north, east, and west, and by unincorporated Yamhill County land to the south.

Economic activity in Gaston is centered around forestry and agricultural industries, with food processing playing an especially key role. Commercial development is located primarily along the Tualatin Valley Highway/South Pacific Railroad corridor through the town. Residential development is generally limited to the western portion of Gaston. Only the eastern edge of Gaston is considered flood prone. Several residences in that portion of the community are in the Tualatin River flood plain.

City of Hillsboro

Hillsboro is in central Washington County. The city is approximately 17 miles west of Portland, Oregon. Hillsboro was incorporated in 1876 and had a population of 91,611 in 2010 (Reference 2).

Hillsboro has a rapidly expanding and diversified economy centered around numerous light manufacturing plants. In particular, the electronics industry is becoming more important in the economy of Hillsboro. Due to its proximity to Portland, Hillsboro also has characteristics of a bedroom, or suburban, community. Commercial development in Hillsboro is extensive, with a well-developed business district in the west-central portion of the city and heavy commercial development along Tualatin Valley Highway. Residential areas are scattered throughout the city but are concentrated in the northern and eastern portions of Hillsboro. Important transportation routes in the city include Tualatin Valley Highway (State Highway 8), Sunset Highway (U.S. 26), Cornell Road, State Highway 219, Burlington Northern Railroad, and Southern Pacific Railroad. The flood plains are relatively undeveloped.

City of King City

The City of King City is located in the North Willamette Valley in Washington County. The nearest major highway is Interstate 5 and the nearest major city is Tigard. King City was incorporated in 1966 and had a population of 3,111 in 2010 (Reference 2).

City of North Plains

North Plains is located in north-central Washington County. It is approximately 20 miles west of Portland, Oregon. The city was incorporated in 1963 and had a population of 1,947 in 2010 (Reference 2).

The economy of North Plains is based primarily on agriculture and forestry. Soil types in the city consist of the Woodburn, Aloha, and Willamette Associations. Vegetation consists of grass, Douglas fir, oak, ash, willow, cedar, hazelbrush, maple, and rosebushes. The floodplains in the community are generally undeveloped.

City of Sherwood

Sherwood is located in the southeast corner of Washington County. It is approximately 13 miles southwest of Portland, Oregon. The population in 2010 was 18,194 (Reference 2).

Economic activity in Sherwood is diversified and growing. Industrial facilities in the community include a wood products plant, a leather tannery, and a machine manufacturing plant. In addition, agriculture and support services augment the income of the community. Commercial development is primarily in the central section of Sherwood. Residential development is spread throughout the city. Important transportation routes are Pacific Highway West (State Highway 99), Edy Road, Sherwood

Road, and the Southern Pacific Railroad. There is no development in the flood plain.

City of Tigard

Tigard is in the southeast corner of Washington County. It is approximately 8 miles southwest of Portland, Oregon, and is adjacent to the City of Beaverton to the north and to the City of Durham to the south. Unincorporated areas of Washington County also border Tigard, along with some small county areas that are within the city. Tigard was incorporated in 1961; the estimated population in 2010 was 48,035 (Reference 2).

Economic activity in Tigard is diversified and growing. Industrial facilities in the community are varied and are located along Pacific Highway West (State Highway 99W) and State Highway 217 (US217). Commercial development is located primarily along Pacific Highway West and Southwest Main Street. Residential development in Tigard is mostly west of Fanno Creek. Important transportation routes in the city are Pacific Highway West, US217, Hall Boulevard, and the Burlington Northern and Southern Pacific Railroads. The floodplains of several areas along the studied stream reaches are undergoing development. One such area is along Summer Creek between Southwest 113th and Southwest 121st Avenues, where several residences are in the floodplain. Another flood-prone area includes commercial and residential development along a 1-mile reach of Fanno Creek from Pacific Highway West upstream to Southwest Tiedeman Avenue.

City of Tualatin

Tualatin is in the southeastern corner of Washington County and the northwestern portion of Clackamas County. It is bordered by the City of Durham, to the north, by the City of Lake Oswego to the east, and by unincorporated areas of Washington and Clackamas Counties to the west and south. Tualatin is approximately 5 miles southwest of the City of Portland. The population was estimated to be 26,054 in 2010 (Reference 2).

The broad-based economy of Tualatin is subject to strong growth. Most of the economic activity centers in the central business district, where commercial development is interspersed with local industries. In the central business district, development includes new large retail chain stores. Industrial development in this area includes a food-processing plant and several warehouses. Residential development is concentrated in the northwestern and southwestern portions of Tualatin. New development is occurring throughout the southern portion of Tualatin on the benchlands above the Nyberg Slough flood plain.

2.3 Principal Flood Problems

The past history of flooding of the streams within Washington County indicates that, for a particular storm, flooding usually occurs on many streams throughout the study area. Flooding is caused by heavy rainfall augmented by snowmelt at a time when the soil is near saturation. Damaging floods may occur any time between late October and late April. The most severe floods occur in December, January, and February.

The largest flood recorded on the Tualatin River at West Linn since the U.S. Geological Survey (USGS) established a stream gage there in 1928 occurred in December 1933. The peak discharge at the gage was 23,300 cubic feet per second (cfs) with a 1.4-percent-annual-chance of flooding. The January 1974 flood on the Tualatin River also caused considerable damage to the study area. That flood had an estimated discharge of 22,300 cfs with a 4-percent-annual-chance of flooding. The flood occurred before the operation of the Henry Hagg Lake Project (Reference 6). The operation of the Henry Hagg Lake Project has decreased the frequency of a flood of 21,500 cfs to a 2-percent-annual-chance of flooding for the Tualatin River at West Linn.

Other major Tualatin River flood occurred in December 1937, December 1955, December 1964, January 1974, and February 1996. Before 1928, flooding was not well documented, but major floods occurred in February 1890, November 1896, February 1904, January 1905, and January 1914.

The February 1996 flood on the Tualatin River was the largest flood flow ever recorded with an estimated 84-year return interval and an annual probability of recurrence of 1.2%. However, for almost all of the smaller urbanized Tualatin River tributaries that were studied, the November 1996 flood is thought to be the largest flood ever observed with an estimated 25-year return interval and an annual probability of recurrence of 4%.

Records of past flood on the remaining study reaches in Washington County are not well documented. Flood damages have been small in these unincorporated areas because their floodplains are sparsely developed.

However, the floodplain of Nyberg Slough is not sparsely developed. In the 1974 flood, a business district sustained heavy damage when the Tualatin River overtopped its banks and entered Nyberg Slough, an overflow channel. A Tualatin River flood with a recurrence interval greater than 15 years would be expected to flow through Nyberg Slough.

City of Beaverton

No gaging stations are located along Beaverton Creek, Fanno Creek, South Johnson Creek, Erickson Creek, or Cedar Mill Creek. However, history indicates that Beaverton has had recurrent and substantial flood problems from these streams. The largest flood along the creeks in the study area since 1970 occurred in December 1977. The 1977 flood had an estimated recurrence interval of approximately 10 years. Flood damage in Beaverton was moderate; most occurred near the intersections of SH 217 with SH 8 and SH 10.

The potential for property damage from Beaverton Creek overflows is especially severe for several reasons. The inadequate size and moderate grade of the channel through the study segment causes overbank flooding during even mild storms. Beaverton Creek flow is constricted by many culverts and bridges, resulting in increased upstream flood heights. Finally, the potential for property damage is significant because of the extensive commercial and residential development within the Beaverton Creek floodplain.

Fanno Creek, South Johnson Creek, Erickson Creek, and Cedar Mill Creek also have flooding problems. However, the flood damage potential from these streams is not as large as that from Beaverton Creek. Generally, the floodplains along these streams have not been extensively developed. The only area with a major flooding problem is a residential development in the Fanno Creek floodplain just upstream of SH 217.

City of Cornelius

Since October 1939, the USGS has maintained a stream gage on Tualatin River near Dilley, Oregon. The largest flood at that gage occurred in December 1964, when a flow of 17,100 cfs was observed. The average return interval for the 1964 flood was 190 years. Major floods were also recorded at Dilley in December 1955, January 1964, January 1972, and January 1974. All peak discharges after 1974 were affected by regulation or diversion, and are thus not considered major floods. Prior to 1939, flooding was not well documented in the upper Tualatin River basin. However, records from a gage on Tualatin River near West Linn, Oregon, indicate major floods occurred in December 1933 and December 1937.

Generally, Cornelius is free of flood damage by riverine sources because there is almost no development in the flood plain.

City of Durham

Five major floods have occurred on the Tualatin River at Durham since the USGS established a stream gage at West Linn in 1928. Those floods

occurred in December 1933, December 1937, December 1955, December 1964, and January 1974, and had return intervals of approximately 90, 45, 20, 10, and 25 years, respectively. These floods had peak discharges of 28,300; 25,300; 21,400; 17,700; and 22,000 cfs, respectively, at the West Linn gage. All peak discharges after 1974 were affected by regulation or diversion, and are thus not considered major floods. Considerable development in Durham took place on high ground, resulting in only minor flood damage to property.

Fanno Creek has flooded low areas downstream of Durham Road. However, damage has been slight because of minimal development in the floodplain. Fanno Creek has no major obstructions that aggravate flooding problems in Durham.

City of Forest Grove

The USGS has maintained two stream gages on Gales Creek periodically since 1935; one near the Town of Gales Creek, period of record 1936 to 1945 and 1964 to 1970, and the other near Forest Grove, period of record 1941 to 1956 and 1971 to 1980. The largest recorded flood at either station occurred in February 1949 when a discharge of 6410 cfs, a 5.9-percent-annual-chance flood, was recorded near Forest Grove. Other major floods have been recorded in December 1955, January 1964, December 1964, January 1972, and December 1977. There are no stream gages on Council Creek.

Due to the undeveloped or lightly developed state of the flood plains within Forest Grove, damages caused by flooding have been minimal. Water-related damage in the city generally results from high ground water and local drainage problems.

City of Gaston

The largest recorded flood on Tualatin River in the vicinity of the City of Gaston occurred in December 1964. The peak discharge at the USGS stream gage near Dilley, 4 miles downstream of City of Gaston, was 17,100 cfs. The 1964 flood was a 0.5-percent-annual-chance flood. That flood caused minor damage to residences located east of Tualatin Valley Highway in Gaston. There have been numerous other large floods on Tualatin River, including those which occurred in 1933, 1937, 1955, 1972, and 1974.

The largest flood on Wapato Creek occurred in 1949. Although stream gage records are not available, it is estimated that the 1949 flood was a 2-percent-annual-chance flood. Flood damages in Gaston were light because development in the flood plain had been avoided.

City of Hillsboro

The City of Hillsboro is generally free of flood damage from riverine sources. Most damage in the city results from higher ground water and ineffective local drainage.

City of King City

Intense rainfall runoff from massive winter storms moving inland from the Pacific Ocean has combined with snowmelt runoff to produce large Tualatin River floods. The largest flood recorded at the City of West Linn since the USGS established a stream gage there in 1928 occurred in December 1933. The peak discharge at the gage was 23,300 cfs, with an approximate recurrence interval of a 1-percent-annual-chance flood.

The city of King City is affected by the Tualatin River but damage is small because of the limited development in the flood plain. Past damages in the city resulted from high ground water and ineffective local drainage.

City of North Plains

Flooding in North Plains is caused by intense rainfall from massive winter storms moving inland from the Pacific Ocean. This often results in simultaneous flooding on all streams in the study area, as in the flood of December 1964. Flooding on the unnamed tributary downstream of Glencoe Road at River Mile (RM) 0.27 is greatly accentuated by coincident flooding on McKay Creek. Flooding upstream of Glencoe Road is also influenced by the backwater effect of McKay Creek. The 1.8-mile study reach has several highly constrictive culverts that cause substantial ponding. This includes the culvert crossing at Glencoe Road (RM 0.27) and the Burlington Northern Railroad (BNRR) culvert crossing at RM 1.20. At the BNRR culvert crossing, backwater from the 10-percent-annaul-chance flood and greater floodflows would overflow the right bank at Gordon Road.

There are no stream gage stations on either McKay Creek or Unnamed Tributary of McKay Creek, but local officials and residents have substantial knowledge of flooding conditions through the study reach. Local officials indicate that floods rise quickly following a rainstorm and may last a full day. Coincident flooding on McKay Creek is primarily responsible for this relatively long flood duration for a small stream of 2.5 square miles drainage area. The constrictive culverts at RM 0.27 and RM 1.20 also contribute to the extended duration.

The most recent flood on January 31, 1987, closely followed this pattern of flood duration and coincident flooding on McKay Creek. Based on numerous high water marks, flood photographs, and interviews with local

officials and residents, the January 31, 1987, flood was estimated to be greater than a 10-year recurrence interval. Flood damages were minor, however, consisting of numerous closed roads and isolation for several property owners. Flooding has occurred on a fairly regular basis on the Unnamed Tributary, and that knowledge has discouraged development in the floodplain.

City of Sherwood

Flooding from Cedar Creek and Rock Creek South is generally caused by rainfall in the winter, the period of greatest storm activity. Flood rise quickly following a heavy rainstorm and usually last less than 1 day.

The largest flood on both streams in the last 30 years occurred in December 1977. Heavy rains at that time caused some shallow flooding along the Rock Creek South flood plain. Sherwood Road, the main arterial to the City of Tualatin, was under approximately 1 foot of floodwater from Rock Creek South. No structures located along Rock Creek South were reported flooded. Flood damage from Cedar Creek was negligible because that stream is in a ravine.

City of Tigard

Flooding on the Tualatin River, Fanno Creek, Ash Creek, and Summer Creek is primarily caused by rainstorms in the winter, the period of greatest storm activity. Floods rise quickly following a heavy rainstorm and usually last less than 1 day on Fanno Creek and half a day on Ash and Summer Creeks.

Flooding in Tigard is not well documented. During the last 30 years, the largest flood on Fanno, Ash, and Summer Creeks occurred in December 1977. Although stream gage records are not available, it is estimated that the 1977 flood recurrence interval was approximately a 10-percent-annual-chance flood for the three streams. Flood damages in Tigard were minor because the areas susceptible to flooding were known and development was avoided in those areas. Flooding along Summer Creek is accentuated by a high ground water table, which causes nuisance flooding that affects numerous residences.

City of Tualatin

Intense rainfall runoff from massive winter storms moving inland from the Pacific Ocean has combined with snowmelt runoff to produce large Tualatin River floods. The largest flood recorded at the City of West Linn since the USGS established a stream gage there in 1928 occurred in December 1933. The peak discharge at the gage was 23,300 cfs, with an approximate recurrence interval of a 1-percent-annual-chance flood. The

central business district of Tualatin sustained heavy damage when the Tualatin River overtopped its banks and entered Nyberg Slough. A Tualatin River flood with greater than a 6.6-percent-annual-chance flood would be expected to flow through Nyberg Slough and inundate much of the central business district.

The January 1974 flood on the Tualatin River caused considerable damage to the study area. That flood had an estimated discharge at Tualatin of 22,340 cfs, which was estimated to be a 2.5-percent-annual-chance flood. The central business district, located on Nyberg Slough, was hit especially hard. Peak Nyberg Slough flow was approximately 2,600 cfs.

Flooding on Hedges Creek is often elevated by Tualatin River backwater flooding. Urbanization of the Hedges Creek drainage basin could increase future flood problems.

2.4 Flood Protection Measures

The Tualatin River basin has one multipurpose flood-control storage project. The Henry Hagg Lake Project, located northwest of the City of Gaston, was constructed by the U.S. Bureau of Reclamation (USBR). That project began operation in the 1974-75 flood season. It provides 30,000 acre-feet of flood storage starting in November of each year. Flood storage capacity is reduced as the winter flood season terminates, and the reservoir is filled each spring in anticipation of the summer irrigation demand. This storage would reduce the discharge of a flood, such as the flood of 1964, by approximately 3,000 cfs. The effect of Henry Hagg Lake Project flood storage has been considered in the calculation of water-surface profiles for the Tualatin River reach in the following communities: Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Tigard, and Tualatin.

The USBR has completed a draft feasibility study of two alternative storage project on the Tualatin River near Gaston, which could provide additional flood storage in the Tualatin River Basin. Those projects, however, are still in the planning stages and are not reflected in the data presented (Reference 6).

Nonstructural measures are also being used to aid in the prevention of future flood damage. These measures are based on a flood hazard zoning ordinance for controlling development within the 1-percent-annual-chance floodplain. This ordinance requires the county or the city to review all proposed development within the 1-percent-annual-chance floodplain to ensure that it is reasonably safe from flooding. The FEMA guidelines for controlling development within the flood plain are followed (Reference 7).

City of Beaverton

No structural flood protection measures are being used to help prevent future flood damage in Beaverton, but several culverts have been enlarged on Beaverton Creek to improve the flooding situation. The Southern Pacific Railroad culvert was improved, as were numerous culverts in the Canyon Road area.

City of Gaston

There is a levee along the right bank of Wapato Creek which was considered in the analysis of flood elevations. However, the levee does not provide 1-percent-annual-chance flood protection.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood-hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50- 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community. Some of the flooding sources in the discussion below are superseded with new studies. Pease refer to section 10 for details of updates.

Tualatin River stream-gage records were analyzed statistically, using the log-Pearson Type III distribution, as outlined by the U.S. Water Resources Council (Reference 8). Discharge-frequency curves for USGS stream gages at West Linn, Dilley, and Farmington were developed utilizing records from 1938 to 1976, 1940 to 1975, and 1939 to 1958, respectively.

As a result of the relatively short record, Farmington gage data were adjusted using the long-term station data at West Linn. All downstream discharges were adjusted for flood control furnished by the Henry Hagg Lake Project.

