

# **Nitrogen Management Plan Freerange Holdings, LLC**



**APNs 104-071-004, 104-071-005**



Submitted to:

California Regional Water Quality Control Board  
North Coast Region  
5550 Skylane Boulevard, Suite A  
Santa Rosa, California 95403

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Eureka CA 95503

Updated: July 25, 2019

**This plan must be kept on site and produced upon request by Regional Water Board staff.**

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# Nitrogen Management Plan

## Introduction

This document has been prepared in order to meet the California State Water Resources Control Board (SWRCB) Order WQ 2017-0023-DWQ GENERAL WASTE DISCHARGE REQUIREMENTS AND WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF WASTE ASSOCIATED WITH CANNABIS CULTIVATION ACTIVITIES (General Order). This document serves as the Nitrogen Management Plan for cannabis cultivation activities that fall under the SWRCB Tier 2 Low Risk category. The Plan has been prepared on behalf of the property owner, Freerange Holdings, LLC.

This document includes a description of the cultivation activities that will occur on Humboldt County Assessor's Parcel Numbers (APNs) **104-071-004** and **104-071-005**. The following sections describe how Nitrogen is used, stored, and applied during the cannabis cultivation process.

## 1. Facility Description

### 1.1. Location and Configuration

The Freerange Holdings LLC commercial cannabis cultivation operation (the Project) will take place on a remote 333-acre site located in Petrolia, California. The Project is accessed via Reynolds Road, a 1.1-mile gravel road that connects to the Humboldt County-owned Mattole Road. The site is located in the Mattole River watershed between Squaw Creek (Class I) and Granny Creek (Class II/III). Seasonal drainage courses that flow into Granny and Squaw creeks are present on both parcels. All cultivation areas are located at least three hundred feet (300') from the aforementioned surface waters.

The property owners and approximately 4-12 seasonal employees will conduct the cannabis cultivation operations. The total cultivation area is 53,800ft<sup>2</sup>, as permissible under Humboldt County Codes 314-55.4.6.5 and 314-55.4.6.1.2 (b). The Project consists of 23,800ft<sup>2</sup> of existing cultivation on APN 104-071-004 comprised of one (1) 34'x100' greenhouse and three (3) 68'x100' greenhouses. An additional 30,000ft<sup>2</sup> of new cultivation will take place on APN 104-071-005 in three (3) 100'x100' fully automated greenhouses. A 4,332ft<sup>2</sup> processing building and a 4,800ft<sup>2</sup> nursery greenhouse space (three (3) 20'x80' hoop structures) will also be located on APN 104-071-005. The anticipated canopy area acreage at plant maturity is 1.1 acres.

The 23,800ft<sup>2</sup> cultivation site (APN 104-071-004) will initially be conducted as an outdoor operation in greenhouses, using natural light only, until fully automated greenhouses can be installed. Automated greenhouses will allow for mixed-light operations that use supplemental light during the spring and fall seasons when daylight is limited. This operation will initially conduct 3-4 growing cycles per year using starts (clones) from the onsite nursery. This site will use the existing footprint with minor adjustments to the cultivation area layout to ensure adequate setback is maintained from a seasonal, unnamed Class III creek located at the southwest corner of the parcel.

The 30,000ft<sup>2</sup> cultivation operation (APN 104-071-005) will also be initially conducted using traditional hoop structures and natural light only. Once fully automated 100' x 100' greenhouses can be obtained, this cultivation site will convert to a mixed-light operation allowing for up to 6 harvests per year. This site will be developed on an upland, previously disturbed saddle outside of the riparian setback.

Once automatic greenhouses are installed, cultivation will occur year-round and will consist of growing cycles lasting approximately 2.5 months in duration each. The process begins with clones

(baby plants) produced onsite from “mother” plants maintained in the nursery. The young plants will be started in the nursery in 4-inch pots with existing soil amended with organic nutrients including bat guano, worm castings, and dried chicken manure. When the plants are large enough (~2 weeks) they will be transplanted into larger plastic pots with amended soil and moved into the cultivation greenhouses. The plants will be fed a dilute compost tea mixed with irrigation water approximately every three to five days depending on weather conditions and need. The plants mature over two months after which time they will be harvested and removed from the greenhouses for drying. At full operation, a portion of the plants will be in each stage of cultivation (clone, vegetative growth, flowering, drying) during every month of the year.

