Report of Sediment Nutrient Reduction Task Force
October 24, 2025

October 15, 2025 marked the 1-year anniversary of the Bear Lake Watch Sedimentation-Nutrient Reduction Workshop. Here is an update on what has taken place:

1. <u>BLW Sedimentation-Nutrient Reduction Workshop at Utah Department of Environmental Quality 10/15/2025</u>: More than 40 people attended. Among attendees were scientists (Utah State University, USGS, U.S. National Wildlife Refuge, Rocky Mountain Power, Utah and Idaho Departments of Environmental Quality, Bear River Commission), students, administrators, policy decision-makers, Bear Lake Watch and members of the general public.

   Scientific presentations were made by Michael Hess (USGS) – platform water quality monitoring and sedimentation inflow; Deo Lachman (Bear Lake National Wildlife Refuge) – impacts of sedimentation-nutrient inflow on flora and fauna; Jennifer Cornell (Idaho Department of Environmental Quality): tributary analysis; and Conelly Baldwin (PacifiCorp) – inflow/outflow data and operations.

2. Attendees were randomly assigned to five tables to brainstorm about five types of initiatives to address excessive sedimentation-nutrient reduction inflows into Bear Lake.
   a. Team 1: Upstream restoration practices to reduce sediment and nutrient loading – river and farmlands
   b. Team 2: Mechanical approaches to control sedimentation and nutrients upstream from Mud Lake
   c. Team 3: Utilize Mud Lake / Dingle Marsh more effectively as a natural filter
   d. Team 4: Manage sediment/nutrient problems within Bear Lake itself – a perpetual triage paradigm
   e. Team 5: Continue status quo and assess long-term sustainability

3. The reports of the five teams are found in the "Summary of Key Considerations for Addressing Excessive Sediment-Nutrient Inflow to Bear Lake (UT/ID)", below.

4. Following the workshop, the Sedimentation-Nutrient Reduction Task Force was convened, consisting of Patrick Belmont (USU), Mirella Ortiz (USU), Anna McEntire (USU-ILWA), Betsy Brunner (USU), Bryson Lord (BLW), Brady Long (BLW), and Greg Critchfield (BLW)

5. Three meetings of the Sedimentation-Nutrient Reduction Task Force have taken place.
    a. May 22, 2025: Review of team reports from Sedimentation-Nutrient Reduction Workshop held Oct 15, 2024
    b. July 9, 2025: Creation and discussion of outline to determine what the Sedimentation-Nutrient Reduction Task Force should accomplish.
        i. Primer of key concepts
        ii. Data we have
        iii. Data we don't have
        iv. Case studies of those who have dealt with similar issues
        v. Policy recommendations & stories
    c. Sep 9, 2025:
        i. Review of outline and discussion of progress on Task Force outline
            1. Data we have
            2. Data we don't have
            3. Scientific areas of focus
        ii. Public release of progress report of Task Force activities since the October 15, 2024 workshop – by end October 2025

Summary of Key Considerations for Addressing Excessive Sediment-Nutrient Inflow to Bear Lake (UT/ID)

The five team reports collectively outline a multifaceted approach to tackling sediment and nutrient loading in Bear Lake, emphasizing upstream prevention, mechanical interventions, enhanced natural filtration, in-lake management, and sustained monitoring under a status quo scenario. Common themes include the need for collaborative data collection (e.g., on sediment loads, carp impacts, and hydrological models), stakeholder engagement across federal/state agencies and local users, and securing diverse funding. Below is a synthesized overview of recommended actions, data gaps, stakeholders, and resource considerations, highlighting overlaps and unique contributions from each team.

1. Recommended Actions

These span proactive restoration, structural modifications, and operational tweaks to reduce inflow, capture sediments, and mitigate internal cycling. Teams 1–4 focus on intervention, while Team 5 emphasizes adaptive management without major changes.

Category	Key Recommendations	Contributing Teams
Upstream Prevention & Restoration	– Fencing to exclude cattle from streams. – Beaver dam analogs and riparian buffer plantings. –Scouring flows to flush sediments. – – Collaborate on agricultural BMPs (e.g., via NRCS).	Team 1 (primary); Team 5 (inflow adjustments).
Mechanical & Structural Controls	– Build sediment traps/dams (new or upgraded, e.g., along Pixsley Dam to Bear Lake). – Use gravel pits or "filter within a filter" designs for capture. – Mechanical dredging/filtration along Rainbow Canal. – Redo Causeway gates and Stewart Dam (including bypass for peak runoff).	Team 1 (traps); Team 2 (all); Team 3 (traps, dam bypass).
Enhancing Natural Filters	– Expand Mud Lake/Dingle Marsh size (without harming refuge). – Divert peak flows (May–June) via natural channels to promote settling. – Truck out excess sediments from traps/ponds.	Team 3 (primary); Team 5 (high water levels to prioritize Mud Lake filling).
In-Lake & Internal Management	– Dredge sediments directly from lakebed. - Install nutrient treatment facilities and phosphorus-immobilizing materials. - Generate internal waves to resuspend and capture/treat sediments. – Apply rotenone to control carp (reducing resuspension).	Team 4 (primary); Team 5 (carp control, shoreline vegetation burning).

