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Sent:	Monday, April 28, 2014 4:58 PM
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Cc:	Meghan A. Quinn
Subject:	FW: EMAIL 1 - Comments on the Tentative Waste Discharge Requirements for Colusa Industrial Properties, Inc. WDR Order No. R5-2014___
Attachments:	2904-034cv - Colusa WDR Comments.pdf

Please see email below.

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Subject: EMAIL 1 - Comments on the Tentative Waste Discharge Requirements for Colusa Industrial Properties, Inc. WDR Order No. R5-2014___

Attached in PDF format are the comments written on behalf of **Colusa County Citizens for Responsible Industry.** **Please be advised that the attachments to these comments will follow in separate emails for ease of sending.** If you encounter problems with the receipt of this document, please contact Charissa Villanueva at the phone number or e-mail address listed below.

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April 28, 2014

Via U.S. and Electronic Mail

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Re: Comments on the Tentative Waste Discharge Requirements for Colusa Industrial Properties, Inc. WDR Order No. R5-2014___

Dear Ms. Adam and Ms. Olsen:

We write on behalf of Colusa County Citizens for Responsible Industry to provide comments on the Tentative Waste Discharge Requirements ("WDR") Order ("Tentative Order") prepared by the Central Valley Regional Water Quality Control Board ("Regional Board") for Colusa Industrial Properties, Inc.'s Colusa Industrial Park Wastewater Treatment Facility ("WWTF") in the Colusa Industrial Park (collectively referred to as "CIP") in Colusa County.[1] The Tentative Order authorizes new construction and proposes new requirements to accommodate new Industrial Process Water ("IPW") flows from a proposed new biomass power plant, known as the Colusa Bio – Energy Project and Solar Power Facility proposed by Colusa Bio Energy, LLC ("Applicant"). The biomass power plant is proposed on 25 acres[2] in Colusa County ("County"), approximately 1.75 miles south of the City of

[1] Waste Discharge Requirement Order No. R5-2014-__, available at http://www.swrcb.ca.gov/centralvalley/board_decisions/tentative_orders/colusa_industrial/cip_wdr.pdf [*hereinafter cited as* WDR R5-2014__].
[2] The Biomass and Solar Project is proposed on portions of Assessor's Parcel Number ("APN") 017-030-099 and APN 017-030-100. *See* North Star Engineering, Draft Initial Study and Proposed

Colusa city limits and 0.85 miles west of State Route 20/45, southwest of the CIP ("Biomass Power Plant").

The Biomass Power Plant requires the construction of a water tank, a 10,000 square foot turbine/generator building, cooling towers, exhaust stacks, ash silos and an electric substation.[3] The power facility will employ the use of a boiler, which will burn biomass fuel and produce approximately 340,000 pounds of steam per hour to generate energy.[4] The Biomass Power Plant will require up to 423,000 gallons of water per day ("gpd") to produce 30 megawatts of power, which will generate a wastewater stream of 3,000 gpd.[5] The wastewater will be primarily from cooling tower blow-down.[6] Construction of a wastewater pipeline is necessary to convey this discharge to the WWTF.[7] The WWTF is located within the CIP and is located approximately 0.25 miles northeast of Biomass Power Plant. However, neither the WDR, nor the Biomass Power Plant Mitigated Negative Declaration ("MND") describe and analyze the impacts from construction and operation of the pipeline required to connect the two facilities.[8] The applicant is seeking modification of the CIP WDR Order so that the Biomass Power Plant may discharge effluent to the WWTF.[9] The proposed construction and operation of the WWTF in the CIP and the Biomass Power Plant are collectively referred to as "the Project".

Based upon our review of the Tentative Order, supporting documentation, and past environmental documents for the CIP, we conclude that the Tentative Order fails to comply with the California Environmental Quality Act's[10] ("CEQA") requirements. The Tentative Order states that the additional discharge generated by the proposed Biomass Power Plant to the CIP, and the new construction required to do so, is exempt from environmental review as an "existing facility" under the "Class 1" exemption in CEQA.[11] As described in these comments, the proposed Biomass Power Plant is not an existing structure, its discharge would necessitate new construction and modification of the current water treatment system at the

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Mitigated Negative Declaration for the Colusa Bio Energy Project Conditional Use Permit #10-11-1 and Solar Power Facility, p. 1 (Dec. 2013) [*hereinafter* MND]. **Attachment A**.
[3] *Id.*, pp. 11 – 12.
[4] *Id.*, p. 12.
[5] *Id.*.
[6] *Id.*, p. 15.
[7] *Id.*, p. 13 .
[8] MND, p. 15.
[9] *Id.*, p. 3.
[10] Pub. Resources Code §§ 21000 et seq.
[11] *See* CEQA Guidelines, § 15301.

CIP, and its discharge and the modifications to the WWTF are new and will have a significant adverse impact on the environment. Therefore, the WDR is not categorically exempt under the existing facilities exception, and the Regional Board must conduct environmental review, pursuant to CEQA.

The Regional Board failed to proceed in the manner required by CEQA by improperly basing its exemption determination on proposed mitigation measures set forth in the pending and unapproved MND prepared for the Biomass Power Plant. However, the pending MND did not analyze the environmental impacts of the discharge, new construction and modifications. By relying on the mitigation measures in the pending and unapproved MND, the Regional Board has failed to consider and elicit public input on the Project's potentially significant environmental impacts associated with the new processes, procedures, construction and significantly expanded uses permitted by the WDR.

The Regional Board may not approve a new WDR for the CIP until it prepares an Environmental Impact Report ("EIR") that adequately analyzes the potentially significant direct, indirect and cumulative impacts associated with the WDR, and identifies and incorporates all feasible mitigation measures to minimize the impacts associated with the new processes and facilities permitted by the proposed WDR.

I. STATEMENT OF INTEREST

Colusa County Citizens for Responsible Industry is a coalition comprised of individuals, including William Douthat and Ian Trotti, and groups, including California Unions for Reliable Energy ("CURE") and its members and their families. Colusa County Citizens for Responsible Industry was formed to advocate for responsible and sustainable industrial and utility development that protects public health and safety and the environment where the coalition members and their families live, work and recreate.

The individual members of Colusa County Citizens for Responsible Industry work, live and recreate in and around Colusa County and the surrounding region. They have a personal interest in protecting the Project site and surrounding areas where development and operations related to the Project may lead to unnecessary, adverse impacts to public health and safety and the area's plants, wildlife, air, food and water resources. These individuals appreciate and enjoy the environment in and around the Project area.

CURE is a coalition of labor unions whose members encourage sustainable development of California's energy and natural resources. Environmental degradation destroys cultural and wildlife areas, consumes limited fresh water resources, causes air and water pollution, and imposes other stresses on the environmental carrying capacity of the State. This in turn jeopardizes future development by causing construction moratoriums and otherwise reducing future employment opportunities for CURE's members. In contrast, well designed projects reduce environmental impacts of electricity generation, and improve long-term economic prospects. Additionally, union members live, recreate and work in the communities and regions that suffer the impacts of projects that are detrimental to human health and the environment. CURE, therefore, has a direct interest in enforcing environmental laws to minimize the adverse impacts of projects that would otherwise degrade the environment. Finally, CURE members are concerned about projects that risk serious environmental harm without providing countervailing economic benefits. The CEQA process allows for a balanced consideration of a project's socioeconomic and environmental impacts, and it is in this spirit that we offer these comments.

Based on these concerns, Colusa County Citizens for Responsible Industry has a strong interest in ensuring projects comply with CEQA, as well as applicable federal, state, and local laws and regulations. While the coalition recognizes the benefits of renewable energy, it is also cognizant of the health and safety and environmental risks associated with industrial and utility development, such as that involved with this Project.

II. THE CATEGORICAL EXEMPTION FROM ENVIRONMENTAL REVIEW FOR EXISTING FACILITIES IN CEQA DOES NOT APPLY TO THE TENTATIVE ORDER

A. Categorical Exemptions Must Be Narrowly Construed to Afford the Fullest Protection of the Environment

CEQA provides that certain categories of projects have been determined not to have a significant effect on the environment and are, therefore, exempt from the provisions of CEQA. The Secretary of the Resources Agency designated 32 classes of projects that are categorically exempt from the provisions of CEQA.[12] The Class

[12] Pub. Resources Code § 21084(a).

1 category provides an exemption from environmental review for "existing facilities".[13] Class 1 exempts from review:

> the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination.[14]

In interpreting what constitutes an existing facility, CEQA specifically states that "[t]he key consideration is whether the project involves negligible or no expansion of an existing use."[15] Furthermore, Courts interpreting CEQA have time and again reiterated that categorical exemptions must be construed narrowly, to ensure the greatest environmental protection within the reasonable scope of their plain language.[16]

B. The WWTF Is Not an Existing Facility

The WWTF which will receive discharges from the proposed Biomass Power Plant is not an existing facility. In *Committee for a Progressive Gilroy v. State Water Resources Control Board,*[17] the Court determined that a permit being reissued for the discharge from a Publicly Owned Treatment Works ("POTW") was exempt from environmental review because an EIR had already analyzed the environmental impacts associated with the permitted discharge. Accordingly, additional review was superfluous and unnecessary. The POTW at issue in that case existed, for purposes of the Class 1 exemption, because a permit was being issued to a facility the operation of which was undergoing no or a negligible expansion beyond that already analyzed in an EIR. Indeed, the volume of effluent and processes employed had not changed.

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[13] *See* CEQA Guidelines, § 15301.
[14] *See id.*
[15] *Id.*
[16] *County of Amador v. El Dorado County Water Agency*, (1999) 76 Cal.App.4th 931, 966; Guidelines, § 15003, subd. (f); *see also Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 390.
[17] *Committee for a Progressive Gilroy v. State Water Resources Control Board,* (1987) 192 Cal.App.3d 847.

Here, no agency has conducted environmental review of the WWTF. Instead, in 1992, the County certified an EIR that addressed discharges from food processing operations from the CIP facilities.[18] Accordingly, the Regional Board issued WDRs only for discharges from food processing operations and allowed those discharges to be directly applied to Land Application Areas ("LAAs").[19] Subsequently, Colusa Industrial Properties proposed additional discharges from other food processors and the Regional Board exempted the WDR for those similar food processing operations from CEQA review.

However, the Regional Board now proposes a Tentative Order for the "Colusa Industrial Properties Wastewater Treatment Facility," a facility which does not exist as currently proposed.[20] The proposed Biomass Power Plant seeks to discharge effluent that requires treatment, and therefore, cannot be directly land applied, like the previous discharges from food processing. Because the CIP did not have a WWTF comprised of treatment ponds used for the dilution and monitoring of effluent discharge from a Biomass Power Plant, and the proposed WWTF has not undergone environmental review, the Class 1 exemption for existing facilities does not apply. Accordingly, the Regional Board must prepare an Initial Study and either a mitigated negative declaration or an EIR that identifies, analyzes and mitigates the new WWTF and its significant impacts.

C. The Colusa Industrial Park is Not a Facility

The area zoned as the Colusa Industrial Park is not a facility within the meaning of the "existing facilities" exemption under CEQA. CEQA requires the fullest protection of the environment, and therefore, a narrow interpretation of the categorical exemptions.[21] Accordingly, the vague concept of a facility is not so broad as to encompass the industrial park. For instance, the Court in *Azusa Land Reclamation Co. v. Main San Gabriel Watermaster*, examined whether a landfill, which is excavated, fell within the definition of a facility, which is typically built. The Court explained:

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[18] Eco-Analysts, Final Supplemental Environmental Impact Report for the Colusa Industrial Park (May 1992) [*hereinafter* FEIR]. **Attachment B**.
[19] *Id.*
[20] WDR R5-2014__, p. 1.
[21] *County of Amador v. El Dorado County Water Agency*, (Dist. 1999) 76 Cal.App.4th 931, 966; Guidelines, § 15003, subd. (f); *see also Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 390.

> [A] term that does not have a clearly established meaning, such as the exemption for existing 'facilities,' should not be so broadly interpreted so to include a class of businesses that will not normally satisfy the statutory requirements for a categorical exemption, even if the premises on which such businesses are conducted might otherwise come within the vague concept of a "facility."[22]
>
> The concept of a facility is vague. For example, a "facility" is normally defined as "something (as a hospital, machinery, plumbing) that is built, constructed, installed, or established to perform some particular function or to serve or facilitate some particular end"; or "[s]omething that is built or installed to perform some particular function....". [23]

The Court held that a landfill does not come within the exemption for existing facilities, not only because of the difference in construction method employed, but also because "one of the significant features of a landfill is that its long term operation will change the characteristics of both the landfill and the land itself, because it will be filled up with alternating layers of solid waste and dirt."[24]

Similarly, here, the WDR regulates the discharges generated at the CIP, which is merely an area zoned for multiple uses and industries.[25] Like a landfill, which is filled with waste, an industrial park is an area of land that will be filled with a multitude of uses and industries that will have different effluent. The construction of each facility and addition of each new discharge to the WWTF will have characteristics that will impact and change the land. Indeed, the federal Environmental Protection Agency ("EPA") has recognized that different effluents require different treatment technology. Accordingly, the EPA has codified different standards of treatment for different discharges in its effluent limitations guidelines ("ELGs").[26] Different Standard Industrial Categories ("SICs") have different ELGs which are implemented through individual permits in the National Pollution

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[22] *Azusa Land Reclamation Co. v. Main San Gabriel Basin Watermaster,* (1997) 52 Cal.App.4th 1165, 1192 – 93.
[23] *Id.* at 1193 *quoting* Black's Law Dict. (6th ed. 1990) p. 591.
[24] *Id.* at 1194.
[25] An industrial park is defined as "an area that is at a distance from the center of a city and that is designed (as by homogeneous architecture) esp. for a community of industries and businesses." (Merriam Webster, http://www.merriam-webster.com/dictionary/industrial%20park (last visited April 15, 2014).)
[26] 33 U.S.C. § 1316; 40 C.F.R. § 400 et seq.

Discharge Elimination System ("NPDES"). Accordingly, the applicable ELG for the discharge source, which must be incorporated into a permit, is based on the type of technology needed to mitigate the impacts of the wastewater from the industrial discharge being regulated.[27] The WDR and Wastewater Discharge Requirement Technical Evaluation Prepared for the Addition of New Discharges both note that the future identities of the CIP's tenants are unknown.[28] Accordingly, the SICs and corresponding required treatment technology is also unknown.

The existing facilities exemption was not intended to allow unhampered land application of a variety of different industrial effluents that have the potential to change the characteristics of the CIP, the WWTF retention ponds, and the land itself. Accordingly, the CIP is not a facility, and discharges into a new WWTF to process discharges from the CIP require environmental review.

D. The Biomass Plant is Not an Existing Facility; Therefore the WDR Covers More Than a Negligible Expansion of an Existing Use

The Biomass Power Plant, which is one of the bases for a newly proposed WDR, is still in the initial stages of the permit application process and is, therefore, by no means existing. Thus, the WDR falls outside the exception for existing facilities. CEQA's categorical exemption for existing facilities is for the "operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures."[29] In determining whether a facility is existing, "[t]he key consideration is whether the project involves negligible or no expansion of an existing use."[30]

There are three reasons that the WDR is not for an existing facility. First, the WDR proposes to cover waste discharges from a proposed Biomass Power Plant that does not exist. The Biomass Power Plant, which is one of the bases for a newly proposed WDR,[31] is still in the initial stages of the permit application process.

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[27] *See* 40 C.F.R. § 400 et seq.
[28] CH2MHill, Wastewater Discharge Requirement Technical Evaluation prepared for Colusa Industrial Properties, p. 1-1 (May 2013) [*hereinafter* Waste Discharge Report]. **Attachment C**.
[29] CEQA Guidelines, § 15301.
[30] *Id.*
[31] The other basis for renewal is the added discharges of stormwater runoff from Premier Mushrooms, which may contain polyaromatic hydrocarbons, and heavy metals, the environmental impacts of which have also evaded review.

Thus, the WDR covers a new facility that is by no means existing and clearly falls outside the exception for existing facilities.

Second, to date, the WDR for the CIP has permitted the land application of food processing operations.[32] The current and past residents of the CIP include Hanover Foods, Inc., which ceased its operations in 2003,[33] but has recently reopened,[34] Sakata Seeds, Nunhems, USA, Inc., and Premiere Mushrooms.[35] Given the innocuous nature of the IPW from these food processors, and the lack of chemicals used in their industrial processes, the previous WDR for the CIP permitted the ***direct*** land application of IPW flows.[36] Accordingly, the WDR did not address treatment.

Third, for the first time, the WDR is being proposed for a WWTF. However, the WWTF is proposed, and the proposal incorporates proposed mitigation measures from the County's draft MND for the Biomass Power Plant. A WWTF that can accommodate the effluent from a Biomass Power Plant has not been approved and is not currently constructed. The effluent from a biomass facility is different from the effluent from current food processing in the CIP. For example, the Biomass Power Plant industrial process described in the power plant's Authority to Construct permit application explains that the process involves the addition of lime and ammonia. The addition of these compounds will change the nature of the effluent. Furthermore, the amount of discharge will increase because of the Biomass Power Plant's proposal to discharge between 1,800 and 3,000 gallons per day of effluent. However, no further discussion of the contents of the effluent are discussed in the WDR or in the Biomass Power Plant's MND.[37] Clearly, the treatment of waste discharge from a biomass facility and the construction of facilities required to do so is considerably different from the current effluent handling process at the CIP.[38] It is precisely the different nature of the biomass effluent and facilities required to process that effluent that has triggered the

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[32] Waste Discharge Report, p. 1-1.
[33] *Id.*
[34] Email from Ed Hulbert to Lani Andam, Re: Colusa Industrial Properties (Thursday, March 13, 2013 3:23 p.m.) **Attachment D.**
[35] Waste Discharge Technical Report, p. 1 -1.
[36] WDR R5-2014__, p. 3, ¶ 9 *emphasis added.*
[37] Application to the Colusa County Air Pollution Control District of an Authority to Construct for a Biomass Power Plant in Colusa, California, pp. 5 – 12 (March 2013). **Attachment E.**
[38] URS, Report of Waste Discharge – Lined Wastewater Evaporation Pond – San Joaquin Solar 1 & 2 Hybrid Power Plant Project, November 12, 1999. **Attachment F.**

expansion and modification of a WWTF. Therefore, a WDR for the WWTF is not a negligible expansion of an existing use.

E. The Proposed Permit for the CIP Would Authorize a New and Significantly Expanded Use and Discharge

The WDR allows for an expanded use of IPW, and modification of the WWTF. However, the Class 1 exemption is intended for regulatory devices that relate only to the operation of an existing system, rather than to permitting an expanded use of the system.[39] Where a permit is issued incident to a new or expanded use, the permit issuance does not qualify for a categorical exemption as an existing facility.[40] Indeed, the relevant consideration in determining whether a permit comes within the exemption for existing facilities is whether or not a permit would authorize a change in operations. [41]

Here, the Tentative Order expands the use of the existing CIP WWTF by 1) permitting a new use of the IPW flows for rice decomposition, 2) allowing for year round IPW land application, as opposed to application during only the dry months of the year, and 3) the addition of a discharge, which requires modification of the use of the WWTF treatment ponds and the construction of pipelines to convey the discharge to the treatment pond. Given the new uses proposed in the updated WDR, the permit is for an expanded and new use of the system.

1. *The proposal to convey process wastewater from a proposed biomass combustion plant to the industrial wastewater disposal system is not a negligible expansion of an existing use, but is a new use of the system.*

The water delivery and treatment system necessary to convey and treat the discharge is not already in place, and therefore, the WDR is not a regulatory device related to the operation of an existing facility. In *Turlock Irrigation District v. Zanker*, the irrigation district implemented new conservation rules to regulate a water delivery system that was already in place.[42] Accordingly, the court held that

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[39] *Turlock Irrigation District v. Zanker* (Dist. 2006) 140 Cal.App.4th 1047, 1065; *See also Santa Monica*, 101 Cal.App.4th at 793.
[40] *Bloom v. McGurk* (1994) 26 Cal.App.4th 1307, 1311-12; *Erven v. Board of Supervisors*, (1975) 53 Cal.App.3d 1004, 1014.
[41] *Bloom v. McGurk*, 26 Cal.App.4th at 1311-12.
[42] *See Turlock Irrigation District*, 140 Cal.App.4th 1047.

the rules were a regulatory device which did not expand the use because the rules regulated access to and operation of a system which already existed.[43] Therefore, application of the Class 1 exemption was proper.[44]

Unlike in *Turlock*, the proposal to convey process water from the proposed Biomass Power Plant to a WWTF in the CIP will result in a new use of the CIP's wastewater system. The Tentative Order sets forth a series of new and different uses for the system. The Tentative Order expands the timeframe during which IPW can be land applied. In the original WDR for the CIP, outflows of IPW were prohibited from November 1 through April 30.[45] Indeed, the IPW was used only for irrigation water during the dry weather months. The new regulations implemented by the Tentative Order will permit the application of IPW during the winter months for rice decomposition on the CIP land, a new use of the land and the IPW.[46] The land will be completely flooded by effluent from various sources for rice decomposition.[47] Therefore, IPW constituents will directly impact the land and the underlying ground water, which drains to the Colusa Water Basin.[48]

Accordingly, the WDR is distinguishable from the circumstances presented in *Turlock*, where new rules made a minor change to the operation of an existing system without any expansion of the physical system. The Tentative Order will lead to a significant expansion in operation of the system and use of the IPW. Accordingly, the new purpose the WWTF and IPW will serve, rice decomposition, is not exempt from CEQA as a negligible expansion of an existing use. Environmental review of the Project is required.

2. The proposed WDR authorizes a new discharge which requires the modification of new facilities.

Operation of the biomass plant, and disposal of the IPW discharged from the biomass plant, requires the construction of new facilities, and therefore, does not fall under the Class 1 exemption for existing facilities.[49] The existing facilities

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[43] *Id.* at 1065 .
[44] *Id.*
[45] WDR, Order No. 5-01-250, at p.8.
[46] WDR R5-2014__, p. 6, ¶ 20.
[47] *Id.*
[48] WDR R5-2014__, p. 11, ¶ 40.
[49] *See Bloom v. McGurk*, 26 Cal.App.4th 1307 (holding that a new regulatory permit with no expansion of the facility or its use came within the class 1 exemption).

exemption was intended for minor modifications, such as maintenance and improvements to an existing structure, rather than the expansion of a facility.[50] Where a permit is not necessarily a renewal, but rather, allows for the expansion or a change in the use of a facility, the existing facilities exemption does not apply, and environmental review is required.[51]

To accommodate the addition of biomass effluent and corresponding permit modification under review, CIP proposes that "lined pond 3," which is currently used for emergency storage of IPW inflows, be used to regulate and manage IPW.[52] Accordingly, the lined pond to which the discharge will be conveyed is being altered to implement a new process necessary to prepare the effluent for land application. In tandem with this new use of the system, Colusa Bio Energy LLC will construct 0.25 miles of pipeline to convey their effluent to "lined pond 3."[53] Therefore, physical expansion, as well as an expansion and modification of the WWTF processes, will be made incident to the WDR. The existing facilities exemption is inapplicable to the proposed Biomass Power Plant, and should not be construed to insulate the WDR authorizing its discharge from environmental review.

3. *The physical modifications and expanded use necessary to convey and treat the biomass effluent at the WWTF are not minor.*

The addition of the biomass facility to the CIP will require the laying of piping and the expanded use of the WWTF, which is in no way a minor alteration of an existing use.[54] The Class 1 exemption is intended only for minor alterations to existing facilities.[55] "Although the Guidelines do not define a minor alteration, it has to be one that is so small that it does not cross the threshold level set by the Guidelines for an exception to the categorical exemptions. Thus, a 'minor' alteration cannot be an activity that creates a reasonable possibility of a significant

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[50] *See City of Pasadena v. State of California*, (1993) 14 Cal.App.4th 810, 822 (holding that minor interior building modifications necessary to bring a building up to code were minor); *see also Erven v. Board of Supervisors*, (1975) 53 Cal.App.3d 1004, 1014 ("Should the Board decide in the future to widen existing public roads or to acquire private road easements, by condemnation or dedication, and improve them, such actions would not qualify for exemption and compliance with the CEQA would be required either by the preparation and consideration of an environmental impact report or by a negative declaration.").
[51] *Bloom v. McGurk*, 26 Cal.App.4th at 1312-13.
[52] WDR R5-2014__, p. 5, ¶ 19.
[53] MND, p. 88.
[54] *See* CEQA Guidelines, § 15301 ("minor alteration of existing public or private structures.").
[55] *Azusa,* 52 Cal.App.4th at 1194; CEQA Guidelines, § 15301.

environmental effect."[56] According to the MND for the Biomass Power Plant, the effluent "will be discharged to the CIP Wastewater Treatment Facility (WWTF) located approximately 0.25 miles north of the project site."[57] The MND goes on to state, "[t]he bio-energy facility would also require the installation of a wastewater conveyance pipeline to the CIP WWTF."[58] However, the CIP will only be able to serve the bio-energy facility without violating the existing WDRs through the modification of the procedures used by the CIP's WWTF. Furthermore, modification of the WDR was necessary to accommodate a year round discharge, which permits a new use of the land – rice straw decomposition.[59] The new use of the CIP, combined with the new process that will be implemented to treat the wastewater of a distinct and different type of chemical discharge, and the construction of .25 miles of pipeline, cannot be construed to be a minor modification.

An expanded use of the WWTF system, the construction of new pipelines to serve the system, an expansion of the timeframe during which the system operates, and a new use of the system are not minor modifications. The WDR is not permitting a minor change to the operation of an existing system without any expansion of the physical system. The Tentative Order will lead to a significant expansion in operation of the system, along with the construction of new or expanded facilities to accommodate a new effluent from a Biomass Power Plant. Therefore, the Project is not a minor modification of an existing use exempt from CEQA.

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[56] *Id.*
[57] MND, p. 88.
[58] *Id.*
[59] WDR R5-2014__, p. 21, ¶ 66.

III. EVEN IF THE NEW FACILITIES AND NEW USES COULD BE CHARACTERIZED AS INVOLVING NO EXPANSION OR A NEGLIGIBLE EXPANSION OF AN EXISTING FACILITY, THERE IS SUBSTANTIAL EVIDENCE THAT THE PROPOSED DISPOSAL OF WASTEWATER FROM THE PROPOSED BIOMASS PLANT THROUGH THE PROPOSED CONSTRUCTION AND OPERATION OF THE FACILITY ITSELF AND NEW PIPELINES WILL HAVE A SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO UNUSUAL CIRCUMSTANCES, AND THEREFORE, THE CLASS 1 CATEGORICAL EXEMPTION DOES NOT APPLY

The CEQA Guidelines provide that "[a] categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances."[60] "A significant effect is a 'substantial, or potentially substantial, adverse change....' This means that an activity has a significant effect if it 'has the potential to degrade the quality of the environment.'"[61] Whether a project presents unusual circumstances, is determined by whether the project presents circumstances that differ from the types of projects typically covered by the claimed categorical exemption, and those differences create the possibility of an adverse impact on the environment.[62]

A. WDR Coverage of a Biomass Facility within an Industrial Park used by Food Processing Operations Presents Unusual Circumstances

The Regional Board's proposed WDR for land application of IPW from the Biomass Power Plant presents unusual circumstances. Whether a Project presents unusual circumstances is determined by whether "the circumstances of a particular project (i) differ from the general circumstances of the projects covered by a particular categorical exemption, and (ii) those circumstances create an environmental risk that does not exist for the general class of exempt projects."[63] The unusual circumstances exception can be triggered by a showing that a project is distinguishable from the types of projects ordinarily exempt from review.[64]

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[60] CEQA Guidelines, § 15300.2.
[61] *Azusa,* 52 Cal.App.4th at 1197 *quoting* Pub. Resources Code §§ 21068, 21083.
[62] *Fairbank v. City of Mill Valley* (1999) 75 Cal. App. 4th 1243, 1260.
[63] *Azusa,* 52 Cal.App.4th at 1207 *citing* Myers v. Board of Supervisors (1976) 58 Cal.App.3d 413.
[64] *Fairbank v. City of Mill Valley*, 75 Cal. App. 4th at 1260.

Whether the circumstances exist, is a factual determination, whereas whether the circumstances related to the Project are unusual is a matter of law.[65]

The WDR for the CIP presents an unusual circumstance in that WDRs are being issued for discharges of wastewater generated by various facilities in an industrial park as opposed to individual facilities. The WDR that would cover the Biomass Power Plant discharges is the same WDR which covers the entire CIP. The CIP may house a range of uses. Indeed, the future tenants of the CIP are still unknown, as is the contents of their discharges.[66] Accordingly, the CIP is required to present the Regional Board with a detailed analysis of the effluent from new dischargers applying for coverage under the permit.

Ordinarily, CEQA review of a renewed permit for an individual facility, which has not been significantly altered or changed may be appropriate, and therefore, properly exempt as the "operation . . . [or] permitting . . . of existing public or private structures."[67] Indeed,

> thousands of permits are renewed each year for the ongoing operation of regulated facilities, and [courts have] discern[ed] no legislative or regulatory directive to make each such renewal an occasion to examine past CEQA compliance at every facility... That result would contravene the applicable statutes of limitation and the ordinary meaning of the words used in the class 1 exemption.[68]

However, new dischargers that are seeking coverage under a new or substantially revised permit, which authorizes discharges from new facilities with new uses, is subject to environmental review. The effluent from the new facilities seeking permit coverage may be different from the permitted discharges, and therefore, will require different treatment technology depending on the type of effluent. In other circumstances, when a discharger's permit is up for renewal on a regular basis, the discharge may not have changed at all. Indeed, CEQA review was not intended to open each and every permit renewal to a new environmental review.[69]

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[65] *See Azusa,* 52 Cal.App.4th at 1207.
[66] WDR R5-2014__, p. 3, ¶ 11.
[67] CEQA Guidelines, § 15301.
[68] *Bloom v. McGurk*, 26 Cal.App.4th at 1315.
[69] *Bloom v. McGurk*, 26 Cal.App.4th at 1315.

However, the Tentative Order is distinguishable. The WDR covers a zoning designation for an area that may house a variety of industrial discharges, which require different treatment technologies to mitigate the impacts each of those discharges may have on the environment. The biomass facility is a new use of the property, which will generate effluent that requires a new treatment process. The effluent is different from that produced by the current users of the CIP WWTF. Accordingly, the Regional Board's reissuance of the CIP's WDR permit presents unusual circumstances.

B. The WDRs Will Result In Significant Environmental Impacts Due to Unusual Circumstances

The approval of the Tentative Order presents unique circumstances that will result in a significant impact on the environment. A distinguishing project feature combined with substantial evidence of an adverse environmental impact is sufficient to remove the project from the categorically exempt class.[70]

To date, the WDR for the CIP has only authorized the discharges of food processing operations, which have not used chemicals in their operations.[71] However, the BFB that will be constructed and used at the Biomass Power Plant for the generation of energy will add ammonia and lime to water during the energy production process.[72] No treatment is prescribed for these chemicals, nor are the environmental impacts that lime and ammonia may have on agriculture and the environment discussed, analyzed or mitigated. Furthermore, the biomass effluent will contain elevated levels of TDS.[73] Elevated levels of TDS in land applied IPW flows is known to hamper crop productivity, and may lead to soil degradation[74]

In sum, the WDR may result in a significant environmental impact due to unusual circumstances and, therefore, is not exempt from environmental review, pursuant to CEQA.

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[70] *Fairbank v. City of Mill Valley*, 75 Cal. App. 4th at 1260.
[71] WDR Order No. 99-093, p. 1, ¶ 4. **Attachment G.**
[72] Application to the Colusa County Air Pollution Control District of an Authority to Construct for a Biomass Power Plant in Colusa, California, pp. 5 – 12 (March 2013).
[73] MND, pp. 21. 68 – 73.
[74]Stephen A. Grattan, *Irrigation Water Salinity and Crop Production*, Agriculture and natural Resources Catalog, U.C. Davis, Publication No. 8066 (2002). **Attachment H.**

IV. THE CVRWQCB HAS IMPERMISSIBLY BASED ITS EXEMPTION DETERMINATION ON MITIGATION MEASURES FOR THE BIOMASS AND SOLAR ENERGY PROJECT WHICH HAVE NOT BEEN EVALUATED NOR APPROVED

The first step in the CEQA process is determining whether or not the proposed project is encompassed by either a statutory or categorical exemption.[75] If the proposed project is not exempt, the lead agency is required to prepare an Initial Study.[76] If the Initial Study results in a determination that the Project will have a significant impact on the environment, an environmental review document be prepared to identify measures that will mitigate project impacts below a level of significance.[77] It is only in this last step that measures are identified to mitigate the environmental impacts associated with the project.

Here, the Regional Board improperly incorporates the mitigation measures set forth in the proposed and unapproved MND for the Biomass and Solar Energy Project and claims that the WDR is exempt.[78] However, "proposed mitigation measures cannot be used to support a categorical exemption; they must be considered under the standards that apply to a mitigated negative declaration."[79] Indeed, an exemption from environmental review cannot be based on another final environmental review document,[80] and certainly not on one that is still unapproved.

The Wastewater Discharge Requirement Technical Evaluation Prepared for the Addition of New Discharges states, "[p]reliminary data suggest that the GeenPlant [*sic*] biomass plant IPW may be suitable for CIP land application; but may not comply with current permit limits for TDS."[81] Because high concentrations of TDS may degrade groundwater and limit crop productivity, the MND for the Biomass Power Plant proposes a TDS mass balance approach to dilute its effluent.[82]

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[75] *See Santa Monica Chamber of Commerce v. City of Santa Monica* (2002) 101 Cal.App.4th 786, 792 *summarizing* the three tiered approach to environmental review procedures mandated by CEQA.
[76] CEQA Guidelines, § 15063.
[77] Pub. Resources Code, §§ 21080, 21151.
[78] *See* MND, pp. 68 – 73.
[79] *Azusa,* 52 Cal.App.4th at 1199; *see also Salmon Prot. & Watershed Network v. Cnty of Marin,* (2004) 125 Cal.App.4th 1098, 1107.
[80] *Azusa,* 52 Cal.App.4th at 1200 – 01.
[81] Letter from Bret Isbell, Water Resources Engineer to Ed Hulbert, p. 2 (October 2, 2013) **Attachment I**.
[82] *See* MND, p. 72.

To this end, the MND proposes the use of lined pond 3, which "has been available for emergency IPW storage," even though "no IPW has been diverted into Pond 3 to date." In fact, the MND states that the CIP proposes to use Pond 3 to regulate and monitor IPW flows before IPW is conveyed to the land application system."[83] Prior to this proposal the, "IPW [was] directly land applied during the seed washing season, typically from August through October each year."[84]

The Regional Board improperly proposes to base its exemption determination on proposed mitigation measures for a Project that will have a significant impact on water quality in the Colusa Basin. CEQA prohibits this approach.[85] The Regional Board is required to prepare an environmental review document which identifies, analyzes and mitigates the adverse impacts that will result from construction of an expanded WWTF system, new processes to dilute the biomass effluent, and issues arising from the distinctly different effluent that will be discharged from a steam generating power facility, as opposed to seed washing operations.[86]

V. THERE ARE NO OTHER EXEMPTIONS THAT ARE APPLICABLE TO THE TENTATIVE ORDER

The WDR is not statutorily exempt from CEQA review. According to the Water Code, "[n]either the state board nor the regional boards shall be required to comply with the provisions of Chapter 3 of Division 13 of the Public Resources prior to the adoption of any waste discharge requirement, except requirements for new sources as defined in the Federal Water Pollution Control Act ["FWPCA"]."[87] This statutory exemption from preparation of an EIR is only applicable to those WDR orders that are issued pursuant to the federal authority in the FWPCA.[88] The FWPCA applies only to the discharge of a pollutant from a point source to the waters of the United States.[89] The California Water Code requires the regulatory permitting of discharges made to both surface waters and land, which may impact

[83] Waste Discharge Report, p. 2-5.
[84] *Id*, at 2-1.
[85] *Salmon Prot. & Watershed Network*, 125 Cal.App.4th at 1107.
[86] Waste Discharge Technical Report, p. 1-1. (Since 2003 only seed washing operations by Nunhems and Sakata Seeds have been discharging effluent.).
[87] Cal. Water Code § 13389.
[88] *Committee for a Progressive Gilroy v. State Water Resources Control Board*, (1987) 192 Cal.App.3d 847.
[89] 33 U.S.C. § 1251 et seq.

surface or ground water quality.[90] "[W]hen the orders are required by the Federal Water Pollution Control Act, the boards are explicitly relieved of the duty 'to comply with the provisions [of CEQA].'"[91] However, Water Code section 13372 of the Water Code places a limitation on the statutory exemption from CEQA review set forth in section 13889.[92] According to Water Code section 13372, "[t]he provisions of this chapter apply only to actions required under the Federal Water Pollution Control Act and acts amendatory thereto."[93]

The WDR under review is for the land application of IPW, and therefore, is being issued under the exclusive authority of the Porter-Cologne Act.[94] Because the WDR for the CIP is issued under the exclusive authority of the Porter-Cologne Act, "[b]y the terms of the statutes read as a whole, the exemption under Water Code section 13389 simply does not apply in this case."[95] Accordingly, no statutory exemptions apply to the WDR. Therefore, the CVRWQCB must prepare an EIR that identifies, analyzes and mitigates the impacts associated with land application of a new source of IPW, which may have a significant impact on the environment.

VI. CONCLUSION

The Regional Board may not approve a new WDR for the Project until it prepares an EIR that adequately analyzes the Project's potentially significant direct, indirect and cumulative impacts, and identifies and incorporates all feasible mitigation measures to minimize the impacts associated with the new processes and facilities permitted by the updated WDR. By complying with State law, the Regional Board and the public can ensure that the Project's significant environmental impacts are mitigated to a less than significant level.

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[90] *See* Cal. Water Code, § 13263, which provides that requirements be prescribed related to the conditions in the disposal area, or receiving waters where the discharge is proposed.
[91] *Committee for a Progressive Gilroy*, 192 Cal.App.3d at 860 *quoting* Cal. Water Code, § 13389.
[92] *See id* at 862.
[93] Cal. Water Code, § 13372; *Committee for a Progressive Gilroy*, 192 Cal.App.3d at 862.
[94] *See* WDR No. 05-01-250.
[95] *Committee for a Progressive Gilroy*, 192 Cal.App.3d at 862.

Sincerely,

Meghan A. Quinn

MAQ:clv

Attachments

2904-034cv

From:	Charissa L. Villanueva <cvillanueva@adamsbroadwell.com>
Sent:	Monday, April 28, 2014 5:01 PM
To:	Andam, Lani@Waterboards; Olson, Anne@Waterboards
Cc:	Meghan A. Quinn
Subject:	EMAIL 2 - Comments on the Tentative Waste Discharge Requirements for Colusa Industrial Properties, Inc. WDR Order No. R5-2014___
Attachments:	Attachment A.pdf; Attachment B.pdf

Attached in PDF format are the comments written on behalf of **Colusa County Citizens for Responsible Industry.** **Please be advised that the attachments to these comments will follow in separate emails for ease of sending.** If you encounter problems with the receipt of this document, please contact Charissa Villanueva at the phone number or e-mail address listed below.

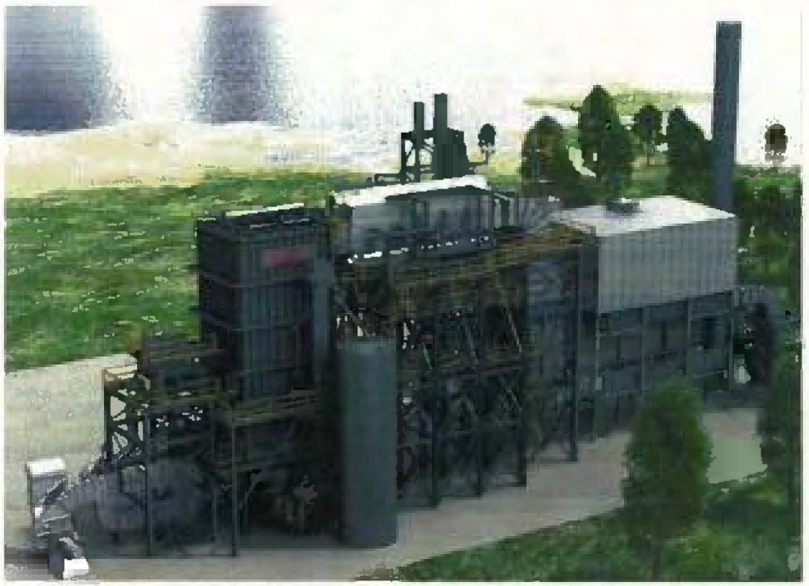
Charissa L. Villanueva
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080
(650) 589-1660
cvillanueva@adamsbroadwell.com

ATTACHMENT A

Draft Initial Study and Proposed Mitigated Negative Declaration

for the

Colusa Bio Energy Project Conditional Use Permit #10-11-1 and Solar Power Facility



Lead Agency:

Colusa County Planning Department
220 12th Street
Colusa, CA 95932

Prepared By:

NorthStar ENGINEERING
Civil · Surveying · Architecture & Design
Water Resources · Environmental · GIS
111 Mission Ranch Blvd., Suite 100, Chico, CA 95926
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1. Project Information

1.1 Project Title

Colusa Bio Energy Power Project Conditional Use Permit #10-11-1 and Solar Power Facility

1.2 Lead Agency Name and Address

Colusa County Planning Department
220 12th Street
Colusa, CA 95932

1.3 Lead Agency Contact Person

Kent Johanns, Associate Planner
Email: kjohanns@countyofcolusa.org
Tel: (530) 458-0480
Fax: (530) 458-0482

1.4 Project Location

The proposed Colusa Bio-Energy Project (hereafter referred to as "bio-energy facility") and the Colusa Solar Power Facility (hereafter referred to as "solar facility") are located in Colusa County, approximately 1.75 miles south of the City of Colusa city limits and 0.85 miles west of State Route 20/45 (SR 20/45). The project's regional location is depicted in **Figure 1, Location Map**.

The bio-energy facility site consists of approximately 25 acres and includes portions of Assessor's Parcel Number (APN) 017-030-099 (123.51 acres) and APN 017-030-100 (507.61 acres). The solar facility, which is a separate project from the bio-energy facility, includes approximately 127.5 acres of APN 017-030-100; **Figure 2, APN Map.**

Access to the projects is currently provided by approximately 3,600 feet of undeveloped gravel road running south from Niagara Avenue within the Colusa Industrial Park (CIP).

1.5 Project Sponsor's Name and Address

Colusa Bio Energy, LLC
P.O. Box 3381
Auburn, CA 95604
(530) 368-0984

1.6 General Plan Designation and Zoning Designation

The Colusa County General Plan was adopted in July 2012. The Colusa County General Plan Land Use Diagram designates the parcels as Industrial (I); **Figure 3, Land Use Map**. The parcels are currently zoned Exclusive Agricultural (EA), with a proposed zoning of Industrial (per the Zoning Code Update).

Pursuant to Section 6.03(a)(18) of the Colusa County Code, a bio-energy facility and a solar facility are discretionary conditional uses that may be permitted in the EA and I zone with the approval of the County Planning Commission.

1.7 Existing Land Uses and Setting

1.7.1 Bio-Energy Facility and Solar Facility Site

Niagara Avenue provides access to the unpaved access roads that connect to the bio-energy facility project and the solar facility sites (together referred to as "project site" or "project area"). State Route 20/45 is located northeast of the project area and provides north/south access to the City of Colusa located 2 miles to the north. The Colusa Industrial Park (CIP) and the Colusa County Airport are located immediately to the north of the project site.

The proposed bio-energy facility will occupy approximately 25 acres of land; 3.5 acres owned by CIP and 21.5 acres owned by J&R Kalfsbeek, Inc. The solar facility will occupy an adjacent approximately 127.5 acres of the J&R Kalfsbeek, Inc. parcel.

A portion of the bio-energy facility site includes an existing approximately 4,400 square foot maintenance building left in place by the current occupant, Colusa Industrial Properties, Inc. This building will be incorporated into the bio-energy facility project's facilities. The remaining area of the bio-energy facility project site consists of agricultural land that has been previously farmed for rice; this land was taken out of production in 2012. Agricultural drainage channels form the boundaries of both the bio-energy facility and solar facility sites.

The solar facility site is roughly square, relatively flat, and has most recently been used for rice farming. The central portion of the site is diagonally bisected by 230KV 230 KV Western Area Power Administration (WAPA) transmission lines. The transmission lines form the southern boundary of the bio-energy facility site.

The elevation of the project site is 48 feet above mean sea level (msl), and is located in Zone A, which is defined as being subject to 100 year flooding with no base flood elevation determined, and identified as an area that has a one percent chance of being flooded in any given year. Soils within the project area consist primarily of Willows Silty Clay. The Willows series consists of very deep, poorly drained soils with slopes ranging from 0 to 2 percent.

1.7.2 Surrounding Land Uses and Setting

The site is bordered on the west, south, and east, by existing agricultural uses, specifically rice fields and associated facilities.

The Colusa Industrial Park (CIP) is located to the north of the project site, situated next to the Colusa County Airport and adjacent to SR 20/45. Agriculture-related uses within the CIP consist of processing, warehousing, and manufacturing facilities. Grain and food processing facilities include rice, dry beans, vine seeds, wild rice, tomatoes and fresh mushrooms. Current manufacturing includes Clearcast Concrete Stone Products, ABC Pallets and two large chemical dealers operating out of the CIP. Other surrounding land uses include hunting and recreation opportunities and the Colusa Golf and Country Club, which are located directly to the north of the CIP.

1.8 Required Permits and Approvals

Bio-energy facility

- Colusa County: Conditional Use Permit, Building Permit, Grading Permit, Floodplain Development Permit
- Colusa County Air Pollution Control District: Authority to Construct Permit
- Colusa County Airport Land Use Commission
- California Department of Public Health: Amendment to Water Supply Permit
- Central Valley Regional Water Quality Control Board (RWQCB): Update to the Colusa Industrial Park's Waste Discharge Requirements, WDR Order No. 5-01-250.
- RWQCB: General Construction Storm Water National Pollutant Discharge Elimination System (NPDES) Permit
- RWQCB: General Industrial Storm Water NPDES
- RWQCB: Clean Water Act Section 401 Water Quality Certification
- Army Corps of Engineers: Clean Water Act Section 404 Nationwide Permit
- U.S. Fish and Wildlife Service: Endangered Species Act Section 7 Consultation for Giant Garter Snake

Solar Energy Facility

- Colusa County: Conditional Use Permit, Building Permit, Grading Permit
- RWQCB: Clean Water Act Section 401 Water Quality Certification
- Army Corps of Engineers: Clean Water Act Section 404 Nationwide Permit
- U.S. Fish and Wildlife Service: Endangered Species Act Section 7 Consultation for Giant Garter Snake

1.9 Regulatory Guidance:

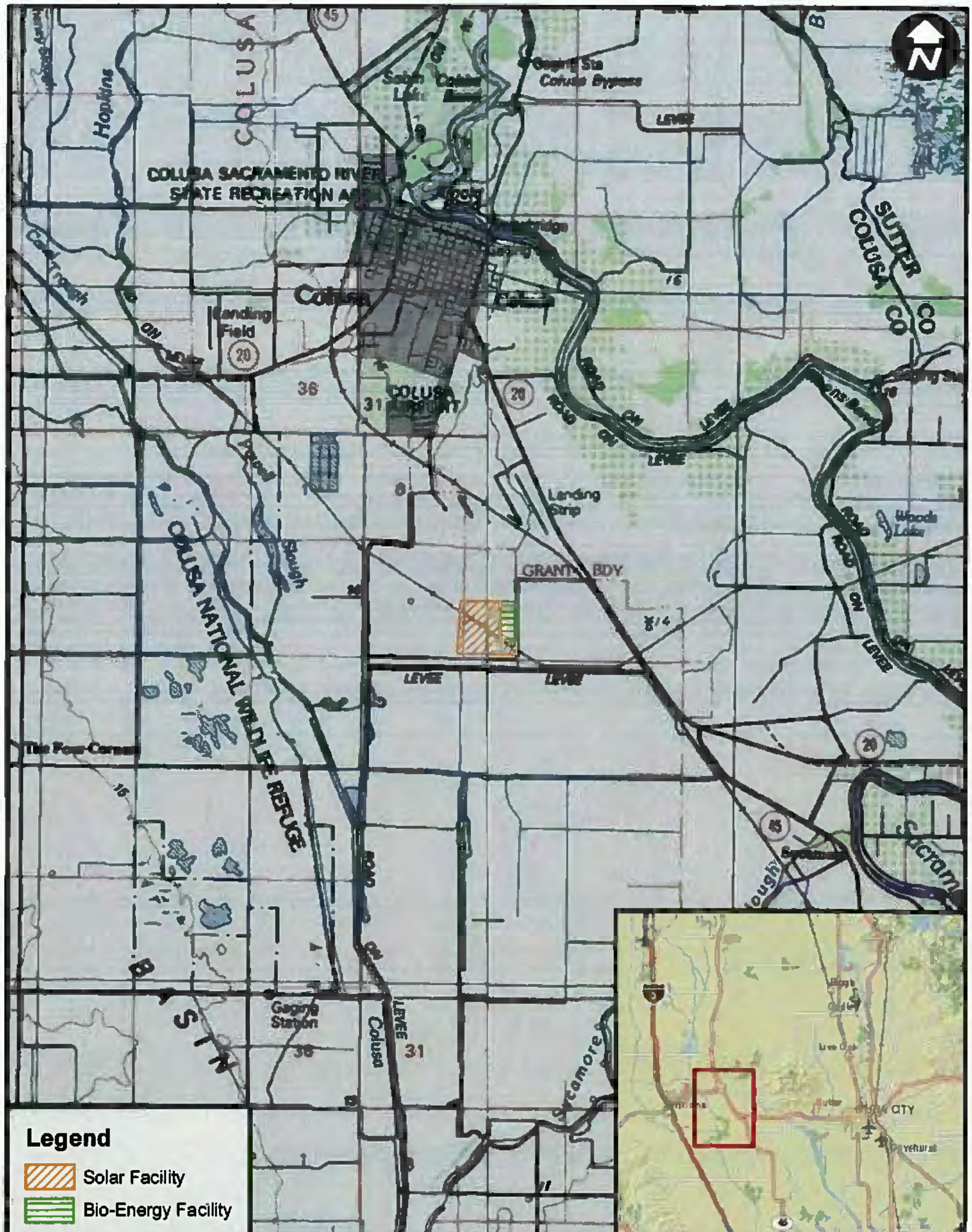
This document is an initial study with supporting environmental studies, which provide justification for a Mitigated Negative Declaration pursuant to the California Environmental Quality Act (CEQA). This Mitigated Negative Declaration has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., and the State CEQA Guidelines 14 California Code Regulations Section 15000 et seq.

