Updated March 2024

Dr. Belize Lane, Associate Professor

Curriculum Vitae

Department of Civil and Environmental Engineering ● Utah State University
Utah Water Research Laboratory ● 1600 Canyon Rd. Logan, UT 84321
belize.lane@usu.edu ● http://usuwetlab.org ● @USU_WETLab

EDUCATION

2017 **Ph.D. Hydrologic Sciences-** University of California- Davis.
Dissertation: Integrating flow, form and function for improved environmental water management.

2014 **M.Sc. Hydrologic Sciences-** University of California- Davis.
Thesis: Environmental flows in a human-dominated system: integrated water management strategies for the Rio Grande/Bravo basin.

2010 **B.Sc. Ecology-** University of California- San Diego, La Jolla CA.

RESEARCH

MERIT AWARDS

2023 Top Downloaded Publication Award for *Lane et al. (2021),* Hydrological Processes, Wiley.
2022 Reproducible Results Award for *Morgan and Lane (2022),* American Society for Civil Engineers (ASCE).
2022 Early Career Award for Applied Water Research, Universities Council on Water Resources (UCOWR).
2022 Outstanding Graduate Mentor of the Year, USU Department of Civil Engineering.
2022 Natural Resources Workforce Development Fellowship, Southwest Climate Adaptation Science Center, *Haley Canham**
2022 Graduate Research Innovation Grant, Joint Fire Science Program, *Haley Canham**
2022 Outstanding Graduate Student of the Year, USU Dept. of CEE, *Haley Canham**
2019 USU Climate Adaptation Science Fellowship, *Betsy Morgan**
2019 American Water Works Association, Graduate Science and Engineering Scholarship, Intermountain Section, *Karl Christensen**
2018 American Geophysical Union, Outstanding Student Poster Award, *Noelle Patterson**

**Lane graduate student awards*

SUCCESSFUL RESEARCH GRANTS (my share in brackets)

2024-2026 Division of Forestry, Fire and State Lands, Utah Department of Natural Resources. *Establishing a Functional Flows Framework for the Great Salt Lake Basin.* Lane B (PI), Null S, Baker M, Ostermiller J, Neilson B. $300,000

2024-2026 Colorado Department of Transportation, *Predicting direct post-wildfire sediment hazards to transportation infrastructure.* Lane B (PI), Murphy B, Belmont P, Yocom L. $200,000

2023-2026 U.S. Army Engineer Research and Development Center (ERDC). *Riverine communities and ecosystem responses to a changing world.* Schwalb A, Schwartz B, Nowlin W, Lane B (co-I), Perkin J. $3 million ($161,624)

2023-2025 National Oceanic and Atmospheric Administration (NOAA), *Novel Geospatial Architecture of Channel and Floodplain Morphological Attributes within the OWP Hydrofabrics.* Lane B (PI), Phillips C, Cohen S, Manners R, Goharian E, Demitir I. $1.5 million ($500,000)

2022-2024 Graduate Research Innovation Fellowship, Joint Fire Science Program, *Post-wildfire hydrogeomorphic risk management assessment.* Lane B (PI), Canham H. $25,296

2022-2023 Utah Agricultural Experiment Station, *Increasing the water conservation impact of Utah State University's Extension Water Check Program with 5 second metering.* Rosenberg D, Horsburgh J, Lane B (Co-I), Kopp K. $74,833 ($0)

2022-2023 USU SEED Grant, "Investigating the effects of wildfire disturbance on river corridor and water quality changes." $20,000

2021-2023 U.S. Army Engineer Research and Development Center (ERDC), *Predicting ecological futures in Texas watershed.* Nowlin W, Swannack T, Lane B (Co-I). $2.5 million ($270,000)

2021-2026 California State Water Resources Control Board, *Statewide development and implementation of instream flows for cannabis cultivation.* Carter S, Lane B (Co-I), Stein E, Grantham T. $3 million ($310,000)

2020-2022 National Science Foundation, *RAPID: Monitoring and modeling post-wildfire hydrologic response in space and time.* Lane B (PI), Murphy B, Belmont P. $49,900.

2019-2020 National Science Foundation, *HydroLearn Fellowship*. Lane B. $5,000

2019-2022 U.S. Geological Survey, *Temperature impacts of summer dewatering on the Blacksmith Fork River.* Lane B (PI), Neilson B. $41,179 ($41,179)

2019-2021 Utah State University Library, Open Educational Resources Imitative, *Story Map modules to teach physical hydrology fundamentals.* Lane B (PI). $3,000

2018-2020 California State Water Board, *Hydrogeomorphic classification of the South Fork Eel River, CA.* Sandoval-Solis S, Lane B (Co-I), Stein S, Grantham T, Yarnell S, Zimmerman J. $4.3 mil ($648,298)

2018-2019 U.S. Geological Survey, *Improving representation of environmental objectives in water systems models.* Lane B (PI), Rosenberg D. $77,165 ($77,165).

SCHOLARLY CONTRIBUTIONS

Google Scholar: https://scholar.google.com/citations?user=LB2ePs8AAAAJ&hl=en

Research Gate: https://www.researchgate.net/profile/Belize_Lane ORCiD Profile: 0000-0003-2331-7038

Citations	642
h-Index	16
i10-Index	19

Co-Author Key: *Lane Graduate Student ºLane Graduate Advisee ***Lane Post-Doctoral Scholar*

Contribution Key

Conceptualization (C), Methodology (M), Analysis (A), Supervision of Analysis (A_S), Writing (W), Funding (F)
Capitalized letter indicates lead role; Lowercase letter indicates supporting role, no-letter indicates minor or no role.