Peak Tualatin River discharges near the downstream corporate limits of Tualatin were reduced to reflect flows into Oswego Canal by way of a diversion dam and outlet works. The Oregon Iron and Steel Dam at RM 3.4 and its outlet work at RM 6.7 divert flow from the Tualatin River into Oswego Canal to stabilize the Lake Oswego water level. A stream gage on

Oswego Canal has been maintained by the USGS since 1928 to measure this outflow from the Tualatin River.

The USGS has maintained two stream gages on Gales Creek periodically since 1935; one near the Town of Gales Creek, with periods of record from 1936 to 1945 and from 1964 to 1970, and the other near the City of Forest Grove, with periods or record from 1941 to 1956 and from 1971 to the present. The U.S. Water Resources Council guidelines (Reference 8) for broken record stations were applied to these sets of data, and discharge-frequency curves were prepared for both stations.

Peak discharge-drainage are relationships for selected recurrence intervals on Dairy Creek, West Fork Dairy Creek, McKay Creek, and Unnamed Tributary of McKay Creek were obtained from a Myer's rating curve developed from several nearby stream gages. These gages included three on the Tualatin River, one on Gales Creek, and one on Johnson Creek in Multnomah County, respectively.

The frequency discharges for the Unnamed Tributary of McKay Creek were developed by the regional analysis presented in "Magnitude and Frequency of Floods in Western Oregon," U.S. Geological Survey Open-File Report 79-553, dated 1979 (Reference 9). The frequency discharges developed by this procedure were checked for reasonableness of results.

The U.S. Natural Resources Conservation Service, formerly the Soil Conservation Service (SCS), method for rainfall-runoff and unit hydrograph determination (Reference 10) was used in conjunction with USACE computer programs (Reference 11, 12, and 13) for hydrograph computing, combining, and routing, for the purpose of generating flood hydrographs for selected recurrence intervals on the remaining detailed study streams in Washington County.

Peak flows from the July 1981 FIS report for the City of Durham (Reference 15) were used for the Fanno Creek restudy. The discharges used for the Tualatin River are taken from the channel improvement restudy of the Tualatin River, completed in 1983 by the USACE, as shown in the February 1987 FIS report for the City of Tualatin.

Peak discharge-drainage area relationships for Washington County are shown in Table 3, Summary of Discharges.

Table 3 - Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Ash Creek					
At mouth	4.0	750	950	1,000	1,250
At Hall Boulevard	2.5	450	600	650	800
Beaverton Creek					
Upstream of Bronson Creek Confluence	31.4	3,943	5,063	5,518	6,605
At Cedar Hills Boulevard	6.5	1,039	1,353	1,480	1,771
Bronson Creek					
At mouth	5.0	518	656	714	855
At Northwest Kaiser Road	3.2	351	443	482	577
Butternut Creek					
At mouth	5.0	682	865	941	1,116
At Southwest 198th Avenue	2.9	498	628	680	801
At Southwest 185th Avenue	1.8	302	380	412	484
Cedar Creek					
At mouth	8.9	744	863	909	1,028
At State Highway 99 W	8.3	753	851	897	1,016
At Sunset Blvd	6.6	844	1,208	1,359	1,732
Cedar Mill Creek					
At mouth	8.4	1,050	1,289	1,384	1,588
At Northwest Barnes	3.0	467	585	632	699
Cedar Mill Creek - North overflow	3.4	65	181	230	306
Cedar Mill Creek - South Overflow					
At mouth	3.5	9	84	120	180
Cedar Mill Creek - Upper North Overflow	3.4	57	141	164	198
Celebrity Creek					
At mouth	0.8	150	188	203	238
US of Rosa park pedestrian bridge	0.7	127	158	171	200

Table 3 - Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Chicken Creek					
At mouth	15.6	1125	1429	1580	1959
US of Cedar Creek confluence	8.9	744	863	909	1028
At Wilsonville road	6.5	939	1,321	1,502	1889
Chicken Creek - West Tributary					
At mouth	1.6	309	425	477	611
Council Creek					
At Hobbs Road	10.8	1,089	1,819	1,952	2,264
At Cornelius Schefflin Road	7.2	875	1,408	1,502	1,722
At Martin Road	5.0	609	1,005	1,077	1,245
At Beal Road	206.0	240	407	438	514
Dairy Creek					
Downstream of McKay Creek Confluence	296.4	19,513	30,176	32,847	37,816
Downstream of McKay Creek Confluence	230.2	15,104	23,793	25,396	29,247
Dawson Creek					
At mouth	4.3	601	755	819	976
At N.W. Brookwood Avenue	3.7	517	652	706	836
Erickson Creek					
At mouth	1.7	278	352	382	451
Farmington road	1.5	99	162	188	249
SW 9th Ave	0.7	115	146	158	186
Fanno Creek					
At mouth	32.0	2,950	3,850	4,250	5,150
At Southwest Tiedeman Avenue	24.0	2,750	3,500	3,850	4,700
At Southwest Dakota Street	17.0	1,900	2,450	2,700	3,250
At State Highway 217	10.0	1,400	1,800	1,970	2,400
At Washington-Clackamas County boundary	5.0	950	1,150	1,300	1,550

Table 3 - Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Gales Creek					
At Stringtown Road	69.0	6,000	8,400	9,450	12,000
At Roderick Road Gage	66.0	5,800	8,150	9,150	11,600
Glencoe Swale					
At mouth	3.78	266	337	349	368
Shannon road	2.6	346	599	645	753
Jackson school road	2.3	321	552	594	692
15th Avenue	1.9	247	432	464	543
Sewell Avenue	0.8	98	171	185	217
Golf Creek					
At mouth	1.4	317	389	419	488
Gordon Creek					
At mouth	1.5	157	191	205	236
Hall Creek					
At mouth	4	720	923	1001	1179
Hwy 217 & 114th Ave	2.9	540	686	741	872
Kennedy St	2.4	490	611	660	774
Near 99th Ave	1	182	229	249	294
Hall Creek - 106th Tributary					
At mouth	0.2	50	63	68	80
Hall Creek - North Fork					
At mouth	1.0	189	239	259	306
Hall Creek - South Fork					
At mouth	0.3	22	38	46	62
Hedges Creek					
At mouth	4.1	304	509	595	802
Upstream end	2.0	447	583	636	760

Table 3 - Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Holcomb Creek					
At mouth	4.9	370	477	524	634
McKay Creek					
At mouth	66.0	4,409	6,983	7,451	8,569
At Hornecker Road	61.0	4,168	6,681	7,136	8,236
At West Union	38.7	2,811	4,328	4,603	5,271
North Johnson Creek					
At mouth	3.5	425	501	530	598
North Johnson Creek - East Tributary					
At mouth	0.3	42	52	57	67
North Johnson Creek - North Tributary					
At mouth	0.5	94	118	127	150
Nyberg Slough					
At Southwest 65th Street	694.0	16,000	23,900	33,600	48,500
Rock Creek North					
At mouth1	76.0	6,765	8,682	9,492	11,432
Downstream of Dawson Creek confluence	70.0	6,412	8,213	8,971	10,779
At S.W. 231st Avenue (Below Beaverton Creek Confluence)	63.8	5,995	7,680	8,387	10,076
Upstream of Beaverton Creek confluence	26.0	1,872	2,411	2,640	3,210
At West Union Road	19.0	1,470	1,904	2,085	2,530
Rock Creek South					
At mouth	6.2	520	660	718	873
At Sherwood Road	3.7	410	546	616	786
South Johnson Creek					
At mouth	3.6	577	730	793	940
Storey Creek					
At mouth	5.0	396	657	706	828

Table 3 - Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Storey Creek - East Tributary					
At mouth	1.309	105	176	189	222
Storey Creek - Middle Tributary					
At mouth	1.323	100	165	176	206
Summer Creek					
At mouth	6.2	1,050	1,300	1,450	1,750
At Southwest 135th Avenue	4.0	800	1,000	1,100	1,350
Tualatin River					
At rail road crossing	690.8	16,000	26,900	33,500	48,400
At Farmington	550.9	13,800	23,200	29,000	41,800
DS of Rock creek confluence	548.6	13,700	23,100	28,900	41,700
DS of Dairy Creek confluence	462.0	12,100	20,300	25,400	36,700
DS of Golf Course Tributory	221.4	7,400	12,400	15,500	22,400
Upper end of the Tualatin River	214.3	7,200	12,100	15,200	21,900
Tualatin River - Golf Course Overflow					
At mouth	NA	1,665	2,970	3,859	5,285
Tualatin River - LaFolette Overflow					
At mouth	NA	978	1,711	2,056	3,387
Turner Creek					
At mouth	2.0	320	406	441	522
Waible Creek					
Approximately 2,400 feet downstream of U.S. Highway 26/ Sunset Highway	5.1	351	462	564	725
Waible Creek - North Tributary					
Just upstream of confluence with Waible Creek	0.6	33	49	55	63
Waible Creek - South Tributary					
Just upstream of confluence with Waible Creek	1.2	118	141	159	186

Table 3 - Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Wapato Creek					
At mouth	22.0	650	1,150	1,400	2,000
At Washington/Yamhill County Line	13.0	550	850	1,000	1,350
West Fork Dairy Creek					
At Banks Road	46	4,200	6,090	7,010	9,630
Willow Creek					
At mouth	5.1	799	1,022	1,115	1,328
At Northwest 173rd Avenue	2.6	432	547	595	704

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Many flooding sources discussed in sections below have been revised with new revised studies. Refer to Section 10 – Revision Descriptions for details.

Hydraulic analyses for all streams studied in detail were performed using the USACE HEC-2 step-backwater computer program (Reference 16). Cross-section data used in the program came from a number of sources. Cross sections are composites of data from USACE field surveys, city topographic maps (References 17 though 21), the USGS topographic information. All bridges, dams, and culverts were field checked to obtain elevation data and structural geometry.

Digital methods were used wherever possible to reduce redundant work effort and automate the direct transfer of data. They were used to directly convert a network of sections and alignments into section positions and distances, to convert survey data to the model cross sections, and to automatically map the 1- and 0.2-percent annual chance floodplain boundaries based on widths from the model output and to use those same data for the Floodway Data tables in a spreadsheet.

Water-surface profile computations at bridges are based on present normal bridge openings. Consideration was not given either to the possible blockage of bridge openings by sediment and debris or to future bridge enlargement.

Field surveys were made to establish stream channel profiles, cross sections, and a few high-water elevations for approximately 13.5 miles of Fanno Creek, 1.5 miles of Ash Creek, and 2.1 miles of Summer Creek. The original field surveys began in September 1997 and were completed in March 1998. Additional field surveyed cross sections on both Fanno Creek and Ash Creek were obtained by crews from the Cities of Beaverton

and Tigard and Washington County, Oregon, during the winter months of 1998-99.

The model for Unnamed Tributary of McKay Creek was calibrated using engineering judgment and information about past flooding events from local officials and residents along the Unnamed Tributary. Numerous high water marks from the January 31, 1987 flood were used in the model calibration for the entire 1.8-mile study reach.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM. Where appropriate, backwater elevations from the Tualatin River were shown on the final Flood Profiles for Fanno Creek.

Hydraulic roughness (Manning's "n" values) for the channel and overbanks were first estimated from field observations. The "n" values were then adjusted to match high-water marks where available. Tabulated "n" values are shown in Table 4 for all streams studied in detail.

Table 4. Roughness Coefficient - Manning's "n" Values

Stream	Overbank	Channel
Ash Creek	0.040 - 0.180	0.030 - 0.065
Beal Creek	0.02 - 0.07	0.07 - 0.08
Beaverton Creek	0.001 - 0.200	0.012 - 0.080
Bethany Creek	0.035 - 0.060	0.035 - 0.040
Bronson Creek	0.06 - 0.15	0.04 - 0.11
Butternut Creek	0.03 - 0.07	0.03 - 0.07
Cedar Creek	0.020 - 0.150	0.030 - 0.060
Cedar Mill Creek and tributaries	0.02 - 0.25	0.02 - 0.08
Celebrity	0.08	0.05
Chicken Creek and West Tributary	0.02 - 0.10	0.02 - 0.10
Council Creek	0.04 - 0.10	0.042 - 0.085
Dairy Creek	0.04 - 0.10	0.04 - 0.10
Dawson Creek	0.06 - 0.10	0.035 - 0.055
Deer Creek	0.035 - 0.400	0.035
Erickson Creek	0.030 - 0.065	0.03 - 0.05
Fanno Creek	0.040 - 0.120	0.043 - 0.080
Gales Creek	0.077 - 0.110	0.050 - 0.057
Glencoe Swale	0.055 - 0.100	0.030 - 0.055
Gordon Creek	0.04 - 0.06	0.035 - 0.050
Hall Creek and tributaries	0.012 - 0.100	0.02 - 0.09
Hedges Creek	0.02 - 0.10	0.02 - 0.10
Holcomb Creek	0.04 - 0.08	0.04 - 0.05
North Johnson Creek and tributaries	0.02 - 0.25	0.02 - 0.08
McKay Creek and Unnamed Tributary	0.058 - 0.110	0.058 - 0.110
Nyberg Slough	0.050 - 0.095	0.40 - 0.05
Rock Creek North	0.04 - 0.07	0.04 - 0.07
Rock Creek South	0.02 - 1.00	0.04 - 0.08
South Johnson Creek	0.05 - 0.10	0.06 - 0.08
Storey Creek and tributaries	0.04 - 0.12	0.045 - 0.065
Summer Creek	0.04 - 0.30	0.045 - 0.085
Tualatin River and overflows	0.063 - 0.120	0.047 - 0.050
Turner Creek	0.04 - 0.08	0.045 - 0.070
Waible Creek and tributaries	0.035 - 0.100	0.050 - 0.065
Wapato Creek	0.080 - 0.090	0.050 - 0.052
West Fork Dairy Creek	0.08 - 0.11	0.055 - 0.057
Willow Creek	0.04 - 0.08	0.030 - 0.065

Overbank roughness factors were based on digital aerial orthophotographs flown in 1999 by Washington County (Reference 22). Base map references of similar roughness were identified electronically as an AutoCAD layer on the aerial orthophotographs. Geographic Information System techniques were used to compute the weighted average "n" values at each of the overbanks for the surveyed cross sections. Using the techniques described above, overbank roughness values ranged from 0.04 to 0.120.

Water-surface profile computations at bridges are based on present normal bridge openings. Consideration was not given either to the possible blockage of bridge openings by sediment and debris or to future bridge enlargement.

Starting water-surface elevations (WSELs) for the Tualatin River were obtained from a hydraulic analysis performed by the USACE for the West Linn FIS (Reference 23).

Starting WSELs for Ash Creek and Summer Creek were obtained from those modeled for Fanno Creek at the point of each creek's respective confluence. Starting WSELs for Fanno Creek were based on the slope-area method; backwater from the Tualatin River taken from the City of Durham FIS report (Reference 15) is reflected on the water-surface profiles.

Both upstream and downstream elevations for the Tualatin River Side Channel and Nyberg Slough were obtained from Tualatin River profiles located at the entrance and exit of the overbank channels. For Nyberg Slough, overflow from the Tualatin River does not reach the slough for floods with less than a 6.6-percent-annual-chance frequency. Thus, the 10-percent-annual-chance flood is not shown on the profile for Nyberg Slough.

For all other steams studied in detail, starting WSELs were obtained using the normal-depth routine of the HEC-2 program.

Results of the hydraulic analyses for Council Creek showed that the 1-percent-annual-chance flood elevations for the entire reach studied in the community are below the 1-percent-annual-chance flood elevation on Dairy Creek at its confluence with Council Creek as presented in the Washington County, Oregon, Flood Insurance Study (Reference 5). Therefore, the 1- and 0.2-percent-annual-chance flood elevations and boundaries along Council Creek, as presented on the profiles and maps, are the result of backwater from Dairy Creek.

Flood profiles were drawn showing computed WSELs to an accuracy of 0.5 foot for floods of the selected recurrence intervals (Exhibit 1).

Elevations along Wapato Creek and Rock Creek are controlled by Tualatin River during a 1-percent-annual-chance flood. The profiles for the creek reflect that analysis.

New 2-foot contour maps were developed by David Smith and Associates, Inc., for Ash Creek, Fanno Creek and Summer Creek. They are based on aerial photography flown in December 1997 (Reference 24).

Approximate flood boundaries were based upon the existing Flood Plain Delineation Maps (Reference 25) and Flood Hazard Boundary Map (FHBM) (Reference 26).

Because of stream meanders, distances on the FIRM, published separately, may not agree exactly with distances on the profiles (Exhibit 1).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD). With the completion of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are now prepared using NAVD as the referenced vertical datum.

To accurately convert flood elevations from the current NGVD29 datum to the newer NAVD88 datum, the following procedure was implemented. Use CORPSCON to determine whether it is necessary to use a Stream-by-

Stream or Countywide factor in the conversion. Using the FEMA protocol for determining the conversion factor (*FEMA Guidelines & Specifications – Appendix B*) the decision was made that a single, countywide conversion factor was acceptable to use in performing the datum conversion for Washington County, OR. The average datum conversion factor for Washington County is calculated to be +3.52 ft. The final NAVD88 elevations were computed by adding the calculated value to the existing NGVD29 data.

All previous elevations in Washington County have been converted from NGVD to NAVD by adding 3.52 feet. Flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD.