An initial study is conducted by a lead agency to determine if a project may have a significant effect on the environment. In accordance with the CEQA Guidelines Section 15063, an EIR must be prepared if an initial study indicates that the proposed project under review may have a potentially significant impact on the environment. A Negative Declaration may be prepared instead, if the lead agency prepares a written statement describing the reasons why the proposed project would not have a significant effect on the environment, and therefore, why it does not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a Negative Declaration shall be prepared for a project subject to CEQA when either:

a) *The initial study shows there is no substantial evidence, in light of the whole record before the agency, that the proposed project may have a significant effect on the environment, or*

b) *The initial study identifies potentially significant effects, but:*
   (1) *Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed negative declaration is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur and;*
   (2) *There is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a significant effect on the environment.*

If revisions are adopted in the proposed project in accordance with the CEQA Guidelines Section 15070(b), a mitigated negative declaration is prepared.



NorthStar ENGINEERING
Civil · Surveying · Architecture & Design · Water Resources · Environmental · GIS

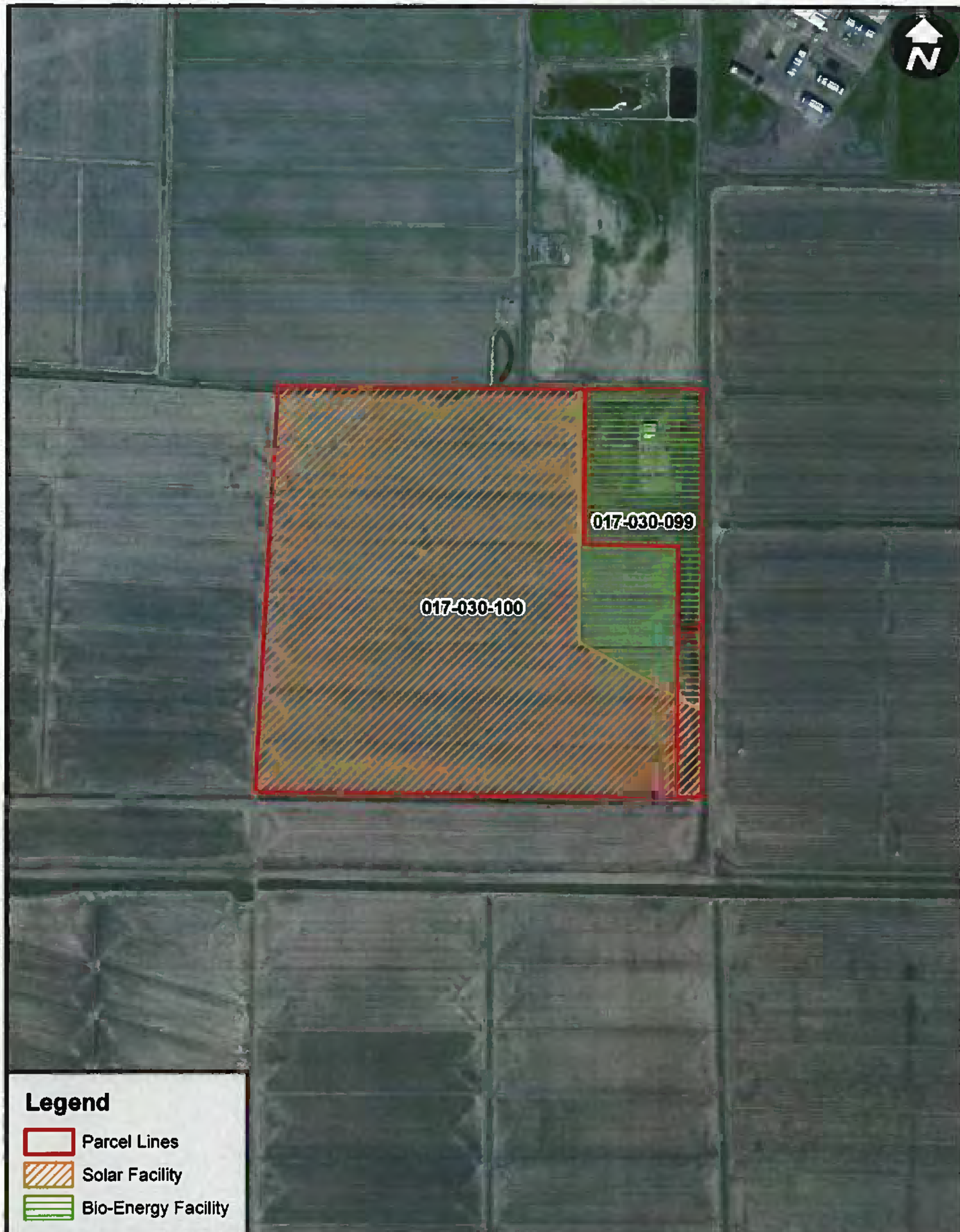
Drawn By: CJW
Checked:
Map Date: 11/12/13
Scale: 1 in = 1 miles

Miles
0 0.5 1 2

Within Section 8 of T15N, R1W Colusa County, CA. Colusa, Meridian USGS 7.5' Quads. Boundary provided by Colusa County

Colusa Bio-Energy Facility CUP

FIGURE 1 - LOCATION MAP



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Water Resources · Environmental · GIS

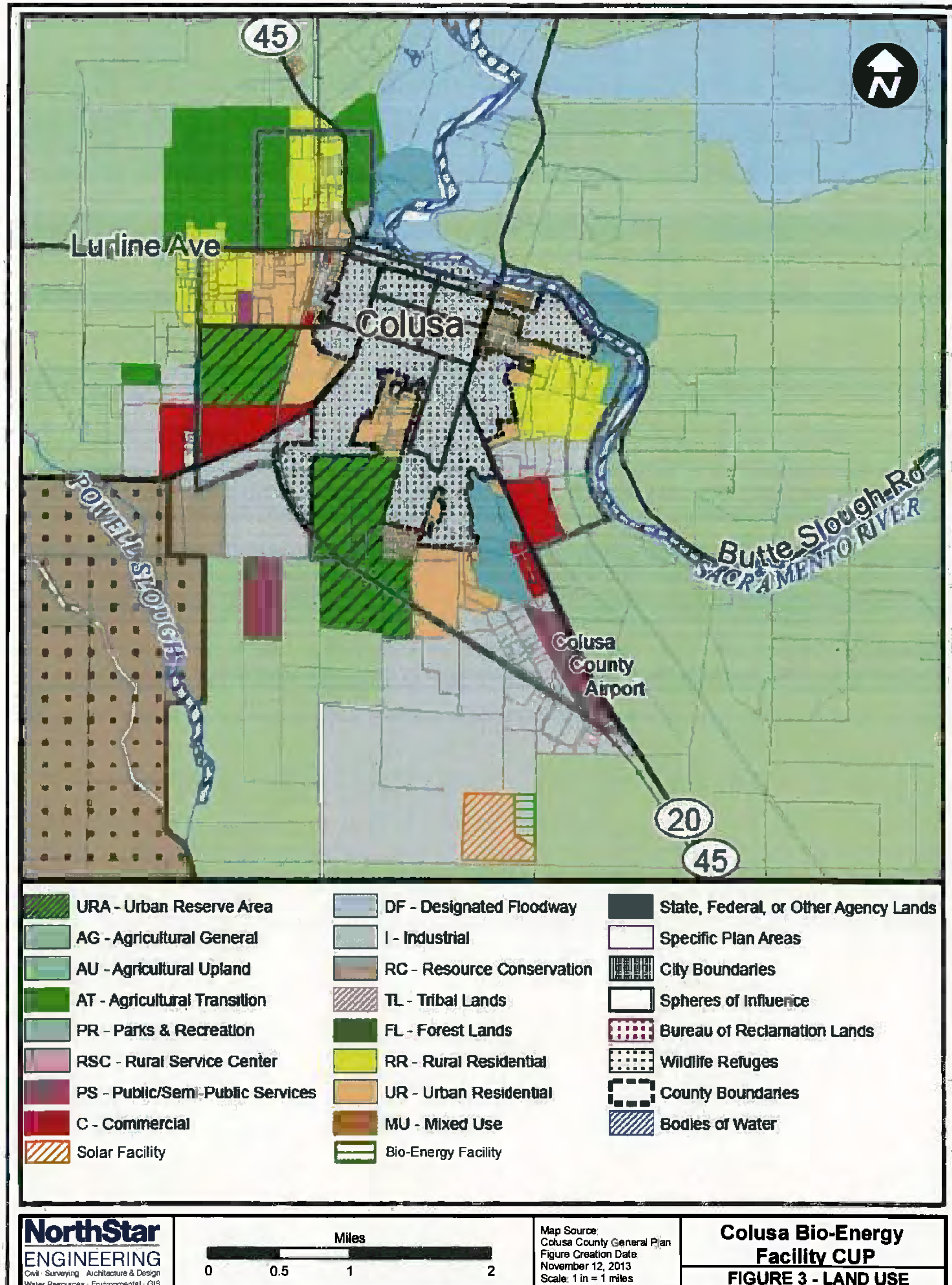
Drawn By: CJW
Checked:
Map Date: 11/12/13
Scale: 1 Inch = 794 feet

Feet
0 250 500 1,000

Parcel Data Provided By Colusa County
Aerial: ESRI (January 16, 2012)
Map Date: November 12, 2013

Colusa Bio-Energy Facility CUP

FIGURE 2 - ASSESSOR PARCEL NUMBERS



Map Source:
Colusa County General Plan
Figure Creation Date
November 12, 2013
Scale: 1 in = 1 miles

Colusa Bio-Energy Facility CUP

FIGURE 3 - LAND USE

2. Project Description

2.1 Project Overview

Colusa Bio Energy, LLC (applicant) is requesting approval of a Conditional Use Permit (CUP) to construct a 30 MW (net) bio-energy power facility on approximately 25 acres (hereafter referred to as the "bio-energy facility"). **Figure 4a, Bio-Energy Facility Site Plan,** illustrates a preliminary layout of proposed buildings, parking areas, access roads, driveways, material storage areas, and other proposed improvements.

In addition to the bio-energy facility, the applicant will be proposing the construction of a 25 MW solar facility under a separate application (hereafter referred to as the "solar facility"). The solar facility will be located on approximately 127.5 acres, immediately adjacent to the bio-energy project site. For the purposes of CEQA, both the bio-energy facility and the solar facility projects are analyzed for potential environmental impacts in this Initial Study/Mitigated Negative Declaration (IS/MND).

Throughout this document "project site" and "project area" refer to both the bio-energy facility and the solar facility sites.

2.2 Bio-energy Facility

Operational Lifecycle

It is anticipated that the bio-energy facility will have a nominal 40+ year operating life, including routine maintenance, equipment replacements, and upgrades to ensure air emission reductions and power plant efficiency.

Facility Design/Proposed Structures

The bio-energy facility project consists of the construction and operation of a new biomass power facility. The bio-energy facility could consist of up to eight buildings to be constructed over time.

Buildings and amenities to be constructed on the site include, **Figure 4a, Bio-Energy Facility Site Plan:**

- 25,000 square foot (sq. ft.) fuel processing building,
- 50,000 sq. ft. fuel storage building,
- 10,000 sq. ft. turbine generator building
- office/shop building
- maintenance area
- truck scales
- employee and visitor parking (approximately 14 parking spaces for employees and visitors)

The power facility will include:

- water tank, sized to provide for fire protection
- 10,000 sq. ft. turbine/generator building
- cooling towers (up to 40 feet in height)
- exhaust stack up to 140ft

- ash silos
- electric substation

The existing building on the site may be incorporated into the facility design. In addition, temporary fuel storage buildings may be erected to house biomass. It is anticipated that four temporary structures may be used for fuel storage, and until that time, the fuel storage will be stored in piles onsite, both covered and un-covered.

Biomass Technology

The boiler associated with the plant would burn biomass fuel (i.e., rice hulls, almond and walnut shells, wood waste and orchard prunings, and other agricultural waste streams) to produce up to 340,000 pounds of steam per hour. The steam would then be used to power a steam turbine, which in turn would drive a generator that would produce a net 30 MW of electricity. The electricity would originate from the onsite electric substation and be transferred to the WAPA Transmission system grid for distribution to the purchaser(s).

The project applicant estimates that up to 423,000 gallons per day (gpd) or 425 acre-feet of water per year would be required for the operation of the bio-energy facility. This water would be supplied from the CIP Water System that serves the CIP. The use of this water would create a wastewater stream of approximately 3,000 gpd.

The biomass-fired boiler would have a maximum annual average heat input of approximately 410 million British thermal units per hour (MMBtu/hr) and a maximum steam generation rate of 340,000 pounds per hour (lb/hr). A bubbling fluidized bed combustor system provides precise combustion control and is considered best available control technology (BACT) under California EPA guidelines. The combustor exhausts through the boiler and superheater before entering the multi-clone which will remove heavy ash particles form the exhaust stream and finally through the economizer where residual heat is captured. At this point, the flue gas is directed to a lime reaction vessel and finally through a baghouse where the remaining particulate is removed before being directed to the exhaust stack.

Biomass Fuel Supply

The fuel supply for the proposed bio-energy facility would be agricultural/wood waste consisting of rice hulls, almond and walnut shells, wood waste and orchard prunings, and other agricultural waste streams. It is estimated that a total of 161,000 tons of rice hulls, 49,000 tons of almond shells, and 30,000 tons of wood products would be processed at the power facility. Fuel would be stockpiled onsite in the fuel buildings, temporary storage buildings, or outdoor fuel piles. The stockpiled fuel would be moved to the fuel buildings adjacent to the power facility as necessary to turn over the fuel at least every 180 days.

Substation

The onsite, dedicated substation would be located along the southern boundary of the bio-energy facility site. The substation would contain metering equipment, a control building (less than 500 sq. ft.), switchgear, a series of fuses and circuit breakers that serve as protective relays, and transformers that step-up the voltage to match the voltage of the transmission system at the Point of Interconnection (POI). The substation footprint would be approximately 125,000 sq. ft.

Site Improvements

It is anticipated that the existing compacted area within the bio-energy facility site would be used for the power facility. The fuel storage areas and the power substation would be located on the remainder of the bio-energy facility site. Because the site is relatively flat, extensive grading and excavation is not anticipated for these facilities. Power would be conveyed to the new electric substation in the southwestern corner of the site and connected to the WAPA 230kV transmission line.

Off-Site Improvements

Other bio-energy facility improvements that would be required to support access, water supply, and wastewater disposal would include the installation of the following facilities:

- Primary access to the site would be from SR 20/45, Niagara Avenue, and gravel access roads, **Figure 5, Site Access**. Existing gravel access roads would be widened to 24-feet all purpose, gravel roads, per County standards.
- A water supply pipeline extending from the CIP to the project site.
- A wastewater pipeline extending from the bio-energy facility to the CIP wastewater treatment facility.

Refer to **Figure 6, Water and Wastewater Pipelines**, for the location of the proposed water and wastewater pipelines.

Site Access and Parking

Primary access would be provided from SR 20/45 and Niagara Avenue. Trucks hauling fuel would access the site via two driveways, one for ingress and the other for egress. The driveways are locate on the northern site boundary. Refer to **Figure 5, Site Access.** The bio-energy facility would include installation of up to 14 parking spaces for employees and visitors.

Fuel Delivery

Material handling and delivery would be done by an outside contractor retained by the project proponent. No fuel would be accepted at the plant from individual private homeowners. Biomass would be delivered to the bio-energy facility year round. It is anticipated that approximately 15,000 tons of rice hulls per month would be delivered between November through April, with approximately 11,000 tons per month recovered during other parts of the year. It is estimated that almond shells would consist of approximately 16,000 tons per month between September through November and wood products would consist of 2,500 tons per month year round.

Truck traffic for fuel and ash handling will range from 23 trucks per day in May to a peak of approximately 58 trucks per day in November. Employee traffic will amount to 24 vehicles per day.

Based on the volume of material required to fuel the facility and the number of days that material could be delivered, it is estimated that up to 12,000 truckloads would be delivered per year; an average of 33 truckloads would be delivered per day.

Ash Disposal Plan

It is anticipated that the bio-energy facility would generate approximately 50,000 tons of ash per year. Ash would be disposed of in one of the following methods: used as a soil amendment on agricultural fields or used as an amendment in bagged soil and compost. The ash that will be produced from the bio-energy facility has a variety of market capabilities. In its natural state the rice hull ash and fly ash can both be used as a soil amendment and supplement to organic mulch market (refer to Appendix A, Letters of Intent). A secondary purpose would be to activate the carbon in the ash and sell the ash internationally or to US firms for multiple purposes including water filtration and high performance concrete. The third purpose of the ash is Sodium silicate, which is used as raw material for several purposes: silica gel production, preparation of catalysts, inks, load for medicines, concrete hardening accelerator, component of detergents and soaps, refractory constituent, solar panels and to manufacturer computer components. Overall the market price can vary on the ash products depending on grade and activation. Ash would not be disposed in a landfill.

Enclosed pneumatic or screw conveyors would move ash to enclosed overhead ashbins/silos. Ash from the ash silos would be vacuum fed into a trailer for transport offsite or the ash will be processed and packaged within an enclosed structure or baghouse, and sold or removed from the site. Ash will be fully contained during transport to avoid spillage or exposure to wind during transport. No ash would be stored in open piles on the site.

Lighting

The proposed bio-energy facility would include exterior lighting to allow for safe access to the facility in the dark. The highest light source would be along the catwalks at the top of the boiler and exhaust stack, including safety lighting for aviation.

Security/safety lighting would be provided at the substation, the inverters, and the points of access. Lights would remain on from dusk to dawn.

Construction Staging

Materials and equipment for construction of the bio-energy facility would be staged within the bio-energy facility site.

Water Supply

The proposed bio-energy facility will obtain water from Colusa Industrial Properties, Inc. under its Domestic Water Supply Permit. The existing permit, No. 01-21-0(P)06001, was issued for the Colusa Industrial Properties, Inc. Water System (Water System) and is intended to serve the CIP. The Water System currently serves the 450-acre industrial park and an adjacent golf course. The water source consists of two wells with chlorination treatment. Existing storage for the system consists of a 5,000-gallon pressure tank and a 45,000 gallon fire water storage tank. Water from the Water System will be conveyed to the biomass power site via a new water pipeline placed within the same easement as the access roadway; refer to **Figure 6, Water and Wastewater Pipelines.** The Water Supply Permit will be amended to include the bio-energy facility project site within the area served.

The facility will require approximately 423,000 gallons of water per day or a total of 425 acre-feet (AF) per year to operate, which will be supplied by Water System.

Water will be used in the boiler to generate steam as well as for dust control and sanitary purposes. Used water will result in cooling tower makeup water and industrial process water. Most water loss will be from cooling tower evaporation.

Wastewater Disposal Plan

The residual water, primarily from the cooling tower blow-down, of approximately 2.0 gpm or under 3,000 gpd would be discharged to the CIP wastewater treatment facility (WWTF) located approximately 0.25 miles north of the bio-energy project site, **Figure 6**. Ultimately, wastewater will be used for irrigation of crops in the fields adjacent to the project site under the wastewater disposal permits currently held by CIP. The Central Valley Regional Water Quality Control Board (CVRWQCB) through the issuance of Waste Discharge Requirements (WDRs) would regulate all operations and monitoring requirements within the CIP WWTF. The existing WDRs for the CIP WWTF are being revised to accommodate the residual water from the bio-energy facility.

Air Quality Attainment Plan

<u>Air Quality Control Measures</u>

The following air quality control measures will be applicable for construction activities for the bio-energy (and solar facility). These measures are also identified as mitigation measure, MM Air Quality 1 - Construction Emissions, in Section 3, Air Quality.

The following air quality control measures shall be listed on all building and site improvement plans:

<u>Control Dust</u>

a) During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems are to be used to prevent dust from leaving the site and to create a crust after each day's activities cease.
b) During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the later morning and after work is completed for the day and whenever wind exceeds 15 miles per hour.
c) Soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation.
d) On-site construction vehicles shall be limited to a speed of 15 mph on unpaved roads.
e) Haul vehicles transporting soil into or out of the property shall be covered.
f) Existing roads and streets adjacent to the project shall be cleaned at least once per day if dirt or mud from the project site has been tracked onto these roadways, unless conditions warrant a greater frequency.
g) Other measures may be required as determined appropriate by the Colusa County Air Pollution Control District (CCAPCD) or Department of Public Works in order to control dust.

Post Contact Information

a) Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24 hours. The telephone number of the Colusa County Air Pollution Control District shall be visible to ensure compliance with CCAPCD Rule 2.10 Nuisance.

Other Construction Practices

a) Maintain all construction equipment in proper tune according to manufacturer's specification.
b) Where feasible, give preference to utilizing the following equipment:
   - Electric equipment
   - Substitute gasoline-powered for diesel-powered equipment
   - Alternatively fueled construction equipment on-site, such as compressed natural gas (CNG), liquid natural gas (LNG), propane, or biodiesel.
   - Equipment that has Caterpillar pre-chamber diesel engines, as practical.
   - Diesel construction equipment meeting the California Air Resources Board's (CARB) 1996 or newer certification standard for off-road heavy-duty diesel engines.

c) Construction workers shall park in designated parking area(s) to help reduce dust emissions.

Authority to Construct Permit

The bio-energy project includes construction and stationary emission sources, and will require a permit to construct from the Colusa County Air Pollution Control District (CCAPCD). Several rules and regulations will apply to the permitting and operation of the bio-energy facility. The specific primary regulations applicable to project permitting are listed in the Air Quality Analysis (Appendix B) and Draft Authority to Construct (ATC) Permit Application (Appendix C). The CCAPCD requires applicants to demonstrate to the satisfaction of the CCAPCD that a new source can be expected to comply with all the applicable regulations and rules and ambient air quality standards of the District and all applicable state laws.

The bio-energy facility project will mitigate its onsite emissions from the power plant per CCAPCD permitting requirements using BACT and emission offsets. The bio-energy project's net emissions would all be below the applicable significance thresholds. BACT will be identified in the final ATC Permit issued by the CCAPCD.

Fire Prevention and Suppression Plan

Heat can build-up within fuel storage piles to the point of spontaneous-combustion. When a pile is opened up and exposed to oxygen, the fire can flare up into open flames. About the only way to extinguish a fuel pile fire is to open the pile, spread it out on the ground and extinguish it with water. High, large volume piles on small footprints are harder to take apart than are low spread-out piles. Therefore, to minimize the potential for fire associated with the bio-energy facility's fuel storage piles and fly ash, the following fire minimization measures and fire management practices will be installed as part of project and site design and included as part of the daily monitoring and management of the bio-energy facility:

Facility Improvements

- A water storage tank of at least 150,000 gallons will be installed that is capable of a fire flow of 2,500 gallons per minute for 60 minutes.
- Fire hydrants will be installed within 150 feet of any building, including temporary buildings.
- Installation of water standpipes will be distributed throughout the fuel storage areas.
- Provide a back-up generator that can pump from the water storage tank, independent of the water supplied by CIP.
- Internal access provides two locations for ingress and egress.
- Primary access roads will be constructed to County standards.

Fuel Storage Piles and Fly Ash

- Biomass fuel storage piles will be actively managed and rotated on a continuous basis to reduce the risks associated with combustion that may occur if the storage piles were left to decompose.
- Fuel storage piles will be slightly elevated to reduce the potential for water flooding the piles.
- The storage piles will be temperature tested daily for "hot spots" and overall moisture. If hot spots are detected they are lifted and spread to an isolated area.
- Fuel storage pile sizes will be minimized and separated by fire breaks.
- All structures, including temporary buildings, and equipment will be equipped with spark and fire detection and suppression equipment.
- Project design will include collection of fly ash in the emission control equipment and collection and transport in fully enclosed conveyors to a water-conditioning area to moisten the fly ash residue products before discharge onto the bottom ash conveyor for disposal (EPA, 1995).

Employment

Implementation of the proposed bio-energy facility would generate the need for approximately 20 employees. It is anticipated that these employees would fill four shifts per week with four employees per shift plus a single shift of management, technical and administrative employees.

Power Purchase Agreement

Roseville Electric and Redding Electric Utility will purchase the power generated by the facility.

Land Lease/Purchase Agreement

The land lease/purchase agreement is an agreement to lease or sell up to 152.5 acres of the CIP, Inc. and Kalfsbeek properties to Colusa Bio Energy, LLC. For the bio-energy facility, approximately 3.5 acres would be leased or sold for construction of the bio-energy facility and 21.5 acres for the fuel storage and wastewater storage/evaporation ponds.

Approximately 127.5 acres would be leased or sold for construction of the solar facility. The timing of the solar facility will be determined at a later date. That solar facility will be processed under a separate application but will use this environmental analysis to comply with CEQA.

Bio-Energy Facility Construction

Construction of the bio-energy facility is anticipated to begin in 2014 with the facility being operational in two years.

2.3 Solar Power Facility

The solar power facility will be processed by the Colusa County under a separate use permit application; however, it is being included in this CEQA evaluation.

Solar Facility Overview

Colusa Bio Energy, LLC (applicant) is proposing the construction, operation, and maintenance of a photovoltaic (PV) solar energy facility on lands to be leased from J&R Kalfsbeek, Inc. The solar facility would have a production capacity of up to 25 megawatts (MW) alternating current (AC). Power from the solar facility would be purchased by a major utility or municipality, which is as of yet undetermined. During typical daytime conditions, the solar facility would supply electricity sufficient to power up to 20,000 households.

The solar facility consists of 127.5 acres with the solar facility covering approximately 115 acres. The facility would be installed adjacent to the proposed bio-energy facility, see **Figure 4b**.

Solar Facility Design

Solar Panel Array

The solar facility would consist of approximately 85,000 PV solar panels mounted onto either a collection of single-axis tracking (SAT) systems supported by machine-driven posts or ballasted foundation systems could be provided wherein individual SAT system supports become pre-cast elements set atop of the existing soil. The solar panels would be composed of either mono-crystalline or polycrystalline silicon solar cells that convert sunlight directly into electricity. The ultimate number of PV solar panels would be determined during the final design stage.

Single-Axis Tracking (SAT) Systems

The SAT systems would consist of solar panels mounted onto a support structure that aligns the panels in rows that rotate to face east in the morning and west in the afternoon hours, tracking the sun along a north/south axis to maximize solar absorption. The solar panels would be rack-mounted at a width of 12 panels, measuring from 40 to 60 feet across each row regardless of whether the row is tilted to a maximum 45-degrees in the morning or evening hours or when laying level (horizontal) at midday. The upper edge of the highest panels would be from 8 to 12 feet from the ground surface when fully inclined to 45-degrees, while all panels would be from 4 to 10 feet above the ground surface when level. The length of each row of panels would be approximately 60 feet along the north/south axis.

Solar Panels

The solar facility would incorporate high-efficient, commercially available 290 to 325 PV solar panels made from either mono-crystalline or polycrystalline silicon, anti-reflective glass, aluminum frame, and copper electrical wires with plastic sheathing. By design, the solar panels would absorb sunlight to maximize electrical output and use antireflective glass, resulting in less reflectance of standard residential and commercial glass applications. Due to the limited rotation angles, the solar panels would lack the ability to reflect the sun upon any ground-based, offsite observer. The solar panels would be protected from impact by tempered glass, and would have a factory applied ultraviolet (UV) and weather-resistant "quick connect" wire connectors.

Electricity Delivery

Energy generated by the solar panel arrays would be delivered to the substation located at the bio-energy facility site via an underground connection. Energy generated by the solar facility would be delivered to the existing 230 kilovolt (kV) transmission line that bisects the solar facility site. Connection would be made from the bio-energy facility site via a direct tap of the 230 kV transmission line.

Other Site Improvements

There will be gated access points at the northerly edge and the easterly edge of the site, with maintenance access at the southerly edge near the WAPA lines, refer to **Figure 4a**. All-weather 12-foot wide perimeter access roads would be included for fire access and internal circulation, per County standards.

The solar facility perimeter would be fenced by 8-foot chain-link fencing with barbed wire affixed to the top.

Solar Facility Construction

Construction of the solar facility is anticipated to begin in 2014 or later with the entire facility being fully operational less than one year later.

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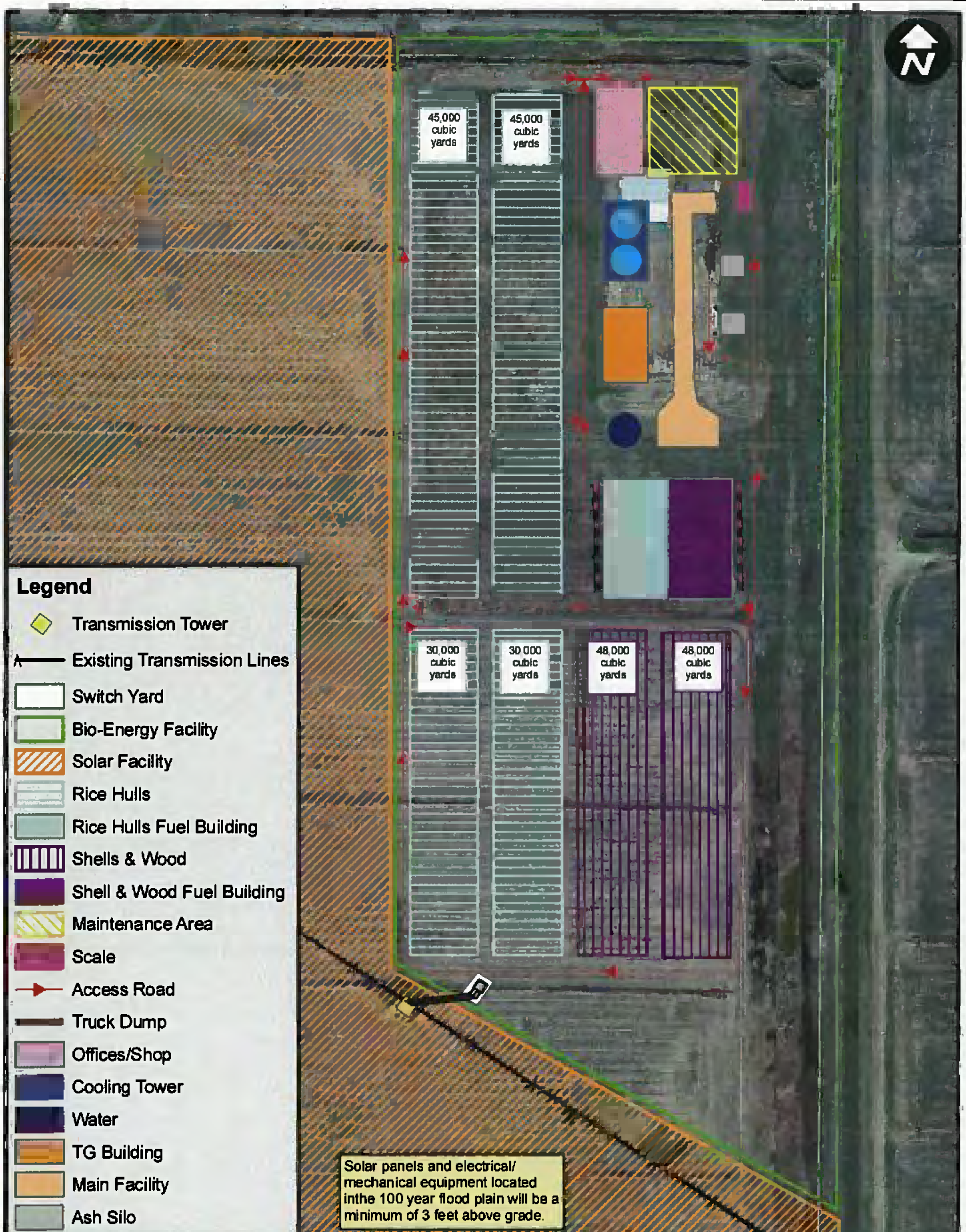
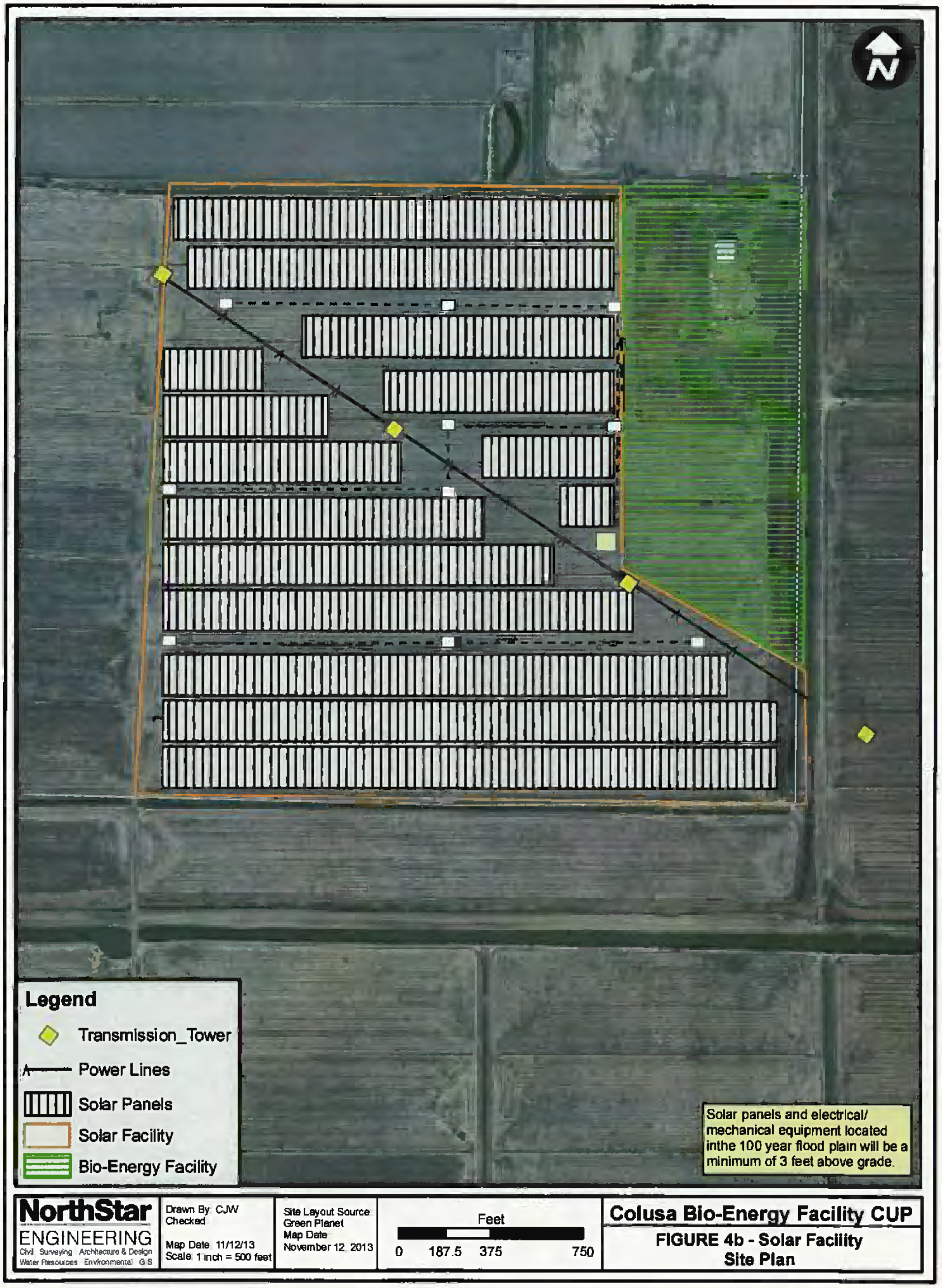


NorthStar ENGINEERING Civil · Surveying · Architecture & Design Water Resources · Environmental · GIS	Drawn By: CJW Checked: Map Date: 11/12/13 Scale: 1 inch = 216 feet	Site Layout Source: Green Planet Map Date: November 12, 2013	Feet 0 80 160 320	**Colusa Bio-Energy Facility CUP** **FIGURE 4a - Bio-Energy Facility Site Plan**



Legend
Transmission_Tower
Power Lines
Solar Panels
Solar Facility
Bio-Energy Facility
Solar panels and electrical/ mechanical equipment located inthe 100 year flood plain will be a minimum of 3 feet above grade.
N
NorthStar ENGINEERING
Civil Surveying Architecture & Design Water Resources Environmental GIS
Drawn By CJW
Checked
Map Date 11/12/13
Scale 1 inch = 500 feet
Site Layout Source Green Planet
Map Date November 12 2013
Feet
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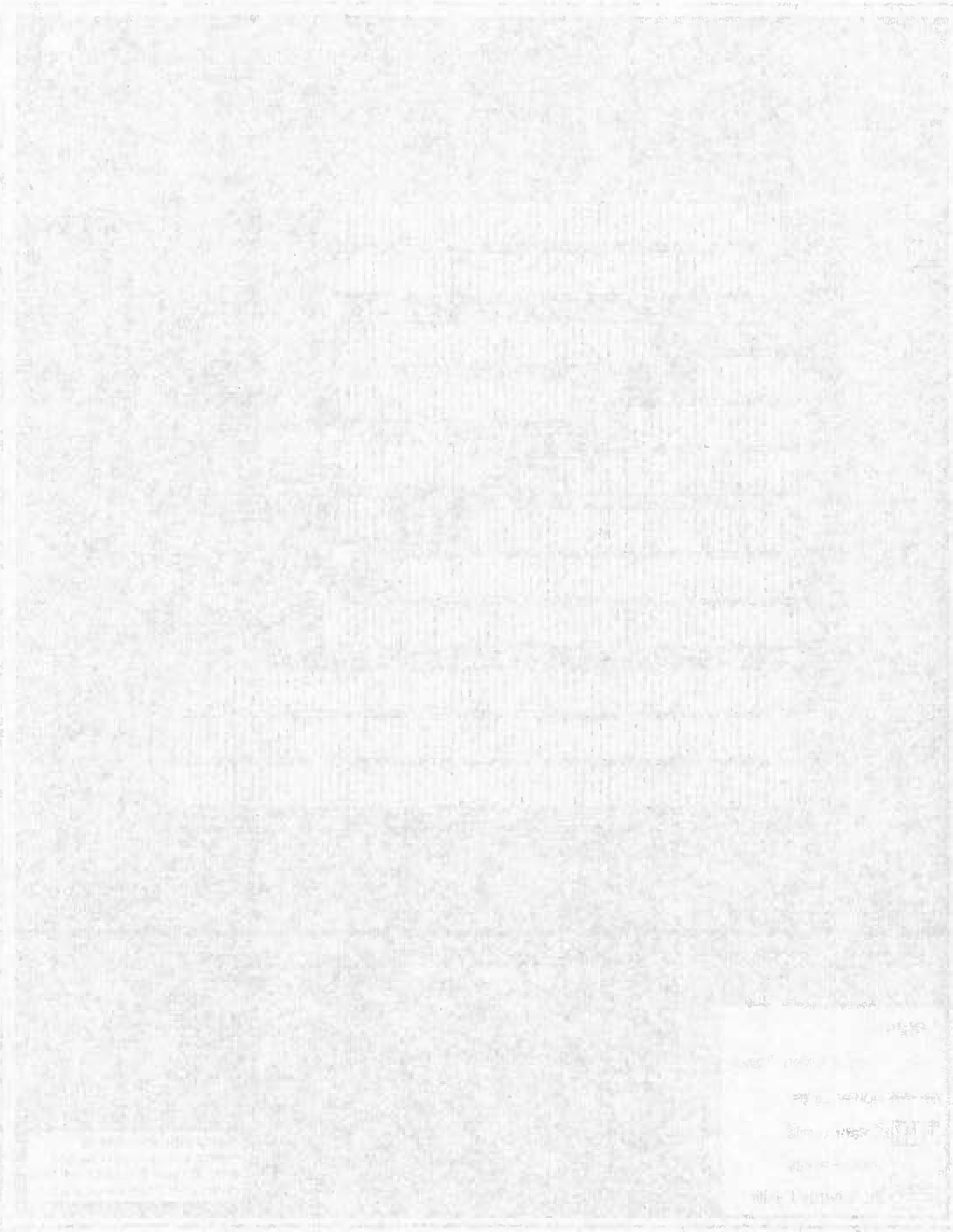
Colusa Bio-Energy Facility CUP
FIGURE 4b - Solar Facility Site Plan



NorthStar ENGINEERING Civil · Surveying · Architecture & Design Water Resources · Environmental · GIS	Drawn By: CJW Checked: Map Date: 11/12/13 Scale: 1 inch = 794 feet	Feet 0 250 500 1,000	Aerial ESRI (January 16, 2012) Map Date: November 12, 2013	Colusa Bio-Energy Facility CUP FIGURE 5 - PREFERRED ACCESS ROUTES

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Drawn By: CJW
Checked:

Map Date: 11/12/13
Scale: 1 inch = 678 feet

Line Locations Source: California Engineering Company, Inc.
Aerial: ESRI (January 16, 2012)

Map Date: November 12, 2013

Colusa Bio-Energy Facility CUP

FIGURE 6 - WATER & WASTEWATER PIPELINES, WASTEWATER TREATMENT FACILITY (WWTF)

3. Determination

Environmental Factors Potentially Affected

The environmental factors checked below could be potentially affected by the proposed project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agricultural/Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	☒ Hazards/Hazardous Materials	☒ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population & Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☒ Utilities/Service Systems	☐ Mandatory Findings of Significance

**Note: The Project Description includes Control, Avoidance and Minimization Measures that are part of the project. These measures would be part of all Contract Documents and Construction Plans.*

Determination:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature   Date

Printed Name   For

Evaluation of Environmental Impacts:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards, (e.g., the project will not expose sensitive receptors to pollutants based on a project-specific screening analysis.)

2) All answers must take account of the whole action involved including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used: Identify and state where they are available for review.
   b) Impacts Adequately Addressed: Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures: For effects that are "Less Than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) The explanation of each issue should identify:

   a) The significance criteria or threshold, if any, used to evaluate each question; and

   b) The mitigation measure identified, if any, to reduce the impact to less than significant.

4. Environmental Checklist

1. Aesthetics

Would the project:	Potentially Significant	Less Than Significant with Mitigation	Less Than Significant	No Impact
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site/surroundings?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

Responses to Checklist Questions

a-b) No Impact:

There are no officially designated scenic vista points or scenic highways located in Colusa County (GP EIR, pg. 3.1-10). Therefore, the bio-energy and solar facility sites are not located in an area that has been designated a scenic vista or visible from an officially designed state scenic highway. The bio-energy facility and the solar facility sites are located immediately south of the Colusa Industrial Park (CIP), west of SR 20/45, and with agricultural land uses located to the south, west, and east.

In addition, although the Sutter Buttes are considered a visual resource within the County. The Sutter Buttes are located approximately 10 miles east of SR 20/45. Construction of the proposed bio-energy facility and the solar facility would not impede views of this resource, since the site is located approximately 0.8 miles west of SR 20/45.

Because there are no designated scenic vista points or highways located within Colusa County or near the project site, no impact to scenic resources would occur.

c) Less Than Significant:

As described under Item a), above, the proposed projects would add additional industrial uses to an existing industrial area. The proposed projects would not significantly degrade the existing visual quality of the site or the surrounding area.

The CIP boundaries are located approximately 0.2 miles north of the northernmost boundary of the bio-energy facility site. The CIP includes a variety of industrial uses and a wastewater treatment facility. The existing land uses are similar in height, materials, and structure as the proposed bio-energy facility. The bio-energy facility would include structures ranging in height up to 50 feet with the exception of the exhaust stack, which will extend up to 140 feet. Other buildings will include the fuel processing building, fuel storage building, and water tank.

The solar facility system's height above ground would change throughout the day as it tracks the sun; the maximum height would be approximately 12-feet above ground at its full tilt angle of 45 degrees. The eastern boundary of the solar facility is approximately one mile from SR 20/45.

In addition, existing power line facilities are located along the southern boundary of the bio-energy facility and bisect the solar facility site, and thus alter the visual character of the area. Given that the bio-energy facility and the solar facility are located near the CIP and power lines, the proposed uses would be consistent with the existing industrial character of the surrounding area. In addition, the distance of both facilities from SR 20/45 (approximately 0.8 miles to the east) reduces the sensitivity to visual changes within the vicinity.

Implementation of the proposed bio-energy facility and the solar facility would introduce additional industrial development in the area; however, this development would be consistent with the surrounding industrial uses. Therefore, this impact is considered less than significant.

d) Less Than Significant:

Bio-Energy facility

Short-Term Construction Impacts

During construction of the proposed bio-energy facility, light and glare may be produced from construction equipment, vehicles, portable office trailers, and other temporary elements on the bio-energy facility site. These temporary elements would be removed from the bio-energy facility site upon completion of the construction phase. The use of temporary lighting during the construction phase may be necessary in the early morning or during the winter, when the sun sets earlier. Due to the temporary nature of the construction phase, short-term impacts associated with light and glare would be less than significant.

Long-Term Operations Impacts

The proposed bio-energy facility would not create a new source of substantial light that would adversely affect day or nighttime views in the area. Low-level lighting would be installed throughout the facility for safety and security purposes, as well as operations and maintenance.

The proposed bio-energy facility would be required to be consistent with the lighting requirements in Article 8 (Development Standards) of the County Code, which specifically state:

> *(e) Lighting. Reflectors, spotlights, floodlights, and other sources of illumination may be used to illuminate buildings, landscaping, signs, and parking and loading areas on any site only if they are equipped with lenses or other devices, which concentrate the illumination upon such buildings, landscaping, signs, and parking and loading areas. No unshielded lights, reflectors, or spotlights shall be so located and directed that they shine toward or are directly visible from adjacent properties or streets.*

Lights would be shielded and downward facing to reduce offsite light scatter. Long-term impacts associated with light would be less than significant.

Daytime glare can occur when the sunlight strikes reflective surfaces such as windows and reflective building materials. The bio-energy facility would introduce new structures into the project area, however, reflective building materials would not be used as part of building design, and as such, the facility would not result in increases in daytime glare. Therefore, impacts associated with daytime glare would be less than significant.

Solar Facility

The solar facility, a separate project from the bio-energy facility, would involve the installation of solar facility is immediately adjacent to the bio-energy facility. The solar facility field would be oriented in a north-south direction, and the panels would rotate in an east-west direction to track the sun as it moves across the sky during the day. The solar panels would be black in color and would use anti-reflective glass to be absorptive rather than reflective. By design, the solar panels would absorb sunlight to maximize electrical output. Crystalline silicon cells absorb two-thirds of the sunlight reaching the panel's surface. The addition of anti-reflective glass reduces the reflected sunlight and increases absorption. The panels would be on a single-axis tracking system, limiting the rotation angles of the panels; the panels would lack the ability to reflect the sun upon any ground-based, offsite observer.

The Colusa County Airport is located north of the solar facility site. The southernmost portion of the runway, is located approximately 0.75 of a mile from the northern boundary of the solar site. The runway extends in a north-south direction. Glare-producing reflections from the solar facility field would only be possible when the sun's position in the sky is east of the pilot/viewer, approaching or taking off at the southern end of the runway. Solar panels have less reflectivity than water (Shea, 2012). Given that the solar facility site and surrounding agricultural land is predominantly rice fields, which tend to be flooded during both the five-month growing season and during winter months for wildlife conservation, the installation of the solar facility field would create less reflection than the water used for existing agricultural uses. Therefore, the impacts associated with daytime glare and the solar facility are considered less than significant.

Mitigation

None Required.

