FLOODPLAIN MANAGEMENT INFORMATION SERIES:
A SPECIAL REPORT

PROCEDURES FOR BUILDING BRIDGES AND STRUCTURES IN THE REGULATORY FLOODWAY

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U.S. Army Corps of Engineers
Federal Emergency Management Agency

January 1994
First Edition

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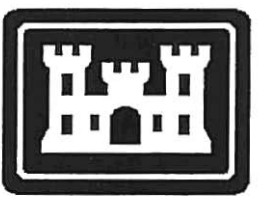
A SPECIAL REPORT

PROCEDURES FOR BUILDING BRIDGES AND STRUCTURES IN THE REGULATORY FLOODWAY



US Army Corps
of Engineers

Prepared by:
U. S. Army Engineer District
Walla Walla, Washington
Hydrology Branch

For:
Federal Emergency Management Agency
Region X Office

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PROCEDURES FOR BUILDING BRIDGES OR STRUCTURES IN THE REGULATORY FLOODWAY

1. Introduction

1-1 Purpose. Several publications have been developed by Federal Emergency Management Agency (FEMA) to assist local governments in the enforcement of floodway regulations. One of the initial documents, ***"Procedures for Compliance with Floodway Regulations,"*** May 1990, was developed by the Philadelphia District Corps of Engineers through FEMA Community Assistance Program funding. The purpose of this document, ***"Procedures for Building Bridges or Structures in the Regulatory Floodway,"*** is: (1) to supplement the Philadelphia publication, (2) to describe in detail the engineering procedures required to comply with floodway regulations, and (3) to provide simple examples that can be followed in detail, which illustrate specific situations typically encountered.

To completely simplify the floodway development issue, if a development must occur within a designated regulatory floodway, one of the following options must be fulfilled before a permit can be issued:

Option 1. The community officials must be provided with adequate backup data plus a certification demonstrating that "no rise" will result to the Base Flood Elevation (BFE) as a result of the development. The "no rise" must apply to the "With Floodway" elevation that is shown in the Floodway Data Table within the Flood Insurance Study (FIS) text report.

Option 2. The community officials must be provided with an analysis that would revise the floodway so that the FEMA regulations pertaining to floodway adoption and floodway revision are met.

So that the basic floodway regulations are understood, those regulations are listed for future reference in Appendixes A, B, and C.

2. Regulations Affecting Floodway Development.

When a community enters the National Flood Insurance Program (NFIP), it must select and adopt a floodway, as stated in Index 44 of the Code of Federal Regulations (CFR), Part 60, Section 60.3, paragraph (d)(2) [44 CFR 60.3(d)(2)], see Appendix A, and then enforce it as stated in, 44 CFR 60.3(d)(3),(see Appendix A). However, it is not often understood that the floodway regulation is a requirement that can be modified to integrate a local government's development needs and still accomplish the basic goal of sound floodplain management. 44 CFR 60.3 (d)(2) requires a floodway but not necessarily the floodway that FEMA first presents to the local government.

3. Typical Floodway Development - Problem approach.

A typical floodway development example is the placement of a culvert or bridge in a stream. Since the culvert or bridge is usually located within the floodway, the first option must be made to determine if the crossing can be designed to result in "no rise" to the 100-year flood "With Floodway" elevation. The FEMA paper, "Certification Requirements for Simple Floodway Encroachments," is available as a guide for "no rise" analysis. Since significant channel improvement must usually be performed before a "no rise" can be obtained, this option is often determined to be not practicable. The second option of revising the floodway then becomes the only available development option. As long as the total surcharge of the development, plus the new floodway fringe encroachment, does not exceed 1 foot, a revision can take place following 44 CFR, Section 65.7 (included in full as Appendix B). This procedure does involve significant amounts of time and money, so it should be evaluated in a cost/benefit analysis before deciding upon this option.

If it is determined that the proposed development will cause more than a 1-foot rise, floodway regulation 44 CFR 60.3 (d) (4), (see Appendix A), and with map revision Section 65.12 (see Appendix C) defines required procedures. If there are insurable structures in the raised floodplain, this option cannot be used, and the revision cannot be accomplished unless those properties are obtained through easement purchase.

4. Floodway Revision Alternatives.

Development within the regulatory floodway may be allowed provided that FEMA regulations and local ordinances for doing so are met. Four alternatives of allowable floodway revision are:

a. Maintaining a "no rise" to the original base flood elevations (BFE) and floodway elevations after the development is in place.

b. Revising previously established floodway boundaries so that the development is no longer within the floodway.

c. Revising previously established floodway boundaries so that allowable surcharge limits are not exceeded.

d. Revising the previously established floodway boundaries when allowable surcharge limits are exceeded.

5. Additional Data Requirements.

Generally, the FEMA work previously conducted will have cross sections at a rate of four to five per mile except in the vicinity of bridges where cross section spacing is usually much closer. Spacing of cross sections is normally too far apart for site specific changes to the floodway; therefore, supplemental cross sections should be taken at locations which will best represent the area being studied prior to any floodway

5. Additional Data Requirements. *(continued)*

encroachment. These cross sections should be added to the existing computer model, and the BFE's and floodway should be recomputed. This procedure will provide a new set of BFE's to use in determining the results of making changes to the floodway. Adding cross sections to a hydraulic model at a given location improves the hydraulic model accuracy in that specific area.

6. Floodway Development Analysis.

6-1. Computational Methods. The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC), computer program "Water Surface Profiles," HEC-2, dated May 1991, version 4.6.2, has been used to perform the computations necessary to illustrate the methodology for compliant development within the regulatory floodway. Examples of base conditions and revised conditions are based on this version of the HEC-2 computer program.

Each of the 12 alternatives discussed will be contained in a separate exhibit. Each exhibit will contain HEC-2 input data and output data cross section plots, a work map delineating the floodplains and floodways, and a floodway data table. Water surface profile plots are not shown in each exhibit but should be included in the package sent to FEMA in the format shown in exhibit 1. The 100-year floodplain shown on the work maps may change by a few feet when comparing one exhibit to the base exhibit, but the exhibits will not show this as a change since the main thrust of this manual is the floodway and not the 100-year floodplain. Expansion and contraction coefficients on the "NC" record were not changed in the case of the bridge scenarios since the bridge area was extremely small (less than 2 percent) with respect to the total conveyance. This slight change in conveyance would produce negligable losses. The computation of the surcharge on the floodway data table will differ from the computation shown in the HEC-2 model output. This differance is due to rounding each elevation (base flood and floodway elevation) first and then subtracting the two elevations. This is slightly different from the method used in this version of the HEC-2 program. Centerline stationing and base flood elevations have been removed from the work map for clarification of the location of cross sections, floodplains, and floodway. The exhibit shows the type of information which should be sent to FEMA for review and approval.

6-2. Data Acquisition. The technical analysis for developing in the regulatory floodway begins with retrieval of the data used to develop the current flood insurance study. This data should be obtained from FEMA archives through a request to the FEMA regional office that is responsible for the study area. Figure 1 shows the locations and area of responsibility

6-2. Data Acquisition. ***(continued)***
of each FEMA regional office, and figure 2 gives the telephone number and address of each FEMA regional office. Data should be requested by the community but may be requested by non-governmental personnel for the stream location of interest. Also, a search should be requested to determine if any revisions have been approved. Computational data should reflect any approved changes.

Data available from FEMA includes: (1) the hydraulic model data, (2) profile plots, (3) floodway data tables, and (4) work map showing the location of cross sections, 100- and 500-year floodplains, floodway, and 4-foot interval contours (if available).

6-3. Data/Program Check. Initially, the 10-, 50-, 100- and 500-year flood profiles and floodway should be recomputed using the model data retrieved from FEMA archives and compared to the existing study results. This comparison is to determine if the same computational procedures are being used to process the hydraulic model and if the correct hydraulic data has been retrieved. If there is a difference between the values, the applicable FEMA regional office should be contacted to determine if the new values may be used as the BFE's. These BFE's are the values that the floodway is compared with and must be acceptable to FEMA.

6-4. Floodway Development Examples. The following list of exhibits present the scenarios which will be analyzed and presented in this manual. Exhibit 1 presents the original FEMA model. Exhibits 2 through 7 will present scenarios using buildings, and exhibits 8 through 12 will present scenarios using bridges.

Exhibit One - Original FEMA model
Exhibit Two - Additional cross sections - new base condition
Exhibit Three - Adding the structure
Exhibit Four - "No rise" condition
Exhibit Five - Floodway realigned
Exhibit Six - Surcharge limits satisfied
Exhibit Seven - Use of Section 65.12 to Compute new Base Condition
Exhibit Eight - Bridge cross sections added to exhibit 2
Exhibit Nine - Adding the bridge
Exhibit Ten - "No rise" condition
Exhibit Eleven - Surcharge limits satisfied
Exhibit Twelve - Use of Section 65.12 to compute new Base Condition

7. Addition of a Structure in Existing Floodway

7-1. Exhibit One: Original FEMA Model. Original data retrieved from the FEMA archives was used to establish the current BFE's and regulatory floodway. There have been no additions or corrections made to the data file, profiles, floodway data table, or floodplains (100- and 500-year). Cross section plots were developed from the HEC-2 data provided by FEMA. These cross section plots are presented in this exhibit to provide a base for comparing changes presented in the remaining exhibits.

7. Addition of a Structure in Existing Floodway *(cont.)*

7-2. Exhibit Two: New Base Condition - Additional Cross Sections. Three additional cross sections (1.10, 2.05, and 2.10, exhibit 2 - cross sections) were surveyed to obtain site specific data at the location where floodway modifications are being examined. These three new cross sections were field located on the work map (exhibit 2 - work map, bold lines). Once the new cross sections were located, the HEC-2 model was modified by adding the appropriate "X1" and "GR" records (italicized print exhibit 2 - input and output) to the original data file (exhibit 1). Channel, left overbank, and right overbank reach lengths between cross sections were measured on the work map and entered on the appropriate "X1" records. The reach lengths for the original cross sections "B" and "C" were modified (by changing the "X1" record) to reflect the addition of the new cross sections. Water surface profiles (only the 100-year and floodway are shown in this exhibit) were recomputed to determine the new base flood elevations. The floodway shown on the work map of this exhibit is the same as shown on the original study work map (exhibit 1). Floodway limits at the three added cross sections were determined by direct measurement of the floodway on the work map. The cross sections were encroached (through the use of "ET" record with encroachment method 1) to the measured limits. The remaining cross sections which used encroachment method 4 (equal conveyance reduction) in exhibit 1 were encroached to the starting and ending stations computed by the model in exhibit 1 using encroachment method 1 ("ET" record fixed encroachment stations). The use of the encroachment method 1 is to maintain the floodway as presented in the original flood insurance study. This will determine the surcharge that exists in the area prior to development. The floodway data table was updated to include the additional cross sections (exhibit 2 - Floodway Data Table) and shows the new base flood elevations. The encroachments determined from exhibit 1 - work map caused the "Increase" in the floodway data table to exceed 1 foot surcharge at cross sections 1.10 and E. These increases are due to the addition of data and not to filling in the floodway; therefore, it is not important to worry about this at this stage as long as it is remembered that "no rise" applies to the With Floodway elevations and the With Floodway elevations can be no higher than 1.0 foot above the base condition Without Floodway elevation. Also, it must be remembered that when revising the floodway, any hydraulically correct floodway is acceptable as long as the With Floodway meets the above criteria. Please note that new BFE's occur as a result of adding cross sections. This is acceptable and will set the new Base Flood condition.

7-3. Exhibit Three: Adding the Structure. This exhibit shows the addition of a structure in the existing floodway is not acceptable because of the increase in base flood elevation and surcharge compared with exhibit 2. (Note that the With Floodway elevation in Exhibit 3 is greater than one foot above the Regulatory elevation in Exhibit 2.) Cross sections 1.10, B, 2.05, and 2.10 have been modified to represent the addition of a structure in the floodplain. These modifications were accomplished by changing the HEC-2 input geometry ("X1" and "GR" records) and are shown as italicized print in exhibit 3 - input and output data. The results of these changes are shown on exhibit 3 - cross sections as blockouts (bold lines). This represents the flow area reduction caused by the addition of the structure. This addition results in a rise in the floodway, as shown on exhibit 3 - floodway data table, which is greater than was shown in the natural floodway in exhibit 2. The floodway shown on exhibit 3 - work map is not the computed floodway for this condition. The floodway is the same as mapped on exhibit 2 - work map to depict the degree of encroachment the structure makes on the floodway. In exhibit 3 - floodway data table, the regulatory base flood elevation is from the computation in exhibit 2 and is the elevation for comparison of the "no rise" condition.

7-4. Exhibit Four: "No Rise" Condition. This exhibit shows a method of correcting the addition of a structure in the floodway to a "no rise" condition. This will be accomplished by increasing the conveyance throughout the area of the structure. The increase in conveyance will continuously extend for some distance upstream and downstream of the structure. Generally, this method would keep the floodway at the pre-project location. The example selected here for the "no rise" condition is one where the structure straddles (partially in and partially out) the floodway. This was selected primarily to provide an example which would be a likely scenario encountered for a floodway modification. The only reason the floodway in this exhibit has been modified in the vicinity of the structure is that the building was straddling the floodway. If the building were within the floodway, the floodway would not have been altered for this method. The increase in conveyance is accomplished by excavation of the natural channel and overbank (modifying the "GR" or "CI" records) so as to increase the conveyance of the channel or overbank sufficiently to offset the increased base flood elevation due to the construction of the structure. In this case, the excavation was accomplished through modification of the "GR" records. Localized excavation would be considered non-effective flow and is not acceptable. The amount of conveyance increase which is required will be determined by recomputing the 100-year water surface elevation and floodway and comparing them to results in exhibit 2. The "no rise" condition retains the same floodway boundaries as the base condition, exhibit 2, except for the condition where the structure straddles the floodway. Exhibit 4 - floodway data table regulatory base flood elevation is from the computation in exhibit 2 and is the elevation for comparison of the "no rise" condition.

7-5. Exhibit Five: Floodway Realigned. This exhibit shows the removal of the structure from the floodway. This is accomplished through re-alignment of the floodway using encroachment method one ("ET" record). Exhibit 5 - input and output use italicized print to show the changes made from exhibit 3 - input and output. Cross sections in this exhibit have not been changed from those in exhibit 3. Computing the floodway limits using encroachment method 4 (equal conveyance reduction) is not a recommended method since the BFE's used in computing the new limits would be based on the structure in-place reducing the flow area. This reduced flow area will generally cause an increase in the BFE's, therefore allowing an increase which would be greater than the 1-foot surcharge above the regulatory BFE's allowed by FEMA regulations. With this in mind, the floodway was re-computed using encroachment method 1 ("ET" fixed encroachment stations). Since the floodway is being modified for this case, the floodway increase above the BFE's computed in exhibit 2 has been kept at 1 foot or less. In this case, some modification of the floodway was also necessary on the right side of the channel due to the structure straddling the floodway on the right floodplain. Exhibit 5 - work map shows the re-aligned floodway with bold lines. This method of obtaining compliance for building within the floodway requires concurrence of all entities affected by the floodway changes. In exhibit 5 - floodway data table, the regulatory base flood elevation is from the computation in exhibit 2 and is the elevation used to determine the increase in water surface between the floodway and the BFE's.

7-6. Exhibit Six: Surcharge Limits Satisfied. This exhibit shows widening the floodway on the opposite side of the floodplain (left bank in this case) of the construction area to compensate for the development on the structure side of the channel. The project itself remains within the floodway, but the allowable surcharge limits are no longer exceeded with the new floodway delineations. The structure used in this example has been modified from previous examples. The structure in the previous examples was straddling the floodway, and to leave the structure in the floodway, it must be completely in the floodway to start. Cross section plots show the change in model geometry, and the new structure is shown with bold lines on the work map. Modifications to the HEC-2 model are shown at exhibit 6 - input and output in italicized print. Modifications to the geometry comprise changing the "X1" and "GR" records. Floodway limits were established through modification of the "ET" record using method 1 (fixed encroachment stations). Method 1 was used since the BFE's established in exhibit 2 are without the structure in place. Once the structure has been placed in the floodway, the computed 100-year flood elevations will differ from the BFE's due to the loss of conveyance caused by construction of the structure. The floodway has been shaped to

Exhibit 6: Surcharge Limits Satisfied *(continued)* maximize the surcharge to Exhibit 2 and form a smooth boundary which would be reasonable to manage. The results of the new floodway are shown on the exhibit 6 - work map and exhibit 6 - floodway data table. All affected parties must concur with any floodway revision of this type.

7-7. Exhibit Seven: Use of Section 65.12 to Compute new Base Condition. A new floodway is computed using equal conveyance reduction method (HEC-2 floodway computation "ET" record method 4). This computation uses the "project in place" as the new base flood condition and the basis of the 1-foot rise for floodway computations. This procedure could be used for the revision of a floodway when allowable surcharge limits based on the current BFE's are exceeded and no other means can be successfully employed to develop an acceptable floodway having a surcharge of 1 foot or less. (Note that the surcharge in Exhibit 3 exceeds the 1.0 foot maximum allowable.) No insurable structures may be located in the 100-year floodplain defined by the alternative. This insurable structure ban exists in the new 100-year floodplain. The base model used for this exhibit is based on exhibit 1. The three new cross sections (1.10, 2.05, and 2.10) have been added, and the structure was added to the model with "X1" and "GR" records. Encroachments for the floodway have all been re-computed using encroachment method 4 (equal conveyance reduction). Exhibit 7 - input and output shows encroachment method 1 (fixed encroachment stations) being used at a number of cross sections. This was done after the method 4 encroachment established the maximum encroachment allowable to maintain a 1 foot or less increase from the BFE's. The method 1 encroachment was used to shape the floodway removing areas of unreasonable narrowing.

8. Addition of a Bridge in Existing Floodway

8-1. Exhibit Eight: Bridge Cross Sections added to Exhibit 2. This exhibit illustrates establishing new base flood elevations for the addition of a bridge in the floodway. The bridge cross sections (2.06, 2.07, 2.08, and 2.09) have been added to the exhibit 2 model and shown on exhibit 8 - input and output in italicized print. New base flood elevations will be computed using the additional cross sections. These four new cross sections are shown on exhibit 8 - work map detail. The cross sections were added to the model by adding the appropriate "X1" and "GR" records and changing the reach lengths on the "X1" record for cross section 2.10. The reach length from cross section 2.05 to cross section 2.10 remains the same as it was before the bridge cross sections were added. Cross section 2.07 was surveyed at the downstream side of the bridge. This section is used to complete the four cross sections set used in the normal bridge computation. The bridge is modeled using the "BT" record for top of road and low chord elevations. Cross sections 2.05 and 2.10 are near the area

8-1. Exhibit 8: Bridge Cross Sections added *(continued)* necessary to allow contraction and expansion of the flow back to the natural floodplain and keeping the flow lines nearly parallel. Floodway limits at the four additional cross sections were measured from the work maps and inserted in the model with the "ET" record encroachment method 1.

8-2. Exhibit Nine: Adding the Bridge. This exhibit shows the addition of a bridge to the exhibit 8 model with no other adjustments being made. The bridge was added to the model using the "BT" and "X2" records and with the elevation of the low chord in the channel being above the floodway elevation. The model modifications are shown in italicized print. The approaches will be the only obstruction to flow. With the bridge added, the base flood elevations from the bridge upstream to cross section "D" have both raised and lowered by 0.08 feet and 0.06 feet, respectively. (Note: These changes in water surface elevations can be seen in the detailed output on pages 98 and 110 at Section 'C'.)

8-3. Exhibit Ten: "No Rise" Condition. This exhibit illustrates a method of correcting the addition of a bridge in the floodway to a "no rise" condition. This will be accomplished by increasing the conveyance throughout the area of the bridge. The increase in conveyance will continue for some distance upstream and downstream of the bridge. Generally, this method would keep the floodway in the pre-project location. This increase in conveyance is accomplished by excavating the natural channel (modifying the "GR" or "CI" records) sufficiently to decrease the rise in the base flood elevation due to adding the bridge to pre-project conditions. These modifications to the HEC-2 model are shown in exhibit 10 - input and output in italicized print. In this case, the excavation was accomplished through modification of the "GR" records. Localized excavation would be considered noneffective flow and is not acceptable. The amount of conveyance increase which is required will be determined by the re-computation of the BFE's and the floodway to obtain a resulting 100-year water surface elevation and floodway which is comparable to that as shown in exhibit 8. The "no rise" condition retains the same floodway boundaries as the base condition (exhibit 8). Exhibit 10 - floodway data table regulatory base flood elevation is from the computation in exhibit 8 and is the elevation for comparison of the "no rise" condition.

8-4. Exhibit Eleven: Surcharge Limits Satisfied. The floodway is widened such that the allowable surcharge limits are no longer exceeded with the new floodway delineation. Computing the floodway limits using encroachment method 4 (equal conveyance reduction) is not a recommended method since the BFE's used in computing the new limits would be based on the bridge in-place reducing the flow area. This reduced flow area will generally cause an increase in the BFE's, therefore allowing an increase which would be greater than the 1-foot surcharge

8-4. Exhibit Eleven: Surcharge Limits Satisfied (continued) allowed by FEMA regulations. With this in mind, the floodway was re-computed using encroachment method 1 ("ET" fixed encroachment stations). Modifications to the HEC-2 model are shown in exhibit 11 - input and output in italicized print. The 1-foot increase from the BFE's in the base case (exhibit 8) was obtained using encroachment method 1. This method was chosen since the 100-year flood elevation computed in exhibit 11 is not the regulatory BFE, and with an encroachment method 4, the model would be using the new elevation to make the comparison for floodplain reduction. The other reason for using encroachment method 1 is that the change in the floodway in this case was to be accomplished in the left overbank area only. Once the bridge is placed in the floodway, the computation of the 100-year flood elevation will differ from the BFE's due to the loss of conveyance from construction of the bridge in the floodway. The floodway has been shaped to maximize the surcharge to exhibit eight and form a smooth boundary which would be reasonable to manage. The results of the new floodway are shown on exhibit 11 - work map and exhibit 11 - floodway data table. All affected parties must concur with any floodway revision of this type.

8-5. Exhibit Twelve: New Base Condition Computed. This exhibit illustrates the computation of a new floodway using equal conveyance reduction method (HEC-2 floodway computation "ET" record method 4). This computation uses the "project in place" as the new base flood condition and the basis of the 1-foot rise for floodway computations. This procedure could be used for the revision of a floodway when allowable surcharge limits based on the current BFE's are exceeded and no other means can be successfully employed to develop an acceptable floodway having a surcharge of 1 foot or less. No insurable structures may be located in the 100-year floodplain defined by this alternative. This insurable structure ban exists in the new 100-year floodplain. The model base used for this exhibit is on exhibit 8. The four new cross sections (2.06, 2.07, 2.08, and 2.09) have been added, and the bridge was added to the model with the "BT" record. Encroachments for the floodway have all been re-computed using encroachment method 4 (equal conveyance reduction). Exhibit 12 - input and output shows encroachment method 1 (fixed encroachment stations) being used at a number of cross sections. These modifications to the HEC-2 model are shown in exhibit 12 - input and output in italicized print. This was done after method 4 encroachment established the maximum encroachment allowable to maintain a 1 foot or less increase from the BFE's. Method 1 encroachment was used to shape the floodway, removing areas of unreasonable narrowing.

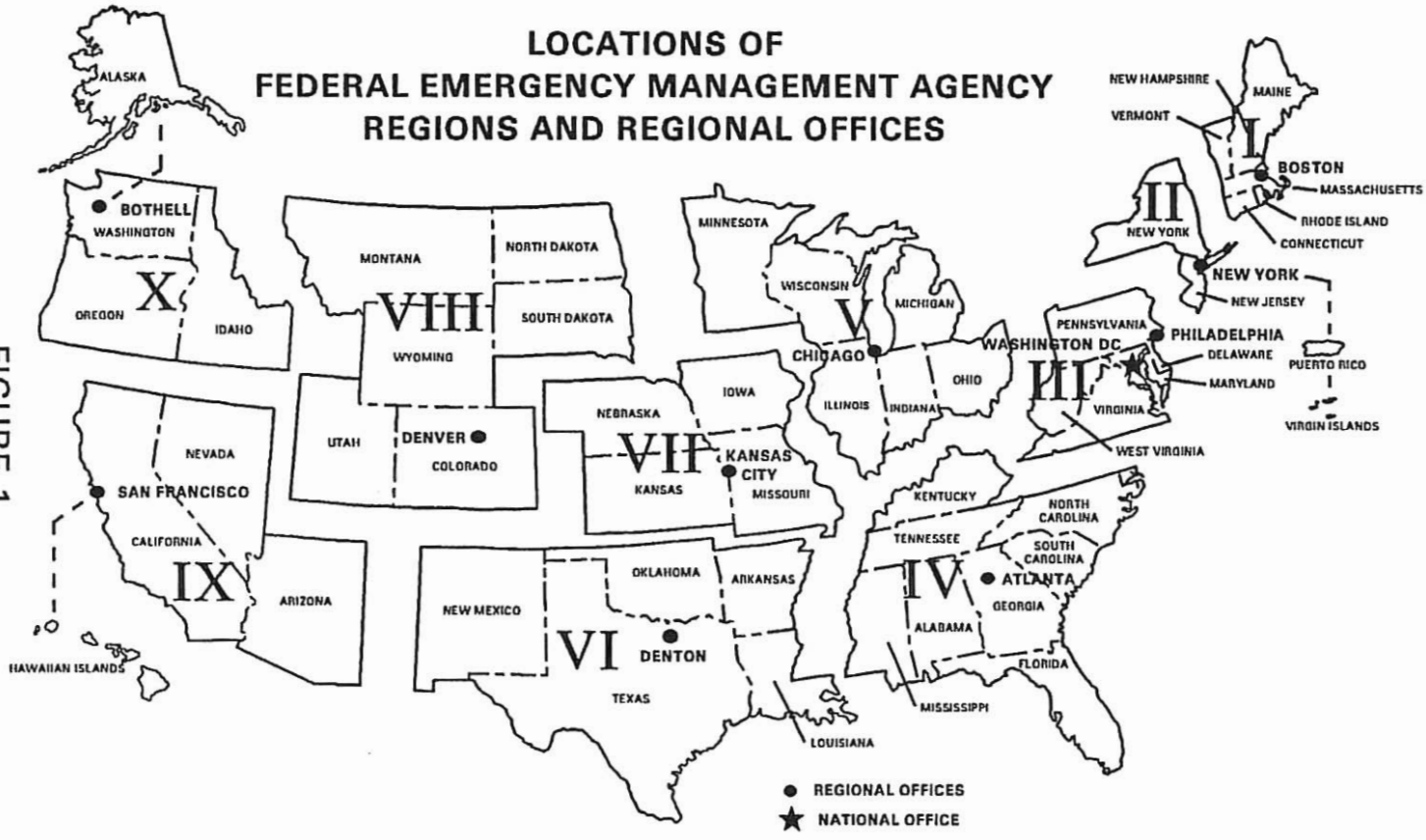

LOCATIONS OF
FEDERAL EMERGENCY MANAGEMENT AGENCY
REGIONS AND REGIONAL OFFICES
ALASKA
BOTHELL
WASHINGTON
OREGON
X
IDAHO
MONTANA
NORTH DAKOTA
VIII
SOUTH DAKOTA
WYOMING
MINNESOTA
WISCONSIN
V
MICHIGAN
CHICAGO
NEBRASKA
IOWA
VII
KANSAS CITY
KANSAS
MISSOURI
ILLINOIS
INDIANA
OHIO
UTAH
DENVER
COLORADO
NEVADA
SAN FRANCISCO
CALIFORNIA
IX
ARIZONA
HAWAIIAN ISLANDS
NEW MEXICO
OKLAHOMA
ARKANSAS
VI
DENTON
TEXAS
LOUISIANA
KENTUCKY
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
IV
ATLANTA
GEORGIA
ALABAMA
MISSISSIPPI
FLORIDA
NEW HAMPSHIRE
MAINE
VERMONT
I
BOSTON
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
II
NEW YORK
NEW YORK
NEW JERSEY
PUERTO RICO
VIRGIN ISLANDS
PENNSYLVANIA
PHILADELPHIA
WASHINGTON DC
DELAWARE
MARYLAND
III
VIRGINIA
WEST VIRGINIA
REGIONAL OFFICES
NATIONAL OFFICE

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

NATIONAL OFFICE

Federal Emergency Management Agency,
Federal Insurance Administration
Office of Risk Assessment
Technical Operations Division
Washington DC 20472

REGIONAL OFFICES

Region I (Boston), 442 J.W. McCormack POCH, Boston, MA 02109, (617) 223-9540

Region II (New York), 26 Federal Plaza, Room 1338, New York, NY 10278, (212) 225-7208

Region III (Philadelphia), Liberty Square Building (2nd Floor), 105 S. Seventh Street, Philadelphia, PA 19106, (215) 931-5500

Region IV (Atlanta), Suite 700, 1371 Peachtree Street, N.E., Atlanta, GA 30309, (404) 853-4200

Region V (Chicago), 175 West Jackson (4th Floor), Chicago, IL 60604-2698, (312) 408-5500

Region VI (Denton), Federal Regional Center, Room 206, 800 North Loop 288, Denton, TX 76201-3698, (817) 898-9399

Region VII (Kansas City), 911 Walnut Street, Room 200, Kansas City, MO 64106, (816) 283-7061

Region VIII (Denver), Denver Federal Center, Building 710, Box 25267, Denver, CO 80225-0267, (303) 235-4811

Region IX (San Francisco), Building 105, Presidio of San Francisco, San Francisco, CA 94129, (415) 923-7100

Region X (Bothell), Federal Regional Center, 130 228th Street, S.W., Bothell, WA 98021-9796, (206)481-8800

FIGURE 2

REFERENCES

1. Federal Emergency Management Agency, **Procedures for Compliance with Floodway Regulations**, May 1990

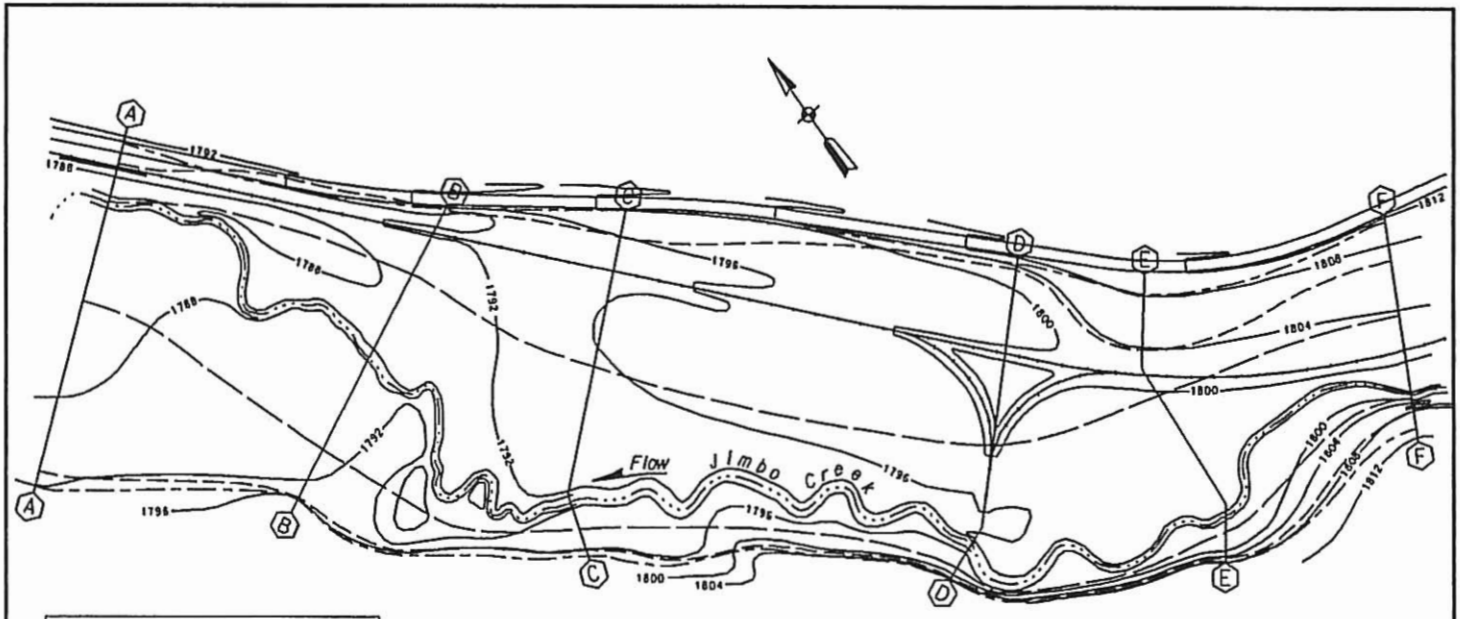
2. U. S. Army Corps of Engineers Hydrologic Engineering Center, **HEC-2 Water Surface Profiles**, September 1990

3. U. S. Geological Survey, **Water Supply Paper 1849**, 1967

4. Federal Emergency Management Agency, **Guidelines and Specifications for Study Contractors**, March 1991

EXHIBIT ONE
Original FEMA Model

EXHIBIT 1 – WORK MAP



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

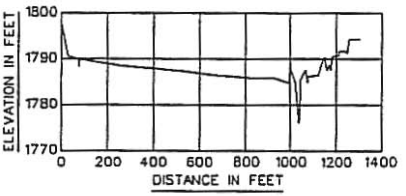
100-YEAR FLOODPLAIN

500-YEAR FLOODPLAIN

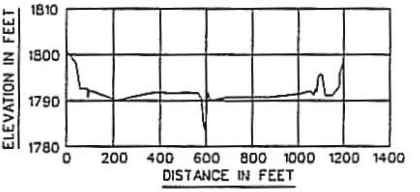
NOTE: BASE FLOOD ELEVATIONS AND CENTERLINE STATIONING HAVE BEEN DELETED FOR CLARITY.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

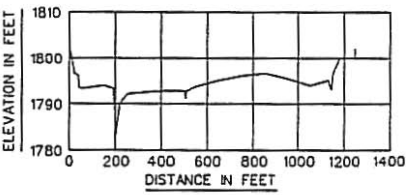
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP



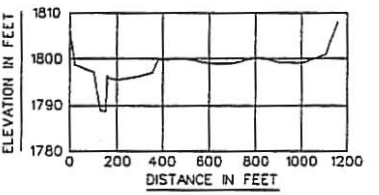
CROSS SECTION A



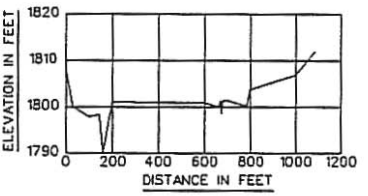
CROSS SECTION B



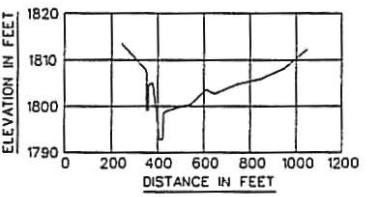
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

EXHIBIT 1 – CROSS SECTIONS

EXHIBIT 1 – PROFILES

EXHIBIT 1 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
B	1270	681	2589	6.0	1793.6	1793.6	1794.6	1.0
C	2576	580	2518	6.1	1796.8	1796.8	1797.3	0.5
D	4236	450	2497	6.2	1801.4	1801.4	1802.3	0.9
E	5346	541	2618	5.9	1803.9	1803.9	1804.9	1.0
F	6261	289	2084	7.4	1806.7	1806.7	1807.7	1.0

[1] Feet above limit of detailed study.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

```
**********************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**********************************

T1      100-YR FLOOD - FEMA ARCHIVE DATA
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 1

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0       2                                                 -1                1789.00
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        1                 -1                                                -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38        43        39        42         1         2        25        26        53        54
       52       200

QT         5     15460     15460      2370     10600     51000
NC      .030      .030      .040       .10       .30
ET                          10.40
          FIELD SURVEYED SECTION 1 = FIS SECTION A
X1      1.00        34    1023.0    1047.0        .0        .0        .0                            0
GR   1798.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR   1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR   1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR   1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR   1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR   1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR   1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                          7.40
          FIELD SURVEYED SECTION 2 = FIS SECTION B
X1      2.00        38     580.0     608.0    1015.0    1070.0    1270.0
GR   1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR   1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR   1791.5     567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR   1784.0     598.0    1785.3     600.0    1787.4     601.0    1791.8     608.0    1789.9     619.0
GR   1790.5     683.0    1790.6     720.0    1790.6     750.0    1790.7     880.0    1791.4    1005.0
GR   1792.1    1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0    1795.2    1087.0
GR   1795.8    1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0    1793.0    1178.0
GR   1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

NC      .045      .045      .040       .10       .30
ET                          9.10                                                    110.0      690.0
          FIELD SURVEYED SECTION 3 = FIS SECTION C
X1      3.00        29     192.0     217.0    1010.0     705.0    1306.0                            0
GR   1803.1        .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3      53.0
GR   1793.9     153.0    1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6     217.0
GR   1789.9     218.0    1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9     503.0
GR   1791.3     508.0    1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0     753.0
GR   1796.5     853.0    1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3    1144.0
GR   1796.5    1153.0    1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                          9.10                                                     50.0      500.0
          FIELD SURVEYED SECTION 4 = FIS SECTION D
X1      4.00        27     100.0     160.0    1300.0    1420.0    1660.0                            0
GR   1807.2        .0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0     130.0
GR   1788.7     139.0    1788.7     151.0    1796.3     160.0    1795.7     167.0    1795.4     200.0
GR   1796.2     300.0    1797.0     356.0    1799.8     381.0    1799.6     400.0    1800.1     478.0
GR   1799.9     500.0    1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0     832.0
GR   1799.3     900.0    1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0    1131.0
GR   1805.0    1140.0    1808.0    1162.0

ET                          10.40
          FIELD SURVEYED SECTION 5 = FIS SECTION E
X1      5.00        24     144.0     199.0     980.0     700.0    1110.0                            0
GR   1808.3        .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9     156.0
GR   1750.1     161.0    1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9     399.0
GR   1800.9     499.0    1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5     676.0
GR   1801.3     682.0    1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4     787.0
GR   1803.5     799.0    1805.3     899.0    1806.8     999.0    1811.9    1085.0

ET                          6.40
          FIELD SURVEYED SECTION 6 = FIS SECTION F
X1      6.00        21     399.0     430.0     855.0     860.0     915.0                            0
GR   1813.5     246.0    1808.1     346.0    1807.5     350.0    1799.2     355.0    1799.2     359.0
GR   1804.6     363.0    1804.9     371.0    1805.0     378.0    1798.3     399.0    1793.3     407.0
GR   1792.6     416.0    1793.0     423.0    1798.6     430.0    1799.0     446.0    1800.4     546.0
GR   1803.6     607.0    1802.7     646.0    1804.8     746.0    1805.9     846.0    1808.1     946.0
GR   1812.3    1046.0
```

EXHIBIT 1 - HEC2 INPUT & OUTPUT

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTH	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 1.000
3265 DIVIDED FLOW
FIELD SURVEYED SECTION 1 = FIS SECTION A

1.000	12.90	1789.00	1788.72	1789.00	1789.79	.79	.00	.00	1784.50
15460.0	11802.0	2098.7	1559.3	1774.4	216.6	245.0	.0	.0	1785.50
.00	6.65	9.69	6.36	.030	.040	.030	.000	1776.10	76.07
.005099	0.	0.	0.	0	5	0	.00	978.44	1179.00

*SECNO 2.000
3265 DIVIDED FLOW
FIELD SURVEYED SECTION 2 = FIS SECTION B

2.000	9.92	1793.62	1792.92	.00	1794.10	.47	4.28	.03	1790.40
15460.0	6063.6	1392.1	8004.3	1203.6	196.8	1440.2	61.4	24.7	1791.80
.05	5.04	7.07	5.56	.030	.040	.030	.000	1783.70	56.21
.003270	1015.	1270.	1070.	4	14	0	.00	1096.50	1179.11

CCHV= .100 CEHV= .300
*SECNO 3.000
FIELD SURVEYED SECTION 3 = FIS SECTION C

3.000	13.19	1796.79	1795.92	.00	1797.26	.47	3.16	.00	1793.20
15460.0	2248.0	2001.4	11210.6	490.3	217.5	2370.5	118.1	45.6	1788.60
.10	4.58	9.20	4.73	.045	.040	.045	.000	1783.60	24.30
.004237	1010.	1306.	705.	2	15	0	.00	1130.94	1155.24

*SECNO 4.000
FIELD SURVEYED SECTION 4 = FIS SECTION D

4.000	12.75	1801.45	1800.49	.00	1801.93	.48	4.67	.00	1797.10
15460.0	1112.5	4949.2	9398.3	294.6	599.1	2546.3	225.5	81.9	1796.30
.18	3.78	8.26	3.69	.045	.040	.045	.000	1788.70	12.44
.002499	1300.	1660.	1420.	3	13	0	.00	1103.27	1115.71

*SECNO 5.000
FIELD SURVEYED SECTION 5 = FIS SECTION E

5.000	13.80	1803.90	1802.89	.00	1804.47	.58	2.51	.03	1798.30
15460.0	3765.2	4187.4	7507.4	645.5	476.2	1842.9	285.1	98.4	1801.00
.22	5.83	8.79	4.07	.045	.040	.045	.000	1790.10	15.73
.003415	980.	1110.	700.	3	5	0	.00	805.27	821.00

*SECNO 6.000
FIELD SURVEYED SECTION 6 = FIS SECTION F

6.000	14.14	1806.74	1805.70	.00	1807.67	.93	3.09	.10	1798.30
15460.0	1061.8	4339.2	10059.0	202.0	385.8	1714.3	337.5	111.7	1798.60
.25	5.26	11.25	5.87	.045	.040	.045	.000	1792.60	350.46
.003656	855.	915.	860.	2	10	0	.00	533.73	884.19

```
T1      FLOODWAY - FEMA ARCHIVE DATA
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 1

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                               -1                1790.00

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBH       CHNIM     ITRACE
      2                   -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
 2800 NAT Q1=    2164.95 WSELK=    1789.00 ENC Q1=    2164.95 WSEL=    1790.00 RATIO=    .0000
 NAT Q1=    3695. RATIOS LOB, CH, ROB=    .7984    .0948    .1069 WSEL=    1790.00

3470 ENCROACHMENT STATIONS=      687.6    1047.0 TYPE=      4 TARGET=         .414
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.0    2316.0        .0    1411.4     240.6        .0        .0        .0   1785.50
      .00      9.31      9.63       .00       .030      .040      .000      .000   1776.10    687.56
   .005241      0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 2.000
 2800 NAT Q1=    2703.57 WSELK=    1793.62 ENC Q1=    2703.57 WSEL=    1794.32 RATIO=    .0000
 NAT Q1=    3971. RATIOS LOB, CH, ROB=    .4122    .0718    .5160 WSEL=    1794.32
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.44
3470 ENCROACHMENT STATIONS=      244.4     925.0 TYPE=      4 TARGET=         .319
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.92   1794.62   1793.41   1793.62   1795.18       .56      3.74       .08   1790.40
   15460.0    5887.6    1526.5    8045.9    1085.3     224.5    1279.2      51.6      12.5   1791.80
      .05      5.42      6.80      6.29       .030      .040      .030      .000   1783.70    244.36
   .002536    1015.     1270.     1070.         3        18         0       .00    680.62    924.98

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3470 ENCROACHMENT STATIONS=      110.0     690.0 TYPE=      1 TARGET=      580.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.73   1797.33   1796.11   1796.79   1797.99       .66      2.78       .03   1793.20
   15460.0    1520.2    2250.9   11688.9     300.8     231.4    1985.9     100.9      24.5   1788.60
      .09      5.05      9.73      5.89       .045      .040      .045      .000   1783.60    110.00
   .004365    1010.     1306.      705.         3        12         0       .00    580.00    690.00

*SECNO 4.000
3470 ENCROACHMENT STATIONS=       50.0     500.0 TYPE=      1 TARGET=      450.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.57   1802.27   1800.40   1801.45   1803.02       .75      5.00       .03   1797.10
   15460.0    1064.7    5882.7    8512.6     233.6     648.3    1615.3     184.3      41.3   1796.30
      .15      4.56      9.07      5.27       .045      .040      .045      .000   1788.70     50.00
   .002714    1300.     1660.     1420.         2         9         0       .00    450.00    500.00

*SECNO 5.000
 2800 NAT Q1=    2645.37 WSELK=    1803.90 ENC Q1=    2645.37 WSEL=    1804.90 RATIO=    .0000
 NAT Q1=    3787. RATIOS LOB, CH, ROB=    .2274    .2270    .5456 WSEL=    1804.90
3470 ENCROACHMENT STATIONS=      104.1     644.9 TYPE=      4 TARGET=         .301
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     14.82   1804.92   1803.63   1803.90   1805.64       .71      2.62       .00   1798.30
   15460.0    1702.5    5000.4    8757.2     274.6     532.6    1811.3     232.6      50.1   1801.00
      .18      6.20      9.39      4.83       .045      .040      .045      .000   1790.10    104.14
   .003353     980.     1110.      700.         3         6         0       .00    540.74    644.88

*SECNO 6.000
 2800 NAT Q1=    2556.88 WSELK=    1806.74 ENC Q1=    2556.88 WSEL=    1807.34 RATIO=    .0000
 NAT Q1=    3021. RATIOS LOB, CH, ROB=    .0710    .2569    .6720 WSEL=    1807.34
3470 ENCROACHMENT STATIONS=      399.0     688.3 TYPE=      4 TARGET=         .154
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     15.13   1807.73   1805.38   1806.74   1808.65       .92      2.95       .06   1798.30
   15460.0        .0    4035.3   11424.7        .0     416.4    1667.8     279.6      58.4   1798.60
      .22       .00      9.69      6.85       .000      .040      .045      .000   1792.60    399.00
   .003384     855.      915.      860.         2         9         0       .00    289.33    688.33
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EXHIBIT 1 - HEC2 INPUT & OUTPUT

```
T1      10-YR FLOOD - FEMA ARCHIVE DATA
T2      JIMBO CREEK, CITY OF YURINA, WA (REPATRUBL COUNTY)
T3      EXHIBIT 1

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       4                                                 -1                1786.70

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        3               -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTH       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 3
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     10.60   1786.70   1786.68   1786.70   1787.21      .51       .00       .00   1784.50
    2370.0    1076.1    1198.3      95.6     322.6     161.4      39.2        .0        .0   1785.50
      .00      3.34      7.42      2.44      .030      .040      .030      .000   1776.10    625.13
   .004432        0.        0.        0.         0         6         0      .00    475.31   1123.29

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000      7.86   1791.56   1791.45       .00   1791.84      .28      4.60       .02   1790.40
    2370.0     473.9     838.9    1057.1     188.6     139.4     369.4      15.4      15.1   1791.80
      .08      2.51      6.02      2.86      .030      .040      .030      .000   1783.70     91.55
   .003699     1015.     1270.     1070.         2        13         0      .00    778.51   1155.51

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     10.68   1794.28   1793.60       .00   1794.48      .20      2.63       .01   1793.20
    2370.0     127.1     811.3    1431.6     104.7     155.3     618.7      31.2      28.2   1788.60
      .16      1.21      5.23      2.31      .045      .040      .045      .000   1783.60     43.20
   .002144     1010.     1306.      705.         3        12         0      .00    602.01   1146.78

*SECNO 4.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000      8.68   1797.38   1794.65       .00   1797.72      .34      3.20       .04   1797.10
    2370.0        .8    1845.6     523.6       2.0     355.0     273.2      57.0      42.5   1796.30
      .26       .40      5.20      1.92      .045      .040      .045      .000   1788.70     85.78
   .001988     1300.     1660.     1420.         3        11         0      .00    273.65    359.43

*SECNO 5.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000      9.99   1800.09   1799.12       .00   1800.67      .58      2.88       .07   1798.30
    2370.0     544.1    1817.5       8.4     183.5     268.5       5.4      69.3      47.1   1801.00
      .31      2.97      6.77      1.57      .045      .040      .045      .000   1790.10     29.31
   .004018      980.     1110.      700.         3         8         0      .00    180.69    679.41

*SECNO 6.000
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.65
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000      9.85   1802.45   1800.92       .00   1802.75      .30      2.05       .01   1798.30
    2370.0      98.4    1361.2     910.4      47.1     252.8     373.3      80.8      50.9   1798.60
      .37      2.09      5.39      2.44      .045      .040      .045      .000   1792.60     353.04
   .001473      855.      915.      860.         2        10         0      .00    207.42     585.05
```

EXHIBIT 1 - HEC2 INPUT & OUTPUT

```
T1      50-YR FLOOD - FEMA ARCHIVE DATA
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 1

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ
      -10       5                                           -1                1788.60
J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE
        4              -1                                    -1

    SECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    L-BANK ELEV
    Q         QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA      R-BANK ELEV
    TIME      VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN    SSTA
    SLOPE     XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID   ENDST

*PROF 4

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
    1.000    12.50  1788.60  1788.13  1788.60  1789.15     .55      .00      .00  1784.50
10600.0   7852.2   1717.6   1030.2   1447.9    207.0    200.3       .0       .0  1785.50
     .00     5.42     8.30     5.14     .030     .040     .030     .000  1776.10    76.60
 .003973       0.       0.       0.        0        8        0      .00   924.62  1178.43

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
    2.000     9.25  1792.95  1792.51      .00  1793.37      .42     4.20      .01  1790.40
10600.0   3815.5   1286.2   5498.4    854.0    178.1   1077.5     48.1     24.0  1791.80
     .06     4.47     7.22     5.10     .030     .040     .030     .000  1783.70    58.28
 .003895   1015.    1270.    1070.        2       14        0      .00  1088.88  1177.27

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 3 = FIS SECTION C
    3.000    12.62  1796.22  1795.35      .00  1796.58      .36     3.21      .01  1793.20
10600.0   1478.5   1638.3   7483.2    397.8    203.5   1854.7     92.1     44.0  1788.60
     .11     3.72     8.05     4.03     .045     .040     .045     .000  1783.60    33.26
 .003548   1010.    1306.     705.        3       15        0      .00  1038.15  1152.21

*SECNO 4.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
    4.000    11.85  1800.55  1799.66      .00  1801.04      .49     4.42      .04  1797.10
10600.0    685.9   4279.6   5634.5    216.8    545.0   1692.5    173.3     78.3  1796.30
     .19     3.16     7.85     3.33     .045     .040     .045     .000  1788.70    14.92
 .002562   1300.    1660.    1420.        3        9        0      .00  1071.95  1086.87

*SECNO 5.000
        FIELD SURVEYED SECTION 5 = FIS SECTION E
    5.000    13.00  1803.10  1802.35      .00  1803.59      .49     2.55      .00  1798.30
10600.0   2768.9   3440.1   4391.0    543.6    432.0   1357.1    218.8     94.4  1801.00
     .24     5.09     7.96     3.24     .045     .040     .045     .000  1790.10    18.60
 .003188    980.    1110.     700.        2        9        0      .00   778.83   797.43

*SECNO 6.000
        FIELD SURVEYED SECTION 6 = FIS SECTION F
    6.000    13.10  1805.70  1804.32      .00  1806.47      .77     2.80      .08  1798.30
10600.0    665.6   3512.0   6422.5    152.1    353.7   1269.2    259.8    106.8  1798.60
     .27     4.38     9.93     5.06     .045     .040     .045     .000  1792.60   351.08
 .003199    855.     915.     860.        2       15        0      .00   477.16   828.24
```

EXHIBIT 1 - HEC2 INPUT & OUTPUT

