

Dr. Belize Lane, Associate Professor

Curriculum Vitae

Department of Civil and Environmental Engineering • Utah State University
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EDUCATION

2017 **Ph.D. Hydrologic Sciences**- University of California- Davis, Davis CA.

Dissertation: Integrating flow, form and function for improved environmental water management.

2014 **M.Sc. Hydrologic Sciences**- University of California- Davis, Davis CA.

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 **graduate student 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 CEE Department.

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**

SUCCESSFUL RESEARCH GRANTS (my share in brackets)

2023-2025 Colorado Department of Transportation, *Predicting direct post-wildfire sediment hazards to transportation infrastructure. Lane B (PI), Murphy B, Belmont P, Yocom L.*

- 2023-2025 CIROH, *Novel Geospatial Architecture of Channel and Floodplain Morphological Attributes within the OWP Hydrofabrics*. **Lane B (PI)**, Cohen S, Phillips C...
- 2022-2024 Graduate Research Innovation Fellowship, Joint Fire Science Program, *Post-wildfire hydrogeomorphic risk management assessment*. **Lane B (PI)**, Canham H.
- 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.
- 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 – Phase I*. Nowlin W, Swannack T, **Lane B (Co-I)**.
- 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.
- 2020-2022 National Science Foundation, *RAPID: Monitoring and modeling post-wildfire hydrologic response in space and time*. **Lane B (PI)**, Murphy B, Belmont P.
- 2019-2020 National Science Foundation, *HydroLearn Fellowship*. **Lane B**.
- 2019-2022 U.S. Geological Survey, *Temperature impacts of summer dewatering on the Blacksmith Fork River*. **Lane B (PI)**, Neilson B.
- 2019-2021 Utah State University Library, Open Educational Resources Initiative, *Story Map modules to teach physical hydrology fundamentals*. **Lane B (PI)**.
- 2018-2020 California State Water Resources Control 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.
- 2018-2019 U.S. Geological Survey, *Improving representation of environmental objectives in water systems models*. **Lane B (PI)**, Rosenberg D.

SCHOLARLY CONTRIBUTIONS

Google Scholar Statistics

Profile: <https://scholar.google.com/citations?user=LB2ePs8AAAAJ&hl=en>

	All	Since 2018
Citations	472	438
h-Index	13	
i10-Index	15	

ResearchGate Statistics

Profile: https://www.researchgate.net/profile/Belize_Lane

Citations	417
Total Reads	10,818

ORCID Profile: [0000-0003-2331-7038](https://orcid.org/0000-0003-2331-7038)

Co-Author Key

*Lane Graduate Student

°Lane Graduate Advisee

ψLane's PhD Supervisor

**Lane Post-Doc

PEER-REVIEWED JOURNAL ARTICLES

Published

1. 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>
2. Patterson NP*, Lane B, Persad G, Ortiz-Partida J, and Sandoval-Solis Sψ (2022). "Projected effects of temperature and precipitation variability change on streamflow patterns using a functional flows approach," *Earth's Future*. DOI:10.1029/2021EF002631
3. Jones A°, 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
4. 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.
5. Grantham T, Carlisle D, Lane B, Lusardi R, Obester A, Sandoval Sψ, 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.
6. Morgan E* and Lane B (2022). "Quantifying uncertainty in regional flow – ecology relationships," *Journal of Water Resources Planning and Management*. DOI:10.1061/(ASCE)WR.1943-5452.0001533.
* Awarded Reproducible Results award by JWRPM
7. 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 .
8. Byrne C**, Pasternack GBψ, Guillon H**, Lane B, and Sandoval-Solis Sψ (2021). "Channel constriction predicts pool-riffle velocity reversals across landscapes," *Geophysical Research Letters*. DOI:[10.1029/2021GL094378](https://doi.org/10.1029/2021GL094378)
9. Wineland S, Basagaoglu H, Fleming J, Friedman J, Garza-Diaz L, Kellog W, Koch J, Lane B, Mirchi A, Sandoval-Solis Sψ, 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>.
10. Sandoval-Solis Sψ, 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>.

