

Philip B. Bedient, Ph.D., P.E.
Curriculum Vitae

ADDRESS:

Herman Brown Professor of Engineering
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EDUCATION:

B.S. Physics, University of Florida, Gainesville, Florida, 1969
M.S. Environmental Engineering, University of Florida, 1972
Ph.D. Environmental Engineering Sciences, University of Florida, 1975

PROFESSIONAL EXPERIENCE:

Chair – Department of Civil and Environmental Engineering, Rice University, Houston, TX – July 2019 to July 2022.
Herman Brown Professor of Engineering - Civil and Environmental Engineering - Rice University - July 2001 to present.
Professor - Environmental Engineering - Rice University - 1986 to 2001.
Professor and Chair - Department of Environmental Science and Engineering, Rice University, Houston, Texas, 1992 - 1999.
Associate Professor - Environmental Engineering – 1980 - 1986.
Assistant Professor - Environmental Engineering – 1975 - 1980.

SCIENTIFIC SOCIETIES:

American Society of Civil Engineers
American Institute of Hydrology
American Water Resources Association
Association of Environmental Engineering Professors
American Academy of Water Resources Engineers
American Geophysical Union

HONORS:

American Institute of Hydrology's Ray K. Linsley Award (2021)
Diplomate - Water Resources Engineer, American Academy of Water Resources Engineers (2008)
C.V. Theis Award from the American Institute of Hydrology (April 2007)
Fellow – American Society of Civil Engineers (April, 2006)
Endowed Chair – Herman Brown Professor in Engineering (July, 2001)
Shell Distinguished Chair in Environmental Science (1988-93)
Phi Beta Kappa

PROFESSIONAL COMMITTEES:

Chair, Academic Council, Interagency Flood Risk Management (InFRM) – NWS, USGS, and USACE – 2021 - present
TS Allison Recovery Project - Technical Advisory Committee - 2002-2003
Harris County Flood Control District – MaapNext TAG Chair – 2021-2022

National Academy of Engineers (National Research Council)

UNIVERSITY COMMITTEES:

Dean Review Committee – Department of Architecture, 2019
 Undergraduate Curriculum Committee, 2005-current
 Accreditation (ABET/SACS) Committee, 2005-2019
 Space Planning Committee, 2005-2019
 BSCE Advisor 2007-current
 Search Committee, Civil and Environmental Engineering, (2020)

LICENSES:

Professional Engineer, State of Texas, Environmental Engineering (45626)
 Professional Hydrologist, American Institute of Hydrology

RESEARCH INTERESTS:

Hydrology and Flood Prediction, Flood Warning Systems, H&H Modeling, Flood Mitigation Studies, Water Resources Planning and Management, Community Outreach

COURSES & STUDENTS:

- CEVE 412 - Hydrology and Watershed Analysis
- CEVE 512 - Hydrologic Design Laboratory
- CEVE 101 - Fundamentals of Civil and Environmental Engineering
- CEVE 415/515 - Water Resources Planning and Management (50%)
- 20 Ph.D. and 75 M.S. degrees since 1975

RESEARCH STATEMENT:

Dr. Bedient continues to direct the Severe Storm Prediction, Education and Evacuation from Disasters (SSPEED) Center at Rice University as it entered its 13th year with funding exceeding \$10 million since 2009. The SSPEED Center focuses on research and education related to protection strategies for severe storm flooding and hurricane-related surge. In 2022, SSPEED received funding from both public and private institutions to improve flood warning, to research and communicate scientific knowledge regarding the development of a resilient Houston, and to educate through conferences, workshops, civic engagements, media outreach and educational activities.

The City of Houston Health Dept (HHS) funded Dr. Bedient for major research relating to COVID (\$230,000 from the COVID related Cares Act). The research involved developing advanced hydraulic models to track travel times to 39 waste water treatment plants throughout Houston. Statistical analyses were used to better understand these dynamic relationships. In October 2020 Dr. Bedient also received \$730,000 to develop flood information response systems (FIRST) for four watersheds in Houston, with radar rainfall used to predict inundation at selected critical facilities. In 2019, Dr. Bedient joined and later became chair of the Interagency Flood Risk Management (InFRM) Academic Council that advises the USACE, USGS, and NWS. The Council is positioned to receive funding from the Texas General Land Office on upcoming Harvey mitigation projects. He has continued in this role into 2023.

Dr. Bedient has worked extensively in Flood Alert Systems for the past twenty years, and he continues to expand flood warning technology throughout the region. The Texas Medical Center's Flood Alert System is one of the best and most accurate in the U.S. and has resulted in over 1.9 million in funding over the last decade.

In 2022, the SSPEED Center and its researchers were featured in local and national media stories this year, including television, print, radio and online sources. SSPEED has also promoted our research milestones and notable events through our website, sspeed.rice.edu, and by distributing e-Newsletters.

SURFACE WATER PROJECT (since 1990)

“Galveston Bay Park Plan Project” – City of Houston, Harris County, Port of Houston, \$1,000,000, January 2023-January 2026

“Ft Bend County Review of County-wide Watershed Study” – Ft Bend County TX, \$350,000, July 2022 – May 2023

“Navasota River Flood Study” – Texas A&M University at Galveston, \$50,000, December 2021 – November 2022

“COSI Sims Bayou” – Rice University - \$18,000, March 2022 – February 2024

“Flood Information and Response System for the City of Houston, Texas (FIRST)” – City of Houston, \$730,000, Fall 2020 – December 2022

“Surveillance of Houston's wastewater to track community COVID-19 infection dynamics” – City of Houston, \$296,000, 2020 - 2022

“Measuring, Mapping and Managing Flood Risk: A Pilot Program in Texas” – Texas A&M University, \$160,000, January 2019 – December 2020

“FAS5 - Operational Support” – Texas Medical Center, \$96,000 per year, 2020 – 2022

“Cypress Creek Watershed Analysis of Flooding & Storage Options” - Greater Houston Flood Mitigation Consortium, \$121,912, September 2018 – April 30, 2019

“Greens Bayou Watershed Analysis and Resiliency Planning GHFMC Proposal” - Greater Houston Flood Mitigation Consortium, \$233,088, August 2018 – November 2019

“Center to Rebuild Texas Analysis and Report on Regional Detention” TAMU and the Governor’s Office. \$175,000, April 2018 – July 2019.

“Analysis of Federal Project Residual Flood Areas” Greater Houston Flood Consortium, \$130,000, Jan – Aug 2018.

“FAS4 - Operational Support” – Texas Medical Center, \$96,000 per year, Oct 2017 – 2020

Flood Warning System for White Oak Bayou, funded by Kinder Inst at Rice U. \$75,000 for 2017-18.