```
T1      500-YR FLOOD - FEMA ARCHIVE DATA
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 1

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ
      -10       6                                          -1                1792.00

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE
        5               -1                                  -1

    SECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    L-BANK ELEV
    Q         QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA      R-BANK ELEV
    TIME      VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN    SSTA
    SLOPE     XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID   ENDST

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     15.90   1792.00   1791.14   1792.00   1793.28      1.28       .00       .00   1784.50
   51000.0   42191.0    2953.9    5855.1    4659.4     288.6     690.3        .0        .0   1785.50
      .00      9.06     10.24      8.48      .030      .040      .030      .000   1776.10     23.28
  .003881        0.        0.        0.         0         9         0       .00   1227.41   1250.69

*SECNO 2.000
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     12.41   1796.11   1794.97       .00   1797.40      1.29      4.12       .00   1790.40
   51000.0   22298.7    2543.2   26158.1    2510.2     266.2    2819.3     134.7      28.2   1791.80
      .03      8.88      9.56      9.28      .030      .040      .030      .000   1783.70     48.52
  .003991      1015.     1270.     1070.         2        13         0       .00   1135.97   1184.49

CCHV=     .100 CEHV=     .300
*SECNO 3.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     16.42   1800.02   1798.25       .00   1800.93       .92      3.50       .04   1793.20
   51000.0    7773.2    3476.8   39750.0    1053.2     298.5    5453.2     251.4      50.2   1788.60
      .06      7.38     11.65      7.29      .045      .040      .045      .000   1783.60     11.85
  .004456      1010.     1306.      705.         2        12         0       .00   1234.56   1246.41

*SECNO 4.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     16.47   1805.17   1803.00       .00   1805.98       .82      5.04       .01   1797.10
   51000.0    4061.3    8926.1   38012.5     637.2     821.6    6133.2     486.9      88.7   1796.30
      .12      6.37     10.86      6.20      .045      .040      .045      .000   1788.70      3.60
  .002837      1300.     1660.     1420.         2        13         0       .00   1137.58   1141.18

*SECNO 5.000
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     17.56   1807.66   1805.88       .00   1808.77      1.11      2.70       .09   1798.30
   51000.0   10100.3    8252.1   32647.6    1153.3     683.1    4588.6     612.3     107.3   1801.00
      .15      8.76     12.08      7.11      .045      .040      .045      .000   1790.10      2.29
  .003984       980.     1110.      700.         2        10         0       .00   1011.18   1013.47

*SECNO 6.000
3301 HV CHANGED MORE THAN HVINS
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     18.47   1811.07   1809.89       .00   1812.90      1.84      3.92       .22   1798.30
   51000.0    4176.7    8471.2   38352.1     508.4     519.9    4009.9     726.1      124.5   1798.60
      .17      8.21     16.29      9.56      .045      .040      .045      .000   1792.60     291.05
  .005153       855.      915.      860.         2         6         0       .00   725.60    1016.65
```

EXHIBIT 1 - HEC2 INPUT & OUTPUT

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

EXHIBIT 1

SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.03	9.63	687.56	1047.00	1.00
	1.000	2370.00	.00	1776.10	1786.70	1786.68	523.13	7.42	625.13	1123.29	.00
	1.000	10600.00	.00	1776.10	1788.60	1788.13	1855.18	8.30	76.60	1178.43	.00
	1.000	51000.00	.00	1776.10	1792.00	1791.14	5638.27	10.24	23.28	1250.69	.00
	2.000	15460.00	1270.00	1783.70	1793.62	1792.92	2840.65	7.07	56.21	1179.11	.00
*	2.000	15460.00	1270.00	1783.70	1794.62	1793.41	2588.97	6.80	244.36	924.98	1.00
	2.000	2370.00	1270.00	1783.70	1791.56	1791.45	697.43	6.02	91.55	1155.51	.00
	2.000	10600.00	1270.00	1783.70	1792.95	1792.51	2109.63	7.22	58.28	1177.27	.00
	2.000	51000.00	1270.00	1783.70	1796.11	1794.97	5595.69	9.56	48.52	1184.49	.00
	3.000	15460.00	1306.00	1783.60	1796.79	1795.92	3078.32	9.20	24.30	1155.24	.00
	3.000	15460.00	1306.00	1783.60	1797.33	1796.11	2518.10	9.73	110.00	690.00	.55
	3.000	2370.00	1306.00	1783.60	1794.28	1793.60	878.68	5.23	43.20	1146.78	.00
	3.000	10600.00	1306.00	1783.60	1796.22	1795.35	2455.94	8.05	33.26	1152.21	.00
	3.000	51000.00	1306.00	1783.60	1800.02	1798.25	6804.90	11.65	11.85	1246.41	.00
	4.000	15460.00	1660.00	1788.70	1801.45	1800.49	3439.98	8.26	12.44	1115.71	.00
	4.000	15460.00	1660.00	1788.70	1802.27	1800.40	2497.21	9.07	50.00	500.00	.82
	4.000	2370.00	1660.00	1788.70	1797.38	1794.65	630.26	5.20	85.78	359.43	.00
	4.000	10600.00	1660.00	1788.70	1800.55	1799.66	2454.25	7.85	14.92	1086.87	.00
	4.000	51000.00	1660.00	1788.70	1805.17	1803.00	7591.98	10.86	3.60	1141.18	.00
	5.000	15460.00	1110.00	1790.10	1803.90	1802.89	2964.53	8.79	15.73	821.00	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.63	2618.50	9.39	104.14	644.88	1.03
	5.000	2370.00	1110.00	1790.10	1800.09	1799.12	457.28	6.77	29.31	679.41	.00
	5.000	10600.00	1110.00	1790.10	1803.10	1802.35	2332.79	7.96	18.60	797.43	.00
	5.000	51000.00	1110.00	1790.10	1807.66	1805.88	6424.99	12.08	2.29	1013.47	.00
	6.000	15460.00	915.00	1792.60	1806.74	1805.70	2302.12	11.25	350.46	884.19	.00
	6.000	15460.00	915.00	1792.60	1807.73	1805.38	2084.25	9.69	399.00	688.33	.99
*	6.000	2370.00	915.00	1792.60	1802.45	1800.92	673.07	5.39	353.04	585.05	.00
	6.000	10600.00	915.00	1792.60	1805.70	1804.32	1774.99	9.93	351.08	828.24	.00
	6.000	51000.00	915.00	1792.60	1811.07	1809.89	5038.25	16.29	291.05	1016.65	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

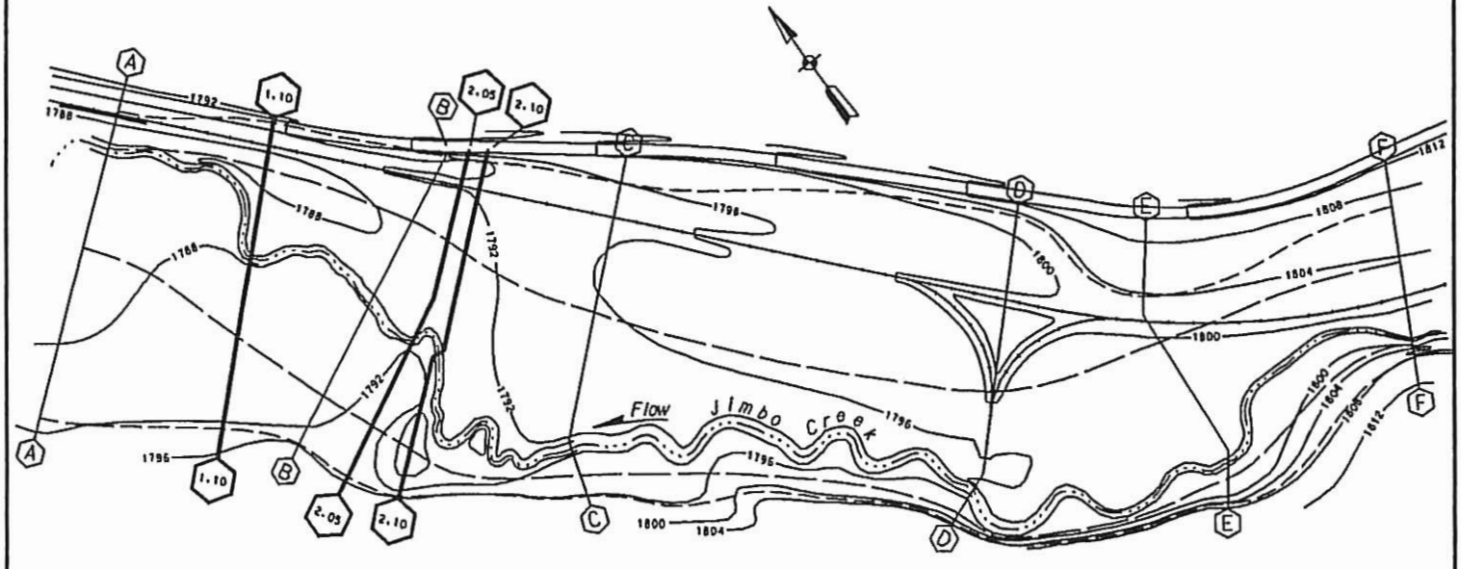
WARNING SECNO= 6.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 1
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
2.000	681.	2589.	6.0	1794.6	1793.6	1.0
3.000	580.	2518.	6.1	1797.3	1796.8	.5
4.000	450.	2497.	6.2	1802.3	1801.5	.8
5.000	541.	2618.	5.9	1804.9	1803.9	1.0
6.000	289.	2084.	7.4	1807.7	1806.7	1.0

EXHIBIT TWO

Additional Cross Sections
New Base Condition

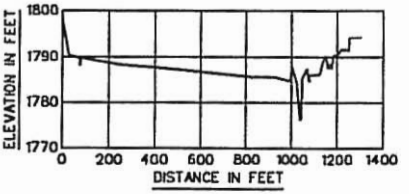


NOTES:

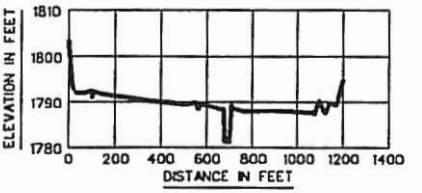
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 1.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

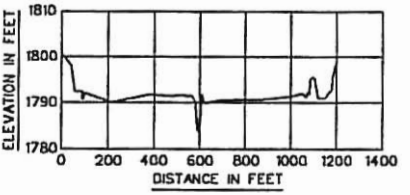
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP



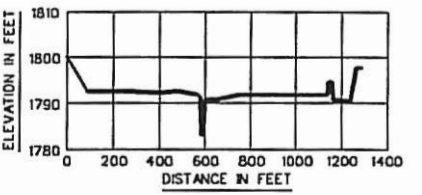
CROSS SECTION A



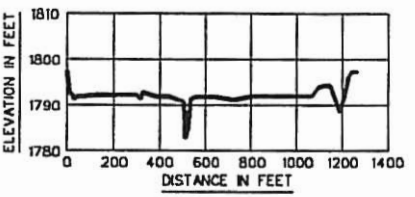
CROSS SECTION 1.10



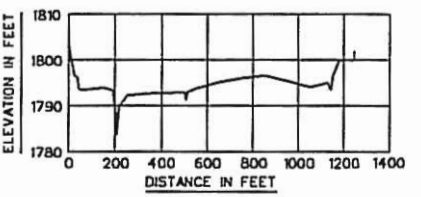
CROSS SECTION B



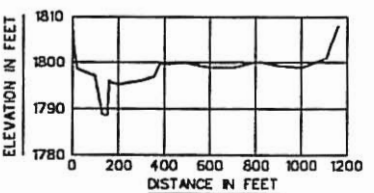
CROSS SECTION 2.05



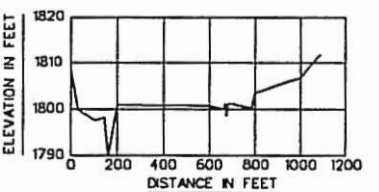
CROSS SECTION 2.10



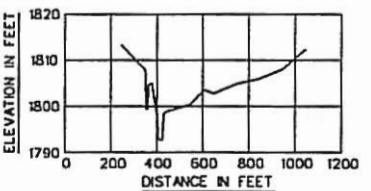
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS
OR REVISIONS TO EXHIBIT 1.

EXHIBIT 2 – CROSS SECTIONS

EXHIBIT 2 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	592	2672	5.8	1791.7	1791.7	1792.8	1.1
B	1270	681	2147	7.2	1793.4	1793.4	1794.0	0.6
2.05	1476	697	2105	7.3	1794.2	1794.2	1794.8	0.6
2.10	1626	720	2942	5.3	1794.8	1794.8	1795.6	0.8
C	2576	580	2357	6.6	1796.2	1796.2	1797.0	0.8
D	4236	450	2547	6.1	1801.7	1801.7	1802.4	0.7
E	5346	541	2615	5.9	1803.8	1803.8	1804.9	1.1
F	6261	289	2086	7.4	1806.8	1806.8	1807.7	0.9

[1] Feet above limit of detailed study.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 1 input data.

```
**********************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**********************************

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURIINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 2
T4      SECTIONS ADDED ONLY - NO ENCROACHMENT CHANGES

J1  ICHECK      INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0         2                                       -1                1789.00
J2  NPROF       IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        1                   -1                                      -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38        43        39        42         1         2        25        26        53        54
       52       200

QT       5     15460     15460      2370     10600     51000
NC    .030      .030      .040       .10       .30
ET                         9.10                                                    687.56    1047.00
        FIELD SURVEYED SECTION 1 = FIS SECTION A
X1     1.00        34    1023.0    1047.0        .0        .0        .0                            0
GR  1798.1         .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR  1788.4       255.0   1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR  1785.6       932.0   1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR  1776.5      1041.0   1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR  1786.3      1121.0   1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR  1788.7      1169.0   1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR  1791.7      1245.0   1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                         9.10                                                    426       1018
        ADDITIONAL FIELD SURVEYED SECTION 1.1
X1     1.10        42     675.0     710.0     540.0     759.0
GR  1803.4         .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR  1792.5       100.0   1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR  1790.9       272.0   1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR  1788.3       562.0   1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR  1781.2       681.0   1781.3     696.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR  1789.6       710.0   1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR  1787.9       981.0   1787.7    1064.0    1788.2    1069.0    1787.2    1075.0    1790.1    1088.0
GR  1790.5      1094.0   1790.3    1099.0    1788.1    1113.0    1787.4    1123.0    1789.8    1139.0
GR  1789.4      1172.0   1795.0    1200.0

ET                         9.10                                                    244.36    924.98
        FIELD SURVEYED SECTION 2 = FIS SECTION B
X1     2.00        38     580.0     608.0     340.0     530.0     511.0                            0
GR  1800.9         .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR  1792.2       100.0   1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR  1791.5       567.0   1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR  1784.0       598.0   1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR  1790.5       683.0   1790.6     720.0    1790.6     750.0    1790.7     880.0    1791.4    1005.0
GR  1792.1      1053.0   1791.2    1068.0    1792.5    1074.0    1791.9    1080.0    1795.2    1087.0
GR  1795.8      1096.0   1795.4    1104.0    1791.0    1119.0    1790.9    1145.0    1793.0    1178.0
GR  1795.8      1183.0   1797.6    1192.0    1798.6    1198.0

ET                         9.10                                                    266       963
        ADDITIONAL FIELD SURVEYED SECTION 2.05
X1     2.05        23     570.0     598.0     215.0     150.0     206.0                            0
GR  1800.2         .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR  1791.9       570.0   1791.5     576.0    1783.2     585.0    1783.2     592.0    1790.9     598.0
GR  1790.7       640.0   1791.9     750.0    1791.9     790.0    1791.9     905.0    1791.9    1005.0
GR  1791.9      1115.0   1791.9    1137.0    1794.7    1143.0    1794.7    1155.0    1790.7    1163.0
GR  1790.5      1240.0   1797.7    1264.0    1797.7    1288.0

ET                         9.10                                                    177       897
        ADDITIONAL FIELD SURVEYED SECTION 2.1
X1     2.10        35     504.0     537.0     180.0      70.0     150.0                            0
GR  1797.3         .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8      41.0
GR  1792.1       122.0   1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7     327.0
GR  1791.9       378.0   1791.7     443.0    1790.7     504.0    1786.9     510.0    1782.8     512.0
GR  1784.6       521.0   1784.6     524.0    1787.2     529.0    1790.6     534.0    1791.3     537.0
GR  1791.7       564.0   1791.8     637.0    1791.0     723.0    1791.9     805.0    1791.9     903.0
GR  1791.9       980.0   1791.9    1064.0    1793.9    1096.0    1794.2    1121.0    1794.1    1149.0
GR  1788.6      1189.0   1791.8    1209.0    1796.2    1228.0    1797.1    1241.0    1797.1    1265.0
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EXHIBIT 2 - HEC2 INPUT & OUTPUT

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NC    .045      .045      .040      .10       .30
ET                        9.10                                                  110.00    690.00
          FIELD SURVEYED SECTION 3 = FIS SECTION C
X1   3.00        29      192.0     217.0    615.0     485.0     950.0                          0
GR 1803.1        .0     1796.6      25.0   1796.0      38.0    1793.7      45.0  1793.3     53.0
GR 1793.9     153.0     1793.2     192.0   1788.8     202.0    1783.6     207.0  1788.6    217.0
GR 1789.9     218.0     1792.2     253.0   1792.6     353.0    1792.8     453.0  1792.9    503.0
GR 1791.3     508.0     1792.9     513.0   1793.8     553.0    1795.1     653.0  1796.0    753.0
GR 1796.5     853.0     1795.4     949.0   1794.0    1053.0    1795.0    1131.0  1793.3   1144.0
GR 1796.5    1153.0     1799.9    1180.0   1800.0    1246.4    1802.0    1247.4

ET                        9.10                                                   50.00    500.00
          FIELD SURVEYED SECTION 4 = FIS SECTION D
X1   4.00        27      100.0     160.0   1300.0    1420.0    1660.0                          0
GR 1807.2        .0     1803.8       6.0   1798.7      20.0    1797.1     100.0  1789.0    130.0
GR 1788.7     139.0     1788.7     151.0   1796.3     160.0    1795.7     167.0  1795.4    200.0
GR 1796.2     300.0     1797.0     356.0   1799.8     381.0    1799.6     400.0  1800.1    478.0
GR 1799.9     500.0     1799.0     600.0   1798.9     700.0    1800.2     800.0  1800.0    832.0
GR 1799.3     900.0     1798.9    1000.0   1800.8    1100.0    1801.0    1113.0  1804.0   1131.0
GR 1805.0    1140.0     1808.0    1162.0

ET                        9.10                                                  104.14    644.88
          FIELD SURVEYED SECTION 5 = FIS SECTION E
X1   5.00        24      144.0     199.0    980.0     700.0    1110.0                          0
GR 1808.3        .0     1799.9      30.0   1797.7      99.0    1798.3     144.0  1792.9    156.0
GR 1790.1     161.0     1793.1     171.0   1801.0     199.0    1800.9     299.0  1800.9    399.0
GR 1800.9     499.0     1800.8     599.0   1800.0     662.0    1801.3     671.0  1798.5    676.0
GR 1801.3     682.0     1801.3     699.0   1800.9     726.0    1800.4     764.0  1800.4    787.0
GR 1803.5     799.0     1805.3     899.0   1806.8     999.0    1811.9    1085.0

ET                        9.10                                                  399.00    688.33
          FIELD SURVEYED SECTION 6 = FIS SECTION F
X1   6.00        21      399.0     430.0    855.0     860.0     915.0                          0
GR 1813.5     246.0     1808.1     346.0   1807.5     350.0    1799.2     355.0  1799.2    359.0
GR 1804.6     363.0     1804.9     371.0   1805.0     378.0    1798.3     399.0  1793.3    407.0
GR 1792.6     416.0     1793.0     423.0   1798.6     430.0    1799.0     446.0  1800.4    546.0
GR 1803.6     607.0     1802.7     646.0   1804.8     746.0    1805.9     846.0  1808.1    946.0
GR 1812.3    1046.0
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    SECNO       DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q           QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME        VLOB       VCH        VROB       XNL        XNCH       XNR        WTH        ELMIN      SSTA
    SLOPE       XLOBL      XLCH       XLOBR      ITRIAL     IBC        ICONT      CORAR      TOPWID     ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
   15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0    1785.50
      .00      6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
   .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     10.67   1791.67   1790.96       .00   1792.24       .57      2.43       .02   1788.70
   15460.0    3418.6    2346.5    9694.9     811.5     307.9    1577.7      35.9      14.7    1789.60
      .03      4.21      7.62      6.14      .030      .040      .030      .000   1781.00    101.05
   .002950       675.      759.      540.         2        13         0       .00   1024.35   1183.31

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000      9.66   1793.36   1792.96       .00   1793.96       .59      1.71       .01   1790.40
   15460.0    5897.7    1549.1    8013.2    1064.2     189.4    1295.3      63.6      25.3    1791.80
      .05      5.54      8.18      6.19      .030      .040      .030      .000   1783.70     57.03
   .004606       340.      511.      530.         2         9         0       .00   1093.72   1178.64

*SECNO 2.050
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     10.98   1794.18   1793.68       .00   1794.74       .56       .78       .00   1791.90
   15460.0    3733.2    1490.4   10236.3     824.5     195.8    1653.4      74.3      30.0    1790.90
      .06      4.53      7.61      6.19      .030      .040      .030      .000   1783.20     69.65
   .004228       215.      206.      150.         2         8         0       .00   1168.42   1252.25

*SECNO 2.100
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.59
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     11.95   1794.75   1793.53       .00   1795.04       .29       .28       .03   1790.70
   15460.0    5642.6    1509.8    8307.6    1387.6     270.6    1949.6      82.5      33.2    1791.30
      .07      4.07      5.58      4.26      .030      .040      .030      .000   1782.80      6.88
   .001681       180.      150.       70.         1         6         0       .00   1214.90   1221.78

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .47
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     12.60   1796.20   1795.93       .00   1796.99       .78      1.80       .15   1793.20
   15460.0    2153.3    2400.0   10906.8     395.7     203.1    1843.3     121.4      47.0    1788.60
      .09      5.44     11.81      5.92      .045      .040      .045      .000   1783.60     33.55
   .007656       615.      950.      485.         3         9         0       .00   1034.00   1152.17

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.96
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.04   1801.74   1800.39       .00   1802.13       .39      5.10       .04   1797.10
   15460.0    1133.5    4630.9    9695.6     319.9     616.4    2821.7     223.7      81.8    1796.30
      .18      3.54      7.51      3.44      .045      .040      .045      .000   1788.70     11.65
   .001990      1300.     1660.     1420.         4         9         0       .00   1105.79   1117.44

*SECNO 5.000
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     13.74   1803.84   1802.95       .00   1804.44       .60      2.25       .06   1798.30
   15460.0    3780.5    4231.5    7448.0     638.8     473.3    1810.6     285.6      98.3    1801.00
      .22      5.92      8.94      4.11      .045      .040      .045      .000   1790.10     15.91
   .003559       980.     1110.      700.         3         6         0       .00    802.20    818.11

*SECNO 6.000
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     14.16   1806.76   1805.69       .00   1807.68       .92      3.14       .10   1798.30
   15460.0    1062.9    4328.5   10068.5     202.8     386.3    1721.7     337.8      111.6   1798.60
      .25      5.24     11.21      5.85      .045      .040      .045      .000   1792.60    350.45
   .003622       855.      915.      860.         2        10         0       .00    534.48    884.92
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EXHIBIT 2 - HEC2 INPUT & OUTPUT

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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 2
T4      SECTIONS ADDED ONLY - NO ENCROACHMENT CHANGES

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                               -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIH     ITRACE
      2                 -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
CCHV=    .100 CEHV=    .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
       FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00      .030      .040      .000      .000   1776.10    687.56
  .005241        0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.66
3470 ENCROACHMENT STATIONS=      426.0    1018.0  TYPE=      1  TARGET=      592.000
       ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.84   1792.84   1791.25   1791.67   1793.37       .54      1.93       .08   1788.70
   15460.0   4293.6    2327.4    8839.1     863.0     349.0    1459.8      31.8       7.0   1789.60
      .03      4.98      6.67      6.05      .030      .040      .030      .000   1781.00    426.00
  .001912       675.      759.      540.         3        17         0       .00    592.00   1018.00

*SECNO 2.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .64
3470 ENCROACHMENT STATIONS=      244.4     925.0  TYPE=      1  TARGET=      680.620
       FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.26   1793.96   1793.41   1793.36   1794.79       .83      1.33       .09   1790.40
   15460.0   5509.9    1797.0    8153.1     867.2     206.3    1073.3      57.2      13.4   1791.80
      .05      6.35      8.71      7.60      .030      .040      .030      .000   1783.70    244.36
  .004658       340.      511.      530.         2        14         0       .00    680.62    924.98

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      266.0     963.0  TYPE=      1  TARGET=      697.000
       ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.60   1794.80   1794.26   1794.18   1795.67       .87       .87       .01   1791.90
   15460.0   4525.7    1889.1    9045.3     721.5     213.3    1170.6      66.0      16.3   1790.90
      .06      6.27      8.85      7.73      .030      .040      .030      .000   1783.20    266.00
  .005105       215.      206.      150.         2         8         0       .00    697.00    963.00

*SECNO 2.100
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.68
3470 ENCROACHMENT STATIONS=      177.0     897.0  TYPE=      1  TARGET=      720.000
       ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.81   1795.61   1794.04   1794.75   1796.04       .43       .33       .04   1790.70
   15460.0   6052.9    1841.5    7565.7    1206.2     298.7    1436.9      73.0      18.3   1791.30
      .06      5.02      6.17      5.27      .030      .040      .030      .000   1782.80    177.00
  .001800       180.      150.       70.         2        10         0       .00    720.00    897.00

CCHV=    .100 CEHV=    .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .58
3470 ENCROACHMENT STATIONS=      110.0     690.0  TYPE=      1  TARGET=      580.000
       FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.45   1797.05   1796.16   1796.20   1797.81       .76      1.67       .10   1793.20
   15460.0   1479.0    2368.7   11612.3     278.0     224.4    1854.2     107.5      26.4   1788.60
      .09      5.32     10.56      6.26      .045      .040      .045      .000   1783.60    110.00
  .005352       615.      950.      485.         2         6         0       .00    580.00    690.00

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.44
3470 ENCROACHMENT STATIONS=       50.0     500.0  TYPE=      1  TARGET=      450.000
       FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.68   1802.38   1800.37   1801.74   1803.10       .71      5.28       .01   1797.10
   15460.0   1074.9    5816.7    8568.4     239.2     655.0    1653.2     189.1      43.3   1796.30
      .15      4.49      8.88      5.18      .045      .040      .045      .000   1788.70     50.00
  .002564       1300.     1660.     1420.        2         9         0       .00    450.00    500.00
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*SECNO 5.000
3470 ENCROACHMENT STATIONS=      104.1     644.9  TYPE=      1  TARGET=      540.740
        FIELD SURVEYED SECTION 5 = FIS SECTION E
   5.000     14.82   1804.92   1803.67   1803.84   1805.64       .72      2.54       .00   1798.30
 15460.0    1703.4    5005.3    8751.3     274.3     532.2    1808.2     237.8      52.1   1801.00
     .19      6.21      9.40      4.84      .045      .040      .045      .000   1790.10    104.14
 .003368      980.     1110.      700.         2         6         0       .00    540.74    644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0     688.3  TYPE=      1  TARGET=      289.330
        FIELD SURVEYED SECTION 6 = FIS SECTION F
   6.000     15.13   1807.73   1805.39   1806.76   1808.65       .92      2.95       .06   1798.30
 15460.0        .0    4033.0   11427.0        .0     416.6    1669.3     284.8      60.3   1798.60
     .22       .00      9.68      6.85      .000      .040      .045      .000   1792.60    399.00
 .003376      855.      915.      860.         2         9         0       .00    289.33    688.33
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
EXHIBIT 2
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.67	1790.96	2697.13	7.62	101.05	1183.31	.00
*	1.100	15460.00	759.00	1781.00	1792.84	1791.25	2671.82	6.67	426.00	1018.00	1.17
	2.000	15460.00	511.00	1783.70	1793.36	1792.96	2548.82	8.18	57.03	1178.64	.00
*	2.000	15460.00	511.00	1783.70	1793.96	1793.41	2146.80	8.71	244.36	924.98	.59
	2.050	15460.00	206.00	1783.20	1794.18	1793.68	2673.67	7.61	69.65	1252.25	.00
	2.050	15460.00	206.00	1783.20	1794.80	1794.26	2105.46	8.85	266.00	963.00	.62
*	2.100	15460.00	150.00	1782.80	1794.75	1793.53	3607.76	5.58	6.88	1221.78	.00
*	2.100	15460.00	150.00	1782.80	1795.61	1794.04	2941.82	6.17	177.00	897.00	.86
*	3.000	15460.00	950.00	1783.60	1796.20	1795.93	2442.16	11.81	33.55	1152.17	.00
*	3.000	15460.00	950.00	1783.60	1797.05	1796.16	2356.60	10.56	110.00	690.00	.85
*	4.000	15460.00	1660.00	1788.70	1801.74	1800.39	3758.04	7.51	11.65	1117.44	.00
*	4.000	15460.00	1660.00	1788.70	1802.38	1800.37	2547.42	8.88	50.00	500.00	.64
	5.000	15460.00	1110.00	1790.10	1803.84	1802.95	2922.73	8.94	15.91	818.11	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.67	2614.72	9.40	104.14	644.88	1.08
	6.000	15460.00	915.00	1792.60	1806.76	1805.69	2310.73	11.21	350.45	884.92	.00
	6.000	15460.00	915.00	1792.60	1807.73	1805.39	2085.91	9.68	399.00	688.33	.98

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      1.100  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.100  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.100  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      4.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

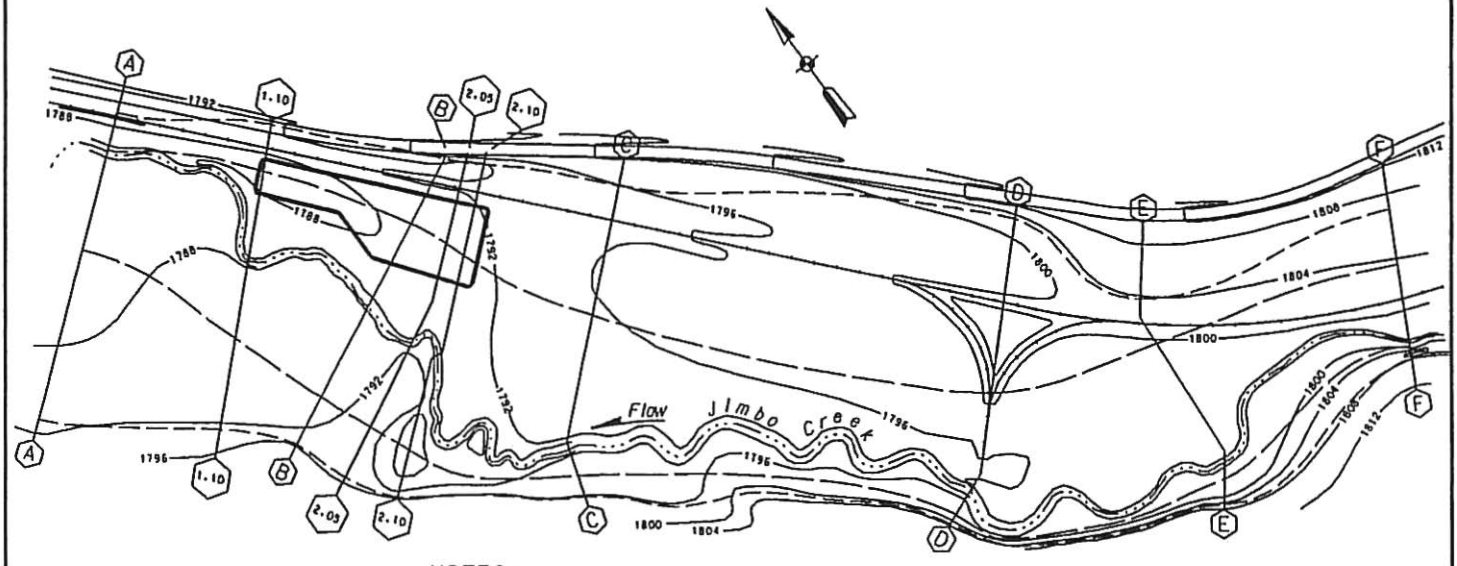
FLOODWAY DATA, EXHIBIT 2
PROFILE NO. 2

	------- FLOODWAY -------			WATER SURFACE ELEVATION		
STATION	WIDTH	SECTION AREA	MEAN VELOCITY	WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	592.	2672.	5.8	1792.9	1791.7	1.2
2.000	681.	2147.	7.2	1794.0	1793.4	.6
2.050	697.	2105.	7.3	1794.8	1794.2	.6
2.100	720.	2942.	5.3	1795.7	1794.8	.9
3.000	580.	2357.	6.6	1797.0	1796.2	.8
4.000	450.	2547.	6.1	1802.3	1801.7	.6
5.000	541.	2615.	5.9	1804.9	1803.8	1.1
6.000	289.	2086.	7.4	1807.8	1806.8	1.0

EXHIBIT 2 - HEC2 INPUT & OUTPUT

EXHIBIT THREE

Adding the Structure



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

100-YEAR FLOODPLAIN

NOTES:

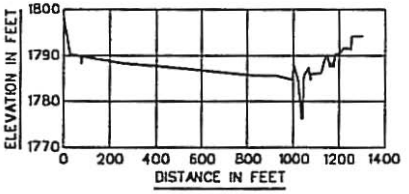
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 2.
3. THE RIGHT BANK FLOODWAY FROM EXHIBIT 2 IS SHOWN TO DEPICT THE DEGREE OF ENCROACHMENT THE STRUCTURE MAKES ON THE FLOODWAY.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

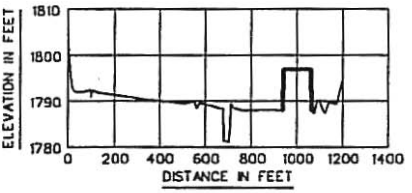
JIMBO CREEK

FLOOD INSURANCE STUDY

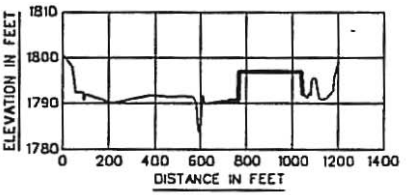
WORK MAP



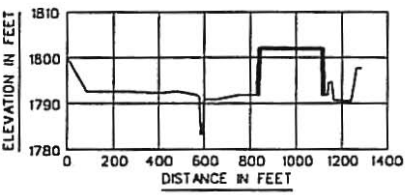
CROSS SECTION A



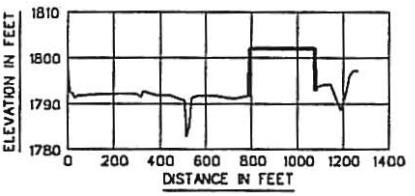
CROSS SECTION 1.10



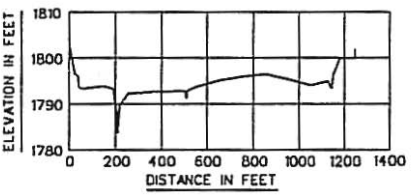
CROSS SECTION B



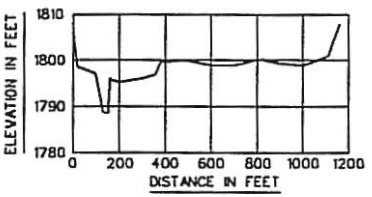
CROSS SECTION 2.05



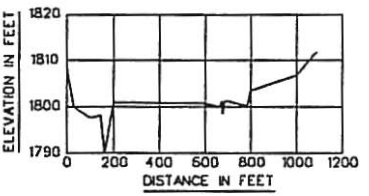
CROSS SECTION 2.10



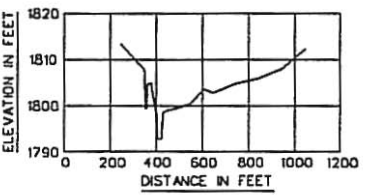
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 2.

EXHIBIT 3 – CROSS SECTIONS

EXHIBIT 3 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY[2]	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	512	2347	6.6	1791.7	1791.9	1793.0	1.3
B	1270	523	1790	8.6	1793.4	1793.8	1794.3	0.9
2.05	1476	570	2161	7.2	1794.2	1794.7	1795.6	1.4
2.10	1626	615	2941	5.3	1794.8	1795.3	1796.2	1.4
C	2576	580	2587	6.0	1796.2	1796.7	1797.4	1.2
D	4236	450	2478	6.2	1801.7	1801.5	1802.2	0.5
E	5346	541	2620	5.9	1803.8	1803.9	1804.9	1.1
F	6261	289	2084	7.4	1806.8	1806.7	1807.7	0.9

[1] Feet above limit of detailed study.
[2] Regulatory base flood elevations as determined by conditions shown on Exhibit 2.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA
JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 2 input data.

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**********
HEC-2 WATER SURFACE PROFILES

Version  4.6.2;  May 1991
**********

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 3
T4      SECTIONS ADDED WITH PROJECT IN PLACE

J1   ICHECK      INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0          2                                                        -1                1789.00
J2   NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
        1                     -1                                           -1
J3   VARIABLE CODES FOR SUMMARY PRINTOUT
        38         43         39         42          1          2         25         26         53         54
        52        200

QT       5      15460      15460       2370      10600      51000
NC    .030       .030       .040        .10        .30
ET                                      9.10                                                     687.56     1047.00
          FIELD SURVEYED SECTION 1 = FIS SECTION A
X1    1.00         34     1023.0     1047.0         .0         .0         .0                               0
GR  1798.1         .0     1790.5       29.0     1789.8       75.0     1788.3       77.0     1789.9       80.0
GR  1788.4      255.0     1787.8      391.0     1787.2      537.0     1786.4      678.0     1785.8      815.0
GR  1785.6      532.0     1784.7      994.0     1788.0     1002.0     1784.5     1023.0     1776.1     1038.0
GR  1776.5     1041.0     1785.5     1047.0     1787.6     1068.0     1784.8     1077.0     1786.0     1079.0
GR  1786.3     1121.0     1789.1     1137.0     1790.4     1148.0     1790.1     1150.0     1787.5     1160.0
GR  1788.7     1169.0     1787.6     1177.0     1790.4     1181.0     1790.7     1209.0     1791.6     1213.0
GR  1791.7     1245.0     1791.3     1249.0     1794.2     1256.0     1794.3     1306.0

ET                                      9.10                                                     426        1018
          ADDITIONAL FIELD SURVEYED SECTION 1.1
X1    1.10       44.0      675.0      710.0      675.0      540.0      759.0       .000       .000       .000
GR  1803.4         .0     1794.7       14.0     1793.0       21.0     1792.0       35.0     1792.2       75.0
GR  1792.5      100.0     1790.9      102.0     1792.4      105.0     1791.9      133.0     1791.4      193.0
GR  1790.9      272.0     1790.4      343.0     1789.9      437.0     1789.5      507.0     1790.0      552.0
GR  1788.3      562.0     1789.6      571.0     1789.0      622.0     1788.4      667.0     1788.7      675.0
GR  1781.2      681.0     1781.3      686.0     1781.4      693.0     1781.0      700.0     1784.0      705.0
GR  1789.6      710.0     1788.5      724.0     1788.0      764.0     1788.1      832.0     1788.1      902.0
GR  1788.0      936.0     1797.0      940.0     1797.0     1060.0     1787.9     1066.0     1788.2     1069.0
GR  1787.2     1075.0     1790.1     1088.0     1790.5     1094.0     1790.3     1099.0     1788.1     1113.0
GR  1787.4     1123.0     1789.8     1139.0     1789.4     1172.0     1795.0     1200.0

ET                                      9.10                                                     244.36     924.98
          FIELD SURVEYED SECTION 2 = FIS SECTION B
X1    2.00       39.0      580.0      608.0      340.0      530.0      511.0       .000       .000       .000
GR  1800.9         .0     1798.2       42.0     1792.4       60.0     1792.6       90.0     1790.6       93.0
GR  1792.2      100.0     1790.0      214.0     1791.8      378.0     1791.5      474.0     1791.7      509.0
GR  1791.5      567.0     1790.4      580.0     1785.4      589.0     1784.2      591.0     1783.7      597.0
GR  1784.0      598.0     1785.3      600.0     1787.4      603.0     1791.8      608.0     1789.9      619.0
GR  1790.5      681.0     1790.6      720.0     1790.7      764.0     1797.0      770.0     1797.0     1040.0
GR  1792.0     1046.0     1792.1     1053.0     1791.2     1068.0     1792.5     1074.0     1791.9     1080.0
GR  1795.2     1087.0     1795.8     1096.0     1795.4     1104.0     1791.0     1119.0     1790.9     1145.0
GR  1793.0     1178.0     1795.8     1183.0     1797.6     1192.0     1798.6     1198.0

ET                                      9.10                                                     266        963
          ADDITIONAL FIELD SURVEYED SECTION 2.05
X1    2.05       34.0      570.0      598.0      215.0      150.0      206.0       .000       .000       .000
GR  1800.2         .0     1792.5       89.0     1792.7      240.0     1792.3      400.0     1792.7      480.0
GR  1791.9      570.0     1791.5      576.0     1783.2      585.0     1783.2      592.0     1790.9      598.0
GR  1790.7      640.0     1791.9      750.0     1791.9      790.0     1791.9      834.0     1802.0      840.0
GR  1802.0     1115.0     1791.9     1121.0     1791.9     1137.0     1794.7     1143.0     1794.7     1155.0
GR  1790.7     1163.0     1790.5     1240.0     1797.7     1264.0     1797.7     1288.0

ET                                      9.10                                                     177        897
          ADDITIONAL FIELD SURVEYED SECTION 2.1
X1    2.10       35.0      504.0      537.0      180.0       70.0      150.0       .000       .000       .000
GR  1797.3         .0     1792.5       13.0     1792.2       25.0     1791.2       31.0     1791.8       41.0
GR  1792.1      122.0     1792.2      217.0     1792.2      299.0     1791.4      317.0     1792.7      327.0
GR  1791.9      378.0     1791.7      443.0     1790.7      504.0     1786.9      510.0     1782.8      512.0
GR  1784.6      521.0     1784.6      524.0     1787.2      529.0     1790.6      534.0     1791.3      537.0
GR  1791.7      564.0     1791.8      637.0     1791.0      723.0     1791.7      789.0     1802.0      795.0
GR  1802.0     1075.0     1793.0     1081.0     1793.9     1096.0     1794.2     1121.0     1794.1     1149.0
GR  1788.6     1189.0     1791.8     1209.0     1796.2     1228.0     1797.1     1241.0     1797.1     1265.0
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NC    .045      .045      .040      .10       .30
ET                        9.10                                                  110.00    690.00
          FIELD SURVEYED SECTION 3 = FIS SECTION C
X1     3.00        29     192.0     217.0     615.0     485.0     950.0                          0
GR  1803.1        .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3      53.0
GR  1793.9      153.0   1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6     217.0
GR  1789.9      218.0   1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9     503.0
GR  1791.3      508.0   1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0     753.0
GR  1796.5      853.0   1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3    1144.0
GR  1796.5     1153.0   1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                        9.10                                                   50.00    500.00
          FIELD SURVEYED SECTION 4 = FIS SECTION D
X1     4.00        27     100.0     160.0    1300.0    1420.0    1660.0                          0
GR  1807.2        .0    1803.8       6.0    1798.7      20.0    1797.1      100.0   1789.0     130.0
GR  1788.7      139.0   1788.7     151.0    1796.3     160.0    1795.7      167.0   1795.4     200.0
GR  1796.2      300.0   1797.0     356.0    1799.8     381.0    1799.6      400.0   1800.1     478.0
GR  1799.9      500.0   1799.0     600.0    1798.9     700.0    1800.2      800.0   1800.0     832.0
GR  1799.3      900.0   1798.9    1000.0    1800.8    1100.0    1801.0     1113.0   1804.0    1131.0
GR  1805.0     1140.0   1808.0    1162.0

ET                        9.10                                                  104.14    644.88
          FIELD SURVEYED SECTION 5 = FIS SECTION E
X1     5.00        24     144.0     199.0     980.0     700.0    1110.0                          0
GR  1808.3        .0    1799.9      30.0    1797.7      99.0    1798.3      144.0   1792.9     156.0
GR  1790.1      161.0   1793.1     171.0    1801.0     199.0    1800.9      299.0   1800.9     399.0
GR  1800.9      499.0   1800.8     599.0    1800.0     662.0    1801.3      671.0   1798.5     676.0
GR  1801.3      682.0   1801.3     699.0    1800.9     726.0    1800.4      764.0   1800.4     787.0
GR  1803.5      799.0   1805.3     899.0    1806.8     999.0    1811.9     1085.0

ET                        9.10                                                  399.00    688.33
          FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00        21     399.0     430.0     855.0     860.0     915.0                          0
GR  1813.5      246.0   1808.1     346.0    1807.5     350.0    1799.2      355.0   1799.2     359.0
GR  1804.6      363.0   1804.9     371.0    1805.0     378.0    1798.3      399.0   1793.3     407.0
GR  1792.6      416.0   1793.0     423.0    1798.6     430.0    1799.0      446.0   1800.4     546.0
GR  1803.6      607.0   1802.7     646.0    1804.8     746.0    1805.9      846.0   1808.1     946.0
GR  1812.3     1046.0
```

```
    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
       FIELD SURVEYED SECTION 1 = FIS SECTION A
    1.000     12.90   1789.00   1788.72   1789.00   1789.79      .79       .00       .00   1784.50
 15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0   1785.50
     .00       6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
 .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
       ADDITIONAL FIELD SURVEYED SECTION 1.1
    1.100     10.88   1791.88   1791.40       .00   1792.60      .72      2.80       .01   1788.70
 15460.0    4613.7    2750.6    8095.6     925.2     315.4    1165.2      34.3      14.1   1789.60
     .03       4.99      8.72      6.95      .030      .040      .030      .000   1781.00    100.78
 .003741       675.      759.      540.         2        14         0       .00    926.25   1184.39

*SECNO 2.000
3265 DIVIDED FLOW
       FIELD SURVEYED SECTION 2 = FIS SECTION B
    2.000     10.07   1793.77   1793.36       .00   1794.55      .78      1.93       .02   1790.40
 15460.0    8341.9    1791.3    5326.8    1281.4     201.0     739.0      57.5      22.4   1791.80
     .04       6.51      8.91      7.21      .030      .040      .030      .000   1783.70     55.75
 .005050        340.      511.      530.         2        13         0       .00    821.09   1179.38

*SECNO 2.050
3265 DIVIDED FLOW
       ADDITIONAL FIELD SURVEYED SECTION 2.05
    2.050     11.54   1794.74   1794.07       .00   1795.36      .62       .79       .02   1791.90
 15460.0    5641.3    1577.9    8240.7    1107.9     211.6    1205.8      67.7      26.2   1790.90
     .05       5.09      7.46      6.83      .030      .040      .030      .000   1783.20     63.14
 .003661        215.      206.      150.         2         9         0       .00    907.35   1254.12

*SECNO 2.100
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51
       ADDITIONAL FIELD SURVEYED SECTION 2.1
    2.100     12.53   1795.33   1793.83       .00   1795.67      .34       .29       .03   1790.70
 15460.0    7446.5    1644.4    6369.1    1667.9     289.2    1350.1      76.4      29.0   1791.30
     .06       4.46      5.69      4.72      .030      .040      .030      .000   1782.80      5.36
 .001598        180.      150.       70.         1        10         0       .00    930.52   1224.21

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .59
       FIELD SURVEYED SECTION 3 = FIS SECTION C
    3.000     13.09   1796.69   1795.96       .00   1797.20      .50      1.47       .05   1793.20
 15460.0    2237.8    2054.9   11167.3     475.6     215.3    2288.2     117.3      41.7   1788.60
     .09       4.71      9.54      4.88      .045      .040      .045      .000   1783.60     24.64
 .004620        615.      950.      485.         2         6         0       .00   1129.90   1154.54

*SECNO 4.000
       FIELD SURVEYED SECTION 4 = FIS SECTION D
    4.000     12.79   1801.49   1800.49       .00   1801.96      .47      4.76       .00   1797.10
 15460.0    1115.6    4904.0    9440.4     298.0     601.4    2583.3     223.8      78.0   1796.30
     .17       3.74      8.15      3.65      .045      .040      .045      .000   1788.70     12.34
 .002422        1300.     1660.     1420.        3        13         0       .00   1103.61   1115.95

*SECNO 5.000
       FIELD SURVEYED SECTION 5 = FIS SECTION E
    5.000     13.79   1803.89   1802.85       .00   1804.47      .58      2.48       .03   1798.30
 15460.0    3767.3    4193.4    7499.3     644.5     475.8    1838.4     283.6      94.6   1801.00
     .21       5.84      8.81      4.08      .045      .040      .045      .000   1790.10     15.75
 .003435        980.     1110.      700.         3         5         0       .00    804.84    820.60

*SECNO 6.000
       FIELD SURVEYED SECTION 6 = FIS SECTION F
    6.000     14.14   1806.74   1805.70       .00   1807.67      .93      3.10       .10   1798.30
 15460.0    1062.0    4337.6   10060.4     202.1     385.9    1715.4     336.1     107.9   1798.60
     .24       5.25     11.24      5.86      .045      .040      .045      .000   1792.60    350.46
 .003651        855.      915.      860.         2        10         0       .00    533.85    884.30
```

EXHIBIT 3 - HEC2 INPUT & OUTPUT

```
T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 3
T4      SECTIONS ADDED WITH PROJECT IN PLACE

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                               -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                 -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00      .030      .040      .000      .000   1776.10    687.56
  .005241        0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47
3470 ENCROACHMENT STATIONS=      426.0    1018.0  TYPE=      1  TARGET=      592.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.98   1792.98   1791.57   1791.88   1793.68       .70      2.25       .07   1788.70
   15460.0   5171.7    2686.0    7602.3     898.6     354.0    1094.1      29.9       6.5   1789.60
      .03      5.76      7.59      6.95      .030      .040      .030      .000   1781.00    426.00
  .002429       675.      759.      540.         2        13         0       .00    512.21    938.21

*SECNO 2.000
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .63
3470 ENCROACHMENT STATIONS=      244.4     925.0  TYPE=      1  TARGET=      680.620
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.57   1794.27   1793.90   1793.77   1795.47      1.20      1.64       .15   1790.40
   15460.0   7605.1    2200.0    5654.9     972.9     215.1     601.9      50.8      11.5   1791.80
      .04      7.82     10.23      9.39      .030      .040      .030      .000   1783.70    244.36
  .006073       340.      511.      530.         2         9         0       .00    523.05    767.41

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      266.0     963.0  TYPE=      1  TARGET=      697.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     12.35   1795.55   1794.60   1794.74   1796.37       .82       .86       .04   1791.90
   15460.0   6040.9    1869.5    7549.6     949.4     234.3     977.4      59.3      13.9   1790.90
      .05      6.36      7.98      7.72      .030      .040      .030      .000   1783.20    266.00
  .003657       215.      206.      150.         3         8         0       .00    570.17    836.17