11. **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](https://doi.org/10.1002/esp.5246).
12. *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](https://doi.org/10.1002/hyp.14283).
13. **Lane B**, Garousi I^o, 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](https://doi.org/10.1002/hyp.14273).
* Awarded top-downloaded publication award by *Hydrological Processes*
14. *Merritt A^o*, **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.
15. 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](https://doi.org/10.7717/peerj.9539).
16. *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](https://doi.org/10.1002/esp.4874).
17. **Lane B**, Ortiz-Partida JP, and Sandoval-Solis S[‡] (2020). “Extending water resources performance to river ecosystems.” *Ecological Indicators*. DOI:[10.1016/j.ecolind.2020.106336](https://doi.org/10.1016/j.ecolind.2020.106336). CMAWF
18. *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](https://doi.org/10.1029/2019WR026691).
19. *Patterson NP**, **Lane B**, Sandoval-Solis S[‡], Pasternack GB[‡], Yarnell S, and Qiu L^o (2020). “A hydrologic feature detection algorithm to quantify seasonal components of flow regimes.” *Journal of Hydrology*. DOI:[10.1016/j.jhydrol.2020.124787](https://doi.org/10.1016/j.jhydrol.2020.124787).
20. 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](https://doi.org/10.1002/rra.3575).
21. **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](https://doi.org/10.1061/(ASCE)WR.1943-5452.0001145).
22. 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](https://doi.org/10.1007/s11269-019-02337-1).
23. **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](https://doi.org/10.1007/s00267-018-1077-7).
24. **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](https://doi.org/10.1002/eco.1969).

25. **Lane B**, Pasternack GB^ψ, Dahlke H, and Sandoval-Solis S^ψ (2017). “The role of topographic variability in river channel classification.” *Progress in Physical Geography*. DOI:[10.1177/0309133317718133](https://doi.org/10.1177/0309133317718133).
26. **Lane B**, Dahlke H, Pasternack GB^ψ, and Sandoval-Solis S^ψ (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](https://doi.org/10.1111/1752-1688.12504).
27. Ortiz-Partida JP, **Lane B**, and Sandoval-Solis S^ψ (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](https://doi.org/10.1016/j.ejrh.2016.08.004).
28. Porse E, Sandoval-Solis S^ψ, 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](https://doi.org/10.1007/s11269-015-0952-8).
29. **Lane B**, Sandoval-Solis S^ψ, 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](https://doi.org/10.1002/rra.2804).
30. Ai X, Sandoval-Solis S^ψ, 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](https://doi.org/10.1002/rra.2728).

Manuscripts Under Review

1. Patterson NP*, Sandoval-Solis S^ψ, **Lane B**, Pasternack GB^ψ. “Dendrochronology reveals the response of a riparian forest to water management policies in an arid environment,” Submitted to *Ecohydrology*.
2. Margetts K^o, **Lane B**, Crookston B. “Large woody debris accumulation and passage at V- and I-rock weirs in mountain streams,” Submitted to *Journal of Coastal and Hydraulic Structures*.
3. Nogueira X^o, Pasternack G^ψ, **Lane B**, Sandoval-Solis S^ψ. “Width undulation drives flow convergence routing in 5 flashy ephemeral river types across a dry summer subtropical region,” Submitted to *Earth Surface Processes and Landforms*.
4. Thurber DM*, **Lane B**, Xu T, Neilson B. “Dissolving the mystery of surface-subsurface connections in karst-influenced mountain watersheds using hydrologic timeseries,” Submitted to *Geomorphology*.

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, International Association for Hydro-environment Engineering and Research, June 24, 2022, 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 Resources Control Board. Davis, 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. Davis, 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 Resources Control 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, 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](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

Lane B, **Canham H***, **Ridgway P***, Murphy B. “Observed Hydro-Geomorphologic Impacts from Compounding Watershed Disturbances: Wildfire, Monsoons, and Debris Flows,” American Geophysical Union Fall Meeting. Chicago, IL. December 16, 2022.

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*]

Patterson N*, Sandoval-Solis S, **Lane B**, Xong X, Csank A. “Dendrochronology reveals the response of a riparian forest to water policies in an arid basin.” AGU Fall Meeting. Chicago, IL. Dec 12, 2022.

Lane B, ⁺Pasternack GB, *Guillon H***, *Lee A***, and Sandoval-Solis S^ψ. “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*

Garousi I^o and **Lane B**. “Enhancing hydrology learning by using open web platforms and data services in the education of hydrologists.” AGU Frontiers in Hydrology, Puerto Rico. June 21, 2022.

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.

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.

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.

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.

