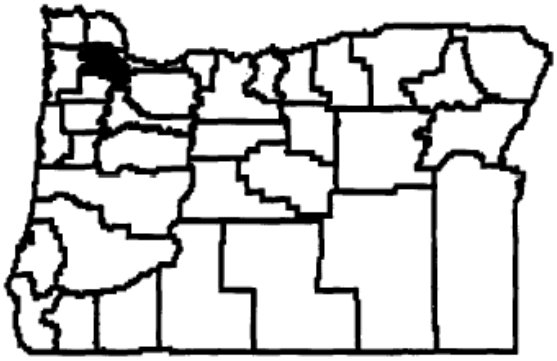
# FLOOD INSURANCE STUDY

# WASHINGTON COUNTY, OREGON
## AND INCORPORATED AREAS

## VOLUME 1 OF 3

| 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 |



**Effective: November 4, 2016**

# Federal Emergency Management Agency

**Flood Insurance Study Number**
**41067CV001A**

## 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.

Selected Flood Insurance Rate Map panels for the community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

| Old Zone | New Zone |
|---|---|
| A1 through A30 | AE |
| V1 through V30 | VE |
| B | X |
| C | X |

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 Dates:

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### PUBLISHED SEPARATELY

# 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 | October 29, 1982 |
| 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 | April 10, 1981 |
| Gaston, City of | September 9, 1976 | July 21, 1981 |
| Hillsboro, City of | September 8, 1976 | September 12, 1980 |
| King City, City of | September 9, 1976 | February 1, 1981 |
| North Plains, City of | October 22, 1976 | April 10, 1981 |
| 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 | April 9, 1981 |
| Tualatin, City of | September 9, 1976 | February 1, 1981 |

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<br><br>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 113$^{th}$ and Southwest 121$^{st}$ 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 | | | | | |
| At mouth | 12.0 | 1,045 | 1,692 | 1,815 | 2,113 |
| At NW Groveland Drive (Highway 26) | 3.2 | 180 | 234 | 297 | 380 |
| At NW West Union Road | 2.0 | 112 | 161 | 222 | 349 |
| Waible Creek - South Tributary | | | | | |
| At mouth | 1.2 | 220 | 362 | 387 | 443 |
| At Brookwood Parkway | 1.0 | 173 | 208 | 266 | 387 |
| Waible Creek Tributary 1 | | | | | |
| At mouth | 0.4 | 45 | 56 | 66 | 80 |

**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 |
|---|---|---|---|---|---|
| Waible Creek Tributary 2 | | | | | |
| At mouth | 0.5 | 49 | 86 | 92 | 109 |
| At NW West Union Road | 0.4 | 33 | 47 | 54 | 56 |
| 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.

