

Date: 2/6/2007

COLLEGE OF ENGINEERING  
Faculty Activity Summary

Name: Larry J. Weber

Academic Rank and Date Appointed (Mo/Yr): Associate Professor (8/2001)

Date of First University of Iowa Appointment (Mo/Yr): Postdoctoral Associate (April, 1993)

Department(s): Civil and Environmental

Office Address: 423C Hydraulics Laboratory

Office Phone: (319) 335-5597

Highest Academic Degree: Ph.D.

Special Fields of Knowledge: Coupling Individual-Based Ecological and Fluid Mechanics Models; Fish Passage Facilities; Environmental Hydraulics; Hydraulic Structures; River Restoration and Sustainability; and Ice Mechanics

Present Course Teaching Preferences:

Department Courses (List at least five)

1. 53:071 Principles of Hydraulics
2. 53:170 Flow in Open Channels
3. 53:079 Hydraulic Design
4. 53:173 Sediment Transport
5. 53:199 Environmental River Engineering
- 6.

Core Courses (List at least two)

1. 57:007 Statics
2. 57:020 Mechanics of Fluids and Transfer Processes
- 3.

---

NOTE: THIS PAGE IS LIMITED TO THE INFORMATION REQUESTED AND THAT INFORMATION IS LIMITED TO THE SPACE PROVIDED.

The University of Iowa College of Engineering requests this information on the credentials and accomplishments of faculty for collegiate purposes including consideration for reappointment, promotion, and merit salary adjustments. No persons outside the University are routinely provided this information. Information you fail to provide will result in an incomplete record of your credentials and accomplishments. Responses to items marked "optional" are optional.

**1. Academic Background**

<u>Institution</u>	<u>Dates Attended</u>	<u>Major</u>	<u>Degree</u>	<u>Dates Awarded</u>
University of Iowa	Aug, 1990 - May, 1993	C. E.	Ph.D	May, 1993
University of Iowa	June, 1989 - Aug, 1990	C. E.	M.S.	Aug, 1990
University of Iowa	Aug, 1984 - May, 1989	C. E.	B.S.	May, 1989

**2. Professional Experience**

**2.1 Academic**

<u>University</u>	<u>Position</u>	<u>Dates</u>	<u>Main Courses Taught</u>
University of Iowa	Associate Professor	8/01 – present	see ‘Teaching Activities’
University of Iowa	Assistant Professor	8/96 – 8/01	see ‘Teaching Activities’
University of Iowa	Ast. Res. Scientist	10/94 – 8/96	Prestressed Concrete
University of Iowa	Post. Doc. Assc.	5/93 – 10/94	Prestressed Concrete

**2.2 Industrial**

<u>Company</u>	<u>Position</u>	<u>Dates</u>
----------------	-----------------	--------------

**2.3 Other**

<u>Company, Firm, Agency</u>	<u>Position</u>	<u>Dates</u>
----------------------------------	-----------------	--------------

### **3. Professional Activities**

#### **3.1 Scientific and Professional Societies**

(give grade of membership. List committee memberships, chairmanships, or offices held with inclusive dates.)

Upper Mississippi River Navigation and Environmental Sustainability Program  
Science Panel Member, 2005 - present

American Society of Civil Engineers – Member

Hydraulics and Structures Track Chair, 2006 EWRI Congress, Omaha, NE

Hydraulics and Structures Track Chair, 2005 EWRI Congress, Anchorage, Alaska

Session Convenor, 1999 ASCE Water Resources Conference, Fish Passage, Seattle, WA

Task Committee Chair: Engineering for Fish Bypass and Enhancement, 1998 to present

Tour Group Leader, 35<sup>th</sup> Annual ASCE Environmental and Water Resources Conference, Iowa City, IA, April 3, 1997.

Task Committee Member: Migratory Juvenile Fish Bypass Systems, 1994 - 1995

International Association for Hydraulic Research – Member

Member, Local organizing committee, 4<sup>th</sup> International Conference on Hydroinformatics 2000, Cedar Rapids, IA, July 23-27, 2000.

Session Convenor, Fish Passage Through Hydropower Installations Session, XXVII IAHR Congress, San Francisco, CA, 10-15 August 1997

American Fisheries Society – Member

#### **3.2 Professional Registration (Give states in which registered)**

Iowa, Certificate No. 13494, 1996

#### **3.3 Honors, Prizes, and Awards (Provide year of award)**

Nominated for the 13<sup>th</sup> IAHR Arthur T. Ippen Award, 2003

Nominated for the 11<sup>th</sup> IAHR Arthur T. Ippen Award, 1999

1992 ASCE Collingwood Prize, Best Technical Paper by a Younger Member.

University of Iowa Dean's Scholarship, June, 1989 - January, 1993.

National Science Foundation Undergraduate Research Award, 1988.

#### **3.4 Consulting (Provide inclusive years)**

Idaho Power, 1999 - 2000

#### **3.5 Other**

#### **4. Service Activities**

(Include activities of last two years and indicate scope of involvement and responsibility, i.e., committee member, chairman, etc. Provide inclusive dates for activities.)

##### **4.1 Department**

Departmental Curriculum Committee (2003 – 2005)  
Member, CEE Coordination Committee (2000 – 2002)  
Coordinator, HWR Subtrack (2000 – 2002)  
Chair, CEE Field Trip Committee (2000 – 2001)  
Member, CEE Coordination Committee (1999 – 2000)  
Coordinator, HWR Subtrack (1999 – 2000)  
Member, CEE Field Trip Committee (1998 – 1999)  
Faculty Secretary, CEE Department (1996 – 1997)

##### **4.2 IIHR Hydrosience and Engineering**

Director, IIHR (May 2004 – present)  
Associate Director, IIHR (Aug., 2003 – 2004)  
Coordinator, Environmental Hydraulics Group (2000 – 2003)  
Chair, IIHR Administrative Review Committee (2000)  
Member, IIHR Internal Review Committee (1997)  
Member, IIHR Strategic Planning Committee (1995)  
Member, IIHR Building Renovation Committee (1995)  
Chair, IIHR Brochure Committee (1995)

##### **4.3 College**

Engineering Administrative Council (May 2004 – present)  
College Curriculum Committee (2003 – 2004)  
Member, Hydroinformatics Subgroup (2000 – 2001)  
Faculty Secretary, College of Engineering (1997 – 1998).  
Member, College of Engineering Research Scientist Review Committee (1995 – 1997)

##### **4.4 University**

##### **4.5 Community, State, National and International**

Advisory Board Member, Western Dubuque High School, Project Lead the Way (2005 – present)  
Chair, Iowa Childrens Museum Water Exhibit Design Team (1996 – 1999)

##### **4.6 Student Related**

###### **4.6.1 Advisor to Student Groups**

Chair, CEE Field Trip Committee (2000 – 2001)  
Member, CEE Field Trip Committee (1998 – 1999)  
Faculty Advisor, HydroPower Contest Participants (1997 – 1998)

**4.6.2 Special Counseling Services**

**4.6.3 Other Student Services**

EIT Review Session, Statics, 10-1-02  
EIT Review Session, Statics, 4-21-98  
EIT Review Session, Statics, 4-1-97

**4.7 Other**

## 5. Teaching Activities

### 5.1 Courses Taught (exclude directed reading, individual investigations, thesis research)

Sem	Course Number	Course Title	Sem Hrs	Number of Students	Remarks
S05	53:098	Project Design and Management in Civil Engineering	3	31	
S04	53:071	Principles of Hydraulics	3	35	
	53:091	Professional Seminar	0	66	
F03	53:020	Freshman Seminar	0	20	
	53:091	Professional Seminar	0	66	
S03	53:199	Contemporay Topics in CEE: Environmental River Engineering	3	19	
F02		University Developmental Leave			
F01	57:007	Statics	2	120	
	53:193	Grad Sem: Hydraulics Hydrology and Wtr Res	0	12	
S01	53:071	Principles of Hydraulics	3	34	
	53:199	Contemporay Topics in CEE: Fisheries Engineering	3	11	
F00	57:007	Statics	2	110	
	53:193	Grad Sem: Hydraulics Hydrology and Wtr Res	0	15	
S00	53:071	Principles of Hydraulics	3	37	
F99	33:142	Natural Science and Human Culture: Tech, Society and the Environment	3	23	Led team taught course with 3 other University of Iowa faculty
F99	53:170	Flow in Open Channels	3	10	
S99	53:071	Principles of Hydraulics	3	32	
F98	53:173	Mechanics of Sediment Transport	3	11	
S98	57:007	Engineering Statics	2	13	Co-taught w/F. Holly
S98	53:010	Freshman Seminar	0	32	
	53:020	Sophomore Seminar	0	36	
	53:090	Professional Seminar	0	84	
F97	57:005	Engineering I	3	70	Led 3 Discussions
	53:010	Freshman Seminar	0	32	
	53:020	Sophomore Seminar	0	36	
	53:090	Professional Seminar	0	84	
S97	53:071	Principles of Hydraulics	3	47	
F96	57:007	Statics	2	108	
S95	53:138	Prestressed Concrete Structures	3	12	
S94	53:138	Prestressed Concrete Structures	3	8	

### 5.2 Graduate Student Advising and Committees

Notes:

1. Date of completion of degree, or expected date.
2. Topic or title of thesis.
3. Award nominations or awards earned by dissertation.
4. Student's first permanent position after graduation, if known.