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

Canham H*, **Lane B**, Murphy B. “Highly variable post-wildfire streamflow response across contiguous watersheds.” AGU Fall Meeting. New Orleans, LA. December 17, 2021.

*Guillon H***, **Lane B**, Pasternack GB. “Evaluating the influence of erosion and tectonic processes on California’s topography using fractals.” European Geophysical Union, *Virtual*. April 27, 2021.

Rowles J*, **Lane B**, Sandoval-Solis S, Young C, Chalmers D. “Balancing competing water needs in an unregulated seasonal watershed.” AGU Fall Meeting, *Virtual*. Dec 15, 2020.

Morgan E* and **Lane B**. “Incorporating critical context and uncertainty in flow-ecology relationships,” American Water Resources Association (AWRA). *Virtual*. Nov 9-12, 2020.

Lane B, **Patterson N***, Sandoval-Solis S^ψ. “Modeling statewide hydrologic patterns under mounting climate stressors,” CA Water and Envr. Modeling Forum (CWEMF). Oct 8-10, 2020. 70+ attendees.

Grantham T, Yarnell S, **Lane B**, Stein E, Sandoval-Solis S^ψ. “A functional flows modeling approach for environmental flow standards in California,” CWEMF. *Virtual*. Oct 8-10, 2020.

Lane B, Sandoval S^ψ, 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

Sandoval S^ψ, **Lane B**, *Guillon H***. “Instream flows in the age of AI,” CWEMF. Oct 8-10, 2020.

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.

*Byrne C***, Pasternack GB^ψ, **Lane B**, *Guillon H***, Sandoval-Solis S^ψ. “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.

*Guillon H***, *Byrne C***, **Lane B**, Sandoval-Solis S^ψ, Pasternack GB^ψ. “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

Patterson N*, **Lane B**, Sandoval-Solis S^ψ. “Evidence of climate change in the Sierra Nevada from seasonal flow attributes,” AGU Fall Meeting, San Francisco CA. Dec 11, 2019.

Grantham T, Yarnell S, **Lane B**, Stein E, Sandoval-Solis S^ψ, 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.

Lane B, *Hung F***, Rowles JL*, Chalmers D, Sandoval S^ψ. “Setting limits with limited data: catchment modeling of human-eco water use tradeoffs,” AGU 2019 Fall Meeting, San Francisco CA.

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.

Patterson N*, **Lane B**, Sandoval-Solis S^ψ “Understanding natural streamflow with the Seasonal Flow Detection Algorithm,” AGU Fall Meeting, San Francisco CA. Dec 10, 2019.

Yarnell S, Stein E, Zimmerman J, **Lane B**, Grantham T, Howard J, Lusardi R, Sandoval. “Stakeholder engagement in the California Environmental Flows Framework,” International Society for River Science (ISRS) Biannual Meeting, Vienna, Austria. Sep 9, 2019.

Lane B, Grantham T, Yarnell S, Stein E,... “California Environmental Flows Framework Decision Support Tools,” International Society for River Science Biannual, Vienna, Austria. Sep 9, 2019.

Invited. **Lane B**. “Geomorphic classification of California.” California Water Data Science Symposium: Open Water. CalEPA Headquarters, Sacramento, CA. July 2, 2019.

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.

Lane B and Rosenberg DE. “Promoting instream flows in western states,” UCOWR Annual Conference. Snowbird, UT. June 13, 2019

Christensen K* and **Lane B** “Unimpaired hydrologic metric scaling for California streams,” UCOWR Annual Conference. Snowbird, UT. June 12, 2019.

Lane B, Grantham T, Yarnell S, Stein E, Zimmerman J, Howard J, Lusardi R, Sandoval-Solis S^ψ. “California Environmental Flows Framework Decision Support Tools I,” Society for Freshwater Sciences (SFS) Annual Meeting, Salt Lake City, UT May 23, 2019.

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.

Sandoval-Solis S and **Lane B** “Natural streamflow and geomorphic classification for California,” California Water and Environmental Modeling Forum. Folsom, CA. April 22, 2019.

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.

Patterson NP* and **Lane B**. “Analyzing California reference streamflow with the seasonally-based Functional Flows Calculator,” AGU Fall Meeting. Washington DC, December 2018.

