PROJECT DESCRIPTION

November 6, 2023

The Hills, LLC

APN 223-061-043 - Conditional Use Permit – 22,200 SF Outdoor Cultivation

APN 223-061-038, 223-073-004, 223-073-005 – 28,740 SF Outdoor, 10,000 SF Mixed Light and 10,000 SF Nursery

This project includes relocation of existing cannabis cultivation on two separate legal parcels and development of a new 10,000 square foot commercial nursery and ancillary structures support the operations.

The site can be accessed by two separate roads: Little Buck Mountain Road and Wallan Road.

Employee count varies depending on season but a peak of 11 employees. Employees currently commute to the site but will be given the opportunity to reside on the premise once the employee housing structure is developed.

Development on APN 223-061-043 will include restoration of existing 22,200 square feet of cannabis cultivation and relocation to a single consolidated site with cultivation occurring in coldframe greenhouses outdoor using light deprivation techniques to achieve two cycles per season.

The relocation site has not yet been developed. It will operate with light deprivation techniques only. A small solar and battery system will be developed at this site to power security cameras and direct-drive fans within the greenhouses.

Development on APN 223-061-038, 223-073-004, 223-073-005 (comprising a single legal structure) will include relocation of existing 28,740 SF Outdoor, 10,000 SF Mixed Light canopy and development of a new 10,000 SF Nursery. Outdoor cultivation will occur in coldframe structures or in full sun in pots with one to two harvest cycles per year. The nursery and mixed light operations will occur in coldframe greenhouse structures in Phase 1 and be upgraded in Phase 2 to occur in full-season operation with up to four cycles per year.

The ancillary structures utilized in the cannabis operations include:

Existing Building A – Ag-exempt structure for farm equipment and harvest storage – 1,200 SF with 600' SF carport
Proposed Building B – Ag-exempt barn for drying of cannabis – 5,050 SF with 15'x18' covered storage area
Proposed Building C – Commercial structure for processing, pre-rolling and packaging of cannabis and office areas. Includes ADA parking and rest facilities – two story 6,082 SF and one story 1,712 SF.
Proposed Building D – 5,040 SF two story structure for employee housing

Power is currently provided by generators. Power is proposed to be provided by PGE using its renewable energy rate to power cultivation areas, the well diversion and the cannabis related structures above.

Water will be sourced from a permitted well and rain catchment from the roof of proposed structures. A total of 59,500 gallons of existing waste storage is present. An additional 100,000 gallon water storage tank is proposed with potential to add an additional 100,000 gallon tank as part of a future expansion. Total water upon full project implementation is anticipated to b e 756,900 gallons with rain catchment offset of approximately 290,000 gallons (based on 2020-2021 drought year analysis) for a a net diversion of 467,214 gallons from the well. High efficiency drip irrigation systems will be utilized.

The project also includes decommissioning of legacy surface water diversions, replacement of under-sized stream crossing culverts, and installation of new culverts over dirt ford stream crossings for the ranch road system to maintain access to the grazing pastures and adjacent forested areas for firewood and recreation.

Two water storage ponds developed without benefit of permits in 2016 and a legacy stock watering pond will also be decommissioned and restored per an agreement with the Waterboard.

Proposed Adult Use Cannabis Cultivation and Ancillary Activities

Cultivation and Operations Manual

For:

Applicant

The Hills, LLC
PO Box 250
Garberville, Ca 95540
APN: 223-061-043
APN: 223-073-005
APN: 223-073-004
APN: 223-061-038
APN: 223-061-046

Property Owner

Shadow Light ranch, LLC
PO Box 250
Garberville, Ca 95540

Rev. 10-6-21
Rev. 03-10-21
Rev. 04-17-20

CDFA License #

CDFA License Number CCL19-0004617 Cottage Mixed Light Tier 1

CDFA License Number CCL18-0001873 Small Mixed Light Tier 1

CDFA License Number CCL18-0001874 Small Mixed Light Tier 1

CDFA License Number CCL18-0001875 Medium Outdoor

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1.0 OVERVIEW

1.1 Project Description

The Hills, LLC is proposing to permit existing cannabis cultivation activities in accordance with the County of Humboldt's (County) *Commercial Medical Marijuana Land Use Ordinance* (CMMLUO). The project requires a conditional use permit for the cultivation and a special permit for the nursery and processing. The project includes the permitting of existing and proposed facilities appurtenant to the cultivation, including:

Final Proposed Cultivation/Nursery

(Zone 1)= Ag Exempt Light Deprivation Hoop Houses 9,000SF outdoor, 10,000SF mixed light Agratech or similar engineered greenhouse, 3,500 SF outdoor

-(Zone 1) Nursery-10,080 SF Wholesale Greenhouse (Agratech or similar)

-(Zone 2) 10-Ag Exempt Light Deprivation Hoop Houses – 10,000 SF outdoor

-(Rock Pit) (P) 22,200SF outdoor, 24 Ag Exempt Light Deprivation Hoop Houses

-(Roadside) 6,240 SF outdoor, 7 Ag Exempt Light Deprivation Hoop Houses (E&P)

Processing-BLDG A, 1,200 SF (E) Warehouse; **BLDG B** 5,050 SF (P) Warehouse with 850SF Mother Room For Wholesale Nursery; **BLDG C** 7,090 SF (P) Processing-Storage 1,140 SF Offices

Housing-Single Family Residence (E). Future Phase BLDG D 5,064 SF Employee Housing ®

Access-There are two access points for the project.

A. Little Buck Mountain Road See Road analysis to confirm it meets county required road standards, and is the primary access for most big trucks and deliveries as well as many employees.

B. Wallan Road, See Road analysis confirming it meets county required standards. It is a pre authorized county access road. Our staff is trained to be courteous and respectful to our neighbors while driving.

1.2 Site Description

The Project is located at, (APN 223-061-043, 223-073-005, 223-073-004 and 223-061-038) just east of the community of Garberville. The subject parcels are approximately 435.5 acres in size (per the County of Humboldt's WebGIS) The property is AG, type B grazing with sections of prime AG and TPZ. It has a relatively diverse topography but the cultivation is on slopes of less than 15% gradient. The property is a mixture of meadows and oak groves with a few fir. Bear Creek flows through the Southwest portion of the property. The property is characterized as open grassland and timber. The current cultivation is separated between 6 cultivation sites.

Interim Conditions Cultivation 2019/2020

1. Lower 40 7,500SF (Outdoor) (Proposed to relocate 22,200 SF outdoor-Rock Pit)

2. Zone 1 22,650SF (4,650SF Outdoor, 8,000SF Depo, 10,000SF Mixed Light)

3. Zone 2 5,950SF (1,950SF Outdoor, 4,000SF Depo)

4. Roadside 6,300SF (Outdoor)

5. Corral 6,900SF (Outdoor) (Proposed to relocate)

6. South 80 8,000SF(Outdoor) (Proposed to relocate)

Total Cultivation: 57,300 (under pre-existing SF which was 60,940 + 5,000 on-046)

See Site Plan

1.3. Land Use

The subject property has a General Plan designation of AG (FRWK) and TPZ as identified by the Northern Humboldt General Plan (NHGP) and is zoned Agriculture Exclusive (AE) B-5 (160). The property contains class B grazing with some prime agricultural soils according the Humboldt WebGIS. The proposed cultivation area occupies less than 0.33% of the total land area. Land uses surrounding the parcel are composed of residential, timber and agriculture. The surrounding parcels are zoned Agricultural Exclusive (AE), Timber Production Zone (TPZ), Forest Recreation (FR), and Rural Residential (RR).

2.0 AUTHORIZATION

2.1 State of California Commercial Cannabis Activity License

The Hills, LLC will has 4 temporary Commercial Cannabis Activity licenses issued by the State of California. Upon county approval of wholesale nursery facility and special permit, a wholesale nursery license will be obtained by the State of California.

2.2 State Water Resources Control Board

Water for domestic is supplied by a spring. **In 2019 Shadow Light Ranch drilled a well to supply water for cannabis cultivation and is the primary and single source of water currently for cultivation (40 GPM)**. The well is not hydrologically connected thus out of the jurisdiction of the water board.

2.3 Coast Regional Water Quality Control Board

June 10, 2016, The Hills, LLC enrolled with the North Coast Regional Water Quality Control Board (NCRWQCB) for coverage under Tier 2 of Order No R1 2015-0023 *Waiver of Waste Discharge Requirements and General Water Quality Certification for Discharges of Waste Resulting from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects in the North Coast Region* (WDID 1B16868CHUM) . The Hills, LLC has transitioned to the State General Order as of July 1st, 2019 under WDID 1_12CC415333.

2.4 Humboldt County Building Department

All necessary building permits will be obtained from the Humboldt County Building Department for all existing and proposed structures and supporting infrastructure upon approval of the Conditional Use and Special Permits. All permits for existing and proposed structures are ready for issuance by Humboldt County Building Department as of 2/15/21, except for the Nursery and Mixed Light greenhouses.

2.5 Cal Fire

The subject property is located within a State Responsibility Area (SRA) for fire protection. Several improvements are proposed in order to meet SRA requirements, including designating a fire turnaround and pull-out area for emergency vehicles, and management of trees and vegetation around existing structures to maintain the required 100-foot defensible space. All structures on the property meet the 30-foot SRA setback requirement from property lines.

A fire hydrant serviced by 30,000 gallons of tank storage will be located at the north-east side of the property, above the storage barn near the top well site. If required by Cal Fire, another 2,500-gallon water tank with a riser to SRA specifications will be installed in addition to the hydrant.

2.6 California Department of Fish and Wildlife

An approved Lake and Stream-Bed Alteration Agreement (LSAA) from the Department of Fish and Wildlife (DFW) will be obtained for any work in wetland areas.

2.7 HUMBOLDT COUNTY DEPARTMENT OF AGRICULTURE/DPR

Licensee has obtained an Operator ID Number (OIN) from the Dept of Ag for areas where fertilizer and pesticides are handled, mixed or applied. Proper records are kept on application rates and submitted to department of AG. All employees and contractors will be property trained on application, record keeping and REI's. All fertilizers and chemicals will be stored in compliance with DPR.

3.0 CULTIVATION SUMMARY

3.1 Wholesale Nursery Propagation and Initial Transplant

Juvenile plants are propagated onsite from 'mother plants' located in BLDG B or in on-site Nursery in Zone 1. Mother plants remain in the vegetative stage solely for propagation. Cuttings are sampled from the mother plants and are rooted into a growing medium, typically oasis cubes, to produce 'clones.' The clones are tracked, traced and placed into the Wholesale Nursery area. Clones for purpose of on-site cultivation will be sold from the Wholesale Nursery License to the Cultivation License. Clones produced for Wholesale Distribution will be tracked, traced and sold to licensed cannabis cultivators.

For on-site cultivation and once the clones are fully rooted they are transplanted directly into one (1) gallon or four inch plastic containers containing a growing medium potting soil. The juvenile plants are irrigated using hand watering methods. After 2-4 weeks the clones are then transplanted into 100 gallon pots outdoor or in a hoop house with beds containing potting soil to continue their 'vegetative' cycle.

3.2 Mixed Light /Depo/Outdoor Cultivation Plan

Baseline cultivation method used smart pots and potting soil as the growing medium for both the mixed light greenhouses as well as outdoor cultivaiton.

The mixed light cultivation will occur in (1) Agra Tech GH, for a combined cultivation area of 10,000 square feet. The Agratech greenhouse is an automated steel and polycarbonate shell structure. The GH utilizes a combination of artificial light and light deprivation to produce up to four 4 flowering cycles per year. The growing media is potting soil on raised rolling tables.

The light deprivation cultivation (Light Dep) will occur in hoop houses totaling 47,440 SF. The hoop houses utilize a combination of natural light and light deprivation tarps to obtain two flowering cycles per year. The growing media is raised beds.

The outdoor full term cultivation will occur in Zone 1 A & B 3,500SF as identified on the site map. Plants will be taken directly from the nursery and transplanted into 100 gallon pots for the vegetive and flowering cycle. One cycle per year for the full sun outdoor. These areas may be partially converted into light deprivation hoops in the future (see light deprivation)

Cultivation Activity Schedule				
Month	Nursery	Mixed Light	Light Dep	Full Sun
January	Maintain mothers, cut clones, maintain starts in pots	Maintain plants	No activity	No activity
February	Maintain mothers, cut clones, transplant rooted clones to pots	Harvest/Re-plant	No activity	No activity
March	Maintain mothers, cut clones, maintain starts in pots	Maintain plants	No activity	No activity
April	Maintain mothers, cut clones, maintain starts in pots	Maintain plants	Fill pots/check drip system	Fill pots/check drip system
May	Maintain mothers, cut clones, transplant rooted clones to pots	Harvest/Re-plant	Plant May 1st	Plant May 15th
June	Maintain mothers, cut clones, maintain starts in pots	Maintain plants	Maintain plants	Maintain plants
July	Maintain mothers, cut clones, transplant rooted clones to pots	Maintain plants	Harvest/Re-plant July 15th	Maintain plants
August	Maintain mothers, cut clones, transplant rooted clones to pots	Harvest/Re-plant	Maintain plants	Maintain plants
September	Maintain mothers, cut clones, maintain starts in pots	Maintain plants	Maintain plants	Maintain plants
October	Maintain mothers, cut clones, maintain starts in pots	Maintain plants	Harvest	Harvest
November	Maintain mothers, cut clones, transplant rooted clones to pots	Harvest/Replant	Amend soil	Amend soil

4.0 IRRIGATION SUMMARY

Irrigation and fertigation of plants occurs using top-feed drip irrigation and hand watering methods. The Hills, LLC maintains that the irrigation and fertigation methods used are helpful and necessary in reducing water consumption. See section 9.1 for water source, storage, and use analysis.

5.0 HARVEST-DRYING/CURING-PROCESSING

5.1 Processing Facility

All cannabis processing will occur on parcel (223-073-005) currently at the existing 1,200SF building. A proposed 7,090 square foot processing facility is planned (BLDG C). The facility will incorporate all aspects of processing including drying, curing, and trimming, and will include an ADA restroom for employees. An additional 5,050 SF building (BLDG B) will be constructed and used as necessary for any overflow, hanging, curing, bucking, trimming, storing from BLDG C. The restroom will include a working flush toilet as well as a sink with cold and hot running water provided by an on demand propane water heater. The proposed metal building will have an engineered concrete slab and will conform to commercial building standards per the 2019 California Building Code.

5.2 Harvest-drying/curing-processing

Plants that are ready for harvest have their flowering branches removed and suspended in the drying room. Track and Trace tags are collected and plants are moved in track and trace to “harvested”. The drying process takes approximately one week to two weeks. At which time the flowers are bucked into manageable size and stored in totes for processing. At this time, the product is tagged as bulk product with package tags in track and trace .

Product is now ready for processing by hand or trim machine. As product is being processed it is separated into, bud and trim. The finished product is entered into track and trace as trim or bud and stored in the processed materials room before being transported to a licensed distributor.

*Throughout the harvest process all “waste or unusable product” is weighed, logged into track and trace and transported to the on-site secured compost area (SCA)

5.3 STORAGE AND TRANSPORTATION

All finished product, after being logged in to the Track & Trace system, will be stored on-site in a secure room in the processing building. All product, will be transferred off-site by a licensed distributor for sale.

6.0 Employee Plan

The Hills, LLC is an “agricultural employer” as defined in the Alatorre-Zenovich-Dunlap-Berman Agricultural Labor Relations Act of 1975 (Part 3.5 (commencing with Section 1140) of Division 2 of the Labor Code), and complies with all applicable federal, state and local laws and regulations governing California Agricultural Employers.

6.1 Job Descriptions And Employee Summary

- ***Agricultural Crop ‘Farm Manager’:*** Directs and coordinates worker activities, such as planting, irrigation, chemical application, harvesting, grading, scheduling, payroll and record keeping. Coordinates growing activities with nurseries and suppliers. Records information, such as production, track and trace, and chemical application. Determines procedural changes in planting, harvesting, drying and storage. Analyzes soil to determine type and

quantity of fertilizer required for maximum production. Inspects equipment and facilities to ensure proper functioning. Inspects plants to determine maturity of crops or to estimate potential crop damage from weather, mold, or pest infestation. Purchases machinery, equipment, fertilizers, and supplies as needed. Hires, discharges, transfers and promotes workers, enforces safety regulations, and interpret policies. Provides information to supervisors, coworkers, and agencies by telephone, in written form, email or in person. Documenting/Recording Information- entering, transcribing, recording, storing, or maintaining information in written or electronic form. Observing, receiving, and otherwise obtaining information from all relevant sources. Analyze information and evaluate results to choose the best solution and solve problems.

- ***Inventory/Processing Manager/Records:*** Manager will lead a team to process, track, trace, and store all cannabis products. Manager hires, discharges, transfers and promotes workers, enforces safety regulations, maintains track and trace records, and interpret policies. Duties also include creating schedules and monitoring workload as necessary. Manager will be a liaison between local and state agencies and available to assist in inspections as necessary.

- ***Lead Cultivator*****:** Oversight and management of the day to day cultivation of cannabis and cannabis sites. Responsibilities include, but are not limited to: plant propagation, transplanting, soil management, irrigation, fertilization, pesticide management, and harvest activities.

- ***Seasonal Laborer:*** Provides assistance to all aspects of growing and processing cannabis including but not limited to: propagation, cultivation, watering, fertilizing, pest management, record keeping, track and trace, harvesting, and processing support including trim machine operation and hand-finish trimming. This is a part-time to full-time, seasonal position.

- **Nursery Manager:** Manager will oversee the daily operations of the greenhouse and mother room.They manage the care of plants, production of clones, track and trace. Manager will hire and coordinate wholesale nursery greenhouse workers. Manager will observe environmental standards for agricultural and horticultural production. Coordinate with sales and cultivation team.

- **Staff:** Assist Nursery Manager with tasks involving cloning, feeding, fertilizing, track and trace, and distribution in the wholesale nursery.

6.2 Staffing Requirements

In addition to the Agricultural Crop Farm Manager, Lead Cultivator, and Inventory /Processing Manager, and Nursery Manager up to (2) full-time Seasonal labor positions will be filled. The number of seasonal laborers varies based on the needs of the ranch during the cultivation, harvest and processing seasons. During the peak harvest and processing season, there are an estimated total of five (5) full time seasonal additional workers onsite.

Month	Cultivation	Nursery	Processing
January	2	2	5
February	2	2	5
March	4	2	5
April	4	2	5
May	9	2	0
June	9	2	0
July	9	2	0
August	9	2	0
September	9	2	0
October	9	2	0
November	5	2	4
December	2	2	5

6.3 Employee Training and Safety

Planting, cultivation, harvesting, drying, and trimming are performed by both seasonal and non-seasonal who have been trained throughly in each task and supervised and by Farm Manager. A written training program and records of all employees who have been trained are kept on-site. All personnel are provided with access to Personal Protective Equipment (PPE) along with the proper training to use the equipment. Access to all buildings and cultivation areas is limited to authorized personal.

All personnel are trained in proper safety procedures including fire safety; use of rubber gloves and respirators; proper hand washing guidelines; and protocol in the event of an emergency. Contact information for the local fire department, CAL FIRE, Humboldt County Sheriff and Poison Control as well as the Farm Manager will be posted on site. All personnel is provided with a written copy of emergency procedures and contact information. The safety data sheets (SDS) are kept on site and accessible to personnel.

7.0 HOUSING/FACILITIES

7.1 ON-SITE HOUSING

On site housing will be temporarily located in the existing cabin and studio residence with capacity for three to five employees. A 5,064 SF proposed employee housing facility including bedrooms, bathroom, kitchen and common areas or county approved cabins are planned for the future.

7.2 Toilet and Hand Washing Facilities

The proposed drying and processing building will include one (1) ADA-compliant restroom, including a working flush toilet as well as a sink with hot and cold running water. Anti-bacterial Liquid Soap and paper hand towels will be made available. Additional ADA restrooms are located in building B. Employees will work at a distance typically no greater than 250 feet from the restroom facility. Portable toilets and hand washing stations will be utilized at all worksites with a greater distance than 250 ft from proposed facility.

8.0 SECURITY PLAN AND HOURS OF OPERATION

8.1 Security

The facilities including cultivation, wholesale nursery greenhouse, processing buildings, and climate controlled storage buildings are secure behind locked entry gates that are located off Clark Road and at the North perimeter of the property. The entry gates remain locked at all times and access to the site is limited exclusively to employees and registered guests. Restricted access signs are posted conspicuously at the entry gates. The processing facility area will have low intensity exterior lighting to illuminate the entrances, and will include a small number of motion activated security lights. All lighting will be designed and located so that direct rays are confined to the property. Security cameras are installed throughout the ranch and the main access gate and at entrances to the facilities. The proposed processing and storage facility will include an alarm system.

8.2 Hours of Operation

Activities associated with cultivation (watering, transplanting, and harvesting) generally occur during daylight hours 8:00 AM to 5:00 PM. Depending on seasonal activities hours may need to be extended. All other activities such as processing and wholesale nursery typically occur no earlier than 8:00 AM and extend no later than 8:00 PM. Monday through Friday between the hours of 12:00 PM to 2:00 PM personnel will be on site to accommodate necessary inspections.

9.0 WATER/ ENVIRONMENT

9.1 Water Source and Projected Water Use

Water for domestic use is provided by a spring. Historically, water was supplied by unpermitted surface water diversions prior to 2015. A 1.3 million gallon rain water catchment pond with a fully contained seep supplied the cannabis irrigation until 2019. In 2019 Shadow Light Ranch drilled a non hydrologically connected well (40GPM) to irrigate cannabis. Water is pumped via solar up to a series of water tanks that gravity feed to cultivation sites. The Hills, LLC utilizes water management strategies to conserve and reuse onsite water and fertilizers to achieve net zero discharge.

See appended water management plan.

9.2 Water Storage

Water is pumped daily from the well into holding tanks and will be off-set with rain water catchment from proposed structures.

Existing water storage is summarized below:

(2) 5,000 gallon

(14) 3,000 gallon

(3) 2,500 gallon

Totaling 59,500 gallons

The permittee proposes to develop additional supplemental storage totaling 100,000 gallons to capture water from the proposed structures to further mitigate the use of the well.

Further mitigation in the form of a second 100,000 gallon rain catchment tank is being considered as part of longterm site development within the next 4 to 8 years based on market conditions.

9.3 Site Drainage, Runoff, and Erosion Control

The Hills, LLC was enrolled with the North Coast Regional Water Quality Control Board (NCRWQCB) for Tier 2 coverage, and a Water Resources Protection Plan (WRPP) has been developed utilizing best management practices (BMP's) in accordance with the NCRWQCB's recommendations.

The Hills, LLC Enrolled in the State Water Board Cannabis General Order in April of 2019 The Hills, LLC has hired Timberland Resource Consultants to develop a Site Management Plan to comply with BMP's of the order.

9.4 Site Drainage and Runoff

The sites are mostly flat with surface flow in the wet season generally draining from the West to the East. All sites are slightly sloped to drain. Two zones are slightly above 5% grade. The edges of the sites are ditched and have either a waddle like hay absorbing element or is further directed to a catchment zone that has a series of waddle filter zones to capture any runoff. All other sites, roads, driveways, parking areas, and turn arounds have drainage that is designed to code. The existing and proposed cultivation sites and greenhouses are located away from riparian zones. Fertilizers and pesticides are currently stored in a lockable storage shed with secondary containment to prevent contamination with runoff. Sites have been identified for storage/disposal of spoils and cultivation waste.

Site investigation for the development of the Water Resources Protection Plan (WRPP) and site management plan (SMP) showed no evidence of surface runoff with associated with the cultivation. Moreover, the cultivation structures are located approximately 100-200 feet from the nearest water course, providing a sufficient buffer to prevent sediment and nutrient delivery. To further prevent runoff to riparian areas, water conservation and containment measures will be implemented including the use of hand irrigation to prevent excessive water use, and the maintenance of a stable, vegetated buffer between the cultivation area and riparian zone.

9.5 Erosion Control

The Site Management Plan (SMP) includes erosion and sediment control BMP's designed to prevent, contain, and reduce sources of sediment. The SMP also includes corrective actions to reduce sediment delivery, including: removing burn piles; removing livestock from the swale area of the property; constructing a sediment basin within the swale area to catch surface runoff; and constructing a drainage ditch that extends across the site. The ditch is vegetated and does an adequate job in reducing water velocity and settling fine sediment and requires no corrective action. Additionally, the SMP requires mulch piles and spoils from any grading to be stored in a designated location away from watercourse.

9.6 Watershed and Habitat Protection

Adherence to the Site Management Plan (SMP) ensures that the watershed and surrounding habitat are protected. The cultivation activities and associated structures are 50-200 feet from the nearest watercourse, providing a suitable buffer between the cultivation operation and habitat. Additionally, site development and maintenance activities utilize BMP's in accordance with the NCRWQCB's recommendations. Any grading and earthwork activities will be conducted by a licensed contractor in accordance with approved grading permits and the SMP.

9.7 Monitoring and Reporting

Monitoring will be conducted to confirm the effectiveness of corrected measures listed in the Site Management Plan (SMP) and determine if the site meets all Standard Conditions. Inspections will include photographic documentation of any controllable sediment discharge sites as identified on the site map. Visual inspection will occur at those locations on the site where pollutants or wastes, if not contained, could be transported into receiving waters, and those locations where runoff from roads or developed areas drains into or towards surface water. The inspection will also document the progress of any plan element subject to a time schedule, or in the process of being implemented. A monitoring plan is included in the SMP with photo points identified on SMP map. Onsite monitoring shall occur in compliance with the water discharge order.

10. ENERGY AND GENERATOR USE

Generators are currently used to power the current operations. See appended generator plan.

PGE grid service is proposed. Use of on-site generators will be limited to power outage events once the grid service is connected. The generator is located away from the property line to ensure the noise level does not exceed 60 decibels at the property line. The generator and diesel fuel is located within a secondary containment trough. Current plans include PG&E to be brought onsite. The applicant has an executed power service agreement and $150,000 deposit has been paid for PGE to install the service. PGE is waiting for county approval to install the service.

11. BEST MANAGEMENT PRACTICES

Best Management Practices (BMP's) are employed when storing, handling, mixing, application of all fertilizers, pesticides and fungicides. All nutrients, pesticides and fungicides are located in a locked storage room, and contained within water tight, locked and labeled containers in accordance with manufactures instruction. Application rates will be tracked and reported with the end of the year monitoring report required in the Site Management Plan (SMP). Employees responsible for application are trained to handle, mix, apply or dispose of pesticides/fungicides with proper hand, eye body and respiratory protection in accordance with the manufacturer's recommendations. See the SMP for complete BMP specifications for the use and storage of regulated products.

12.FERTILIZERS

12.1 Nutrients for cultivation include but are not limited to:

Earth Juice

Root Excelerator

Thrive Alive

Aurora

Kelp

12.2.Pesticides and Fungicides

Bonide Sulfur
Plant Therapy

*All plant fertilizer and pesticides subject to change as necessary

13. WASTE MANAGEMENT PLAN

13.1 Solid Waste Management

Trash and recycling containers are located in the side basement under the deck of the ranch house. The containers are situated on a concrete pad to prevent storm water contamination and leachate from entering or percolating to receiving waters. The trash containers are in an enclosed area to prevent animal intrusion. Solid waste and recycling is hauled off-site to the Humboldt Waste Management Authority transfer station at least once per week. Future plans are to develop a separate and specifically designed fenced and contained refuse area.

13.2 Cultivation Waste and Soil Management

Cultivation vegetative matter such as root balls, branches, and leaves are composted at a designated area (see site map). Soils are analyzed annually than amended and reused. Used pots will be collected and stored in the warehouse for the winter. All packaging from soil amendments and fertilizers will be collected and disposed at an appropriate facility.

13.3 Wastewater Management

The water management plan aims to achieve a low evaporation, properly absorbing irrigation and nutrient system. Drip system and hand watering methods minimize the over-irrigation of plants and subsequent runoff.

14. PRODUCT MANAGEMENT

14.1 Product Testing and Labeling

R & D testing is preformed as deemed necessary by Cultivation, Inventory or Nursery Manager.

14.2 Product Inventory and Tracking

- All inventory from seed to sale is tracked in Metrc with plant or package tags.

14.3 Transportation and Distribution

Transportation will be handled by a third-party, contracted, licensed transporter/distributer in accordance with State and Local regulations. All merchantable product will be distributed through licensed cannabis distributors. Prior to moving packages from the on-site holding facility to another physical location, a transport manifest is created in Metrc. Prior to moving clones as packages from the wholesale nursery to a licensed cultivator a manifest will be created in Metrc.