2. Agricultural and Forestry Resources

Would the project:	Potentially Significant	Less Than Significant with Mitigation	Less Than Significant	No Impact
a) Convert Farmland (Prime, Unique or of Statewide Importance) pursuant to the Farmland Mapping and Monitoring Program of the CA Resources Agency, to non-agricultural use?			X	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 1220(g)), timberland (as defined by Public Resources Code section				X

4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?			X	

Responses to Checklist Questions

a) Less than Significant:

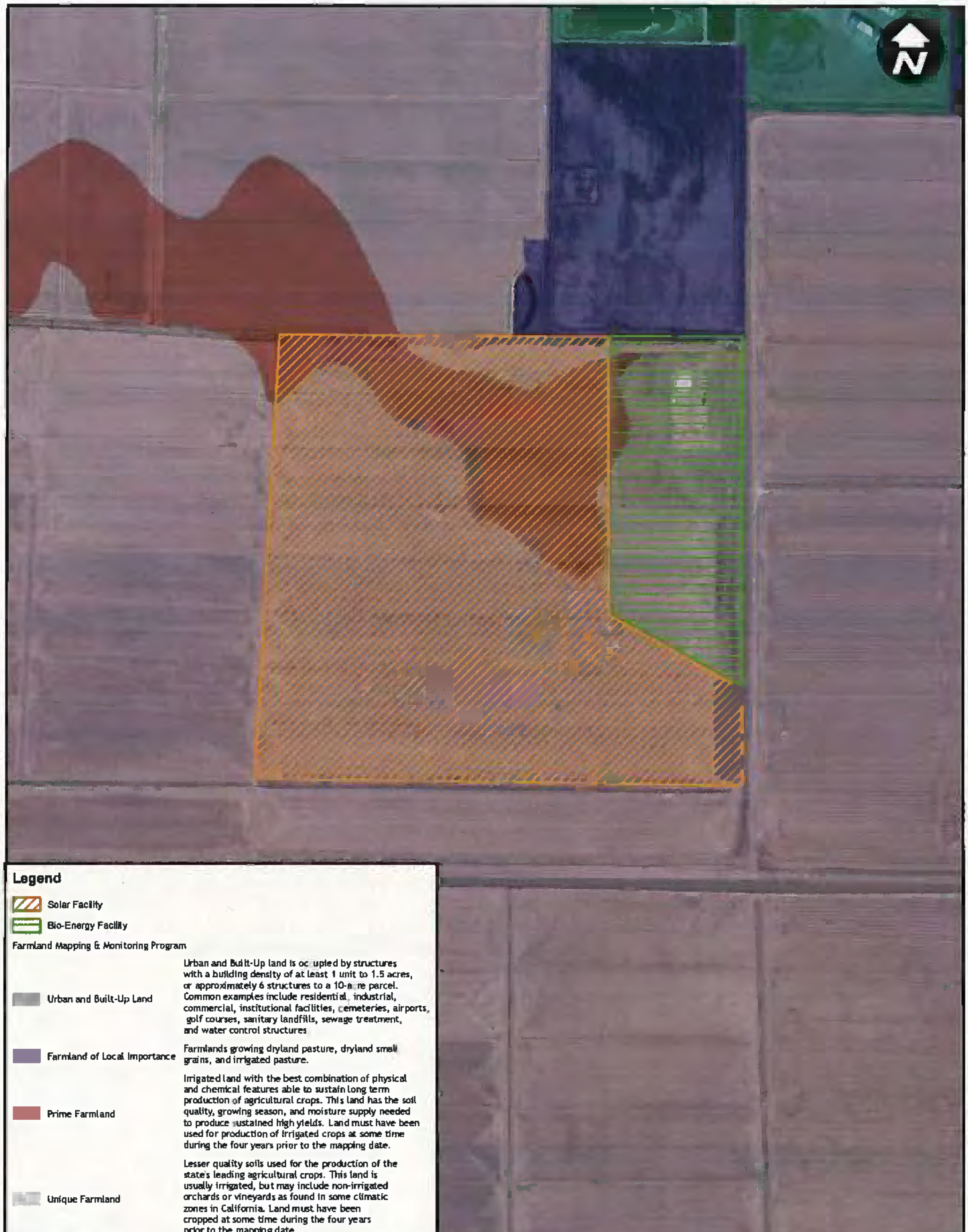
The projects are located in a rural agricultural area of Colusa County approximately 1 mile south of the City of Colusa and west of the Sacramento River. According to the EIR for the Colusa County General Plan Update, agriculture is the County's primary economic sector. The Colusa County Agricultural Commission identifies 434,400 acres of cropland and 206,600 acres as underdeveloped? rangeland. Within these agricultural classifications, farmland is used for a variety of crop, livestock and other agriculturally-related activities. The Farmland Mapping and Monitoring Program (FMMP) *Important Farmland* map identifies the bio-energy facility site as "Unique Farmland." This designation consists of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyard as found in some climatic zones in California. A section of the northern portion of the solar facility site is designated as "Prime Farmland." This designation consists of irrigated land with the best combination of physical and chemical features able to sustain long-term production of agricultural crops; **Figure 7, Prime Farmland**.

Implementation of the bio-energy facility project and the solar facility would remove approximately 153 acres of land from agricultural production.

According to the EIR for the Colusa County General Plan, there are a total of 123,318 acres of land identified as Unique Farmland within the County. The project site consists of a total of 152.5 acres: 25 acres slated for the biomass facilities and 127.5 acres reserved for the future construction of a solar array. Up until 2012 when the fields were taken out of production, the properties were used for rice production. The conversion will equate to a loss of 0.12 percent of unique farmland within the County. Further, the County is currently undertaking an update to the zoning ordinance and mapping, in which these properties will be rezoned from Exclusive Agriculture (EA) to Industrial. The rezone will extend the industrial uses consistent with the CIP, southward to include the bio-energy facility and solar facility lands; a process that is expected to conclude concurrently with or after entitlement of the bio-energy facility project. The impacts associated with the conversion of farmland to non-agricultural uses was addressed in the General Plan, and a statement of overriding considerations for that loss was adopted by the Board of Supervisors. Impacts associated with implementation of the bio-energy and solar facility projects are considered less than significant.

b) No Impact:

There are no Williamson Act contracts within or adjacent to the project site.



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Water Resources · Environmental · GIS

Drawn By: CJW
Checked

Map Date: 11/12/13
Scale: 1 inch = 726 feet

Feet
0 250 500 1,000

Farmland Data Provided By Colusa County
Aerial: ESRI (January 16, 2012)
Map Date: November 12, 2013

Colusa Bio-Energy Facility CUP

FIGURE 7 - PRIME FARMLAND

c- d) No Impact:

The project would not cause the rezoning of forest land or timberland. The project is located within a rural agricultural area south of the City of Colusa that consists of active agricultural lands and Industrial land uses. The project would not result in the loss of forest land to a non-forest use.

e) Less than Significant:

Refer to discussion under Item a) above.

Mitigation

None Required.

3. Air Quality

Would the project:	Potentially Significant	Less Than Significant with Mitigation	Less Than Significant	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?		X		
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including emissions that exceed quantitative thresholds for ozone precursors)?		X		
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Create objectionable odors affecting a substantial number of people?			X	

Responses to Checklist Questions

a- c) Less Than Significant With Mitigation Incorporated:

The project will result in temporary impacts associated with construction activities, as well as long-term impacts associated with operations and maintenance of the bio-energy facility. Construction-related air quality impacts and operational air quality impacts are addressed separately below.

<u>Construction-Related Emissions</u>

Construction activities associated with the bio-energy facility project would include construction of office/shop, turbine, fuel processing and storage buildings (including temporary buildings), site grading for both the bio-energy site and solar facility site, construction of access roads, and utility installation (water and wastewater pipelines). These construction activities would result in the generation of short-term, temporary emissions of fugitive dust (PM10). PM10 emitted during construction can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. Despite this variability in emissions, experience has shown that there are a number of feasible control measures that can be reasonably implement to significant reduce PM10 emissions from construction activities to levels considered less than significant.

For the purpose of this analysis, it is assumed that the 25.5 acre bio-energy facility site would be constructed in 2014, and the future solar facility of approximately 127.5 acres would be completed at some future date.

Construction activities that could generate dust and vehicle emissions are primarily related to grading and other ground-preparation activities in order to prepare the project site for the installation of various structures and improvements proposed.

Additionally, construction activities would result in temporary emissions of nitrogen oxides (NO_X) and reactive organic gases (ROG) from diesel fumes associated with operation of construction equipment.

Relative to state and federal ambient air quality standards, Colusa County is in non-attainment under state standards for 1-hour Ozone and PM10. Refer to **Table 1.**

Table 1. Colusa County Air Quality Attainment Status

Pollutant	State	Federal
NOx	Attainment	Attainment
SO2	Attainment	Attainment
CO	Attainment	Attainment
1-hour Ozone	*Non-Attainment Transitional (by operation of State law)*	--
8-hour Ozone	*Attainment*	*Attainment*
PM10	*Non-Attainment*	Attainment
PM2.5	*Attainment*	*Attainment*

Thresholds of significance for air quality impacts have been established in other districts in the Northern Sacramento Valley Air Basin (NSVAB). These thresholds have been used as a basis for this analysis, specifically 25 tons per year (or 137 pounds per day) of any nonattainment pollutant (or their precursors), which is also consistent with CCAPCD Rule 3.6. In addition, a more stringent threshold of 80 pounds per day was used for PM10 (a non-attainment pollutant).

The California Emissions Estimator Model (CalEEMod) version 2011.1.1 was used to quantify construction and operational emissions associated with the project. **Table 2**, provides a summary of construction emission estimates. CalEEMod modeling used construction equipment defaults for a conservative approach to analysis and assumed one construction season (May 1 to October 31, for a total of 132 active days).

Based on estimated construction emissions, construction of the bio-energy facility project would result in a less than significant construction air quality impacts; however, standard mitigation measures would further reduce construction emissions, these are identified under Mitigation below.

Table 2. Estimated Construction Emissions 2013/2014

Construction Emissions	Tons Per Year		
	ROG	NO_X	PM10
Unmitigated 2013/2014	2.03	13.74	1.27

Source: Air Quality Analysis, 2013.

In addition, the future solar facility would have minimal surface disturbances such as grading, clearing and other earth-moving activities. The construction activities would attract vehicle trips, as workers associated with construction, however these will be short-term. The potential Solar Facility construction impacts will be less than significant.

<u>Operational Emissions</u>

Emissions generated from operation of the proposed biomass boiler would be the primary source of stationary emissions from the bio-energy facility project. The project would also result in increased vehicle trips to the project site from employees and from trucks transporting biomass materials. As described in the project description, the bio-energy and the solar facility projects would generate a total of 24 employee trips per day and an average of 33 truck trips per day for biomass fuel deliveries.

Mobile Operational and Area Source Emissions

The mobile operational and area source emissions were calculated using the California Emissions Estimator Model (CalEEMod) version 2011.1.1. The emission estimates for the biomass fuel delivery trucks were calculated separately using CARB emission factors for on road heavyduty trucks. **Table 3** depicts the bio-energy facility project's unmitigated and mitigated mobile emissions, based on the annual estimates of ROG, NOx and PM10.

Table 3. 2013/2014 Total Mobile Operational Emissions

Operational Emissions	ROG	NOx	PM10	PM2.5
	Tons Per Year			
Unmitigated 2013/2014	0.08	0.19	0.03	1.04
2013/2014 Truck	0.24	4.45	0.10	
Total Unmitigated 2013/2014	**0.32**	**4.64**	**0.13**	**1.04**
Mitigated 2013/2014	0.08	0.17	0.03	1.04
2013/2014 Truck	0.24	4.45	0.10	
Total Mitigated 2013/2014	**0.32**	**4.62**	**0.13**	**1.04**
Total Reduction	0	0.02	0	0

Source: CalEEMod (Attachments A, B & C)

As with the mobile operational emissions estimates, the emissions generated by area sources would not be expected to exceed the Level A daily threshold of 80 pounds per day. Therefore, the project would have mobile operational and area source emissions impacts that are less than significant.

Bio-Energy Facility Operational Emissions

Maximum daily and annual emissions, reflect both startup emissions and base-load emissions. Maximum daily emissions were calculated to subsequently determine the applicability of best available control technology (BACT) and the associated ambient air quality impacts. Maximum daily emissions reflect the last two hours of an 8-hour cold startup sequence followed by 22 hours of base-load operation. Maximum annual emissions were calculated to subsequently determine the applicability of emission offsets, the emission offset liability, and the associated ambient air quality impacts. Maximum annual emissions for the BFB Boiler reflect 8,520 hours of base-load operation.

The maximum emissions from the proposed bio-energy facility are compared with the CCAPCD offset thresholds in **Table 4**. Offsets will not be required for CO and $PM_{2.5}$, which are not nonattainment pollutants. Maximum facility emissions of all nonattainment pollutants, except reactive organic compounds (ROC), will exceed the District's 25 tpy offset threshold. Therefore, the project proponent must offset the emission increases of NOx/PM10/SOx associated with the bio-energy facility. Please note that the Draft ATC Permit Application and the mobile and area source emission estimates refers to reactive organic pollutants differently. However, both ROC and reactive organic gases (ROG) are equivalent.

Table 4. Total Operational Emissions from the Bio-Energy Facility

Pollutant	Biomass Combustion	Mobile Sources	Total	Offset Thresholds	Offsets Required
CO	142	N/A	142	N/A	No
NO_X	132	4.62	136.62	25	Yes
PM_{10}	43.9	0.13	44.03	25	Yes
$PM_{2.5}$	43.5	1.04	44.54	N/A	No
ROC	8.76	0.32	9.08	25	No
SO_X	52.4	N/A	52.4	25	Yes

The emission offset liability for the proposed Plant is summarized in **Table 5**. Section c.3 of Rule 3.6 (Standards for Authority to Construct) specifies the offset ratios that must be used to offset emission increases from a project. An offset ratio of 1.5:1 was assumed (see the Draft ATC Application, Appendix C). The final offset analysis will be updated to reflect the actual location of the portfolio of emission reduction credits (ERCs) used to provide the offsets. Offset ratios vary according to the distance of the origin of the emission reductions to the proposed facility, as follows:

- An offset ratio of 1:1 for on-site emission reductions;
- An offset ratio of 1.2:1 for emission reductions originating within 20 miles;
- An offset ratio of 1.5:1 for emission reductions originating between 20 and 50 miles; and
- An offset ratio of 2:1 for emission reductions originating beyond 50 miles.

Table 5. Offset Liability

Pollutant	Offsettable Emissions Increase (lb/quarter)	Offset Ratio[1]	Offset Liability (lb/quarter)[2]
CO	0	N/A	0
NOx	53,626	1.5	80,439
PM_{10}	9,470	1.5	14,205
$PM_{2.5}$	0	N/A	0
ROC	0	N/A	0
SOx	13,700	1.5	20,550

Notes:
[1] Assumes all sources of ERCs originate between 20 and 50 miles of the Plant for the purposes of this offset analysis.
[2] Calculated as the offsettable emissions increase times the offset ratio. The final offset liability will be recalculated after all sources of ERCs are identified.

The operating emissions of the bio-energy were also analyzed with regards to Ambient Air Quality Standards (AAQS). Section c.5 of Rule 3.6 specifies that emissions from a new stationary source shall not cause or worsen a violation of any AAQS. Therefore, an air quality impact analysis (AQIA) was performed to estimate the maximum ground-level concentrations associated with emissions from the Plant, during both base-load operation, startup, and commissioning, to determine whether such impacts are significant, and to demonstrate that such concentrations – when combined with background concentrations – will not cause or worsen a violation of any AAQS. A detailed discussion of the AQIA is included in the Draft ATC Permit Application (Appendix C).

Best Available Control Technology (BACT)

Section c.1 of Rule 3.6 requires an applicant to apply BACT, on a pollutant-specific basis, to any new emissions unit that has maximum daily emissions exceeding specified thresholds. The project proponent must apply BACT for CO, NOx, PM10, ROC, and SOx emissions from the BFB Boiler, as well as NOx emissions from the Emergency Generator and Emergency Fire Pump (refer to the Draft ATC Permit Application (Appendix C). BACT will not be required for the Rice Hulls Receiving/Handling operation, Rice Hulls Stockpiles, Shells/Wood Receiving/Handling operation, Shells/Wood Stockpiles, Cooling Tower, and Ash Silos, Lime Silo. BACT also will not be required for the Emergency Generator and Emergency Fire Pump, except for NOx. Therefore, BACT analyses were conducted for the BFB Boiler, Emergency Generator, and Emergency Fire Pump to identify BACT. Provided below is a summary of the results of the BACT analyses.

The CCAPCD defines BACT as the most stringent emission limitation or control technique of the following criteria:

- The most effective emission control device, emission limit, or technique that has been required or used for the type of equipment comprising such emissions unit; or

- Any other emission control device or technique, alternative basic equipment, different fuel or process, determined to be technologically feasible and cost- effective by the District.

The first criterion listed above is typically referred to as the "achieved in practice" standard while the last is commonly known as the "technologically feasible" standard. Furthermore, BACT must not be less stringent than the emission control required by any applicable provision of CCAPCD, state, or federal laws or regulations, unless the applicant demonstrates to the satisfaction of the CCAPCD that such limits are not achievable.

As summarized in the following sections, the BACT analyses made the following conclusions, as shown below.

- A CO emission limit of 0.09 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design CO emission rate of 0.081 lb/MMBtu (24-hour average), the proposed BFB Boiler will satisfy BACT.
- A NOx emission limit of 0.075 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design NOx emission rate of 0.075 lb/MMBtu (24-hour average), the proposed BFB Boiler will satisfy BACT.
- A PM_{10} emission limit of 0.024 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design PM_{10} emission rate of 0.024 lb/MMBtu, the proposed BFB Boiler will satisfy BACT.
- A SOx emission limit of 0.054 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design SOx emission rate of 0.030 lb/MMBtu (30-day average), the proposed BFB Boiler will satisfy BACT.
- A VOC emission limit of 0.009 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design VOC emission rate of 0.005 lb/MMBtu, the proposed BFB Boiler will satisfy BACT.
- The Tier 2 NOx+VOC standard of 4.8 g/bhp constitutes BACT for an emergency diesel generator rated greater than 750 bhp. The proposed Emergency Generator is a Tier 2 engine and thus will satisfy BACT.
- The Tier 3 NOx+VOC standard of 3.0 g/bhp constitutes BACT for an emergency fire pump rated between 600 and 750 bhp. The proposed Emergency Fire Pump is a Tier 3 engine and thus will satisfy BACT.

The bio-energy facility project will mitigate its onsite emissions from the bio-energy facility per CCAPCD permitting requirements using BACT and emission offsets. Therefore, the project's net emissions would all be below the applicable significance thresholds, so the project would have emissions impacts that are less than significant.

e) Less than Significant:

Operation of the bio-energy project would not generate odors directly. No noticeable odors would be emitted from the boiler. The only notable potential for the creation of odors associated with the bio-energy project is the potential for biomass fuel for the project to generate odors if it is left to rot or decay. The biomass would be stored in piles and rotated on a continuous basis to avoid rot and decomposition. Therefore, impacts related to odors is less than significant. No mitigation is required.

Mitigation

All projects in Colusa County must comply with CCAPCD Rule 2.10 *Nuisance*. Also, the Colusa County Grading Ordinance (Chapter 9 of the County Code) establishes permit requirements and grading standards to which all projects must adhere.

In addition, based on estimated construction emissions, construction of the bio-energy facility project and the solar facility would result in a less than significant construction air quality impacts; however, standard mitigation measures would further reduce construction emissions, these are identified below.

MM Air Quality 1 - Construction Emissions:

The following air quality control measures shall be listed on all building and site improvement plans:

<u>Control Dust</u>

a) During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems are to be used to prevent dust from leaving the site and to create a crust after each day's activities cease.
b) During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the later morning and after work is completed for the day and whenever wind exceeds 15 miles per hour.
c) Soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation.
d) On-site construction vehicles shall be limited to a speed of 15 mph on unpaved roads.
e) Haul vehicles transporting soil into or out of the property shall be covered.
f) Existing roads and streets adjacent to the project shall be cleaned at least once per day if dirt or mud from the project site has been tracked onto these roadways, unless conditions warrant a greater frequency.
g) Other measures may be required as determined appropriate by the CCAPCD or Department of Public Works in order to control dust.

<u>Post Contact Information</u>

a) Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24 hours. The telephone number of the Colusa County Air Pollution Control District shall be visible to ensure compliance with CCAPCD Rule 2.10 Nuisance.

<u>Other Construction Practices</u>

a) Maintain all construction equipment in proper tune according to manufacturer's specification.
b) Where feasible, give preference to utilizing the following equipment:

- Electric equipment
- Substitute gasoline-powered for diesel-powered equipment
- Alternatively fueled construction equipment on-site, such as compressed natural gas (CNG), liquid natural gas (LNG), propane, or biodiesel.
- Equipment that has Caterpillar pre-chamber diesel engines, as practical.
- Diesel construction equipment meeting the California Air Resources Board's (CARB) 1996 or newer certification standard for off-road heavy-duty diesel engines.

c) Construction workers shall park in designated parking area(s) to help reduce dust emissions.

Timing: Requirements of the mitigation shall be adhered to throughout all grading and construction periods.

Monitoring: The Colusa County Planning Department and the Public Works Department shall ensure that mitigation measures are noted on building and improvement plans and/or in construction and contract documents. Building inspectors shall spot check and shall ensure compliance on-site. Colusa County Air Pollution Control District inspectors shall respond to nuisance complaints.

4. Biological Resources

Would the project:	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?		X		
c) Have a substantial adverse effect on protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Responses to Checklist Questions

a-b) Less Than Significant with Mitigation Incorporated:

<u>Biological Resources Assessment</u>

A Biological Resources Assessment (BRA) was prepared covering both the bio-energy facility site and the solar facility site. Biological surveys were conducted on February 21, 2013, during which general biological resources and habitat assessments were conducted to determine the presence of special-status species and habitats within the project site and to determine if these resources would be impacted by the proposed projects. The project site is heavily disturbed and manipulated through past agricultural practices. As such, very few natural habitats remain on the two sites.

Lists of special-status species that potentially occur in the vicinity of the project site were obtained from the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB), and the California Native Plant Society (CNPS), refer to Appendix D for species lists. Prior to and following the February 2013 field survey, the lists were evaluated, and the potential for these special-status species to occur in the survey area was assessed.

All of the special-status species listed by the US Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and California Native Plant Society (CNPS) as occurring within the Colusa and Meridian and/or eight surrounding USGS quadrangles are included in the BRA, Table 1 (refer to Appendix D). With the exception of Swainson's Hawk (due to potential for foraging habitat), species with a "Moderate" or "High" potential for occurrence within the project site are listed in **Table 6**. Known occurrences of heartscale, vernal pool fairy shrimp, tricolored blackbirds, and the GGS occur within 1 mile of the project site. Within 5 miles of the project site, known populations of palmate-bracted bird's beak, Coulter's goldfields, San Joaquin spearscale, Ferris' milk-vetch, brittlescale, vernal pool smallscale, bank swallow, Swainson's hawk, San Joaquin pocket mouse, and western yellow-billed cuckoo occur. However, the only listed species with potential habitat to occur within the project site are the tricolored blackbird and GGS as well as foraging habitat for Swainson's hawks and White-tailed Kite. Additionally, habitat for a variety of other migratory birds and raptors occurs within the project site. The remaining species listed above as having known occurrences within 5 miles require habitat types that do not occur within the project site including vernal pools, alkaline flats, or riparian habitats.

Table 6.
List Of Special-Status Species With Moderate to High Potential for Occurrence Within the Project Site

Common Name (*Scientific name*)	Status Fed/State/ CNPS	Habitat	Potential for Occurrence
REPTILES & AMPHIBIANS			
Giant garter snake (*Thamnophis gigas*)	FT/ST/__	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands.	Moderate. Marginal habitat present in the ditches within the BSA
Northwestern Pond Turtle (*Actinemys marmorata marmorata*)	__/CSC/__	Associated with permanent ponds, lakes, streams, and irrigation ditches or permanent pools along intermittent streams.	Moderate. Marginal habitat present in the ditches within the BSA.
BIRDS			
Burrowing Owl (*Athene cunicularia*)	_/CSC/_	Nests in burrows in the ground, often in old ground squirrel burrows or badger, within open dry grassland and desert habitat.	Moderate. Marginal habitat associated with farming activities within the BSA.
Northern Harrier (*Circus cyaneus*)	_/CSC/_	Meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands	Moderate. Marginal nesting habitat present.
Swainson's Hawk (*Buteo swainsoni*)	__/ST/__	Nests in isolated trees or riparian woodlands adjacent to suitable foraging habitat including grasslands or suitable grain or alfalfa fields, or livestock pastures.	None. No suitable nesting trees present within the Project site; however suitable foraging habitat is present.
Tri-colored blackbird (*Agelaius tricolor*)	_/CSC/_	Nests in dense blackberry, cattail, tules, willow, or wild rose within emergent wetlands throughout the Central valley and foothills surrounding the valley.	Moderate. Marginal habitat present within a few of the ditches present within the Project site.
White-tailed Kite (*Elanus leucurus*)	__/FP/__	Uses herbaceous lowlands with variable tree growth and dense population of voles. Substantial groves of dense, broad-leafed deciduous trees used for nesting and roosting.	None. No suitable nesting trees present in the BSA; however suitable foraging habitat is present.
Migratory Birds and Raptors	MBTA	Nest and forage in a variety of habitats including hardwood woodlands, coniferous forests, meadows, grasslands and riparian.	High. Suitable foraging and nesting habitat present.

CODE DESIGNATIONS	
FE = Federally-listed Endangered FT = Federally-listed Threatened FC = Federal Candidate Species BCC = Federal Bird of Conservation Concern MBTA = protected by the federal Migratory Bird Treaty Act SE = State-listed Endangered ST = State-listed Threatened	CSC = CDFG Species of Special Concern FP = CDFG Fully Protected Species SNC= CDFG Sensitive Natural Community CNPS 1B = Rare or Endangered in California or elsewhere CNPS 2 = rare or Endangered in California, more common elsewhere CNPS 3 = More information is needed CNPS 4 = Plants with limited distribution

*Potential for occurrence: for plants it is considered the potential to occur during the survey period; for birds and bats it is considered the potential to breed, forage, roost, over-winter, or stop-over in the BSA during migration. Any bird or bat species could fly over the BSA, but this is not considered a potential for occurrence. The categories for the potential for occurrence include:

None: The species or natural community is known not to occur, and has no potential to occur in the BSA based on sufficient surveys, the lack of suitable habitat, and/or the BSA is well outside of the known distribution of the species.

Low: Potential habitat in the BSA is sub-marginal and the species is not known to occur in the vicinity of the BSA. Protocol-level surveys are not recommended.

Moderate: Suitable habitat is present in the BSA and the species is known to occur in the vicinity of the BSA.

High: Habitat in the BSA is highly suitable for the species and there are reliable records close to the BSA, but the species was not observed.

Known: Species was detected in the BSA or a recent reliable record exists for the BSA.

Source: NorthStar Engineering, 2013. For a full list of all potentially occuring species in the area, see Appendix D.

Only species with a moderate to high potential of occurring within the project (including the potential for foraging habitat) are discussed in the sections below. Species with a low or no potential to occur within the project site are not discussed further because the potential for these species to occur is negligible.

Reptiles and Amphibians

Two special-status reptile species, GGS and northwestern pond turtle, were determined to have a moderate potential to occur within the project site. No other special-status reptile or amphibian species were determined to have potential to occur.

Northwestern Pond Turtles

The northwestern pond turtle is listed as a state and federal species of special concern. It occurs in aquatic habitats including rivers, streams, and natural and artificial ponds and lakes. They require basking sites, moderately deep water, microinvertebrate forage, and terrestrial habitat suitable for laying eggs and wintering. Habitat exists within the irrigation ditches as well as adjacent rice fields. No turtles were observed during the survey.

Giant Garter Snake

The GGS is a federal and state listed threatened species which inhabits agricultural wetlands and other waterways such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley. Because of the direct loss of natural habitat, the GGS relies heavily on rice fields in the Sacramento and San Joaquin Valley, but also uses managed marsh areas in federal national wildlife refuges and state wildlife areas. Giant garter snakes are typically absent from larger rivers because of lack of suitable habitat and emergent vegetative cover, and from wetlands with sand, gravel, or rock substrates. Riparian woodlands typically do not provide suitable habitat because of excessive shade, lack of basking sites, and absence of prey populations. However, some riparian woodlands do provide good habitat.

Primary habitat requirements consist of 1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; 2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; 3) grassy banks and openings in waterside vegetation for basking; and 4) higher elevation uplands for cover and refuge from floodwaters during the snake's dormant season. Habitat loss and fragmentation, flood control activities, changes in agricultural and land management practices, predation from introduced species, parasites, water pollution and continuing threats are the main causes for the decline of this species. However, when abundant cover is available, GGS may be able to persist with numerous predators that share the same habitats (NorthStar Engineering, 2013).

The rice fields within the project site have been inactive and drained since 2012 and no longer support potential GGS or pond turtle aquatic habitat. However, the irrigation ditches and active rice fields adjacent to the project site provide potentially suitable aquatic habitat for GGS and the upland areas within 200 feet of the ditches and active rice fields provide potentially suitable upland basking habitat for GGS and pond turtle. Additionally, multiple known CNDDB occurrences of GGS are located within 5 miles of the project site and are potentially hydrologically connected to the irrigation ditches within the project site. The road construction/improvement, portion of the projects will impact irrigation ditches that hold potential GGS and pond turtle aquatic habitat in three locations. In addition, the construction of both projects will encroach upon potential GGS upland habitat, which occurs within 200 feet of the irrigation ditches on the site.

<u>Fish</u>

None of the drainages or ditches within the project site provide suitable habitat for anadromous fish. These drainages are all man-altered and do not contain sufficient flows to provide habitat for anadromous fish.

<u>Birds</u>

The project site contains potentially suitable habitat for a variety of special-status bird species including the northern harrier, tricolored blackbird, and a number of migratory bird species protected by the Migratory Bird Treaty Act (MBTA). The project site also contains suitable foraging habitat for the Swainson's hawk and white-tailed kite; however the site does not support suitable nesting habitat for these two raptor species.

Northern Harrier

Northern harriers are a raptor commonly found near wetlands and open grasslands perched on or flying close to the ground. The northern harrier is one of the few birds of prey that is frequently polygynous when ecological conditions permit. Nests are constructed on the ground, typically in dense, low vegetation that provides a visual barrier and cover. In drier habitats, the nest consists of a loose, thin layer of sticks. In wetter situations, nests are larger, more substantial structures. Nests are built by the female and typically consist of grass, reeds, and small sticks. Breeding activity begins in April, concluding in September, with a peak in activity from June to July. A single brood of four to six eggs are incubated by the female. Incubation begins with the last egg and lasts about 29-

39 days. The female broods the young for about 4 weeks while the male provisions the female and young with prey items. Young begin to leave the nest, moving around into the surrounding vegetation, at about 2 weeks of age. The amount of time spent at the nest steadily decreases after this point until fledging. First flight generally occurs at 29–34 days of age. Young remain in the vicinity of the nest until dispersal. Both projects and the road construction activities may impact potential nesting habitat for the northern harrier.

Swainson's Hawk (foraging habitat only)

Swainson's hawk is a long-distance migrant with nesting grounds in western North America. The Swainson's hawk population that nests in the Central Valley winters primarily in Mexico, while the population that nests in the interior portions of North America winters primarily in Argentina. Swainson's hawks arrive in the Central Valley between March and early April to establish breeding territories, and breeding occurs from late March to late August, peaking in late May through July. In the Central Valley, Swainson's hawks nest in isolated trees, small groves, or large woodlands, next to open grasslands or agricultural fields. This species typically nests near riparian areas; however, it has been known to nest in urban areas as well. Nest locations are usually in close proximity to suitable foraging habitats, which include fallow fields, irrigated pastures, alfalfa and other hay crops, and low-growing row crops. Swainson's hawks leave their breeding grounds to return to their wintering grounds in late August or early September (Bloom and DeWater 1994). Swainson's hawks' largest threats are loss of habitat and poisoning due to pesticide use in South America, where they winter. Both projects and the road construction activities may impact potential foraging habitat for Swainson's hawks. However, no trees occur within the project site or in close proximity to the project site, therefore, no impacts to Swainson's hawk nesting habitat is anticipated.

White-Tailed Kite (foraging habitat only)

The white tailed kite is a CDFW fully protected bird species that can be found as a yearlong resident in coastal and valley lowlands near agricultural areas. Its habitat includes herbaceous and open stages of most habitats and cismontane habitats in California. The kite forages in undisturbed open grasslands, meadows, farmlands, and emergent wetlands where there are dense populations of voles (their main food source). White tailed kites require dense broad-leaved deciduous tree woodlands for nesting. Both projects and the road construction activities may impact potential foraging habitat for white-tailed kites. However, no trees occur within or in close proximity to the project site, therefore, no impacts to white-tailed kite nesting habitat is anticipated.

Tri-colored Blackbird

The tri-colored blackbird occurs throughout California's Central Valley and in coastal habitats from Sonoma County south. The tri-colored blackbird requires dense fresh emergent wetlands to nest and breed, and forages in grassland and cropland habitats. Its nests are made from mud and plant materials and they form colonies of 50 pairs to as large as 30,000 pairs. Tri-colored blackbirds require open, accessible water, protective nesting substrates (flooded, thorny, or spiny vegetation), and suitable foraging space within a few miles of the nesting colony. In response to loss of fresh emergent wetland habitat, tri-colored blackbirds have been increasingly observed to utilize Himalayan blackberry (*Rubus discolor*), elderberry, poison oak (*Toxicodendron diversilobum*), and grain fields for colony establishment. Portions of the irrigation ditches within and adjacent to the BSA contain dense emergent vegetation that could potentially be used as nesting habitat for tri-colored blackbirds. As such, the proposed irrigation ditch crossings and crossing improvements may impact potential nesting habitat for the tri-colored blackbird.

Migratory Bird Species

Migratory birds are protected in varying degrees under California Fish and Game Code, Section 3503.5, the MBTA, and CEQA. The project site currently provides suitable nesting and/or foraging habitat for several of these species that may nest on the ground in the abandoned rice fields or in low vegetation present within and adjacent to the irrigation ditches. Direct take of active nests, eggs, or birds is prohibited by CDFW and measures must be taken to minimize disturbance. Therefore, a qualified biologist should conduct a pre-construction migratory bird survey during April-May, or no more than 30 days prior to construction activities, to determine the presence/absence of nesting birds in the project site. Should nesting migratory birds be observed, appropriate spatial and temporal buffers will be required by MBTA and/or CDFW.

Mammals

No special-status mammal species have potential to occur within the project site due to the lack of suitable roosting habitat for bat species and the lack of open grassland areas for special-status rodents.

c) Less Than Significant With Mitigation Incorporated:

Waters of the U.S.

During the field visit to the project site, irrigation ditches were observed along the northern, southern, and eastern boundaries of the project site. These features are likely considered jurisdictional other waters by the U.S. Army Corps of Engineers (USACE). Additionally, a narrow strip of open land in-between the rice field/access road and the irrigation ditch along the eastern boundary of the site exhibited wetland characteristics and may also be considered jurisdictional by the USACE.

Due to the length of time that a portion of the bio-energy and solar facility sites have been under rice production, it is likely that these areas are regulated, in part, by the Natural Resources Conservation Service (NRCS) and may be considered "prior converted cropland" by the NRCS. As such, a wetland determination should be requested from the NRCS, if a valid determination has not already been made on the site by the NRCS. The Farm Service Agency (FSA) must be notified of the proposed conversion of the project area to a development as well. Once a valid wetland determination is acquired from the NRCS, the USACE should be notified of the NRCS wetland determination. In addition, the USACE must be informed of the presence of any potential jurisdictional waters of the U.S. on the site via the submittal of a formal wetland delineation report and map depicting the potential features. This wetland delineation report and map must be verified by the USACE. The actual acreage of jurisdictional Waters of the U.S. is dependent upon review and approval by the USACE.

Required Regulatory Permitting

The USACE and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into jurisdictional waters of the United States, under Section 404 of the Clean Water Act (CWA). Due to the likelihood of the both projects impacting potential waters of the U.S., including irrigation ditches, a CWA Section 404 permit from the USACE must be acquired prior to the start of any construction activities within the survey area. In addition to the USACE permit, Section 401 of the CWA requires a water quality certification and authorization for placement of dredged or fill material in wetlands and other waters of the U.S. from the Regional Water Quality

Control Board (RWQCB), and the California Fish and Game Code (Section 1602) requires that a state or local government agency, public utility, or private entity notify the California Department of Fish and Wildlife (CDFW) if a proposed project will impact the streambed or bank of other waters of the U.S. and acquire a Streambed Alteration Agreement from the CDFW prior to construction activities.

In addition, as part of the permitting process, the USACE will be required to consult the US Fish and Wildlife Service (USFWS) to meet Section 7 requirements of the Endangered Species Act and the State Historic Preservation Office (SHPO) to meet Section 106 requirements of the National Historic Preservation Act (NHPA). Based on the recent records search there are no Section 106 issues; however, there are numerous occurrences of the giant garter snake (GGS), which is a state and federal listed species within 5 miles of the survey area. Due to these occurrences additional reporting and avoidance measures will be required for impacts to GGS habitat as part of the CWA Section 404 permitting process.

d) Less Than Significant With Mitigation Incorporated:

Refer to the discussion under Items a-b) above.

e-f) No Impact:

The proposed improvements would not conflict with any policies or ordinances adopted by Colusa County to protect biological resources. There is no adopted Habitat Conservation Plan covering the Project site. The project would be required to adhere to the mitigation measures and standard/permitting requirements of regulatory agencies, as set forth in this study. With regard to local plans, policies and ordinances, the projects would result in no impact.

Mitigation

MM Biological 1 – Giant Garter Snake:

Due to the potential for both projects to impact GGS habitat, Section 7 Consultation with the USFWS will be required (as part of the regulatory permitting process, refer to MM Biological 5 – Obtain Regulatory Permits) to determine the level of impacts to GGS habitat and required mitigation. Mitigation is dependent on the type of impact (direct habitat loss, indirect, and temporary), duration of construction, and takes into consideration both upland and aquatic habitat within 200 feet of construction activities. Mitigation ratios are typically 1:1 for short-term temporary impacts up to 3:1 for permanent impacts.

The following avoidance and minimization measures are typically required by the USFWS within a project area per the 1997 *Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California* (GGS Programmatic).

- Construction activities within 200 feet of the irrigation ditches on the site must be conducted during the active season for GGS (between May 1 and October 1) to minimize any direct impacts to the species.

- All potential GGS aquatic habitat that will be directly impacted by construction activities must be dewatered. Dewatered habitat must remain dry for at least 15 consecutive days after April 15 and prior to excavation or filling of the dewatered habitat.

- Construction personnel will participate in a USFWS worker environmental awareness training program. During the training, workers will be informed of the potential for this species to be present and the associated habitat for GGS and that it is unlawful to take harm or harass GGS.

- The site will be inspected by a USFWS approved biologist within 24 hours prior to the commencement of the construction activities. If GGS are found within the BSA, the USFWS will be notified immediately and the qualified biologist has the authority to stop all construction work on the site until the appropriate corrective measures have been conducted and it is determined that the snake will not be harmed.

- The clearing of wetland vegetation within the irrigation ditches will be confined to the minimal area necessary to complete the project. Excavation equipment will be located and operated from the top of the bank.

- Movement of heavy equipment to and from the site will be restricted to established roadways to minimize habitat disturbance and no staging or storing of equipment will occur within 200 feet of the ditches.

- Adjacent GGS habitat will be designated as Environmentally Sensitive Areas and will be flagged or fenced off using silt fencing and orange barrier fencing to avoid inadvertent impacts from the construction personnel.

- After completion of the construction activities, any temporary water diversion structures or plugs, if used within the irrigation ditches to dewater them during construction, and debris will be removed and the disturbed bank will be restored to pre-construction height and slope and revegetated with an appropriate native seed mix.

  Timing: Prior to initiation of any grading and construction activities for the bio-energy and/or solar facility. Regulatory permits can be submitted to the appropriate agency once design plans have been prepared for the bio-energy and/or the solar facility, including access roads.

  Monitoring: The Colusa County Planning Department shall be provided copies of regulatory permits. Requirements, including those listed as part of this mitigation measure, identified by the USACE, RWQCB, and/or CDFW shall be included in all Construction Plans and Contract Documents, as appropriate, and implemented by the contractor.

MM Biological 2 – Western Pond Turtle:

Western Pond Turtle shall be adequately protected during project construction through a combination of preconstruction surveys and implementation of a worker awareness training. A qualified biologist shall conduct a preconstruction survey of the site prior to any ground breaking activity to confirm that no turtles are located within the project area. The survey shall be conducted no more than 2 days prior to the start of construction. All workers shall be trained by the qualified biologist of the possible presence of this species within the project area. If a turtle is identified in the construction zone prior to or during construction the biologist should relocate the turtle to suitable habitat outside of the construction zone prior to starting or continuing construction activity.

Timing: Two days prior to initiation of any grading and construction activities.

Monitoring: The Colusa County Planning Department. Requirements shall be included in all Construction Plans and Contract Documents, as appropriate, and implemented by the contractor.

MM Biological 3 – Swainson's Hawk:

Prior to the initiation of construction the following shall be conducted:

a) A qualified biologist shall be retained to determine if an active nest is located within 10 miles of the bio-energy and/or solar facility sites at the time of construction.

b) If an active nest is located within 10 miles of the bio-energy and/or solar facility sites the then appropriate mitigation for loss of foraging habitat per CDFG's (CDFW) *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (Buteo swainsoni) in the Central Valley of California (CDFG, 1994)* will be required.

c) If an active nest is found within ½ mile of the project site, no intensive new disturbances (e.g., heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities) or other project-related activities that may cause nest abandonment or forced fledging, should be initiated within 0. 25 miles (buffer zone) of the active nest between March 1 and September 15. If construction or other project-related activities that may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site (funded by the project proponent) by a qualified biologist (to determine if the nest is abandoned) will be required. If an active nest is abandoned and the nestlings are still alive, the project proponent shall fund the recovery and hacking (controlled release of captive reared young) of the nestling(s). Routine disturbances such as agricultural activities, commuter traffic, and routine maintenance activities within 0.25 mile of an active nest are not be prohibited. Fledging will be verified by a qualified wildlife biologist.

Timing: Prior to initiation of any grading and construction activities.

Monitoring: The Colusa County Planning Department shall be provided with a summary letter reporting the findings of the qualified biologist and a summary of the timing and implementation of the mitigation. All requirements, including those listed as part of this mitigation measure and those identified by agencies as part of the regulatory permitting processes shall be included in all Construction Plans and Contract Documents, as appropriate, and implemented by the contractor.

MM Biological 4 – Migratory Birds and Raptors:

Vegetation removal or ground disturbance in areas where nests of northern harriers, tricolored blackbirds, or other birds protected by the MBTA (16 USC Section 703) and the CFGC (Section 3503) potentially occur, must be conducted between September 1 and February 28 (i.e. the nonbreeding season). If vegetation removal or ground disturbance occurs during the breeding season (i.e. March 1 to August 31) then a qualified biologist shall:

a) Conduct a survey for northern harriers, tricolored blackbirds, and all other birds protected by the MBTA and map all nests located within 500 feet of construction areas;

b) Develop buffer zones around active nests in coordination with CDFW. Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails. Nests shall be monitored at least twice per week and a report submitted to CDFW monthly.

Timing: Monitoring by a qualified biologist shall occur prior to initiation of any grading and construction activities during the breeding season (i.e., March 1 to August 31).

Monitoring: The Colusa County Planning Department shall be provided with a summary letter reporting the findings of the qualified biologist and a summary of the timing and implementation of the mitigation. All requirements, including those listed as part of this mitigation measure and those identified by agencies as part of the regulatory permitting processes shall be included in all Construction Plans and Contract Documents, as appropriate, and implemented by the contractor.

MM Biological 5 – Obtain Regulatory Permits

The USACE and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into jurisdictional waters of the United States, under Section 404 of the Clean Water Act (CWA). Due to the likelihood of potential impacts to waters or other waters of the U.S., including irrigation ditches, the following regulatory permits must be acquired prior to the start of any grading or construction activities within the bio-energy site and the solar energy site:

a) CWA Section 404 permit from the USACE

b) CWA Section 401 Water Quality Certification from the RWQCB

c) California Fish and Game Code (Section 1602) Streambed Alteration Agreement from CDFW

Timing: Prior to initiation of any grading and construction activities. Regulatory permits can be submitted to the appropriate agency once design plans (at a 60% level of completion) have been prepared for the bio-energy facility, including access roads, and solar facility project.

Monitoring: The Colusa County Planning Department shall be provided copies of regulatory permits. Requirements identified by the USACE, RWQCB, and/or CDFW shall be included in all Construction Plans and Contract Documents as appropriate and implemented by the contractor.

Obtaining the appropriate regulatory permits ensures: 1) compliance with applicable state and federal laws, 2) that potential impacts to wetlands and other waters of the U.S., waters of the state, and streambed and banks (including irrigation ditches) are mitigated appropriately (including the payment of mitigation fees), and 3) minimizes, reduces, or avoids potentially significant impacts.

5. Cultural Resources

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations, Section 15064.5?		X		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CA Code of Regulations, §15064.5?		X		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d) Disturb any human remains, including those interred outside of formal cemeteries?		X		

Response to Checklist Questions

a-d) Less Than Significant With Mitigation Incorporated:

On June 7, 2013, Genesis Society conducted an archaeological records search maintained by the Northwest Information Center (NWIC) at CSU-Sonoma for the bio-energy facility and solar facility project sites (Appendix E). According to the NWIC the area has not been subjected to an archaeological survey and no prehistoric or historic-era resources (sites) have been documented within the projects' boundaries. Likewise, no cultural resources have been formally recorded within 1/8-mile radius of the area.

Construction of the bio-energy facility and the solar facility would not generate potentially significant impacts to any known cultural, archaeological, and paleontological resources. However, there is the potential for unknown/undocumented resources, including human remains, to be uncovered during work activities. Pursuant to Health and Safety Code (Section 7050.5), the Coroner must be contacted if human remains are uncovered during construction activities. Previously unidentified human remains are subject to regulations set forth at the state and federal levels, including the CA Public Resources Code and the Native American Graves Protection and Repatriation Act (NAGPRA).

Mitigation

MM Cultural Resources 1:

Although no prehistoric or historic-era sites have been formally recorded or otherwise identified within or adjacent to the project corridor, the area is considered to contain lands at least moderate in sensitivity for cultural resources. Therefore, although unlikely, in the event that unknown resources are discovered during construction and excavation activities, the following measures will be included in all Contract Documents and Construction Plans.

a) Should archaeological resources be encountered at any point during project excavation and construction activities, all activity in the area of the discovery shall cease. Contractor shall retain the services of a qualified archaeological consultant to examine the findings that have been discovered, assess their significance, and offer proposals for any exploratory procedures deemed appropriate to either further investigate and/or mitigate any adverse impacts.

b) Should human remains be encountered during excavation activities in the project area, the following procedures shall be followed:

   i. Per Health and Safety Code Section 7050.5(b), the Colusa County Medical Examiner-Coroner's Office will be contacted immediately; this will occur whether or not a Most Likely Descendant (MLD) has already been appointed. All work must cease, no further disturbances may occur until the Coroner has made findings as to the origins and disposition per Public Resource Code Section 5097.98.

   ii. The Medical Examiner-Coroner's Office has two working days in which to examine the identified remains. If the Coroner determines that the remains are Native American, then, if an MLD has not yet been appointed, the Office will notify the Native American Heritage Commission (NAHC) within 24 hours.

   iii. Following receipt of the Medical Examiner-Coroner's Office notice, the NAHC will contact an MLD. The MLD will then have 48 hours in which to make recommendations to the County and the consulting archaeologist regarding the treatment and/or re-interment of the human remains and any associated grave items.

   iv. Appropriate treatment and disposition of Native American human remains and associated grave items will be collaboratively determined in consultation between the appointed MLD, the consulting archaeologist, and the landowner or authorized representative. The treatment of human remains may potentially include the preservation, excavation, analysis and/or reburial of those remains and any associated artifacts.

   v. If the remains are determined not to be Native American, the Medical Examiner-Coroner, archaeologist, and County will collaboratively develop a procedure for the appropriate study, documentation, and ultimate disposition of the historic human remains.

Timing: During construction and excavation activities.

Monitoring: The Colusa County Planning Department and the Public Works Department.

6. Geology and Soils

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
i.) Rupture of a known earthquake fault, as delineated on the Alquist-Priolo Earthquake Fault Zoning Map for the area or based on other substantial evidence of a known fault?				X
ii.) Strong seismic ground shaking?			X	
iii.) Seismic-related ground failure/liquefaction?			X	
iv.) Landslides?				X
b) Substantial soil erosion or the loss of topsoil?			X	
c) Located on a geologic unit or soil that is unstable, or would become unstable as a result of the project, and potentially result in landslide, lateral spreading, subsidence, liquefaction or collapse?				X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

Responses to Checklist Questions

a) Less Than Significant:

There are no active faults or Alquist-Priolo Earthquake Fault Zones in Colusa County. In addition there are no Seismic Hazard Zones identified in Colusa County (GP EIR, pg. 3.6-6). However, there are potentially active faults in nearby counties as all of California is subject to seismic ground shaking. Thus, the area could experience ground shaking and seismic-related ground failure generated (liquefaction) by faults outside Colusa County (GP EIR, pg. 3.6-16).