PEER-REVIEWED JOURNAL ARTICLES

Published

1. Nogueira Xº, Pasternack GB, **Lane B**, Sandoval-Solis S (2024). "Width undulation drives flow convergence routing in 5 flashy ephemeral river types across a dry summer subtropical region," *Earth Surface Processes and Landforms*. https://doi.org/10.1002/esp.5805
2. Margetts Kº, **Lane B**, Crookston B (2023). "Large woody debris accumulation and passage at V- and I-rock weirs in mountain streams," *Journal of Coastal and Hydraulic Structures.* 10.48438/JCHS.2023.0025
3. *Lee A***, **Lane B**, and Pasternack G (2023). "Identifying key channel variability functions controlling ecohydraulic conditions using synthetic channel archetypes," *Ecohydrology.* https://doi.org/10.1002/eco.2533 CmWF
4. Patterson NP*, **Lane B**, Persad G, Ortiz-Partida J, and Sandoval-Solis S (2022). "Projected effects of temperature and precipitation variability change on streamflow patterns using a functional flows approach," *Earth's Future.* DOI:10.1029/2021EF002631 CMA$_s$W
5. Jones Aº, Horsburgh J, Bastidas C, Flint C and **Lane B** (2022). "Advancing hydroinformatics and water data science instruction: Community perspectives and online learning resources." *Frontiers in Water: Water and Hydrocomplexity.* DOI: 10.3389/frwa.2022.901393 CMaw
6. Gallagher MA, Habib EH, Williams D, **Lane B**, Byrd J and Tarboton D (2022). "Designing professional learning experiences to support hydrology and water resources faculty to create high-quality curricular materials." *Frontiers in Education: STEM Education.* DOI:10.3389/feduc.2022.890379. cmaw
7. Grantham T, Carlisle D, **Lane B**, Lusardi R, Obester A, Sandoval S, Stein E, Stanford B, Taniguchi K, Yarnell SM, and Zimmerman J (2022). "Modeling functional flows in California's rivers," *Frontiers in Environmental Science – Freshwater Science*. DOI:10.3389/fenvs.2022.787473. cMAw
8. Morgan E* and **Lane B** (2022). "Quantifying uncertainty in regional flow – ecology relationships," *Journal of Water Resources Planning and Management.* 10.1061/(ASCE)WR.1943-5452.0001533. CMAA$_s$WF
   * Awarded Reproducible Results award by *JWRPM*
9. Stein E, Zimmerman J, Yarnell S, Stanford B, **Lane B**, Taniguchi K, Obester A and Grantham T (2021). "The California Environmental Flows Framework: Meeting the challenges of developing a large-scale environmental flows program," *Frontiers in Environmental Science – Freshwater Science*. DOI:10.3389/fenvs.2021.769943 . CMA$_s$wF
10. *Byrne C***, Pasternack GB, *Guillon H***, **Lane B**, and Sandoval-Solis S (2021). "Channel constriction predicts pool-riffle velocity reversals across landscapes," *Geophysical Research Letters*. DOI:10.1029/2021GL094378 cmA$_s$W
11. Wineland S, Basagaoglu H, Fleming J, Friedman J, Garza-Diaz L, Kellog W, Koch J, **Lane B**, Mirchi A, Sandoval-Solis S, Paladino S, Nava L, Ortiz-Partida J, Plassin S, Gomez-Quiroga G, Saiz-Rodriguez R, Neeson T, Wagner K, Weber N, Wootten A. (2021). "The environmental flows implementation challenge: Insights and recommendations across water-limited systems," *WIRES-Water.* https://doi.org/10.1002/wat2.1565. Cmw
12. Sandoval-Solis S, Paladino S, Garza-Diaz L, Nava L, Friedman J, Ortiz-Partida J, Plassin S, Gomez-Quiroga G, Koch J, Fleming J, **Lane B**, Wineland S, Mirchi A, Saiz-Rodriguez R, and

Neeson T (2022). "Environmental Flows in the Rio Grande - Rio Bravo Basin," *Ecology & Society.* https://doi.org/10.5751/ES-12944-270120. Cmw

13. **Lane B**, *Guillon H***, *Byrne C***, Pasternack GB, Kasprak A, and Sandoval-Solis S (2021). "Channel reach morphology and landscape properties are linked across a large heterogeneous region," *Earth Surface Processes and Landforms.* DOI:10.1002/esp.5246. CMAAsWF
14. Alger SM*, **Lane B**, and Neilson B (2021). "Combined influences of irrigation diversions and associated subsurface return flows on river temperature in a semi-arid region." *Hydrological Processes.* DOI:10.1002/hyp.14283. CMAsWF
15. **Lane B**, Garousi Iº, Gallagher M, Tarboton D, and Habib E (2021). "An open web-based module developed to advance data-driven hydrologic process learning." *Hydrological Processes,* 35(7), e14273. DOI:10.1002/hyp.14273. CMAWf