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Northern Region
619 Second Street
Eureka, California 95501
(707) 445-6493
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

December 20, 2019

Mr. Joshua Sweet
P.O. Box 250
Garberville, CA 95542

Subject: Draft Lake or Streambed Alteration Agreement
Notification No. 1600-2018-0857-R1
Sweet Water Diversion, Stream Crossing, and Pond Projects

Dear Mr. Sweet:

The California Department of Fish and Wildlife (Department) has determined that your project requires a Lake or Streambed Alteration Agreement (Agreement) because it could substantially adversely affect an existing fish or wildlife resource. Enclosed is a draft Agreement that includes measures the Department has determined are necessary to protect existing fish and wildlife resources.

Within 30 days of receipt of this draft Agreement, you must notify the Department in writing whether the measures to protect fish and wildlife resources are acceptable (Fish and Game Code section 1603). If you agree with the measures set forth in the draft Agreement, you or your authorized representative **must return the draft Agreement with original signature to the above address.**

If you disagree with any measures in the draft Agreement, please contact the Department staff identified below. In the event that mutual agreement is not reached, you may follow the dispute resolution process described in Fish and Game Code section 1603(a), Part III of the "Notification Instructions and Process." If you fail to respond in writing within 90 days of receiving the draft Agreement, the Department may withdraw the draft Agreement.

Please be advised the Department may not execute the Agreement until it has complied with the California Environmental Quality Act (CEQA) (Public Resources Code section 21000 *et seq.*) as the lead or a responsible agency. Please note that the draft Agreement may be subject to change upon receipt and review of the environmental document for the project.

After you receive a final Agreement executed by the Department, you may begin the project the Agreement authorizes provided you have obtained all other necessary local, state, and federal permits or other authorizations.

For more information on the process described above, please refer to Part IV in the "Notification Instructions and Process" included with your notification materials, which is also available at www.wildlife.ca.gov/habcon/1600/notificationpackage.pdf.

If you have any questions regarding this letter, please contact Senior Environmental Scientist Specialist David Manthorne at david.manthorne@wildlife.ca.gov or (707) 441-5900.

Sincerely,

Scott Bauer
Senior Environmental Scientist Supervisor

ec. Chris Carroll
Timberland Resource Consultants
carroll@timberlandresource.com

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
REGION 1 – NORTHERN REGION
619 Second Street
Eureka, CA 95501

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2018-0857-R1
Unnamed Tributaries to Bear Creek, Tributary to the South Fork Eel River, Tributary to the Eel River and the Pacific Ocean

Joshua Sweet
Sweet Water Diversion, Stream Crossing, and Pond Projects
31 Encroachments

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and Joshua Sweet (Permittee).

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, the Permittee initially notified CDFW on December 31, 2018, with revisions received on August 13, 2019 and September 13, 2019, that the Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, the Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, the Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project to be completed is located within the Bear Creek and South Fork Eel River watershed, approximately 1.5 miles east of the town of Garberville, County of Humboldt, State of California. The project is located in Sections 19 and 20, T4S, R4E, Humboldt Base and Meridian; in the Garberville U.S. Geological Survey 7.5-minute quadrangle; Assessor's Parcel Numbers 223-061-038, 223-061-043, 223-074-004, and 223-073-005; latitude 40.0977 N and longitude 123.7698 W.

PROJECT DESCRIPTION

The project includes thirty-one proposed encroachments. Four encroachments are for water diversion from unnamed tributaries to Bear Canyon Creek and the South Fork Eel

River. Water is diverted for domestic use and irrigation. Work for the water diversion will include use modifications of existing infrastructure, stream restoration, use, and maintenance of the water diversion infrastructure. Twenty-two proposed encroachments will permit fourteen existing culverts placed without permits, upgrade two existing culverts, and install infrastructure at six road/stream crossings where no conveyance structure is in place. Four encroachments will improve spillways for two ponds. One encroachment will realign a stream with its historic channel. Work for these encroachments will include excavation, removal of the failing culverts, replacement with new properly sized culverts, backfilling and compaction of fill, and rock armoring as necessary to minimize erosion.

Table 1. Project Encroachments with Description

ID	Latitude/Longitude	Description
Crossing-1	40.1028, -123.7653	Permit existing 42" diameter culvert at road/stream crossing
Crossing-2	40.1023, -123.7655	Permit rocked ford crossing
Crossing-3	40.1022, -123.7656	Permit existing 42" diameter culvert at road/stream crossing
Crossing-4	40.1012, -123.7670	Install a minimum 18" diameter culvert to improve dirt ford at road/stream crossing
Crossing-5	40.1010, -123.7672	Install a minimum 18" diameter culvert to improve dirt ford at road/stream crossing
Crossing-6	40.1007, -123.7675	Permit existing 24" diameter culvert at road/stream crossing
Crossing-7	40.1000, -123.7686	Permit existing 42" diameter culvert at road/stream crossing
Crossing-8	40.0997, -123.7689	Permit existing 48" diameter culvert at road/stream crossing
Crossing-9	40.1007, -123.7699	Rock armor the outlet of an existing 36" diameter culvert to minimize erosion
Crossing-10	40.1002, -123.7707	Permit existing 60" diameter culvert at road/stream crossing
Crossing-11	40.1024, -123.7706	Install a minimum 36" diameter culvert at road/stream crossing*
Crossing-12	40.1006, -123.7719	Permit existing 18" diameter culvert at road/stream crossing
Crossing-13	40.1005, -123.7746	Install a minimum 18" diameter culvert to improve dirt ford at road/stream crossing
Crossing-14	40.0994, -123.7739	Permit existing 60" diameter culvert at road/stream crossing
Crossing-15	40.0996, -123.7753	Install a minimum 18" diameter culvert to improve rocked ford at road/stream crossing
Crossing-16	40.0990, -123.7755	Permit existing 60" diameter culvert at road/stream crossing
Crossing-17	40.1001, -123.7765	Abandon existing dirt ford crossing
Crossing-18	40.0961, -123.7678	Permit existing 24" diameter culvert at road/stream crossing
Crossing-19	40.0987, -123.7629	Permit existing 12" diameter culvert at road/bank seep crossing
Crossing-20	40.0955, -123.7632	Permit existing 30" diameter culvert at road/stream crossing
Crossing-21	40.0956, -123.7625	Install a minimum 18" diameter culvert to improve dirt ford at road/stream crossing
Crossing-22	40.0920, -123.7622	Replace existing 15" diameter culvert with a minimum 18" diameter culvert at road/stream crossing
23 (Pond Spillway)	40.0931, -123.7691	Remove unpermitted pond spillway and redirect flow to approved location per approved Stream Restoration Plan
24A: Overflow	40.0928, -123.7683	Remove unpermitted pond spillway and redirect flow to approved location per approved Stream Restoration Plan

24B: Pond Spillway	40.0926, -123.7685	Rebuild pond spillway or decommission pond per approved Stream Restoration Plan
Crossing-25	40.0936, -123.7704	Install a minimum 18" diameter culvert to improve dirt ford at road/stream crossing
Map Point D	40.0927, -123.7615	Realign Class III stream per approved Stream Restoration Plan
POD A	40.1018, -123.7634	Remove cisterns and structures from stream and install as needed an approved water diversion structure per approved CDFW Diversion Infrastructure Plan
POD B	40.0998, -123.7601	Remove cisterns and structures from stream and install as needed an approved water diversion structure per approved CDFW Diversion Infrastructure Plan
POD C	40.0981, -123.7648	Water diversion from a Class II stream per approved CDFW Diversion Infrastructure Plan
POD D	40.0949, -123.7628	Water diversion form a bank seep for domestic use

*Project as needed pending cultivation relocation approval.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include Coho Salmon (*O. kisutch*), Steelhead Trout (*O. mykiss*), Southern Torrent Salamander (*Rhyacotriton variegatus*), Pacific Giant Salamander *(Dicamptodon tenebrosus)*, Foothill Yellow-legged Frog *(Rana boylii),* Coastal Tailed Frog (*Ascaphus truei*), Western Pond Turtle (*Actinemys marmorata marmorata*) amphibians, reptiles, aquatic invertebrates, mammals, birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include:

Impacts to water quality:
increased water temperature;
reduced instream flow;
temporary increase in fine sediment transport;

Impacts to bed, channel, or bank and direct effects on fish, wildlife, and their habitat:
loss or decline of riparian habitat;
direct impacts on benthic organisms;

Impacts to natural flow and effects on habitat structure and process:
cumulative effect when other diversions on the same stream are considered;
diversion of flow from activity site;
direct and/or incidental take;
indirect impacts;
impediment of up- or down-stream migration;
water quality degradation; and
damage to aquatic habitat and function.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

The Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. The Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. The Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of the Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Adherence to Existing Authorizations. All water diversion facilities that the Permittee owns, operates, or controls shall be operated and maintained in accordance with current law and applicable water rights.

1.4 Change of Conditions and Need to Cease Operations. If conditions arise, or change, in such a manner as to be considered deleterious by CDFW to the stream or wildlife, operations shall cease until corrective measures approved by CDFW are taken. This includes new information becoming available that indicates that the bypass flows and diversion rates provided in this agreement are not providing adequate protection to keep aquatic life downstream in good condition or to avoid "take" or "incidental take" of federal or State listed species.

1.5 Notification of Conflicting Provisions. The Permittee shall notify CDFW if the Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact the Permittee to resolve any conflict.

1.6 Project Site Entry. The Permittee agrees to allow CDFW employees access to any property it owns and/or manages for the purpose of inspecting and/or monitoring the activities covered by this Agreement, provided CDFW: a) provides 24 hours advance notice; and b) allows the Permittee or representatives to participate in the inspection and/or monitoring. This condition does not apply to CDFW enforcement personnel.

1.7 Agreement Compliance. The proposed work shall comply with the measures of this Agreement. **Failure to comply with these measures shall result in suspension or revocation of this Agreement**.

1.8 CDFW Notification of Work Initiation and Completion. The Permittee shall contact CDFW within the seven-day period preceding the beginning of work permitted by this Agreement. Information to be disclosed shall include Agreement number, and the anticipated start date. Subsequently, the Permittee shall notify CDFW no later than seven (7) days after the project is fully completed.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, the Permittee shall implement each measure listed below.

2.1 Permitted Project Activities. Except where otherwise stipulated in this Agreement, all work shall be in accordance with the Permittee Notification received on December 31, 2018, with revisions received on August 13, 2019 and September 13, 2019, together with all maps, BMP's, photographs, drawings, and other supporting documents submitted with the Notification.

2.2 Incidental Take. This Agreement does not allow for the take, or incidental take of any state or federal listed threatened or endangered listed species.

Project Timing

2.3 Work Period. All work, not including diversion of water, shall be confined to the period **June 15 through October 1** of each year. Work within the active channel of a stream shall be restricted to periods of **dry weather**. Precipitation forecasts and potential increases in stream flow shall be considered when planning construction activities. Construction activities shall cease and all necessary erosion control measures shall be implemented prior to the onset of precipitation.

2.4 Work Completion. The proposed work shall be completed by no later than **October 1, 2021**. A notice of completed work, including photographs of each site, shall be submitted to CDFW within seven (7) days of project completion.

2.5 Extension of the Work Period. If weather conditions permit, and the Permittee wishes to extend the work period after October 1, a written request shall be made to CDFW at least 5-working days before the proposed work period variance. Written approval (letter or e-mail) for the proposed time extension must be received from CDFW prior to activities continuing past October 1.

2.6 Avoidance of Nesting Birds. Vegetation maintenance/removal as necessary within the scope of the project shall be confined to the period commencing August 16 and ending February 28, of any year in which this Agreement is valid, provided the work area is outside of the actively flowing stream. Work may continue during precipitation events provided stream flows have not risen into work areas and sediment delivery will not result.

2.7 Nesting Bird Surveys. If construction, grading, vegetation removal, or other project-related improvements are necessary during the nesting season of protected raptors and migratory birds (March 1 through August 15), the Permittee shall notify CDFW of proposed work and a focused survey for nests of such birds shall be conducted by a qualified biologist within seven days prior to the beginning of project-related activities. If a nest is found, Permittee shall consult with CDFW regarding appropriate action to comply with the Migratory Bird Treaty Act of 1918 and Fish and Game Code. If a lapse in project-related work of seven days or longer occurs, another focused survey and if required, consultation with CDFW shall be required before project work can be reinitiated.

Vegetation Management

2.8 Minimum Vegetation Removal. No native riparian vegetation shall be removed from the bank of the stream, except where authorized by CDFW. Permittee shall limit the disturbance or removal of native vegetation to the minimum necessary to achieve design guidelines and standards for the Authorized Activity. Permittee shall take precautions to avoid damage to vegetation outside the work area.

2.9 Vegetation Management. Permittee shall limit vegetation management (e.g., trimming, pruning, or limbing) and removal for the purpose of stream crossing or diversion infrastructure placement/maintenance to the use of hand tools. Vegetation management shall not include treatment with herbicides.

Water Diversion

2.10 Maximum Diversion Rate. The maximum instantaneous diversion rate from any point of diversion (POD) shall not exceed **ten (10) gallons per minute** (gpm) at any time.

2.11 Bypass Flow. The Permittee shall pass 80% of the flow at all times at POD A and POD B and must bypass 90% of the flow at POD-C to keep all aquatic species including fish and other aquatic life in good condition below the point of diversion.

2.12 Seasonal Diversion Minimization. No more than **400 gallons per day** shall be diverted from any point of diversion (POD) during the low flow season from **May 15 to November 15** of each year. Water shall be diverted only if the Permittee can adhere to conditions 2.10 and 2.11 of this Agreement.

2.13 Measurement of Diverted Flow. Permittee shall install and maintain an adequate measuring device for measuring the instantaneous and cumulative rate of diversion. This measurement shall begin as soon as this Agreement is signed by the Permittee. The device shall be installed within the flow of diverted water. The Permittee shall maintain records of diversion, and provide information including, but not limited to the following:

2.13.1 The amount of water used per week for cannabis cultivation separated out from the amount of water used for other irrigation purposes and other uses of water (e.g., domestic use or fire protection).

2.13.2 Permittee shall make available for review at the request of the department the daily diversion records required by the State Water Resources Control Board (Board) in Attachment A to the Board's Cannabis Cultivation Policy (October 17, 2017), No. 84, pages 40-41 (see Cal. Code Regs., tit. 23, § 2925).

2.14 Water Management Plan. The Permittee shall submit a Water Management Plan no later than **sixty days** from the time this Agreement is made final that describes how compliance will be achieved under this Agreement. The Water Management Plan shall include details on water storage, water conservation, or other relevant material to maintain water needs in coordination with forbearance and bypass flow requirements. The Water Management Plan shall include a brief narrative describing water use on the property, photographs to support the narrative, and water use calculations to ensure compliance with this Agreement. The Water Management Plan shall be submitted to CDFW at 619 Second Street, Eureka, CA 95501.

Water Diversion Facility Retrofit

2.15 Intake Structure. No polluting materials (e.g., particle board, plastic sheeting, bentonite) shall be used to construct or screen, or cover the diversion intake structure.

2.16 Intake Structure Placement. Infrastructure installed in the streambed (e.g., cistern or spring box) shall not exceed 10 percent of the active channel width and shall not be located in the deepest portion of the channel. The depth of the intake shall be no greater than one foot (12 inches) below the streambed.

2.17 Intake Screening. The Permittee shall regularly inspect, clean, and maintain screens in good condition.

2.17.1 The water intake screens shall be securely attached (e.g., threaded or clamped) to the intake line and have a minimum wetted area of 0.25 square feet and a minimum open area of 27%.

2.17.2 A water intake screen with round openings shall not exceed 3/32-inch diameter; a screen with square openings shall not exceed 3/32-inch measured diagonally; and a screen with slotted openings shall not exceed 0.069 inches in width. Slots must be evenly distributed on the screen area.

2.17.3 The water intake screen may be constructed of any rigid material, perforated, woven, or slotted. Stainless steel or other corrosion-resistant

material is recommended to reduce clogging due to corrosion. Care should be taken not to use materials deemed deleterious to aquatic species.

2.17.4 The water intake screen shall be placed in fast moving water with the long axis of the screen parallel to the streamflow. The water intake shall not be placed in pool habitat.

2.18 Intake Shall Not Impede Aquatic Species Passage. The water diversion structures shall be designed, constructed, and maintained such that they do not constitute a barrier to upstream or downstream movement of aquatic life.

2.19 Exclusionary Devices. Permittee shall keep the diversion structures (e.g. cistern) covered at all times to prevent the entrance and entrapment of amphibians and other wildlife.

2.20 Diversion Infrastructure Plan (DIP). The Permittee shall submit a DIP for CDFW review and approval prior to diverting water. The DIP shall include a narrative describing the different elements of the water diversion infrastructure, supporting photographs and/or diagrams, and justification of how compliance with the CDFW Fish Screen Criteria will be achieved under this Agreement.

2.21 Diversion Intake Removal. Permittee shall plug, cap, block (e.g., with a shut-off valve), or remove all intakes at the end of each diversion season.

2.22 Heavy Equipment Use. No heavy equipment shall be used in the excavation or replacement of the existing water diversion structure. The Permittee shall use hand tools or other low impact methods of removal/replacement. All project materials and debris shall be removed from the project site and properly disposed of off-site upon project completion.

Diversion to Storage

2.23 Water Storage. All water storage facilities (WSFs) (e.g., reservoirs, storage tanks, mix tanks, and bladders tanks) must be located outside the active 100-year floodplain and outside the top of bank of a stream. Covers/lids shall be securely affixed to water tanks at all times to prevent potential entry by wildlife. Permittee shall cease all water diversion at the point of diversion when WSFs are filled to capacity.

2.24 Water Storage Maintenance. WSFs shall have a float valve to shut off the diversion when tanks are full to prevent overflow. The Permittee shall install any other measures necessary to prevent exorbitant use or waste of water. Water shall not leak, overflow, or overtop WSFs at any time. Permittee shall regularly inspect all WSFs and infrastructure used to divert water to storage and use and repair any leaks.

2.25 Limitations on Impoundment and Use of Diverted Water. The Permittee shall impound and use water in accordance with a valid water right, including any limitations on when water may be impounded and used, the purpose for which it may be impounded and used, and the location(s) where water may be impounded and used.

2.26 Water Conservation. The Permittee shall make best efforts to minimize water use, and to follow best practices for water conservation and management.

2.27 State Water Code. This Agreement does not constitute a valid water right. The Permittee shall comply with State Water Code sections 5100 and 1200 et seq. as appropriate for the water diversion and water storage. The application for this registration is found at: http://www.swrcb.ca.gov/waterrights/publications_forms/forms/docs/sdu_registration.pdf.

Reservoirs

2.28 No Stocking. Stocking of fish, wildlife, or plant of any kind, in any Waters of the State, including reservoirs, shall be prohibited without written permission from the department pursuant to Section 6400 of the Fish and Game Code.

2.29 Invasive Species Management for Reservoirs. Permittee shall implement an invasive species management plan prepared by a Biologist for any existing or proposed reservoir. The plan shall include, at a minimum, an annual survey for invasive aquatic species, including the American bullfrog (*Lithobates catesbeianus* = *Rana catesbeiana)*. The Biologist, if appropriate, shall implement eradication measures if invasive aquatic species are identified as part of the survey.

2.29.1 Bullfrog Management Plan. If bullfrogs are observed, they shall be appropriately managed. Management of bullfrogs, including annual draining and drying of ponds, shall follow the guidelines in Exhibit A. A copy of the annual monitoring report, shall be submitted to CDFW in accordance with the reporting measures described in Exhibit A and below (Reporting Measure 3.5).

2.30 Off-stream reservoirs. Shall be appropriately designed, sized, and managed to contain any diverted water in addition to precipitation and storm water runoff, without overtopping. The Permittee shall install an overflow spillway that will withstand a 100-year flood event, designed with a dispersal mechanism, or low-impact design, that discourages channelization and promotes dispersal and infiltration of flows to prevent surface overflow from reaching waters of the State. The spillway shall be designed and placed to allow for a minimum of two-feet of freeboard.

2.31 Seasonal Diversion Minimization. To minimize adverse impacts to native pond breeding amphibians (when present) the following diversion minimizations apply: From November 1 to March 31, the Permittee shall divert water at a rate no greater than the rate of water flowing into the pond (i.e., water diversion shall not decrease the pond depth). From April 1 – September 1, when native larval amphibians are present, the Permittee shall cease diverting water once the pond volume is one third of the maximum pond volume. To comply with this measure; the Permittee shall establish a fixed visual marker(s) (e.g., stage plate) in the pond as a reference for water level thresholds.

Stream Crossings

2.32 Stream Protection. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other deleterious material from project activities shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the stream. All project materials and debris shall be removed from the project site and properly disposed of off-site upon project completion.

2.33 Equipment Maintenance. Refueling of machinery or heavy equipment, or adding or draining oil, lubricants, coolants or hydraulic fluids shall not take place within stream bed, channel and bank. All such fluids and containers shall be disposed of properly off-site. Heavy equipment used or stored within stream bed, channel and bank shall use drip pans or other devices (e.g., absorbent blankets, sheet barriers or other materials) as needed to prevent soil and water contamination.

2.34 Hazardous Spills. Any material, which could be hazardous or toxic to aquatic life and enters a stream (i.e. a piece of equipment tipping-over in a stream and dumping oil, fuel or hydraulic fluid), the Permittee shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550, and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours at 707-445-6493 and consulted regarding clean-up procedures.

2.35 Dewatering.

2.35.1 Stream Diversion. Only when work in a flowing stream is unavoidable (e.g., perennial streams), Permittee shall divert the stream flow around or through the work area during construction operations. Stream flow shall be diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses.

2.35.2 Maintain Aquatic Life. When any dam or other artificial obstruction is being constructed, maintained, or placed in operation, Permittee shall allow sufficient water at all times to pass downstream to maintain aquatic life

below the dam pursuant to Fish and Game Code §5937.

2.35.3 Stranded Aquatic Life. The Permittee shall check daily for stranded aquatic life as the water level in the dewatering area drops. All reasonable efforts shall be made to capture and move all stranded aquatic life observed in the dewatered areas. Capture methods may include fish landing nets, dip nets, buckets and by hand. Captured aquatic life shall be released immediately in the closest suitable aquatic habitat adjacent to the work site. This condition does not allow for the take or disturbance of any State or federally listed species, or State listed species of special concern. The Department staff who prepared this agreement shall be contacted immediately if any of these species are detected.

2.35.4 Coffer Dams. Prior to the start of construction, Permittee shall divert the stream around or through the work area and the work area shall be isolated from the flowing stream. To isolate the work area, water tight coffer dams shall be constructed upstream and downstream of the work area and water diverted, through a suitably sized pipe, from upstream of the upstream coffer dam and discharge downstream of the downstream coffer dam. Coffer dams and the stream diversion system shall remain in place and functional throughout the construction period. Coffer dams or stream diversions that fail for any reason shall be repaired immediately.

2.35.5 Minimize Turbidity, Siltation, and Pollution. Permittee shall use only clean, non-erodible materials, such as rock or sandbags that do not contain soil or fine sediment, to construct any temporary stream flow bypass. Permittee shall divert stream flow around the work site in a manner that minimizes turbidity, siltation, and pollution, and does not result in erosion or scour downstream of the diversion.

2.35.6 Remove any Materials upon Completion. Permittee shall remove all materials used for the temporary stream flow bypass after the Authorized Activity is completed.

2.35.7 Restore Normal Flows. Permittee shall restore normal flows to the effected stream immediately upon completion of work at that location.

2.36 Excavated Fill. Excavated fill material shall be placed in upland locations where it cannot deliver to a watercourse. To minimize the potential for material to enter the watercourse during the winter period, all excavated and relocated fill material shall be tractor contoured (to drain water) and tractor compacted to effectively incorporate and stabilize loose material into existing road and/or landing features.

2.37 Runoff from Steep Areas. The Permittee shall make preparations so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential or contained behind erosion control structures. Erosion control structures

such as straw bales and/or siltation control fencing shall be placed and maintained until the threat of erosion ceases. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

2.38 Culvert Installation.

2.38.1 The project is located in a moderate to very high Fire Hazard Severity Zone as designated by CAL FIRE. Culvert materials shall consist of corrugated metal pipe (CMP). Use of High Density Polyethylene (HDPE) pipe is not recommended.

2.38.2 Existing fill material in the crossing shall be excavated down vertically to the approximate original channel and outwards horizontally to the approximate crossing hinge points (transition between naturally occurring soil and remnant temporary crossing fill material) to remove any potential unstable debris and voids in the older fill prism.

2.38.3 Culvert shall be installed to grade (not perched or suspended), aligned with the natural stream channel, and extend lengthwise completely beyond the toe of fill. If culvert cannot be set to grade, it shall be oriented in the lower third of the fill face, and a downspout or energy dissipator (such as boulders, rip-rap, or rocks) shall be installed above or below the outfall as needed to effectively control stream bed, channel, or bank erosion (scouring, headcutting, or downcutting). The Permittee shall ensure basins are not constructed and channels are not be widened at culvert inlets.

2.38.4 Culvert bed shall be composed of either compacted rock-free soil or crushed gravel. Bedding beneath the culvert shall provide for even distribution of the load over the length of the pipe, and allow for natural settling and compaction to help the pipe settle into a straight profile. The crossing backfill materials shall be free of rocks, limbs, or other debris that could allow water to seep around the pipe, and shall be compacted.

2.38.5 Culvert inlet, outlet (including the outfall area), and fill faces shall be armored where stream flow, road runoff, or rainfall energy is likely to erode fill material and the outfall area.

2.38.6 Permanent culverts shall be sized to accommodate the estimated 100-year flood flow [i.e. ≥1.0 times the width of the bankfull channel width or the 100-year flood size, whichever is greater], including debris, culvert embedding, and sediment loads.

2.39 Crossing Maintenace

2.39.1 The placement of armoring shall be confined to the work period when the

stream is dry or at its lowest flow

2.39.2 No heavy equipment shall enter the wetted stream channel.

2.39.3 No fill material, other than clean rock, shall be placed in the stream channel.

2.39.4 Rock shall be sized to withstand washout from high stream flows, and extend above the ordinary high water level.

2.39.5 Rock armoring shall not constrict the natural stream channel width and shall be keyed into a footing trench with a depth sufficient to prevent instability.

2.40 Fords, Armored Fill and Vented Crossings.

2.40.1 Fords, armored and vented crossings are considered permanent watercourse encroachments and shall accommodate the 100-year flood flow plus associated sediment and debris.

2.40.2 Hydrologically-connected road approaches to fords, armored and vented crossings shall be rocked and maintained to avoid delivery of fine sediment to the watercourse below.

2.40.3 Fords, armored and vented crossings shall be maintained as necessary to avoid delivery of fine sediment to the watercourse below.

2.40.4 Fords, armored and vented crossings shall be sufficiently outsloped to minimize aggradation of suspended sediments at the crossing.

2.40.5 The lowest point of fords, armored and vented crossings shall be constructed within or directly over the original stream channel, to the extent feasible, in order to contain high flows up to twice bank-full and to avoid diversion potential.

2.40.6 Armor material shall be comprised of durable angular screened quarry rock of sufficient size and placement to minimize mobilization during a 100-year storm event. Wood may be used for armoring if sound, tight-grained, redwood is applied and sufficiently keyed into the fillslope to resist movement during a 100-year storm event.

2.40.7 If maximum fill heights exceed 15 feet or fills exceed 500 cubic yards of fill, rock sizing, armoring thickness, chute width and chute depth shall be calculated and sized using the nomograph provided in Figure 23 of Cafferata et al (2017).

2.40.8 Stream crossing spillway fill slopes shall be armored from roadbed to the

natural channel in a manner sufficient to prevent significant scour or removal of armor during high flows. Scour is expected through road surface rock cap.

2.41 Road Approaches. The Permittee shall treat road approaches to new or re-constructed permanent crossings *on Class I and II watercourses* to minimize erosion and sediment delivery to the watercourse. Permittee shall ensure road approaches are hydrologically disconnected to the maximum extent feasible to prevent sediment from entering the crossing site, including when a Stream Crossing is being constructed or reconstructed. Road approaches shall be armored from the crossing for a minimum of *50* feet in both directions, or to the nearest effective water bar or point where road drainage does not drain to the crossing, with durable rock, compacted grindings, pavement, or chip-seal.

2.42 Project Inspection. The Project shall be inspected by Timberland Resource Consultants or a licensed engineer to ensure that the stream crossings were installed as designed. A copy of the inspection report, including photographs of each site, shall be submitted to CDFW within 90 days of completion of this project.

Erosion Control and Pollution

2.43 Erosion Control. Permittee shall use erosion control measures throughout all work phases where sediment runoff threatens to enter a stream, lake, or other Waters of the State.

2.44 Erosion Control. Permittee shall use erosion control measures throughout all work phases where sediment runoff threatens to enter a stream, lake, or other Waters of the State.