Areas of high liquefaction potential are confined to the nine Bay Area counties, which do not include Colusa County. The Sacramento River corridor presents the greatest likelihood of loose sediment and saturated soils, which are soil characteristics primarily associated with liquefaction (GP EIR, pg. 3.6-6). Because of the flat topography, soils in the project area do not have a tendency to become unstable, and there is no danger of landslides or mudslides in the area. The project area is a low subsidence area. Although expansive soils exist within the County, they occur primarily adjacent to the Sacramento River nearly two miles from the Project site. However, the existence of expansive soils is determined through soil testing prior to finalizing construction plans. Engineering design measures incorporated into construction plans would adequately address potential problems associated with expansive soils. In addition, the project would be required to comply with the provisions of the California Building Standards Code (CBC), which requires projects to: perform geotechnical investigations in accordance with state law, engineer improvements to address potential seismic and ground failure issues, and use earthquake-resistant construction techniques to address potential earthquake loads when constructing buildings and improvements. The project would be required to conform to other applicable regulations including the Land Grading and Leveling Ordinance and any applicable 2030 General Plan policies and actions.

Therefore, relative to these geology and soils environmental factors, the bio-energy and solar facility projects would result in less than significant potential impacts.

b) Less Than Significant:

Excavation within the existing and expanded gravel access roadways it will be necessary to construct infrastructure from CIP to the site for water supply and from the site to the CIP wastewater treatment plant for wastewater disposal. The treatment plant is located approximately 0.25 miles north of the site. The amount of excavation and earth movement needed for project construction would vary according to location. In addition, and depending on the location and extent of excavation activities, project construction would temporarily increase the potential for soil erosion. The primary concern would be the potential for soil adjacent to irrigation ditches to be loosened and deposited into the ditches. However, erosion potential is relatively minor because of the small degree of earth disturbance associated with the project.

As a result of construction activities, water quality control measures and best management practices (BMPs) will be incorporated into the Stormwater Pollution Prevention Plan (SWPPP), as appropriate and applicable, prepared for the project and implemented by the contractor to protect water quality. These measures are identified and described in Section 9, Hydrology and Water Quality, Mitigation: MM Water Quality 1 – SWPPP Best Management Practices.

Additionally, the project would be required to obtain water quality certification from the RWQCB per Section 401 of the Clean Water Act (as identified in Section 4, Biological Resources). Project approval from the RWQCB is indicative of compliance with the applicable water quality standards. Furthermore, as described in Section 3, Air Quality of this document, the project is required to prepare an approved air pollution control plan, which would include fugitive dust control measures.

c) Less Than Significant:

Refer to the discussion under Item a) above.

d) Less Than Significant:

Refer to the discussion under Item a) above.

e) No Impact:

As discussed in the Section 9, Hydrology and Water Quality, the employees of the bio-energy project will use the CIP wastewater treatment facility for the disposal of wastewater. The bio-energy and the solar facility projects do not propose the construction or use of septic tanks or an alternative wastewater disposal system beyond that which is already used by the CIP. Therefore, there is no impact associated with septic tanks and alternative waste water disposal.

Mitigation

Refer to Mitigation identified and described in Section 9, Hydrology and Water Quality, Mitigation: MM Water Quality 1 – SWPPP Best Management Practices.

7. Greenhouse Gas Emissions

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Generate greenhouse gas emissions, directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Responses to Checklist Questions

a) Less than Significant:

Once operational, the bio-energy project would burn agricultural residuals and woody biomass material to generate thermal heat. The combustion of this biomass material would result in the release of carbon dioxide (CO_2) emissions. CO_2 is the most common and prolific type of greenhouse gas.

CO_2 emissions for the bio-energy facility were estimated using the set of emission factors published by the EPA in 40 CFR Part 90. The fuel stream that was used for the bio-energy facility was woody material and agricultural byproducts (ag byproducts), with a standard biogenic CO_2 emission factor for combustion of 93.80 to 118.17 kg CO_2/MMBtu (Table C-1 of 40 CFR Part 98).

Using this factor, it is estimated that the bio-energy project would generate approximately 1.39 to 1.74 tons of CO_2 per MW/hr (range between wood debris and ag byproduct). As a comparison, electricity produced from coal generates approximately 1.3 tons of CO_2 per MW/hr, and electricity produced from natural gas generates approximately 0.7 tons of CO_2 per MW/hr.

Of the 30 MW/hr of electricity produced by the facility, Roseville Electric and Redding Electric Utility would utilize a portion of the electricity. It is assumed that the energy produced by the facility would offset the use of energy produced from sources such as coal and natural gas. While the project generates similar amounts of CO_2 as a coal facility, the California Public Utilities Commission (CPUC) has determined that biomass generation of electricity meets the state's emissions performance standard (EPS). The EPS is met because alternative means of disposing of biomass such as open air burning and landfill deposition have the potential to generate greater concentrations of GHG in the atmosphere, including methane (Regulations Establishing and Implementing a Greenhouse Gases Emission Performance Standard for Local Publicly Owned Electric Utilities - Chapter 11. Greenhouse Gases Emission Performance Standard, Article 1, Section 2900 et. seq.).

Therefore, while the proposed bio-energy facility would result in the direct emission of CO_2, the project would offset a greater amount of CO_2 by displacing the use of energy from sources that generate similar and/or higher levels of CO2 per MW/hr. Overall, the project is anticipated to result in a net reduction of GHGs in the project region and would result in positive impacts with GHGs.

Table 7. CO2 Emission Factors for Woody Material and Ag Byproducts

GHG Emissions	kg/MMBtu	Kg/yr	GWP	MTCO2e/yr
Woody Material				
CO2	93.8	327,662,160	1	327,662
CH4 (Methane)	0.032	111,782	21	2,347
N2O (Nitrous Oxide)	0.0042	14,671	310	4,548
			Total	334,558
Ag Byproduct				
CO2	118.17	412,791,444	1	412,791
CH4	0.032	111,782	21	2,347
N2O	0.0042	14,671	310	4,548
			Total	419,687

Note: Totals assume plant firing at 410 MMBtu/hr for 355 days/year

- **MMBtu** equals one million British thermal units (Btu). One Btu is the heat required to raise the temperature of one pound of water by one degree Fahrenheit.
- **CO2e-carbon dioxide equivalent** is a standard unit for measuring carbon footprints. By using CO2e, the effect of each type of greenhouse gas (i.e., carbon dioxide, methane, nitrous oxide) is expressed in terms of the amount of CO2 that would create the same amount of warming. That way, a carbon footprint consisting of a variety of greenhouse gases can be identified as a single number.
- **W-Watt** hour, a unit of energy equal to a power of one watt operating for one hour
- **kW-Kilowatt** is a unit of energy equal to 1000 watt-hours,
- **MW-Megawatt** a unit of power equal to one million watts, especially as a measure of the output of a power station.

Additionally, the bio-energy facility project would not utilize any forest materials or result in the loss or removal of any vegetation or biomass material that would not otherwise be disposed of. The bio-energy project would utilize agricultural byproducts and woody biomass, such as tree prunings and removed crops. All fuel for the project would be generated and sourced within the region. The use of these fuel types would not remove any trees or other living biomass vegetation that provide positive carbon sequestration benefits. Therefore, the project would have GHG impacts that are less than significant.

The project would also generate limited volumes of CO2 from associated construction and vehicle trips. GHG generated associated with the operation of the bio-energy project would generate approximately 50.83 $MTCO_2e$/Year emissions from operational sources (i.e., construction, trucking, etc.).

As described above, the proposed bio-energy project would generate new direct sources of GHGs. However, the project is anticipated to offset an even higher level of existing GHGs that are generated through energy production from other sources, such as coal and natural gas. Therefore, the project would not result in a net increase in atmospheric CO2. This is a less than significant impact.

The solar facility generates little to no CO2 per megawatt hour. There is no impact to GHG emissions associated with the solar facility.

b) Less than Significant:

There are numerous regional and state-level programs and plans in place that aim to reduce GHG levels in California. State level programs include, but are not limited to:

Bioenergy Action Plan Executive Order #S-06-06

Executive Order #S-06-06 establishes targets for the use and production of biofuels and biopower and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20% of its biofuels within California by 2010, 40% by 2020, and 75% by 2050. The executive order also calls for the state to meet a target for use of biomass electricity, including biomass cogeneration facilities.

California Executive Orders S-3-05 and S-20-06, and Assembly Bill 32

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05.? The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by 2020 and 3) 80% below the 1990 levels by 2050.

In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that California Air Resources Board (CARB) create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team (CAT). Each CAT working group will develop a Near-term Implementation Plan (CATNIPs) for the specific climate change mitigation measures and adaptation strategies being addressed by the working group. These will be the measures and strategies that will be underway or completed by the end of 2010. The CATNIP will include a brief description of the measures and strategies, the steps to be taken in implementation, the agency/department responsible, and the timeline for completion. The Energy Working Group of the Climate Action Team focuses its efforts on both greenhouse gas emission reduction and adaptation actions affecting the energy sector. CARB, which is part of Cal-EPA, develops air quality regulations at the state level. The state regulations mirror federal regulations by establishing industry-specific pollution controls for criteria, toxic, and nuisance pollutants. California also requires areas to develop plans and strategies for attaining state ambient air quality standards as set forth in the California Clean Air Act of 1988. In addition to developing regulations, CARB develops motor vehicle emission standards for California vehicles.

Assembly Bill 32-Climate Change Scoping Plan

On December 11, 2008 ARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap of ARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The Scoping Plan contains the main strategies California will implement to reduce CO2e emissions by 169 million metric tons (MMT), or approximately 30%, from the state's projected 2020 emissions level of 596 MMT of CO_2e under a business-as-usual (BAU) scenario. (This is a reduction of 42 MMT CO2e, or almost 10%, from 2002-2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.) The Scoping Plan also breaks down the amount of GHG emissions reductions ARB recommends for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- improved emissions standards for light---duty vehicles (estimated reductions of 31.7 MMT CO_2e),
- the Low-Carbon Fuel Standard (15.0 MMT CO_2e),
- energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e), and
- a renewable portfolio standard for electricity production (21.3 MMT CO_2e).

The Cal-EPA 2011 Greenhouse Gas Reduction Report Card (January, 2011) reported that in 2009, the date for which the most current data are available, California had achieved a reduction of 1.3 MMT CO_2e compared to 2007 levels from implementation of the California Renewables Portfolio Standard (RPS) program.

Senate Bill 1368

SB 1368 requires the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC) to set a global warming emissions standard for electricity used in California regardless of whether it's generated in-state or purchased from plants in other states. The new standard applies to any new long-term financial contracts for base load electricity, and applies both to investor-owned utilities and municipal utilities. The standard for baseload generation owned by, or under long-term contract to publicly owned utilities, is an emissions performance standard (EPS) of 1,100 lbs CO_2 per megawatt-hour (MWh). However, the CPUC has determined that biomass generation of electricity is EPS compliant because alternative means of disposing biomass such as open air burning and landfill deposition have the potential to generate greater concentrations of greenhouse gas in the atmosphere, including methane.

Senate Bills 1078 and 107 and Executive Order S-14-08

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20% of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Energy Standard to 33% renewable power by 2020.

California Renewables Portfolio Standard (RPS)

Established in 2002 under Senate Bill 1078 and accelerated in 2006 under Senate Bill 107, California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires electric corporations to increase procurement from eligible renewable energy resources by at least 1% of their retail sales annually, until they reach 20% by 2010. Biomass generated electricity is considered an eligible renewable energy source for the RPS program.

The proposed bio-energy project is consistent with all of the applicable Statewide programs to reduce GHGs described above.

Additionally, the County General Plan identifies policies that would assist the state in meeting the GHG reduction goals established by AB 32. The bio-energy and solar facility projects are consistent with all applicable local and state programs and measures aimed at reducing GHG levels. Therefore, impacts are considered less than significant.

Mitigation

None Required.

8. Hazards and Hazardous Materials

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			X	
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		X		

Responses to Checklist Questions

a) Less Than Significant:

The bio-energy facility and solar facility do not involve the transport, use, or disposal of hazardous materials. Therefore, impacts are considered less than significant. Refer to Section 3, Air Quality, for a discussion of potential air emissions impacts associated with construction activities for both projects and long-term emissions for the operation of the bio-energy facility and corresponding mitigation measures.

b) Less Than Significant With Mitigation:

Construction of the bio-energy and the solar facility projects are not anticipated to use explosive or highly hazardous substances. During project construction, the only hazardous substances anticipated to be in use would be fuel (most likely diesel) and lubricating oil used by construction equipment. Normal use of these substances would not present a significant risk of upset. Operation of the facilities may require the use of a variety of materials that may be considered hazardous. Storage and use of various materials over certain thresholds, as identified in the California Health and Safety Code Section 25500 would require that the facilities comply with hazardous materials business and emergency response requirements. Although impacts associated with the release of hazardous materials into the environment are unlikely, mitigation measures have been identified to ensure that the accidental release of hazardous materials into the environment is considered less than significant.

c) Less Than Significant:

The project will not involve the handling of hazardous or acutely hazardous materials. Hazardous emissions will consist of exhaust emissions from construction equipment and combustion emissions from the bio-energy facility (refer to Section 3, Air Quality). While construction emissions are short-term in nature and are not anticipated to adversely affect human health, combustion emissions will be present for the life of the bio-energy project. However, these impacts are addressed in Section 3, Air Quality, and there are no schools located or proposed within a quarter mile of the project site. Therefore, this impact will be less than significant.

d) No Impact:

According to the California Department of Toxic Substances Control (DTSC) there are no Federal Superfund Sites, State Response Sites, or Voluntary Cleanup Sites on, or in the vicinity of the project site. The DTSC EnviroStor Database identifies four cleanup sites in the vicinity of the City of Colusa. The cleanup site nearest the project site is located along the west side of SR 20/45 near the intersection of Moonbend Road, over two miles north of the project site. A search of the State Water Resources Control Board Geotracker Database reveals no leaking underground storage tanks near the project site. Therefore, there will be no impact associated with known hazardous materials sites.

e- f) Less Than Significant:

The Colusa County Airport Comprehensive Land Use Plan (CLUP) establishes land use standards to protect the public from safety hazards and noise impacts and to prevent the encroachment of incompatible land uses around the Colusa County Airport. The project area is located within one mile of the Colusa County Airport runway's southern end and is within the FAR Part 77 Horizontal Surface, which is set at 150 feet above the airport elevation of 50 feet above msl. Elevation at the project site is 48 above msl. Most industrial and commercial uses are considered compatible or compatible with restrictions (e.g., on building heights).

Bio-Energy Facility

The 140-foot cooling tower will be the highest point of the bio-energy facility and will not penetrate the established Horizontal Surface for this site. Additionally, the primary aircraft traffic pattern lies east of the Airport, so aircraft operating within the Airport's published traffic pattern will not likely overfly the project site or be affected by the thermal plumes from the cooling tower. However, the Airport and surrounding area see significant crop duster activity. Given the presence of low flying agricultural aircraft and the fact that the tower will be a prominent feature in the landscape, the tower should be marked and lighted per FAA Advisory Circular 70/7460-1K, *Obstruction Marking and Lighting*. (Thompson, 2013.)

The CLUP identifies land uses that are incompatible within the three safety zones: Clear Zone, Approach/Departure Zone, and Overflight Zone. The bio-energy facility site is located within the Airport Overflight Zone, which is the least restrictive of the zones. FAA Advisory Circular 150/5200-33B *Hazardous Wildlife Attractants On or Near* Airports provides guidance regarding project features that could attract hazardous wildlife near an airport (e.g., bird strikes). The FAA recommends a distance of five statue miles between the farthest edge of the airport's air operations area (AOA) and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace (FAA, 2007). The bio-energy project does not propose the construction of facilities that would serve as an attractant to hazardous wildlife near the airport.

Solar Power Facility

The solar facility would be 12 feet at its highest point. The panels will be placed on a single-axis tracking (SAT) system that would be mounted onto a support structure that aligned the panels in rows that rotate from east to west, tracking the sun on a north/south axis to maximize solar absorption. The solar panels will be made from either mono-crystalline silicon, anti-reflective glass, aluminum frames, and copper electrical wires with plastic sheathing. By design, the solar panels would absorb sunlight to maximize electrical output and use antireflective glass, resulting in less reflectance than standard residential and commercial glass applications. The solar panels are also less reflective than water. Up until 2012, the site of the solar facility was used as rice fields during the growing season and ponded for wildlife during the off-season. Therefore, the change in use to a solar facility would result in a less reflective surface than the previous use. Further, construction and operation of the solar facility is not expected to result in reflective surfacing above existing conditions; however, the FAA Solar Guide recommends consultation with the FAA as part of project processing (FAA, 2010).

In addition, the installation of the solar facility would eliminate the rice fields, which can be a hazardous wildlife attractant.

The projects are located in an area designated for industrial uses. Implementation of the projects would not result in safety hazards for people residing or working in the project area. Refer to Section 3, Air Quality for a discussion of potential air emissions impacts associated with construction activities for both projects and long-term emissions for the operation of the bio-energy facility and corresponding mitigation measures.

g) No Impact:

The General Plan includes polices that require the County to maintain emergency access routes that are free of traffic impediments (Action SA-1A, SA-1B). The proposed project does not include any actions that would impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Furthermore, the bio-energy and solar facility projects would not result in population growth that would increase the demand for emergency services during disasters. Since the project area is west of SR 20/45, it is not anticipated that temporary construction activities would hamper or block evacuation during an emergency. Therefore, there is no impact to emergency access and evacuation routes.

h) Less than Significant:

The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents) and topography (degree of slope). Wildland fires could occur if a fire were to start within the bio-energy facility site and escape to surrounding lands. Potential fire hazards associated with the bio-energy site consist primarily of biomass fuel storage and potential for fly ash combustion.

Biomass fuel storage piles are actively managed and rotated on a continuous basis to reduce the risks associated with combustion that may occur if the storage piles were left to decompose. The storage piles are temperature tested for "hot spots." All fuel piles are tested daily for hot spots and overall moisture. If hot spots are detected they are lifted and spread to an isolated area.

There is a fire hazard associated with fly ash, which is a solid, grey/black or black/tan odorless powder that is the residual from the burning of a combination of carbonaceous materials (Weyerhaeuser, 2011). Fly ash containing some degree of incompletely combusted matter (as low as seven percent in some cases) is expected to present the potential for explosion when a high airborne dust concentration comes in contact with an ignition source. Fly ash may similarly deflagrate if ignited in an open or loosely contained area. Project design will include collection of fly ash in the emission control equipment and collection and transport in fully enclosed conveyors to a water-conditioning area to moisten the fly ash residue products before discharge onto the bottom ash conveyor for disposal (EPA, 1995).

Further, a water tank is included in the project facilities, which will be appropriately sized (150,000 gallons) to accommodate immediate fire suppression needs in the event of an emergency. Through project design and development of the Fire Prevention and Suppression Plan (refer to the Project Description), the impacts associated with fires will be less than significant.

Mitigation

MM Hazardous Materials 1:

The following measures shall be adhered to as applicable to the bio-energy facility and solar energy facility:

a) If the bio-energy facility and/or the solar facility stores hazardous materials over threshold quantities (as identified in the California Health and Safety Code Section 25500), each facility shall comply with hazardous materials business and emergency response plan requirements employing the California Environmental Reporting System (CERS) electronic reporting system.

b) The bio-energy facility and solar energy facility shall comply with the California Accidental Release Prevention Plan Program (CalARP or Risk Management Program). An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance (listed in Tables 1-3, Title 19 Section 2770.5 California Code of Regulations) must complete and submit a risk management plan (RMP). The intent of the RMP is to provide basic information that may be used by first responders in order to prevent or mitigate damage to the public health and safety and to the environment from a release or threatened release of a hazardous material and to comply with community right to know laws. It is recommended that a civil, safety or process engineer be consulted to complete this plan.

Timing: Requirements of the mitigation shall be adhered to throughout the operational life of the bio-energy facility and/or solar facility.

Monitoring: The Colusa County Planning Department shall ensure that mitigation measures are included in the use permit. The Colusa County Environmental Health Department shall ensure compliance with applicable laws and regulations, including Colusa County Code, Chapter 42 – Public Nuisance Abatement.

9. Hydrology and Water Quality

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements?			X	

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?			X	
e) Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
f) Otherwise degrade water quality?		X		
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X

Responses to Checklist Questions

a) Less Than Significant:

Bio-Energy Facility Wastewater Discharge Requirements

A technical memorandum was prepared by CH2M Hill to evaluate the industrial process water (IPW) that would generated from the bio-energy project. The evaluation is included in its entirety below.

The bio-energy facility would utilize a 300,000 pound-per-hour biomass capacity boiler to generate electricity. This process would generate an average IPW outflow of 1,800 gallons per day (gpd). The IPW would be conveyed to the existing CIP wastewater treatment facility (WWTF). CIP WWTP would land apply the IPW to rice as part of the CIP's land application system. The land application system has an existing permit (Waste Discharge Requirement, WDR Order No. 5-01-250) and is regulated by the Central Valley Regional Water Quality Control Board (RWQCB).

CIP's Existing Land Application Permit

The CIP WWTF land treatment system consists of 268 acres of agricultural land. Historically, the land treatment area has been farmed for rice production. IPW is used to meet part of the irrigation requirement for rice. Supplemental irrigation is used to meet the remaining part of the irrigation requirement. The 268 acres represents approximately 3,300,000 gpd of available land application capacity.

IPW land application is governed by WDR Order No. 5-01-250, issued by the RWQCB in October 2001. The corresponding Monitoring and Reporting Program (MRP) is dated October 26, 2009. CIP monitors both IPW water quality and analyzes groundwater samples from a monitoring well network (nine wells) to confirm that the land application system is performing as intended.

The CIP is currently in the process of updating its land application permit as requested by the RWQCB. The RWQCB requested that CIP update IPW discharge information to support a revised Report of Waste Discharge (ROWD) and corresponding land application permit. CIP anticipates its updated permit will be approved by the RWQCB in February 2014.

Proposed IPW Management

The bio-energy facility would convey its IPW outflow to the CIP WWTF's existing lined pond. The lined pond would serve as a regulating reservoir so CIP could manage the flow rate and regulate IPW conveyance to the rice fields. IPW water quality would be monitored to verify constituents were within permit parameters and align with irrigation requirements.

Potential groundwater quality impacts of land applying the IPW generated from the bio-energy facility were considered. The following evaluations were performed:

- Hydraulic loading was evaluated to determine how much rice acreage would be utilized for IPW application each year
- Existing WDR constituent limits were compared with the bio-energy facility's IPW profile to evaluate potential constituents of concern

- A total dissolved solids (TDS) mass balance was performed to evaluate TDS loading to the land application area

A water balance and hydraulic loading evaluation was performed for CIP's land application area. In the Colusa area the annual water requirement to grow a rice crop and decompose stubble after harvest is approximately 6 to 8 feet (equivalent to acre-feet per acre) for typical growing conditions. A conservative assumption of 6 feet of water required annually is assumed for this water balance and groundwater evaluation. **Table 8** shows that 93 acres of the 268 acres available would be required for land application. CIP plans to utilize 100 acres for the land application area, which provides an additional level of IPW water management flexibility.

Table 8. Water Balance Information For CIP's Land Application Area

Land Application Area Water Requirement	Value		Assumptions
Annual Rice Water Requirement	6.0	feet	Annual rice water requirement based on local practices, historical records, and typical growing conditions
Average Annual Precipitation	1.4	feet	Average annual precipitation from CIMIS Station 32, Colusa, CA, 17.1 inches
Annual Rice 'Irrigation' Requirement	4.6	feet	Annual Rice Water Requirement minus Average Annual Precipitation
IPW outflow to Land Application Area	426	acre-feet	Derived from water balance information presented in Table 3
Utilized Land Application Area	93	acres	Calculated: IPW outflow to Land Application area / Annual Rice 'Irrigation' Requirement
Land Application Area Available	268	acres	CIP's designated land application area permitted in their WDR

Table 9. WDR Constituent Limits For CIP's Existing Land Application System

Constituent	Existing WDR Limit	Bio-Energy Facility IPW Profile (flow-stream into CIP's lined pond)
BOD_5	300 lbs/acre/day, daily maximum; and 100 lbs/acre/day as a seven-day average	Non-detect
Total coliform organism	2.2 MPN/100 mL over any seven-day period	Non-detect
pH	$6.5 \leq pH \leq 8.5$	8.1-8.1
TDS	700 mg/L	Up to 30,000 mg/L before concentrate is blended. See Tables 1 and 3.
Organic Nitrogen	20 mg/L (except 40 mg/L during July and August)	Non-detect

Notes: BOD_5 = 5-day biochemical oxygen demand, mg/L = milligram per liter

The CIP's existing WDR permit contains specific constituent limits, which were compared to the anticipated bio-energy facility's IPW profile. The bio-energy facility's IPW profile information was provided by equipment manufacturer Water Conservation Technology International, and contains constituent concentrations from testing similar installations. Constituent comparisons are summarized in **Table 9**. Existing WDR permit constituent limits and trace element water quality objectives (WQO) from the Sacramento Basin Plan were compared to the anticipated bio-energy facility IPW profile. The IPW that would be land applied to the rice fields showed no constituent concentrations as likely to exceed Basin Plan water quality objectives.

CIP would manage the IPW in an existing lined pond and would regulate and monitor the IPW before conveying it to the land application area. The lined pond has a 4.7 million gallon capacity, accounting for a 2-ft freeboard. The pond is approximately 335 feet wide by 553 feet long with a maximum depth of approximately 7 feet; it is lined with an HDPE liner. The pond liner was installed in accordance with HDPE liner installation and construction standards **Diagram 1** illustrates lined pond inflows and outflows. Descriptions of inflows and outflows are as follows:

- Colusa Biomass IPW Inflow – IPW generated from the bio-energy facility.
- Other IPW Inflows – IPW generated from other CIP facilities, which are governed by the WDR.
- Supplemental Irrigation Water – fresh water that is provided from CIP's groundwater supply system to satisfy agronomic water requirement. The groundwater well has been licensed by the California Department of Health Services (Permit No. 01-21-03P06001).
- Evaporation – water that evaporates from the lined pond to the atmosphere.
- Precipitation – direct rainfall that collects in the lined pond.
- Pond Outflow to Land Application Area – IPW that is utilized to meet agronomic water requirements for rice.

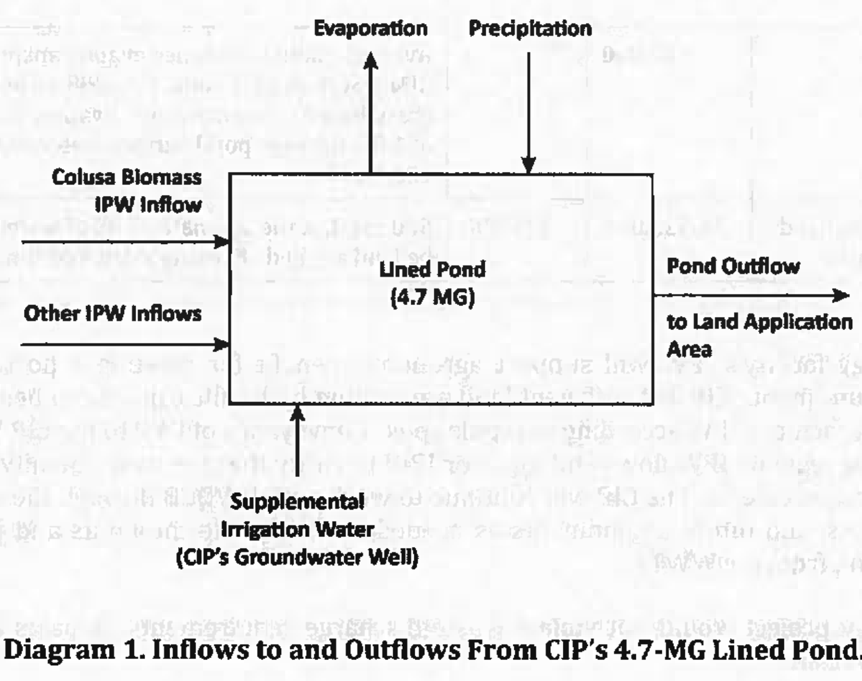

Diagram 1. Inflows to and Outflows From CIP's 4.7-MG Lined Pond.

Lined pond inflows and outflows were used to evaluate the TDS mass loading to the land application area. The TDS mass balance shows that supplemental irrigation water is the predominate source of TDS. While the bio-energy facility IPW can have TDS of up to 30,000 mg/L before it flows into the lined pond, the overall TDS loading does not appear to be a concern. The TDS of IPW that would be conveyed to the land application area is approximately 600 mg/L, which is below the WDR limit of 700 mg/L TDS.

Table 10. Lined Pond Water Balance and TDS Mass Balance

Lined Pond Inflows and Outflows (annual totals)	Volume (ft^3)	TDS (kg)	Assumptions
Bio-Energy Facility IPW Inflow	82,000	70,000	Average daily IPW production of 1,840 gpd, 330 days of operation per year. IPW inflow TDS 30,000 mg/L. Data provided by Water Conservation Technology, Inc. based on similar installations.
Other IPW Inflows	350,000	20,000	Other CIP facilities that generate IPW for land application, data from onsite monitoring and reports submitted to the RWQCB 2008-2012.
Direct Precipitation	263,000	-	Pond area receiving precipitation 185,000 ft^2. Average annual precipitation from CIMIS station 32, 17.1 inches.
Supplemental Irrigation Water (from CIP's groundwater supply well)	18,542,000	226,000	Supplemental irrigation water source is CIP's groundwater supply well. Groundwater TDS is 430 mg/L (analytical lab testing results, July 2013).
Evaporation	682,000	-	Average annual reference evapotranspiration from CIMIS Station 32, Colusa, CA, 52.8 inches. Uses a grass-based reference crop. Evaporation coefficient of 1.05. Average pond surface water evaporation area 155,000 ft^2.
IPW outflow to Land Application Area	18,555,000	315,000	600 mg/L is the estimated TDS of water that would be land applied. Existing WDR TDS limit is 700 mg/L.

The bio-energy facility's IPW will support agronomic benefit for meeting a portion of the rice irrigation requirement. CIP has sufficient land application hydraulic capacity to beneficially utilize the bio-energy facility's IPW according to regulations. Conveyance of IWP to the CIP WWTF will use a lined pond to regulate IPW flows and monitor IPW to verify that the water quality complies with WDR permit requirements. The CIP will continue to work with RWQCB through the existing permit renewal process, and future amendments as needed, to determine the limits and practices of all land application from the WWTF.

The bio-energy project would not violate waste discharge requirements. Impacts are considered less than significant.

b) Less Than Significant:

Hydrology within the project area is characterized by localized runoff from precipitation events and irrigation. The irrigation canals receive the surface runoff and channelize the water. A series of irrigation canals form the perimeter of the bio-energy and solar facility site flow through the surrounding rice fields.

The bio-energy facility will obtain water from CIP, Inc. under its Domestic Water Supply Permit. The existing permit, No. 01-21-0(P)06001, was issued for the Colusa Industrial Properties Water System (Water System), primarily serving the Colusa Industrial Park (CIP). The permit currently serves a 450-acre industrial park and an adjacent golf course. It should be noted that the CIP has not reached its full buildout capacity. The water source for the CIP is two wells, with chlorination treatment, and is stored in a 5,000 gallon pressure tank and 45,000 gallon fire water storage tank. Water from the water system will be conveyed to the bio-energy site via a new water pipeline up to 8 inches in size placed within the same easement as the access roadway. The service area under the Water Supply Permit will be amended to include the bio-energy facility project site.

The bio-energy facility will require approximately 423,000 gpd to operate. Given that one of the larger water users within the CIP is no longer in operation, which used approximately 1.2 million gallons per day, it is anticipated that the existing water supply system has sufficient supplies available to serve the bio-energy project without depleting groundwater supplies. Therefore, impacts are considered less than significant.

The solar facility would not result in increased water demand. In addition, because precipitation would be able to permeate directly into the soil throughout the 127.5-acre site, the solar facility would not impede groundwater recharge. Impacts are considered less than significant.

c–e) Less Than Significant:

When land is in a natural or undeveloped condition, soils, mulch, vegetation, and plant roots absorb rainwater. This absorption process is called infiltration or percolation. Much of the rainwater that falls on natural or undeveloped land slowly infiltrates the soil and is stored either temporarily or permanently in underground layers of soil. When the soil becomes completely soaked or saturated with water or the rate of rainfall exceeds the infiltration capacity of the soil, the rainwater begins to flow on the surface of land to low lying areas, ditches, channels, streams, and rivers. Rainwater that flows off of a site is defined as stormwater runoff.

When a site is in a natural condition or is undeveloped, a larger percentage of rainwater infiltrates into the soil and a smaller percentage flows off the site as stormwater runoff. The infiltration and runoff process is altered when a site is developed with constructed land uses. Buildings, roads, and parking lots typically introduce asphalt, concrete, and roofing materials to the site. These materials are relatively impervious, which means that they absorb less rainwater. As impervious surfaces are added to the ground conditions, the natural infiltration process is reduced. As a result, the volume and rate of stormwater runoff increases. The increased volumes and rates of stormwater runoff may impact storm drainage facilities if adequate capacity is not available to accommodate runoff.

Development of the project site would place a limited amount of impervious surfaces on the approximately 25.5 acre bio-energy site. Development of the project site would potentially increase local runoff production, and would introduce constituents into storm water that are typically associated with urban runoff. These constituents include heavy metals (such as lead, zinc, and copper) and petroleum hydrocarbons. Best management practices (BMPs) will be applied to the proposed site development to limit the concentrations of these constituents in any site runoff that is discharged into storm drainage facilities to acceptable levels. It is anticipated that stormwater flows from the project site would be directed to the irrigation ditches located to the north and east of the project site.

No permanent alteration of drainage patterns or irrigation ditches will occur. In addition, the bio-energy facility's IPW will be piped to the CIP WWTF and would not be disposed of overland in existing stormwater/irrigation ditches. The WWTF's existing wastewater ponds are adequately sized to accommodate the bio-energy facility's IPW, refer to the discussion under Item a) above. The bio-energy facility would not result in impacts to offsite stormwater drainage systems is considered less than significant.

The construction of the solar facility would not result in the creation of impervious surfaces. Because rainfall precipitation would be able to permeate directly into the soil throughout the 127.5-acre site, the solar facility would not contribute to runoff water that would exceed the capacity of storm drainage or irrigation facilities.

f) Less Than Significant with Mitigation Incorporated:

Refer to the discussion under Item a) above with regard to water quality and IPW outflow associated with the bio-energy facility.

Construction of the proposed bio-energy facility, associated roadways, and the future solar facility could temporarily cause erosion, possibly resulting in soil being deposited into existing or drainage ditches. The roadway construction and improvements will result in the crossing of three irrigation ditches. While there may be temporary impacts associates with construction of the irrigation crossings, water quality best management practices would be included in the SWPPP to address potential impacts associated with soil erosion, refer to Mitigation MM Water Quality 1 – SWPPP Best Management Practices (below). Through the application of erosion control measures the bio-energy and solar facility projects are not expected to substantially degrade local water quality, this is a less than significant impact with mitigation incorporated.

g) No Impact:

Floodplain zones are determined by the Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate Maps (FIRMs). These tools assist cities and counties in mitigating flooding hazards through land use planning. FEMA also outlines specific regulations for any construction, whether residential, commercial, or industrial within 100-year floodplains.

The project site is located within flood zone A (based upon FEMA FIRM Map No. FM06011C0575F). Lands within the FEMA designated 100-year floodplain or Zone A are subject to mandatory flood insurance purchase as required by FEMA. The insurance rating is based on the difference between the base flood level (BFL), the average depth of the flooding above the ground surface for a specific area, and the elevation of the lowest floor. The bio-energy facility would be required to obtain a Floodplain Development Permit. The Permit application outlines the steps to be followed to determine the minimum finish floor elevation and the requirements for certification of the lowest finish floor elevation.

No housing development is associated with the project, therefore, no new housing will be located within a 100-year flood hazard areas as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map.

h-i) No Impact:

The project is the construction of a bio-energy facility and solar facility. The projects would not impede or redirect flood flows, nor expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

j) No Impact:

The project area is not subject to seiche, tsunami, or mudflows, therefore, no impacts related to these types of events are anticipated.

Mitigation

MM Water Quality 1 – SWPPP Best Management Practices:

As a result of construction activities, the following water quality control measures or best management practices (BMPs) will be incorporated into the Stormwater Pollution Prevention Plan (SWPPP), as appropriate and applicable, prepared for the project and implemented by the contractor to protect water quality:

Water Quality Best Management Practices:

a) Construction crews shall be instructed in preventing and minimizing pollution on the job.

b) Interim erosion control measures may be needed and shall be installed during construction to assure adequate erosion control facilities are in place at all times.

c) All mulch may be straw or rice mulch may be used if needed with a tackifier.

d) For stockpiled soils, all slopes greater than 10% and less than 50% that are free of vegetation shall have earthguard applied, mulch spread and tacked down or plastic sheeting prior to a 30% chance of rain.

e) Insure all SWPPP measures are in place prior to a 30% chance of rain.

f) Dust control measures in the form of water application to all exposed soil surfaces to prevent the transport of soil from exposed surfaces on construction sites in the form of airborne particulates watering of exposed soil surfaces shall occur at least twice daily, preferably in the late morning and after work is done for the day. All clearing, grading, earth moving or excavation activities shall cease when winds exceed 20 mph.

g) To minimize the tracking of mud and dirt and to stabilize the point of ingress/egress by construction vehicles the contractor shall place 2" to 4" angular rock with a minimum depth of 6" in conjunction with an underlay of filter fabric. Only one stabilized construction entrance/exit will be allowed per site. Any soil material carried onto street surfaces by construction equipment shall be removed on a daily basis.

h) Haul roads shall be watered periodically to minimize dust.

i) Haul trucks shall be covered with tarpaulins or other effective covers at all times.

j) If the construction site is to remain inactive longer than 3 months the site shall be stabilized by applying "earth guard" or seeded and watered until grass cover is grown or other approved method.

k) Inspect sediment control devices after each storm and remove sediment.

l) During long periods of rain and high intensity rainfall, SWPPP measures may become clogged. Extreme care should be taken to clean SWPPP measures to reduce fugitive discharge and potential flooding.

m) Use broom and shovels when possible to maintain a clean site. Use of a hose is not recommended. Introducing water as a cleanup method adds to water pollution.

n) Designate a concrete washout area, as needed; to avoid wash water from concrete tools or trucks from entering storm drain systems. Maintain washout area and dispose of concrete waste on a regular basis.

o) Establish a vehicle storage, maintenance, and refueling area, as needed, to minimize the spread of oil, gas, and engine fluids. Use of oil pans under stationary vehicles is strongly recommended.

p) Protect drain inlets from receiving polluted storm water through the use of filters such as fabrics, gravel bags or straw wattles.

q) Be prepared for rain and have the necessary materials onsite before the rainy season.

r) Inspect all BMP's before and after each storm event. Maintain BMP's on regular basis and replace as necessary, through the entire course of construction.

Timing: Requirements of the mitigation shall be incorporated into the SWPPP.

Monitoring: The Colusa County Planning Department and the Public Works Department shall ensure that water quality control measures or BMPs are incorporated into the Stormwater Pollution Prevention Plan (SWPPP), as appropriate and applicable, prepared for the project and implemented by the contractor to protect water quality.

10. Land Use and Planning

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

Responses to Checklist Questions

a) No Impact:

The bio-energy and solar facility sites are surrounded by active agricultural lands to the west, south and east and industrial land to the north. No physical barriers would be constructed that would result in physically dividing an established community. Therefore, there is no impact.

b) No Impact:

The bio-energy and solar facility projects are consistent with the land use designation for the project site, Industrial, and would not conflict with other applicable plans or policies of the County adopted for the purpose of avoiding or mitigating environmental effects. In response to the General Plan Update, the County is currently updating their zoning ordinance and mapping, in which the project site will be rezoned for industrial uses consistent with both the General Plan designation and contiguous properties to the north that are part of the CIP.

The bio-energy facility would utilize the region's agricultural waste byproducts to generate electricity for use within the State. Both the bio-energy facility and solar facility are considered renewal energy resources under the California Renewable Energy Program and will apply to the State's renewable energy goal of 33 percent. In addition, the County's General Plan encourages the use and development of renewalable and sustainable sources of energy, including biomass and solar (GP Policies Con 2-1, Con 2-2). Further, GP Policy Con 2-3 allows commercial alternative energy facilities such as biomass and solar within the Agriculture General, Agriculture upland, Industrial, Forest, and Resource Conservation land use designations with a conditional use permit (Colusa County, 2012).

The bio-energy and solar facility projects are consistent with the County's long-term goals of for land uses within the area and conservation policies established in the General Plan. Therefore, there is no impact to regarding land use planning.

c) No Impact:

There are no adopted habitat conservation or natural community conservation plans applicable to the bio-energy and solar facility sites; therefore, there will be no impact.

Mitigation

None Required.

11. Mineral Resources

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site on a local general plan, specific plan or other land use plan?				X

Responses to Checklist Questions

a), b) No Impact:

The State Geologist has not yet mapped the mineral resources in Colusa County (SMARA). The General Plans of Colusa County and the City of Colusa do not identify any important mineral resource sites in the project area (GP EIR). Construction of the project would not result in the loss of availability of known mineral resources that would be of future value to the region and the residents of the State. Relative to mineral resources, there would be no impact.

Mitigation

None Required.

12. Noise

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			X	
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

Responses to Checklist Questions

a) Less Than Significant:

The project site is located south of the city of Colusa, west of SR 20/45. Agricultural lands currently in active production occur to the west, east and south. The Colusa Industrial Park and the Colusa County Airport are located to the north of the project site. The ambient noise in the project area is generated primarily by agricultural production, air traffic and by traffic on the adjacent roadways. Project construction activities would cause temporary increases in local noise levels.

Sensitive receptors are facilities where sensitive receptor population groups (children, the elderly, the acutely ill and the chronically ill) are likely to be located. These land uses include residences, schools, playgrounds, child-care centers, retirement homes, convalescent homes, hospitals and medical clinics. There are no existing noise sensitive land uses adjacent to the project site. The project site is located in an agricultural and industrial area that generally has a relatively high level of ambient background noise throughout the day. The nearest noise sensitive land uses are residences located approximately 1.60 miles to the north of the site.

An Environmental Noise Assessment was prepared for the Project (Bollard Acoustical Consultants, Inc., 2013). The project is located adjacent to an industrial park and in the vicinity of the County Airport. Other sources of ambient noise levels include SR 20, which runs in generally north/south direction approximately 0.75 mile from the site. During the construction phases of the project, noise from construction activities will be present in the immediate area of construction. Construction noise is regulated by state and county regulations, which include California Building Code (CBC) standards for construction-generated noise attenuation. Noise levels generated during construction must comply with applicable local, state, and federal regulations. Adherence to existing noise attenuation standards and measures would ensure construction-generated noise impacts that are less than significant. Project construction, ongoing operation, and off-site traffic noise levels are predicted to satisfy the applicable Colusa County noise standards without mitigation (Bollard Acoustical Consultants, Inc., 2013). See Appendix F, Environmental Noise Assessment, for more detail.

b) No Impact:

The project will not result in exposure of people to excessive ground borne vibration or ground borne noise levels, nor is the installation of the bio-energy facility likely to generate such vibration or noise (Bollard Acoustical Consultants, Inc., 2013).

c) Less Than Significant:

Noise levels due to onsite equipment (boiler, cooling tower, turbine) are predicted to be well below measured existing ambient noise levels at the nearest noise-sensitive land uses to the project site. In addition, increases in off-site traffic noise resulting from project operations are predicted to be negligible (Bollard Acoustical Consultants, Inc., 2013).

d) Less Than Significant:

The only temporary increase in ambient noise levels would be caused by short-term project construction. However, given the considerable distance between construction activities and the nearest sensitive receptors (approximately 1.6 miles to the nearest residence), no appreciable short-term noise increases are identified at those receptors during project construction (Bollard Acoustical Consultants, Inc., 2013).

e) Less Than Significant:

Although the project site is located within two miles of a public airport, it is located over 3,000 feet southwest of the main airport flight paths, and is located beyond the 55 dB CNEL noise contours. As a result, the project site is not adversely impacted by aircraft noise.

f) No Impact:

There are no private air strips within the Project area; therefore, there would be no impact.

Mitigation

None Required.

13. Population and Housing

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

Responses to Checklist Questions

a-c) No Impact:

The proposed bio-energy project and solar facility will be located within an area designated for industrial land uses and is currently being rezoned for industrial uses as part of the County's zoning ordinance update. The bio-energy and solar facility projects would not increase development capacity of, or access to, undeveloped lands that is not already planned for in the General Plan.

The project will use existing water supply and wastewater treatment facilities that are part of the CIP; therefore, the use of these facilities would not result in new infrastructure would not extend to an area that could result population growth.

The area is designated agricultural or industrial land. There are no homes or residents currently located within the project area, and therefore, no homes or people would be displaced as a result of project implementation.

The project would have no impact on housing and population growth.

Mitigation

None Required.

14. Public Services

Would the project: result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Fire protection?			X	
b) Police protection?			X	
c) Schools?				X
d) Parks?				X
e) Other public facilities?				X

Responses to Checklist Questions

a) Less than Significant:

According to the EIR for the 2030 Colusa County General Plan Update, fire protection in Colusa County is provide by six rural fire districts, one city fire department, one joints powers authority, CAL FIRE, and the U.S. Forest Service. The majority of districts are staffed by volunteer firefighters. There are mutual aid agreements between most agencies to ensure adequate staff and equipment are available when a fire occurs.

The incidence of fire in the County is relatively low, particularly on the valley floor. The greatest hazards are in the forest area, which generally fall under the jurisdiction of state and federal agencies. The project site is located in a moderate fire hazard severity zone (Colusa County, 2010).

The rural fire protection districts are responsible for structural and wildfire protection as well as medical emergencies within their respective districts. Estimated response times may range from three minutes in the cities of Williams and Colusa to more than 30 minutes in the rugged mountain areas.

Implementation of the bio-energy and solar facility projects would not adversely impact existing fire and emergency services within the County, and would not require the construction of new fire protection facilities, such as a fire station. The bio-energy project does have a Fire Prevention and Suppression Plan to ensure that fire flows and water storage on the site are adequate in the event of a fire. In addition, roadway access will meet County standards for all-purpose gravel roads, including roadway width to ensure that fire trucks can access the site. Fire hydrants will also be installed onsite within 150 feet of any building. The final site plans and development specifications developed for the bio-energy facility project will indicate the location and design specifications of the fire hydrants and water storage tank that will be required to serve the project site.

b) Less than Significant:

The unincorporated areas of Colusa County receive general public safety and law enforcement services from the Colusa County Sheriffs Department, which is located at 929 Bridge Street in the City of Colusa approximately 3 miles north of the project site. The Sheriff's Department also operates the Office of Coroner and the County Office of Emergency Services (OES). The Sheriffs Department is responsible for all law enforcement patrol services throughout all areas of the unincorporated County. Mutual aid is coordinated through the municipal police departments serving the cities of Colusa and Williams.

Implementation of the bio-energy and solar facility projects would not result in significant new demand for police services. Project implementation would not require the construction of new police facilities to serve the project site, nor would it result in impacts to the existing response times and existing police protection service levels.

c–e) No Impact:

The bio-energy and solar facility projects are industrial uses would not result increased enrollment in area schools, need for additional park or recreational facilities, or an increase demand for parks or other public facilities.

Mitigation

None Required.

15. Recreation

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?				X

Responses to Checklist Questions

a-b) No Impact:

The projects are industrial uses within an industrial zone and do not include new residential uses that would increase the need for or use of parks and other recreational facilities. The proposed bio-energy facility would generate approximately 24 jobs, which are anticipated to be filled by existing County residents. The bio-energy and solar facility projects do not include the development of recreational facilities, nor does they require the construction or expansion of existing facilities or other structures. The bio-energy and solar facility projects would result in no impacts to recreational activities or facilities within the County.

Mitigation

None Required.

16. Traffic and Transportation

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to			X	

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?			X	
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X

Responses to Checklist Questions

a) Less Than Significant:

A Traffic Impact Study was prepared for the bio-energy and solar facility projects and is included in **Appendix** G. The proposed bio-energy facility would generate truck related traffic associated with deliveries of biomass fuel (i.e., agricultural and woody waste), disposal truck traffic, and employee traffic. The two projects would have approximately 24 employees . The bio-energy project would result in an average of 33 truck trips per day, however, in the worst-case month of November, it is estimated that the bio-energy project would result in 58 truck deliveries of biomass per day; therefore, the worst-case scenario was used in estimating trip generation. Fifty-eight trucks per day results in 116 trip-ends. The combined bio-energy facility and solar facility traffic would include up to 116 truck trips daily and 52 daily employee trips, T**able 11.**

Table 11. Trip Generation

Land Use	Units	Trip Rate			Vehicle Trips						
		Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour			PM Peak Hour		
						In	Out	Total	In	Out	Total
Bio-Energy	Employees	2.13 TE/Emp	0.40 TE/Emp	0.36 TE/Emp	43	6	2	8	3	4	7
	Trucks				116	9	9	18	9	9	18
Solar Facility	Employees	2.13 TE/Emp	0.40 TE/Emp	0.36 TE/Emp	9	1	0	1	0	1	1
Total					168	16	11	27	12	14	26

Notes: TE = Trip End
Emp = Employee
Source: Trip Generation 9th Edition, Institute of Transportation Engineers
TRC, 2013.

Source: Traffic Impact Study – Colusa Bio-Energy Facility, TRC. 2013.