    * Awarded top-downloaded publication award by *Hydrological Processes*

16. Merritt Aº, **Lane B,** and Hawkins C (2021). "Classification and prediction of natural streamflow regimes in arid regions of the USA." *Water MDPI*. DOI:10.3390/w13030380. cMAsW
17. Beck MB, O'Hara C, Lowndes J, Mazor R, Theroux S, Gillett D, **Lane B** and Gearheart G (2020). "The importance of open science for biological assessment." *PeerJ.* DOI:10.7717/peerj.9539. cMw
18. *Byrne C***, Pasternack GB, *Guillon H***, **Lane B**, and Sandoval-Solis S (2020). "Reach-scale bankfull channel types can exist independently of catchment hydrology," *Earth Surface Processes and Landforms.* DOI:10.1002/esp.4874. CMAsWf
19. **Lane B**, Ortiz-Partida JP, and Sandoval-Solis S (2020). "Extending water resources performance metrics to river ecosystems." *Ecological Indicators.* DOI:10.1016/j.ecolind.2020.106336. CMAWF
20. *Guillon H***, *Byrne C***, **Lane B**, Sandoval-Solis S, and Pasternack GB (2020). "A machine learning framework to predict geomorphic channel types and assess model entropy over large regions," *Water Resources Research.* DOI:10.1029/2019WR026691. CMAsWf
21. Patterson NP*, **Lane B**, Sandoval-Solis S, Pasternack GB, Yarnell S, and Qiu L (2020). "A hydrologic feature detection algorithm to quantify seasonal components of flow regimes." *Journal of Hydrology.* DOI:10.1016/j.jhydrol.2020.124787. CMAAsWf
22. Yarnell SM, Stein E, Webb J, Grantham T, Lusardi R, Zimmerman J, Peek R, **Lane B,** Howard J, and Sandoval-Solis S (2019). "A functional flows approach for selecting ecologically relevant flow metrics for environmental flow applications." *River Research and Applications.* DOI:10.1002/rra.3575. CMAAsWf
23. **Lane B** and Rosenberg DE (2019). "Promoting instream flows in the changing western U.S." *Journal of Water Resources Planning and Management.* DOI:10.1061/(ASCE)WR.1943-5452.0001145. CMAWf
24. Ortiz-Partida JP, Kahil T, Ermolieva T, Ermoliev Y, **Lane B,** Sandoval-Solis S, and Wada Y (2019). "A two-stage stochastic optimization for robust operation of multipurpose reservoirs." *Water Resources Management.* DOI:10.1007/s11269-019-02337-1. cmW
25. **Lane B**, Sandoval-Solis S, Yarnell S, Stein E, Dahlke H, and Pasternack GB (2018). "Beyond metrics? The role of hydrologic baseline archetypes in environmental water management." *Environmental Management.* DOI:10.1007/s00267-018-1077-7. CMAW
26. **Lane B**, Pasternack GB, and Sandoval-Solis S (2018). "Integrated analysis of flow, form, and function for river management and design testing." *Ecohydrology.* DOI:10.1002/eco.1969. CMAwF

27. **Lane B**, Pasternack GB, Dahlke H, and Sandoval-Solis S (2017). "The role of topographic variability in river channel classification." *Progress in Physical Geography.* DOI:10.1177/0309133317718133. CMAW
28. **Lane B**, Dahlke H, Pasternack GB, and Sandoval-Solis S (2017). "Revealing the diversity of natural hydrologic regimes in California for future environmental flows applications." *Journal of the American Water Resources Association.* DOI:10.1111/1752-1688.12504. CMAW
29. Ortiz-Partida JP, **Lane B**, and Sandoval-Solis S (2016). "Economic effects of a reservoir re-operation policy in the Rio Grande/Bravo for integrated human and environmental water management." *Journal of Hydrology: Regional Studies.* DOI:10.1016/j.ejrh.2016.08.004. CMA_sW
30. Porse E, Sandoval-Solis S, and **Lane B** (2015). "Integrating environmental flows into multi-objective reservoir management for a transboundary, water-scarce river basin: Rio Grande/Bravo." *Water Resources Management*. DOI:10.1007/s11269-015-0952-8. CMaW
31. **Lane B**, Sandoval-Solis S, and Porse E (2014). "Environmental flows in a human-dominated system: Evaluating integrated water management strategies in the Rio Grande/Bravo Basin." *River Research and Applications.* DOI:10.1002/rra.2804. CMAW
32. Ai X, Sandoval-Solis S, Dahlke H, and **Lane B** (2014). "Reconciling hydropower and environmental water uses in the Leishui River Basin." *River Research and Applications*. DOI:10.1002/rra.2728. cmaw

TECHNICAL REPORTS, BOOK CHAPTERS, AND CONFERENCE PAPERS

1. **Lane B**, Pasternack GB, *Guillon H**, Lee A**,* and Sandoval-Solis S (2022). "Regional eflows design using Geo-Hydro-Eco functional archetypes," Conference Paper, 39th World Congress, IAHR, Grenada, Spain.
2. *Lee A**,* Pasternack GB, **Lane B**, Sandoval S, *Guillon H**, Kahn S*** (2021). "Method for generating 3d terrain models using river builder for selected channel types for the state of California," Final Report. California State Water Board. Sacramento, CA.
3. *Guillon H**,* **Lane B,** Sandoval S, Pasternack GB, *Lee A**, Kahn S*** (2021). "Methodology for predicting geomorphic classes using Lidar data for the State of California," Final Report. California State Water Resources Control Board. Sacramento, CA.
4. *Kahn S***, *Guillon H**,* Sandoval S, Pasternack GB, *Byrne C**,* **Lane B**, *Lee A*** (2021). "Modeling network scale channel cross-section using empirical scaling relationships and coarse resolution remotely sensed dataset," Final Report, California State Water Board. Sacramento, CA.
5. California Environmental Flows Working Group. "California Environmental Flows Framework Version 1.0." California Water Quality Monitoring Council Technical Report 37 pp. 2021.
6. *Byrne CF**, Guillon H***, **Lane B**, Pasternack GB, and Sandoval-Solis S (2020). Coastal California Regional Geomorphic Classification. Final Report. California State Water Resources Control Board. Sacramento, CA.
7. *Byrne CF**, Guillon H***, **Lane B**, Pasternack GB, and Sandoval-Solis S (2019). Sacramento River Basin Geomorphic Classification. Final Report. Submitted to the California State Water Resources Control Board. Sacramento, CA.
8. *Guillon H***, *Byrne CF**,* **Lane B**, Pasternack GB, and Sandoval-Solis S (2019). South Fork of the Eel River Basin Geomorphic Classification. Final Report. California State Water Resources Control Board. Sacramento, CA.

