UTAH DEPARTMENT of
ENVIRONMENTAL QUALITY
WATER
QUALITY

MEETING MINUTES

Water Quality Task Force

September 10, 2019
9:30-11:30
195 North 1950 West,
Water Quality Board Room

PRESENT:

Jim Bowcutt	DEQ/DWQ
Jodi Gardberg	DEQ/DWQ
Leila Ahmadi	Utah Division of Water Resources
Jim Harris	DEQ/DWQ
Hope Braithwaite	USU Extension
Jay Olsen	UDAF
John Hilbert	JVWCD
Josh Palmer	Gov Friend
RJ Spencer	UDAF
Kate Fickas	DEQ/DWQ
Darren Hess	WBWCD
Bill Zannotti	UDFFSL
Melissa Noble	UDDW
Trina Hedrick	UDWR
Brad Nelson	Weber Basin
Ben Radcliff	USBR
Jason Kim	Weber Basin
Mark Muir	U.S. Forest Service
Jeff Ostermiller	DEQ/DWQ
Gary Kleeman	EPA
Norm Evenstad	NRCS
Kristy Davis	UACD

I. *DISCUSSION*

Trina Hedrick (Utah Division of Wildlife Resources)- Pelican Lake Restoration Project (see presentation)

- Pelican Lake was identified as a blue ribbon fishery in the State of Utah for the quality fishing for bluegill and bass.
- Gradually visibility decreased and a fish kill occurred in the mid 1990's due to poor water quality.
- While large amounts of funding have already been allocated to the project from different agencies, there is still a need for additional funding. The current funding will fund Phase I and II, but will only partially fund phase III. DWR is currently applying for RCPP funding and other grants to help with the project.
- A large amount of the sediment in the reservoir is coming from open canals, specifically Bullock Canal.
- Maintenance of much of the project will be done by local irrigation companies. This included the maintenance of the lower fish screens and the dredging of the sediment catchment ponds. DWR will maintain the upper fish screens. An MOU is actually being developed for this maintenance.
- Landowners were hesitant at first by the relationship between the landowners and the DWR have really come a long ways.

Kate Fickas (Division of Water Qualtiy) Algal Blooms in the State of Utah 2019 (See Presentation)

- The first algal bloom was detected on Utah lake on May 31st.
- Sites that are monitored for toxic algae are prioritized before the season begins.
- Remote sensing will be used more in the future to help identify and measure the extent of algal blooms around the state.
- 2019 has been a very low toxin year so far. However, toxins tend to increase in September.
- DEQ could improve communication with other agencies to make sure messaging is consistent for all interest groups.
- Matt Warner Reservoir was actually closed as a result of high levels of algae present in the reservoir. However, samples showed that the algae was not toxic.

- Satellite imagery is currently being used to monitor reservoirs all around the state, not just Utah Lake.

- $200,000 is allocated by DEQ every year to monitor HABs around the state.

- The Health Department determines when HAB warnings are issued or lifted, not DEQ.

- An Algal bloom is considered harmful if any toxic algae is detected. The extent of listing a reservoir is determined on the quantity of algae detected.

- Weber Basin would like to be on the advisory listing committee so they aren't finding out about blooms late in the game.

- Each individual lake should develop a list of stakeholders that can be included in pre-advisory e-mails.

- Most algal blooms occur in lower elevation lakes, but some have been observed in higher elevation lakes as well recently.

- When advisories are issued for specific beaches it can help keep other locations in larger lakes open for recreation.

Jeff Ostermiller (Utah Division of Water Quality) Headwater Nutrient criteria (See presentation)

- 50% of all perennial streams in Utah are considered to be "head waters".

- The development of headwater criteria could be a catalyst to resurrect watershed groups around the state that are no longer active. This needs to be area specific.

- We need to look into the approval process of listing and implementation plans. There could be a public comment period for these plans if desired by the local watershed groups.

Bill Zanotti (Utah Forestry Fire and State Lands) ***Fuels Reduction Projects in Utah(See presentation)***

- Various information/education techniques have been used to educate landowners about the benefits of forest management, including fact sheets that are watershed specific, and identify success stories.

- Forestry Fire and State Lands does partner with the U.S. Forest Service on various projects around the state.

- There is funding available to private landowners to thin the forest around their houses and cabins.

II. ADDITIONAL ITEMS

- Next Meeting December 3rd.

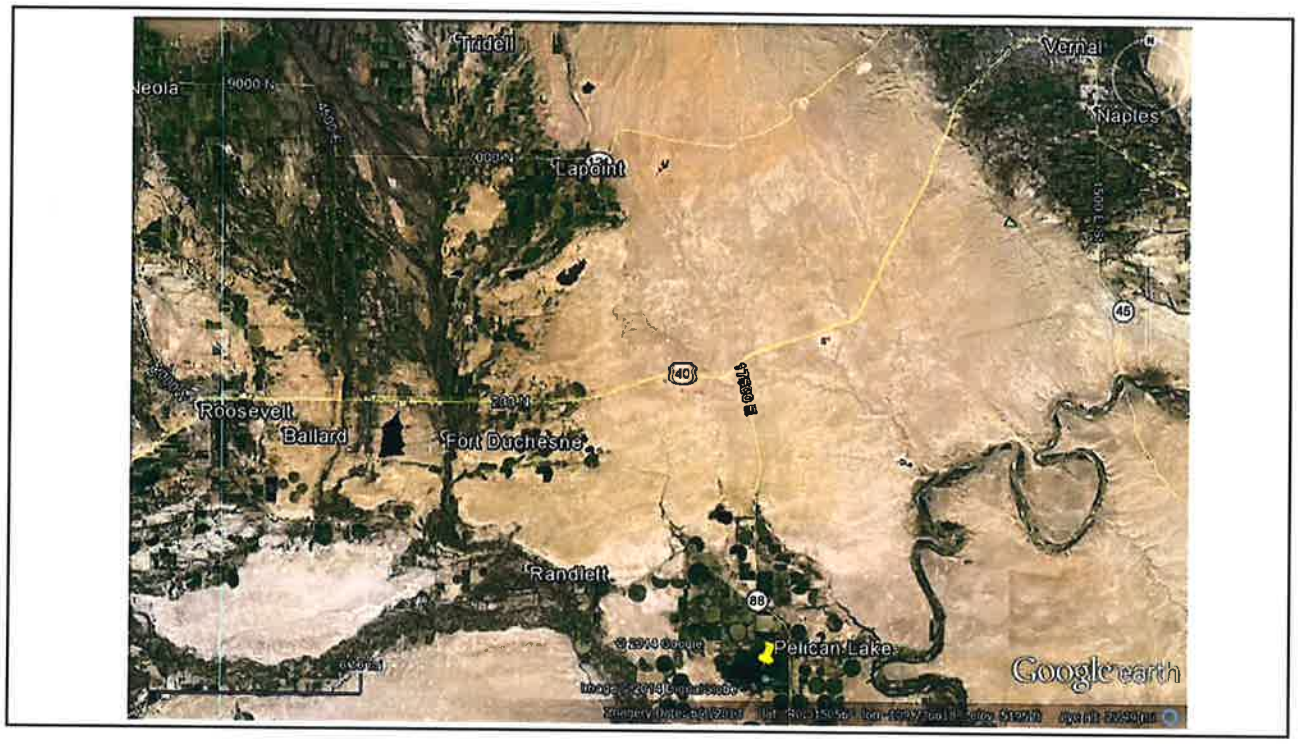
- Potential Topics:
  - Water Resources- The State Plan, Research with UBR work, Water Rights and water quality.
  - Reservoir management and water quality- Is there any research that has been done about this?
  - Shared Stewardship Agreement with Forest Service and WRI- Mark Muir
  - Bull Creek Fire-Pre and Post Fire data- Ben Abbott
  - NPS Project Report.