“SSPEED Center Proposal to the Houston Endowment -- Environmental Studies of Various Gal Bay Surge Mitigation Strategies, 2017-2019”, Houston Endowment, \$1,000,000.

Shell Center Award (Padgett and Bedient) -- \$50,000 for one year. 2015-2016.

NSF PIRE award “Coastal Flood Risk Reduction Program: Integrated, Multi-scale Approaches for Understanding how to Reduce Vulnerability to Damaging Events, (2015-2020), \$100,000 per year for 5 years shared with Jamie Padgett. (50%). (Dutch Exchange Program for students).

Shell Center Award "Stress Nexus of Coastlines: Population Development, Infrastructure Security, and Morphological Dynamics of the Upper Texas Gulf Coast" (2014-2016). With others (\$20,000).

“SSPEED Center Proposal to the Houston Endowment 2014-2017,” Houston Endowment \$3,200,000. Last year funding level of \$500,000.

“SSPEED Center Proposal to the Houston Endowment Coastal Integrated”, Houston Endowment, 2011-2014, \$3,195,451

“FAS3- Operational Support”, Texas Medical Center, 2012-2017, \$96,000 per year for 5 years. Supports the operation and research related to TMC Flood Alert System Analysis

“Urban Resilience: Flooding in the Houston-Galveston Area”, Kinder. 2009-2012, \$240,003

“White Oak Bayou BMP Demonstration Project – Cottage Grove Subdivision”, City of Houston, 2009-2013, \$165,000.

“Residential Storm Surge Damage Assessment for Galveston County”, Texas General Land Office (GLO), 2012-2013, \$100,000

“Rice University FEMA: Food Analysis”, Rice, 2011-2012, \$70,000

“Amendment to Expand Development and Validation of the Online Storm Risk Calculator Tool for Public Usage”, City of Houston, 2011, \$388,030

“Hurricane Ike: Lessons Learned and Steps to the Future”, Houston Endowment, 2009-2012, \$1,250,000

“Libya AEL Training Grant”, AECOM, 2008-2010. \$1.7 million over 2 years.

“Texas OEM SSPEED Training” University of Texas, 2008, \$90,000

“Watershed Information Sensing and Evaluation System”. Houston Endowment (with UH), 2007-2010, \$400,000.

“Advanced Flood Alert System for the TXDOT for Bridge Control at 288”. HGAC, 2007-2011 \$200,000.

“Civil and Environmental Engineering for the 21st Century”. NSF Dept Reform Grant, 2005-2007, \$100,000.

“CASA – Collaborative Adaptive Sensing of the Atmosphere – the Houston Testbed”. NSF, 2003 – 2009, \$110,000, (\$90,000 for 2006-07).

“FAS2 - Operational Support”, Texas Medical Center, 2003-2012, \$69,000

“Flood Alert System (FAS2) for the Texas Medical Center and Brays Bayou”. FEMA, 2002-2003, \$300,000.

“Multi-Purpose Water Management Technology for the Texas Mexico Border”, Advanced Technology Program, 2000-2001, \$129,000.

“Analysis of Clear Creek Watershed,” Galveston Bay Preservation Foundation, 1999-2000, \$15,000.

“Flood Alert System - Maintenance and Support”. Texas Medical Center, 1998-2002, \$271,000.

“Flood Prediction System for the Texas Medical Center”. Texas Medical Center, 1997-1998, \$262,000.

“The Effects of Changing Water Quality and Market Inefficiencies on Water Resource Allocation in the Lower Rio Grande Valley”. Energy and Environmental Systems Institute, Rice University, 1996-1997, \$12,000.

"Characterization of Laguna Madre Contaminated Sediments", Environmental Protection Agency, 1995, \$68,500.

"Role of Particles in Mobilizing Hazardous Chemicals in Urban Runoff". Environmental Protection Agency, 1992-95, \$240,000. (P. B. Bedient, Co-P.I.).

"Galveston Bay Characterization Report", Galveston Bay National Estuary Program, 1991-1992, \$35,000.

"Characterization of Non-Point Sources and Loadings to Galveston Bay". Galveston Bay National Estuary Program, 1990-1991, \$125,000.

GROUNDWATER PROJECTS (SINCE 1990)

“A Large-Scale Experimental Investigation of the Impact of Ethanol on Groundwater Contamination”, (P.J.J. Alvarez – Co-P.I.) American Petroleum Institute, 2004-2007, \$120,000.

“A Large-Scale Experimental Investigation of Impact of Ethanol on Groundwater Contamination”, Gulf Coast Hazardous Substances Research Center, 2004-2005, \$45,000.

“A Large-Scale Experimental Investigation of Impact of Ethanol on Groundwater Contamination”, Gulf Coast Hazardous Substances Research Center, 2003-2004, \$95,000.

"Chlorinated Solvent Impact and Remediation strategies in the Dry Cleaning Industry”, Gulf Coast Hazardous Substances Research Center, 2000 – 2003, \$149,400.

"Design Manual for the Extraction of Contaminants from Subsurface Environments", Environmental Protection Agency, 1994-2002, \$4,500,000.

"Development of Data Evaluation/Decision Support System for Bioremediation of Subsurface Contamination", Environmental Protection Agency, 1993-1996, \$450,000.

Shell Distinguished Chair in Environmental Science, Shell Oil Company Foundation, 1988-1993, \$750,000.

LIST OF HAZARDOUS WASTE SITE PROJECTS (since 2000)