Water for cultivation operations will be collected in a 120'x150' rainwater catchment pond (to be constructed), and will be supplemented with water from two onsite wells (existing). A solar electric system at each wellhead will be used to power the two well pumps; both wells are covered to limit exposure to rainfall. Water from the rainwater catchment pond will flow via gravity into storage tanks and out to the cultivation sites for use in irrigation/feeding. All irrigation will be maintained inside the greenhouses and cannabis plants will be hand-watered as needed to avoid over-watering.

The Project site plans included as Appendix A contains a map showing the Project location, nearby water bodies, public and access roads, cultivation sites, and other relevant features on sheet 1. The site plans include a comprehensive facility plan (sheets 1-10) that shows the overall site, disturbed areas, cultivation areas, buildings, access roads, greenhouses, material storage areas, sources of irrigation water, and water storage as well as other features of interest.

## **2. Sources of Nitrogen**

Organic and natural soil amendments as well as a paraffinic oil pesticide approved for organic crop production are the only added agricultural products used in this operation. These materials will be applied as per the manufacturer's instructions, and will be returned to storage in a dedicated area located in the Ag barn immediately after use.

- 2.1. Dried chicken manure (1.3-1.28-1) is the only bulk material used in this cultivation operation. Chicken manure is collected via onsite scrapings; part of the manure scrapings consists of dirt.
- 2.2. Dry Fertilizers used in cultivation include: Roots Organics Big Worm (2,0,0), Planet Natural Rainbow Mix Pro Grow (8-6-3), and Sparetime Supply Mocha Bat Guano (4-6-1). Big Worm contains worm castings; Rainbow Mix Pro Gro contains guanos, kelp, feather and bone meal, and Mocha Bat Guano is pure bat poop. Dry fertilizers are used to make compost tea.
- 2.3. Liquid Fertilizers include Planet Natural Hi-Brix Molasses (0-0-3) and Age Old Organics Age Old Bloom (5-10-5) containing fish and feather meal, colloidal phosphates, seaweed extracts, borax, and other naturally occurring micronutrients. Liquid fertilizers are used to make compost tea.

The table that follows shows the agricultural soil amendments planned for use in the Freerange Holdings LLC cultivation operation. Amendments will be tested for compliance with California State licensing requirements and may be substituted for an equivalent product as needed.

| <b>Agricultural Products Used / Stored Onsite</b> |   |  |
|---|---|--|
| <b>Product Name</b>                               | <b>Use; Main ingredient(s)</b>  | <b>Application Frequency</b>   |
| Planet Natural Hi-Brix (0-0-3)                    | Fertilizer; molasses  | Applied throughout cycle in diluted quantities in compost tea (~5-7 times / month)                               |
| Roots Organics Big Worm (2-0-0)                   | Fertilizer; worm castings   | Used to amend soil at beginning of cycle and applied throughout cycle in diluted quantities (~5-7 times / month) |
| Planet Natural Rainbow Mix Pro Grow (8-6-3)       | Fertilizer; organic fertilizer made from guanos, kelp, feather and bone meal and other naturally occurring ingredients. | Applied throughout cycle in diluted quantities in compost tea (~5-7 times / month)                               |
| Sparetime Supply Mocha Bat Guano (4-6-1)          | Fertilizer; bat guano   | Used to amend soil at beginning of cycle and applied throughout cycle in diluted quantities (~5-7 times / month) |
| Age Old Organics Age Old Bloom (5-10-5)           | Fertilizer; fish and feather meal, colloidal phosphates, seaweed extracts, borax, naturally occurring micronutrients    | Applied once during last 2 weeks of each cycle in diluted quantities as part of compost tea                      |
| Dried Chicken Manure (1.3-1.3-1)                  | Soil amendment; chicken manure  | Used to amend soil at beginning of each cycle  |
| Organic JMS Stylet Oil                            | Powdery mildew / fungus / pest / disease control; 97% Paraffinic oil  | 1-2 times per cycle  |