Restoration of Pelican Lake, Utah
A Multi-phase Approach to Success

Natalie Boren, Regional Fisheries Biologist, Utah Division of Wildlife Resources
**Trina Hedrick, Regional Aquatics Manager, Utah Division of Wildlife Resources

Presentation Outline

- **History of Pelican Lake as a Blue Ribbon Fishery**
- **Causes of its decline**
- **Solutions to restoration**
- **Progress thus far**
- **Funding sources**


Tridell
Vernal
Naples
Lapoint
Roosevelt
Ballard
Fort Duchesne
Randlett
Pelican Lake
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Google earth


Google earth

History as a Blue Ribbon Fishery

- A 1974 Outdoor Life article put Pelican Lake on the map as a destination fishery.
  - The article told stories of bag limits of half-pound Bluegill.
  - A second story in Field & Stream magazine titled *Desert Bluegill at Pelican Lake* mentions anglers catching 2 pound Bluegill with rumors of 3 pounders as well.
- These articles also mention the "extremely clear waters of Pelican Lake" and the ability to see fish on the spawning bed and in the reeds. It also mentions the ability to catch 100+ Bluegill in a day from 7.5 inches to 10 inches with larger fish coming from the deeper waters.
- Pelican used to winterkill on occasion (mid 90's) so DWR worked with the irrigation company to turn water to Pelican earlier to prevent this.
- The lake was officially designated a Blue Ribbon Fishery in 2004; however, the late 2010's brought troubles which ultimately led to its downlisting in 2015.
- What gave this 1,600 acre farm pond the ability to grow such large Bluegill?
  - Abundant macrophyte growth providing ideal conditions for abundant bug life from larvae to nymphs.
  - Abundant snail and crustacean production which still exists at Pelican Lake.
  - Hypothesized partial winter kills which reduced the amount of mouths in the system.
  - Healthy Largemouth Bass populations (especially in the 10"-14" range) which aided in keeping Bluegill populations in check.

The slow and painful degradation of the fishery

Carp Infiltrate the System

Up stream reservoirs, home to large populations of adult carp, undergo draining due to construction projects. It is hypothesized carp were flushed down the system in 2008 & 2009, subsequently limiting the ability of Bluegill and Largemouth Bass to keep existing carp populations under control

Sediment & Flood Events

Heavy clay soils make up the geology of the lands within the watershed. Flash flood events and heavy monsoon rains send sediment into the abandoned canal system then into Pelican Lake. Wind and wave action churn the sediment sending it across the lake. An estimated 900,000 cubic yards of material has ended up in Pelican Lake over the past 25 years.

Turbidity & Macrophyte Loss

Both Bluegill and Largemouth Bass are predominately site feeders. If turbidity is high, their ability to find food is impaired. Carp uproot macrophytes leading to loss of habitat for bugs, crustaceans and snails. The combination of carp and sediment loads have severely impacted the system.

Solutions to Restoration

- **DWR staff created a management team to provide ideas, input and a way forward. We focused initially on the sportfish management aspect. But it was clear right away that the two (the fishery and water quality) were linked.**
- **This team was created in 2015, members included: DWR biologist and managers, local and regional anglers that frequent Pelican Lake, federal partners which manage the lands around the lake, water managers, BRFAC representatives and USFWS representatives.**
- **We developed six specific goals with objectives to target existing problems.**
  - **Goal #1 Improve water quality and reduce sediment deposition at Pelican Lake.**
    - Eliminate as many sources of carp within the drainage as possible by working with private land owners, draining ponds, and conducting rotenone treatments.
    - Find sources of sediment along the canal system and prioritizing their repair.
    - Hire engineers to help us come up with viable solutions to reduce sediment across multiple years and multiple phases.
    - Determine cost estimates for each phase and secure funding to begin construction and restoration.

Work Completed To-Date

Pelican Lake lower fish screen & lake-wide Rotenone Treatment

- To conduct a successful rotenone treatment, we needed very low water levels at Pelican Lake (the bulrush stands had to be as dry as possible so that carp couldn't find hiding places).
- Irrigators needed a way to keep fish and debris out of their irrigation systems.
- Along with the drought, irrigators were effective at drawing down water levels so both projects could be completed.
- On October 11, 2018, 250 barrels of powered rotenone and 1,000 gallons of liquid were applied at Pelican Lake.
- By November 30 the lower fish screen was complete and functional.
- On December 5 the irrigation company started its normal water operations and began to fill.
- On December 19 & 26, restocking began...2,124 Bluegill and six Largemouth Bass from Steinaker Reservoir were caught by anglers and transferred to Pelican Lake.
- In January, we started (then DWQ took over) water quality monitoring in the canal.
- In-lake monitoring ran for one month before ice in 2018 and then started again in spring 2019.

Work Coming Up!

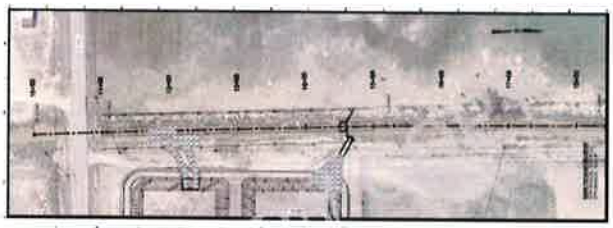
Can current and future sediment problems be fixed or controlled?

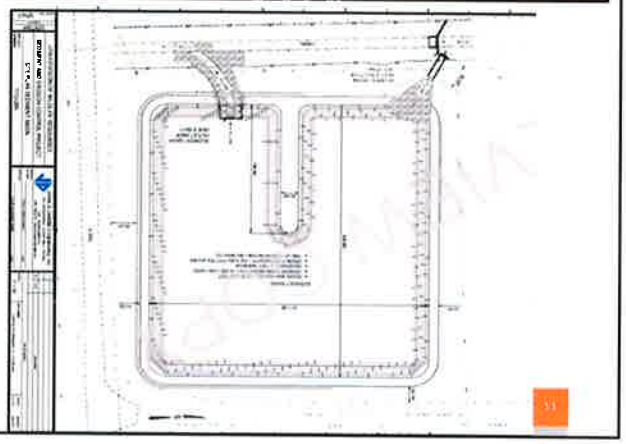
- After numerous onsite visits with engineers & irrigation company reps, we began working to develop solutions to the many issues we found (sediment, sediment and more sediment).
- After prioritizing the issues and determining solutions, six potential phases were introduced.
    1. Sediment catch basin on private land, located just above Pelican Lake (this was an idea that stemmed from the land owner).
    2. Restoration and armoring of 0.5 -1 mile of canal just above Pelican Lake. This reach is owned by the canal company.
    3. Re-alignment of the canal as it enters Pelican Lake and creation of a natural biofilter using wetlands (Lake Conestoga, Nebraska example).
    4. Sandgate reconstruction/feasibility study (would take flood waters to the Duchesne River down a historical wash) As of June 2019 this option was not supported by the irrigation company and will not be pursued any further.
    5. Large scale dredging/clean excavation operation to remove deposited sediments.
    6. Utilize dredged materials to construct a large sediment control dyke and water control structure in Pelican Lake, armored, with angler access points. We are still applying for PL- 566 funding for Phases 5 & 6 of the project and looking for $1.4 million.

Work Coming Up!

Pelican Lake Sediment Control Phases I-III

- Phase I –construct a 3.75 acre sediment catch basin directly above Pelican Lake.
  - Purpose = prevent/reduce future sediment deposits into Pelican Lake & have the ability to remove deposits from the system which also benefits the land owner who wants soils for his fields.
  - Bids have been collected and work is scheduled to start by the end of September and run about a month.





Work Coming Up!

Pelican Lake Sediment Control Phases I-III

- Phase II – Prioritize the worst of the worst erosion segments along the 1.5 miles of canal directly above Pelican Lake, work with five land owners & NRCS to apply for restoration grants and leverage our EPA 319 $$ to armor, pull banks, and vegetate the canal to slopes.
  - Purpose = prevent future erosion of farm fields which will ultimately end up in Pelican Lake or the sediment catch basin.
  - Local funding with help from NRCS was secured and will be using along with the EPA 319 $ to complete the project. This portion will start once the sediment catch basin is done.

Work Coming Up!

Pelican Lake sediment control Phases I-III

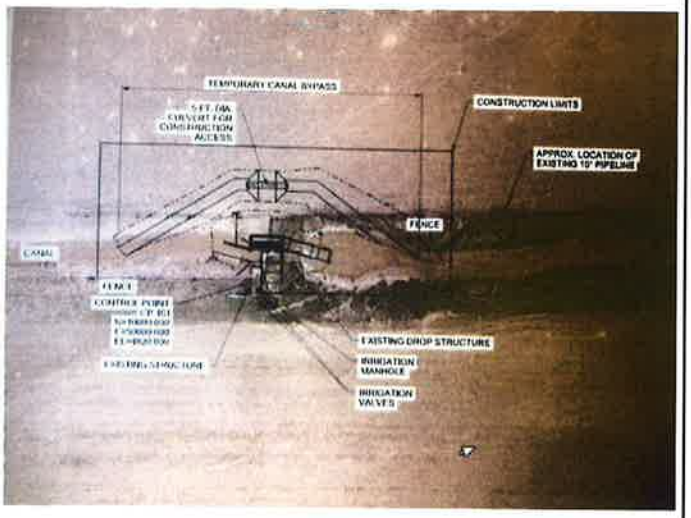
- Phase III – Re-align the canal as it enters Pelican Lake
  - Purpose = natural bio-filter allowing for nutrient cycling and remaining sediments to drop before entering the lake. This phase would coincide with future dredging work described in previous slides.
  - Funding dependent after completion of phase 1 & 2

13

Work Coming Up!