2001 The Dickson County Landfill, Dickson, TN

2002 Celanese Engineering Resins, Inc., Bishop, TX

2002 GB Biosciences, Houston, TX

2003 DOW Plaquemine, LA

2004 Ciba-Geigy, McIntosh, AL

2004 Amoco, Independence, MO

2004 Olin-Geigy, McIntosh, AL

2006 Crazy Horse Landfill, Monterey County, CA

2008 Mid-Valley Sanitary Landfill, Rialto, CA

2010 Pratt-Whitney, West Palm Beach, FL

2013 Monsanto, Mystic River, MA

2013 San Jacinto River Waste Pits, San Jacinto River, TX

2015 LCP Chemicals Site, Brunswick, GA

2015 North Carolina Steam Stations, NC

PUBLICATIONS AND PRESENTATIONS

A. Books or Related Chapters

1. Sebastian, A., Juan, A., & Bedient, P. B. (2022). Urban flood modeling: Perspectives, challenges, and opportunities. Coastal flood risk reduction: The netherlands and the U.S. upper texas coast (pp. 47-60) doi:10.1016/B978-0-323-85251-7.00005-6
2. Li, D., Fang, Z. N., & Bedient, P. B. (2021). Flood early warning systems under changing climate and extreme events. Climate change and extreme events (pp. 83-103) doi:10.1016/B978-0-12-822700-8.00002-0
3. **Bedient, P. B. and Huber, W. C. (2018). “Hydrology and Floodplain Analysis”, 6th Ed. Pearson, January 2018, 760 pages.**
4. Fang, Z., Sebastian A., and Bedient, P.B. 2014. “*Modern Flood Prediction and Warning Systems.*” Handbook of Engineering Hydrology: Fundamentals and Applications (Chapter 21), Vol. 1, Taylor & Francis Inc. ISBN-10:1466552417.
5. Bedient, P. B. and W. C. Huber, 2012, “*Hydrology and Floodplain Analysis*”, 5th Ed. Prentice-Hall Publishing Co., Upper Saddle River, NJ, February 2012, 800 page textbook.
6. Bedient, P. B., 2012 “*Lessons learned from Hurricane Ike*” Ed. Philip Bedient. College Station, TX: Texas A&M University Press, College Station, TX: 2012, 194 Pages
7. Rifai H.S., Borden R.C., Newell C.J. and Bedient P.B., “ *Modeling Remediation of Chlorinated solvent plumes*” In Situ Remediation of Chlorinated solvent Plumes, Chapter 6, H.F. Stroo, C.H. Ward Editors, Springer, N.Y. 2010, 145 pp.
8. Fang, Z., Safiolea, E., Bedient, P.B. (2006) “*Enhanced Flood Alert and Control Systems for Houston.*” In Chapter 16, Coastal Hydrology and Processes, Ed. By Vijay P. Singh and Y. Jun Xu, Water Resource Publications, LLC, pp. 199-210

9. Capiro, N.L. and Bedient P.B. "*Transport of Reactive Solute in Soil and Groundwater*" The Water Encyclopedia (2005): 524-531.
10. Horsak, R.D., Bedient, P.B., Thomas, F.B., and Hamilton, C. "*Pesticides*", Environmental Forensics (2005).
11. Thompson, J.F. and Bedient, P.B. "*Urban Storm Water Design and Management*," The Engineering Handbook, Chapter 94, CRC Press, 2004, 21 pp.
12. Bedient, P. B., Rifai H. S., and Newell C. J., "*Ground Water Contamination: Transport and Remediation*", 2nd Ed. PTR Publ., Upper Saddle River, NJ, 1999, 605 pages.
13. Charbeneau, R. J., Bedient, P. B. and Loehr R. C., "*Groundwater Remediation*", Technomic Publishing Co., Inc., Lancaster, PA 1992, 188 pages.

B. Peer Reviewed Journal Publications (since 1990 out of a total of 165)

1. McCall, C., Fang, Z. N., Li, D., Czubai, A. J., Juan, A., Laturner, Z. W., ... Stadler, L. B. (2022). Modeling SARS-CoV-2 RNA degradation in small and large sewersheds. Environmental Science: Water Research and Technology, 8(2), 290-300. doi:10.1039/d1ew00717c
2. Bi, S., Kiaghadi, A., Schulze, B. C., Bernier, C., Bedient, P. B., Padgett, J. E., Griffin, R. J. (2021). Simulation of potential formation of atmospheric pollution from aboveground storage tank leakage after severe storms. Atmospheric Environment, 248 doi:10.1016/j.atmosenv.2021.118225
3. Garcia, M.; Juan, A.; Bedient, P. Integrating Reservoir Operations and Flood Modeling with HEC-RAS 2D. Water 2020, 12, 2259.
4. Fagnant, C., Gori, A., Sebastian, A. et al. Characterizing spatiotemporal trends in extreme precipitation in Southeast Texas. Nat Hazards (2020). <https://doi.org/10.1007/s11069-020-04235-x>
5. Ebad Sichani, M., Anarde, K. A., Capshaw, K. M., Padgett, J. E., Meidl, R. A., Hassanzadeh, P., Loch-Temzelides, T.P., Bedient, P. B. (2020). Hurricane risk assessment of petroleum infrastructure in a changing climate. Frontiers in Built Environment, 6 doi: 10.3389/fbuil.2020.00104
6. Gori, A., Gidaris, I., Elliott, J., Padgett, J., Loughran, K., Bedient, P., Panakkal, P., and Juan, A. "Accessibility and Recovery Assessment of Houston's Roadway Network due to Fluvial Flooding during Hurricane Harvey." Natural Hazards Review, Vol. 21, Issue 2 (2019/May). DOI: doi:10.1061/(ASCE)NH.1527-6996.0000355
7. Gori, A., Blessing, R., Juan, A., Brody, S., & Bedient, P. "Characterizing urbanization impacts on floodplain through integrated land use, hydrologic, and hydraulic modeling." Journal of Hydrology, 568(2019/January): 82-95. DOI: 10.1016/j.jhydrol.2018.10.053
8. Bernier, C., Kameshwar, S., Elliott, J. R., Padgett, J. E., & Bedient, P. B. (2018). Mitigation strategies to protect petrochemical infrastructure and nearby communities during storm surge. Natural Hazards Review, 19(4) doi:10.1061/(ASCE)NH.1527-6996.0000309
9. Bass, B., Torres, J. M., Irza, J. N., Proft, J., Sebastian, A., Dawson, C., & Bedient, P. (2018). Surge dynamics across a complex bay coastline, Galveston bay, TX. Coastal Engineering, 138,