### 3. Nitrogen Storage, Use, and Disposal Practices

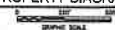
- 3.1. Soil amendments and fertilizers containing nitrogen will be delivered at the beginning of the first cultivation cycle each year and as needed thereafter.
- 3.2. The only bulk fertilizer, dried chicken manure, will come from onsite scrapings and therefore does not require storage. Dry and liquid fertilizers will be stored in the original containers on pallets inside the Ag barn year-round. The Ag barn is a covered, enclosed structure with a concrete floor. The storage location for agricultural products used onsite can be seen on sheet 4 of the site plan set (Appendix A).
- 3.3. The soil and amendment mixing will occur within the cultivation and nursery area footprints using a skid steer and/or shovels. Compost tea mixers are located at each cultivation area and the nursery. All mixing is located outside of the riparian setback, and within a bio-swale perimeter or upslope of the sediment detention basin. Locations of the soil piles (blending areas) and compost tea mixers can be seen on sheets 4, 6, and 8 of the site plan set included in Appendix A.
- 3.4. At the end of useful life, soil piles will be moved to a stable, flat area (<2% slope) outside of the riparian setback; piles will be spread, compacted, and graded to match the surrounding topography. The soil will then be mulched and allowed to naturally re-seed. Soil storage areas can be seen on the site plan map set included with this plan on sheets 4, 6, and 8.
- 3.5. Soil for cultivation is re-used each year. A combination of dried chicken manure, bat guano, worm castings, and dilute compost tea are used to amend soil during each growing cycle.

### 4. Nitrogen Application Rate

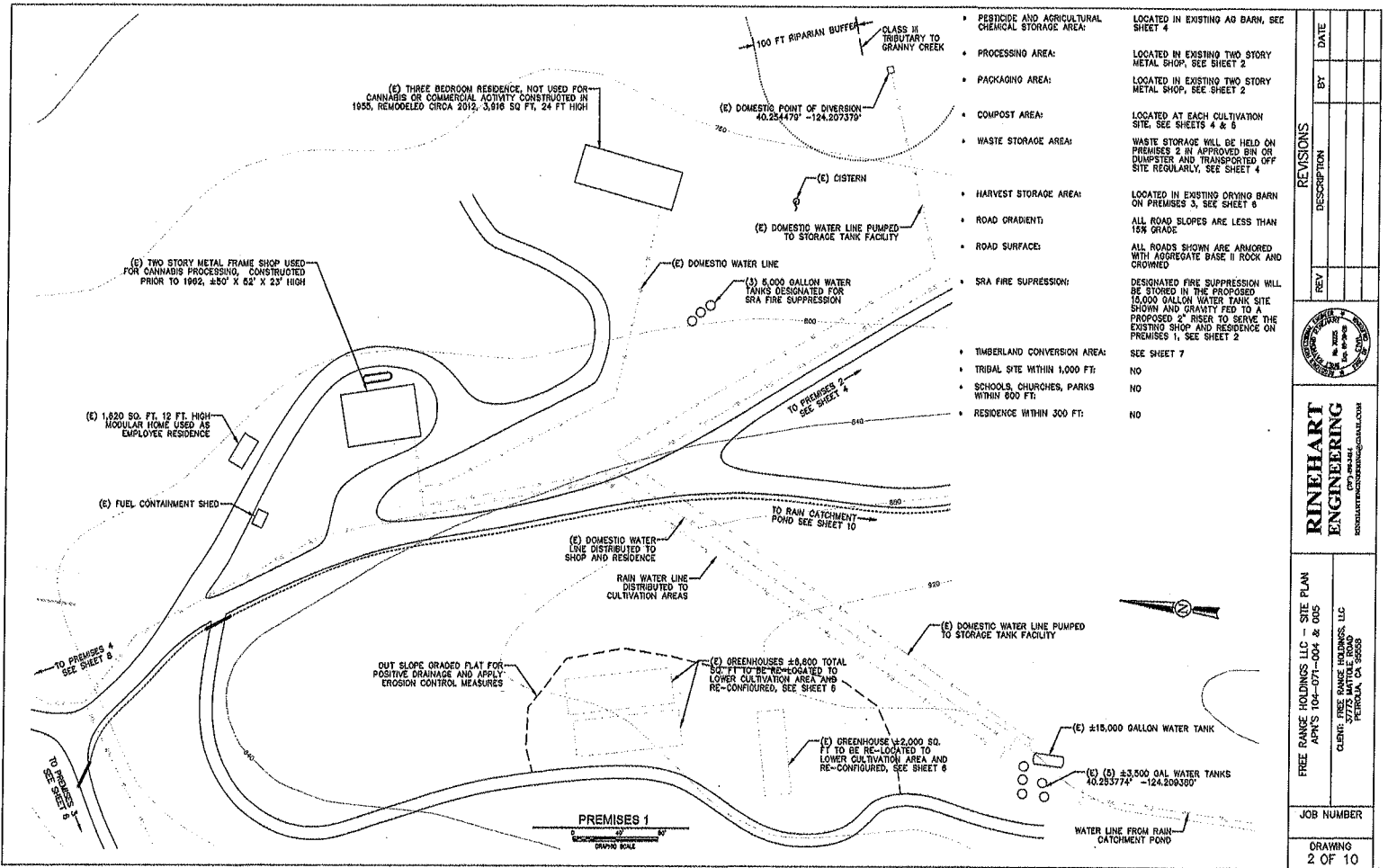
- 4.1. Monthly Applied Nitrogen; assumes 1.11 canopy acres or 90% of cultivation area. This application rate estimate is based on a mixture of outdoor and mixed-light cultivation.

