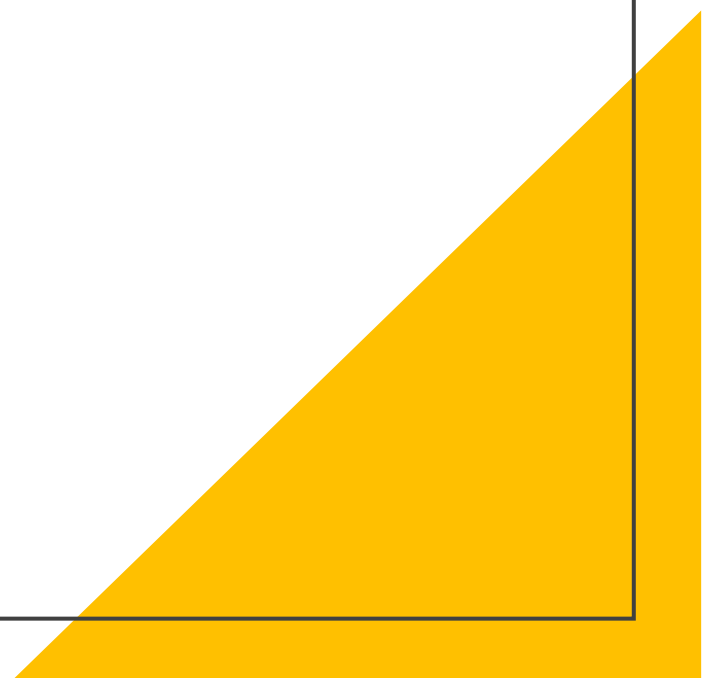


# 2020-2030 Lake Sunapee Watershed Management Plan

Best Management Practices Progress – Project Update  
and Review of Phase 1 Grant Project



Action Plan Components  
for Achieving Water  
Quality Goal Set in  
Management Plan

1. Education & Outreach
2. Research
3. Further Evaluation
4. Monitoring
5. Land Conservation
6. Land Use Regulation
- 7. Best Management Practices (Water Quality Improvement Projects)**

# Water Quality Goal

Total in-lake phosphorus reduction/offset of 7.5% or 100 kg by 2030

- As of November 2022, we have achieved about **14%** of our phosphorus reduction goal from completion of projects, conserved land and outreach efforts (based on annual estimate)
- Looking at ways to improve estimate reductions from outreach efforts and new land use regulation/ordinances – likely use assumptions
- No recent land use regulations/ordinances to justify annual load reduction estimate
- Land Conservation Target – need additional 602 acres (243 hectares) conserved to meet goal (know of only one 16-acre property conserved in watershed since 2020 – Davis Hill Rd.)

**Table 21 - Summary of Estimated Phosphorus Loading Reduction/Offsets** (adapted from plan)

Category	Estimated Annual P Load Reduction/Offset (kg)	Estimated 10-year Phosphorus Reduction/Offset (kg)	Notes
Education and Outreach	1	10	Estimate includes voluntary action, septic upgrades and homeowner projects. Could be substantially higher.
Land Conservation	2	20	Offset of P loading is 0.26 kg/yr (keeping land in forest rather than residential) for full buildout period. This equates to an offset of 0.08 kg/ha/yr for the next 10 years. Estimate based on 25ha/yr protected or 250 ha over 10 years.
Land Use Regulation, Zoning and Ordinances	1	10	Estimate
Best Management Practices	Identified	4	See Appendix H - BMP Tables
	To be identified	2	Sites identified through further evaluation task.
<b>Total Reductions/offsets:</b>	<b>10</b>	<b>100</b>	

# Keys to Success

- Will Require Participation from All – Not Just From LSPA to be Successful
- Project Implementation of Best Management Practices
  - Collaboration is Critical with Towns, State (NH DOT) and Landowners
  - Grant Money and Match Likely Needed to Implement Many of the Projects