2.45 Seed and Mulch. Upon completion of construction operations and/or the onset of wet weather, Permittee shall stabilize exposed soil areas within the work area by applying mulch and seed. Permittee shall restore all exposed or disturbed areas and access points within the stream and riparian zone by applying local native and weed free erosion control grass seeds. Locally native wildflower and/or shrub seeds may also be included in the seed mix. Permittee shall mulch restored areas using at least two to four inches of weed-free clean straw or similar biodegradable mulch over the seeded area. Alternately, Permittee may cover seeding with jute netting, coconut fiber blanket, or similar non-synthetic monofilament netting erosion control blanket.

2.46 Erosion and Sediment Barriers. Permittee shall monitor and maintain all erosion and sediment barriers in good operating condition throughout the work period and the following rainy season, defined herein to mean October 15 through June 15. Maintenance includes, but is not limited to, removal of accumulated sediment and/or replacement of damaged sediment fencing, coir logs, coir rolls, and/or

straw bale dikes. If the sediment barrier fails to retain sediment, Permittee shall employ corrective measures, and notify the department immediately.

2.47 Prohibition on Use of Monofilament Netting. To minimize the risk of ensnaring and strangling wildlife, Permittee shall not use any erosion control materials that contain synthetic (e.g., plastic or nylon) monofilament netting, including photo- or biodegradable plastic netting. Geotextiles, fiber rolls, and other erosion control measures shall be made of loose-weave mesh, such as jute, hemp, coconut (coir) fiber, or other products without welded weaves.

2.48 Site Maintenance. Permittee shall be responsible for site maintenance including, but not limited to, re-establishing erosion control to minimize surface erosion and ensuring drainage structures and altered streambeds and banks remain sufficiently armored and/or stable.

2.49 Cover Spoil Piles. Permittee shall have readily available erosion control materials such as wattles, natural fiber mats, or plastic sheeting, to cover and contain exposed spoil piles and exposed areas in order to prevent sediment from moving into a stream or lake. Permittee shall apply and secure these materials prior to rain events to prevent loose soils from entering a stream, lake, or other Waters of the State.

2.50 No Dumping. Permittee shall not deposit, permit to pass into, or place where it can pass into a stream, lake, or other Waters of the State any material deleterious to fish and wildlife, or abandon, dispose of, or throw away within 150 feet of a stream, lake, or other Waters of the State any cans, bottles, garbage, motor vehicle or parts thereof, rubbish, litter, refuse, waste, debris, or the viscera or carcass of any dead mammal, or the carcass of any dead bird.

Stream Restoration

2.51 Stream Restoration Plan. The Permittee shall submit Stream Restoration Plans to CDFW for projects 23, 24A, 24B, POD-B, and Map Point D prior to conducting remediation activities. The Stream Restoration Plan (SRP) shall detail the dimensions and slopes of the stream channel to be remediated. The SRP shall describe any material utilized to restore the channel to a natural condition. The SRP shall include a revegetation plan for remediation of the impacted channel reach.

2.52 Revegetation Plan. The Permittee shall submit a revegetation plan to CDFW with each Stream Restoration Plan, for review and approval. The Revegetation Plan shall, at a minimum, include the following:

2.52.1 The identification of the area and vegetation types that will be restored.

2.52.2 A planting design and palette appropriate to the vegetation type, cover,

stratum, and level of biodiversity (i.e., species richness and composition). Use of a reference site is recommended.

2.52.3 Use regionally appropriate native plants for a riparian vegetation type. The derivation of plant material such as containers, plugs, cuttings, divisions, or seeds from coastal areas of Humboldt, Del Norte and Mendocino Counties within 30 miles of the coast. All native seed material shall be from the North Coast ecoregion (Humboldt, Mendocino, Sonoma or Del Norte Counties), if practical. If quantities are not able to be satisfied from these collection sites, propagules may be obtained from other counties in Northern California with pending approval from a restoration ecologist or botanist.

2.52.4 Cuttings of willows, cottonwoods conducted when dormant. Collection of cuttings within an area dispersed to maintain genetic and sexual diversity, and to avoid adversely impact existing riparian vegetation. Cuttings hydrated between harvesting and planting (e.g., soak cuttings in water several days to a week to stimulate rooting prior to planting). Cuttings planted to depth of 75 percent of their length with buds pointing up and bottom of cutting in moist soil or water.

2.52.5 Planting conducted after the first seasonal rains have saturated soils beyond the first several inches (November/December) and before April.

2.52.6 No application of fertilizer on plants or chemical controls on weeds.

2.52.7 Measurable success criteria based on plant survival, density, or cover.

2.52.8 Monitoring conducted for a minimum of five years to determine whether the revegetation goals and objectives have been met. Remedial measures if revegetation goals and objectives are not met.

2.52.9 Annual status reports on the revegetation efforts shall be submitted to CDFW in the by **October 31 of each year** following initial planting for the length of the monitoring period.

3. Reporting Measures

3.1 Work Completion. The proposed work shall be completed by no later than **October 1, 2021**. A notice of completed work (condition 2.4), with supplemental photos, shall be submitted to CDFW **within seven (7) days** of project completion.

3.2 Measurement of Diverted Flow. Copies of the **Water Diversion Records** (condition 2.13) shall be submitted to CDFW at 619 Second Street, Eureka, CA 95501 no later than **December 31** of each year beginning in **2019**.

3.3 Water Management Plan. The Permittee shall submit a **Water Management Plan** (condition 2.14) within **60 days** from the effective date of this agreement. The Water Management Plan shall be submitted to CDFW at 619 Second Street, Eureka, CA 95501.

3.4 Diversion Infrastructure Plan. The Permittee shall **allow 60 days for CDFW review and approval** after submittal of a Diversion Infrastructure Plan (condition 2.20). This document shall be submitted to CDFW at the 619 Second Street, Eureka, CA 95501.

3.5 Invasive Species Management for Reservoirs. The Permittee shall submit all required documents described in the Invasive Species Management for Reservoirs (condition 2.29) including subsection 2.29.1, **Bullfrog Management Plan** (Exhibit A) no later than **December 31** of each year. The Bullfrog Management Plan shall be submitted to CDFW at 619 Second Street, Eureka, CA 95501.

3.6 Project Inspection. The Permittee shall submit the **Project Inspection Report** (condition 2.42) to CDFW, LSA Program at 619 Second Street, Eureka, CA 95501.

3.7 Stream Restoration Plan. The Permittee shall submit a **Stream Restoration Plan** (condition 2.51) by **June 15, 2020**. The Stream Restoration Plan shall be submitted to CDFW at 619 Second Street, Eureka, CA 95501. Revegetation Plan.

3.8 Revegetation Plan. The permittee submit a **Revegetation Plan** (condition 2.52) to CDFW by **June 15, 2020**, for review and approval prior to implementation of the Stream Restoration Plans. The Revegetation Plan shall be submitted to CDFW at 619 Second Street, Eureka, CA 95501.

CONTACT INFORMATION

Written communication that the Permittee or CDFW submits to the other shall be delivered to the address below unless the Permittee or CDFW specifies otherwise.

To Permittee:

Joshua Sweet
P.O. Box 250
Garberville, California 95542
310-710-7549
sohumhills@gmail.com

To CDFW:

Department of Fish and Wildlife
Northern Region
619 Second Street
Eureka, California 95501
Attn: Lake and Streambed Alteration Program
Notification #1600-2018-0857-R1

LIABILITY

The Permittee shall be solely liable for any violation of the Agreement, whether committed by the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require the Permittee to proceed with the project. The decision to proceed with the project is the Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety this Agreement if it determines that the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide the Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide the Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to the Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against the Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 *et seq.* (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

The Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and the Permittee. To request an amendment, the Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by the Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, the Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), the Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, the Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If the Permittee fails to submit a request to extend the Agreement prior to its expiration, the Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (FGC section 1605(f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after the Permittee signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall **expire five years** from date of execution, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. The Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of the Permittee, the signatory hereby acknowledges that he or she is doing so on the Permittee's behalf and represents and warrants that he or she has the authority to legally bind the Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If the Permittee begins or completes a project different from the project the Agreement authorizes, the Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR Joshua Sweet

Joshua Sweet | Date

FOR DEPARTMENT OF FISH AND WILDLIFE

Scott Bauer
Senior Environmental Scientist Supervisor | Date

Prepared by: David Manthorne, Senior Environmental Scientist Specialist, December 20, 2019

EXHIBIT A.

BULLFROG MONITORING AND MANAGEMENT PLAN

GENERAL BULLFROG INFORMATION

The American bullfrog (*Lithobates catesbeianus* = *Rana catesbeiana*); hereafter bullfrog, is an invasive non-native species in California and poses a significant threat to California's native fish and wildlife resources. Bullfrogs were introduced in California over 100 years ago from eastern parts of the United States as a food supply, but have since caused substantial ecological consequences. Bullfrogs are considered highly invasive and are well documented to be prey upon a variety of fish and wildlife species, including some that are rare, threatened, and endangered. Human modifications to the environment provide favorable condition to bullfrogs such as artificially created agricultural ponds, canals and ditches where warm still water occurs. As a result bullfrogs have spread throughout California.

Efforts to control bullfrogs have been met with varying degrees of success because: 1) bullfrogs can be difficult to detect and go dormant from fall through winter, 2) bullfrogs often take cover in difficult areas to manage (e.g. dense vegetation), 3) they can travel long distances to colonize and re-colonize areas, 4) they have high reproductive output, 5) they are weary and readily flee perceived threats, and 6) they can survive physical trauma remarkably well. CDFW scientific staff recognizes there is an urgent and immediate need to develop improved bullfrog management strategies to protect California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. Public support and implementation of bullfrog control in California is an important conservation strategy that will help protect natural resources for future generations.

MONITORING

The Project reservoir(s) shall be monitored for bullfrog presence on an annual basis with a minimum of five total surveys, no less than two weeks apart, throughout the months of May-July

- All pond survey effort must be made by a person knowledgeable in bullfrog identification (see Appendix A for reference photos);
- Survey efforts shall include listening for bullfrog calls and slowly walking the complete perimeter of the pond at night* (dusk or later) while shining a flashlight to detect movement and eye-shine

If bullfrogs are not detected upon completion of five total surveys, or at any other time of the year incidentally, removal efforts are not required that year.

*Day time monitoring can also be conducted to aid detection but is not required under this plan.

SUCCESS CRITERIA

The level of effort needed to successfully manage bullfrog populations varies with infestation levels. This plan shall be considered successfully implemented if sufficient effort is provided to prevent adult bullfrogs from reproducing in the reservoir(s) each year, and no bullfrog life-stages can be detected. Bullfrogs are capable of traveling long distances over-land, and on-going

efforts will be required to ensure dispersing bullfrogs do not colonize the reservoir(s) at a future time.

MANAGEMENT METHODS

Two removal methods may by employed for controlling bullfrogs under this plan and include:

- Manual direct removal
- Reservoir de-watering (Hydro-modification)

Implementing both reservoir de-watering and manual direct removal is currently believed to be the most effective method of managing bullfrog infestations. Prior to conducting reservoir dewatering activities, please coordinate with CDFW Environmental Scientist Kalyn Bocast by email at kalyn.bocast@wildlife.ca.gov.

Direct Removal

All direct removal efforts must be made by a person knowledgeable in bullfrog identification.

- Removal efforts must occur during, but are not be limited to the active/breeding season, occurring May – July;
- A minimum of ***two*** efforts throughout the season are considered necessary;
- Direct removal efforts are typically most effective when conducted at night with use of lights but can also be conducted during the day;
- Direct removal must include working the entire perimeter of the reservoir;
- A rubber raft or small boat may be necessary to successfully remove some individuals;
- A team of two individuals or more is often helpful, one person for shining lights and/or operating a boat and the other person to perform removal efforts;
- Bullfrog tadpoles must be removed and dispatched and must not be relocated or kept as pets.

Management Authorization

Take of bullfrogs is specifically allowed in the California Code of Regulations (CCR), Title 14 (T-14) section 5.05(a)(28), under the authority of a sport fishing license. There is no daily bag limit, possession limit or hour restriction, but bullfrogs can only be taken by hand, hand-held dip net, hook and line, lights, spears, gigs, grabs, paddles, bow and arrow or fish tackle.

Alternatively, FGC Section 5501 allows CDFW, as limited by the commission, to issue a permit to destroy fish that are harmful to other wildlife. The regulations have addressed this under Section CCR T-14 226.5 Issuance of Permits to Destroy Harmful Species of Fish in Private Waters for Management Purposes. This allows the CDFW to issue free permits to destroy harmful aquatic species by seining and draining.

Pond Dewatering

In order to prevent and/or control infestations, annual pond dewatering may be appropriate, under the condition that the reservoir can be successfully dewatered without adversely affecting stream resources. Careful planning and coordination with CDFW, is necessary to ensure

potential impacts to stream resources can be addressed, prior to commencing with pond draining. Discharge of polluted water to waters of the state may require permitting from other agencies with permitting authority, such as the Regional Water Quality Control Board.

In general, bullfrog tadpoles require two years to develop into frogs, whereas native amphibians only require one year. Therefore, draining a reservoir every year is intended to interrupt bullfrog tadpole development, dramatically decrease bullfrog populations and allow for reduced efforts as a measure of adaptive management. Typically in Northern California, reservoir draining should occur in September through October to avoid impacts to sensitive native amphibian and fishery resources. While draining occurs, direct removal efforts should be employed as described above if possible.

REPORTING

A written log shall be kept of monitoring and management efforts and shall be provided to CDFW **each year** by December 31. The written log shall include: 1) date and time of each monitoring and management effort, 2) approximate number of each bullfrog life stage detected and/or removed per effort, and 3) amount of time spent for each monitoring and management effort.

APPENDIX A. BULLFROG REFERENCE PHOTOS



This is a photo of a Bullfrog tadpole. (Photo taken by Mike van Hattem).



The photos shown in this Appendix demonstrate a medium sized adult bullfrog that was removed from Ten Mile Creek, Mendocino County. Note the bullfrog has a large tympanum, (circular ear drum shown with an arrow) and **does not** have distinct ridges along its back (dorsolateral folds). Photo taken by Wes Stokes.



The bullfrog has somewhat distinct mottling and **the underside of the bullfrogs hind legs are not shaded pink or red.**

Native Ecosystems, Inc.

Habitat Restoration Specialists

625 11th Street, Arcata, CA 95521 Office 707-599-7814 nat-eco.net

POND1 and POND2 RESTORATION PLAN

APN 223-061-038



Prepared By:
Hugh McGee
Native Ecosystems, Inc.
hugh@nat-eco.net
707-599-7814

Prepared For:
Shadowlight Ranch
Garberville, CA

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APPENDIX C. VEGETATION CHANGE MAPS
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APPENDIX E. NATIVE PLANT RESTORATION SITE PLAN

1. PROJECT DESCRIPTION

This Restoration Plan was prepared by Native Ecosystems Inc. (NEI) on behalf of Shadow Light Ranch, LLC. The restoration plan describes the proposed restoration methods associated with the removal of one approximately 0.60 acre water storage pond located and one approximately 0.23 acre water storage pond at APN 223-061-038 in Garberville, CA in the County of Humboldt. The water storage ponds are located at longitude 40.093264 and latitude -123.770104. These water storage ponds, also known as "Upper Pond" and "Lower Pond", will herein be referred to as POND 1 and POND 2.

POND 1 was constructed in 2016, without required State of California and Humboldt County permits. In November of 2017, and May of 2018, staff from the North Coast Regional Water Quality Control Board (NCRWQCB) conducted site inspections of the property as part of State Water Resource Control Board Cannabis Small Irrigation Use Registration. As a result of these inspections, a Notice of Violation (NOV) was issued on June 18, 2018, for dredge and/or placement of earthen materials into streams and/or wetlands at POND1, without the required pre-authorization via a Water Quality Certificate. In addition, the Draft Cleanup and Abatement Order No. R1-2020-0023 (CAO) was issued for POND1. CAO R1-2020-0023, Section A, sub-section 1.m requires that: "A proposal for the removal and restoration of the area impacted by the construction of the upper on-stream pond, POND1. This proposal will include: a written proposal prepared by both a licensed engineer and a licensed geologist that addresses the removal of POND1, stabilization of the restored area to minimize mass movement that may impact restored wetlands, and assessment of a stable location for any spoils associated with removal of POND1. Sub-Section A.1.n requires that: "forensic wetland delineation be prepared by a qualified professional identifying the scope of wetlands impacted by the construction of POND1. An associated plan to restore and enhance wetlands destroyed during construction of POND1 which includes a planting plan, specific species to be established, survival success criteria, and a monitoring and reporting plan."

A forensic wetland delineation was completed by WRA Consultants in 2019 (WRA 2019). This forensic delineation included an on-site delineation of wetlands upslope and down slope of POND1 and an assessment of historical air photos. Based on evidence found during these investigations, it was determined that a 6,828 square foot wetland seep existed in the construction footprint of POND1.

NEI was contracted in May of 2022 by Shadow Light Ranch, LLC to create a restoration plan that details the methods required for the removal of POND1, and the restoration of topographic features, and the associated vegetation, which existed prior to construction of POND1. As part of the project, Shadow Light Ranch, LLC chose to also remove POND 2 during restoration implementation. The activities associated with the removal of POND 2 are also described in this document, and the restoration at both ponds will be treated as one project site. POND 1 and POND 2 will herein be referred to as "the project site" It is estimated that 2.2 acres of grassland habitat, 0.54 acres of oak woodland habitat, and 0.16 acres of seasonal wetland habitat was impacted from construction of the project site. SHN Engineering (SHN) has been contracted to assess the geology and soils of the area, determine the topographic features that existed prior to construction of the project site, and to create grading plans that present the methods to restore those features and mitigate any future soil erosion impacts to restored areas. These restoration methods are described in this plan and the grading plans located in **Appendix A**. This restoration plan, and the forensic wetland delineation completed by WRA Consultants, fulfills the requirements detailed in CAO R1-2020-0023, Section A, sub-section 1.m and sub-section 1.n.

NEI and SHN staff have completed extensive assessments of historical aerial imagery of the project area and conducted several site visits to the project site to assess current and historical conditions, define and inventory reference site conditions, and to develop proposed restoration tasks. The findings from these assessments and the forensic wetland delineation were used to develop the proposed restoration treatments detailed in this plan. From on-site assessments and topographic surveys, we can calculate that

pre-construction topographic conditions at the project site can be restored using on-site materials. These materials existed prior to construction of the project site, were not imported, and were used for construction of the project site. The proposed grading activities detailed in **Appendix A** will allow for all cut and fill to be balanced on-site. On-site botanical assessments and review of historical air photos were conducted to determine vegetative composition at the project site and adjacent reference sites. From these assessments, we are confident that the vegetative composition of the grassland and wetland areas prior to construction of the pond were dominated by non-native grass and forb plant species. Oak woodland areas that were cleared for construction of the pond were dominated by native plant species. This plan requires the establishment of diverse native plant communities throughout the entire project site.

The goal of this restoration plan is to describe the restoration methods that will be implemented to restore the topographic features, and the associated native plant restoration methods that will be used to enhance wetland, grassland, and oak woodland habitat at the restored project site. The plan has two main restoration objectives: **Objective 1:** Removal of POND 1 and POND 2 and restoration of topographic features though grading of approximately 9088 cubic yards using on-site materials to restore pre-pond construction conditions. **Objective 2:** Installation over 37,000 native plants and 155 lbs of native plant seed at the restored project site to restore wetland, oak woodland, and grassland habitat. This restoration plan details the methods required to effectively restore areas impacted by construction of POND1 and POND2.

2. PROJECT LOCATION

This project is located at APN 223-061-038, in Garberville, CA in the County of Humboldt. The project is located at longitude 40.093264 and latitude -123.770104. The project is located within a grassland and oak woodland ridge top in the headwaters of an unnamed Class II tributary to Bear Canyon Creek, which drains into the South Fork of the Eel River. The project vicinity and parcel map can be found in **Appendix B.**

3. CAUSE OF EXITING CONDITION AND IMPACTS

Thorough aerial photography analysis, forensic mapping of vegetation types, and on-the-ground assessments were conducted to delineate habitat types and vegetation that existed prior to construction of the project site. This information was used to assess the probable impacts resulting from the change in those habitat types. While the construction of the project site had significant impacts to terrestrial habitat, the current impacts to aquatic habitat and water resources have been minimal.

Habitat

Construction of the project site resulted in the removal and impacts to an approximately 0.16 acres (6828 square foot) seasonal wetland. Using the Forensic Wetland Delineation (WRA 2019), we calculate that there was approximately 0.184 acres (8,028 square feet) of seasonal wetland within the footprint of POND 1 construction, prior to construction activities. Currently, there is approximately 0.028 acres (1200 square feet) of seasonal wetland habitat remaining within the footprint of the project site construction that overlaps with the delineated wetland area. The removal of this wetland resulted in the removal of some native wetland vegetation and associated habitat. Given the current conditions in the adjacent wetland area upslope of the project site that was not altered by construction, and the current conditions in the wetland that was impacted by construction, we can estimate that the historic seasonal wetland was likely dominated by non-native perennial grasses with some native plant species scattered throughout. Pond construction activities also resulted in removal of approximately 0.54 acres of oak woodland habitat. The impacted oak woodland habitat appears to have consisted of mature native oak trees. Removal of those trees, and other unknown plant species in the understory, shrub, and herbaceous layers, likely impacted plant and animal species that utilized that habitat. Pond construction activities also resulted in the grading of approximately 2.2 acres of grassland habitat. Using air photo analysis and data from field assessments

of adjacent reference sites, the grassland areas were likely dominated by non-native vegetation, with small patches of native grasses, forbs, and shrubs scattered throughout. Bare soils created during construction, and the introduction of non-native seed for erosion control, resulted in increased cover of non-native invasive grasses such as *Dactylis glomerata*, *Festuca arundinacea*, *Festuca perennis*, and *Phalaris aquatica*. Historic grasslands in the project area now consist of native and non-native grassland areas and areas inundated by the ponds. There was a net gain of grassland habitat due to areas that were historically oak woodland being removed and converted to grassland. A summary of vegetation change resulting from construction of the project site can be found in **Table 1 and Figure 1 below**. A larger image detailing this change in vegetation can be found in **Appendix C**.

Aquatic Resources and Water Quality

The project area is situated on a topographic bench, with no defined channel or connectivity to nearby watercourses. Wetland and soils analysis completed by WRA (WRA 2019) and geologic and soils analysis completed by SHN Engineering (SHN, 2020) showed that the hydrology and geology, and associated soils, of the POND1 area did not support channelized flow of surface water, or any connectivity to nearby watercourses. Delivery of sediment to nearby watercourses and impacts to aquatic resources during and after pond construction is minimal. In its current condition, if the lower berm of POND1 and POND2 were to fail, water and sediment could potentially discharge into nearby watercourses and have impacts to aquatic resources.

Table 1. Summary of habitat and vegetation change prior to and after construction of the project site.

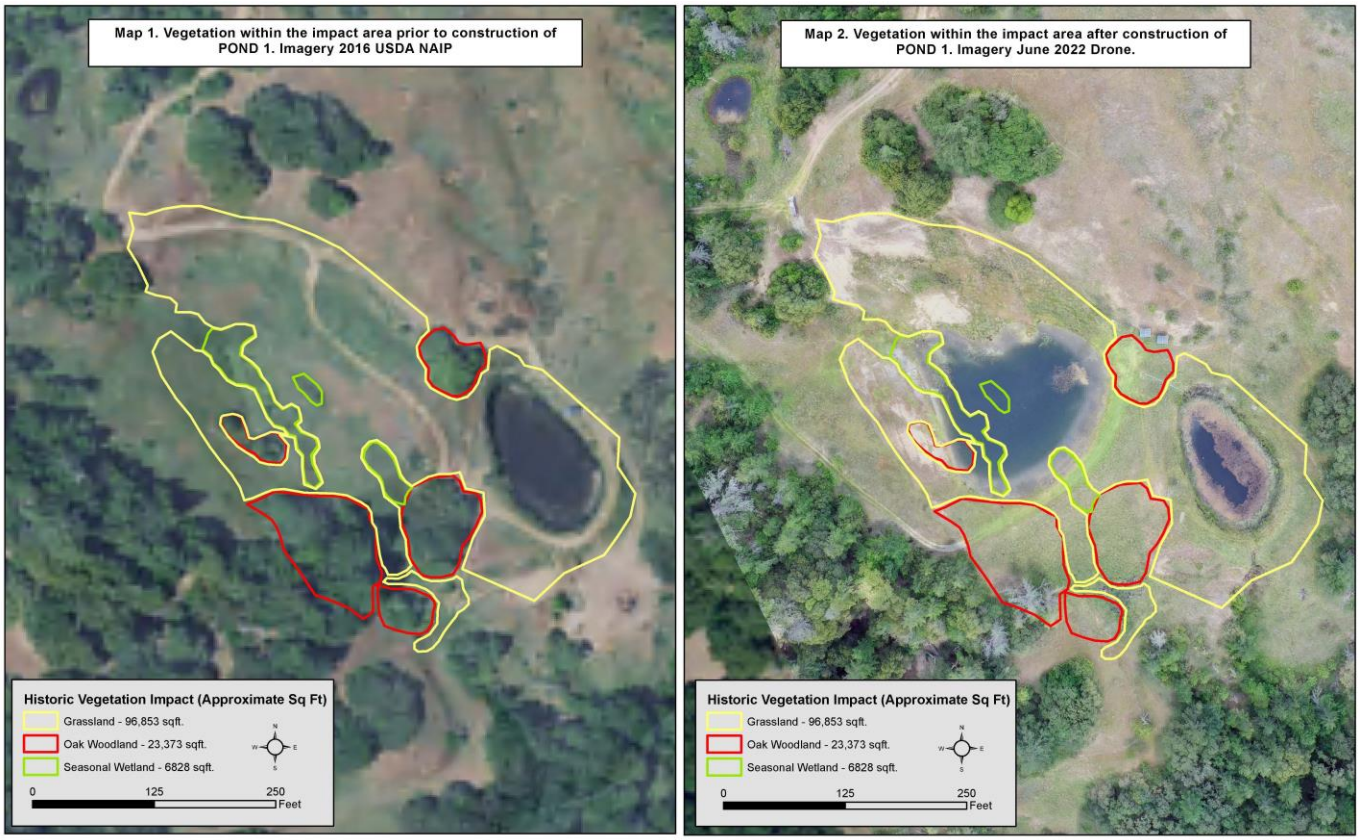
Habitat Change Pre and Post POND 1 and POND 2 Construction			
Historic Vegetation Type	**Historic Area (Acres)**	**Current Area (Acres)**	**Net Gain/Loss (Acres)**
Grassland	2.22	2.08	- 0.13
Oak Woodland	0.54	0	- 0.54
Seasonal Wetland	0.184	0.028	- 0.156
POND 1	0.00	0.60	+ 0.60
POND 2	0.00	0.23	+ 0.23
Total	**2.94**	**2.94**	**0.00**

4. CURRENT SITE CONDITIONS

The project site is located on a south facing grassland slope below an un-named ridgeline. It is located at an elevation between 950 feet at the top of the project area and 860 feet at the bottom of the project area. The project area is situated above an unnamed Class II tributary of Bear Canyon Creek, which is a Class II stream that drains to the South Fork Eel River. The project area consists of approximately 2.94 acres of which 2.22 acres is grassland habitat, 0.028 acres is seasonal wetland habitat, 0.60 acres is covered by waters of POND1, and 0.23 acres is covered by waters of POND2. A dirt access is located on western, eastern, and southern side of the pond.

Soils at the site consist of Coolyork-Yorknorth complex, 30 to 50 percent slopes. This soil is defined as colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from schist and Colluvium derived from sandstone and/or residuum weathered from schist and/or earth flow deposits derived from mudstone respectively. The underlying geology is of the Franciscan Complex. Mapping completed by SHN (SHN 2020) shows that the site is situated on a distinct transition in the Wildcat Group sediments, progressing from siltstone in the northwest corner of the pond, to sandstone in the central part of the pond, to conglomerate that appears to underlie most of the embankment for the Upper Pond and extending to road cuts along the access road.