Flood elevations shown in this FIS report and on the FIRM are referenced to NAVD. These flood elevations must be compared to structure and ground elevation referenced to the same vertical datum. For information regarding conversion between the NGVD and NAVD, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242
(301) 713-4172 (fax)

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS report provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevation; delineations of the 1- and 0.2-percent-annual-chance floodplains; and a 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles and Floodway Data tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:4,800, and 1:2,400 with contour intervals of 2 feet and 4 feet (References 18, 19, 20, and 21).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM. On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations, but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The approximate 1-percent-annual-chance flood boundaries were obtained from the Floodplain Delineation Maps published by Washington County (Reference 25) and the FHBM for Washington County (Reference 26).

The approximate 1-percent-annual-chance floodplain boundaries for Hedges Creek were delineated on a topographic map at a scale of 1:24,000, with a contour interval of 10 feet (Reference 27).

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the base flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross section (see Table 5, Floodway Data). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation (WSEL) or the base flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

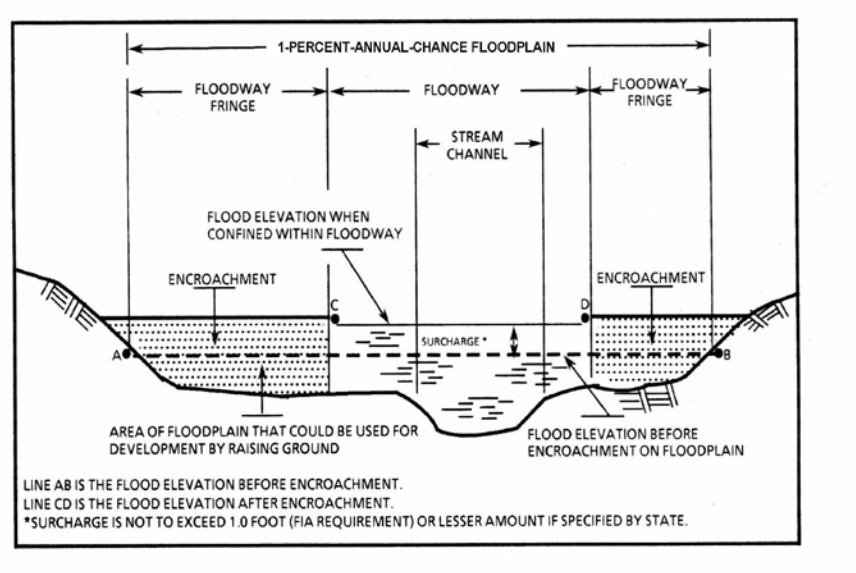


Figure 1. Floodway Schematic

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ASH CREEK								
A	0.10	60	301	3.4	164.1	160.5[2]	161.4[2]	0.9
B	0.19	26	147	7.0	164.1	162.5[2]	162.8[2]	0.3
C	0.33	116	716	1.3	164.1	164.1	164.8	0.7
D	0.41	96	440	2.1	164.2	164.2	164.9	0.7
E	0.55	70	229	4.0	164.9	164.9	165.6	0.7
F	0.72	106	441	1.9	166.0	166.0	166.7	0.7
G	0.91	66	180	4.7	167.9	167.9	168.8	0.9
H	1.08	50	248	3.1	173.3	173.3	174.3	1.0
I	1.28	18	129	5.6	177.5	177.5	178.4	0.9
J	1.39	36	158	4.6	180.6	180.6	181.5	0.9
K	1.52	56	238	2.7	184.5	184.5	185.1	0.6

[1]Stream distance in miles above confluence with Fanno Creek

[2]Elevations computed without consideration of backwater effects from Fanno Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

ASH CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEAL CREEK								
A	417	145	431	1.6	169.1	168.6[2]	169.3[2]	0.7
B	637	47	181	3.2	169.1	168.9[2]	169.6[2]	0.7
C	1,024	273	1,200	0.5	169.4	169.4	170.2	0.8
D	1,608	125	746	0.6	171.3	171.3	171.8	0.5
E	1,785	93	529	0.8	171.3	171.3	171.8	0.5
F	2,082	24	118	3.5	171.6	171.6	172.2	0.6
G	2,227	53	228	1.8	172.0	172.0	172.6	0.6
H	2,468	76	325	1.2	172.1	172.1	172.9	0.8
I	2,757	67	247	1.6	172.2	172.2	173.1	0.9

[1]Feet above confluence with Council Creek

[2]Elevations computed without consideration of backwater effects from Council Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BEAL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEAVERTON CREEK								
A	1,017	210	1,179	7.5	149.5	145.1[2]	146.1[2]	1.0
B	1,411	90	737	10.6	149.5	148.5[2]	148.7[2]	0.2
C	1,918	214	2,248	3.4	150.1	150.1	151.0	0.9
D	2,885	225	2,042	3.8	150.6	150.6	151.5	0.9
E	3,469	214	2,040	3.4	151.2	151.2	152.1	0.9
F	4,172	158	1,832	3.5	152.1	152.1	152.9	0.8
G	4,643	188	2,076	3.4	152.5	152.5	153.3	0.8
H	4,881	189	2,164	2.7	152.6	152.6	153.4	0.8
I	5,501	161	1,682	4.1	152.9	152.9	153.8	0.9
J	5,667	172	1,957	3.6	153.6	153.6	154.4	0.8
K	5,941	190	2,217	3.0	153.8	153.8	154.6	0.8
L	6,388	193	2,195	3.5	154.0	154.0	154.9	0.9
M	6,501	71	918	6.8	155.5	155.5	155.8	0.3
N	7,041	190	2,565	2.7	156.6	156.6	157.1	0.5
O	7,386	200	2,636	1.9	156.7	156.7	157.1	0.4
P	7,870	195	2,632	2.5	156.8	156.8	157.3	0.5
Q	8,519	204	2,537	2.6	156.9	156.9	157.5	0.6
R	9,367	198	2,718	2.4	157.1	157.1	157.8	0.7
S	10,104	198	2,561	2.2	157.3	157.3	158.0	0.7
T	10,576	270	3,367	2.0	157.4	157.4	158.2	0.8
U	11,391	329	3,870	1.5	157.5	157.5	158.4	0.9
V	12,068	300	3,716	1.8	158.0	158.0	158.8	0.8
W	13,094	240	2,508	2.4	158.0	158.0	158.9	0.9
X	13,970	230	2,422	2.5	158.2	158.2	159.1	0.9
Y	14,307	220	2,306	2.5	158.3	158.3	159.2	0.9
Z	14,753	216	2,121	2.8	158.5	158.5	159.4	0.9

[1]Feet above confluence with Rock Creek North

[2]Elevations computed without consideration of backwater effects from Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BEAVERTON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEAVERTON CREEK								
AA	15,159	214	2,395	2.4	158.7	158.7	159.6	0.9
AB	15,551	220	2,306	2.7	158.8	158.8	159.8	1.0
AC	15,936	220	2,283	2.6	159.0	159.0	159.9	0.9
AD	16,368	120	1,225	5.1	159.3	159.3	160.1	0.8
AE	16,554	156	1,824	3.3	160.0	160.0	160.8	0.8
AF	17,052	158	1,816	3.2	160.2	160.2	161.0	0.8
AG	17,214	209	2,411	2.4	161.1	161.1	162.0	0.9
AH	18,009	215	2,497	2.4	161.2	161.2	162.2	1.0
AI	18,324	184	2,156	2.8	161.3	161.3	162.3	1.0
AJ	18,630	198	2,251	2.9	161.5	161.5	162.4	0.9
AK	18,926	190	2,212	2.6	161.5	161.5	162.5	1.0
AL	19,473	169	2,099	2.7	161.7	161.7	162.7	1.0
AM	20,062	226	1,959	2.9	162.0	162.0	162.9	0.9
AN	21,311	285	2,545	2.2	162.3	162.3	163.3	1.0
AO	21,903	276	2,331	2.4	162.4	162.4	163.4	1.0
AP	22,411	213	1,975	2.3	162.6	162.6	163.6	0.9
AQ	22,864	187	2,241	1.9	162.8	162.8	163.8	0.9
AR	23,366	166	1,764	2.9	163.0	163.0	163.9	0.9
AS	23,533	69	791	5.5	163.1	163.1	164.0	0.9
AT	24,090	281	2,549	2.2	164.0	164.0	164.8	0.8
AU	24,594	254	2,100	2.8	164.1	164.1	164.9	0.8
AV	26,374	83	602	9.3	164.7	164.7	165.4	0.7
AW	27,108	213	1,715	3.3	166.9	166.9	167.3	0.4
AX	27,789	224	1,832	3.5	167.2	167.2	167.6	0.4
AY	28,237	264	2,008	3.1	167.4	167.4	167.7	0.3
AZ	28,773	251	1,762	3.7	167.6	167.6	167.9	0.3

[1]Feet above confluence with Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BEAVERTON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEAVERTON CREEK								
BA	30,064	327	1,959	3.5	167.8	167.8	168.2	0.4
BB	31,158	241	1,331	4.6	168.3	168.3	168.6	0.3
BC	31,555	64	520	8.8	168.7	168.7	168.8	0.1
BD	31,751	112	876	6.7	170.0	170.0	170.2	0.2
BE	32,190	199	1,700	3.1	170.3	170.3	171.2	0.9
BF	32,458	186	1,362	4.8	170.3	170.3	171.2	0.9
BG	33,321	332	2,531	1.7	170.7	170.7	171.6	0.9
BH	33,852	339	2,378	1.6	170.7	170.7	171.6	0.9
BI	34,114	243	2,264	1.6	170.8	170.8	171.7	0.9
BJ	34,661	204	2,069	1.7	170.8	170.8	171.7	0.9
BK	35,077	207	1,959	1.8	170.9	170.9	171.8	0.9
BL	35,351	211	2,033	1.7	170.9	170.9	171.8	0.9
BM	35,580	205	1,924	1.8	170.9	170.9	171.8	0.9
BN	36,047	203	1,953	2.0	171.0	171.0	171.9	0.9
BO	36,530	213	2,013	1.8	171.0	171.0	171.9	0.9
BP	37,255	117	1,089	2.5	171.1	171.1	172.0	0.9
BQ	37,487	127	1,221	3.0	171.2	171.2	172.0	0.8
BR	37,868	135	735	3.7	171.4	171.4	172.2	0.8
BS	38,285	382	3,522	1.0	171.9	171.9	172.9	1.0
BT	39,137	211	1,824	1.5	171.9	171.9	172.9	1.0
BU	39,433	98	712	2.7	171.9	171.9	172.8	0.9
BV	39,765	82	1,118	1.7	172.6	172.6	173.5	0.9
BW	40,440	90	832	2.2	172.7	172.7	173.6	0.9
BX	40,624	70	837	1.9	173.2	173.2	174.1	0.9
BY	40,845	84	671	3.4	173.2	173.1	174.0	0.9
BZ	41,120	77	637	3.5	173.2	173.2	174.1	0.9

[1]Feet above confluence with Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BEAVERTON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEAVERTON CREEK								
CA	41,285	86	264	5.9	173.2	173.2	174.0	0.8
CB	41,535	96	520	3.0	174.8	174.8	175.6	0.8
CC	41,898	120	1,514	1.4	177.4	177.4	178.0	0.6
CD	42,010	60	587	2.6	177.4	177.4	178.0	0.6
CE	42,363	60	582	2.7	177.4	177.4	178.1	0.7
CF	42,547	53	519	3.0	177.6	177.6	178.3	0.7
CG	42,653	80	753	2.0	177.7	177.7	178.4	0.7
CH	43,303	181	1,269	1.3	177.8	177.8	178.5	0.7
CI	43,417	181	1,270	1.3	177.8	177.8	178.5	0.7
CJ	43,569	175	1,467	1.7	178.1	178.1	179.1	1.0
CK	44,047	176	1,443	1.8	178.1	178.1	179.1	1.0
CL	44,963	187	1,347	1.2	178.2	178.2	179.2	1.0
CM	45,438	46	414	3.6	178.2	178.2	179.1	0.9
CN	45,632	65	457	3.3	178.5	178.5	179.4	0.9
CO	46,148	134	698	2.1	179.5	179.5	180.2	0.7
CP	46,252	53	452	3.5	179.5	179.5	180.2	0.7
CQ	46,810	63	491	3.1	179.7	179.7	180.5	0.8
CR	46,949	61	503	2.9	179.9	179.9	180.8	0.9
CS	47,249	91	797	1.9	180.0	180.0	180.9	0.9
CT	47,459	146	1,857	0.8	180.1	180.1	181.0	0.9
CU	48,022	35	485	2.9	180.2	180.2	181.1	0.9
CV	48,402	95	618	2.4	180.5	180.5	181.5	1.0
CW	48,694	103	653	4.2	180.6	180.6	181.4	0.8
CX	49,093	46	105	1.4	182.2	182.2	182.9	0.7
CY	49,415	65	180	0.8	182.3	182.3	182.9	0.6
CZ	49,688	30	121	0.2	182.3	182.3	182.9	0.6

[1]Feet above confluence with Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BEAVERTON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEAVERTON CREEK								
DA	49,807	30	15	1.3	182.7	182.7	182.9	0.2
DB	50,296	13	5	3.7	183.3	183.3	183.4	0.1
DC	50,513	82	315	0.1	183.3	183.3	183.7	0.4
DD	50,857	39	150	0.1	183.3	183.3	183.7	0.4
DE	51,109	34	144	0.1	183.3	183.3	183.7	0.4
DF	51,446	115	627	0.7	183.3	183.3	183.7	0.4
DG	51,730	45	255	1.3	183.4	183.4	183.7	0.3
DH	52,007	34	178	1.9	183.4	183.4	183.8	0.4
DI	52,457	28	349	0.5	189.1	189.1	189.5	0.4
DJ	52,670	25	324	0.7	189.1	189.1	189.5	0.4
DK	52,780	32	303	0.8	189.1	189.1	189.5	0.4
DL	53,025	30	59	2.4	189.1	189.1	189.6	0.5
DM	53,626	30	26	5.3	195.6	195.6	195.8	0.2
DN	53,795	30	26	5.3	196.9	196.9	197.3	0.4
DO	54,275	30	27	5.0	200.2	200.2	200.6	0.4
DP	54,598	89	59	5.6	203.2	203.2	203.3	0.1
DQ	54,946	105	52	5.3	208.5	208.5	208.6	0.1
DR	55,219	30	67	2.1	208.8	208.8	209.0	0.2
DS	55,483	30	128	1.1	208.8	208.8	209.1	0.3
DT	55,702	9	80	2.1	208.8	208.8	209.1	0.3
DU	56,057	69	200	1.7	208.8	208.8	209.3	0.5
DV	56,143	63	260	1.3	208.8	208.8	209.4	0.6
DW	56,362	17	44	3.9	208.9	208.9	209.3	0.4
DX	56,513	15	63	3.0	210.6	210.6	211.5	0.9
DY	56,796	13	44	4.4	211.4	211.4	212.2	0.8
DZ	56,883	23	18	5.1	215.6	215.6	215.8	0.2

[1]Feet above confluence with Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BEAVERTON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEAVERTON CREEK								
EA	56,987	30	26	3.5	216.2	216.2	216.4	0.2
EB	57,104	31	35	2.6	216.8	216.8	217.0	0.2
EC	57,389	36	53	1.7	218.8	218.8	219.0	0.2
ED	57,711	14	74	1.2	222.3	222.3	222.9	0.6
EE	57,794	11	74	2.3	222.3	222.3	222.9	0.6
EF	57,958	24	92	1.8	222.3	222.3	223.1	0.8
EG	59,692	56	377	0.2	244.9	244.9	245.0	0.1
EH	59,945	23	72	1.1	245.1	245.1	245.2	0.1
EI	60,121	20	46	1.7	245.4	245.4	245.5	0.1
EJ	60,420	6	20	3.9	247.0	247.0	247.2	0.2
EK	60,531	6	21	3.7	247.3	247.3	247.4	0.1
EL	60,725	8	18	4.3	250.5	250.5	251.0	0.5
EM	60,916	16	65	1.3	259.1	259.1	259.4	0.3
EN	61,362	6	11	7.4	260.4	260.4	260.4	0.0
EO	61,511	7	23	3.5	264.0	264.0	264.7	0.7
EP	61,774	7	28	2.8	266.6	266.6	267.4	0.8

[1]Feet above confluence with Rock Creek North

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BETHANY CREEK								
A	351	279	1,382	0.4	173.5	172.5[2]	173.3[2]	0.8
B	675	279	1,507	0.3	173.5	172.5[2]	173.3[2]	0.8
C	1,250	182	989	0.5	173.5	172.5[2]	173.3[2]	0.8
D	1,907	20	98	5.2	173.5	173.4[2]	173.6[2]	0.2
E	2,917	60	158	3.3	175.9	175.9	176.8	0.9
F	3,449	41	115	4.0	176.5	176.5	177.5	1.0
G	4,110	40	145	3.4	180.9	180.9	180.9	0.0
H	4,558	56	154	2.5	181.3	181.3	181.5	0.2
I	4,764	33	122	3.8	181.8	181.8	182.6	0.8
J	5,105	40	86	5.6	182.6	182.6	183.3	0.7
K	5,618	39	70	3.1	184.7	184.7	185.0	0.3
L	5,946	44	40	5.8	187.9	187.9	187.9	0.0