Pelican Lake Coanda Screen

- Two engineering firms have helped us complete design work and the permitting. We have recorded MOUs with the irrigation company & landowner for construction of a coanda style fish screen above Pelican Lake. We have an easement to access the screen in perpetuity for maintenance purposes.
  - Purpose = protection of the fishery from future fish invasions from all potential upstream sources
  - Bids have been collected, construction is set to start at the end of September and should run about a month.



14

Funding is critical...where has it come from so far?

- Blue Ribbon Fisheries Council
  - Engineering & design
  - Reference purchase
  - Lower fish screen
  - Upper fish screen (FY 2020)

- UDWR Habitat Council
  - Engineering & design

- Utah DEQ Funds & EPA 319 Funds
  - Watershed plan
  - Water quality testing
  - Engineering & design
  - Construction phases I-III

What we've learned from this project....

Team work, partnerships, and communication have been critical!

Having an engineering firm as a "lead" for this project has been key to success thus far. They know all the players, they know of potential funding sources and they have resources to help get the job done.

This project seemed impossible at first! Having a plan of attack that was meaningful and achievable is critical.

Never give up on something that is so meaningful to so many people! Pelican Lake is a special place, memories are made here, and it's worth the time and effort to restore it and protect it for future generations!

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

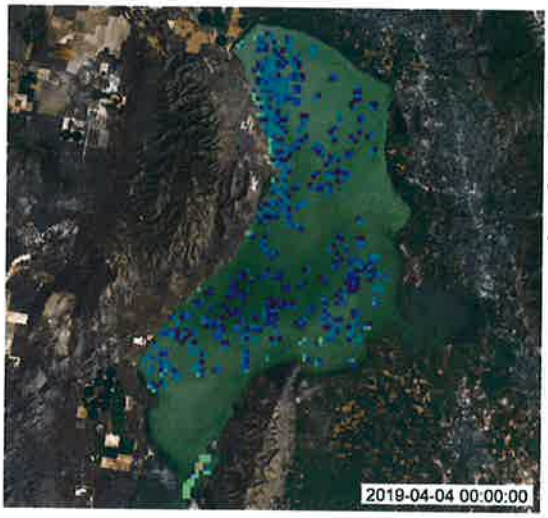
2019 Harmful Algal Bloom Update

WATER QUALITY TASK FORCE
September 10, 2019

2019 Thus Far (not over yet!)

- **510** site visits
  - **145** unique sites
- **50** lakes/reservoirs
- **600** samples run
  - 200 anatoxin-a
  - 200 microcystin
  - 200 cell and taxa count
- **20** lakes on advisory/reported

HAB Monitoring Toolbox



- Monitoring Crew
- UPHL Testing
- PhycoTech Testing
- Sonde Buoys
- Satellite Imaging

HAB Monitoring Toolbox

Monitoring Crew

- Weekly monitoring schedule
  - Visit Each Site
  - Use visual observation and phycocyanin sonde to determine presence of bloom
    - Water column (Type 2)
    - Surface (Type 1)

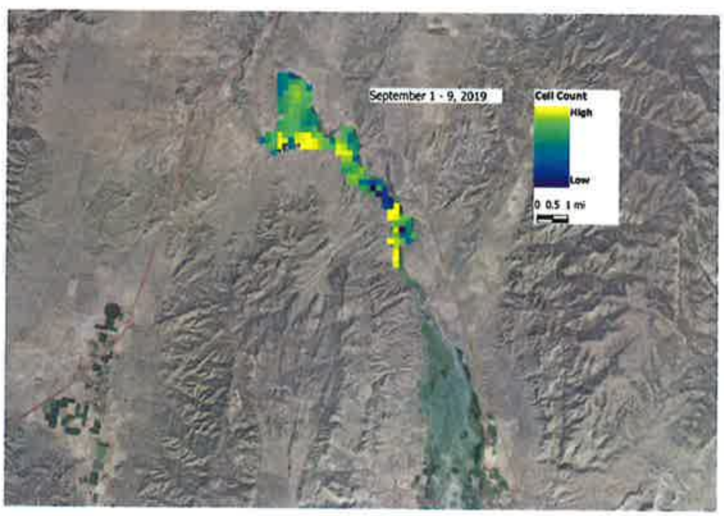
- Lab Testing
  - Samples are sent to Utah Public Health Lab and PhycoTech
  - New sites/reservoirs are rushed for 24 hour turn around time
  - Sites already on advisory have a 72 hour turn around time

HAB Monitoring Toolbox

Waterbody	Routine vs. Response	Date Delivered to UPHL	24 vs 72 hr	Data Final Data Delivered from Lab	Sample Type (Type 1 vs 2)	Sample Location	DWQ Site ID	LAT_DD	LONG DD	Sample Date	Sample Time	UPHL Anatoxin-a (ug/l)	UPHL Microcystin (ug/L)	Cyanobacteria cells/ml	LHD
[illegible]	Routine				Type 2	[illegible]	N/A	[illegible]	-111.14821	[illegible]	11:45	<0.10	<0.10		[illegible]
Utah Lake	Routine				Type 2	Lindon Marina Beach	4917335	40.32854	-111.76654	5/30/2019	12:00	<0.10	0.13	0	Utah
Utah Lake	Routine				Type 1	Saratoga Springs Picnic Area	4917418	40.29086	-111.87094	5/30/2019	13:45	<0.10	1800	1,184,701	Utah
Utah Lake	Routine				Type 2	Saratoga Springs Picnic Area	4917418	40.29086	-111.87094	5/30/2019	14:00	<0.10	14	2,973	Utah
Utah Lake	Routine				Type 2	Saratoga Springs North	4917418	40.29086	-111.87094	6/5/2019	13:10	Not Requested	0.12	123	Utah
Utah Lake	Routine				Type 2	Lindon Marina	4917335	40.32854	-111.76654	6/5/2019	11:40	Not Requested	<0.10	229	Utah
Calder Reservoir	Routine				Type 2	Boat Ramp	5937804	40.72876	-109.20461	6/11/2019	9:30	<0.10	<0.10	103,720	Tri-County
Utah Lake	Routine				Type 2	Provo Bay	4917446	40.18143	-111.71920	6/12/2019	12:48	<0.10	0.123	14,427	Utah
Utah Lake	Routine				Type 2	Saratoga Springs Picnic Area	4917418	40.29105	-111.87071	6/13/2019	10:20	<0.10	0.12	124	Utah
Utah Lake	Routine				Type 1	Open Water Middle of Provo Bay	N/A	40.10021	-111.71125	6/18/2019	11:15	<0.10	0.42	370,112	Utah
McClellan Lake	Routine				Type 2	Access	5917880	39.93946	-111.64247	6/24/2019	14:50	0.12	<0.10	64,340	Utah
Utah Lake	Response				Type 2	Open Water Middle of Provo Bay	N/A	40.18021	-111.71125	6/27/2019	11:30	<0.10	0.122	3,949	Utah
Calder Reservoir	Response				Type 2	Boat Ramp	5937804	40.72876	-109.20461	7/2/2019	9:56	<0.10	<0.10	1,288	Tri-County
Matt Warner	Response				Type 1	Boat Ramp	5937855	40.76443	-109.29964	7/2/2019	8:56	<0.10	0.63	1,788,528	Tri-County
Matt Warner	Response				Type 2	Boat Ramp	5937855	40.76443	-109.29964	7/2/2019	9:00	<0.10	0.14	211,863	Tri-County
Utah Lake	Response				Type 2	Open Water Middle of Provo Bay	N/A	40.18021	-111.71125	7/3/2019	10:20	<0.10	0.26	4,445	Utah
Bear Lake	Response				Type 1	North of Below Rest Stop	N/A	41.85840	-111.36425	7/6/2019	14:30	<0.10	<0.10	0	Bear River
Bear Lake	Response				Type 1	Rendezvous Beach	N/A	41.84719	-111.34618	7/6/2019	16:24	<0.10	<0.10	6	Bear River
McClellan Lake	Response				Type 1	Access	5917880	39.93946	-111.64247	7/9/2019		<0.10	0.14	98,353	Utah
McClellan Lake	Response				Type 2	Access	5917880	39.93946	-111.64247	7/9/2019		<0.10	0.18	18,777	Utah
McClellan Lake	Response				Type 1	Access	5917880	39.93946	-111.64247	7/9/2019		<0.10	0.12	3,457	Utah
Utah Lake	Response				Type 1	Utah Lake Open Water	N/A			7/10/2019	12:30	<0.10	1.07	449,874	Utah
Utah Lake	Response				Type 2	Utah Lake open water	N/A			7/11/2019	12:40	<0.10	0.185	27,455	Utah
Matt Warner	Response				Type 1	North Shore	N/A	40.77590	-109.29964	7/11/2019	9:20	<0.10	2.79	8,413,840	Tri-County
Matt Warner	Response				Type 2	North Shore	N/A	40.77590	-109.29964	7/11/2019	9:30	<0.10	0.41	1,278,186	Tri-County
Calder Reservoir	Response				Type 2	Boat Ramp	5937804	40.72876	-109.20461	7/11/2019	10:20	<0.10	<0.10	4,002	Tri-County
Strawberry Reservoir	Routine				Type 1	Indian Creek Inlet	N/A	[illegible]	[illegible]	7/11/2019	16:40	<0.10	<0.10	1,122	Wasatch