Figure 1. Maps with imagery from 2016 (prior to construction) and 2022 (current conditions) showing vegetation change related to construction of POND 1



Wetland vegetation exists within the pond area, on the banks of the pond, and in the existing wetland seep on the Northeast corner of the pond. Native wetland vegetation most commonly consists of *Typha latifolia*, *Juncus effuses ssp. Pacificus*, and *Juncus patens.* Non-native vegetation consists of *Festuca arundinacea* and *Mentha pulegium.*

The pond is immediately surrounded by sloping grasslands that are dominated by non-native annual and perennial grasses, with patches of native vegetation scattered throughout. Non-native grasses common throughout the project area include *Avena barbata*, *Briza minor*, *Bromus diandrus*, *Bromus hordeaceus*, *Dactylis glomerata*, *Elymus caput-medusae*, *Festuca arundinacea*, *Festuca perennis*, and *Phalaris aquatica*. Native grasses and gramanoids present throughout the project area include *Danthonia califonica*, *Stipa pulchra*, *Juncus effusus*, and *Juncus patens* and native forbs including *Clarkia amoena*, *Lupinus bicolor*, *Ranunculus occidentalis* and *Sisyrinchium bellum.*

Vegetation surrounding the project area includes a mosaic of grassland and oak woodland habitat. Oak woodlands exist immediately adjacent to the construction footprint and consist of mature *Quercus garryana*, *Quercus kelloggii*, *Quercus chrysolepis* and *Arbutus menziesii* trees with *Arctostaphylos manzanita ssp. manzanita*, *Toxicodendron diversilobum*, and young *Pseudotsuga menziesii* in the shrub and understory layer. The herbaceous layer is mainly dominated by bare soils with patches of *Dactylis glomerata*, *Danthonia californica* and *Sisyrinchium bellum* in small openings. Woodland edges consist of dense stands of *Briza minor* with patches of *Danthonia californica*, *Ranunculus occidentalis* and *Sisyrinchium bellum* throughout and then transitioning to native and non-native grasslands. These grasslands are dominated by non-native grasses such as *Dactylis glomerata*, *Elymus caput-medusae*,

Festuca arundinacea, Festuca perennis, and *Phalaris aquatic,* with small to large patches of *Danthonia califonica and Stipa pulchra.* A complete list of plant species observed throughout the project site during assessments and detailed in the Botanical Survey Report (NRM, 2018) can be found in **Appendix D.**

5. REFERENCE SITE CONDITIONS

In May of 2022 NEI staff visited the project site to assess current vegetative conditions and identify reference site conditions to be used to develop the restoration plan. A total of eight areas adjacent to the project area were identified as reference sites. In each reference site, an inventory of plant species was completed, as well as observations of abundance of individual species. This information was used to assist in the development of native plant restoration design for wetland, grassland, and oak woodland restoration areas. Targeted restoration plant species were determined by identifying which species were present and abundant on site and at sites with similar site conditions at reference sites. Targeted species were also determined by identifying species that have had high success rates on other wetland, grassland, and oak woodland restoration projects implemented by NEI and other local restoration practitioners. Availability of seed and containerized stock from local commercial native plant nurseries was also taken into consideration. The native plant restoration methods described below are based on common restoration practices, and experience with successful native pant establishment on other similar habitat restoration projects. The plant pallet and associated restoration methods were chosen with the goal of providing the highest survival rate for the existing site conditions, immediate soil stability, and long term functional plant and animal habitat. A summary of the reference sites identified for the project can be found in **Table 2**. The locations of the reference sites are shown in the image in **Figure 2**.

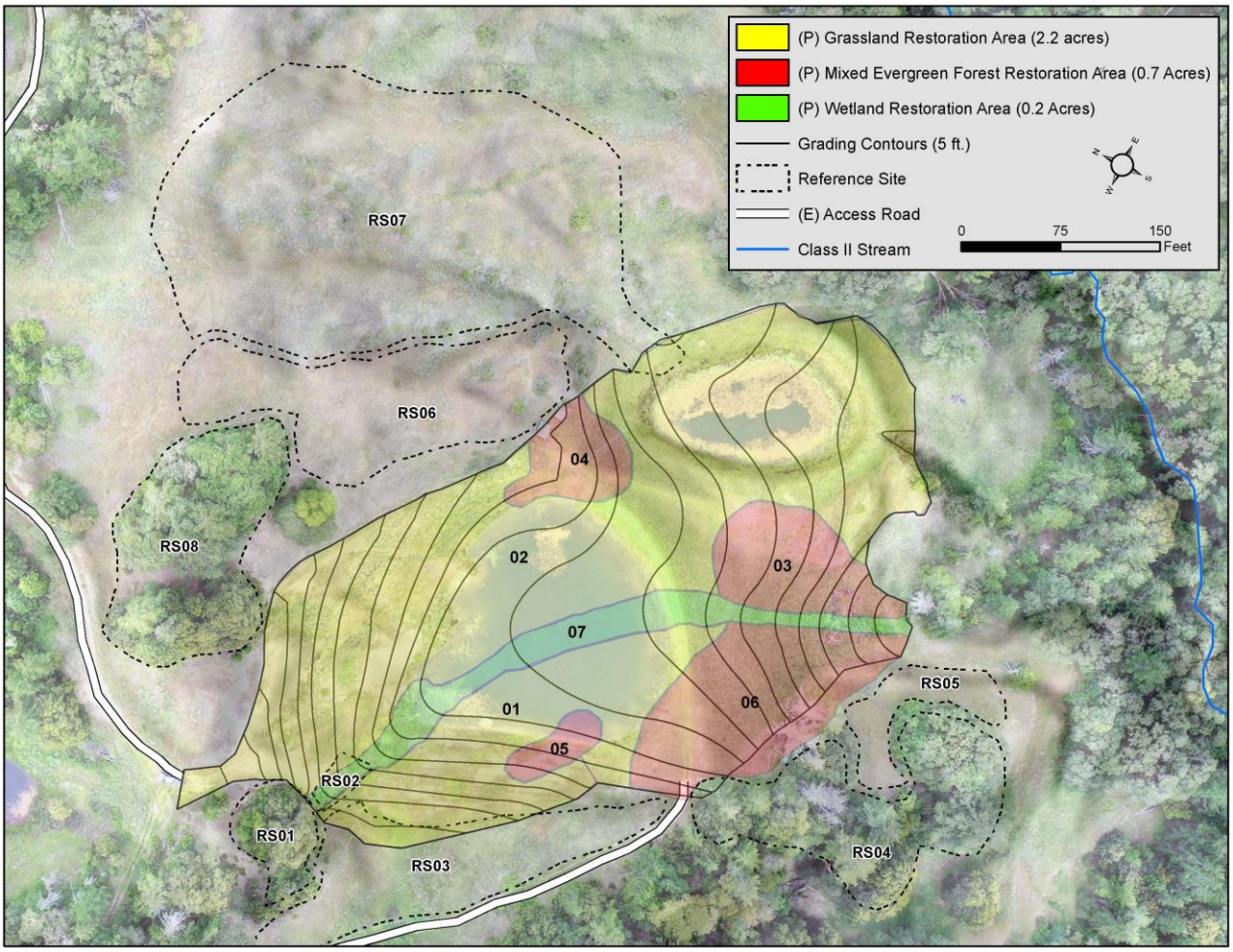


Figure 2. Reference site and restoration area locations. (Imagery, NEI drone June 2022)

In June of 2022, NEI and SHN staff visited the site to assess current conditions and discuss the restoration of topographic features similar to those that existed prior to construction of the project site. Prior to this visit, SHN had conducted extensive investigations using air photo analysis, Google Earth, and photographs of the project site prior and during construction. This analysis was used to determine the target grading elevations to be recreated during restoration. Grading plans were developed with the goal of reconstructing topographic features to the site that provide for the restoration of targeted habitat types and allow for site stability. The grading plans can be found in **APPENDIX A.**

Table 2. Summary of reference site data.

SITE ID	Description	Habitat Restoration Type	Target Native Plant Restoration Species Derived From Site
RS01	Oak woodland located above, and at the start of, the wetland seep. The site includes mature *Quercus chrysolepis, Arbutus menziesii,* and *Pseudotsuga menziesii* trees with *Arctostaphylos manzanita ssp. manzanita* and *Toxicodendron diversilobum* in the shrub layer. The herbaceous layer is mainly dominated by bare soils with patches of *Dactylis glomerata, Danthonia californica* and *Sisyrinchium bellum* in small openings and forest edges.	Oak Woodland	*Quercus chrysolepis, Arbutus menziesii, Danthonia californica, and Sisyrinchium bellum*
RS02	Seasonal wetland located above the pond. The site is dominated by non-native perennial and annual grasses including *Briza minor, Festuca arundinacea, Festuca perennis, and Phalaris aquatica* with small patches of native grass and gramanoid species including *Danthonia califonica, Stipa pulchra, Juncus effusus,* and *Juncus patens* and native forbs including *Lupinus bicolor, Sisyrinchium bellum* and *Ranunculus occidentalis*. Several native *bacharis pilularus* plants are scattered throughout.	Seasonal Wetland	*Danthonia califonica, Stipa pulchra, Juncus effusus, Juncus patens, Lupinus bicolor, Sisyrinchium bellum, Ranunculus occidentalis*
RS03	A grassland hill slope not impacted by POND 1 construction. The site is dominated by non-native perennial and annual grasses including *Avena barbata, Briza minor, Bromus diandrus, Bromus hordeaceus, Dactylis glomerata, Elymus caput-medusae, Festuca arundinacea, Festuca perennis,*and *Phalaris aquatica*. Small patches of native grasses occur throughout the site including *Danthonia califonica, Stipa pulchra, Juncus effusus,* and *Juncus patens* and native forbs including *Clarkia amoena, Ranunculus occidentalis* and *Sisyrinchium bellum.*	Grassland	*Danthonia califonica, Stipa pulchra, Juncus effusus, Juncus patens Clarkia amoena, Sisyrinchium bellum, Ranunculus occidentalis*

SITE ID	Description	Habitat Restoration Type	Target Native Plant Restoration Species Derived From Site
RS04	Oak woodland dominated by *Quercus chrysolepis* and *Douglas-fir* with *Quercus garryana* throughout. The understory consists of young *Quercus chrysolepis, Arbutus menziesii*, and *Pseudotsuga menziesii* trees. Approximately 0.23 acres of this woodland was removed during POND1 construction.	Oak Woodland	*Quercus chrysolepis, Quercus garryana, Arbutus menziesii*
RS05	A grassland flat not impacted by POND 1 and POND2 construction. The site is dominated by non-native perennial and annual grasses including *Avena barbata, Briza minor, Bromus diandrus, Bromus hordeaceus, Dactylis glomerata*. Small patches of native grasses occur throughout the site including *Danthonia califonica, Elymus glaucus, and Stipa pulchra* and native forbs including *Brodea elegans* and *Ranunculus occidentalis* and *Sisyrinchium bellum*.	Grassland	*Danthonia califonica, Elymus glaucus, Stipa pulchra, Sisyrinchium bellum, Ranunculus occidentalis*
RS06	A grassland hill slope not impacted by POND 1 and POND2 construction. The site consists of large stands of *Stipa pulchra* with native forbs throughout including *Eschscholzia californica, Ranunculus occidentalis*, and *Sisyrinchium bellum.* Non-native annual and perennial grasses are scattered throughout the site and include *Briza minor, Bromus diandrus, Bromus hordeaceus, Dactylis glomerata, Phalaris aquatica.*	Grassland	*Stipa pulchra, Eschscholzia californica, Sisyrinchium bellum, Ranunculus occidentalis*
RS07	Grassland hill slopes east of the project site with ridgelines dominated by *Briza minor, Bromus diandrus, Dactylis glomerata, Elymus caput-medusae, Phalaris aquatica* and scattered native *Stipa pulchra* and *Sisyrinchium* bellum patches and throughout.	Grassland	*Stipa pulchra, Sisyrinchium bellum*
RS08	Oak woodland with *Quercus garryana* and *Quercus kelloggii* with *Quercus chrysolepis* and *Arbutus menziesii* throughout. Understory is dominated by dense stands of young *Pseudotsuga menziesii*. Woodland edges consist of dense stands of *Briza minor* with patches of *Danthonia californica, Ranunculus occidentalis* and *Sisyrinchium bellum.*	Oak Woodland	*Quercus garryana, Quercus kelloggii Quercus chrysolepis Arbutus menziesii throughout, Danthonia californica, Ranunculus occidentalis, Sisyrinchium bellum.*

6. RESTORATION OBJECTIVES

The restoration activities described in this document are required to restore the topographic features and associated habitat that existed prior to construction of the project site. The restoration activities have been designed to have clear beneficial ecological outcomes that address both biological and physical habitat issues at the project site. At the completion of the project, a total of 3.10 acres of habitat will be restored. (An additional 0.16 acres beyond the 2.94 acres of original impact will be restored at the interface of construction and existing vegetation, bringing the total restoration area to 3.1 acres) A summary of total restoration area by habitat type can be found in **Table 3**.

The restoration plan has two primary restoration objectives:
Objective 1: Removal of POND1 and POND2 and restoration of topographic features though grading of approximately 9,088 cubic yards using on-site materials to restore pre-pond construction conditions.

Objective 2: Installation over 37,000 native plants and 155 lbs of native plant seed onto the project site after grading is completed to restore wetland, oak woodland, and grassland habitat.

To ensure that these objectives are completed and have long-term success, annual monitoring and maintenance is required for a three year period. A summary of the project objectives, outcomes, and performance measure can be found in **Table 4**.

Table 3. Restoration area to be restored by habitat type.

RESTORATION ACTION	RESTORATION HABITAT TYPE	RESTORED AREA (acres)
GRADING/PLANT INSTALLATION	Grassland	2.20
GRADING/PLANT INSTALLATION	Oak Woodland	0.70
GRADING/PLANT INSTALLATION	Wetland	0.20
TOTAL		**3.10**

Table 4. Restoration objectives, outcomes, and performance measures.

Restoration Task	Objective	Restoration Outcomes	Performance Measure
1. Grading	Restore topographic features similar to pre-pond construction	**1.** Increased site stability/decreased erosion **2.** Restoration of pre-pond construction topography	Annual monitoring for 3 years after construction
2. Installation of native plant materials	Establish a diverse assemblage of native plants on post construction soils	1. Increased site stability/decreased erosion 2. Increased native grassland, wetland, and oak woodland wildlife habitat 3. Increased native plant diversity	Annual monitoring for 3 years after plant installation

7. RESTORATION REQUIREMENTS

To ensure that project objectives are fulfilled and to mitigate any future impacts to physical and biological resources, the general construction and restoration measures are required within the project area are detailed below. Locations of restoration sites can be found in **Figure 2**.

- **SITE 01**: Grade sites and install erosion control measures as detailed in grading plans. After completion of grading, install 5485 native plants, 26 lbs. of native plant seed, and 55 bales of straw.
- **SITE 02**: Grade sites and install erosion control measures as detailed in grading plans. After completion of grading, install 18547 native plants, 86 lbs. of native plant seed, and 85 bales of straw.
- **SITE 03**: Grade sites and install erosion control measures as detailed in grading plans. After completion of grading, install 2109 native plants, 10 lbs. of native plant seed, and 10 bales of straw.
- **SITE 04:** Grade sites and install erosion control measures as detailed in grading plans. After completion of grading, install 1522 native plants, 6 lbs. of native plant seed, and 6 bales of straw.
- **SITE 05:** Grade sites and install erosion control measures as detailed in grading plans. After completion of grading, install 553 native plants, 2 lbs. of native plant seed, and 2 bales of straw.
- **SITE 06:** Grade sites and install erosion control measures as detailed in grading plans. After completion of grading, install 4980 native plants, 18 lbs. of native plant seed, and 18 bales of straw.
- **SITE 07:** Grade sites and install erosion control measures as detailed in grading plans. After completion of grading, install 3872 native plants, 10 lbs. of native plant seed, and 10 bales of straw.

A summary of the proposed restoration treatments and treatment quantities for each site can be found in **Table 5** below. A summary of specifications for each restoration treatment type can be found in **Table 6.** Definitions of species abbreviations can be found in **Table 7**. More detailed specifications for each treatment type can be found below in Section 8, Restoration Specifications. The restoration site plan detailing locations of project sites and associated treatments can be found in **Appendix E.**

Table 5. Summary of restoration treatments and quantities.

RESTORATION TREATMENTS AND QUANTITIES																	
SITE ID	RESTORATION ACTION	RESTORATION HABITAT TYPE	AREA (acres)	TREES (Plants)				RUSHES AND SEDGES Size AB34 (Plants)			GRASS PLUGS Size SC10 (Plants)			NATIVE FORB SEED MIX (lbs)	NATIVE GRASS SEED MIX (lbs)	STRAW MULCH (bales)
				QUEGAR	QUEKEL	QUECHR	ARBMEN	JUNPAT	JUNEFF	CARTUM	DANCAL	STIPUL	FESCAL			
01	GRADING/PLANT INSTALLATION	Grassland	0.50	0	0	0	0	0	0	0	2728	2728	0	8	18	25
02	GRADING/PLANT INSTALLATION	Grassland	1.70	0	0	0	0	0	0	0	9274	9274	0	26	60	85
03	GRADING/PLANT INSTALLATION	Oak Woodland	0.19	11	11	11	4	0	0	0	517	517	1036	3	7	10
04	GRADING/PLANT INSTALLATION	Oak Woodland	0.11	7	7	7	2	0	0	0	600	300	600	2	4	6
05	GRADING/PLANT INSTALLATION	Oak Woodland	0.04	2	2	2	1	0	0	0	218	109	218	1	1	2
06	GRADING/PLANT INSTALLATION	Oak Woodland	0.36	22	22	22	7	0	0	0	1964	980	1964	5	13	18
07	GRADING/PLANT INSTALLATION	Wetland	0.20	0	0	0	0	1355	1355	387	387	387	0	3	7	10
TOTALS			3.10	42	42	42	14	1355	1355	387	15688	14294	3819	47	109	155

Table 6. Summary of restoration treatments and specifications.

Treatment Type	Specifications	Installation Densities
Grading	Grade as detailed in grading plans	N/A
Grasslands Plant Installation	Install plants using the following ratios: Danthonia californica (50%) Stipa pulchra (50%). Install top of root collar at grade with hoedad or planting shovel. Plant in groupings of 100 plants per species.	2 ft. O.C.
Oak Woodland Tree Installation	Install Size D40 or Similar Size plants using the following ratios: Arbutus menziesii (10%), Quercus chrysolepis (30%), Quercus garryana (30%), Quercus kelloggii (30%). Excavate hole with shovel or augur, install top of root collar at grade, backfill with native soil. Install 3 ft. tall by 1 ft. diameter tree protector made of hardware cloth and secured with 2 in. by 2 in. by 4 ft. wooden stake.	15 ft. O.C.
Oak Woodland Grass Installation	Install plants using the following ratios: Danthonia californica (25%), Festuca californica (50%), Stipa pulchra (25%). Install top of root collar at grade with hoedad or planting shovel. Plant in groupings of 100 plants per species.	2 ft. O.C.
Wetland Plant Installation	Install plants using the following ratios: Carex tumulicola (10%), Danthonia californica (10%), Juncus patens (35%), Juncus effuses ssp. Pacificus (35%), Stipa pulchra (10%). Install top of root collar at grade with hoedad or planting shovel. Install CARTUM, JUNPAT, JUNEFF in wetter areas. Install DANCAL, STIPUL in drier areas.	1.5 ft. O.C.
Native Grass Seed Mix	Install seed on bare soils using the following ratios: Elymus glaucus (60%), Bromus sitchensis (30%), Danthonia californa (10%). Broadcast by hand or ATV spreader, rake or harrow in.	30 lbs/acre
Native Forb Seed Mix	Install seed on bare soils using the following ratios: Achillea millefolium (5%), Acmispon americanus var. americanus (5%), Clarkia amoena (10%), Escholzia californica (20%), Lupinus bicolor (20%), Ranunculus occidentalis (10%) Sysyrinchium bellum (10%), Trifolium willdenovii (20%); Broadcast by hand or ATV spreader, rake or harrow in.	15 lbs/acre
Straw Mulch	Install native grass straw or weed free rice straw on all bare soils	50 bales/acre

Table 7. Species codes definitions.

Species Code	Scientific Name	Type	Species Code	Scientific Name	Type
DANCAL	*Danthonia californica*	Grass	JUNPAT	*Juncus patens*	Wetland
DESCES	*Deschampsia cespitosa*	Grass	ARBMEN	*Arbutus menziesii*	Tree
FESCAL	*Festuca californica*	Grass	QUECHR	*Quercus chrysolepis*	Tree
STIPUL	*Stipa pulchra*	Grass	QUEGAR	*Quercus garryana*	Tree
CARTUM	*Carex tumulicola*	Wetland	QUEKEL	*Quercus kelloggii*	Tree
JUNEFF	*Juncus effuses*	Wetland			

8. RESTORATION METHODS AND SPECIFICATIONS

Prior to all restoration activities described below, all state, federal and county permits shall be complete. Prior to any work, a qualified biologist will survey project areas and access roads to assess immediate impacts to aquatic and terrestrial wildlife.

8.1 Construction Access and Project Setup

8.1.1 Contract a qualified engineer or surveyor to stake out construction access, grading elevations, water storage, and de-watering locations as detailed in grading plans.
8.1.2 Install stabilized construction entrance and erosion control materials as detailed in Sheet C4 in the grading plans.
8.1.3 Mobilize equipment and personnel to staging areas as detailed in grading plans.
8.1.4 Equipment shall be checked for noxious weed prior to entering the restoration area.

8.2 De-watering

8.2.1 Prior to all de-watering activities, hire a qualified biologist to re-locate (seining/e-fish) fish and amphibians from the project area.
8.2.2 Install de-watering equipment and water storage as detailed in Sheet C-3 in the grading plans.
8.2.3 Conduct de-watering activities as detailed in Sheet C-3 in the grading plans.
8.2.4 Remove de-watering equipment upon completion.

8.3 Native Plant Salvage

8.3.1 Salvage all native wetland plant material from the de-watered pond area and adjacent banks and place in a temporary nursery located out of the construction area.
8.3.2 Salvage areas shall be delineated by a qualified biologist.
8.3.3 Plant salvage shall be conducted under the supervision of a qualified biologist.
8.3.4 Salvaged native plant materials should be placed in shade and staged in standing water or moist soils where temporary overhead irrigation can be accessed. Plants should be checked once per week throughout the construction period to ensure adequate soil moisture.

8.4 Vegetation Removal

8.4.1 Prior to grading activities, remove dense stands of non-native perennial grasses including *Dactylis glomerata, Festuca arundinacea, Festuca perennis,* and *Phalaris aquatica* from the grading area.
8.4.2 Site shall be flagged by a qualified biologist.
8.4.3 Remove plants by excavating the entire plant, including the root mass up to 12 inches below the surface, with an excavator or bulldozer.
8.4.4 Transport vegetation off-site to a disposal facility or compost area.
8.4.5 Timing of removal should occur when seed on flowering plants is not viable.

8.5 Grading

8.5.1 Grading should occur when soil moisture levels in the pond area have decreased enough to allow for adequate compaction during construction.
8.5.2 Backfill pond in 18 inch lifts and compact with sheep foot roller. Grading elevations and profiles can be found in Sheet C2.
8.5.3 The top 12 inches of soil should be lightly compacted for native plant installation purposes.
8.5.4 Use stored or imported water for daily dust mitigation during construction activities.
8.5.5 An engineer or qualified individual should be on-site daily to check completed grading elevations and compaction.

8.6 Construction Closeout

8.6.1 De-mobilize equipment from the project site.

8.6.2 Remove erosion control materials.

8.6.3 Inspect project areas for any construction waste and/or spills, and remove from site.

8.7 Native Plant Installation and Post-construction Erosion Control

8.7.1 Native plant installation and erosion control measures will be implemented on bare soils. Installation of seed and mulch after construction or just prior to the first substantial fall rains. Plants shall be installed as detailed in the Native Plant Restoration Site Plan in APPENDIX E and Grading plan sheet C-5. Planting areas shall conform to the areas delineated in the APPENDIX E, but installation should be prioritized to areas that have best post-construction soil conditions. Exact planting location shall be at the discretion of the Project Manager

8.7.2 *Plant Materials*: All native plant materials shall be sourced from local native plant nurseries. Seed shall be collected within the tree seed zone, or from sites with similar climate and site conditions within 50 miles of the project site when possible. Container plants shall be root tight upon delivery and show no sign of disease or pests. For native seeding projects, seed shall be free of weeds and show no sign of mold or rot. Seed should be stored in a dry cool location prior to installation. All plant materials shall be inspected by plant installation project manager prior to installation.

8.7.3 *Seed Collection*: If seed is collected from on-site populations or nearby collection areas, all relevant permits must be obtained prior to collection. No more than 50% of seed from individual plants should be collected. Seed should be collected from multiple individuals to ensure genetic diversity. Seed will be processed, stored, cared for, and grown using native plant propagation best management practices.

8.7.4 *Site Preparation:* All necessary grading will be completed during construction activities. No additional site preparation is required.

8.7.5 *Seed and Mulch Installation:* Native seed installation will occur in areas identified in Table 5 and the restoration site plan. Seed shall be installed based on installation specifications listed in Table 6**.** Distribute seed by hand or broadcaster and rake or harrow in seed to ensure soil contact so that at least ½ inch of soil is covering seed. Once raking is complete, native grass straw or a similar certified weed free straw shall be applied with a straw blower at a rate detailed in Table 6. Seeding should take place prior to, or immediately after, a significant rainfall that will increase soil moisture to levels adequate for planting. Irrigation may be installed as needed to maintain adequate soil moisture for successful germination.

8.7.6 *Follow-up Seeding:* Some seed should be reserved for follow up spot seeding of areas with low germination. The seeding site shall be inspected between fall and spring to identify areas with low germination. Spot seeding should occur when soil moisture and soil temperatures are adequate for seeding.

8.7.7 *Native Plant Installation***:** Individual planting sites will be chosen by the Project Manager. Planting locations will be chosen based on distribution of species on reference sites. Micro-site selection will be used to provide the most appropriate planting site for each individual species. The Project Manager may flag planting sites prior to plant installation using color coded pin flags to differentiate between species. Plant installation will take place after October 1, or after soil moisture is adequate for planting, and before March 31. Plants shall be installed at densities and composition described in Table 5 and Table 6.

8.7.8 *Containerized and plug plant installation specifications:*

1. Plant installation shall take place after the first significant rainfall in late fall or early winter when soil moisture is adequate for planting. The Project Manager shall visit the planting site after significant rainfall and prior to installation to determine if soil moisture is adequate for planting.
2. Plants shall be transported to site no more than 3 days prior to installation to ensure proper care at the nursery until time of planting.
3. Non-native invasive plants shall be removed from the site prior to plant installation.
4. Prior to planting, vegetation within .5 ft. of planting holes shall be cleared to bare soil.
5. Plants shall be installed by hand using a shovel or hoedad depending on plant container size.
6. Planting holes shall be no less than 1.5 times the size of container.
7. Plants shall be installed with soil level in container equal to soil level at grade.
8. A basin shall be installed at each planting location by creating a slight depression around planting hole measuring 6 inches in diameter.
9. Tree protection shall be installed on all trees. Tree protection shall be 3 feet in height above grade and 12 inches in diameter. Tree protection cages shall be constructed of 1 inch hardware cloth and secured with two 2 inch by 2inch by 60 inch wooden stakes, with at least 1 foot of the stake secured below grade.

9. SEDIMANT CONTROL PLAN

All project activities will be conducted between June 15 and September 15 when minimal chances for precipitation will be present. Erosion control measures detailed in Sheet C-3 grading plans will be installed prior to construction. After completion of construction, native seed and mulch straw will be installed to protect surface soils and to mitigate sediment delivery. No other erosion control measures are recommended.

10. AVOIDANCE AND MINIMIZATION MEASURES

To avoid or minimize adverse impacts to fish and wildlife resources identified above, the Permittee shall implement each measure listed below.

10.1 Permitted Project Activities: All work will be implemented in accordance with county, state, and federal permits.

10.2 Species Avoidance: A qualified biologist shall be on-site prior to and during de-watering activities and as needed throughout the project to determine impacts to aquatic and terrestrial species prior to and during construction activities. No crossing construction or reconstruction shall occur if water is present, unless a visual encounter survey is conducted for all life-stages of Foothill Yellow-legged Frog (*Rana boylii),* Northern Red-legged Frog (*Ranaaurora),* Tailed Frog *(Ascaphus truei),* Pacific Giant Salamander (*Dicamptodon tenebrosus),* Southern Torrent Salamander *(Rhyacotriton variegatus), and* Rough-skinned Newt *(Taricha granulosa)* by a qualified individual (knowledgeable of all life stages of these and similar species) within the project area no more than three hours prior to operations. Visual encounter surveys shall consist of walking the entire survey reach and visually scanning in the water and on the banks. Any amphibian/reptile species encountered shall be relocated to nearby suitable habitat upstream of the project site. All trees shall be checked for wildlife use prior to felling.

10.3 Minimum Vegetation Removal: No native riparian vegetation shall be removed from the project sites, except where authorized permits and required for restoration activities. Permittee shall limit the disturbance or removal of native vegetation to the minimum necessary to achieve design guidelines and

standards for the Authorized Activity. Permittee shall take precautions to avoid damage to vegetation outside the work area. Vegetation management shall not include treatment with herbicides.

10.4 Sudden Oak Death: To avoid the spread of *Phytophera ramorum*, no soil or wood products shall be transported off the project site.