9. Sandoval S and **Lane B** (2018). Estimating statewide environmental flows. California State Water Resources Control Board. Sacramento, CA.
10. Lund J, Sandoval S, Gray B, Moyle P, Frank R, **Lane B**, Yarnell S, Dahlke H, Grantham T, Lusardi R, Santos N, Bell A, and Willis A (2016). "Keeping California's streams alive: An approach for rapidly setting environmental flow standards for all rivers in California." Final Technical Report. California State Water Resources Control Board. Sacramento, CA.
11. **Lane B**, Sandoval-Solis S, Dahlke HE, and Pasternack GB (2016). "Hydro-geomorphic classification of California: Sacramento Basin." Technical Report for California State Water Resources Control Board. Sacramento, CA.
12. Metzger L, **Lane B**, MacPhee D, Kilanski M, Kromann J, Salvatierra J, Setegn S. 2015. "An international perspective on the basin scale water - energy nexus." Sustainability of Integrated Water Resources Management: Water Governance, Climate and Echo-hydrology, S. Setegn and M. Donoso (Ed.), Springer, 320 p. DOI:10.1007/978-3-319-12194-9_25.

DIGITAL PRODUCTS

Canham H and Lane B (2022). Rainfall-Runoff Event Detection and Identification (RREDI) toolkit, HydroShare, http://www.hydroshare.org/resource/797fe26dfefb4d658b8f8bc898b320de

Lane B and Byrne C (2021). California river classification field surveying protocols, HydroShare, https://doi.org/10.4211/hs.023f24c1a62f48f496e10b7cbafe6b86

California Environmental Flows Working Group (2021). California Natural Flows Database: Functional flow metrics v1.2.1, May 2021. https://rivers.codefornature.org/

Functional Flows Calculator, https://eflows.ucdavis.edu/hydrology

Lane B and Rosenberg D (2019). Keeping Water in Utah's Streams, 2-minute animated educational video. Utah Water Research Laboratory.

California Environmental Flows Framework (CEFF) project website, https://ceff.ucdavis.edu

Guillon H, Byrne C, Lane B, Sandoval S, Pasternack GB (2020). Channel types predictions for the Sacramento River basin, https://doi.org/10.25338/B8031W

Guillon H, Byrne C, Lane B, Sandoval S, Pasternack GB (2020). Channel types predictions for the South Fork Eel River basin, https://doi.org/10.25338/B8VG83

SELECTED PROFESSIONAL PRESENTATIONS

1. Rengers F et al . "Sediment transport analysis of debris flows using lidar in the Grizzly Creek Fire, Glenwood Canyon, CO, USA," AGU Fall Meeting. San Francisco, CA. Dec 14 2023.
2. David S et al. "Fire-WATER: predicting post-wildfire sedimentation cascades and the vulnerability of water supply reservoirs," AGU Fall Meeting. San Francisco, CA. Dec 13 2023.
3. Conley M* and **Lane B**. "A generalized framework for improving subadult mussel habitat modeling," AGU Fall Meeting. San Francisco, CA. Dec 14 2023.
4. Canham H* and **Lane B**. "Exploring controls on event runoff response in wildfire disturbed watersheds," American Geophysical Union Fall Meeting. San Francisco, CA. Dec 12 2023. [*poster*]
5. *Nusrat F***, **Lane B,** Ostermiller J, Null S, Neilson B, Thompson P, Baker M. "Utah's Functional Flows Framework," Salt Lake County Watershed Symposium, Nov 15, 2023.
6. Conley M* and **Lane B**. "A four-pronged approach to improving subadult mussel habitat modeling," Next Generation Ecological Modeling Symposium. U.S. Army Corps – Environmental Research and Development Center. Vicksburg, MS. Aug 2, 2023. **Awarded best graduate student presentation*