165-183. doi:10.1016/j.coastaleng.2018.04.019

10. Bass, B., & Bedient, P. (2018). Surrogate modeling of joint flood risk across coastal watersheds. *Journal of Hydrology*, 558, 159-173. doi:10.1016/j.jhydrol.2018.01.014
11. Anarde, K. A., Kameshwar, S., Irza, J. N., Nittrouer, J. A., Lorenzo-Trueba, J., Padgett, J. E., . . . Bedient, P. B. (2018). Impacts of hurricane storm surge on infrastructure vulnerability for an evolving coastal landscape. *Natural Hazards Review*, 19(1) doi:10.1061/(ASCE)NH.1527-6996.0000265
12. Brody, S. D., Sebastian, A., Blessing, R., & Bedient, P. B. (2018). Case study results from southeast Houston, Texas: Identifying the impacts of residential location on flood risk and loss. *Journal of Flood Risk Management*, 11, S110-S120. doi:10.1111/jfr3.12184
13. Bernier, C., Elliott, J. R., Padgett, J. E., Kellerman, F., & Bedient, P. B. (2017). Evolution of social vulnerability and risks of chemical spills during storm surge along the Houston Ship Channel. *Natural Hazards Review*, 18(4) doi:10.1061/(ASCE)NH.1527-6996.0000252
14. Torres, J.M., Bass, B., Irza, J.N., Proft, J., Sebastian, A., Dawson, C., and Bedient, P (2017). Modeling the Hydrodynamic Performance of a Conceptual Storm Surge Barrier System for the Galveston Bay Region. *J. of Waterway, Port, Coastal, and Ocean Engineering*. DOI: 10.1061/(ASCE)WW.1943-5460.0000389.
15. Bass, B., Juan, A., Gori, A., Fang, Z., and Bedient, P. (2016). 2015 Memorial Day Flood Impacts for Changing Watershed Conditions in Houston, TX. *Natural Hazards Review*. DOI: 10.1061/(ASCE)NH.1527-6996.0000241.
16. Juan, A., Hughes, C., Fang, Z., and Bedient, P., 2016. Hydrologic Performance of Watershed-scale Low Impact Development (LID) in a High Intensity Rainfall Region. *Journal of Irrigation and Drainage Engineering*, doi: 10.1061/(ASCE) IR.1943-4774.0001141.
17. Torres, J., Bass, B., Irza, N., Fang, Z., Proft, J., Dawson, C., Kiani, M., and Bedient, P (2015). Characterizing the hydraulic interactions of hurricane storm surge and rainfall-runoff for the Houston-Galveston region. *Coastal Engineering* 106, 7-19. DOI: <http://dx.doi.org/10.1016/j.coastaleng.2015.09.004>.
18. Juan, A, Fang, Z., and Bedient, P.B. "Developing a Radar-Based Flood Alert System for Sugar Land, Texas." *Journal of Hydrologic Engineering* (2015).
19. Brody, S.D., Sebastian, A., Blessing, R., & Bedient, P.B. (2015). Case-study results from southeast Houston, Texas: Identifying the impacts of residential location on flood risk and loss. *Journal of Flood Risk Management*, (accepted for publication). doi: 10.1111/jfr3.12184
20. Fang, N., Dolan G., Sebastian, A., & Bedient, P.B. (2014). Case Study of Flood Mitigation and Hazard Management at the Texas Medical Center in the Wake of Tropical Storm Allison in 2001. *ASCE Natural Hazards Review*, 15(3). doi: 10.1061/(ASCE)NH.1527-6996.0000139.
21. Christian, J, Fang, Z., Torres, J., Deitz, R. and Bedient, P.B. "Modeling the Hydraulic Effectiveness of a Proposed Storm Surge Barrier System for the Houston Ship Channel during Hurricane Events." *Natural Hazards Review* 16, no. 1 (2014): 04014015
22. Burleson, Daniel W., Hanadi S. Rifai, Jennifer K. Proft, Clint N. Dawson, and Philip B. Bedient. "Vulnerability of an industrial corridor in Texas to storm surge." *Natural Hazards* 77, no. 2 (2015): 1183-1203.

23. Sebastian, A., Proft, J., Dawson, C., & Bedient, P.B. (2014). Characterizing hurricane storm surge behavior in Galveston Bay using the SWAN+ADCIRC model. *Coastal Engineering*, 88, 171-181. doi: <http://dx.doi.org/10.1016/j.coastaleng.2014.03.002>.
24. Brody, S.D., Blessing, R., Sebastian, A., & Bedient, P.B. (2014). Examining the impact of land use/land cover characteristics on flood losses. *Journal of Environmental Planning and Management*, 57(8), 1252-1265. doi: 10.1080/09640568.2013.802228.
25. Brody, S.D., Blessing, R., Sebastian, A., and Bedient, P.B. (2013). "Delineating the Reality of Flood Risk and Loss in Southeast, TX." *ASCE Natural Hazards Review*, 14, 89-97. doi: 10.1061/(ASCE)NH.1527-6996.0000091.
26. Fang, Z., Sebastian A., and Bedient, P.B. 2014. "Modern Flood Prediction and Warning Systems." *Handbook of Engineering Hydrology: Fundamentals and Applications (Chapter 21)*, Vol. 1, Taylor & Francis Inc. ISBN-10:1466552417.
27. Teague, A., J. Christian, and P. Bedient. (2013) "Use of Radar Rainfall in an Application of Distributed Hydrologic Modeling for Cypress Creek Watershed, Texas". *Journal of Hydrologic Engineering*. DOI: 10.1061/(ASCE)HE.1943-5584.000056.
28. Doubleday, G., Sebastian, A., Luttenschlager, T., and Bedient, P.B. (2013). "Modeling Hydrologic Benefits of Low Impact Development: A Distributed Hydrologic Model of The Woodlands, TX." *Journal of American Water Resources*, 1-13. doi: 10.1111/jawr.12095.
29. Christian, J., A. Teague, L. Dueñas-Osario, Z. Fang, and P. Bedient, (2012). "Uncertainty in Floodplain Delineation: Expression of Flood Hazard and Risk in a Gulf Coastal Watershed." *Journal of Hydrological Processes*, doi: 10.1002/hyp.9360.
30. Ray, T., Stepinski, E., Sebastian, A., Bedient, P.B. (2011) "Dynamic Modeling of Storm Surge and Inland Flooding in Texas Coastal Floodplain" ", *Journal of Hydraulic Engineering*, ASCE, Vol. 137, No.10, October 2011, ISSN 0733-9429/2011/10-1103-1110
31. Fang, Z., Bedient, P. B., and Buzcu-Guven, B. (2011). "Long-Term Performance of a Flood Alert System and Upgrade to FAS3: A Houston Texas Case Study". *Journal of Hydrologic Engineering*, ASCE Vol. 16, No. 10, October 1, 2011, ISSN 1084-0699/2011/10-818-828.
32. Teague, A., Bedient, P. and Guven, B. (2010). "Targeted Application of Seasonal Load Duration Curves using Multivariate Analysis in Two Watersheds Flowing into Lake Houston" (JAWRA-10-0003-P.R1). *Journal of American Water Resources Association*. Accepted.
33. Fang, Z., Zimmer, A., Bedient, P. B, Robinson, H., Christian, J., and Vieux, B. E. (2010). "Using a Distributed Hydrologic Model to Evaluate the Location of Urban Development and Flood Control Storage". *Journal of Water Resources Planning and Management*, ASCE, Vol. 136, No. 5, September 2010, ISSN 0733-9496/2010/5-597-601.
34. Fang, Z., Bedient, P. B., Benavides J.A, and Zimmer A. L. (2008). "Enhanced Radar-based Flood Alert System and Floodplain Map Library". *Journal of Hydrologic Engineering*, ASCE, Vol. 13, No. 10, October 1, 2008, ISSN 1084-0699/2008/10-926-938.