#### 5.2a PhD Dissertation Supervision

<u>Sem.</u>	<u>Student</u>	<u>Date</u> <sup>1</sup>	<u>Topic</u> <sup>2</sup>	<u>Award</u> <sup>3</sup>	<u>Permanent Position</u> <sup>4</sup>	<u>Remarks</u>
F04	Joseph Daraio	Dec, 07	Development of a Mussel Dynamics Model for Adaptive Ecosystem Management of the Upper Mississippi River System			
F03	Dongsu Kim	Dec, 07	Development of a Clear Creek Digital Watershed			Co-Chair M. Muste
F02	MD Haque	Aug, 07	Development of a Fully Three-Dimensional Numerical Model Coupling Atmospheric Conditions with Hydrodynamics for the Prediction of Thermal Conditions with a Reservoir			Co-Chair, GC
S02 -	Jie Zeng	Dec, 06	Development and Validation of a Fully Three-Dimensional Sediment Transport Numerical Model for Application to River Flows		South Florida Water Mangt. District	Co-Chair, GC
S02	Haegyun Lee	Dec, 06	Unstructured Level Set Method			Co-Chair, C-L Lin
F03	Andy McCoy	Dec, 06	Numerical Investigations Using LES: Exploring Flow Physics and Mass Exchange Processes Near Groynes		HDR Engineering Inc.	Co-Chair GC
F03	Y. Kim	Aug, 06	Uncertainty Analysis for Non-Intrusive Measurement of River Discharge Using Image Velocimetry		KOWACO	Co-Chair, M. Muste
S02 -	Nate Young	May, 06	Habitat suitability analysis for freshwater mussels in Pool 16, Upper Mississippi River			
S01	S.K. Ooi	Dec, 05	Large Eddy Simulation of Density Currents			Co-Chair, GC
S01 – F04	Yenory Morales	Dec, 04	Analysis of mussel population dynamics in the Mississippi River		University of Birmingham UK	
S97 – S02	Ouyang, Huei-Tau	Dec, 01	A genetic programming algorithm applied to submerged vanes			Co-Chair, J Odgaard
F97 – S02	Heqing Huang	Aug, 02	Numerical modeling of total dissolved gas			
F96 – F00	Kevin D Nielsen	Dec, 00	Experimental description of a plunging jets		Carroll College	
S96 – F00	Jianchun Huang	Aug, 00	Development and validation of a three-dimensional numerical model for application to river flow		US Bureau of Reclamation	Co-Chair, VC Patel

Notes: GC is an abbreviation for Prof. George Constantinescu. Prof. Constantinescu and I have co-advised several students, whereby I lead the project development, model validation and results interpretation and Prof. Constantinescu leads the numerical model development, verification and implementation efforts. We jointly advise

the students with respect to thesis preparation and publications. J. Odgaard refers to Prof. A. Jacob Odgaard and M. Muste refers to Research Engineer and Adjunct Professor Marian Muste.

### 5.2b MS Dissertation Supervision

<u>Sem.</u>	<u>Student</u>	<u>Date</u> <sup>1</sup>	<u>Topic</u> <sup>2</sup>	<u>Permanent Position</u> <sup>4</sup>	<u>Remarks</u>
F04	Ben Fennely	May 2006	Numerical Modeling Pool 13, Upper Mississippi River		
F04	Brady McDaniel	Dec 2005	Design of a Spillway Flow Deflector for Total Dissolved Gas Abatement for Brownlee Dam		
F03 – S05	Shae Hoschek	Sum 2005	Experimental Measurement of Bubble Entrainment		
F03 – S05	Matt McConville	Spring 2005	A Three-Dimensional Computational Fluid Dynamics Model of Temperature in Brownlee Dam Powerhouse Canal	HDR Consulting	
F01 – S03	Stephen Scissions	Spring 2003	Bathymetric Survey for Habitat Suitability		
F01 – S03	Isaac Willig	Spring 2003	Reservoir Collection and Passage of Juvenile Salmonids at Priest Rapids Dam	Iowa DNR	
F01 – SM03	Andy McCoy	Sum 2003	Numerical Modeling of Total Dissolved Gas at Rock Island Dam		
F00 – F02	Zhang, L	Fall, 2002	Numerical Modeling of Total Dissolved Gas at Hells Canyon Dam	South Florida Water Management District	
F00 – F01	Robert S. Zimmerman	Fall 2001	Hydraulic Model Study of Rocky Reach Modular Inclined Screen	Idaho Power Corp	
S00 – F00	Simone Stumpp	Fall 2000	Investigations on Numerical Modeling of River-bed Roughness		Exchange student / U. of Stuttgart
S00 – F00	Jens Moedinger	Fall 2000	Three-dimensional Numerical Model for Natural Rivers: Review and Application to the Rock Island Dam Forebay		Exchange student / U. of Stuttgart
S99 – S00	Paul Dierking	Sum 2001	Hells Canyon Dam Deflector Design	HDR Engineering	
F98 – S00	Fernando Andrade	Fall 2000	Numerical Model of Rocky Reach Forebay	Foster Wheeler Engineering	



F98 – S00	Pete Haug	Feb, 00	Wanapum Dam Spillway Deflector Design	U. of Iowa	
F98 – S00	Jeff Blank	Mar, 00	Numerical Modeling of Lower Granite Lock and Dam	PWA, Corte Madera, CA	
S98 – F99	Nate Young	Oct, 99	Vibrational Characteristics of ESBS Screen	HDR Inc, Omaha, NE	
S97 – F98	Eric Shumate	Oct, 98	Energy Loss of Combining Open Channel Flows	CCEI, Kansas City, MO	
F96 – S98	Matt Cole	Apr, 98	Zone of Influence of Near Surface Oriented Passage Facilities	Engineering Consultant	
F95 – S97	Carl Mannheim	Mar, 97	Physical Model Study of Nitrogen Supersaturation Downstream of a Spillway	ENSR Consulting, Redmond, WA	
F94 – F96	Mark Allen	Oct, 96	An Analytical Model for Flow Through Vertical Barrier Screens	ENSR Consulting, Redmond, WA	
F94 – S96	Jeff DenBleyder	Feb, 96	Mitigation of Predation at a Juvenile Bypass Outfall Site	CH2M Hill, Salt Lake City, Utah	co-adviser

### 5.2c PhD Committee Membership

<u>Sem.</u>	<u>Student</u>	<u>Date</u> <sup>1</sup> <u>Topic</u> <sup>2</sup>	<u>Remarks</u>
F02	J. Kim	Numerical modeling of cavitaiton	
F02	Z. Chen	Experimental and numerical modeling of inverted intakes	
S00	J.J. Cui	Numerical modeling of boundary roughness	

### 5.3 Undergraduate Student Advising and Mentoring

#### 5.3a Undergraduate Student Project Supervision

Notes:

1. Honors projects, undergraduate and graduate directed study, non-thesis special investigations, etc.
2. Student awards arising from this work, if any.

<u>Sem.</u>	<u>Student</u>	<u>Project description</u> <sup>1</sup>	<u>Awards</u> <sup>2</sup>
F04 – S05	Aaron Burkhardt	Laboratory Modeling of the Future Units Fish Bypass at Wanapum Dam	
S02 – S04	Amy Frank	Geometric Modeling of Priest Rapids Dam	
S02 – F03	Denise Armbruster	Geometric Modeling of Wanapum Dam	
S02 – F03	Joe Welter	Forebay Collection Concepts for Grant County PUD Fish Passage Study	

F01 - F03	Andrea Rogers	Priest Rapids Forebay Model	
F00 – S04	Nick Campney	Wanapum Tailrace Erosion Study	
S00 – S01	Greg Hein	Wanapum Dam Total Dissolved Gas Study	
S00 – F00	Nathan Stevens	Hells Canyon Dam Total Dissolved Gas Study	
S00 – F00	Adrain Holmes	Hells Canyon Dam Total Dissolved Gas Study	
S99 – S00	Justin Arnold	Wanapum Dam Spillway Deflector Design	
S98 – F98	Caleb Krantz	Combining Flow Flume	
S98 – S99	Troy Lyons	Wanapum Dam Total Dissolved Gas Study	
F97 – S98	Amy Valoni	Plunge Characteristics of Fish Outfalls	
S97 – S98	Sarah Klemuk	Plunge Characteristics of Fish Outfalls	
S97 – S98	Jeff Blank	Lower Granite Kinematic Model	
S97 – S98	Nate Young	Honors Project: Comparison of Turbulence Intensities from ADV and LDV	
S97 – S97	Calib Krantz	Wanapum Flow Deflector Erosion Study	
F96 – S97	Jason Piotter	Wanapum Forebay Model	
F96 – S97	David DeGraff	Rocky Reach Gatewell Study	
F96 – S97	Doug Bottorff	Wanapum Forebay Model	
S96 – S97	Chad Lambi	Rock Island / Wanapum Forebay Models	
F94 – S97	David Kuhl	Wanapum Fish Outfall	
S94 – F94	Mark Allen	Rock Island / Wanapum Intake Studies	
S95 – F95	Steve Ashton	Rock Island Forebay Model	
F94 – S95	ChitraParameswar	Honors Project: Plunge Characteristics of a Fish Outfall	

### 5.3b Other Student Mentoring and Special Advising

Notes:

1. Name of program, nature of activities; includes interdepartmental advising.

<u>Sem.</u>	<u>Student</u>	<u>Description<sup>1</sup></u>
F99 – S00	Nick Campney	Research Experience for High School Students
Sum 97	Tahir Charles	Summer Research Experience Program
Sum 97	Landis Clemons	Summer Research Experience Program
Spr 96	Ross Konklin	Research Experience for High School Students

### 5.3c Undergraduate Student Advising

Notes:

1. Name of program, nature of activities; includes interdepartmental advising.
2. Student awards arising from this work, if any.