*SECNO 2.100
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.58
3470 ENCROACHMENT STATIONS=      177.0     897.0  TYPE=      1  TARGET=      720.000
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     13.45   1796.25   1794.21   1795.33   1796.69       .43       .28       .04   1790.70
   15460.0   7137.7    1867.4    6455.0    1416.9     319.9    1204.1      66.9      15.7   1791.30
      .06      5.04      5.84      5.36      .030      .040      .030      .000   1782.80    177.00
  .001472       180.      150.       70.         2         9         0       .00    614.65    791.65

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .61
3470 ENCROACHMENT STATIONS=      110.0     690.0  TYPE=      1  TARGET=      580.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.85   1797.45   1796.03   1796.69   1798.07       .62      1.33       .06   1793.20
   15460.0   1536.2    2205.0   11718.8     310.6     234.3    2042.3     103.3      23.2   1788.60
      .08      4.95      9.41      5.74      .045      .040      .045      .000   1783.60    110.00
  .004013       615.      950.      485.         2         9         0       .00    580.00    690.00

*SECNO 4.000
3470 ENCROACHMENT STATIONS=       50.0     500.0  TYPE=      1  TARGET=      450.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.53   1802.23   1800.34   1801.49   1802.99       .76      4.87       .04   1797.10
   15460.0   1060.6    5909.1    8490.4     231.4     645.7    1600.5     187.5      40.1   1796.30
      .14      4.58      9.15      5.30      .045      .040      .045      .000   1788.70     50.00
  .002775      1300.     1660.     1420.         3         9         0       .00    450.00    500.00
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.000
3470 ENCROACHMENT STATIONS= 104.1 644.9 TYPE= 1 TARGET= 540.740
FIELD SURVEYED SECTION 5 = FIS SECTION E

5.000	14.82	1804.92	1803.58	1803.89	1805.64	.71	2.65	.00	1798.30
15460.0	1702.1	4999.0	8758.9	274.6	532.7	1812.2	235.6	48.9	1801.00
.18	6.20	9.38	4.83	.045	.040	.045	.000	1790.10	104.14
.003349	980.	1110.	700.	2	5	0	.00	540.74	644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS= 399.0 688.3 TYPE= 1 TARGET= 289.330
FIELD SURVEYED SECTION 6 = FIS SECTION F

6.000	15.13	1807.73	1805.39	1806.74	1808.65	.92	2.95	.06	1798.30
15460.0	.0	4035.3	11424.7	.0	416.4	1667.8	282.6	57.1	1798.60
.21	.00	9.69	6.85	.000	.040	.045	.000	1792.60	399.00
.003384	855.	915.	860.	2	9	0	.00	289.33	688.33

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
EXHIBIT 3
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.88	1791.40	2405.91	8.72	100.78	1184.39	.00
*	1.100	15460.00	759.00	1781.00	1792.98	1791.57	2346.67	7.59	426.00	938.21	1.11
	2.000	15460.00	511.00	1783.70	1793.77	1793.36	2221.40	8.91	55.75	1179.38	.00
*	2.000	15460.00	511.00	1783.70	1794.27	1793.90	1789.89	10.23	244.36	767.41	.49
	2.050	15460.00	206.00	1783.20	1794.74	1794.07	2525.31	7.46	63.14	1254.12	.00
	2.050	15460.00	206.00	1783.20	1795.55	1794.60	2161.14	7.98	266.00	836.17	.81
*	2.100	15460.00	150.00	1782.80	1795.33	1793.83	3307.19	5.69	5.36	1224.21	.00
*	2.100	15460.00	150.00	1782.80	1796.25	1794.21	2940.98	5.84	177.00	791.65	.92
*	3.000	15460.00	950.00	1783.60	1796.69	1795.96	2979.11	9.54	24.64	1154.54	.00
*	3.000	15460.00	950.00	1783.60	1797.45	1796.03	2587.27	9.41	110.00	690.00	.76
	4.000	15460.00	1660.00	1788.70	1801.49	1800.49	3482.67	8.15	12.34	1115.95	.00
	4.000	15460.00	1660.00	1788.70	1802.23	1800.34	2477.60	9.15	50.00	500.00	.74
	5.000	15460.00	1110.00	1790.10	1803.89	1802.85	2958.73	8.81	15.75	820.60	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.58	2619.61	9.38	104.14	644.88	1.04
	6.000	15460.00	915.00	1792.60	1806.74	1805.70	2303.42	11.24	350.46	884.30	.00
	6.000	15460.00	915.00	1792.60	1807.73	1805.39	2084.25	9.69	399.00	688.33	.99

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 1.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.100 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

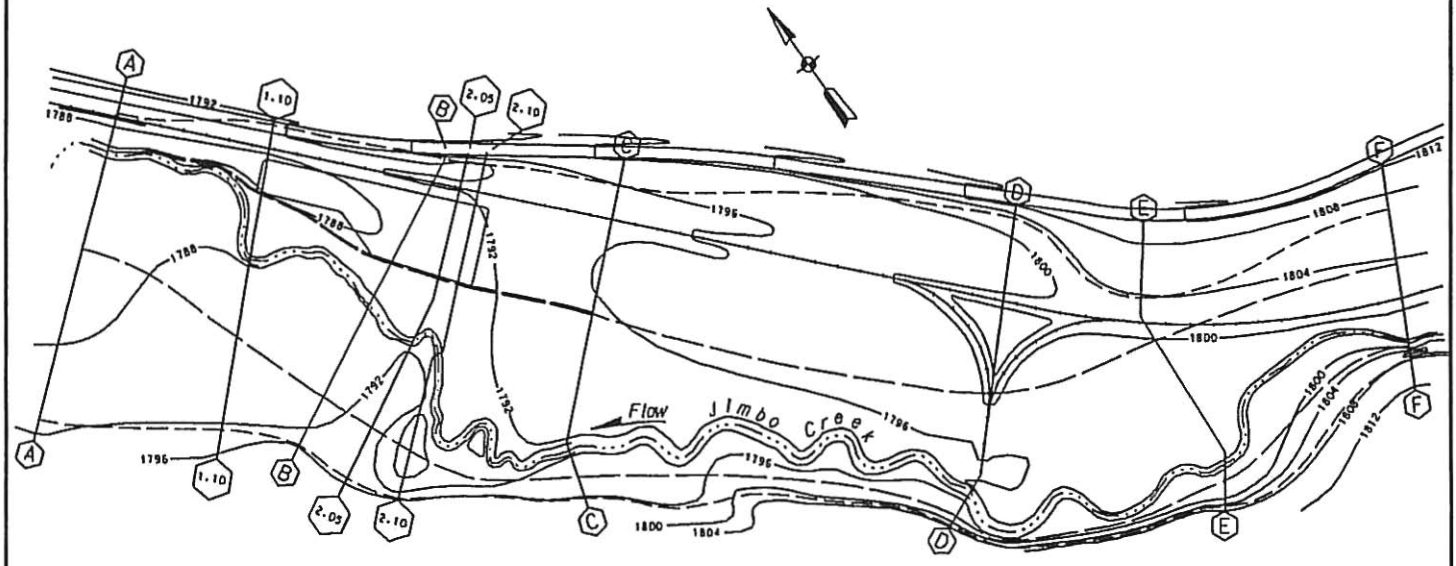
WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 3
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	512.	2347.	6.6	1793.0	1791.9	1.1
2.000	523.	1790.	8.6	1794.3	1793.8	.5
2.050	570.	2161.	7.2	1795.5	1794.7	.8
2.100	615.	2941.	5.3	1796.2	1795.3	.9
3.000	580.	2587.	6.0	1797.5	1796.7	.8
4.000	450.	2478.	6.2	1802.2	1801.5	.7
5.000	541.	2620.	5.9	1804.9	1803.9	1.0
6.000	289.	2084.	7.4	1807.7	1806.7	1.0

EXHIBIT FOUR

"No Rise" Condition



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

100-YEAR FLOODPLAIN

NOTES:

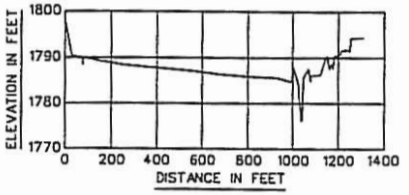
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 3.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

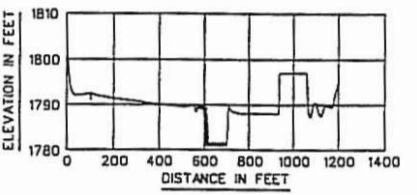
JIMBO CREEK

FLOOD INSURANCE STUDY

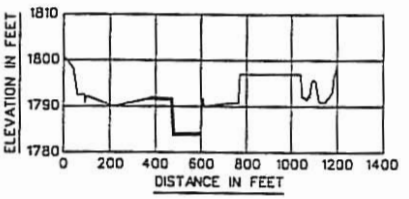
WORK MAP



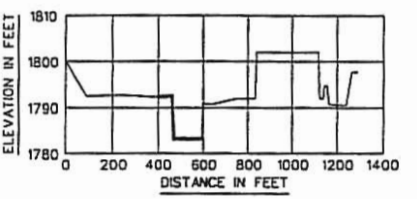
CROSS SECTION A



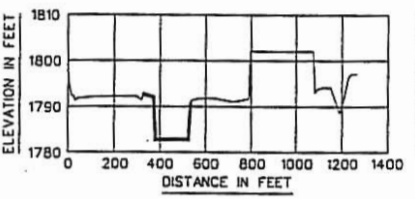
CROSS SECTION 1.10



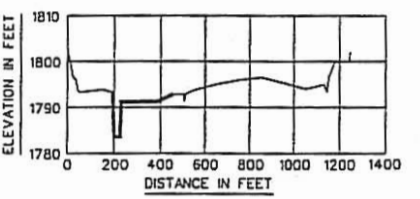
CROSS SECTION B



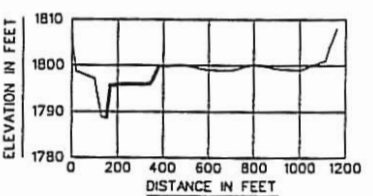
CROSS SECTION 2.05



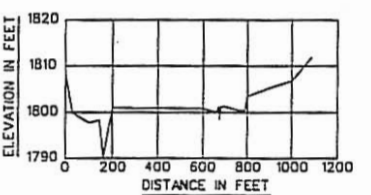
CROSS SECTION 2.10



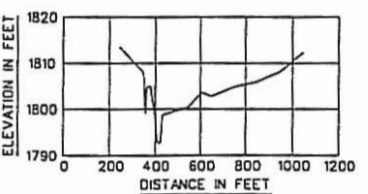
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS
OR REVISIONS TO EXHIBIT 3.

EXHIBIT 4 – CROSS SECTIONS

EXHIBIT 4 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY[2]	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	512	2706	5.7	1791.7	1791.4	1792.6	0.9
B	1270	522	2176	7.1	1793.4	1792.8	1793.4	0.0
2.05	1476	569	2339	6.6	1794.2	1793.6	1794.0	0.0
2.10	1626	614	3174	4.9	1794.8	1794.2	1794.7	0.0
C	2576	580	1972	7.8	1796.2	1795.7	1795.8	0.0
D	4236	450	2576	6.0	1801.7	1801.6	1802.4	0.7
E	5346	541	2590	6.0	1803.8	1803.8	1804.9	1.1
F	6261	289	2086	7.4	1806.8	1806.8	1807.7	0.9

[1] Feet above limit of detailed study.
[2] Regulatory base flood elevations as determined by conditions shown on Exhibit 2.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 3 input data.

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**********************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**********************************

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 4
T4      SECTIONS ADDED WITH PROJECT IN PLACE - ADDITIONAL CONVEYANCE

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0         2                                               -1                1789.00
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        1                   -1                                      -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38        43        39        42         1         2        25        26        53        54
       52       200

QT       5     15460     15460      2370     10600     51000
NC    .030      .030      .040       .10       .30
ET                                   9.10                                                  687.56    1047.00
          FIELD SURVEYED SECTION 1 = FIS SECTION A
X1    1.00        34    1023.0    1047.0        .0        .0        .0                              0
GR  1798.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR  1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR  1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR  1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR  1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR  1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR  1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                                   9.10                                                  426       1018
          ADDITIONAL FIELD SURVEYED SECTION 1.1
X1    1.10        44.0     603.0     710.0     675.0     540.0     759.0      .000      .000      .000
GR  1803.4        .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR  1792.5     100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR  1790.9     272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR  1788.3     562.0    1789.6     571.0    1789.2     603.0    1781.2     613.0    1781.2     645.0
GR  1781.2     675.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR  1789.6     710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR  1788.0     936.0    1797.0     940.0    1797.0    1060.0    1787.9    1066.0    1788.2    1069.0
GR  1787.2    1075.0    1790.1    1088.0    1790.5    1094.0    1790.3    1099.0    1788.1    1113.0
GR  1787.4    1121.0    1789.8    1139.0    1789.4    1172.0    1795.0    1200.0

ET                                   9.10                                                  244.36    924.98
          FIELD SURVEYED SECTION 2 = FIS SECTION B
X1    2.00        35.0     470.0     608.0     340.0     530.0     511.0      .000      .000      .000
GR  1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR  1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     470.0    1784.0     480.0
GR  1784.0     504.0    1784.0     523.0    1784.0     580.0    1784.2     591.0    1783.7     597.0
GR  1784.0     598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR  1790.5     683.0    1790.6     720.0    1790.7     764.0    1797.0     770.0    1797.0    1040.0
GR  1792.0    1046.0    1792.1    1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0
GR  1795.2    1087.0    1795.8    1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0
GR  1793.0    1178.0    1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

ET                                   9.10                                                  266       963
          ADDITIONAL FIELD SURVEYED SECTION 2.05
X1    2.05        24.0     461.0     598.0     215.0     150.0     206.0      .000      .000      .000
GR  1800.2        .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.5     461.0
GR  1783.2     471.0    1783.2     510.0    1783.2     570.0    1783.2     592.0    1790.9     598.0
GR  1790.7     640.0    1791.9     750.0    1791.9     790.0    1791.9     834.0    1802.0     840.0
GR  1802.0    1115.0    1791.9    1121.0    1791.9    1137.0    1794.7    1143.0    1794.7    1155.0
GR  1790.7    1163.0    1790.5    1240.0    1797.7    1264.0    1797.7    1288.0

ET                                   9.10                                                  177       897
          ADDITIONAL FIELD SURVEYED SECTION 2.1
X1    2.10        40.0     370.0     537.0     180.0      70.0     150.0      .000      .000      .000
GR  1797.3        .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8      41.0
GR  1792.1     122.0    1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7     327.0
GR  1792.0     370.0    1782.8     380.0    1782.8     423.0    1782.8     479.0    1782.8     504.0
GR  1782.8     521.0    1782.8     524.0    1787.2     529.0    1790.6     534.0    1791.3     537.0
GR  1791.7     564.0    1791.8     637.0    1791.0     723.0    1791.7     789.0    1802.0     795.0
GR  1802.0    1075.0    1793.0    1081.0    1793.9    1096.0    1794.2    1121.0    1794.1    1149.0
GR  1788.6    1189.0    1791.8    1209.0    1796.2    1228.0    1797.1    1241.0    1796.5    1273.0
GR  1796.4    1276.0    1789.8    1286.0    1793.0    1297.0    1794.9    1324.0    1799.9    1341.0
```

EXHIBIT 4 - HEC2 INPUT & OUTPUT

```
NC    .045      .045      .040      .10       .30
ET                        9.10                                                  110.00    690.00
          FIELD SURVEYED SECTION 3 = FIS SECTION C
X1     3.00        28     192.0     231.0     615.0     485.0     950.0                          0
GR  1803.1       0.0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3      53.0
GR  1793.9     153.0    1793.2     192.0    1783.6     200.0    1783.6     207.0    1783.6     226.0
GR  1791.2     231.0    1791.30    385.0    1792.8     453.0    1792.9     503.0    1791.3     508.0
GR  1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0     753.0    1796.5     853.0
GR  1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3    1144.0    1796.5    1153.0
GR  1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                        9.10                                                   50.00    500.00
          FIELD SURVEYED SECTION 4 = FIS SECTION D
X1     4.00        26     100.0     167.0    1300.0    1420.0    1660.0                          0
GR  1807.2       0.0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0     130.0
GR  1788.7     139.0    1788.7     151.0    1795.6     167.0    1795.9     200.0    1796.0     340.0
GR  1797.0     354.0    1799.8     381.0    1799.6     400.0    1800.1     478.0    1799.9     500.0
GR  1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0     832.0    1799.3     900.0
GR  1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0    1131.0    1805.0    1140.0
GR  1808.0    1162.0

ET                        9.10                                                  104.14    644.88
          FIELD SURVEYED SECTION 5 = FIS SECTION E
X1     5.00          24    144.0     199.0     980.0     700.0    1110.0                          0
GR  1808.3          .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9     156.0
GR  1790.1     161.0    1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9     399.0
GR  1800.9     499.0    1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5     676.0
GR  1801.3     682.0    1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4     787.0
GR  1803.5     799.0    1805.3     899.0    1806.8     999.0    1811.9    1085.0

ET                        9.10                                                  399.00    688.33
          FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00          21    399.0     430.0     855.0     860.0     915.0                          0
GR  1813.5     246.0    1808.1     346.0    1807.5     350.0    1799.2     355.0    1799.2     359.0
GR  1804.6     363.0    1804.9     371.0    1805.0     378.0    1798.3     399.0    1793.3     407.0
GR  1792.6     416.0    1793.0     423.0    1798.6     430.0    1799.0     446.0    1800.4     546.0
GR  1803.6     607.0    1802.7     646.0    1804.8     746.0    1805.9     846.0    1808.1     946.0
GR  1812.3    1046.0
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    SECNO       DEPTH      CWSEL      CRIWS      WSELK       EG         HV         HL        OLOSS      L-BANK ELEV
    Q           QLOB       QCH        QROB       ALOB        ACH        AROB       VOL       TWA        R-BANK ELEV
    TIME        VLOB       VCH        VROB       XNL         XNCH       XNR        WTH       ELMIN      SSTA
    SLOPE       XLOBL      XLCH       XLOBR      ITRIAL      IDC        ICONT      CORAR     TOPWID     ENDST

*PROF 1
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
   15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0   1785.50
      .00      6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
   .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     10.44   1791.44   1790.62       .00   1792.18       .74      2.39       .00   1789.20
   15460.0    1685.5    8379.4    5395.1     505.9    1018.7    1010.4      36.2      13.7   1789.60
      .03      3.33      8.23      5.34      .030      .040      .030      .000   1781.00    101.34
   .002617       675.      759.      540.         2        13         0       .00    868.58   1182.16

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000      9.11   1792.81   1792.49       .00   1793.77       .96      1.53       .07   1791.50
   15460.0    2717.2   10344.2    2398.6     636.8    1140.9     484.7      62.4      22.1   1791.80
      .05      4.27      9.07      4.95      .030      .040      .030      .000   1783.70     58.74
   .003745       340.      511.      530.         2         9         0       .00    806.29   1174.97

*SECNO 2.050
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     10.37   1793.57   1792.88       .00   1794.38       .81       .59       .02   1792.50
   15460.0    1002.7   11014.9    3442.4     397.9    1351.9     792.4      73.1      25.7   1790.90
      .05      2.52      8.15      4.34      .030      .040      .030      .000   1783.20     76.57
   .002438       215.      206.      150.         2         8         0       .00    872.02   1250.25

*SECNO 2.100
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.52
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     11.44   1794.24   1789.86       .00   1794.63       .39       .21       .04   1792.00
   15460.0    2058.9   10319.8    3081.2     769.6    1799.3     980.6      82.3      28.4   1791.30
      .06      2.68      5.74      3.14      .030      .040      .030      .000   1782.80      8.27
   .001053       180.      150.       70.         2        15         0       .00    957.02   1314.69

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3265 DIVIDED FLOW
3301 HV CHANGED MORE THAN HVINS
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     12.09   1795.69   1795.69       .00   1796.83      1.14      1.56       .23   1793.20
   15460.0    1365.2    5208.4    8886.4     316.5     414.2    1575.9     128.4      40.7   1791.20
      .09      4.31     12.57      5.64      .045      .040      .045      .000   1783.60     38.93
   .006397       615.      950.      485.         0         9         0       .00    907.30   1150.73

*SECNO 4.000
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.73
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     12.87   1801.57   1800.55       .00   1802.02       .45      5.12       .07   1797.10
   15460.0    1090.2    5285.9    9083.9     305.4     675.6    2627.0     226.9      73.4   1795.60
      .17      3.57      7.82      3.46      .045      .040      .045      .000   1788.70     12.11
   .002138       1300.     1660.     1420.        3         6         0       .00    1104.34  1116.45

*SECNO 5.000
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     13.73   1803.83   1802.91       .00   1804.44       .60      2.37       .05   1798.30
   15460.0    3783.1    4238.9    7438.1     637.7     472.8    1805.3     287.8      90.0   1801.00
      .21      5.93      8.96      4.12      .045      .040      .045      .000   1790.10     15.94
   .003583       980.     1110.      700.        3         6         0       .00    801.69   817.64

*SECNO 6.000
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     14.16   1806.76   1805.69       .00   1807.68       .92      3.15       .10   1798.30
   15460.0    1063.2    4326.1   10070.7     203.0     386.4    1723.3     339.9     103.2   1798.60
      .25      5.24     11.20      5.84      .045      .040      .045      .000   1792.60     350.45
   .003615       855.      915.      860.        2        10         0       .00    534.65   885.09
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EXHIBIT 4 - HEC2 INPUT & OUTPUT

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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 4
T4      SECTIONS ADDED WITH PROJECT IN PLACE - ADDITIONAL CONVEYENCE

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                                 -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                   -1                                      -1

    SECNO     DEPTH     WSEL      CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00      .030      .040      .000      .000   1776.10    687.56
   .005241       0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.84
3470 ENCROACHMENT STATIONS=      426.0    1018.0  TYPE=      1  TARGET=      592.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.65   1792.65   1790.87   1791.44   1793.21       .56      1.77       .08   1789.20
   15460.0    2194.9    7875.5    5389.7     538.6    1148.7    1018.2      33.5       6.5   1789.60
      .03      4.07      6.86      5.29      .030      .040      .030      .000   1781.00    426.00
   .001549      675.      759.      540.         3        14         0       .00    512.07    938.07

*SECNO 2.000
3470 ENCROACHMENT STATIONS=      244.4     925.0  TYPE=      1  TARGET=      680.620
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000      9.73   1793.43   1792.54   1792.81   1794.36       .93      1.04       .11   1791.50
   15460.0    2187.4   10609.4    2663.3     480.4    1227.3     468.1      60.5      11.9   1791.80
      .05      4.55      8.64      5.69      .030      .040      .030      .000   1783.70    244.36
   .003088       340.      511.      530.         3        19         0       .00    522.24    766.60

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      266.0     963.0  TYPE=      1  TARGET=      697.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     10.83   1794.03   1792.81   1793.57   1794.90       .86       .53       .01   1792.50
   15460.0    1000.2   11633.0    2826.8     308.6    1414.0     616.0      70.5      14.3   1790.90
      .06      3.24      8.23      4.59      .030      .040      .030      .000   1783.20    266.00
   .002341       215.      206.      150.         2         5         0       .00    569.26    835.26

*SECNO 2.100
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48
3470 ENCROACHMENT STATIONS=      177.0     897.0  TYPE=      1  TARGET=      720.000
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     11.90   1794.70   1789.75   1794.24   1795.15       .44       .21       .04   1792.00
   15460.0    1450.6   11155.0    2854.5     486.7    1876.3     810.7      79.0      16.0   1791.30
      .06      2.98      5.95      3.52      .030      .040      .030      .000   1782.80    177.00
   .001070       180.      150.       70.         2        14         0       .00    613.75    790.75

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3301 HV CHANGED MORE THAN HVINS
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
3470 ENCROACHMENT STATIONS=      110.0     690.0  TYPE=      1  TARGET=      580.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     12.18   1795.78   1795.78   1795.69   1797.19      1.42      1.66       .29   1793.20
   15460.0    785.2    5590.0    9084.8     173.0     417.4    1381.6     120.9      24.1   1791.20
      .09      4.54     13.39      6.58      .045      .040      .045      .000   1783.60    110.00
   .007183       615.      950.      485.         0         5         0       .00    580.00    690.00

*SECNO 4.000
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.73
3470 ENCROACHMENT STATIONS=       50.0     500.0  TYPE=      1  TARGET=      450.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.67   1802.37   1800.44   1801.57   1803.08       .71      5.82       .07   1797.10
   15460.0    1038.9    6372.1    8049.0     238.8     729.2    1608.0     197.6      41.0   1795.60
      .15      4.35      8.74      5.01      .045      .040      .045      .000   1788.70     50.00
   .002408       1300.     1660.     1420.        3        10         0       .00    450.00    500.00
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EXHIBIT 4 - HEC2 INPUT & OUTPUT

```
*SECNO 5.000
3470 ENCROACHMENT STATIONS=      104.1      644.9  TYPE=       1  TARGET=       540.740
       FIELD SURVEYED SECTION 5 = FIS SECTION E
    5.000      14.77    1804.87    1803.67    1803.83    1805.60        .73       2.51        .01    1798.30
  15460.0     1710.2     5038.2     8711.6      272.4      529.7     1787.5      246.7       49.9    1801.00
      .19       6.28       9.51       4.87       .045       .040       .045       .000    1790.10     104.14
  .003467       980.      1110.       700.          3          6          0        .00     540.74     644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0      688.3  TYPE=       1  TARGET=       289.330
       FIELD SURVEYED SECTION 6 = FIS SECTION F
    6.000      15.13    1807.73    1805.36    1806.76    1808.65        .92       3.00        .06    1798.30
  15460.0         .0     4033.5    11426.5         .0      416.6     1668.9      293.4       58.1    1798.60
      .22        .00       9.68       6.85       .000       .040       .045       .000    1792.60     399.00
  .003378       855.       915.       860.          2          9          0        .00     289.33     688.33
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
EXHIBIT 4
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.44	1790.62	2535.05	8.23	101.34	1182.16	.00
*	1.100	15460.00	759.00	1781.00	1792.65	1790.87	2705.51	6.86	426.00	938.07	1.21
	2.000	15460.00	511.00	1783.70	1792.81	1792.49	2262.32	9.07	58.74	1174.97	.00
	2.000	15460.00	511.00	1783.70	1793.43	1792.54	2175.84	8.64	244.36	766.60	.62
	2.050	15460.00	206.00	1783.20	1793.57	1792.88	2542.14	8.15	76.57	1250.25	.00
	2.050	15460.00	206.00	1783.20	1794.03	1792.81	2338.67	8.23	266.00	835.26	.46
*	2.100	15460.00	150.00	1782.80	1794.24	1789.86	3549.50	5.74	8.27	1314.69	.00
*	2.100	15460.00	150.00	1782.80	1794.70	1789.75	3173.63	5.95	177.00	790.75	.46
*	3.000	15460.00	950.00	1783.60	1795.69	1795.69	2306.66	12.57	38.93	1150.73	.00
*	3.000	15460.00	950.00	1783.60	1795.78	1795.78	1971.98	13.39	110.00	690.00	.08
*	4.000	15460.00	1660.00	1788.70	1801.57	1800.55	3607.96	7.82	12.11	1116.45	.00
*	4.000	15460.00	1660.00	1788.70	1802.37	1800.44	2575.98	8.74	50.00	500.00	.80
	5.000	15460.00	1110.00	1790.10	1803.83	1802.91	2915.88	8.96	15.94	817.64	.00
	5.000	15460.00	1110.00	1790.10	1804.87	1803.67	2589.64	9.51	104.14	644.88	1.03
	6.000	15460.00	915.00	1792.60	1806.76	1805.69	2312.68	11.20	350.45	885.09	.00
	6.000	15460.00	915.00	1792.60	1807.73	1805.36	2085.53	9.68	399.00	688.33	.97

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=     1.100  PROFILE= 2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.100  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.100  PROFILE= 2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     3.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     3.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     4.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     4.000  PROFILE= 2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

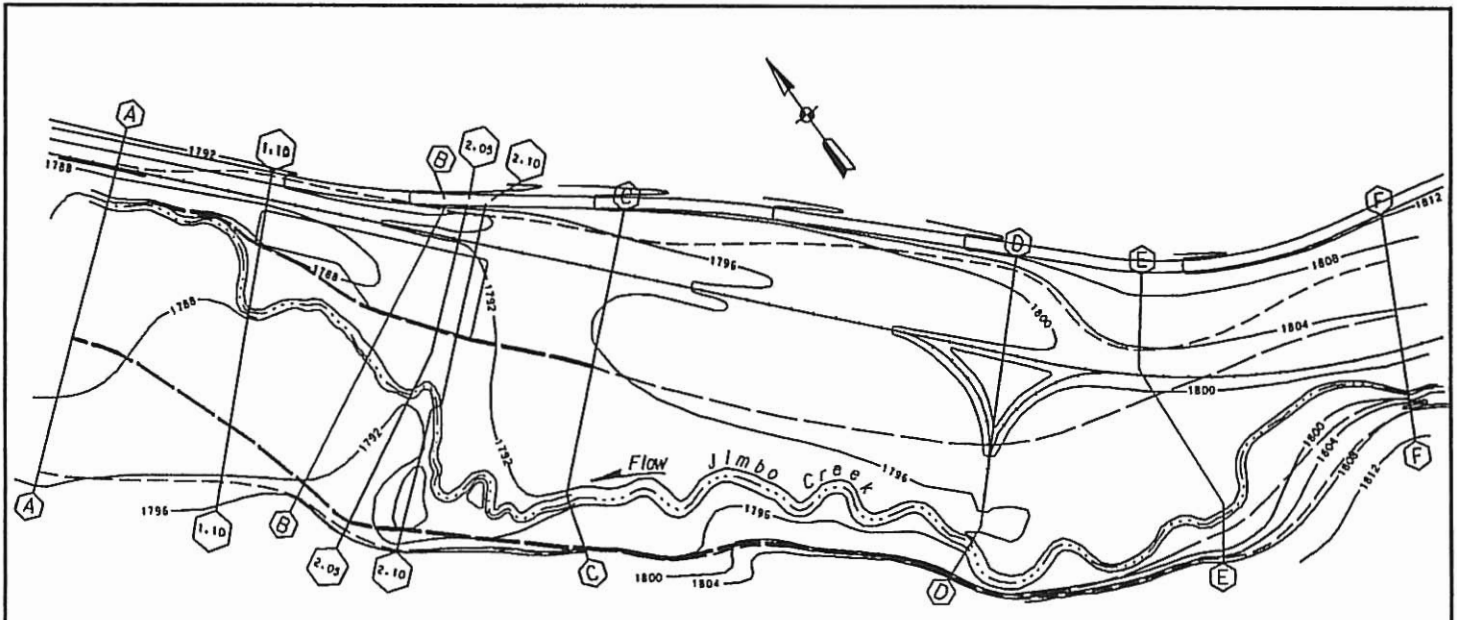
FLOODWAY DATA, EXHIBIT 4
PROFILE NO. 2

	FLOODWAY			WATER SURFACE ELEVATION		
STATION	WIDTH	SECTION AREA	MEAN VELOCITY	WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	512.	2706.	5.7	1792.6	1791.4	1.2
2.000	522.	2176.	7.1	1793.4	1792.8	.6
2.050	569.	2339.	6.6	1794.1	1793.6	.5
2.100	614.	3174.	4.9	1794.7	1794.2	.5
3.000	580.	1972.	7.8	1795.8	1795.7	.1
4.000	450.	2576.	6.0	1802.4	1801.6	.8
5.000	541.	2590.	6.0	1804.8	1803.8	1.0
6.000	289.	2086.	7.4	1807.8	1806.8	1.0

EXHIBIT 4 - HEC2 INPUT & OUTPUT

EXHIBIT FIVE

Floodway Realigned



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

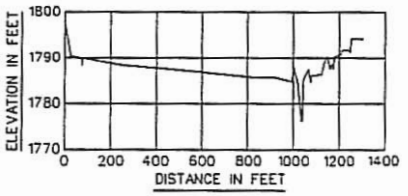
100-YEAR FLOODPLAIN

NOTES:

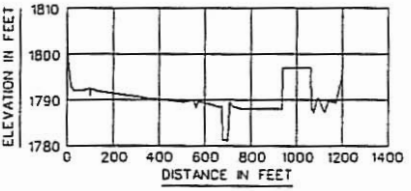
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 3.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

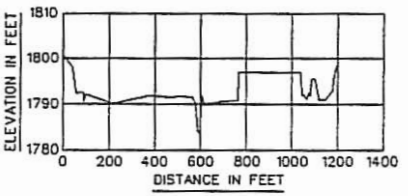
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP



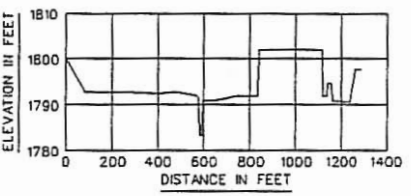
CROSS SECTION A



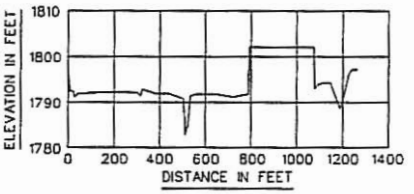
CROSS SECTION 1.10



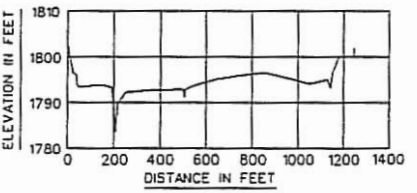
CROSS SECTION B



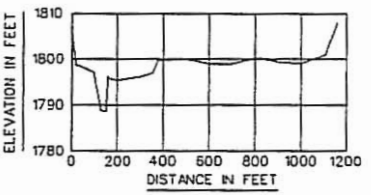
CROSS SECTION 2.05



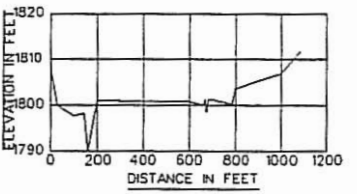
CROSS SECTION 2.10



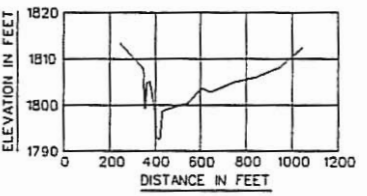
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: CROSS SECTION DATA SAME AS EXHIBIT 3.

EXHIBIT 5 – CROSS SECTIONS

EXHIBIT 5 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY[2]	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	497	2101	7.4	1789.0	1789.0	1790.0	1.0
1.10	759	635	2260	6.8	1791.7	1791.9	1792.3	0.6
B	1270	655	2091	7.4	1793.4	1793.8	1794.0	0.6
2.05	1476	735	2250	6.9	1794.2	1794.7	1795.0	0.8
2.10	1626	710	2976	5.2	1794.8	1795.3	1795.7	0.9
C	2576	650	2642	5.9	1796.2	1796.7	1797.1	0.9
D	4236	485	2525	6.1	1801.7	1801.5	1802.1	0.4
E	5346	541	2562	6.0	1803.8	1803.9	1804.8	1.0
F	6261	289	2089	7.4	1806.8	1806.7	1807.8	1.0

[1] Feet above limit of detailed study.
[2] Regulatory base flood elevations as determined by conditions shown on Exhibit 2.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 3 input data.

```
*************************************
HEC-2 WATER SURFACE PROFILES

Version  4.6.2;  May 1991
*************************************

T1        100-YEAR FLOOD
T2        JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3        EXHIBIT 5
T4        SECTIONS ADDED WITH PROJECT IN PLACE AND OUT OF FLOODWAY

J1  ICHECK     INQ      NINV      IDIR      STRT    METRIC     HVINS         Q      WSEL        FQ
         0       2                                                -1             1789.00
J2  NPROF    IPLOT     PRFVS     XSECV     XSECH        FN     ALLDC       IBW     CHNIM    ITRACE
         1                -1                                      -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
        38        43        39        42         1         2        25        26        53        54
        52       200

QT           5     15460     15460      2370     10600     51000
NC        .030      .030      .040       .10       .30
ET                            9.10                                                     550.0   1047.00
          FIELD SURVEYED SECTION 1 = FIS SECTION A
X1        1.00        34    1023.0    1047.0        .0        .0        .0                           0
GR      1798.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR      1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR      1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR      1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR      1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR      1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR      1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                            9.10                                                     300.0       935
          ADDITIONAL FIELD SURVEYED SECTION 1.1
X1        1.10      44.0     675.0     710.0     675.0     540.0     759.0      .000      .000      .000
GR      1803.4        .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR      1792.5     100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR      1790.9     272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR      1788.3     562.0    1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR      1781.2     681.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR      1789.6     710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR      1788.0     936.0    1797.0     940.0    1797.0    1060.0    1787.9    1066.0    1788.2    1069.0
GR      1787.2    1075.0    1790.1    1088.0    1790.5    1094.0    1790.3    1099.0    1788.1    1113.0
GR      1787.4    1123.0    1789.8    1139.0    1789.4    1172.0    1795.0    1200.0

ET                            9.10                                                    110.00       765
          FIELD SURVEYED SECTION 2 = FIS SECTION B
X1        2.00      39.0     580.0     608.0     340.0     530.0     511.0      .000      .000      .000
GR      1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR      1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR      1791.5     567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR      1784.0     598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR      1790.5     683.0    1790.6     720.0    1790.7     764.0    1797.0     770.0    1797.0    1040.0
GR      1792.0    1046.0    1792.1    1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0
GR      1795.2    1087.0    1795.8    1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0
GR      1793.0    1178.0    1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

ET                            9.10                                                    100.00       835
          ADDITIONAL FIELD SURVEYED SECTION 2.05
X1        2.05      24.0     570.0     598.0     215.0     150.0     206.0      .000      .000      .000
GR      1800.2        .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR      1791.9     570.0    1791.5     576.0    1783.2     585.0    1783.2     592.0    1790.9     598.0
GR      1790.7     640.0    1791.9     750.0    1791.9     790.0    1791.9     834.0    1802.0     840.0
GR      1802.0    1115.0    1791.9    1121.0    1791.9    1137.0    1794.7    1143.0    1794.7    1155.0
GR      1790.7    1163.0    1790.5    1240.0    1797.7    1264.0    1797.7    1288.0

ET                            9.10                                                     80.00       790
          ADDITIONAL FIELD SURVEYED SECTION 2.1
X1        2.10      35.0     504.0     537.0     180.0      70.0     150.0      .000      .000      .000
GR      1797.3        .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8      41.0
GR      1792.1     122.0    1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7     327.0
GR      1791.9     378.0    1791.7     443.0    1790.7     504.0    1786.9     510.0    1782.8     512.0
GR      1784.6     521.0    1784.6     524.0    1787.2     529.0    1790.6     534.0    1791.3     537.0
GR      1791.7     564.0    1791.8     637.0    1791.0     723.0    1791.7     789.0    1802.0     795.0
GR      1802.0    1075.0    1793.0    1081.0    1793.9    1096.0    1794.2    1121.0    1794.1    1149.0
GR      1788.6    1189.0    1791.8    1209.0    1796.2    1228.0    1797.1    1241.0    1797.1    1265.0
```

EXHIBIT 5 - HEC2 INPUT & OUTPUT

```
NC    .045      .045      .040      .10       .30
ET                        9.10                                                  40.00     690.00
          FIELD SURVEYED SECTION 3 = FIS SECTION C
X1     3.00        29     192.0     217.0     615.0     485.0     950.0                             0
GR  1803.1         .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3      53.0
GR  1793.9       153.0   1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6     217.0
GR  1789.9       218.0   1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9     503.0
GR  1791.3       508.0   1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0     753.0
GR  1796.5       853.0   1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3    1144.0
GR  1796.5      1153.0   1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                        9.10                                                  15.00     500.00
          FIELD SURVEYED SECTION 4 = FIS SECTION D
X1     4.00        27     100.0     160.0    1300.0    1420.0    1660.0                             0
GR  1807.2         .0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0     130.0
GR  1788.7       139.0   1788.7     151.0    1796.3     160.0    1795.7     167.0    1795.4     200.0
GR  1796.2       300.0   1797.0     356.0    1799.8     381.0    1798.6     400.0    1800.1     478.0
GR  1799.9       500.0   1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0     832.0
GR  1799.3       900.0   1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0    1131.0
GR  1805.0      1140.0   1808.0    1162.0

ET                        9.10                                                  104.14    644.88
          FIELD SURVEYED SECTION 5 = FIS SECTION E
X1     5.00        24     144.0     199.0     980.0     700.0    1110.0                             0
GR  1808.3         .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9     156.0
GR  1790.1       161.0   1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9     399.0
GR  1800.9       499.0   1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5     676.0
GR  1801.3       682.0   1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4     787.0
GR  1803.5       799.0   1805.3     899.0    1806.8     999.0    1811.9    1085.0

ET                        9.10                                                  399.00    688.33
          FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00        21     399.0     430.0     855.0     860.0     915.0                             0
GR  1813.5       246.0   1808.1     346.0    1807.5     350.0    1799.2     355.0    1799.2     359.0
GR  1804.6       363.0   1804.9     371.0    1805.0     378.0    1798.3     399.0    1793.3     407.0
GR  1792.6       416.0   1793.0     423.0    1798.6     430.0    1799.0     446.0    1800.4     546.0
GR  1803.6       607.0   1802.7     646.0    1804.8     746.0    1805.9     846.0    1808.1     946.0
GR  1812.3      1046.0
```

```
    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTH        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
       FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
  15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0    1785.50
     .00       6.65      9.69      6.36      .030      .040      .030      .000   1776.10      76.07
  .005099       0.        0.        0.         0         5         0       .00    978.44    1179.00

*SECNO 1.100
3265 DIVIDED FLOW
       ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     10.88   1791.88   1791.40       .00   1792.60       .72      2.80       .01   1788.70
  15460.0    4613.7    2750.6    8095.6     925.2     315.4    1165.2      34.3      14.1    1789.60
     .03       4.99      8.72      6.95      .030      .040      .030      .000   1781.00     100.78
  .003741       675.      759.      540.         2        14         0       .00    926.25    1184.39

*SECNO 2.000
3265 DIVIDED FLOW
       FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.07   1793.77   1793.36       .00   1794.55       .78      1.93       .02   1790.40
  15460.0    8341.9    1791.3    5326.8    1281.4     201.0     739.0      57.5      22.4    1791.80
     .04       6.51      8.91      7.21      .030      .040      .030      .000   1783.70      55.75
  .005050       340.      511.      530.         2        13         0       .00    821.09    1179.38

*SECNO 2.050
3265 DIVIDED FLOW
       ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.54   1794.74   1794.07       .00   1795.36       .62       .79       .02   1791.90
  15460.0    5641.3    1577.9    8240.7    1107.9     211.6    1205.8      67.7      26.2    1790.90
     .05       5.09      7.46      6.83      .030      .040      .030      .000   1783.20      63.14
  .003661       215.      206.      150.         2         9         0       .00    907.35    1254.12

*SECNO 2.100
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51
       ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.53   1795.33   1793.83       .00   1795.67       .34       .29       .03   1790.70
  15460.0    7446.5    1644.4    6369.1    1667.9     289.2    1350.1      76.4      29.0    1791.30
     .06       4.46      5.69      4.72      .030      .040      .030      .000   1782.80       5.36
  .001598       180.      150.       70.         1        10         0       .00    930.52    1224.21

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59
       FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.09   1796.69   1795.96       .00   1797.20       .50      1.47       .05   1793.20
  15460.0    2237.8    2054.9   11167.3     475.6     215.3    2288.2     117.3      41.7    1788.60
     .09       4.71      9.54      4.88      .045      .040      .045      .000   1783.60      24.64
  .004620       615.      950.      485.         2         6         0       .00   1129.90    1154.54

*SECNO 4.000
       FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     12.79   1801.49   1800.49       .00   1801.96       .47      4.76       .00   1797.10
  15460.0    1115.6    4904.0    9440.4     298.0     601.4    2581.3     223.8      78.0    1796.30
     .17       3.74      8.15      3.65      .045      .040      .045      .000   1788.70      12.34
  .002422       1300.     1660.     1420.        3        13         0       .00   1103.61    1115.95

*SECNO 5.000
       FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     13.79   1803.89   1802.85       .00   1804.47       .58      2.48       .03   1798.30
  15460.0    3767.3    4193.4    7499.3     644.5     475.8    1838.4     283.6      94.6    1801.00
     .21       5.84      8.81      4.08      .045      .040      .045      .000   1790.10      15.75
  .003435       980.     1110.      700.        3         5         0       .00    804.84     820.60

*SECNO 6.000
       FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     14.14   1806.74   1805.70       .00   1807.67       .93      3.10       .10   1798.30
  15460.0    1062.0    4337.6   10060.4     202.1     385.9    1715.4     336.1      107.9   1798.60
     .24       5.25     11.24      5.86      .045      .040      .045      .000   1792.60     350.46
  .003651       855.      915.      860.        2        10         0       .00    533.85     884.30
```

EXHIBIT 5 - HEC2 INPUT & OUTPUT

```
T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURIMA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 5
T4      SECTIONS ADDED WITH PROJECT IN PLACE AND OUT OF FLOODWAY

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10        3                                                 -1                1790.00
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                    -1                                      -1

    SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      550.0    1047.0  TYPE=      1  TARGET=      497.000
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1788.86   1789.00   1790.84       .84       .00       .00   1784.50
 15460.0   13579.3    1880.7        .0    1860.4     240.6        .0        .0        .0 100000.00
      .00      7.30      7.82       .00       .030      .040      .000      .000   1776.10    550.00
  .003456       0.        0.        0.         0         8         0       .00    497.00   1047.00

*SECNO 1.100
3470 ENCROACHMENT STATIONS=      300.0     935.0  TYPE=      1  TARGET=      635.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.33   1792.33   1791.60   1791.88   1793.11       .78      2.26       .01   1788.70
 15460.0   5632.6    2858.3    6969.0     991.6     331.2     937.2      32.9       8.5   1789.60
      .03      5.68      8.63      7.44       .030      .040      .030      .000   1781.00    300.00
  .003433       675.      759.      540.         2        17         0       .00    635.00    935.00

*SECNO 2.000
3470 ENCROACHMENT STATIONS=      110.0     765.0  TYPE=      1  TARGET=      655.000
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.33   1794.03   1793.53   1793.77   1794.90       .87      1.76       .03   1790.40
 15460.0   9106.4    1856.7    4497.0    1322.3     208.2     560.3      54.2      14.5   1791.80
      .04      6.89      8.92      8.03       .030      .040      .030      .000   1783.70    110.00
  .004821       340.      511.      530.         2         9         0       .00    655.00    765.00

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      100.0     835.0  TYPE=      1  TARGET=      735.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.81   1795.01   1794.40   1794.74   1795.78       .77       .87       .01   1791.90
 15460.0   7120.9    1822.7    6516.5    1182.2     219.2     848.2      63.8      17.6   1790.90
      .05      6.02      8.31      7.68       .030      .040      .030      .000   1783.20    100.00
  .004342       215.      206.      150.         2         8         0       .00    735.00    835.00

*SECNO 2.100
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.60
3470 ENCROACHMENT STATIONS=       80.0     790.0  TYPE=      1  TARGET=      710.000
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.94   1795.74   1794.09   1795.33   1796.16       .42       .34       .03   1790.70
 15460.0   7919.7    1828.5    5711.7    1602.4     302.9    1071.1      72.0      19.9   1791.30
      .06      4.94      6.04      5.33       .030      .040      .030      .000   1782.80     80.00
  .001694       180.      150.       70.         2        10         0       .00    710.00    790.00

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .63
3470 ENCROACHMENT STATIONS=       40.0     690.0  TYPE=      1  TARGET=      650.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.52   1797.12   1795.94   1796.69   1797.72       .60      1.51       .05   1793.20
 15460.0   2653.5    2145.9   10660.7     532.9     226.0    1881.6     109.3      28.7   1788.60
      .08      4.98      9.50      5.66       .045      .040      .045      .000   1783.60     40.00
  .004292       615.      950.      485.         2        10         0       .00    650.00    690.00

*SECNO 4.000
3470 ENCROACHMENT STATIONS=       15.0     500.0  TYPE=      1  TARGET=      485.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.36   1802.06   1800.43   1801.49   1802.80       .74      5.04       .04   1797.10
 15460.0   1542.9    5804.7    8112.4     345.3     635.7    1544.0     194.7      47.1   1796.30
      .15      4.47      9.13      5.25       .045      .040      .045      .000   1788.70     15.00
  .002820      1300.     1660.     1420.         3         9         0       .00    485.00    500.00
```

```
*SECNO 5.000
3470 ENCROACHMENT STATIONS=      104.1     644.9  TYPE=      1  TARGET=      540.740
      FIELD SURVEYED SECTION 5 = FIS SECTION E
   5.000     14.72   1804.82   1803.70   1803.89   1805.58       .75      2.77       .00   1798.30
 15460.0    1717.7    5075.1    8667.3     270.4     526.9    1764.8     243.0      56.3   1801.00
     .18      6.35      9.63      4.91      .045      .040      .045      .000   1790.10    104.14
 .003581      980.     1110.      700.         2         5         0       .00    540.74    644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0     688.3  TYPE=      1  TARGET=      289.330
      FIELD SURVEYED SECTION 6 = FIS SECTION F
   6.000     15.15   1807.75   1805.34   1806.74   1808.66       .91      3.04       .05   1798.30
 15460.0        .0    4028.2   11431.8        .0     417.0    1672.4     289.5      64.5   1798.60
     .21       .00      9.66      6.84      .000      .040      .045      .000   1792.60    399.00
 .003359      855.      915.      860.         2         9         0       .00    289.33    688.33
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
EXHIBIT 5
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1788.86	2100.96	7.82	550.00	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.88	1791.40	2405.91	8.72	100.78	1184.39	.00
	1.100	15460.00	759.00	1781.00	1792.33	1791.60	2259.99	8.63	300.00	935.00	.45
	2.000	15460.00	511.00	1783.70	1793.77	1793.36	2221.40	8.91	55.75	1179.38	.00
	2.000	15460.00	511.00	1783.70	1794.03	1793.53	2090.75	8.92	110.00	765.00	.26
	2.050	15460.00	206.00	1783.20	1794.74	1794.07	2525.31	7.46	63.14	1254.12	.00
	2.050	15460.00	206.00	1783.20	1795.01	1794.40	2249.63	8.31	100.00	835.00	.28
*	2.100	15460.00	150.00	1782.80	1795.33	1793.83	3307.19	5.69	5.36	1224.21	.00
*	2.100	15460.00	150.00	1782.80	1795.74	1794.09	2976.41	6.04	80.00	790.00	.41
*	3.000	15460.00	950.00	1783.60	1796.69	1795.96	2979.11	9.54	24.64	1154.54	.00
*	3.000	15460.00	950.00	1783.60	1797.12	1795.94	2642.46	9.50	40.00	690.00	.43
	4.000	15460.00	1660.00	1788.70	1801.49	1800.49	3482.67	8.15	12.34	1115.95	.00
	4.000	15460.00	1660.00	1788.70	1802.06	1800.43	2525.04	9.13	15.00	500.00	.57
	5.000	15460.00	1110.00	1790.10	1803.89	1802.85	2958.73	8.81	15.75	820.60	.00
	5.000	15460.00	1110.00	1790.10	1804.82	1803.70	2562.11	9.63	104.14	644.88	.93
	6.000	15460.00	915.00	1792.60	1806.74	1805.70	2303.42	11.24	350.46	884.30	.00
	6.000	15460.00	915.00	1792.60	1807.75	1805.34	2089.34	9.66	399.00	688.33	1.00

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 2.100 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

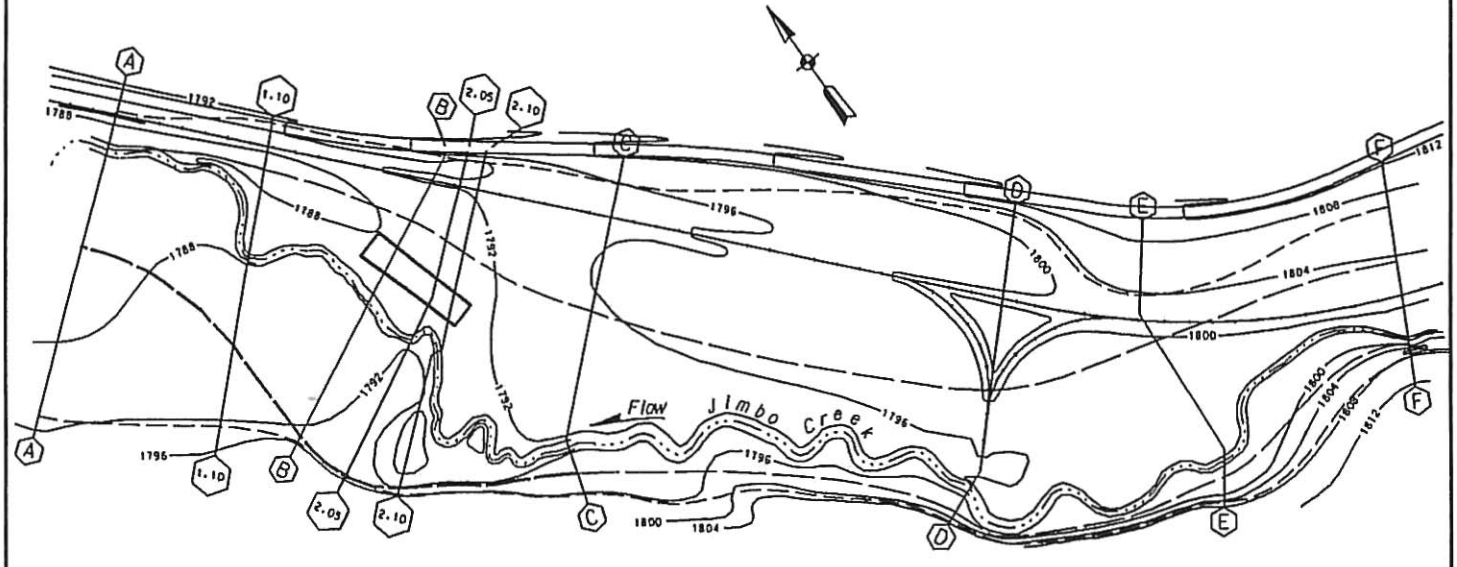
FLOODWAY DATA, EXHIBIT 5
PROFILE NO. 2

	------- FLOODWAY -------			WATER SURFACE ELEVATION		
STATION	WIDTH	SECTION AREA	MEAN VELOCITY	WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	497.	2101.	7.4	1790.0	1789.0	1.0
1.100	635.	2260.	6.8	1792.3	1791.9	.4
2.000	655.	2091.	7.4	1794.1	1793.8	.3
2.050	735.	2250.	6.9	1795.0	1794.7	.3
2.100	710.	2976.	5.2	1795.7	1795.3	.4
3.000	650.	2642.	5.9	1797.1	1796.7	.4
4.000	485.	2525.	6.1	1802.1	1801.5	.6
5.000	541.	2562.	6.0	1804.8	1803.9	.9
6.000	289.	2089.	7.4	1807.7	1806.7	1.0

EXHIBIT 5 - HEC2 INPUT & OUTPUT

EXHIBIT SIX

Surcharge Limits Satisfied



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

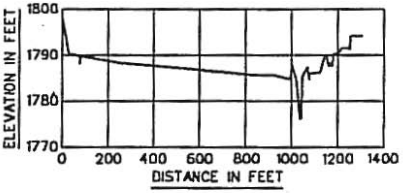
100-YEAR FLOODPLAIN

NOTES:

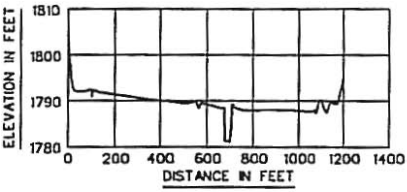
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 2.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

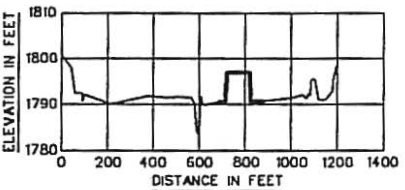
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP



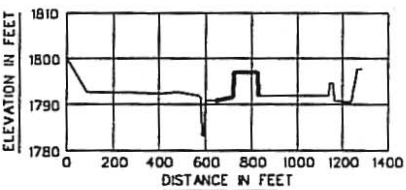
CROSS SECTION A



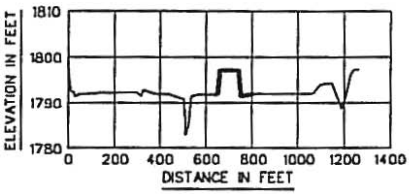
CROSS SECTION 1.10



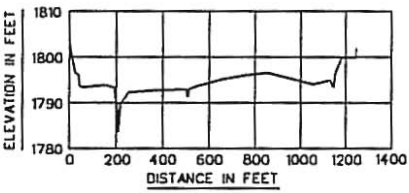
CROSS SECTION B



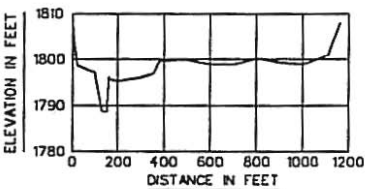
CROSS SECTION 2.05



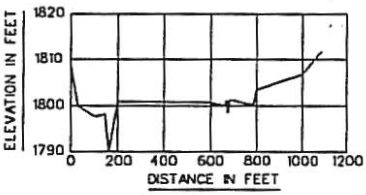
CROSS SECTION 2.10



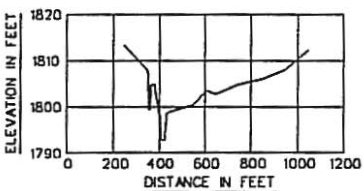
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS
OR REVISIONS TO EXHIBIT 2.