⁺ *Received the American Geophysical Union’s Outstanding Student Poster Award*

Stein E, Yarnell S, Sandoval S, **Lane B**, Zimmerman J... “Establishing environmental flows in complex environments.” International Symposium on Ecohydraulics ,Tokyo, Japan. Aug 21, 2018.

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.

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

- 2017-2022 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

Current Students

- 2022-Present Megan Conley, PhD, Hydrodynamic monitoring and modeling to support freshwater mussel reintroduction
- 2022-Present Haley Canham, PhD, Post-wildfire hydrology in a changing Western U.S.
- 2022-Present Steven White, MS, Incorporating topographic variability patterns into river channel design
- 2022-Present Paxton Ridgway, MS, Hydrogeomorphic response to compounding disturbances in an intensively monitored burned watershed

Past Students

- 2020-2022 Daniel Thurber, MS, Characterizing Karst Mountain Watersheds Through Streamflow Response to Snowmelt. Currently: Engineer at WSP, Redmond WA.
- 2018-2022 Noelle Patterson, PhD. Currently: Eco-Engineer at CBEC, Sacramento CA.
- 2020-2022 Haley Canham, MS, Variable hydrologic response from burned western watersheds. Currently: PhD candidate at Utah State.
- 2018-2020 Jesse Rowles, MS, Human – ecological water management tradeoffs in a seasonal watershed with spatially distributed demands. Currently: Eco-Engineer at CBEC, Sacramento CA.
- 2018-2021 Elizabeth (Betsy) Morgan, MS, 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.
- 2018-2020 Sara (Madison) Alger, MS, Stream flow and temperature patterns in an irrigation depleted stream. Currently: Engineer at Jacobs Engineering, Salt Lake City UT.
- 2017-2020 Karl Christensen, MS, Unimpaired hydrologic metric scaling. Currently: Engineer at AECOM, Denver CO.

Postdoctoral Scholars

- 2020-Present Dr. Anzy Lee
- 2018-2021 Dr. Herve Guillon, Currently: Principal Data Scientist, Vitidore, CA.
- 2018-2020 Dr. Colin Byrne, Currently: US Bureau of Reclamation, 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.
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*.
Patterson N** and Lane B. [Functional Flow Calculator](#). Webinar. California Water Quality Monitoring Council. *451 views*.
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..*
CEFF Technical Workgroup. "[Environmental flows in California](#)," CA Water Blog. March 18, 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.
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.
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, 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 & Sandoval S. CA Environmental Flows Framework, CA Dept. of Water Resources Environmental Committee Meeting. February 27, 2020. Sacramento CA. ~100 attendees
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.
Invited Seminar. Lane B. Interdisciplinary Research Forum, NSF Climate Adaptation Science. Utah State University. February 12, 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.
 CEFF Technical Workgroup “California Environmental Flows Framework,” California Department of Fish and Wildlife Technical Workshop. November 2, 2018.
 CEFF Technical Workgroup “California Environmental Flows Framework,” California Advisory Committee on Salmon and Steelhead. October 24, 2018
Invited Seminar. Lane B. “Functional flows in modified hydroscapes.” Colorado State University, Dept. Civil & Environmental Engineering. Fort Collins, CO. April 26, 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.
[Winter Break Edition of Cache](#) Rendezvous.
- 2021 [“Deadbeat dams’ and their impact on cold-water ecosystems,”](#) High Country News, Sep 2021.
[“USU researcher leads team monitoring grizzly creek burn scar hydrologic response,”](#) Utah State Today, July 2021
[“Spring runoff could trigger slides on Grizzly Creek burn scar,”](#) KDNK public radio
- 2020 [“Water data and software services to support discovery, reproducibility, and collaboration in the water-resources domain and beyond,”](#) Northeast Big Data Innovation Hub, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), September 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.

[“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

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

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

2022 AGU Frontiers in Hydrology. *Sharing experiences in developing, implementation, and evaluation of digital hydrology learning resources.* Puerto Rico, June 2022.
2019 Society for Freshwater Sciences Annual Conference. *The environmental flow and water management nexus.* Salt Lake City UT, June 2019.
2018 USU Spring Runoff Conference. March 2018.

Committee Service

University Service

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

2014-Present American Geophysical Union
2014-Present American Society for Civil Engineers
2015-Present American Water Resources Association
2015-Present University Council on Water Resources
2017-Present Society for Freshwater Science
2017-Present International Society for River Science
2019-Present Consortium of Universities for the Advancement of Hydrologic Science