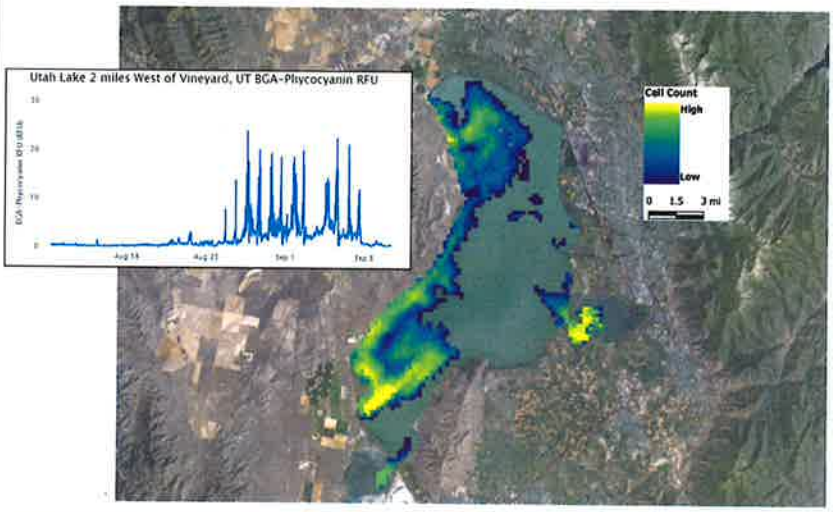
Division of Water Quality

HAB Monitoring Toolbox



Division of Water Quality

HAB Monitoring Toolbox



Division of Water Quality

HAB Communication

2019 Advisories & Reports: Date Issued

- = Danger
- = Warning
- = Advisory Lifted
- = Reported

- **Blackridge Reservoir**: August 1, 2019
- **Calder Reservoir**: June 21, 2019
- **Deer Creek Reservoir**: August 30, 2019
- **Jordan Narrows**: August 1, 2019
- **Manning Meadow Reservoir**: July 25, 2019
- **Mantua Reservoir–North Beach**: September 10, 2019
- **Mantua Reservoir–Remainder of Lake**: August 19, 2019
- **Matt Warner Reservoir**: July 3, 2019
- **Mill Meadow Reservoir**: August 27, 2019
- **Millrace Pond**: August 28, 2019
- **Minersville Reservoir**: September 5, 2019
- **Otter Creek Reservoir**: August 21, 2019
- **Payson Lakes**: July 9, 2019
- **Scofield Reservoir**: August 29, 2019
- **Starvation Reservoir**: August 30, 2019
- **Utah Lake**: September 9, 2019
- **Upper Box Creek Reservoir**: July 25, 2019
- **Wheeler Farm**: August 1, 2019
- **Yuba Lake–North Beach Shore**: September 9, 2019
- **Yuba Lake–Remainder of Lake**: August 7, 2019

Division of Water Quality

Communication: Continuous Improvement…

Toxic algal bloom found at Yuba Lake

by McKenzie Stauffer | Thursday, August 8th 2019

A warning advisory has been issued for Yuba Lake after a toxic algal bloom was discovered in the water, according to Utah DEQ. (FILE photo: KUTV)

(KUTV) — A warning advisory has been issued for Yuba Lake after a toxic algal bloom was discovered in the water, according to Utah Department of Environmental Quality.

The algal bloom was discovered after Utah DEQ's Division of Water Quality took water samples from the north shore, located 25 miles south of Nephi.

Communication: Continuous Improvement…

Dangerous toxins force closure of Vernal reservoir

By Amy Joi O Donoghue, KSL | Posted - Aug 13th, 2019 @ 5:16pm

Communication: Continuous Improvement…

UTAH DNR STATE PARKS

UTAH DNR WILDLIFE RESOURCES

UVMA

Toxic Algae Kills Dogs Across the Country

Editor's note: This story was updated Aug. 27, 2019 with warnings about toxic algae blooms in several New York City parks.

Aug. 14, 2019 -- A deadly variety of algae has caused a recent spate of dog deaths in the Southern United States, causing concern among canine owners nationwide.

A dog died last Wednesday in Texas after wading in a shallow pool near a river; three dogs died in Wilmington, NC, after a trip to a pond last Thursday; and another died after swimming in Lake Allatoona in Georgia on Saturday.

Offseason Goals

- Data analysis to begin to understand spatio-temporal dynamic of algal blooms
- Reprioritization of monitoring sites
- Larger outreach campaign to new stakeholders

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

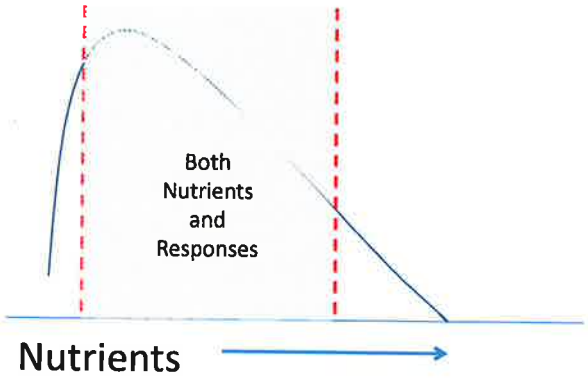
Water Quality Task Force
9/10/2019

What is a headwater stream?

For these purposes:

- Defined based on administrative rules
  - Not ecological or hydrological
- Utah's Antidegradation Classes (Category 1 & 2)
- Primarily within USDAFS boundaries
- ~9 miles of stream segments excluded due to grandfathered point sources

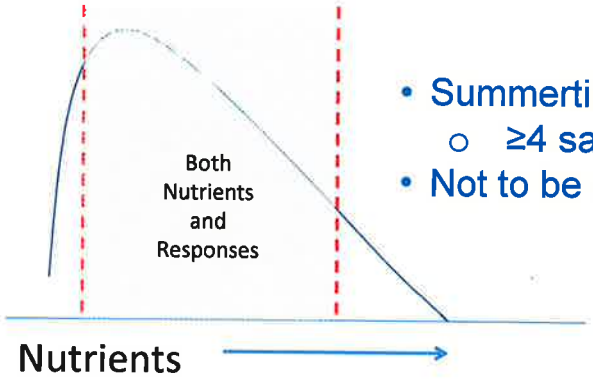
What are combined criteria?



In a nutshell…

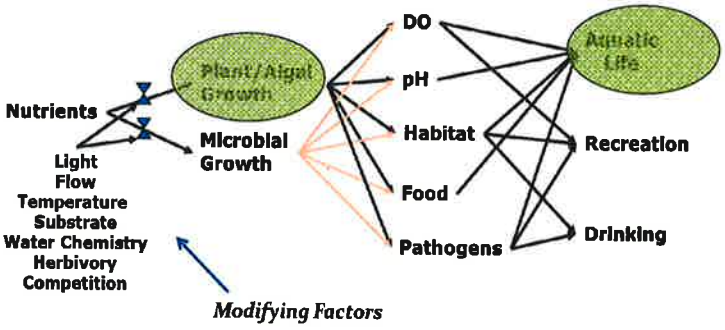
Defining the Endpoints: Total Phosphorus

TP 0.035 ⟷ 0.080
TN 0.40 ⟷ 0.80



- Summertime average
  - ≥4 samples
- Not to be exceeded

Determine Ecological Responses



The "Green Path"

The "Green Path": WQ Response Goals

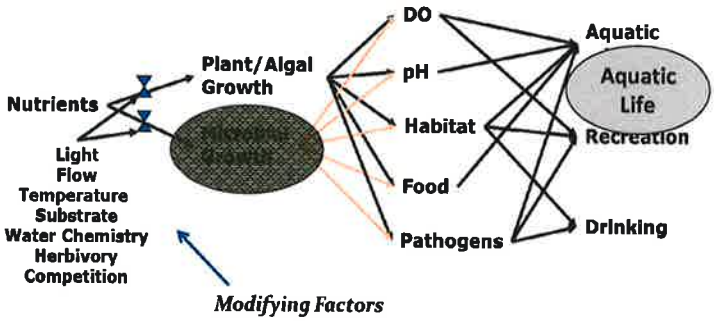
Gross Primary Production (GPP)
< 6 g $O_2/m^2/day$

OR

Filamentous Algae Cover
< 1/3 of Stream Bed

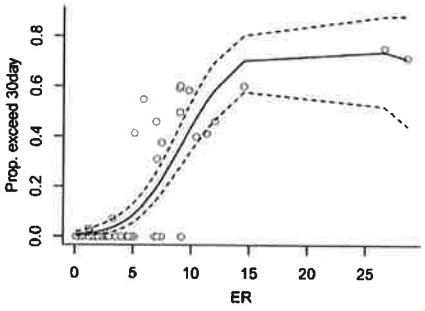
Not to be exceeded during the growing season.