EXHIBIT 6 – CROSS SECTIONS

EXHIBIT 6 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY[2]	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	628	2763	5.6	1791.7	1791.7	1792.8	1.1
B	1270	845	2199	7.0	1793.4	1793.4	1793.9	0.5
2.05	1476	900	2190	7.1	1794.2	1794.4	1794.8	0.6
2.10	1626	867	3072	5.0	1794.8	1795.0	1795.6	0.8
C	2576	580	2338	6.6	1796.2	1796.4	1797.0	0.8
D	4236	450	2554	6.1	1801.7	1801.6	1802.4	0.7
E	5346	541	2614	5.9	1803.8	1803.9	1804.9	1.1
F	6261	289	2086	7.4	1806.8	1806.8	1807.7	0.9

[1] Feet above limit of detailed study.
[2] Regulatory base flood elevations as determined by conditions shown on Exhibit 2.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 2 input data.

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***********************************
HEC-2 WATER SURFACE PROFILES

Version  4.6.2; May 1991
***********************************

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 6
T4      SECTIONS ADDED ONLY - PROJECT ADDED AND IN FLOODWAY

J1 ICHECK    INQ      NINV      IDIR      STRT     METRIC    HVINS      Q        WSEL      FQ
     0        2                                               -1               1789.00
J2 NPROF    IPLOT     PRFVS     XSECV     XSECH     FN       ALLDC     IBW      CHNIM     ITRACE
    1                  -1                                     -1
J3 VARIABLE CODES FOR SUMMARY PRINTOUT
    38        43        39        42         1         2        25        26        53        54
    52       200

QT         5     15460     15460      2370     10600     51000
NC      .030      .030      .040       .10       .30
ET                          9.10                                                  687.56   1047.00
        FIELD SURVEYED SECTION 1 = FIS SECTION A
X1      1.00        34    1023.0    1047.0        .0        .0        .0                             0
GR    1798.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR    1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR    1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR    1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR    1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR    1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR    1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                          9.10                                                  390.00   1018.00
        ADDITIONAL FIELD SURVEYED SECTION 1.1
X1      1.10        42     675.0     710.0     675.0     540.0     759.0
GR    1803.4        .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR    1792.5     100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR    1790.9     272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR    1788.3     562.0    1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR    1781.2     681.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR    1789.6     710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR    1787.9     981.0    1787.7    1064.0    1788.2    1069.0    1787.2    1075.0    1790.1    1088.0
GR    1790.5    1094.0    1790.3    1099.0    1788.1    1113.0    1787.4    1123.0    1789.8    1139.0
GR    1789.4    1172.0    1795.0    1200.0

ET                          9.10                                                   80.00    924.98
        FIELD SURVEYED SECTION 2 = FIS SECTION B
X1      2.00      40.0     580.0     608.0     340.0     530.0     511.0      .000      .000      .000
GR    1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR    1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR    1791.5     567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR    1784.0     598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR    1790.5     683.0    1790.6     714.0    1797.0     720.0    1797.0     820.0    1790.6     826.0
GR    1790.7     880.0    1791.4    1005.0    1792.1    1053.0    1791.2    1068.0    1792.5    1074.0
GR    1791.9    1080.0    1795.2    1087.0    1795.8    1096.0    1795.4    1104.0    1791.0    1119.0
GR    1790.9    1145.0    1793.0    1178.0    1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

ET                          9.10                                                   60.00    963.00
        ADDITIONAL FIELD SURVEYED SECTION 2.05
X1      2.05      25.0     570.0     598.0     215.0     150.0     206.0      .000      .000      .000
GR    1800.2        .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR    1791.9     570.0    1791.5     576.0    1783.2     585.0    1783.2     592.0    1790.9     598.0
GR    1790.7     640.0    1791.6     719.0    1797.0     725.0    1797.0     825.0    1791.9     831.0
GR    1791.9     905.0    1791.9    1005.0    1791.9    1115.0    1791.9    1137.0    1794.7    1143.0
GR    1794.7    1155.0    1790.7    1163.0    1790.5    1240.0    1797.7    1264.0    1797.7    1288.0

ET                          9.10                                                   30.00    897.00
        ADDITIONAL FIELD SURVEYED SECTION 2.1
X1      2.10        38     504.0     537.0     180.0      70.0     150.0                             0
GR    1797.3        .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8      41.0
GR    1792.1     122.0    1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7     327.0
GR    1791.9     378.0    1791.7     443.0    1790.7     504.0    1786.9     510.0    1782.8     512.0
GR    1784.6     521.0    1784.6     524.0    1787.2     529.0    1790.6     534.0    1791.3     537.0
GR    1791.7     564.0    1791.8     637.0    1792.0     651.2    1797.0     661.2    1797.0     741.8
GR    1791.3     751.8    1791.9     805.0    1791.9     903.0    1791.9     980.0    1791.9    1064.0
GR    1793.9    1096.0    1794.2    1121.0    1794.1    1149.0    1788.6    1189.0    1791.8    1209.0
GR    1796.2    1228.0    1797.1    1241.0    1797.1    1265.0
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EXHIBIT 6 - HEC2 INPUT & OUTPUT

```
NC    .045      .045      .040      .10       .30
ET                        9.10                                                  110.00    690.00
          FIELD SURVEYED SECTION 3 = FIS SECTION C
X1     3.00        29     192.0     217.0     615.0     485.0     950.0                          0
GR  1803.1         .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3     53.0
GR  1793.9       153.0   1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6    217.0
GR  1789.9       218.0   1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9    503.0
GR  1791.3       508.0   1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0    753.0
GR  1796.5       853.0   1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3   1144.0
GR  1796.5      1153.0   1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                        9.10                                                   50.00     500.00
          FIELD SURVEYED SECTION 4 = FIS SECTION D
X1     4.00        27     100.0     160.0    1300.0    1420.0    1660.0                          0
GR  1807.2         .0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0    130.0
GR  1788.7       139.0   1788.7     151.0    1796.3     160.0    1795.7     167.0    1795.4    200.0
GR  1796.2       300.0   1797.0     356.0    1799.8     381.0    1799.6     400.0    1800.1    478.0
GR  1799.9       500.0   1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0    832.0
GR  1799.3       900.0   1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0   1131.0
GR  1805.0      1140.0   1808.0    1162.0

ET                        9.10                                                  104.14     644.88
          FIELD SURVEYED SECTION 5 = FIS SECTION E
X1     5.00        24     144.0     199.0     980.0     700.0    1110.0                          0
GR  1808.3         .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9    156.0
GR  1790.1       161.0   1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9    399.0
GR  1800.9       499.0   1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5    676.0
GR  1801.3       682.0   1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4    787.0
GR  1803.5       799.0   1805.3     899.0    1806.8     999.0    1811.9    1085.0

ET                        9.10                                                  399.00     688.33
          FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00        21     399.0     430.0     855.0     860.0     915.0                          0
GR  1813.5       246.0   1808.1     346.0    1807.5     350.0    1799.2     355.0    1799.2    359.0
GR  1804.6       363.0   1804.9     371.0    1805.0     378.0    1798.3     399.0    1793.3    407.0
GR  1792.6       416.0   1793.0     423.0    1798.6     430.0    1799.0     446.0    1800.4    546.0
GR  1803.6       607.0   1802.7     646.0    1804.8     746.0    1805.9     846.0    1808.1    946.0
GR  1812.3      1046.0
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    SECNO       DEPTH       CWSEL       CRIWS       WSELK       EG          HV          HL          OLOSS       L-BANK ELEV
    Q           QLOB        QCH         QROB        ALOB        ACH         AROB        VOL         TWA         R-BANK ELEV
    TIME        VLOB        VCH         VROB        XNL         XNCH        XNR         WTN         ELMIN       SSTA
    SLOPE       XLOBL       XLCH        XLOBR       ITRIAL      IDC         ICONT       CORAR       TOPWID      ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000      12.90    1789.00    1788.72    1789.00    1789.79        .79        .00        .00    1784.50
   15460.0    11802.0     2098.7     1559.3     1774.4      216.6      245.0         .0         .0    1785.50
      .00       6.65       9.69       6.36       .030       .040       .030       .000    1776.10      76.07
   .005099         0.         0.         0.          0          5          0        .00     978.44    1179.00

*SECNO 1.100
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100      10.67    1791.67    1790.96        .00    1792.24        .57       2.43        .02    1788.70
   15460.0     3418.6     2346.5     9694.9      811.5      307.9     1577.7       35.9       14.7    1789.60
      .03       4.21       7.62       6.14       .030       .040       .030       .000    1781.00     101.05
   .002950        675.       759.       540.          2         13          0        .00    1024.35    1183.31

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000       9.70    1793.40    1793.11        .00    1794.14        .73       1.85        .05    1790.40
   15460.0     6798.0     1739.0     6923.0     1089.9      190.7     1018.7       62.0       24.6    1791.80
      .05       6.24       9.12       6.80       .030       .040       .030       .000    1783.70      56.88
   .005666        340.       511.       530.          2         13          0        .00     987.49    1178.72

*SECNO 2.050
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050      11.22    1794.42    1793.87        .00    1794.97        .55        .82        .02    1791.90
   15460.0     4427.3     1483.8     9549.0      950.7      202.9     1533.2       72.4       29.0    1790.90
      .06       4.66       7.31       6.23       .030       .040       .030       .000    1783.20      66.74
   .003724        215.       206.       150.          2          8          0        .00    1067.32    1253.09

*SECNO 2.100
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.49
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100      12.17    1794.97    1793.66        .00    1795.27        .31        .28        .02    1790.70
   15460.0     6350.7     1575.2     7534.1     1490.1      277.4     1739.0       80.9       32.0    1791.30
      .06       4.26       5.68       4.33       .030       .040       .030       .000    1782.80       6.32
   .001684        180.       150.        70.          2         10          0        .00    1128.11    1222.67

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .52
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000      12.81    1796.41    1795.93        .00    1797.05        .65       1.68        .10    1793.20
   15460.0     2196.6     2242.1    11021.3      429.4      208.4     2027.9      120.7       45.7    1788.60
      .09       5.12      10.76       5.43       .045       .040       .045       .000    1783.60      29.01
   .006139        615.       950.       485.          2          5          0        .00    1099.31    1152.76

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.68
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000      12.93    1801.63    1800.48        .00    1802.05        .42       4.98        .02    1797.10
   15460.0     1126.2     4744.6     9589.2      310.5      609.9     2719.2      224.7       81.6    1796.30
      .17       3.63       7.78       3.53       .045       .040       .045       .000    1788.70      11.95
   .002163        1300.      1660.      1420.         3          9          0        .00    1104.85    1116.80

*SECNO 5.000
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000      13.76    1803.86    1802.92        .00    1804.45        .59       2.35        .05    1798.30
   15460.0     3776.1     4218.6     7465.3      640.7      474.1     1819.9      285.7       98.1    1801.00
      .22       5.89       8.90       4.10       .045       .040       .045       .000    1790.10      15.86
   .003516        980.      1110.       700.         3          6          0        .00     803.08     818.94

*SECNO 6.000
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000      14.15    1806.75    1805.69        .00    1807.67        .92       3.12        .10    1798.30
   15460.0     1062.7     4331.3    10066.1      202.6      386.2     1719.8      338.0       111.4    1798.60
      .25       5.25      11.22       5.85       .045       .040       .045       .000    1792.60     350.45
   .003631        855.       915.       860.         2         10          0        .00     534.29     884.74
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EXHIBIT 6 - HEC2 INPUT & OUTPUT

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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 6
T4      SECTIONS ADDED ONLY - NO ENCROACHMENT CHANGES OR IMPROVEMENTS

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10        3                                                -1                1790.00
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                    -1                                     -1

    SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
         FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
  15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00       .030      .040      .000      .000   1776.10    687.56
  .005241        0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.69
3470 ENCROACHMENT STATIONS=      390.0    1018.0  TYPE=      1  TARGET=      628.000
         ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.82   1792.82   1791.30   1791.67   1793.33       .50      1.88       .09   1788.70
  15460.0   4586.5    2271.1    8602.4     959.0     348.5    1455.3      32.5       7.2   1789.60
      .03      4.78      6.52      5.91       .030      .040      .030      .000   1781.00    390.00
  .001830       675.      759.      540.         3        13         0       .00    628.00   1018.00

*SECNO 2.000
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .62
3470 ENCROACHMENT STATIONS=       80.0     925.0  TYPE=      1  TARGET=      844.980
         FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.16   1793.86   1793.36   1793.40   1794.66       .79      1.24       .09   1790.40
  15460.0   8492.4    1775.3    5192.3    1302.7     203.8     692.1      57.6      13.8   1791.80
      .05      6.52      8.71      7.50       .030      .040      .030      .000   1783.70     80.00
  .004736       340.      511.      530.         2        14         0       .00    739.11    924.98

*SECNO 2.050
3265 DIVIDED FLOW
3470 ENCROACHMENT STATIONS=       60.0     963.0  TYPE=      1  TARGET=      903.000
         ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.58   1794.78   1794.42   1794.42   1795.60       .82       .93       .01   1791.90
  15460.0   6922.9    1889.7    6647.3    1131.6     212.9     845.6      67.3      17.3   1790.90
      .06      6.12      8.88      7.86       .030      .040      .030      .000   1783.20     62.60
  .005144       215.      206.      150.         2         8         0       .00    795.33    963.00

*SECNO 2.100
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.73
3470 ENCROACHMENT STATIONS=       30.0     897.0  TYPE=      1  TARGET=      867.000
         ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.81   1795.61   1794.11   1794.97   1796.01       .40       .37       .04   1790.70
  15460.0   8547.1    1802.2    5110.7    1742.1     298.8    1030.7      75.6      19.8   1791.30
      .06      4.91      6.03      4.96       .030      .040      .030      .000   1782.80     30.00
  .001721       180.      150.       70.         2         6         0       .00    781.20    897.00

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .56
3470 ENCROACHMENT STATIONS=      110.0     690.0  TYPE=      1  TARGET=      580.000
         FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.42   1797.02   1796.16   1796.41   1797.79       .78      1.67       .11   1793.20
  15460.0   1473.9    2383.2   11602.9     275.4     223.6    1839.2     111.5      28.5   1788.60
      .09      5.35     10.66      6.31       .045      .040      .045      .000   1783.60    110.00
  .005482       615.      950.      485.         2         6         0       .00    580.00    690.00

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47
3470 ENCROACHMENT STATIONS=       50.0     500.0  TYPE=      1  TARGET=      450.000
         FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.70   1802.40   1800.36   1801.63   1803.11       .71      5.31       .01   1797.10
  15460.0   1076.2    5808.1    8575.6     239.9     655.9    1658.2     193.0      45.4   1796.30
      .15      4.49      8.86      5.17       .045      .040      .045      .000   1788.70     50.00
  .002545      1300.     1660.     1420.         2         9         0       .00    450.00    500.00
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EXHIBIT 6 - HEC2 INPUT & OUTPUT

*SECNO 5.000
3470 ENCROACHMENT STATIONS= 104.1 644.9 TYPE= 1 TARGET= 540.740
FIELD SURVEYED SECTION 5 = FIS SECTION E

5.000	14.82	1804.92	1803.68	1803.86	1805.64	.72	2.53	.00	1798.30
15460.0	1703.6	5005.8	8750.6	274.2	532.2	1807.9	241.8	54.2	1801.00
.19	6.21	9.41	4.84	.045	.040	.045	.000	1790.10	104.14
.003369	980.	1110.	700.	2	6	0	.00	540.74	644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS= 399.0 688.3 TYPE= 1 TARGET= 289.330
FIELD SURVEYED SECTION 6 = FIS SECTION F

6.000	15.14	1807.74	1805.38	1806.75	1808.65	.92	2.95	.06	1798.30
15460.0	.0	4032.3	11427.7	.0	416.7	1669.7	288.7	62.4	1798.60
.22	.00	9.68	6.84	.000	.040	.045	.000	1792.60	399.00
.003373	855.	915.	860.	2	9	0	.00	289.33	688.33

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
EXHIBIT 6
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.67	1790.96	2697.13	7.62	101.05	1183.31	.00
*	1.100	15460.00	759.00	1781.00	1792.82	1791.30	2762.77	6.52	390.00	1018.00	1.15
	2.000	15460.00	511.00	1783.70	1793.40	1793.11	2299.38	9.12	56.88	1178.72	.00
*	2.000	15460.00	511.00	1783.70	1793.86	1793.36	2198.60	8.71	80.00	924.98	.46
	2.050	15460.00	206.00	1783.20	1794.42	1793.87	2686.78	7.31	66.74	1253.09	.00
	2.050	15460.00	206.00	1783.20	1794.78	1794.42	2190.13	8.88	62.60	963.00	.35
*	2.100	15460.00	150.00	1782.80	1794.97	1793.66	3506.47	5.68	6.32	1222.67	.00
*	2.100	15460.00	150.00	1782.80	1795.61	1794.11	3071.56	6.03	30.00	897.00	.65
*	3.000	15460.00	950.00	1783.60	1796.41	1795.93	2665.59	10.76	29.01	1152.76	.00
*	3.000	15460.00	950.00	1783.60	1797.02	1796.16	2338.19	10.66	110.00	690.00	.61
*	4.000	15460.00	1660.00	1788.70	1801.63	1800.48	3639.57	7.78	11.95	1116.80	.00
*	4.000	15460.00	1660.00	1788.70	1802.40	1800.36	2554.01	8.86	50.00	500.00	.77
	5.000	15460.00	1110.00	1790.10	1803.86	1802.92	2934.78	8.90	15.86	818.94	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.68	2614.33	9.41	104.14	644.88	1.07
	6.000	15460.00	915.00	1792.60	1806.75	1805.69	2308.51	11.22	350.45	884.74	.00
	6.000	15460.00	915.00	1792.60	1807.74	1805.38	2086.41	9.68	399.00	688.33	.98

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 1.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.100 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

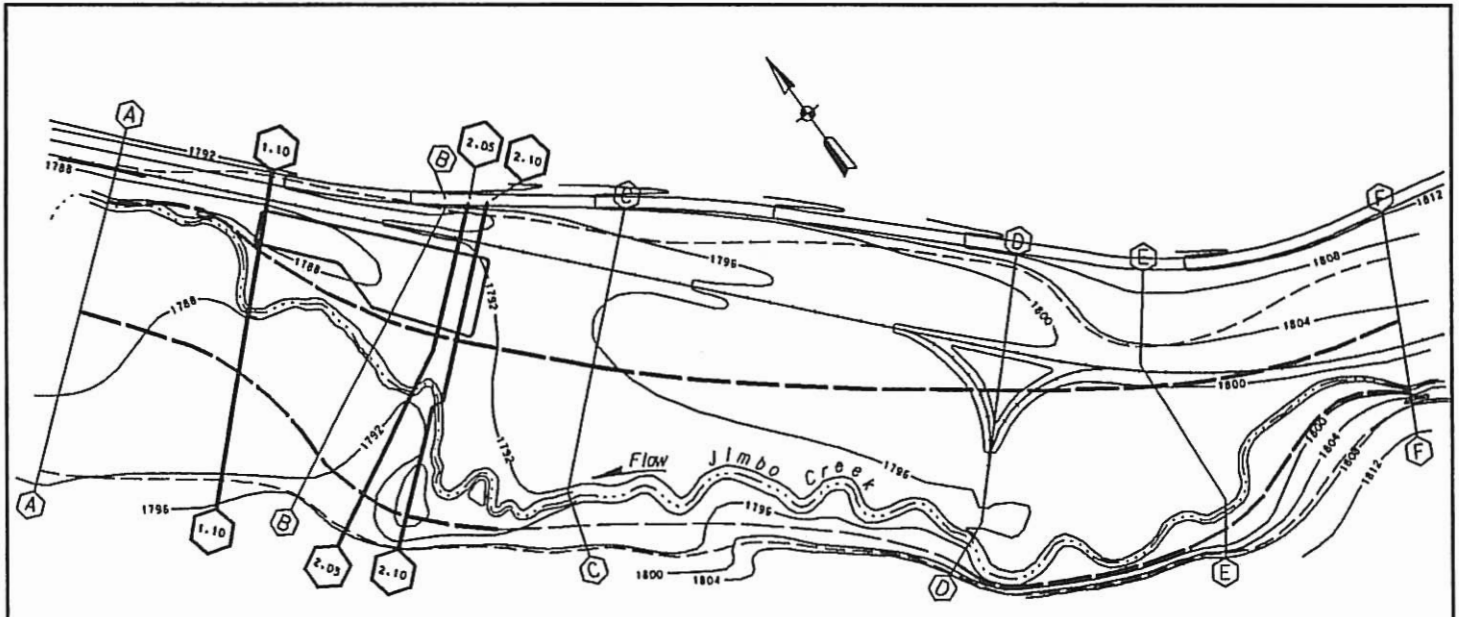
WARNING SECNO= 4.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 6
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	628.	2763.	5.6	1792.9	1791.7	1.2
2.000	845.	2199.	7.0	1793.9	1793.4	.5
2.050	900.	2190.	7.1	1794.8	1794.4	.4
2.100	867.	3072.	5.0	1795.6	1795.0	.6
3.000	580.	2338.	6.6	1797.0	1796.4	.6
4.000	450.	2554.	6.1	1802.4	1801.6	.8
5.000	541.	2614.	5.9	1805.0	1803.9	1.1
6.000	289.	2086.	7.4	1807.8	1806.8	1.0

EXHIBIT SEVEN

Use of Section 65.12 to Compute New Base Condition



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

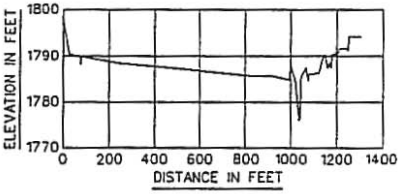
100-YEAR FLOODPLAIN

NOTES:

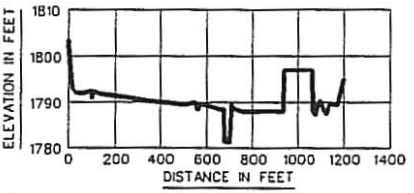
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 1.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

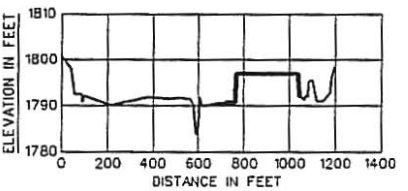
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP



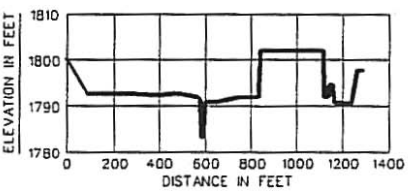
CROSS SECTION A



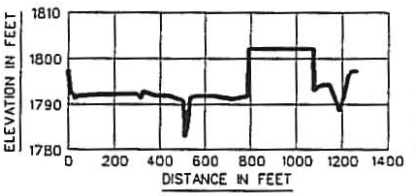
CROSS SECTION 1.10



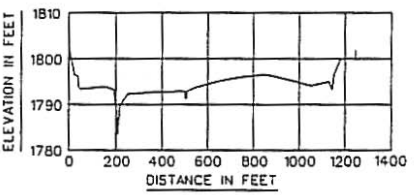
CROSS SECTION B



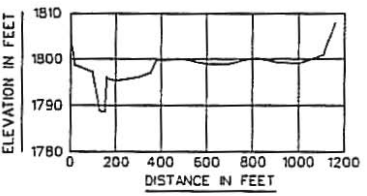
CROSS SECTION 2.05



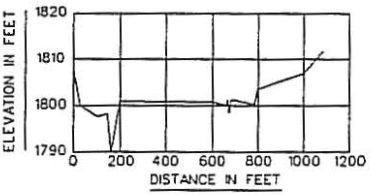
CROSS SECTION 2.10



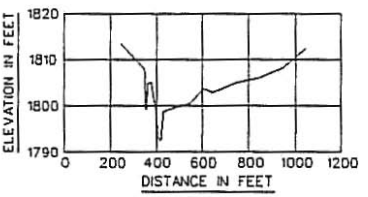
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 1.

EXHIBIT 7 – CROSS SECTIONS

EXHIBIT 7 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	399	1791	8.6	1789.0	1789.0	1790.0	1.0
1.10	759	437	2001	7.7	1791.9	1791.9	1792.8	0.9
B	1270	525	1954	7.9	1793.8	1793.8	1794.5	0.7
2.05	1476	610	2271	6.8	1794.7	1794.7	1795.6	0.9
2.10	1626	650	3057	5.1	1795.3	1795.3	1796.2	0.9
C	2576	572	2521	6.1	1796.7	1796.7	1797.4	0.7
D	4236	628	2912	5.3	1801.5	1801.5	1802.1	0.6
E	5346	565	2529	6.1	1803.9	1803.9	1804.5	0.6
F	6261	258	1927	8.0	1806.7	1806.7	1807.7	1.0

[1] Feet above limit of detailed study.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA
JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 1 input data.

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**********
HEC-2 WATER SURFACE PROFILES

Version  4.6.2;  May 1991
**********

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 7
T4      SECTIONS ADDED WITH PROJECT IN PLACE - COMPUTE NEW FLOODWAY

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0        2                                                 -1                1789.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        1                  -1                                      -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38        43        39        42         1         2        25        26        53        54
       52       200

QT       5     15460     15460      2370     10600     51000
NC    .030      .030      .040       .10       .30
ET                        8.4
        FIELD SURVEYED SECTION 1 = FIS SECTION A
X1    1.00        34    1023.0    1047.0        .0        .0        .0                            0
GR 1798.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR 1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR 1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1021.0    1776.1    1038.0
GR 1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR 1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR 1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR 1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

        ADDITIONAL FIELD SURVEYED SECTION 1.1
X1    1.10      44.0     675.0     710.0     675.0     540.0     759.0      .000      .000      .000
GR 1803.4        .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR 1792.5     100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR 1790.9     272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR 1788.3     562.0    1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR 1781.2     681.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR 1789.6     710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR 1788.0     936.0    1797.0     940.0    1797.0    1060.0    1787.9    1066.0    1788.2    1069.0
GR 1787.2    1075.0    1790.1    1088.0    1790.5    1094.0    1790.3    1099.0    1788.1    1113.0
GR 1787.4    1123.0    1789.8    1139.0    1789.4    1172.0    1795.0    1200.0

ET                        7.1                                   215.0     740.0
        FIELD SURVEYED SECTION 2 = FIS SECTION B
X1    2.00      39.0     580.0     608.0     340.0     530.0     511.0
GR 1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR 1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR 1791.5     567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR 1784.0     598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR 1790.5     683.0    1790.6     720.0    1790.7     764.0    1797.0     770.0    1797.0    1040.0
GR 1792.0    1046.0    1792.1    1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0
GR 1795.2    1087.0    1795.8    1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0
GR 1793.0    1178.0    1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

ET                        7.1                                   200.0     810.0
        ADDITIONAL FIELD SURVEYED SECTION 2.05
X1    2.05      24.0     570.0     598.0     215.0     150.0     206.0      .000      .000      .000
GR 1800.2        .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR 1791.9     570.0    1791.5     576.0    1783.2     585.0    1783.2     592.0    1790.9     598.0
GR 1790.7     640.0    1791.9     750.0    1791.9     790.0    1791.9     834.0    1802.0     840.0
GR 1802.0    1115.0    1791.9    1121.0    1791.9    1137.0    1794.7    1143.0    1794.7    1155.0
GR 1790.7    1163.0    1790.5    1240.0    1797.7    1264.0    1797.7    1288.0

ET                        7.1                                   120.0     770.0
        ADDITIONAL FIELD SURVEYED SECTION 2.1
X1    2.10      35.0     504.0     537.0     180.0      70.0     150.0      .000      .000      .000
GR 1797.3        .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8      41.0
GR 1792.1     122.0    1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7     327.0
GR 1791.9     378.0    1791.7     443.0    1790.7     504.0    1786.9     510.0    1782.8     512.0
GR 1784.6     521.0    1784.6     524.0    1787.2     529.0    1790.6     534.0    1791.3     537.0
GR 1791.7     564.0    1791.8     637.0    1791.0     723.0    1791.7     789.0    1802.0     795.0
GR 1802.0    1075.0    1793.0    1081.0    1793.9    1096.0    1794.2    1121.0    1794.1    1149.0
GR 1788.6    1189.0    1791.8    1209.0    1796.2    1228.0    1797.1    1241.0    1797.1    1265.0
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NC      .045      .045      .040       .10       .30
ET                           7.1                                   110.0     682.0
        FIELD SURVEYED SECTION 3 = FIS SECTION C
X1      3.00        29     192.0     217.0     615.0     485.0     950.0                             0
GR    1803.1        .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3      53.0
GR    1793.9     153.0    1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6     217.0
GR    1789.9     218.0    1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9     503.0
GR    1791.3     508.0    1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0     753.0
GR    1796.5     853.0    1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3    1144.0
GR    1796.5    1153.0    1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                           7.1                                    50.0     678.0
        FIELD SURVEYED SECTION 4 = FIS SECTION D
X1      4.00        27     100.0     160.0    1300.0    1420.0    1660.0                             0
GR    1807.2        .0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0     130.0
GR    1788.7     139.0    1788.7     151.0    1796.3     160.0    1795.7     167.0    1795.4     200.0
GR    1796.2     300.0    1797.0     356.0    1799.8     381.0    1799.6     400.0    1800.1     478.0
GR    1799.9     500.0    1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0     832.0
GR    1799.3     900.0    1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0    1131.0
GR    1805.0    1140.0    1808.0    1162.0

ET                           8.4
        FIELD SURVEYED SECTION 5 = FIS SECTION E
X1      5.00        24     144.0     199.0     980.0     700.0    1110.0                             0
GR    1808.3        .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9     156.0
GR    1790.1     161.0    1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9     399.0
GR    1800.9     499.0    1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5     676.0
GR    1801.3     682.0    1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4     787.0
GR    1803.5     799.0    1805.3     899.0    1806.8     999.0    1811.9    1085.0

        FIELD SURVEYED SECTION 6 = FIS SECTION F
X1      6.00        21     399.0     430.0     855.0     860.0     915.0                             0
GR    1813.5     246.0    1808.1     346.0    1807.5     350.0    1799.2     355.0    1799.2     359.0
GR    1804.6     363.0    1804.9     371.0    1805.0     378.0    1798.3     399.0    1793.3     407.0
GR    1792.6     416.0    1793.0     423.0    1798.6     430.0    1799.0     446.0    1800.4     546.0
GR    1803.6     607.0    1802.7     646.0    1804.8     746.0    1805.9     846.0    1808.1     946.0
GR    1812.3    1046.0
```

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
   15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0   1785.50
      .00      6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
   .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     10.88   1791.88   1791.40       .00   1792.60       .72      2.80       .01   1788.70
   15460.0    4613.7    2750.6    8095.6     925.2     315.4    1165.2      34.3      14.1   1789.60
      .03      4.99      8.72      6.95      .030      .040      .030      .000   1781.00    100.78
   .003741       675.      759.      540.         2        14         0       .00    926.25   1184.39

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.07   1793.77   1793.16       .00   1794.55       .78      1.93       .02   1790.40
   15460.0    8341.9    1791.3    5326.8    1281.4     201.0     739.0      57.5      22.4   1791.80
      .04      6.51      8.91      7.21      .030      .040      .030      .000   1783.70     55.75
   .005050       340.      511.      530.         2        13         0       .00    821.09   1179.38

*SECNO 2.050
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.54   1794.74   1794.07       .00   1795.36       .62       .79       .02   1791.90
   15460.0    5641.3    1577.9    8240.7    1107.9     211.6    1205.8      67.7      26.2   1790.90
      .05      5.09      7.46      6.83      .030      .040      .030      .000   1783.20     63.14
   .003661       215.      206.      150.         2         9         0       .00    907.35   1254.12

*SECNO 2.100
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.53   1795.33   1793.83       .00   1795.67       .34       .29       .03   1790.70
   15460.0    7446.5    1644.4    6369.1    1667.9     289.2    1350.1      76.4      29.0   1791.30
      .06      4.46      5.69      4.72      .030      .040      .030      .000   1782.80      5.36
   .001598       180.      150.       70.         1        10         0       .00    930.52   1224.21

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .59
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.09   1796.69   1795.96       .00   1797.20       .50      1.47       .05   1793.20
   15460.0    2237.8    2054.9   11167.3     475.6     215.3    2288.2     117.3      41.7   1788.60
      .09      4.71      9.54      4.88      .045      .040      .045      .000   1783.60     24.64
   .004620       615.      950.      485.         2         6         0       .00   1129.90   1154.54

*SECNO 4.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     12.79   1801.49   1800.49       .00   1801.96       .47      4.76       .00   1797.10
   15460.0    1115.6    4904.0    9440.4     298.0     601.4    2583.3     223.8      78.0   1796.30
      .17      3.74      8.15      3.65      .045      .040      .045      .000   1788.70     12.34
   .002422      1300.     1660.     1420.         3        13         0       .00   1103.61   1115.95

*SECNO 5.000
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     13.79   1803.89   1802.85       .00   1804.47       .58      2.48       .03   1798.10
   15460.0    3767.3    4193.4    7499.3     644.5     475.8    1838.4     283.6      94.6   1801.00
      .21      5.84      8.81      4.08      .045      .040      .045      .000   1790.10     15.75
   .003435       980.     1110.      700.         3         5         0       .00    804.84    820.60

*SECNO 6.000
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     14.14   1806.74   1805.70       .00   1807.67       .93      3.10       .10   1798.30
   15460.0    1062.0    4337.6   10060.4     202.1     385.9    1715.4     336.1     107.9   1798.60
      .24      5.25     11.24      5.86      .045      .040      .045      .000   1792.60     350.46
   .003651       855.      915.      860.         2        10         0       .00    533.85    884.30
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EXHIBIT 7 - HEC2 INPUT & OUTPUT

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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 7
T4      SECTIONS ADDED WITH PROJECT IN PLACE - COMPUTE NEW FLOODWAY

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                               -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                   -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
 2800 NAT Q1=    2164.95  WSELK=    1789.00  ENC Q1=    2164.95  WSEL=    1789.80  RATIO=     .0000
 NAT Q1=    3351.  RATIOS LOB, CH, ROB=     .7929    .1010    .1061  WSEL=    1789.80

3470 ENCROACHMENT STATIONS=      648.3     1047.0  TYPE=       4  TARGET=         .354
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.14   1789.00   1791.16      1.16       .00       .00   1784.50
   15460.0   13308.0    2152.0        .0    1550.3     240.6        .0        .0        .0   1785.50
      .00      8.58      8.94       .00       .030      .040      .000      .000   1776.10    648.34
   .004525       0.        0.        0.         0         9         0       .00    398.66   1047.00

*SECNO 1.100
 2800 NAT Q1=    2527.68  WSELK=    1791.88  ENC Q1=    2527.68  WSEL=    1792.68  RATIO=     .0000
 NAT Q1=    3736.  RATIOS LOB, CH, ROB=     .3603    .1387    .5010  WSEL=    1792.68
3470 ENCROACHMENT STATIONS=      483.9     920.5  TYPE=       4  TARGET=         .323
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.80   1792.80   1791.78   1791.88   1793.75       .96      2.57       .02   1788.70
   15460.0   4592.7    3102.7    7764.6     679.6     347.6     973.5      28.4       6.2   1789.60
      .02      6.76      8.93      7.98       .030      .040      .030      .000   1781.00    483.93
   .003443       675.      759.      540.         3        14         0       .00    436.59    920.51

*SECNO 2.000
3470 ENCROACHMENT STATIONS=      215.0     740.0  TYPE=       1  TARGET=      525.000
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.84   1794.54   1793.91   1793.77   1795.53       .99      1.77       .01   1790.40
   15460.0   8781.2    2032.9    4645.9    1188.3     222.4     543.7      48.3      10.8   1791.80
      .04      7.39      9.14      8.54       .030      .040      .030      .000   1783.70    215.00
   .004640       340.      511.      530.         2         9         0       .00    525.00    740.00

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      200.0     810.0  TYPE=       1  TARGET=      610.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     12.36   1795.56   1794.66   1794.74   1796.31       .74       .75       .02   1791.90
   15460.0   6998.6    1806.6    6654.7    1146.2     234.9     889.8      57.6      13.4   1790.90
      .05      6.11      7.69      7.48       .030      .040      .030      .000   1783.20    200.00
   .003390       215.      206.      150.         2         9         0       .00    610.00    810.00

*SECNO 2.100
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.56
3470 ENCROACHMENT STATIONS=      120.0     770.0  TYPE=       1  TARGET=      650.000
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     13.42   1796.22   1794.23   1795.33   1796.62       .40       .27       .03   1790.70
   15460.0   7984.9    1807.7    5667.5    1637.6     318.7    1100.9      65.9      15.4   1791.30
      .05      4.88      5.67      5.15       .030      .040      .030      .000   1782.80    120.00
   .001397       180.      150.       70.         2         9         0       .00    650.00    770.00

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .57
3470 ENCROACHMENT STATIONS=      110.0     682.0  TYPE=       1  TARGET=      572.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.76   1797.36   1796.01   1796.69   1798.02       .66      1.33       .08   1793.20
   15460.0   1529.9    2246.1   11684.0     303.5     232.2    1985.3     102.8      23.2   1788.60
      .08      5.04      9.67      5.89       .045      .040      .045      .000   1783.60    110.00
   .004296       615.      950.      485.         2         9         0       .00    572.00    682.00

*SECNO 4.000
3470 ENCROACHMENT STATIONS=       50.0     678.0  TYPE=       1  TARGET=      628.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.37   1802.07   1800.45   1801.49   1802.66       .58      4.63       .01   1797.10
   15460.0    934.9    5372.1    9153.0     223.7     636.3    2052.5     193.0      42.8   1796.30
      .15      4.18      8.44      4.46       .045      .040      .045      .000   1788.70     50.00
   .002408      1300.     1660.     1420.         3         9         0       .00    628.00    678.00
```
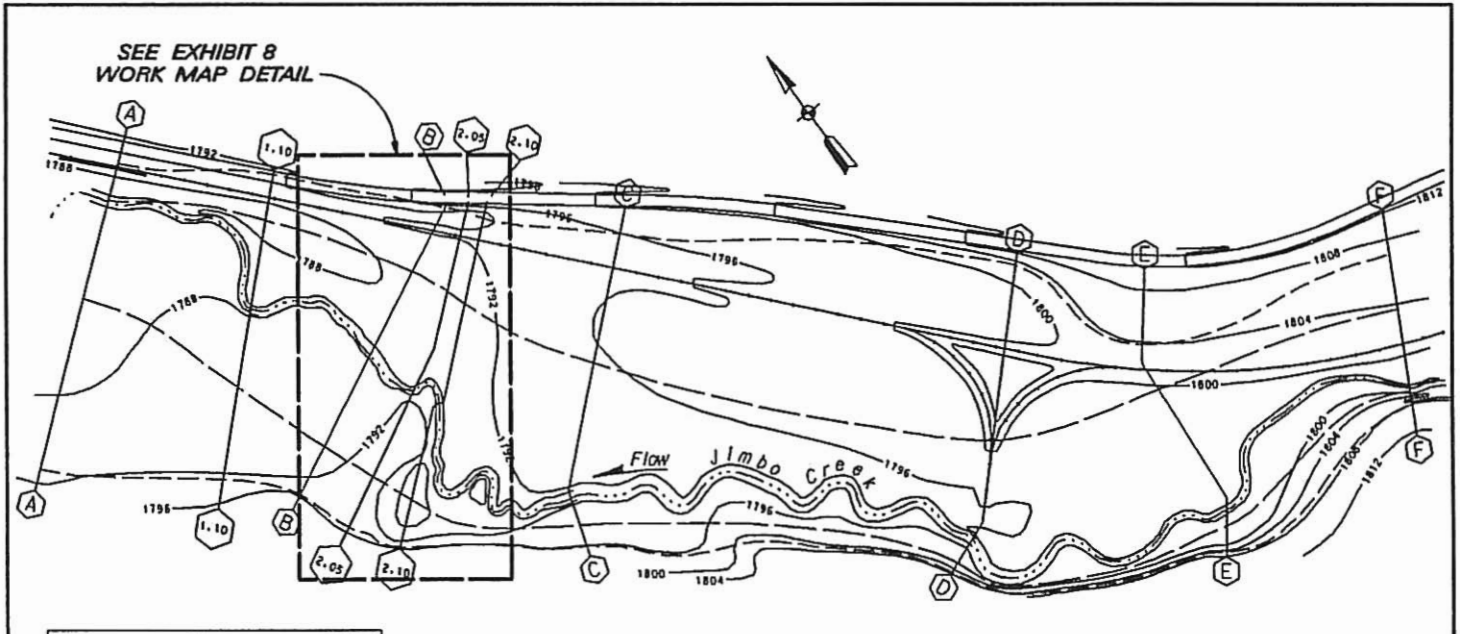

```
*SECNO 5.000
 2800 NAT Q1=    2637.89 WSELK=    1803.89 ENC Q1=    2637.89 WSEL=    1804.69 RATIO=    .0000
 NAT Q1=    3533.  RATIOS LOB, CH, ROB=    .2303   .2347   .5350 WSEL=    1804.69
3470 ENCROACHMENT STATIONS=       97.1     662.4 TYPE=       4 TARGET=        .253
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     14.43   1804.53   1803.45   1803.89   1805.30       .78      2.59       .06   1798.30
   15460.0   2126.4    4978.5    8355.1     306.3     510.9    1712.3     243.9      53.2   1801.00
      .19      6.94      9.75      4.88      .045      .040      .045      .000   1790.10     97.14
   .003819    980.      1110.     700.         2         5         0       .00    565.24     662.38

*SECNO 6.000
 2800 NAT Q1=    2558.67 WSELK=    1806.74 ENC Q1=    2558.67 WSEL=    1807.54 RATIO=    .0000
 NAT Q1=    3189.  RATIOS LOB, CH, ROB=    .0717   .2497   .6786 WSEL=    1807.54
3470 ENCROACHMENT STATIONS=     399.0     656.5 TYPE=       4 TARGET=        .198
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     15.07   1807.67   1805.58   1806.74   1808.74      1.07      3.35       .09   1798.30
   15460.0       .0    4262.7   11197.3        .0     414.6    1512.1     288.4      61.4   1798.60
      .21       .00     10.28      7.41      .000      .040      .045      .000   1792.60     399.00
   .003825    855.      915.      860.         2        10         0       .00    257.52     656.52

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

EXHIBIT 7
SUMMARY PRINTOUT

      SECNO         Q         XLCH      ELMIN     CHSEL     CRIWS     AREA      VCH       SSTA      ENDST     DIFKWS

       1.000  15460.00       .00    1776.10   1789.00   1788.72   2236.03     9.69      76.07   1179.00       .00
       1.000  15460.00       .00    1776.10   1790.00   1789.14   1790.93     8.94     648.34   1047.00      1.00

       1.100  15460.00    759.00    1781.00   1791.88   1791.40   2405.91     8.72     100.78   1184.39       .00
       1.100  15460.00    759.00    1781.00   1792.80   1791.78   2000.75     8.93     483.93    920.51       .92

       2.000  15460.00    511.00    1783.70   1793.77   1793.36   2221.40     8.91      55.75   1179.38       .00
       2.000  15460.00    511.00    1783.70   1794.54   1793.91   1954.44     9.14     215.00    740.00       .77

       2.050  15460.00    206.00    1783.20   1794.74   1794.07   2525.31     7.46      63.14   1254.12       .00
       2.050  15460.00    206.00    1783.20   1795.56   1794.66   2270.89     7.69     200.00    810.00       .83

*      2.100  15460.00    150.00    1782.80   1795.33   1793.83   3307.19     5.69       5.36   1224.21       .00
*      2.100  15460.00    150.00    1782.80   1796.22   1794.23   3057.23     5.67     120.00    770.00       .89

*      3.000  15460.00    950.00    1783.60   1796.69   1795.96   2979.11     9.54      24.64   1154.54       .00
*      3.000  15460.00    950.00    1783.60   1797.36   1796.01   2520.89     9.67     110.00    682.00       .67

       4.000  15460.00   1660.00    1788.70   1801.49   1800.49   3482.67     8.15      12.34   1115.95       .00
       4.000  15460.00   1660.00    1788.70   1802.07   1800.45   2912.49     8.44      50.00    678.00       .58

       5.000  15460.00   1110.00    1790.10   1803.89   1802.85   2958.73     8.81      15.75    820.60       .00
       5.000  15460.00   1110.00    1790.10   1804.53   1803.45   2529.43     9.75      97.14    662.38       .64

       6.000  15460.00    915.00    1792.60   1806.74   1805.70   2303.42    11.24     350.46    884.30       .00
       6.000  15460.00    915.00    1792.60   1807.67   1805.58   1926.68    10.28     399.00    656.52       .93

 SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO=      2.100  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.100  PROFILE= 2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE= 2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA,   EXHIBIT 7
PROFILE NO.  2

                ------- FLOODWAY -------      WATER SURFACE ELEVATION
  STATION    WIDTH    SECTION     MEAN       WITH     WITHOUT  DIFFERENCE
                       AREA     VELOCITY   FLOODWAY   FLOODWAY