The bio-energy and solar facilities would be accessed from SR 20/45, via the existing Niagara Avenue intersection, which provides access to the CIP. Should improvement to the Niagara Avenue encroachment be necessary, the applicant will obtain an encroachment permit from Caltrans and incorporate all conditions pursuant to permit approval.

Given the anticipated trip generation associated with the two projects, implementation and operation of the facilities would not conflict with an measures established for the performance of the circulation system. Implementation of the bio-energy and solar facility projects would not change existing pedestrian, bicycle, or transit facilities in the project area.

b) Less Than Significant:

The operation of the bio-energy facility and future solar facility will not significantly impact any congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways (TRC, 2013).

For roadways and intersections under the jurisdiction of Caltrans, the acceptable operational level of service (LOS) is a threshold LOS E. This LOS threshold would be applicable to the segments of SR 20/45 evaluated in the traffic study. The LOS threshold for County roads and intersections in the unincorporated areas is LOS C or better. With regard to the City of Colusa, the acceptable threshold for streets and intersections is LOS C, with the exception in the downtown area on SR 20/45 and SR 20 (Market, Bridge, 10th and Main Streets), the acceptable threshold is LOS D. This is consistent with Caltrans LOS standards for state highways through urban areas.

The traffic study prepared by TRC (Appendix G) indicates that all of the roadway segments and impacted intersections will continue to operate at acceptable levels of service, **Table 13,** therefore, impacts will be less than significant.

Table 12. Daily Roadway Segment Operations - Existing Plus Project Conditions

Roadway	Segment	Lns.	Road Type	LOS Threshold	Daily			
					Existing Condition		Existing Plus Project Condition	
					Vol.	LOS[1]	Vol.	LOS[1]
1. SR 20/45	Market Street to Wescott Road	2	Class I Hwy.	E	20,900	E	20,989	E
2. SR 20/45	Wescott Road to Niagara Avenue	2	Class I Hwy.	E	15,000	E	15,089	E
3. SR 20/45	Niagara Avenue to SR 45	2	Class I Hwy.	E	9,300	D	9,379	D
4. SR 20	SR 45 to the Sacramento River	2	Class I Hwy.	E	7,600	C	7,679	D

Notes:
[1] LOS = Level of Service (LOS E, per Caltrans standard for state highways)
Unacceptable operations indicated with **BOLD** type.

Source: Traffic Impact Study – Colusa Bio-Energy Facility, TRC. 2013.

Table 13. Peak Hour Intersection Operations - Existing Plus Project Conditions

Intersection	Traffic Control	Existing Condition				Existing Plus Project Condition			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
1. Bridge St./Market St.	Side street stop	A (C)	7.7 (15.1)	A (C)	8.0 (21.1)	A (C)	7.8 (15.5)	A (C)	8.1 (21.9)
2. Bridge St./Wescott Rd.	Side street stop	A (D)	8.2 (26.9)	A (D)	9.0 (28.9)	A (D)	8.2 (28.0)	A (D)	9.0 (29.8)
3. SR 20/45/Niagara Ave.	Side street stop	A (B)	7.9 (11.6)	A (B)	8.0 (14.0)	A (B)	7.9 (11.8)	A (B)	8.1 (14.2)

Notes:
[1] LOS = Level of Service
[2] For side-street stop controlled intersections, the delay and LOS for the most-delayed individual movement is shown in parentheses next to the average intersection delay and LOS. Average intersection delay(most-delayed movement) Unacceptable operations indicated with **BOLD** type.

Source: Traffic Impact Study – Colusa Bio-Energy Facility, TRC. 2013.

c) No Impact:

The construction and operation of the bio-energy facility and future solar facility will not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. All elements of the project will adhere to FAA guidelines for height restrictions and safety measures (i.e., marking and lighting, etc.)

d) Less Than Significant:

The bio-energy and solar facility projects would not include any design features that would result in traffic hazards. Access to the bio-energy and solar facilities would be via the existing Niagara Avenue intersection used for the CIP. Implementation of both projects does not require improvements to this intersection. However, improvements to Niagara Avenue may be required as a result of the Caltrans encroachment permit process if one is required. In that case, there could be temporary roadway obstructions along Niagara Avenue during the construction phase of the project. However, these obstructions would be for a short period of time. Adherence to the conditions of any encroachment permits will be incorporated into construction contract documents. Potential impacts associated with traffic hazards or incompatible uses are less than significant.

e) Less Than Significant:

Emergency vehicles could experience temporary delays during the construction phase of any intersection improvements along Niagara Avenue. As stated under Item d) above, implementation of both projects does not require improvements to this, or any other intersection evaluated in the Traffic Impact Study. However, improvements to Niagara Avenue may be required as a result of the Caltrans encroachment permit process. In that case, there could be temporary roadway obstructions along Niagara Avenue during the construction phase of the project. However, these obstructions would be for a short period of time. Adherence to the conditions of any encroachment permits will be incorporated into construction contract documents. Emergency vehicle access to, and passage through, the construction activities would be ensured through adherence to the conditions of the Caltrans encroachment permit. Thus, temporary traffic control activities during the construction phase of the bio-energy and solar facility projects would not prevent emergency vehicle movement throughout the area.

f) No Impact:

The project would not conflict with adopted plans, programs, or policies supporting the use of alternative transportation including public transit, bicycle or pedestrian facilities, nor would the project decrease the performance or safety of such facilities.

Mitigation

None Required.

17. Utilities and Service Systems

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Exceed wastewater treatment requirements of the applicable Water Quality Control Board?			X	
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
e) Result in a determination by the wastewater treatment provider which serves/may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statutes and regulations related to solid waste?		X		

Responses to Checklist Questions

a) Less Than Significant:

The bio-energy facility's residual water, primarily from the cooling tower blow-down, of approximately 8.4 gpm or 200,000 gpd, will be discharged to the CIP Wastewater Treatment Facility (WWTF) located approximately 0.25 miles north of the project site. As discussed in Section 9, Hydrology and Water Quality, the bio-energy facility would not exceed the wastewater treatment requirements established in the CIP Waste Discharge Requirements (WDRs). Ultimately, wastewater will be used for irrigation of crops in the fields adjacent to the existing WWTF. The Central Valley Regional Water Quality Control Board through the issuance of WDRs would regulate all operations and monitoring related to the continued operation of the CIP WWTF.

The solar facility would not result in the need for wastewater treatment.

b) Less Than Significant:

Implementation and operation of the bio-energy facility would require the installation of a water supply pipeline from the existing CIP water supply facilities to the project site. The bio-energy facility would also require the installation of a wastewater conveyance pipeline to the CIP WWTF. These utilities would be sized and installed within the project site access roads. The CIP is able to serve the bio-energy project without the expansion of existing facilities, i.e., the drilling of a new water supply well or installation of additional wastewater treatment and evaporation ponds. Therefore, impacts are considered less than significant.

The solar facility would not result in the construction or expansion of water or wastewater treatment facilities.

c) Less Than Significant:

The proposed bio-energy facility and solar facility would result in the limited increase of impervious surfaces within the boundaries of each project site, and would not require the construction of stormwater or drainage infrastructure beyond project site boundaries. Onsite flows on the solar facility site would be allowed to infiltrate into subsurface soils, as they do under existing conditions, and eventually percolate into the groundwater basin below. The bio-energy facility and solar facility would result in less than significant impacts to stormwater drainage facilities.

d) No Impact:

Short-Term Construction Impacts

During construction of the proposed bio-energy and the solar facility, water would be required for dust suppression (refer to Section 3, Air Quality). A nominal quantity of water may also be required to moisture-condition onsite soils prior to compaction for the access roads and the solar facility and substation foundations. A water truck will be used for dust mitigation throughout construction of the bio-energy facility and the solar facility. The water requirements during construction would be satisfied by existing water entitlements and resources. Short-term impacts associated with water supplies would be less than significant.

Long-Term Operations Impacts

The bio-energy facility will obtain water from CIP, Inc. under its Domestic Water Supply Permit. The existing permit, No. 01-21-0(P)06001, was issued for the Colusa Industrial Properties Water System (Water System), primarily serving the Colusa Industrial Park (CIP). The permit currently serves a 450-acre industrial park and an adjacent golf course. It should be noted that the CIP has not reached its full buildout capacity. The water source for the CIP is two wells, with chlorination treatment, and is stored in a 5,000 gallon pressure tank and 45,000 gallon fire water storage tank. Water from the water system will be conveyed to the bio-energy site via a new water pipeline placed within the same easement as the access roadway. The service area under the Water Supply Permit will be amended to include the bio-energy facility project site, if necessary.

The bio-energy facility will require approximately 423,000 gpd to operate. Given that one of the larger water users within the CIP is no longer in operation, which used approximately 1.2 million gallons per day, it is anticipated that the existing water supply system has sufficient supplies available to serve the bio-energy project; therefore, impacts are considered less than significant.

The solar facility would not result in increased water demand.

e) Less Than Significant:

As discussed in Section 9, Hydrology and Water Quality, the CIP would be able to adequately serve the bio-energy facility using its existing facilities while at the same time meeting the CIP WWTF's existing commitments.

f) No Impact:

Once operational the solar facility will not generate a solid waste stream that would impact the permitted capacity of a landfill. Ash waste from the bio-energy facility will not be disposed of in a landfill. Waste associated with the daily operations associated with managing the bio-energy and solar facilities would be disposed of in the Stonyford solid waste is disposed of at the Ostrom Road Land Fill in Yuba County via the Maxwell Transfer Station Disposal Site, owned and operated by the County. Refer to the discussion under Item g) below with regard to the methods of ash disposal.

g) Less Than Significant With Mitigation:

The bio-energy facility would generate approximately 50,000 tons of ash per year. This ash would be disposed of utilizing one or both of the following methods (refer to Appendix A for Letters of Intent):

- Used as a soil amendment on agricultural fields
- Used an amendment in bagged soil and compost products and as a cement amendment

No ash would be stored in open piles on site or disposed of in a landfill. The bio-energy and solar facility will comply with federal, state, and local statues and regulations related to solid waste. However, to ensure that the ash associated with the operation of the bio-energy facility does not cause a public nuisance, the following mitigation measures are proposed to reduce potential impacts to a less than significant level.

Mitigation

MM Ash Disposal 1.

To protect the public welfare and avoid the potential of a public nuisance, in compliance with Colusa County Code, Chapter 42 – Public Nuisance Abatement, the following measures are applicable to the storage, packaging, and/or disposal of ash associated with the operation of the bio-energy facility:

1. Enclosed pneumatic or screw conveyors would move ash to enclosed overhead ashbins/silos.
2. All ash associated with the operation of the bio-energy facility will be temporarily stored within the ash silos identified on project plans.
3. No ash will be allowed to accumulate beyond the storage capacity of the ash silos.
4. No ash will be stockpiled on the project site.
5. If ash is to be transported offsite, the ash from the ash silos will be vacuum fed into a trailer for transport.
6. If ash is to be packaged onsite, the ash will be processed within an enclosed structure or "baghouse," and sold or removed from the site.

Timing: Requirements of the mitigation shall be adhered to throughout the operational life of the bio-energy facility.

Monitoring: The Colusa County Planning Department and the Public Works Department shall ensure that mitigation measures are included in the use permit as conditions of project

approval. The Colusa County Planning Department shall ensure compliance per Colusa County Code, Chapter 42 – Public Nuisance Abatement.

5. Mandatory Findings of Significance

Mandatory Findings of Significance	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
b) Does the project have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

Responses to Checklist Questions

a-c) Less Than Significant:

As described throughout the analysis above, the proposed bio-energy project and potential solar facility would not result in any significant impacts to the environment. These projects would be required to implement mitigation measures that would reduce any potentially significant impacts to a less than significant level (as identified throughout this document). The bio-energy facility and the solar facility would not result in any cumulative impacts, impacts to biological resources or impacts to known cultural and/or historical resources. These are less than significant impacts.

6. Report Preparers and References

Report Preparers:

NorthStar Engineering:

- Kamie Loeser, Senior Environmental Planner
- Christy Dawson, Senior Regulatory Biologist
- Carol Wallen, Associate Biologist, GIS Analyst
- Uma Hinman, Consulting Environmental Planner, Uma Hinman Consulting

References:

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What about the Traffic Study?

Appendices

Appendices are located on the attached cd.

ATTACHMENT B

1/22/99 - mailed copy to
CH2M Hill - Jim Thayer

1/8/10 - copy to Greenplanet

11/15/19 - copy to Kent

FINAL SUPPLEMENTAL
ENVIRONMENTAL IMPACT REPORT

for

COLUSA INDUSTRIAL PARK

Prepared for

Colusa County Planning Department
220 - 12th Street
Colusa, CA 95932

Prepared by

ECO-ANALYSTS
1025 Village Lane
Chico, CA 95926

May, 1992

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FIGURES

APPENDICES

INTRODUCTION

In 1981, a Final Environmental Impact Report was approved by the Colusa County Board of Supervisors for the Colusa Industrial Park. This proposal covered 253± acres north of the current site. The existing industrial park developed with 5- and 10-acre parcels with smaller parcels at the northwestern edge. The smaller parcels were used to develop professional offices that currently house the County Agricultural Commissioner, Soil Conservation Service, Colusa Industrial Park offices and similar uses. The larger parcels to the south have agricultural processing facilities and fertilizer suppliers.

The current proposal will provide potentially larger parcels for agricultural product processors and provide a land disposal system for septic tank effluents. The moderate to highly alkaline soils are causing leach line problems with the currently used leach lines and Colusa Industrial Park proposes to use a pond and land disposal system for wastewater effluents.

The Central Valley Regional Water Quality Control Board issued Order Number 84-115 on 28 September 1984 to allow for the replacement septic tank effluent disposal. In 1990, the same board issued draft discharge requirements for the proposed expansion. The final Report of Waste Discharge Requirements (91-139) was issued on 28 June 1991.

PROJECT DESCRIPTION

LOCATION

The proposed project is located approximately one and one-half miles south of the City of Colusa. The 195±-acre site is a mixture of fallow and currently farmed rice land in Section 8 of T15N, R1W, MDB&M. The site is bordered on the north and east by railroad property of the Southern Pacific Railroad and on the west and south by agricultural land (see Figures 1 and 2), and identified as Assessor's Parcel Nos. 017-03-014 and -021.

The project site is essentially flat, with a slight slope to the south (0-1%). Average elevation is 44-45 feet, based on USGS 7.5' topographic maps (Meridian and Colusa quadrangles). The site has been used for agricultural production of rice.

SETTING

The site is centered on very deep, poorly drained soils. The mean annual precipitation is about 15 inches and the mean annual temperature is about 61 degrees Fahrenheit. The majority of the site has been used for rice production. The remainder of the site has been left fallow and has a ground cover of various grasses and forbs. Currently the site has a General Plan designation of Agriculture-General (A-G) and is zoned Exclusive Agriculture (E-A).

A drainage channel runs north-south through the center of the site, then extending along the eastern border of the southern portion of the site. A levee extends east-to-west along the southern border of the northern half of the site. The site is accessed by several unpaved roads that traverse the area in north-south and east-west directions.

The site is surrounded on three sides by agriculturally zoned land. North of the site, the land is designated Industrial and Public/Semi-Public Services for the current Industrial Park and the Colusa County Airport. Impacts to the airport as a result of this project would probably be no more significant than those from the current industrial park. Expansion of the airport to the south is unlikely. The Southern Pacific Railroad owns a 150-foot right-of-way south of the airport, separating the project site from the airport.

One area along the northern border of the site, next to the Southern Pacific Railroad property, consists of (probably less than 4 acres) well developed wetlands and wildlife habitat area

COLUSA COUNTY

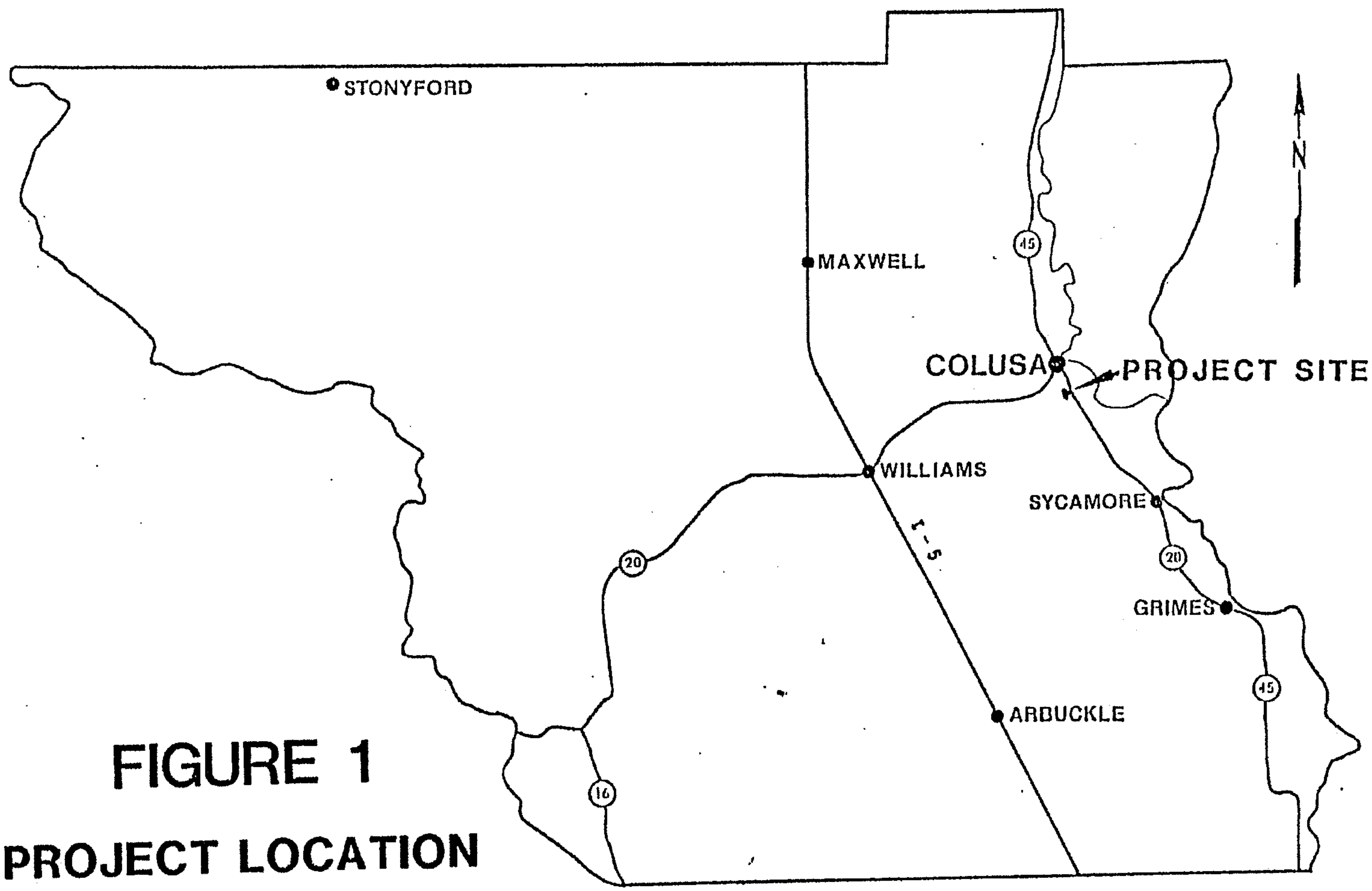


FIGURE 1

PROJECT LOCATION

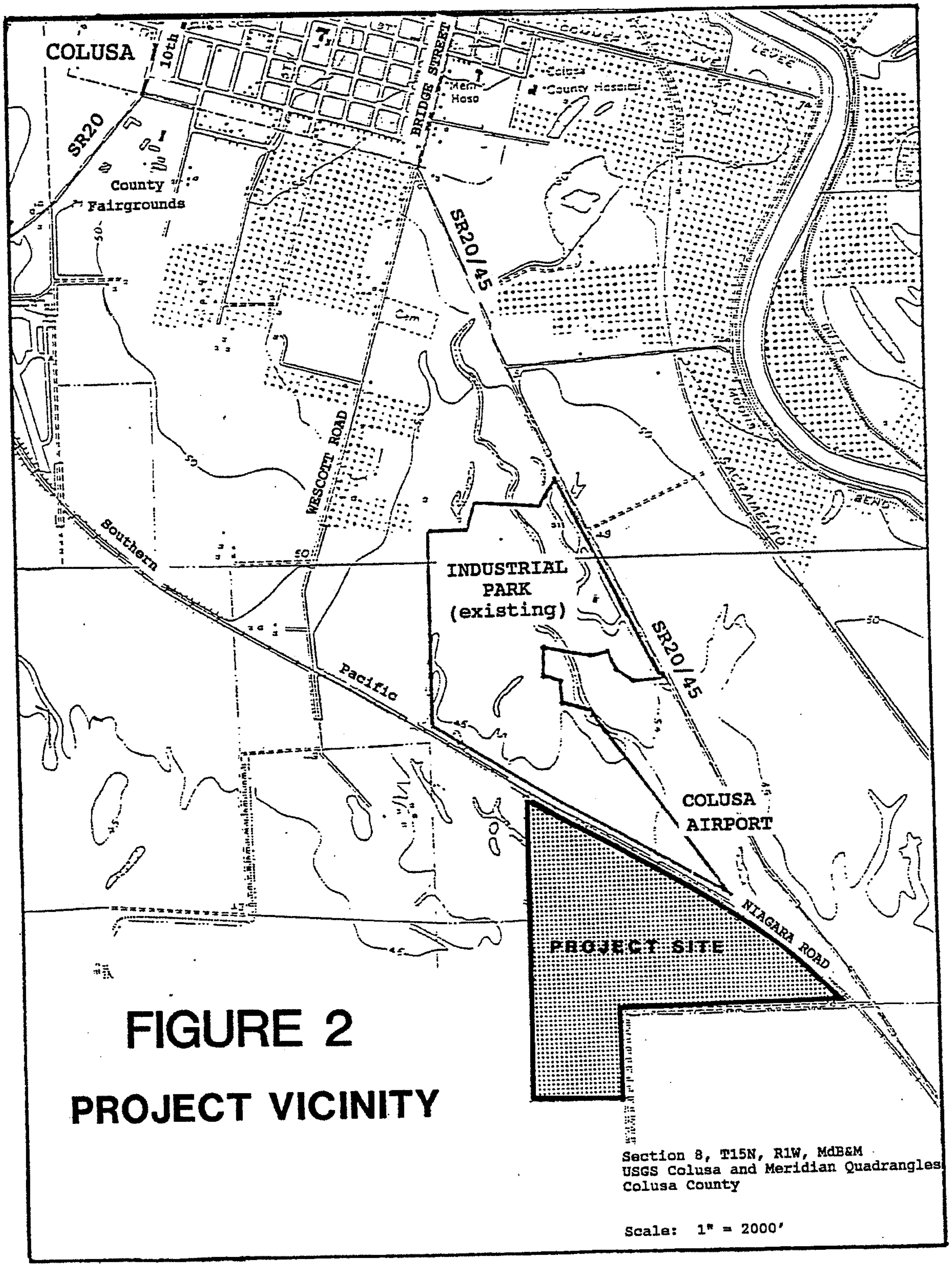


FIGURE 2

PROJECT VICINITY

in two parallel ditches. The Moran Seed Company has a 10-acre treatment area located in the upper half of the site where the levee meets the drainage channel. This site contains two aerated evaporation basins.

PROJECT DETAILS

The project developers, Colusa Industrial Properties, propose to unite Parcels 17-03-14, 67.95 acres, and 17-03-21, 127.98 acres (total 195.93) acres) into their adjacent 253-acre industrial park. The developers are requesting an amendment to the General Plan to change the current designation from Agriculture-General to Industrial (Figure 3), and a rezone from E-A (Exclusive Agriculture) to Industrial (Figure 4). The project developers propose to use 130 acres for industrial uses including agricultural processing and storage, and pre-treatment by ponding of wastewater.

The land treatment site will consist of approximately 40 acres of ponds, and land upon which wastewater will be spray or flood irrigated. Approximately 7 acres will be used for collection ponds to receive and store wastewater discharge prior to land application. Additional area is available in the 130-acre industrial portion for storage ponds, if needed. Water from these ponds would be used to irrigate field crops such as small grains, hay, clover or other suitable crops. The site is appropriate for the land treatment process, based upon a site-specific soils investigation and review of available groundwater information.

The remaining acreage will be devoted to small grain or forage production with a perimeter buffer area and preserved wildlife wetland area (see Figure 5).

JURISDICTIONS

The unincorporated 195±-acre site falls entirely within the jurisdiction of Colusa County. The project is also within the service district of the Colusa Rural Fire District.

OVERALL DEVELOPMENT SCHEME

Uses of the property proposed for the expanded Colusa Industrial Park (195± acres) include:

- Additional development sites, primarily for larger processing plants, especially agricultural in nature, and

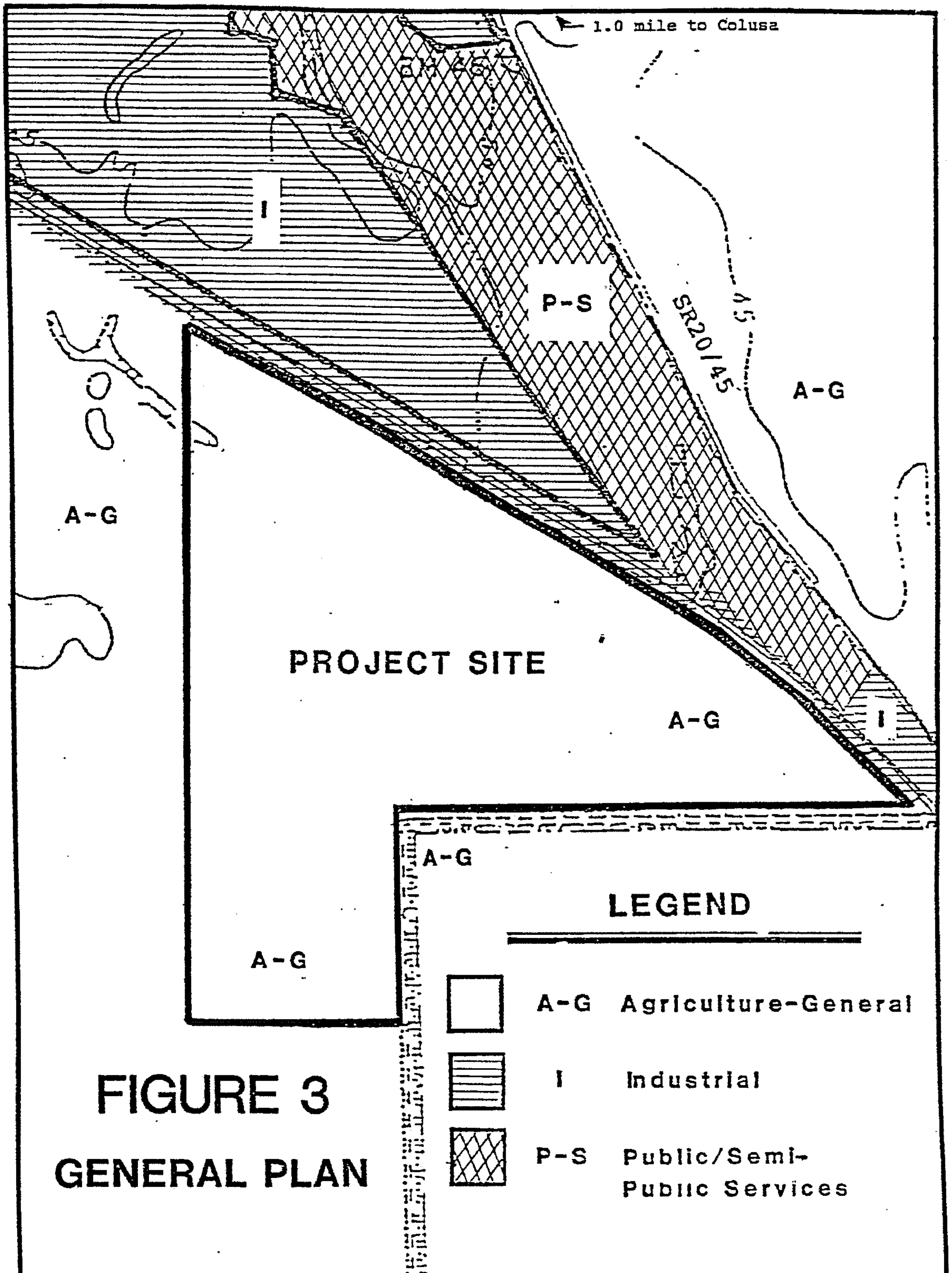


FIGURE 3
GENERAL PLAN

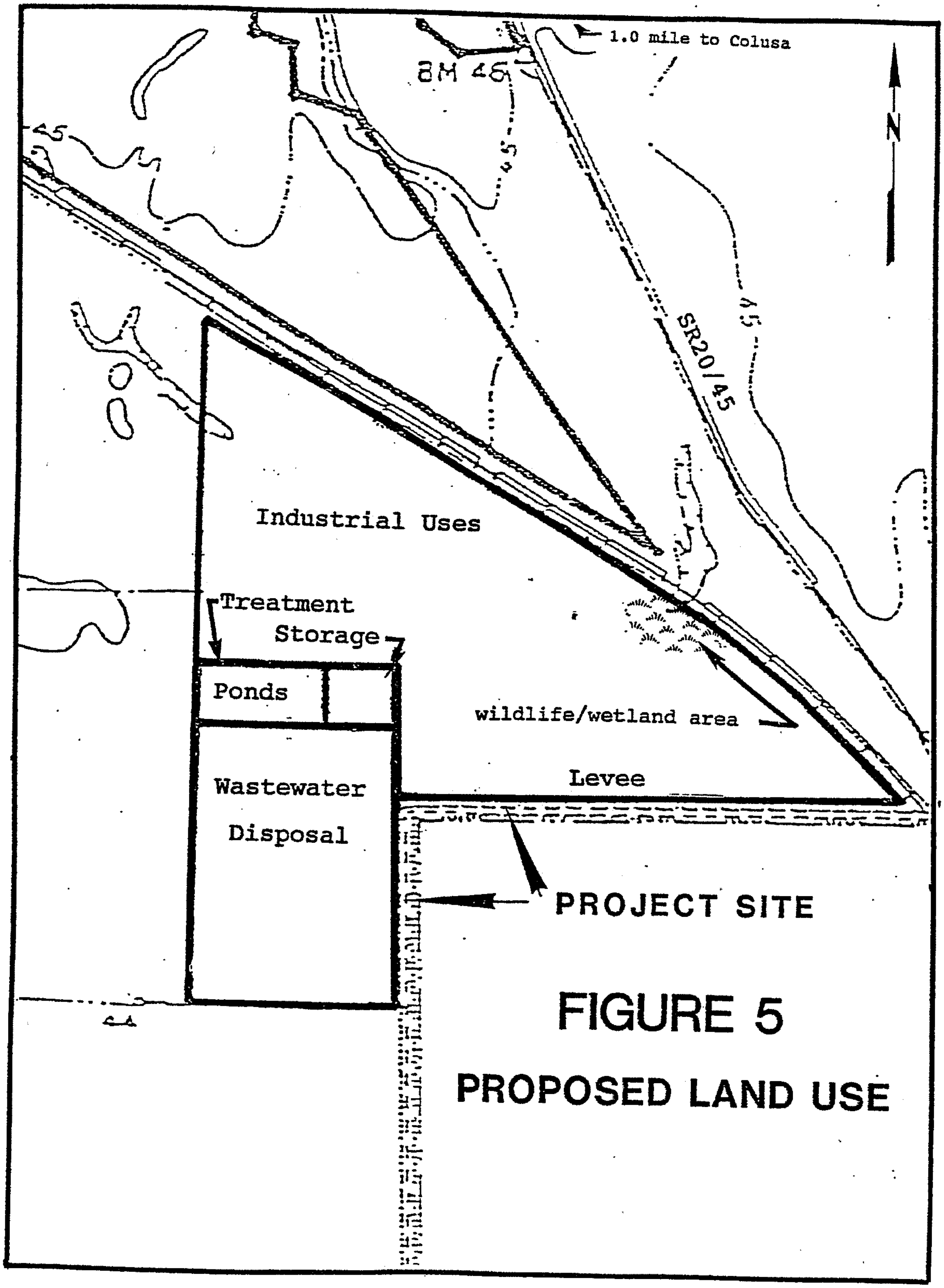


FIGURE 5

PROPOSED LAND USE

their related facilities such as storage, processing equipment, shipping and receiving.

- Provide areas and facilities for pre-treatment of liquid waste discharges prior to their ultimate disposal into outfall treatment and disposal facilities.

- Construction and operation of outfall treatment facilities for non-toxic waste discharged from industrial processes and for domestic and commercial septic tank effluents, composed of:

  - receiving ponds for removal of solids;

  - processing ponds and facilities for secondary treatment such as aeration for BOD removal, final sedimentation, etc., prior to final discharge;

  - discharge areas for flood or spray irrigation of forage crops.

The initial Environmental Impact Report for Colusa Industrial Park requires that any individual user be made to remove any objectional material from liquid waste prior to subsequent discharge into park facilities, and in no case can any liquid waste contain toxic substances, as defined by the State of California.

Domestic and non-toxic industrial wastewaters from the existing industries and the initial development will be treated and disposed of in on-site septic tank systems, leach fields, and evaporation/percolation ponds. Wastewater will be applied using surface irrigation methods, with a level border irrigation system planned. A tailwater-recovery/return-flow system will be employed to recirculate any potential runoff from the border strips for reapplication.

Wastewater applications will be scheduled to supply a crop demand for water and, as such, will generally occur from late spring to early fall. The storage facilities will be used to store wastewater during nonapplication periods until applications can be scheduled.

A monitoring program, including the use of currently installed monitoring wells, will be implemented to evaluate the performance of the land treatment process on the site. The monitoring program will include sampling of wastewater, groundwater and soils. Data from this program will be used to determine the effects of wastewater application on the site, to detect developing problems, if any, and to suggest needed site management changes.

Roadways, utilities and landscaping will be expanded with each new use, in order to conform with Colusa County standards and conditions for development and the proponent's CC&Rs for the existing industrial park.

APPROVALS

Colusa County is the lead agency for all land use approvals and environmental review. Approvals from Colusa County after environmental review include:

Colusa County Planning Commission: Rezoning the project site from Exclusive Agriculture (E-A) to Industrial, and grading permits.

Colusa County Board of Supervisors: Amendment of the Colusa County General Plan text and map to change the land use designation for the project site from Agriculture-General (A-G) to Industrial.

Central Valley Water Quality Control Board will determine wastewater requirements and construction details for the discharge areas to assure there will be no pollution of surface water sources. They will also review all new industrial wastewater sources and all monitoring records for wastewater influents and groundwater samples.

Colusa County Public Works Department may review the design of all roads and drainage structures to ensure they meet or exceed County standards. If any land grading permit is required, it must be approved and issued by this department.

Colusa County Building Department must approve all buildings.

GEOLOGY AND SOILS

LOCATION

The project site is located in Colusa County, west of the Sacramento River, approximately one mile southeast of the City of Colusa.

The proposed project site is located immediately south of the industrial park (see Figure 2). The site consists of approximately 195 acres of currently farmed agricultural land in Section 8, T15N, R1W, MDB&M. The project site is bordered on the north by the railroad right-of-way of the Southern Pacific Transportation Company and on the east and south by agricultural land.

GEOLOGY

The project site, and the entire Colusa area, is underlain by the Tehama formation and younger sediments comprised of conglomerate sandy claystone, siltstone and related sedimentary rocks. These layers are the source for groundwater for the area.

The site lies on Sacramento River flood basin deposits. These deposits are fine-grained sediments, primarily clays and silts. Thickness of the flood basin deposits at the site probably ranges between 70 and 90 feet. The Sacramento flood basin deposits are underlain by Continental sediments of the Great Valley sequence. These sediments consist of intermixed layers of clays, sand, silts, and gravels. Thickness of these deposits beneath the site may be as much as 2,000 feet (CH2M Hill, Report of Waste Discharge for the Land Treatment System at Colusa Industrial Properties, p. 11).

SOILS

The general soil conditions as described in the Soil Conservation Service's "Preliminary Draft Soil Survey for Colusa County, June 1991" are soils consisting of the Colusa and Riverbend series (see Figure 6). The Colusa series consists of very deep, somewhat poorly drained soils on flood plains. These soils formed in alluvium from mixed sources. The soils are slightly to moderately alkaline, slowly permeable, poorly drained clay loam and clay soils. Due to long-term agricultural use for rice cropping, the surface soils have puddled and have greatly reduced the long-term infiltration rates. With these reduced infiltration rates and restricted surface drainage, the soils have ponded water on the surface for extended periods in

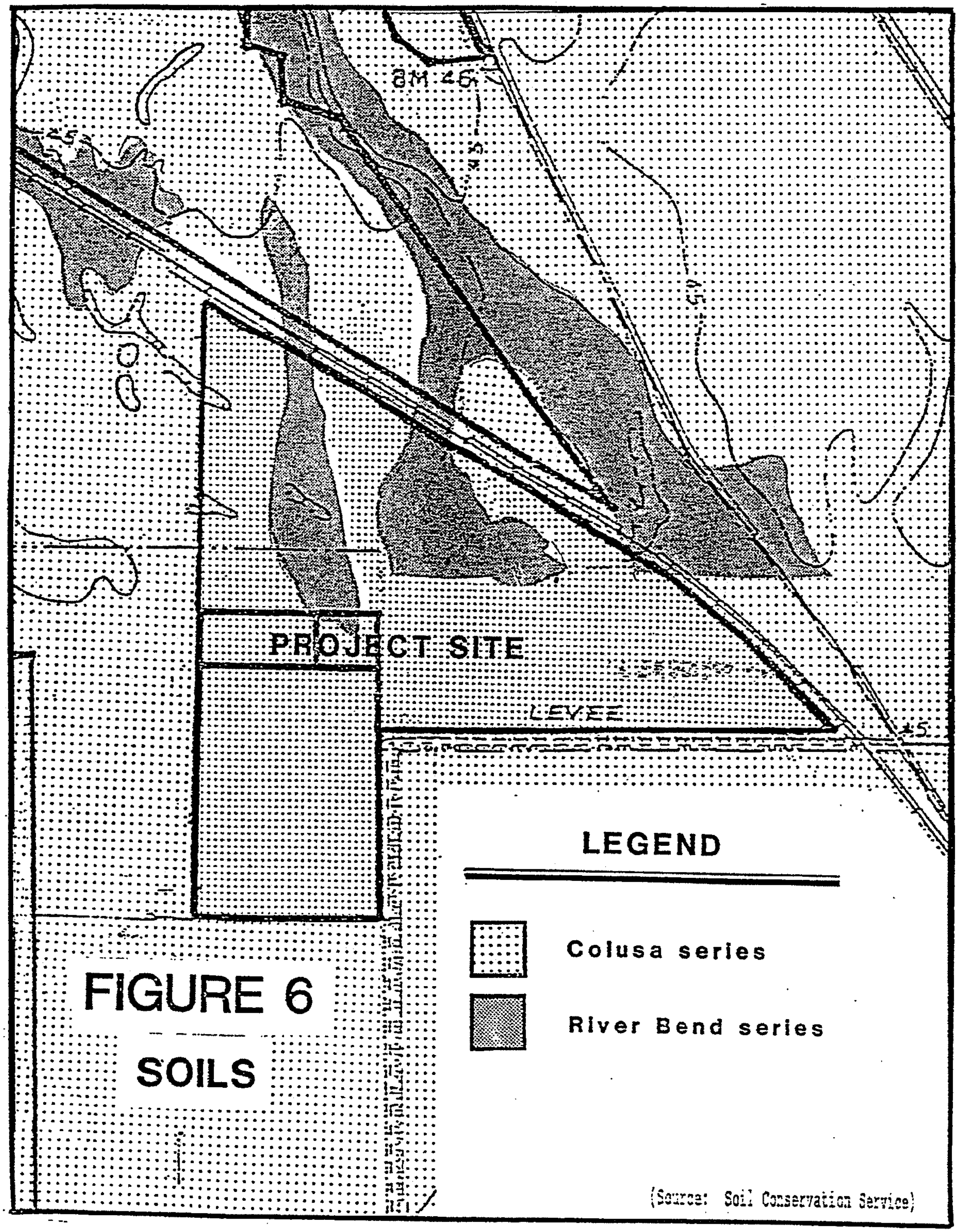


FIGURE 6

SOILS

the rainy winter and spring months. Slopes range from 0 to 2 percent. The mean annual precipitation is about 15 inches, and the mean annual temperature is about 61 degrees F.

The Riverbend and Colusa series consist of very deep, somewhat poorly drained soils on flood plains, with moderately slow permeability and high available water capacity. These two soil series differ in three characteristics: longevity of high water table, chemical makeup, and capability category/land use. Riverbend series has a depth to water table of 3 to 5 feet November through April, whereas Colusa series has a depth to water table of 3 to 6 feet from January through December. Riverbend series, a soil ranging (in depth) from loam to sandy and silt loam to silty clay loam, is suitable for irrigated crops. Colusa series, a loam-sandy loam, is limited by very strong alkalinity for nonirrigated pasture. Capability unit classification for Riverbend series is IIs-2 irrigated and IVs-2 nonirrigated. Capability unit classification for Colusa series is IVs-6 irrigated and nonirrigated, with limited agricultural productivity. For a detailed analysis of the characteristics of these two soils, see Appendix C.

A site-specific soils investigation was performed in 1983 by CH2M Hill to evaluate the soil suitability for long-term wastewater application. The investigation consisted of excavation of test pits and hand augur borings to evaluate the soil profile, determination of soil infiltration rates, and soil sampling for chemical analysis. The detailed profile logs are found in Appendix D.

The data from these tests indicate the on-site soils have a high shrink-swell clay loam surface soil overlying a dense clay subsoil. The depths and textures of the surface soils are greatly variable, probably as a result of previous land grading operations done in preparation for rice production.

To accurately assess surface infiltration rates, four on-site locations were selected in which infiltration rates were tested. The test data are summarized in Table 1.

The tested infiltration rates are slower than typical for this soil series. Soil puddling and compaction due to farming practices in rice production are responsible for this.

Chemical analyses were performed on soil samples collected on site. The results of these analyses indicate:

- The surface soils exhibit generally neutral to slightly alkaline pH, but the subsoils are strongly alkaline and have a significant buildup of sodium.

Table 1

Soil Infiltration Tests

Location	Description	Infiltration Rate[a] Test 1 (in/hr)	Test 2 (in/hr)
TP6	4- to 10-inch depth -- surface soil removed[b]	0.02	0.01
TP3	0- to 6-inch depth	0.02	0.05
TP1	0- to 10-inch depth -- surface soil removed[b]	<0.01	<0.01
SE area	8- to 14-inch depth -- surface soil removed	0.01	0.04

[a]Long-term infiltration rate calculated at end of minimum 20-hour test period.

[b]Surface soil removed so that measurements could be made on most restrictive layer.

(Source: CH2M Hill, 1984)

- The alkali (high sodium), in conjunction with the very clayey textures, is an indication that sodium dispersion of the soils is very likely.

From the field tests performed, the following conclusions can be made:

- The on-site soils are restricted by a very slow infiltration rate and seasonal water table at or near the surface. Under these conditions, the soils are suitable for seasonal waste-water application to meet the consumptive use of a crop.

- The natural infiltration rates have been reduced by alkalinity and farming practices under rice production.

Potentially Significant Impacts

Geologic hazards which may impact the project site are soil expansivity, subsidence and earthquake ground shaking. Severe shrink-swell movement of the expansive soil may damage concrete slabs, foundation footings and infrastructure.

Subsidence is typically caused by removal of water or natural gas from loose, porous sands or from water-bearing clays beneath the surface. Increases in groundwater pumpage requirements in the Colusa area increase the possibility of widespread small gradient changes in drains, sewer and canals.

The project site could be subject to earthquake ground shaking of intensity VI to VIII as measured on the modified Mercalli scale. This intensity could occur as a result of a maximum credible earthquake of magnitude 5.7 on the Richter scale, centered at the nearest earthquake fault located in the Sutter Buttes.

Secondary effects from earthquake ground shaking, such as liquefaction, lurching and/or differential settling of the soil area unlikely to occur at the site due to the soil characteristics.

Flooding may also impact the project site. There is some disagreement as to whether the site is located in a Zone A (100-year) or Zone B (500-year) flood plain. CH2M Hill identified the site as not being in Zone A based on flood plain mapping from the Department of Housing and Urban Development (see Appendix D, page D-16). The Safety Element of the Colusa County General Plan identifies the project site as being in Zone B (General Plan, Safety-3). However, the Federal Emergency Management Agency (FEMA) identifies the property as lying within Zone A of the Colusa County flood plain (FEMA Flood Insurance Rate Map, Colusa County, CA., Community No. 1, 060022C, Panel 37, June 5, 1989).

Mitigations

- A qualified soils engineer shall be retained to recommend specific soil treatment and foundation design for any structures to be constructed.

- Drainage and sewer lines shall be designed and constructed in such a manner that small changes in elevation or alignment due to subsidence would not seriously affect this function.

- Buildings should be constructed to withstand lateral forces caused by earthquakes of Intensity VII or VIII on the modified Mercalli scale as described in the Uniform Building Code.

- The area proposed for land disposal should be deep ripped and have any organic materials disced into the soil to improve permeability. Additional organic matter (crop or crop processing residue) shall be added to improve soil permeability.

- Buildings should be constructed a minimum of one foot above ground level elevation to protect against possible flood damage.

BIOLOGY

The project site has been altered from its original grassland/marsh habitats to one that is controlled by human activity. The majority of the site has been converted to rice production land, although portions of it have been left fallow. The two drainage ditches along the eastern edge of the site have well-developed freshwater emergent wetlands. Water is present in these ditches during most of the year.

The current use of the fields, including leaving portions fallow and minimizing ditch maintenance, create habitats for both resident and migratory wildlife. Site visits to the parcel were made between March and August 1991 and wildlife species present were recorded (Appendix E). Resident wildlife species include ring-necked pheasants, red-tailed hawks, yellow-billed magpies, black-tailed jackrabbits and raccoons. Migratory bird species include egrets, Canada geese, and several species of ducks.

Potential Impacts

The proposed uses of the land will not create any significant changes for wildlife, other than the conversion of rice land to another crop. The most important habitat, the two north-south parallel ditches and one east-west ditch, will be maintained in their current state. The stubble and spilled grain from small-grain production or the remains of the hay crop will provide a feeding area for wildlife similar to that provided at the current time. A small depressed wetland exists on the northeastern edge of the rice field, in direct line with and 300 feet south of the end of the airport runway. This wetland area measures about 36,000 square feet.

Recommended Mitigation

The value of the drainage ditches on the east side of the project site can be enhanced by periodic cleaning of short segments of ditch to maintain a mixture of open water and dense vegetation. Each ditch should be divided into sections 200 feet long. No more than two segments shall have the vegetation on one bank and on the bottom of the ditch removed in any one year. Rotation of segments over a six-year period will ensure a range of vegetation and open water mixtures. Dredged materials shall be removed from the ditch areas and piled away from all wetland areas. A maintenance schedule shall be filed with the County of Colusa Planning Department, and annual reports provided to this department for a period of five years from the start of construction.

Required Mitigation

The 36,000-square-foot wetland on the northeastern edge of the property and 300± feet south of the airport runway, shall be maintained in its present state.

Research w/ N.R.C.S.