35. Gomez, D. E., De Blanc, P. C., Rixey, W., Bedient, P.B., Alvarez, P. J.J. (2008), "Evaluation of Benzene Plume Elongation Mechanisms Exerted by Ethanol Using RT3D with a General Substrate Interaction Module" *Water Resource Research Journal*, Vol. 44, May.
36. Rifai, H.S., Borden, R. C., Newell, C. J., and Bedient, P.B. "Modeling Dissolved Chlorinated Solvents in Groundwater and Their Remediation," in SERDP monograph on Remediation of Dissolved Phase Chlorinated Solvents in Groundwater, (accepted) 2007.
37. Bedient, P. B., Holder, A., and Thompson, J. F., and Fang, Z. (2007). "Modeling of Storm water Response under Large Tailwater Conditions – Case Study for the Texas Medical Center". *Journal of Hydrologic Engineering*, Vol. 12, No. 3, May 1, 2007.
38. Capiro, N.L., Stafford, B.P., Rixey, W.G., Alvarez, P.J.J. and Bedient, P.B. "Fuel-Grade Ethanol Transport at the Water Table Interface in a Pilot-Scale Experimental Tank" *Water Research*, 41(3), pp. 656-654, 2007.
39. Bedient, P.B., Rifai, H.S., Suarez, M.P., and Hovinga, R.M. "Houston Water Issues" Chapter in *Water for Texas*. Jim Norwine and J.R. Giardino, Eds. pp. 107-121, 2005.
40. Characklis, G.W., Griffin, R.C., and Bedient, P.B. "Measuring Long-term Benefits of Salinity Reduction" *Journal of Agricultural and Resource Economics*, 30 (1) (2005): 69-93.
41. Bedient, P.B., Horsak, R.D., Schlenk, D., Hovinga, R.M., and Pierson, J.D. "Environmental Impact on Fipronil to Louisiana Crawfish Industry" *Environmental Forensics* (2005): 289-299.
42. Characklis, G. W., Griffin, R.C., and Bedient, P.B. "Measuring the Long-term Benefits of Salinity Reduction" *Journal of Agricultural and Resource Economics*, 30(1), pp.69-93, 2005.
43. Vieux, B.E. and Bedient, P.B. "Assessing urban hydrologic prediction accuracy through event reconstruction" *Journal of Hydrology*, 299(3-4), pp. 217-236. Special Issue on Urban Hydrology, 2004.
44. Thompson, J.F. and Bedient, P.B. "Urban Storm Water Design and Management" *The Engineering Handbook*, Chapter 94, CRC Press, 2004, 21 pp.
45. Capiro, N.L. and Bedient P.B. "Transport of Reactive Solute in Soil and Groundwater" *The Encyclopedia of Water*, John Wiley and Sons, Inc., New York, NY, USA pp. 524-531, 2005.
46. Bedient, P.B., Holder, A., and Benavides, J. "Advanced Analysis of T.S. Allison's Impacts" submitted to *Jn. of American Water Resources Assn.*, 2004.
47. Bedient, P. B., A. Holder, J. Benavides, and B. Vieux "Radar-Based Flood Warning System applied to TS Allison, *ASCE Journal of Hydrologic Engineering*, 8(6), pp 308-318, Nov, 2003.
48. Glenn, S., Bedient, P.B., and B. Vieux "Ground Water Recharge Analysis Using NEXRAD in a GIS Framework" submitted to *Ground Water*, October 2002.
49. Bedient, P.B., Vieux, B.E., Vieux, J.E., Koehler, E.R., and H.L. Rietz "Mitigating Flood Impacts of Tropical Storm Allison" accepted by *Bulletin of American Meteorological Society*, 2002.
50. El-Beshry, M., Gierke, J.S., and P.B. Bedient "Practical Modeling of SVE Performance at a Jet-Fuel Spill Site" *ASCE Journal of Environmental Engineering* pp. 630-638, (127) 7, July 2001.
51. El-Beshry, M.Z., Gierke, J.S., and P.B. Bedient "Modeling the Performance of an SVE Field Test" in Chapter 7, *Vadose Zone Science and Technology Solutions*, Brian B. Looney and Ronald W. Falta Editors, Vol. II, pp. 1157-1169, (2000).
52. Rifai, H.S., Brock, S.M. Ensor, K.B., and P.B. Bedient "Determination of Low-Flow Characteristics for Texas Streams" *ASCE Journal of Water Resources Planning and Management*, (126)5, pp.310-319, September-October 2000.
53. Bedient, P.B., Hoblit, B.C., Gladwell, D.C., and B.E. Vieux "NEXRAD Radar for Flood Prediction in Houston" *ASCE Journal of Hydrologic Engineering*, 5(3), pp. 269-277, July 2000.

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Conference Proceedings and Other Technical Publications (since 1995)

1. Panakka, P., Juan, A., Garcia, M., Padgett, J. E., & Bedient, P. (2019). Towards enhanced response: Integration of a flood alert system with road infrastructure performance models. Paper presented at the Structures Congress 2019: Buildings and Natural Disasters - Selected Papers from the Structures Congress 2019, 294-305. doi:10.1061/9780784482223.029
2. Figlus, J., Anarde, K., Dellapenna, T., & Bedient, P. (2018). Coastal storm rapid response measurements of hurricane harvey impact and recovery on two texas barrier islands. Paper presented at the Proceedings of the Coastal Engineering Conference, 36 (2018)
3. Balomenos, G. P., Kameshwar, S., Bass, B., Padgett, J. E., & Bedient, P. (2018). Vulnerability of bridges exposed to coastal hazards and climate change. Paper presented at the Maintenance, Safety, Risk, Management and Life-Cycle Performance of Bridges - Proceedings of the 9th International Conference on Bridge Maintenance, Safety and Management, IABMAS 2018, 1643-1649.
4. Juan, A., Fang, Z., and Bedient, P. B. (2012). "Flood Warning Indicator: Establish a Reliable Radar-Based Flood Warning System for Sugar Land, Texas", American Geophysical Union (AGU) 2012 Fall Meeting, San Francisco, CA, December 3-7.
5. Deitz, R., Christian, J. K., Wright, G., Fang, Z., and Bedient, P. B. (2012). "Linkage of Rainfall-Runoff and Hurricane Storm Surge in Galveston Bay", American Geophysical Union (AGU) 2012 Fall Meeting, San Francisco, CA, December 3-7.
6. Bedient, P. B., Doubleday, G., Sebastian, A., and Fang, Z. (2012). "Distributed Hydrologic Modeling of LID in the Woodlands, Texas", American Geophysical Union (AGU) 2012 Fall Meeting, San Francisco, CA, December 3-7.
7. Burcham, M., Bedient, P. B., McGuire, T., Adamson, D., New Ch., (2012) Occurrence of Sustained Treatment Following Enhanced Anaerobic Bioremediation at Chlorinated Solvent Sites^[1]_{SEP}, AGU Fall Meeting, San Francisco, California, December 3-7 2012
8. Fang, Z. and Bedient, P., Performance Evaluation of a NEXRAD-Based Flood Warning during Recent Events in 2012^[1]_{SEP}, AGU Fall Meeting, San Francisco, California, December 3-7 2012
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10. Environmental and Water Res. Inst. (EWRI) 2012 Congress, Organized three sessions for SSPEED research results. Albuquerque, New Mexico, May 20-24 2012.
11. Fang, Z. and Bedient, P. B. (2012). "Creating Flood Alert Systems in Coastal Areas", SSPEED Conference – Gulf Coast Hurricanes: Mitigation and Response, Houston, Texas, April 10.
12. Fang, Z. and Bedient, P. B. (2012). "Advanced Radar-Based Flood Warning System for Urban Areas and its Performance Evaluation", SSPEED Conference – Gulf Coast Hurricanes: Mitigation and Response, Houston, Texas, April 11.