Ecological Responses



The "Brown Path"

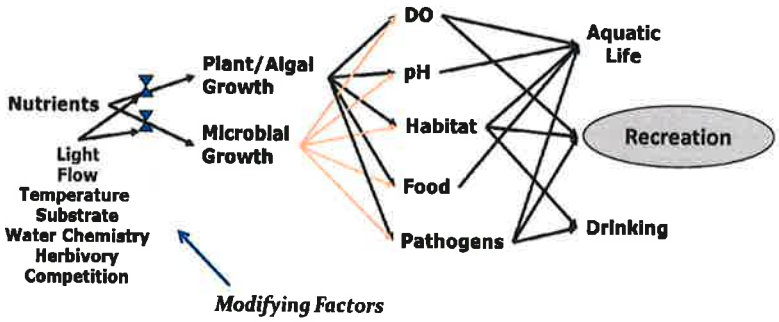
The Brown Path: WQ Goal



Ecosystem Respiration
< 5 g $O_2/m^2/day$

Not to be exceeded during the growing season.

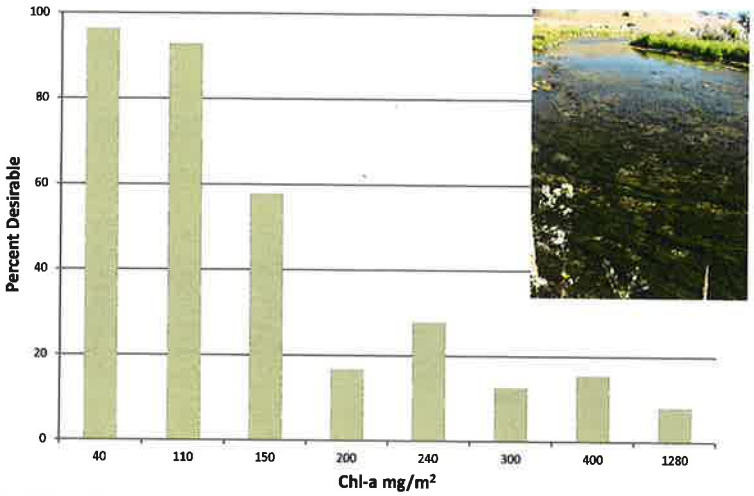
Protection of Human Values



Aesthetics & Nuisance

Aesthetics and Recreation

Recreation Survey



Benthic Chl-a Response
Indicator 125 mg/m²

Headwater NNC: Assessment Matrix

Nutrient Data (TN or TP)	Ecological Responses: No Data	Ecological Responses: < All Criteria	Ecological Responses: > Any Criterion
No Data or < 4 Samples	Not Assessed [a]	Not Assessed [a]	Impaired (5) [b]
< Low Threshold	Fully Supporting (1 or 2) [d]	Fully Supporting (1 or 2) [d]	Impaired (5) [b,e]
Between Lower and Upper Threshold	Insufficient Data (3A) [c]	Fully Supporting (1 or 2) [d]	Impaired (5)
Above Upper Threshold	Threatened (5) [f]	Threatened (5) [e,f]	Impaired (5)

Note: Associated *Integrated Report* categories are in parentheses.

[a] There are insufficient nutrient-related data to assess whether or not aquatic life uses are supported; however, aquatic life uses may be assessed with other water quality parameters.

[b] Sites where an ecological response threshold has been exceeded, but the lower TN and TP thresholds have not will be listed as impaired on the basis of a biological assessment ; cause will be listed as unknown pending follow -up investigations.

[c] Sites where TN o r TP fall below the upper threshold, but above the lower threshold, and lack measures for at least one response variable will not be assessed with respect to nutrient s. These sites will be prioritized for follow -up monitoring.

[d] The integrated report distin guishes between sites where at least one parameter has been evaluated for all uses (Category 1) and sites where some uses are supported, and other uses are either not supported or not assessed (Category 2).

[e] Sites where nutrient and ecological response dat a are in conflict may be candidates for site -specific criteria.

[f] Sites designated as threatened will automatically become impaired within two assessment cycles unless it can be demonstrated that biological uses are fully supported both locally and protective of downstream uses.

What to do with NNC impairments?

- Several important differences to other water quality concerns:
  - No point sources
  - Criteria include both pollutants and responses
  - Mostly on public lands
  - Spatial variation in sensitivity to enrichment
- Traditional TMDLs may not be the best fit:
  - Sources are both natural and human-caused
  - Non-point source load are difficult to accurately quantify
  - Effective solutions often involve fixing pollutant sources and habitat
- Alternative TMDLs (5e) are potentially attractive alternatives

What are 5-alt TMDL alternatives?

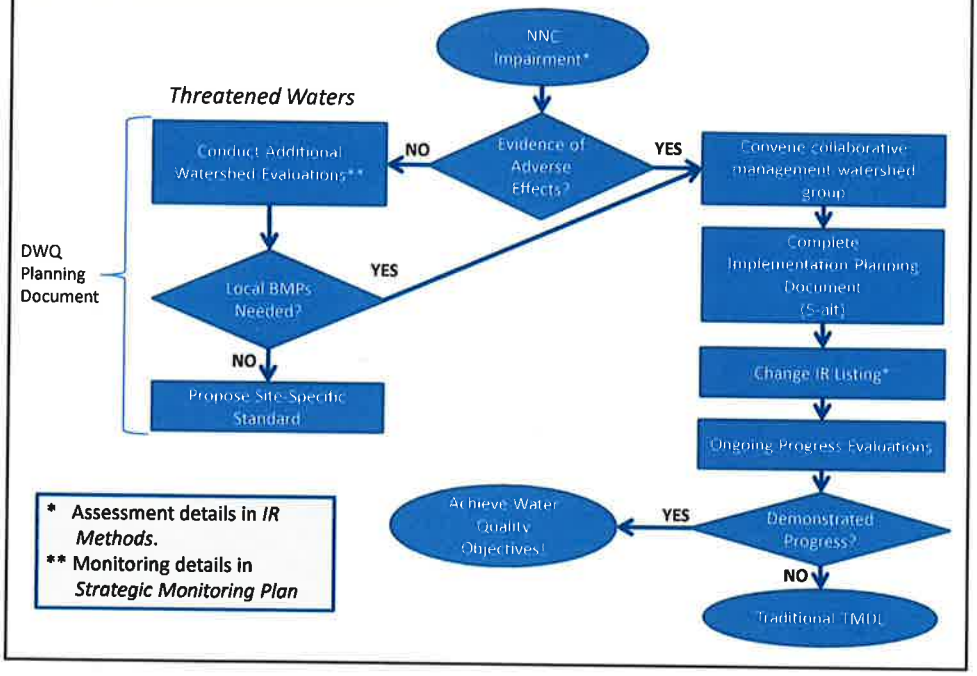
- Restoration plans focused on implementation
  - Move from pollutant load reductions to broader environmental objectives
  - Phase 2 in traditional TMDLs comes first
- Formally introduced by EPA in 2016
  - Part of the *Long-term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program*
  - States pilotprojects have started over the last several years
- Intended to be flexible, state-driven efforts
  - No formal EPA action provided progress can be documented

What are the elements of 5-alt TMDL alternatives?

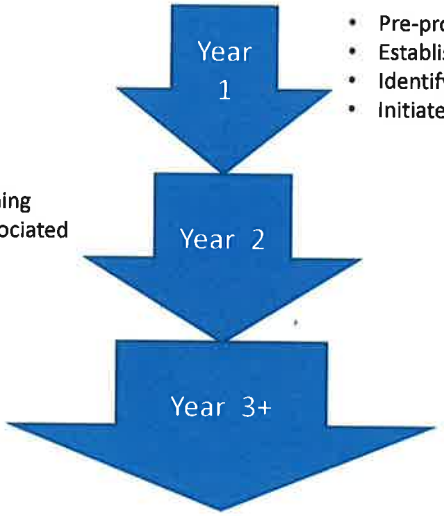
- ID of specific waterbodies (AUs) and pollutants (causes) that are included in the plan
- ID potential sources
- Description of implementation strategy
- Rough estimate of when water quality standards will be met
- Identification of partnerships and authorities/responsibilities
- Identification of funding sources
- Plan for ongoing monitoring and assessment of progress
  - Recommendation for 5-alt
- Plan for ongoing reporting on progress
  - 5-alt: EPA oversight via performance measures

Very similar to the elements of watershed plans required under the 319 program.