TRAFFIC

EXISTING SETTING

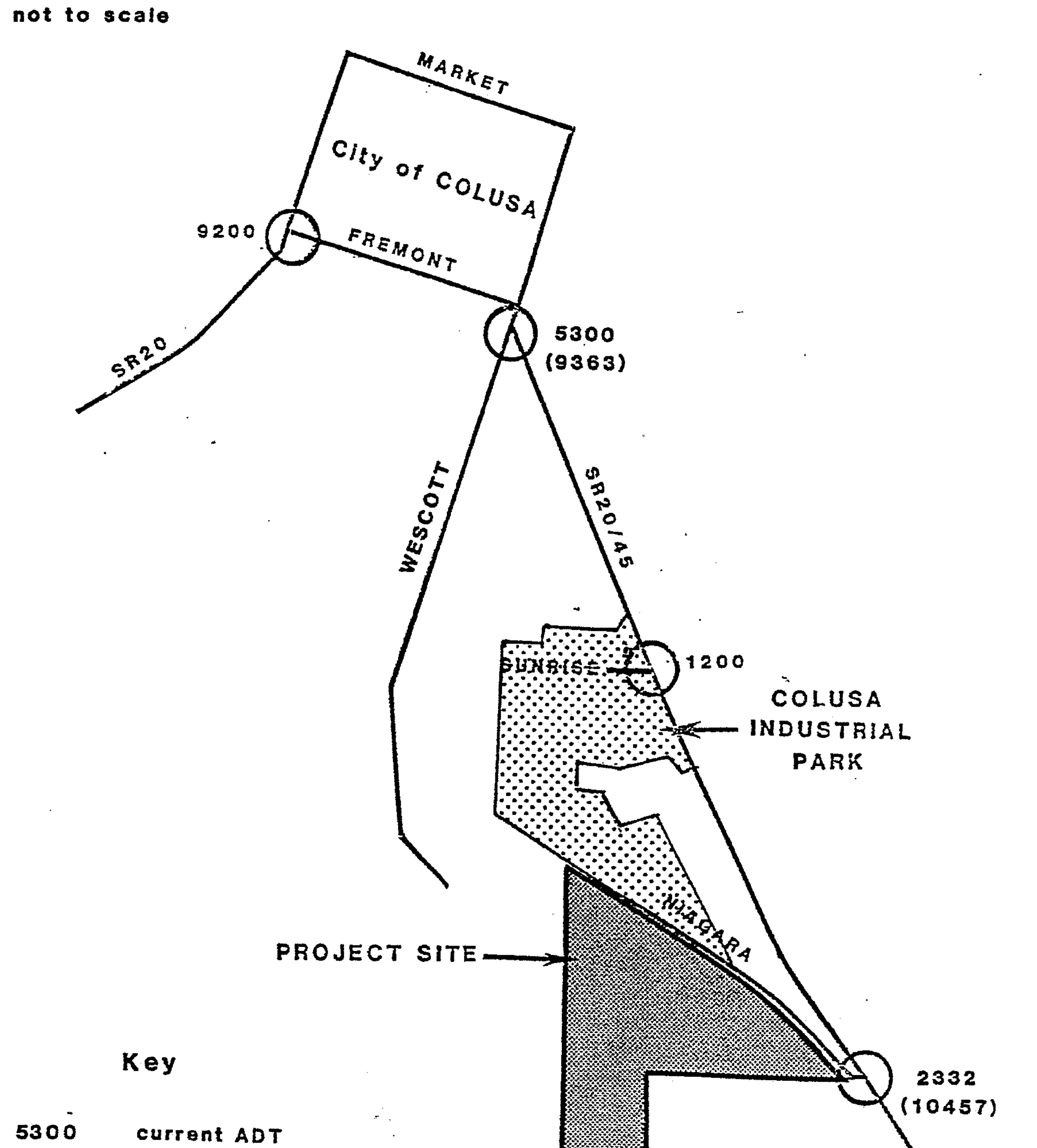
Regional Access

Figure 1 earlier in this EIR illustrates regional access routes in the area, including Interstate Highway 5 and various county and state roads, and shows the relationship of State Route (SR) 20 to Interstate 5. SR20 (SR20/45 past the proposed project site) is a major east-west arterial, continuing east to Yuba City/Marysville and west through the City of Colusa. West of Colusa, SR20 continues, connecting with Interstate 5. State Route 45 provides two-lane north-south highway access between the project vicinity and the agricultural areas between Interstate 5 on the west and Highway 99 to the east.

Local Roads

The local roadway system serving the project area is shown in Figure 7. The project site is located approximately one mile south of the City of Colusa. SR20/45 runs along the east side of the project site and has been recently improved for a distance of several miles from the intersection of SR20/Wescott/Bridge at the southeast corner of Colusa, southeast to Moon Bend Road. In August of this year, this highway segment received a rubberized asphalt overlay. With an 80-foot right-of-way, the highway has two 12-foot lanes with two-foot paved shoulders and approximately four feet of gravelled shoulder. For northbound traffic, there is a left-turn lane onto Niagara Road, and for southbound traffic, a widened, paved shoulder allows for right turns onto Niagara Road.

Access to the project site is provided by Niagara Road from SR20/45 at the northern end of the site. Extending along the north side of the Southern Pacific Railroad right-of-way, Niagara Road is a two-lane road in good condition with a 60-foot right-of-way, and serves several existing businesses in the current industrial park on the north side of the road. Sight distance along this road is excellent. A portion of Niagara Road, serving these businesses, is private. Internal roads of the project site will be maintained by the owners as is presently being done for the private portions of Niagara Road and the internal roads of the existing industrial park. Access is currently achieved by a dirt road which turns south off of Niagara Road, crosses the railroad property and enters the project site. Niagara Road is the only access route planned for the site. There are no plans for a second access to SR20/45 from the southern portion of the



Key

5300	current ADT
(9363)	ADT at Project buildout

FIGURE 7

EXISTING INTERSECTION ADT (WITH PROJECT)

site. Future development plans call for the industrial uses to be located in the northern portion of the site, making the Niagara access to the site the only access necessary.

EXISTING PLUS PROJECT CONDITIONS

Project Description

The proposed expansion of the Colusa Industrial Park consists of approximately 196 acres. A land treatment site for septic tank effluent will use approximately 40 acres. Approximately 130 acres will be used for industrial uses, including agricultural processing and storage with a small area preserved as a wetland area. Access to the site will be from Niagara Road. Secondary access into the project site is not proposed, although there is the potential for additional access to the south where a dirt road enters the project site from SR20/45.

Project Trip Generation

The original plan for the Colusa Industrial Park was adopted in 1981. That plan anticipated a fairly slow buildout of the following land uses and the average daily trips (ADT) they would generate, as shown in Table 2.

Table 2

Traffic Generation for 1981 Site Plan

Area (Acres)	Use	Trip Generation Rate (trips/acre)	ADT
20	Office	240	4,800
50	Warehousing	62	3,100
50	General Industrial	8.2	610
75	Heavy Industrial	52.4	2,620
50	Light Industrial	59.4	3,000
		Total:	14,130

Present land use based on the 1981 Colusa Industrial Park Plan consists of approximately 60 acres of light, agriculture-related industry and offices. The business park has nine operating offices. The project is approximately 25% built out under the master plan. The proposed plan would add 130± acres of industrial activity under the full development alternative.

Average daily traffic (ADT) on SR20/45 near the project has increased from 4000 in 1981 to 4340 in 1990. Peak month ADT during the fall harvest season is 5000 vehicles. Peak hour traffic (noon - 1:00 PM) has increased from 440 to 550. These volumes are well below capacity of the roadway. The current level of service is at level "A" or free flow.

The actual increase in vehicle numbers with 25 percent buildout is less than 30% of that predicted for this level of buildout. The reason for the great discrepancy is the number of employees needed to process bulk agricultural products versus those needed for normal industrial manufacturing and processing. Although some residential development has occurred along SR20/45, this was not considered in the impact analysis because the large, heavy-duty trucks that deliver and transport products to and from the industrial park during peak months consume more roadway capacity than conventional automobiles.

The level of service (LOS) scale or ranking system is an evaluative approach generally accepted by transportation planners and traffic engineers to describe a range of operational conditions. Capacity analysis of traffic conditions uses six categories, designated A (best) through F (worst), defined as:

A: Little traffic delay, free movement.

B: Some drivers are inconvenienced, minor delays.

C: Average delay, some disruption considered acceptable for peak hours.

D: Some considerable delay and inconvenience during peak hours. May be cost effective to operate in this service level for peak hours.

E: Capacity reached, long delays. The maximum number of vehicles are served, but service is poor. Risk of reaching forced flow and congested conditions.

F: Breakdown of the traffic flow. Forced flow with delays and congested conditions. The number of vehicles actually served is below those served at capacity.

A traffic assessment of the proposed project was performed by Dr. Donald Holtgrieve in June 1991 (see Table 3). This assessment was completed prior to the Caltrans improvements to

Table 3

Traffic Generation for 1991 Site Plan

Area (Acres)	Use	Trip Generation Rate (trips/acre)	ADT
65	Warehousing	60	3900
65	Light Industrial	65	4225

(Estimates from Institute of Traffic Engineers and Caltrans District 4)

State Route 45/20 in the vicinity of this project. The project will expand the present industrial park by 196.3 acres, including 130± acres of agricultural processing and industrial storage uses. Recent trip generation estimates indicate an average of 60 trips per day per acre for warehouse uses and 65 trips per day per acre for light industrial uses during full use periods (harvest season). The peak hour is usually 15% of the average daily trips (ADT) and occurs from noon to 1:00 PM. Average trips per day may total 8125 during harvest season, or 1258 peak-hour trips, at full buildout.

These figures rely on two assumptions:

1 - Maximum land use purposes are achieved at project buildout;

2 - The ITE (Institute of Traffic Engineers) trip generation formula used in determining "trips per acre according to land use" is accurate.

The second assumption used to determine trips per day is only approximate at best. ITE bases its studies on industrial land uses that are full-time, year-round, and labor-intensive. This project's industrial uses will be seasonal, with part-time employment. The ITE figures are not site-specific or land-use-specific, and should be considered as only approximate guidelines.

These predictions should be reviewed in the context of prior experience at the existing industrial park. The estimated traffic impacts from the expanded industrial park will probably be 30-50 percent of the ITE-estimated levels. Again, it must be noted that the percentage of heavy-duty vehicles, those with more than three axles, will be high and will have a direct impact upon roadway capacity and service levels.

Intersections

Intersection operational capacity is often the critical factor in determining the traffic handling capacity of a local roadway system. Four intersections have been identified which would be most affected by the proposed project. As shown in Figure 7, these intersections include the proposed project's primary access point, SR20/45 at Niagara Road; the existing industrial park's northern access point, SR20/45 at Sunrise Road; SR20/45 at Wescott Road; and SR20 at Fremont Street.

The industrial park is about 25% built out under its present master plan. Traffic generation for the 1981 site plan gave a total of 14,130 ADT; the current total is about 1000 ADT in peak months. The "ADT With Project" figure assumes full buildout and maximum use with peak average daily use at the two intersections cited. It is unknown what impact, in terms of increased ADT, the proposed project will have on the SR20/45 - Sunrise intersection. It is unlikely there will be any direct increase in ADT because traffic to the proposed project (SR20/45 - Niagara) will be related to agricultural processing and warehousing activities, whereas traffic on SR20/45 - Sunrise is related to office park activities. SR20 - Fremont Street carries 9200 ADT, a 100% increase over 1981 levels. This increase includes the effect of other land development in Colusa rather than increases related to this project.

Figure 8 shows the projected growth in ADT by the year 2000. This is derived by multiplying current traffic levels by a factor of 1.025 percent. These figures include the proposed project and future projections and are worst-case-scenario figures. This presumes full buildout and maximum use of the project site during peak season. Since the actual generation rate is lower, the figures presented can be assumed to include worst-case cumulative effects.

Peak-hour trips for the SR20/45 - Wescott and SR20 - Fremont intersections are similar, reflecting average daily peak hour traffic on SR20 through the City of Colusa.

Seasonal variations will occur, with the highest traffic counts during harvest season. With the assortment of agricultural products processed at the current industrial park and the proposed project, the harvest season would extend from July into November. The ADT and peak hour figures reflect full buildout of the 196-acre project site, at harvest season. Table 4 shows the type and volume of daily traffic for the present industrial park site, based on interviews with company managers in 1991.

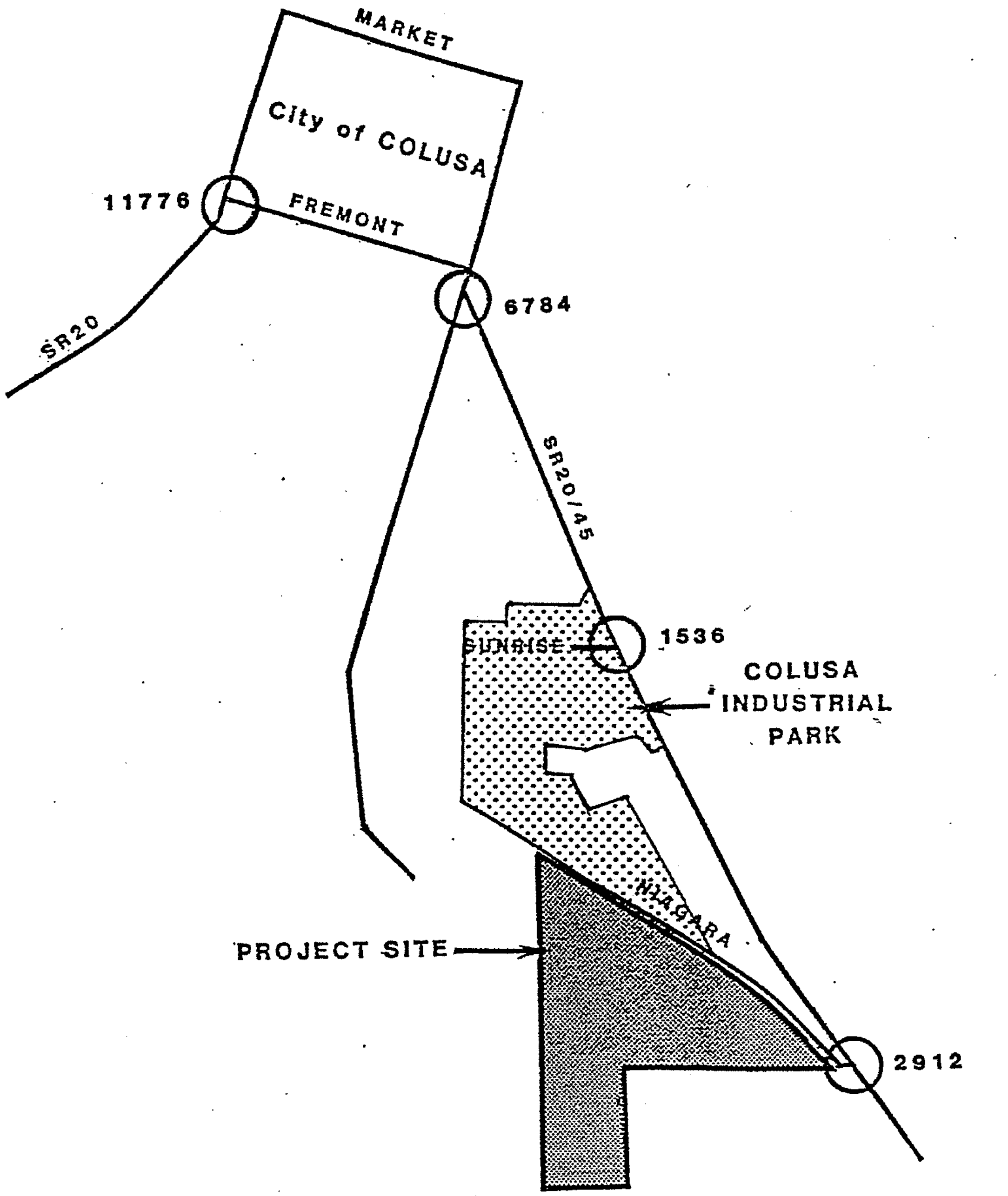


FIGURE 8

FUTURE ADT (WITH PROJECT) - YEAR 2000

Table 4

Current Traffic Generation

Company		Vehicles per Day Off-Season	Peak Season
Simplot:	Employees	27	42
	Trucks	--	20
Harris Moran Seed Co:	Employees	9-12	30
	Trucks	--	8-10
Indian Harvest:	Employees	15	36
	Trucks	--	6
Colusa Bean Growers:	Employees	18	39-45
	Trucks	10	150-200
*Colusa Cold Storage:	Employees	84-105	150
	Trucks	2-26	50

*Not all employees and trucks come to this site -- figures are for company's total traffic volumes for three locations.

(Source: On-site survey and I.T.E. Trip Generation)

With regard to ADT at the SR20/24 - Niagara intersection, a worst-cast directional split was assumed to be one-half northbound and one-half southbound. Because of the nature of the proposed project, the majority of the traffic will enter from the south and exit to the south, since much of the agricultural products processed at the site originate south of Colusa. For example, a tomato processing plant is a possible use at the proposed site, and a large area of tomato production is located south of the City of Colusa.

Potentially Significant Impacts

With the roadway improvements to SR20/45 in August 1991, there are no recognized potentially significant impacts on traffic imposed by the proposed project. Minor work such as striping for extension of the left-turn lane may need to be done before project completion.

Mitigations

None required.

WASTEWATER DISPOSAL

A major component of this project is provision of an alternate method to wastewater effluent disposal in leach line systems and an increased ability to handle agricultural product process waters. All existing domestic wastewater effluents are processed on each parcel by individual septic tank/leach field systems. One industrial user, Moran Seed, Inc., produces agricultural product wastewater which is treated in two aerated evaporation basins on their property.

The leach lines handling domestic effluents have experienced clogging problems related to the alkaline, sodic soils on the existing industrial park. Some leach lines have had to be replaced.

In 1983, Colusa Industrial Properties commissioned a wastewater study by CH2M Hill to establish the feasibility of land disposal of effluents from both domestic and industrial uses. The report on this study was issued in January, 1984, and has been used to design the pond areas and land disposal area for the combined existing and proposed industrial park. The gross area needed for wastewater treatment and disposal established limits on the amount of additional industrial development that can be accommodated.

The pond system will include receiving ponds for removal of solids and "polishing" effluent. If any future industrial dischargers produce large volumes of solids in discharge water, they may have to provide their own settling ponds. Effluent from the receiving ponds will flow to processing ponds for final sedimentation and a reduction in biological oxygen demand (BOD) including aeration. Water from these ponds can be routed to the planted areas for spray or flood irrigation.

The area designated for ponds, conveyance facilities, access roads and a perimeter buffer area leaves approximately 40 acres available for land irrigation treatment of effluents. The 7± acres of new ponds to be developed will accommodate wastewater effluent from domestic septic tanks with leach fields that have reduced efficiency and industrial effluent from new agricultural product processes that move into the industrial park.

Domestic effluents from the septic tank system in the existing office complex will be the first to be pumped into the new ponds. Additional domestic and industrial sources will be added to the pond irrigation system in lieu of leach line replacements when existing leach field systems lose their adequacy to handle effluents. Wastewater from the existing Moran

Seed ponds will be included in the land treatment system. The ultimate volume of wastewater that can be treated by land disposal is 0.102 million gallons (mgd) per day or 114 acre feet/year. Other users that discharge process water may have to provide additional holding pond areas. This is the capacity of the irrigated area as determined by the CH2M Hill study.

In addition to water consumed by evaporation from growing crops, there will be a net evaporation from the ponds that will average 45 inches per year.

The discharge requirements for Colusa Industrial Park incorporated in their state permit do not allow any discharge into their ponds of toxic or potentially hazardous materials. Processers producing toxic or objectionable substances must be capable of removing these materials within their plant processes or removing them from the site by a licensed hauler. The present permit allows 500 gallons per day of septic tank effluent to be handled in the pond/spray system.

Land Treatment Area and Application

The 33 acres to be used for land treatment will be deep ripped to improve percolation rates. Any vegetation on the site should be disced under before ripping. Rice production on this property has produced a concentration of fine soil particles near the surface that significantly reduces the percolation rates. Further soil amendment in the form of gypsum or sulfur should be added to aid in leaching soluble sodium.

The cover crop to be planted will be annual crops, such as barley, or a perennial grass forage crop.

Buffer Areas

The CH2M Hill report establishes buffer area setbacks from major drainageways and adjoining properties. These buffer areas, in which effluent waters will not be released, total approximately 15 acres. They are:

1. Southern Pacific Railroad right-of-way, 75 feet (half of the 150-foot right-of-way) located on the eastern boundary of the project site. This is away from the treatment site and will not be affected.

2. Major drainageways. These include the two parallel ditches on the eastern edge of the project and the central drain ditch that separates the area used for rice from the fallow

land to the north -- 25-foot buffer area. Only the central drain ditch is near the treatment area.

3. Adjacent lands not owned by Colusa Industrial Properties, at the southern and western boundaries -- 50-foot buffer area.

Monitoring

Three monitoring wells were required by Waste Discharge Permit 91-139 and have been installed (see Appendix G). The location and design of these wells were subject to review by staff of the Central Valley Regional Water Quality Control Board (CVRWQCB). The standard battery of mineral tests in groundwater will be performed once a year. Quarterly samples will be drawn from the monitoring wells and tested in a state-certified laboratory for 20°C 5-day Biochemical Oxygen Demand (BOD_5), Total Dissolved Solids (TSD), Chemical Oxygen Demand (COD), Alkalinity/Acidity (pH), and Total Nitrogen.

Monitoring requirements were also established for incoming (influent) liquids being sent to the ponds. A daily record will be maintained for the amount of influent being sent to the ponds. Quarterly samples will be taken and tested by a state-certified laboratory for 20°C BOD_5, Suspended Solids, TSD, Specific Conductivity (SC), pH and Total Nitrogen.

Reports on the flows, spray amounts and laboratory tests will be sent to the CVRWQCB on a monthly basis.

The regional board determined that the long period required for development of the office and industrial buildings is sufficient to detect any potential problems. All new connections to the pond/irrigation field system must be reviewed and approved by the Executive Officer of the CVRWQCB.

Impacts

None anticipated from the current uses. The regional board has reviewed this project and standard conditions in issuing the permit for waste discharge.

There is a potential for new agricultural product processors to add large amounts of organic materials (pulp, skins, seeds, etc.) to their discharges. This could overload the proposed pond system and create odor problems.

Required Mitigation

- Prior to establishment of any new industrial product processing in Colusa Industrial Park, an agricultural engineer shall evaluate the potential industrial wastewater discharges. If the potential exists to overload the pond system with dissolved or suspended solids and increase the BOD or COD, or to add any chemical which would have the effect of degrading surface or subsurface water quality, then a pretreatment system shall be required. The evaluation of new discharges and proposed pretreatment system will be sent to the Executive Officer of the CVRWQCB before any additional effluents are permitted into the system.

SOLID WASTE

The California Integrated Waste Management Board has requested a discussion of disposal of solid waste from office use or industrial processing. While no specific new users or facilities have been selected or identified for Colusa Industrial Park or its newly-annexed area, there are some general practices which are designed to minimize impacts upon the Colusa County landfill. The scope of any solid wastes generated can not be reasonably determined without details on possible uses within the park.

Colusa County currently has two landfill sites, Stonyford and Evans Road landfills; however, the Stonyford site is scheduled for closure. The Evans Road landfill currently has a 45-tons-per-day limit on solid waste acceptance, but the county intends to apply for additional daily capacity to allow acceptance of wastes from outside the county. If new, large solid waste generators develop within the county, acceptance of waste from other areas will be reduced.

Janet Krug, Environmental Compliance Analyst in the Colusa County Department of Public Works, stated that Colusa County is reviewing the need for user benefit or development fees to accommodate increased costs of new growth.

Combustible construction wastes can be burned on the site to reduce the bulk of any materials transported to the landfill. Surplus aggregate and cement fragments can be incorporated into road base and parking lot fill areas. Any organic agricultural wastes produced by processors within the park can be used as a soil amendment to be disced into the spray field areas or on nearby property to improve soils and infiltration rates. Some vegetable wastes, including waste pulp, can be dried and used for cattle feed or mulch by an area processor such as the Sun Beet Company.

Any large-scale operation generating waste packing material may be required to contract with one of the recycling companies dealing in Colusa County to dispose of paper, cardboard and suitable plastics. Currently only cardboard is being recycled.

<u>Required Mitigation</u>

- Colusa Industrial Properties shall require any tenant generating significant amounts of solid waste to work with the Department of Public Works to develop recycling or reuse programs.

CEQA-REQUIRED ASSESSMENT CONCLUSIONS

This section summarizes the impact findings in this Environmental Impact Report in terms of the various assessment categories suggested by California Environmental Quality Act (CEQA) guidelines for EIR content. The findings are summarized with respect to the project's potential for growth inducement, unavoidable and irreversible adverse impacts, effects found not to be significant, and cumulative impacts.

GROWTH-INDUCING IMPACTS

Approval and development of the proposed project would add some job opportunities to the area thereby incrementally adding to housing needs. This project may also provide incentives to other land owners to develop their properties, particularly since areas adjacent to the project site consist of moderately- to highly-alkaline soils with limited economic value for agricultural uses.

The project's processing plant and storage facility could have a secondary growth-inducing effect on local industrial activities, resulting in pressure for industrial expansion in the area.

SIGNIFICANT ADVERSE IMPACTS WHICH CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED

If the proposed project were implement subject to effective incorporation of all impact mitigation measures recommended in this EIR, the following significant adverse impacts of project buildout would remain unavoidable:

- The project would contribute to the cumulative degradation of air quality in the Colusa area due to the incremental increases in vehicular traffic.
- Structures on the site could be subject to earthquake ground shaking.
- The project site, which is located in a 100-year to 500-year flood area (Zone B), could be subjected to infrequent flood events.
- Loss of agricultural lands with capability class III and IV would occur.

- Stormwater runoff from 60 acres of the site would increase.
- Industrial uses on the site could increase the levels of noise and glare in the area.

SIGNIFICANT IRREVERSIBLE CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSAL, SHOULD IT BE IMPLEMENTED

A portion of the project site which currently consists of agricultural and open lands would make the irreversible transition to industrial uses since placement of buildings, streets and paved areas on vacant land is essentially irreversible. Newly-developed areas tend to remain in those uses for very long periods of time.

EFFECTS FOUND NOT TO BE SIGNIFICANT

- The project will not have any significant visual impact on the surrounding area. The shortest distance from SR20 to the project area in which industrial uses are proposed is over 3625 feet.
- Utility infrastructure will be provided by the developers for sewer service and water supply.
- There will be no significant impacts on the area's water supply since there is an adequate water supply in the area.
- The project will contribute both stationary and mobile source air pollutants, but this impact is not significant in itself.

CUMULATIVE IMPACTS

Cumulative impacts are those impacts which, when considered at the project level, may be less than significant, but when combined with impacts from other projects could produce a significant impact. These impacts are discussed in detail in the respective sections of the EIR, and are summarized and placed in a regional perspective in this section. Implementation of the proposed project, when considered with potential growth, is anticipated to result in cumulative impacts to traffic, water quality, stormwater runoff, and wildlife.

Traffic

Significant additional traffic may be added to local area roads. The level of service for SR20 on Market Street will decline to "D". Drivers on SR20 near the project site may experience delays from turning movements of trucks at peak hours during the fall harvest season. The cumulative effect as well as the project-specific traffic increases will create potentially hazardous conditions on SR20 near the project site.

Water Quality

Construction of industrial facilities, roadways and parking areas will disturb approximately one-third of the project area. Some water quality degradation could occur as a result of an increase in suspended solids from the disturbance of vegetation and soils.

Stormwater Runoff

Development of this project will affect the rate of stormwater runoff in minor storms because of the increases in impervious surfaces due to roads, paved parking areas, and roofs of industrial facilities.

Wildlife

The development of this project could reduce the open space and habitat available for area wildlife.

ALTERNATIVES

The California Environmental Quality Act (CEQA), as amended, requires environmental impact reports (EIRs) to discuss reasonable alternatives to proposed projects. The proposed expansion of industrial park and wastewater treatment site has been considered in this EIR as the principal proposal for the development of the project site, and has been subjected to detailed impact analysis. To provide further understanding of the environmental effects of the project and possible mitigation approaches, and to meet CEQA requirements, a number of alternatives to the proposed action are described and evaluated in this section. The alternatives discussed include:

1. No Project. The CEQA-required "no project" alternative, which assumes continuation of the present use of the site for rice production.

2. Ponds and Spray Irrigation Without Additional Development. Development of the project site as proposed but without adding the agricultural product processing facility and industrial storage uses.

3. Industrial and Office Park Development With No Agricultural Uses. This alternative offers a mixture of heavy and light industrial uses and additional office park acreage.

The comparative principal characteristics, mitigating effects, and adverse factors associated with each of these alternatives are described below.

Alternative 1 - No Project

Consideration of the "no project" alternative is required by CEQA. In this case, "no project" is taken literally to mean no physical development of the site. The property would remain as vacant land with potential for future development, be managed for continued rice production, or be left fallow. No roads or other infrastructure improvements would be made.

Advantages

The "no project" alternative would maintain the present character of the site. This would maintain the general character of, and continue to be compatible with, the surrounding parcels to the west, south and east sides of the project site.

Impacts related to increased traffic volumes on local roads would not occur.

There would be no increase in demands for public services.

There would be no increase in air pollutant production from mobile or stationary sources attributable to this site.

Potential water quality impacts as a result of development would be avoided. There would be no possible increase in stormwater runoff volumes or potential degradation of surface waters.

Disadvantages

There are no significant environmental disadvantages associated with "no project" unless the pond system could not be constructed to better handle septic tank effluents. There would be a loss of potential employment opportunities for the local market.

Alternative 2 - Ponds and Spray Irrigation Without Additional Development

The current General Plan land use designation for the project site is Agriculture-General (A-G). No General Plan Amendment would be necessary as this designation allows for "agricultural industry (processing), and agricultural support uses...."

Advantages

There would be little demand on public services such as sheriff's and fire protection.

There would not be any traffic impacts with this alternative.

This alternative would provide the greatest compatibility with the surrounding land uses, compared with the other development alternatives. An additional 130 acres, as compared to the proposed project, would be used for agricultural production (rice or hay, or pasture). This would provide additional acreage in which to use the wastewater effluent for spray irrigation purposes.

There would be no increase in impervious surfaces, thereby avoiding impacts on groundwater recharge characteristics and possible groundwater contamination.

Disadvantages

The low-quality, problem soils on the project site would be more productive if used for the proposed project's agriculture-related purposes of providing industrial uses for processing and storage. This alternative would not provide such an agriculturally-compatible land use.

Future industrial and office park needs would not be met with this alternative. This could result in a similar proposed project being developed in an area less suitable than the project site. The proposed project site is not located near urban development, is next to a principal highway and an airport, is contiguous to an existing industrial and office park development, and has on-site substandard soils. Any similar proposed project in the future may not have all these attributes.

Alternative 3 - Industrial and Office Park Development With No Agricultural Uses

An alternative to the proposed project could be development of the project site for industrial and office park facilities. None of the agricultural uses of a land treatment site for septic tank effluent as in the proposed project would be incorporated in this alternative. Industrial uses such as storage warehouses, rice dryers, agricultural-product processing plants, packing and distribution facilities would be developed. An appropriate buffer zone would separate these facilities from the office park development. This alternative would require a General Plan Amendment from Agriculture-General to Industrial, and a rezone from Exclusive-Agricultural to Industrial.

Advantages

This alternative complies with several of the county's goals and policies and provides a balanced mix of land uses which will provide services for agricultural-related activities for the area. County industrial land use policies (LU-44, LU-46, LU-47 and LU-48) are met with this alternative.

This alternative is compatible with current surrounding land uses. Activities associated with agriculture will not impact on this alternative proposal, while the industrial uses (processing, storage, etc.) would complement agricultural land uses.

This alternative provides a logical extension (spatial relationship) with the current Colusa Industrial Park. Future industrial and office park needs would be met with this alternative.

Additional jobs would be created in an area with high seasonal unemployment rates.

Disadvantages

Wastewater treatment needs for the existing and expanded Colusa Industrial Park would still have to be addressed. The proposed project is designed to address this problem. This alternative compounds the need for a wastewater treatment site without providing a solution.

Potential noise, odor, light and glare problems could result from this alternative.

Heavy truck traffic to and from the site may increase, particularly during peak seasonal harvest times.

An increase in automobile traffic, traffic-related hazards and air pollution would occur.

Increased demands for public services, sheriff's department and fire protection, would occur.

The amount of impervious surface would be substantially greater than the proposed project, possibly reducing the amount of recharge area while increasing the risk of groundwater contamination.

Comparison of Alternatives

The No Project alternative has the fewest environmental impacts. Ponds and Spray Irrigation Without Additional Development is the next alternative with fewer environmental impacts. Industrial and Office Park Development With No Agricultural Uses would produce the greatest impacts on the environment.

The proposed project, expansion of the industrial park and park waste disposal treatment site, was chosen because it would meet future growth needs and utilize substandard soils for more beneficial uses. The proposed project would offer a reasonable use of the land while minimizing environmental impacts, and provide potential economic benefits to the area.

The proposed project would have environmental impacts not found with the No Project alternative.

Appendix A

PERSONS AND ORGANIZATIONS CONTACTED

<u>Colusa County</u>	
Planning Department	Stanley Walker, Planning Director
Public Works Department	Jon Wrysinski
Environmental Health Department	Janet Krug
<u>State of California</u>	
Central Valley Regional Water Quality Control Board	Richard McHenry, Area Engineer
Caltrans District 3	Robert O'Loughlin, Chief, Planning Branch C
<u>U.S. Government</u>	
Soil Conservation Service	Bill Reed
<u>Colusa Industrial Park</u>	Andy Clark Dan Klar Ed Hobart
<u>Colusa Bean Growers, Inc.</u>	Alan Rains, Plant Supervisor
<u>Colusa Cold Storage</u>	Shawn Bradford
<u>Harris-Moran Seed Company</u>	Paul Bender, Field Rep.
<u>Indian Harvest Specialty Foods</u>	Don Kurkun
<u>Simplot</u>	Mary Burleson

Appendix B

REFERENCES

California Regional Water Quality Control Board. 1984. Adopted Waste Discharge Requirement for Colusa Industrial Properties.

California Regional Water Quality Control Board. 1991. Tentative Waste Discharge Requirements for Colusa Industrial Properties, Inc.

CH2M Hill. 1984. Report of Waste Discharge for the Land Treatment System at Colusa Industrial Properties. R17612.AO.

Colusa County General Plan. 1989.

Colusa County Zoning Ordinances.

Draft Environmental Impact Report for Colusa Industrial Properties, Colusa County, California. 1981. Prepared for the Colusa County Board of Supervisors by California State University Foundation, Chico.

Andam, Lani@Waterboards

From:	Charissa L. Villanueva <cvillanueva@adamsbroadwell.com>
Sent:	Monday, April 28, 2014 5:04 PM
To:	Andam, Lani@Waterboards; Olson, Anne@Waterboards
Cc:	Meghan A. Quinn
Subject:	EMAIL 3 - Comments on the Tentative Waste Discharge Requirements for Colusa Industrial Properties, Inc. WDR Order No. R5-2014___
Attachments:	Attachment C.pdf

Attached in PDF format are the comments written on behalf of **Colusa County Citizens for Responsible Industry.** **Please be advised that the attachments to these comments will follow in separate emails for ease of sending.** If you encounter problems with the receipt of this document, please contact Charissa Villanueva at the phone number or e-mail address listed below.

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ATTACHMENT C

Report

Wastewater Discharge Requirement Technical Evaluation

Prepared for

Colusa Industrial Properties, Inc.

REGISTERED PROFESSIONAL ENGINEER
BRETT M. ISBELL
C71402
CIVIL
STATE OF CALIFORNIA

CH2MHILL®

May 2013

2525 Airpark Drive
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Acronyms and Abbreviations

µmhos/cm	micromhos per centimeter
bgs	below ground surface
BOD_5	5-day biological oxygen demand
CIMIS	California Irrigation Management Information System
CIP	Colusa Industrial Properties, Inc.
CEC	cation exchange capacity
DDA	designated disposal area
EC	electrical conductivity
FDS	fixed dissolved solids
FEMA	Federal Emergency Management Agency
ft^2	square feet
ft^3	cubic feet
ft/ft	foot per foot
gpd	gallons per day
H	horizontal
HDPE	high-density polyethylene
IPW	industrial process wastewater
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mgd	million gallons per day
MRP	Monitoring and Reporting Program
msl	mean sea level
MW	monitoring well
NO_3-N	nitrate-nitrogen
Nunhems	Nunhems USA, Inc.
PVC	polyvinyl chloride
ROWD	Report of Waste Discharge
Sakata	Sakata Seeds, Inc.
TDS	total dissolved solids
TKN	total Kjeldahl nitrogen
Total N	total nitrogen
V	vertical
Water Board	California Regional Water Quality Control Board
WDR	Waste Discharge Requirements

SECTION 1

Introduction

1.1 Purpose

Colusa Industrial Properties, Inc. (CIP), submits this Technical Evaluation in support of a revised Report of Waste Discharge (ROWD) requested by the California Regional Water Quality Control Board (Water Board), Central Valley Region. The purpose of the ROWD is to update wastewater discharge information necessary to revise and reissue existing Waste Discharge Requirements (WDR) Order No. 5-01-250 adopted by the Water Board on October 19, 2001. CIP anticipates that the revised WDR Order will continue to appropriately govern existing discharges and provide the flexibility needed to accommodate reasonably anticipated changes in tenants or discharges in the future.

1.2 Background

CIP operates an industrial park approximately 1 mile south of Colusa, California (Figure 1; all figures are located at the end of their respective sections). The industrial park provides commercial development opportunities for a range of businesses and industries. Current tenants of the industrial park include manufacturing, processing, and distribution companies. Two tenants of the CIP property currently land apply industrial process wastewater (IWP) in accordance with WDR Order No. 5-01-250: Sakata Seeds, Inc. (Sakata), and Nunhems USA, Inc. (Nunhems), as shown on Figure 2. Both are seed processing facilities that use fresh water to wash seeds, and in turn, generate IPW primarily consisting of seed wash water. The IPW is managed in a system of tanks, pipes, ponds, irrigation infrastructure, and crop land referred to collectively as the land treatment system (see Figure 3 for a flow diagram of the land application and wastewater management systems).

The land treatment system was first used in 1999 for discharge of IPW from tomato processing and seed processing operations. In 2000, the system was used only for disposal of IPW from seed processing. From 2001 to 2003, the system was again used for both tomato and seed IPW. Since then, IPW conveyed to the land treatment system has originated from seed processing operations; the tomato processing facility has been decommissioned.

The land treatment system consists of 268 acres of cropped agricultural land. The original land treatment system consisted of 118 acres and has since been expanded to include an additional 150 acres known as Phase 1 of the Davis Property (Figure 2). The Davis Property assessor's parcel number is 017-03-0-008-3; the remaining agricultural land (127 acres) sits on assessor's parcel numbers 017-03-0-083, 017-03-0-084, 017-03-0-085, and 017-030-0-086. CIP is the owner of the land upon which the facilities and the land application are located. Historically, the land treatment area has been farmed for rice production. The total land available for land application of IPW is currently underused. Less than 20 acres have been used for land application during the past 8 years. Sakata has operated at the site since 2001 and Nunhems, a seed washing operation similar to Sakata, started washing seeds in August 2012. Even with the addition of Nunhems to the system, only 17 acres of the available 268 acres were used for land application in 2012. The former tomato processing facility, Hanover Food Corporation, was decommissioned in 2003 and no longer contributes to the land application system.

Premier Mushrooms, a tenant of CIP since 2006, composts, grows, and processes mushrooms for public distribution and sale. Currently, Premier Mushrooms has 48 growing rooms and a 21,000-square-foot cold storage facility where mushrooms are processed and distributed to the public. Premier Mushrooms does not currently generate IPW that is managed by the land treatment system. However, because of planned expansion and improvements to the operation, Premier Mushrooms is proposing to discharge IPW and stormwater to the land treatment system, as described further herein.

1.3 Regulatory Summary

WDR Order No. 5-01-250 and accompanying Monitoring and Reporting Program (MRP; No. 5-01-250) were adopted by the Water Board on October 19, 2001 (Appendix A). The Water Board issued a Revised MRP (No. 5-01-250 REV 2) on October 12, 2011 (Appendix B). The land treatment system complies with the WDR Order adopted on October 19, 2001, as evaluated in annual reports, groundwater assessment technical reports, and a Water Board site visit on August 3, 2012 (Appendix C). The land treatment system is monitored in accordance with the current MRP. CIP also holds permit No. 01-21-03P06001 from the California Department of Health Services' Division of Drinking Water and Environmental Management Branch to supply water for domestic purposes (Appendix D).

In December 2012, as a result of discussions between CIP and the Water Board, the Water Board requested that a revised ROWD be submitted to provide details of current and proposed wastewater discharges from the industrial park.

In support of the revised ROWD, this report provides updated information on current and potential future IPW and stormwater management needs, including the following operations and procedures:

- Premier Mushrooms' proposed use of Pond 3 (see Figure 2) for stormwater management and the potential for land application from Pond 3
- Land application of industrial process water for the purpose of rice decomposition during the winter season
- Proposed expansion of Pond 1 to provide flexibility to manage addition domestic wastewater flows resulting from future undefined expansion
- Addition of new tenants, provided that IPW generated for land application is of a similar nature and quality as currently permitted operations, and that compliance with the WDR and MRP is maintained

Groundwater monitoring and reporting indicate that the land treatment system is functioning as designed. Soil and groundwater monitoring to date have not indicated significant impacts to nitrogen or salinity levels in soil or groundwater (CH2M HILL, 2013). Neither nitrogen nor electrical conductivity (EC) in soil and groundwater has increased significantly beyond background levels since irrigation with IPW began in 1999. Data suggest that the long-term effect of IPW land application to groundwater is negligible. In some cases, monitoring results suggest soil chemical characteristics (e.g., soil salinity) have improved as compared to surrounding fields that are irrigated with groundwater.

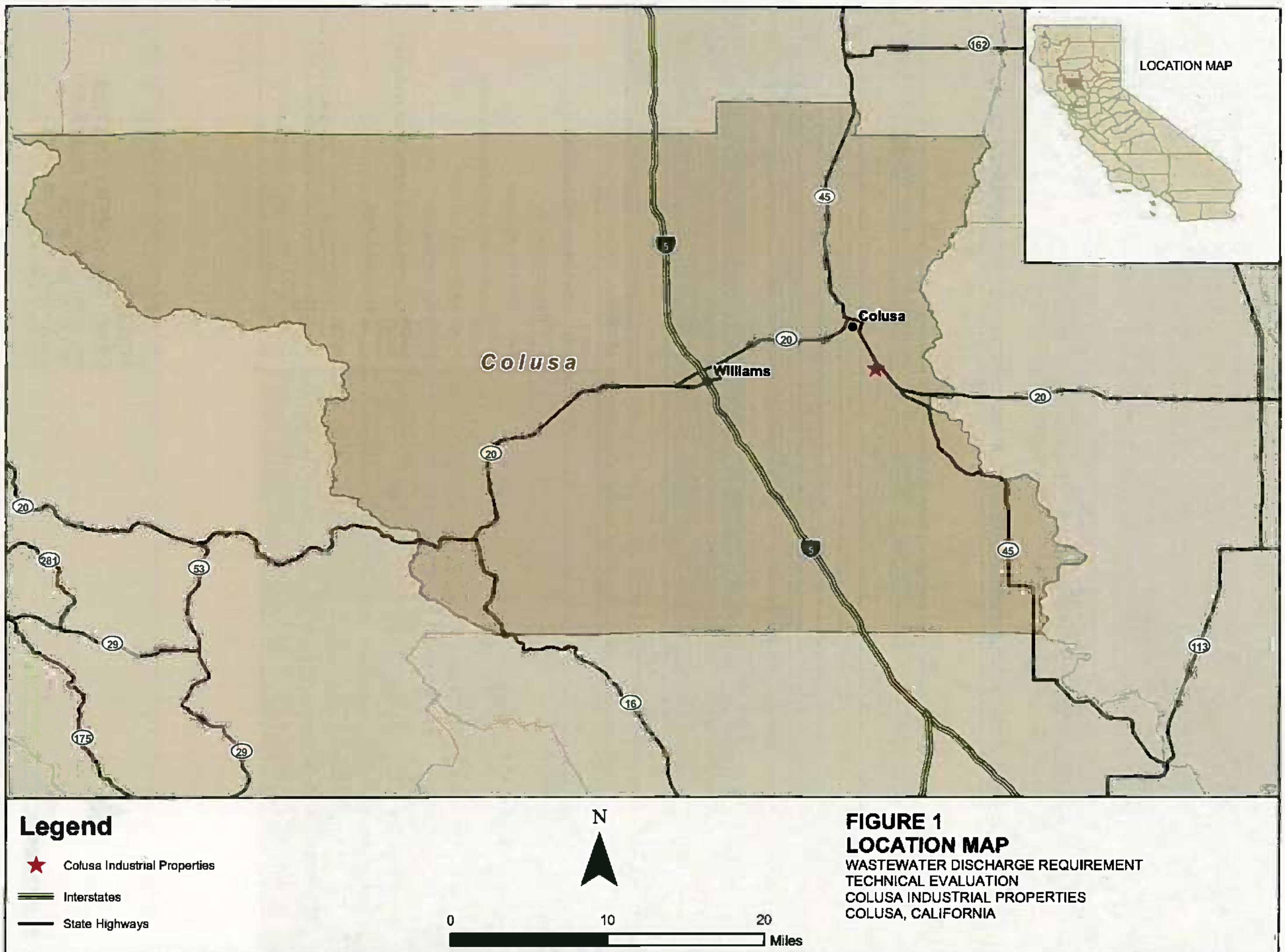

FIGURE 1
LOCATION MAP
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

CH2MHILL

\\ODINPROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG1.MXD 4/17/2013 8:53:58 AM ALABELLE

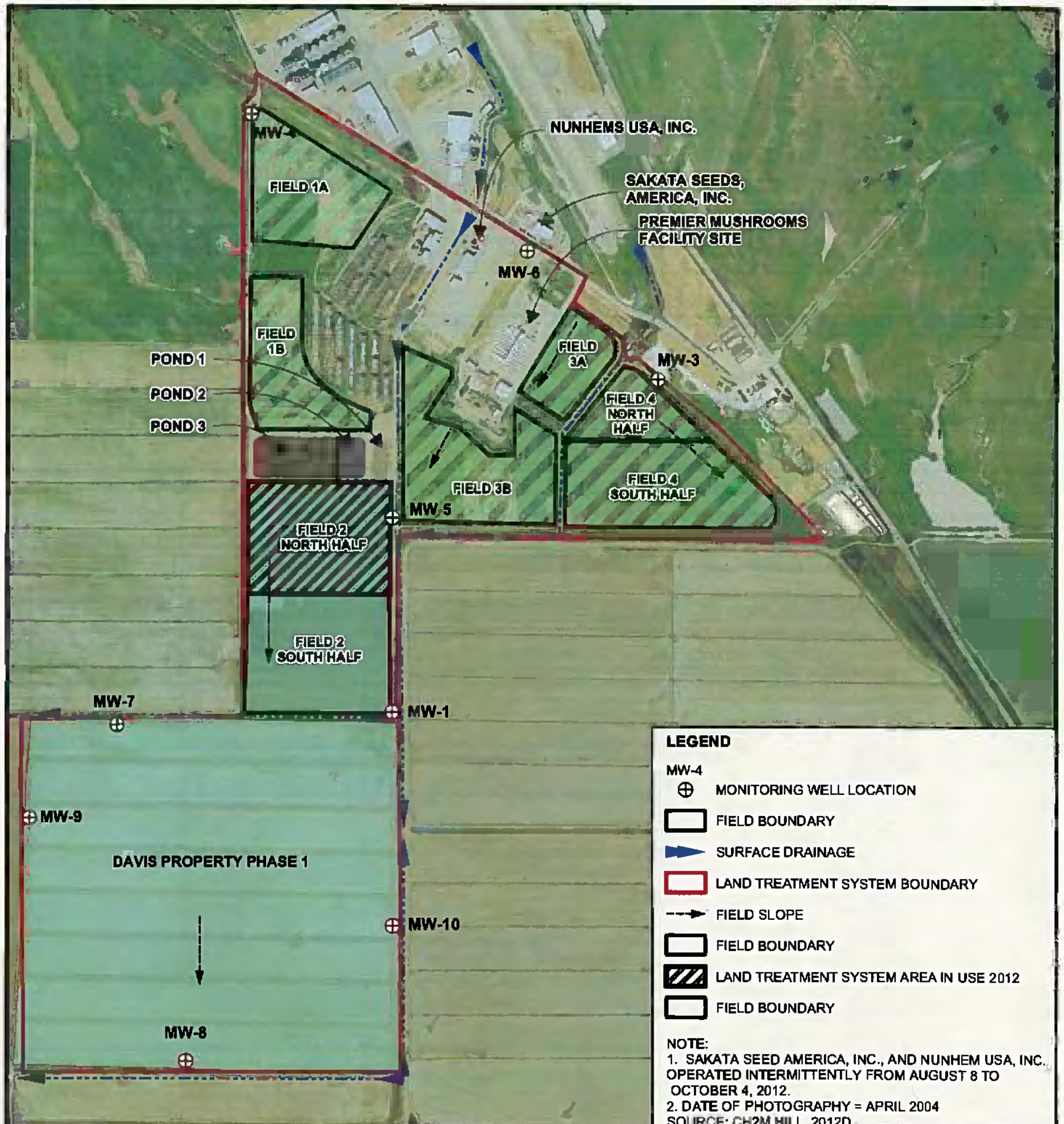

FIGURE 2
LAND TREATMENT SYSTEM
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

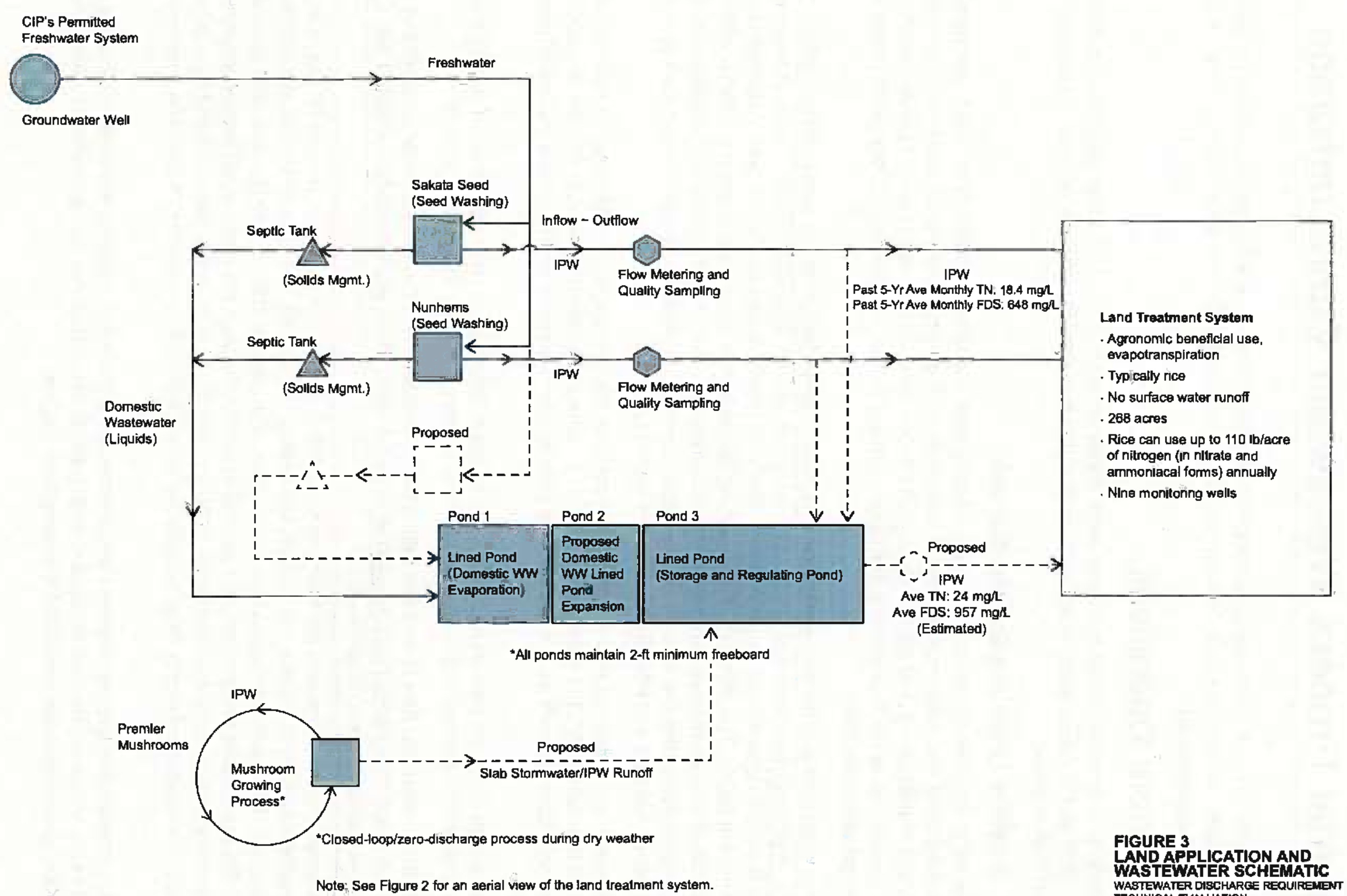

FIGURE 3
LAND APPLICATION AND WASTEWATER SCHEMATIC
WASTEWATER DISCHARGE REQUIREMENT TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

CH2MHILL

WBG061113130942RDD

SECTION 2

Industrial Process Wastewater Characterization

This section provides a complete characterization of CIP's IPW. First, current operations and current sources of IPW are discussed and characterized. Next, proposed operational changes and potential future sources of IPW are discussed and characterized.