10.5 Equipment and Vehicles: A spill kit will be present in all project vehicles and equipment. All equipment that will be working within 150 feet of a stream shall be cleaned daily, to remove materials deleterious to aquatic and terrestrial life or riparian habitat including non-native species, oil, grease, hydraulic fluid, soil, and other debris. Cleaning of equipment shall take place a minimum of 150 feet from top of bank or edge of the riparian zone, whichever results in a greater stream buffer. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat. Refueling of machinery or heavy equipment, or adding or draining oil, lubricants, coolants or hydraulic fluids shall not take place within 150 feet of the stream bed, channel and bank. All pumps and small engine equipment shall be stored in secondary containment.

10.6 Staging and Storage Areas. Short-term staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than 150 feet from the top of bank or edge of the riparian zone, whichever results in a greater stream buffer. All equipment and fuel stored on site shall be bermed to contain any spilled material and shall be protected from rain. Berms shall consist of plastic covered dirt or sandbags. All materials shall be promptly removed following the completion of project work.

10.7 *Hazardous Spills.* Any material, which could be hazardous or toxic to aquatic life and enters a stream (i.e. a piece of equipment tipping-over in a stream and dumping oil, fuel or hydraulic fluid), the Permittee shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550, and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours at 707-445-6493 and consulted regarding clean-up procedures.

11. MONITORING AND MAINTENACE

Project monitoring and maintenance is required to ensure effectiveness of restoration treatments. The monitoring methods success criteria and maintenance requirements are detailed below. A summary of monitoring, maintenance, and reporting requirements can be found in **Table 8**.

11.1 Grading

Project sites shall be visited by an engineer or qualified individual to conduct visual assessments to assess project effectiveness, site stability, and any potential erosion issues. Pre and post project photos will be taken for all sites and a monitoring report shall be prepared. In the event maintenance of the project site is required, construction must occur within accordance of existing permits,

11.2 Native Plant Installation

Seeding areas will be monitored for cover for 3 years. Seeding areas will be monitored by establishing 1/1000 acre baseline monitoring plots within seeding zone at time of installation targeted at sampling a minimum of 10% of the planted area. Seeding areas will be monitored for cover in late spring during the first, second, and third year of establishment. Areas with less than 80% vegetative cover at time of monitoring will be re-seeded in the fall to bring native cover percentage back to 80%. Pre and post project photos will be taken for all sites and a monitoring report will be prepared by a qualified biologist annually.

Containerized planting areas will be monitored for survival 3 years. These plants will be monitored by establishing 1/100th acre baseline monitoring plots within planting zone targeted at sampling a minimum of 10% of the planted population. Quantity of plants, by species, per plot will be recorded immediately after installation. Planting areas will be monitored for cover in late spring during the first, second, and third year of establishment. Species with less than 80% survival after each year will be re-planted to bring survival percentage back to 80%. No further monitoring, maintenance, or re-planting is required beyond year 3. Pre and post project photos will be taken for all sites. A monitoring report will be prepared by a qualified biologist annually.

Restoration Task	Monitoring Requirements	Success Criteria	Maintenance Requirement	Reporting Requirement
1. Grading	Annual visual assessment by engineer or qualified practitioner for 3 years	Site stability, no signs of erosion	Repair as needed	Pre- and post project photos, annual photos, monitoring report
2. Installation of native plant materials	Vegetative cover and survival data collection at revegetation sites for 3 years	80% survival of native plants, 80% vegetative cover	Maintain plants as needed to achieve success criteria, maintain tree protection	Pre- and post project photos, annual photos, monitoring report

Table 8. Monitoring and Maintenance Requirements

12. PROJECT TIMELINE

Project Task	Completion Dates
Final Grading Plans	December 2023
Federal, State, and County Permits	January - May 2024
Order Native Plant Materials	December 2023
Bid Solicitation and Contractor Selection	June 2024
Pre-construction Meeting	June 2024
De-watering	June 2024
Construction - Pond Grading	July - August 2024
Install Native Seed and Straw Mulch	Sept 2024- Nov 2024
Install Native Grass Plugs and Trees	Nov 2024 - Dec 2024
Monitoring Year 1	Summer 2025
Monitoring Year 2	Summer 2026
Monitoring Year 3	Summer 2027

13. REFERENCES

1. WRA Associates (WRA 2019). Letter from Douglas Spichar, Senior Wetland Ecologist, WRA Associates regarding forensic wetland delineation.

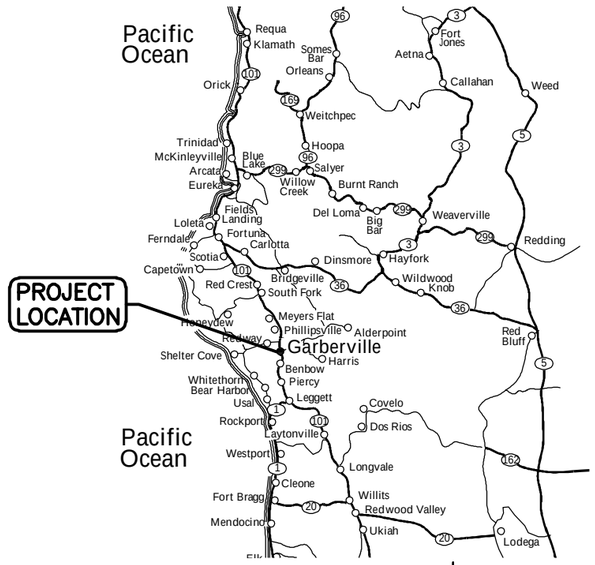
2. SHN Engineering (SHN 2020). Engineering Geologic Evaluation Regarding the Presence or Absence of a Class III Stream Beneath the "Upper Pond," Shadow Light Ranch, Garberville, California.

3. Natural Resource Management (NRM 2018) Botanical Survey Report: Shadowlight Ranch

SHADOW LIGHT RANCH, LLC

POND RESTORATION PLAN

GARBERVILLE, CALIFORNIA



LOCATION MAP

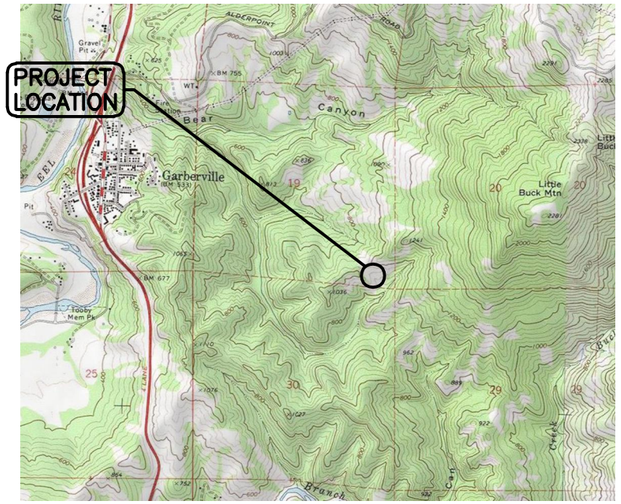
NTS

PREPARED BY:

OCTOBER 2023

INDEX OF SHEETS

SEQ	SHEET	TITLE
1	G1.0	COVER
2	G2.0	NOTES
3	C1.0	EXISTING CONDITIONS & DEMOLITION
4	C2.0	GRADING AND SITE PLAN
5	C2.1	PROFILES
6	C2.2	SECTIONS
7	C3.0	DEWATERING DETAILS
8	C4.0	EROSION AND SEDIMENT CONTROL PLAN
9	C4.1	EROSION AND SEDIMENT CONTROL DETAILS
10	C5.0	REVEGETATION DETAILS



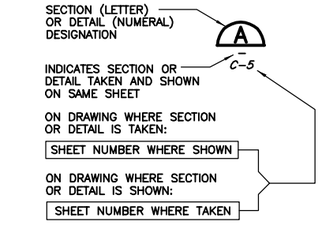
VICINITY MAP

NTS

ABBREVIATIONS

BMP	– BEST MANAGEMENT PRACTICE
CP	– CONTROL POINT
CY	– CUBIC YARD
DIA	– DIAMETER
(E)	– EXISTING
EG	– EXISTING GRADE
FG	– FINISH GRADE
GPM	– GALLONS PER MINUTE
H	– HORIZONTAL
MAX	– MAXIMUM
MIN	– MINIMUM
(N)	– NEW
OC	– ON CENTER
RSP	– ROCK SLOPE PROTECTION
SQ FT	– SQUARE FOOT
TYP	– TYPICAL
V	– VERTICAL

DETAIL AND SECTION DESIGNATION



REGISTERED PROFESSIONAL ENGINEER
JASON G. ISLAND
NO. 64809
CIVIL
STATE OF CALIFORNIA

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DSGN JN
DR CDN/JWF
CHK JM
APVD

SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

COVER

SHEET G1.0
SEQ
DATE 10/2023
PROJ. NO. 018064

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GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO CURRENT CALIFORNIA BUILDING CODE.
2. THE WORKING DRAWINGS ARE GENERALLY DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW REQUIRED FOR INSTALLATION IN THE SPACE PROVIDED. THEY DO NOT SHOW EVERY DIMENSION, COMPONENT PIECE, SECTION, JOINT OR FITTING REQUIRED TO COMPLETE THE PROJECT. ALL LOCATIONS FOR WORK SHALL BE CHECKED AND COORDINATED WITH EXISTING CONDITIONS IN THE FIELD BEFORE BEGINNING CONSTRUCTION. EXISTING UNDERGROUND UTILITIES WITHIN THE LIMITS OF EXCAVATION SHALL BE VERIFIED AS TO CONDITION, SIZE AND LOCATION BY UNCOVERING, PROVIDED SUCH IS PERMITTED BY LOCAL PUBLIC AUTHORITIES WITH JURISDICTION, BEFORE BEGINNING CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.
3. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. THE CONTRACTOR SHALL PROVIDE A COPY OF THE TRENCH PERMIT FROM THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE EXCAVATION OF ANY TRENCH OVER FIVE FEET IN DEPTH.
5. CONTRACTOR SHALL PERFORM TRENCH WORK IN CONFORMANCE WITH THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY REQUIREMENTS AND SHALL CONFORM TO ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH STANDARDS, RULES, REGULATIONS AND ORDERS ESTABLISHED BY THE STATE OF CALIFORNIA AND OTHER APPLICABLE AGENCIES.
6. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, GENERAL CONTRACTOR WILL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. ALL WORK AND EQUIPMENT SHALL COMPLY WITH THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY REQUIREMENTS. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY, AND NOT BE LIMITED TO NORMAL WORKING HOURS. CONTRACTOR FURTHER AGREES TO HOLD HARMLESS, INDEMNIFY AND DEFEND THE OWNER, THE ENGINEER AND HIS/HER CONSULTANTS.
7. THE CONTRACTOR SHALL INDEPENDENTLY REVIEW GROUND, TOPOGRAPHY AND TREE CONDITIONS THROUGHOUT THE SITE, AND ASSUME THE RISK OF COMPLETING THE WORK SET OUT ON THESE PLANS, REGARDLESS OF ROCK, WATER TABLE OR OTHER CONDITIONS WHICH MAY BE ENCOUNTERED IN THE COURSE OF THE WORK.
8. ANY DISCREPANCY DISCOVERED BY THE CONTRACTOR IN THESE PLANS, OR ANY FIELD CONDITIONS DISCOVERED BY THE CONTRACTOR THAT MAY DELAY OR OBSTRUCT THE PROPER COMPLETION OF THE WORK SHOWN HEREIN SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND THE ENGINEER IMMEDIATELY UPON DISCOVERY. SAID NOTIFICATION SHALL BE IN WRITING.
9. ALL UNDERGROUND IMPROVEMENTS SHALL BE INSTALLED TESTED AND APPROVED PRIOR TO PAVING.
10. THE CONTRACTOR SHALL NOT BEGIN EXCAVATING UNTIL ALL EXISTING UTILITIES HAVE BEEN MARKED IN THE FIELD. THE CONTRACTOR SHALL NOTIFY EACH APPLICABLE ENTITY AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. CALL UNDERGROUND SERVICE ALERT (USA) TWO WORKING DAYS BEFORE DIGGING AT (800) 227-2600 FOR LOCATES.
11. GRADING AND CONSTRUCTION CONTRACTORS SHALL STOP WORK AND NOTIFY THE OWNER AND THE ENGINEER IF CULTURAL RESOURCES ARE DISCOVERED DURING CONSTRUCTION.
13. THE CONTRACTOR SHALL GIVE THE INSPECTOR 48 HOURS ADVANCE NOTICE OF ANY CONSTRUCTION OR REQUIRED TESTING.
14. SHOULD THE CONTRACTOR OR ANY OF HIS AGENTS OR EMPLOYEES ENCOUNTER OR DISCOVER MATERIALS WHICH APPEAR TO BE HAZARDOUS DURING THE PERFORMANCE OF THE WORK, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY AND SUSPEND WORK IN THE AFFECTED AREA UNTIL THE ENGINEER HAS INSPECTED THE LOCATION AND MATERIALS IN QUESTION. SHOULD IT BE NECESSARY TO UNDERTAKE REMEDIATION, THE ENGINEER WILL GIVE WRITTEN NOTICE TO SUSPEND WORK IN THE AFFECTED AREA UNTIL THE PROPER COURSE OF ACTION HAS BEEN DETERMINED. OPERATIONS IN THE AFFECTED AREA SHALL BE RESUMED ONLY UPON WRITTEN NOTICE BY THE ENGINEER.
15. ALL SITE GRADING WILL BE INSPECTED BY A QUALIFIED FIELD TECHNICIAN PER PLANS AND REPORTS. COMPACTION TESTING WILL BE CONDUCTED AFTER SUFFICIENT DENSITIES HAVE BEEN ACHIEVED IN THE CONTRACTOR'S OPINION. THE CONTRACTOR SHALL MAKE ALL REQUESTS FOR MATERIALS TESTING AT LEAST 48 HOURS IN ADVANCE. ANY SOILS THAT FAIL TO MEET THE REQUIRED COMPACTION LEVELS SHALL BE REMOVED, AND RECOMPACTED. ALL COSTS ASSOCIATED WITH ACHIEVING COMPACTION STANDARDS SHALL BE INCLUDED IN THE CONTRACTOR'S ORIGINAL BID.
16. THE TOPSOIL SHALL BE REMOVED FROM CUT AND FILL AREAS AND SHALL NOT BE USED FOR ENGINEERED FILL. TOPSOIL SHALL BE STOCKPILED SEPARATELY AND REPLACED OVER AREAS OF EXPOSED SUBGRADE TO A MINIMUM DEPTH OF 6 INCHES.
17. NO CHANGES OR MODIFICATIONS SHALL BE MADE TO THESE PLANS WITHOUT WRITTEN APPROVAL BY THE ENGINEER.

SURVEY NOTES:

HORIZONTAL DATUM
CCS83 ZONE 1, U.S. SURVEY FEET, BASED UPON GPS OBSERVATIONS, PROCESSED BY NGS OPUS (JANUARY 20, 2021) WITH CORS STATIONS P332, P185 & P159, REFERENCE EPOCH 2010.00 AT CONTROL POINT #1

VERTICAL DATUM
NAVD 88, U.S. SURVEY FEET, BASED UPON GPS OBSERVATIONS, PROCESSED BY NGS OPUS (JANUARY 20, 2021) WITH CORS STATIONS P332, P185 & P159, REFERENCE EPOCH 2010.00 AT CONTROL POINT #1

PROJECT SPECIFICATIONS:

GENERAL COMPACTION

1. REFER TO THE SOILS REPORT FOR DECOMMISSIONING OF TWO PONDS PREPARED BY SHN CONSULTING ENGINEERS & GEOLOGISTS, DATED OCTOBER 25, 2023 FOR DETAILED GUIDELINES ON SITE PREPARATION, EXCAVATION, ENGINEERED FILL, AND OTHER GENERAL RECOMMENDATIONS.
2. COMPACTION REQUIREMENTS AS SPECIFIED WILL BE BY PERCENT OF THE MAXIMUM DRY DENSITY AND AS DETERMINED PER ASTM D 1557.
3. PLACE BACKFILL AND FILL SOIL MATERIAL IN LOOSE LIFTS OF NOT MORE THAN 8 INCHES FOR MATERIAL COMPACTED BY HEAVY EQUIPMENT, AND NOT MORE THAN 6 INCHES FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS.
4. THE GROUND SURFACE IN AREAS TO RECEIVE FILL SHALL BE PREPARED AS FOLLOWS:
   4.1. ALL ORGANIC MATERIAL AND TOPSOIL SHALL BE REMOVED.
   4.2. ON SLOPES GREATER THAN 1V:4H, HORIZONTAL BENCHES SHALL BE CUT INTO THE SOIL TO PROVIDE A LEVEL BEARING SURFACE FOR THE FILL MATERIAL. THE MINIMUM WIDTH OF THE BENCHES SHALL BE FOUR FEET.
5. ALL IMPROVEMENTS SHALL BE GRADED TO DRAIN TO THE APPROVED DRAINAGE COURSE AT A UNIFORM SLOPE OF 2% MINIMUM UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM THE GROUND ELEVATIONS AND OVERALL TOPOGRAPHY OF THE SITE PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY SHN CONSULTING ENGINEERS & GEOLOGISTS AT 707-459-4518 IMMEDIATELY, AND PROVIDE WRITTEN DESCRIPTION OF ANY DIFFERENCES IN TOPOGRAPHY FROM THAT SHOWN ON THESE PLANS WHICH MAY REQUIRE CHANGES IN DESIGN AND/OR AFFECT EARTHWORK QUANTITY.
7. NO CUT OR FILL SLOPES SHALL EXCEED THE SLOPE RATIO OF 2H:1V, UNLESS OTHERWISE NOTED.
8. TOPSOIL SHALL BE REMOVED FROM ALL CUT AND FILL AREAS AND SHALL NOT BE USED FOR ENGINEERED FILL.
9. FILL MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE SOILS REPORT UNLESS OTHERWISE NOTED ON THESE PLANS. NO ADDITIONAL COMPENSATION WILL BE MADE FOR COMPLYING WITH THE FILL MATERIAL REQUIREMENTS OF THE SOILS REPORT.
10. COMPACTION IN TRENCHES SHALL BE TESTED EVERY 50-75 FEET WITH A MINIMUM OF TWO TESTS PER ANY LENGTH OF TRENCHING. THE ENGINEER WILL BE PERMITTED TO COMPLETE TESTING AT ANY BACKFILL ELEVATION DURING THE BACKFILLING PROCESS. THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND AN OPERATOR, FREE OF CHARGE TO FACILITATE THE TESTING REQUIRED BY THE ENGINEER.
11. FILL MATERIALS SHALL BE MECHANICALLY COMPACTED. JETTING WILL NOT BE ALLOWED.
12. CARE SHALL BE TAKEN NOT TO CRUSH THE PIPE OR OTHER COMPONENTS WITH COMPACTION EQUIPMENT.
13. GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE FOOTING EXCAVATIONS PRIOR TO PLACEMENT OF FORMS AND REBAR.

TESTING AND INSPECTION

1. ALL SITE GRADING, SUBGRADE, AND BACKFILLING WILL BE INSPECTED BY A QUALIFIED FIELD TECHNICIAN PER THE PLANS AND REPORTS. CONTRACTOR TO PROVIDE 48 HOUR NOTICE IN ADVANCE OF REQUIRED INSPECTION. FAILURE TO GIVE ADEQUATE NOTICE MAY RESULT IN TESTING DELAYS WHICH WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE QUALIFIED FIELD TECHNICIAN WILL MAKE ALL COMPACTION TESTS WHEN ADVISED BY THE CONTRACTOR THAT IN THE OPINION OF THE CONTRACTOR, SUFFICIENT DENSITIES HAVE BEEN ACHIEVED. THE CONTRACTOR SHALL FURNISH A BACKHOE AND OPERATOR UPON REQUEST AT NO COST TO OWNER.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY EXCAVATIONS FOR COMPACTION TESTS. COSTS OF EXCAVATION, BACKFILLING, AND COMPACTING IN CONNECTION WITH COMPACTION TESTING SHALL BE BORNE BY THE CONTRACTOR. A FAILING COMPACTION TEST INDICATES THAT THE REQUIRED COMPACTION STANDARDS HAVE NOT BEEN ACHIEVED. ANY FILL MATERIAL OR PORTION OF FILL MATERIAL THAT DOES NOT MEET THE SPECIFIED REQUIREMENTS SHALL BE REMOVED AND RECOMPACTED UNTIL THE REQUIREMENTS ARE SATISFIED AT NO ADDITIONAL COST TO THE OWNER. COSTS ASSOCIATED WITH RETESTING PREVIOUSLY FAILED AREAS SHALL BE PAID BY OWNER AND BACK-CHARGED TO THE CONTRACTOR.
4. EXCAVATIONS FOR COMPACTION TESTS SHALL BE BACKFILLED WITH MATERIAL SIMILAR TO THAT EXCAVATED, AND BE COMPACTED TO THE SPECIFIED DENSITY.
5. ALL COSTS ASSOCIATED WITH ACHIEVING COMPACTION STANDARDS SHALL BE INCLUDED IN THE BID PRICES PAID FOR THE BID ITEM INVOLVED AND THEREFORE NO ADDITIONAL COMPENSATION SHALL BE MADE.

EROSION CONTROL NOTES:

1. BMPs SHALL BE INSTALLED PRIOR TO ANY SITE DISTURBANCE AND MAINTAINED SUCH THAT NO VISIBLE SEDIMENT LEAVES THE SITE.
2. TRACKING CONTROLS: ENTRANCE/EXIT BMP.
3. PAVED AREAS AT THE ACCESS POINTS SHALL BE SWEPT OR VACUUMED AS OFTEN AS EACH DAY TO ELIMINATE TRACKING SOIL AND DEBRIS BEYOND THE LIMITS OF THE PROJECT SITE. ANY SOILS AND/OR DEBRIS, ROCK, GRAVEL, ETC. TRACKED BEYOND THE LIMITS OF THE PROJECT SITE AS A RESULT OF THIS PROJECT SHALL BE REMOVED IMMEDIATELY.
4. DISTURBED AREAS PROTECTED TO EXTENT PRACTICAL DURING CONSTRUCTION.
5. STOCKPILE MANAGEMENT TO BE IMPLEMENTED.
6. DISTURBED AREA STABILIZED AS SOON AS POSSIBLE.
7. SEE SHEET C4.0 AND C4.1 FOR MORE EROSION CONTROL PLAN AND DETAILS, RESPECTIVELY.
8. THE CONTRACTOR SHALL NOT ALLOW ANY CONSTRUCTION DEBRIS TO ENTER THE STORM DRAIN OR SANITARY SEWER SYSTEMS. THE CONTRACTOR SHALL INSTALL APPROVED PHYSICAL BARRIERS TO ENSURE THAT ALL DEBRIS IS CAPTURED AND REMOVED FROM SURFACE RUNOFF PRIOR TO RELEASING SITE RUNOFF.

REGISTERED PROFESSIONAL ENGINEER
JASON G. ISLAND
NO. 64809
CIVIL
STATE OF CALIFORNIA

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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WWW.SHN-ENGR.COM
707-441-8855

NO.	DATE	REVISION	BY

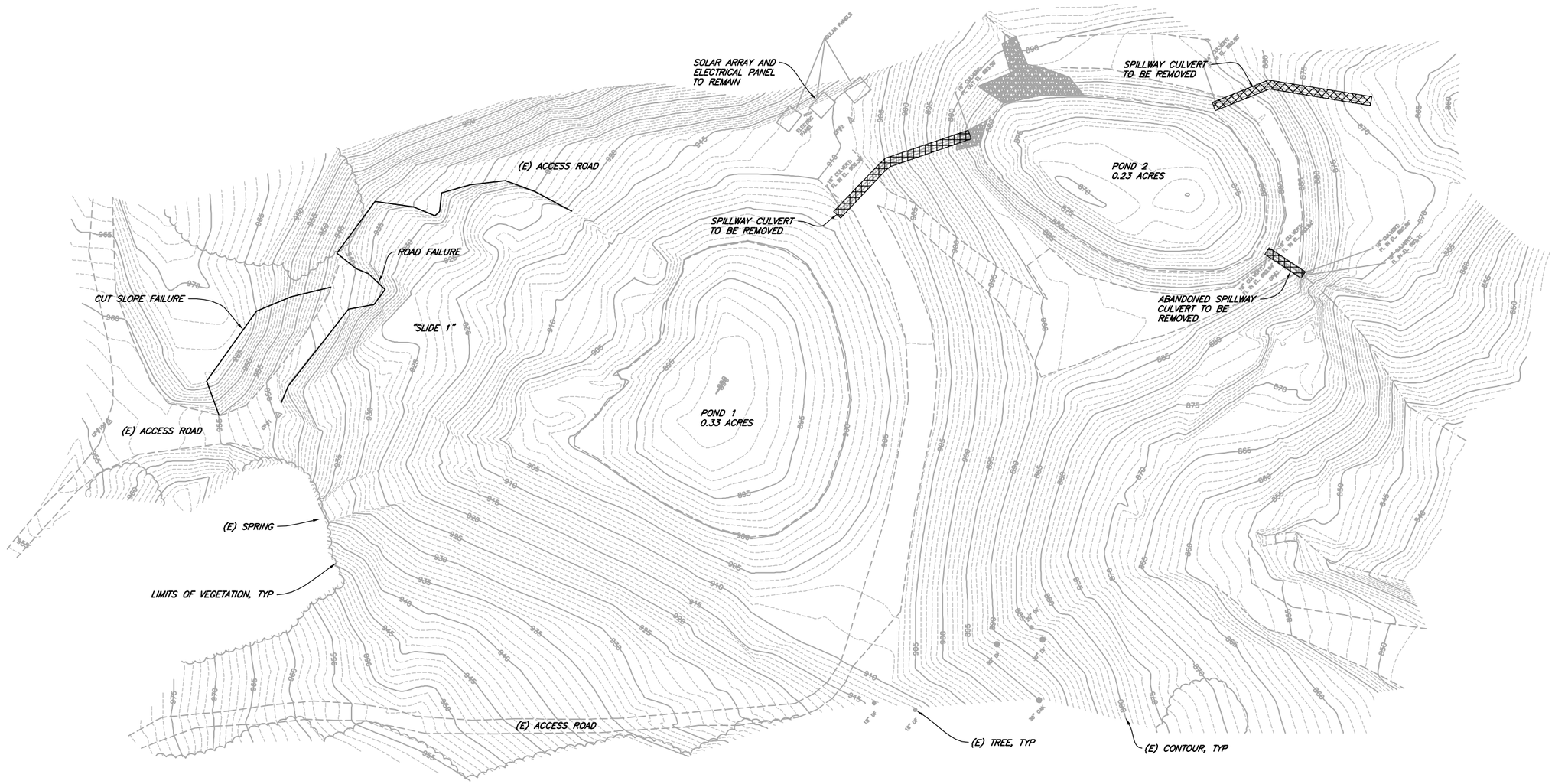
DSGN JN
DR CDN/JWF
CHK JM
APVD

SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

NOTES

SHEET G2.0
SEQ
DATE 10/2023
PROJ. NO. 018064

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NO.	DATE	REVISION	BY

DSGN JN
DR CDN/JWF
CHK JM
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SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