| Amount Nitrogen Applied per Canopy Acre            |      |     |        |              |
|--|------|-----|--------|--------------|
| Month  | Bulk | Dry | Liquid | Rate Applied |
| January  | 1    | 12  | 0.06   | 13           |
| February   | 1    | 12  | 0.06   | 13           |
| March  | 2    | 25  | 0.06   | 27           |
| April  | 2    | 25  | 0.13   | 27           |
| May  | 2    | 25  | 0.13   | 27           |
| June   | 2    | 25  | 0.13   | 27           |
| July   | 2    | 25  | 0.13   | 27           |
| August   | 2    | 25  | 0.13   | 27           |
| September  | 1    | 24  | 0.13   | 26           |
| October  | 1    | 12  | 0.13   | 13           |
| November   | 1    | 12  | 0.06   | 13           |
| December   | 1    | 12  | 0.06   | 13           |
| Subtotal   | 17   | 235 | 0.06   | 253          |
| Total Annual Nitrogen Applied (lbs. / canopy acre) |      |     |        | 228          |

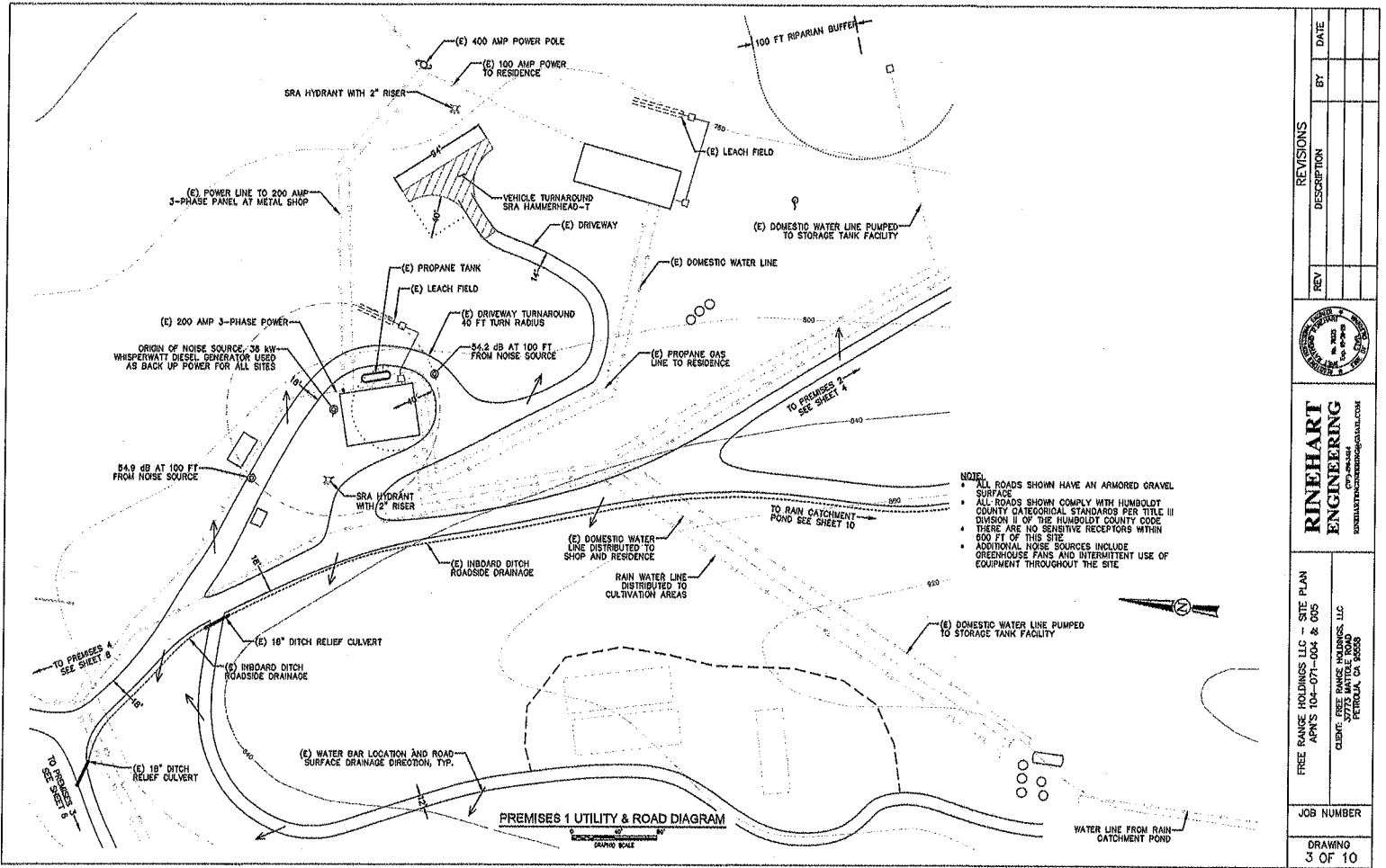
- 4.2. This cultivation operation does not experience limited nitrogen availability issues.