<u>Sem.</u>	<u>Number of Advisees</u>
S05	9
F04	8
S04	9

F03	7
S03	9
F02	8
S02	11
F01	9
S01	7
F00	8
S00	10
F99	9
S99	7
F98	7
S998	9
F97	8
S97	10
F96	9

#### **5.4 Supervision of Postdoctoral Associates**

Notes:

1. Associate's present position, if known.
2. Student awards arising from this work, if any.

<u>Sem.</u>	<u>Name</u>	<u>Project description</u>	<u>Present Position</u>
F02 – F04	Marcela Politano	Two Phase Flow Modeling at Spillways	Research Engineer, IIHR Hydroscience and Engineering
F01 – S03	Songheng Li	Numerical Modeling of Fish Passage Facilities	Research Engineer, IIHR Hydroscience and Engineering
Sum 97	Tim Johnson	Wanapum Forebay CFD Model	Boeing
F96 – F97	Ehab Meselhe	Wanapum Forebay CFD Model	Assoc. Professor, University of Louisiana at La Fayette
S96 – F97	Sanjiv Sinha	Priest Rapids Tailrace CFD Model	Adjunct Asst. Professor, U of Michigan

#### **5.5 Invited Seminars and Short Courses**

<u>Date</u>	<u>Location</u>	<u>Host Organization</u>	<u>Title/Description</u>
03/05	Boise, ID	University of Idaho	Recent Advances in Environmental Hydraulics
03/05	Logan, UT	Utah State University	Recent Advances in Environmental Hydraulics
09/04	Baton Rouge, LA	Louisiana State University	Restoration Efforts in the Upper Mississippi River Basin
10/02	Ames, IA	Iowa State University	Numerical Modeling of Fish Passage: Rules of the road for fish swim path selection

10/00	Pullman, WA	Washington State University	Numerical Modeling of Fish Passage Facilities: Challenges of Model Calibration
4/00	Boise, ID	U. of Idaho	Physical and Numerical Modeling of Fish Passage Facilities
1/00	Boise, ID	Idaho Power	Total Dissolved Gas Modeling
3/99	Richland, WA	Battelle National Labs	Numerical Modeling of Fish Passage Facilities at Hydropower Installations
12/98	Boise, ID	University of Idaho	Integration of Physical and Numerical Models for Design of Fish Passage Facilities
10/98	Bellevue, WA	Parametrix, Inc	Modeling Activities for Fish Passage Studies at Chelan Co. PUD and Grant Co. PUD
11/97	Minneapolis, MN	University of Minnesota, St Anthony Falls Laboratory	Recent Developments in Fish Bypass at Columbia River Dams
4/97	Iowa City, Iowa	University of Iowa, College of Engineering Honors Seminar	Fish Bypass at Columbia River Dams
11/96	Iowa City, Iowa	Sunrise Optimist Club	Fish Bypass at Columbia River Dams
10/96	Iowa City, Iowa	University of Iowa, CE Professional Seminar	Fish Bypass at Columbia River Dams
9/96	Iowa City, Iowa	University of Iowa, Environmental Graduate Seminar	Fish Bypass at Columbia River Dams
4/96	Iowa City, Iowa	University of Iowa, Civil Engineering Deptment	Recent Developments in Physical Model Studies
3/96	Pullman, Washington	Washington State University, Civil Engineering Department	Columbia River Fish Passage
10/94	Iowa City, Iowa	University of Iowa, Mechanical Engineering Deptment	Fish Bypass and the Nature of Turbulence
11/93	Iowa City, Iowa	University of Iowa, Civil Engineering Deptment	Fish Bypass at Columbia River Dams
4/93	Iowa City, Iowa	University of Iowa, Civil Engineering Deptment	Fatigue of Freshwater Ice
9/91	Iowa City, Iowa	University of Iowa, Civil Engineering Deptment	Fracture Toughness of S2 Columnar Ice

### **5.6 Advisor to Student Groups**

Notes:

1. Name of program, nature of activities.

<u>Sem.</u>	<u>Group</u>	<u>Description</u> <sup>1</sup>
-------------	--------------	---------------------------------

### **5.7 Teaching Awards and Nominations**

Notes:

1. Indicate if nominated but not awarded.

<u>Date</u>	<u>Title</u>	<u>Grantor</u>	<u>Selection Process</u>	<u>Nominee<sup>1</sup></u>
-------------	--------------	----------------	--------------------------	----------------------------

### **5.8 Formative Evaluations**

(listing of efforts undertaken to improve personal teaching effectiveness, including peer observation, etc.)

1. Peer observation in the classroom by Prof. W.A. Nixon

### **5.9 Textbooks and Educational Publications**

<u>Date</u>	<u>Description</u>
-------------	--------------------

### **5.10 Funded and Unfunded Course, Curriculum, Software, and Laboratory Development**

(listing of developmental efforts and innovations focused on improvement of instruction, including efforts to obtain external funding for laboratory and curricular development)

Developed a new course given under the course number (053:195) Contemporary Topics: Ecohydraulics – the science and application of basin scale modeling. Offered Spring 2001. The purpose of the course is to educate students to the fundamentals and application of integrated modeling, genetic programming, neural networks and ecological models to the solution of basin-scale stream restoration projects.

1. Updated and expanded laboratory experiments for Principles of Hydraulics (1996).
2. Added physical model study project to required course content for Principles of Hydraulics (1998).
3. Implemented use of computer program HEC-RAS into laboratory portion of Principles of Hydraulics (1999).

### **5.11 Other**

(attendance at teaching workshops; student comments of particular interest; etc.)

Participation in IIHR Internatioanl Perspectives in Water Resources Planning in Turkey, 2005.  
 Participation in IIHR Internatioanl Perspectives in Water Resources Planning in Argentina, 2003.  
 Participation in IIHR Internatioanl Perspectives in Water Resources Planning in China, 2000.

Accepted for the 2000 Exceed Teaching Workshop.

Summer 1997, Selected to participate in the nTITLE summer faculty workshop designed to improve instruction methods by introducing new technologies to the classroom.

**6. Research Activities**

**6.1 Active research fields at present** (major fields only)

Coupling Individua  
 Fish Passage Facilities  
 Flow in Closed Conduits and Open Channels  
 Modeling of Hydropower Facilities  
 Stream Restoration

**6.2 Principal investigator on contracts and/or grants** (last five years)

<b>Contract or Grant Title</b>	<b>Sponsor</b>	<b>Start and End Date</b>	<b>Funding</b>	<b>% Credit</b>
Laboratory Tests on the Underdrain Lateral Prototype – Scottsdale CAP	Johnson Screens	1/06 – 1/07	\$19,770	100%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	2/04 – 12/05	\$6,817,608	50%
Forebay Computational Fluid Dynamics Modeling to Support Fish Passage at Lower Granite, Ice Harbor and McNary Dams	Tetra Tech, Inc.	7/05 – 7/06	\$153,809	34%
Numerical Modeling of McNary Dam for Temperature Improvements	Walla Walla District Office, USACE	6/05 – 6/06	\$103,932	50%
Numerical Modeling of Fish Passage Facilities at Lower Granite, Ice Harbor and McNary Dams	Walla Walla District Office, USACE	6/05 – 6/06	\$398,018	50%
Support for the Upper Mississippi River System Navigation and Ecosystem Sustainability Program	US Dept. of the Army	4/05 – 8/06	\$68,627	100%
Numerical Model of Ohio River Contaminant Dispersion Between CSO at Twelvemile Creek and Murray Plant Intake	Holly and Associates	12/04 – 3/05	\$60,000	50%
CFD Modeling of Rocky Reach Dam	Chelan County PUD	4/01 – 12/01	\$80,000	75%
Numerical Model of Thermal Regime Downstream of the Quad Cities Nuclear Generation Station	Exelon Generation Corp. LLC	2/04 – 12/04	\$60,000	50%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	2/04 – 12/05	\$1,738,000	75%
Numerical Modeling of The Dalles Dam	Portland District Office, USACE	9/03 – 6/04	\$86,077	50%
Temperature Control Weir and Spillway Deflector Design for Brownlee Dam	Idaho Power Corp, Boise, ID	8/03 – 12/04	\$665,000	100%
Application of CFD for Modeling Design and Analysis of Hydropower Facilities	Rock Island District Office, USACE	7/03 – 7/06	\$159,295	100%
Fish River Ecosystem Study	USACE	3/03 – 8/03	\$4,000	100%
Numerical Modeling of McNary Dam for Temperature Improvements	Walla Walla District Office, USACE	9/02 – 9/04	\$288,060	50%

Hydraulic Model Study of Circulating Water Pump Basin for East Kentucky Power Cooperative	Eastern Kentucky Power Cooperative	8/02 – 7/03	\$84,500	50%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	8/02 – 12/05	\$6,872,566	75%
Numerical Modeling of Lake Washington Ship Canal	Seattle District Office, USACE	6/02 – 2/03	\$60,000	50%
Enhancement and Application of CFD for Modeling Fish Passage Facilities	Vicksburg District Office, USACE	3/02 – 2/04	\$142,000	50%
Hydraulic Modeling of the Villalobos River Catchment	University of Idaho	7/01 – 9/02	\$30,420	100%
Lower Granite Dam Surface Bypass and Collection, Numeric Interpolation	USACE	1/01 – 1/02	\$22,500	100%
3-D Model of Hells Canyon Dam	Idaho Power Corp, Boise, ID	10/00 – 6/01	\$200,000	100%
Numerical Modeling of Rocky Reach Dam, Integration with Fish Tracking Data	Chelan County PUD via ENSR Consulting	10/00 – 5/01	\$46,000	75%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	8/00 – 12/01	\$2,150,048	100%
Intergovernmental Personnel Act for Jianchun Huang	US Department of Interior	6/00 – 6/01	\$115,204	100%
2-D Total Dissolved Gas Model for Hells Canyon Dam	Idaho Power Corp, Boise, ID	12/99 – 8/00	\$192,000	100%
Numerical Modeling of Rocky Reach Dam	Chelan County PUD via ENSR Consulting	9/99 – 8/00	\$52,800	75%
Nursery Bridge Model	US Army Corps of Engineers, Walla Walla District (thru CH2M Hill, Boise, ID office)	8/99 – 9/99	\$14,000	100%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	7/99 – 6/00	\$600,000	100%
Juvenile Fish Passage at Rock Island and Rocky Reach Dams	Public Utility District No. 1 of Chelan County	7/99 – 6/00	\$75,000	100%
Numerical Modeling of Lower Granite Dam, Surface Bypass Channel	US Army Corps of Engineers, Walla Walla District (thru CH2M Hill, Boise, ID office)	4/99 – 3/00	\$97,700	75%
Hydraulic Model Testing of ESBS Perforated Plate Vibrations	US Army Corps of Engineers, Walla Walla District (thru Sverdrup Civil, Inc, Bellevue, WA office)	9/98 – 2/99	\$123,500	100%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	7/98 – 6/99	\$751,495	75%
Juvenile Fish Passage at Rock Island and Rocky Reach Dams	Public Utility District No. 1 of Chelan County	7/98 – 6/99	\$155,242	100%