[1]Feet above confluence with Rock Creek North

[2]Elevations computed without consideration of backwater effects from Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BETHANY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BRONSON CREEK								
A	419	145	443	2.0	158.0	151.5[2]	151.5[2]	0.0
B	751	85	274	2.4	158.0	151.9[2]	152.2[2]	0.3
C	977	18	261	3.8	160.3	160.3	160.9	0.6
D	1,483	190	1,760	0.6	160.4	160.4	161.2	0.8
E	1,776	225	1,774	0.6	160.5	160.5	161.2	0.7
F	2,053	191	1,134	0.7	160.5	160.5	161.2	0.7
G	2,326	199	995	0.8	160.6	160.6	161.2	0.6
H	2,619	157	645	1.3	160.7	160.7	161.3	0.6
I	3,148	130	491	1.5	161.1	161.1	161.6	0.5
J	3,681	125	410	2.2	161.7	161.7	162.2	0.5
K	3,947	113	284	3.0	162.4	162.4	162.8	0.4
L	4,009	60	237	3.3	167.3	167.3	167.8	0.5
M	4,598	81	544	1.4	167.7	167.7	168.2	0.5
N	5,179	139	696	1.4	167.8	167.8	168.7	0.9
O	5,968	34	234	2.8	172.0	172.0	172.0	0.0
P	6,155	58	410	1.7	172.5	172.5	173.3	0.8
Q	6,540	133	1,351	0.5	172.6	172.6	173.3	0.7
R	6,878	85	314	2.3	172.6	172.6	173.3	0.7
S	7,266	85	529	1.3	172.8	172.8	173.7	0.9
T	7,486	30	196	3.4	173.1	173.1	173.9	0.8
U	7,727	80	519	1.2	173.6	173.6	174.3	0.7
V	7,954	20	90	7.2	173.6	173.6	174.3	0.7
W	8,166	40	177	3.8	176.8	176.8	177.0	0.2
X	8,545	175	1,023	0.6	178.2	178.2	178.8	0.6
Y	8,805	199	793	0.8	183.3	183.3	183.5	0.2
Z	9,283	266	1,468	0.4	183.3	183.3	183.6	0.3

[1]Feet above confluence with Beaverton Creek

[2]Elevations computed without consideration of backwater effects from Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BRONSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BRONSON CREEK								
AA	9,660	196	1,049	0.6	183.3	183.3	183.6	0.3
AB	10,101	236	1,878	0.3	185.0	185.0	185.3	0.3
AC	10,422	130	914	0.7	185.0	185.0	185.3	0.3
AD	10,764	24	135	4.6	185.0	185.0	185.2	0.2
AE	10,966	21	162	4.4	187.2	187.2	187.6	0.4
AF	11,260	76	563	1.2	187.2	187.2	188.1	0.9
AG	11,712	65	223	3.2	187.7	187.7	188.5	0.8
AH	11,880	36	152	4.5	188.3	188.3	188.9	0.6
AI	12,114	20	115	5.7	192.7	192.7	193.3	0.6
AJ	12,244	52	327	1.9	194.3	194.3	194.6	0.3
AK	12,333	106	630	1.3	194.9	194.9	195.7	0.8
AL	12,534	162	843	0.9	195.0	195.0	195.7	0.7
AM	12,902	172	693	1.1	195.1	195.1	195.8	0.7
AN	13,149	161	518	1.6	195.2	195.2	196.0	0.8
AO	13,518	118	380	1.5	195.6	195.6	196.5	0.9
AP	13,979	115	227	2.5	197.1	197.1	197.6	0.5
AQ	14,303	118	356	1.7	198.0	198.0	198.6	0.6
AR	15,312	126	308	2.1	199.8	199.8	200.8	1.0
AS	15,464	132	310	2.2	200.6	200.6	201.6	1.0
AT	15,757	114	318	2.4	201.8	201.8	202.8	1.0
AU	16,548	113	290	2.3	204.4	204.4	205.2	0.8
AV	16,802	134	361	1.6	205.1	205.1	206.0	0.9
AW	17,402	161	336	2.2	206.6	206.6	207.6	1.0
AX	17,846	163	236	3.3	209.1	209.1	210.0	0.9
AY	18,225	97	235	2.5	212.2	212.2	213.2	1.0
AZ	18,477	70	228	3.1	213.6	213.6	214.4	0.8

[1]Feet above confluence with Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BRONSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BRONSON CREEK								
BA	19,047	97	310	1.9	216.7	216.7	217.3	0.6
BB	19,314	104	282	1.6	217.0	217.0	217.9	0.9
BC	19,741	89	213	2.1	218.2	218.2	219.2	1.0
BD	20,519	142	360	1.5	220.7	220.7	221.7	1.0
BE	20,946	26	81	6.5	223.1	223.1	223.9	0.8
BF	21,117	44	105	5.0	225.0	225.0	225.5	0.5
BG	21,674	92	282	1.9	227.4	227.4	228.4	1.0
BH	22,346	151	279	2.0	229.0	229.0	229.9	0.9
BI	22,974	172	255	1.5	232.7	232.7	233.2	0.5
BJ	23,737	224	326	1.1	237.3	237.3	237.3	0.0
BK	24,134	26	71	5.5	238.2	238.2	239.0	0.8
BL	24,705	40	148	2.9	243.4	243.4	244.2	0.8
BM	25,210	50	132	3.3	246.2	246.2	246.6	0.4
BN	25,470	56	136	3.6	247.9	247.9	248.5	0.6
BO	25,871	80	166	2.4	249.6	249.6	250.2	0.6
BP	26,223	149	248	2.0	250.3	250.3	251.4	1.1
BQ	26,398	17	53	6.2	251.1	251.1	252.1	1.0
BR	26,734	90	228	1.6	255.0	255.0	255.5	0.5
BS	27,268	18	55	6.0	256.2	256.2	257.2	1.0
BT	27,968	31	117	2.8	264.1	264.1	264.3	0.2
BU	28,532	120	207	2.3	266.7	266.7	267.0	0.3
BV	28,736	39	106	3.4	272.4	272.4	272.6	0.2

[1]Feet above confluence with Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BRONSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BUTTERNUT CREEK								
A	971	27	111	9.1	144.3	125.5[2]	125.9[2]	0.4
B	1,193	88	638	2.0	144.3	133.3[2]	133.4[2]	0.1
C	1,891	49	344	2.8	144.3	133.5[2]	133.5[2]	0.0
D	3,023	169	454	2.8	144.3	134.2[2]	134.6[2]	0.4
E	3,976	107	318	3.8	144.3	135.9[2]	136.3[2]	0.4
F	4,505	101	326	3.2	144.3	137.0[2]	137.9[2]	0.9
G	5,376	91	274	3.9	144.3	139.4[2]	140.3[2]	0.9
H	6,023	74	207	5.2	144.3	141.5[2]	142.5[2]	1.0
I	6,698	80	288	3.7	144.3	143.8[2]	144.5[2]	0.7
J	6,882	72	719	1.3	150.7	150.7	151.4	0.7
K	7,450	88	773	1.2	150.7	150.7	151.5	0.8
L	8,584	99	717	1.4	150.7	150.7	151.6	0.9
M	9,293	97	574	1.8	150.8	150.8	151.7	0.9
N	9,447	50	399	2.5	151.1	151.1	152.1	1.0
O	10,251	77	512	2.0	151.5	151.5	152.5	1.0
P	11,130	44	197	4.3	152.1	152.1	153.1	1.0
Q	11,679	89	419	2.3	153.6	153.6	154.4	0.8
R	12,503	85	372	2.4	154.2	154.2	155.2	1.0
S	13,904	68	219	4.0	157.5	157.5	158.3	0.8
T	14,725	70	286	2.8	160.9	160.9	161.5	0.6
U	15,861	61	211	4.4	163.3	163.3	164.2	0.9
V	16,842	46	204	3.8	166.5	166.5	166.9	0.4
W	17,104	51	240	3.4	167.0	167.0	167.5	0.5
X	17,378	58	439	1.3	170.5	170.5	171.4	0.9
Y	17,706	69	480	1.1	170.6	170.6	171.5	0.9
Z	17,942	70	404	1.8	170.7	170.7	171.6	0.9

[1]Feet above confluence with Tualatin River

[2]Elevations computed without consideration of backwater effects from Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

BUTTERNUT CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CARPENTER CREEK								
A	7,143	220	647	1.2	175.5	169.6[2]	170.5	0.9
B	11,671	57	229	2.7	180.0	178.1[2]	178.8	0.7
C	13,750	11	70	3.5	183.2	183.2	183.6	0.4
D	14,956	118	207	2.6	187.3	187.3	187.6	0.3
E	15,520	60	156	3.9	190.3	190.3	191.2	0.9

[1]Feet above confluence with Tualatin River

[2]Elevations computed without consideration of flooding from Gales Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

CARPENTER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CARPENTER CREEK SPLIT								
A	521	200	473	0.8	183.0	183.0	183.5	0.5
B	1,522	170	186	2.0	183.8	183.8	184.6	0.8

[1]Feet above confluence with Carpenter Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

CARPENTER CREEK SPLIT

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CEDAR CREEK								
A	1,300	141	582	2.3	144.2	144.1[2]	144.8	0.7
B	2,121	222	992	1.4	145.0	145.0	145.7	0.7
C	2,510	120	571	2.4	145.6	145.6	146.1	0.5
D	3,498	139	1,370	1.0	152.1	152.1	152.9	0.8
E	4,234	121	996	1.4	152.3	152.3	153.0	0.7
F	4,705	135	1,086	1.3	152.3	152.3	153.2	0.9
G	5,216	143	1,153	1.2	152.4	152.4	153.4	1.0
H	6,500	288	4,682	0.3	164.7	164.7	165.6	0.9
I	7,743	190	2,864	0.5	164.7	164.7	165.6	0.9
J	8,721	230	3,094	0.4	164.7	164.7	165.7	1.0
K	9,766	180	2,163	0.6	164.8	164.8	165.7	0.9
L	10,221	149	1,681	0.8	164.9	164.9	165.9	1.0
M	10,493	260	2,684	0.5	165.0	165.0	165.9	0.9
N	10,950	221	2,077	0.7	165.0	165.0	166.0	1.0
O	11,539	260	2,355	0.6	165.1	165.1	166.0	0.9
P	12,251	213	1,591	0.9	165.1	165.1	166.1	1.0
Q	12,821	40	369	3.7	165.3	165.3	166.2	0.9
R	13,312	237	2,838	0.5	170.9	170.9	171.9	1.0
S	14,326	246	2,165	0.6	171.0	171.0	172.0	1.0
T	15,349	243	2,689	0.5	174.8	174.8	175.5	0.7
U	16,937	261	1,799	0.8	175.0	175.0	175.6	0.6

[1]Feet above confluence with Chicken Creek

[2]Elevations computed without consideration of backwater from Chicken Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
V	18,164	159	826	1.6	175.7	175.7	176.4	0.7
W	19,056	143	779	1.7	177.0	177.0	177.8	0.8
X	19,693	172	842	1.6	177.9	177.9	178.7	0.8
Y	20,489	189	855	1.6	178.8	178.8	179.4	0.6
Z	22,029	104	365	3.7	182.9	182.9	183.7	0.8
AA	23,168	160	804	1.7	185.5	185.5	186.3	0.8
AB	24,376	153	693	2.0	187.6	187.6	188.5	0.9
AC	25,229	279	1,396	1.0	190.3	190.3	191.2	0.9
AD	26,803	134	401	3.4	194.7	194.7	195.5	0.8
AE	28,119	137	709	1.9	199.9	199.9	200.8	0.9
AF	29,116	79	403	3.4	203.1	203.1	203.9	0.8
AG	29,948	89	633	2.1	206.2	206.2	206.8	0.6

[1]Feet above confluence with Chicken Creek
[2]Elevations computed without consideration of backwater from Chicken Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CEDAR MILL CREEK								
A	720	176	476	3.3	170.7	168.9[2]	169.6[2]	0.7
B	1,309	130	472	3.4	170.7	170.8	171.7	0.9
C	1,680	163	639	3.0	171.4	171.4	172.5	1.1
D	2,500	177	591	3.2	172.8	172.8	173.7	0.9
E	3,458	293	456	3.2	173.7	173.7	174.6	0.9
F	3,796	44	393	3.6	181.1	181.1	181.1	0.0
G	4,106	40	399	3.4	181.1	181.1	181.6	0.5
H	4,418	198	1,304	1.1	181.1	181.1	181.8	0.7
I	4,815	326	1,907	0.7	181.2	181.2	181.9	0.7
J	5,163	301	736	2.4	182.1	182.1	182.4	0.3
K	5,723	52	403	3.3	182.2	182.2	182.6	0.4
L	6,062	91	644	1.9	182.7	182.7	183.3	0.6
M	6,216	56	422	2.7	182.8	182.8	183.4	0.6
N	6,600	77	551	2.1	183.0	183.0	183.7	0.7
O	7,283	127	615	2.1	183.4	183.4	184.0	0.6
P	7,435	98	410	3.2	183.5	183.5	184.1	0.6
Q	7,705	100	395	3.7	184.0	184.0	184.5	0.5
R	7,979	124	642	2.0	184.4	184.4	185.0	0.6
S	8,218	173	735	1.8	184.5	184.5	185.2	0.7
T	8,448	153	847	1.8	184.9	184.9	185.4	0.5
U	8,652	181	956	1.2	184.9	184.9	185.5	0.6
V	8,961	64	266	4.8	186.0	186.0	186.0	0.0
W	9,310	80	468	1.6	188.8	188.8	189.7	0.9
X	9,651	90	392	2.2	188.9	188.9	189.8	0.9
Y	9,896	96	317	2.4	189.2	189.2	190.1	0.9
Z	10,161	60	221	3.3	191.0	191.0	191.7	0.7

[1]Feet above confluence with Beaverton Creek

[2]Elevations computed without consideration of backwater effects from Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR MILL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CEDAR MILL CREEK								
AA	10,496	31	154	4.7	194.6	194.6	194.6	0.0
AB	10,683	55	180	4.7	195.9	195.9	196.2	0.3
AC	11,213	31	184	4.0	198.3	198.3	199.1	0.8
AD	11,440	58	186	4.7	198.9	198.9	199.9	1.0
AE	11,740	60	168	5.3	201.9	201.9	202.5	0.6
AF	12,247	29	215	3.4	204.7	204.7	205.6	0.9
AG	13,193	19	101	4.7	207.7	207.1	207.7	0.6
AH	13,629	20	112	4.2	210.0	210.0	210.0	0.0
AI	13,787	27	84	5.6	212.4	212.3	212.4	0.1
AJ	13,897	30	203	2.3	213.0	213.0	213.0	0.0
AK	14,316	31	169	4.1	213.8	213.7	213.8	0.1
AL	14,823	29	202	3.5	215.4	215.1	215.4	0.3
AM	15,007	19	104	6.1	216.0	215.4	216.0	0.6
AN	15,250	18	118	5.3	218.2	217.7	218.2	0.5
AO	15,639	20	137	4.6	220.9	220.6	220.9	0.3
AP	15,851	8	80	7.9	224.0	223.4	224.0	0.6
AQ	16,173	34	233	2.7	225.3	224.9	225.3	0.4
AR	16,540	69	264	2.4	227.6	226.7	227.6	0.9
AS	16,746	17	124	5.1	229.0	228.5	229.0	0.5
AT	16,880	46	240	2.9	229.7	228.9	229.7	0.8
AU	17,053	145	299	2.8	232.7	231.8	232.7	0.9
AV	17,712	19	109	6.4	234.2	233.7	234.2	0.5
AW	18,405	29	179	4.0	239.4	239.0	239.4	0.4
AX	18,853	32	144	5.7	242.2	241.4	242.2	0.8
AY	19,549	45	193	3.6	248.7	247.7	248.7	1.0
AZ	20,008	25	124	5.6	252.5	252.2	252.5	0.3

[1]Feet above confluence with Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR MILL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CEDAR MILL CREEK								
BA	20,278	78	363	2.0	280.4	280.1	280.4	0.3
BB	20,395	59	381	1.7	280.5	280.2	280.5	0.3
BC	20,793	82	355	2.1	280.8	280.3	280.8	0.5
BD	21,460	60	161	4.9	282.3	282.0	282.3	0.3
BE	21,641	44	176	4.0	283.3	282.7	283.3	0.6
BF	21,851	21	72	8.2	284.5	284.2	284.5	0.3
BG	22,052	18	89	6.5	288.7	287.7	288.7	1.0
BH	22,199	24	154	3.5	292.7	291.9	292.7	0.8
BI	22,453	126	195	4.3	300.3	300.3	300.3	0.0

[1]Feet above confluence with Beaverton Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CEDAR MILL CREEK NORTH OVERFLOW								
A	83	169	340	0.7	206.6	206.6	207.3	0.7
B	336	35	62	3.7	207.2	207.2	207.8	0.6
C	427	31	37	6.2	208.0	208.0	208.1	0.1
D	799	24	34	6.8	210.9	210.9	211.0	0.1
E	1,133	104	67	3.4	211.9	211.9	212.2	0.3

[1]Feet above confluence with Cedar Mill Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR MILL CREEK NORTH OVERFLOW

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CELEBRITY CREEK								
A	326	21	94	2.2	179.2	179.2	179.9	0.7
B	526	14	60	3.4	179.6	179.6	180.2	0.6
C	710	7	41	6.3	179.9	179.9	180.6	0.7
D	1,020	19	73	2.8	181.5	181.5	181.7	0.2
E	1,134	21	97	2.1	182.0	182.0	182.6	0.6
F	1,445	18	84	2.4	182.4	182.4	182.9	0.5
G	1,568	19	58	3.5	183.1	183.1	183.7	0.6
H	1,714	21	88	2.3	183.6	183.6	184.1	0.5
I	1,917	19	77	2.6	183.8	183.8	184.3	0.5
J	2,070	19	65	3.1	184.2	184.2	184.7	0.5
K	2,328	13	46	4.4	186.4	186.4	186.7	0.3
L	2,517	18	55	3.1	187.7	187.7	188.0	0.3
M	2,666	21	94	1.8	188.6	188.6	189.1	0.5
N	2,796	19	53	3.3	188.8	188.8	189.5	0.7
O	3,115	20	48	5.2	191.7	191.7	192.7	1.0
P	3,431	23	51	4.7	194.2	194.2	195.1	0.9
Q	3,718	19	47	4.2	195.6	195.6	196.5	0.9
R	3,939	12	35	4.4	197.2	197.2	197.6	0.4
S	4,074	12	37	4.0	197.8	197.8	198.6	0.8
T	4,255	12	38	3.9	199.1	199.1	200.1	1.0
U	4,459	12	35	4.9	201.2	201.2	201.4	0.2
V	4,831	23	37	5.0	204.5	204.5	204.7	0.2
W	5,215	14	24	7.0	206.1	206.1	206.4	0.3
X	5,550	25	34	4.9	211.8	211.8	211.8	0.0