DRAWING  
1 OF 10

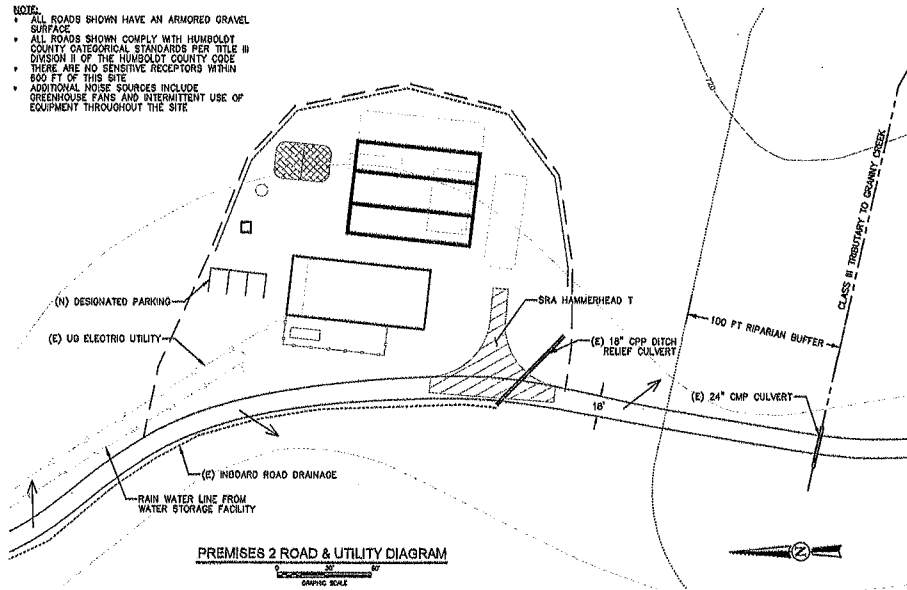








- NOTE:
- ALL ROADS SHOWN HAVE AN ARMORED GRAVEL SURFACE
  - ALL ROADS SHOWN COMPLY WITH HUMBOLDT COUNTY CATEGORICAL STANDARDS PER TITLE III DIVISION II OF THE HUMBOLDT COUNTY CODE
  - THERE ARE NO SENSITIVE RECEPTORS WITHIN 600 FT OF THIS SITE
  - ADDITIONAL NOISE SOURCES INCLUDE GREENHOUSE FANS AND INTERMITTENT USE OF EQUIPMENT THROUGHOUT THE SITE



PREMISES 2 ROAD & UTILITY DIAGRAM

| REVISIONS   |             |      |
|---|-------------|------|
| REV   | DESCRIPTION | DATE |
|   |             |      |
|   |             |      |
|   |             |      |
|   |             |      |
|   |             |      |
| <b>RINEHART ENGINEERING</b><br><small>REGISTERED PROFESSIONAL ENGINEERING FIRM</small>  |             |      |
| FREE RANGE HOLDINGS, LLC - SITE PLAN<br>APN'S 104-071-004 & 005<br>CLIENT: FREE RANGE HOLDINGS, LLC<br>17777 WILSON AVENUE, SUITE 100<br>PETROLIA, CA 95968 |             |      |
| JOB NUMBER  |             |      |
| DRAWING 5 OF 10   |             |      |



