



County of Tehama Air Pollution Control District

P.O. Box 1169 • Red Bluff, California 96080

Joseph H. Tona

Phone: (530) 527-3717

Air Pollution Control Officer

Fax: (530) 527-0959

E-mail: Jtona@tehcoapcd.net

Tehama County Air Pollution Control District Request for Proposals

2:11D Indirect Source Program Grant Funding

The Tehama County Air Pollution Control District is seeking proposals for emission mitigation projects that demonstrate reductions in emissions of ozone precursors such as oxides of nitrogen or volatile organic compounds, or of particulate matter including diesel particulate, smoke, or dust.

Submittal:	One electronic or hard copy of each proposal must be received at the address below.
Address to:	Lisa Mann 1834 Walnut St Red Bluff, CA 96080 lmann@tehcoapcd.net
Issuance Date:	August 17, 2021

Air Pollution Control District Proposal Project Name: RCDTC Carbonizer Project

Lead Agency: Resource Conservation District of Tehama County

P.O. Box 1232

Red Bluff, CA 96080

Lead Agency Contact: Lisa Krumwide, Project Coordinator 530-727-1280

Project Location: PATH House

380 Sale Lane

Red Bluff, CA 96080

Contractor: Lepage Company

Calculated Emission Reduction: \$21,846.85 per weighted ton emission reduction

Mitigation Project Report

The Resource Conservation District of Tehama County (RCDTC), a public agency, is partnering with Lepage Company, a private contractor (Attachment 1), to create biochar and reduce air pollution, through the use of their Tiger Cat 6040 Carbonizer. This Carbonizer will be used on site to incinerate 80 acres of prune trees, on the Poor And Homeless Housing property (PATH), 380 Sale Lane, Red Bluff, CA (Attachment 2).

RCDTC will coordinate with Lepage Company to streamline invoicing, reporting and compliance under the current Authority to Construct Permit 1262 (Attachment 3) that was issued by the Air Pollution Control District (District) on January 29, 2025. Project work is anticipated to start between May-June 2025 and will be completed by June 2025. All Project work is dependent on contracting.

Once funding is made available, Lepage Company will transport the carbonizer to the Sale Lane property along with any equipment needed to perform construction and incineration. Lepage Company will knock-over and pile the whole prune trees. Piled prune trees will then be placed into the carbonizer for incineration. Once the trees have been incinerated, Lepage Company will use a spreader to place the biochar onto the property.

The RCDTC performed a thorough emission reduction analysis for the proposed mitigation project using *US EPA document AP-42 (1)* and *Air Curtain Incinerator Emissions Factor Determination (2)*. The following information is the RCDTC's findings.

An air curtain incinerator reduces burn emissions from forest and agricultural woody biomass when compared to open pile burning. Open pile burning of prune as an orchard crop, with 30 ton/acre of waste due to orchard removal, creates 3 lb/ton PM10 (1). NOx was not measured for prune, however, open pile forest burning creates 4 lb/ton of NOx (1). Therefore, removal of an 80-acre prune orchard, at 30 ton/acre of waste would result in 240 tons of waste needing incineration.

$$80 \text{ ac} * 30 \text{ tons waste/acre} = 240 \text{ tons waste}$$

PM10 production from 240 tons of waste woody biomass, at 3 lb/ton, will output 720 particulate pounds.

$$240 \text{ tons waste} * 3 \text{ lb particulate/ton waste} = 720 \text{ pounds (0.36 tons) PM10.}$$

NOx production from 240 tons of waste woody biomass, at 4 lb/ton will be 960 pounds of NOx.

$$240 \text{ tons waste} * 4 \text{ lb NOx/ton waste} = 960 \text{ lbs (0.48) of NOx}$$

Using Table 3 from *Air Curtain Incinerator Emissions Factor Determination* (2), accepted emission factors for burning woody biomass of agriculture and forest vegetation are 1.0 lb/ton NOx and 1.3 lb/ton for PM10.

Approximately 240 tons of prune waste will be removed from the 80-acre farm and burned in an air curtain incinerator. Using the emission factor of 1.0 lb NOx/ton waste times 240 tons, results in 240 lbs (0.12 tons) of NOx.

$$1.0 \text{ lb NOx/ ton waste} * 240 \text{ tons waste} = 240 \text{ lbs (0.12 tons) NOx}$$

Using the air curtain incinerator PM10 emission factor of 1.3 lb/ton times 240 tons of prune waste will result in 312 pounds of PM10.

$$240 \text{ tons waste} * 1.3 \text{ lbs PM10/ton waste} = 312 \text{ lbs (0.156 tons) PM10}$$

Pile burning will produce a NOx of 960 pounds versus 240 pounds using an air curtain incinerator for a total project savings of (960-240=720) 720 pounds (0.36 tons) of NOx. Pile burning will produce a PM10 of 720 pounds versus 312 pounds using an air curtain incinerator for a total savings of (720-312=408) 408 pounds (0.204 tons) PM10.