Numerical Modeling of Lower Granite Dam, Surface Bypass Channel	US Army Corps of Engineers, Walla Walla District (thru Sverdrup Civil, Inc, Bellevue, WA office)	6/98 – 1/99	\$40,000	100%
Fabrication of Model Screen Components for Rocky Reach Dam	ENSR Consulting	6/98 – 8/98	\$28,250	100%
Physical Model Study of Stilling Basin for Yelm Hydroelectric Spillway No. 3	CH2M Hill, Boise, ID	4/98 – 9/98	\$25,000	100%
Ott Current Meter Calibration	ENSR Consulting	3/98 – 4/98	\$10,000	100%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	7/97 – 6/98	\$142,869	75%
Juvenile Fish Passage at Rock Island and Rocky Reach Dams	Public Utility District No. 1 of Chelan County	7/97 – 6/98	\$274,776	100%
Lower Granite Dam, Surface Bypass and Collection – Numerical Interpolation	US Army Corps of Engineers, Walla Walla District (thru CH2M Hill, Boise, ID office)	6/97 – 7/97	\$20,600	100%
Lower Granite Dam, SBC – Physical Modeling of Behavioral Guidance Structure	US Army Corps of Engineers, Walla Walla District (thru CH2M Hill, Boise, ID office)	6/97 – 7/97	\$23,317	100%
Headloss Evaluation of Intake Screens	Hendricks Screen Co	8/96 - 10/96	\$30,000	100%
Juvenile Fish Passage at Wanapum and Priest Rapids Dams	Public Utility District No. 2 of Grant County	7/96 – 6/97	\$1,038,596	75%
Juvenile Fish Passage at Rock Island and Rocky Reach Dams	Public Utility District No. 1 of Chelan County	7/96 – 6/97	\$254,995	100%
			<b>Total Grant and Contract Funding</b>	
			\$24,375,574	
			<b>Total Credited Grant and Contract Funding</b>	
			\$17,518,956	

\* If less than grant amount, give percent responsibility. For example, if the grant amount is \$100,000 and it is shared equally with a co-principal investigator, enter \$50,000 (50%).



**6.3 Participation** (5 hours/week or more) in research contracts and/or grants

Contract or Grant Title

**6.4 Other important facts or information**

(Research proposals submitted, new research programs under development, seminars presented, etc.)

*Proposals Submitted – Unfunded*

<b>Contract or Grant Title</b>	<b>Sponsor</b>	<b>Start and End Date</b>	<b>Funding</b>	<b>% Credit</b>
IGERT: Integrating Physical – Chemical Models with Ecological Responses for Analysis of Large Scale Biodiversity Protection and Restoration Concepts, Preliminary Proposal	NSF	7/06 – 6/11	To be determined	30
Experimental and Computational Study of Bubbly Flow and Total Dissolved Gas Downstream of Spillways	NSF	8/05 – 7/08	\$358,124	50
International: Global Awareness Certificate Program in Water Resources Management for IRES	NSF	5/05 – 4/08	\$104,766	50
Hydraulic Model Study: Cabinet Gorge Bypass Tunnel Project	Avista Corp	4/05 – 3/06	\$323,100	60
IIHR – NCHC Collaborative Research: Cyberinfrastructure-Based Adaptive Integrated Management for the Tan-Sui River Basin – Taiwan	NSF	1/05 – 12/07	\$187,511	30
Development of Numerical Tools for Multidimensional TDG Prediction	US Dept. of Defense, Army	1/05 – 12/05	\$141,102	50
Field Measurement of the Two-Phase Flow Downstream of Spillways for Total Dissolved Gas Computations	US Dept. of Defense, Army	1/05 – 12/05	\$107,599	50
International Workshop on Large Scale Ecosystems: A Comparative Study between the Mississippi System in North America and the Parana System in South America	NSF	5/04-12/04	\$26,250	75
Center for Sustainable Transportation Biofuels	DOE	9/03 – 8/08	\$9,001,872	10
Modification 3 Lower Granite Surface Bypass and Collection Modified Prototype Behavioral Guidance Structure	CH2MHill	3/03 – 2/04	\$186,049	75
Acquisition of Laboratory and Field Equipment for the Newly Established Mississippi Riverside Environmental Research Station to Investigate Mussel Habitats in the Upper Mississippi River	NSF	10/02 – 9/03	\$91,761	50
Physical Modeling of the Ice Harbor North Shore AWS Pump Sump	CH2MHill	7/02 – 6/03	\$120,000	75

Enhancement and Application of CFD for Modeling Fish Passage Facilities	US Dept of Defense, Army	5/02 – 4/05	\$142,000	75
Design of Flume fo the University of Idaho	University of Idaho	3/02 – 2/03	\$21,500	75
Cost Estimate for Rocky Reach Weir Box Modeling	Chelan County PUD	1/02 – 12/02	\$29,265	100
Hells Canyon Dam Training Video	Idaho Power Company	12/01 – 11/02	\$11,200	100
Using Induced Turbulence to Assist Downstream-Migrating Juvenile Salmonids	Washington State University	5/01 – 4/02	\$13,500	100
Evaluating Hydrodynamics Fish Behavior and Economic Impacts to Evaluate Prototype Fish-Passage Facilities on the Columbia and Snake Rivers	EPA	10/98 – 9/99	\$100,000	50
Numeric Interpolation Surface Bypass and Collection Lower Granite Dam Modification	CH2MHill	10/97 – 9/98	\$62,156	75

### *Seminars Presented for Development of new Projects*

“Presentation of Modeling Capabilities and Qualifications” to U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington, November, 1996.

“Numerical Modeling of Fish Passage Facilities” to Grant County PUD, Chelan County PUD and USACOE Walla Walla District Office, Wanapum Village, Washington, July, 1997.

“Numerical Modeling of Fish Passage Facilities at Rocky Reach” to Chelan County PUD, Wenatchee, Washington, July, 1999.

“Physical Modeling of Spillway Deflectors” to Idaho Power Corp, Boise, Idaho, October, 1999.

“Presentation of Modeling Capabilities and Qualifications” to Foster Wheeler Inc, Bothell, Washington, July, 2001.

“Presentation of Modeling Capabilities and Qualifications” to U.S. Army Corps of Engineers, Seattle District, Seattle, Washington, November, 2001.

### **6.5 Research highlights** (one paragraph)

In recent research activities, my students and I have focused on numerous laboratory, field and computational studies related to environmental hydraulics and river restoration research. One large research and design project that we have conducted has been related to fish passage on the Snake and Columbia Rivers. Our group has become known as leading experts in the field of modeling and design of fish passage facilities. In particular, our research on spillway deflector design for mitigation of total dissolved gas has received attention throughout the Northwestern United States. Our projects have resulted in the expansion of ‘standard of the industry’ designs for spillway deflectors to ‘state of the art’ solutions for unconventional dams such as Rock Island Dam and Hells Canyon Dam. Additionally, the IIHR numerical modeling has continually met the challenges of application to innovative designs for juvenile fish passage facilities. This computational research has led the field of numerical modeling of fish passage facilities and continues to set the standard for cost effectiveness and scientific complexity in hydraulic engineering. Our computational models are now directly coupled with an ecological model for juvenile swim path selection developed by Dr. John Nestler at the US Army Corps of Engineers (ERDC) and to a individual-based ecological model for predicting the life stages of freshwater mussels in the Mississippi River. The coupling between fish response and hydrodynamics allows design teams to develop passage facilities with an increasing likelihood of successfully collecting and passing juvenile salmonids. Lastly, students working with our group, at the undergraduate and graduate levels, are receiving unprecedented interest from consulting engineers, hydropower owners, federal laboratories and regulatory agencies for post graduate employment.

7. **Publications.** (List in chronological order with each publication shown with proper order of authors, inclusive page numbers, and in correct bibliographical form.)

**7.1 Books and monographs.** Limit to textbooks, research monographs, conference/symposium/congress proceedings, handbooks, etc., of which you are an author or an editor. Do not include articles or chapters in such media.)

**7.2 Articles in technical journals with rigorous review procedures.** (Include notes, discussions, letters to editor, etc., which are published in such journals and those articles or chapters in a meeting's printed record if that record utilizes review procedures equivalent to those for archive journals.)