**NOISE**

- ALL ROADS SHOWN HAVE AN ARMORED GRAVEL SURFACE
- ALL ROADS SHOWN COMPLY WITH HUMBOLDT COUNTY CATEGORICAL STANDARDS PER TITLE III DIVISION II OF THE HUMBOLDT COUNTY CODE
- THERE ARE NO SENSITIVE RECEPTORS WITHIN 400 FT OF THIS SITE
- ADDITIONAL NOISE SOURCES INCLUDE GREENHOUSE FANS AND INTERMITTENT USE OF EQUIPMENT THROUGHOUT THE SITE

ORIGIN OF NOISE SOURCE, FANS AND DEHUMIDIFIERS USED IN DRYING BARN

40 dB AT 100 FT FROM NOISE SOURCE

(N) RUNOFF DETENTION BASIN, SEE DETAIL THIS SHEET

WOODED AREA

58.7 dB AT 100 FT FROM NOISE SOURCE

(N) DESIGNATED PARKING

(N) SRA HAMMERHEAD

ORIGIN OF NOISE SOURCE, AUTOMATED EQUIPMENT USED FOR MIXING COMPOST

ARMED GRAVEL ROAD

WATER BAR LOCATION AND ROAD SURFACE DRAINAGE DIRECTION, TYP.

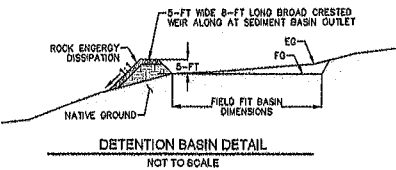
100 FT RIPARIAN BUFFER

WOODED AREA

PREMISES 3 ROAD & UTILITY DIAGRAM

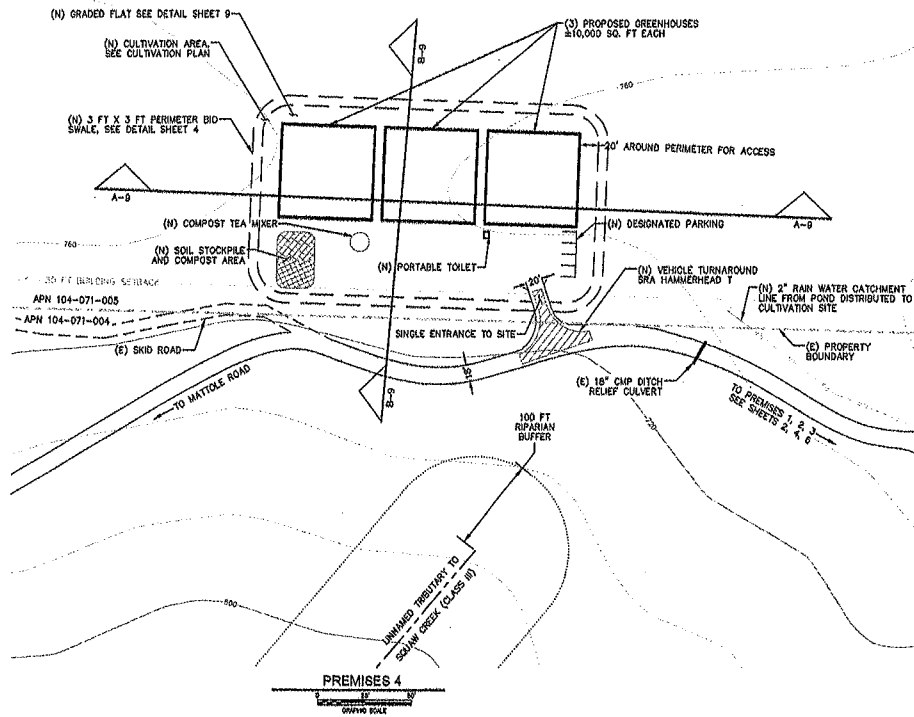
BY DATE

DRAWN BY SCALE

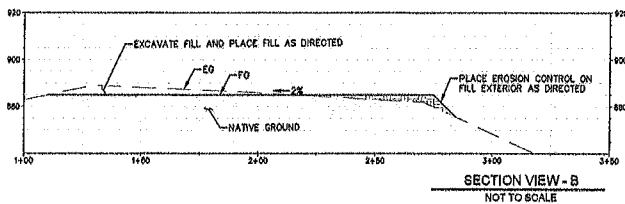


|   |  |   |  |                                      |  |
|---|--|---|--|--------------------------------------|--|
| FREE RANGE HOLDINGS LLC - SITE PLAN<br>APR 5 104-071-004 & 005<br>CLIENT: FREE RANGE HOLDINGS, LLC<br>37725 WATFLE ROAD<br>PERDUE, CA 95959 |  |  |  | REVISIONS<br>REV DESCRIPTION BY DATE |  |
| JOB NUMBER  |  |  |  | REVISIONS<br>REV DESCRIPTION BY DATE |  |
| DRAWING<br>7 OF 10  |  |  |  | REVISIONS<br>REV DESCRIPTION BY DATE |  |