Category	Key Recommendations	Contributing Teams
Status Quo Adaptations	– Maintain high lake levels to buffer inflows and limit shoreline exposure. – Adjust diversions/lifts to route water through Mud Lake for settling. – Monitor and limit bank erosion/weed growth during low levels.	Team 5 (exclusive).

2. Data Needs & Monitoring to Demonstrate Progress

All teams stress insufficient baseline data, particularly on sediment/nutrient dynamics, invasive species links (e.g., carp stirring), and intervention impacts. A recurring call is for comprehensive hydrodynamic-sediment models incorporating velocity, seasonality, and nutrient unlocking.

- Core Data Gaps:

    - Sediment/nutrient loads, concentrations, flows (e.g., from Pixsley Dam to Bear/Mud Lake; seasonal/multiple-site sampling). (Teams 1, 3, 5)

    - Sediment properties (size, composition, sources) and resuspension drivers (carp, wind). (Teams 2, 4)

    - Lidar for topography; fisheries data on carp destabilization. (Team 1)

    - Impacts on water rights, refuge ecology, and invasives from interventions. (Teams 2, 3)

    - Shoreline sediment correlations and routine monitoring (e.g., no current shoreline data). (Team 5)

    - Proven case studies from similar projects. (Team 2)

- Progress Metrics:

    - Turbidity via USGS gages; population studies for fisheries/carp. (Team 1)

    - TBD for most, but all advocate models and expanded monitoring (e.g., shoreline, velocity parameters). (Teams 4, 5)

3. Stakeholders & Potential Collaborators

Broad consensus on multi-jurisdictional involvement (UT/ID, federal/state), with overlaps in agencies like USGS, Pacificorp, and fisheries groups. Local buy-in is critical to avoid conflicts (e.g., water rights, refuge).

Group Type	Key Entities	Contributing Teams
Federal/State Agencies	USGS (gages/monitoring), NRCS/State Ag (BMPs), FWS (wildlife), Env Quality agencies.	Teams 1, 2, 5.
Utilities & Water Managers	Pacificorp (dam ops, restoration), Bear River Canal Co., Water rights holders.	Teams 3, 5.
Local/Community	Landowners, irrigators, homeowners/resorts, recreational users, tourists, Bear Lake Watch.	Teams 1, 4, 5.
Research & Other	Fisheries experts, Utah State University, env consulting firms, Refuge managers, State/county weed control.	Teams 1, 3, 4, 5.
Broad Catch-All	Upstream/downstream users (e.g., all Bear Lake stakeholders).	Team 2.

4. Cost Ranges & Funding Sources

Estimates vary widely due to scale; upstream/in-lake actions are costliest, while research/monitoring is lower. Total potential exceeds $20M across ideas, with ongoing ops (e.g., trucking, gages) adding to long-term burdens. Team 5 incurs no new costs.

- Cost Breakdown:

    - Monitoring/Research: <$5M (e.g., Lidar $500K, gages $75K/year, fishery studies $250K, models TBD). (Teams 1, 4)

    - Upstream Restoration: $5–7.5M (fencing, plantings, etc.) + >$10M total package. (Team 1)

    - Mechanical/Structural: $5M (traps) + ongoing dredging/trucking; $4M (dam rebuild) + $3M (rights/easements). (Teams 2, 3)

- In-Lake: Variable, tied to dredging/treatment (not quantified beyond research). (Team 4)

- Funding Opportunities:

  - Federal: 319 Nonpoint Source Program, PL 566 (5–6 years), Watershed Restoration Initiatives. (Teams 1, 2)

  - State/Utility: Utah Watershed Restoration, Idaho Ag BMPs, Pacificorp Initiatives. (Teams 1, 3)

  - TBD for others; leverage collaborations (e.g., USGS, NRCS) for grants. (Teams 3, 4)

Overall Insights

- Prioritization: Start with data collection and modeling (low-cost, high-impact) to validate interventions, as all teams flag evidence gaps. Upstream prevention (Team 1) and Mud Lake enhancements (Team 3) offer preventive leverage, while in-lake triage (Team 4) suits short-term needs.

- Risks/Challenges: Potential adverse effects (e.g., on refuge, water rights, invasives) require phased pilots. Carp control emerges as a cross-cutting lever.

- Path Forward: Form a cross-team/working group with core stakeholders (e.g., USGS, Pacificorp) to integrate recommendations, secure initial funding for monitoring, and pilot 1–2 actions (e.g., sediment traps + gages) within 1–2 years. This balanced strategy could achieve sustainable reductions in sediment-nutrient inflows while minimizing disruptions to Bear Lake's ecology and economy.