     1.000    399.     1791.      8.6      1790.0     1789.0       1.0
     1.100    437.     2001.      7.7      1792.8     1791.9        .9
     2.000    525.     1954.      7.9      1794.6     1793.8        .8
     2.050    610.     2271.      6.8      1795.5     1794.7        .8
     2.100    650.     3057.      5.1      1796.2     1795.3        .9
     3.000    572.     2521.      6.1      1797.4     1796.7        .7
     4.000    628.     2912.      5.3      1802.1     1801.5        .6
     5.000    565.     2529.      6.1      1804.5     1803.9        .6
     6.000    258.     1927.      8.0      1807.6     1806.7        .9
```

EXHIBIT EIGHT

Bridge Cross Sections
Added to Exhibit 2



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

100-YEAR FLOODPLAIN

NOTES:

1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 2.

CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP

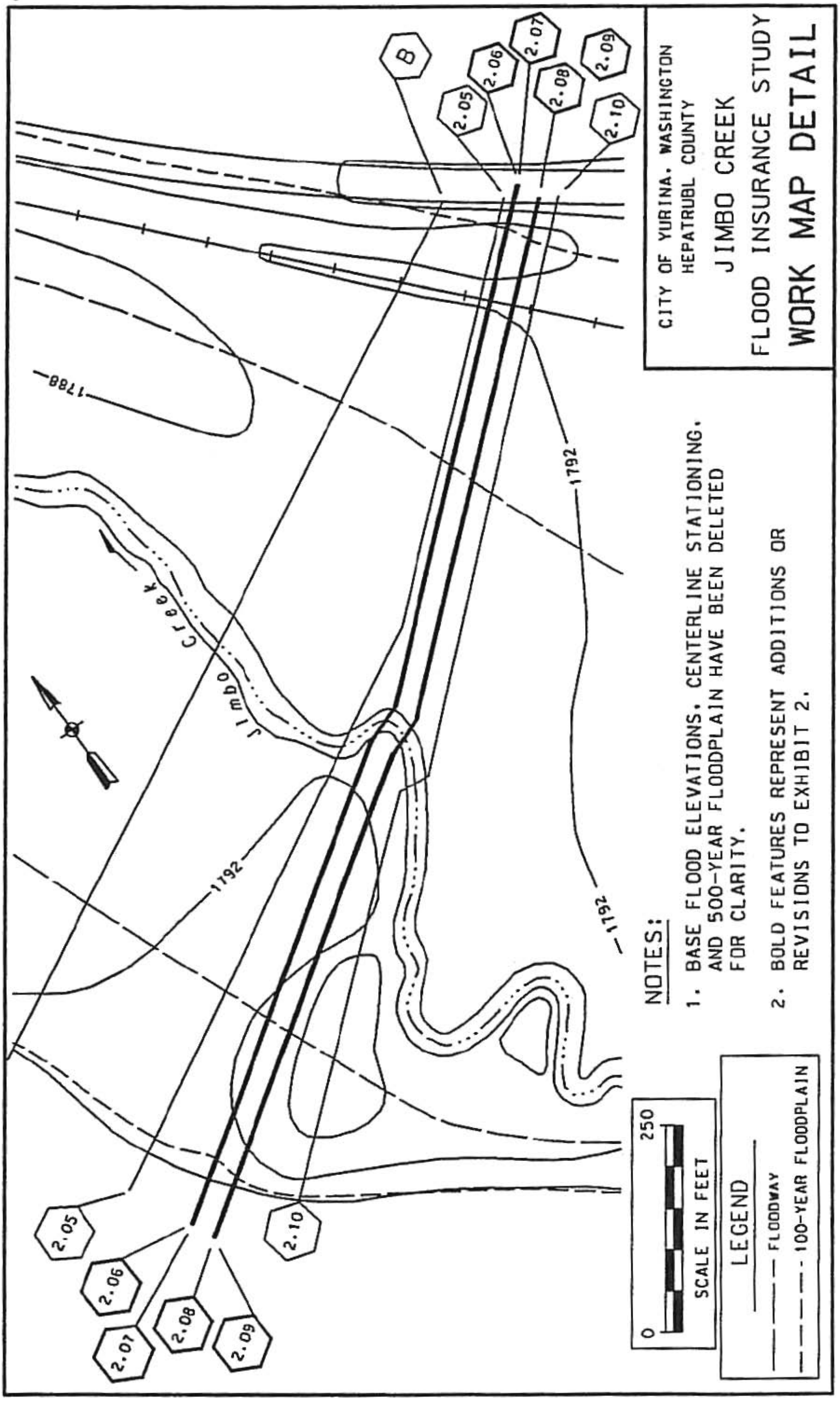
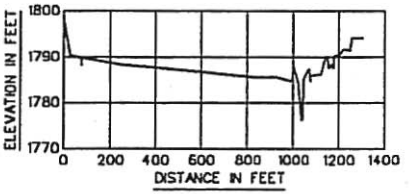
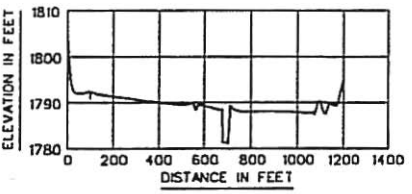


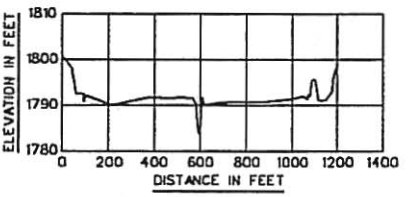
EXHIBIT 8 – WORK MAP DETAIL



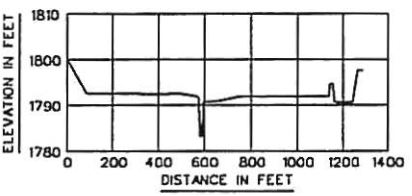
CROSS SECTION A



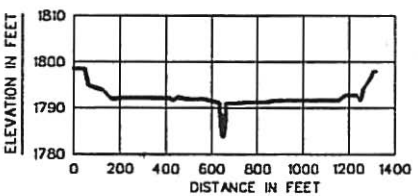
CROSS SECTION 1.10



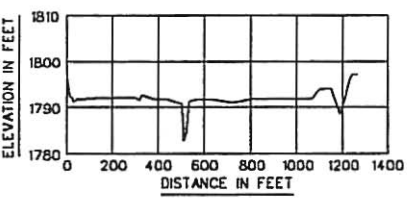
CROSS SECTION B



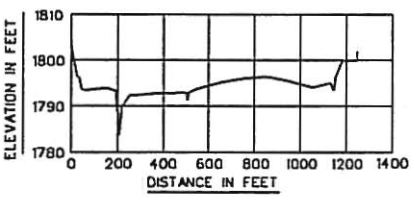
CROSS SECTION 2.05



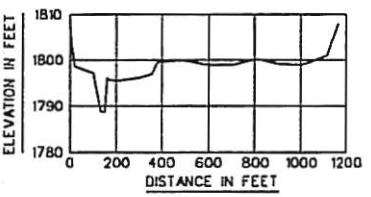
CROSS SECTIONS
2.06, 2.07, 2.08, & 2.09



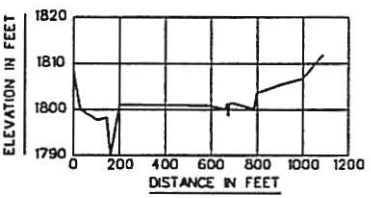
CROSS SECTION 2.10



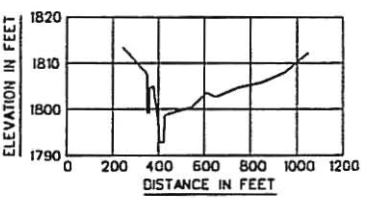
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS
OR REVISIONS TO EXHIBIT 2.

EXHIBIT 8 – CROSS SECTIONS

EXHIBIT 8 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	592	2672	5.8	1791.7	1791.7	1792.8	1.1
B	1270	681	2147	7.2	1793.4	1793.4	1794.0	0.6
2.05	1476	697	2105	7.3	1794.2	1794.2	1794.8	0.6
2.06	1535	704	2712	5.7	1794.5	1794.5	1795.3	0.8
2.07	1536	704	2710	5.7	1794.5	1794.5	1795.3	0.8
2.08	1566	704	2773	5.6	1794.6	1794.6	1795.4	0.8
2.09	1567	704	2775	5.6	1794.6	1794.6	1795.4	0.8
2.10	1626	720	2913	5.3	1794.8	1794.8	1795.6	0.8
C	2576	580	2355	6.6	1796.2	1796.2	1797.0	0.8
D	4236	450	2549	6.1	1801.7	1801.7	1802.4	0.7
E	5346	541	2615	5.9	1803.8	1803.8	1804.9	1.1
F	6261	289	2086	7.4	1806.8	1806.8	1807.7	0.9

[1] Feet above limit of detailed study.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 2 input data.

```
**********
HEC-2 WATER SURFACE PROFILES

Version  4.6.2;  May 1991
**********

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURIMA, MA (HEPATRUBL COUNTY)
T3      EXHIBIT 8
T4      ADDED CROSS SECTIONS AT FUTURE BRIDGE LOCATION

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0         2                                               -1                1789.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBH       CHNIM     ITRACE
        1                   -1                                    -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38        43        39        42         1         2        25        26        53        54
       52       200

QT          5     15460     15460      2370     10600     51000
NC       .030      .030      .040       .10       .30
ET                             9.10                                                    687.56    1047.00
        FIELD SURVEYED SECTION 1 = FIS SECTION A
X1       1.00        34    1023.0    1047.0        .0        .0        .0                             0
GR    1790.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR    1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR    1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR    1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR    1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR    1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR    1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                             9.10                                                    426       1018
        ADDITIONAL FIELD SURVEYED SECTION 1.1
X1       1.10        42     675.0     710.0     675.0     540.0     759.0
GR    1803.4        .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR    1792.5     100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR    1790.9     272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR    1788.3     562.0    1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR    1781.2     681.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR    1789.6     710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR    1787.9     981.0    1787.7    1064.0    1788.2    1069.0    1787.2    1075.0    1790.1    1088.0
GR    1790.5    1094.0    1790.3    1099.0    1788.1    1113.0    1787.4    1123.0    1789.8    1139.0
GR    1789.4    1172.0    1795.0    1200.0

ET                             9.10                                                    244.36    924.98
        FIELD SURVEYED SECTION 2 = FIS SECTION B
X1       2.00        38     580.0     608.0     340.0     530.0     511.0                             0
GR    1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR    1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR    1791.5     567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR    1784.0     598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR    1790.5     683.0    1790.6     720.0    1790.6     750.0    1790.7     880.0    1791.4    1005.0
GR    1792.1    1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0    1795.2    1087.0
GR    1795.8    1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0    1793.0    1178.0
GR    1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

ET                             9.10                                                    266       963
        ADDITIONAL FIELD SURVEYED SECTION 2.05
X1       2.05        23     570.0     598.0     215.0     150.0     206.0                             0
GR    1800.2        .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR    1791.9     570.0    1791.5     576.0    1783.2     585.0    1783.2     592.0    1790.9     598.0
GR    1790.7     640.0    1791.9     750.0    1791.9     790.0    1791.9     905.0    1791.9    1005.0
GR    1791.9    1115.0    1791.9    1137.0    1794.7    1143.0    1794.7    1155.0    1790.7    1163.0
GR    1790.5    1240.0    1797.7    1264.0    1797.7    1288.0

ET                              9.1                                                    263.5     967.5
        SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
X1       2.06        49.0      633.0     663.5      74.0      19.0      59.0
GR    1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR    1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR    1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR    1791.9     568.0    1791.1     633.0    1789.0     638.5    1787.9     639.5    1786.6     640.4
GR    1784.0     648.7    1783.7     649.3    1783.7     651.5    1785.0     656.1    1785.3     657.0
GR    1788.9     660.7    1790.9     663.5    1791.0     688.6    1791.0     709.0    1791.3     756.4
GR    1791.3     828.1    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     995.9
GR    1791.7    1003.6    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9
GR    1792.8    1206.1    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5
GR    1794.2    1260.0    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6
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ET                         9.1                                                        263.5      967.5
      FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
X1     2.07      49.0     633.0     663.5       1.0       1.0       1.0
GR   1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0      113.0
GR   1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1      414.6
GR   1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0      548.2
GR   1791.9     568.0    1791.1     633.0    1789.0     638.5    1787.9     639.5    1786.6      640.4
GR   1784.0     648.7    1783.7     649.3    1783.7     651.5    1785.0     656.1    1785.3      657.0
GR   1788.9     660.7    1790.9     663.5    1791.0     688.6    1791.0     709.0    1791.3      756.4
GR   1791.3     828.1    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7      995.9
GR   1791.7    1003.6    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7     1182.9
GR   1792.8    1206.1    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6     1253.5
GR   1794.2    1260.0    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6

ET                         9.1                                                        263.5      967.5
      SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
X1     2.08         0         0         0        30        30        30

ET                         9.1                                                        263.5      967.5
      SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
X1     2.09      49.0     633.0     663.5       1.0       1.0       1.0
GR   1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0      113.0
GR   1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1      414.6
GR   1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0      548.2
GR   1791.9     568.0    1791.1     633.0    1789.0     638.5    1787.9     639.5    1786.6      640.4
GR   1784.0     648.7    1783.7     649.3    1783.7     651.5    1785.0     656.1    1785.3      657.0
GR   1788.9     660.7    1790.9     663.5    1791.0     688.6    1791.0     709.0    1791.3      756.4
GR   1791.3     828.1    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7      995.9
GR   1791.7    1003.6    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7     1182.9
GR   1792.8    1206.1    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6     1253.5
GR   1794.2    1260.0    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6

ET                         9.10                                                         177        897
      ADDITIONAL FIELD SURVEYED SECTION 2.1
X1     2.10        35     504.0     537.0      74.0      19.0      59.0
GR   1797.3        .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8       41.0
GR   1792.1     122.0    1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7      327.0
GR   1791.9     378.0    1791.7     443.0    1790.7     504.0    1786.9     510.0    1782.8      512.0
GR   1784.6     521.0    1784.6     524.0    1787.2     529.0    1790.6     534.0    1791.3      537.0
GR   1791.7     564.0    1791.8     637.0    1791.0     723.0    1791.9     805.0    1791.9      903.0
GR   1791.9     980.0    1791.9    1064.0    1793.9    1096.0    1794.2    1121.0    1794.1     1149.0
GR   1788.6    1189.0    1791.8    1209.0    1796.2    1228.0    1797.1    1241.0    1797.1     1265.0

NC     .045      .045      .040       .10       .30
ET                         9.10                                                      110.00     690.00
      FIELD SURVEYED SECTION 3 = FIS SECTION C
X1     3.00        29     192.0     217.0     615.0     485.0     950.0
GR   1803.1        .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3       53.0
GR   1793.9     153.0    1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6      217.0
GR   1789.9     218.0    1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9      503.0
GR   1791.3     508.0    1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0      753.0
GR   1796.5     853.0    1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3     1144.0
GR   1796.5    1153.0    1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                         9.10                                                       50.00     500.00
      FIELD SURVEYED SECTION 4 = FIS SECTION D
X1     4.00        27     100.0     160.0    1300.0    1420.0    1660.0                                0
GR   1807.2        .0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0      130.0
GR   1788.7     139.0    1788.7     151.0    1796.3     160.0    1795.7     167.0    1795.4      200.0
GR   1796.2     300.0    1797.0     356.0    1799.8     381.0    1799.6     400.0    1800.1      478.0
GR   1799.9     500.0    1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0      832.0
GR   1799.3     900.0    1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0     1131.0
GR   1805.0    1140.0    1808.0    1162.0

ET                         9.10                                                      104.14     644.88
      FIELD SURVEYED SECTION 5 = FIS SECTION E
X1     5.00        24     144.0     199.0     980.0     700.0    1110.0                                0
GR   1808.3        .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9      156.0
GR   1790.1     161.0    1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9      399.0
GR   1800.9     499.0    1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5      676.0
GR   1801.3     682.0    1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4      787.0
GR   1803.5     799.0    1805.3     899.0    1806.8     999.0    1811.9    1085.0

ET                         9.10                                                      399.00     688.33
      FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00        21     399.0     430.0     855.0     860.0     915.0                                0
GR   1813.5     246.0    1808.1     346.0    1807.5     350.0    1799.2     355.0    1799.2      359.0
GR   1804.6     363.0    1804.9     371.0    1805.0     378.0    1798.3     399.0    1793.3      407.0
GR   1792.6     416.0    1793.0     423.0    1798.6     430.0    1799.0     446.0    1800.4      546.0
GR   1803.6     607.0    1802.7     646.0    1804.8     746.0    1805.9     846.0    1808.1      946.0
GR   1812.3    1046.0
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTH        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
  15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0   1785.50
     .00      6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
  .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     10.67   1791.67   1790.96       .00   1792.24       .57      2.43       .02   1788.70
  15460.0    3418.6    2346.5    9694.9     811.5     307.9    1577.7      35.9      14.7   1789.60
     .03      4.21      7.62      6.14      .030      .040      .030      .000   1781.00    101.05
  .002950       675.      759.      540.         2        13         0       .00   1024.35   1183.31

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000      9.66   1793.36   1792.96       .00   1793.96       .59      1.71       .01   1790.40
  15460.0    5897.7    1549.1    8013.2    1064.2     189.4    1295.3      63.6      25.3   1791.80
     .05      5.54      8.18      6.19      .030      .040      .030      .000   1783.70     57.03
  .004606       340.      511.      530.         2         9         0       .00   1093.72   1178.64

*SECNO 2.050
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     10.98   1794.18   1793.68       .00   1794.74       .56       .78       .00   1791.90
  15460.0    3733.2    1490.4   10236.3     824.5     195.8    1653.4      74.3      30.0   1790.90
     .06      4.53      7.61      6.19      .030      .040      .030      .000   1783.20     69.65
  .004228       215.      206.      150.         2         8         0       .00   1168.42   1252.25

*SECNO 2.060
        SECTION 2.06 IS A DUPLICATE OF SECTION 2.07
     2.060     10.79   1794.49   1793.62       .00   1794.88       .39       .13       .02   1791.10
  15460.0    5450.2    1590.7    8419.2    1232.8     238.6    1682.4      77.0      31.2   1790.90
     .06      4.42      6.67      5.00      .030      .040      .030      .000   1783.70     82.78
  .002477        74.       59.       19.         2        14         0       .00   1181.25   1264.02

*SECNO 2.070
        FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF FUTURE BRIDGE
     2.070     10.79   1794.49   1793.62       .00   1794.88       .39       .00       .00   1791.10
  15460.0    5451.6    1589.3    8419.1    1234.1     238.7    1683.8      77.1      31.2   1790.90
     .06      4.42      6.66      5.00      .030      .040      .030      .000   1783.70     82.63
  .002470         1.        1.        1.         0        13         0       .00   1181.42   1264.05

*SECNO 2.080
        SECTION 2.08 IS A DUPLICATE OF SECTION 2.07
     2.080     10.89   1794.59   1793.62       .00   1794.95       .36       .07       .00   1791.10
  15460.0    5514.0    1531.2    8414.8    1291.0     241.8    1745.6      79.3      32.0   1790.90
     .06      4.27      6.33      4.82      .030      .040      .030      .000   1783.70     76.29
  .002196        30.       30.       30.         2        13         0       .00   1189.20   1265.48

*SECNO 2.090
        SECTION 2.09 IS A DUPLICATE OF SECTION 2.07
     2.090     10.90   1794.60   1793.62       .00   1794.96       .36       .00       .00   1791.10
  15460.0    5515.3    1530.0    8414.7    1292.2     241.9    1747.0      79.4      32.0   1790.90
     .06      4.27      6.33      4.82      .030      .040      .030      .000   1783.70     76.15
  .002190         1.        1.        1.         0        13         0       .00   1189.36   1265.51

*SECNO 2.100
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     11.95   1794.75   1793.53       .00   1795.04       .29       .08       .01   1790.70
  15460.0    5639.5    1514.5    8305.9    1382.8     270.3    1943.0      82.8      33.3   1791.30
     .07      4.08      5.60      4.27      .030      .040      .030      .000   1782.80      6.91
  .001698        74.       59.       19.         2         6         0       .00   1214.83   1221.74
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 3.000
3265 DIVIDED FLOW
3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .47
FIELD SURVEYED SECTION 3 = FIS SECTION C

3.000	12.62	1796.22	1795.93	.00	1796.99	.77	1.80	.14	1793.20
15460.0	2156.2	2390.1	10913.8	397.7	203.4	1853.9	121.7	47.1	1788.60
.09	5.42	11.75	5.89	.045	.040	.045	.000	1783.60	33.28
.007555	615.	950.	485.	2	9	0	.00	1037.89	1152.21

*SECNO 4.000
3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.94
FIELD SURVEYED SECTION 4 = FIS SECTION D

4.000	13.03	1801.73	1800.39	.00	1802.13	.39	5.10	.04	1797.10
15460.0	1133.0	4638.0	9689.0	319.3	616.0	2815.2	224.1	81.9	1796.30
.18	3.55	7.53	3.44	.045	.040	.045	.000	1788.70	11.67
.002000	1300.	1660.	1420.	4	9	0	.00	1105.73	1117.40

*SECNO 5.000
FIELD SURVEYED SECTION 5 = FIS SECTION E

5.000	13.74	1803.84	1802.95	.00	1804.44	.60	2.25	.06	1798.30
15460.0	3780.3	4230.8	7449.0	638.9	473.4	1811.1	285.9	98.5	1801.00
.22	5.92	8.94	4.11	.045	.040	.045	.000	1790.10	15.91
.003556	980.	1110.	700.	3	6	0	.00	802.25	818.16

*SECNO 6.000
FIELD SURVEYED SECTION 6 = FIS SECTION F

6.000	14.16	1806.76	1805.69	.00	1807.68	.92	3.14	.10	1798.30
15460.0	1062.9	4328.6	10068.4	202.8	386.3	1721.6	338.1	111.7	1798.60
.25	5.24	11.21	5.85	.045	.040	.045	.000	1792.60	350.45
.003623	855.	915.	860.	2	10	0	.00	534.47	884.92

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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURIHA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 8
T4      ADDED CROSS SECTIONS AT FUTURE BRIDGE LOCATION

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                               -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                 -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00       .030      .040      .000      .000   1776.10    687.56
  .005241        0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.66
3470 ENCROACHMENT STATIONS=      426.0    1018.0  TYPE=      1  TARGET=      592.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.84   1792.84   1791.25   1791.67   1793.37       .54      1.93       .08   1788.70
   15460.0    4293.6    2327.4    8839.1     863.0     349.0    1459.8      31.8       7.0   1789.60
      .03      4.98      6.67      6.05       .030      .040      .030      .000   1781.00    426.00
  .001912       675.      759.      540.         3        17         0       .00    592.00   1018.00

*SECNO 2.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .64
3470 ENCROACHMENT STATIONS=      244.4     925.0  TYPE=      1  TARGET=      680.620
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.26   1793.96   1793.41   1793.36   1794.79       .83      1.33       .09   1790.40
   15460.0    5509.9    1797.0    8153.1     867.2     206.3    1073.3      57.2      13.4   1791.80
      .05      6.35      8.71      7.60       .030      .040      .030      .000   1783.70    244.36
  .004658       340.      511.      530.         2        14         0       .00    680.62    924.98

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      266.0     963.0  TYPE=      1  TARGET=      697.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.60   1794.80   1794.26   1794.18   1795.67       .87       .87       .01   1791.90
   15460.0    4525.7    1889.1    9045.3     721.5     213.3    1170.6      66.0      16.3   1790.90
      .06      6.27      8.85      7.73       .030      .040      .030      .000   1783.20    266.00
  .005105       215.      206.      150.         2         8         0       .00    697.00    963.00

*SECNO 2.060
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        SECTION 2.06 IS A DUPLICATE OF SECTION 2.07
     2.060     11.63   1795.33   1794.07   1794.49   1795.84       .52       .14       .04   1791.10
   15460.0    6494.0    1804.6    7161.4    1234.9     264.4    1213.0      68.5      17.0   1790.90
      .06      5.26      6.83      5.90       .030      .040      .030      .000   1783.70    263.50
  .002265        74.       59.       19.         2        13         0       .00    704.00    967.50

*SECNO 2.070
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF FUTURE BRIDGE
     2.070     11.63   1795.33   1794.07   1794.49   1795.85       .52       .00       .00   1791.10
   15460.0    6492.4    1806.0    7161.6    1233.6     264.3    1211.9      68.6      17.1   1790.90
      .06      5.26      6.83      5.91       .030      .040      .030      .000   1783.70    263.50
  .002271        1.        1.        1.         0        13         0       .00    704.00    967.50

*SECNO 2.080
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        SECTION 2.08 IS A DUPLICATE OF SECTION 2.07
     2.080     11.72   1795.42   1794.07   1794.59   1795.91       .49       .07       .00   1791.10
   15460.0    6534.0    1769.5    7156.5    1266.9     267.0    1239.3      70.5      17.5   1790.90
      .06      5.16      6.63      5.77       .030      .040      .030      .000   1783.70    263.50
  .002106        30.       30.       30.         2        13         0       .00    704.00    967.50
```

```
    SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2.090
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        SECTION 2.09 IS A DUPLICATE OF SECTION 2.07
     2.090     11.72   1795.42   1794.08   1794.60   1795.92       .49       .00       .00   1791.10
  15460.0    6535.0    1768.6    7156.4    1267.7     267.1    1240.0      70.5      17.6   1790.90
      .06      5.16      6.62      5.77      .030      .040      .030      .000   1783.70    263.50
  .002103        1.        1.        1.         0        13         0       .00    704.00    967.50

*SECNO 2.100
3470 ENCROACHMENT STATIONS=      177.0     897.0  TYPE=      1  TARGET=      720.000
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.77   1795.57   1794.04   1794.75   1796.01       .44       .09       .00   1790.70
  15460.0    6041.4    1857.6    7561.0    1193.1     297.3    1422.5      73.6      18.3   1791.30
      .06      5.06      6.25      5.32      .030      .040      .030      .000   1782.80    177.00
  .001859       74.       59.       19.         2        10         0       .00    720.00    897.00

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .59
3470 ENCROACHMENT STATIONS=      110.0     690.0  TYPE=      1  TARGET=      580.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.45   1797.05   1796.15   1796.22   1797.82       .77      1.71       .10   1793.20
  15460.0    1478.5    2370.2   11611.3     277.7     224.3    1852.6     107.9      26.5   1788.60
      .08      5.32     10.57      6.27      .045      .040      .045      .000   1783.60    110.00
  .005365       615.      950.      485.         2         6         0       .00    580.00    690.00

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   1.45
3470 ENCROACHMENT STATIONS=       50.0     500.0  TYPE=      1  TARGET=      450.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.69   1802.39   1800.37   1801.73   1803.10       .71      5.28       .01   1797.10
  15460.0    1075.3    5814.3    8570.4     239.4     655.2    1654.6     189.5      43.3   1796.30
      .15      4.49      8.87      5.18      .045      .040      .045      .000   1788.70     50.00
  .002558       1300.     1660.     1420.         2         9         0       .00    450.00    500.00

*SECNO 5.000
3470 ENCROACHMENT STATIONS=      104.1     644.9  TYPE=      1  TARGET=      540.740
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     14.82   1804.92   1803.68   1803.84   1805.64       .72      2.54       .00   1798.30
  15460.0    1703.4    5005.3    8751.3     274.3     532.2    1808.2     238.3      52.1   1801.00
      .19      6.21      9.40      4.84      .045      .040      .045      .000   1790.10    104.14
  .003368       980.     1110.      700.         2         6         0       .00    540.74    644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0     688.3  TYPE=      1  TARGET=      289.330
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     15.14   1807.73   1805.38   1806.76   1808.65       .92      2.95       .06   1798.30
  15460.0        .0    4032.9   11427.1        .0     416.6    1669.3     285.2      60.4   1798.60
      .22       .00      9.68      6.85      .000      .040      .045      .000   1792.60    399.00
  .003376       855.      915.      860.         2         9         0       .00    289.33    688.33
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

EXHIBIT 8
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.67	1790.96	2697.13	7.62	101.05	1183.31	.00
*	1.100	15460.00	759.00	1781.00	1792.84	1791.25	2671.82	6.67	426.00	1018.00	1.17
	2.000	15460.00	511.00	1783.70	1793.36	1792.96	2548.82	8.18	57.03	1178.64	.00
*	2.000	15460.00	511.00	1783.70	1793.96	1793.41	2146.80	8.71	244.36	924.98	.59
	2.050	15460.00	206.00	1783.20	1794.18	1793.68	2673.67	7.61	69.65	1252.25	.00
	2.050	15460.00	206.00	1783.20	1794.80	1794.26	2105.46	8.85	266.00	963.00	.62
	2.060	15460.00	59.00	1783.70	1794.49	1793.62	3153.84	6.67	82.78	1264.02	.00
*	2.060	15460.00	59.00	1783.70	1795.33	1794.07	2712.22	6.83	263.50	967.50	.84
	2.070	15460.00	1.00	1783.70	1794.49	1793.62	3156.58	6.66	82.63	1264.05	.00
	2.070	15460.00	1.00	1783.70	1795.33	1794.07	2709.81	6.83	263.50	967.50	.84
	2.080	15460.00	30.00	1783.70	1794.59	1793.62	3278.41	6.33	76.29	1265.48	.00
	2.080	15460.00	30.00	1783.70	1795.42	1794.07	2773.23	6.63	263.50	967.50	.83
	2.090	15460.00	1.00	1783.70	1794.60	1793.62	3281.02	6.33	76.15	1265.51	.00
	2.090	15460.00	1.00	1783.70	1795.42	1794.08	2774.78	6.62	263.50	967.50	.83
	2.100	15460.00	59.00	1782.80	1794.75	1793.53	3596.20	5.60	6.91	1221.74	.00
	2.100	15460.00	59.00	1782.80	1795.57	1794.04	2912.90	6.25	177.00	897.00	.82
*	3.000	15460.00	950.00	1783.60	1796.22	1795.93	2455.05	11.75	33.28	1152.21	.00
*	3.000	15460.00	950.00	1783.60	1797.05	1796.15	2354.69	10.57	110.00	690.00	.84
*	4.000	15460.00	1660.00	1788.70	1801.73	1800.39	3750.48	7.53	11.67	1117.40	.00
*	4.000	15460.00	1660.00	1788.70	1802.39	1800.37	2549.23	8.87	50.00	500.00	.65
	5.000	15460.00	1110.00	1790.10	1803.84	1802.95	2923.42	8.94	15.91	818.16	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.68	2614.72	9.40	104.14	644.88	1.08
	6.000	15460.00	915.00	1792.60	1806.76	1805.69	2310.66	11.21	350.45	884.92	.00
	6.000	15460.00	915.00	1792.60	1807.73	1805.38	2085.95	9.68	399.00	688.33	.98

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 1.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.060 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

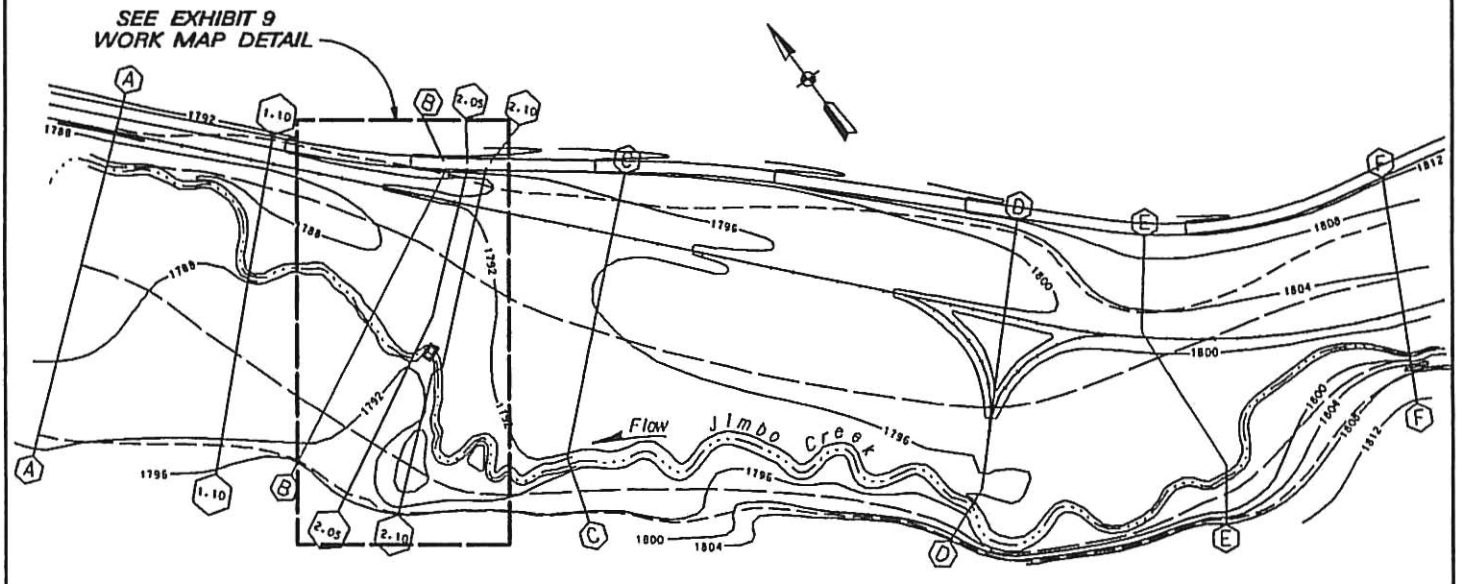
WARNING SECNO= 4.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 8
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	592.	2672.	5.8	1792.9	1791.7	1.2
2.000	681.	2147.	7.2	1794.0	1793.4	.6
2.050	697.	2105.	7.3	1794.8	1794.2	.6
2.060	704.	2712.	5.7	1795.3	1794.5	.8
2.070	704.	2710.	5.7	1795.3	1794.5	.8
2.080	704.	2773.	5.6	1795.4	1794.6	.8
2.090	704.	2775.	5.6	1795.4	1794.6	.8
2.100	720.	2913.	5.3	1795.6	1794.8	.8
3.000	580.	2355.	6.6	1797.0	1796.2	.8
4.000	450.	2549.	6.1	1802.4	1801.7	.7
5.000	541.	2615.	5.9	1804.9	1803.8	1.1
6.000	289.	2086.	7.4	1807.8	1806.8	1.0

EXHIBIT NINE

Adding the Bridge



0 500 1000
SCALE IN FEET

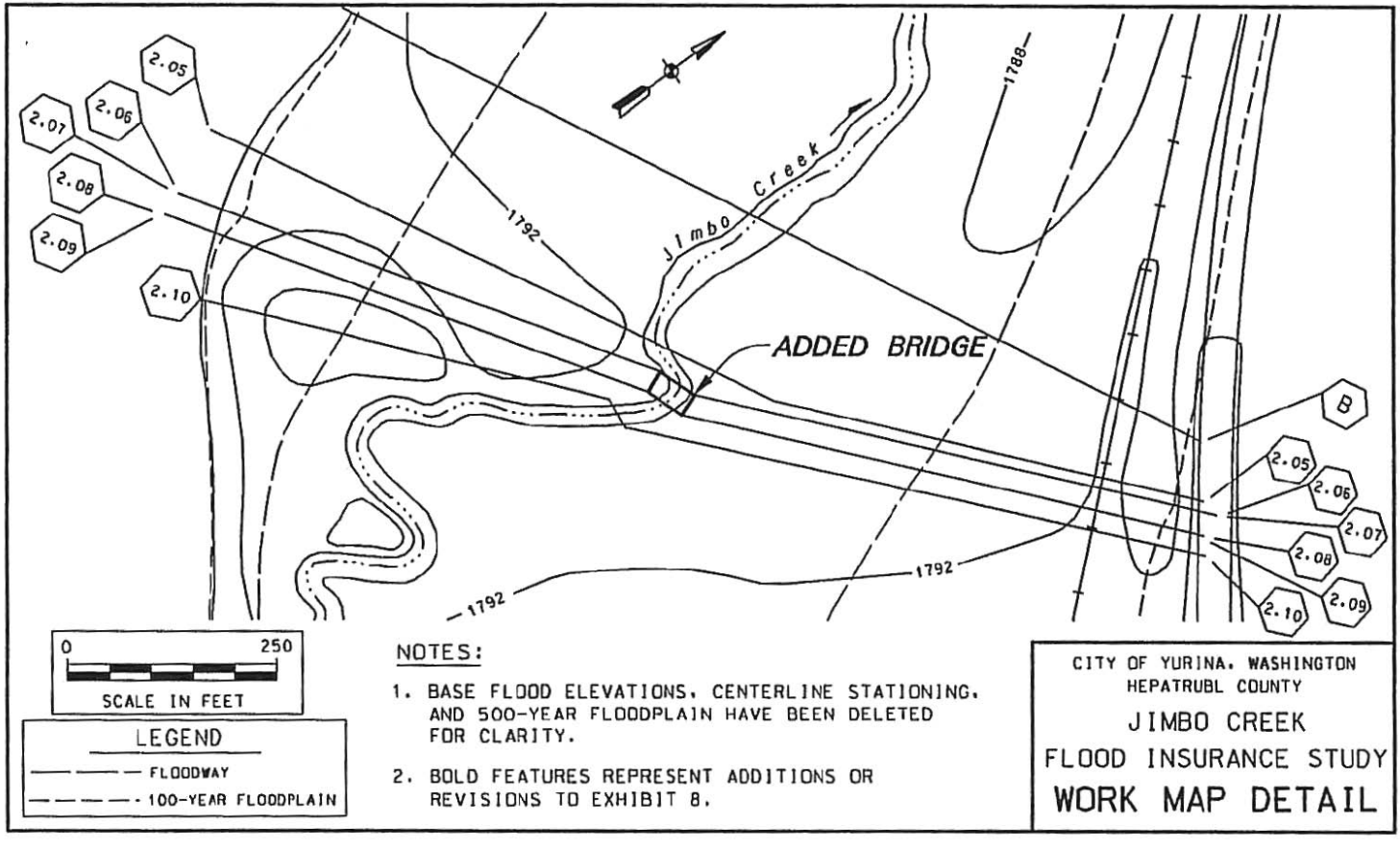
LEGEND
FLOODWAY
100-YEAR FLOODPLAIN

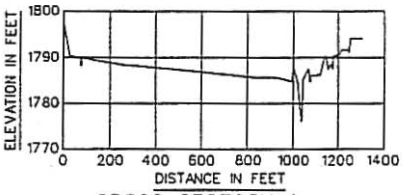
NOTES:

1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.

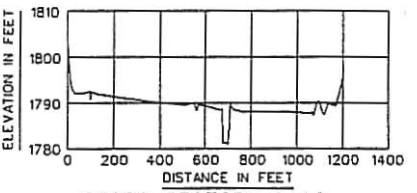
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP

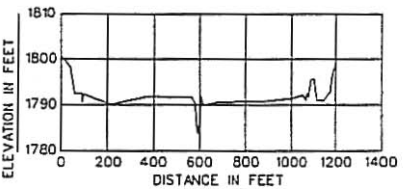

2.05
2.06
2.07
2.08
2.09
2.10
1792
Jimbo Creek
1788
ADDED BRIDGE
B
1792
1792
0
250
SCALE IN FEET
LEGEND
FLOODWAY
100-YEAR FLOODPLAIN
NOTES:
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP DETAIL



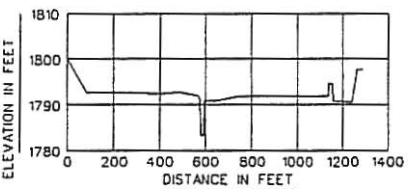
CROSS SECTION A



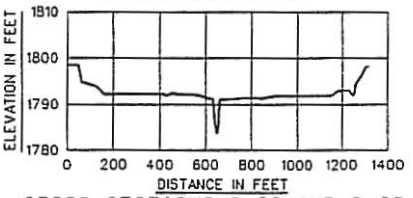
CROSS SECTION 1.10



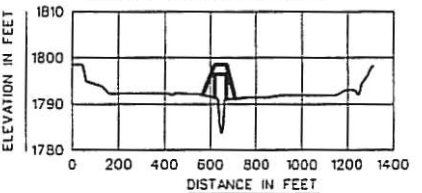
CROSS SECTION B



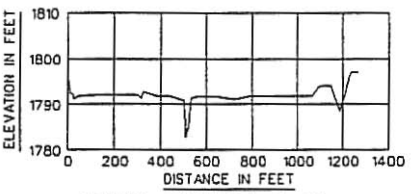
CROSS SECTION 2.05



CROSS SECTIONS 2.06 AND 2.09



CROSS SECTIONS 2.07 AND 2.08



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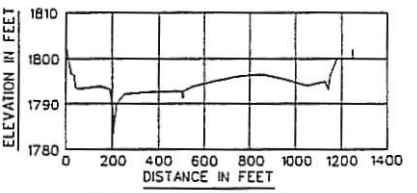
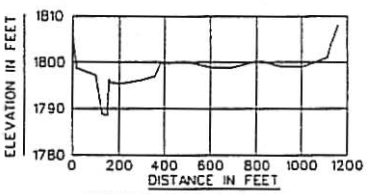
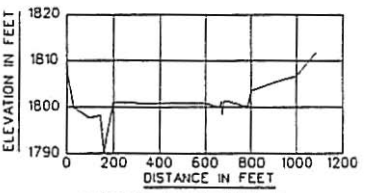


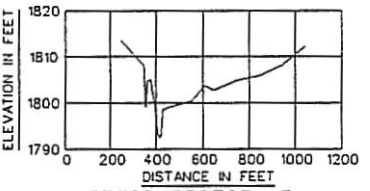
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.

EXHIBIT 9 – CROSS SECTIONS

EXHIBIT 9 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY [2]	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	592	2672	5.8	1791.7	1791.7	1792.8	1.1
B	1270	681	2147	7.2	1793.4	1793.4	1794.0	0.6
2.05	1476	697	2105	7.3	1794.2	1794.2	1794.8	0.6
2.06	1535	704	2712	5.7	1794.5	1794.5	1795.3	0.8
2.07	1536	704	2361	6.5	1794.5	1794.4	1795.2	0.7
2.08	1566	704	2465	6.3	1794.6	1794.6	1795.4	0.8
2.09	1567	704	2870	5.4	1794.6	1794.7	1795.6	1.0
2.10	1626	720	2991	5.2	1794.8	1794.8	1795.7	0.9
C	2576	580	2357	6.6	1796.2	1796.2	1797.1	0.9
D	4236	450	2549	6.1	1801.7	1801.7	1802.4	0.7
E	5346	541	2614	5.9	1803.8	1803.8	1804.9	1.1
F	6261	289	2086	7.4	1806.8	1806.8	1807.7	0.9

[1] Feet above limit of detailed study.
[2] Regulatory base flood elevations as determined by conditions shown on Exhibit 8.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 8 input data.

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*************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
*************************************

T1        100-YEAR FLOOD
T2        JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3        EXHIBIT 9
T4        ADDED BRIDGE

J1  ICHECK     INQ      NINV      IDIR      STRT    METRIC     HVINS         Q      WSEL        FQ
         0       2                                              -1              1789.00
J2  NPROF    IPLOT     PRFVS     XSECV     XSECH        FN     ALLDC       IBW     CHNIM    ITRACE
         1                -1                                      -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
        38        43        39        42         1         2        25        26        53        54
        52       200

QT         5     15460     15460      2370     10600     51000
NC      .030      .030      .040       .10       .30
ET                          9.10                                                    687.56   1047.00
       FIELD SURVEYED SECTION 1 = FIS SECTION A
X1      1.00        34    1023.0    1047.0        .0        .0        .0                           0
GR    1798.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR    1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR    1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR    1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR    1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR    1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR    1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                          9.10                                                       426      1018
       ADDITIONAL FIELD SURVEYED SECTION 1.1
X1      1.10        42     675.0     710.0     675.0     540.0     759.0
GR    1803.4        .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR    1792.5     100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR    1790.9     272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR    1788.3     562.0    1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR    1781.2     681.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR    1789.6     710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR    1787.9     981.0    1787.7    1064.0    1788.2    1069.0    1787.2    1075.0    1790.1    1088.0
GR    1790.5    1094.0    1790.3    1099.0    1788.1    1113.0    1787.4    1123.0    1789.8    1139.0
GR    1789.4    1172.0    1795.0    1200.0

ET                          9.10                                                    244.36    924.98
       FIELD SURVEYED SECTION 2 = FIS SECTION B
X1      2.00        38     580.0     608.0     340.0     530.0     511.0                           0
GR    1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR    1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR    1791.5     567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR    1784.0     598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR    1790.5     683.0    1790.6     720.0    1790.6     750.0    1790.7     880.0    1791.4    1005.0
GR    1792.1    1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0    1795.2    1087.0
GR    1795.8    1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0    1793.0    1178.0
GR    1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

ET                          9.10                                                       266       963
       ADDITIONAL FIELD SURVEYED SECTION 2.05
X1      2.05        23     570.0     598.0     215.0     150.0     206.0                           0
GR    1800.2        .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR    1791.9     570.0    1791.5     576.0    1783.2     585.0    1783.2     592.0    1790.9     598.0
GR    1790.7     640.0    1791.9     750.0    1791.9     790.0    1791.9     905.0    1791.9    1005.0
GR    1791.9    1115.0    1791.9    1137.0    1794.7    1143.0    1794.7    1155.0    1790.7    1163.0
GR    1790.5    1240.0    1797.7    1264.0    1797.7    1288.0

ET                           9.1                                                     263.5     967.5
       SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
X1      2.06      49.0     633.0     663.5      74.0      19.0      59.0
GR    1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR    1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR    1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR    1791.9     568.0    1791.1     633.0    1789.0     638.5    1787.9     639.5    1786.6     640.4
GR    1784.0     648.7    1783.7     649.3    1783.7     651.5    1785.0     656.1    1785.3     657.0
GR    1788.9     660.7    1790.9     663.5    1791.0     688.6    1791.0     709.0    1791.3     756.4
GR    1791.3     828.1    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     995.9
GR    1791.7    1003.6    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9
GR    1792.8    1206.1    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5
GR    1794.2    1260.0    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6
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EXHIBIT 9 - HEC2 INPUT & OUTPUT

ET			9.1						263.5	967.5
	FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE									
X1	2.07	53.0	633.0	663.5	1.0	1.0	1.0	.000	.000	.000
X2				1796.4	1798.4					
BT	8	568	1791.9	1791.9	594	1795.15	1791.6	620	1798.4	1791.3
BT	620	1798.4	1796.4	670	1798.4	1796.4	670	1798.4	1790.9	696
BT	1793.5	1791.0	709	1791.0	1791.0					
GR	1798.5	.0	1798.5	47.0	1795.5	60.9	1794.8	63.6	1794.0	113.0
GR	1793.8	123.7	1792.0	163.8	1792.2	210.0	1792.2	327.2	1792.1	414.6
GR	1791.7	433.8	1792.3	444.4	1792.1	472.8	1792.0	498.7	1792.0	548.2
GR	1791.9	568.0	1791.6	594.0	1791.3	620.0	1791.1	633.0	1789.0	638.5
GR	1787.9	639.5	1786.6	640.4	1784.0	648.7	1783.7	649.3	1783.7	651.5
GR	1785.0	656.1	1785.3	657.0	1788.9	660.7	1790.9	663.5	1790.9	670.0
GR	1791.0	688.6	1791.0	696.0	1791.0	709.0	1791.3	756.4	1791.3	828.1
GR	1791.2	836.3	1791.5	871.4	1791.7	912.5	1791.7	995.9	1791.7	1003.6
GR	1791.7	1075.1	1791.7	1104.1	1791.7	1153.1	1792.7	1182.9	1792.8	1206.1
GR	1792.8	1223.2	1792.8	1232.1	1791.7	1247.0	1792.6	1253.5	1794.2	1260.0
GR	1796.0	1285.0	1798.0	1305.5	1798.0	1317.6				
ET			9.1						263.5	967.5
	SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE									
X1	2.08	0	0	0	30	30	30			
X2							1			
ET			9.1						263.5	967.5
	SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE									
X1	2.09	49.0	633.0	663.5	1.0	1.0	1.0			
GR	1798.5	.0	1798.5	47.0	1795.5	60.9	1794.8	63.6	1794.0	113.0
GR	1793.8	123.7	1792.0	163.8	1792.2	210.0	1792.2	327.2	1792.1	414.6
GR	1791.7	433.8	1792.3	444.4	1792.1	472.8	1792.0	498.7	1792.0	548.2
GR	1791.9	568.0	1791.1	633.0	1789.0	638.5	1787.9	639.5	1786.6	640.4
GR	1784.0	648.7	1783.7	649.3	1783.7	651.5	1785.0	656.1	1785.3	657.0
GR	1788.9	660.7	1790.9	663.5	1791.0	688.6	1791.0	709.0	1791.3	756.4
GR	1791.3	828.1	1791.2	836.3	1791.5	871.4	1791.7	912.5	1791.7	995.9
GR	1791.7	1003.6	1791.7	1075.1	1791.7	1104.1	1791.7	1153.1	1792.7	1182.9
GR	1792.8	1206.1	1792.8	1223.2	1792.8	1232.1	1791.7	1247.0	1792.6	1253.5
GR	1794.2	1260.0	1796.0	1285.0	1798.0	1305.5	1798.0	1317.6		
ET			9.10						177	897
	ADDITIONAL FIELD SURVEYED SECTION 2.1									
X1	2.10	35	504.0	537.0	74.0	19.0	59.0			0
GR	1797.3	.0	1792.5	13.0	1792.2	25.0	1791.2	31.0	1791.8	41.0
GR	1792.1	122.0	1792.2	217.0	1792.2	299.0	1791.4	317.0	1792.7	327.0
GR	1791.9	378.0	1791.7	443.0	1790.7	504.0	1786.9	510.0	1782.8	512.0
GR	1784.6	521.0	1784.6	524.0	1787.2	529.0	1790.6	534.0	1791.3	537.0
GR	1791.7	564.0	1791.8	637.0	1791.0	723.0	1791.9	805.0	1791.9	903.0
GR	1791.9	980.0	1791.9	1064.0	1793.9	1096.0	1794.2	1121.0	1794.1	1149.0
GR	1788.6	1189.0	1791.8	1209.0	1796.2	1228.0	1797.1	1241.0	1797.1	1265.0
NC	.045	.045	.040	.10	.30					
ET			9.10						110.00	690.00
	FIELD SURVEYED SECTION 3 = FIS SECTION C									
X1	3.00	29	192.0	217.0	615.0	485.0	950.0			
GR	1803.1	.0	1796.6	25.0	1796.0	38.0	1793.7	45.0	1793.3	53.0
GR	1793.9	153.0	1793.2	192.0	1788.8	202.0	1783.6	207.0	1788.6	217.0
GR	1789.9	218.0	1792.2	253.0	1792.6	353.0	1792.8	453.0	1792.9	503.0
GR	1791.3	508.0	1792.9	513.0	1793.8	553.0	1795.1	653.0	1796.0	753.0
GR	1796.5	853.0	1795.4	949.0	1794.0	1053.0	1795.0	1131.0	1793.3	1144.0
GR	1796.5	1153.0	1799.9	1180.0	1800.0	1246.4	1802.0	1247.4		
ET			9.10						50.00	500.00
	FIELD SURVEYED SECTION 4 = FIS SECTION D									
X1	4.00	27	100.0	160.0	1300.0	1420.0	1660.0			0
GR	1807.2	.0	1803.8	6.0	1798.7	20.0	1797.1	100.0	1789.0	130.0
GR	1788.7	139.0	1788.7	151.0	1796.3	160.0	1795.7	167.0	1795.4	200.0
GR	1796.2	300.0	1797.0	356.0	1799.8	381.0	1799.6	400.0	1800.1	478.0
GR	1799.9	500.0	1799.0	600.0	1798.9	700.0	1800.2	800.0	1800.0	832.0
GR	1799.3	900.0	1798.9	1000.0	1800.8	1100.0	1801.0	1113.0	1804.0	1131.0
GR	1805.0	1140.0	1808.0	1162.0						
ET			9.10						104.14	644.88
	FIELD SURVEYED SECTION 5 = FIS SECTION E									
X1	5.00	24	144.0	199.0	980.0	700.0	1110.0			0
GR	1808.3	.0	1799.9	30.0	1797.7	99.0	1798.3	144.0	1792.9	156.0
GR	1790.1	161.0	1793.1	171.0	1801.0	199.0	1800.9	299.0	1800.9	399.0
GR	1800.9	499.0	1800.8	599.0	1800.0	662.0	1801.3	671.0	1798.5	676.0
GR	1801.3	682.0	1801.3	699.0	1800.9	726.0	1800.4	764.0	1800.4	787.0
GR	1803.5	799.0	1805.3	899.0	1806.8	999.0	1811.9	1085.0		