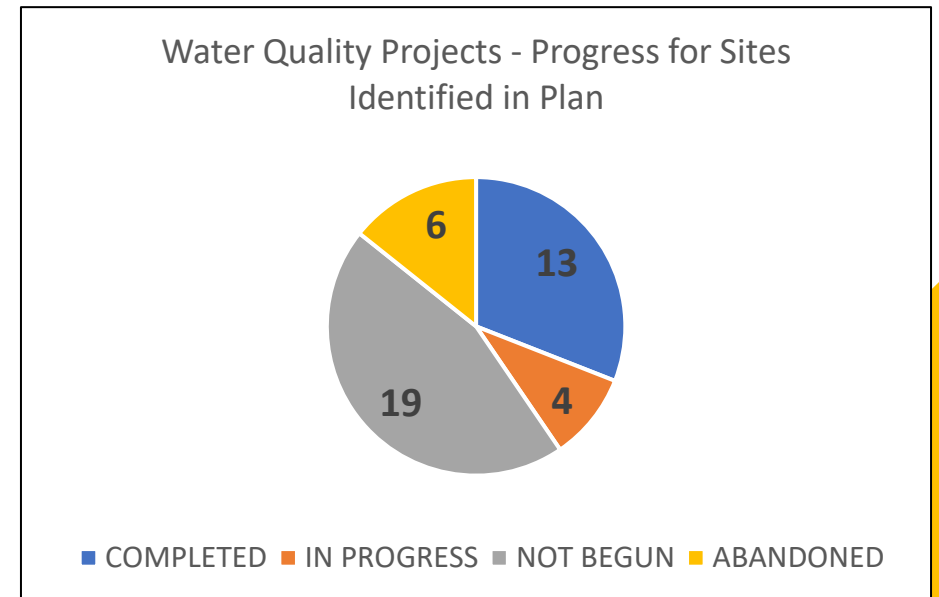


# Water Quality Improvement Projects - Progress

For sites identified in plan

## ⑬ Projects Completed – Met 28% of Best Management Practices phosphorus reduction goal

- Newbury – 4 sites: Bridge Replaced in 2020 Over Bay Point Road (Chandler Brook), Beck Brook stabilized at Mt. Sunapee Resort, Mt. Sunapee Facility Garage Area BMP Restoration – 2020
- New London – 1 site: Davis Hill Brook stabilized
- Springfield – 1 site: Deer Hill Road Turnout & Sediment Traps
- Sunapee – 7 sites: 6 addressed by Highway Department During Road Maintenance Schedule (Burkehaven Hill Road, Lake Ave in GM, Garnet Street near Dewey Beach, Westwood Road, Hamel Rd), Garnet Street Driveway



# Water Quality Improvement Projects - Progress

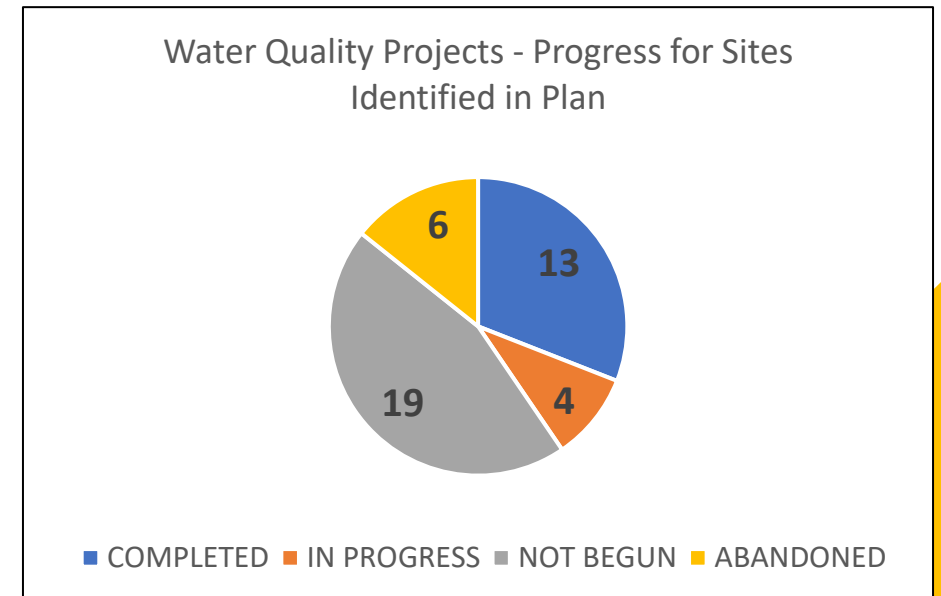
For sites identified in plan

## ④ In Progress

- Sunapee – 3 sites: Granliden (Phase 2 grant project), Yacht Club (design plan in final phase of completion, driveway paved to reduce bluestone erosion), Garnet Hill Road
- Newbury – Pine Cliff (Phase 2 grant project)

## ⑥ Projects Abandoned

- 4 sites located on NHDOT property (NHDOT did not think proposed approaches were necessary at this time)
- NL Shopping Plaza Detention Pond Restoration – material buildup and outlet need addressing, property owner stopped answering my emails & phone calls
- Garnet Hill Road – Partially abandoned




# Potential “To Be Identified” Sites

- Kidder Brook Erosion at TLV – process of finalizing grant
- Route 103A roadside erosion at The Fells
- Road & beach erosion on Garnet Street – involves three properties + town