- PESTICIDE AND AGRICULTURAL CHEMICAL STORAGE AREA: LOCATED IN EXISTING AG BARN, SEE SHEET 4
- PROCESSING AREA: LOCATED IN EXISTING TWO STORY METAL SHOP, SEE SHEET 2
- PACKAGING AREA: LOCATED IN EXISTING TWO STORY METAL SHOP, SEE SHEET 2
- COMPOST AREA: LOCATED AT EACH CULTIVATION SITE, SEE SHEETS 4 & 6
- WASTE STORAGE AREA: WASTE STORAGE WILL BE HELD ON PREMISES 2 IN APPROVED BIN OR DUMPSTER AND TRANSPORTED OFF SITE REGULARLY, SEE SHEET 4
- HARVEST STORAGE AREA: LOCATED IN EXISTING DRYING BARN ON PREMISES 3, SEE SHEET 6
- ROAD GRADIENT: ALL ROAD SLOPES ARE LESS THAN 10% GRADE
- ROAD SURFACE: ALL ROADS SHOWN ARE ARMORED WITH AGGREGATE BASE II ROCK AND CROWNED
- SRA FIRE SUPPRESSION: DESIGNATED FIRE SUPPRESSION WILL BE STORED IN THE PROPOSED 15,000 GALLON WATER TANK SITE SHOWN AND GRAVITY FED TO A PROPOSED 2" RISER TO SERVE THE EXISTING SHOP AND RESIDENCE ON PREMISES 1, SEE SHEET 2
- TIMBERLAND CONVERSION AREA: SEE SHEET 7
- TRIBAL SITE WITHIN 1,000 FT: NO
- SCHOOLS, CHURCHES, PARKS WITHIN 600 FT: NO
- RESIDENCE WITHIN 300 FT: NO



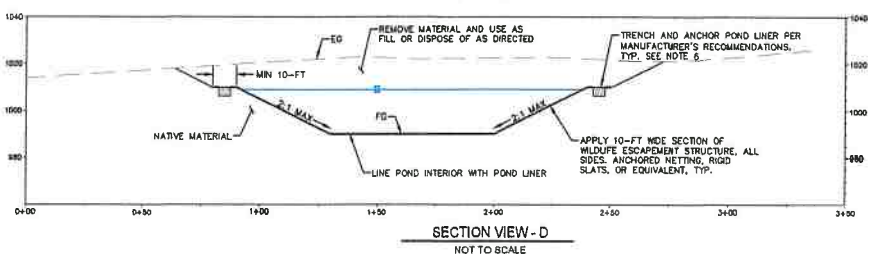
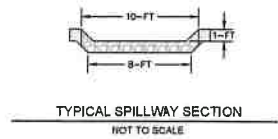
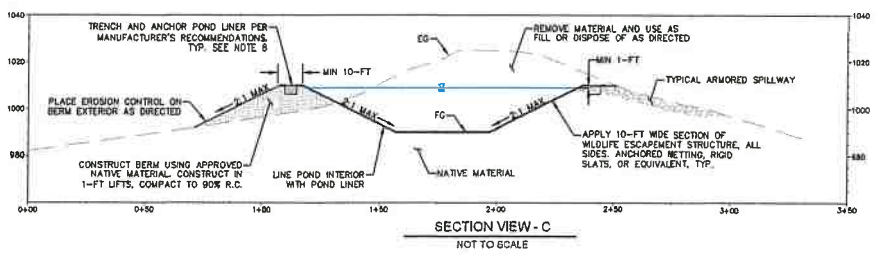
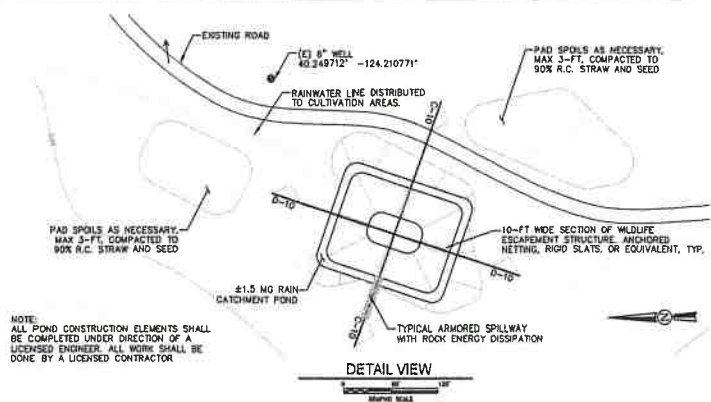
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|   |             |      |
| <b>RINEHART ENGINEERING</b><br><small>REGISTERED PROFESSIONAL ENGINEER</small>  |             |      |
| FREE RANGE HOLDINGS LLC - SITE PLAN<br>APN'S 104-071-004 & 005<br>CLIENT: FREE RANGE HOLDINGS LLC<br>10000 RINEHART DRIVE<br>PETROLIA, CA 95558 |             |      |
| JOB NUMBER  |             |      |
| DRAWING 8 OF 10   |             |      |