13. Teague, A, and Bedient, P. B. (2011). "Visualization of Hydrologic Simulations with Pollutant Load Estimation for Cypress Creek Watershed, Houston, Texas". 2011 World Environmental and Water Resources Congress. Palm Springs California 22-26 May 2011.
14. Christian, J. K., Fang, Z., and Bedient, P. B. (2011). "Probabilistic Floodplain Delineation", 2011 World Environmental and Water Resources Congress, Palm Springs, California. May 22-26
15. Fang, Z., Juan, A., Bedient, P. B., Kumar, S., and Steubing, C. (2011). "Flood Warning Indicator: Establishing a Reliable Radar-Based Flood Warning System for the Upper Oyster Creek Watershed", ASCE/TFMA, TFMA 2011 Annual Conference, Sugar Land, Texas, April 11- 14.
16. Bedient, P. B. and Fang, Z. (2010). "Advanced Radar-based Flood Warning System for Hurricane-prone Urban Areas and Performance during Recent Events", 2nd International Conference on Flood Recovery, Innovation and Response (FRIAR), Milano, Italy, May 26-28.
17. Fang, Z., Juan, A., Bedient, P. B., Kumar, S., and Steubing, C. (2010). "Flood Alert System for Upper Oyster Creek Watershed in Sugar Land, Texas using NEXRAD, HEC-HMS, HEC-RAS, and GIS", ASCE/TFMA, TFMA 2010 Annual Conference, Fort Worth, Texas, June 7- 10.
18. Fang, Z. and Bedient, P. B. (2010). "Radar Applications in Flood Warning System for an Urban Watershed in Houston, Texas", Remote Sensing and Hydrology 2010 Symposium - Special Session on Flood Forecasting and Management with Remote Sensing and GIS, Jackson Hole, WO, September 27 -30.
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22. Teague, A. and Bedient, P. 2010. "Distributed Water Quality Modeling for a Drinking Water Source Watershed for the City of Houston, Texas". Conference Proceedings. World Environmental and Water Resources Congress. May 16-20, 2010, Providence, RI.
23. Fang, Z. and Bedient, P.B. (2009). "Radar-based Flood Warning System for Houston and Its Performance Evaluation". American Geophysical Union (AGU) 2009 Fall Meeting, December 14-18, San Francisco, CA.
24. Fang, Z. and Bedient, P.B. (2009). "Radar-based Flood Alert System for Coastal Area and Collaborated Efforts for Disaster Prevention and Risk Management". IRCD 34th Annual Natural Hazards Research and Applications Workshop – Hazards and the Economy: Challenges and Opportunity, July 15-18, Boulder, CO.
25. Fang, Z. and Bedient, P.B. (2009). "Flood Inundation Prediction and Performance during Hurricane Ike". Proceedings of World Environmental & Water Resources Congress 2008, Environmental and Water Resources Institute (EWRI), ASCE, Kansas City, Missouri, May 17- 21.

26. Robinson, H., Fang, Z. and Bedient, P.B. (2009). "Distributed Hydrologic Modeling of the Yuna River Watershed in the Dominican Republic". Proceedings of World Environmental & Water Resources Congress 2008, Environmental and Water Resources Institute (EWRI), ASCE, Kansas City, Missouri, May 17-21.
27. Ray, T., Fang, Z., and Bedient, P.B. (2009). "Assessment of Flood Risk Due to Storm Surge in Coastal Bayous Using Dynamic Hydraulic Modeling". Proceedings of World Environmental & Water Resources Congress 2008, Environmental and Water Resources Institute (EWRI), ASCE, Kansas City, Missouri, May 17-21.
28. Fang, Z. and Bedient, P.B. (2009). "Advanced Radar-based Flood Forecasting Systems for a Highly Urbanized Coastal Area and SSPEED Center", ASCE/TFMA Flood Awareness and Flood Response Workshop, April 29, San Marcos, TX.
29. Fang, Z. and Bedient, P.B. (2009). "Flood Warning Systems for Urban Flooding". Grand Challenges in Coastal Resiliency I: Transforming Coastal Inundation Modeling to Public Security, January 20-21, Baton Rouge, LA.
30. Fang, Z. and Bedient, P.B. (2008). "NEXRAD Radar-based Hydraulic Flood Prediction System for a Major Evacuation Routes in Houston". American Geophysical Union 2008 Fall Meeting, December 15-19, San Francisco, CA.
31. Fang, Z. and Bedient, P.B. (2008). "Advanced Flood Alert System with Hydraulic Prediction for a Major Evacuation Route in Houston". Proceedings of American Water Resources Association (AWRA) Annual Conference 2008, New Orleans, Louisiana, November 17-20.
32. Fang, Z. and Bedient, P.B. (2008). "Flood Inundation Prediction and Performance during Hurricane Ike". Proceedings of Severe Storm Prediction and Global Climate Impact in the Gulf Coast Conference 2008, Houston, Texas, October 28-31.
33. Bedient, P.B. and Fang, Z. (2008). "Predicting and Managing Severe Storms in the Gulf Coast through University Research". Proceedings of Severe Storm Prediction and Global Climate Impact in the Gulf Coast Conference 2008, Houston, Texas, October 28-31.
34. Robinson, H., Fang, Z. and Bedient, P.B. (2008). "Distributed Hydrologic Model Development in the Topographically Challenging Yuna River Watershed, Dominican Republic". Proceedings of Severe Storm Prediction and Global Climate Impact in the Gulf Coast Conference 2008, Houston, Texas, October 28-31.
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36. Fang, Z. and Bedient, P.B. (2008). "Floodplain Map Library (FPML): Innovative Method for Flood Warning System for Urban Watershed in Houston, TX". Proceedings of World Environmental & Water Resources Congress 2008, Environmental and Water Resources Institute (EWRI), ASCE, Honolulu, Hawaii, May 13-16.
37. Bedient, P.B., "Foresight Panel on Environmental Effects" Houston-Galveston Area Council, Houston, Texas, February 5, 2008
38. Bedient, P.B., Fang, Z., Hovinga, R. M., "Flood Warning System (FAS₂) Rice University Training, Houston, Texas, January 15, 2008
39. Bedient, P.B., Fang, Z., Hovinga, R. M., SSPEED Meeting, Houston, Texas, November 16, 2007