# Water Quality Improvement Project - Specifics

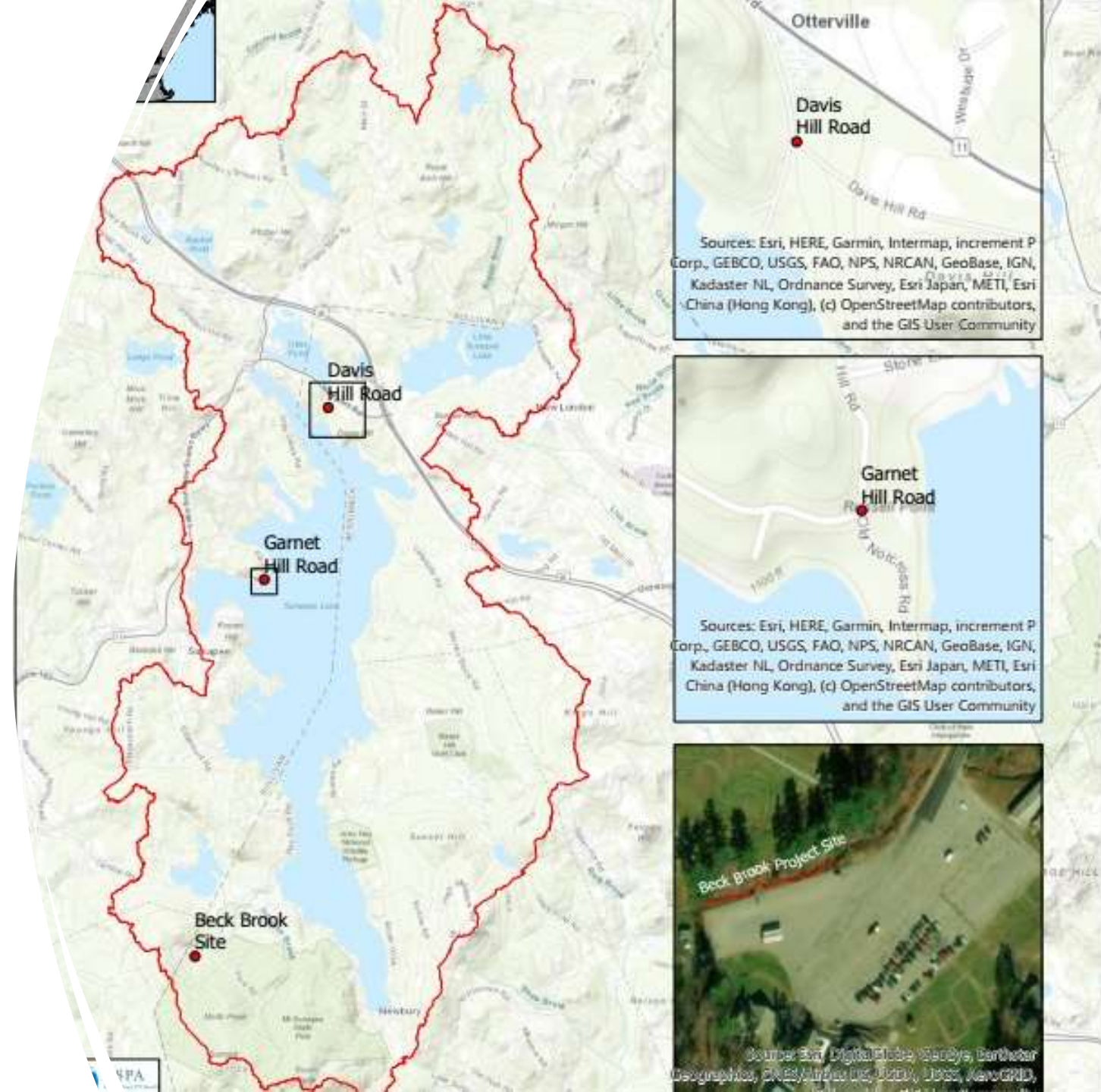
- Load reduction calculations based on research and modeling for a variety of best management practices (such as a grass swale) and drainage area
  - Periodic maintenance needed to ensure proper operation of implemented projects to meet load reduction estimates
- 
- A large yellow triangle is positioned in the bottom right corner of the slide, pointing towards the top right.



# Phase 1 Grant Completion

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- Implementation at two sites:
  - Portion of Beck Brook located at the Mt. Sunapee Resort
  - Davis Hill Road Site – brook crossing
- Third site (Garnet Hill) not fully implemented
- Project helps meet the water quality goal set in the 2020-2030 Lake Sunapee Management Plan



# Davis Hill Phase 1 Grant Project Site

## **Original Proposal:**

Stormwater flowing off Davis Hill Road is eroding the unprotected banks of Davis Hill Brook both up and down gradient of the gravel road crossing releasing soils into the brook. LSPA and the New London Public Works Division propose a BMP consisting of the installation of vegetated berms, a three-foot concrete box culvert extension, stepped concrete waste blocks (serving as wingwalls), and plantings on both sides of road to stabilize banks.

- Applied December 2019
- Grant Finds Released September 2020
- Extension Granted in 2021 to December 31<sup>st</sup>, 2022
- Project Implemented August 2022