- NOTES:**
- LOOSE MATERIAL SHALL BE REMOVED, CRACKED, AND WADDLED AS DIRECTED.
  - ALL CORRECTIVE GRADING SHALL CONFORM TO HUMBOLDT COUNTY TITLE III, DIVISION 3, SECTION 331-12.
  - SLOPES NOT TO EXCEED 1:1 UNLESS SPECIFIED.
  - ALL DISTURBED SLOPES SHALL BE STAKED WITH WADDLES EVERY 10-FT, SPREAD WITH STRAW, AND RE-SEEDED WITH APPROVED NATIVE GRASS MIX.
  - ALL FINISHED GRADE SHALL MAINTAIN POSITIVE DRAINAGE

### GRADED FLAT DETAIL SECTION VIEWS

| FREE RANGE HOLDINGS LLC - SITE PLAN<br>APNS 104-071-004 & 005 |         | <b>RINEHART<br/>ENGINEERING</b><br><br>CLING: FREE RANGE HOLDINGS, LLC<br>39723 MATTHEW ROAD<br>PERDUE, GA 30568<br>OFF: 866-543-<br>WWW.FREE-RANGE.COM |             |  |      | REVISIONS |  |
|---|---------|---|-------------|---|------|-----------|--|
| JOB NUMBER  | DRAWING | REV   | DESCRIPTION | BY  | DATE |           |  |
|   | 9 OF 10 |   |             |   |      |           |  |



- NOTES:
1. GRADES SHOW DO NOT ACCURATELY REFLECT CURRENT TOPOGRAPHY AND IS NOT A PRODUCT OF TOPOGRAPHIC SURVEY.
  2. LOOSE MATERIAL SHALL BE REMOVED, TRACKED, AND WAGGLES AS DIRECTED.
  3. ALL PROPOSED GRADING SHALL CONFORM TO HUMBOLDT COUNTY TITLE II, DIVISION 3, SECTION 331-12.
  4. SLOPES NOT TO EXCEED 2:1 FOR REDUCED ENTRAPMENT RISK UNLESS SPECIFIED OTHERWISE.
  5. ALL DISTURBED SLOPES SHALL BE STAKED WITH WAGGLES EVERY 10-FT, SPREAD WITH STRAW AND RE-SEED WITH APPROVED NATIVE GRASS MIX.
  6. INSTALL LINER PER MANUFACTURER'S RECOMMENDATIONS.
  7. POND CONSTRUCTION SHALL BE IN COMPLIANCE WITH DESIGN SPECIFICATIONS OUTLINED IN AGRICULTURE HANDBOOK 550 BY THE USDA AND NRCS.

| REVISIONS |             | DATE |
|-----------|-------------|------|
| REV       | DESCRIPTION | BY   |
|           |             |      |
|           |             |      |
|           |             |      |



**RINEHART  
ENGINEERING**

REGISTERED PROFESSIONAL ENGINEER  
CALIFORNIA LICENSE NO. 44561

|   |                                   |
|---|-----------------------------------|
| FREE RANGE HOLDINGS, LLC - SITE PLAN<br>APN'S 104-071-004 & 005<br>CLIENT: FREE RANGE HOLDINGS, LLC<br>10777 LINDSEY LANE<br>PETROLIA, CA 95558 | JOB NUMBER<br>DRAWING<br>10 OF 10 |
|---|-----------------------------------|