40. Fang, Z. and Bedient, P.B. "Real-time Hydraulic Prediction Tool – Floodplain Map Library (FPML)". American Water Resources Association 2007 Annual Conference, Albuquerque, New Mexico, November 12-15, 2007
41. Fang, Z. and Bedient, P.B. "Enhanced NEXRAD Radar-based Flood Warning System with Hydraulic Prediction Feature: Floodplain Map Library (FPML)". American Geophysical Union 2007 Fall Meeting, San Francisco, CA. December 10-14, 2007
42. Fang, Z. and Bedient, P.B. "The Future of Flood Prediction in Coastal Areas" Severe Storm Prediction, Evacuation, and Education from Disasters Conference, Rice University, Houston Texas, May 8-10, 2007
43. Bedient, P.B. and Fang, Z. "Radar-based Flood Warning System Using Dynamic Floodplain Map Library." Proceedings of World Environmental & Water Resources Congress 2007, Environmental and Water Resources Institute (EWRI), ASCE, Tampa, Florida, May 15-19, 2007
44. Bedient, P.B., and C. Penland "A Radar Based FAS for Houston's Texas Medical Center" IDRC Conference, Davos, Switzerland, Aug 2006.
45. Safiolea, E. and P.B. Bedient "Comparative Analysis of the Hydrologic Impact of Land Use Change and Subsidence in an Urban Environment" Proceedings of AWRA GIS Conference, Houston, TX, May 8-10, 2006.
46. Bedient, P.B., Fang, Z., and R. Hovinga "Prediction for Severe Storm Flood Levels for Houston Using Hurricane Induced Storm Surge Models in GIS Frame" Proceedings of AWRA GIS Conference, Houston, TX, May 8-10, 2006.
47. Fang, Z., Safiolea, E., and P.B. Bedient "Enhanced Flood Alert and Control Systems for Houston" Proceedings of 25th American Institute of Hydrology Conference, Baton Rouge, LA, May 21-24, 2006.
48. Gordon, R. and P.B. Bedient "Rice University Engineers Without Borders: An Exercise in International Service Learning" Proceedings of the ASE Education Conference, Chicago, June 18-21, 2006.
49. Gordon, R., Benavides, J.A., Hovinga, R., Whitko, A.N., and P.B. Bedient "Urban Floodplain Mapping and Flood Damage Reduction Using LIDAR, NEXRAD, and GIS" Proceedings of the 2006 AWRA Spring Specialty Conference: GIS and Water Resources IV, Houston, TX, May 8-10, 2006.
50. Fang, Z. and P.B. Bedient "IP2 Houston Flood Alert and Response-2006" CASA Meeting, Estes Park, Co, October 16-17, 2006.
51. Safiolea, E., Bedient, P.B., and B.E. Vieux "Assessment of the Relative Hydrologic Effects of Land Use Change and Subsidence Using Distributed Modeling" (July 2005).
52. Holder, A.W., Hoblit, B., Bedient, P.B., and B.E. Vieux "Urban Hydrologic Forecasting Application Using the NEXRAD Radar in Houston" Proceedings of the Texas Section American Society of Civil Engineers, Austin, TX, pp. 279-288, April 5-8, 2000.
53. Benavides, J.A., Pietruszewski, B., Stewart, E., and P.B. Bedient "A Sustainable Development Approach for the Clear Creek Watershed" Proceedings of the Texas Section American Society of Civil Engineers, Austin, TX, pp. 269-278, April 5-8, 2000.
54. Bedient, P.B., Rifai, H.S., and C.W. Newell "Decision Support System for Evaluating Pump-and-

Treat Remediation Alternatives" Pollution Modeling: Vol. 1, Proceedings for Envirosoft 94, November 16-18, 1994, San Francisco, CA, Edited by P. Zannetti, Computational Mechanics Publications, Wessex Inst of Technology, Southampton, UK.

55. Hamed M.M. and P.B. Bedient "Uncertainty Analysis of Natural Attenuation in Groundwater Systems," Proceedings of the In Situ and On-Site Bioremediation Symposium, New Orleans, LA, 1997, 1:43-48.
56. Hamed, M.M., Holder, A.W., and P.B. Bedient "Evaluation of Reaeration Using a 3-D Groundwater Transport Model" Proceedings of the In Situ and On-Site Bioremediation Symposium, New Orleans, LA, 1997, 1:75-80.
57. Holder, A.W., Bedient, P.B., and J.B. Hughes "TCE and 1,2-DCE Biotransformation Inside a Biologically Active Zone" Proceedings of the First International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, May 18-21, 1:219-224, 1998.
58. Hamed M.M. and P.B. Bedient "Uncertainty Analysis of Natural Attenuation in Groundwater Systems" Proceedings of the In Situ and On-Site Bioremediation Symposium, New Orleans, LA, 1997, 1:43-48.
59. Hamed, M.M., Holder, A.W., and P.B. Bedient "Evaluation of Reaeration Using a 3-D Groundwater Transport Model" Proceedings of the In Situ and On-Site Bioremediation Symposium, New Orleans, LA, 1997, 1:75-80.
60. Hamed, M.M., Bedient, P.B., and J.P. Conte "Probabilistic Modeling of Contaminant Transport in the Subsurface" Proceedings of the International Association of Hydro geologists Conference Solutions '95", Edmonton, Canada, June 4-10, 1995.