# Existing Conditions

---

055-000-000  
**DAVIS HILL REALTY TRUST**  
 835 CORNELL CT  
 UNIVERSITY CITY, ND 58136

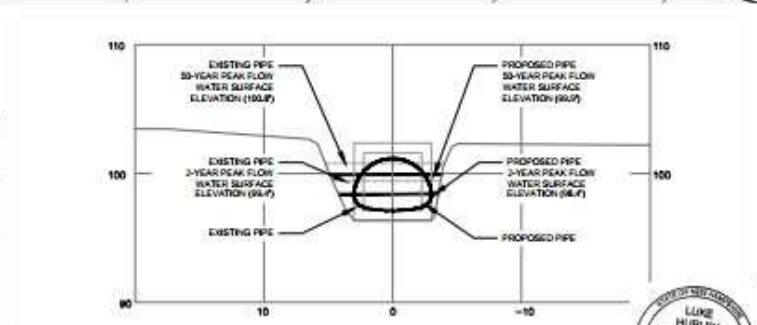
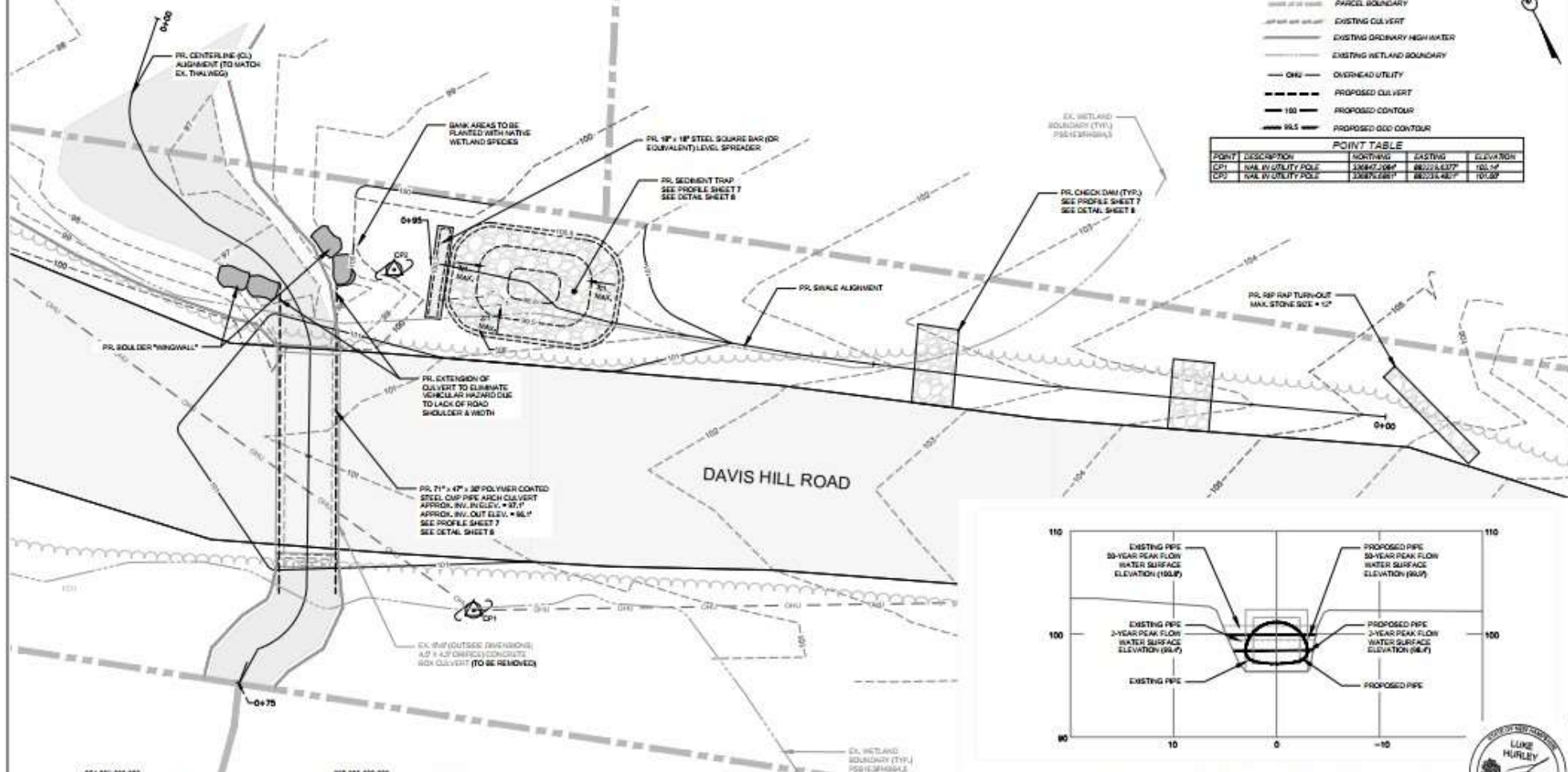
055-000-000  
**DAVIS HILL REALTY TRUST**  
 835 CORNELL CT  
 UNIVERSITY CITY, ND 58136

**LEGEND**

- UTILITY POLE
- CONTROL POINT
- EDGE OF ROAD
- 100 --- EXISTING MAJOR CONTOUR
- 50 --- EXISTING MINOR CONTOUR
- TREELINE
- EXISTING EDGE OF WATER
- PARCEL BOUNDARY
- EXISTING CULVERT
- EXISTING ORDINARY HIGH WATER
- EXISTING WETLAND BOUNDARY
- OHU --- OVERHEAD UTILITY
- PROPOSED CULVERT
- 100 --- PROPOSED CONTOUR
- PROPOSED CDD CONTOUR

POINT TABLE				
POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
CPI	NAL IN UTILITY POLE	33847.087	88223.637	101.54
CPI	NAL IN UTILITY POLE	33876.287	88234.487	102.89