[1]Feet above confluence with Butternut Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

CELEBRITY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CHICKEN CREEK								
A	2,316	45	381	4.1	134.4	132.0[3]	132.5[3]	0.5
B	2,540	93	409	3.9	134.4	134.0[3]	134.1[3]	0.1
C	3,065	117	596	2.9	134.9	134.9	135.0	0.1
D	4,074	110	694	3.5	135.9	135.9	136.1	0.2
E	7,110	130	634	4.1	139.5	139.5	139.9	0.4
F	7,299	57	363	5.7	141.1	141.1	141.2	0.1
G	8,632	50	473	4.0	144.1	144.1	144.8	0.7
H	11,383	109	305	4.8	149.6	149.6	150.4	0.8
I	12,425	165	1,119	1.9	151.0	151.0	151.6	0.6
J	13,121	200	1,105	1.4	151.2	151.2	151.9	0.7
K	13,273	67	581	2.1	153.8	153.8	154.5	0.7
L	14,049	92	632	1.8	153.8	153.8	154.6	0.8
M	15,132	70	356	4.1	154.1	154.1	154.8	0.7
N	15,243	92	239	4.6	157.2	157.2	158.0	0.8
CHICKEN CREEK WEST TRIBUTARY								
A	751[2]	32	185	3.1	153.3	153.3	154.1	0.8
B	1,512[2]	32	140	3.2	156.3	156.3	157.1	0.8

[1]Feet above confluence with Tualatin River

[2]Feet above confluence with Chicken Creek

[3]Elevations computed without consideration of backwater effects from Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

CHICKEN CREEK - CHICKEN CREEK WEST TRIBUTARY

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
COUNCIL CREEK								
A	2,783	248	1,107	1.9	156.3	143.3[2]	144.1[2]	0.8
B	3,662	298	1,196	1.4	156.3	143.6[2]	144.5[2]	0.9
C	4,250	63	285	5.9	156.3	143.6[2]	144.6[2]	1.0
D	4,432	57	310	5.8	156.3	146.7[2]	146.9[2]	0.2
E	5,015	97	792	2.5	156.3	148.2[2]	149.0[2]	0.8
F	7,942	166	1,074	1.6	156.3	149.6[2]	150.6[2]	1.0
G	8,348	164	968	2.6	156.3	149.9[2]	150.8[2]	0.9
H	8,543	71	482	3.6	156.3	150.5[2]	151.3[2]	0.8
I	8,958	128	779	1.7	156.3	151.1[2]	152.0[2]	0.9
J	10,928	172	968	1.5	156.3	151.9[2]	152.6[2]	0.7
K	13,467	44	339	4.9	156.3	153.7[2]	154.3[2]	0.6
L	13,968	114	658	2.8	156.3	155.3[2]	155.9[2]	0.6
M	16,971	139	1,052	1.9	156.3	155.8[2]	156.5[2]	0.7
N	18,557	139	840	1.8	156.3	156.3	156.9	0.6
O	19,373	39	408	4.4	157.1	157.1	157.8	0.7
P	21,282	57	562	2.8	160.1	160.1	160.3	0.2
Q	22,478	145	1,196	1.3	160.6	160.6	160.9	0.3
R	22,671	106	727	2.1	160.8	160.8	161.1	0.3
S	23,311	76	828	1.9	165.0	165.0	166.0	1.0
T	23,641	183	823	2.2	165.1	165.1	166.1	1.0
U	24,727	169	869	1.9	165.5	165.5	166.5	1.0
V	25,111	174	1,182	0.9	165.6	165.6	166.5	0.9
W	28,143	175	794	0.8	165.8	165.8	166.8	1.0
X	30,233	180	444	3.3	169.0	169.0	169.9	0.9
Y	31,294	227	857	0.3	169.3	169.3	170.2	0.9
Z	32,610	22	149	2.9	172.1	172.1	172.7	0.6

[1]Feet above confluence with Dairy Creek

[2]Elevations computed without consideration of backwater effects from Dairy Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

COUNCIL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
COUNCIL CREEK								
AA	33,061	120	778	0.7	172.1	172.1	172.9	0.8
AB	33,727	103	627	0.8	172.1	172.1	173.0	0.9
AC	34,070	82	486	0.3	172.2	172.2	173.0	0.8
AD	35,087	116	519	0.3	172.2	172.2	173.0	0.8
AE	35,235	101	389	0.3	172.2	172.2	173.0	0.8

[1]Feet above confluence with Dairy Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

COUNCIL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
DAIRY CREEK								
A	3,512	984	15,983	1.4	152.3	152.3	153.1	0.8
B	5,485	1,222	17,350	1.7	152.3	152.3	153.2	0.9
C	9,167	345	6,445	6.8	153.1	153.1	154.1	1.0
D	9,713	661	10,203	3.3	153.7	153.7	154.6	0.9
E	11,136	380	5,003	7.9	153.7	153.7	154.7	1.0
F	11,438	370	6,628	4.1	155.6	155.6	156.4	0.8
G	11,842	1,078	20,232	1.2	156.0	156.0	156.9	0.9
H	12,157	1,362	12,460	2.9	156.1	156.1	157.0	0.9
I	14,863	1,576	29,815	0.5	156.3	156.3	157.2	0.9
J	16,220	1,587	21,143	0.9	156.3	156.3	157.2	0.9
K	19,998	1,624	22,317	0.9	156.3	156.3	157.2	0.9
L	24,827	1,362	20,267	0.8	156.3	156.3	157.3	1.0
M	27,542	770	9,691	1.6	156.4	156.4	157.4	1.0
N	29,088	1,437	10,703	1.0	156.6	156.6	157.7	1.1
O	32,530	1,017	10,678	0.4	156.9	156.9	158.0	1.1
P	33,566	1,036	10,309	1.5	158.9	158.9	159.7	0.8

[1] Feet Above Confluence with Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

DAIRY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
DAWSON CREEK								
A	398	143	573	3.3	147.1	137.3[2]	138.3[2]	1.0
B	1,563	82	217	7.1	147.1	138.5[2]	139.5[2]	0.9
C	1,959	45	289	4.9	147.1	145.7[2]	145.7[2]	0.0
D	2,616	65	383	2.7	147.1	146.2[2]	146.6[2]	0.4
E	3,277	80	325	3.9	147.1	146.7[2]	147.3[2]	0.6
F	3,699	80	320	3.9	147.5	147.5	148.1	0.6
G	4,034	139	809	1.6	151.3	151.3	152.2	0.9
H	4,602	160	846	1.3	151.4	151.4	152.3	0.9
I	5,709	151	613	1.9	151.8	151.7	152.5	0.8
J	6,366	70	286	3.3	152.3	152.3	153.0	0.7
K	6,985	55	213	4.6	154.3	154.3	155.1	0.8
L	7,343	54	254	2.9	155.0	155.0	156.0	1.0
M	7,726	58	220	4.3	155.9	155.9	156.7	0.8
N	8,397	93	321	4.3	158.2	158.2	159.0	0.8
O	9,067	12	101	5.7	163.1	163.0	163.4	0.4
P	9,743	45	241	3.0	163.9	163.8	164.5	0.7
Q	9,973	55	237	3.6	164.0	163.9	164.8	0.9
R	10,291	95	351	2.6	164.3	164.3	165.3	1.0
S	10,853	102	465	1.8	164.8	164.8	165.7	0.9
T	11,409	28	111	4.9	168.1	168.1	168.2	0.1
U	11,586	79	342	2.5	169.8	169.8	170.8	1.0
V	12,375	60	168	5.1	171.7	171.5	172.1	0.6
W	12,715	50	153	4.0	172.9	173.0	173.8	0.8
X	12,955	44	150	4.4	173.7	173.7	174.7	1.0
Y	13,426	75	183	3.8	176.0	176.0	176.4	0.4
Z	14,649	42	153	2.1	181.0	181.0	181.4	0.4
AA	15,630	80	226	2.4	182.6	182.5	183.6	1.1
AB	16,130	70	163	2.6	183.9	184.0	184.7	0.7

[1]Feet above confluence with Rock Creek North

[2]Elevations computed without consideration of backwater effects from Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

DAWSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
DEER CREEK								
A	319	15	38	2.2	175.7	175.7	175.9	0.2
B	592	15	27	3.0	176.1	176.1	176.4	0.3
C	864	10	13	6.1	176.3	176.3	176.4	0.1
D	1,298	13	26	3.1	178.4	178.4	179.2	0.8
E	1,520	14	22	3.6	179.7	179.7	179.8	0.1
F	2,377	9	19	4.2	187.7	187.7	187.7	0.0
G	2,741	7	11	7.3	192.0	192.0	192.1	0.1
H	3,185	9	17	4.8	197.6	197.6	198.0	0.4
I	3,439	8	12	7.0	202.2	202.2	202.2	0.0

[1]Feet above confluence with Bethany Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

DEER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ERICKSON CREEK								
A	379	34	122	4.3	172.6	168.9[2]	169.4[2]	0.5
B	680	27	91	5.3	172.6	170.4[2]	170.7[2]	0.3
C	1,023	17	90	4.4	172.6	172.0[2]	172.5[2]	0.5
D	1,412	28	209	1.9	173.3	173.3	174.0	0.7
E	1,626	26	156	2.8	173.4	173.4	174.2	0.8
F	1,874	67	235	2.2	173.7	173.7	174.4	0.7
G	2,270	31	69	2.7	177.8	177.8	178.3	0.5
H	2,527	40	35	5.4	181.9	181.9	182.4	0.5
I	2,773	40	148	1.3	182.2	182.2	183.0	0.8
J	3,346	24	46	4.1	187.7	187.7	187.7	0.0
K	3,799	41	35	5.4	188.6	188.6	189.1	0.5
L	4,289	39	58	3.2	189.6	189.6	190.2	0.6
M	4,658	35	96	2.0	190.8	190.8	191.0	0.2
N	5,009	21	143	1.5	190.8	190.8	191.1	0.3
O	5,297	19	67	3.1	190.8	190.8	191.2	0.4
P	5,650	10	18	1.3	194.1	194.1	194.8	0.7
Q	5,914	9	22	1.0	194.5	194.5	195.5	1.0
R	6,215	5	18	1.7	197.3	197.3	198.0	0.7
S	6,452	7	10	5.9	198.0	198.0	198.9	0.9
T	6,781	34	204	0.8	198.9	198.9	199.9	1.0
U	6,897	33	178	1.0	198.9	198.9	199.9	1.0
V	7,086	52	220	0.7	199.0	199.0	200.0	1.0
W	7,410	39	155	1.0	199.1	199.1	200.0	0.9
X	7,617	40	147	1.2	199.2	199.2	200.1	0.9
Y	7,993	24	74	1.8	199.6	199.6	200.3	0.7
Z	8,330	15	41	3.9	200.2	200.2	200.8	0.6
AA	8,637	16	32	4.3	202.8	202.8	202.8	0.0

[1]Feet above confluence with Beaverton Creek

[2]Elevations computed without consideration of backwater effects from Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

ERICKSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
FANNO CREEK								
A	0.02	251	2,242	1.9	130.8	120.8[2]	121.8[2]	1.0
B	0.20	351	2,723	1.6	130.8	121.4[2]	122.3[2]	0.9
C	0.53	411	2,308	1.8	130.8	122.2[2]	123.2[2]	1.0
D	0.99	221	1,218	3.5	130.8	126.7[2]	127.6[2]	0.9
E	1.30	126	987	4.2	131.3	131.3	132.0	0.7
F	1.45	98	901	4.7	133.2	133.2	134.2	1.0
G	1.76	271	2,285	1.8	135.2	135.2	136.1	0.9
H	2.25	281	1,770	2.4	136.6	136.6	137.6	1.0
I	2.73	191	793	5.2	141.0	141.0	141.4	0.4
J	3.02	301	2,048	2.0	142.2	142.2	142.7	0.5
K	3.43	311	2,417	1.7	143.8	143.8	144.7	0.9
L	3.80	301	876	4.7	145.3	145.3	146.2	0.9
M	4.08	256	1,206	3.4	147.8	147.8	148.5	0.7
N	4.41	410	1,825	2.2	149.4	149.4	150.0	0.6
O	4.91	161	789	5.1	155.9	155.9	156.8	0.9
P	5.16	256	2,707	1.5	158.6	158.6	159.4	0.8
Q	5.73	331	2,447	1.6	159.5	159.5	160.3	0.8
R	5.99	201	1,998	1.9	161.6	161.6	162.2	0.6
S	6.25	191	1,649	2.0	162.3	162.3	163.2	0.9
T	6.40	191	992	3.3	163.2	163.2	163.9	0.7
U	6.66	226	1,420	1.9	163.9	163.9	164.8	0.9
V	7.11	226	1,280	2.1	165.7	165.7	166.7	1.0
W	7.48	321	1,718	1.6	169.0	169.0	169.3	0.3
X	7.75	331	1,570	1.5	169.5	169.5	170.0	0.5
Y	8.11	601	1,877	1.3	170.6	170.6	171.1	0.5
Z	8.29	351	1,120	2.1	171.8	171.8	172.7	0.9

[1]Miles above confluence with Tualatin River

[2]Elevations computed without consideration of backwater effects from Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FANNO CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
FANNO CREEK								
AA	8.67	206	1,364	1.6	180.7	180.7	181.0	0.3
AB	8.91	95	605	3.7	182.1	182.1	182.5	0.4
AC	9.42	311	1,194	1.9	186.1	186.1	186.6	0.5
AD	9.55	96	529	4.2	189.0	189.0	189.7	0.7
AE	9.97	146	1,490	1.4	192.2	192.2	193.2	1.0
AF	10.17	141	806	2.5	194.1	194.1	194.8	0.7
AG	10.62	76	549	3.6	198.0	198.0	199.0	1.0
AH	10.76	176	871	2.3	201.0	201.0	201.8	0.8
AI	11.03	151	1,234	1.6	204.0	204.0	204.8	0.8
AJ	11.38	190	493	4.0	207.8	207.8	208.3	0.5
AK	11.58	176	425	4.5	210.7	210.7	211.3	0.6
AL	11.87	206	532	3.6	214.4	214.4	215.4	1.0
AM	12.18	141	315	5.9	220.0	220.0	220.3	0.3
AN	12.36	236	863	1.8	221.1	221.1	222.1	1.0
AO	12.81	96	346	3.7	230.8	230.8	231.8	1.0
AP	13.16	91	498	2.6	236.4	236.4	237.4	1.0
AQ	13.32	76	360	3.5	239.1	239.1	239.8	0.7
AR	13.49	80	416	3.1	240.3	240.3	241.3	1.0

[1]Miles above confluence with Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FANNO CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
GALES CREEK								
A	0.80	2,000	4,233	2.4	167.3	162.3[2]	163.2[2]	0.9
B	1.49	1,500	3,744	2.7	167.7	167.7	168.5	0.8
C	1.64	900	6,145	1.6	169.4	169.4	170.3	0.9
D	1.88	1,620	8,828	1.1	171.8	171.8	172.5	0.7
E	2.03	1,590	7,884	1.3	172.3	172.3	173.1	0.8
F	2.39	1,300	9,133	1.1	175.0	175.0	175.5	0.5
G	2.52	1,212	8,651	1.2	175.4	175.4	176.0	0.6
H	2.98	1,950	11,580	0.9	175.6	175.6	176.3	0.7
I	3.35	2,000	7,884	1.3	175.8	175.8	176.5	0.7
J	4.18	410	1,199	8.3	178.5	178.5	179.3	0.8
K	4.28	180	1,951	5.1	182.7	182.7	182.9	0.2
L	4.38	350	2,727	3.6	183.6	183.6	183.9	0.3
M	4.98	2,120	9,893	1.0	184.9	184.9	185.9	1.0
N	5.20	2,450	7,252	1.4	185.2	185.2	186.2	1.0
O	5.68	2,370	5,147	1.9	186.8	186.8	187.7	0.9
P	6.13	1,900	5,113	1.9	189.4	189.4	189.9	0.5
Q	6.51	1,600	3,240	3.0	191.4	191.4	192.4	1.0
R	6.93	1,260	3,861	2.5	196.8	196.8	197.8	1.0
S	7.16	660	4,170	2.3	198.8	198.8	199.5	0.7
T	7.55	570	2,044	4.8	201.2	201.2	202.0	0.8
U	7.92	190	1,826	5.2	205.5	205.5	206.4	0.9
V	7.98	225	2,229	4.2	207.0	207.0	207.6	0.6
W	8.06	470	3,750	2.5	207.3	207.3	208.3	1.0
X	8.42	350	3,469	2.7	208.9	208.9	209.8	0.9
Y	8.72	210	2,188	4.3	211.3	211.3	211.9	0.6
Z	8.98	350	2,632	3.6	214.4	214.4	215.1	0.7