7. Canham H* and **Lane B**. "Revealing hydrologic variability in post-wildfire rainfall-runoff response," ICRW8 Corvallis, OR. June 2023.
8. Rengers F, Bower S, Knapp A,… **Lane B**, Ridgway P*, Murphy B. "Post-fire debris flow observations following the Grizzly Creek Fire, Glenwood Canyon, Colorado, USA: Lessons Learned," Geological Society of America – Rocky Mountain Section Meeting. Fort Collins, CO. May 25, 2023.
9. Davis A, Vaughn C, Donovan S, **Lane B**, Conley M*. "Assessing the feasibility of a mussel reintroduction into the Mission Reach of the San Antonio River, Texas. Freshwater Mussel Conservation Society, April 2023.
10. **Lane B**, Canham H*, Ridgway P*, Murphy B. "Observed Hydro-Geomorphic Impacts from Compounding Watershed Disturbances: Wildfire, Monsoons, and Debris Flows," American Geophysical Union Fall Meeting. Chicago, IL. December 16, 2022.
11. *Lee A***, **Lane B**, Pasternack GB. "Characterizing sub-reach variabilities and covariance structures using spectral analysis." AGU Fall Meeting. Chicago, IL. December 13, 2022 [*poster*]
12. Patterson N*, Sandoval-Solis S, **Lane B**, Xong X, Csank A. "Dendrochronology reveals the response of a riparian forest to water management policies in an arid basin." AGU Fall Meeting. Chicago, IL. December 12, 2022.
13. **Lane B**, [+]Pasternack GB, *Guillon H***, *Lee A***, and Sandoval-Solis S. "Regional Eflows Design using Geo-Hydro-Eco Functional Archetypes," 39th World Congress, International Association for Hydro-environment Engineering and Research (IAHR), Grenada, Spain. June 22, 2022. [+]*Presenter*
14. Garousi Iº and **Lane B**. "Enhancing hydrology learning by using open web platforms and data services in the education of hydrologists." AGU Fronteirs in Hydrology, Puerto Rico. June 21, 2022.
15. Patterson N* **Lane B**, Persad G, Sandoval-Solis S. "Quantifying shifts in functional flows due to climate change in the Sierra Nevada, California." Environmental and Water Resources Congress (ASCE), Atlanta GA. June 7, 2022.
16. Thurber D* and **Lane B**. "Streamflow response to snowmelt in a karst mountain system," AGU Hydrology Days, Colorado State University. April 27, 2022. Fort Collins, CO.
17. Canham H* and **Lane B.** "Post-wildfire rainfall-runoff event response variability across space and time in monitored nested watersheds in the Colorado River headwaters" AGU Hydrology Days, Colorado State University. April 25, 2022. Fort Collins, CO.
18. Grantham T, Stein E, **Lane B**, Yarnell S. "Progress and Challenges in Implementing the California Environmental Flows Framework." American Fisheries Society. April 2022. Santa Cruz, CA.
19. **Lane B** and Rowles J* "Assessing the impact of potential instream flow targets on human supply and aquatic habitat in the South Fork Eel River." CWEMF Annual Meeting. April 6, 2022. Folsom, CA.
20. *Lee A***, **Lane B**, Pasternack GB. "Key geomorphic parameters characterizing eco-hydraulic responses of river channels using River Builder." AGU Fall Meeting. New Orleans, LA. Dec 15, 2021 [*poster*]
21. Canham H*, **Lane B**, Murphy B. "Highly variable post-wildfire streamflow response across contiguous watersheds." AGU Fall Meeting. New Orleans, LA. December 17, 2021.
22. *Guillon H***, **Lane B**, Pasternack GB. "Evaluating the influence of erosion and tectonic processes on California's topography by measuring its fractal dimension and anisotropy across scales." European Geophysical Union (EGU), *Virtual*. April 27, 2021.
23. Rowles J*, **Lane B**, Sandoval-Solis S, Young C, Chalmers D, Forni L. "Balancing competing water needs in an unregulated seasonal watershed subject to distributed diversion pressures." American Geophysical Union (AGU) Fall Meeting, *Virtual.* Dec 15, 2020.

24. Habib E, Gallagher M, Byrd J, Tarboton D, Williams D, Ames D, and **Lane B.** "Results from Virtual Hackathon for Co-development and Sharing of Authentic Learning Modules in Hydrology and Water Resources." AGU Fall Meeting, *Virtual.* Dec 8, 2020. #ED024
25. Morgan E* and **Lane B.** "Incorporating critical context and uncertainty in flow-ecology relationships," American Water Resources Association (AWRA). *Virtual.* Nov 9-12, 2020.
26. **Lane B**, Patterson N*, Sandoval-Solis S. "Modeling statewide hydrologic patterns and changes under mounting climate stressors," California Water and Environmental Modeling Forum (CWEMF). *Virtual.* Oct 8-10, 2020. *70+ attendees*.
27. Grantham T, Yarnell S, **Lane B**, Stein E, Sandoval-Solis S. "A functional flows modeling approach for environmental flow standards in California," CWEMF. *Virtual.* Oct 8-10, 2020.
28. **Lane B**, Sandoval S, Young C, Chalmers D. "Environmental and human water resources modeling in the South Fork Eel River, CA," CWEMF. *Virtual.* Oct 8-10, 2020. 70+ attendees
29. Sandoval S, **Lane B**, *Guillon H***.* "Instream flows in the age of AI," CWEMF. Oct 8-10, 2020.
30. Alger SM*, **Lane B**, Neilson B. "Lateral return flows control temperature patterns in irrigation depleted streams," American Fisheries Society Utah Chapter. St. George, UT. Feb 27, 2020.
31. *Byrne C***, Pasternack GB$^{\Psi}$, **Lane B**, *Guillon H***, Sandoval-Solis S. "Self-maintained riffle-pool couplets are less abundant than expected across California's diverse river systems," AGU Fall Meeting, San Francisco CA. December 13, 2019.
32. *Guillon H***, *Byrne C***, **Lane B**, Sandoval-Solis S, Pasternack GB. "A comprehensive analysis of model outputs characterizes and compares machine-learning-enabled classification of rivers in regions of California," AGU Fall Meeting, San Francisco CA. Dec 13, 2019
33. Patterson N*, **Lane B**, Sandoval-Solis S. "Evidence of climate change in the Sierra Nevada from seasonal flow attributes," AGU Fall Meeting, San Francisco CA. Dec 11, 2019.
34. Grantham T, Yarnell S, **Lane B**, Stein E, Sandoval-Solis S, Zimmerman J, Howard J, Carlisle D, Lusardi R. "A functional flows approach for developing environmental flow standards in California," AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
35. **Lane B**, *Hung F***, Rowles JL*, Chalmers D, Sandoval-Solis S. "Setting limits with limited data: A catchment scale modeling framework to evaluate human-ecological water use tradeoffs," AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
36. Alger SM*, **Lane B**, Neilson, B. "Controls on summer stream temperature patterns in irrigation-depleted streams," AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
37. Patterson N*, **Lane B**, Sandoval-Solis S$^{\Psi}$ "Understanding natural streamflow with the Seasonal Flow Detection Algorithm," AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
38. Yarnell S, Stein E, Zimmerman J, **Lane B**, Grantham T, Howard J, Lusardi R, Sandoval-Solis S. "Stakeholder engagement in the California Environmental Flows Framework," International Society for River Science (ISRS) Biannual Meeting, Vienna, Austria. Sep 9, 2019.
39. **Lane B**, Grantham T, Yarnell S, Stein E, Zimmerman J, Howard J, Lusardi R, Sandoval-Solis S. "California Environmental Flows Framework Decision Support Tools," International Society for River Science (ISRS) Biannual Meeting, Vienna, Austria. September 9, 2019.
40. *Invited.* **Lane B. "**Geomorphic classification of California." California Water Data Science Symposium: Open Water. CalEPA Headquarters, Sacramento, CA. July 2, 2019.
41. *Hung F***, Morgan B*, **Lane B** "An integrated modeling framework for ecohydraulic analysis," Univ. Council on Water Resources (UCOWR). Snowbird, UT. June 13, 2019.