The Design

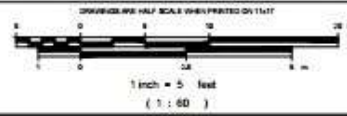


055-000-000  
**DAVIS HILL REALTY TRUST**  
 835 CORNELL CT  
 UNIVERSITY CITY, ND 58136

055-000-000  
**GILMAN 2017 TRUST NICHOLAS**  
 610 S. CAROLINA AVE. SE  
 WASHINGTON, D.C. 20003

**PROPOSED CONDITIONS SITE PLAN**  
 Scale: 1" = 5'

NO.	DATE	BY	CHKD.	APPD.	DESCRIPTION
1	1/11/2021	GR			DRAWN
2	1/14/2021	ML			CHECKED
3	1/14/2021	GR			CHECKED
4		GR			PROJECT NO. 17-135



**STONE ENVIRONMENTAL**  
 535 Stone Cutters Way / Montpelier / VT / 05602 / USA  
 802.229.4541 / info@stone-env.com / www.stone-env.com

DAVIS HILL CULVERT REPLACEMENT  
 AND EMBANKMENT STABILIZATION  
 PROPOSED CONDITIONS

NEW LONDON NEW HAMPSHIRE



SHEET NO. **6**



Project Completion August 2022

# Beck Brook Phase 1 Grant Project Site

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## Original Proposal:

During spring melt and periods of heavy precipitation, the banks of Beck Brook along the section parallel with the upper parking area of the Mount Sunapee Resort erode and slump, releasing soils into the brook causing turbid conditions to occur. LSPA and Vail Resorts Management Company (current owner of Mt. Sunapee Resort) propose a BMP to lengthen the existing vegetated swale along the edge of parking area to infiltrate surface flow runoff, stabilize the stream bank using gabion baskets overlain with soils and plantings and create a maintenance plan and site map for all on-site BMPs.

- Applied December 2019
- Grant Finds Released September 2020
- Extension Granted in 2021 to December 31<sup>st</sup>, 2022
- Project Implemented August-September 2022