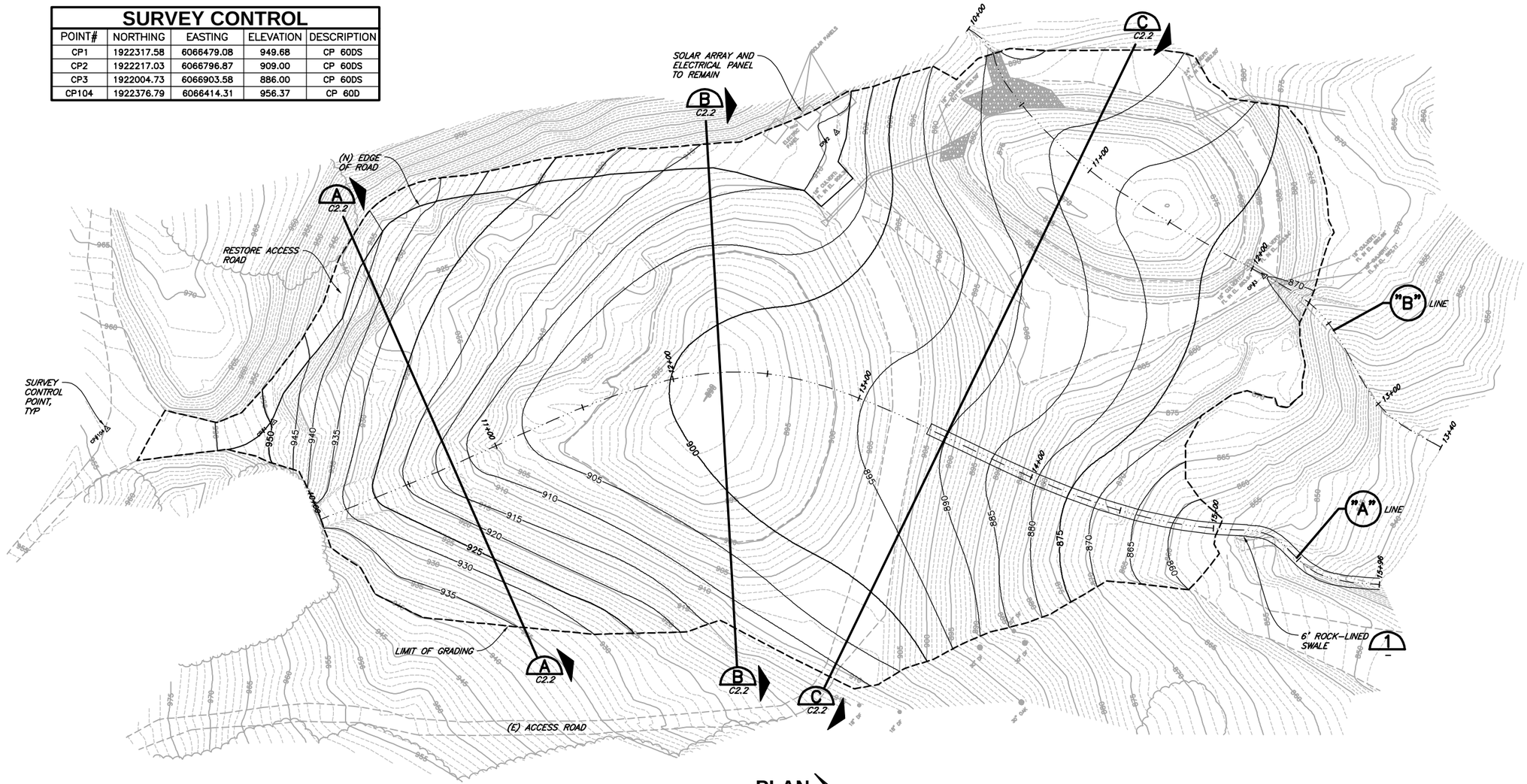
EXISTING CONDITIONS & DEMOLITION

SHEET C1.0
SEQ
DATE 10/2023
PROJ. NO. 018064

REGISTERED PROFESSIONAL ENGINEER
JASON G. ISLAND
NO. 64809
CIVIL
STATE OF CALIFORNIA

SURVEY CONTROL

POINT#	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	1922317.58	6066479.08	949.68	CP 60DS
CP2	1922217.03	6066796.87	909.00	CP 60DS
CP3	1922004.73	6066903.58	886.00	CP 60DS
CP104	1922376.79	6066414.31	956.37	CP 60D



PLAN
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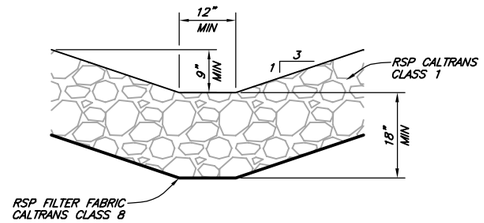
CUT/FILL SUMMARY

NAME	CUT FACTOR	FILL FACTOR	2D AREA	CUT	FILL	NET
CUT FILL VOLUME	1	1	135,683 SQ FT	9088 CY	9086 CY	2 CY (CUT)
TOTALS			135,683 SQ FT	9088 CY	9086 CY	2 CY (CUT)

LEGEND

865 EXISTING CONTOUR

865 PROPOSED CONTOUR



DETAIL 1
NTS C2.0, C2.1

(ROCK-LINED SWALE)

REGISTERED PROFESSIONAL ENGINEER
JASON G. ISLAND
NO. 64809
CIVIL
STATE OF CALIFORNIA

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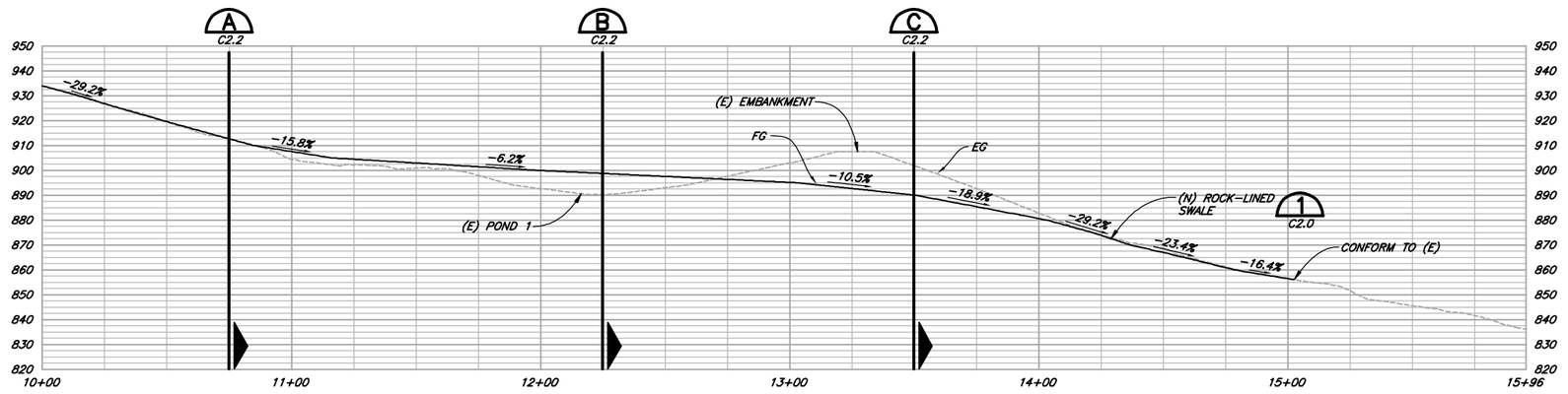
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CHK JM
APVD

SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

GRADING AND SITE PLAN

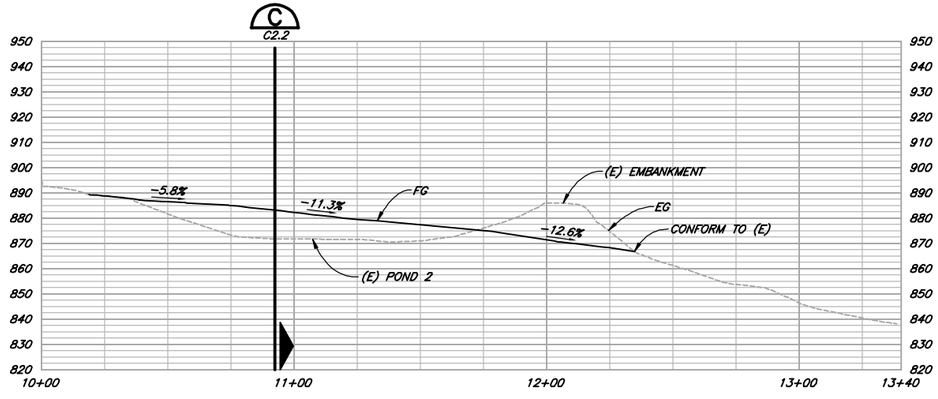
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DATE 10/2023
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"A" LINE PROFILE

SCALE: 1"=30' H&V



"B" LINE PROFILE

SCALE: 1"=30' H&V

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DR CDN/JWF
CHK JM
APVD

SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

PROFILES

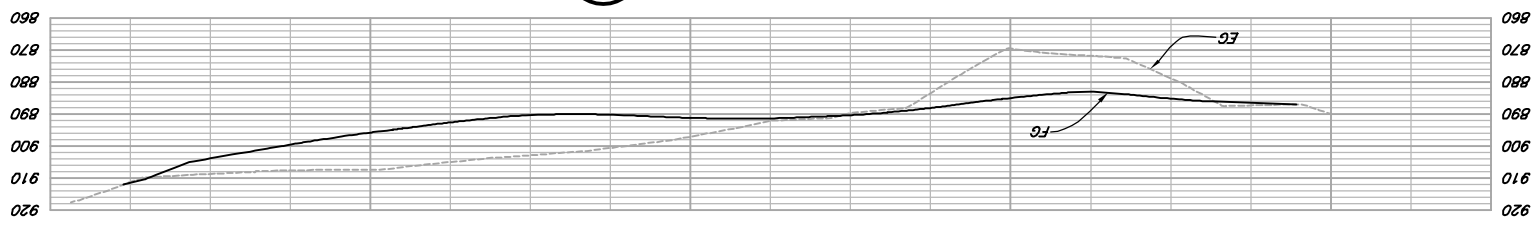
REGISTERED PROFESSIONAL ENGINEER
JASON G. ISLAND
NO. 64809
CIVIL
STATE OF CALIFORNIA

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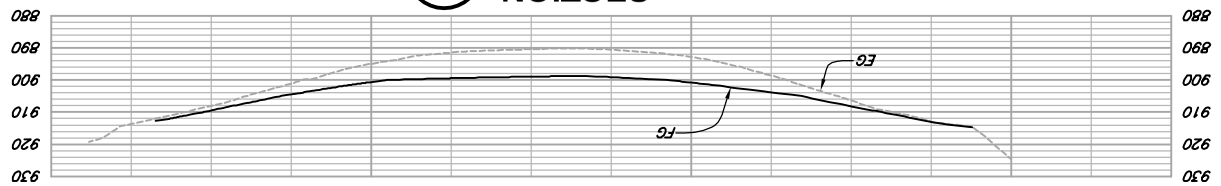
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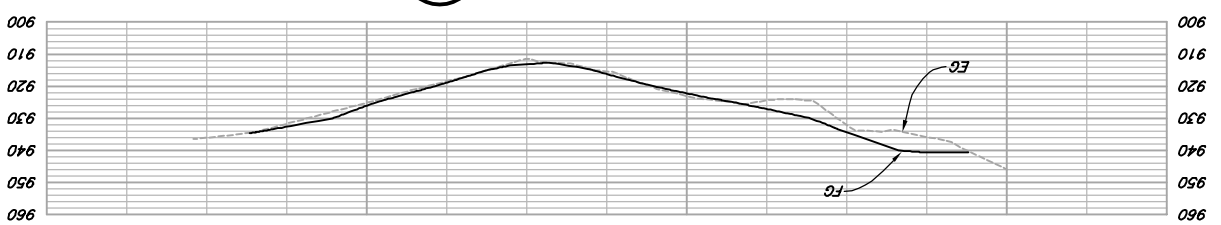
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SCALE: 1"=30' H&V C2.0, C2.1



SECTION B
SCALE: 1"=30' H&V C2.0, C2.1



SECTION A
SCALE: 1"=30' H&V C2.0, C2.1



JASON G. ISLAND
No. 64809
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
CIVIL

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APN 223-061-038 GARBERVILLE, CALIFORNIA

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WATER MANAGEMENT NOTES:

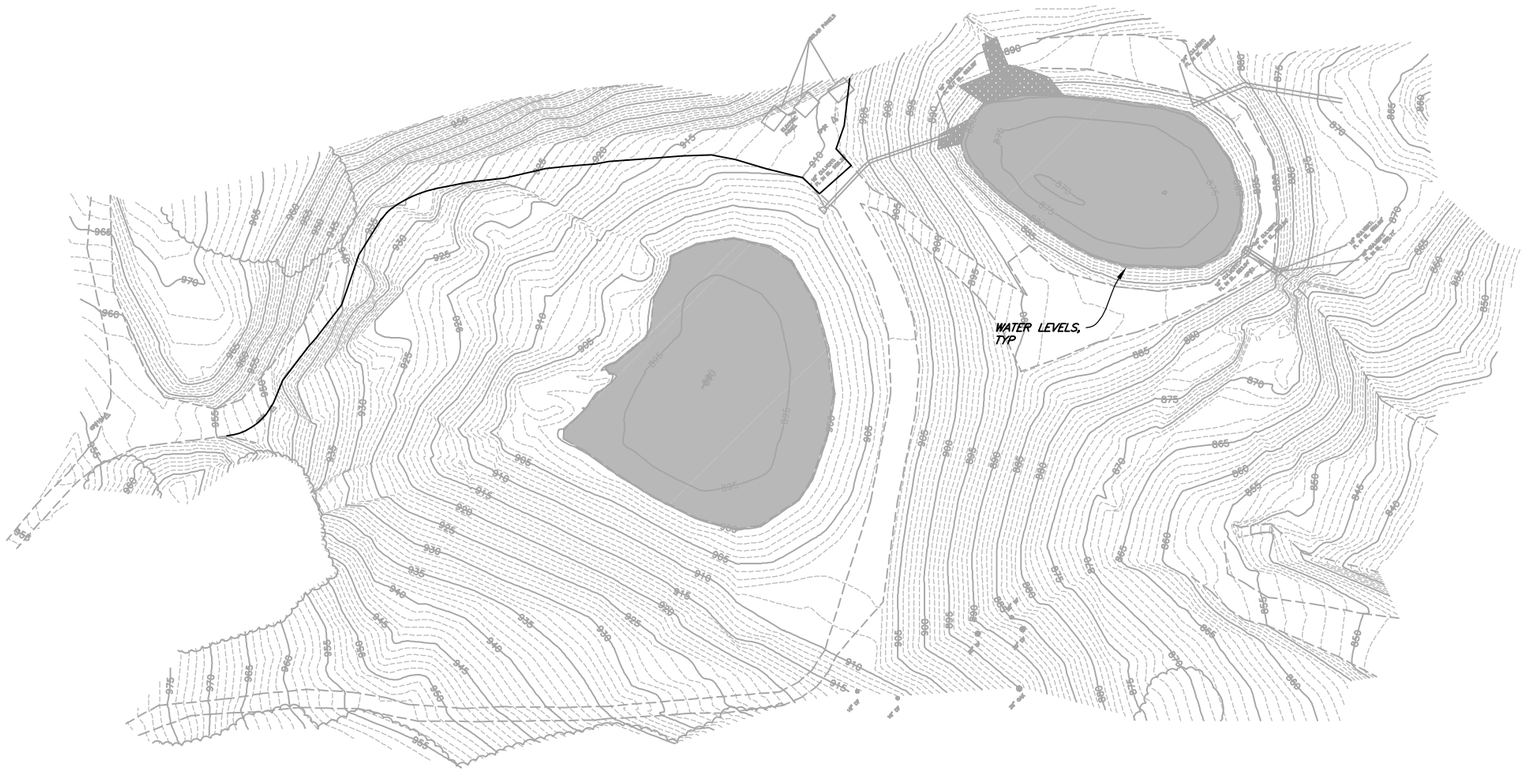
1. THE GOAL OF THE WATER MANAGEMENT SYSTEM IS TO DIVERT WATER AWAY FROM THE WORK AREA TO PROVIDE FOR EFFECTIVE OPERATIONS AND MINIMIZE ANY SEDIMENT DISCHARGE INTO DOWNSTREAM WATERS.
2. IF NECESSARY, A SECOND PUMPING SYSTEM CAN BE SET UP WITHIN THE ISOLATED WORK AREA TO DIVERT NUISANCE WATER (SEEPAGE, SPRINGS, SOIL PIPES, ETC.) OUT OF THE SYSTEM. THIS WATER SHOULD BE DIVERTED TO A STABLE AREA AND SHOULD NOT DISCHARGE TO ANY RECEIVING WATERS
3. NO CONSTRUCTION ACTIVITIES ARE PERMITTED UNTIL THE WATER MANAGEMENT SYSTEM HAS BEEN COMPLETED
4. A PASSIVE (GRAVITY FLOW) WATER SYSTEM CAN BE INSTALLED IN PLACE OF THE ACTIVE (PUMPED) SYSTEM IF CONDITIONS ALLOW FOR SUCH A SYSTEM.
5. THE CONTRACTOR MAY PROPOSE ALTERNATIVES IF APPROVED BY THE ENGINEER OF RECORD
6. ALL WATER MANAGEMENT EQUIPMENT INCLUDING PUMPS AND SCREEN SHALL BE REMOVED PRIOR TO A SIGNIFICANT STORM EVENT THAT COULD RESULT IN SURFACE WATER RUNOFF
7. ALL PUMPS AND FUEL TANKS SHALL BE PLACED ON ABSORBENT PADS INSIDE A PLASTIC TUB WITH MIN 3" SIDEWALLS.
8. CONTRACTOR SHALL FURNISH ALL EQUIPMENT, TOOLS AND MATERIALS NECESSARY FOR OPERATING AND MAINTAINING THE WATER MANAGEMENT SYSTEM.

DEWATERING:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROPER DESIGN INSTALLATION, OPERATION, AND DESTRUCTION OF DEWATERING FACILITIES NEEDED DURING CONSTRUCTION.
2. CONTRACTOR SHALL ESTABLISH AND MAINTAIN DEWATERING FACILITIES TO ALLOW FOR THE EXCAVATION, AND SUBSEQUENT PLACEMENT AND RECOMPACTION OF TRENCH MATERIAL WITHIN THE EXCAVATED AREA.
3. HANDLING OF WATER FROM THE EXCAVATION AND DISPOSAL OF SAME FROM THE PROJECT SITE SHALL BE PERFORMED IN ACCORDANCE WITH BMPs TO AVOID SEDIMENT TRANSPORT AND OTHER IMPACTS TO RECEIVING WATERS AS OUTLINED IN THE APPROVED WASTE AND DEBRIS REMOVAL PLAN FOR THIS PROJECT.
4. SEDIMENT BASINS SHALL BE LOCATED A MINIMUM OF 100 FEET FROM A WATERCOURSE.
5. WATER FROM THE SEDIMENT BASINS SHOULD NOT BE DISCHARGED AS CONCENTRATED FLOW DIRECTLY INTO SLOUGHS, CUTOFF SLOUGHS, STREAMS, OR ANY DITCH THAT DISCHARGES TO ONE OF THESE FEATURES.
6. RECOMMENDED PUMP MINIMUM 3" DISCHARGE FLANGE (600 GPM) FOR INITIAL POND DRAW-DOWN.
7. PUMP DISCHARGE LOCATIONS DETERMINED BY FIGURE 3 OF THE SHN SOILS REPORT FOR THE DECOMMISSIONING OF TWO PONDS DATED OCTOBER 25, 2023.
8. THE PUMP DISCHARGE AREAS SHOULD BE INSPECTED REGULARLY FOR SIGNS OF EROSION. ALL PUMPING SHOULD CEASE IF ANY EROSION OCCURS AS A RESULT OF PUMPING.
9. 4" PERFORATED FLEXIBLE PLASTIC PIPE SET ON CONTOUR AND STAKED EVERY 10', ENDS CAPPED. FIBER ROLLS INSTALLED DOWNHILL OF PERFORATED PIPE PER DETAIL 1 SHEET C4.1.

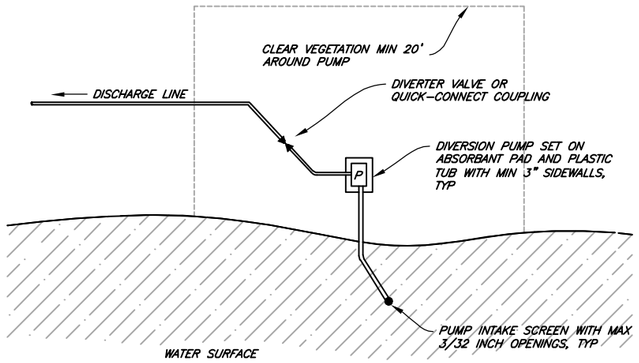
AQUATIC SPECIES MANAGEMENT NOTES:

1. AQUATIC SPECIES WITHIN THE ISOLATED WORK AREA SHALL BE REMOVED AND RELOCATED BY A QUALIFIED BIOLOGIST PRIOR TO CONSTRUCTION ACTIVITIES.
2. ANY DIVERSION PUMPS INTAKES SHALL HAVE OPENINGS NOT EXCEEDING 3/32 INCHES TO PREVENT PASSAGE AND/OR UPTAKE OF AQUATIC SPECIES.
3. CONTRACTOR SHALL NOTIFY CLIENT MINIMUM ONE WEEK PRIOR TO NEEDING BIOLOGIST RELOCATION SERVICES.



PLAN
1"=30'

NOTE:
1. WATER LEVELS AT THE TIME OF SHN SURVEY DATED JANUARY 20, 2021.
2. DEWATERING LOCATIONS DETERMINED BY SHN CONSULTING ENGINEERING & GEOLOGISTS SOILS REPORT FOR THE DECOMMISSIONING OF TWO PONDS DATED OCTOBER 25, 2023, SEE FIGURE 3.
3. CONTRACTOR TO DETERMINE PUMP LOCATIONS ON SITE.



DETAIL 1
NTS
(DEWATERING PUMP)

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JASON G. ISLAND
NO. 64809
CIVIL
STATE OF CALIFORNIA

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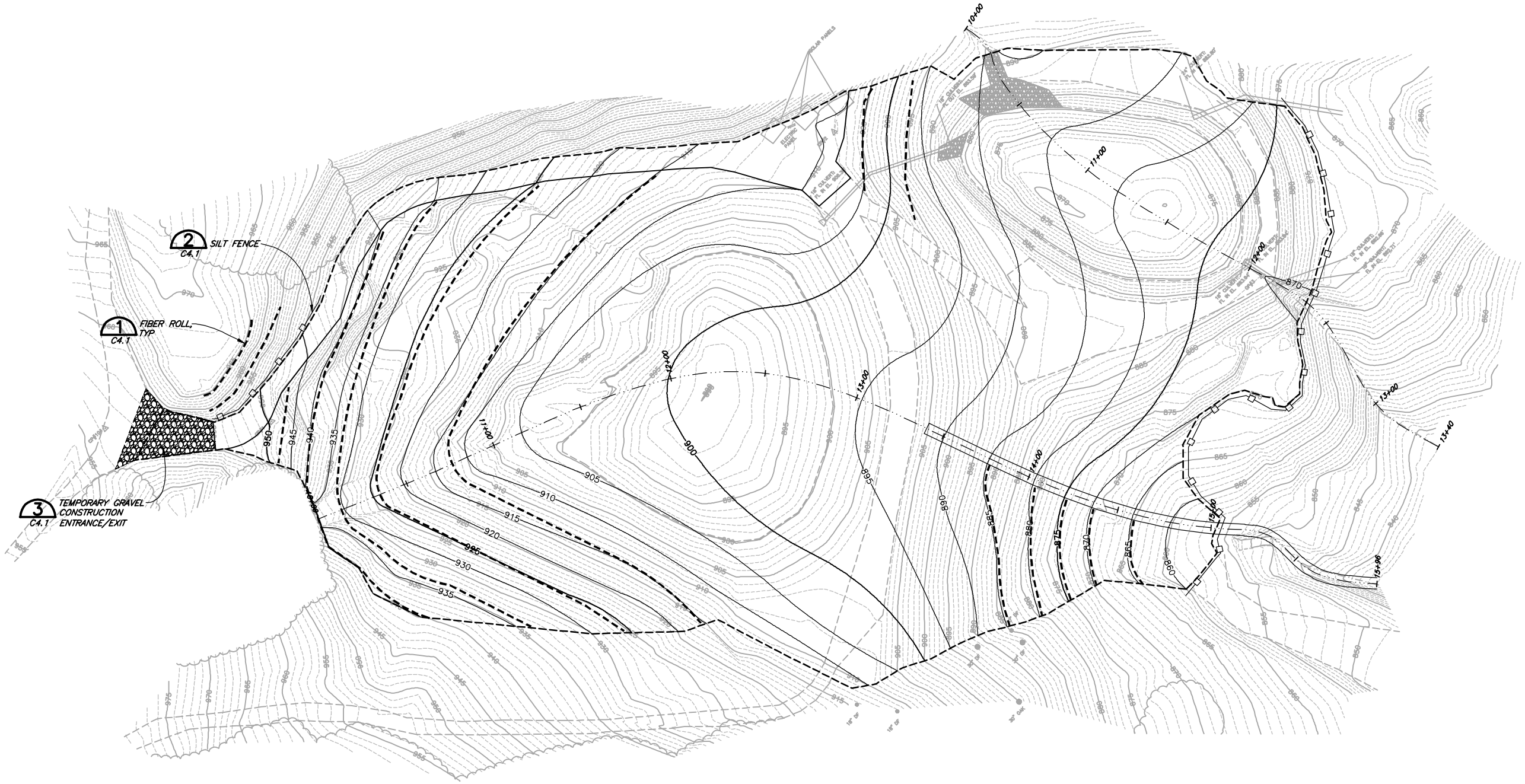
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SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

DEWATERING PLAN

SHEET C3.0
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NOTES:

1. REFER TO POND 1 AND POND 2 RESTORATION PLAN BY NATIVE ECOSYSTEMS FOR THE RE-VEGETATION PLAN.
2. SEE SHEET C5.0 FOR THE RE-VEGETATION DETAILS.

PLAN
1"=30'

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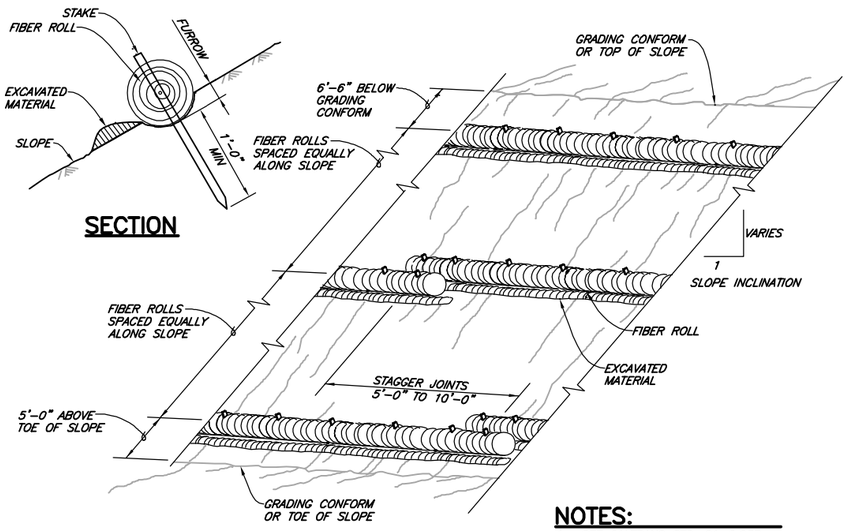
SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

EROSION AND SEDIMENT CONTROL PLAN

SHEET C4.0
SEQ
DATE 10/2023
PROJ. NO. 018064

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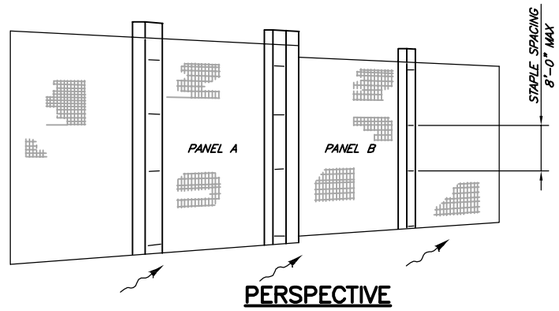
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PERSPECTIVE

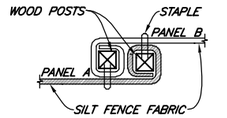
NOTES:

1. SEE CALTRANS STD. 21-2.03P FIBER ROLLS, FOR FIBER ROLL SPACING ALONG SLOPES

DETAIL 1
NTS C4.0
(TEMPORARY FIBER ROLL)



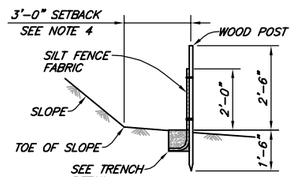
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SILT FENCE PANELS AT JOINTS

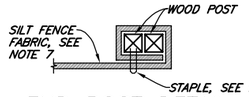


POST AT JOINTS

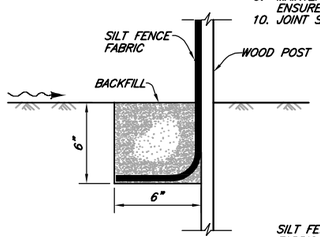
NOTES:

1. INSTALL TEMPORARY SILT FENCE BY FIRST DIGGING TRENCH, DRIVING POSTS, PLACING AND SECURING FABRIC. THEN BACKFILL AND TAMP.
2. REACH LENGTH NOT TO EXCEED 500 FEET.
3. THE DOWN STREAM END OF THE TEMPORARY SILT FENCE SHALL HAVE THE LAST 8' ANGLED UP SLOPE.
4. SETBACK DIMENSIONS MAY VARY TO FIT FIELD CONDITIONS.
5. POSTS TO OVERLAP AND FENCE FABRIC TO FOLD AROUND EACH POST ONE FULL TURN, SECURE FABRIC WITH 4 STAPLES FOR EACH POST.
6. POSTS SHALL BE DRIVEN TIGHTLY TOGETHER TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT THE JOINT. THE TOPS OF THE POSTS SHALL BE SECURED TO EACH OTHER WITH WIRE.
7. FOR EACH END POST, FENCE FABRIC SHALL BE FOLDED AROUND TWO POSTS ONE FULL TURN AND SECURED WITH 4 STAPLES.
8. MINIMUM OF 4 STAPLES SHALL BE INSTALLED PER POST. STAPLES TO BE 1/16"x1"x6".
9. MAINTENANCE OPENINGS SHALL BE CONSTRUCTED IN A MANNER TO ENSURE THAT SEDIMENT IS RETAINED BY THE TEMPORARY SILT FENCE.
10. JOINT SECTIONS SHALL NOT BE PLACED AT SUMP LOCATIONS.