2.1 Current Operations

CIP operates two separate and distinct wastewater management systems, 1) the land application system that manages IPW, and 2) the domestic wastewater system that manages domestic wastewater. Each system is described further below.

2.1.1 Existing Land Application System

This subsection describes the existing land application system and summarizes the results of recent monitoring. Detailed monitoring and reporting data further quantifying IPW quality, results of groundwater monitoring well samples, and evaluations of land application system effectiveness are available in annual reports that have been submitted each year to the Water Board. The land treatment system is performing as designed to treat IPW flows from CIP agricultural facilities.

The source of influent into the land application system is currently limited to the seed washing facilities of Nunhems and Sakata. Nunhems and Sakata use fresh water to wash agricultural seeds. The fresh water is provided from CIP's groundwater supply system, which has been licensed by the California Department of Health Services (Permit No. 01-21-03P06001). After washing the seeds, the spent wash water (i.e., IPW) is collected, metered, sampled in accordance with the MRP, and conveyed to the land application system (Figure 3). IPW is directly land applied during the seed washing season, typically from August through October each year. Rice is planted approximately 1 week before the IPW first is land applied.

Table 1 presents a summary of flow monitoring results from 2008 through 2012. As shown in Table 1, daily IPW flow varied from zero to 54,300 gallons per day (gpd) and the overall monthly average flow for the period evaluated was approximately 68,000 gpd (months with no discharge were excluded from the overall monthly average).

The land treatment system consists of 268 acres of cropped to agricultural land composed of the original land treatment system (118 acres) and Phase 1 of the Davis Property, which is 150 acres (Figure 2).

The WDR Order limits IPW flow to no more than 0.690 million gallons per day (mgd) to the original land treatment system (118 acres). The IPW daily maximum flow recorded during the 5 years evaluated in Table 1 was 54,300 gpd which is well below the 690,000 gpd limit.

IPW is sampled in accordance with the MRP and tested for 5-day biological oxygen demand (BOD_5), chloride, EC, fixed dissolved solids (FDS), nitrate, pH, sodium, total nitrogen (Total N), and total Kjeldahl nitrogen (TKN). Table 2 summarizes the IPW quality throughout the past 5 years. The average BOD_5 of IPW that was land applied during the 2008-2012 processing seasons ranged from 402 to 1,490 milligrams per liter (mg/L). Total N concentrations in IPW ranged from 16.3 to 21.9 mg/L during the 2010 through 2012 processing seasons. Laboratory results show that Total N is composed of mostly TKN, with nitrate-nitrogen (NO_3-N) accounting for less than 3 percent of the total.

Agronomic consumptive use requirements are summarized in Table 3. Comparing IPW hydraulic loading rates (Table 4) to the total crop (rice) water requirement (Table 3) shows that that the agronomic requirement is considerably greater than the amount of IPW being land applied.

TABLE 1

IPW Effluent Flows, 2008-2012

Wastewater Discharge Requirement Technical Evaluation

	2008		2009		2010		2011		2012		Overall (2008-2012)	
	Monthly Total (gallons)	Daily Maximum (gpd)	Monthly Total (gallons)	Daily Maximum (gpd)	Monthly Total (gallons)	Daily Maximum (gpd)	Monthly Total (gallons)	Daily Maximum (gpd)	Monthly Total (gallons)	Daily Maximum (gpd)	Monthly Average (gallons)	Daily Maximum (gpd)
August	-	-	-	-	-	-	11,700	7,000	127,500	34,200	**69,600**	**34,200**
September	18,500	4,200	20,400	10,200	21,200	11,000	155,675	27,500	237,300	51,600	**90,615**	**51,600**
October	205,900	54,300	37,600	24,600	87,100	39,200	-	-	49,600	49,600	**95,050**	**54,300**
November	14,100	7,400	-	-	-	-	19,500	19,500	-	-	**16,800**	**19,500**
Annual	**238,500**	**54,300**	**58,000**	**24,600**	**108,300**	**39,200**	**186,875**	**27,500**	**414,400**	**51,600**	**201,215**	**54,300**

Sources: CH2M HILL, 2009, 2010, 2011, 2012a, 2013

Note:

Months with no discharge were excluded from the data set.

TABLE 2
Average Annual IPW Effluent Quality
Wastewater Discharge Requirement Technical Evaluation

Constituent	2008	2009	2010	2011	2012	Average
BOD_5 (mg/L)	402	1,020	906	1,490	1,148	**993**
Chloride (mg/L)	-	-	154	115	119	**129**
EC (µmhos/cm)	-	-	1,083	1,367	1,164	**1,205**
FDS (mg/L)	-	-	500	895	549	**648**
Nitrate-N (mg/L)	0.40	0.40	0.23	0.25	0.44	**0.35**
pH	-	-	6.8	7.3	7.5	**7.2**
Sodium (mg/L)	-	-	147	165	157	**156**
Total N as Nitrogen (mg/L)	-	-	16.3	17.0	21.9	**18.4**
TKN (mg/L)	11.3	12	16.3	16.8	21.6	**15.6**

Sources: CH2M HILL, 2009, 2010, 2011, 2012a, 2013
Note:
µmhos/cm = micromhos per centimeter

TABLE 3

Average Monthly Crop Water Demands

Wastewater Discharge Requirement Technical Evaluation

	2008		2009		2010		2011		2012	
Month	**Crop Requirement (inches)**	**Applied Water Requirement (inches)**	**Crop Requirement (inches)**	**Applied Water Requirement (inches)**	**Crop Requirement (inches)**	**Applied Water Requirement (inches)**	**Crop Requirement (inches)**	**Applied Water Requirement (inches)**	**Crop Requirement (inches)**	**Applied Water Requirement (inches)**
Aug	-	-	-	-	-	-	7.39	10.56	7.43	10.62
Sep	5.62	8.03	5.48	7.83	5.49	7.84	5.71	8.15	5.67	8.09
Oct	3.19	4.55	2.16	3.09	3.63	5.19	2.42	3.45	2.79	3.99
Nov	2.15	3.07	-	-	-	-	0.17	0.24	-	-
Total	**10.96**	**15.65**	**7.64**	**10.92**	**9.12**	**13.03**	**15.69**	**22.41**	**15.89**	**22.7**

Sources: CH2M HILL, 2009, 2010, 2011, 2012a, 2013

Note:

Evaporation and precipitation data for the past 5 years can be found in Section 3.2.

The effluent water quality data and volumes in Section 2.1 were used to calculate the total pounds of loading on the irrigated land (Table 4). The maximum Total N loading rate per acre is 7.5 pounds per acre annually, and the maximum loading rate per acre for TDS/FDS is 385 pounds per acres annually. According to the WDR, the daily BOD5 loading to the land treatment system area must not exceed 300 pounds per day, with a weekly average limit of 100 pounds per day. BOD5 loading rates from the past 5 years are presented in Table 4. Typical nitrogen application rates for California rice are in the range of 100 to 200 pounds of nitrogen per acre with special circumstances requiring less or more (Williams, Mutters, Greer & Horwath, 2010). This is significantly greater than the 7.5 maximum annual pounds per acre listed in Table 4. Additionally, monitoring well data suggest that IPW nitrogen loading does not have a negative effect on groundwater quality.

TABLE 4
Annual Loadings to the Land Application System, 2008-2012
Wastewater Discharge Requirement Technical Evaluation

	2008	2009	2010	2011	2012
Hydraulic Loading[a] (inches per acre)	1.3	0.63	1.3	2.5	0.90
Total N Loading[b] (pounds per acre)	2.8	1.7	3.7	7.5	5.0
Avg. BOD_5 Loading Rate[c] (pounds per acre per day)	3	21	31	54	12
TDS/FDS Load[d] (pounds per acre)	177	161	140	385	123

[a] Hydraulic loading rates were calculated by dividing the total volume of IPW land applied during the year by the irrigated area.

[b] Total N loading rates were calculated by dividing the summation of pounds Total N land applied during the year by the irrigated area.

[c] BOD_5 loading rates were calculated by summing the daily loading rates in pounds for each day of IPW application and dividing the total by the respective land application area using only the days during which land application occurred.

[d] TDS is reported for 2008 and 2009. FDS is reported for 2010, 2011, and 2012. TDS/FDS loading rates were calculated by summing the daily loading rates for each day of IPW application and dividing the total by the respective land application area.

Sources: CH2M HILL, 2009, 2010, 2011, 2012a, 2013

2.1.2 Lined Pond 3 – Regulated Storage

Existing Pond 3 is lined with an HDPE liner and has been available for emergency IPW storage, but no IPW has been diverted into Pond 3 to date. CIP proposes to use Pond 3 to regulate and monitor IPW flows before IPW is conveyed to the land application system (see proposed operations in subsequent sections). Pond 3 is approximately 335 feet wide by 553 feet long, measured from top edge of slope to top edge of slope, with a maximum depth of approximately 7 feet and side slopes at an inclination between 3 (horizontal) (H) to 1 (vertical) (V) and 4H:1V. The pond subgrade consists of native clay soil, of medium to high plasticity. The pond bottom was prepared to receive a 60-mil-thick, smooth HDPE synthetic geomembrane by grading the bottom and slopes relatively smooth and compacting them with a smooth drum roller. The pond liner was installed in accordance with HDPE liner installation and construction standards (CH2M HILL, 2012b). A 2-foot-wide anchor trench surrounds the perimeter of the pond at the top and slopes to a depth of 3 feet. A 4-inch polyvinylchloride (PVC) inflow pipe was installed under the south berm near the southeast corner of the pond.

2.1.3 Premier Mushrooms

Premier Mushrooms is located on CIP property, just south of Sakata and southwest of Nunhems. Premier Mushrooms currently does not discharge water to CIP's land application system. Premier Mushrooms currently has 48 growing rooms but plans to expand to 96 growing rooms by 2016.

Premier Mushrooms grows mushrooms using a sophisticated, highly managed growing process without process water discharge, called a closed-loop or zero-IPW-discharge process. This process, which during dry weather involves adding fresh water to maintain required mushroom growing process water balance, is summarized as follows:

- Compost is made by mixing straw, nutrient additives, and process water in the composting wharf. Process water is stored in a lined sump and applied to the composting process inside the wharf as needed. Process water drainage is collected and returns to the lined sump for storage until the next composting cycle.
- Aged compost is the growing medium for mushrooms. Aged compost is transported to enclosed growing rooms where mushrooms are grown. There are concrete slabs outside the enclosed growing rooms. Concrete slabs are cleaned after growing rooms have been loaded with compost. Wash-down water used to clean the slabs is collected and conveyed to the lined sump.
- Process water from the lined sump is applied to the straw inside the enclosed wharf rooms for composting; the runoff is collected and conveyed to the lined sump.
- Concrete slabs outside the growing rooms are uncovered and exposed to the atmosphere. Precipitation that falls on the slabs is collected as stormwater and mixed with process water as the IPW is conveyed to the existing lined sump. In this way, concrete slab stormwater is incorporated into the closed-loop/zero-IPW-discharge system.

During dry weather operating conditions, this closed-loop process requires adding fresh water from CIP's groundwater supply system to maintain required process water composition. However, during wet weather periods, the concrete slabs receive direct precipitation and there is a potential for having more stormwater than is required to keep the process water at the desired quality. There is a considerable risk of infringing upon the freeboard or overtopping Premier Mushroom's existing regulating basin (part of the closed-loop process) during a 100-year precipitation event for a duration of a month. Therefore, additional stormwater storage capacity is required to manage concrete slab stormwater runoff (see Section 2.2.4.1).

2.1.4 Domestic Wastewater Evaporation

CIP tenants currently use septic tanks at their respective sites to manage domestic wastewater. Leach fields are not used as part of the septic systems. In lieu of leach fields, septic tank effluent is conveyed in gravity pipes to a lined evaporation pond (Pond 1 on Figure 2) to dispose of the domestic wastewater for the industrial park. This pond is a containment basin for the wastewater produced by the businesses in the northwest section of the industrial park.

The dimensions of the pond, measured from the top outer edge just inside the anchor trench, are approximately 325 by 175 feet. The depth is approximately 6 feet and side slopes are 4 (horizontal) (H) to 1 (vertical) (V). The pond is lined with a 60-mil-thick smooth high-density polyethylene (HDPE) synthetic geomembrane. The HDPE acts as a barrier between the wastewater and the soil beneath the layer. The membrane sheets were welded together and tests were performed to check the quality of the welds. All associated work was performed in July 2005.

The CIP domestic wastewater pond was lined in accordance with the construction drawings prepared by Field Lining Systems, Inc., Monitors, under the supervision of a construction quality assurance officer, who observed liner installation and testing.

2.2 Proposed Changes to Operations

CIP submits the following proposed operations for consideration by the Water Board when developing a revised WDR Order. This subsection describes proposed operations for the following components:

- Land application system
- Additional wastewater pond to increased domestic liquid-stream wastewater capacity
- Lined Pond 3
- Proposed new sources of IPW, including Premier Mushrooms

2.2.1 Extended Land Application System Period

CIP proposes to continue to use the existing land application system. Additionally, CIP proposes to extend the effective land application period of IPW to include land application during winter months (November through April) using rice decomposition. The crop land that is irrigated with the IPW is typically rice. Additional water in the winter would provide waterfowl habitat and help decompose rice straw. Decomposing rice straw by flooding is a common practice in the Sacramento Valley and is environmentally sound.

2.2.2 Increased Domestic Liquid-stream Wastewater Capacity

The size of lined Pond 1 is effective in managing domestic wastewater volume of existing tenants and current operations. However, CIP proposes to add a second lined pond (Pond 2) having size and storage volume approximately 150 percent larger as the existing lined Pond 1 (Figure 3). The new lined Pond 2 will increase domestic liquid-stream wastewater storage volume, enhance management flexibility, and provide liquid-stream wastewater capacity for future unidentified tenants. CIP proposes lining the pond with an HDPE synthetic geomembrane (similar to that in Pond 1) in accordance with standard quality control and quality assurance practices.

2.2.3 Existing Lined Pond 3

CIP proposes to continue to use Pond 3 for regulated storage. CIP proposes to use Pond 3 to regulate and monitor IPW flows from Premier Mushrooms before IPW is conveyed to the land application system (see proposed operations for Premier Mushrooms in subsequent sections).

2.2.4 Proposed New Sources of Industrial Process Wastewater

Premier Mushrooms proposes to be permitted to discharge to CIP's land application system. Additionally, CIP requests the flexibility of being allowed to add future unidentified tenants by submitting a letter to the Water Board that describes the proposed operational conditions, quantifies anticipated flow rates, and characterizes IPW constituents. These requests are described in Sections 2.2.4.1 and 2.2.4.2.

2.2.4.1 Premier Mushrooms

CIP and Premier Mushrooms are requesting the flexibility of applying stormwater-originated IPW from Premier Mushrooms to CIP's land application system.

Overview. As previously described, Premier Mushrooms currently operates as a zero-discharge facility. However, two conditions threaten Premier Mushrooms' ability to effectively operate as a zero-discharge facility: (1) precipitation events and (2) expansion of the facility from 48 growing rooms to 96 growing rooms (by approximately 2016). The planned concrete slab area that would collect stormwater for IPW is estimated at 121,000 square feet (ft^2) for 96 growing rooms. During wet weather periods, the concrete slabs outside the facility receive direct precipitation, and more stormwater is generated than is required to keep the mushroom-growing process water at the desired composition. Additionally, there is risk that heavy precipitation will increase water levels in Premier Mushrooms' existing regulating pond and infringe upon freeboard. The preferred approach for managing excess water resulting from direct precipitation to concrete slabs outside the growing rooms is capturing and conveying the IPW to Pond 3, and applying the IPW originating from Premier Mushrooms on CIP's land application system. Premier Mushrooms anticipates that this risk will increase as the facility is expanded from 48 to 96 growing rooms, primarily because of the increased concrete slab area that will collect direct precipitation.

Proposed IPW from Premier Mushrooms will originate from rainfall; the stormwater runoff will likely contain salts and nutrients as it flows across the surface of the concrete slabs into drainage pipes even if slab best management practices have been implemented. The stormwater runoff and the growing room runoff flows in the same drainage pipes to the existing onsite regulating pond, becoming IPW for characterization purposes.

Covering the outside slab areas, collecting precipitation stormwater separately from the process water loop, and treating stormwater for land application have been discussed, but are not preferred at this time.

IPW is subsequently characterized in more detail, but a summary of the proposed operation follows:

- Premier Mushrooms would divert slab runoff IPW to Pond 3 during storm events.
- Pond 3 would be used to regulate IPW flow for proper and desired irrigation rates to CIP's land application system.
- Water samples would be collected from Pond 3 in accordance with the MRP (specific conditions would be determined at a later time).
- Calculations (below) indicate that no more than approximately 5.5 million gallons of IPW would be used during the 100-year return period precipitation (this includes IPW flow from Premier Mushrooms to CIP and direct precipitation to Pond 3).
- Assuming that no more than 48 inches of IPW are applied to rice (this is a conservative assumption; actual rice crop irrigation requirements would likely be 60 inches or more, depending on agronomic conditions and weather), Premier Mushrooms would use no more than 4.2 acres of the land application system, corresponding to a maximum anticipated IPW volume of 5.5 million gallons.

Detailed characterization of anticipated IPW quantities and composition follow.

Industrial Process Wastewater Quantity. Table 5 shows the volume of water that would be collected from the slab and conveyed to the pond during large storm events. The maximum flow based on a 100-year return period would be approximately 14,300 gpd (1,911 ft^3 per day) and the maximum monthly total IPW volume of approximately 443,000 gallons (59,200 ft^3). As mentioned in Section 2.1.1, the maximum IPW volume produced in a day throughout the past 8 years was 54,300 gpd. At the maximum during the past 8 years, in 2012, Nunhems and Sakata used 17 acres for land application. Assuming that new IPW generated from Premier Mushrooms would be less than or equal to this maximum rate, the land area required for managing the new IPW discharge is estimated to be no more than 6 acres of land.

Pond 3 has a surface area of approximately 183,000 square feet (ft^2) and a storage capacity of approximately 926,275 ft^3 (this considers a 2-foot minimum freeboard), with precipitation falling directly into the lined pond. The volumes of water in the pond during the 100-year return period storm are listed in Table 5.

TABLE 5
Pond 3 Storage Volume (100-Year Return Period)
Wastewater Discharge Requirement Technical Evaluation

Period	100-Year Return Period Precipitation Total[a] (inches)	Pond Area Receiving Direct Precipitation (ft^2)	Precipitation Volume (ft^3)	IPW Flow from Premier Mushrooms to Pond 3 (ft^3)
October	1.87	183,000	28,500	18,900
November	4.57	183,000	69,700	46,000
December	4.49	183,000	68,500	45,300
January	5.88	183,000	89,700	59,200
February	4.58	183,000	69,800	46,200
March	4.07	183,000	62,100	41,100
April	1.6	183,000	24,400	16,100
May	0.56	183,000	8,500	5,700
June	0.42	183,000	6,400	4,200
July	0.07	183,000	1,100	700
August	0.13	183,000	2,000	1,300
September	0.62	183,000	9,500	6,200
Water Year	**28.86**	-	**440,200**	**290,900**

IPW Characterization. Premier Mushroom water samples were collected for laboratory analysis in 2012. Water quality laboratory results are summarized in Table 6. Premier Mushrooms intends to divert IPW to Pond 3 during significant rain events. As such, samples were collected within 1 or 2 days of rainfall in an attempt to characterize slab runoff water quality associated with rain events. Prior to sampling, daily precipitation was less than 0.1 inch in all but one case (California Irrigation Management Information System [CIMIS] Station No. 32 reported a 0.53-inch precipitation event 2 days before the March 29 grab sample was collected). Because direct precipitation falls on Pond 3 as fresh water, constituent concentrations estimated for Pond 3 water composition were multiplied by a factor of 0.4. This is considered a conservative assumption because it is likely that additional direct precipitation will fall in Pond 3 at times when IPW is not being diverted to Pond 3 and would, therefore, reduce the estimated Pond 3 constituent concentrations presented in Table 6.

2.2.4.2 Future Unidentified Facilities

CIP's land treatment system consists of 268 acres of cropped agricultural land, of which up to 17 acres are being used by Nunhems and Sakata. If Premier Mushrooms uses approximately 4 acres, 247 acres of unused crop land would be left for application for additional flow or future facilities.

The IPW effluent from Nunhems and Sakata is directly applied to the land, and the IPW flow rate is measured and recorded daily. IPW quality is tested and reported in accordance with the MRP. IPW is suitable for direct applied land application. The IPW consists of agricultural seed rinse water and does not contain a significant amount of debris, grit and screening, sludge, or biosolids. In case of emergency excess flow, IPW is discharged to the land application system, where there is ample capacity for beneficial use by crops.

TABLE 6

Premier Mushrooms Effluent Water Quality and Dilution Concentration in the Lined Pond

Wastewater Discharge Requirement Technical Evaluation

	Sampling Date							
	3/15/2012		3/19/2012		3/29/2012		4/5/2012	
Constituent	IPW Value at Premier Mushroom Slab	Estimated/ Calculated Pond 3 Water Quality	IPW Value at Premier Mushroom Slab	Estimated/ Calculated Pond 3 Water Quality	IPW Value at Premier Mushroom Slab	Estimated/ Calculated Pond 3 Water Quality	IPW Value at Premier Mushroom Slab	Estimated/ Calculated Pond 3 Water Quality
Daily Rainfall Total (inches)	0.07	-	0	-	0	-	0	-
pH	7.13	-	6.96	-	7.24	-	7.83	-
Sodium (mg/L)	-	-	172	**68.8**	225	**90**	146	**58.4**
Ammonia Nitrogen (mg/L)	16.6	**6.64**	20.5	**8.2**	17.2	**6.88**	30.1	**12.04**
BOD_5 (mg/L)	73.4	**29.36**	237	**94.8**	33.3	**13.32**	97.6	**39.04**
Chloride (mg/L)	410	**164**	800	**320**	470	**188**	800	**320**
Conductivity (µmhos/cm)	2,090	**836**	3,910	**1564**	3,170	**1268**	3,610	**1444**
NO_3-N (mg/L)	0.7	**0.28**	ND	-	2.6	**1.04**	ND	-
Nitrogen, Total as Nitrogen (mg/L)	27	**10.8**	48	**19.2**	32	**12.8**	39	**15.6**
Nitrate + NO_3-N (mg/L)	0.7	**0.28**	ND	-	0.6	**0.24**	3.1	**1.24**
TKN (mg/L)	26	**10.4**	48	**19.2**	31	**12.4**	46	**18.4**
FDS (mg/L)	840	**336**	1,640	**656**	1,630	**652**	1,690	**676**
TDS (mg/L)	1,290	**516**	2,540	**1,016**	1,890	**756**	2,320	**928**

Note:

Bold font indicates estimated IPW quality of Pond 3 water that is proposed to be land applied.

SECTION 3

Local and Site-Specific Conditions

3.1 Land Characteristics

The CIP industrial park is located approximately 1 mile south of Colusa, California. The surrounding agricultural land typically consists of fields of rice, tomatoes, walnuts, and various other field crops.

CIP is located on gently sloping agricultural land at approximately 42 to 48 feet above sea level, as shown on Figure 4. The facilities are approximately 1.3 miles from the Sacramento River, to which surface water and shallow groundwater regionally drains.

Figure 5 shows the Federal Emergency Management Agency (FEMA) floodplain map for CIP (FEMA, 2013). CIP's property is in the 0.2 percent Annual Hazard Flood Zone. Therefore, flood conditions are not highly likely and CIP is not in a flood hazard area.

In 1983, a site-specific soil investigation was performed by a CH2M HILL soil scientist to evaluate the soil suitability for long-term wastewater application. The investigation consisted of excavation of test pits and hand auger borings to evaluate the soil profile, determination of soil infiltration rates, and soil sampling for chemical analysis. The general soil conditions, as described in *Soils of Colusa County* (Harradine, 1948), are the typical basin soils, consisting of the Colusa and Marvin Series. The soils are slightly to moderately alkaline, with low permeability, comprised of poorly drained clay loam and clay soils. Under long-term rice cropping, the surface soils have become saturated and this has greatly reduced the infiltration rates. With these reduced infiltration rates and restricted surface drainage, the soils have ponded water for extended periods in the rainy winter and spring months.

3.2 Weather

According to the National Oceanic and Atmospheric Association, California is in the West climatic region. As measured and reported at CIMIS Station No. 32, located near Colusa the average temperature ranged from 44.9 degrees Fahrenheit in December to 76.2 degrees Fahrenheit in July from January 2008 through December 2012. Table 7 shows the monthly and annual precipitation in inches from the past 5 years, ranging from 0 to 7 inches per month.

TABLE 7
Monthly Precipitation at CIMIS Station No. 32
Wastewater Discharge Requirement Technical Evaluation

	Monthly Precipitation (inches)					
Month	**2008**	**2009**	**2010**	**2011**	**2012**	**30-year Average**
Jan	3.7	0.5	7.0	1.3	2.4	3.5
Feb	2.1	3.8	2.3	2.3	0.5	3.3
Mar	2.7	1.1	0.7	4.6	2.6	2.3
Apr	0.8	0.1	2.6	0.0	1.5	1.0
May	0.7	0.6	0.7	1.6	0.0	0.8
Jun	0.2	0.2	0.0	1.6	0.1	0.3
Jul	0.0	0.0	0.0	0.0	0.0	0.0
Aug	0.0	0.0	0.0	0.0	0.0	0.1
Sep	0.0	0.1	0.1	0.1	0.0	0.3
Oct	1.0	2.0	0.5	1.1	0.9	0.8
Nov	0.0	0.2	1.5	1.7	3.3	2.0
Dec	2.3	2.2	4.2	0.1	3.2	2.6
Total	**13.5**	**10.8**	**19.6**	**14.4**	**14.5**	**17.1**

Sources: CH2M HILL, 2009, 2010, 2011, 2012a, 2013

The 100-year return period of annual precipitation is approximately 28.9 inches as reported by weather station Colusa 2 SSW. Weather station Colusa 2 SSW was used (as opposed to CIMIS Station No. 32) because Colusa 2 SSW has precipitation data for over 50 years; the reporting period for CIMIS is shorter.

Table 8 shows the monthly and annual reference evapotranspiration from the past 5 years, as listed in CIP's annual WDR reports (CH2M HILL, 2009, 2010, 2011, 2012a, and 2013). Data were derived from the CIMIS Station No. 32.

TABLE 8
Monthly Reference Evapotranspiration at CIMIS Station No. 32
Wastewater Discharge Requirement Technical Evaluation

	Reference Evapotranspiration (Inches)					
Month	**2008**	**2009**	**2010**	**2011**	**2012**	**30-year Average**
Jan	0.95	0.95	0.72	1.07	1.70	1.18
Feb	1.73	1.73	1.45	2.18	2.54	1.89
Mar	3.42	3.42	3.45	2.49	2.98	3.32
Apr	5.03	5.03	4.04	5.12	4.54	5.06
May	6.43	6.43	6.02	5.89	7.52	6.63
Jun	7.62	7.62	7.83	6.27	7.98	7.06
Jul	8.34	8.34	7.94	7.74	7.87	7.89
Aug	7.23	7.23	6.91	7.04	7.08	7.04
Sep	5.35	5.35	4.97	5.28	5.15	5.42
Oct	3.78	3.78	2.93	3.17	3.31	3.74
Nov	1.79	1.79	1.84	1.70	1.34	1.91
Dec	1.08	1.08	0.70	2.11	1.00	1.14
Total	**52.75**	**52.75**	**48.80**	**50.06**	**53.01**	**52.28**

Sources: CH2M HILL, 2009, 2010, 2011, 2012a, 2013

The CIMIS station does not directly calculate pan evaporation, but Table 9 contains monthly pan evaporation estimates that were calculated based on the reference evapotranspiration represented in Table 7 and an assumed 0.7 pan coefficient (average Class A Land Pan) (Snyder et al., 2005).

TABLE 9
Monthly Pan Evaporation at CIMIS Station No. 32
Wastewater Discharge Requirement Technical Evaluation

		Pan Evaporation (Inches)					
Month	**Pan Coefficient[a]**	**2008**	**2009**	**2010**	**2011**	**2012**	**30-year Average**
Jan	0.7	1.36	1.36	1.03	1.53	2.43	1.68
Feb	0.7	2.47	2.47	2.07	3.11	3.63	2.69
Mar	0.7	4.89	4.89	4.93	3.56	4.26	4.74
Apr	0.7	7.19	7.19	5.77	7.31	6.49	7.23
May	0.7	9.19	9.19	8.60	8.41	10.74	9.47

TABLE 9
Monthly Pan Evaporation at CIMIS Station No. 32
Wastewater Discharge Requirement Technical Evaluation

		Pan Evaporation (Inches)					
Month	**Pan Coefficient[a]**	**2008**	**2009**	**2010**	**2011**	**2012**	**30-year Average**
Jun	0.7	10.89	10.89	11.19	8.96	11.40	10.09
Jul	0.7	11.91	11.91	11.34	11.06	11.24	11.27
Aug	0.7	10.33	10.33	9.87	10.06	10.11	10.06
Sep	0.7	7.64	7.64	7.10	7.54	7.36	7.74
Oct	0.7	5.40	5.40	4.19	4.53	4.73	5.34
Nov	0.7	2.56	2.56	2.63	2.43	1.91	2.73
Dec	0.7	1.54	1.54	1.00	3.01	1.43	1.63
Total	**0.70**	**75.37**	**75.37**	**69.72**	**71.51**	**75.73**	**74.69**

[a] Pan coefficient for Class A pan placed in short green cropped area, with low humidity (<40%), with approximately 10 meters distance of green crop on the windward side, with light winds speeds (<2 meters per second) (Allen et al., 1998).

3.3 Soil Sample Results

Soil samples were collected in accordance with the MRP from 2001 through 2008, and the annual soil sampling program was terminated in 2009 in accordance with the revised MRP. Results from soil samples collected from the land application system during 2001, 2003, and 2004 (CH2M HILL, 2002a, 2003, 2004a) are briefly discussed and summarized below. Additional soil information has been reported to the Water Board in annual reports dating back to 2001. Soil sample locations are depicted on Figure 6. Annual soil sampling efforts were made to comply with the Revised MRP No. 5-01-250 for CIP Designated Disposal Area (DDA) Monitoring, Section C. Samples were collected in 6- to 12-inch and 36- to 42-inch increments below ground surface (bgs). Soil from all the sampling locations was composited into the control samples for each report.

From the 2001 Annual Soil Report, three discrete sampling locations were chosen outside of the DDA and composited, by depth, into a control sample. Fourteen samples ([6 DDA + 1 control] x 2 depths) were analyzed. From the 2003 Annual Soil Report, three discrete sampling locations were also chosen outside of the DDA and composited, by depth, into a control sample. Twenty-six ([12 DDA + 1 control] x 2 depths) were analyzed. From the 2004 Annual Soil Report, three discrete sampling locations were randomly chosen for the 2.4-acre area of the DDA. Four ([1 DDA + 1 control] x 2 depths) were analyzed. Control and regular soil samples were analyzed for constituents represented in Table 10.

The soil on the DDA is classified as a Colusa clay loam (Harradine, 1948). Colusa soils are calcareous soils derived from mixed river sediments. The topography of these soils is flat or nearly flat. Typically, these soils exhibit poor surface and subsurface drainage and usually have a high water table. Results of the soil sampling (compared to the control samples) indicate that application of IPW to the DDA did not consistently increase or decrease soil chemical levels.

Total alkalinity was higher in the DDA than in the control area; however, the pH results indicated that alkalinity was higher in the control area than in the DDA. Cation exchange capacity (CEC) results were similar in the upper 6 inches of soil for the control area and DDA. CEC was higher in the lower sample from the DDA than that of the control area. Because clay content is a major, if not the most important, influence on CEC, this might have been caused by different subsurface clay contents. Higher CEC at lower depths is consistent with soil samples from this site in previous years.

TABLE 10

2001, 2003, and 2004 Soil Sampling Results

Wastewater Discharge Requirement Technical Evaluation

Sample	Depth (inches)	Total Solids (%)	Total Alkalinity (mg/L)	pH (standard units)	CEC (meq/100 g)	Nitrate + Nitrite (mg/kg)	Nitrate - (mg/kg)	TKN (mg/kg)	Total N (mg/kg)	TDS (mg/L)	Chloride (mg/L)	EC (µmhos/cm)
2001 Annual Soil Report												
Control	6-12	-	198	9.1	30.1	-	19	675	694	-	-	1.1
Control	36-42	-	192	9.2	28.8	-	21	760	781	-	-	3.8
2-North	6-12	-	214	7.6	30.4	-	13	1,519	1,532	-	-	0.6
2-North	36-42	-	229	8.9	29.5	-	12	844	856	-	-	0.9
2-South	6-12	-	244	8.1	28.8	-	20	844	864	-	-	1.9
2-South	36-42	-	240	8.5	26.8	-	12	675	687	-	-	2.2
3a	6-12	-	162	8.3	39.9	-	22	1,097	1,119	-	-	1.1
3a	36-42	-	191	8.7	29.1	-	13	760	773	-	-	0.8
3b	6-12	-	259	9	16.4	-	12	760	772	-	-	0.7
3b	36-42	-	591	8.9	29.4	-	14	1,266	1,280	-	-	0.8
4-North	6-12	-	201	9	28.7	-	11	1,013	1,034	-	-	0.5
4-South	36-42	-	226	8.8	23.2	-	14	675	689	-	-	0.6
4-North	6-12	-	214	8.1	27.9	-	9	1,266	1,275	-	-	0.8
4-South	36-42	-	194	9.4	28.4	-	13	591	604	-	-	1.1
2003 Annual Soil Report												
Control	6-12	-	51	8	20.4	-	8	404	412	-	-	1.6
Control	36-42	-	66	8.3	36.4	-	6	623	629	-	-	0.9
DP1	6-12	-	38	7	17.6	-	11	1,119	1,130	-	-	0.9
DP1	36-42	-	31	8.2	18.7	-	8	582	590	-	-	1.2
DP2	6-12	-	33	7.4	16.9	-	8	1,137	1,145	-	-	1.4

TABLE 10

2001, 2003, and 2004 Soil Sampling Results

Wastewater Discharge Requirement Technical Evaluation

Sample	Depth (inches)	Total Solids (%)	Total Alkalinity (mg/L)	pH (standard units)	CEC (meq/100 g)	Nitrate + Nitrite (mg/kg)	Nitrate - (mg/kg)	TKN (mg/kg)	Total N (mg/kg)	TDS (mg/L)	Chloride (mg/L)	EC (µmhos/cm)
DP2	36-42	-	77	7.8	17.9	-	7	747	754	-	-	1
DP3	6-12	-	51	7.6	17.4	-	10	1,042	1,052	-	-	2.9
DP3	36-42	-	77	7.9	18.8	-	7	545	552	-	-	1.6
DP4	6-12	-	51	7.6	17.9	-	8	468	476	-	-	1.6
DP4	36-42	-	77	7.8	17.5	-	7	515	522	-	-	1.2
DP5	6-12	-	66	7.9	20.1	-	7	785	792	-	-	1.7
DP5	36-42	-	97	8.1	16.1	-	7	638	645	-	-	1.7
DP6	6-12	-	48	7.9	20.6	-	8	1,067	1,075	-	-	1.9
DP6	36-42	-	82	7.9	20.2	-	7	529	536	-	-	1.4
DP7	6-12	-	51	7.9	17.9	-	8	1,083	1,091	-	-	1.8
DP7	36-42	-	64	8.1	19.2	-	8	634	642	-	-	1.1
DP8	6-12	-	61	7.8	18.8	-	8	1,365	1,373	-	-	2
DP8	36-42	-	82	8	18.7	-	7	774	781	-	-	1.4
DP9	6-12	-	77	7.8	16.5	-	9	442	451	-	-	1.8
DP9	36-42	-	79	8	17.1	-	7	739	746	-	-	1.1
DP10	6-12	-	77	7.9	17.3	-	9	585	594	-	-	2
DP10	36-42	-	82	8	21.9	-	8	643	651	-	-	1.3
Field 2 North	6-12	-	130	7.6	18.5	-	11	1,468	1,479	-	-	0.8
Field 2 North	36-42	-	166	9.5	17.9	-	9	445	454	-	-	0.9

TABLE 10

2001, 2003, and 2004 Soil Sampling Results

Wastewater Discharge Requirement Technical Evaluation

Sample	Depth (inches)	Total Solids (%)	Total Alkalinity (mg/L)	pH (standard units)	CEC (meq/100 g)	Nitrate + Nitrite (mg/kg)	Nitrate - (mg/kg)	TKN (mg/kg)	Total N (mg/kg)	TDS (mg/L)	Chloride (mg/L)	EC (µmhos/cm)
Field 2 South	6-12	-	107	8.8	15.1	-	7	194	201	-	-	2
Field 2 South	36-42	-	61	8.3	15.1	-	7	565	572	-	-	0.6
2004 Annual Soil Report												
Control	6-12	71.33	69	9.1	30.1	BDL	-	BDL	BDL	840	12	-
Control	36-42	65.33	112	9.5	18.19	BDL	-	BDL	BDL	700	9	-
DDA	6-12	63.96	87	8.1	29.49	BDL	-	BDL	BDL	450	9	-
DDA	36-42	54.29	224	9.5	31.11	BDL	-	BDL	BDL	600	11	-

Sources: CH2M HILL, 2002a, 2003, 2004a

Notes:

BDL = below detection limit
meq/100 g = milliequivalents per 100 grams
mg/kg = milligrams per kilogram

All 2004 nitrogen measurements were below the detection limit of the laboratory test. This result is inconsistent with results from previous years, and indicates that the laboratory test used to detect soil nitrogen forms for this purpose is inappropriate. It is highly unlikely that agricultural soil has so little nitrogen that it cannot be detected in soil analysis.

TDS levels were higher in the control area soil samples than in the DDA samples, indicating that TDS in the IPW is not increasing levels on the DDA in use. Chloride levels were similar for both the control area and the DDA. Iron levels were higher in the control area than in the DDA. However, manganese was undetectable in the control area, while very low concentrations of manganese were detected in the DDA.

Results of the soil sampling (compared to the control samples) indicate that application to the DDA did not significantly alter the soil chemical properties within the fields receiving IPW. In most cases, the results obtained for all parameters measured in the control samples fell within the range of values for fields receiving IPW. Comparison of the soil sampling results from the DDA and control samples indicates that the DDA natural treatment system is performing within expectations as a land application system.

3.4 Monitoring Well Network and Site Hydrogeology

The CIP site lies on Sacramento River flood basin deposits, which overlie continental sediments of the Great Valley Sequence. The continental deposits reach a thickness of 1,800 feet, and have been divided into the Mehrten and pre-Mehrten sediments and the Laguna and Victor Formations. All of these formations are tilted toward the center of the valley and are overlain by more recent stream-laid deposits, such as alluvial fans, floodplains, and flood basins (California Department of Water Resources, 1978).

Figure 7 shows the site layout and the locations of the nine monitoring wells in the land treatment system area. Monitoring wells MW-1 through -8 were installed prior to 2004. MW-2 (not shown) was subsequently abandoned. MW-9 and MW-10 were installed in November 2004, as described in a monitoring well installation report submitted in December 2004 (CH2M HILL, 2004b).

Geologic logs completed during the construction of MW-4, MW-5, and MW-6 in March 1999 indicate that the shallow subsurface is dominated by clays and silts, with sand occasionally intermixed. Silty sand was encountered from approximately 14 feet bgs and extends to the bottom of the borings, between 26 and 28 feet bgs (Anderson Consulting Group, 1999). The soil of the land treatment system consists of the Colusa and Marvin Series and typically has low permeability (CH2M HILL, 1999; Harradine, 1948). Geologic logs completed during the construction of MW-7, MW-8, MW-9, and MW-10 indicate similar geology in the Phase 1 area as was observed in the more northern wells, except that the fine sediments extend to at least 28 feet bgs. Results of infiltration tests conducted in 1983 indicated that surface soil infiltration rates were less than 0.01 to 0.05 inch per hour (CH2M HILL, 1999).

During low-discharge years, the 2009 MRP requires semiannual sampling of five of the monitoring wells and annual sampling of all nine of the monitoring wells. Prior to 2009 all nine wells were sampled quarterly. Measurements taken between 2008 and 2012 indicate that the groundwater in the land treatment system occurred at depths from 1.59 to 15.50 feet bgs. Depths to groundwater varied by as much as 10.83 feet (at MW-4). Figures 8 through 15 show groundwater elevation contours that represent hydrologic conditions during the last eight groundwater sampling events. Table 11 shows the range of groundwater conditions from 2008 to 2012; additional groundwater data are provided in Appendix E. The contours on the figures were created using the Kriging contouring algorithm in Surfer, a computer program distributed by Golden Software.

Hydraulic gradients were estimated near each monitoring well using the groundwater elevation contours shown on Figures 8 through 15. The estimated lateral hydraulic gradients at individual monitoring wells ranged from 1.0×10^{-4} to 2.5×10^{-3} foot per foot (ft/ft). However, as shown on Figures 8 and 15, the hydraulic gradients varied spatially across the site. Thus, using the estimated lateral hydraulic gradients listed in Table 11 for groundwater flow calculations is not recommended.

TABLE 11
Range of Groundwater Conditions at the Land Treatment System
Wastewater Discharge Requirement Technical Evaluation

Monitoring Well	Top-of-Casing Elevation (feet msl)	Depth to Groundwater[a] (feet below top of casing)	Groundwater Elevation (feet msl)	Estimated Lateral Hydraulic Gradient (ft/ft)
MW-1	44.94	1.79 to 7.39	37.55 to 43.15	0.0002 to 0.002
MW-3	45.59	3.28 to 9.36	36.23 to 42.31	0.0003 to 0.0021
MW-4	45.76	3.92 to 14.75	31.01 to 41.84	0.0004 to 0.0025
MW-5	45.87	2.8 to 8.56	37.31 to 43.07	0.0003 to 0.0022
MW-6	45.80	4.05 to 10.91	34.89 to 41.75	0.0003 to 0.0022
MW-7	45.81	1.55 to 7.6	38.21 to 44.26	0.00035 to 0.0023
MW-8	43.62	1.55 to 6.11	37.51 to 42.07	0.0002 to 0.0012
MW-9	44.80	1.34 to 6.51	38.29 to 43.46	0.0001 to 0.0021
MW-10	44.56	1.5 to 6.65	37.91 to 43.06	0.0001 to 0.001

[a] Tabulated depths to groundwater are measured from the top-of-casing reference points, which are slightly below grade.