NNC Implementation



How would the timing of 5-alt plans work?



- Pre-project monitoring
- Establish local advisory group
- Identify potential funding sources
- Initiate permit applications

- Define BMPs
- Finalize 5-alt planning document and associated watershed plan
- Secure funding

- BMP implementation
- Ongoing monitoring
- Remove from list once WQ objectives are met

What are potential advantages of the 5-alt approach?

- Flexibility
  - Easily responsive to local conditions and concerns
  - Better address within watershed spatial variance in WQ concerns
- Integration of Multi-agency Objectives
  - Planning "currency" as BMPs, not pollutant loads
- Monetary Efficiency
  - Minimize resources spent on planning
- Accountability
  - Sufficient data to demonstrate ongoing improvements

What's next?

A collaborative effort to flesh out 5-alt details:

- Integration of within and among agency documentation requirements
- Review existing data
- Conduct pilot 5e planning effort
- Refine 5-alt planning documentation

Who should be included in this group?

Fuel Reduction To Prevent Wildfires

Water Quality Task Force
September 10, 2019

State of Utah
Department of Natural Resources
Division of Forestry, Fire and State Lands

Bill Zanotti
Forest Stewardship Coordinator
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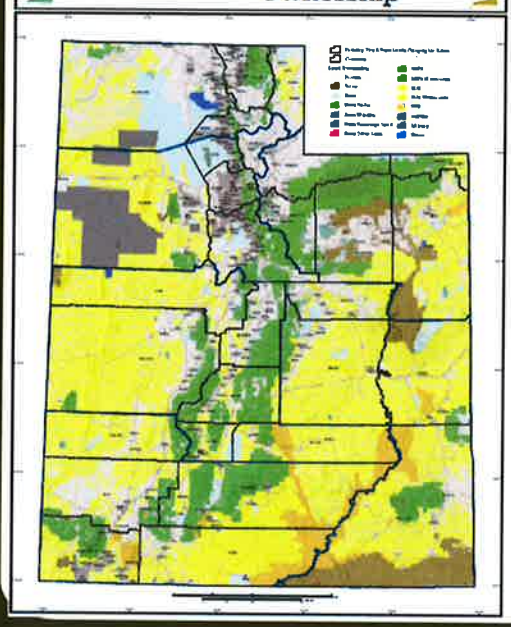
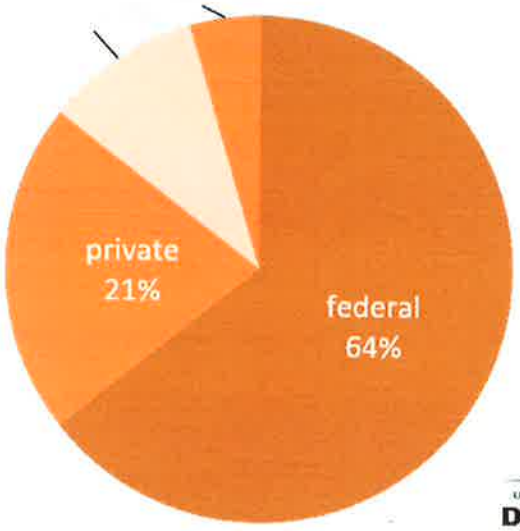
Suite 6
Moab, Utah 84532

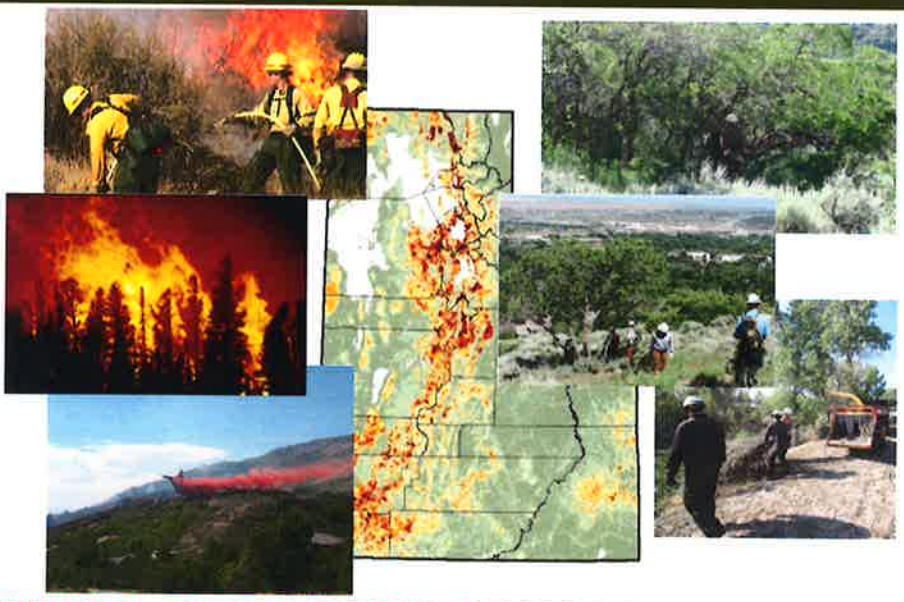
Division of Forestry, Fire and State Lands

Responsible for forest health and responding to wildland fires on **state and private lands** ensuring that communities, watersheds, rangelands and wildlife habitat don't suffer catastrophic losses.

Utah Land Ownership







REDUCE THE RISK OF WILDFIRE!

Forestry Programs:

- Forest Stewardship Program (FSP)
- Watershed Restoration Initiative (WRI)
- Landscape Scale Restoration Funding (LSR)
- NRCS – EQIP

Fire Program:

- Catastrophic Wildfire Risk Reduction Program – Utah
- Stevens Funds –USFS
- State Fire Assistance Funds – USFS
- National Fire Plan Program – USFS

Current Forest Stewardship Plans

Area	Plans	Acres
Bear River	9	48,022
Central	10	4,690
Northeast	20	80,175
Southeastern	27	113,893
Wasatch Front	6	8,652
Southwest	19	23,764
Total	91	265,976

Landscape Scale Restoration (LSR) Grants
(USFS – State and Private Forestry Program)

Cedar Mountain Aspen Initiative	2009-2014
Virgin River Watershed Initiative	2009-2014
Tamarisk Eradication and Native Tree Restoration along the Colorado River	2010-2015
Wasatch Front Watershed Sustainability Partnership	2010-2015
Escalante River Watershed Riparian Restoration	2011-2015
Monte Cristo	2011-2016
Wolf Creek Ranch – Aspen Forest Regeneration/Forest Health Protection	2012-2017
Virgin River Riparian Habitat Restoration	2013-2018
City to Stream: Ogden River	2013-2018
Monroe Mountain Aspen Restoration	2014-
Forest restoration Through Biomass Utilization in Southeastern Utah	2015-
UT PJ Encroachment	2016-
Monroe Mountain II	2019-
Virgin River	2019-

Colorado River Near Moab

February 2011: Before Phase 1 of the project, tamarisk formed a thick understory underneath the mature cottonwood trees.

Immediately after tamarisk understory was bullhogged, cottonwoods were painted with a sand paint mixture to deter beavers.

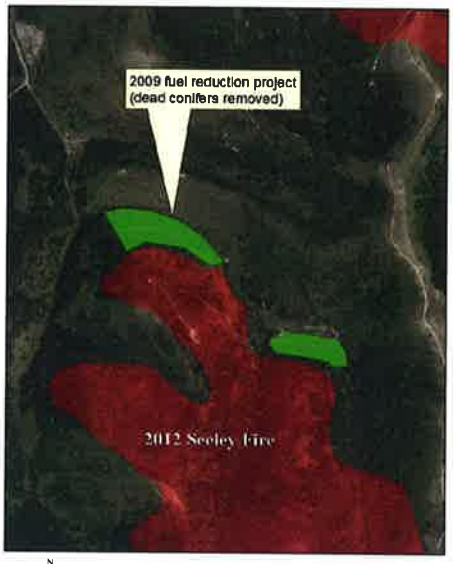
Colorado River Near Moab

June 2015: After Phase 3 of the project, all tamarisk and Russian olive underneath the cottonwood trees and along the embankment behind has been removed/ mulched.