42. Alger SM*, **Lane B**, Neilson BT. "Characterizing depleted flow and temperature patterns on the Blacksmith Fork River," UCOWR Annual Conference. Snowbird, UT. June 13, 2019.
43. **Lane B** and Rosenberg DE. "Promoting instream flows in western states," UCOWR Annual Conference. Snowbird, UT. June 13, 2019
44. Christensen K* and **Lane B** "Unimpaired hydrologic metric scaling for California streams," UCOWR Annual Conference. Snowbird, UT. June 12, 2019.
45. **Lane B**, Grantham T, Yarnell S, Stein E, Zimmerman J, Howard J, Lusardi R, Sandoval-Solis S$^{\Psi}$. "California Environmental Flows Framework Decision Support Tools I," Society for Freshwater Sciences (SFS) Annual Meeting, Salt Lake City, UT May 23, 2019.
46. Patterson NP* and **Lane B.** "Application of ecologically-based flow metrics for cannabis-impaired streams," Annual. Salmonid Restoration Conference, SRF. Santa Rosa, CA. April 24, 2019.
47. Sandoval-Solis S and **Lane B** "Natural streamflow and geomorphic classification for California," California Water and Environmental Modeling Forum. Folsom, CA. April 22, 2019.
48. *Invited.* **Lane B**, Burnett P, Nielson J, Rosenberg D. "Expanding Instream Flows to Protect Ecosystems," Utah Water Users Conference. St George, UT. March 20, 2019.
49. Patterson NP* and **Lane B.** "Analyzing California reference streamflow with the seasonally-based Functional Flows Calculator," AGU Fall Meeting. Washington DC, December 2018. [Poster]

    $^{+}$ *Received the American Geophysical Union's Outstanding Student Poster Award*
50. Pasternack GB and **Lane B**. "Flow, form, and function: An extensible framework for environmental flows." International Symposium on Ecohydraulics (ISE), Tokyo, Japan. August 21, 2018.
51. Stein E, Yarnell S, Sandoval S, **Lane B**, Zimmerman J, Howard J, Grantham T, "Establishing environmental flow targets in complex environments." International Symposium on Ecohydraulics (ISE), Tokyo, Japan. August 21, 2018.
52. *Invited.* **Lane B** and Stein E. "Key challenges and opportunities in incorporating environmental flows into bioassessment." The evolving science supporting biological assessments & criteria. Society for Freshwater Sciences Annual Conference. Detroit, MI. May 23, 2018.
53. Stein ED, Yarnell S, Sandoval-Solis S, **Lane B**, Zimmerman J, Howard J, Grantham T. "A coordinated approach for developing statewide environmental flow regulations in California." Society for Freshwater Sciences Annual Conference. Detroit, MI. May 21, 2018.
54. **Lane B** and Pasternack GB. "Regional methodology for developing ecological flow criteria." Annual Salmonid Restoration Federation Conference, Fortuna, CA. Apr 14, 2018.
55. **Lane B** and Rosenberg DE. "Can we have it all? Envisioning Utah's rivers as coupled human – natural systems." Spring Runoff Conference, Logan, UT. Mar 27, 2018.

TEACHING

2017-2023	Physical Hydrology (CEE 6400), Utah State University, 3 credits
2021-2023	Engineering Hydrology (CEE 3430), Utah State University, 3 credits
2019	Hydrologic Field Methods (CEE 6930), Utah State University, 3 credits
2016-2017	Water Science and Management (ESM 121), UC Davis, 3 crds (co-instructor)
2018	Principles of HEC Software (Winter 2018), UC Davis, 3 crds (co-instructor)

MENTORSHIP

Graduate Students (current students in bold)

Megan Conley, PhD candidate. Hydrodynamic monitoring and modeling to support freshwater mussel reintroduction

Haley Canham, PhD candidate. Post-wildfire hydrology in a changing Western U.S.