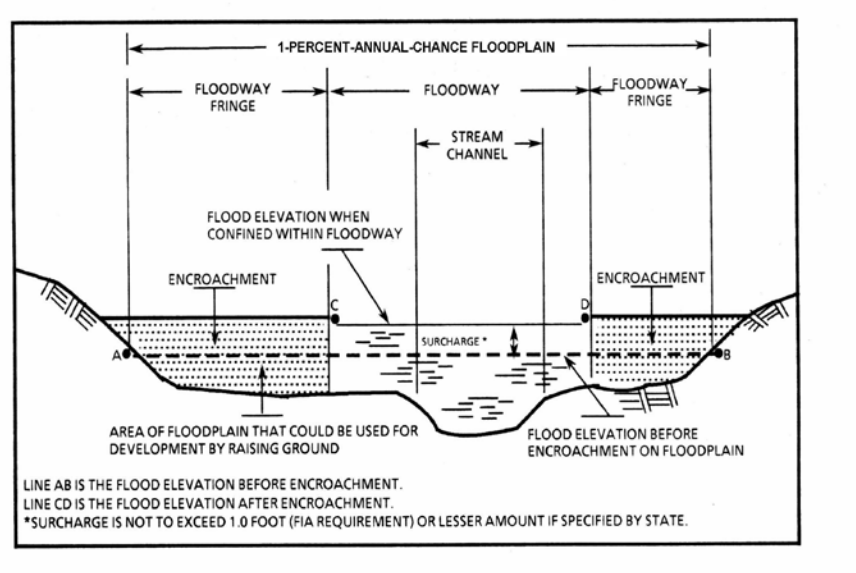


**Figure 1. Floodway Schematic**

| 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 (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| BUTTERNUT CREEK | | | | | | | | |
| AA | 18,222 | 64 | 190 | 3.8 | 171.1 | 171.1 | 171.8 | 0.7 |
| AB | 18,906 | 91 | 451 | 1.5 | 172.3 | 172.3 | 173.0 | 0.7 |
| AC | 19,059 | 55 | 287 | 2.4 | 173.1 | 173.1 | 173.5 | 0.4 |
| AD | 19,340 | 54 | 254 | 2.9 | 173.5 | 173.5 | 173.9 | 0.4 |
| AE | 19,850 | 70 | 177 | 4.7 | 174.9 | 174.9 | 175.3 | 0.4 |
| AF | 20,452 | 24 | 95 | 4.6 | 177.2 | 177.2 | 177.8 | 0.6 |
| AG | 20,933 | 25 | 118 | 4.0 | 179.5 | 179.5 | 180.1 | 0.6 |
| AH | 21,396 | 32 | 125 | 3.7 | 180.7 | 180.7 | 181.7 | 1.0 |
| AI | 21,945 | 36 | 124 | 3.6 | 182.9 | 182.9 | 183.8 | 0.9 |
| AJ | 22,200 | 45 | 208 | 2.0 | 185.1 | 185.1 | 186.0 | 0.9 |
| AK | 22,384 | 54 | 191 | 2.2 | 185.4 | 185.4 | 186.3 | 0.9 |
| AL | 22,964 | 12 | 40 | 10.6 | 187.5 | 187.5 | 188.0 | 0.5 |
| AM | 23,466 | 27 | 88 | 5.1 | 192.3 | 192.3 | 193.3 | 1.0 |
| AN | 24,440 | 23 | 118 | 2.3 | 195.4 | 195.4 | 195.6 | 0.2 |
| AO | 24,666 | 20 | 75 | 3.9 | 195.5 | 195.5 | 195.8 | 0.3 |
| AP | 25,050 | 18 | 68 | 4.2 | 196.3 | 196.3 | 197.3 | 1.0 |
| AQ | 25,448 | 38 | 113 | 1.6 | 197.7 | 197.7 | 198.2 | 0.5 |
| AR | 25,601 | 33 | 113 | 1.6 | 198.7 | 198.7 | 199.1 | 0.4 |
| AS | 25,799 | 20 | 85 | 2.2 | 198.8 | 198.8 | 199.3 | 0.5 |
| AT | 25,881 | 23 | 81 | 2.3 | 199.0 | 199.0 | 199.4 | 0.4 |
| AU | 26,063 | 31 | 123 | 1.5 | 199.5 | 199.5 | 200.5 | 1.0 |
| AV | 26,502 | 49 | 146 | 1.4 | 199.9 | 199.9 | 200.8 | 0.9 |
| AW | 26,728 | 48 | 236 | 0.7 | 199.9 | 199.9 | 200.8 | 0.9 |
| AX | 26,909 | 16 | 50 | 3.1 | 200.1 | 200.1 | 201.1 | 1.0 |