Timber Harvesting

2017 Seeley Fire

Huntington Canyon
Emery/Carbon Counties



UTAH DNR FORESTRY

UTAH DNR FORESTRY

Catastrophic Wildfire Reduction Funding

Wildfire Risk Reduction Goals

as found in Utah Code 65A-8-103 (from 2015's SB 56)

Improving wildfire prevention, preparedness and mitigation through:

- ***Restoring and maintaining resilient landscapes***
- ***Creating fire adapted communities***
- ***Improving safe and effective wildfire response***

CatFire State Funding

FY 2015: **$1,926,700** 21 projects statewide

FY 2016: **$2.5M** 27 projects

FY 2017: **$1M** 10 projects

FY 2018: **$1M** 9 projects

FY 2019: **$500,000** 14 projects

FY 2020: **$1M** 13 projects

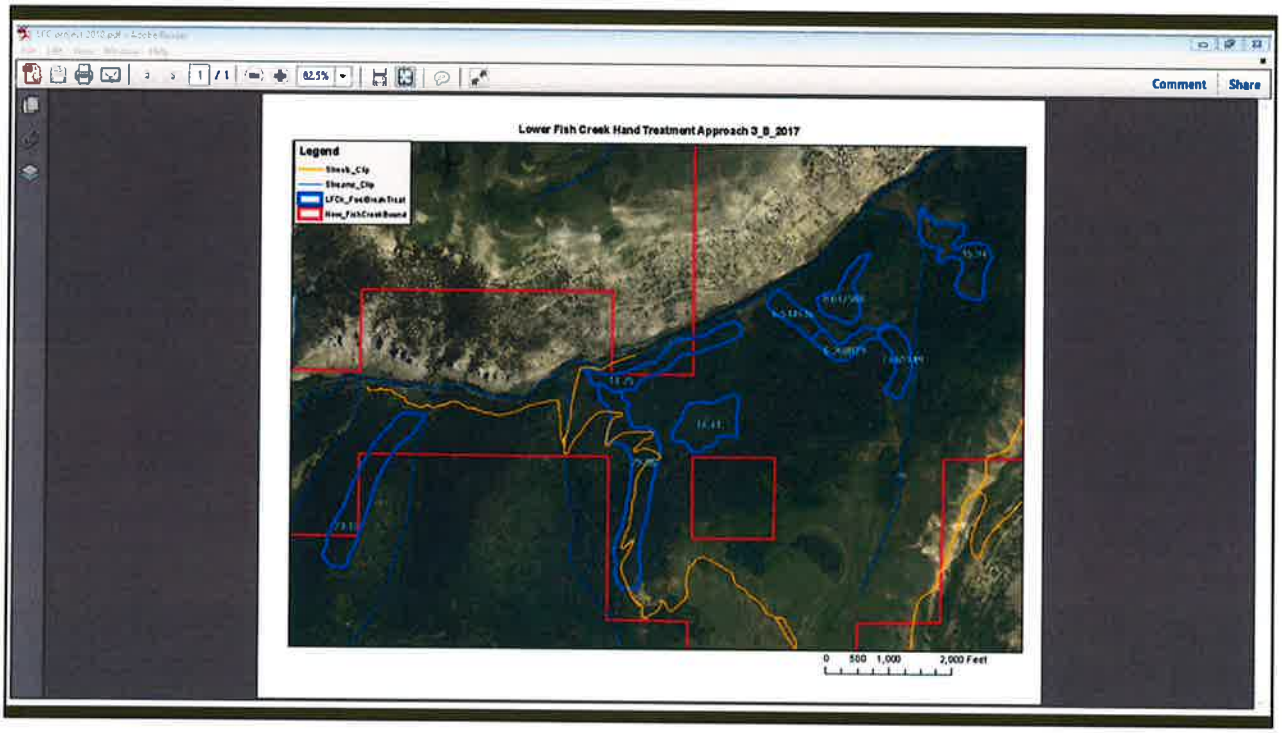
CatFire State Projects

SFY-2019 Proposed Projects

CatFire State Project

Lower Fish Creek WMA
Carbon County

Lower Fish Creek WMA Overview



Fact Sheets On Wildfire Mitigations

Causey Estates Community Defends Against Wildfire Threats

UTAH DNR FORESTRY

Alpine School District Completes WUI Project, Creating Safer Camping Conditions For Kids.

By: Page Kannor, Southeast Area Wildland Urban Interface Coordinator

Late summer 2017, Utah's division of forestry, fire and state lands (FFSL), Utah Conservation Corp, and Alpine School District initiated a plan to reduce fuels at Alpine School Districts Clear Creek Camp in Carbon County.

The original project area was the community of Clear Creek, but due to aftereffects of the Seeley fire, the community opted out of the project.

"In this case, the original community we had worked to provide fuel reduction for turned it down," said Page Kannor, Southeast area WUI Coordinator. "The community had experienced loss and grief due to the deaths incurred by mudslides, which were a result of erosion from the Seeley fire."

Once the request to switch funding to Alpine School District was approved by the grantor, U.S. Forest Service Intermountain Region, from its original Clear Creek allotment, planning and implementing the project began.

By June 2018, the projects completion date, 14 acres of hazardous fuels such as dead and down fuels and standing Conifer trees had been hand-thinned, reducing the threat of wildfire to the campsite.

"This was a two part project. We removed the ground and ladder fuels throughout the area, making it a better and safer place for kids to learn and play," said Kannor. "It was also an Aspen tree regeneration project. We removed the encroaching Conifer trees to give the Aspen tress a chance to come back."

The implementation of the project began in October 2017 and concluded in June 2018. Piles were burned in October 2018.

UTAH DNR FORESTRY

WUI Grant Helps Reduce Threat to Woodland Hills

UTAH COUNTY

At the south end of Utah County at the base of the Mt. Nebo Watershed is the City of Woodland Hills. Every spring and fall, in close partnership with Utah County Fire and Utah Division of Forestry, Fire and State Lands have been cutting and chipping hazardous fuels to reduce the threat of fire around homes within the Woodland Hills community.

Funded in 2013 through the Western States Wildland Urban Interface Grant, wildfire fuel reduction projects have been occurring within the community. Project have included cutting a 56 ft wide strip along the eastern emergency exit of the community, and proposed cutting a 300 ft wide three mile long fuel break on the eastern slope above the community, as well as funding an annual chipper day to aid community members in reduce fuel hazards around their properties.

After beginning the three mile long fuel break, a landslide [illegible] the proposed fuel break ultimately hindered the fuel break construction. Instead, funding was transitioned to thinning oak brush on large parcels of land within the community.

"Most homes within the community have wooden frame construction and wooden decks with dense oak and maple stands that are overstocked with dead material," said Kalin Gibble, Wasatch Front Area WUI Coordinator. "Development was geared around the privacy provided by dense oak brush shrubs."

Prior to the project, many roads were too narrow or overgrown for access by emergency vehicles. Fires have occurred in the community, including the Mt. Nebo Fire of 2010. More recently, in September, 2018 the entire community was evacuated during the Pole Creek Fire. The Woodland Hills project aimed to reduce hazardous fuels that increase the wildfire risk to the community, and to modify potential extreme fire behavior to a level that could be more effectively controlled. This project leveraged the high concern and motivation of the community to take action to reduce wildfire hazards.

After five years, the grant closed in June, 2018. Overall, 150 acres of fuels were thinned within Woodland Hills over the course of this grant. And, while on paper, 150 acres has value, the real value of the project was engaging the community in mitigating the wildfire hazards that exist in this community said Gibble.

Gibble said "Getting communities to recognize that the hazard exists is an uphill battle, but once that message is understood it's amazing to see communities start to take action on their own."

UTAH DNR FORESTRY

Two Examples Of Structure Fires That Could Have Turned Into Wildland Fires.

UTAH DNR FORESTRY

First Example

Defensible Space Protect Wildland From A Structure Fire

Indianola, Utah

May 14, 2018

Second Example

Structure fire in the morning of New Year's Eve 2017
Old La Sal, Utah

After a family get together for Christmas, the family, turned everything off, said their good-byes and left the house empty. In the early morning of New Year's Eve 2017 the structure caught fire and burnt to the ground.

It was a dry winter (2017-2018) with no snow on the ground. If it wasn't for defensible space around the structure, the fire would have spread into the surrounding vegetation.

Any Questions?

THANK YOU!