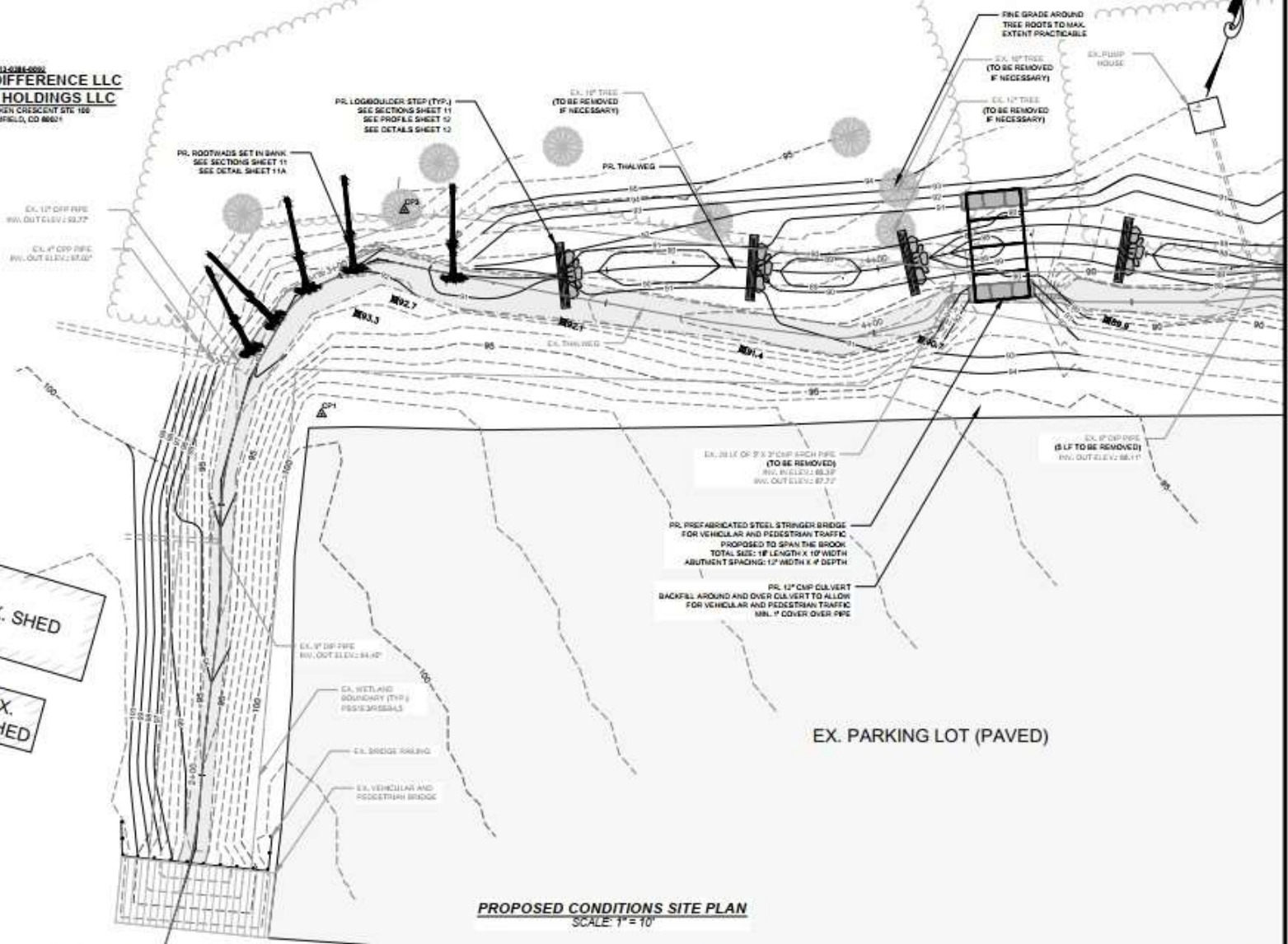
Gabion baskets in use



Existing Conditions

0611-001-0001  
**SUNAPEE DIFFERENCE LLC**  
**C/O VR NE HOLDINGS LLC**  
 380 INTERLOCKEN CRESCENT STE 100  
 BROOKFIELD, CO 80601

EX. SHED  
 EX. SHED



**PROPOSED CONDITIONS SITE PLAN**  
 SCALE: 1" = 10'

MATCHLINE - SHEET 8

**LEGEND**

- ▲ CONTROL POINT
- EDGE OF ROAD
- - - 100 - - - EXISTING 1'
- - - 90 - - - EXISTING 1'
- - - 100 - - - PROPOSED 1'
- - - 90 - - - EXISTING 1'
- - - 100 - - - EXISTING 1'
- - - 90 - - - PROPOSED 1'
- PROPOSED

Point	Description	Notes
CP1	Center 1" Slope Grade	30354
CP2	Center 1" Slope Grade	30346
CP3	Nail in Tree	30325

**TREE REMOVAL NOTES:**  
 TREES WILL ONLY BE REMOVED DURING CHANNEL AND FLOODPLAIN CONSTRUCTION IF ROOT STRUCTURE LIES WITHIN LIMITS OF STREAM OR EXCAVATION.  
 IF TREES ARE REMOVED, STUMPS SHALL REMAIN IN PLACE WHERE FEASIBLE TO PROVIDE BANK STABILIZATION.  
 LOGS TO BE USED IN STEPS WILL BE SOURCED ON-SITE FROM FELLEED TREES, OR FROM TREES ELSEWHERE ON THE PROPERTY AS AVAILABLE.

The Design



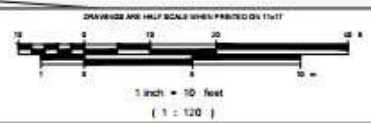
FILE: Sunapee.dwg

#	DATE	DRAWN	CHK'D	APPRO	DESCRIPTION

DRAWN ON: 04/01/21  
 DRAWN BY: HLS  
 CHECKED ON: 04/02/21  
 CHECKED BY: GMB  
 PROJECT NO: 17-135

DATE: 04/01/21

SCALE: 1" = 10'



**STONE ENVIRONMENTAL**

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 802.229.4541 / info@stone-env.com / www.stone-env.com