1. Lee, H., Lin, C.L., and Weber, L.J., "Application of a Nonhydrostatic Numerical Model to Design of Spillways," Journal of Hydraulic Engineering, ASCE, submitted for review September 2005.
2. Turan, C., Carrica, P.M., Lyons, T., Hay, D. and Weber, L.J., "A Three-Dimensional Numerical Model and Experimental Study of the Free Surface Flow in an Ogee-Crested Fish Bypass," Journal of Hydraulic Engineering, ASCE, submitted for re-review January 2006.
3. McCoy, A.W., Constantinescu, S.G., Weber, L.J. (2006). "A numerical investigation of the dynamics of coherent structures and mass exchange processes in channel flow with two lateral submerged groynes." submitted to Water Resources Research.
4. McCoy, A.W., Constantinescu, S.G., Weber, L.J. (2006). "Numerical investigation of flow hydrodynamics in a channel with a series of groynes." submitted to Journal of Hydraulic Engineering.
5. Nestler, J.M., Baigun, C.R., Oldani, N. and Weber, L.J. (2006). "Contrasting the Middle Parana and Mississippi Rivers to Develop a Template for Restoring Large Floodplain River – Ecosystems," Journal of River Basin Management, in press.
6. Morales, Y., Weber, L.J., Mynett, A.E. and Newton, T.J., "Simulating the Effect of Invasive Species Dispersion on Native Freshwater Mussel Communities" Journal of River Basin Management, in press.
7. McCoy, A., Constantinescu, S.G. and Weber, L.J., "Exchange processes in a channel with two emerged groynes," Journal of Flow, Turbulence, and Combustion, in press.
8. Weber, L.J., Goodwin, R.A, Li, S. and Nestler, J.M., "Application of an Eulerian-Lagrangian-Agent Method for Design of Juvenile Fish Passage Facilities," Journal Hydroinformatics, IAHR, Vol. 8, No. 4, (2006), pp 271-295.
9. Li, S., Silva, J.M., Lai, Y.G., Weber, L.J., and Patel, V.C., "Three-Dimensional Simulation of Flows in Practical Water-Pump Intakes," Journal of Hydroinformatics, IAHR, Vol. 8, No. 2, (2006) pp. 111-124.
10. Morales, Y., Weber, L.J., Mynett, A.E. and Newton, T.J., "Effects of Substrate and Hydrodynamic Conditions on the Formation of Mussel Beds in a Large River" Journal of the North American Benthological Society, Vol. 25, No. 3, (2006) pp. 664-676.
11. Morales, Y., Weber, L.J., Mynett, A.E. and Newton, T.J., "Mussel Dynamics Model: a tool for analysis of freshwater mussel communities" Journal of Ecological Modeling, Vol. 197 (2006) pp. 448-460.
12. Ouyang, H., Weber, L.J. and Odgaard, A.O. "Design Optimization of a Two-Dimensional Hydrofoil by Applying a Genetic Algorithm," Journal of Engineering Optimization, Vol. 38, No. 5, (2006) pp. 529-540.
13. Goodwin, R.A, Nestler, J.M., Anderson, J.J., Weber, L.J. and Loucks, D.P. "Decoding 3-D Movement Rules of Fish for Forecasting using a Eulerian-Lagrangian-Agent Method (ELAM)," Journal of

Ecological Modeling, 192 (2006) 197-223.

14. Lin, C.L., Lee, H., Lee, T. and Weber, L.J., "A Level Set Characteristic Galerkin Finite Element Method for Free Surface Flows" Int. J. for Numer. Meth. in Fluids, Vol. 49, June 2005, pp 521-547.
15. Weber, L.J., Huang, H., Lai, Y.G. and McCoy, A., "Modeling Total Dissolved Gas Production and Transport Downstream of Spillways - Three-Dimensional Model Development and Applications" Journal of River Basin Management, IAHR, Vol. 2, No. 3, December 2004.
16. Huang, J., Patel, V.C., Lai, L.G. and Weber, L.J., "Simulation Study of Flow Through a Reach of the Chattahoochee River," Journal of Hydraulic Research, IAHR, Vol. 42, No. 5, December 2004, 487-491.
17. Li, S., Lai, Y.G., Weber, L.J., Silva, J.M. and Patel, V.C., "Validation of a Three-Dimensional Numerical Model for Water-Pump Intakes," Journal of Hydraulic Research, IAHR, Vol. 42, No. 3, 2004, 282-292.
18. Lai, Y.G., Weber, L.J., and Patel, V.C., "A Non-hydrostatic Three-Dimensional Model for Hydraulic Flow Simulation – Part II: Validation and Application," Journal of Hydraulic Engineering, ASCE, Vol. 129, No. 3, March 2003, pp 206-214.
19. Lai, Y.G., Weber, L.J., and Patel, V.C., "A Non-hydrostatic Three-Dimensional Model for Hydraulic Flow Simulation – Part I: Formulation and Verification," Journal of Hydraulic Engineering, ASCE, Vol. 129, No. 3, March 2003, pp 196-205.
20. Huang, J., Weber, L.J. and Lai, Y.G., "Three-Dimensional Numerical Study of Flow in Open-Channel Junctions", Journal of Hydraulic Engineering, ASCE, Vol. 128, No. 3, March, 2002.
21. Weber, L.J., Shumate, E.D. and Mawer, N., "Experimental on Flow at a 90° Open-Channel Junction ", Journal of Hydraulic Engineering, ASCE, Vol. 127, No. 5, May, 2001.
22. Muste, M., Meselhe, E.A., Weber, L.J., and Bradley, A.A., "Coupled Physical-Numerical Analysis of Flows in Natural Waterways", Journal of Hydraulic Research, IAHR, Vol. 39, No. 1, 2001.
23. Meselhe, E.A., Weber, L.J., Odgaard, A.J., and Johnson, T., "Numerical Modeling for Fish Diversion Studies", Journal of Hydraulic Engineering, ASCE, Vol. 126, No. 5, May, 2000.
24. Sinha, S.K., Weber, L.J. and Odgaard, A.J., "Using Computational Tools to Enhance Fish Bypass", HydroReview, Vol. 18, No. 1, February, 1999.
25. Weber, L.J. and Nixon, W.A., "Fatigue of Freshwater Ice", Cold Regions Science and Technology. Vol. 26, No. 2, October, 1997, pp. 153-164.
26. Den Bleyker, J.S., Weber, L.J. and Odgaard, A.J., "Development of a Flow Spreader for Fish Bypass Outfalls", North American Journal of Fisheries Management. Vol. 17, No. 3, August, 1997.
27. Weber, L.J. and Nixon, W.A., "Fracture Toughness of Freshwater Ice - Part I Experimental Technique and Results", ASME Journal of Offshore Mechanics and Arctic Engineering, Vol. 118, May 1996, pp. 135-140.
28. Weber, L.J. and Nixon, W.A., "Fracture Toughness of Freshwater Ice - Part II Analysis and Micrography", ASME Journal of Offshore Mechanics and Arctic Engineering, Vol. 118, May 1996, pp. 141-147.

29. Nixon, W.A. and Weber, L.J., "Reinforcement Percentage Effects on Bending Strength of Soil-Ice Mixtures", ASCE Journal of Cold Regions Engineering, Vol. 9, 1995, pp. 152-163.
30. Nixon, W.A. and Weber, L.J., "Fatigue-Crack Growth in Fresh-Water Ice: Preliminary Results", Annals of Glaciology, Vol. 15, 1991, pp. 236-241.
31. Nixon, W.A. and Weber, L.J., "Flexural Strength of Sand-Reinforced Ice", ASCE Journal of Cold Regions Engineering, Vol. 5, 1991, pp. 14-27.

**7.3 Articles, chapters, abstracts, and summaries in research monographs, conference/symposium/congress proceedings, handbooks, etc.** (Generally most articles published in the cited media. Also papers printed by a society as a preprint/reprint and not published in any other form.

1. Goodwin, R.A., Smith, D.L., Nestler, J.M., Anderson, J.J., Weber, L.J., and Stockstill, R.L., "Agent-Based Approach Enhances Conventional Aquatic Habitat Description & Species Utilization Methods," ASCE EWRI World Environmental and Water Resources Congress, CD-ROM, Omaha, May 21-25, 2006.
2. Li, S. and Weber, L.J., "Three-Dimensional Hydrodynamic Simulation of Flows for Fish Passage at the Dalles Dam," ASCE EWRI World Environmental and Water Resources Congress, CD-ROM, Omaha, May 21-25, 2006.
3. Muste, M., Weber, L.J., Lyons, T., Haug, P., and Hay, D., "Model Study of Emergency Stoplogs Deployed in a Complex Flow Field – 1: Experimental Results," ASCE EWRI World Environmental and Water Resources Congress, CD-ROM, Omaha, May 21-25, 2006.
4. Politano, M.S., Carrica, P.M., Turan, C., Weber, L.J., and Hay, D., "Model Study of Emergency Stoplogs Deployed in a Complex Flow Field – 2: Numerical Results," ASCE EWRI World Environmental and Water Resources Congress, CD-ROM, Omaha, May 21-25, 2006.
5. Politano, M.S., Haque, M.M., Constantinescu, G.S., and Weber, L.J., "A Three-Dimensional Thermal Model for McNary Dam," ASCE EWRI World Environmental and Water Resources Congress, CD-ROM, Omaha, May 21-25, 2006.
6. Turan, C., Carrica, P.M., Politano, M.S., and Weber, L.J., "Water Entrainment and Mixing due to Spillway Discharges," ASCE EWRI World Environmental and Water Resources Congress, CD-ROM, Omaha, May 21-25, 2006.
7. Turan, C., McDaniel, B., Politano, M.S., Carrica, P.M., and Weber, L.J., "A Study of the Free Surface Flow on Brownlee Dam," ASCE EWRI World Environmental and Water Resources Congress, CD-ROM, Omaha, May 21-25, 2006.
8. Zeng, J., Constantinescu, G.S., and Weber, L.J., "Validation of a Computational Model to Predict Suspended and Bed Load Sediment Transport and Equilibrium Bed Morphology in Open Channels," RCEM 2005, River, Coastal, and Estuarine Morphodynamics, Urbana, October 4-7, 2005.
9. Morales, Y., Minett, A.E. and Weber, L.J., "Analysis of Mussel Population Dynamics," 17<sup>th</sup> Canadian Hydrotechnical Conference, Edmonton, Alberta, August 17 – 19, 2005.
10. Morales, Y., Mynett, A.E. and Weber, L.J. "Modelling freshwater mussel dynamics," Proc. IAHR Congress XXXI, 11-16 September 2005, Seoul, Korea, pp. 1948-1956.