Jose Castejon, PhD, Investigating channel morphology and hydrodynamics across the U.S. to improve regional flood inundation modeling

Paxton Ridgway, MS. Hydrogeomorphic response to compounding disturbances in an intensively monitored burned watershed

Steven White, MS, Incorporating topographic variability patterns into river channel design

Daniel Thurber, MS (2022). Characterizing Karst Mountain Watersheds Through Streamflow Response to Snowmelt. *Currently*: Engineer at WSP, Redmond WA.

Noelle Patterson, PhD (2022). *Currently*: Eco-Engineer at CBEC, Sacramento CA.

Haley Canham, MS (2022) Variable hydrologic response from burned western watersheds. *Currently*: PhD candidate at Utah State.

Jesse Rowles, MS (2020). Human – ecological water management tradeoffs in a seasonal watershed with spatially distributed demands. *Currently*: Eco-Engineer at CBEC, Sacramento CA.

Betsy Morgan, MS (2021). Accounting for uncertainty in flow-ecology relationships. *Currently*: Staff Engineer at Colorado River Authority of Utah; prev. Interstate Streams Scientist at Utah Dept. of Water Resources, Salt Lake City.

Sara (Madison) Alger, MS, Stream flow and temperature patterns in an irrigation depleted stream. *Currently*: Engineer at Jacobs Engineering, Salt Lake City UT.

Karl Christensen, MS, Unimpaired hydrologic metric scaling. *Currently*: Engineer at AECOM, Denver CO.

Committee Service

2023-Present	Eshan Kahrizi, PhD, CEE
2023-Present	Ishwar Joshi, PhD, CEE
2023-Present	Jihad Ottman, PhD, CEE
2023-Present	Reza Morovati, PhD, CEE
2022-Present	Michael Laswell, PhD, CEE
2022-Present	Mahmud Aveek, PhD, CEE
2018-Present	Amber Jones, PhD, CEE
2019-Present	Homa Salehabadi, PhD, CEE
2021-Present	Motasem Abuolqumboz, PhD, CEE
2022-Present	Casey Langstroth, MS, Watershed Sciences
2021-2023	Aaron Sigman, MS, CEE
2020-2022	Kathryn Margetts, MS, CEE
2019-2022	Rui Gao, PhD, CEE
2018-2020	Adam Fischer, MS, Watershed Sciences
2018-2020	Madeline Friend, MS (Plan B), Watershed Sciences

Postdoctoral Scholars

2020-Present	Dr. Anzy Lee
202-2021	Dr. Sana Kahn, *Currently:* Researcher at CSIRO, Australia
2018-2021	Dr. Herve Guillon, *Currently*: Principal Data Scientist, Vitidore, CA.

2018-2020 Dr. Colin Byrne, *Currently*: USBR Sedimentation & Hydraulics Program, Denver CO.
2018-2019 Dr. Fengwei Hung, Systems Modeling

SERVICE

Public Outreach

Webinars, Podcasts, and Videos

2022 Functional Environmental Flows, WaterTalk Podcast, February 18, 2022.

2020 Keeping Water in Utah Streams, Animated video available through the Utah Water Research Laboratory website.

2020 Lane B and Habib E. "HydroLearn and Jupyter Notebook," CUAHSI Forum on Transitioning to Online Education." May 8, 2020. *88 views.*

2018 Lane B, Patterson N**, and Sandoval-Solis, S. California Natural Streamflow Classification and Functional Flow Metrics. California Water Resources Control Board. **Over 50 participants from numerous state agencies, non-profits, consulting firms, and universities. 229 views.*

2018 Patterson N** and Lane B. Functional Flow Calculator. Webinar. California Water Quality Monitoring Council. *451 views.*

2018 Patterson N** and Lane B. Functional Flows Calculator: Under the Hood. Webinar. State Water Resources Control Board. *158 views.*

Newsletters, Blogs and Briefings

2020 Functional flows can improve environmental water management in California, CA Water Blog. November 29, 2020. **Over 400 views in first day and 3,000 views in first 3 weeks..*

2020 CEFF Technical Workgroup. "Environmental flows in California," CA Water Blog. March 18, 2020.

2020 Overview of analysis for instream flow regime criteria on a watershed scale, Version 2. March 2020. California Department of Fish and Wildlife, Instream Flow Program (CDFW), West Sacramento, CA.

2020 CEFF Technical Workgroup. "The California Environmental Flows Framework," The Current, CalTrout, Jan 2020. https://caltrout.org/article/the-california-environmental-flows-framework

2019 Lane B and Stein ED. "Framework and web tools for developing ecological flow criteria in California," National Newsletter. National Water Quality Monitoring Council, Spring 2019.

2018 CEFF Technical Workgroup. "Functional flows for developing environmental flow recommendations," California Water Blog. December 9, 2018.

2018 Lane B and Rosenberg DE "Expanding instream flows to protect ecosystems in over-allocated river basins." Legislative Briefing, July 2018.

2017 Lane B, Sandoval S and Yarnell S. "A simplified method to classify streams and improve California's water management," California Water Blog. July 16, 2017.

Selected Public Workshops and Presentations

2021 Habib E, Tarboton D, Ames D, Gallagher M and Lane B, Annual Summer HydroLearn Hackathons. Instructed 25-30 international hydrology faculty in 8-day NSF-funded workshop. June 22 - July 2, 2020 and July 12 - 21, 2021.