**MOUNT SUNAPEE STREAMBANK STABILIZATION AND STORMWATER TREATMENT PROPOSED CONDITIONS**

NEWBURY                      NEW HAMPSHIRE

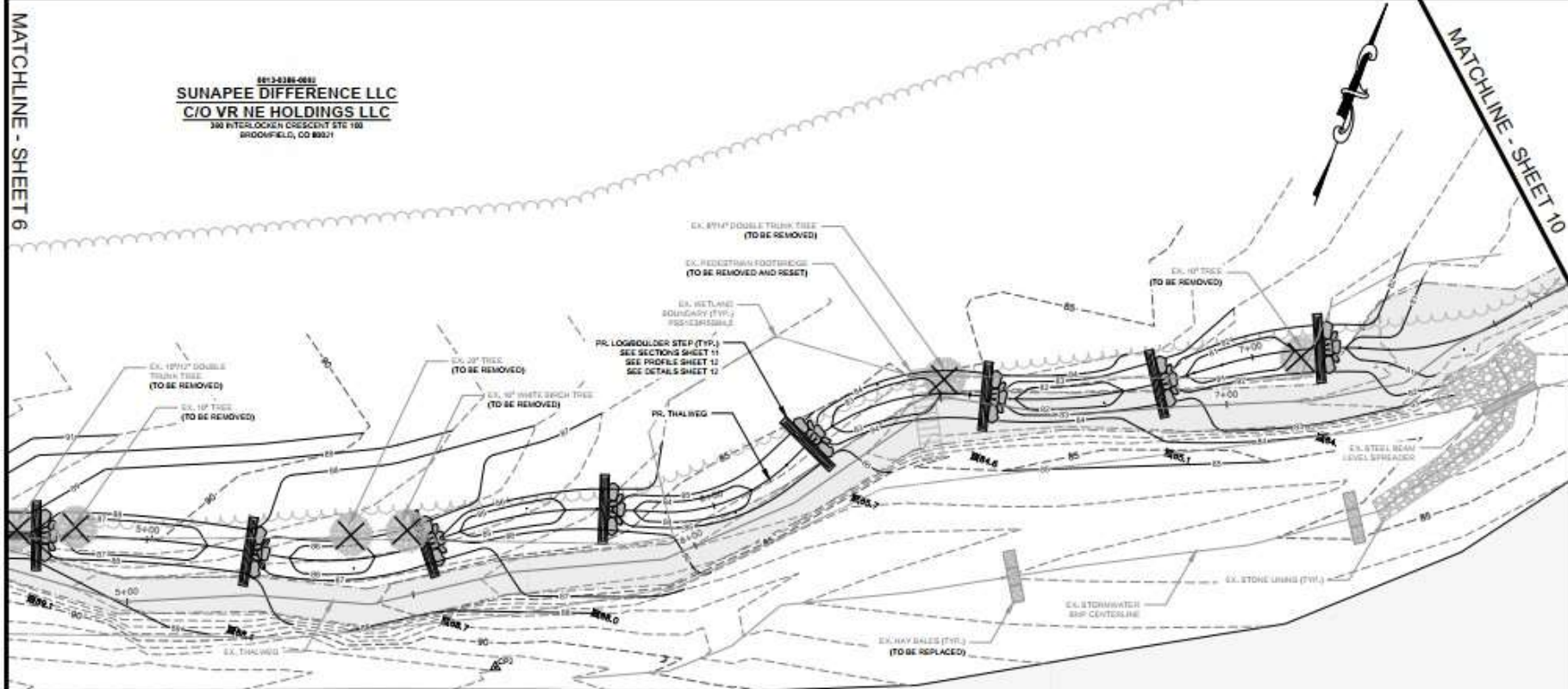
6



MATCHLINE - SHEET 6

601-238-6881  
**SUNAPEE DIFFERENCE LLC**  
**C/O VR NE HOLDINGS LLC**  
 300 INTERLOCKEN CRESCENT STE 100  
 BRIDGEMFIELD, CO 80301

MATCHLINE - SHEET 10



**LEGEND**

- ▲ CONTROL POINT
- EDGE OF ROAD
- 100 --- EXISTING
- 30 --- EXISTING
- PROPOS
- 100 --- PROPOS
- EXISTING
- EXISTING
- PROPOS

# The Design

Point	Description	Elev
CPT	Radius 1" Above Grade	30315
CP2	Radius 1" Above Grade	30314
CP3	Radius 1" Above Grade	30313

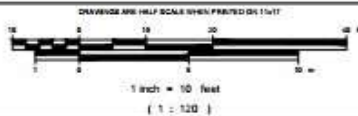
**TREE REMOVAL NOTES:**  
 - TREES WILL ONLY BE REMOVED DURING CHANNEL AND FLOODPLAIN CONSTRUCTION IF ROOT STRUCTURE LIES WITHIN LIMITS OF STREAM OR EXCAVATION.  
 - IF TREES ARE REMOVED, STUMPS SHALL REMAIN IN PLACE WHERE FEASIBLE TO PROVIDE BANK STABILIZATION.  
 - LOGS TO BE USED IN STEPS WILL BE SOURCED ON-SITE FROM FELLED TREES, OR FROM TREES ELSEWHERE ON THE PROPERTY AS AVAILABLE.

EX. PARKING LOT (PAVED)

**PROPOSED CONDITIONS SITE PLAN**  
 SCALE: 1" = 10'

FILE: Sunapee.dwg

REV	DATE	BY	CHK'D	APP'D	DESCRIPTION



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**MOUNT SUNAPEE STREAMBANK STABILIZATION AND STORMWATER TREATMENT PROPOSED CONDITIONS**  
 NEWBURY NEW HAMPSHIRE



**8**  
 SHEET NO.

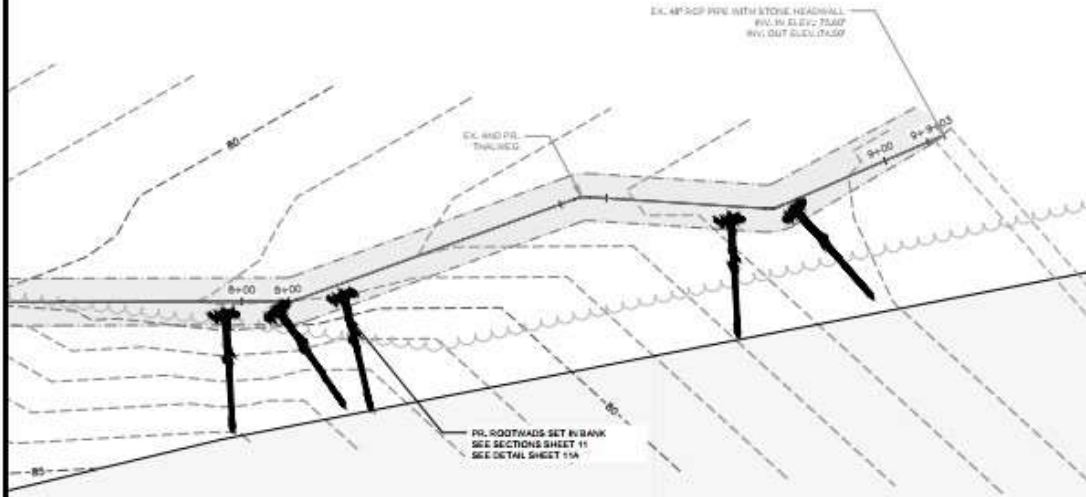
MATCHLINE - SHEET 8

0013-0388-0002  
**SUNAPEE DIFFERENCE LLC**  
**C/O VR NE HOLDINGS LLC**  
 300 INTERLOCKEN CRESCENT STE 100  
 BROOMFIELD, CO 80021