Using the Carl Moyer Program cost-effectiveness criteria for PM10 and Ozone Precursors, RCDTC concludes the following.

Formula C-2: Annual Weighted Surplus Emissions Reductions (3):

NOx reductions (tons/yr) + ROG reductions (tons/yr) + [20 * (PM10 reductions (tons/yr))]

$$0.36 \text{ tons NOx} + [20 * 0.204 \text{ tons PM10}] =$$

$$0.36 \text{ tons NOx} + 4.08 \text{ tons PM10} =$$

$$4.44 \text{ tons reduction of NOx and PM10}$$

The result of formula C-2 is used to complete formula C-1 to determine the cost-effectiveness of surplus emission reductions.

Formula C-1: Cost-Effectiveness of Weighted Surplus Emission Reductions (\$/ton):

$$\frac{\text{Annualized Cost (\$/yr)}}{\text{Annual Weighted Surplus Emission Reductions (tons/yr)}}$$

\$97,000 Le Page removal estimate /4.44 tons emission reduction = \$21,846.85 per weighted ton emission reduction.

This falls well below the Carl Moyers cost-effectiveness limit of \$34,000 per weighted ton of surplus emissions reduced. Furthermore, considering the standard commercial prune orchard development and life span, this 4.44 tons of emissions reduction will extend for 10 years. Standard practice for the removal and replanting of a prune orchard will have a mitigation project life of at least ten years. There will be two years of fallow time followed by at least 8 years of tree growth and production prior to subsequent orchard removal.

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1. *US EPA document AP-42*, section 2.5 Open Burning, table 2.5-5 EMISSION FACTORS AND FUEL LOADING FACTORS FOR OPEN BURNING OF AGRICULTURAL MATERIALS, EMISSION FACTOR RATING: D for Prune and forest.

2. *Air Curtain Incinerator Emissions Factors Determination*; Brian Clerico and Errol Villegas; April 04, 2017; Table 3.

3. Formulas C-1 and C-2 were obtained from:

https://ww2.arb.ca.gov/sites/default/files/classic/msprog/nvepb/mailouts/_MSC/msc0921/msc0921-appendices.pdf; Appendix C.

ATTACHMENTS

Attachment 1:



Lepage Company, Inc
218 Washington St
Red Bluff, CA 96080
(530) 529-9901 – Phone
(530) 529-9903 – Fax
CCL # 743003 – General Building & Engineering,
C27 Landscaping, LTO # A10972
SBA Certified, HUBZone Small Business, WOSB & WBE

PROPOSAL

January 27, 2025

TO: Tehama County Resource Conservation District
RE: Orchard Removal/Cleanup of approximately 80 acres on Sale Lane, Red Bluff CA

Lepage Company proposes to furnish all equipment, labor and permits necessary to complete the following:

Mobilization, Cut, Skid and Deck 80 acres of dead orchard trees	
• Feller Bunchers	
• Skidders	
• Excavators w/grapple	
• Water Tender	
	\$42,000.00
Process trees to create Biochar	
• TigerCat 6040 Carbonizer	
• Excavator w/Grapple	
• Log Skidder	
• Water Tender	
	\$45,000.00
Load out, haul and broadcast Biochar product approximately 160 yds throughout the 80-acre Orchard	
• CAT D6 Dozer	
• Frontend Loader	
• Fertilizer Spreader	
	\$10,000.00
	Total \$97,000.00