2020 Lane B and Sandoval S. California Environmental Flows Framework, CA Dept. of Water Resources Environmental Committee Meeting. February 27, 2020. Sacramento CA. ~100 attendees

2020 *Invited Presentation.* Lane B and Rosenberg DE. Instream flows and water conservation. Quarterly Water Coordination Meeting, Utah Div. of Natural Resources. January 7, 2020. Salt Lake City, UT.

2020 *Invited Seminar*. Lane B. Interdisciplinary Research Forum, NSF Climate Adaptation Science. Utah State University. February 12, 2020

2020 *Invited Seminar*. Lane B. "Establishing environmental flows for California streams: Emerging technical and implementation tools," Dept. of Civil and Environmental Engineering, Stanford University. Palo Alto, CA. March 4, 2019.

2019 Sandoval, S. and Lane B "Environmental flows for the State of California," U.S. Department of Agriculture Seminar Series, Sacramento CA. January 11, 2019.

2018 Lane B and Rosenberg, D.E. "Promoting instream flows in Cache Valley," Cache Valley Water District Board Meeting. Dec 3, 2018.

2018 CEFF Technical Workgroup "California Environmental Flows Framework," California Department of Fish and Wildlife Technical Workshop. November 2, 2018.

2018 CEFF Technical Workgroup "California Environmental Flows Framework," California Advisory Committee on Salmon and Steelhead. October 24, 2018

2018 *Invited Seminar*. Lane B. "Functional flows in modified hydroscapes." Colorado State University, Dept. Civil & Environmental Engineering. Fort Collins, CO. April 26, 2018

2018 *Invited Seminar*. Lane B. "Functional flows: Integrating ecology and engineering for sustainable river basins." Dept. Watershed Sciences, Utah State, Logan UT. Jan 31, 2018.

Media Highlights

2023 "USU professor helps agencies mitigate wildfire effects and protect water sources," Utah State Engineering Magazine, January 2023.

2022 "USU College of Engineering professor receives early career award for applied water research," Utah State Today, January 2022.

2022 Winter Break Edition of Cache Rendezvous.

2021 "Deadbeat dams' and their impact on cold-water ecosystems," High Country News, September 2021.

2021 "USU researcher leads team monitoring grizzly creek burn scar hydrologic response," Utah State Today, July 2021

2021 "Spring runoff could trigger slides on Grizzly Creek burn scar," KDNK public radio, March 2021.

2020 "Water data and software services to support discovery, reproducibility, and collaboration in the water-resources domain and beyond," Northeast Big Data Innovation Hub. Emily Clark, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), September 2020.

2020 "Aspiring hydrologists getting their feet wet," Utah Water Research Laboratory 2020 Annual Report. Utah State University.

2019 "Developing solutions for Utah's rising water management crisis," Utah State Engineer Magazine, College of Engineering, Utah State University, October 2019.

2019 "Balancing summer water needs in the Blacksmith Fork River," Utah Water Research Laboratory 2018 Annual Report. Utah State University, May 2019.

2018 "Cache Water Board discusses options for expanding instream flow," Herald Journal News, Logan UT, Dec 7, 2018.

Working Group Affiliations & Service

2023-Present *Invited*, Co-chair of Hydroinformatics Working Group for the Cooperative Institute for Research to Operations in Hydrology (CIROH)

2022-Present *Invited,* Middle Colorado Watershed Council Technical Advisory Team

2016-Present *Founding Member,* California Environmental Flows Technical Workgroup

2017-Present *Invited,* California Environmental Flows Strategic Workgroup, California Water Quality Monitoring Council (Senate Bill 1070). (2017 to Present). **Other members include CalEPA, Cal State Water Board, Cal Dept. Water Resources, USFS, SCCWRP, etc*

2019-Present Universities Council on Water Resources (UCOWR) Delegate

2019-Present *Invited,* Logan River Task Force. Logan, UT

Editorial & Reviewer Service

Technical Reports

USGS papers and reports; USBR models and reports**;** California Department of Fish & Wildlife reports and factsheets

Proposals

National Science Foundation – Geomorphology & Land Use Dynamics; Hydrological Sciences

Journal Articles

Numerous journals in hydrology, earth science, and water management including: Nature, BioScience, J. Hydrology, J. Water Resources Planning & Management, J. Hydrologic Engineering, Environmental Management, J. American Water Resources Association, Ecological Indicators

Conference Session Convener

AGU Fronteirs in Hydrology. *Sharing experiences in developing, implementation, and evaluation of digital hydrology learning resources*. Puerto Rico, June 2022.

Society for Freshwater Sciences Annual Conference. *The environmental flow and water management nexus.* Salt Lake City UT, June 2019.

USU Spring Runoff Conference. March 2018.

Committee Service

University Service

2022-2023	Search Committee, USU Field Safety Officer
2020-2021	USU Field Safety Committee, College of Engineering Representative
2019	USU Gender Equity Committee
2017-Present	Adjunct Faculty, Department of Watershed Sciences, USU
2018-2020	Faculty Advisor, NSF Climate Adaptation Science

Department and College Service

2023-	Utah Water Research Laboratory Safety Committee
2018-2022	Academic Advisor, USU Engineering Senior Design
2021-2022	Search Committee, Groundwater faculty search hire in CEE
2019-2020	Search Committee, Cluster faculty hire search in CEE

Professional Memberships

American Geophysical Union, American Society for Civil Engineers, American Water Resources Association, Universities Council on Water Resources, Society for Freshwater Science, International Society for River Science, Consortium of Universities for the Advancement of Hydrologic Science.