[1]Miles above confluence with Tualatin River

[2]Elevations computed without consideration of backwater effects from Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

GALES CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
GALES CREEK								
AA	9.48	350	3,515	2.7	219.0	219.0	219.9	0.9
AB	9.58	90	1,215	7.5	219.8	219.8	220.5	0.7
AC	17.38	81	739	7.6	464.4	464.4	465.4	1.0
AD	17.72	75	631	8.9	477.1	477.1	477.7	0.6
AE	17.89	88	841	6.6	483.3	483.3	483.5	0.2
AF	17.97	60	383	14.5	486.6	486.6	486.6	0.0
AG	18.28	67	703	6.0	504.2	504.2	504.2	0.0

[1]Miles above confluence with Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

GALES CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
GLENCOE SWALE								
A	1,011	119	351	2.0	156.2	140.5[2]	141.5[2]	1.0
B	1,511	61	143	3.7	156.2	141.3[2]	142.1[2]	0.8
C	2,038	40	125	3.8	156.2	143.0[2]	143.7[2]	0.7
D	2,647	22	104	3.6	156.2	144.5[2]	145.3[2]	0.8
E	3,158	22	79	5.1	156.2	146.5[2]	147.1[2]	0.6
F	3,469	22	144	2.3	159.2	159.2	160.0	0.8
G	4,337	79	973	1.1	159.3	159.3	160.3	1.0
H	4,943	36	615	1.2	166.4	166.4	167.4	1.0
I	5,336	96	1,711	0.4	166.4	166.4	167.4	1.0
J	5,920	91	1,392	0.5	166.4	166.4	167.4	1.0
K	7,051	120	1,522	0.7	166.4	166.4	167.4	1.0
L	7,915	128	1,306	0.8	166.4	166.4	167.4	1.0
M	8,545	143	1,285	0.8	166.4	166.4	167.4	1.0
N	9,149	160	1,148	0.9	166.4	166.4	167.4	1.0
O	9,635	79	490	2.0	166.6	166.6	167.6	1.0
P	10,051	71	411	2.3	166.8	166.8	167.7	0.9
Q	10,548	80	360	3.2	167.2	167.2	168.0	0.8
R	10,653	25	245	3.7	172.6	172.6	173.0	0.4
S	11,112	96	709	1.3	172.6	172.6	173.4	0.8
T	11,598	54	271	2.6	172.7	172.7	173.5	0.8
U	12,055	109	344	2.5	173.2	173.2	173.8	0.6
V	12,680	48	91	5.1	173.3	173.3	173.7	0.4
W	13,235	39	179	2.6	175.6	175.6	175.9	0.3
X	13,733	25	66	11.2	177.4	177.4	177.4	0.0
Y	14,329	67	305	2.4	183.7	183.7	184.3	0.6
Z	15,222	79	311	1.6	183.9	183.9	184.6	0.7

[1]Feet above confluence with McKay Creek

[2]Elevations computed without consideration of backwater effects from McKay Creek and Dairy Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

GLENCOE SWALE

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
GLENCOE SWALE								
AA	15,713	73	301	1.5	187.3	187.3	187.5	0.2
AB	16,182	42	178	2.4	187.3	187.3	187.6	0.3
AC	16,700	58	216	2.0	187.4	187.4	187.9	0.5
AD	17,233	36	74	4.7	188.0	188.0	188.7	0.7
AE	18,004	42	283	1.0	194.6	194.6	195.5	0.9
AF	18,713	97	361	1.0	194.6	194.6	195.6	1.0
AG	18,924	88	297	0.5	194.6	194.7	195.6	0.9
AH	19,541	28	60	2.3	194.7	194.7	195.7	1.0
AI	20,023	16	35	3.6	197.0	197.0	197.0	0.0
AJ	20,496	18	35	3.1	198.8	198.8	199.4	0.6
AK	20,981	23	55	2.1	199.9	199.9	200.8	0.9
AL	21,477	22	49	2.3	200.9	200.9	201.8	0.9

[1]Feet above confluence with McKay Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

GLENCOE SWALE

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
GOLF CREEK								
A	338	80	225	1.6	198.3	198.3	199.3	1.0
B	713	26	112	3.9	199.8	199.8	200.7	0.9
C	950	31	103	4.1	200.9	200.9	201.6	0.7
D	1,092	62	281	1.5	202.6	202.6	203.6	1.0
E	1,226	35	125	3.5	202.8	202.8	203.7	0.9
F	1,330	29	117	3.2	203.0	203.0	204.0	1.0
G	1,436	10	49	8.6	203.3	203.3	204.0	0.7
H	1,639	29	162	2.6	210.1	210.1	210.9	0.8
I	2,028	21	160	2.6	213.9	213.9	214.8	0.9
J	2,094	60	415	1.0	214.0	214.0	214.9	1.0
K	2,280	34	217	1.9	214.0	214.0	214.9	0.9
L	2,448	34	182	2.1	214.0	214.0	215.0	1.0
M	2,663	66	341	1.2	214.2	214.2	215.2	1.0
N	2,819	18	71	5.9	214.2	214.2	215.2	1.0
O	2,967	61	501	1.1	221.6	221.6	222.5	0.9
P	3,224	43	297	1.5	221.7	221.7	222.5	0.8
Q	3,393	55	252	1.7	221.7	221.7	222.6	0.9
R	3,576	18	72	5.0	223.1	223.1	223.4	0.3

[1]Feet above confluence with Hall Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
GORDON CREEK								
A	521	8	22	9.5	146.2	128.4[2]	128.5[2]	0.1
B	1,817	25	80	2.6	146.2	136.0[2]	136.7[2]	0.7
C	2,497	17	27	7.1	146.2	141.1[2]	141.1[2]	0.0
D	3,358	32	92	2.5	152.9	152.9	153.6	0.7
E	3,913	20	96	2.0	153.0	153.0	153.9	0.9
F	4,822	16	36	5.3	154.3	154.3	154.7	0.4
G	5,383	19	61	3.8	160.2	160.2	160.4	0.2
H	5,898	45	93	1.8	160.7	160.7	161.4	0.7
I	6,178	30	26	3.6	161.8	161.8	161.8	0.0
J	6,732	19	29	2.7	165.4	165.4	165.5	0.1
K	6,818	12	42	1.8	168.6	168.6	168.6	0.0
L	7,653	13	14	6.6	172.9	172.9	172.9	0.0
M	8,514	9	21	3.3	181.7	181.7	182.6	0.9
N	8,595	12	38	1.5	182.7	182.7	183.5	0.8
O	9,360	17	6	3.5	191.6	191.6	191.6	0.0
P	9,990	23	13	1.2	196.3	196.3	196.3	0.0

[1]Feet above confluence with Tualatin River

[2]Elevations computed without consideration of backwater effects from Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

GORDON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HALL CREEK								
A	319	48	423	2.4	181.1	181.0	181.2	0.2
B	641	31	264	2.8	181.1	181.1	181.2	0.1
C	846	58	163	3.1	181.7	181.7	182.7	1.0
D	1,184	116	304	1.6	182.1	182.1	183.1	1.0
E	1,546	44	264	2.8	182.9	182.9	183.8	0.9
F	1,906	93	725	1.0	183.8	183.8	184.8	1.0
G	2,024	73	427	1.8	183.9	183.9	184.9	1.0
H	2,256	88	518	1.5	184.4	184.4	185.3	0.9
I	2,491	64	352	2.1	184.6	184.6	185.4	0.8
J	2,654	37	201	3.7	185.4	185.4	186.0	0.6
K	2,807	226	627	1.3	185.8	185.8	186.3	0.5
L	3,303	47	269	2.7	190.0	190.0	190.0	0.0
M	3,747	15	137	5.0	191.3	191.3	191.8	0.5
N	3,929	26	147	4.6	192.2	192.2	192.6	0.4
O	4,133	24	168	4.0	193.4	193.4	194.3	0.9
P	4,339	73	298	2.1	194.5	194.5	195.4	0.9
Q	4,603	71	389	1.9	195.1	195.1	195.9	0.8
R	4,909	25	131	5.4	198.0	198.0	198.2	0.2
S	5,264	126	552	0.5	198.4	198.4	199.4	1.0
T	5,551	126	469	0.6	198.4	198.4	199.4	1.0
U	5,864	103	438	0.7	198.3	198.3	199.4	0.9
V	6,148	13	51	4.9	198.5	198.5	199.4	0.9
W	6,253	23	122	2.2	201.7	201.7	202.7	1.0
X	6,572	49	235	1.1	202.0	202.0	202.9	0.9
Y	6,883	23	71	3.6	202.1	202.1	203.1	1.0
Z	7,157	26	68	3.7	205.2	205.2	205.2	0.0

[1]Feet above confluence with Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

HALL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HALL CREEK								
AA	7,308	26	60	5.2	206.8	206.8	207.0	0.2
AB	7,542	36	29	5.1	207.8	207.8	208.0	0.2
AC	7,784	23	94	1.1	210.4	210.4	210.5	0.1
AD	8,001	10	54	3.1	210.4	210.4	210.7	0.3
AE	8,196	13	46	3.9	210.7	210.7	211.6	0.9
AF	8,325	14	42	4.0	213.4	213.4	213.6	0.2
AG	8,514	18	103	1.6	219.6	219.6	220.6	1.0
AH	8,644	21	91	1.8	219.7	219.7	220.7	1.0
AI	8,749	39	131	1.1	219.8	219.8	220.8	1.0
AJ	8,921	22	61	2.7	220.1	220.1	220.9	0.8
AK	9,111	15	30	5.0	222.0	222.0	222.0	0.0
AL	9,295	55	231	0.7	227.3	227.3	228.1	0.8
AM	9,536	19	38	4.3	227.3	227.3	228.0	0.7
AN	9,846	13	35	5.3	231.9	231.9	231.9	0.0
AO	9,966	9	32	5.2	235.8	235.8	236.2	0.4
AP	10,091	15	45	3.9	236.1	236.1	237.0	0.9
AQ	10,306	10	40	3.6	238.0	238.0	238.3	0.3
AR	10,448	36	150	0.9	243.0	243.0	243.9	0.9
AS	10,681	21	64	2.4	243.0	243.0	244.0	1.0
AT	10,842	18	45	3.5	244.4	244.4	244.7	0.3
AU	10,952	11	34	4.3	245.4	245.4	245.8	0.4
AV	11,073	253	1,274	0.1	250.4	250.4	251.1	0.7
AW	11,228	314	1,569	0.1	250.4	250.4	251.1	0.7
AX	11,326	58	90	0.8	250.4	250.4	251.1	0.7
AY	11,434	102	195	1.3	255.4	255.4	256.1	0.7
AZ	11,558	13	84	1.7	255.5	255.5	256.2	0.7

[1]Feet above confluence with Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

HALL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HALL CREEK - 106TH TRIBUTARY								
A	138	10	5	4.0	191.6	191.6	191.8	0.2
B	449	10	5	4.0	195.2	195.2	195.4	0.2
C	616	10	5	3.9	200.3	200.3	200.5	0.2
D	766	10	5	4.0	205.2	205.2	205.2	0.0
E	912	10	5	4.0	208.4	208.4	208.4	0.0
F	1,215	7	27	2.6	209.7	209.7	209.9	0.2
G	1,357	10	20	1.7	209.9	209.9	210.4	0.5
H	1,507	14	12	2.9	211.9	211.9	211.9	0.0
I	1,812	7	4	8.0	218.5	218.5	218.5	0.0
J	2,162	22	43	0.8	226.1	226.1	226.2	0.1
K	2,372	10	12	2.7	231.0	231.0	231.3	0.3
L	2,436	5	17	2.0	231.1	231.1	231.4	0.3
M	2,647	10	19	1.8	231.7	231.7	232.1	0.4
N	2,937	3	5	6.9	245.1	245.1	245.1	0.0

[1]Feet above confluence with Hall Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HALL CREEK - NORTH FORK								
A	182	9	16	3.2	181.1	181.1	181.2	0.1
B	475	30	18	2.7	181.1	181.1	181.4	0.3
C	553	30	78	0.6	182.3	182.3	182.4	0.1
D	668	24	220	1.1	182.4	182.4	182.4	0.0
E	804	13	135	1.9	182.4	182.4	182.4	0.0
F	1,224	39	300	0.8	182.5	182.5	182.7	0.2
G	1,428	10	98	2.4	182.5	182.5	182.7	0.2
H	1,576	10	103	2.2	182.5	182.5	183.0	0.5
I	1,699	18	166	1.5	182.5	182.5	183.2	0.7
J	2,005	30	209	1.4	182.5	182.5	183.3	0.8
K	2,101	37	256	1.1	182.5	182.5	183.4	0.9
L	2,245	32	244	1.0	182.5	182.5	183.4	0.9
M	2,382	43	258	0.9	182.6	182.6	183.4	0.8
N	2,739	54	328	0.8	182.6	182.6	183.5	0.9
O	3,056	61	231	0.9	182.6	182.6	183.5	0.9
P	3,245	62	178	1.3	182.6	182.6	183.6	1.0

[1]Feet above confluence with Hall Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

HALL CREEK - NORTH FORK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HALL CREEK - SOUTH FORK								
A	147	27	12	3.9	212.4	212.4	212.4	0.0
B	378	23	11	4.0	218.1	218.1	218.1	0.0
C	612	8	22	3.4	218.3	218.3	218.5	0.2
D	902	30	87	0.9	220.7	220.7	221.0	0.3
E	1,017	40	56	0.8	221.2	221.2	221.3	0.1
F	1,161	15	17	2.6	224.2	224.2	224.2	0.0
G	1,365	42	42	1.0	227.7	227.7	227.8	0.1
H	1,764	10	16	2.7	231.3	231.3	231.9	0.6
I	2,088	10	15	2.8	235.1	235.1	235.9	0.8
J	2,434	30	8	3.0	239.5	239.5	239.6	0.1
K	2,621	27	52	0.5	241.1	241.1	241.2	0.1
L	2,747	7	25	2.1	241.8	241.8	242.6	0.8
M	2,852	12	36	1.2	241.9	241.9	242.8	0.9
N	2,999	7	7	5.9	243.1	243.1	243.1	0.0
O	3,121	17	35	1.2	245.9	245.9	246.6	0.7
P	3,258	15	42	1.0	247.9	247.9	248.7	0.8
Q	3,374	22	16	1.4	249.7	249.7	250.1	0.4
R	3,534	13	6	3.9	252.1	252.0	252.0	0.0
S	3,580	22	14	1.7	253.1	253.1	253.1	0.0
T	3,836	5	4	7.2	258.1	258.1	258.1	0.0
U	3,990	10	9	3.5	259.8	259.8	259.8	0.0
V	4,035	22	68	0.4	260.1	260.1	260.1	0.0

[1]Feet above confluence with Hall Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

HALL CREEK - SOUTH FORK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HEDGES CREEK								
A	823	40	359	1.7	128.9	122.1[2]	123.0[2]	0.9
B	1,384	72	474	1.5	128.9	122.4[2]	123.3[2]	0.9
C	1,442	78	555	0.9	128.9	122.4[2]	123.3[2]	0.9
D	1,895	141	823	0.6	128.9	122.4[2]	123.3[2]	0.9
E	1,998	177	1,017	0.3	128.9	122.4[2]	123.4[2]	1.0
F	2,137	190	1,066	0.3	128.9	122.4[2]	123.4[2]	1.0
G	2,330	188	1,391	0.5	128.9	125.1[2]	125.9[2]	0.8
H	2,642	205	1,547	0.6	128.9	125.1[2]	125.9[2]	0.8
I	3,164	117	753	1.7	128.9	125.1[2]	126.0[2]	0.9
J	3,267	215	1,171	0.9	128.9	125.2[2]	126.0[2]	0.8
K	4,288	188	1,122	1.0	128.9	125.7[2]	126.2[2]	0.5
L	4,664	117	562	1.8	128.9	126.7[2]	127.1[2]	0.4
M	5,002	116	623	1.4	128.9	126.9[2]	127.3[2]	0.4
N	5,577	84	359	2.9	128.9	127.4[2]	127.8[2]	0.4
O	6,148	87	530	1.7	128.9	127.8[2]	128.5[2]	0.7
P	6,681	76	597	2.0	128.9	128.1[2]	128.9[2]	0.8
Q	7,162	66	252	3.5	129.3	129.3	129.7	0.4
R	7,699	27	152	6.3	133.1	133.1	133.2	0.1
S	7,918	136	770	1.3	133.9	133.9	134.4	0.5
T	8,365	171	1,202	0.8	133.9	133.9	134.5	0.6
U	8,742	72	495	1.6	133.9	133.9	134.5	0.6
V	9,353	74	418	1.9	134.4	134.4	134.9	0.5
W	9,554	61	348	2.3	134.6	134.6	135.1	0.5
X	10,016	50	133	6.0	136.1	136.1	136.2	0.1
Y	10,959	36	294	2.8	139.9	139.9	140.4	0.5
Z	11,919	32	143	5.2	142.1	142.1	142.8	0.7