11. Kim, D., Muste, M.V. and Weber, L.J. "Development of New ADCP Post-Processing and Visualization Capabilities," Proc. IAHR Congress XXXI, 11-16 September 2005, Seoul, Korea, pp. 338-347.
12. Kim, Y., Muste, M.V., Kruger, A., Krajewski, W.F. Bradley, A.A. and Weber, L.J. "Real-Time Stream Monitoring using Mobile Large-Scale Particle Image Velocimetry," Proc. IAHR Congress XXXI, 11-16 September 2005, Seoul, Korea, pp. 386-395.
13. Zeng, J., Constantinescu, S.G., and Weber, L.J. "A Fully 3D Non-Hydrostatic Model for Prediction of Flow, Sediment Transport, and Bed Morphology in Open Channels," Proc. IAHR Congress XXXI, 11-16 September 2005, Seoul, Korea, pp. 1327-1328.
14. McCoy, A., Constantinescu, S.G., and Weber, L.J. "LES Simulation of Contaminant Removal from the Embayment Area between Two Vertical Groynes in a Channel," Proc. IAHR Congress XXXI, 11-16 September 2005, Seoul, Korea, pp. 1327-1328.
15. Ooi, S.K., Constantinescu, S.G., and Weber, L.J. "2D Large Eddy Simulation of Lock-Exchange Gravity Current Flows," Proc. IAHR Congress XXXI, 11-16 September 2005, Seoul, Korea, pp. 2081-2093.
16. Haque, M.D., Koken, M., Constantinescu, S.G., and Weber, L.J. "Use of a 3D RANS Model to Predict Stratification Effects Related to Fish Passage at Hydropower Dams," Proc. IAHR Congress XXXI, 11-16 September 2005, Seoul, Korea, pp. 2464-2476.
17. Haque, M.D., and Weber, L.J., "Validation of a 3D RANS Model to Predict Flow and Stratification Effects in River-Dam Forebays," Proceedings of 2005 EWRI Congress, Anchorage, AK, May 15 – 19, 2005.
18. McCoy, A., Constantinescu, S.G., and Weber, L.J., "Coherent Structures in a Channel with Groyne Fields: A Numerical Investigation using LES," Proceedings of 2005 EWRI Congress, Anchorage, AK, May 15 – 19, 2005.
19. Politano, M., Carrica, P.M., Turan, C., and Weber, L.J., "Multidimensional Simulation of Two-Phase Flow Downstream of Spillways for Total Dissolved Gas Prediction," Proceedings of 2005 EWRI Congress, Anchorage, AK, May 15 – 19, 2005.
20. Young, N., McCoy, A., and Weber, L.J., "Hydrodynamic Investigation of Upper Mississippi River Freshwater Mussel Habitats," Proceedings of 2005 EWRI Congress, Anchorage, AK, May 15 – 19, 2005.
21. Hoschek, S.S., Carrica, P.M. and Weber, L.J., "Bubble Entrainment and Distribution in a Model Spillway with Application to TDG Minimization," Proceedings of 2005 EWRI Congress, Anchorage, AK, May 15 – 19, 2005.
22. McCoy, A., Constantinescu, S.G., and Weber, L.J., "Large Eddy Simulation of Mass Exchange Processes in Channel Flow with Spanwise Obstructions", International Conference on Computational Heat and Mass Transfer, Paris-Cachan, France, May 17-20, 2005.
23. McCoy, A., Constantinescu, S.G., and Weber, L.J., "Coherent Structures and Mass Exchange Processes in Channel Flow with Spanwise Obstructions", ERCOFTAC International Symposium on Engineering Turbulence Modelling and Measurements, ETMM6, Sardinia, Italy, May 23-25, 2005.
24. Goodwin, R.A., Nestler, J.M., Anderson, J.J. and Weber, L.J., "Virtual Fish to Evaluate Structures for Endangered Species", Proceedings of the 5<sup>th</sup> International Symposium on Ecohydraulics, Madrid,

Spain, June 12 – 17, 2004.

25. Goodwin, R.A., Nestler, J.M., Anderson, J.J. and Weber, L.J., “Forecast Simulations of 3-D Fish Response to Hydraulic Structures”, Proceedings of 2004 EWRI Congress, Salt Lake City, UT, June 27 – July 1, 2004.
26. Politano, M., Carrica, P., Turan, C. and Weber, L.J., “Prediction of the Total Dissolved Gas Downstream of Spillways Using a Two-Phase Flow Model”, Proceedings of 2004 EWRI Congress, Salt Lake City, UT, June 27 – July 1, 2004.
27. Young, N. and Weber, L.J., “Analysis of Freshwater Mussel Habitat Hydrodynamics through Field Investigation and Numerical Simulation,” Proceedings of the International Conference on Civil and Environmental Engineering - ICCEE, Higashi-Hiroshima, Japan, Oct. 23-24, 2003, pp. 117-125.
28. McCoy, A. and Weber, L.J., “Application of Three Dimensional Hydrodynamic and Total Dissolved Gas Models to Rock Island Dam Spillway,” Proceedings of the International Conference on Civil and Environmental Engineering - ICCEE, Higashi-Hiroshima, Japan, Oct. 23-24, 2003, pp. 167-176.
29. Morales, Y., Weber, L.J. and Mynett, A.E., “Habitat Suitability Analysis for Mussels in the Mississippi River,” Proc. Of the International Seminar in Hydroinformatics and Water Resources Management, AGUA, Cartagena, Columbia, pp. 39-48, September 2003.
30. Young, N. Weber, L.J. and Nakato, T., “Hydrodynamic Characterization of Freshwater Mussel Habitats in the Upper Mississippi River,” Inland Waters: Research, Engineering and Management, Proc. IAHR Congress XXX, 24-29 August 2003, Thessaloniki, Greece, C, II, pp. 497-503 (Reprint 1629).
31. Morales, Y., Mynett, A., and Weber, L.J., “*An Individual Based Model for Freshwater Mussels of the Mississippi River*,” Inland Waters: Research, Engineering and Management, Proc. IAHR Congress XXX, 24-29 August 2003, Thessaloniki, Greece, C, II, pp. 497-503 (Reprint 1630).
32. Morales, Y., Weber, L.J., Slaughter, C.W. and Haak, A., “Decision Support System of the Lake Amatitlan: Hydrodynamic and Sediment Transport Models,” Proceedings of the 5<sup>th</sup> International Conference on Hydroinformatics, Cardiff, UK, August 2002.
33. Nielsen, K., Weber, L.J., and Muste, M.V., “Particle Image Velocimetry (PIV) Measurements in Plunging Jets”, Proceedings of Hydraulic Measurements and Experimental Methods, Estes Park, CO Jul 28 - Aug. 1, 2002.
34. Goodwin, R.A., Nestler, J.M. Weber, L.J., Lai, Y.G. and Loucks, D.P. (2001). “Ecologically Sensitive Hydraulic Design for Rivers: Lessons learned in coupled modeling for improved fish passage.” Proceedings of the ASCE Specialty Conference on Wetlands Engineering and River Restoration, Reno, Nevada, August 2001.
35. Lai, Y. and Weber, L.J., “Three-Dimensional Hydraulic Simulation of Wetting-Drying Process”, Proceedings of The 29<sup>th</sup> IAHR Congress, Bejiing, China, September 17 -21, 2001, pp 171-176.
36. Weber, L.J., Huang, H., and Lai, Y., “Numerical Modeling of Dissolved Gas Supersturation of a Spillway”, Proceedings of The 29<sup>th</sup> IAHR Congress, Bejiing, China, September 17 -21, 2001, pp 785-792.
37. Hotchkiss, R.H., Weber, L.J., and Lai, Y.G., “Along the Far Computational Horizon: Simulating Fluid / Fish Interaction,” Proceedings of ASCE World Water and Environmental Resources Congress, May 20-24, 2001, Orlando, FL.



38. Lai, Y.G., Weber, L.J., and Moedinger, J., "A Three Dimensional Unsteady Model for Simulating River Flows," Proceedings of ASCE World Water and Environmental Resources Congress, May 20-24, 2001, Orlando, FL.
39. Nielsen, K., and Weber, L.J., "Submergence Effects on Discharge Coefficients for Rectangular Orifices", Proceedings of the 2000 International Water Resources Engineering Conference, Minneapolis, MN, Aug. 7 – 10, 2000.
40. Weber, L.J., Lai, Y.G., Blank, J.C. and Andrade, F., "Rocky Reach Dam: A Comprehensive Look at Calibration of a CFD Model Applied to Fish Passage", Proceedings of the 4<sup>th</sup> International Conference on Hydroinformatics, Cedar Rapids, IA, July 24-27, 2000.
41. Lai, Y.G., Weber, L.J., and Patel, V.C., "U2RANS: A Comprehensive Hydraulic Flow Simulation Code – Its Development and Applications", Proceedings of the 4<sup>th</sup> International Conference on Hydroinformatics, Cedar Rapids, IA, July 24-27, 2000.
42. Kruger, A., Weber, L.J., and Muste, M.V., "Real-Time Measurements of Free-Surface Velocity Using Imaging Techniques", Proceedings of the 4<sup>th</sup> International Conference on Hydroinformatics, Cedar Rapids, IA, July 24-27, 2000.
43. Ouyang, H., Weber, L.J. and Odgaard, A.J., "Shape Optimization of a 2-Dimensional Air Foil Using a Genetic Algorithm", Proceedings of the 4<sup>th</sup> International Conference on Hydroinformatics, Cedar Rapids, IA, July 24-27, 2000.
44. Nielsen, K.D., Weber, L.J., and Muste, M., "Capabilities and Limits for ADV Measurements in Bubbly Flows", Proceedings of the 28<sup>th</sup> IAHR Congress, Graz, Austria, Aug. 22-27, 1999.
45. Weber, L.J., Holly, F.M. and Nielsen, K., "Teaching of Hydraulic Design: Perspectives from the University of Iowa and Iowa Institute of Hydraulic Research", Proceedings of the 1999 International Water Resources Engineering Conference, Seattle, WA, Aug. 8 – 11, 1999.
46. Nielsen, K.D. and Weber, L.J., "International Perspectives in Water Resources Planning", Proceedings of the 1999 International Water Resources Engineering Conference, Seattle, WA, Aug. 8 – 11, 1999.
47. Nielsen, K.D., Weber, L.J., and Anderson, K., "Model Studies of Stilling Well Energy Dissipators", Proceedings of the 1999 International Water Resources Engineering Conference, Seattle, WA, Aug. 8 – 11, 1999.
48. Weber, L.J., Nielsen, K., and Haug, P.E., "Plunge Pool Solutions for the Rock Island Dam Notched Spillways", Proceedings of the 1999 International Water Resources Engineering Conference, Seattle, WA, Aug. 8 – 11, 1999.
49. Weber, L.J., and Haug, P.E., "Wanapum Dam Spillway Deflector Modeling", Proceedings of the 1999 International Water Resources Engineering Conference, Seattle, WA, Aug. 8 – 11, 1999.
50. Ouyang, H., Blank, J., Weber, L.J., and Odgaard, A.J., "Integration of Hydrodynamic Model and Monte-Carlo Simulation in Prediction of Fish Distribution", Proceedings of the 1999 International Water Resources Engineering Conference, Seattle, WA, Aug. 8 – 11, 1999.
51. Huang, H., Young, N., and Weber, L.J., "Experimental and Numerical Modeling of Combining Flows at an Open Channel Junction", Proceedings of the 1999 International Water Resources Engineering Conference, Seattle, WA, Aug. 8 – 11, 1999.
52. Weber, L.J., Meselhe, E.A. and Odgaard, A.J., "Combining Hydrodynamic and Fish Tracking Information: The next approach to modeling fish passage facilities", Hydroinformatics 98,

Copenhagen, Denmark, August 24 – 26, 1998.