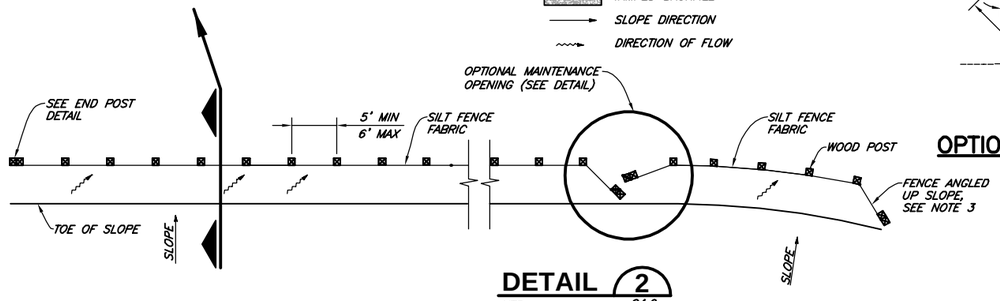
END POST DETAIL



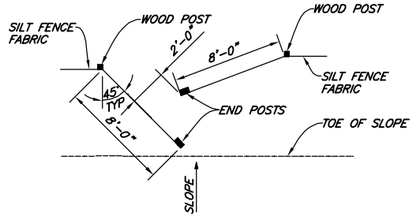
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LEGEND

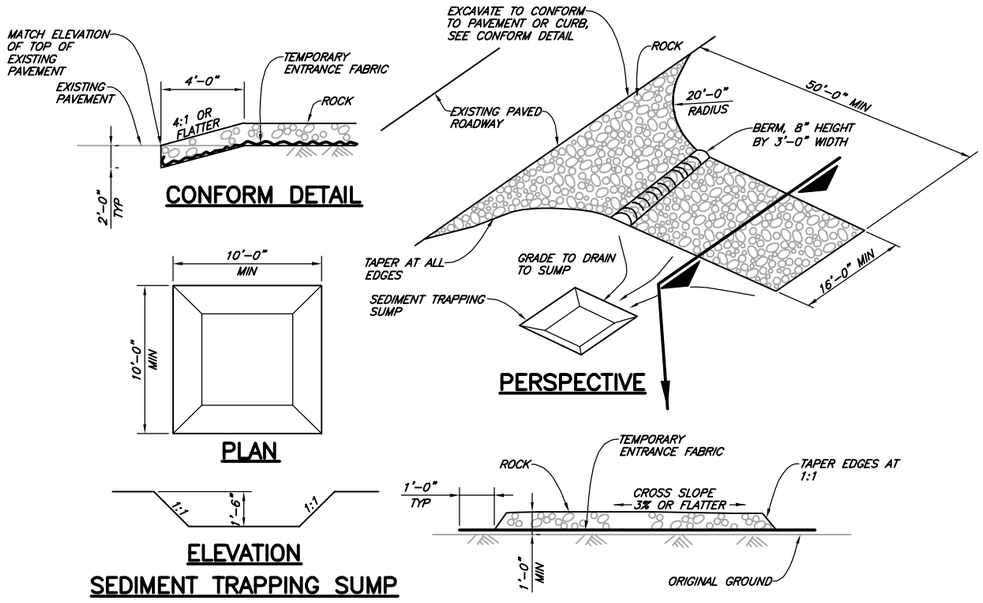
- TAMPED BACKFILL
- SLOPE DIRECTION
- DIRECTION OF FLOW



DETAIL 2
NTS C4.0
(TEMPORARY SILT FENCE)



OPTIONAL MAINTENANCE OPENING



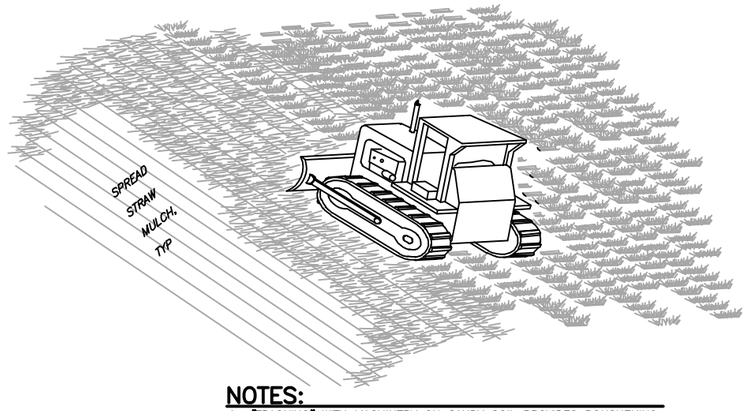
CONFORM DETAIL

PERSPECTIVE

PLAN

ELEVATION
SEDIMENT TRAPPING SUMP

DETAIL 3
NTS C4.0
(TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT)



NOTES:

1. "TRACKING" WITH MACHINERY ON SANDY SOIL PROVIDES ROUGHENING WITHOUT UNDUE COMPACTION.
2. ROUGHEN SLOPE WITH BULLDOZER.
3. BROADCAST SEED AND FERTILIZER.
4. SPREAD STRAW MULCH 3" THICK (2 1/2 TONS PER ACRE).
5. PUNCH STRAW MULCH INTO SLOPE BY RUNNING BULLDOZER UP AND DOWN SLOPE.

DETAIL 4
NTS -
(SLOPE TRACKING)

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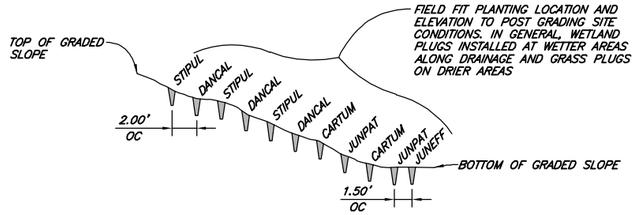
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CHK JM
APVD

SHADOW LIGHT RANCH, LLC
POND RESTORATION PLAN
APN 223-061-038 GARBERVILLE, CALIFORNIA

EROSION AND SEDIMENT CONTROL DETAILS

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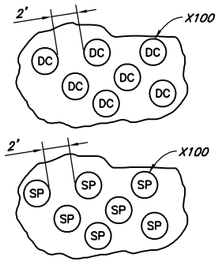
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PROFILE

DETAIL 1
NTS

(TYPICAL WETLAND & GRASS PLUG INSTALLATION)

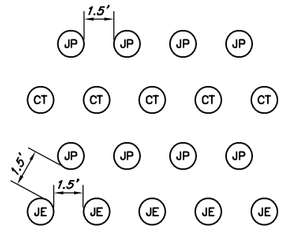


PLAN

NOTE:
INSTALL NATIVE GRASS PLUGS 2.00' OC IN GROUPINGS OF 100 PLANTS PER SPECIES.

DETAIL 2
NTS

(GRASS PLUG SPACING)

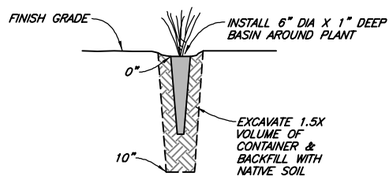


PLAN

NOTE:
INSTALL WETLAND PLUGS 1.50' OC.

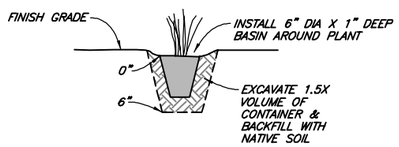
DETAIL 3
NTS

(WETLAND PLUG SPACING)



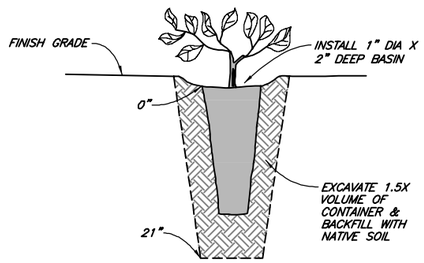
DETAIL 4
NTS

(SUPERCELL 10 PLUG INSTALLATION)



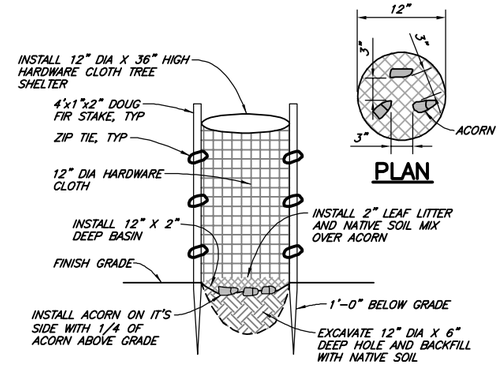
DETAIL 5
NTS

(AB34 PLUG INSTALLATION)



DETAIL 6
NTS

(TP4 TREE INSTALLATION)



PROFILE

DETAIL 7
NTS

(ACORN INSTALLATION)

NOTE:
DETAILS PROVIDED BY: NATIVE ECOSYSTEMS, INC. 10/19/2023. SEE POND 1 AND POND 2 RESTORATION PLAN REPORT BY NATIVE ECOSYSTEMS, INC.

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STATE OF CALIFORNIA

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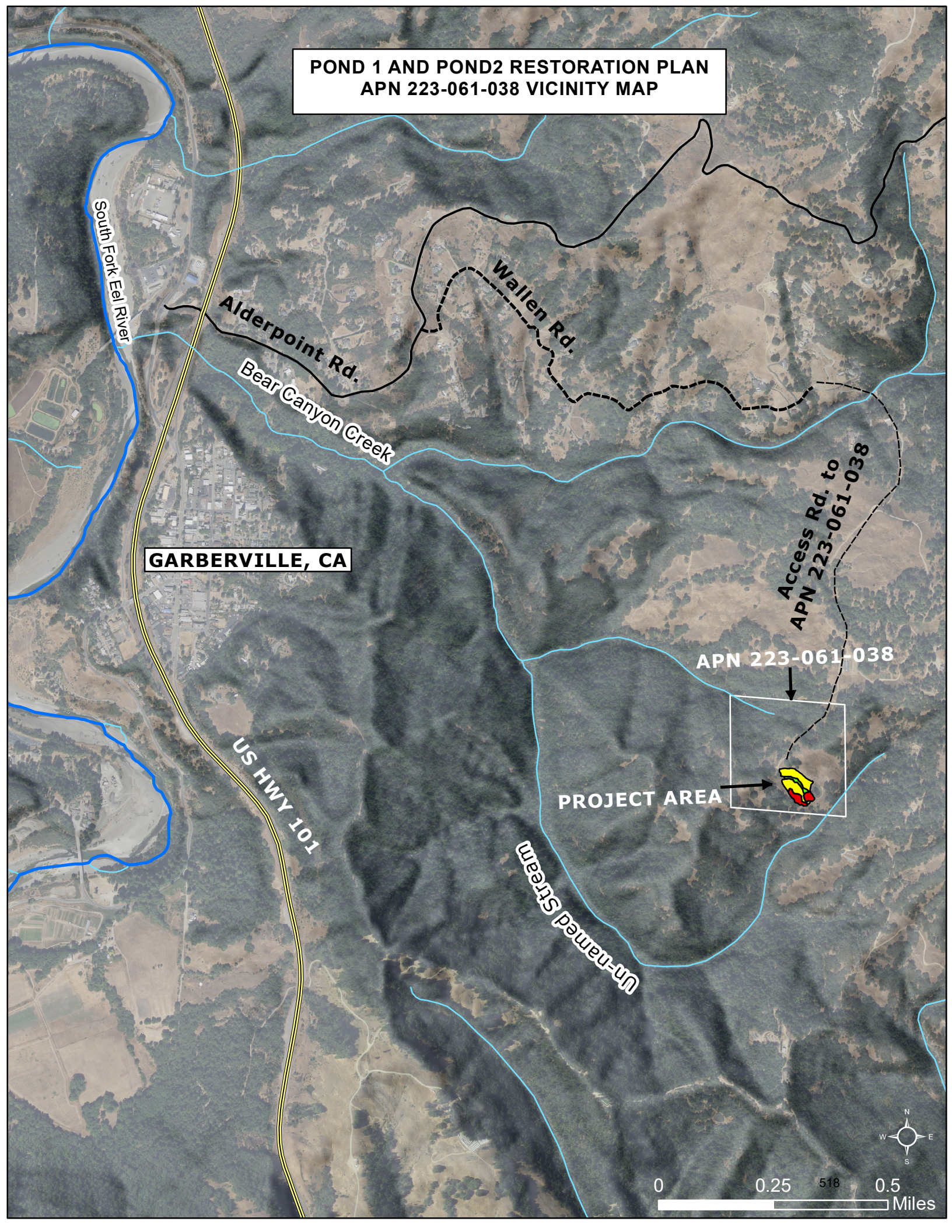
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POND RESTORATION PLAN
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RE-VEGETATION DETAILS

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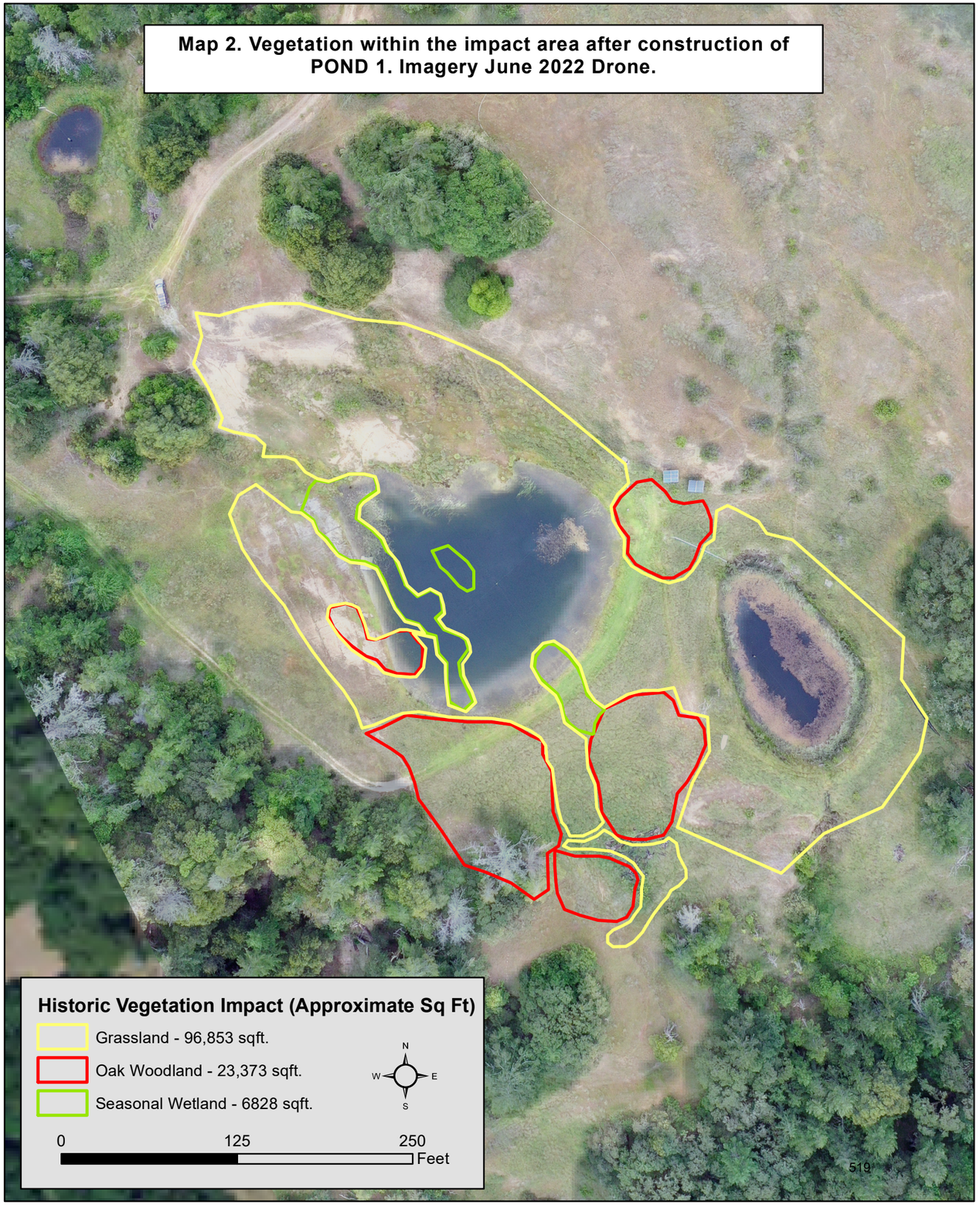

POND 1 AND POND2 RESTORATION PLAN
APN 223-061-038 VICINITY MAP
South Fork Eel River
Alderpoint Rd.
Wallen Rd.
Bear Canyon Creek
GARBERVILLE, CA
Access Rd. to APN 223-061-038
APN 223-061-038
PROJECT AREA
US HWY 101
Un-named Stream
N
W
E
S
0
0.25
518
0.5
Miles

APPENDIX C. Vegetation change resulting from POND 1 construction.

Map 1. Vegetation within the impact area prior to construction of POND 1. Imagery 2016 USDA NAIP



Map 2. Vegetation within the impact area after construction of POND 1. Imagery June 2022 Drone.



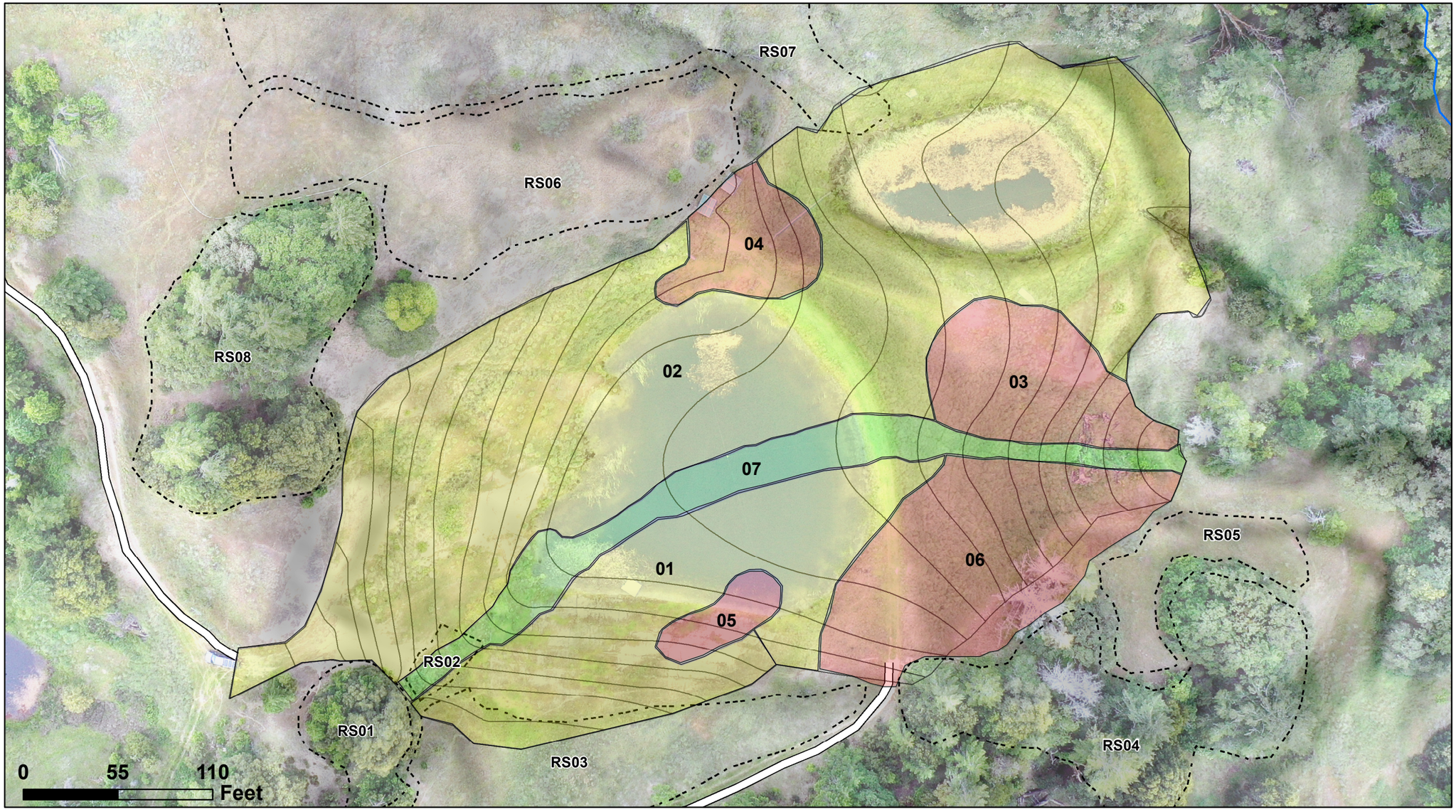
APPENDIX D. PLANT SPECIES OBSERVED ON-SITE

SPECIES NAME	COMMON NAME	FAMILY
Trees		
Acer macrophyllum	Bigleaf maple	Sapindaceae
Arbutus menziesii	Madrone	Ericaceae
Notholithocarpus densiflorus var. densiflorus	Tanoak	Fagaceae
Pseudotsuga menziesii	Douglas-fir	Pinaceae
Quercus chrysolepis	Canyon live oak	Fagaceae
Quercus garryana	Oregon Oak	Fagaceae
Quercus kelloggii	Black oak	Fagaceae
Umbellularia californica	California bay laurel	Lauraceae
Shrubs		
Arctostaphylos manzanita ssp. manzanita	Common manzanita	Ericaceae
Baccharis pilularis	Coyote Brush	Asteraceae
Rosa canina	Dog rose	Rosaceae
Rubus armeniacus	Himalayan blackberry	Rosaceae
Rubus leucodermis	Whitebark raspberry	Rosaceae
Rubus ursinus	California blackberry	Rosaceae
Toxicodendron diversilobum	Poison oak	Anacardiaceae
Herbs		
Achillea millefolium	Yarrow	Asteraceae
Acmispon americanus var. americanus	American lotus	Fabaceae
Acmispon parviflorus	Hill lotus	Fabaceae
Adenocaulon bicolor	Trail plant	Asteraceae
Ansiocarpus madiodes	Woodland Tarweed	Asteraceae
Brodiaea elegans ssp. elegans	Harvest Brodiaea	Themidaceae
Cardamine californica	California toothwort	Brassicaceae
Cerastium glomeratum	Mouse ear chickweed	Caryophyllaceae
Chlorogalum pomeridianum	Soap plant	Asparagaceae
Claytonia perfoliata ssp. perfoliata	Miner's lettuce	Montiaceae
Convolvulus arvensis	Bindweed	Convolvulaceae
Crepis capillaris	Hawks beard	Asteraceae
Croton setiger	Turkey mullein	Euphorbiaceae
Daucus carota	Wild carrot	Apiaceae
Dichelostemma capitatum	Blue Dicks	Themidaceae
Dichelostemma Ida-maia	Firecracker flower	Themidaceae
Erodium botrys	Broad-leaved filaree	Geraniaceae
Erodium brachycarpum	Filaree	Geraniaceae
Erodium cicutarium	Coastal heron's bill	Geraniaceae
Eschscholzia californica	California poppy	Papaveraceae
Fragaria vesca	Woodland strawberry	Rosaceae
Galium aparine	Bedstraw	Rubiaceae
Galium triflorum	Sweet bedstraw	Rubiaceae
Geranium dissectum	Cut leaved geranium	Geraniaceae
Geranium molle	Dove's foot	Geraniaceae

SPECIES NAME	COMMON NAME	FAMILY
Herbs		
Hieracium albiflorum	White flowered hawkweed	Asteraceae
Hypericum perforatum	St. John's wort	Hypericaecea
Hypochaeris radicata	Cat’s ear	Asteraceae
Iris purdyi	Purdy's Iris	Iridaceae
Lactuca saligna	Willow lettuce	Asteraceae
Lathyrus vestitus	Pacific pea	Fabaceae
Linum bienne	Pale flax	Linaceae
Lithophragma affine	Woodland star	Saxifragaceae
Lonicera hispidula	Pink honeysuckle	Caprifoliaceae
Lupinus bicolor	Bicolor Lupine	Fabaceae
Lysimachia arvensis	Scarlet pimpernel	Myrsinaceae
Lythrum hyssopifolia	Hyssop loosestrife	Lythraceae
Madia gracilis	Grassy tarweed	Asteraceae
Matricaria discoidea	Pinapple weed	Asteraceae
Medicago polymorpha	Medic	Fabaceae
Mentha pulegium	Pennyroyal	Lamiaceae
Montia fontana	Water montia	Montiaceae
Myosotis latifolia	Forget me not	Boraginaceae
Nasturtium officinale	watercress	Brassicaceae
Nemophila heterophylla	Variable leaved nemophila	Boraginaceae
Osmorhiza berteroi	Sweet cicily	Apiaceae
Parentucellia viscosa	Yellow gland weed	Orobanchaceae
Perideridia keloggii	Yampah	Apiaceae
Petasites frigidus	Western coltsfoot	Asteraceae
Plantago lanceolata	English plantain	Plantaginaceae
Plectritis sp.	Sea-blush	Valerianaceae
Polygala californica	California milkwort	Polygalaceae
Prunella vulgaris ssp Vulgaris	Self-heal	Lamiaceae
Psilocarphus sp.	Wooly marbles	Asteraceae
Ranunculus occidentalis	Western buttercup	Ranunculaceae
Rumex acetosella	Sheep sorrel	Polygonaceae
Rumex crispus	Curly dock	Polygonaceae
Rumex pulcher	Fiddle dock	Polygonaceae
Sanicula bipinnatifida	Purple sanicle	Apiaceae
Sanicula crassicaulis	Pacific sanicle	Apiaceae
Sherardia arvensis	Field madder	Rubiaceae
Silene gallica	Common catchfly	Caryophyllaceae
Sisyrinchium bellum	Blue-eyes grass	Iridaceae
Sonchus oleraceus	Sow's thistle	Asteraceae
Spiranthes sp.	ladies' tresses	Orchidaceae
Stachys rigida var. quercetorum	Rough hedgenettle	Lamiaceae
Stellaria media	Common chickweed	Caryophyllaceae
Thalictrum fendleri var. polycarpum	Meadow rue	Ranunculaceae
Torilis arvensis	Hedge parsley	Apiaceae
Trifolium dubium	Shamrock clover	Fabaceae