Invited Lectures (Recent since 2000)

1. The Resilience and Adaptation to Climate Risks Workshop: NASA Johnson Space Center and the Houston/Galveston Area, March 8, 2012, Houston, Texas
2. Bedient, P.B., SSPEED Conference. Chair and Organizer, "*Hurricane Ike, Revisited*," September 14, 2009, Houston, Texas.
3. Bedient, P.B., SSPEED Conference. Chair and Organizer, "*Severe Storm Prediction and Global Climate Impact in the Gulf Coast*," Sponsored by American Institute of Hydrology. October 29-31, 2008, Houston, Texas. (Attended by over 150 guests and speakers).
4. Bedient, P.B., SSPEED Conference. Chair and Organizer, "*Severe Storm Prediction and Global Climate Impact in the Gulf Coast*," Sponsored by American Institute of Hydrology. October 29-31, 2008, Houston, Texas. (Attended by over 150 guests and speakers).
5. Bedient, P.B., Robinson, and H., Fang, Z. (2008). "Distributed Hydrologic Model Development in the Topographically Challenging Yuna River Watershed, Dominican Republic". Meeting in Dominican Republic before the President October 20, 2008.
6. Bedient, P.B. (June, 2008) Plan for the Dominican Republic Flood Study, before the Ministers of Education, Environment, and Economic Development.
7. Bedient, P.B. "Advanced Flood Alert Systems in Texas" International Disaster Response Conference, Daves, Switzerland, August 28, 2006.

8. Bedient, P.B. "IP2 Flood Alert System for Houston" CASA Meeting NSF Review, UMASS. April, 2006.
9. Bedient, P.B. "Severe Storm Impacts in the Gulf Coast" Severe Storm Impacts and Disaster Response in Gulf Coast, Houston, Rice University, March 15-16, 2006.
10. Bedient, P.B. "Living with Severe Storms in the Gulf Coast- Scientia Lecture" Rice University, Houston, TX. (September 2005).
11. Bedient, P.B., Fang, Z., Safiolea, E., and B.E. Vieux "Enhanced Flood Alert System for Houston" 2005 National Hydrologic Council Conference: Flood Warning Systems, Technologies and Preparedness, Sacramento, California. (May 16-20)
12. Fang, Z. and Bedient, P.B. "Enhanced Flood Alert and Control Systems for Houston" Proceedings of the 25th American Institute of Hydrology Conference: Challenges of Coastal Hydrology and Water Quality. Baton Rouge, Louisiana, May 21-24, 2006.
13. Fang, Z., Bedient, P.B., and R. Hovinga "Prediction of Severe Storm Flood Levels for Houston Using Hurricane Induced Storm Surge Models in a GIS Frame" Proceedings of AWRA 2006 Spring Specialty Conference: GIS and Water Resources IV. Houston, Texas, May 8-10, 2006.
14. Bedient, P.B. "Impacts of Climate Change on Transportation Systems and Infrastructure" Gulf Coast Study, Lafayette, LA. (May 2005)
15. Capiro, N.L., Da Silva, M.L.B., Stafford, B.P., Alvarez, P.J.J., and P.B. Bedient "Changes in Microbial Diversity Resulting from a Fuel-Grade Ethanol Spill" Eighth International Symposium on In Situ and On-Site Bioremediation, Baltimore, MD. (June 2005).
16. Safiolea, E. and P. B. Bedient "Assessment of the Relative Hydrologic Effect of Land Use Change and Subsidence Using Distributed Modeling" EWRI Watershed Management Conference, Williamsburg, VA. (July 9-22, 2005)
17. Capiro, N.L., Stafford, B., He, X., Rixey, W.G., and P.B. Bedient "A Large-Scale Experimental Investigation of Ethanol Impacts on Groundwater Contamination" Presentation at the Fourth International Conference on Remediation of Chlorinated and Recalcitrant Compounds; Monterey, CA; May 2004.
18. Capiro, N.L., Da Silva, M.L.B., Stafford, B.P., Alvarez, P.J.J., and P.B. Bedient "Changes in Microbial Diversity Resulting from a Fuel-Grade Ethanol Spill" Accepted for Presentation at The Eighth International Symposium on In Situ and On-Site Bioremediation; Baltimore, MD. June 2005.
19. Safiolea, E. and P.B. Bedient "Analysis of Altered Drainage Patterns and Subsidence Impact Using a Distributed Hydrologic Model" AWRA Annual Water Resources Conference in Orlando FL, November 2004.
20. Safiolea, E. and Philip B. Bedient "Assessment of the Relative Hydrologic Effect of Land Use Change and Subsidence using Distributed Modeling" EWRI Watershed Management Conference in Williamsburg VA, Jul19-22, 2005.
21. Bedient, P.B. and J.A. Benavides "Use of QPE and QPF for Flood Alert (FAS2) in the Houston, TX Test Bed" CASA NSF ERC Conference, "Estes Park, CO, October, 2004.
22. Capiro, N.L., Adamson, D.T., McDade, J.M., Hughes, J.B., and P.B. Bedient "Spatial Variability of Dechlorination Activity Within a PCE DNAPL Source Zone" Presentation The 7th

International Symposium In Situ and On-Site Bioremediation; Orlando, FL; June 2003

23. Benavides, J.A. and P.B. Bedient "Improving the Lead-Time and Accuracy of a Flood Alert System in an Urban Watershed" 2003 AWRA Annual Conference, San Diego, California, November 2003.
24. Whitko, A.N. Bedient, P.B., and S. Johnson "Sustainable Flood Control Strategies in the Woodlands – Thirty Years Later" 2003 AWRA Annual Conference, San Diego, California, November 2003.
25. Safiolea E., Hovinga, R., and P.B. Bedient " Impact of Development Patterns on Flooding in Northwest Houston using LIDAR Data" 2003 AWRA Annual Conference, San Diego, California, November 2003
26. Benavides, J.A. and P.B. Bedient "Improving the Performance of a Flood Alert System Designed for a Rapidly Responding Urban Watershed" 2003 Conference on Flood Warning Systems Technologies and Preparedness, Dallas, Texas. October 2003.
27. Bedient, P.B., Holder, A., and Baxter Vieux "A Radar-Based Flood Alert System (FAS) Designed for Houston, TX" *International Conference on Urban Storm Drainage*, Portland, OR, September 2002.
28. Holder, A., Stewart, E., and P.B. Bedient "Modeling an Urban Drainage System with Large Tailwater Effects under Extreme Rainfall Conditions" *International Conference on Urban Storm Drainage*, Portland, OR, September 2002.
29. Glenn, S., Bedient, P.B., and B. Vieux "Analysis of Recharge in Ground Water Using NEXRAD in a GIS Format" *AWRA Summer Specialty Conference*, Keystone, CO, July, 2002.
30. Bedient, P.B. "Flood ALERT System (FAS) for Brays Bayou and the TMC" T.S. Allison: A Brays Bayou Event, Rice University Conference Presentation, and November 13, 2001.
31. Bedient, P.B. "Flood ALERT System for the Texas Medical Center" Hurricanes and Industry, Houston Conference Presentation, November 7, 2001.
32. Bedient, P.B. and J.A. Benavides "Analyzing Flood Control Alternatives for the Clear Creek Watershed in a Geographic Information Systems Framework" presented at ASCE's EWRI Spring 2001 World Water & Environmental Resources Congress Conference.
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