[1]Feet above confluence with Tualatin River

[2]Elevations computed without consideration of backwater effects from Tualatin River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HOLCOMB CREEK								
A	207	71	222	2.9	178.3	175.3[2]	176.2[2]	0.9
B	800	203	885	0.6	178.3	175.5[2]	176.4[2]	0.9
C	1,476	132	632	0.7	178.3	175.5[2]	176.5[2]	1.0
D	2,453	64	139	5.2	178.3	177.7[2]	178.3[2]	0.6
E	2,817	68	193	2.6	178.3	178.2[2]	179.2[2]	1.0
F	3,105	68	180	3.1	178.7	178.7	179.7	1.0
G	3,653	59	155	3.6	180.2	180.2	181.1	0.9
H	4,537	48	295	2.7	185.9	185.9	186.8	0.9
I	5,445	78	205	2.5	186.0	186.0	187.0	1.0
J	6,416	98	141	3.3	189.5	189.5	190.1	0.6
K	7,335	81	148	2.3	192.9	192.9	193.8	0.9
L	8,277	252	91	4.5	198.1	198.1	199.2	1.1
M	8,664	307	101	2.7	199.9	199.9	200.8	0.9
N	9,176	262	78	4.0	203.1	203.1	204.1	1.0
O	9,724	75	65	5.7	207.2	207.2	208.1	0.9
P	10,539	19	85	3.7	211.5	211.5	211.8	0.3

[1]Feet above confluence with Rock Creek North

[2]Elevations computed without consideration of backwater effects from Rock Creek North

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

HOLCOMB CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
McKAY CREEK								
A	2,402	904	4,578	3.2	156.2	144.0[2]	144.4[2]	0.4
B	5,424	904	5,385	2.9	156.2	144.9[2]	145.6[2]	0.7
C	6,713	755	4,047	3.6	156.2	145.5[2]	146.5[2]	1.0
D	7,267	174	1,674	4.7	156.2	146.6[2]	147.5[2]	0.9
E	8,284	324	2,321	4.8	156.2	148.3[2]	149.1[2]	0.8
F	9,134	285	2,552	4.8	156.2	149.2[2]	150.2[2]	1.0
G	12,500	120	1,318	7.3	156.2	152.6[2]	153.1[2]	0.5
H	12,932	514	6,106	1.7	156.2	153.9[2]	154.8[2]	0.9
I	13,841	643	7,219	1.6	156.2	154.0[2]	154.9[2]	0.9
J	14,898	635	6,836	1.8	156.2	154.1[2]	155.0[2]	0.9
K	17,641	686	5,548	2.7	156.2	154.7[2]	155.5[2]	0.8
L	20,386	307	3,335	3.4	156.4	156.4	157.1	0.7
M	21,680	480	4,812	2.4	156.9	156.9	157.6	0.7
N	23,639	652	6,149	1.9	157.4	157.4	158.0	0.6
O	24,798	635	5,002	2.2	158.7	158.7	159.4	0.7
P	29,941	362	3,400	2.9	160.0	160.0	160.8	0.8
Q	33,869	465	3,999	2.2	161.4	161.4	162.2	0.8
R	35,617	202	2,466	3.4	161.9	161.9	162.8	0.9
S	35,775	96	1,175	4.7	162.0	162.0	163.0	1.0
T	35,822	119	1,381	4.7	162.4	162.4	163.2	0.8
U	37,420	338	3,128	2.7	163.5	163.5	164.4	0.9
V	38,688	531	4,696	1.9	164.0	164.0	164.8	0.8
W	45,547	106	1,071	5.0	167.5	167.5	168.4	0.9
X	45,679	83	1,002	5.4	168.5	168.5	169.2	0.7
Y	46,698	390	3,322	2.3	169.9	169.9	170.6	0.7
Z	48,055	95	808	7.9	170.4	170.4	171.3	0.9

[1]Feet above confluence with Dairy Creek

[2]Elevations computed without consideration of backwater effects from Dairy Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

McKAY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
McKAY CREEK								
AA	49,626	405	3,798	1.9	172.5	172.5	173.2	0.7
AB	52,091	409	3,146	2.7	172.9	172.9	173.6	0.7
AC	53,646	415	3,427	2.2	173.3	173.3	174.1	0.8
AD	54,233	105	972	4.7	173.6	173.6	174.4	0.8
AE	54,337	223	2,103	3.5	174.5	174.5	175.1	0.6

[1]Feet above confluence with Dairy Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

McKAY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
NORTH JOHNSON CREEK								
A	112	45	222	2.4	187.0	187.0	187.0	0.0
B	534	14	119	4.4	187.5	187.5	187.7	0.2
C	680	24	189	2.8	187.9	187.9	188.1	0.2
D	898	26	196	2.7	188.2	188.2	188.4	0.2
E	1,198	41	170	3.9	188.6	188.6	188.8	0.2
F	1,680	36	197	2.7	189.4	189.4	189.6	0.2
G	2,152	27	180	2.9	189.9	189.9	190.2	0.3
H	3,041	189	1,284	0.3	190.1	190.1	190.7	0.6
I	3,280	204	1,524	0.1	190.1	190.1	190.7	0.6
J	3,884	233	1,230	0.2	190.1	190.1	190.7	0.6
K	4,609	32	129	3.0	190.7	190.7	191.1	0.4
L	4,796	20	176	2.6	196.3	196.3	197.0	0.7
M	4,942	34	272	1.6	196.3	196.3	197.2	0.9
N	5,334	35	235	1.8	196.4	196.4	197.3	0.9
O	5,747	57	232	1.8	196.4	196.4	197.4	1.0
P	6,259	167	264	1.9	198.0	198.0	198.6	0.6
Q	6,560	8	32	11.4	201.7	201.7	201.7	0.0
R	6,814	8	64	5.8	206.4	206.4	206.4	0.0
S	6,913	13	119	3.1	207.1	207.1	207.1	0.0
T	7,393	41	234	1.4	207.1	207.1	207.7	0.6
U	7,911	49	307	1.4	208.2	208.2	208.9	0.7
V	8,465	193	134	5.5	209.8	209.8	210.4	0.6
W	9,065	110	92	4.4	212.4	212.4	212.7	0.3
X	9,269	152	143	2.2	214.6	214.6	214.6	0.0
Y	10,057	40	79	4.9	218.9	218.9	219.6	0.7
Z	10,520	15	254	1.2	237.0	237.0	237.0	0.0

[1]Feet above confluence with Cedar Mill Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

NORTH JOHNSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
NORTH JOHNSON CREEK								
AA	10,929	73	465	0.7	237.1	237.1	237.1	0.0
AB	11,252	29	76	4.0	237.6	237.6	237.8	0.2
AC	11,657	110	181	1.7	242.1	242.1	242.1	0.0
AD	12,030	60	90	3.5	245.9	245.9	245.9	0.0
AE	12,426	110	165	1.9	249.4	249.4	249.4	0.0
AF	12,613	42	88	3.9	250.7	250.7	250.9	0.2
AG	12,996	30	84	4.0	254.4	254.4	255.0	0.6
AH	13,320	21	47	5.5	259.6	259.6	259.8	0.2
AI	13,770	15	39	7.1	276.4	276.4	277.0	0.6
AJ	14,136	14	26	6.0	293.6	293.6	293.7	0.1
AK	14,419	23	30	4.6	306.9	306.9	307.2	0.3

[1]Feet above confluence with Cedar Mill Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
NORTH JOHNSON EAST TRIBUTARY								
A	376	32	15	3.9	252.0	252.0	252.0	0.0
B	619	8	29	2.0	254.5	254.5	255.3	0.8
C	921	9	10	5.9	258.8	258.8	258.8	0.0
D	1,224	16	15	3.8	281.1	281.1	281.1	0.0
E	1,505	20	21	2.8	290.4	290.4	290.4	0.0
F	1,909	9	10	5.9	327.1	327.1	327.1	0.0
NORTH JOHNSON NORTH TRIBUTARY								
A	544	61	31	4.1	222.0	222.0	222.0	0.0
B	873	37	50	3.0	229.9	229.9	230.0	0.1
C	1,165	8	37	3.5	237.3	237.3	237.4	0.1
D	1,338	15	62	2.4	242.7	242.7	242.7	0.0
E	1,576	15	19	6.6	252.0	252.0	252.0	0.0
F	1,803	21	57	2.2	255.8	255.8	255.8	0.0
G	1,981	10	17	7.5	262.5	262.5	262.5	0.0
H	2,089	4	31	4.1	270.9	270.9	270.9	0.0
I	2,603	24	22	6.3	290.2	290.2	290.2	0.0
J	3,157	7	13	7.8	343.3	343.3	343.3	0.0

[1]Feet above confluence with North Johnson Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

NORTH JOHNSON CREEK - EAST AND NORTH TRIBUTARIES

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH [2] (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
NYBERG SLOUGH								
A	643	504	6,898	0.4	126.0	126.0	126.2	0.2
B	755	559	6,993	0.3	126.0	126.0	126.3	0.3
C	994	403	5,518	0.5	126.0	126.0	126.3	0.3
D	1,593	146	1,306	3.6	126.0	126.0	126.2	0.2
E	1,744	109	1,593	2.5	126.6	126.6	126.9	0.3
F	2,193	349	5,407	0.3	126.6	126.6	127.0	0.4
G	2,926	349	5,097	0.8	126.6	126.6	127.0	0.4
H	3,550	393	5,605	0.5	126.6	126.6	127.0	0.4
I	3,938	90	768	5.7	126.6	126.6	126.9	0.3
J	4,219	131	1,614	4.3	127.9	127.9	128.1	0.2
K[2]	5,081	226	2,108	1.0	127.9	127.9	128.2	0.3

[1] Feet above confluence with Tualatin River

[2] Floodway does not exist upstream of cross section K

This table shows the Nyberg Slough in Clakamas County and Washington County

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

KING COUNTY, WA

AND INCORPORATED AREAS

FLOODWAY DATA

NYBERG SLOUGH (IN WASHINGTON COUNTY AND CLAKAMAS COUNTY)

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCK CREEK NORTH								
A	1,801	264	2,586	4.1	147.0	135.0[2]	136.0[2]	1.0
B	2,680	205	2,542	4.9	147.0	136.0[2]	136.8[2]	0.8
C	3,167	194	2,130	6.1	147.0	136.7[2]	137.5[2]	0.8
D	3,652	182	2,192	6.1	147.0	137.1[2]	138.1[2]	1.0
E	4,131	130	1,674	5.6	147.0	137.6[2]	138.7[2]	1.1
F	4,854	196	2,562	4.0	147.0	139.5[2]	140.3[2]	0.8
G	6,139	199	2,667	3.5	147.0	140.3[2]	141.2[2]	0.9
H	7,342	158	2,131	5.1	147.0	141.0[2]	141.9[2]	0.9
I	7,860	169	2,359	4.8	147.0	142.0[2]	142.7[2]	0.7
J	8,444	228	3,025	4.2	147.0	142.1[2]	143.1[2]	1.0
K	9,629	324	4,237	2.7	147.0	142.5[2]	143.5[2]	1.0
L	12,191	278	3,626	2.8	147.0	143.0[2]	143.9[2]	0.9
M	12,943	237	2,933	4.4	147.0	143.1[2]	144.1[2]	1.0
N	13,574	290	3,527	3.5	147.0	143.4[2]	144.4[2]	1.0
O	14,222	290	3,461	3.8	147.0	143.6[2]	144.6[2]	1.0
P	15,554	342	4,275	2.9	147.0	144.0[2]	144.9[2]	0.9
Q	16,515	294	3,401	3.6	147.0	144.2[2]	145.1[2]	0.9
R	16,792	159	2,205	5.3	147.0	145.2[2]	145.7[2]	0.5
S	17,307	285	3,609	3.4	147.0	145.6[2]	146.1[2]	0.5
T	18,596	337	3,940	3.3	147.0	145.9[2]	146.3[2]	0.4
U	19,348	289	2,883	4.4	147.0	146.1[2]	146.6[2]	0.5
V	19,960	354	3,664	3.4	147.0	146.4[2]	146.9[2]	0.5
W	20,736	299	3,177	3.8	147.0	146.7[2]	147.2[2]	0.5
X	21,420	279	3,249	2.9	147.0	146.8[2]	147.4[2]	0.6
Y	22,301	332	3,667	2.8	147.0	147.0	147.7	0.7
Z	23,050	475	4,709	3.0	147.2	147.2	147.9	0.7

[1]Feet above confluence with Tualatin River

[2]Elevations computed without consideration of backwater effects from Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

ROCK CREEK NORTH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCK CREEK NORTH								
AA	24,285	510	4,185	3.2	147.3	147.3	148.1	0.8
AB	25,237	322	3,422	3.5	147.7	147.7	148.5	0.8
AC	25,901	314	3,101	4.0	147.9	147.9	148.7	0.8
AD	26,555	262	2,960	3.9	148.3	148.3	148.9	0.6
AE	27,322	333	3,492	3.5	148.6	148.6	149.2	0.6
AF	27,982	319	3,051	3.2	148.8	148.8	149.6	0.8
AG	28,569	311	3,369	2.6	149.2	149.2	149.9	0.7
AH	29,231	316	3,521	2.7	149.3	149.3	150.1	0.8
AI	30,496	182	1,957	1.7	150.2	150.2	151.1	0.9
AJ	31,289	187	1,771	1.6	150.3	150.3	151.2	0.9
AK	32,472	140	1,207	2.4	150.6	150.6	151.4	0.8
AL	32,569	86	781	3.4	150.8	150.8	151.5	0.7
AM	33,632	217	1,697	1.4	151.2	151.2	151.9	0.7
AN	34,811	191	1,220	2.3	151.5	151.5	152.1	0.6
AO	34,933	193	1,229	2.5	151.5	151.5	152.2	0.7
AP	35,540	163	1,107	2.6	151.8	151.8	152.4	0.6
AQ	36,100	81	626	5.0	152.2	152.2	152.8	0.6
AR	36,608	105	876	3.3	152.6	152.6	153.6	1.0
AS	36,845	170	1,181	2.9	152.7	152.7	153.7	1.0
AT	37,890	58	557	4.7	153.3	153.3	154.1	0.8
AU	38,726	121	942	3.5	154.4	154.4	155.1	0.7
AV	39,009	118	967	3.0	154.5	154.5	155.3	0.8
AW	39,491	128	932	3.2	154.9	154.9	155.7	0.8
AX	40,071	138	1,031	2.9	155.3	155.3	156.1	0.8
AY	40,497	150	1,185	2.3	155.5	155.5	156.3	0.8
AZ	41,004	153	949	3.2	155.6	155.6	156.6	1.0

[1]Feet above confluence with Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

ROCK CREEK NORTH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCK CREEK NORTH								
BA	41,826	180	1,176	2.5	156.2	156.2	157.2	1.0
BB	42,399	191	1,053	2.8	156.4	156.4	157.4	1.0
BC	43,433	167	968	3.0	157.1	157.1	158.1	1.0
BD	43,494	166	960	3.0	157.1	157.1	158.1	1.0
BE	44,078	127	683	4.2	157.8	157.8	158.6	0.8
BF	44,294	38	404	6.3	158.2	158.2	159.0	0.8
BG	44,929	170	1,098	2.7	159.3	159.3	160.3	1.0
BH	45,210	250	1,608	1.8	159.4	159.4	160.4	1.0
BI	45,511	204	1,381	2.1	160.1	160.1	161.0	0.9
BJ	45,974	192	1,127	2.6	160.2	160.2	161.2	1.0
BK	46,447	172	952	2.7	160.5	160.5	161.5	1.0
BL	46,971	120	686	4.3	161.0	161.0	161.8	0.8
BM	47,734	146	727	4.3	162.2	162.2	162.9	0.7
BN	48,162	250	1,149	2.6	162.7	162.7	163.5	0.8
BO	48,824	200	1,263	2.1	163.2	163.2	163.8	0.6
BP	49,146	300	1,748	1.3	163.9	163.9	164.4	0.5
BQ	49,469	190	622	4.8	164.0	164.0	164.5	0.5
BR	49,684	89	656	4.1	167.5	167.5	168.1	0.6
BS	50,249	111	932	3.1	168.9	168.9	169.4	0.5
BT	50,580	263	1,530	1.8	169.1	169.1	169.6	0.5
BU	50,692	268	1,345	1.8	169.2	169.2	169.9	0.7
BV	51,156	263	1,624	1.3	169.3	169.3	170.0	0.7
BW	51,639	264	1,685	1.2	169.4	169.4	170.1	0.7
BX	52,074	262	1,467	1.5	169.4	169.4	170.2	0.8
BY	52,397	253	1,024	3.1	169.5	169.5	170.3	0.8
BZ	52,907	233	1,042	2.5	169.8	169.8	170.6	0.8

[1]Feet above confluence with Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

ROCK CREEK NORTH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCK CREEK NORTH								
CA	53,015	190	882	2.9	170.0	170.0	170.8	0.8
CB	53,916	109	626	4.5	170.6	170.6	171.5	0.9
CC	54,557	77	500	4.8	172.1	172.1	172.6	0.5
CD	54,787	61	383	6.7	172.6	172.6	173.2	0.6
CE	56,122	67	597	3.5	176.3	176.3	177.2	0.9
CF	57,202	110	814	2.9	177.7	177.7	178.4	0.7
CG	57,448	313	2352	1.1	178.2	178.2	179.1	0.9
CH	58,279	335	2384	1.0	178.3	178.3	179.1	0.9
CI	59,447	435	2644	0.9	178.3	178.3	179.2	0.9
CJ	60,194	510	2383	1.3	178.3	178.3	179.3	1.0
CK	61,015	870	3210	0.5	178.4	178.4	179.3	0.9
CL	62,388	593	1303	1.3	178.4	178.4	179.4	1.0
CM	64,142	169	365	5.0	181.4	181.4	181.5	0.1
CN	65,206	82	350	2.6	184.1	184.1	184.3	0.2
CO	65,969	432	1060	1.7	185.5	185.5	186.0	0.5
CP	66,713	702	725	3.6	186.2	186.2	187.2	1.0
CQ	68,130	220	690	2.4	189.1	189.1	190.0	0.9
CR	69,186	87	299	5.8	191.1	191.1	192.0	0.9
CS	69,972	198	526	3.8	194.0	194.0	194.9	0.9
CT	70,736	336	935	1.1	195.0	195.0	195.7	0.7
CU	71,262	26	193	5.5	195.8	195.8	196.4	0.6
CV	72,384	226	527	2.7	198.7	198.7	199.1	0.4
CW	72,943	115	289	4.9	199.7	199.7	200.2	0.5
CX	74,073	186	514	3.0	202.3	202.3	202.8	0.5
CY	75,339	290	463	3.4	204.8	204.8	204.9	0.1
CZ	76,654	105	359	3.5	206.7	206.7	207.3	0.6