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ET                         9.10                                                                           399.00     688.33
      FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00        21     399.0     430.0      855.0      860.0      915.0                                    0
GR   1813.5     246.0    1808.1     346.0     1807.5      350.0     1799.2      355.0     1799.2         359.0
GR   1804.6     363.0    1804.9     371.0     1805.0      378.0     1798.3      399.0     1793.3         407.0
GR   1792.6     416.0    1793.0     423.0     1798.6      430.0     1799.0      446.0     1800.4         546.0
GR   1803.6     607.0    1802.7     646.0     1804.8      746.0     1805.9      846.0     1808.1         946.0
GR   1812.3    1046.0

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG         HV         HL         OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH        AROB       VOL        TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH       XNR        WTN        ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC        ICONT      CORAR      TOPWID    ENDST

*PROF 1
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
      FIELD SURVEYED SECTION 1 = FIS SECTION A
    1.000     12.90   1789.00   1788.72   1789.00   1789.79        .79        .00        .00   1784.50
  15460.0   11802.0    2098.7    1559.3    1774.4     216.6      245.0         .0         .0   1785.50
      .00      6.65      9.69      6.36      .030      .040       .030       .000    1776.10     76.07
  .005099        0.        0.        0.         0         5          0        .00     978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
      ADDITIONAL FIELD SURVEYED SECTION 1.1
    1.100     10.67   1791.67   1790.96       .00   1792.24        .57       2.43        .02   1788.70
  15460.0    3418.6    2346.5    9694.9     811.5     307.9     1577.7       35.9       14.7   1789.60
      .03      4.21      7.62      6.14      .030      .040       .030       .000    1781.00    101.05
  .002950      675.      759.      540.         2        13          0        .00    1024.35   1183.31

*SECNO 2.000
3265 DIVIDED FLOW
      FIELD SURVEYED SECTION 2 = FIS SECTION B
    2.000      9.66   1793.36   1792.96       .00   1793.96        .59       1.71        .01   1790.40
  15460.0    5897.7    1549.1    8013.2    1064.2     189.4     1295.3       63.6       25.3   1791.80
      .05      5.54      8.18      6.19      .030      .040       .030       .000    1783.70     57.03
  .004606      340.      511.      530.         2         9          0        .00    1093.72   1178.64

*SECNO 2.050
3265 DIVIDED FLOW
      ADDITIONAL FIELD SURVEYED SECTION 2.05
    2.050     10.98   1794.18   1793.68       .00   1794.74        .56        .78        .00   1791.90
  15460.0    3733.2    1490.4   10236.3     824.5     195.8     1653.4       74.3       30.0   1790.90
      .06      4.53      7.61      6.19      .030      .040       .030       .000    1783.20     69.65
  .004228      215.      206.      150.         2         8          0        .00    1168.42   1252.25

*SECNO 2.060
      SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
    2.060     10.79   1794.49   1793.62       .00   1794.88        .39        .13        .02   1791.10
  15460.0    5450.2    1590.7    8419.2    1232.8     238.6     1682.4       77.0       31.2   1790.90
      .06      4.42      6.67      5.00      .030      .040       .030       .000    1783.70     82.78
  .002477       74.       59.       19.         2        14          0        .00    1181.25   1264.02

*SECNO 2.070
3370 NORMAL BRIDGE, NRD=   8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
      FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
    2.070     10.73   1794.43   1793.76       .00   1794.91        .48        .00        .03   1791.10
  15460.0    5164.3    1792.1    8503.5    1075.6     236.7     1541.0       77.1       31.2   1790.90
      .06      4.80      7.57      5.52      .030      .040       .030       .000    1783.70     86.66
  .003230        1.        1.        1.         2        14          0    -225.44    1176.49   1263.15

*SECNO 2.080
3370 NORMAL BRIDGE, NRD=   8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
      SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
    2.080     10.88   1794.58   1793.76       .00   1795.00        .43        .09        .01   1791.10
  15460.0    5265.4    1692.6    8502.0    1153.9     241.3     1628.5       79.1       32.0   1790.90
      .06      4.56      7.02      5.22      .030      .040       .030       .000    1783.70     77.35
  .002702       30.       30.       30.         2        14          0    -233.26    1187.89   1265.24

*SECNO 2.090
      SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
    2.090     10.98   1794.68   1793.62       .00   1795.01        .34        .00        .01   1791.10
  15460.0    5562.2    1487.1    8410.6    1337.8     244.4     1796.1       79.2       32.0   1790.90
      .06      4.16      6.09      4.68      .030      .040       .030       .000    1783.70     71.11
  .002000        1.        1.        1.         2        13          0        .00    1195.53   1266.64
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EXHIBIT 9 - HEC2 INPUT & OUTPUT

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    SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2.100
       ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.01   1794.81   1793.53       .00   1795.10       .28       .08       .01   1790.70
  15460.0    5656.7    1488.3    8315.0    1409.5     272.1    1979.7      82.7      33.3   1791.30
      .07      4.01      5.47      4.20      .030      .040      .030      .000   1782.80      6.76
  .001604       74.       59.       19.         1         6         0       .00   1215.21   1221.97

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3265 DIVIDED FLOW
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .46
       FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     12.60   1796.20   1795.92       .00   1796.99       .78      1.74       .15   1793.20
  15460.0    2153.4    2399.5   10907.1     395.8     203.2    1843.8     121.9      47.1   1788.60
      .09      5.44     11.81      5.92      .045      .040      .045      .000   1783.60     33.54
  .007651       615.      950.      485.         2         9         0       .00   1034.19   1152.17

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   1.96
       FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.04   1801.74   1800.38       .00   1802.13       .39      5.11       .04   1797.10
  15460.0    1133.4    4632.2    9694.5     319.8     616.3    2820.6     224.2      81.8   1796.30
      .18      3.54      7.52      3.44      .045      .040      .045      .000   1788.70     11.66
  .001992      1300.     1660.     1420.         4         9         0       .00   1105.78   1117.43

*SECNO 5.000
       FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     13.74   1803.84   1802.95       .00   1804.44       .60      2.25       .06   1798.30
  15460.0    3780.5    4231.3    7448.3     638.8     473.3    1810.8     286.1      98.4   1801.00
      .22      5.92      8.94      4.11      .045      .040      .045      .000   1790.10     15.91
  .003558       980.     1110.      700.         3         6         0       .00   802.21    818.12

*SECNO 6.000
       FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     14.16   1806.76   1805.69       .00   1807.68       .92      3.14       .10   1798.30
  15460.0    1062.9    4328.6   10068.4     202.8     386.3    1721.6     338.3     111.7   1798.60
      .25      5.24     11.21      5.85      .045      .040      .045      .000   1792.60    350.45
  .003623       855.      915.      860.         2        10         0       .00   534.47    884.92
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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 9
T4      ADDED BRIDGE

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    NVINS     Q         WSEL      FQ
      -10       3                                                 -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                   -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00       .030      .040      .000      .000   1776.10    687.56
  .005241        0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.66
3470 ENCROACHMENT STATIONS=      426.0    1018.0  TYPE=      1  TARGET=      592.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.84   1792.84   1791.25   1791.67   1793.37       .54      1.93       .08   1788.70
   15460.0   4293.6    2327.4    8839.1     863.0     349.0    1459.8      31.8       7.0   1789.60
      .03      4.98      6.67      6.05       .030      .040      .030      .000   1781.00    426.00
  .001912       675.      759.      540.         3        17         0       .00    592.00   1018.00

*SECNO 2.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .64
3470 ENCROACHMENT STATIONS=      244.4     925.0  TYPE=      1  TARGET=      680.620
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.26   1793.96   1793.41   1793.36   1794.79       .83      1.33       .09   1790.40
   15460.0   5509.9    1797.0    8153.1     867.2     206.3    1073.3      57.2      13.4   1791.80
      .05      6.35      8.71      7.60       .030      .040      .030      .000   1783.70    244.36
  .004658       340.      511.      530.         2        14         0       .00    680.62    924.98

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      266.0     963.0  TYPE=      1  TARGET=      697.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.60   1794.80   1794.26   1794.18   1795.67       .87       .87       .01   1791.90
   15460.0   4525.7    1889.1    9045.3     721.5     213.3    1170.6      66.0      16.3   1790.90
      .06      6.27      8.85      7.73       .030      .040      .030      .000   1783.20    266.00
  .005105       215.      206.      150.         2         8         0       .00    697.00    963.00

*SECNO 2.060
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
     2.060     11.63   1795.33   1794.07   1794.49   1795.84       .52       .14       .04   1791.10
   15460.0   6494.0    1804.6    7161.4    1234.9     264.4    1213.0      68.5      17.0   1790.90
      .06      5.26      6.83      5.90       .030      .040      .030      .000   1783.70    263.50
  .002265        74.       59.       19.         2        13         0       .00    704.00    967.50

*SECNO 2.070
3370 NORMAL BRIDGE, NRD=    8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
     2.070     11.51   1795.21   1794.28   1794.43   1795.90       .69       .00       .05   1791.10
   15460.0   6193.2    2121.7    7145.1    1043.7     260.6    1056.6      68.6      17.1   1790.90
      .06      5.93      8.14      6.76       .030      .040      .030      .000   1783.70    263.50
  .003285        1.        1.        1.         2        11         0   -262.81    704.00    967.50

*SECNO 2.080
3370 NORMAL BRIDGE, NRD=    8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000

        SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
     2.080     11.67   1795.37   1794.28   1794.58   1796.00       .63       .09       .01   1791.10
   15460.0   6279.0    2041.9    7139.1    1097.9     265.4    1101.8      70.2      17.5   1790.90
      .06      5.72      7.69      6.48       .030      .040      .030      .000   1783.70    263.50
  .002863       30.       30.       30.         2        11         0   -269.31    704.00    967.50
```

```
    SECNO      DEPTH     CWSEL     CRIWS     WSELK      EG         HV        HL        OLOSS     L-BANK ELEV
    Q          QLOB      QCH       QROB      ALOB       ACH        AROB      VOL       THA       R-BANK ELEV
    TIME       VLOB      VCH       VROB      XNL        XNCH       XNR       WTN       ELMIN     SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL     IDC        ICONT     CORAR     TOPWID    ENDST

*SECNO 2.090
3470 ENCROACHMENT STATIONS=      263.5     967.5 TYPE=      1  TARGET=      704.000
       SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
     2.090      11.86    1795.56   1794.08   1794.68   1796.02       .46       .00       .02   1791.10
  15460.0     6594.0     1717.2    7148.9    1317.7     271.2    1281.1      70.3      17.6   1790.90
      .06       5.00       6.33      5.58       .030      .040      .030      .000   1783.70    263.50
  .001883       1.         1.        1.         2         13         0        .00    704.00    967.50

*SECNO 2.100
3470 ENCROACHMENT STATIONS=      177.0     897.0 TYPE=      1  TARGET=      720.000
       ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100      12.88    1795.68   1794.03   1794.81   1796.10       .42       .08       .00   1790.70
  15460.0     6071.7     1815.0    7573.2    1228.4     300.9    1461.3      73.4      18.3   1791.30
      .06       4.94       6.03      5.18       .030      .040      .030      .000   1782.80    177.00
  .001706      74.        59.       19.        0         10         0        .00    720.00    897.00

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .56
3470 ENCROACHMENT STATIONS=      110.0     690.0 TYPE=      1  TARGET=      580.000
       FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000      13.46    1797.06   1796.17   1796.20   1797.82       .76      1.62       .10   1793.20
  15460.0     1479.1     2368.4   11612.5     278.0     224.4    1854.5     108.3      26.5   1788.60
      .08       5.32      10.55      6.26       .045      .040      .045      .000   1783.60    110.00
  .005349      615.       950.      485.        2         6          0        .00    580.00    690.00

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.45
3470 ENCROACHMENT STATIONS=       50.0     500.0 TYPE=      1  TARGET=      450.000
       FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000      13.69    1802.39   1800.37   1801.74   1803.10       .71      5.27       .01   1797.10
  15460.0     1075.1     5815.2    8569.6     239.3     655.1    1654.1     189.9      43.3   1796.30
      .15       4.49       8.88      5.18       .045      .040      .045      .000   1788.70     50.00
  .002561     1300.      1660.     1420.        2         9          0        .00    450.00    500.00

*SECNO 5.000
3470 ENCROACHMENT STATIONS=      104.1     644.9 TYPE=      1  TARGET=      540.740
       FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000      14.82    1804.92   1803.67   1803.84   1805.64       .72      2.54       .00   1798.30
  15460.0     1703.5     5005.6    8750.8     274.3     532.2    1808.0     238.6      52.1   1801.00
      .18       6.21       9.41      4.84       .045      .040      .045      .000   1790.10    104.14
  .003369      980.      1110.      700.        2         6          0        .00    540.74    644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0     688.3 TYPE=      1  TARGET=      289.330
       FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000      15.14    1807.73   1805.38   1806.76   1808.65       .92      2.95       .06   1798.30
  15460.0        .0      4032.9   11427.1        .0     416.6    1669.3     285.6      60.4   1798.60
      .22        .00       9.68      6.85       .000      .040      .045      .000   1792.60    399.00
  .003376      855.       915.      860.        2         9          0        .00    289.33    688.33
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

EXHIBIT 9
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.67	1790.96	2697.13	7.62	101.05	1183.31	.00
*	1.100	15460.00	759.00	1781.00	1792.84	1791.25	2671.82	6.67	426.00	1018.00	1.17
	2.000	15460.00	511.00	1783.70	1793.36	1792.96	2548.82	8.18	57.03	1178.64	.00
*	2.000	15460.00	511.00	1783.70	1793.96	1793.41	2146.80	8.71	244.36	924.98	.59
	2.050	15460.00	206.00	1783.20	1794.18	1793.68	2673.67	7.61	69.65	1252.25	.00
	2.050	15460.00	206.00	1783.20	1794.80	1794.26	2105.46	8.85	266.00	963.00	.62
	2.060	15460.00	59.00	1783.70	1794.49	1793.62	3153.84	6.67	82.78	1264.02	.00
*	2.060	15460.00	59.00	1783.70	1795.33	1794.07	2712.22	6.83	263.50	967.50	.84
	2.070	15460.00	1.00	1783.70	1794.43	1793.76	2853.31	7.57	86.66	1263.15	.00
	2.070	15460.00	1.00	1783.70	1795.21	1794.28	2360.95	8.14	263.50	967.50	.78
	2.080	15460.00	30.00	1783.70	1794.58	1793.76	3023.71	7.02	77.35	1265.24	.00
	2.080	15460.00	30.00	1783.70	1795.37	1794.28	2465.05	7.69	263.50	967.50	.79
	2.090	15460.00	1.00	1783.70	1794.68	1793.62	3378.26	6.09	71.11	1266.64	.00
	2.090	15460.00	1.00	1783.70	1795.56	1794.08	2870.08	6.33	263.50	967.50	.88
	2.100	15460.00	59.00	1782.80	1794.81	1793.53	3661.31	5.47	6.76	1221.97	.00
	2.100	15460.00	59.00	1782.80	1795.68	1794.03	2990.60	6.03	177.00	897.00	.87
*	3.000	15460.00	950.00	1783.60	1796.20	1795.92	2442.79	11.81	33.54	1152.17	.00
*	3.000	15460.00	950.00	1783.60	1797.06	1796.17	2356.95	10.55	110.00	690.00	.85
*	4.000	15460.00	1660.00	1788.70	1801.74	1800.38	3756.69	7.52	11.66	1117.43	.00
*	4.000	15460.00	1660.00	1788.70	1802.39	1800.37	2548.52	8.88	50.00	500.00	.65
	5.000	15460.00	1110.00	1790.10	1803.84	1802.95	2922.93	8.94	15.91	818.12	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.67	2614.46	9.41	104.14	644.88	1.08
	6.000	15460.00	915.00	1792.60	1806.76	1805.69	2310.66	11.21	350.45	884.92	.00
	6.000	15460.00	915.00	1792.60	1807.73	1805.38	2085.95	9.68	399.00	688.33	.98

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 1.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.060 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

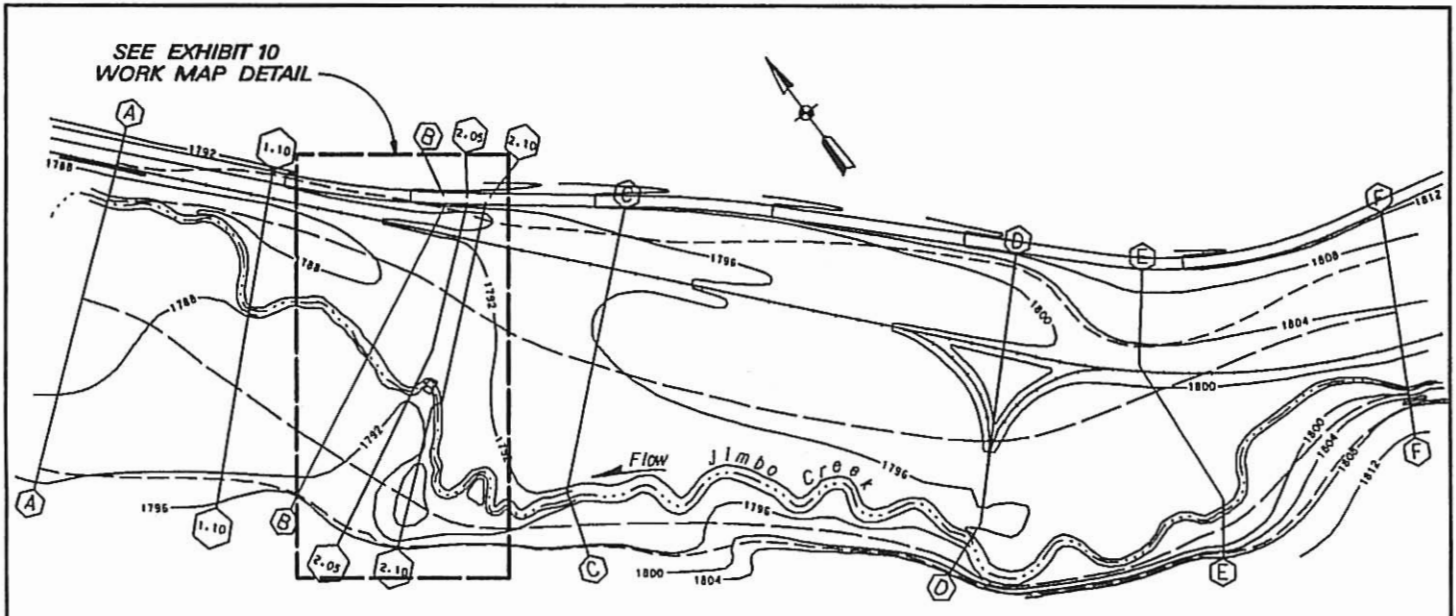
WARNING SECNO= 4.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 9
PROFILE NO. 2

	FLOODWAY			WATER SURFACE ELEVATION		
STATION	WIDTH	SECTION AREA	MEAN VELOCITY	WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	592.	2672.	5.8	1792.9	1791.7	1.2
2.000	681.	2147.	7.2	1794.0	1793.4	.6
2.050	697.	2105.	7.3	1794.8	1794.2	.6
2.060	704.	2712.	5.7	1795.3	1794.5	.8
2.070	704.	2361.	6.5	1795.2	1794.4	.8
2.080	704.	2465.	6.3	1795.4	1794.6	.8
2.090	704.	2870.	5.4	1795.6	1794.7	.9
2.100	720.	2991.	5.2	1795.7	1794.8	.9
3.000	580.	2357.	6.6	1797.1	1796.2	.9
4.000	450.	2549.	6.1	1802.3	1801.7	.6
5.000	541.	2614.	5.9	1804.9	1803.8	1.1
6.000	289.	2086.	7.4	1807.8	1806.8	1.0

EXHIBIT TEN

"No Rise" Condition

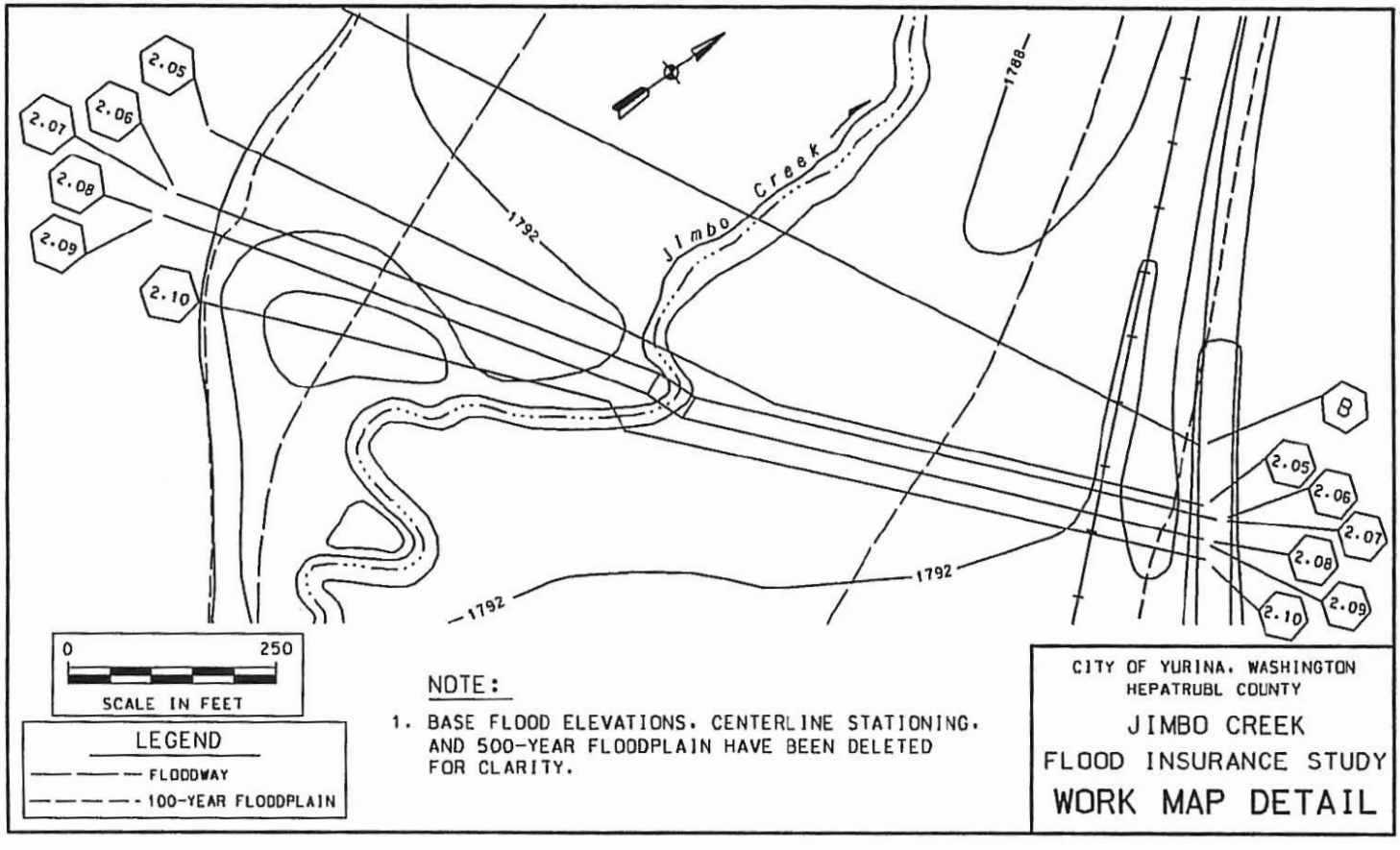


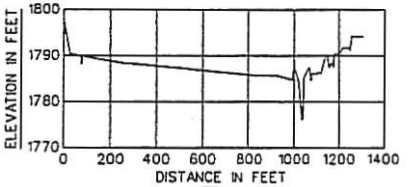
NOTE:

BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.

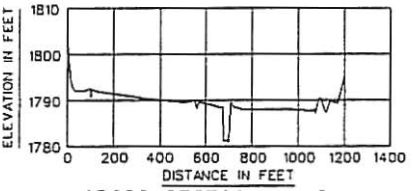
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP

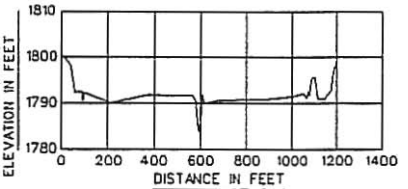

2.05
2.06
2.07
2.08
2.09
2.10
1792
Jimbo Creek
1788
B
0
250
SCALE IN FEET
LEGEND
FLOODWAY
100-YEAR FLOODPLAIN
NOTE:
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP DETAIL



CROSS SECTION A



CROSS SECTION 1.10



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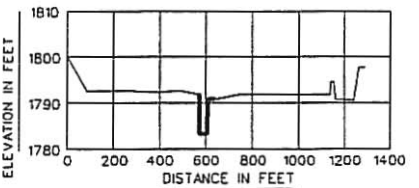
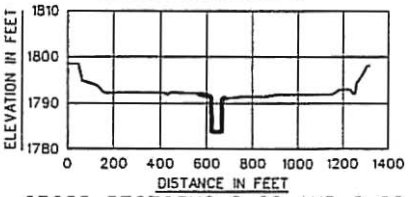
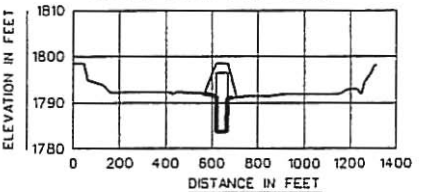


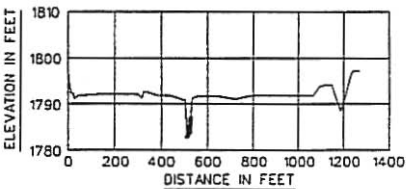
CROSS SECTION 2.05



CROSS SECTIONS 2.06 AND 2.09



CROSS SECTIONS 2.07 AND 2.08



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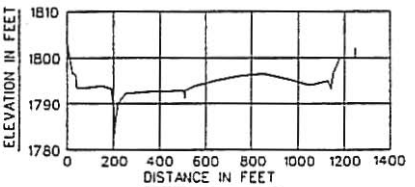
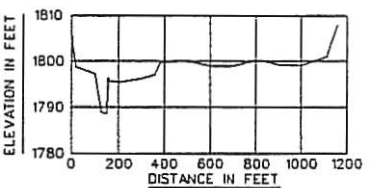
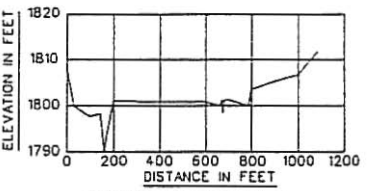


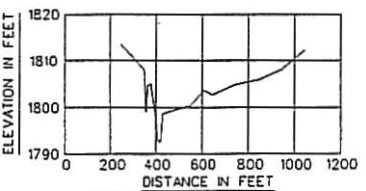
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS
OR REVISIONS TO EXHIBIT 9.

EXHIBIT 10 – CROSS SECTIONS

EXHIBIT 10 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY[2]	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	592	2672	5.8	1791.7	1791.7	1792.8	1.1
B	1270	681	2147	7.2	1793.4	1793.4	1794.0	0.6
2.05	1476	697	2213	7.0	1794.2	1794.1	1794.7	0.5
2.06	1535	704	2866	5.4	1794.5	1794.4	1795.3	0.8
2.07	1536	704	2547	6.1	1794.5	1794.4	1795.2	0.7
2.08	1566	704	2625	5.9	1794.6	1794.5	1795.3	0.7
2.09	1567	704	2991	5.2	1794.6	1794.6	1795.4	0.8
2.10	1626	720	2886	5.4	1794.8	1794.7	1795.5	0.7
C	2576	580	2352	6.6	1796.2	1796.2	1797.0	0.8
D	4236	450	2551	6.1	1801.7	1801.7	1802.4	0.7
E	5346	541	2613	5.9	1803.8	1803.8	1804.9	1.1
F	6261	289	2086	7.4	1806.8	1806.8	1807.7	0.9

[1] Feet above limit of detailed study.
[2] Regulatory base flood elevations as determined by conditions shown on Exhibit 8.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 9 input data.

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*************************************
HEC-2 WATER SURFACE PROFILES

Version  4.6.2; May 1991
*************************************

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 10
T4      ADDITIONAL CONVEYANCE - NO RISE CONDITION

J1  ICHECK     INQ    NINV    IDIR    STRT  METRIC   HVINS       Q    WSEL      FQ
         0       2                                      -1         1789.00
J2   NPROF   IPLOT   PRFVS   XSECV   XSECH      FN   ALLDC     IBW   CHNIM  ITRACE
         1              -1                              -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
        38      43      39      42       1       2      25      26      53      54
        52     200

QT       5   15460   15460    2370   10600   51000
NC    .030    .030    .040     .10     .30
ET                    9.10                                          687.56 1047.00
      FIELD SURVEYED SECTION 1 = FIS SECTION A
X1    1.00      34  1023.0  1047.0      .0      .0      .0                       0
GR  1798.1      .0  1790.5    29.0  1789.8    75.0  1788.3    77.0  1789.9    80.0
GR  1788.4   255.0  1787.8   391.0  1787.2   537.0  1786.4   678.0  1785.8   815.0
GR  1785.6   932.0  1784.7   994.0  1788.0  1002.0  1784.5  1023.0  1776.1  1038.0
GR  1776.5  1041.0  1785.5  1047.0  1787.6  1068.0  1784.8  1077.0  1786.0  1079.0
GR  1786.3  1121.0  1789.1  1137.0  1790.4  1148.0  1790.1  1150.0  1787.5  1160.0
GR  1788.7  1169.0  1787.6  1177.0  1790.4  1181.0  1790.7  1209.0  1791.6  1213.0
GR  1791.7  1245.0  1791.3  1249.0  1794.2  1256.0  1794.3  1306.0

ET                    9.10                                             426    1018
      ADDITIONAL FIELD SURVEYED SECTION 1.1
X1    1.10      42   675.0   710.0   675.0   540.0   759.0
GR  1803.4      .0  1794.7    14.0  1793.0    21.0  1792.0    35.0  1792.2    75.0
GR  1792.5   100.0  1790.9   102.0  1792.4   105.0  1791.9   133.0  1791.4   193.0
GR  1790.9   272.0  1790.4   343.0  1789.9   437.0  1789.5   507.0  1790.0   552.0
GR  1788.3   562.0  1789.6   571.0  1789.0   622.0  1788.4   667.0  1788.7   675.0
GR  1781.2   681.0  1781.3   686.0  1781.4   693.0  1781.0   700.0  1784.0   705.0
GR  1789.6   710.0  1788.5   724.0  1788.0   764.0  1788.1   832.0  1788.1   902.0
GR  1787.9   981.0  1787.7  1064.0  1788.2  1069.0  1787.2  1075.0  1790.1  1088.0
GR  1790.5  1094.0  1790.3  1099.0  1788.1  1113.0  1787.4  1123.0  1789.8  1139.0
GR  1789.4  1172.0  1795.0  1200.0

ET                    9.10                                          244.36  924.98
      FIELD SURVEYED SECTION 2 = FIS SECTION B
X1    2.00      38   580.0   608.0   340.0   530.0   511.0                       0
GR  1800.9      .0  1798.2    42.0  1792.4    60.0  1792.6    90.0  1790.6    93.0
GR  1792.2   100.0  1790.0   214.0  1791.8   378.0  1791.5   474.0  1791.7   509.0
GR  1791.5   567.0  1790.4   580.0  1785.4   589.0  1784.2   591.0  1783.7   597.0
GR  1784.0   598.0  1785.3   600.0  1787.4   603.0  1791.8   608.0  1789.9   619.0
GR  1790.5   683.0  1790.6   720.0  1790.6   750.0  1790.7   880.0  1791.4  1005.0
GR  1792.1  1053.0  1791.2  1068.0  1792.5  1074.0  1791.9  1080.0  1795.2  1087.0
GR  1795.8  1096.0  1795.4  1104.0  1791.0  1119.0  1790.9  1145.0  1793.0  1178.0
GR  1795.8  1183.0  1797.6  1192.0  1798.6  1198.0

ET                    9.10                                             266     963
      ADDITIONAL FIELD SURVEYED SECTION 2.05
X1    2.05      23   570.0   612.0   215.0   150.0   206.0                       0
GR  1800.2      .0  1792.5    89.0  1792.7   240.0  1792.3   400.0  1792.7   480.0
GR  1791.9   570.0  1791.5   572.0  1783.2   576.0  1783.2   606.0  1790.9   612.0
GR  1790.7   640.0  1791.9   750.0  1791.9   790.0  1791.9   905.0  1791.9  1005.0
GR  1791.9  1115.0  1791.9  1137.0  1794.7  1143.0  1794.7  1155.0  1790.7  1163.0
GR  1790.5  1240.0  1797.7  1264.0  1797.7  1288.0

ET                     9.1                                           263.5   967.5
      SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
X1    2.06    53.0   620.0   670.0    74.0    19.0    59.0
GR  1798.5      .0  1798.5    47.0  1795.5    60.9  1794.8    63.6  1794.0   113.0
GR  1793.8   123.7  1792.0   163.8  1792.2   210.0  1792.2   327.2  1792.1   414.6
GR  1791.7   433.8  1792.3   444.4  1792.1   472.8  1792.0   498.7  1792.0   548.2
GR  1791.9   568.0  1791.6   594.0  1791.3   620.0  1783.7   624.0  1783.7   636.0
GR  1783.7   639.5  1783.7   640.4  1783.7   648.7  1783.7   649.3  1783.7   651.5
GR  1783.7   652.1  1783.7   653.0  1783.7   655.0  1783.7   666.0  1790.9   670.0
GR  1791.0   688.6  1791.0   696.0  1791.0   709.0  1791.3   756.4  1791.3   828.1
GR  1791.2   836.3  1791.5   871.4  1791.7   912.5  1791.7   995.9  1791.7  1003.6
GR  1791.7  1075.1  1791.7  1104.1  1791.7  1153.1  1792.7  1182.9  1792.8  1206.1
GR  1792.8  1223.2  1792.8  1232.1  1791.7  1247.0  1792.6  1253.5  1794.2  1260.0
GR  1796.0  1285.0  1798.0  1305.5  1798.0  1317.6
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EXHIBIT 10 - HEC2 INPUT & OUTPUT

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ET                   9.1                                                       263.5     967.5
      FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
X1     2.07      53.0     620.0     670.0       1.0       1.0       1.0      .000      .000      .000
X2                                 1796.4    1798.4
BT        8       568    1791.9    1791.9       594   1795.15    1791.6       620    1798.4    1791.3
BT      620    1798.4    1796.4       670    1798.4    1796.4       670    1798.4    1790.9       696
BT   1793.5    1791.0       709    1791.0    1791.0
GR   1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR   1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR   1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR   1791.9     568.0    1791.6     594.0    1791.3     620.0    1783.7     624.0    1783.7     636.0
GR   1783.7     639.5    1783.7     640.4    1783.7     648.7    1783.7     649.3    1783.7     651.5
GR   1783.7     652.1    1783.7     653.0    1783.7     655.0    1783.7     666.0    1790.9     670.0
GR   1791.0     688.6    1791.0     696.0    1791.0     709.0    1791.3     756.4    1791.3     828.1
GR   1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     995.9    1791.7    1003.6
GR   1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9    1792.8    1206.1
GR   1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5    1794.2    1260.0
GR   1796.0    1285.0    1798.0    1305.5    1798.0    1317.6

ET                   9.1                                                       263.5     967.5
      SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
X1     2.08         0         0         0        30        30        30
X2                                                                1
ET                   9.1                                                       263.5     967.5
      SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
X1     2.09      53.0     620.0     670.0       1.0       1.0       1.0
GR   1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR   1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR   1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR   1791.9     568.0    1791.6     594.0    1791.3     620.0    1783.7     624.0    1783.7     636.0
GR   1783.7     639.5    1783.7     640.4    1783.7     648.7    1783.7     649.3    1783.7     651.5
GR   1783.7     652.1    1783.7     653.0    1783.7     655.0    1783.7     666.0    1790.9     670.0
GR   1791.0     688.6    1791.0     696.0    1791.0     709.0    1791.3     756.4    1791.3     828.1
GR   1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     995.9    1791.7    1003.6
GR   1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9    1792.8    1206.1
GR   1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5    1794.2    1260.0
GR   1796.0    1285.0    1798.0    1305.5    1798.0    1317.6

ET                  9.10                                                         177       897
      ADDITIONAL FIELD SURVEYED SECTION 2.1
X1     2.10        35     504.0     537.0      74.0      19.0      59.0                            0
GR   1797.3        .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8      41.0
GR   1792.1     122.0    1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7     327.0
GR   1791.9     378.0    1791.7     443.0    1790.7     504.0    1786.9     510.0    1782.8     512.0
GR   1783.6     521.0    1783.6     524.0    1787.2     529.0    1790.6     534.0    1791.3     537.0
GR   1791.7     564.0    1791.8     637.0    1791.0     723.0    1791.9     805.0    1791.9     903.0
GR   1791.9     980.0    1791.9    1064.0    1793.9    1096.0    1794.2    1121.0    1794.1    1149.0
GR   1788.6    1189.0    1791.8    1209.0    1796.2    1228.0    1797.1    1241.0    1797.1    1265.0

NC     .045      .045      .040       .10       .30
ET                  9.10                                                      110.00    690.00
      FIELD SURVEYED SECTION 3 = FIS SECTION C
X1     3.00        29     192.0     217.0     615.0     485.0     950.0                            0
GR   1803.1        .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3      53.0
GR   1793.9     153.0    1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6     217.0
GR   1789.9     218.0    1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9     503.0
GR   1791.3     508.0    1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0     753.0
GR   1796.5     853.0    1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3    1144.0
GR   1796.5    1153.0    1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                  9.10                                                       50.00    500.00
      FIELD SURVEYED SECTION 4 = FIS SECTION D
X1     4.00        27     100.0     160.0    1300.0    1420.0    1660.0                            0
GR   1807.2        .0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0     130.0
GR   1788.7     139.0    1788.7     151.0    1796.3     160.0    1795.7     167.0    1795.4     200.0
GR   1796.2     300.0    1797.0     356.0    1799.8     381.0    1799.6     400.0    1800.1     478.0
GR   1799.9     500.0    1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0     832.0
GR   1799.3     900.0    1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0    1131.0
GR   1805.0    1140.0    1808.0    1162.0

ET                  9.10                                                      104.14    644.88
      FIELD SURVEYED SECTION 5 = FIS SECTION E
X1     5.00        24     144.0     199.0     980.0     700.0    1110.0                            0
GR   1808.3        .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9     156.0
GR   1790.1     161.0    1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9     399.0
GR   1800.9     499.0    1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5     676.0
GR   1801.3     682.0    1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4     787.0
GR   1803.5     799.0    1805.3     899.0    1806.8     999.0    1811.9    1085.0
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EXHIBIT 10 - HEC2 INPUT & OUTPUT

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ET                        9.10                                                                           399.00       698.33
      FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00          21      399.0      430.0       855.0       860.0       915.0                                      0
GR   1813.5       246.0     1808.1      346.0      1807.5       350.0      1799.2       355.0      1799.2       359.0
GR   1804.6       363.0     1804.9      371.0      1805.0       378.0      1798.3       399.0      1793.3       407.0
GR   1792.6       416.0     1793.0      423.0      1798.6       430.0      1799.0       446.0      1800.4       546.0
GR   1803.6       607.0     1802.7      646.0      1804.8       746.0      1805.9       846.0      1808.1       946.0
GR   1812.3      1046.0

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
      FIELD SURVEYED SECTION 1 = FIS SECTION A
    1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
  15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0   1785.50
      .00      6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
  .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
      ADDITIONAL FIELD SURVEYED SECTION 1.1
    1.100     10.67   1791.67   1790.96       .00   1792.24       .57      2.43       .02   1788.70
  15460.0    3418.6    2346.5    9694.9     811.5     307.9    1577.7      35.9      14.7   1789.60
      .03      4.21      7.62      6.14      .030      .040      .030      .000   1781.00    101.05
  .002950      675.      759.      540.         2        13         0       .00   1024.35   1183.31

*SECNO 2.000
3265 DIVIDED FLOW
      FIELD SURVEYED SECTION 2 = FIS SECTION B
    2.000      9.66   1793.36   1792.96       .00   1793.96       .59      1.71       .01   1790.40
  15460.0    5897.7    1549.1    8013.2    1064.2     189.4    1295.3      63.6      25.3   1791.80
      .05      5.54      8.18      6.19      .030      .040      .030      .000   1783.70     57.03
  .004606      340.      511.      530.         2         9         0       .00   1093.72   1178.64

*SECNO 2.050
3265 DIVIDED FLOW
      ADDITIONAL FIELD SURVEYED SECTION 2.05
    2.050     10.88   1794.08   1793.75       .00   1794.70       .62       .73       .01   1791.90
  15460.0    3174.8    3568.7    8716.5     778.6     400.4    1548.7      74.5      30.0   1790.90
      .06      4.08      8.91      5.63      .030      .040      .030      .000   1783.20     70.71
  .003691      215.      206.      150.         0         8         0       .00   1166.68   1251.94

*SECNO 2.060
      SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
    2.060     10.73   1794.43   1793.66       .00   1794.83       .40       .11       .02   1791.30
  15460.0    4562.1    3588.9    7309.0    1160.0     507.2    1627.6      77.4      31.2   1790.90
      .06      3.93      7.08      4.49      .030      .040      .030      .000   1783.70     86.08
  .002052       74.       59.       19.         2        13         0       .00   1177.19   1263.28

*SECNO 2.070
3370 NORMAL BRIDGE, NRD=   8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
      FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
    2.070     10.69   1794.39   1793.75       .00   1794.85       .47       .00       .02   1791.30
  15460.0    4322.3    3753.5    7384.2    1013.6     504.7    1495.2      77.5      31.2   1790.90
      .06      4.26      7.44      4.94      .030      .040      .030      .000   1783.70     89.13
  .002627        1.        1.        1.         2        14         0   -223.32   1173.46   1262.59

*SECNO 2.080
3370 NORMAL BRIDGE, NRD=   8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
      SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
    2.080     10.81   1794.51   1793.75       .00   1794.93       .42       .07       .00   1791.30
  15460.0    4441.0    3569.8    7449.1    1078.1     511.1    1568.6      79.6      32.0   1790.90
      .06      4.12      6.98      4.75      .030      .040      .030      .000   1783.70     81.21
  .002290       30.       30.       30.         2        14         0   -230.05   1183.16   1264.37

*SECNO 2.090
      SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
    2.090     10.89   1794.59   1793.66       .00   1794.94       .35       .00       .01   1791.30
  15460.0    4692.2    3395.1    7372.8    1243.7     515.0    1720.0      79.7      32.0   1790.90
      .06      3.77      6.59      4.29      .030      .040      .030      .000   1783.70     76.49
  .001745        1.        1.        1.         2        13         0       .00   1188.95   1265.44
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 2.100
       ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     11.92   1794.72    1793.54       .00    1795.02       .30       .08       .01    1790.70
   15460.0    5599.9    1604.3     8255.9     1369.5      279.4     1924.7      83.2      33.3    1791.30
       .07      4.09      5.74       4.29       .030       .040       .030       .000    1782.80       6.98
  .001728       74.       59.        19.          2          6          0        .00    1214.65    1221.62

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3265 DIVIDED FLOW
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .48
       FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     12.62   1796.22    1795.93       .00    1796.99       .77      1.83       .14    1793.20
   15460.0    2156.9    2387.6    10915.5      398.2      203.5     1856.5     122.0      47.1    1788.60
       .09      5.42      11.73      5.88       .045       .040       .045       .000    1783.60      33.21
  .007530       615.      950.       485.          2          9          0        .00    1038.84    1152.22

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   1.94
       FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.03   1801.73    1800.39       .00    1802.13       .39      5.10       .04    1797.10
   15460.0    1132.9    4639.9     9687.2      319.2      615.9     2813.5     224.5      81.9    1796.30
       .18      3.55      7.53       3.44       .045       .040       .045       .000    1788.70      11.68
  .002003       1300.     1660.      1420.          4          9          0        .00    1105.71    1117.39

*SECNO 5.000
       FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     13.74   1803.84    1802.95       .00    1804.44       .60      2.25       .06    1798.30
   15460.0    3780.2    4230.6     7449.2      638.9      473.4     1811.3     286.3      98.5    1801.00
       .22      5.92      8.94       4.11       .045       .040       .045       .000    1790.10      15.91
  .003555       980.      1110.      700.          3          6          0        .00     802.26     818.17

*SECNO 6.000
       FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     14.16   1806.76    1805.69       .00    1807.68       .92      3.14       .10    1798.30
   15460.0    1062.9    4328.6     10068.4      202.8      386.3     1721.6     338.4      111.7    1798.60
       .25      5.24      11.21      5.85       .045       .040       .045       .000    1792.60      350.45
  .003623       855.      915.       860.          2          10         0        .00     534.47     884.92
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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURIHA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 10
T4      ADDITIONAL CONVEYANCE - NO RISE CONDITION

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                                 -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                 -1                                        -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00      .030      .040      .000      .000   1776.10    687.56
  .005241        0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.66
3470 ENCROACHMENT STATIONS=      426.0    1018.0  TYPE=      1  TARGET=      592.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.84   1792.84   1791.25   1791.67   1793.37       .54      1.93       .08   1788.70
   15460.0   4293.6    2327.4    8839.1     863.0     349.0    1459.8      31.8       7.0   1789.60
      .03      4.98      6.67      6.05      .030      .040      .030      .000   1781.00    426.00
  .001912       675.      759.      540.         3        17         0       .00    592.00   1018.00

*SECNO 2.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .64
3470 ENCROACHMENT STATIONS=      244.4     925.0  TYPE=      1  TARGET=      680.620
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.26   1793.96   1793.41   1793.36   1794.79       .83      1.33       .09   1790.40
   15460.0   5509.9    1797.0    8153.1     867.2     206.3    1073.3      57.2      13.4   1791.80
      .05      6.35      8.71      7.60      .030      .040      .030      .000   1783.70    244.36
  .004658       340.      511.      530.         2        14         0       .00    680.62    924.98

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      266.0     963.0  TYPE=      1  TARGET=      697.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.52   1794.72   1794.26   1794.08   1795.59       .87       .79       .01   1791.90
   15460.0   3858.1    4211.6    7390.4     698.1     427.3    1087.6      66.3      16.3   1790.90
      .06      5.53      9.86      6.79      .030      .040      .030      .000   1783.20    266.00
  .004139       215.      206.      150.         2         8         0       .00    697.00    963.00

*SECNO 2.060
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.49
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
     2.060     11.56   1795.26   1794.02   1794.43   1795.75       .49       .12       .04   1791.30
   15460.0   5396.7    3905.9    6157.3    1154.1     548.5    1163.0      69.0      17.1   1790.90
      .06      4.68      7.12      5.29      .030      .040      .030      .000   1783.70    263.50
  .001871        74.       59.       19.         3        13         0       .00    704.00    967.50

*SECNO 2.070
3370 NORMAL BRIDGE, NRD=   8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
     2.070     11.48   1795.18   1794.17   1794.39   1795.79       .61       .00       .04   1791.30
   15460.0   5147.7    4169.4    6142.8     982.0     544.5    1020.4      69.1      17.1   1790.90
      .06      5.24      7.66      6.02      .030      .040      .030      .000   1783.70    263.50
  .002600         1.        1.        1.         2        10         0   -261.57    704.00    967.50

*SECNO 2.080
3370 NORMAL BRIDGE, NRD=   8 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
     2.080     11.60   1795.30   1794.17   1794.51   1795.87       .57       .07       .00   1791.30
   15460.0   5239.6    4042.8    6177.6    1021.3     550.4    1053.8      70.9      17.6   1790.90
      .06      5.13      7.34      5.86      .030      .040      .030      .000   1783.70    263.50
  .002368        30.       30.       30.         2        10         0   -266.56    704.00    967.50
```

EXHIBIT 10 - HEC2 INPUT & OUTPUT

```
    SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2.090
3470 ENCROACHMENT STATIONS=      263.5     967.5  TYPE=      1  TARGET=      704.000
        SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
     2.090     11.74   1795.44   1794.02   1794.59   1795.89       .45       .00       .01   1791.30
   15460.0    5513.2    3750.5    6196.3    1217.7     557.5    1216.1      70.9      17.6   1790.90
       .06      4.53      6.73      5.10      .030      .040      .030      .000   1783.70     263.50
  .001635        1.        1.        1.         2        13         0       .00    704.00     967.50

*SECNO 2.100
3470 ENCROACHMENT STATIONS=      177.0     897.0  TYPE=      1  TARGET=      720.000
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.72   1795.52   1794.04   1794.72   1795.97       .45       .08       .00   1790.70
   15460.0    5989.9    1960.9    7509.2    1176.3     305.6    1404.0      74.1      18.4   1791.30
       .06      5.09      6.42      5.35      .030      .040      .030      .000   1782.80     177.00
  .001915       74.       59.       19.         2        10         0       .00    720.00     897.00

CCHV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60
3470 ENCROACHMENT STATIONS=      110.0     690.0  TYPE=      1  TARGET=      580.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.45   1797.05   1796.14   1796.22   1797.81       .77      1.75       .09   1793.20
   15460.0    1477.7    2372.5   11609.8     277.3     224.2    1850.3     108.3      26.5   1788.60
       .09      5.33     10.58      6.27      .045      .040      .045      .000   1783.60     110.00
  .005385       615.      950.      485.         2         6         0       .00    580.00     690.00

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.45
3470 ENCROACHMENT STATIONS=       50.0     500.0  TYPE=      1  TARGET=      450.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.69   1802.39   1800.37   1801.73   1803.10       .71      5.28       .01   1797.10
   15460.0    1075.6    5812.3    8572.2     239.6     655.4    1655.8     189.9      43.4   1796.30
       .15      4.49      8.87      5.18      .045      .040      .045      .000   1788.70      50.00
  .002554       1300.     1660.     1420.         1         9         0       .00    450.00     500.00

*SECNO 5.000
3470 ENCROACHMENT STATIONS=      104.1     644.9  TYPE=      1  TARGET=      540.740
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     14.82   1804.92   1803.67   1803.84   1805.64       .72      2.54       .00   1798.30
   15460.0    1704.0    5007.9    8748.2     274.1     532.0    1806.6     238.6      52.1   1801.00
       .19      6.22      9.41      4.84      .045      .040      .045      .000   1790.10     104.14
  .003375       980.     1110.      700.         2         6         0       .00    540.74     644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0     688.3  TYPE=      1  TARGET=      289.330
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     15.14   1807.74   1805.38   1806.76   1808.65       .92      2.96       .06   1798.30
   15460.0        .0    4032.4   11427.6        .0     416.7    1669.6     285.6      60.4   1798.60
       .22       .00      9.68      6.84      .000      .040      .045      .000   1792.60     399.00
  .003374       855.      915.      860.         2         9         0       .00    289.33     688.33
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