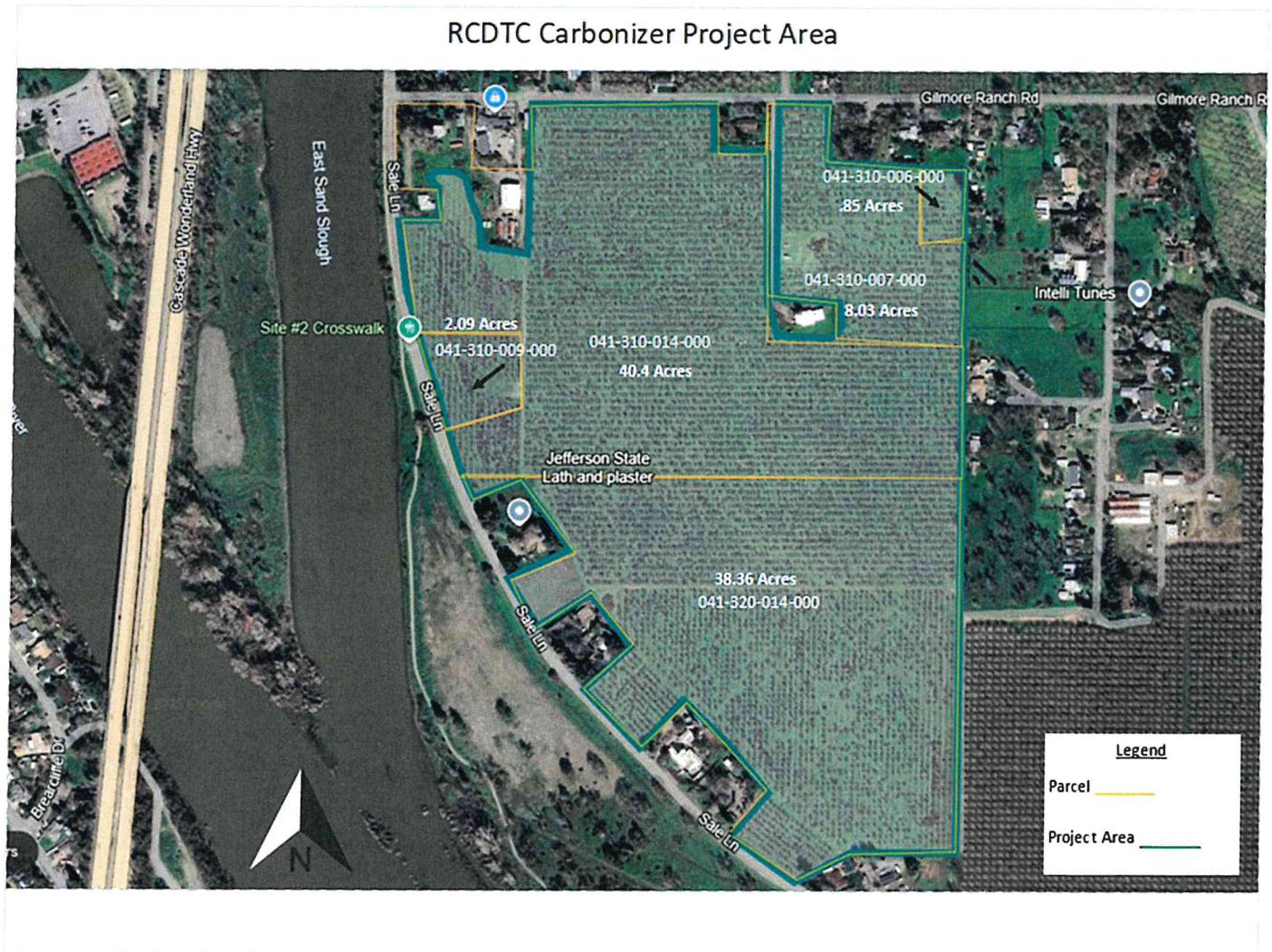
Respectfully Submitted

James P. Lepage V. President

Accepted _____

EXCLUDES: Any SWPP plans, OSHA permits or plans, engineering, surveying, staking, geo-grid reports, compaction testing. Any excavation that requires breaking, blasting, sawing etc. would be considered extra work, ground stabilization due to unsuitable soil conditions, any any excavation, any export, purchasing or installing any soil stabilization treatment. Prevailing wage rates and any items that are not clearly included above, expect to be excluded from this proposal.

Attachment 2:



Attachment 3:

Appendix A- Authority to Construct Permit

Authority to Construct

Issued by Tehama County Air Pollution Control District
1834 Walnut St., P.O. Box 1169, Red Bluff CA 96080
Phone: (530) 527-3717 Fax: (530) 527-0959

Permit 1262

Is Hereby Granted on January 29, 2025

To:

Lepage Company Inc. / Tehama Rock Products
Attn: Jenifer Waelty
218 Washington St
Red Bluff, CA 96080

To Construct:

One (1) TigerCat 6040, Serial Number 1BD, carbonizer powered by a FPI NEF6.7 151KW(202HP) Tier 4 Final Engine.

Equipment Location:

Various locations in Tehama County

Permit Conditions:

1. This Authority to Construct Permit shall remain in effect until a Permit to Operate or a Letter of Exemption is granted or denied pursuant to Tehama County Air Pollution Control District (District) Rule 2:14 Cancellation of Permits. A Permit to Operate shall be issued if the article or equipment listed above conforms to this Authority to Construct Permit, and is in compliance with all Federal and State of California laws, as well as all District rules, regulations, and permit conditions governing air pollution.
2. The permitted source shall construct the facility to conform to the design and operational characteristics contained in the application for an Authority to Construct as listed below:
 - a. Submission date: November 22, 2024
 - b. Submitted by: Jenifer Waelty
 - c. Submitted for: Lepage Company Inc. / Tehama Rock Products
 - d. Contact: Jenifer Waelty
 - e. Emission unit(s): TigerCat 6040 Carbonizer
2021HP FPI NEF6.7 Tier 4 Final diesel fired engine
3. Written authorization shall be obtained from the Air Pollution Control Officer (APCO) prior to making any change in the construction or operational characteristics specified in this Permit that may cause the issuance of air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants. (District Rule 2:1)