**LEGEND**

- CONTROL POINT
- EDGE OF ROAD
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED LIMIT OF DISTURBANCE (LOD)
- PROPOSED CONTOUR
- TREELINE
- EXISTING EDGE OF WATER



EX. PARKING LOT (PAVED)

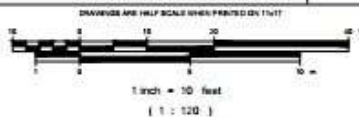
**PROPOSED CONDITIONS SITE PLAN**  
 SCALE: 1" = 10'



The Design

FILE: SUNAPEE.dwg

#	DATE	DRWN	CHK'D	APP'D	DESCRIPTION
1	04/02/21				DRAWN QN: 04/02/21
2					DRAWN BY: FLS
3	04/02/21				CHECKED QN: 04/02/21
4					CHECKED BY: GMB
5					PROJECT NO: 17-135



REGISTRATION

**10**



Project Implementation  
August- September  
2022





Project Completion September 2022

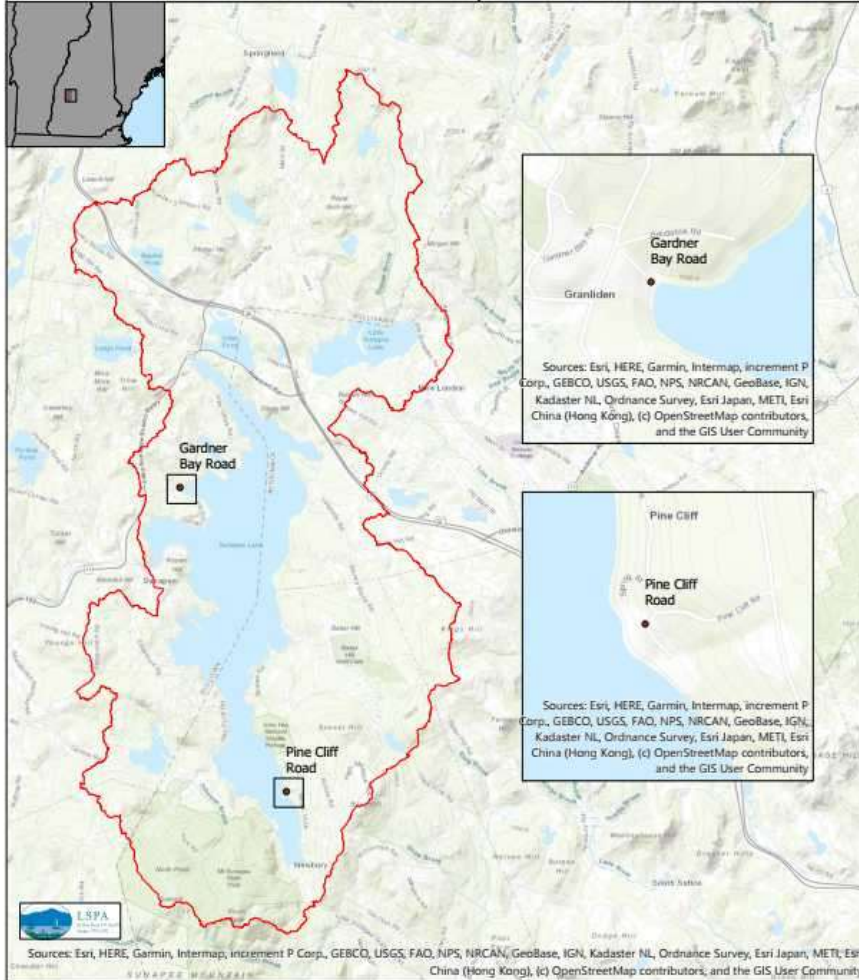
## 2021 Watershed Assistance Grant Project Map

Lake Sunapee Watershed Management Plan - Phase 2

### Legend

- Lake Sunapee Watershed Boundary
- Proposed Project Sites - 2021

0 1 2 4 Miles



# Phase 2 Grant Progress

- Nearing completion of final designs for Granliden site in Sunapee and Pine Cliff site in Newbury
- Implementation anticipated summer and fall 2023

# Phase 3 Grant Proposed Project

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- Grant application accepted November 2022
- Kidder Brook Bank Stabilization on portion running through TLV golf course
- Site not identified in plan – falls under “To be identified” category.





# NHDES Watershed Assistance Grants

- Clean Water Act (Section 319) is the funding source. Money supports various types of projects that work to reduce nonpoint source water pollution.
  - Grant money administered by States, \$550,000 was available in 2023 grant round for NH.
  - 2023 applications collectively added up to \$1.6 million, many projects go unfunded.
  - LSPA has been recipient of four Watershed Assistance grant projects since 2017 starting with the 2020 plan itself (funds granted for projects ranged between \$50,000 and \$90,000).
  - Funding covers 60% of project costs. In-kind and cash match cover the rest.
-