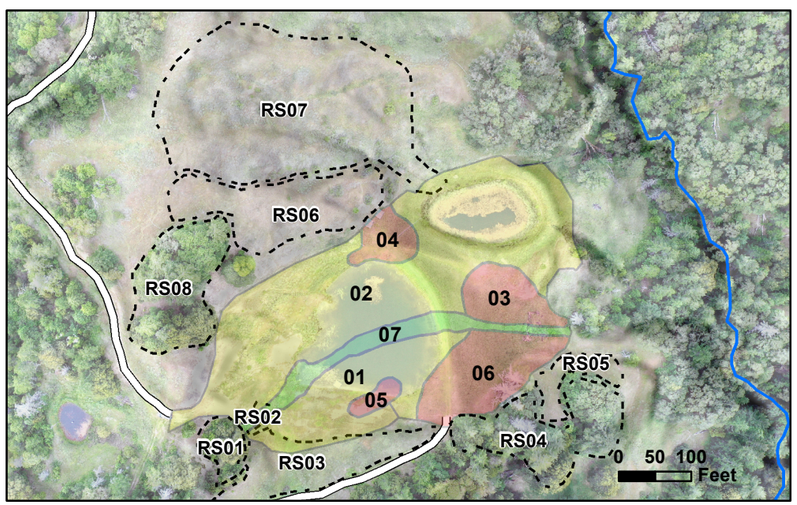
SPECIES NAME	COMMON NAME	FAMILY
Herbs		
Trifolium hirtum	Rose Clover	Fabaceae
Trifolium subterraneum	Sub clover	Fabaceae
Veronica americana	American brooklime	Plantaginaceae
Vicia sativa subsp. nigra	Common vetch	Fabaceae
Vicia tetrasperma	Four-seeded vetch	Fabaceae
Zeltnera muehlenbergii	Meulenberg's centaury	Gentianaceae
Grasses and Graminoids		
Agrostis capillaris	Colonial bentgrass	Poaceae
Aira caryophyllea	Silver hairgrass	Poaceae
Avena barbata	Wild Oats	Poaceae
Briza maxima	Rattlesnake grass	Poaceae
Briza minor	Small rattlesnake grass	Poaceae
Bromus diandrus	Rip gut brome	Poaceae
Bromus hordeaceus	Soft Chess	Poaceae
Carex tumulicola	split-awn sedge	Cyperaceae
Cynosurus echinatus	Hegehog dogtail grass	Poaceae
Dactylis glomerata	Orchard Grass	Poaceae
Danthonia californica	California oat grass	Poaceae
Eleocharis macrostachya	Common spikerush	Cyperaceae
Elymus caput-medusae	Medusahead	Poaceae
Elymus glaucus	Blue wild rye	Poaceae
Festuca arundinacea	Tall fescue	Poaceae
Festuca californica	California Fescue	Poaceae
Festuca myuros	Sixweeks grass	Poaceae
Festuca perennis	Italian Rye	Poaceae
Glyceria Xoccidentalis	western manna grass	Poaceae
Holcus lanatus	Purple velvet grass	Poaceae
Juncus bufonius var. bufonius	Toad rush	Juncaceae
Juncus effuses ssp. pacificus	Common rush	Juncaceae
Juncus patens	Grey rush	Juncaceae
Luzula comosa	Common wood rush	Juncaceae
Melica subulata	Alaska onion grass	Poaceae
Phalaris aquatica	Harding grass	Poaceae
Poa trivialis	rough bluegrass	Poaceae
Stipa pulchra	Purple needlegrass	Poaceae
Typha latifolia	Cattail	Typhaceae
Ferns and Allies		
Adiantum jordanii	Maidenhair fern	Pteridaceae
Equisetum arvense	Common horsetail	Equisetaceae
Pentagramma triangularis ssp. triangularis	Gold back fern	Pteridaceae
Polypodium glycyrrhiza	Licorice fern	Polypodiaceae
Polystichum munitum	Sword fern	Dryopteridaceae
Pteridium aquilinum var. pubescens	Western bracken fern	Dennstaedtiaceae
Woodwardia fimbriata	Chain fern	Blechnaceae

POND 1 RESTORATION PLAN
Native Plant Installation Site Plan



PLANT INSTALLATION NOTES

Treatment Type	Specifications	Installation Densities
Grading	Grade as detailed in grading plans	N/A
Grasslands Plant Installation	Install plants using the following ratios: Danthonia californica (50%) Stipa pulchra (50%). Install top of root collar at grade with hoedad or planting shovel. Plant in groupings of 100 plants per species.	2 ft. O.C.
Oak Woodland Tree Installation	Install Size D40 or Similar Size plants using the following ratios: Arbutus menziesii (10%), Quercus chrysolepis (30%), Quercus garryana (30%), Quercus kelloggii (30%). Excavate hole with shovel or augur, install top of root collar at grade, backfill with native soil. Install 3 ft. tall by 1 ft. diameter tree protector made of hardwarecloth and secured with 2 in. by 2 in. by 4 ft. wooden stake.	15 ft. O.C.
Oak Woodland Grass Installation	Install plants using the following ratios: Danthonia californica (25%), Festuca californica (50%), Stipa pulchra (25%). Install top of root collar at grade with hoedad or planting shovel. Plant in groupings of 100 plants per species.	2 ft. O.C.
Wetland Plant Installation	Install plants using the following ratios: Carex tumulicola (10%), Danthonia californica (10%), Juncus patens (35%) Juncus effuses ssp. Pacificus (35%), Stipa pulchra (10%). Install top of root collar at grade with hoedad or planting shovel. Install CARTUM, JUNPAT, JUNEFF in wetter areas. Install DANCAL, STIPUL in drier areas.	1.5 ft. O.C.
Native Grass Seed Mix	Install seed on bare soils using the following ratios: Elymus glaucus (60%), Bromus sitchensis (30%), Danthonia california (10%). Broadcast by hand or ATV spreader, rake or harrow in.	30 lbs/acre
Native Forb Seed Mix	Install seed on bare soils using the following ratios: Achillea millefolium (5%), Acmispon americanus var. americanus (5%), Clarkia amoena (10%), Escholzia californica (20%), Lupinus bicolor (20%), Ranunculus occidentalis (10%) Sysyrinchium bellum (10%), Trifolium willdenovii (20%); Broadcast by hand or ATV spreader, rake or harrow in.	15 lbs/acre
Straw Mulch	Install native grass straw or weed free rice straw on all bare soils	50 bales/acre



RESTORATION TREATMENTS AND QUANTITIES

SITE ID	RESTORATION ACTION	RESTORATION HABITAT TYPE	AREA (acres)	TREES (Plants)				RUSHES AND SEDGES Size AB34 (Plants)			GRASS PLUGS Size SC10 (Plants)			NATIVE FORB SEED MIX (lbs)	NATIVE GRASS SEED MIX (lbs)	STRAW MULCH (bales)
				QUEGAR	QUEKEL	QUECHR	ARBMEN	JUNPAT	JUNEFF	CARTUM	DANCAL	STIPUL	FESCAL			
01	GRADING/PLANT INSTALLATION	Grassland	0.50	0	0	0	0	0	0	0	2728	2728	0	8	18	25
02	GRADING/PLANT INSTALLATION	Grassland	1.70	0	0	0	0	0	0	0	9274	9274	0	26	60	85
03	GRADING/PLANT INSTALLATION	Oak Woodland	0.19	11	11	11	4	0	0	0	517	517	1036	3	7	10
04	GRADING/PLANT INSTALLATION	Oak Woodland	0.11	7	7	7	2	0	0	0	600	300	600	2	4	6
05	GRADING/PLANT INSTALLATION	Oak Woodland	0.04	2	2	2	1	0	0	0	218	109	218	1	1	2
06	GRADING/PLANT INSTALLATION	Oak Woodland	0.36	22	22	22	7	0	0	0	1964	980	1964	5	13	18
07	GRADING/PLANT INSTALLATION	Wetland	0.20	0	0	0	0	1355	1355	387	387	387	0	3	7	10
TOTALS			3.10	42	42	42	14	1355	1355	387	15688	14294	3819	47	109	155

(P) Grassland Restoration Area (2.2 acres)

(P) Oak Woodland Restoration Area (0.7 Acres)

(P) Wetland Restoration Area (0.2 Acres)

Reference Site

(P) Grading Contours (5 ft.)

(E) Access Road

Class II Stream

Species Code	Scientific Name	Type	Species Code	Scientific Name	Type
DANCAL	*Danthonia californica*	Grass	JUNPAT	*Juncus patens*	Wetland
DESCES	*Deschampsia cespitosa*	Grass	ARBMEN	*Arbutus menziesii*	Tree
FESCAL	*Festuca californica*	Grass	QUECHR	*Quercus chrysolepis*	Tree
STIPUL	*Stipa pulchra*	Grass	QUEGAR	*Quercus garryana*	Tree
CARTUM	*Carex tumulicola*	Wetland	QUEKEL	*Quercus kelloggii*	Tree
JUNEFF	*Juncus effuses*	Wetland			

IMAGERY: NEI DRONE JUNE 2022

NATIVE ECOSYSTEMS
625 11th Street
ARCATA, CA 95521
707.599.7814
nat-eco.net

Reference: 018064

October 25, 2023

Joshua Sweet
Shadow Light Ranch, LLC
P.O. Box 250
Garberville, CA

Subject: Soils Report for the Decommissioning of Two Ponds, Shadow Light Ranch, Garberville, California; APN 223-061-038

Joshua Sweet:

SHN is providing this soils report to inform the decommissioning of two man-made water storage ponds on the Shadow Light Ranch near Garberville, California. The information in this report is intended to support the development of grading plans for the decommissioning and to satisfy the requirements to obtain a Humboldt County grading permit.

The subject ponds have been the site of 5 years of previous investigation and reporting related to regulatory review and a series of notices of violation. There have been many visits to the site for regulatory agency inspections. As such, we have developed a high level of familiarity with the site conditions, the development history of the ponds, and the desired outcome of the proposed decommissioning. The approach to the proposed work is informed by experience with similar pond decommissioning projects and input from regulatory agencies.

The work scope for the preparation of this soils report is focused, reflecting the nature of the project (earthwork related to restoration only, no structures) and the level of previous work following several years of site assessments. Development of the grading recommendations herein is based on our thorough understanding of the site (subsurface materials and site development history) and the desired outcome, within the framework of standard grading procedures. We have previously reviewed available geologic literature and maps, evaluated a range of aerial imagery from a variety of years to understand the development history of the site, mapped the bedrock at the site, and participated in development of conceptual grading plans that are being prepared concurrently to this reporting. Topographic and bathymetric survey of the site has been completed (bathymetric survey was completed with a staff gauge and a raft) during previous work phases.

The report does not include seismic design parameters as they are unnecessary for the proposed work scope, which is limited to earthwork and has no structural element.

Project Location and Description

The site is located on ranch lands about 1.25 miles east-southeast of Garberville (Figure 1). The two ponds are in close proximity to each other and are referred to in this report as Ponds #1 and #2 (Figure 2).

Pond #1 is located at:

Latitude:	40.092969
Longitude:	-123.769473

Pond #2 is located at:

Latitude:	40.092807
Longitude:	-123.768647

The intent of the project is to decommission the two man-made ponds. Both ponds were developed by excavating down into a pre-existing low gradient bench and using the excavated spoils to develop embankments along the downhill edges to facilitate the retention of water. The embankments were developed with spillways, consisting of corrugated metal and plastic pipes.

The goal of the project is to remove the existing embankments and replace the previously excavated material back into the respective pond basins to re-create, to the extent feasible, the pre-existing ground conditions. The original flow paths from a spring through the upper pond footprint and from an ephemeral Class III stream through the lower pond footprint will be restored. In order to achieve this goal, the ponds will need to be drained, spillway infrastructure will need to be removed, the embankments graded back into their respective pond basins, and the area revegetated. A project revegetation plan is being prepared by others, with a focus on restoring pre-existing wetlands.

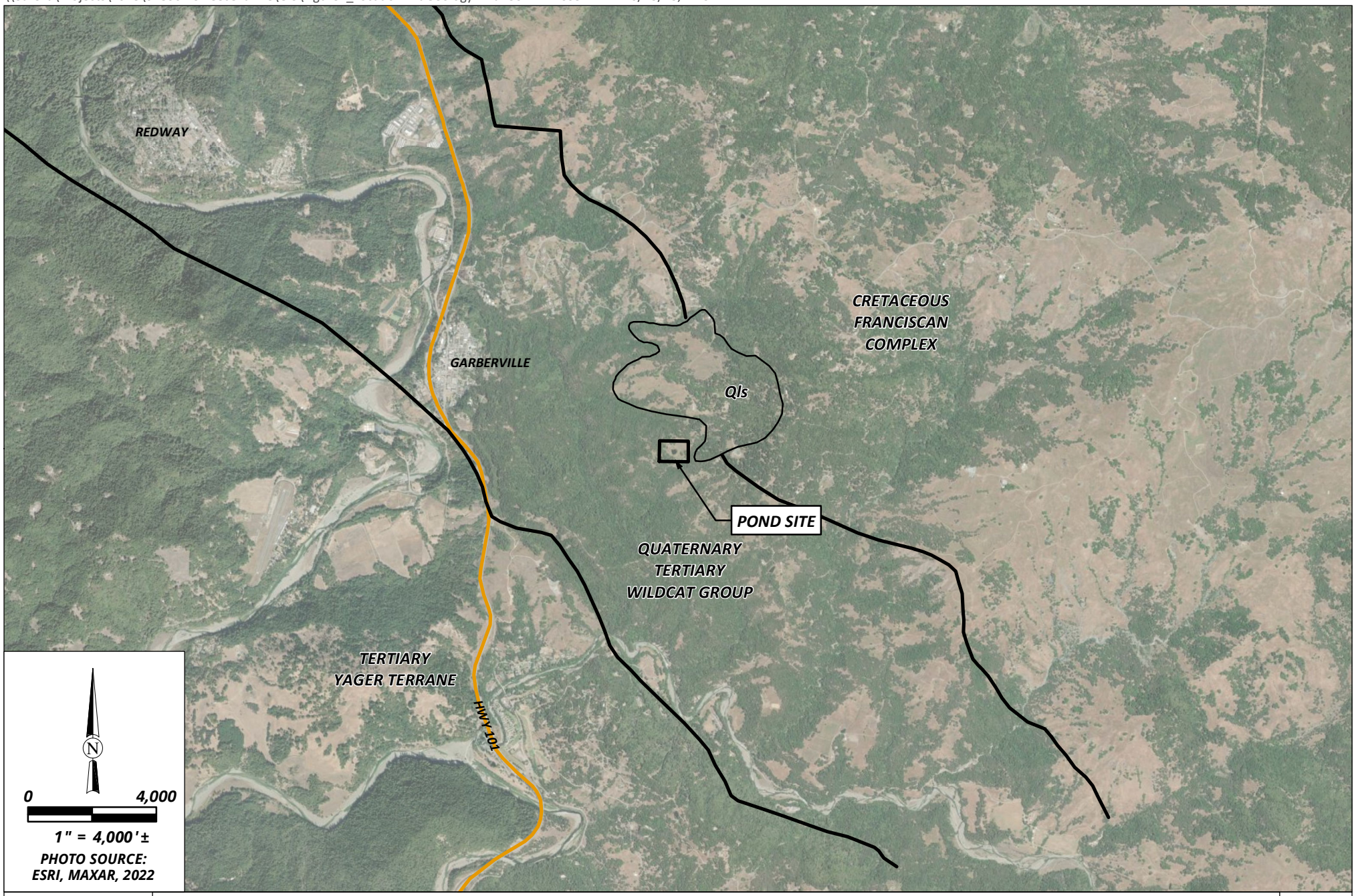
Site Conditions

The area is largely undeveloped land with a mix of grass-covered prairie ground and oak/Douglas fir woodlands.

Although much of the upper slopes in the Shadow Light Ranch are underlain by bedrock associated with the Central belt of the Franciscan Complex, the area around the subject ponds is underlain by Tertiary age sedimentary rocks of the Wildcat Group. We observed exposures of a well-cemented pebble conglomerate on the shoreline of the upper pond just upslope of the embankment, and in road cut exposures downslope of the embankment (in the area of Pond #2; see Figure 2). Sandstone and siltstone exposures were observed along the western and northern shorelines of the upper pond. Exposures on the hills surrounding the ponds consist of Wildcat sediments as well.

Geologic and geomorphic mapping by CGS (Spittler, 1983) does not identify specific historical landslides in the vicinity of the ponds; although a large earthflow complex occurs in Franciscan rocks to the northeast (Figure 1). Some areas of “disrupted ground”—a generalized category showing areas of inferred, potential ground movement—are shown locally in the vicinity of the pond, but no specific mass wasting feature is noted at the pond site.

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Shadow Light Ranch
2023 Soils Report
Garberville, California

Project Location and Geology

October 2023 - 018064

Figure 1

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Shadow Light Ranch
2023 Soil Report
Garberville, California

Aerial Image with Geologic Mapping

October 2023 - 018064

Figure 2

Ponds

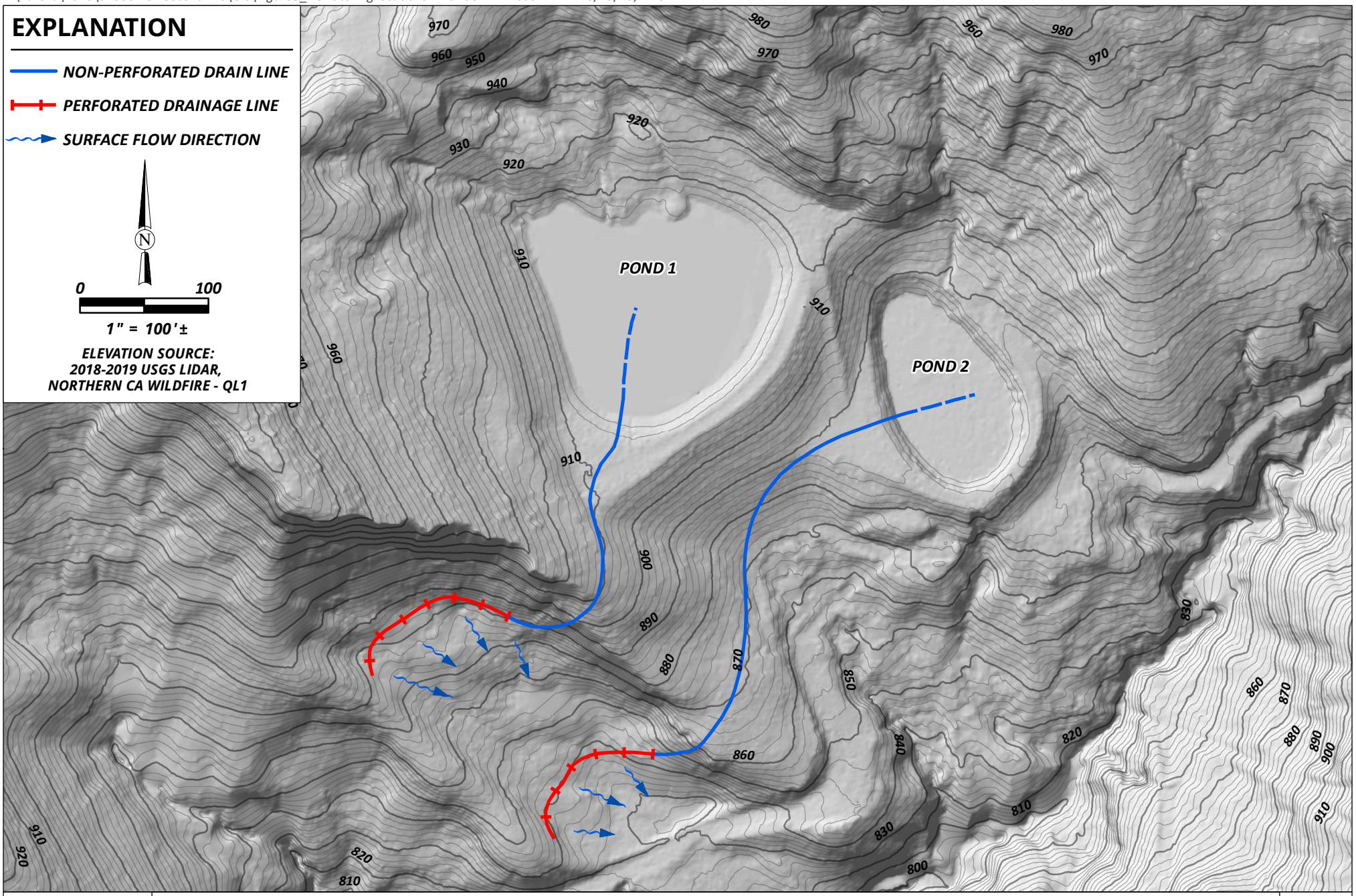
The subject ponds occur as a staggered pair of retention structures, a larger upper pond (Pond #1) and a smaller lower pond (Pond #2). They are adjacent to each other, such that the lower pond is located just below the toe of the embankment of the upper pond (Figure 2). The spillway associated with the upper pond (24-inch corrugated metal culvert) drains into the lower pond; the lower pond subsequently drains into an adjacent Class II watercourse. Both ponds are unlined.

Lower Pond (Pond #2): The lower pond was apparently built by neighboring property owners at some point in the past; the timing is not currently known. It appears recently built (and not yet filled) in Google Earth imagery dated October 12, 2006. The pond is an oval-shaped structure about 165 feet long and 90 feet wide; it was measured with a staff gauge to be 13.5 feet deep. The pond was formed by excavating into what appears to have been a pre-existing bench and forming an earthen embankment along the downhill edge. The embankment is about 15 feet high. This pond drains directly to an adjacent Class II watercourse by means of a spillway consisting of a long 24-inch corrugated plastic pipe. It has a secondary spillway consisting of two side-by-side, 24-inch corrugated plastic pipes that drain to the toe of the embankment. These pipes only carry water when the lower pond is relatively full. There is evidence for minor slumping around these secondary outlet pipes. A Class III watercourse extends up the slope north of the pond, which feeds into the pond; therefore, the lower pond is an “in-stream” retention structure.

Upper Pond (Pond #1). The upper pond was apparently built in 2017. It is not visible in Google Earth imagery dated May 28, 2014, but was present by October 2017, when it was observed during aerial inspections by California Department of Fish and Wildlife personnel. We understand that the pond was completed without permits. It is a tear-drop shaped retention structure created by excavating on a pre-existing bench and developing an earthen embankment around the downhill margin (Figure 3). The pond is estimated to be about 220 feet long and 195 feet wide, in maximum dimension; it was measured with a staff gauge to be 14 feet deep. The embankment is a significant structure with a crest width of about 10 feet. The outboard face of the embankment slopes at between 1.5:1 (horizontal:vertical) and 2:1. As described above, the upper pond drains to the lower pond by means of a spillway consisting of a 24-inch corrugated metal culvert pipe; this flow occurs only when the upper pond is relatively full.

Excavation of the northern margin of the pond exposed siltstone and sandstone of the Wildcat Group. These materials appear to have become unstable when saturated in the over-steep cut along the shoreline; therefore, much of the northern shoreline has slumped toward the edge of the pond, leaving steep headscarps of up to 8 feet high. Areas underlain by siltstone appear to have been especially susceptible. There is no evidence that this area was unstable prior to the excavation and filling of the pond.

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Shadow Light Ranch
2023 Soils Report
Garberville, California

Dewatering Locations

October 2023 - 018064

Figure 3

Decommissioning the Ponds

Approach

Earthwork related to decommissioning the two ponds will require them to be drained and dried, the spillway infrastructure removed, site preparation of grading areas (pond embankments and pond basins), and the embankments removed and replaced into their respective pond basins. The primary goal of the site grading is, therefore, relatively simple: re-fill the pond basins with the spoils that were removed from them and re-shape the ground to reflect pre-existing topography. Because the intent is to re-establish stream flow across the footprint of each back-filled pond, it will be important to replace fill soils in an engineered manner to minimize post-construction settlement.

Timing of the Work

The earthwork required to decommission the two ponds will need to be completed entirely within the dry season, after the end of the rainy season. The spring that drains into the upper pond and the Class III watercourse that flows into the lower pond are both associated with ephemeral (seasonal) flow. In general, no grading-related activities should begin until the spring or stream flow has ceased. The initial step in the decommissioning process is to dewater the ponds, and there is no utility in beginning this process until all in-flow has ceased.

The dewatering work should be completed well before the initiation of the grading work, as the pond basins will require drying before significant earthwork can be completed.

Any grading work not completed within a single construction season will need to be made weather-proof prior to the onset of the winter (rainy) season.

Dewatering

The ponds will need to be dewatered well before the intended grading to allow adequate time for drying within the emptied pond basins. The water should be pumped and dispersed in a suitable (stable) upland area; it cannot be pumped directly into, or in the near vicinity of, waters of the State. We assume the water will be transported away from the ponds via tightline pipes and dispersed across a broad area via perforated pipes.

Figure 3 is a light detection and ranging (LiDAR) hillshade image of the site vicinity. Steep topography south and southwest of the ponds is associated with erosion-resistant conglomerate within the Wildcat Group, which is exposed along the road cut at the southern edge of the image. Moderate gradient areas underlain by the Wildcat sandstone or conglomerate bedrock are favorable areas for the dispersal of the water pumped from the ponds. Favorable dispersal areas that maintain a minimum 100-foot setback from waters of the State are shown on Figure 3. Other areas may be acceptable, which should be approved in the field by the project geologist. We note the slopes directly south of the lower pond (Pond #2) are not stable and dewatering should not occur on these slopes.

Site Preparation and Grading

Following dewatering of the ponds, the pond basins should be allowed to dry, as they are both unlined and the soils will be saturated. Once dry, any loose, unsuitable soil accumulated on the bottom or sides of the ponds should be removed and set aside to be dispersed within the backfill.

Site preparation includes the removal of debris, organics, organic topsoil, loose soil, and/or any other unsuitable material. Site preparation operations should encompass the entire area subject to grading. We anticipate that stripping to a depth of about 2 to 4 inches will be required to remove the organics and topsoil. Deeper stripping may be locally required to remove concentrations of vegetation, such as brush and tree roots. Loose soils associated with the slide area at the north end of the pond should be excavated and blended with the embankment spoils.

Strip and remove all existing vegetation and root systems from the areas that will receive fill and from the embankments that will be the source of the fill. Any vegetation and organic topsoil should be removed.

The interior slopes within the pond basins should be benched during the placement of engineered fill to provide a firm level surface on which to place the engineered fill. Two-foot-wide benches spaced every 2 vertical feet within the pond basins should be used as a general guideline. Backfill material should be brought up uniformly within the pond basin (that is, backfill should be at the same elevation across the basin as the backfill is placed and compacted). The elevation difference of the backfill surface across the pond basin should not be greater than 2 feet.

Engineered fill placed on natural slopes (not within the pond basins) that are steeper than 5H:1V should be keyed and benched into supportive material to provide a firm, stable surface on which to support the fill. Prior to fill placement on slopes steeper than 5H:1V, a construction keyway should be excavated at the toe of the fill. The keyway should be a minimum of 6 feet wide or of a width equal to half the height of the fill slope, whichever is greater. The keyway should be excavated a minimum of 2 feet into bedrock or competent support material, as measured on the downhill side of the excavation. The depth to supportive material should be determined by this office in the field during construction. The base of the keyway excavation should have a nominal slope of approximately 2 percent dipping toward the back (uphill side) of the key. Subsequent construction benches should be excavated to remove any non-supportive surficial soil and should also have a nominal slope of approximately 2 percent dipping in the uphill direction. Our representative should observe the completed keyway and bench excavations to confirm they are founded in materials with sufficient supporting capacity.

Site grading during and shortly after the rainy season is typically difficult and/or uneconomical, and is not advised. Onsite soils will have moisture contents well above optimum and will require greater than normal spreading, mixing and/or aeration to achieve a near-optimum moisture content suitable for required compaction.

Engineered Fill

Engineered fill soils will be derived onsite from the demolition of the existing embankments, which consist of native soils. The intent is to fill the pond basins with the spoils that were created during their original construction. The fill soils need to be free of vegetation, organics, or other undesirable material that may remain following site preparation. The engineered fill should have less than 2 percent by dry weight of vegetation and deleterious material in order to mitigate undesirable levels of settlement.

Engineered fill should be moisture conditioned to near optimal moisture content levels prior to placement. Some soils on the site may be too dry; some may be too wet; mixing of soils of differing moisture contents is encouraged. Engineered fill placed within the pond basins should be placed in loose lifts not exceeding 8 inches in thickness and compacted to a minimum of 90 percent relative compaction. Engineered fill soils placed outside the pond basins may be compacted to a firm condition using similar means and methods of compaction, but need not achieve a compaction standard.

A qualified field technician should be present to observe fill placement and perform field density tests in accordance with ASTM-International D 6938 at random locations throughout the backfilling of the ponds to verify that the specified compaction is being achieved. Compaction verification testing requires that samples of the fill soils are tested for maximum dry density and optimal moisture content prior to the inception of grading.

Erosion Control

Decommissioning of the two ponds will impact a large area that will require erosion control, which will be described in the grading plan. Re-establishment of wetlands is a regulatory requirement for the project, and a comprehensive revegetation plan is being prepared by others.

Landslide Mitigation

Because the sliding at the north end of the upper pond (Pond #2) appears related to over-steepening of the slope during excavation of the pond, we intend to mitigate future sliding by reconstruction of the slope to its pre-existing condition using blended engineered fill. The reworked, compacted fill soils are expected to have a higher resistance to sliding (shear strength) than the pre-existing natural condition, which was strongly influenced by the occurrence of siltstone.

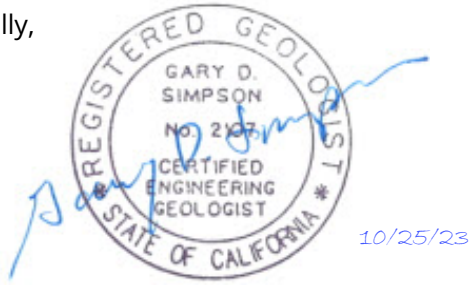
Closure

This is a focused report intended to inform the decommissioning of man-made ponds at the site. There are no structural elements to the proposed development, just earthwork to restore pre-existing conditions. The conclusions and recommendations outlined herein apply to the subject ponds and not to other areas.

We recommend a representative of our firm confirm site conditions during the construction phase. If subsurface conditions differ significantly from those disclosed by our investigation, we should be given the opportunity to re-evaluate the applicability of our conclusions and recommendations. Some alteration of recommendations may be appropriate.

Respectfully,

SHN



Gary D. Simpson, CEG
Sr. Engineering Geologist

GDS:ame