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Catastrophic Wildfire Reduction Strategy: FY'19 Proposed Projects

Regional Workgroup	County	Project Name	Project Type	SB 56 Goal(s)	Accomplishment	Funds Allocated
Central	Wayne	Teasdale Bench	fuel reduction/break	Fire Adapted Communities	20 acres	$37,500
Central	Sevier	Fishlake Defensible Space	defensible space work day	Fire Adapted Communities	40 homes	$6,600
Central	Sanpete	Ephraim Canyon	fuel reduction/break	Fire Adapted Communities	87 acres	$27,600
Wasatch Front	Morgan, Davis, Salt Lake, Utah, Tooele	Wasatch Front Mitigation and Education	chipper day and wildfire preparedness events	Fire Adapted Communities	10 chipping events 10 educational events	$21,500
Wasatch Front	Davis	Layton Bench (Fernwood/Snoqualmie)	fuel reduction/break	Fire Adapted Communities	5 acres	$54,800
Wasatch Front	Davis	Antelope Island (Garr Ranch)	fuel reduction/break	Fire Adapted Communities	5 acres	$17,000
Wasatch Front	Davis	South Davis Metro Portable Water Tank	acquisition of portable water source equipment	Improve Wildfire Response	1 portable water tank	$10,000
Northeast	Uintah	Deep Creek Mini Ranches	fuel reduction/break	Fire Adapted Communities	10 acres	$21,000
Southeast	Grand, San Juan	West Slope La Sal	fuel reduction	Fire Adapted Communities	20 homes 60 acres	$30,100
Southeast	Emery	Joe's Valley Phase 3	wildfire preparedness events and Firewise program assistance	Fire Adapted Communities	130 acres 15 homes	$57,500
Bear River	Box Elder, Cache, Rich, Weber	Area Fire Communications Improvement	temporary use of radio equipment by local fire departments during fires	Improve Wildfire Response	10 radios	$15,200
Bear River	Weber	Causey Estates	fuel reduction/break	Resilient Landscapes	27 acres	$82,000
Southwest	Kane	Christensen's Phase 2	fuel reduction/break	Resilient Landscapes	15 acres	$45,000
Statewide	All	Participating Entity Community Wildfire Preparedness Plans (CWPP)	CWPP planning assistance for fire policy Participating Entities	Fire Adapted Communities	211 CWPPs	$24,200
Statewide	All	Fire Suppression Severity Fund	supplement local initial attack capacity in instances of extreme fire threat	Improve Wildfire Response	temporary increase available suppression resources at local level (engines, crews, equipment)	$50,000
Total	359 acres, 211 CWPPs, 75 homes, 10 community events, 10 radios, 1 portable water tank					$500,000

CatFire Risk Reduction Goals:

1) Restore and maintain resilient landscapes 2) Create fire-adapted communities 3) Improve wildfire response

January 8, 2018

Thank you, Utah Division of Forestry, Manti-La Sal Division of National Forestry, Utah Department of Natural Resources, Wildfire Urban Interface Coordinators, Neighborhood Project Coordinators, San Juan County Firefighters and firefighters everywhere.

New Year's Eve early morning, after a week of Christmas, family fun and finally goodbyes to family travelers, the house was empty, furnace turned down, woodstove out, lights off, coffee pot unplugged, doors locked, our home burned to the ground. It happened fast and could have taken our family with it. We were lucky. God is good.

We all thought we were careful with fire and routines related to living in the country. We do not know yet what happened.

We could have lost much of our beautiful forest and wildlands in the Old La Sal area and south end and east side of the mountain. Thanks to the planning and implementation of a fire plan, the fire did not spread to the forest even though the house is just inside the tree line.

The fire plan worked. Two trees touching the house and deck burned, some were scorched. Grass and low vegetation had been reduced, trees limbed up and space increased between trees, fuels reduced as planned.

We wanted to help reduce the risk of excess fuels in the forest to protect the house in the event of a forest fire but consequently the house burned and the forest did not...because of fuels reduction.

Thank you, thank you, thank you, Wildfire Urban Interface Coordinators and everyone that contributed to this effort.

Thank you, San Juan County First Responders, fire fighters, ambulance, Chief Deputy Alan Freestone and neighbors.

Craig and Brenda Kerby

Jim and Shirley Keogh

	Funding Source	Project Name	County	Treatment Kind		Latitude	Longitude	Acres
UDFFSL	SFA	Beaver Manderfield Fuel Reduction	Beaver	Mitigation	Cut/Pile	38.377	-112.639	42
UDFFSL	SFA	Beaver Manderfield Fuel Reduction	Beaver	Mitigation	Mastication	38.377	-112.639	75
UDFFSL	SFA	Clear Creek Thinning Phase 2	Carbon	Mitigation	Cut/Chip	39.644	-111.154	22
UDFFSL	CatFire	Lower Fish Creek	Carbon	Mitigation	Cut/Pile	39.726	-111.160	68
UDFFSL	SFA	Argyle	Duchense	Mitigation	Cut/Pile	39.882	-110.701	20
UDFFSL	SFA	West Duchesne Phase 2	Duchense	Mitigation	Cut/Pile	39.882	-110.701	20
UDFFSL	WRI	Castle Creek V	Grand	Mitigation	Cut/Pile	38.635	-109.398	10
UDFFSL	CatFire	Willow Basin Thinning	Grand	Mitigation	Cut/Pile	38.586	-109.220	20
UDFFSL	CatFire	West Slope	Grand	Mitigation	Cut/Pile	38.586	-109.220	14
UDFFSL	SFA	Iron Mountain/Pinto Fuel	Iron	Mitigation	Cut/Pile	37.546	-113.215	10
UDFFSL	CatFire	Juab County	Juab	Mitigation	Mastication	39.557	-111.836	22
UDFFSL	Stevens	Rocky Ridge	Juab	Mitigation	Mastication	39.933	-111.825	118
UDFFSL	CatFire	Duck Creek (Upper North Fork)	Kane	Mitigation	Logging/Cut/Pile	37.462	-112.633	70
UDFFSL	Stevens	Upper North Fork	Kane	Mitigation	Cut/Pile/Chip	37.346	-112.705	1
UDFFSL	Stevens	Fillmore (East)	Millard	Mitigation	Mastication	38.969	-112.320	150
UDFFSL	SFA	Morgan County Fuels Reduction	Morgan	Mitigation	Cut/Pile/Chip	41.035	-111.674	24
UDFFSL	SFA	Bullion Canyon	Piute	Mitigation	Mastication	38.240	-112.223	5
UDFFSL	Stevens	Garden City Fuels Reduction	Rich	Mitigation	Cut/Pile/Chip	41.947	-111.400	10
UDFFSL	SFA	Garden City Fuels Reduction	Rich	Mitigation	Cut/Pile/Chip	41.947	-111.400	5
UDFFSL	CatFire	Hi-Country Estates	Salt Lake	Mitigation	Cut/Pile/Chip	40.501	-112.087	15
UDFFSL	BLM	Hi-Country Estates Community Chipping	Salt Lake	Mitigation	Chipping	40.501	-112.087	45
UDFFSL	CatFire	Mt. Aire Fuel Reduction	Salt Lake	Mitigation	Cut/Pile/Chip	40.726	-111.717	5
UDFFSL	CatFire	Spring City Fuel Break	Sanpete	Mitigation	Mastication	39.479	-111.492	65
UDFFSL	CatFire	Canyon Communityies Phase 1	Sanpete	Mitigation	Mastication	39.355	-111.524	72
UDFFSL	WRI	Canyon Communityies Phase 2	Sanpete	Mitigation	Mastication	39.355	-111.524	20
UDFFSL	SFA	Hideaway Valley Fuels Reduction	Sanpete	Mitigation	Cut/Pile/Chip	39.758	-111.448	10
UDFFSL	Stevens	Johnson Creek	San Juan	Mitigation	Cut/Pile	37.756	109.528	14
UDFFSL	SFA	Seven Mile	Sevier	Mitigation	Mastication	38.588	-111.689	23
UDFFSL	SFA	North Summit	Summit	Mitigation	Cut/Pile/Chip	40.784	-110.994	15
UDFFSL	CatFire	Grantsville Grazing	Tooele	Mitigation	Lop/Scatter	40.591	-112.467	300
UDFFSL	CatFire	Grantsville Grazing	Tooele	Mitigation	Reseeding	40.591	-112.467	300
UDFFSL	CatFire	Stansbury Mountain/Grantsville	Tooele	Mitigation	Mastication	40.591	-112.467	251
UDFFSL	SFA	Woodland Hills Fuel Reduction	Utah	Mitigation	Cut/Pile/Chip	40.015	-111.649	43
UDFFSL	SFA	Kolob Terrace Fuel Reduction	Washington	Mitigation	Cut/Pile	37.579	-113.037	20
UDFFSL	SFA	Causey Fuel Reduction & Fuel Break	Weber	Mitigation	Cut/Pile/Chip	41.271	-111.577	23
UDFFSL	SFA	Causey Fuel Reduction & Fuel Break	Weber	Mitigation	Grazing	41.271	-111.577	35
UDFFSL	CatFire	Causey Fuel Reduction & Fuel Break	Weber	Mitigation	Mastication	41.271	-111.577	65