EXHIBIT 10

SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKHS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.67	1790.96	2697.13	7.62	101.05	1183.31	.00
*	1.100	15460.00	759.00	1781.00	1792.84	1791.25	2671.82	6.67	426.00	1018.00	1.17
	2.000	15460.00	511.00	1783.70	1793.36	1792.96	2548.82	8.18	57.03	1178.64	.00
*	2.000	15460.00	511.00	1783.70	1793.96	1793.41	2146.80	8.71	244.36	924.98	.59
	2.050	15460.00	206.00	1783.20	1794.08	1793.75	2727.64	8.91	70.71	1251.94	.00
	2.050	15460.00	206.00	1783.20	1794.72	1794.26	2213.01	9.86	266.00	963.00	.64
	2.060	15460.00	59.00	1783.70	1794.43	1793.66	3294.85	7.08	86.08	1263.28	.00
*	2.060	15460.00	59.00	1783.70	1795.26	1794.02	2865.63	7.12	263.50	967.50	.83
	2.070	15460.00	1.00	1783.70	1794.39	1793.75	3013.57	7.44	89.13	1262.59	.00
	2.070	15460.00	1.00	1783.70	1795.18	1794.17	2546.91	7.66	263.50	967.50	.79
	2.080	15460.00	30.00	1783.70	1794.51	1793.75	3157.86	6.98	81.21	1264.37	.00
	2.080	15460.00	30.00	1783.70	1795.30	1794.17	2625.45	7.34	263.50	967.50	.79
	2.090	15460.00	1.00	1783.70	1794.59	1793.66	3478.69	6.59	76.49	1265.44	.00
	2.090	15460.00	1.00	1783.70	1795.44	1794.02	2991.18	6.73	263.50	967.50	.85
	2.100	15460.00	59.00	1782.80	1794.72	1793.54	3573.57	5.74	6.98	1221.62	.00
	2.100	15460.00	59.00	1782.80	1795.52	1794.04	2885.90	6.42	177.00	897.00	.79
*	3.000	15460.00	950.00	1783.60	1796.22	1795.93	2458.22	11.73	33.21	1152.22	.00
*	3.000	15460.00	950.00	1783.60	1797.05	1796.14	2351.79	10.58	110.00	690.00	.83
*	4.000	15460.00	1660.00	1788.70	1801.73	1800.39	3748.46	7.53	11.68	1117.39	.00
*	4.000	15460.00	1660.00	1788.70	1802.39	1800.37	2550.82	8.87	50.00	500.00	.65
	5.000	15460.00	1110.00	1790.10	1803.84	1802.95	2923.61	8.94	15.91	818.17	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.67	2612.74	9.41	104.14	644.88	1.08
	6.000	15460.00	915.00	1792.60	1806.76	1805.69	2310.66	11.21	350.45	884.92	.00
	6.000	15460.00	915.00	1792.60	1807.74	1805.38	2086.30	9.68	399.00	688.33	.98

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 1.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.060 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

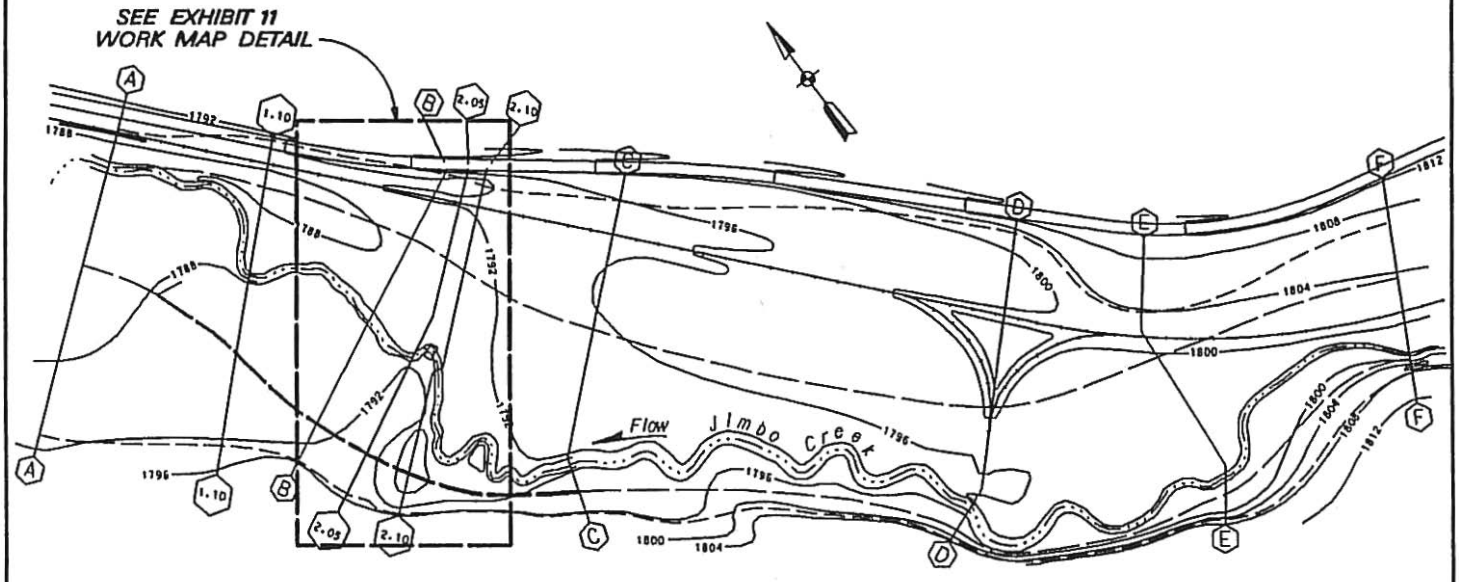
WARNING SECNO= 4.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 10
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	592.	2672.	5.8	1792.9	1791.7	1.2
2.000	681.	2147.	7.2	1794.0	1793.4	.6
2.050	697.	2213.	7.0	1794.7	1794.1	.6
2.060	704.	2866.	5.4	1795.2	1794.4	.8
2.070	704.	2547.	6.1	1795.2	1794.4	.8
2.080	704.	2625.	5.9	1795.3	1794.5	.8
2.090	704.	2991.	5.2	1795.4	1794.6	.8
2.100	720.	2886.	5.4	1795.5	1794.7	.8
3.000	580.	2352.	6.6	1797.0	1796.2	.8
4.000	450.	2551.	6.1	1802.4	1801.7	.7
5.000	541.	2613.	5.9	1804.9	1803.8	1.1
6.000	289.	2086.	7.4	1807.8	1806.8	1.0

EXHIBIT ELEVEN

Surcharge Limits Satisfied



0 500 1000
SCALE IN FEET

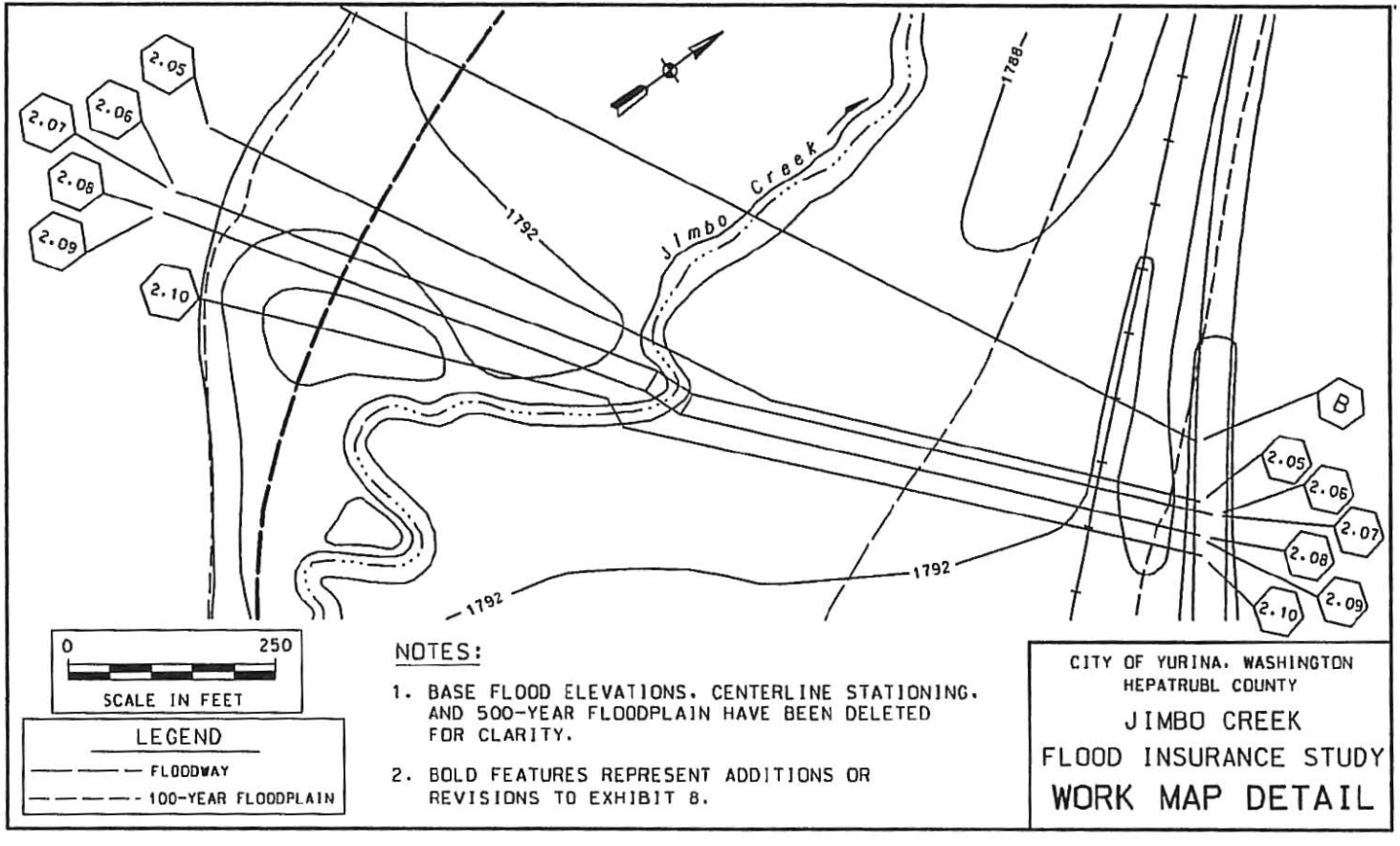
LEGEND
FLOODWAY
100-YEAR FLOODPLAIN

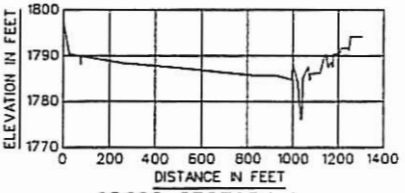
NOTES:

1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.

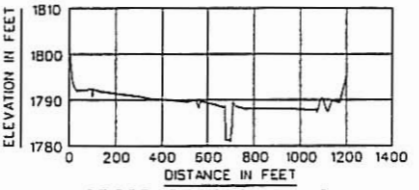
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP


2.05
2.06
2.07
2.08
2.09
2.10
1792
Jimbo Creek
1788
B
0
250
SCALE IN FEET
LEGEND
FLOODWAY
100-YEAR FLOODPLAIN
NOTES:
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP DETAIL



CROSS SECTION A



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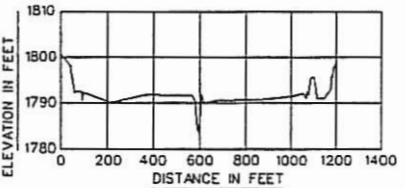

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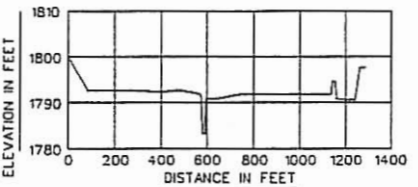
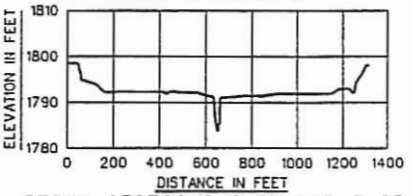
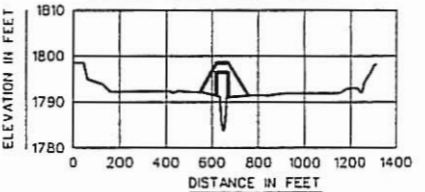


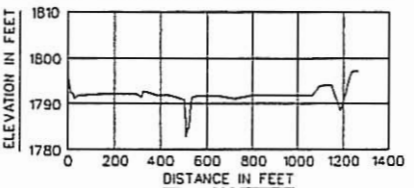
CROSS SECTION 2.05



CROSS SECTIONS 2.06 AND 2.09



CROSS SECTIONS 2.07 AND 2.08



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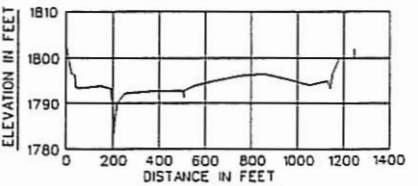
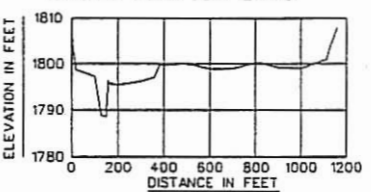
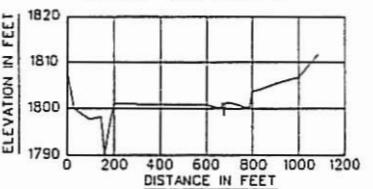


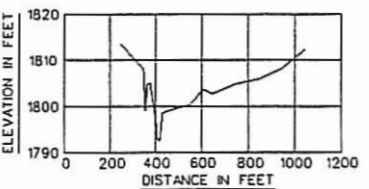
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.

EXHIBIT 11 – CROSS SECTIONS

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY [2]	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	359	1652	9.4	1789.0	1789.0	1790.0	1.0
1.10	759	592	2672	5.8	1791.7	1791.7	1792.8	1.1
B	1270	725	2304	6.7	1793.4	1793.4	1793.9	0.5
2.05	1476	737	2096	7.4	1794.2	1794.2	1794.7	0.5
2.06	1535	741	2762	5.6	1794.5	1794.5	1795.2	0.7
2.07	1536	741	2145	7.2	1794.5	1794.4	1795.0	0.5
2.08	1566	738	2297	6.7	1794.6	1794.6	1795.3	0.7
2.09	1567	738	3023	5.1	1794.6	1794.8	1795.6	1.0
2.10	1626	747	3106	5.0	1794.8	1794.9	1795.7	0.9
C	2576	580	2316	6.7	1796.2	1796.2	1797.0	0.8
D	4236	450	2564	6.0	1801.7	1801.8	1802.4	0.7
E	5346	541	2619	5.9	1803.8	1803.8	1804.9	1.1
F	6261	289	2084	7.4	1806.8	1806.8	1807.7	0.9

[1] Feet above limit of detailed study.
[2] Regulatory base flood elevations as determined by conditions shown on Exhibit 8.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 8 input data.

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*************************************
HEC-2 WATER SURFACE PROFILES

Version   4.6.2;  May 1991
*************************************

T1        100-YEAR FLOOD
T2        JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3        EXHIBIT 11
T4        WIDENED BRIDGE APPROACH AND FLOODWAY

J1  ICHECK     INQ      NINV      IDIR      STRT    METRIC     HVINS         Q      WSEL        FQ
         0       2                                                -1             1789.00
J2  NPROF    IPLOT     PRFVS     XSECV     XSECH        FN     ALLDC       IBW     CHNIM    ITRACE
         1                -1                                      -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
        38      43        39        42         1         2        25        26        53        54
        52     200

QT         5   15460     15460      2370     10600     51000
NC      .030    .030      .040       .10       .30
ET                        9.10                                                    687.56   1047.00
          FIELD SURVEYED SECTION 1 = FIS SECTION A
X1      1.00      34    1023.0    1047.0        .0        .0        .0                           0
GR    1798.1      .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR    1788.4   255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR    1785.6   932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR    1776.5  1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR    1786.3  1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR    1788.7  1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR    1791.7  1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                        9.10                                                       426      1018
          ADDITIONAL FIELD SURVEYED SECTION 1.1
X1      1.10      42     675.0     710.0     675.0     540.0     759.0
GR    1803.4      .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR    1792.5   100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR    1790.9   272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR    1788.3   562.0    1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR    1781.2   681.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR    1789.6   710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR    1787.9   981.0    1787.7    1064.0    1788.2    1069.0    1787.2    1075.0    1790.1    1088.0
GR    1790.5  1094.0    1790.3    1099.0    1788.1    1113.0    1787.4    1123.0    1789.8    1139.0
GR    1789.4  1172.0    1795.0    1200.0

ET                        9.10                                                       200    924.98
          FIELD SURVEYED SECTION 2 = FIS SECTION B
X1      2.00      38     580.0     608.0     340.0     530.0     511.0                           0
GR    1800.9      .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR    1792.2   100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR    1791.5   567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR    1784.0   598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR    1790.5   683.0    1790.6     720.0    1790.6     750.0    1790.7     880.0    1791.4    1005.0
GR    1792.1  1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0    1795.2    1087.0
GR    1795.8  1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0    1793.0    1178.0
GR    1795.8  1183.0    1797.6    1192.0    1798.6    1198.0

ET                        9.10                                                       226       963
          ADDITIONAL FIELD SURVEYED SECTION 2.05
X1      2.05      23     570.0     598.0     215.0     150.0     206.0                           0
GR    1800.2      .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR    1791.9   570.0    1791.5     576.0    1783.2     585.0    1783.2     592.0    1790.9     598.0
GR    1790.7   640.0    1791.9     750.0    1791.9     790.0    1791.9     905.0    1791.9    1005.0
GR    1791.9  1115.0    1791.9    1137.0    1794.7    1143.0    1794.7    1155.0    1790.7    1163.0
GR    1790.5  1240.0    1797.7    1264.0    1797.7    1288.0

ET                         9.1                                                       226     967.5
          SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
X1      2.06    49.0     633.0     663.5      74.0      19.0      59.0
GR    1798.5      .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR    1793.8   123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR    1791.7   433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR    1791.9   568.0    1791.1     633.0    1789.0     638.5    1787.9     639.5    1786.6     640.4
GR    1784.0   648.7    1783.7     649.3    1783.7     651.5    1785.0     656.1    1785.3     657.0
GR    1788.9   660.7    1790.9     663.5    1791.0     688.6    1791.0     709.0    1791.3     756.4
GR    1791.3   828.1    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     995.9
GR    1791.7  1003.6    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9
GR    1792.8  1206.1    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5
GR    1794.2  1260.0    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6
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EXHIBIT 11 - HEC2 INPUT & OUTPUT

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ET                        9.1                                                           226     967.5
           FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
X1      2.07      53.0     633.0     663.5       1.0       1.0       1.0      .000      .000      .000
X2                                  1796.4    1798.4
BT        10     548.2    1792.0    1792.0       568    1793.8    1791.9       594    1796.1    1791.6
BT       620    1798.4    1791.3       620    1798.4    1796.4       670    1798.4    1796.4       670
BT    1798.4    1790.9       696    1796.3    1791.0       709    1795.2    1791.0     756.4    1791.3
BT    1791.3
GR    1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR    1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR    1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR    1791.9     568.0    1791.6     594.0    1791.3     620.0    1791.1     633.0    1789.0     638.5
GR    1787.9     639.5    1786.6     640.4    1784.0     648.7    1783.7     649.3    1783.7     651.5
GR    1785.0     656.1    1785.3     657.0    1788.9     660.7    1790.9     663.5    1790.9     670.0
GR    1791.0     688.6    1791.0     696.0    1791.0     709.0    1791.3     756.4    1791.3     828.1
GR    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     995.9    1791.7    1003.6
GR    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9    1792.8    1206.1
GR    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5    1794.2    1260.0
GR    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6

ET                        9.1                                                           229     967.5
           SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
X1      2.08         0         0         0        30        30        30
X2                                                                 1

ET                        9.1                                                           229     967.5
           SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
X1      2.09      49.0     633.0     663.5       1.0       1.0       1.0
GR    1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR    1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR    1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR    1791.9     568.0    1791.1     633.0    1789.0     638.5    1787.9     639.5    1786.6     640.4
GR    1784.0     648.7    1783.7     649.3    1783.7     651.5    1785.0     656.1    1785.3     657.0
GR    1788.9     660.7    1790.9     663.5    1791.0     688.6    1791.0     709.0    1791.3     756.4
GR    1791.3     828.1    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     995.9
GR    1791.7    1003.6    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9
GR    1792.8    1206.1    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5
GR    1794.2    1260.0    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6

ET                       9.10                                                           150       897
           ADDITIONAL FIELD SURVEYED SECTION 2.1
X1      2.10        35     504.0     537.0      74.0      19.0      59.0                             0
GR    1797.3        .0    1792.5      13.0    1792.2      25.0    1791.2      31.0    1791.8      41.0
GR    1792.1     122.0    1792.2     217.0    1792.2     299.0    1791.4     317.0    1792.7     327.0
GR    1791.9     378.0    1791.7     443.0    1790.7     504.0    1786.9     510.0    1782.8     512.0
GR    1784.6     521.0    1784.6     524.0    1787.2     529.0    1790.6     534.0    1791.3     537.0
GR    1791.7     564.0    1791.8     637.0    1791.0     723.0    1791.9     805.0    1791.9     903.0
GR    1791.9     980.0    1791.9    1064.0    1793.9    1096.0    1794.2    1121.0    1794.1    1149.0
GR    1788.6    1189.0    1791.8    1209.0    1796.2    1228.0    1797.1    1241.0    1797.1    1265.0

NC      .045      .045      .040       .10       .30
ET                       9.10                                                        110.00    690.00
           FIELD SURVEYED SECTION 3 = FIS SECTION C
X1      3.00        29     192.0     217.0     615.0     485.0     950.0                             0
GR    1803.1        .0    1796.6      25.0    1796.0      38.0    1793.7      45.0    1793.3      53.0
GR    1793.9     153.0    1793.2     192.0    1788.8     202.0    1783.6     207.0    1788.6     217.0
GR    1789.9     218.0    1792.2     253.0    1792.6     353.0    1792.8     453.0    1792.9     503.0
GR    1791.3     508.0    1792.9     513.0    1793.8     553.0    1795.1     653.0    1796.0     753.0
GR    1796.5     853.0    1795.4     949.0    1794.0    1053.0    1795.0    1131.0    1793.3    1144.0
GR    1796.5    1153.0    1799.9    1180.0    1800.0    1246.4    1802.0    1247.4

ET                       9.10                                                         50.00    500.00
           FIELD SURVEYED SECTION 4 = FIS SECTION D
X1      4.00        27     100.0     160.0    1300.0    1420.0    1660.0                             0
GR    1807.2        .0    1803.8       6.0    1798.7      20.0    1797.1     100.0    1789.0     130.0
GR    1788.7     139.0    1788.7     151.0    1796.3     160.0    1795.7     167.0    1795.4     200.0
GR    1796.2     300.0    1797.0     356.0    1799.8     381.0    1799.6     400.0    1800.1     478.0
GR    1799.9     500.0    1799.0     600.0    1798.9     700.0    1800.2     800.0    1800.0     832.0
GR    1799.3     900.0    1798.9    1000.0    1800.8    1100.0    1801.0    1113.0    1804.0    1131.0
GR    1805.0    1140.0    1808.0    1162.0

ET                       9.10                                                        104.14    644.88
           FIELD SURVEYED SECTION 5 = FIS SECTION E
X1      5.00        24     144.0     199.0     980.0     700.0    1110.0                             0
GR    1808.3        .0    1799.9      30.0    1797.7      99.0    1798.3     144.0    1792.9     156.0
GR    1790.1     161.0    1793.1     171.0    1801.0     199.0    1800.9     299.0    1800.9     399.0
GR    1800.9     499.0    1800.8     599.0    1800.0     662.0    1801.3     671.0    1798.5     676.0
GR    1801.3     682.0    1801.3     699.0    1800.9     726.0    1800.4     764.0    1800.4     787.0
GR    1803.5     799.0    1805.3     899.0    1806.8     999.0    1811.9    1085.0
```

EXHIBIT 11 - HEC2 INPUT & OUTPUT

```
ET                       9.10                                                              399.00       688.33
        FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00          21     399.0      430.0       855.0        860.0       915.0                                0
GR   1813.5       246.0    1808.1      346.0      1807.5        350.0      1799.2       355.0      1799.2    359.0
GR   1804.6       363.0    1804.9      371.0      1805.0        378.0      1798.3       399.0      1793.3    407.0
GR   1792.6       416.0    1793.0      423.0      1798.6        430.0      1799.0       446.0      1800.4    546.0
GR   1803.6       607.0    1802.7      646.0      1804.8        746.0      1805.9       846.0      1808.1    946.0
GR   1812.3      1046.0

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       THA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 1
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=      .300
*SECNO 1.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
   15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0   1785.50
       .00      6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
   .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     10.67   1791.67   1790.96       .00   1792.24       .57      2.43       .02   1788.70
   15460.0    3418.6    2346.5    9694.9     811.5     307.9    1577.7      35.9      14.7   1789.60
       .03      4.21      7.62      6.14      .030      .040      .030      .000   1781.00    101.05
   .002950      675.      759.      540.         2        13         0       .00   1024.35   1183.31

*SECNO 2.000
3265 DIVIDED FLOW
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000      9.66   1793.36   1792.96       .00   1793.96       .59      1.71       .01   1790.40
   15460.0    5897.7    1549.1    8013.2    1064.2     189.4    1295.3      63.6      25.3   1791.80
       .05      5.54      8.18      6.19      .030      .040      .030      .000   1783.70     57.03
   .004606      340.      511.      530.         2         9         0       .00   1093.72   1178.64

*SECNO 2.050
3265 DIVIDED FLOW
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     10.98   1794.18   1793.68       .00   1794.74       .56       .78       .00   1791.90
   15460.0    3733.2    1490.4   10236.3     824.5     195.8    1653.4      74.3      30.0   1790.90
       .06      4.53      7.61      6.19      .030      .040      .030      .000   1783.20     69.65
   .004228      215.      206.      150.         2         8         0       .00   1168.42   1252.25

*SECNO 2.060
        SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
     2.060     10.79   1794.49   1793.62       .00   1794.88       .39       .13       .02   1791.10
   15460.0    5450.2    1590.7    8419.2    1232.8     238.6    1682.4      77.0      31.2   1790.90
       .06      4.42      6.67      5.00      .030      .040      .030      .000   1783.70     82.78
   .002477       74.       59.       19.         2        14         0       .00   1181.25   1264.02

*SECNO 2.070
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
        FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
     2.070     10.66   1794.36   1793.87       .00   1794.94       .58       .00       .06   1791.10
   15460.0    5271.8    1982.1    8206.1    1000.1     234.6    1377.7      77.1      31.2   1790.90
       .06      5.27      8.45      5.96      .030      .040      .030      .000   1783.70     90.79
   .004067        1.        1.        1.         2        14         0   -387.75   1171.43   1262.22

*SECNO 2.080
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
        SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
     2.080     10.87   1794.57   1793.87       .00   1795.06       .48       .11       .01   1791.10
   15460.0    5422.5    1821.3    8216.3    1108.5     241.2    1496.5      79.0      32.0   1790.90
       .06      4.89      7.55      5.49      .030      .040      .030      .000   1783.70     77.51
   .003132       30.       30.       30.         2        14         0   -407.61   1187.69   1265.20

*SECNO 2.090
        SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
     2.090     11.06   1794.76   1793.62       .00   1795.07       .32       .00       .02   1791.10
   15460.0    5607.3    1446.6    8406.1    1384.1     246.9    1845.6      79.1      32.0   1790.90
       .06      4.05      5.86      4.55      .030      .040      .030      .000   1783.70     66.05
   .001829        1.        1.        1.         2        13         0       .00   1201.73   1267.78
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
*SECNO 2.100
      ADDITIONAL FIELD SURVEYED SECTION 2.1
    2.100    12.08  1794.88  1793.50      .00  1795.15      .27      .07      .00  1790.70
 15460.0   5680.6   1451.7   8327.8   1448.6    274.7   2033.6     82.7     33.3  1791.30
     .07     3.92     5.29     4.10     .030     .040     .030     .000  1782.80     6.55
 .001479      74.      59.      19.        0       10        0      .00  1215.76  1222.31

CCHV=    .100 CEHV=    .300
*SECNO 3.000
3265 DIVIDED FLOW
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .43
      FIELD SURVEYED SECTION 3 = FIS SECTION C
    3.000    12.57  1796.17  1795.98      .00  1796.98      .81     1.66      .16  1793.20
 15460.0   2144.7   2429.2  10886.2    390.0    202.2   1812.7    122.3     47.0  1788.60
     .09     5.50    12.01     6.01     .045     .040     .045     .000  1783.60    34.33
 .007962      615.     950.     485.        2        5        0      .00  1022.70  1152.07

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.01
      FIELD SURVEYED SECTION 4 = FIS SECTION D
    4.000    13.06  1801.76  1800.46      .00  1802.15      .39     5.13      .04  1797.10
 15460.0   1134.6   4612.9   9712.5    321.5    617.4   2838.5    224.3     81.6  1796.30
     .18     3.53     7.47     3.42     .045     .040     .045     .000  1788.70    11.61
 .001963     1300.    1660.    1420.        4       10        0      .00  1105.94  1117.55

*SECNO 5.000
      FIELD SURVEYED SECTION 5 = FIS SECTION E
    5.000    13.74  1803.84  1802.95      .00  1804.44      .60     2.23      .06  1798.30
 15460.0   3781.1   4233.2   7445.7    638.5    473.2   1809.4    286.3     98.2  1801.00
     .22     5.92     8.95     4.11     .045     .040     .045     .000  1790.10    15.92
 .003564      980.    1110.     700.        3        6        0      .00   802.08   818.00

*SECNO 6.000
      FIELD SURVEYED SECTION 6 = FIS SECTION F
    6.000    14.16  1806.76  1805.69      .00  1807.68      .92     3.14      .10  1798.30
 15460.0   1063.0   4328.3  10068.7    202.8    386.3   1721.8    338.5    111.4  1798.60
     .25     5.24    11.20     5.85     .045     .040     .045     .000  1792.60   350.45
 .003622      855.     915.     860.        2       10        0      .00   534.49   884.94
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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURIMA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 11
T4      WIDENED BRIDGE APPROACH AND FLOODWAY

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                       -1                  1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                 -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      687.6    1047.0  TYPE=      1  TARGET=      359.440
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.31   1789.00   1791.36      1.36       .00       .00   1784.50
   15460.0   13144.1    2315.9        .0    1411.4     240.6        .0        .0        .0 100000.00
      .00      9.31      9.63       .00      .030      .040      .000      .000   1776.10    687.56
  .005241        0.        0.        0.         0         9         0       .00    359.44   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.66
3470 ENCROACHMENT STATIONS=      426.0    1018.0  TYPE=      1  TARGET=      592.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.84   1792.84   1791.25   1791.67   1793.37       .54      1.93       .08   1788.70
   15460.0   4293.6    2327.4    8839.1     863.0     349.0    1459.8      31.8       7.0   1789.60
      .03      4.98      6.67      6.05      .030      .040      .030      .000   1781.00    426.00
  .001912       675.      759.      540.         3        17         0       .00    592.00   1018.00

*SECNO 2.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .69
3470 ENCROACHMENT STATIONS=      200.0     925.0  TYPE=      1  TARGET=      724.980
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.25   1793.95   1793.25   1793.36   1794.66       .72      1.24       .05   1790.40
   15460.0   6297.9    1660.5    7501.5    1029.8     205.8    1068.1      57.8      13.6   1791.80
      .05      6.12      8.07      7.02      .030      .040      .030      .000   1783.70    200.00
  .004007       340.      511.      530.         2        14         0       .00    724.98    924.98

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      226.0     963.0  TYPE=      1  TARGET=      737.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.47   1794.67   1794.26   1794.18   1795.55       .89       .84       .05   1791.90
   15460.0   4758.5    1909.3    8792.3     762.2     209.7    1123.6      67.0      16.7   1790.90
      .06      6.24      9.10      7.82      .030      .040      .030      .000   1783.20    226.00
  .005519       215.      206.      150.         2         9         0       .00    737.00    963.00

*SECNO 2.060
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.56
3470 ENCROACHMENT STATIONS=      226.0     967.5  TYPE=      1  TARGET=      741.500
        SECTION 2.06 IS ONE FOOT DOWNSTREAM OF BRIDGE
     2.060     11.54   1795.24   1794.03   1794.49   1795.74       .50       .15       .04   1791.10
   15460.0   6779.4    1776.2    6904.4    1315.2     261.6    1185.2      69.6      17.5   1790.90
      .06      5.15      6.79      5.83      .030      .040      .030      .000   1783.70    226.00
  .002273        74.       59.       19.         3        13         0       .00    741.50    967.50

*SECNO 2.070
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
3470 ENCROACHMENT STATIONS=      226.0     967.5  TYPE=      1  TARGET=      741.500
        FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
     2.070     11.31   1795.01   1794.43   1794.36   1795.85       .84       .00       .10   1791.10
   15460.0   6805.8    2374.2    6280.0    1031.7     254.5     858.4      69.6      17.5   1790.90
      .06      6.60      9.33      7.32      .030      .040      .030      .000   1783.70    226.00
  .004449         1.        1.        1.         2        11         0   -444.65    741.50    967.50

*SECNO 2.080
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
3470 ENCROACHMENT STATIONS=      229.0     967.5  TYPE=      1  TARGET=      738.500
        SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
     2.080     11.55   1795.25   1794.44   1794.57   1795.98       .73       .12       .01   1791.10
   15460.0   6922.4    2231.9    6305.7    1112.6     262.0     922.7      71.2      18.0   1790.90
      .06      6.22      8.52      6.83      .030      .040      .030      .000   1783.70    229.00
  .003572        30.       30.       30.         2        11         0   -463.33    738.50    967.50
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 2.090
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46
3470 ENCROACHMENT STATIONS=      229.0     967.5  TYPE=      1  TARGET=      738.500
        SECTION 2.09 IS ONE FOOT UPSTREAM OF BRIDGE
     2.090     11.90   1795.60   1794.03   1794.76   1796.01      .41       .00       .03   1791.10
  15460.0    6924.2    1639.8    6895.9    1453.6     272.7    1296.2      71.2      18.0   1790.90
      .06      4.76      6.01      5.32      .030      .040      .030      .000   1783.70     229.00
  .001686        1.        1.        1.         2        13         0       .00    738.50     967.50

*SECNO 2.100
3470 ENCROACHMENT STATIONS=      150.0     897.0  TYPE=      1  TARGET=      747.030
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     12.90   1795.70   1793.96   1794.88   1796.09      .39       .08       .00   1790.70
  15460.0    6345.5    1753.6    7360.9    1333.3     301.8    1470.9      74.6      18.9   1791.30
      .06      4.76      5.81      5.00      .030      .040      .030      .000   1782.80     150.00
  .001577       74.       59.       19.         2         9         0       .00    747.00     897.00

CCHV=      .100 CEHV=      .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .53
3470 ENCROACHMENT STATIONS=      110.0     690.0  TYPE=      1  TARGET=      580.000
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.39   1796.99   1796.10   1796.17   1797.78      .79      1.57       .12   1793.20
  15460.0    1467.8    2400.7   11591.5     272.3     222.7    1821.3     110.0      27.2   1788.60
      .09      5.39     10.78      6.36      .045      .040      .045      .000   1783.60     110.00
  .005641       615.      950.      485.         2        10         0       .00    580.00     690.00

*SECNO 4.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50
3470 ENCROACHMENT STATIONS=       50.0     500.0  TYPE=      1  TARGET=      450.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.72   1802.42   1800.34   1801.76   1803.12      .70      5.33       .01   1797.10
  15460.0    1078.1    5795.7    8586.2     241.0     657.2    1665.5     191.2      44.1   1796.30
      .15      4.47      8.82      5.16      .045      .040      .045      .000   1788.70      50.00
  .002517      1300.     1660.     1420.         2         9         0       .00    450.00     500.00

*SECNO 5.000
3470 ENCROACHMENT STATIONS=      104.1     644.9  TYPE=      1  TARGET=      540.740
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     14.82   1804.92   1803.69   1803.84   1805.64      .71      2.51       .00   1798.30
  15460.0    1702.4    5000.0    8757.7     274.6     532.7    1811.6     240.1      52.8   1801.00
      .19      6.20      9.39      4.83      .045      .040      .045      .000   1790.10     104.14
  .003352       980.     1110.      700.         3         6         0       .00    540.74     644.88

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0     688.3  TYPE=      1  TARGET=      289.330
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     15.13   1807.73   1805.38   1806.76   1808.65      .92      2.95       .06   1798.30
  15460.0       .0    4035.8   11424.2        .0     416.4    1667.5     287.1      61.1   1798.60
      .22       .00      9.69      6.85      .000      .040      .045      .000   1792.60     399.00
  .003386       855.      915.      860.         2         9         0       .00    289.33     688.33
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
EXHIBIT 11
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.31	1652.02	9.63	687.56	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.67	1790.96	2697.13	7.62	101.05	1183.31	.00
*	1.100	15460.00	759.00	1781.00	1792.84	1791.25	2671.82	6.67	426.00	1018.00	1.17
	2.000	15460.00	511.00	1783.70	1793.36	1792.96	2548.82	8.18	57.03	1178.64	.00
*	2.000	15460.00	511.00	1783.70	1793.95	1793.25	2303.68	8.07	200.00	924.98	.58
	2.050	15460.00	206.00	1783.20	1794.18	1793.68	2673.67	7.61	69.65	1252.25	.00
	2.050	15460.00	206.00	1783.20	1794.67	1794.26	2095.52	9.10	226.00	963.00	.49
	2.060	15460.00	59.00	1783.70	1794.49	1793.62	3153.84	6.67	82.78	1264.02	.00
*	2.060	15460.00	59.00	1783.70	1795.24	1794.03	2761.98	6.79	226.00	967.50	.76
	2.070	15460.00	1.00	1783.70	1794.36	1793.87	2612.46	8.45	90.79	1262.22	.00
	2.070	15460.00	1.00	1783.70	1795.01	1794.43	2144.65	9.33	226.00	967.50	.65
	2.080	15460.00	30.00	1783.70	1794.57	1793.87	2846.18	7.55	77.51	1265.20	.00
	2.080	15460.00	30.00	1783.70	1795.25	1794.44	2297.29	8.52	229.00	967.50	.68
	2.090	15460.00	1.00	1783.70	1794.76	1793.62	3476.58	5.86	66.05	1267.78	.00
*	2.090	15460.00	1.00	1783.70	1795.60	1794.03	3022.58	6.01	229.00	967.50	.84
	2.100	15460.00	59.00	1782.80	1794.88	1793.50	3756.86	5.29	6.55	1222.31	.00
	2.100	15460.00	59.00	1782.80	1795.70	1793.96	3105.97	5.81	150.00	897.00	.82
*	3.000	15460.00	950.00	1783.60	1796.17	1795.98	2404.87	12.01	34.33	1152.07	.00
*	3.000	15460.00	950.00	1783.60	1796.99	1796.10	2316.31	10.78	110.00	690.00	.82
*	4.000	15460.00	1660.00	1788.70	1801.76	1800.46	3777.34	7.47	11.61	1117.55	.00
*	4.000	15460.00	1660.00	1788.70	1802.42	1800.34	2563.73	8.82	50.00	500.00	.66
	5.000	15460.00	1110.00	1790.10	1803.84	1802.95	2921.16	8.95	15.92	818.00	.00
	5.000	15460.00	1110.00	1790.10	1804.92	1803.69	2618.82	9.39	104.14	644.88	1.08
	6.000	15460.00	915.00	1792.60	1806.76	1805.69	2310.92	11.20	350.45	884.94	.00
	6.000	15460.00	915.00	1792.60	1807.73	1805.38	2083.94	9.69	399.00	688.33	.97

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 1.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.060 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.090 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

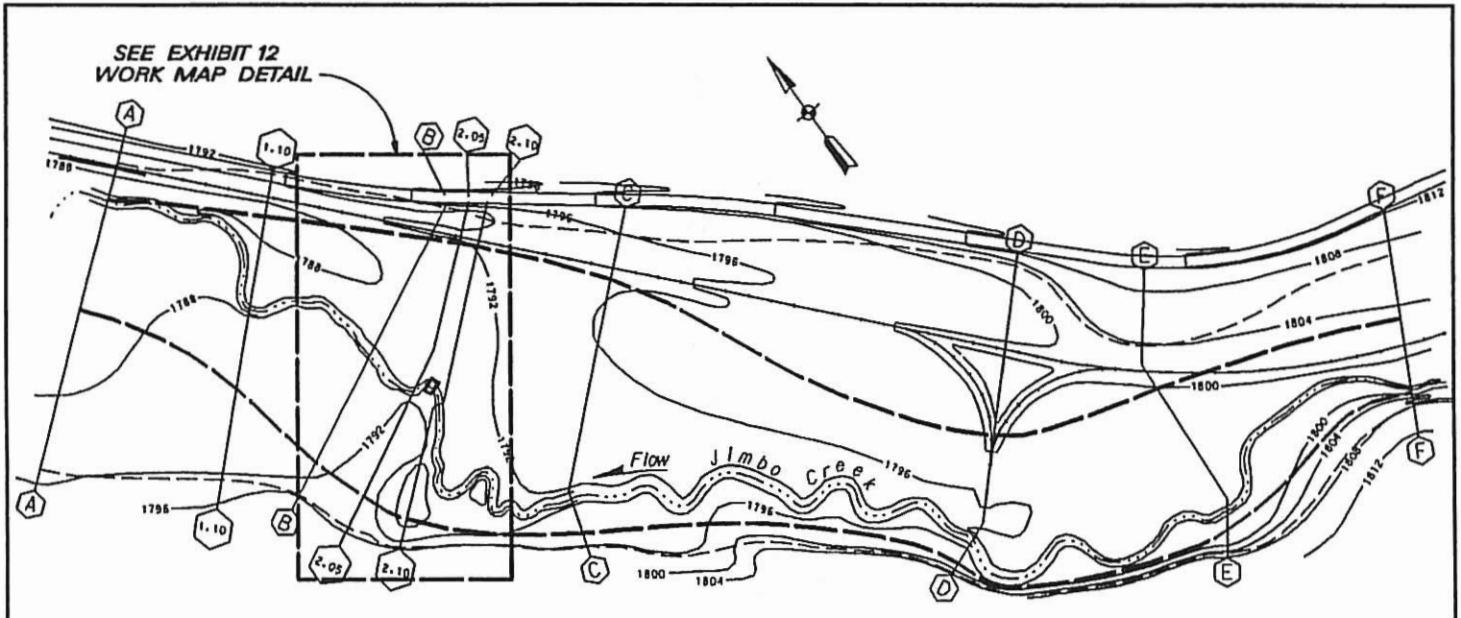
WARNING SECNO= 4.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 11
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	359.	1652.	9.4	1790.0	1789.0	1.0
1.100	592.	2672.	5.8	1792.9	1791.7	1.2
2.000	725.	2304.	6.7	1794.0	1793.4	.6
2.050	737.	2096.	7.4	1794.7	1794.2	.5
2.060	741.	2762.	5.6	1795.3	1794.5	.8
2.070	741.	2145.	7.2	1795.0	1794.4	.6
2.080	738.	2297.	6.7	1795.3	1794.6	.7
2.090	738.	3023.	5.1	1795.6	1794.8	.8
2.100	747.	3106.	5.0	1795.7	1794.9	.8
3.000	580.	2316.	6.7	1797.0	1796.2	.8
4.000	450.	2564.	6.0	1802.5	1801.8	.7
5.000	541.	2619.	5.9	1804.9	1803.8	1.1
6.000	289.	2084.	7.4	1807.8	1806.8	1.0

EXHIBIT TWELVE

Use of Section 65.12 to Compute New Base Condition



0 500 1000

SCALE IN FEET

LEGEND

FLOODWAY

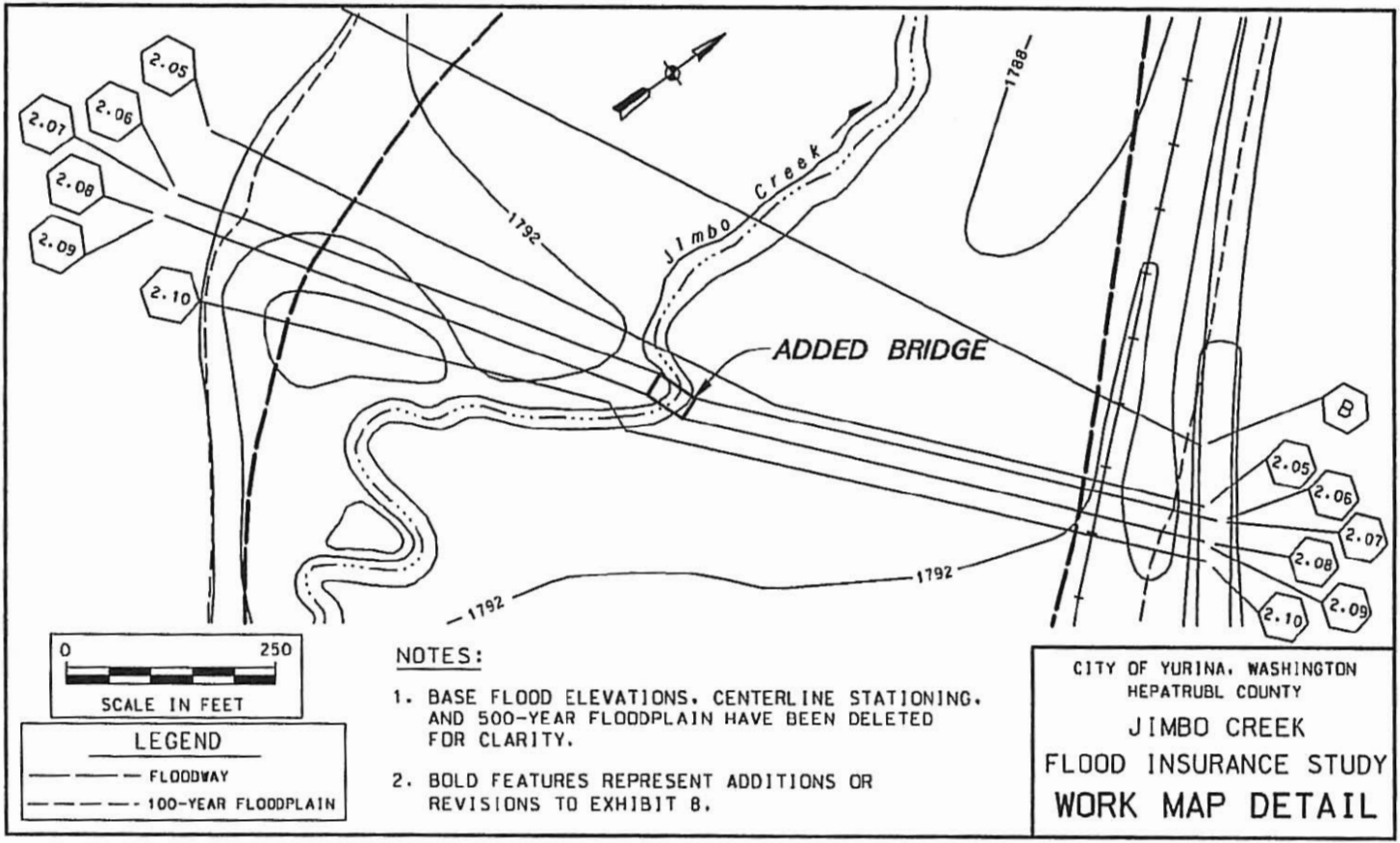
100-YEAR FLOODPLAIN

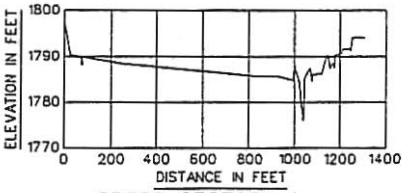
NOTES:

1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.

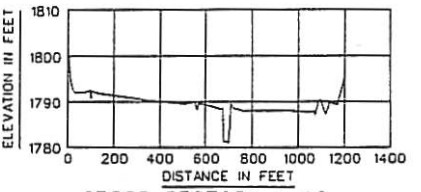
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY

JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP

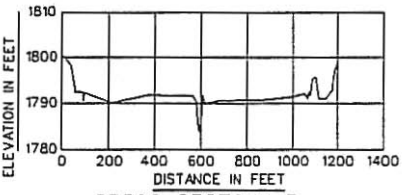

2.05
2.06
2.07
2.08
2.09
2.10
1792
Jimbo Creek
1788
ADDED BRIDGE
B
1792
1792
0
250
SCALE IN FEET
LEGEND
FLOODWAY
100-YEAR FLOODPLAIN
NOTES:
1. BASE FLOOD ELEVATIONS, CENTERLINE STATIONING, AND 500-YEAR FLOODPLAIN HAVE BEEN DELETED FOR CLARITY.
2. BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT B.
CITY OF YURINA, WASHINGTON
HEPATRUBL COUNTY
JIMBO CREEK
FLOOD INSURANCE STUDY
WORK MAP DETAIL



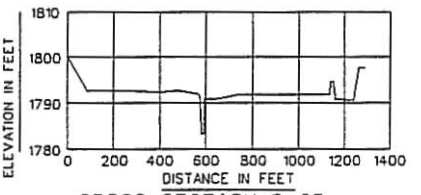
CROSS SECTION A



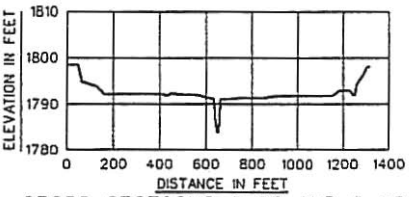
CROSS SECTION 1.10



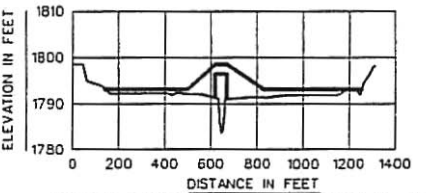
CROSS SECTION B



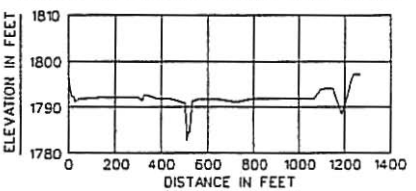
CROSS SECTION 2.05



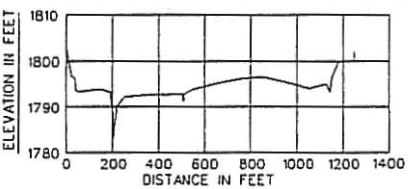
CROSS SECTIONS 2.06 AND 2.09



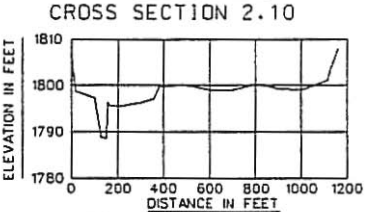
CROSS SECTIONS 2.07 AND 2.08



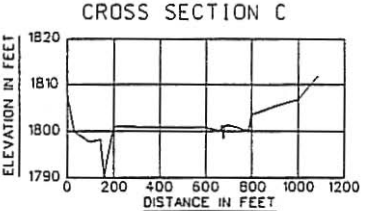
CROSS SECTION 2.10



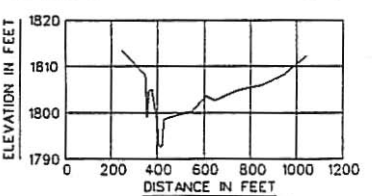
CROSS SECTION C



CROSS SECTION D



CROSS SECTION E



CROSS SECTION F

NOTE: BOLD FEATURES REPRESENT ADDITIONS OR REVISIONS TO EXHIBIT 8.