53. Nielsen, K.D., Weber, L.J. and Bennion, D.K., “Design Challenges of the Lower Granite Dam Behavioral Guidance Structure for Guiding Migrating Fish in the Powerhouse Forebay”, HydroVision 98, Reno, Nevada, July 28 – 31, 1998.
54. Huang, J. and Weber, L.J., “Numerical Simulations of the Forebay of Lower Granite Lock and Dam”, HydroVision 98, Reno, Nevada, July 28 – 31, 1998.
55. Shumate, E. and Weber, L.J., “Experimental Description of Combining Flows at an Open Channel Junction”, Proceedings of the 1998 International Water Resources Engineering Conference, Memphis, TN, Aug. 3 – 7, 1998.
56. Nielsen, K.D., Muste, M. and Weber, L.J., “Plunging Jet Measurement Improvements Using ADV”, Proceedings of the 1998 International Water Resources Engineering Conference, Memphis, TN, Aug. 3 – 7, 1998.
57. Meselhe, E.A. and Weber, L.J., “Validation of a 3-Dimensional Numerical Model Using Field Measurement in a Large Scale River Reach”, Proceedings of Environmental and Coastal Hydraulics: Protecting the Aquatic Habitat, Theme B, Volume 2, The 27<sup>th</sup> IAHR Congress, San Francisco, CA, Aug. 10 – 15, 1997, pp 827 – 832.
58. Hay, D., Stronach, J., Weber, L.J. and Sweeney, C., “Linking Kinematic and Physical Hydraulic Models”, Proceedings of Energy and Water: Sustainable Development, Theme D, Water for a Changing Global Community, The 27<sup>th</sup> IAHR Congress, San Francisco, CA, Aug. 10 – 15, 1997, pp 393 – 398.
59. Weber, L.J. and Mannheim, C.O., “A Unique Approach for Physical Model Studies of Nitrogen Gas Supersaturations”, Proceedings of Energy and Water: Sustainable Development, Theme D, Water for a Changing Global Community, The 27<sup>th</sup> IAHR Congress, San Francisco, CA, Aug. 10 – 15, 1997, pp 518 – 523.
60. Weber, L.J. and Elder, R.A., “Physical Model Studies of a Spillway Bulkhead for Passage of Downstream Migrating Juvenile Salmonids”, Proceedings of Rivertech 96, 1st International Conference on New/Emerging Concepts for Rivers, Chicago, Illinois, 1996.
61. Weber, L.J., and Odgaard, A.J., “Physical Model Studies of Dissolved Gas Supersaturation at Wanapum Dam”, Proceedings of the North American Water and Environment Congress '96, Anaheim, California, 1996.
62. Den Bleyker, J. and Weber, L.J., “Mitigation of Predation at a Juvenile Salmon Outfall Site”, Proceedings of the North American Water and Environment Congress '96, Anaheim, California, 1996.
63. Cherian, M.P., Allen, M. and Weber, L.J., “Flow Through Vertical Barrier Screens - Numerical and Experimental Results”, Proceedings of the North American Water and Environment Congress '96, Anaheim, California, 1996.
64. Weber, L.J. and Nixon, W.A., “Hysteretic Behaviour in Ice Under Fatigue Loading”, Proceedings of the Fifteenth International Conference on Offshore Mechanics and Arctic Engineering, Florence, Italy, June, 1996, pp. 75-81.
65. Weber, L.J., Weitkamp, D., Hay, D., Odgaard, A.J. and Parameswar, C., “Development of a Juvenile Fish Outfall Structure”, Water Power '95 Proceedings of International Conference on Hydropower, Ed. J. C Cassidy, 1995, pp 47- 56.

66. Elder, R., Odgaard, A.J., Patel, V.C., Sinha, S., Sotiropoulos, F. and Weber, L.J., "The Next Generation of Solution Techniques for Three-Dimensional Hydraulic-Engineering Problems," Proceedings of the Advances in Hydro-Science and Engineering, Beijing, China, March, 1995, pp. 2187-2193.
67. Allen, M, Elder, R.A., Hay, D., Odgaard, A.J., Weber, L.J. and Weitkamp, D., "Evaluation of Gatewell Flows for Fish Bypass at a Large Hydroelectric Plant", Proceedings of the First International Conference on Water Resources Engineering, San Antonio, Texas, Eds. W. Espey and P. Combs, 1995, pp. 534-538.
68. Weber, L.J. and Nixon, W.A., "Use of a Low Powered Laser to Measure Crack Front Development", Proceedings of the Twelfth International Conference on Port and Ocean Engineering Under Arctic Conditions, Hamburg, Germany, 1993.
69. Nixon, W.A. and Weber, L.J., "Preliminary Experiments of Creep Crack Growth in Freshwater Ice", Ice Mechanics 1993, ASME AMD, 163, June 1993, pp. 273-280.
70. Nixon, W.A., Marcellus, R.W., and Weber, L.J., "Elastic Analysis of Stresses in Ice Structure Interaction", "Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering", June, 1993, vol. 4, pp. 83-88.
71. Weber, L.J. and Nixon, W.A., "Application of Scanning Electron Microscopy in Fracture and Fatigue of Granular Polycrystalline Ice", Proceedings of the Eleventh International Association of Hydraulic Researchers Symposium of Ice, Banff, Alberta, Canada, Vol. 2, 1992, pp. 1127-1139.
72. Weber, L.J. and Nixon, W.A., "Fracture Toughness of Granular Freshwater Ice", Proceedings of the Eleventh International Conference on Offshore Mechanics and Arctic Engineering, Calgary, Canada, 1992, vol. 4.
73. Weber, L.J. and Nixon, W.A., "Crack Opening and Propagation in S2 Freshwater Ice", Proceedings of the Tenth International Conference on Offshore Mechanics and Arctic Engineering, Stavanger, Norway, Vol. 4, 1991, pp. 245-252.
74. Weber, L.J. and Nixon, W.A., "The Effect of Loading Rate on the Bending Strength of Alluvium Reinforced Ice", Sixth International Cold Regions Engineering Specialty Conference, Hanover, New Hampshire, 1991, pp. 71-84.
75. Weber, L.J. and Nixon, W.A., "The Effect of Soil Type on the Bending Strength of Alluvium Reinforced Ice", Proceedings of the Tenth International Association of Hydraulic Researchers Symposium of Ice, Espoo, Finland, 1990, pp. 486-499.
76. Nixon, W.A. and Weber, L.J., "The Effect of Specimen Size on the Bending Strength of Alluvium Reinforced Ice", Proceedings of the Ninth International Conference on Offshore Mechanics and Arctic Engineering, Houston, vol. 4, 1990, pp. 217-222.

**7.4 Articles published in popular journals or journals with moderate review procedures or presented at a meeting and for which the society or organization does not provide a permanent printed version of article.**

**7.5 Other technical publications (book and paper reviews, reports, theses, and dissertations.)**

1. Ooi, S.K., Constantinescu, S.G., and Weber, L.J., "Numerical Simulations of Lock-Exchange Gravity-Driven Flows," IIHR Technical Report No. 450, June 2006.

2. Haug, P.E., and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XXV: Removal of Rock from Wanapum Dam Spillway Apron", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 340, June 2006.
3. Li, S. and Weber, L.J., "Numerical Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part VIII: Three-Dimensional Computational Fluid Dynamics Modeling of Fish Passage through Various Bypass Routes at Wanapum Dam: For Numerical Fish Surrogate Analysis, Fish Passage Radio-Telemetry Studies, and Future Unit Concept Assessment", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 339, June 2006.
4. Li, S. and Weber, L.J., "Numerical Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part VII: Comparison of the Three-Dimensional Computational Fluid Dynamics (CFD) Model Outputs with Physical Model Data of Forebay and Field Data of the Tailrace of Priest Rapids Dam", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 338, May 2006.
5. Lyons, T.C. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XXIV: Construction and Calibration of the 1:64 Priest Rapids Dam Comprehensive Tailrace Model", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 337, April 2006.
6. Li, S. and Weber, L.J., "Numerical Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part V: Three-Dimensional Computational Fluid Dynamics (CFD) Modeling of Fish Passage through Various Bypass Routes at Future Units of Wanapum Dam", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 336, April 2006.
7. Li, S. and Weber, L.J., "Numerical Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part III: Comprehensive Comparison of the Three-Dimensional Computational Fluid Dynamics (CFD) Model Outputs with Field Data of the Wanapum Dam Forebay and Tailrace", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 335, April 2006.
8. Li, S. and Weber, L.J., "Numerical Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part IV: A Comparison of Hydrodynamic Parameters Associated with Various Fish Passage Routes at Wanapum Dam", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 334, March 2006.
9. Lyons, T.C. and Weber, L.J., "Johnson Screens Underdrain Lateral Collapse Tests", Contracted by Johnson Screen Company, Minneapolis, MN, IIHR Limited Distribution Report No. 333, March 2006.
10. Lyons, T.C. and Weber, L.J., "Hydraulic Modeling for Brownlee Dam Power Canal Weir Design", Contracted by Idaho Power Company, Boise, ID, IIHR Limited Distribution Report No. 332, March 2006.
11. Haug, P.E., and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XXIII: Probable Maximum Flood Scour Study for Wanapum Dam", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. IIHR Limited Distribution Report No. 330, January 2006.
12. Lyons, T.C. and Weber, L.J., "Hydraulic Modeling for Brownlee Dam Spillway Deflector Design: Phase Two – Three Dimensional Model", Contracted by Idaho Power Company, Boise, ID. IIHR Limited Distribution Report No. 328, September 2005.