[1]Feet above confluence with Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

ROCK CREEK NORTH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCK CREEK NORTH								
DA	77,165	188	545	2.3	207.1	207.1	208.0	0.9
DB	77,983	32	149	6.3	209.7	209.7	209.7	0.0
DC	79,349	308	512	2.7	213.5	213.5	214.3	0.8
DD	80,907	323	505	2.3	216.1	216.1	216.7	0.6
DE	81,790	188	184	6.4	219.2	219.2	220.0	0.8
DF	83,164	243	500	2.2	223.4	223.4	224.2	0.8
DG	84,509	50	184	4.9	226.7	226.7	226.8	0.1
DH	84,692	39	192	4.0	227.8	227.8	227.9	0.1
DI	86,000	100	204	4.0	230.6	230.6	230.7	0.1
DJ	86,763	26	113	6.5	235.2	235.2	235.2	0.0
DK	87,401	30	81	8.7	237.7	237.7	238.0	0.3
DL	87,916	20	111	6.8	243.9	243.9	243.9	0.0
DM	88,425	16	104	6.5	247.2	247.2	247.4	0.2

[1]Feet above confluence with Tualatin River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCK CREEK SOUTH								
A	1,615	30	226	3.2	134.3	120.0[2]	120.4	0.4
B	2,343	44	317	2.3	134.3	120.4[2]	121.3	0.9
C	3,702	200	1,377	0.5	134.3	121.1[2]	122.0	0.9
D	4,373	200	1,475	0.5	134.3	121.1[2]	122.0	0.9
E	5,564	400	2,084	0.3	134.3	121.1[2]	122.1	1.0
F	6,755	263	255	2.8	134.3	121.9[2]	122.3	0.4
G	7,579	40	127	5.7	134.3	129.9[2]	130.3	0.4
H	8,780	42	241	3.0	136.2	136.2	136.8	0.6
I	10,375	298	1,577	0.5	136.5	136.5	137.5	1.0
J	11,569	205	829	0.7	137.0	137.0	138.0	1.0
K	13,157	250	1,063	0.6	137.3	137.3	138.3	1.0
L	14,745	141	559	1.1	137.8	137.8	138.8	1.0
M	15,935	121	381	1.6	139.8	139.8	140.8	1.0
N	16,907	144	491	1.3	141.0	141.0	142.0	1.0

[1]Feet above confluence with Tualatin River

[2]Elevations computed without consideration of backwater from Tualatin River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

ROCK CREEK SOUTH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SOUTH JOHNSON CREEK								
A	304	175	531	1.5	171.9	166.1[2]	166.7[2]	0.6
B	616	48	107	9.0	171.9	167.2[2]	167.3[2]	0.1
C	928	24	163	4.9	172.6	172.6	173.1	0.5
D	1,047	52	393	2.7	173.5	173.5	173.9	0.4
E	1,508	90	640	1.6	173.6	173.6	174.1	0.5
F	2,037	86	556	1.6	173.7	173.7	174.3	0.6
G	2,520	87	543	1.7	173.7	173.7	174.5	0.8
H	2,826	92	591	1.4	173.8	173.8	174.6	0.8
I	3,100	88	677	1.2	176.1	176.1	176.9	0.8
J	3,599	78	543	2.0	176.2	176.2	177.1	0.9
K	3,961	89	564	1.8	176.4	176.4	177.3	0.9
L	4,254	77	509	1.9	176.6	176.6	177.6	1.0
M	4,696	103	561	1.8	177.0	177.0	177.9	0.9
N	4,923	81	553	1.5	177.2	177.2	178.1	0.9
O	5,405	103	580	1.5	177.4	177.4	178.4	1.0
P	5,694	68	481	1.9	179.4	179.4	180.2	0.8
Q	5,954	58	405	2.0	179.4	179.4	180.3	0.9
R	6,327	47	283	2.6	179.6	179.6	180.5	0.9
S	6,506	57	355	1.7	180.5	180.5	181.3	0.8
T	6,631	55	323	2.2	180.5	180.5	181.4	0.9
U	6,869	47	263	2.7	180.7	180.7	181.5	0.8
V	7,155	57	398	1.7	180.9	180.9	181.8	0.9
W	7,411	71	420	1.5	181.0	181.0	181.9	0.9
X	7,646	28	141	4.5	181.9	181.9	182.4	0.5
Y	8,176	35	226	2.8	183.3	183.3	184.0	0.7
Z	8,326	35	273	2.3	183.4	183.4	184.3	0.9

[1]Feet above confluence with Beaverton Creek

[2]Elevations computed without consideration of backwater effects from Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

SOUTH JOHNSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SOUTH JOHNSON CREEK								
AA	8,827	65	266	2.8	184.3	184.3	185.2	0.9
AB	9,166	69	243	2.6	185.1	185.1	186.0	0.9
AC	9,349	54	262	2.4	185.6	185.6	186.6	1.0
AD	9,830	60	196	3.6	187.0	187.0	188.0	1.0
AE	10,279	40	143	4.4	190.1	190.1	191.0	0.9
AF	10,649	50	189	3.3	192.5	192.5	193.5	1.0
AG	10,929	55	171	3.7	193.9	193.9	194.9	1.0
AH	11,267	21	56	9.2	205.3	205.3	205.3	0.0
AI	11,357	75	429	1.2	208.3	208.3	208.4	0.1
AJ	11,730	30	136	4.3	215.4	215.4	215.8	0.4
AK	12,096	34	165	2.9	218.2	218.2	218.7	0.5
AL	12,352	48	153	3.3	218.6	218.6	219.6	1.0

[1]Feet above confluence with Beaverton Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

SOUTH JOHNSON CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
STOREY CREEK								
A	269	105	358	2.1	163.9	163.9	164.7	0.8
B	766	124	307	2.2	164.2	164.2	165.0	0.8
C	1,727	67	167	3.6	166.3	166.3	167.0	0.7
D	2,589	87	597	1.4	172.4	172.4	173.2	0.8
E	3,788	142	435	1.1	172.5	172.5	173.4	0.9
F	4,460	15	66	7.5	172.8	172.8	173.4	0.6
G	4,776	7	62	7.9	178.6	178.6	178.7	0.1
H	5,843	35	258	1.9	180.3	180.3	181.0	0.7
I	7,014	12	31	9.3	181.5	181.5	181.5	0.0
J	7,967	31	90	3.6	187.5	187.5	188.5	1.0
K	9,467	22	59	5.4	193.1	193.1	193.7	0.6
L	10,349	22	76	3.9	197.4	197.4	197.8	0.4

[1]Feet above confluence with Waible Gulch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

STOREY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
STOREY CREEK EAST TRIBUTARY								
A	1,478	21	30	6.9	174.0	174.0	174.0	0.0
B	2,489	72	477	0.4	184.7	184.7	184.7	0.0
C	3,701	17	61	2.6	185.7	185.7	186.0	0.3
D	4,398	14	31	5.4	187.9	187.9	188.0	0.1
STOREY CREEK MIDDLE TRIBUTARY								
A	806	14	46	5.1	180.2	180.2	181.2	1.0
B	1,041	18	56	3.1	181.7	181.7	182.4	0.7
C	1,741	44	58	4.0	184.7	184.7	184.7	0.0
D	1,861	20	93	1.9	186.0	186.0	186.6	0.6
E	3,103	12	23	8.1	188.9	188.9	188.9	0.0
F	4,063	31	119	1.8	196.0	196.0	196.8	0.8

[1]Feet above confluence with Storey Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

STOREY CREEK - EAST AND MIDDLE TRIBUTARIES

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SUMMER CREEK								
A	0.02	161	1,365	1.1	161.2	159.9[2]	160.3[2]	0.4
B	0.09	66	385	3.8	161.2	159.9[2]	160.3[2]	0.4
C	0.17	46	369	3.9	161.7	161.7	162.7	1.0
D	0.40	101	528	2.7	163.8	163.8	164.7	0.9
E	0.80	191	922	1.6	167.1	167.1	167.6	0.5
F	1.19	186	1,457	0.9	173.6	173.6	174.5	0.9
G	1.23	186	1,827	0.7	173.6	173.6	174.5	0.9
H	1.28	186	1,803	0.7	173.7	173.7	174.6	0.9
I	1.32	186	1,995	0.7	173.7	173.7	174.7	1.0
J	1.36	186	1,532	0.9	173.7	173.7	174.7	1.0
K	1.45	65	238	5.6	173.6	173.6	174.6	1.0
L	1.56	48	269	4.7	175.2	175.2	175.8	0.6
M	1.70	101	542	2.4	175.8	175.8	176.6	0.8
N	1.75	61	322	3.7	177.1	177.1	177.6	0.5
O	1.93	126	553	2.2	178.1	178.1	179.0	0.9
P	1.97	111	498	2.4	178.4	178.4	179.4	1.0
Q	2.10	86	445	2.7	180.3	180.3	181.3	1.0

[1]Miles above confluence with Fanno Creek

[2]Elevations computed without consideration of backwater effects from Fanno Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

SUMMER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
TUALATIN RIVER								
AC	35,845	250/410	1,359	5.5	125.0	125.0	125.1	0.1
AD	37,920	284/509	446	6.3	125.3	125.3	125.4	0.1
AE	38,516	253/446	659	6.4	125.5	125.5	125.5	0.0
AF	40,752	126/380	895	5.9	125.9	125.9	126.1	0.2

[1]Feet above confluence with Willamette River

[2] Floodway width within City of Tualatin/Total floodway width

This FWDT shows the Tualatin River reach within city of Tualalatin in Clakamas County

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

TUALATIN RIVER (WITHIN CITY OF TUALATIN IN WASHINGTON COUNTY)

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
TUALATIN RIVER								
A	41,903	255/392[2]	5,412	6.6	126.3	126.3	126.6	0.3
B	42,412	102/208[2]	4,425	7.6	126.6	126.6	126.9	0.3
C	42,588	200	4,446	7.8	126.8	126.8	127.2	0.4
D	43,443	374	6,532	5.3	127.9	127.9	128.6	0.7
E	44,042	419	5,825	6.0	128.3	128.3	129.0	0.7
F	44,631	286	6,050	5.5	128.9	128.9	129.6	0.7
G	45,713	235	5,458	6.3	129.1	129.1	129.9	0.8
H	46,125	586	8,671	3.9	129.7	129.7	130.6	0.9
I	46,325	609	8,920	4.3	129.7	129.7	130.6	0.9
J	47,537	638	8,638	4.4	130.2	130.2	131.1	0.9
K	47,907	555	8,688	4.3	130.4	130.4	131.3	0.9
L	48,547	1,038	17,752	1.8	130.8	130.8	131.7	0.9
M	51,159	1,308	20,386	2.3	131.0	131.0	131.9	0.9
N	53,386	1,290	16,561	3.2	131.1	131.1	132.1	1.0
O	55,226	1,335	20,165	1.5	131.5	131.5	132.5	1.0
P	59,644	498	10,118	3.9	132.4	132.4	133.3	0.9
Q	60,256	384	10,395	3.1	132.8	132.8	133.7	0.9
R	60,906	589	10,774	3.6	132.9	132.9	133.8	0.9
S	64,281	711	12,200	3.4	133.4	133.4	134.3	0.9
T	65,552	763	13,107	2.8	133.7	133.7	134.6	0.9
U	68,762	1,583	28,462	1.1	134.1	134.1	135.0	0.9
V	69,084	1,774	30,924	1.4	134.1	134.1	135.0	0.9
W	71,178	3,154	50,166	0.8	134.2	134.2	135.0	0.8
X	75,994	3,768	50,759	1.3	134.2	134.2	135.1	0.9
Y	80,096	3,862	52,093	0.5	134.3	134.3	135.2	0.9
Z	80,604	3,398	46,024	0.7	134.3	134.3	135.2	0.9

[1]Feet above confluence with Willamette River

[2]Floodway width within City of Tualatin/Total floodway width

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

TUALATIN RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ.FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
TUALATIN RIVER								
AA	82,845	2,528	34,746	0.8	134.4	134.4	135.2	0.8
AB	83,267	2,483	33,631	1.1	134.4	134.4	135.3	0.9
AC	84,848	1,681	22,437	2.1	134.4	134.4	135.4	1.0
AD	85,487	792	9,994	3.0	134.6	134.6	135.5	0.9
AE	85,696	1,058	15,927	2.3	134.8	134.8	135.8	1.0
AF	86,585	846	15,373	2.4	135.1	135.1	136.0	0.9
AG[4]	189,211	1,859	21,962	1.5	144.3	141.6[3]	142.5[3]	0.9
AH	189,986	1,640	18,134	1.9	144.3	141.7[3]	142.6[3]	0.9
AI	190,800	1,424	16,228	2.2	144.3	141.9[3]	142.8[3]	0.9
AJ	192,431	1,760	22,170	1.4	144.3/144.3[2]	142.5[3]	143.4[3]	0.9
AK	193,436	2,289	24,940	1.4	144.8/144.3[2]	142.7[3]	143.5[3]	0.8
AL	196,851	1,941	20,385	1.7	145.6	143.2	144.0	0.8
AM	198,810	1,626	21,928	1.4	145.7	143.4	144.2	0.8
AN	200,975	1,278	16,681	2.0	146.2/146.1[2]	143.9	144.7	0.8
AO	201,438	1,208	14,856	2.5	146.2/146.2[2]	144.0	144.8	0.8
AP	201,868	1,089	13,267	2.8	146.4/146.3[2]	144.2	145.0	0.8
AQ	203,771	1,223	17,092	2.1	146.9/146.8[2]	145.0	145.8	0.8
AR	204,855	1,188	18,094	1.6	147.1/146.9[2]	145.3	146.1	0.8
AS	206,088	533	9,683	3.4	147.5	145.8	146.6	0.8
AT	207,184	1,298	15,646	2.3	147.9	146.3	147.1	0.8
AU	208,622	1,602	22,317	1.6	148.2	146.6	147.4	0.8
AV	209,541	974	15,152	2.1	148.3	146.8	147.5	0.7
AW	210,609	1,865	23,939	1.4	148.5	147.0	147.7	0.7
AX	211,885	1,807	27,553	1.3	148.5	147.1	147.8	0.7
AY	212,955	2,237	30,875	1.2	148.6	147.2	147.8	0.6
AZ	214,791	2,579	34,801	1.1	148.6	147.2	147.9	0.7

[1]Feet above confluence with Willamette River

[2]Riverward of levees / Landward of levees

[3]Elevations computed without consideration of effective water surface elevations downstream of detailed study limit.

[4]Break in detailed study reach between this and previous (downstream) reach

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

TUALATIN RIVER

FLOODING SOURCE			FLOODWAY[1]			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
NODES	LINKS	DISTANCE[2]	WIDTH (FEET)	PEAK FLOW (CFS)	VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WAIBLE CREEK									
A		18,550				178.9	178.9	179.4	0.5
	A-B		80.7	351	1.6				
B		19,430				179.6	179.6	180.4	0.8
C		21,785				187.1	187.1	187.6	0.5
	C-D		121.7	382	2.1				
D		23,063				188.3	188.3	188.6	0.3
E		23,550				191.1	191.1	191.5	0.4
	E-F		143.3	339	1.2				
F		24,486				191.9	191.9	192.1	0.2
G		24,700				193.5	193.5	193.9	0.4
	G-H		194.5	264	1.7				
H		25,475				194.1	194.1	194.4	0.3
I		26,064				197.7	197.7	198.7	1.0
	I-J		29.8	277	1.8				
J		26,582				198.0	198.0	198.9	0.9

[1]Values represent maximum along link
[2]Feet above confluence with McKay Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

WAIBLE CREEK

FLOODING SOURCE			FLOODWAY[1]			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
NODES	LINKS	DISTANCE[2]	WIDTH (FEET)	PEAK FLOW (CFS)	VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WAIBLE CREEK – NORTH TRIBUTARY									
A		1,498				196.5	196.5	196.7	0.2
	A-B		17.9	77	2.5				
B		2,995				202.3	202.3	202.3	0.0
C		3,197				206.7	206.7	207.6	0.9
	C-D		14.9	30	1.9				
D		5,688				224.9	224.9	225.0	0.1

[1]Values represent maximum along link
[2]Feet above confluence with Waible Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

WAIBLE CREEK- NORTH TRIBUTARY

FLOODING SOURCE			FLOODWAY[1]			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
NODES	LINKS	DISTANCE[2]	WIDTH (FEET)	PEAK FLOW (CFS)	VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WAIBLE CREEK – SOUTH TRIBUTARY									
A		1,618				185.8	185.8	186.6	0.8
	A-B		74.7	224	1.6				
B		2,932				189.2	189.2	189.3	0.1
C		3,077				190.2	190.2	190.9	0.7
	C-D		59.8	213	1.4				
D		5,194				196.1	196.1	196.1	0.0
E		7,703				206.5	206.5	206.8	0.3
	E-F		39.9	75	1.3				
F		8,452				206.6	206.6	206.9	0.3

[1]Values represent maximum along link
[2]Feet above confluence with Waible Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

WAIBLE CREEK – SOUTH TRIBUTARY