EXHIBIT 12 – CROSS SECTIONS

EXHIBIT 12 - FLOODWAY DATA TABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	FLOODWAY	INCREASE
					(FEET NATIONAL GEODETIC VERTICAL DATUM)			
Jimbo Creek								
A	0	399	1792	8.6	1789.0	1789.0	1790.0	1.0
1.10	759	607	2598	5.9	1791.7	1791.7	1792.6	0.9
B	1270	874	2615	5.9	1793.4	1793.4	1793.8	0.4
2.05	1476	948	2485	6.2	1794.1	1794.1	1794.4	0.3
2.06	1535	967	3169	4.9	1794.5	1794.5	1794.9	0.4
2.07	1536	967	2030	7.6	1795.4	1795.4	1795.9	0.5
2.08	1566	977	2661	5.8	1796.1	1796.1	1796.6	0.5
2.09	1567	977	5319	2.9	1796.5	1796.5	1797.0	0.5
2.10	1626	995	5335	2.9	1796.5	1796.5	1797.0	0.5
C	2576	907	3022	5.1	1796.8	1796.8	1797.3	0.5
D	4236	470	2407	6.4	1801.4	1801.4	1802.0	0.6
E	5346	560	2702	5.7	1803.9	1803.9	1804.9	1.0
F	6261	261	1929	8.0	1806.7	1806.7	1807.6	0.9

[1] Feet above limit of detailed study.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
YURINA, WA
(HEPATRUBL COUNTY)

FLOODWAY DATA

JIMBO CREEK

NOTE: Italicized print represents additions or revisions to Exhibit 8 input data.

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**********
HEC-2 WATER SURFACE PROFILES

Version  4.6.2;  May 1991
**********

T1      100-YEAR FLOOD
T2      JIMBO CREEK, CITY OF YURINA, WA (HEPATRUBL COUNTY)
T3      EXHIBIT 12
T4      SECTIONS ADDED WITH BRIDGE IN PLACE - COMPUTE NEW FLOODWAY

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    NVINS     Q         WSEL      FQ
        0       2                                                 -1                1789.00
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        1                 -1                                      -1
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38        43        39        42         1         2        25        26        53        54
       52       200

QT       5     15460     15460      2370     10600     51000
NC    .030      .030      .040       .10       .30
ET                         9.1                                                          648      1047
        FIELD SURVEYED SECTION 1 = FIS SECTION A
X1    1.00        34    1023.0    1047.0        .0        .0        .0
GR 1798.1        .0    1790.5      29.0    1789.8      75.0    1788.3      77.0    1789.9      80.0
GR 1788.4     255.0    1787.8     391.0    1787.2     537.0    1786.4     678.0    1785.8     815.0
GR 1785.6     932.0    1784.7     994.0    1788.0    1002.0    1784.5    1023.0    1776.1    1038.0
GR 1776.5    1041.0    1785.5    1047.0    1787.6    1068.0    1784.8    1077.0    1786.0    1079.0
GR 1786.3    1121.0    1789.1    1137.0    1790.4    1148.0    1790.1    1150.0    1787.5    1160.0
GR 1788.7    1169.0    1787.6    1177.0    1790.4    1181.0    1790.7    1209.0    1791.6    1213.0
GR 1791.7    1245.0    1791.3    1249.0    1794.2    1256.0    1794.3    1306.0

ET                         9.1                                                          425      1032
      ADDITIONAL FIELD SURVEYED SECTION 1.1
X1    1.10        42     675.0     710.0     675.0     540.0     759.0
GR 1803.4        .0    1794.7      14.0    1793.0      21.0    1792.0      35.0    1792.2      75.0
GR 1792.5     100.0    1790.9     102.0    1792.4     105.0    1791.9     133.0    1791.4     193.0
GR 1790.9     272.0    1790.4     343.0    1789.9     437.0    1789.5     507.0    1790.0     552.0
GR 1788.3     562.0    1789.6     571.0    1789.0     622.0    1788.4     667.0    1788.7     675.0
GR 1781.2     681.0    1781.3     686.0    1781.4     693.0    1781.0     700.0    1784.0     705.0
GR 1789.6     710.0    1788.5     724.0    1788.0     764.0    1788.1     832.0    1788.1     902.0
GR 1787.9     981.0    1787.7    1064.0    1788.2    1069.0    1787.2    1075.0    1790.1    1088.0
GR 1790.5    1094.0    1790.3    1099.0    1788.1    1113.0    1787.4    1123.0    1789.8    1139.0
GR 1789.4    1172.0    1795.0    1200.0

ET                         9.1                                                          184      1058
        FIELD SURVEYED SECTION 2 = FIS SECTION B
X1    2.00        38     580.0     608.0     340.0     530.0     511.0                             0
GR 1800.9        .0    1798.2      42.0    1792.4      60.0    1792.6      90.0    1790.6      93.0
GR 1792.2     100.0    1790.0     214.0    1791.8     378.0    1791.5     474.0    1791.7     509.0
GR 1791.5     567.0    1790.4     580.0    1785.4     589.0    1784.2     591.0    1783.7     597.0
GR 1784.0     598.0    1785.3     600.0    1787.4     603.0    1791.8     608.0    1789.9     619.0
GR 1790.5     683.0    1790.6     720.0    1790.6     750.0    1790.7     880.0    1791.4    1005.0
GR 1792.1    1053.0    1791.2    1068.0    1792.5    1074.0    1791.9    1080.0    1795.2    1087.0
GR 1795.8    1096.0    1795.4    1104.0    1791.0    1119.0    1790.9    1145.0    1793.0    1178.0
GR 1795.8    1183.0    1797.6    1192.0    1798.6    1198.0

ET                         9.1                                                          192      1140
      ADDITIONAL FIELD SURVEYED SECTION 2.05
X1    2.05        23     570.0     598.0     215.0     150.0     206.0                             0
GR 1800.2        .0    1792.5      89.0    1792.7     240.0    1792.3     400.0    1792.7     480.0
GR 1791.9     570.0    1791.5     572.0    1783.2     576.0    1783.2     592.0    1790.9     598.0
GR 1790.7     640.0    1791.9     750.0    1791.9     790.0    1791.9     905.0    1791.9    1005.0
GR 1791.9    1115.0    1791.9    1137.0    1794.7    1143.0    1794.7    1155.0    1790.7    1163.0
GR 1790.5    1240.0    1797.7    1264.0    1797.7    1288.0

ET                         9.1                                                          185.4    1152
      SECTION 2.06 IS LOCATED ONE FOOT DOWNSTREAM OF BRIDGE
X1    2.06        49     633.0     663.5      74.0      19.0      59.0
GR 1798.5        .0    1798.5      47.0    1795.5      60.9    1794.8      63.6    1794.0     113.0
GR 1793.8     123.7    1792.0     163.8    1792.2     210.0    1792.2     327.2    1792.1     414.6
GR 1791.7     433.8    1792.3     444.4    1792.1     472.8    1792.0     498.7    1792.0     548.2
GR 1791.9     568.0    1791.1     633.0    1789.0     638.5    1787.9     639.5    1786.6     640.4
GR 1784.0     648.7    1783.7     649.3    1783.7     651.5    1785.0     656.1    1785.3     657.0
GR 1788.9     660.7    1790.9     663.5    1791.0     688.6    1791.0     709.0    1791.3     756.4
GR 1791.3     828.1    1791.2     836.3    1791.5     871.4    1791.7     912.5    1791.7     955.9
GR 1791.7    1003.6    1791.7    1075.1    1791.7    1104.1    1791.7    1153.1    1792.7    1182.9
GR 1792.8    1206.1    1792.8    1223.2    1792.8    1232.1    1791.7    1247.0    1792.6    1253.5
GR 1794.2    1260.0    1796.0    1285.0    1798.0    1305.5    1798.0    1317.6
```

ET			9.1						*185.4*	*1152*
	FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE									
X1	2.07	*55.0*	633.0	663.5	1.0	1.0	1.0			
X2				*1796.4*	*1798.4*					
BT	*10*	*123.7*	*1793.8*	*1793.8*	*141.5*	*1793.0*	*1790.0*	*498.7*	*1793.8*	*1790.0*
BT	*620*	*1798.4*	*1791.3*	*620*	*1798.4*	*1796.4*	*670*	*1798.4*	*1796.4*	*670*
BT	*1798.4*	*1790.9*	*828.1*	*1793.8*	*1790.0*	*1254.5*	*1793.0*	*1790.0*	*1260.0*	*1794.2*
BT	*1794.2*									
GR	1798.5	.0	1798.5	47.0	1795.5	60.9	1794.8	63.6	1794.0	113.0
GR	1793.8	123.7	*1793.0*	*141.5*	*1793.0*	163.8	1792.2	210.0	1792.2	327.2
GR	1792.1	414.6	1791.7	433.8	1792.3	444.4	1792.1	472.8	1792.0	498.7
GR	1792.0	548.2	1791.9	568.0	*1791.6*	*594.0*	*1791.3*	*620.0*	1791.1	633.0
GR	1789.0	638.5	1787.9	639.5	1786.6	640.4	1784.0	648.7	1783.7	649.3
GR	1783.7	651.5	1785.0	656.1	1785.3	657.0	1788.9	660.7	1790.9	663.5
GR	*1790.9*	*670.0*	1791.0	688.6	*1791.0*	*696.0*	1791.0	709.0	1791.3	756.4
GR	1791.3	828.1	1791.2	836.3	1791.5	871.4	1791.7	912.5	1791.7	995.9
GR	1791.7	1003.6	1791.7	1075.1	1791.7	1104.1	1791.7	1153.1	1792.7	1182.9
GR	1792.8	1206.1	1792.8	1223.2	1792.8	1232.1	1791.7	1247.0	1792.6	1253.5
GR	*1793.0*	*1254.5*	1794.2	1260.0	1796.0	1285.0	1798.0	1305.5	1798.0	1317.6
ET			9.1						*186*	*1163*
	SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE									
X1	2.08	0	0	0	30	30	30			
X2							*1*			
ET			9.1						*186*	*1163*
	SECTION 2.09 IS A LOCATED ONE FOOT UPSTREAM OF BRIDGE									
X1	2.09	49.0	633.0	663.5	1.0	1.0	1.0			
GR	1798.5	.0	1798.5	47.0	1795.5	60.9	1794.8	63.6	1794.0	113.0
GR	1793.8	123.7	1792.0	163.8	1792.2	210.0	1792.2	327.2	1792.1	414.6
GR	1791.7	433.8	1792.3	444.4	1792.1	472.8	1792.0	498.7	1792.0	548.2
GR	1791.9	568.0	1791.1	633.0	1789.0	638.5	1787.9	639.5	1786.6	640.4
GR	1784.0	648.7	1783.7	649.3	1783.7	651.5	1785.0	656.1	1785.3	657.0
GR	1788.9	660.7	1790.9	663.5	1791.0	688.6	1791.0	709.0	1791.3	756.4
GR	1791.3	828.1	1791.2	836.3	1791.5	871.4	1791.7	912.5	1791.7	995.9
GR	1791.7	1003.6	1791.7	1075.1	1791.7	1104.1	1791.7	1153.1	1792.7	1182.9
GR	1792.8	1206.1	1792.8	1223.2	1792.8	1232.1	1791.7	1247.0	1792.6	1253.5
GR	1794.2	1260.0	1796.0	1285.0	1798.0	1305.5	1798.0	1317.6		
ET			9.1						*109*	*1104*
	ADDITIONAL FIELD SURVEYED SECTION 2.1									
X1	2.10	35	504.0	537.0	74.0	19.0	59.0			0
GR	1797.3	.0	1792.5	13.0	1792.2	25.0	1791.2	31.0	1791.8	41.0
GR	1792.1	122.0	1792.2	217.0	1792.2	299.0	1791.4	317.0	1792.7	327.0
GR	1791.9	378.0	1791.7	443.0	1790.7	504.0	1786.9	510.0	1782.8	512.0
GR	1782.8	519.0	1782.8	520.0	1787.2	529.0	1790.6	534.0	1791.3	537.0
GR	1791.7	564.0	1791.8	637.0	1791.0	723.0	1791.9	805.0	1791.9	903.0
GR	1791.9	980.0	1791.9	1064.0	1793.9	1096.0	1794.2	1121.0	1794.1	1149.0
GR	1788.6	1189.0	1791.8	1209.0	1796.2	1228.0	1797.1	1241.0	1797.1	1265.0
NC	.045	.045	.040	.10	.30					
ET			9.1						*83*	*990*
	FIELD SURVEYED SECTION 3 = FIS SECTION C									
X1	3.00	29	192.0	217.0	615.0	485.0	950.0			0
GR	1803.1	.0	1796.6	25.0	1796.0	38.0	1793.7	45.0	1793.3	53.0
GR	1793.9	153.0	1793.2	192.0	1788.8	202.0	1783.6	207.0	1788.6	217.0
GR	1789.9	218.0	1792.2	253.0	1792.6	353.0	1792.8	453.0	1792.9	503.0
GR	1791.3	508.0	1792.9	513.0	1793.8	553.0	1795.1	653.0	1796.0	753.0
GR	1796.5	853.0	1795.4	949.0	1794.0	1053.0	1795.0	1131.0	1793.3	1144.0
GR	1796.5	1153.0	1799.9	1180.0	1800.0	1246.4	1802.0	1247.4		
ET			9.1						*50*	*520*
	FIELD SURVEYED SECTION 4 = FIS SECTION D									
X1	4.00	27	100.0	160.0	1300.0	1420.0	1660.0			0
GR	1807.2	.0	1803.8	6.0	1798.7	20.0	1797.1	100.0	1789.0	130.0
GR	1788.7	139.0	1788.7	151.0	1796.3	160.0	1795.7	167.0	1795.4	200.0
GR	1796.2	300.0	1797.0	356.0	1799.8	381.0	1799.6	400.0	1800.1	478.0
GR	1799.9	500.0	1799.0	600.0	1798.9	700.0	1800.2	800.0	1800.0	832.0
GR	1799.3	900.0	1798.9	1000.0	1800.8	1100.0	1801.0	1113.0	1804.0	1131.0
GR	1805.0	1140.0	1808.0	1162.0						
ET			9.1						*95*	*655*
	FIELD SURVEYED SECTION 5 = FIS SECTION E									
X1	5.00	24	144.0	199.0	980.0	700.0	1110.0			0
GR	1808.3	.0	1799.9	30.0	1797.7	99.0	1798.3	144.0	1792.9	156.0
GR	1790.1	161.0	1793.1	171.0	1801.0	199.0	1800.9	299.0	1800.9	399.0
GR	1800.9	495.0	1800.8	599.0	1800.0	662.0	1801.3	671.0	1798.5	676.0
GR	1801.3	682.0	1801.3	699.0	1800.9	726.0	1800.4	764.0	1800.4	787.0
GR	1803.5	799.0	1805.3	899.0	1806.8	999.0	1811.9	1085.0		

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ET                          9.1                                                                      399        660
      FIELD SURVEYED SECTION 6 = FIS SECTION F
X1     6.00        21      399.0      430.0      855.0      860.0      915.0
GR   1813.5     246.0     1808.1      346.0     1807.5      350.0     1799.2      355.0     1799.2      359.0
GR   1804.6     363.0     1804.9      371.0     1805.0      378.0     1798.3      399.0     1793.3      407.0
GR   1792.6     416.0     1793.0      423.0     1798.6      430.0     1799.0      446.0     1800.4      546.0
GR   1803.6     607.0     1802.7      646.0     1804.8      746.0     1805.9      846.0     1808.1      946.0
GR   1812.3    1046.0


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 1
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3265 DIVIDED FLOW
      FIELD SURVEYED SECTION 1 = FIS SECTION A
    1.000     12.90   1789.00   1788.72   1789.00   1789.79       .79       .00       .00   1784.50
  15460.0   11802.0    2098.7    1559.3    1774.4     216.6     245.0        .0        .0   1785.50
      .00      6.65      9.69      6.36      .030      .040      .030      .000   1776.10     76.07
  .005099        0.        0.        0.         0         5         0       .00    978.44   1179.00

*SECNO 1.100
3265 DIVIDED FLOW
      ADDITIONAL FIELD SURVEYED SECTION 1.1
    1.100     10.67   1791.67   1790.96       .00   1792.24       .57      2.43       .02   1788.70
  15460.0    3418.6    2346.5    9694.9     811.5     307.9    1577.7      35.9      14.7   1789.60
      .03      4.21      7.62      6.14      .030      .040      .030      .000   1781.00    101.05
  .002950      675.      759.      540.         2        13         0       .00   1024.35   1183.31

*SECNO 2.000
3265 DIVIDED FLOW
      FIELD SURVEYED SECTION 2 = FIS SECTION B
    2.000      9.66   1793.36   1792.96       .00   1793.96       .59      1.71       .01   1790.40
  15460.0    5897.7    1549.1    8013.2    1064.2     189.4    1295.3      63.6      25.3   1791.80
      .05      5.54      8.18      6.19      .030      .040      .030      .000   1783.70     57.03
  .004606      340.      511.      530.         2         9         0       .00   1093.72   1178.64

*SECNO 2.050
3265 DIVIDED FLOW
      ADDITIONAL FIELD SURVEYED SECTION 2.05
    2.050     10.95   1794.15   1793.72       .00   1794.72       .58       .76       .00   1791.90
  15460.0    3534.4    2109.0    9816.7     807.4     249.6    1631.6      74.3      30.0   1790.90
      .06      4.38      8.45      6.02      .030      .040      .030      .000   1783.20     70.04
  .004058      215.      206.      150.         2         8         0       .00   1167.77   1252.13

*SECNO 2.060
      SECTION 2.06 IS LOCATED ONE FOOT DOWNSTREAM OF BRIDGE
    2.060     10.77   1794.47   1793.62       .00   1794.87       .40       .13       .02   1791.10
  15460.0    5438.8    1601.4    8419.8    1222.9     238.1    1671.6      77.1      31.2   1790.90
      .06      4.45      6.73      5.04      .030      .040      .030      .000   1783.70     83.89
  .002530       74.       59.       19.         2        14         0       .00   1179.88   1263.77

*SECNO 2.070
3301 HV CHANGED MORE THAN HVINS
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
    2.070     11.74   1795.44   1795.44       .00   1796.42       .98       .00       .18   1791.10
  15460.0    5995.4    3205.3    6259.2     922.3     267.5     964.4      77.2      31.2   1790.90
      .06      6.50     11.98      6.49      .030      .040      .030      .000   1783.70     61.15
  .006873        1.        1.        1.         0        10         0  -2104.35   1216.02   1277.17

*SECNO 2.080
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
      SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
    2.080     12.38   1796.08   1795.44       .00   1796.60       .51       .13       .05   1791.10
  15460.0    6393.7    2403.9    6662.3    1247.1     287.1    1304.5      78.9      32.0   1790.90
      .06      5.13      8.37      5.11      .030      .040      .030      .000   1783.70     58.21
  .003052       30.       30.       30.         4        10         0  -2207.81   1227.62   1285.83
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         EV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 2.090
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.77
       SECTION 2.09 IS A LOCATED ONE FOOT UPSTREAM OF BRIDGE
     2.090     12.82   1796.52    1793.64        .00    1796.64        .12        .00        .04    1791.10
   15460.0    6245.0      936.0     8278.9     2392.7      300.6     2930.6       79.0       32.1    1790.90
      .06       2.61       3.11       2.82       .030       .040       .030       .000    1783.70      56.17
  .000397         1.         1.         1.          2         13          0        .00    1234.17    1290.34

*SECNO 2.100
        ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     13.74   1796.54    1793.54        .00    1796.65        .11        .02        .00    1790.70
   15460.0    5959.7     1020.7     8479.6     2278.4      338.7     3178.2       84.7       33.3    1791.30
      .07       2.62       3.01       2.67       .030       .040       .030       .000    1782.80       2.05
  .000366         74.        59.        19.          2         10          0        .00    1230.91    1232.96

CCEV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .30
        FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.19   1796.79    1795.93        .00    1797.25        .46        .49        .11    1793.20
   15460.0    2249.7     1992.4    11217.9      492.8      217.9     2384.7      141.3       47.8    1788.60
      .10       4.56       9.14       4.70       .045       .040       .045       .000    1783.60      24.24
  .004175        615.       950.       485.          1         13          0        .00    1131.11    1155.36

*SECNO 4.000
        FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     12.74   1801.44    1800.49        .00    1801.93        .49       4.67        .01    1797.10
   15460.0    1111.5     4963.9     9384.6      293.5      598.3     2534.4      248.8       84.1    1796.30
      .18       3.79       8.30       3.70       .045       .040       .045       .000    1788.70      12.48
  .002524        1300.      1660.      1420.          4         13          0        .00    1103.16    1115.64

*SECNO 5.000
        FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     13.80   1803.90    1802.90        .00    1804.48        .58       2.52        .03    1798.30
   15460.0    3763.9     4183.7     7512.4      646.0      476.4     1945.6      308.2      100.6    1801.00
      .22       5.83       8.78       4.07       .045       .040       .045       .000    1790.10      15.71
  .003404        980.      1110.       700.          3          5          0        .00     805.53     821.24

*SECNO 6.000
        FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     14.14   1806.74    1805.70        .00    1807.67        .93       3.08        .11    1798.30
   15460.0    1061.7     4340.1    10058.1      201.9      385.8     1713.7      360.7      113.9    1798.60
      .25       5.26      11.25       5.87       .045       .040       .045       .000    1792.60     350.46
  .003659        855.       915.       860.          2         10          0        .00     533.67     884.13
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T1      FLOODWAY
T2      JIMBO CREEK, CITY OF YURINA, MA (HEPATRUBL COUNTY)
T3      EXHIBIT 12
T4      SECTIONS ADDED WITH BRIDGE IN PLACE - COMPUTE NEW FLOODWAY

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      -10       3                                                 -1                1790.00
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2                   -1                                      -1

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3470 ENCROACHMENT STATIONS=      648.0    1047.0  TYPE=      1  TARGET=      399.000
        FIELD SURVEYED SECTION 1 = FIS SECTION A
     1.000     13.90   1790.00   1789.14   1789.00   1791.16      1.16       .00       .00   1784.50
 15460.0   13309.3    2150.7         .0    1551.5     240.6        .0        .0        .0 100000.00
      .00      8.58      8.94       .00       .030      .040      .000      .000   1776.10    648.00
  .004520        0.        0.        0.         0         9         0       .00    399.00   1047.00

*SECNO 1.100
3301 HV CHANGED MORE THAN HVINS
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.45
3470 ENCROACHMENT STATIONS=      425.0    1032.0  TYPE=      1  TARGET=      607.000
        ADDITIONAL FIELD SURVEYED SECTION 1.1
     1.100     11.60   1792.60   1791.22   1791.67   1793.17       .57      1.95       .06   1788.70
 15460.0   4055.8    2370.1    9034.1     805.4     340.5    1452.5      32.3       7.4   1789.60
      .03      5.04      6.96      6.22       .030      .040      .030      .000   1781.00    425.00
  .002152       675.      759.      540.         2        13         0       .00    607.00   1032.00

*SECNO 2.000
3470 ENCROACHMENT STATIONS=      184.0    1058.0  TYPE=      1  TARGET=      874.000
        FIELD SURVEYED SECTION 2 = FIS SECTION B
     2.000     10.15   1793.85   1793.04   1793.36   1794.40       .55      1.23       .00   1790.40
 15460.0   5762.9    1478.0    8219.2    1048.9     203.2    1362.7      59.9      14.9   1791.80
      .05      5.49      7.27      6.03       .030      .040      .030      .000   1783.70    184.00
  .003313       340.      511.      530.         2        14         0       .00    874.00   1058.00

*SECNO 2.050
3470 ENCROACHMENT STATIONS=      192.0    1140.0  TYPE=      1  TARGET=      948.000
        ADDITIONAL FIELD SURVEYED SECTION 2.05
     2.050     11.24   1794.44   1793.99   1794.15   1795.09       .66       .66       .03   1791.90
 15460.0   3742.9    2272.8    9444.4     742.0     257.9    1485.0      70.3      18.7   1790.90
      .06      5.04      8.81      6.36       .030      .040      .030      .000   1783.20    192.00
  .004226       215.      206.      150.         2         9         0       .00    948.00   1140.00

*SECNO 2.060
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.45
3470 ENCROACHMENT STATIONS=      185.4    1152.0  TYPE=      1  TARGET=      966.600
        SECTION 2.06 IS LOCATED ONE FOOT DOWNSTREAM OF BRIDGE
     2.060     11.15   1794.85   1793.70   1794.47   1795.23       .38       .11       .03   1791.10
 15460.0   5645.9    1549.2    8264.9    1268.1     249.9    1651.2      73.0      19.7   1790.90
      .06      4.45      6.20      5.01       .030      .040      .030      .000   1783.70    185.40
  .002014        74.       59.       19.         2        13         0       .00    966.60   1152.00

*SECNO 2.070
3301 HV CHANGED MORE THAN HVINS
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
3470 ENCROACHMENT STATIONS=      185.4    1152.0  TYPE=      1  TARGET=      966.600
        FIELD SURVEYED SECTION 2.07 LOCATED AT DOWNSTREAM FACE OF BRIDGE
     2.070     12.17   1795.87   1795.87   1795.44   1796.93      1.06       .00       .20   1791.10
 15460.0   6175.0    3345.2    5939.8     875.0     280.7     874.1      73.1      19.7   1790.90
      .06      7.06     11.92      6.80       .030      .040      .030      .000   1783.70    185.40
  .006377         1.        1.        1.         0         9         0 -2107.24    966.60   1152.00

*SECNO 2.080
3301 HV CHANGED MORE THAN HVINS
3370 NORMAL BRIDGE, NRD=  10 MIN ELTRD=  1798.40 MAX ELLC=  1796.40
3470 ENCROACHMENT STATIONS=      186.0    1163.0  TYPE=      1  TARGET=      977.000
        SECTION 2.08 IS LOCATED AT UPSTREAM FACE OF BRIDGE
     2.080     12.89   1796.59   1795.84   1796.08   1797.12       .52       .13       .05   1791.10
 15460.0   6727.0    1743.6    6989.4    1153.4     296.9    1210.4      74.7      20.3   1790.90
      .06      5.83      5.87      5.77       .030      .040      .030      .000   1783.70    186.00
  .003322        30.       30.       30.         4         9         0 -2226.78    977.00   1163.00
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        EV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2.090
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.99
3470 ENCROACHMENT STATIONS=      186.0    1163.0  TYPE=      1  TARGET=      977.000
       SECTION 2.09 IS A LOCATED ONE FOOT UPSTREAM OF BRIDGE
     2.090     13.33   1797.03   1793.69   1796.52   1797.16       .13       .00       .04   1791.10
  15460.0    6218.5     984.9    8256.6    2235.8     316.0    2767.6      74.8      20.4   1790.90
      .06      2.78      3.12      2.98      .030      .040      .030      .000   1783.70    186.00
  .000372        1.        1.        1.         2        17         0       .00    977.00   1163.00

*SECNO 2.100
3470 ENCROACHMENT STATIONS=      109.0    1104.0  TYPE=      1  TARGET=      995.000
       ADDITIONAL FIELD SURVEYED SECTION 2.1
     2.100     14.24   1797.04   1793.72   1796.54   1797.17       .13       .02       .00   1790.70
  15460.0    5700.7    1121.2    8638.1    2010.2     355.2    2969.7      80.1      21.4   1791.30
      .07      2.84      3.16      2.91      .030      .040      .030      .000   1782.80    109.00
  .000377       74.       59.       19.         2        14         0       .00    995.00   1104.00

CCEV=     .100 CEHV=     .300
*SECNO 3.000
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .32
3470 ENCROACHMENT STATIONS=       83.0     990.0  TYPE=      1  TARGET=      907.000
       FIELD SURVEYED SECTION 3 = FIS SECTION C
     3.000     13.69   1797.29   1796.17   1796.79   1797.76       .47       .49       .10   1793.20
  15460.0    1840.0    2035.4   11584.6     398.9     230.5    2392.9     133.4      33.0   1788.60
      .10      4.61      8.83      4.84      .045      .040      .045      .000   1783.60     83.00
  .003614       615.      950.      485.         0        13         0       .00    907.00    990.00

*SECNO 4.000
3470 ENCROACHMENT STATIONS=       50.0     520.0  TYPE=      1  TARGET=      470.000
       FIELD SURVEYED SECTION 4 = FIS SECTION D
     4.000     13.28   1801.98   1800.45   1801.44   1802.80       .82      4.93       .10   1797.10
  15460.0    1026.5    6016.8    8416.7     218.8     630.5    1538.0     221.4      55.5   1796.30
      .16      4.69      9.54      5.40      .045      .040      .045      .000   1788.70     50.00
  .003114       1300.     1660.     1420.        3         9         0       .00    470.00    520.00

*SECNO 5.000
3470 ENCROACHMENT STATIONS=       95.0     655.0  TYPE=      1  TARGET=      560.000
       FIELD SURVEYED SECTION 5 = FIS SECTION E
     5.000     14.77   1804.87   1803.55   1803.90   1805.53       .67      2.72       .02   1798.30
  15460.0    2160.8    4784.6    8514.5     337.5     529.6    1834.9     271.7      64.6   1801.00
      .19      6.40      9.03      4.64      .045      .040      .045      .000   1790.10     95.00
  .003128       980.     1110.      700.         2         5         0       .00    560.00    655.00

*SECNO 6.000
3470 ENCROACHMENT STATIONS=      399.0     660.0  TYPE=      1  TARGET=      261.000
       FIELD SURVEYED SECTION 6 = FIS SECTION F
     6.000     15.02   1807.62   1805.32   1806.74   1808.69      1.07      3.04       .12   1798.30
  15460.0        .0    4259.7   11200.3        .0     412.9    1516.0     318.0      72.8   1798.60
      .22       .00     10.32      7.39      .000      .040      .045      .000   1792.60    399.00
  .003866       855.      915.      860.         1         9         0       .00    261.00    660.00
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
EXHIBIT 12
SUMMARY PRINTOUT

	SECNO	Q	XLCH	ELMIN	CWSEL	CRIWS	AREA	VCH	SSTA	ENDST	DIFKWS
	1.000	15460.00	.00	1776.10	1789.00	1788.72	2236.03	9.69	76.07	1179.00	.00
	1.000	15460.00	.00	1776.10	1790.00	1789.14	1792.08	8.94	648.00	1047.00	1.00
	1.100	15460.00	759.00	1781.00	1791.67	1790.96	2697.13	7.62	101.05	1183.31	.00
*	1.100	15460.00	759.00	1781.00	1792.60	1791.22	2598.35	6.96	425.00	1032.00	.93
	2.000	15460.00	511.00	1783.70	1793.36	1792.96	2548.82	8.18	57.03	1178.64	.00
	2.000	15460.00	511.00	1783.70	1793.85	1793.04	2614.87	7.27	184.00	1058.00	.49
	2.050	15460.00	206.00	1783.20	1794.15	1793.72	2688.64	8.45	70.04	1252.13	.00
	2.050	15460.00	206.00	1783.20	1794.44	1793.99	2484.86	8.81	192.00	1140.00	.29
	2.060	15460.00	59.00	1783.70	1794.47	1793.62	3132.51	6.73	83.89	1263.77	.00
*	2.060	15460.00	59.00	1783.70	1794.85	1793.70	3169.21	6.20	185.40	1152.00	.38
*	2.070	15460.00	1.00	1783.70	1795.44	1795.44	2154.20	11.98	61.15	1277.17	.00
*	2.070	15460.00	1.00	1783.70	1795.87	1795.87	2029.78	11.92	185.40	1152.00	.43
*	2.080	15460.00	30.00	1783.70	1796.08	1795.44	2838.75	8.37	58.21	1285.83	.00
	2.080	15460.00	30.00	1783.70	1796.59	1795.84	2660.68	5.87	186.00	1163.00	.51
*	2.090	15460.00	1.00	1783.70	1796.52	1793.64	5623.94	3.11	56.17	1290.34	.00
*	2.090	15460.00	1.00	1783.70	1797.03	1793.69	5319.48	3.12	186.00	1163.00	.51
	2.100	15460.00	59.00	1782.80	1796.54	1793.54	5795.29	3.01	2.05	1232.96	.00
	2.100	15460.00	59.00	1782.80	1797.04	1793.72	5335.04	3.16	109.00	1104.00	.50
*	3.000	15460.00	950.00	1783.60	1796.79	1795.93	3095.44	9.14	24.24	1155.36	.00
*	3.000	15460.00	950.00	1783.60	1797.29	1796.17	3022.27	8.83	83.00	990.00	.50
	4.000	15460.00	1660.00	1788.70	1801.44	1800.49	3426.24	8.30	12.48	1115.64	.00
	4.000	15460.00	1660.00	1788.70	1801.98	1800.45	2407.39	9.54	50.00	520.00	.54
	5.000	15460.00	1110.00	1790.10	1803.90	1802.90	2968.07	8.78	15.71	821.24	.00
	5.000	15460.00	1110.00	1790.10	1804.87	1803.55	2701.98	9.03	95.00	655.00	.97
	6.000	15460.00	915.00	1792.60	1806.74	1805.70	2301.34	11.25	350.46	884.13	.00
	6.000	15460.00	915.00	1792.60	1807.62	1805.32	1928.91	10.32	399.00	660.00	.88

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 1.100 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.060 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 2.070 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.070 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.070 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.070 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 2.080 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.090 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.090 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, EXHIBIT 12
PROFILE NO. 2

		FLOODWAY		WATER SURFACE ELEVATION		
STATION	WIDTH	SECTION AREA	MEAN VELOCITY	WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	399.	1792.	8.6	1790.0	1789.0	1.0
1.100	607.	2598.	5.9	1792.6	1791.7	.9
2.000	874.	2615.	5.9	1793.9	1793.4	.5
2.050	948.	2485.	6.2	1794.4	1794.1	.3
2.060	967.	3169.	4.9	1794.9	1794.5	.4
2.070	967.	2030.	7.6	1795.8	1795.4	.4
2.080	977.	2661.	5.8	1796.6	1796.1	.5
2.090	977.	5319.	2.9	1797.0	1796.5	.5
2.100	995.	5335.	2.9	1797.0	1796.5	.5
3.000	907.	3022.	5.1	1797.3	1796.8	.5
4.000	470.	2407.	6.4	1801.9	1801.4	.5
5.000	560.	2702.	5.7	1804.9	1803.9	1.0
6.000	261.	1929.	8.0	1807.6	1806.7	.9

APPENDIX A

44CFR 60.3 FLOOD PLAIN MANAGEMENT CRITERIA FOR FLOOD-PRONE AREAS.

The Administrator will provide the data upon which flood plain management regulations shall be based. If the Administrator has not provided sufficient data to furnish a basis for these regulations in a particular community, the community shall obtain, review and reasonably utilize data available from other Federal, State or other sources pending receipt of data from the Administrator. However, when special flood hazard area designations and water surface elevations have been furnished by the Administrator, they shall apply. The symbols defining such special flood hazard designations are set forth in 64.3 of this subchapter. In all cases the minimum requirements governing the adequacy of the flood plain management regulations for flood-prone areas adopted by a particular community depend on the amount of technical data formally provided to the community by the Administrator. Minimum standards for communities are as follows:

a. When the Administrator has not defined the special flood hazard areas within a community, has not provided water surface elevation data, and has not provided sufficient data to identify the floodway or coastal high hazard area, but the community has indicated the presence of such hazards by submitting an application to participate in the Program, the community shall:

(1) Require permits for all proposed construction or other development in the community, including the placement of manufactured homes, so that it may determine whether such construction or other development is proposed within flood-prone areas;

(2) Review proposed development to assure that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334;

(3) Review all permit applications to determine whether proposed building sites will be reasonably safe from flooding. If a proposed building site is in a flood-prone area, all new construction and substantial improvements shall (i) be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, (ii) be constructed with materials resistant to flood damage, (iii) be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

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(4) Review subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding. If a subdivision proposal or other proposed new development is in a flood-prone area, any such proposals shall be reviewed to assure that (i) all such proposals are consistent with the need to minimize flood damage within the flood-prone area, (ii) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards;

(5) Require within flood-prone areas new and replacement water supply systems to be designed to minimize or eliminate infiltration of flood waters into the systems; and

(6) Require within flood-prone areas (i) new and replacement sanitary sewage systems to be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and (ii) onsite waste disposal systems to be located to avoid impairment to them or contamination from them during flooding.

b. When the Administrator has designed areas of special flood hazards (A zones) by the publication of a community's FHBM or FIRM, but has neither produced water surface elevation data nor identified a floodway or coastal high hazard area, the community shall:

(1) Require permits for all proposed construction and other developments including the placement of manufactured homes, within Zone A on the community's FHBM or FIRM;

(2) Require the application of the standards in paragraphs (a) (2), (3), (4), (5) and (6) of this section to development within Zone A on the community's FHBM or FIRM;

(3) Require that all new subdivision proposals and other proposed developments (including proposals for manufactured home parks and subdivisions) greater than 50 lots or 5 acres, whichever is the lesser, include within such proposals base flood elevation data;

(4) Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source, including data developed pursuant to paragraph (b)(3) of this section, as criteria for requiring that new construction, substantial improvements, or

other development in Zone A on the community's FHBM or FIRM meet the standards in paragraphs (c)(2), (c)(3), (c)(5), (c)(6), (c)(12), (c)(14), (d)(2) and (d)(3) of this section;

(5) Where base flood elevation data are utilized, within Zone A on the community's FHBM or FIRM:
(i) Obtain the elevation (in relation to mean sea level) of the lowest floor (including basement) of all new and substantially improved structures, and
(ii) Obtain, if the structure has been floodproofed in accordance with paragraph (c)(3)(ii) of this section, the elevation (in relation to mean sea level) to which the structure was floodproofed, and
(iii) Maintain a record of all such information with the official designated by the community under 52.22(a)(9)(iii);

(6) Notify, in riverine situations, adjacent communities and the State Coordination Office prior to any alternation or relocation of a watercourse, and submit copies of such notifications to the Administrator.

(7) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained;

(8) Require that all manufactured homes to be placed within Zone A on a community's FHBM or FIRM shall be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.

c. When the Administrator has provided a notice of final flood elevations for one or more special flood hazard areas on the community's FIRM and, if appropriate, has designated other special flood hazard areas without base flood elevations on the community's FIRM, but has not identified a regulatory floodway or coastal high hazard area, the community shall:

(1) Require the standards of paragraph (b) of this section within all A1-30 zones, AE zones, A zones, AH zones, and AO zones, on the community's FIRM;

(2) Require that all new construction and substantial improvements of residential structures within Zones A1-30, AE and AH zones on the community's FIRM have the lowest flood (including basement) elevated to

or above the base flood level, unless the community is granted an exception by the Administrator for the allowance of basements in accordance with 60.6 (b) or (c);

(3) Require that all new construction and substantial improvements of non-residential structures within Zones A1-30, AE and AH zones on the community's firm (i) have the lowest floor (including basement) elevated to or above the base flood level or, (ii) together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

(4) Provide that where a non-residential structure is intended to be made watertight below the base flood level, (i) a registered professional engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the applicable provisions of paragraph (c)(3)(ii) or (c)(8)(ii) of this section, and (ii) a record of such certificates which includes the specific elevation (in relation to mean sea level) to which such structures are floodproofed shall be maintained with the official designated by the community under 59.22(a)(9)(iii);

(5) Require, for all new construction and substantial improvements, that fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

(6) Require that manufactured homes that are placed or substantially improved within Zones A1-30, AH, and AE on the community's FIRM on sites:

(i) Outside of a manufactured home park or subdivision,

(ii) In a new manufactured home park or subdivision,

(iii) In an expansion to an existing manufactured home park or subdivision, or

(iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation collapse and lateral movement.

(7) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of residential structures have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified);

(8) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of nonresidential structures (i) have the lowest flood (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified, or (ii) together with attendant utility and sanitary facilities be completely floodproofed to that level to meet the floodproofing standard specified in 60.3(c)(c)(ii);

(9) Require within any A99 zones on a community's FIRM the standards of paragraphs (a)(1) through (a)(4)(i) and (b)(5) through (b)(9) of this section;

(10) Require until a regulatory floodway is designated, that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

(11) Require within Zones AH and AO, adequate drainage paths around structures on slopes, to guide floodwaters around and away from proposed structures.

(12) Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A-1-30, AH, and AE on the community's FIRM that are not subject to the provisions of paragraph (c)(6) of this section be elevated so that either

(i) The lowest floor of the manufactured home is at or above the base flood elevation, or

(ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

(13) Notwithstanding any other provisions of 60.3, a community may approve certain development in Zones A1-30, AE, and AH, on the community's FIRM which increase the water surface elevation of the base flood by more than one foot, provided that the community first applies for a conditional FIRM revision, fulfills the requirements for such a revision as established under the provisions of 65.12, and receives the approval of the Administrator.

(14) Require that recreational vehicles placed on sites within Zones A1-30, AH, and AE on the community's FIRM either

(i) Be on the site for fewer than 180 consecutive days,

(ii) Be fully licensed and ready for highway use, or

(iii) Meet the permit requirements of paragraph (b)(1) of this section and that elevation and anchoring requirements for "manufactured homes" in paragraph (c)(6) of this section.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

d. When the Administrator has provided a notice of final base flood elevations within Zones A1-30 and/or AE on the community's FIRM and, if appropriate, has designated AO zones, AH zones, A99 zones, and A zones on the community's FIRM, and has provided data from which the community shall designate its regulatory floodway, the community shall:

(1) Meet the requirements of paragraphs (c)(1) through (14) of this section;

(2) Select and adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry

the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any point;

(3) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;

(4) Notwithstanding any other provisions of 60.3, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community first applies for a conditional FIRM and floodway revision, fulfills the requirements for such revisions as established under the provisions of 65.12, and receives the approval of the Administrator.

e. When the Administrator has provided a notice of final base elevations within Zones A1-30 and/or AE on the community's FIRM and, if appropriate, has designated AH zones, AO zones, A99 zones, and A zones on the community's FIRM, and has identified on the community's FIRM coastal high hazard areas by designating Zones V1-30, VE, and/or V, the community shall:

(1) Meet the requirements of paragraphs (c)(1) through (14) of this section;

(2) Within Zones V1-30, VE, and V on a community's FIRM, (i) obtain the elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures, and whether or not such structures contain a basement, and (ii) maintain a record of all such information with the official designated by the community under 59.22 (a)(9)(iii);

(3) Provide that all new construction within Zones V1-30, VE, and V on the community's FIRM is located landward of the reach of mean high tide;

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(4) Provide that all new construction and substantial improvements in Zones V1-30 and VE, and also Zone V if base flood elevation data is available, on the community's FIRM, are elevated on pilings and columns so that (i) the bottom of the lowest horizontal structural member of the lowest flood (excluding the pilings or columns) is elevated to or above the base flood level; and (ii) the pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards. A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of paragraphs (e)(4)(i) and (ii) of this section.

(5) Provide that all new construction and substantial improvements within Zones V1-30, VE, and V on the community's FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purposes of this section, a breakaway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or State codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:

(i) Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and,

(ii) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damages due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards. Such enclosed space shall be usable solely for parking of vehicles, building access, or storage.

APPENDIX A

44CFR 60.3 FLOOD PLAIN MANAGEMENT CRITERIA FOR FLOOD-PRONE AREAS. *(Continued)*

(6) Prohibit the use of fill for structural support of buildings within Zones V1-30, VE, and V on the community's FIRM;

(7) Prohibit man-made alteration of sand dunes and mangrove stands within Zones V1-30, VE, and V on the community's FIRM which would increase potential flood damage.

(8) Require that manufactured homes placed or substantially improved within Zones V1-30, V, and VE on the community's FIRM on sites

(i) Outside of a manufactured home park or subdivision,

(ii) In a new manufactured home park or subdivision,

(iii) In an expansion to an existing manufactured home park or subdivision, or

(iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood meet the standards of paragraphs (e)(2) through (7) of this section and that manufactured homes placed or substantially improved on other sites in an existing manufactured home park or subdivision within Zones V1-30, V, and VE on the community's FIRM meet the requirements of paragraph (c)(12) of this section.

(9) Require that recreational vehicles placed on sites within Zones V1-30, V, and VE on the community's FIRM either

(i) Be on the site for fewer than 180 consecutive days,

(ii) Be fully licensed and ready for highway use, or

(iii) Meet the requirements in paragraphs (b)(1) and (e)(2) through (7) of this section.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

(41 FR 46975, Oct. 26, 1976)
Editorial Note: For Federal Register citations affecting 60.3, see the List of Sections Affected in the Finding Aids section of this volume.

APPENDIX B
44CFR 65.7 FLOODWAY REVISIONS

a. General. Floodway data is developed as part of FEMA Flood Insurance Studies and is utilized by communities to select and adopt floodways as part of the floodplain management program required by 60.3 of this subchapter. When it has been determined by a community that no practicable alternatives exist to revising the boundaries of its previously adopted floodway, the procedures below shall be followed.

b. Data requirements when base flood elevation changes are requested. When a floodway revision is requested in association with a change to base flood elevations, the data requirements of 65.6 shall also be applicable. In addition, the following documentation shall be submitted:

(1) Copy of a public notice distributed by the community stating the community's intent to revise the floodway or a statement by the community that it has notified all affected property owners and affected adjacent jurisdictions.

(2) Copy of a letter notifying the appropriate State agency of the floodway revision when the State has jurisdiction over the floodway or its adoption by communities participating in the NFIP.

(3) Documentation of the approval of the revised floodway by the appropriate State agency (for communities where the State has jurisdiction over the floodway or its adoption by communities participating in the NFIP).

(4) Engineering analysis for the revised floodway, as described below:

(a) The floodway analysis must be performed using the hydraulic computer model used to determine the proposed base flood elevations.

(b) The floodway limits must be set so that neither the effective base flood elevations nor the proposed base flood elevations, if less than the effective base flood elevations, are increased by more than the amount specified under 60.3 (d)(2). Copies of the input and output data from the original and modified computer models must be submitted.

(5) Delineation of the revised floodway on the same topographic map used for the delineation of the revised flood boundaries.

APPENDIX B
44CFR 65.7 FLOODWAY REVISIONS *(Continued)*

c. Data requirements for changes not associated with base flood elevation changes. The following data shall be submitted:

(1) Items described in paragraphs (b)(1) through (3) of this section must be submitted.

(2) Engineering analysis for the revised floodway, as described below:

(a) The original hydraulic computer model used to develop the established base flood elevations must be modified to include all encroachments that have occurred in the floodplain since the existing floodway was developed. If the original hydraulic computer model is not available, an alternate hydraulic computer model may be used, provided the alternate model has been calibrated so as to reproduce the original water surface profile of the original hydraulic computer model. The alternate model must be then modified to include all encroachments that have occurred since the existing floodway was developed.

(b) The floodway analysis must be performed with the modified computer model using the desired floodway limits.

(c) The floodway limits must be set so that combined effects of the past encroachments and the new floodway limits do not increase the effective base flood elevations by more than the amount specified in 60.3 (d)(2). Copies of the input and output data from the original and modified computer models must be submitted.

(3) Delineation of the revised floodway on a copy of the effective NFIP map and a suitable topographic map.

d. Certification requirements. All analyses submitted shall be certified by a registered professional engineer. All topographic data shall be certified by a registered professional engineer or licensed land surveyor. Certifications are subject to the definition given at 65.2 of this subchapter.

e. Submission procedures. All requests that involve changes to floodways shall be submitted to the appropriate FEMA Regional Office servicing the community's geographic area.

APPENDIX C
44CFR 65.12 REVISION OF FLOOD INSURANCE RATE MAPS TO REFLECT BASE FLOOD ELEVATIONS CAUSED BY PROPOSED ENCROACHMENTS.

a. When a community proposes to permit encroachments upon the floodplain when a regulatory floodway has not been adopted or to permit encroachments upon an adopted regulatory floodway which will cause base flood elevation increases in excess of those permitted under paragraphs (c)(10) or (d)(3) of 60.3 of this subchapter, the community shall apply to the Administrator for conditional approval of such action prior to permitting the encroachments to occur and shall submit the following as part of its application:

(1) A request for conditional approval of map change and the appropriate initial fee as specified by 72.3 of this subchapter or a request for exemption from fees as specified by 72.5 of this subchapter, whichever is appropriate.

(2) An evaluation of alternatives which would not result in a base flood elevation increase above that permitted under paragraphs (c)(10) or (d)(3) of 60.3 of this subchapter demonstrating why these alternatives are not feasible.

(3) Documentation of individual legal notice to all impacted property owners within and outside of the community, explaining the impact of the proposed action on their property.

(4) Concurrence of the Chief Executive Officer of any other communities impacted by the proposed actions.

(5) Certification that no structures are located in areas which would be impacted by the increased base flood elevation.

(6) A request for revision of base flood elevation determination according to the provisions of 65.6 of this part.

(7) A request for floodway revision in accordance with the provisions of 65.7 of this part.

b. Upon receipt of the Administrator's conditional approval of map change and prior to approving the proposed encroachments, a community shall provide evidence to the Administrator of the adoption of floodplain management ordinances incorporating the increased base flood elevations and/or revised floodway reflecting the post-project condition.

c. Upon completion of the proposed encroachments, a community shall provide as-built certifications in accordance with the provisions of 65.3 of this part. The Administrator will initiate a final map revision upon receipt of such certifications in accordance with Part 67 of this subchapter.

Administrator The Federal Insurance Administrator.

Area of shallow flooding A designated AO, AH, or VO zone on a community's Flood Insurance Rate Map (FIRM) with a one percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

Base Flood The flood having a one percent chance of being equaled or exceeded in any given year.

CFR Code of Federal Regulations.

Channel The deeper portion of the river bed where the water flows.

Community Any State or area or political subdivision thereof, or any Indian tribe or authorized tribal organization, or Alaska Native village or authorized native organization, which has authority to adopt and enforce flood plain management regulations for the areas within its jurisdiction.

Conveyance Measure of the capacity of a cross section to carry water.

Cross Section A line beginning in the left bank floodplain which crosses the stream channel at a right angle and continues to a point on the right bank floodplain . Distances and elevations are recorded along this line at selected features or elevation changes.

Encroachment Method used to limit the width of the floodplain at each cross section.

Flood or Flooding

a. A general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters.

(2) The unusual and rapid accumulation or runoff of surface waters from any source.

(3) Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in paragraph (a)(2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current. *(continued on next page)*

Flood or Flooding *(continued from previous page)*

b. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph (a)(1) of this definition.

Flood Elevation Study An examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards.

Flood Plain or Flood-Prone Area Any land area susceptible to being inundated by water from any source *(see definition of flooding)*.

Floodway *See Regulatory Floodway.*

Floodway Encroachment Lines The lines marking the limits of floodways on Federal, State and local flood plain maps.

Left Bank While facing downstream, the stream bank on the left hand.

Profile The line resulting from joining the centerline points of each cross section in order.

Regulatory Floodway The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Right Bank While facing downstream, the stream bank on the right hand.

U. S. C. United States Code