13. Lyons, T.C. and Weber, L.J., "Hydraulic Modeling for Brownlee Dam Spillway Deflector Design: Phase One – Two Dimensional Model", Contracted by Idaho Power Company, Boise, ID. [IIHR Limited Distribution Report No. 327](#), September 2005.
14. Weber, L.J., Constantinescu, G.S., Haque, M.M., and Koken, M., "McNary Dam Forebay Temperature Improvements Computational Fluid Dynamics (CFD) Numerical Model Study", Contracted by US Army Corps of Engineers, Walla Walla District Office, Walla Walla, WA. [IIHR Limited Distribution Report No. 326](#), September 2005.
15. Lyons, T.C., Haug, P.E., Carrica, P.M., and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XXII: Model Studies of a Future Unit Fish Bypass for Wanapum Dam", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. [IIHR Limited Distribution Report No. 325](#), May 2005.
16. Haug, P.E., and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XX: Wanapum Dam Gate Rating", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. [IIHR Limited Distribution Report No. 323](#), March 2005.
17. Li, S., Fitzgerald, C.R., Constantinescu, S.G., and Weber, L.J., "Three Dimensional Computational Fluid Dynamics (CFD) Modeling of the Dalles Dam Forebay Using Structured Grids," Contracted by US Army Corps of Engineers, Portland District Office, [IIHR Limited Distribution Report No. 321](#), February, 2005.
18. Weber, L.J., and Lyons, T.C., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XXI: Construction and Calibration of the 1:64 Priest Rapids Dam Comprehensive Forebay Model", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. [IIHR Limited Distribution Report No. 315](#), 2004.
19. McCoy, A.W. and Weber, L.J., "Three-Dimensional Hydrodynamic and Total Dissolved Gas Simulations of Rock Island Dam Spillway", Contracted by Public Utility District No. 1 of Chelan County, Wenatchee, WA. [IIHR Distribution Report No. 314](#), September 2003.
20. Lyons, T.C., Li, S. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XIX: Summary of Hydraulic and CFD Models for Priest Rapids Dam", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. [IIHR Limited Distribution Report No. 311](#), 2003.
21. Haug, P.E., Li, S. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XVIII: Summary of Hydraulic and CFD Models for Wanapum Dam", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. [Iowa Institute of Hydraulic Research Limited Distribution Report No. 310](#), 2003.
22. Haug, P.E., and Weber, L.J., "Hydraulic Model of Hells Canyon Dam for Spillway Deflector Design: Phase Two – Three Dimensional Model", Contracted by Idaho Power Co., Boise, ID. [Iowa Institute of Hydraulic Research Limited Distribution Report No. 304](#), March, 2002.
23. Dierking, P.B., and Weber, L.J., "Hydraulic Model of Hells Canyon Dam for Spillway Deflector Design: Phase One – Deflector Design", Contracted by Idaho Power Co., Boise, ID. [Iowa Institute of Hydraulic Research Limited Distribution Report No. 303](#), March, 2002.
24. Morales, Y. and Weber, L.J., "Hydrodynamic Model of the Villalobos River", [IIHR Technical Report No. 425](#), 2002.
25. Nestler, J.M., Goodwin, R.A., Weber, L.J. and Lai, Y.G., "Theoretical and Computational Templates for Juvenile Salmon Swim Path Selection in the Complex Hydrodynamic Environments of Rivers and

- Designed Hydraulic Structures”, US Army Corps of Engineers, ERCD/EL TR-00, November 2001.
26. Weber, L.J., “Review of ‘The Hydraulics of Open Channel Flow’ by J. Chanson”, Journal of Hydraulic Engineering, ASCE, pp. 241-245, Vol. 127, No. 3, March, 2001.
  27. Blank, J.C. and Weber, L.J., “Numerical Simulations of Fish Passage Facilities at Lower Granite Lock and Dam”, Work funded by US Army Corps of Engineers, Walla Walla District Office, Walla Walla, WA. Iowa Institute of Hydraulic Research Technical Report No. 412, 2000.
  28. Allen, M.E., Mannheim, C.O.M. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XVII: Physical Model Wanapum Dam Erosion Characteristics after Installation of Spillway Deflectors", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 286, 2000.
  29. Nielsen, K., Weber, L.J. and Haug, P., “Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XVI: 1:32.5 scale sectional model of Wanapum Dam spillway deflectors”, Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 284, 2000.
  30. Weber, L.J., Young, N. and Haug, P., "Hydraulic Model Testing of ESBS Perforated Plate Vibrations", for U.S. Army Corps of Engineers, Walla Walla District Office. Iowa Institute of Hydraulic Research Limited Distribution Report No. 282, 2000.
  31. Weber, L.J., Cherian, M.P., Allen, M.E. and Muste, M., “Headloss Characteristics for Perforated Plates and Flat Bar Screens”, Iowa Institute of Hydraulic Research Technical Report No. 411, 2000.
  32. Nielsen, K. and Weber, L., "Nursery Bridge Fishway and Marie Dorian Dam, Physical Modeling of Nursery Bridge Drop Structure Stilling Basin", Contracted by U.S. Army Corps of Engineers, Walla Walla District and CH2M Hill, Boise, Idaho. Iowa Institute of Hydraulic Research Technical Report No. 409, 1999.
  33. Nielsen, K. and Weber, L.J., “Yelm Hydroelectric Project: Physical Model Study of Stilling Basin for Spillway No. 3”, Iowa Institute of Hydraulic Research Technical Report No. 400, October, 1998.
  34. Nielsen, K. and Weber, L., "Lower Granite Dam Surface Bypass and Collection (SBC), Physical Modeling of Behavioral Guidance Structure", Contracted by U.S. Army Corps of Engineers, Walla Walla District and CH2M Hill, Boise, Idaho. Iowa Institute of Hydraulic Research Technical Report No. 393, 1998.
  35. DeJong, D. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XIV: Surface Collection Concepts for Wanapum Dam Forebay", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 269, 1998.
  36. Mannheim, C.O.M. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XIII: Physical Model Study of the Top Spill Bulkhead", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 266, 1997.
  37. Mannheim, C.O.M. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XII: Physical Model Study Data for Development of a Gas Concentration Computational Model", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. . Iowa Institute of Hydraulic Research Limited Distribution Report No. 265, 1997.

38. Mannheim, C.O.M. and Weber, L.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part XI: Spillway Deflector Design", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 264, 1997.
39. Den Bleyker, J., Weber, L.J. and Odgaard, A.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part X: Improvements to Outfall Plunge Characteristics", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 260, 1997.
40. Nielsen, K. and Weber, L., "Headloss Analysis of Single and Tee Style Intake Screens", Contracted by Hendrick Screen Company, Owensboro, KY. Iowa Institute of Hydraulic Research Limited Distribution Report No. 254, 1997.
41. Sinha, S.K., Weber, L.J. and Odgaard, A.J., "Numerical Model Studies for Fish Diversion at Priest Rapids /Priest Rapids Development, Part II: Flows Through Priest Rapids Dam Tailrace Reach", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 253, 1997.
42. Sinha, S.K., Weber, L.J. and Odgaard, A.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part IX: Identification of a Fish Bypass Outfall Location for Wanapum Dam Tailrace", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. Iowa Institute of Hydraulic Research Limited Distribution Report No. 252, 1996.
43. Den Bleyker, J., Weber, L.J. and Odgaard, A.J., "Hydraulic Model Studies for Fish Diversion at Wanapum/Priest Rapids Development, Part VIII: Identification of a Fish Bypass Outfall Location for Priest Rapids Tailrace", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. . Iowa Institute of Hydraulic Research Limited Distribution Report No. 238, 1996.
44. Weber, L.J., Odgaard, A.J. and Elder, R., "Study of the Effect of Withdrawal from a Vertical Slot Located Above a Rurbine Intake on the Near Surface Velocities", Contracted by Public Utility District No. 2 of Grant County, Ephrata, WA. . Iowa Institute of Hydraulic Research Limited Distribution Report No. 221, 1994.
45. Weber, L.J. and Odgaard, A.J., "Hydraulic Characteristics of Bar Screen Panels", Contracted by Cook Screen Technologies, Inc. Iowa Institute of Hydraulic Research Limited Distribution Report No. 215, 1993.
46. Weber, L.J., "A Study of Fracture Toughness and Fatigue of Freshwater Ice", Ph.D. Thesis, University of Iowa, Iowa City, Iowa, 1993.
47. Weber, L.J., "A Study of the Flexural Properties of Alluvium Reinforced Ice Beams", M.S. Thesis, University of Iowa, Iowa City, Iowa, 1990.

**7.6 Journals, publishers, and research supporting agencies for whom you have reviewed papers, books or proposals in the past three years.**

Department of Energy

American Society of Civil Engineering, Journal of Hydraulic Engineering

American Society of Civil Engineering, Journal of Cold Regions Engineering

International Association for Hydraulic Research, Journal of Hydraulic Research