[1]Feet above confluence with 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 (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| CEDAR CREEK | | | | | | | | |
| A | 445 | 20 | 148 | 6.5 | 144.2 | 139.3[2] | 139.9[2] | 0.6 |
| B | 939 | 40 | 227 | 5.4 | 144.2 | 143.4[2] | 143.9[2] | 0.5 |
| C | 1,319 | 40 | 305 | 4.3 | 145.2 | 145.2 | 145.6 | 0.4 |
| D | 1,682 | 100 | 625 | 2.1 | 145.8 | 145.8 | 146.2 | 0.4 |
| E | 2,125 | 65 | 423 | 3.1 | 146.1 | 146.1 | 146.5 | 0.4 |
| F | 2,440 | 60 | 386 | 3.3 | 146.4 | 146.4 | 146.9 | 0.5 |
| G | 2,964 | 57 | 378 | 3.0 | 147.2 | 147.2 | 147.7 | 0.5 |
| H | 3,190 | 50 | 518 | 2.2 | 150.2 | 150.2 | 150.7 | 0.5 |
| I | 3,588 | 151 | 1,232 | 1.1 | 150.6 | 150.6 | 151.2 | 0.6 |
| J | 3,958 | 125 | 943 | 1.5 | 150.6 | 150.6 | 151.2 | 0.6 |
| K | 4,584 | 70 | 517 | 2.6 | 150.9 | 150.9 | 151.5 | 0.6 |
| L | 5,291 | 61 | 516 | 1.7 | 151.5 | 151.5 | 152.1 | 0.6 |
| M | 5,646 | 32 | 441 | 2.0 | 156.8 | 156.8 | 157.4 | 0.6 |
| N | 6,789 | 82 | 763 | 2.1 | 157.6 | 157.6 | 158.2 | 0.6 |
| O | 7,311 | 130 | 1,334 | 1.4 | 157.8 | 157.8 | 158.4 | 0.6 |
| P | 8,229 | 135 | 990 | 2.0 | 158.1 | 158.1 | 158.7 | 0.6 |
| Q | 9,142 | 82 | 559 | 2.9 | 158.9 | 158.9 | 159.4 | 0.5 |
| R | 9,731 | 38 | 331 | 4.5 | 160.4 | 160.4 | 160.8 | 0.4 |
| S | 9,913 | 96 | 855 | 1.5 | 162.0 | 162.0 | 162.9 | 0.9 |
| T | 10,462 | 195 | 1,567 | 1.3 | 162.1 | 162.1 | 163.0 | 0.9 |
| U | 10,824 | 168 | 1,353 | 1.4 | 162.2 | 162.2 | 163.1 | 0.9 |
| V | 11,560 | 141 | 617 | 3.0 | 162.6 | 162.6 | 163.6 | 1.0 |
| W | 12,407 | 189 | 1,178 | 1.5 | 163.8 | 163.8 | 164.4 | 0.6 |
| X | 12,767 | 42 | 756 | 2.1 | 173.6 | 173.6 | 174.2 | 0.6 |
| Y | 13,440 | 86 | 1,303 | 1.0 | 173.7 | 173.7 | 174.4 | 0.7 |
| Z | 14,785 | 58 | 693 | 1.8 | 173.7 | 173.7 | 174.6 | 0.9 |
| AA | 14,886 | 170 | 1,011 | 1.7 | 175.4 | 175.4 | 175.7 | 0.3 |
| AB | 15,431 | 242 | 2,483 | 1.0 | 175.5 | 175.5 | 175.8 | 0.3 |

[1]Feet above confluence with Chicken Creek

[2]Elevations computed without consideration of backwater effects 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

| 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 (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| ROCK CREEK SOUTH | | | | | | | | |
| A | 1,478 | 50 | 326 | 2.3 | 134.3 | 120.1[2] | 120.9[2] | 0.8 |
| B | 1,985 | 61 | 655 | 0.8 | 134.3 | 120.1[2] | 121.1[2] | 1.0 |
| C | 2,473 | 36 | 297 | 2.5 | 134.3 | 120.1[2] | 121.1[2] | 1.0 |
| D | 2,688 | 67 | 568 | 1.5 | 134.3 | 120.5[2] | 121.4[2] | 0.9 |
| E | 3,583 | 50 | 436 | 1.0 | 134.3 | 120.7[2] | 121.6[2] | 0.9 |
| F | 4,716 | 40 | 350 | 1.6 | 134.3 | 120.9[2] | 121.8[2] | 0.9 |
| G | 5,036 | 55 | 401 | 1.2 | 134.3 | 121.0[2] | 121.9[2] | 0.9 |
| H | 6,297 | 35 | 158 | 3.3 | 134.3 | 121.8[2] | 122.6[2] | 0.8 |
| I | 7,030 | 33 | 121 | 3.7 | 134.3 | 125.1[2] | 125.7[2] | 0.6 |
| J | 7,710 | 35 | 106 | 4.4 | 134.3 | 130.8[2] | 130.9[2] | 0.1 |
| K | 7,917 | 37 | 118 | 3.3 | 134.3 | 132.1[2] | 132.1[2] | 0.0 |
| L | 8,242 | 37 | 194 | 2.0 | 136.3 | 136.3 | 136.4 | 0.1 |
| M | 8,907 | 66 | 361 | 1.8 | 136.9 | 136.9 | 137.1 | 0.2 |
| N | 9,096 | 33 | 247 | 3.1 | 137.8 | 137.8 | 138.0 | 0.2 |
| O | 10,139 | 88 | 626 | 1.1 | 138.3 | 138.3 | 138.5 | 0.2 |
| P | 10,613 | 35 | 231 | 2.7 | 138.4 | 138.4 | 138.7 | 0.3 |
| Q | 10,739 | 31 | 227 | 3.1 | 138.6 | 138.6 | 139.0 | 0.4 |

[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 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**