Notes:
Includes data collected between 2008 and 2013.
msl = mean sea level

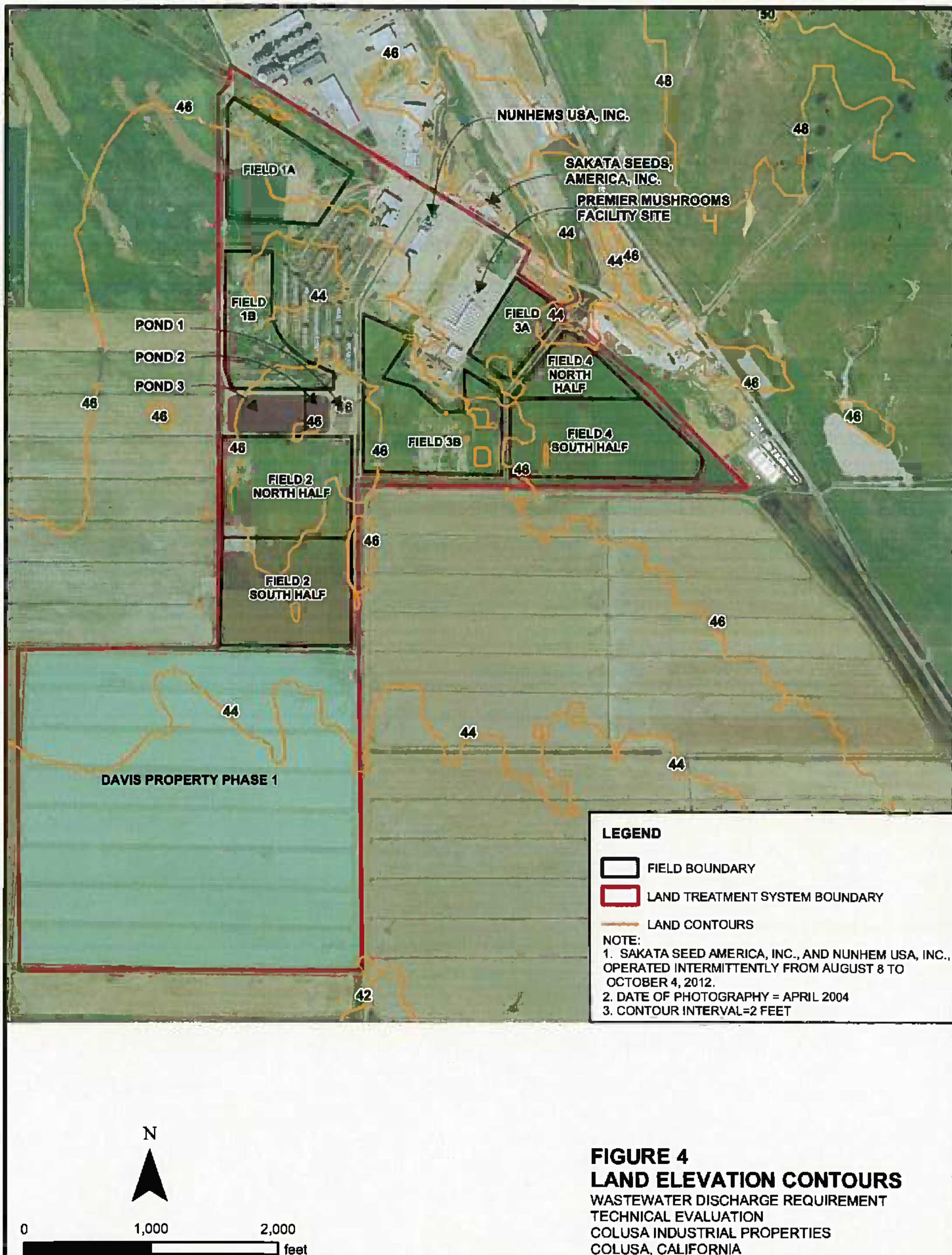

FIGURE 4
LAND ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODIN\PROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG4V2.MXD 5/7/2013 11:57:24 AM ALABELLE

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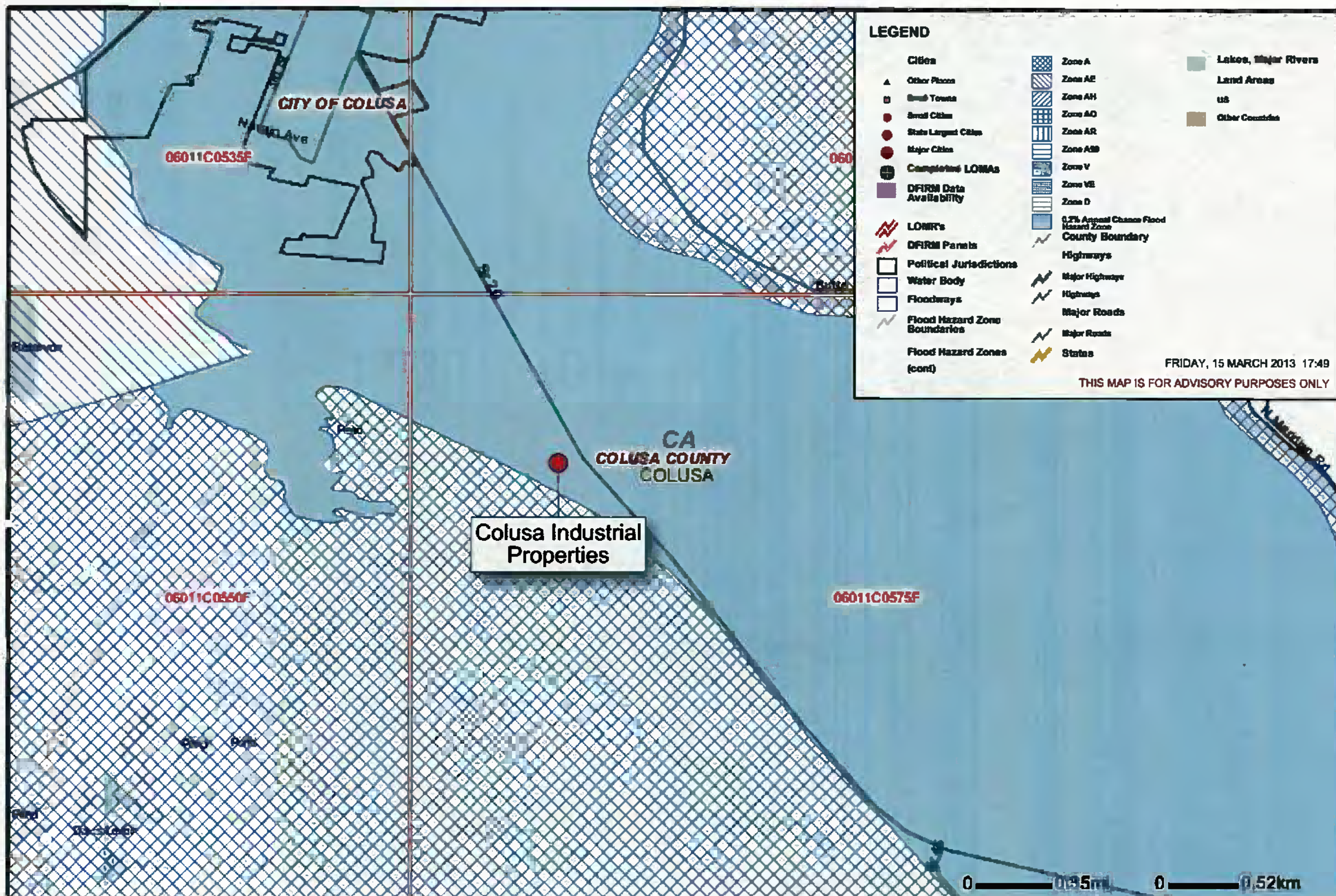

FIGURE 5
FEMA FLOODPLAIN DESIGNATION
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

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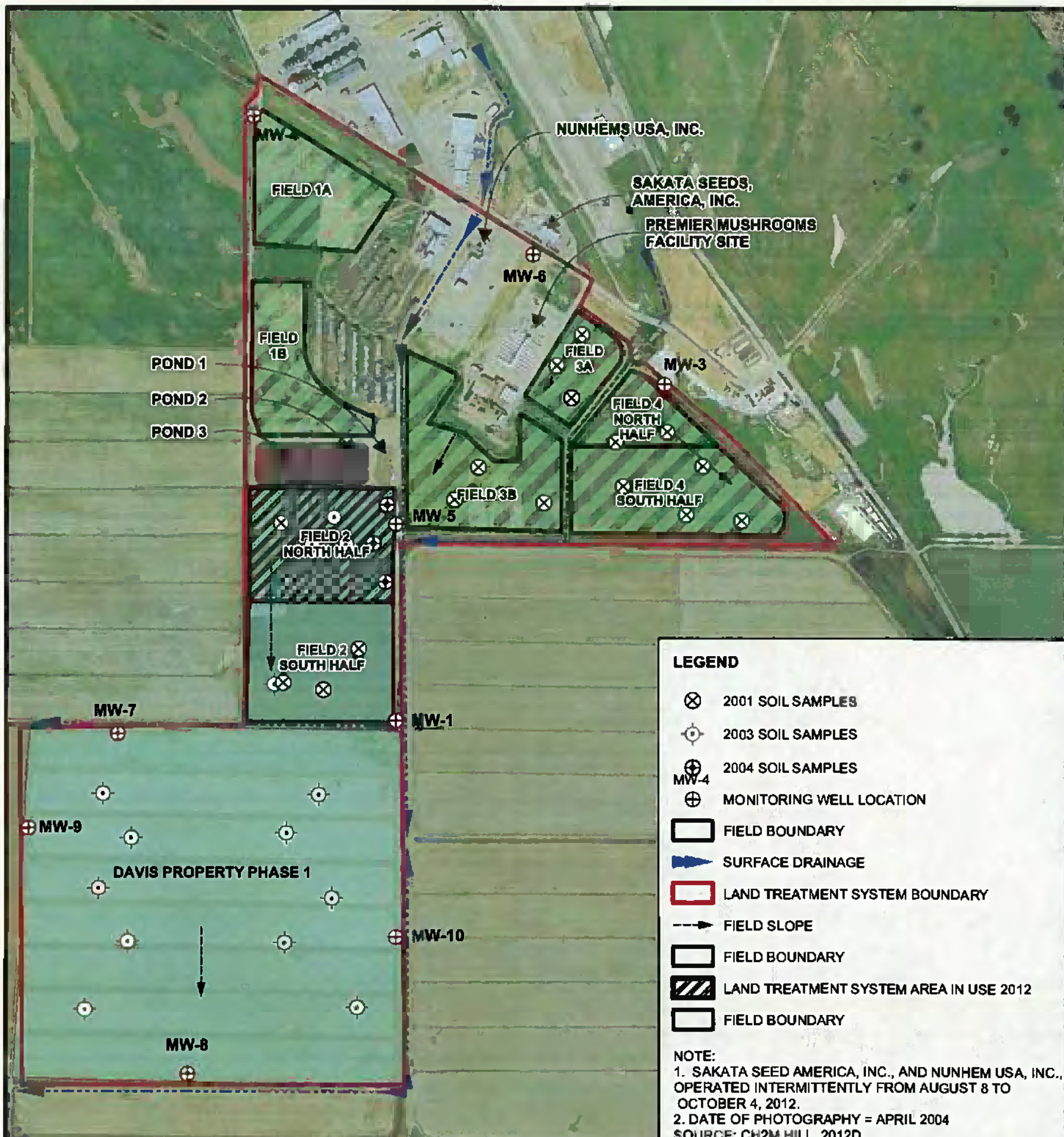

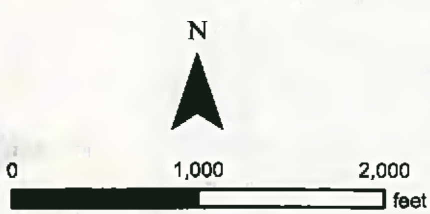

FIGURE 6
SOIL SAMPLING LOCATIONS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

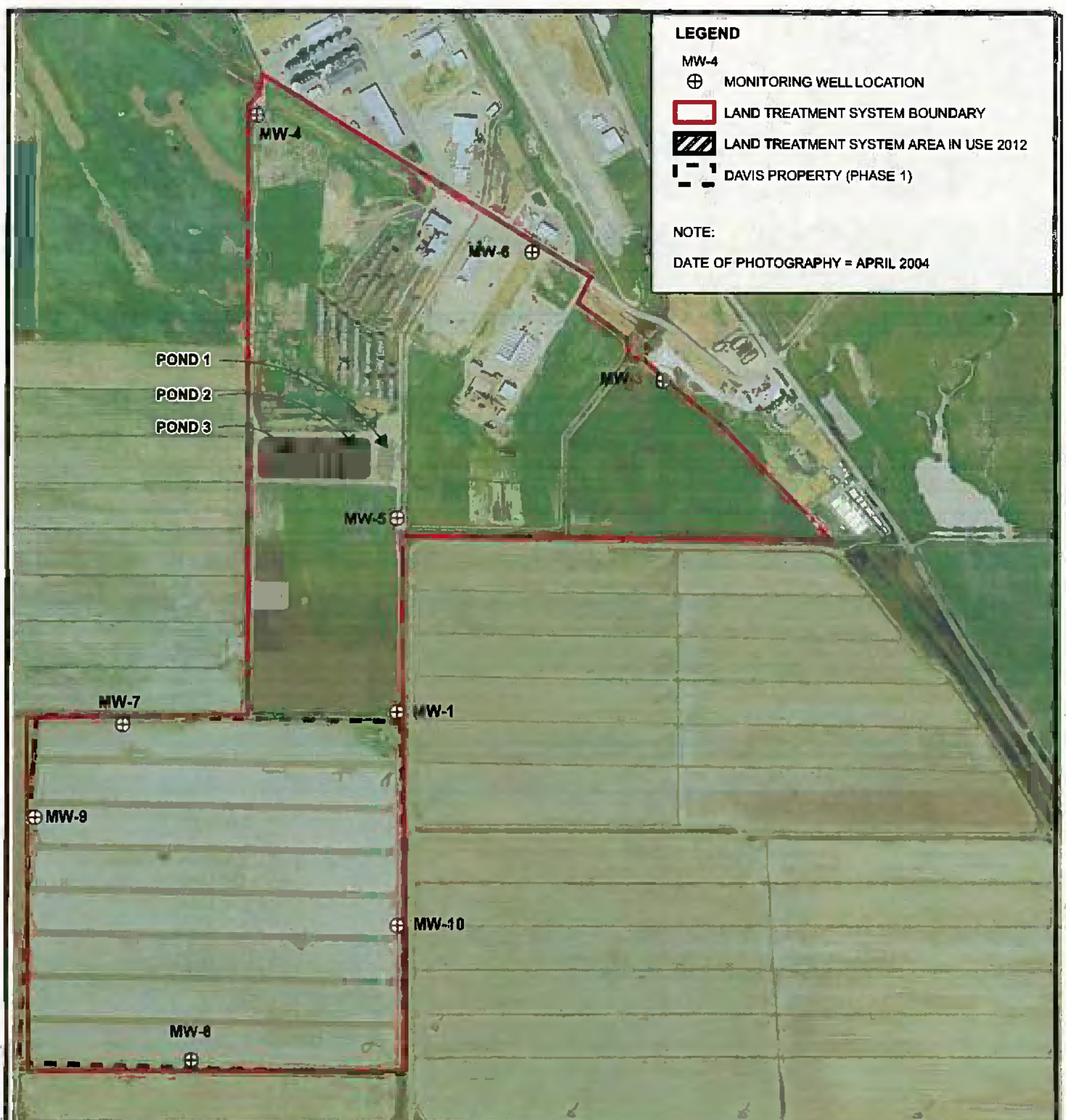

FIGURE 7
LOCATIONS OF MONITORING WELLS, LAND TREATMENT SYSTEM, AND DAVIS PROPERTY (PHASE 1)
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\ODINPROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG7.MXD 5/7/2013 1:15:51 PM ALABELLE

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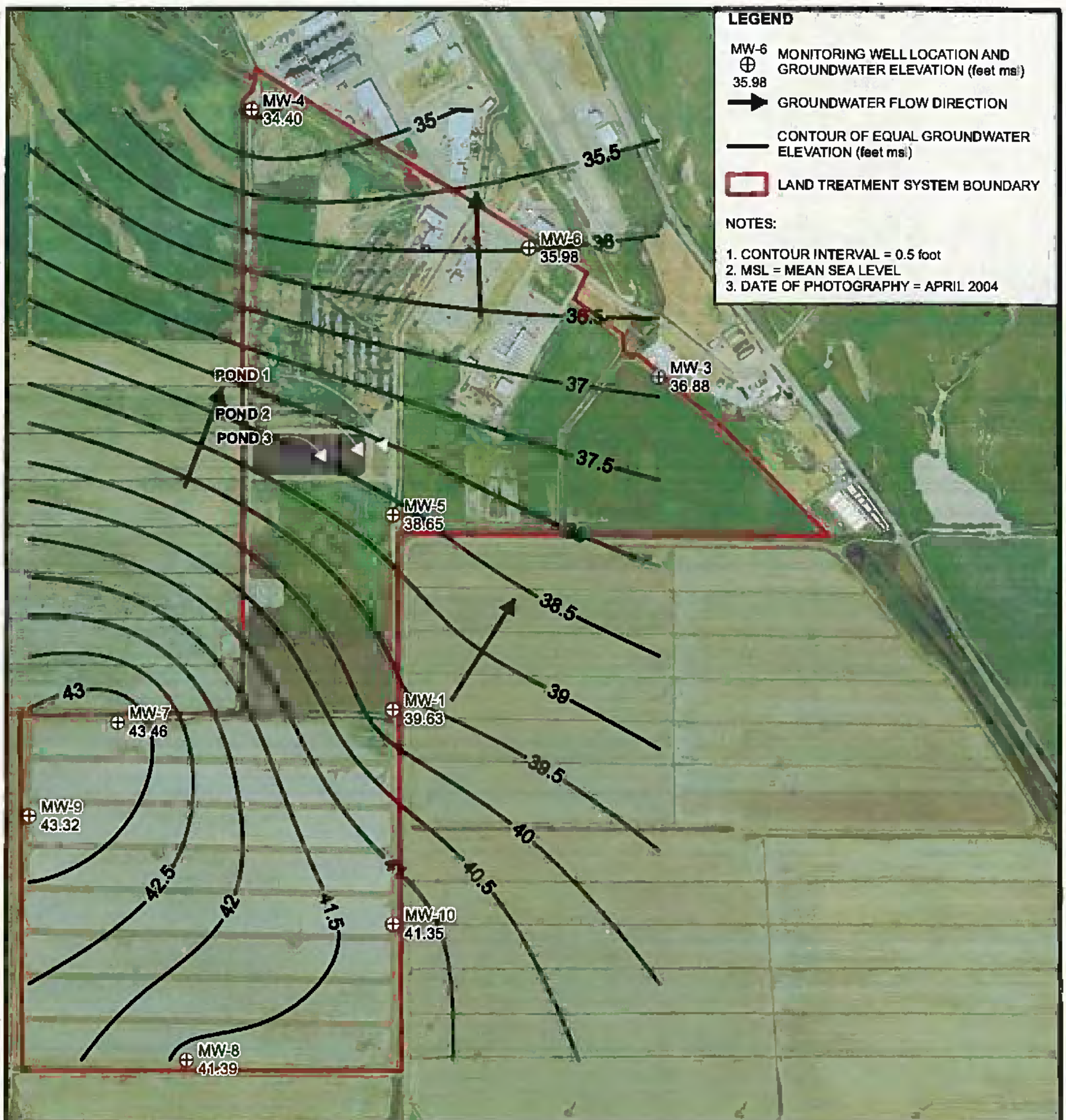

FIGURE 8
MAY 21, 2009
GROUNDWATER ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

CH2MHILL

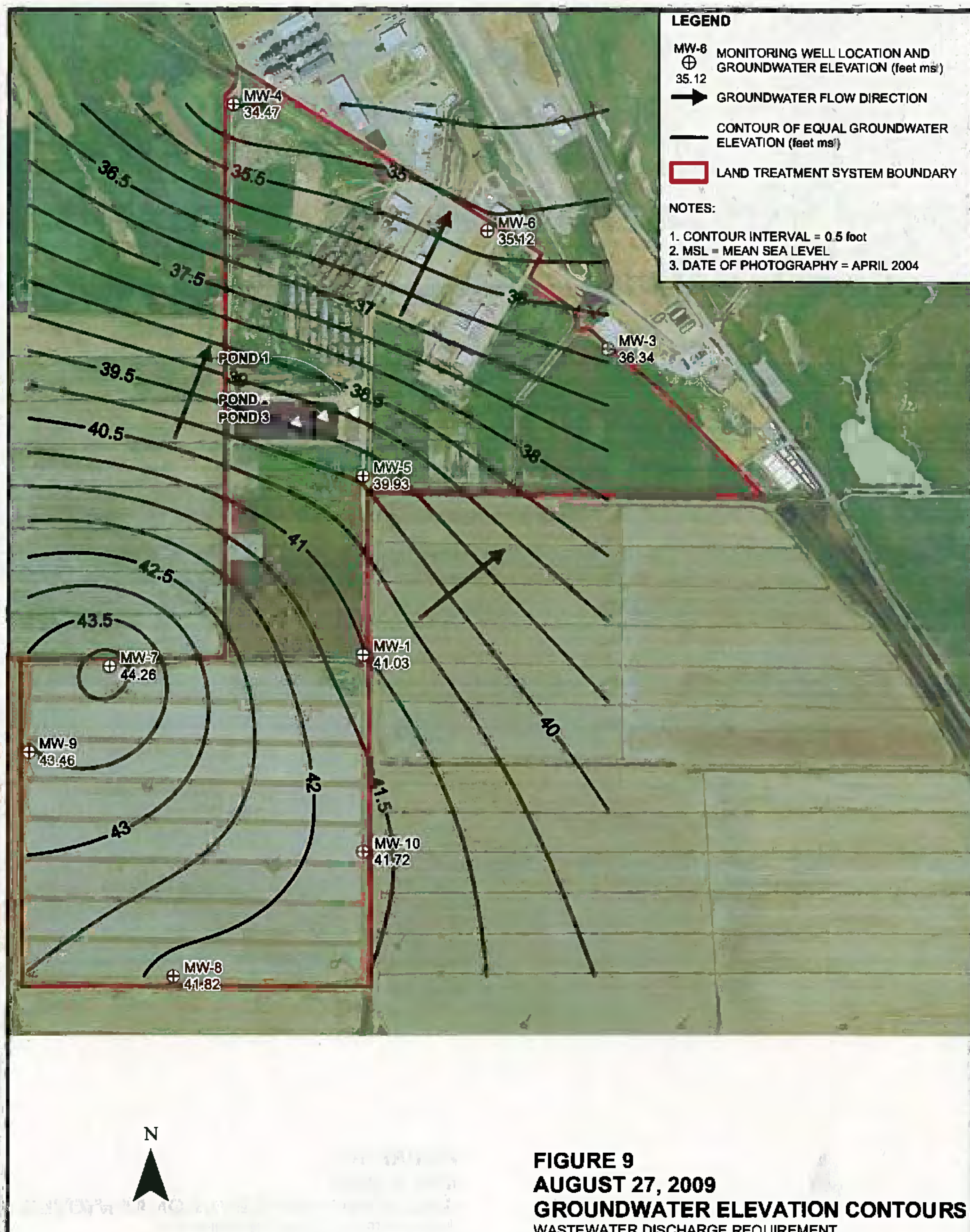

FIGURE 9
AUGUST 27, 2009
GROUNDWATER ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODIN\PROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG9.MXD 5/7/2013 1:31:20 PM ALABELLE

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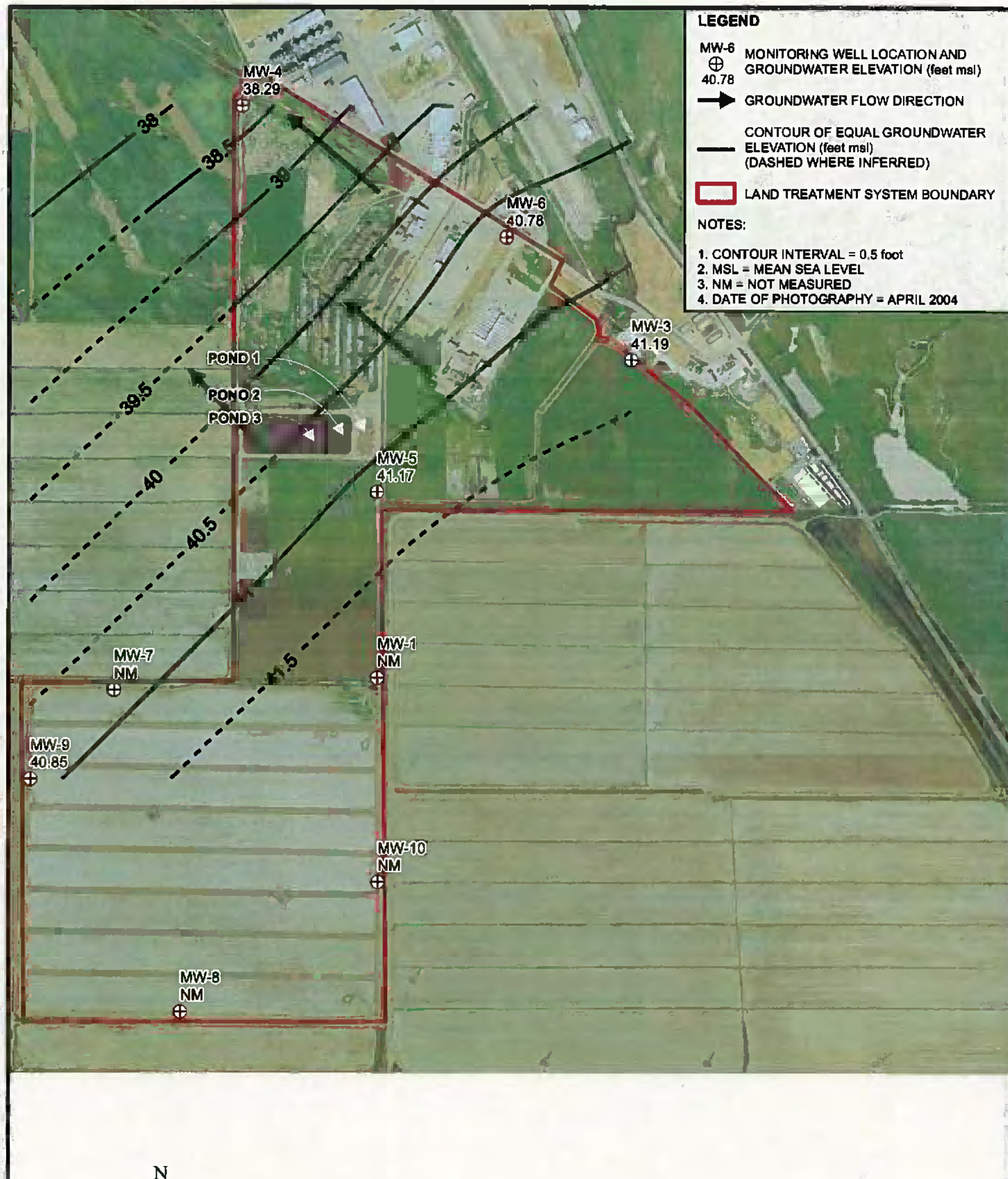

FIGURE 10
MAY 6, 2010
GROUNDWATER ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODIN\PROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG10.MXD 5/7/2013 1:38:18 PM ALABELLE

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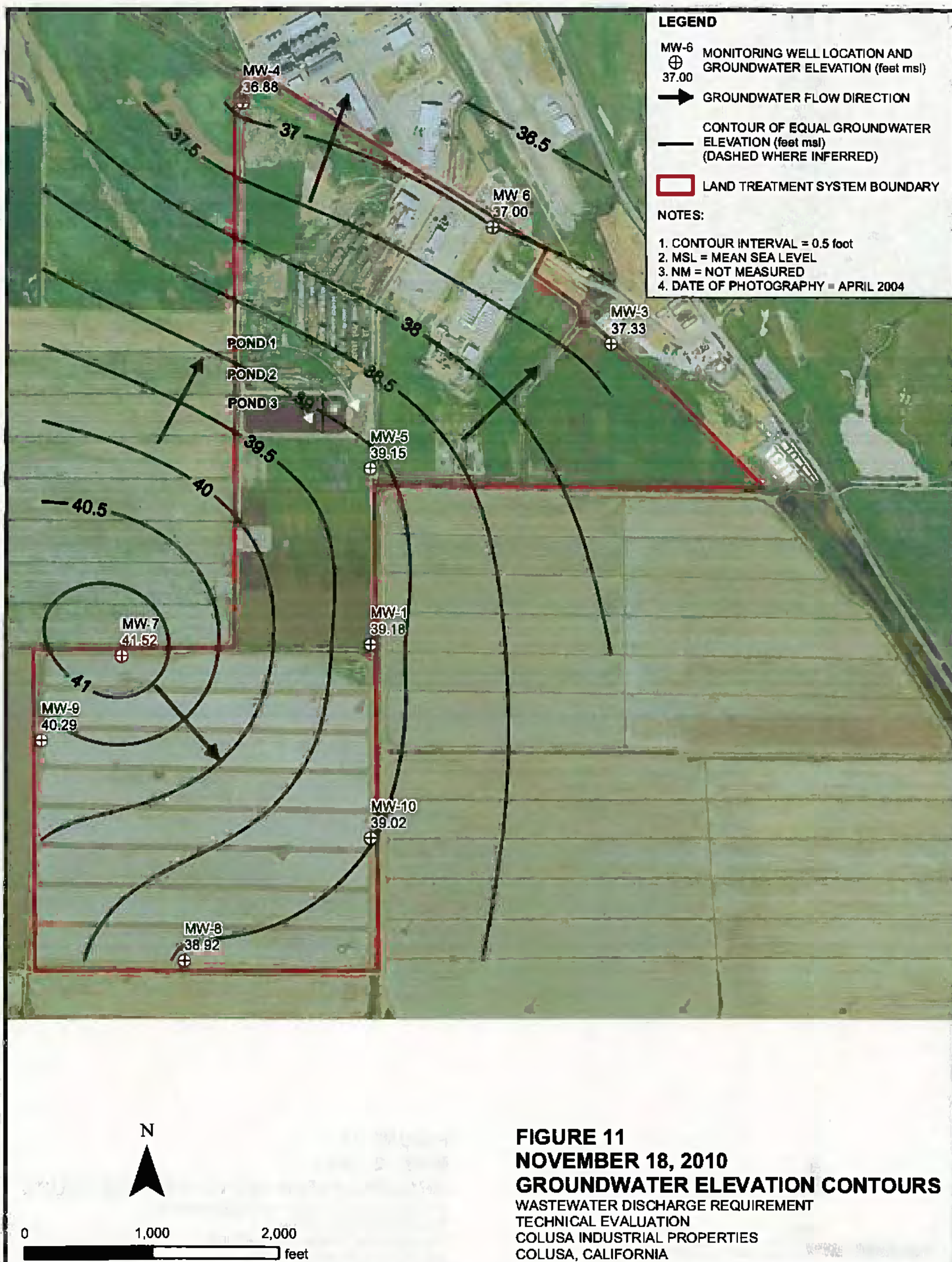

FIGURE 11
NOVEMBER 18, 2010
GROUNDWATER ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODIN\PROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG11.MXD 5/7/2013 1:34:47 PM ALABELLE

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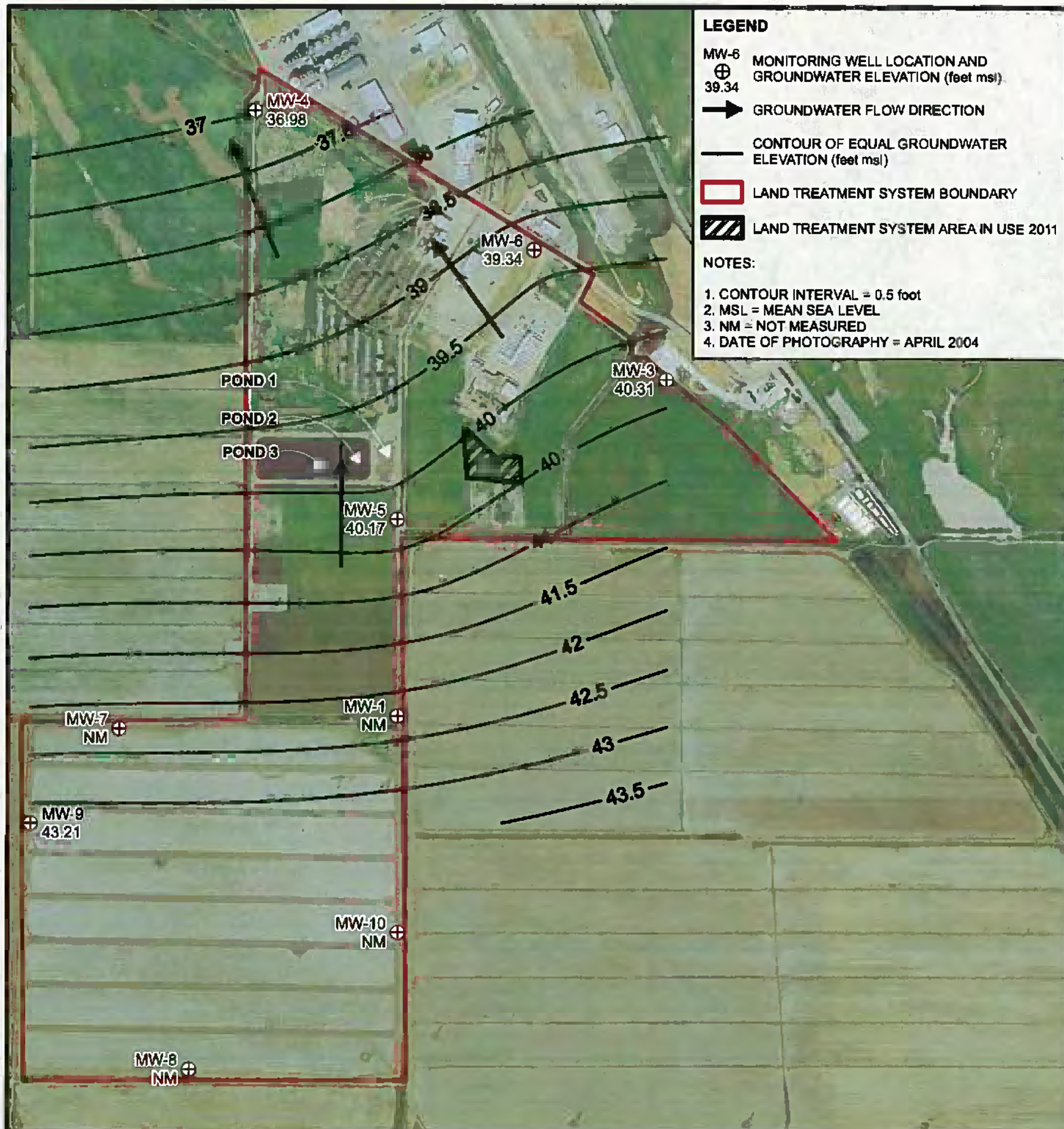

FIGURE 12
MAY 12, 2011
GROUNDWATER ELEVATION CONTOURS

WASTEWATER DISCHARGE REQUIREMENT TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODIN\PROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG12.MXD 5/7/2013 1:41:24 PM ALABELLE

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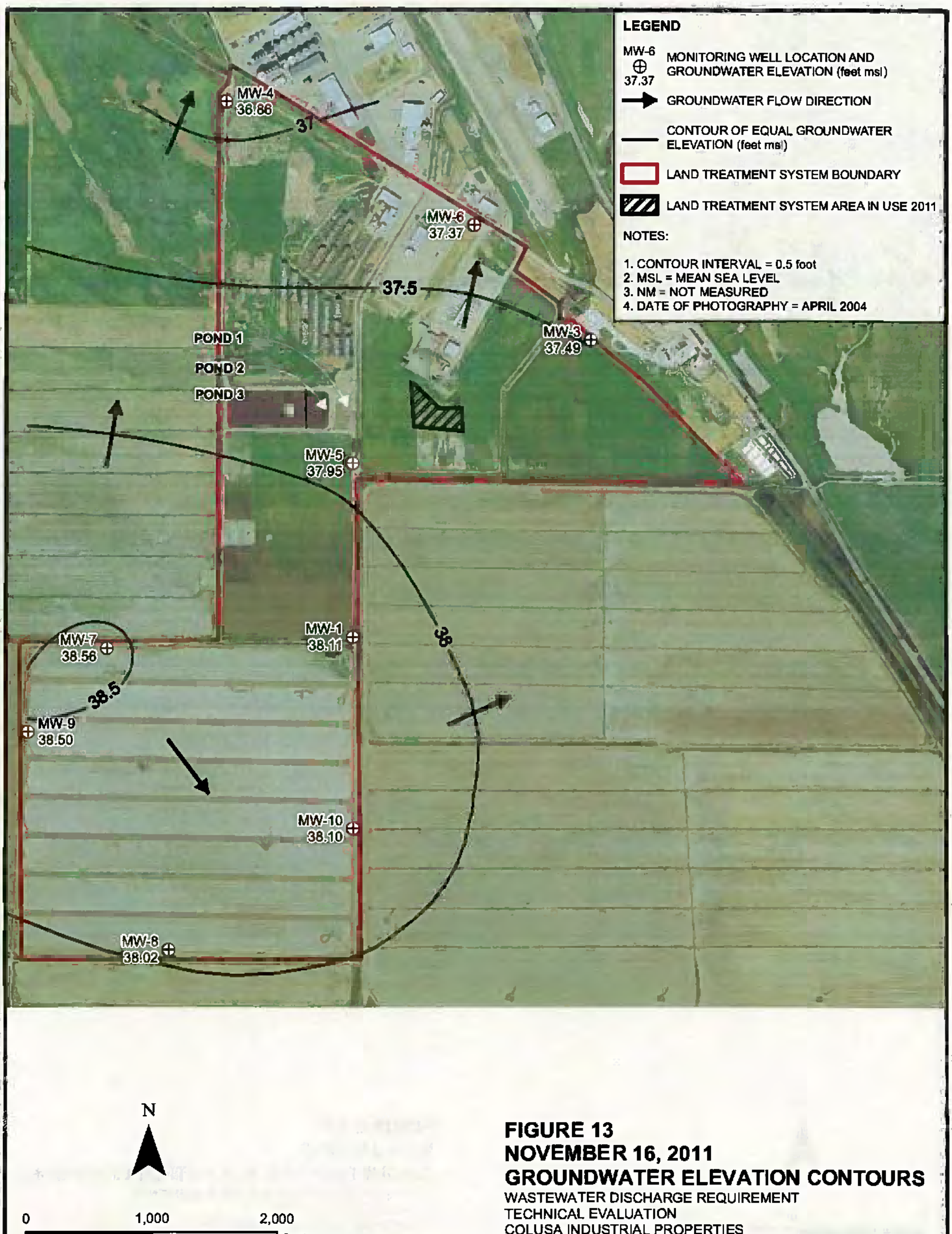

FIGURE 13
NOVEMBER 16, 2011
GROUNDWATER ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODIN\PROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG13.MXD 6/7/2013 1:43:45 PM ALABELLE

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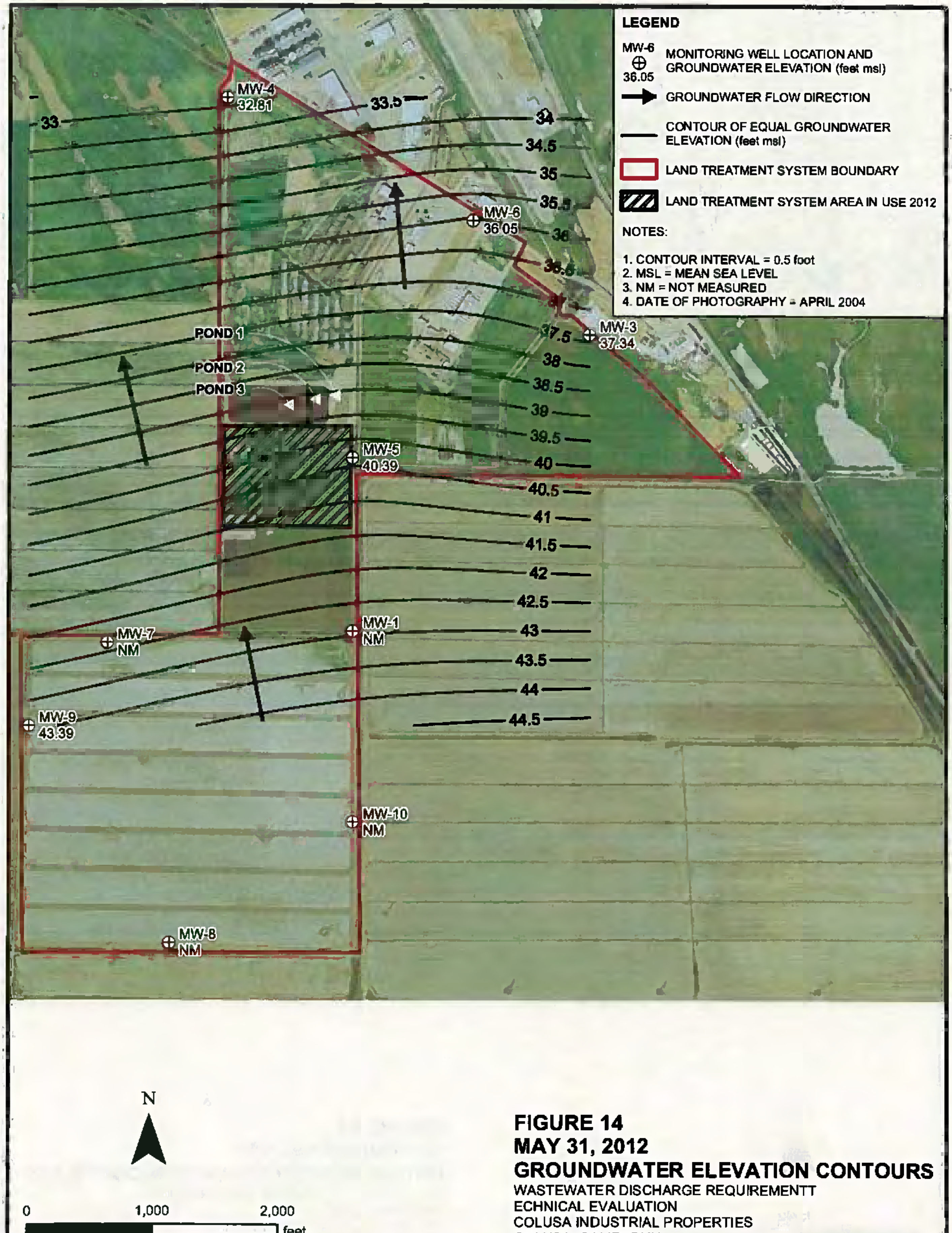

FIGURE 14
MAY 31, 2012
GROUNDWATER ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENTT
ECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODIN\PROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHNICALREPORT_FIG14.MXD 5/7/2013 1:46:55 PM ALABELLE

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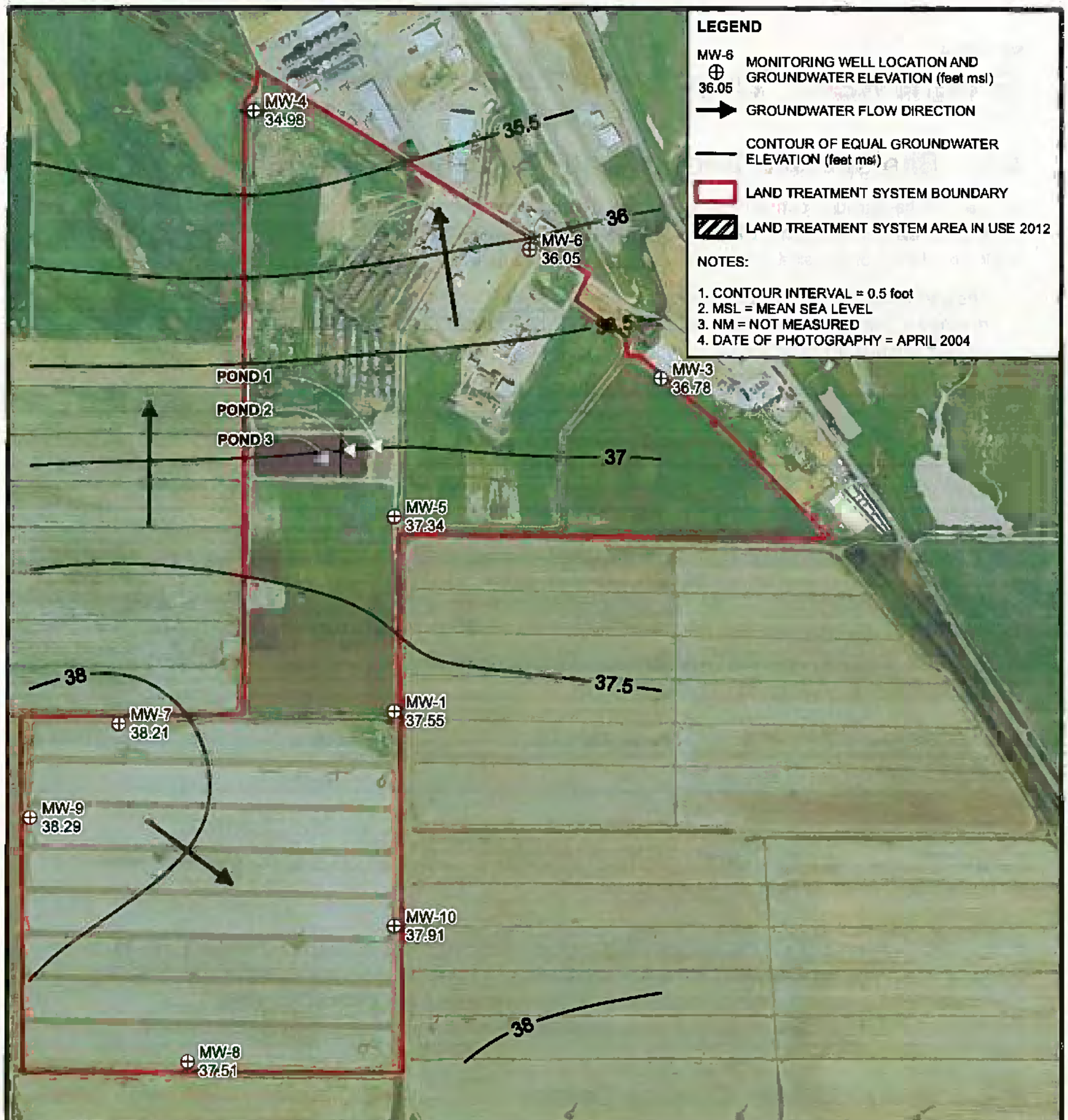

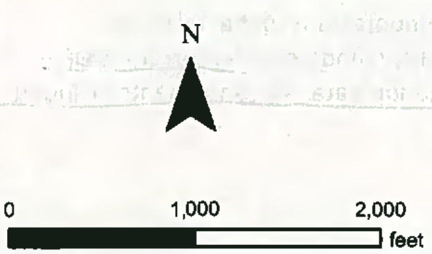

FIGURE 15
OCTOBER 31, 2012
GROUNDWATER ELEVATION CONTOURS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

\\ODINPROJ\COLUSAINDUSTRIALPROP\CIP_433415\FIGURES\ARCMAP\2013\WDR_TECHREPORT\WDRTECHREPORT_FIG15.MXD 5/7/2013 1:48:40 PM ALABELLE

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SECTION 4

Groundwater Trends and Antidegradation Analysis

4.1 Site-specific Background Concentrations

Site-specific background concentrations for the IPW land treatment system were developed and presented in the 2001 Groundwater Assessment Technical Report (CH2M HILL, 2002b) for NO_3-N and TDS, in accordance with the WDR. The definition for a background concentration is as follows:

> *The background groundwater concentration of an analyte at the CIP IPW land treatment system is the average of the groundwater concentrations resulting from monitoring well samples taken before the start of the first IPW application.*

The background concentrations were calculated by averaging concentrations of groundwater samples collected prior to the first IPW land application for each well. This includes groundwater samples collected from MW-7 and MW-8 prior to the 2003 IPW land application season, when IPW was first applied to the Phase 1 area. The samples collected from MW-9 and MW-10 were not included in the background concentration calculations because it is not clear whether groundwater quality at either of these wells is representative of background conditions.

Average constituent concentrations from individual monitoring wells were averaged again to estimate background groundwater concentrations for the entire land application area. The background concentrations of the two constituents of interest, according to the current MRP, are presented in Table 12.

TABLE 12
Background Concentrations for Total Dissolved Solids and Nitrate-Nitrogen in the Land Treatment System
Wastewater Discharge Requirement Technical Evaluation

Analyte	Sample Size[a]	Average Background Concentration[a] (mg/L)
TDS	47	1,647
NO_3-N	30	1.67

[a] Includes samples collected from MW-1, MW-3, MW-4, MW-5, and MW-6 prior to the first IPW land application in 1999, and additional samples collected from MW-7 and MW-8 prior to the first IPW land application on Phase 1 in 2003. Does not include samples collected from MW-9 and MW-10.

A *t*-test was performed on the background concentrations to estimate the 90 percent confidence interval for background concentrations of TDS and NO_3-N (Table 13). A t-test is a statistical analysis that approximates a normal distribution given a small subset of samples. This test yields a range within which the annual average concentrations can vary without being considered statistically different from the background concentrations.

4.2 Groundwater Quality Data

Historical groundwater quality data from 2009 to 2012 are included in Attachment D. Historical groundwater quality data prior to 2008 are available upon request. Monitoring well water quality data were analyzed by Fruit Growers Laboratory, Inc., of Chico, California.

This section describes the groundwater quality at the CIP site, discusses the temporal and spatial trends in groundwater quality, and compares the data to the relevant groundwater quality standards. The current WDR Order excludes some of the constituents in the minimum required characterization data. All constituents included in the current WDR are presented in Table 14.

TABLE 13
Summary of Groundwater Concentrations of Total Dissolved Solids and Nitrate-Nitrogen in Background Locations and Land Application Areas
Wastewater Discharge Requirement Technical Evaluation

	NO_3-N (mg/L)	TDS (mg/L)
Background Concentrations		
Minimum	0.45	700
Average[a]	1.67	1,647
Maximum	6.4	4,150
90 Percent Confidence Interval[b]	±1.13	±634
Annual Averages in Land Application Areas[a]		
2008	2.69	1,552
2009	2.54	2,005
2010	**2.91**	1,788
2011	**4.38**	1,938
2012	2.10	1,763

[a] Analyte concentrations are first averaged for each well from all samples taken at that location in the appropriate time frame. Then these single-well averages are averaged again to determine average concentrations for the entire land treatment system.

[b] Ranges for the background concentrations are determined by a *t*-distribution at the 90 percent level of confidence.

Note:

Bold text indicates a statistically significant exceedance of background conditions at the 90 percent level of confidence.

TABLE 14
Groundwater Quality at the Land Treatment System
Wastewater Discharge Requirement Technical Evaluation

Constituent (unit)	Period	Number of Samples	Mean	Standard Deviation
Alkalinity (mg/L)	2008-2012	54	554.1	176.5
Ammonia (mg/L)	2010-2012	36	0.22	0.07
Barium (mg/L)	2009-2012	46	0.07	0.05
Bicarbonate (mg/L)	2011-2012	28	696.4	163.4
Calcium (mg/L)	2008-2012	54	102.3	95.6
Carbonate (mg/L)	2011-2012	28	Not Detected	Not Detected
Chloride (mg/L)	2008-2012	122	207.3	99.7
Copper (µg/L)	2008-2009	17	Not Detected	Not Detected
EC (µmhos/cm)	2008-2012	113	1,681.2	1,426.7
Fecal Coliform (MPN/100 mL)	2008-2010	64	17.4	100.5

TABLE 14
Groundwater Quality at the Land Treatment System
Wastewater Discharge Requirement Technical Evaluation

Constituent (unit)	Period	Number of Samples	Mean	Standard Deviation
Hydroxide (mg/L)	2011-2012	28	Not Detected	Not Detected
Inorganic Dissolved Solids (mg/L)	2008-2012	105	1,639.4	852.7
Iron (µg/L)	2008-2012	123	296.8	751.6
Magnesium (mg/L)	2008-2012	54	71.5	48.0
Manganese (µg/L)	2008-2012	122	200.7	244.6
NO_3-N (mg/L)	2008-2012	105	3.02	5.8
pH	2008-2012	122	8.0	0.7
Potassium (mg/L)	2008-2012	54	1.4	0.5
Sodium (mg/L)	2008-2012	53	484.6	210.5
Sulfate (mg/L)	2008-2012	54	661.7	603.7
TDS (mg/L)	2008-2012	122	1,871.9	924.1
Total Coliform (MPN/100 mL)	2008-2010	69	889.0	6,020.4
Total Hardness (mg/L)	2008-2012	54	549.1	412.3
TKN (mg/L)	2008-2010	59	1.1	0.4
Zinc (µg/L)	2008-2009	17	Not Detected	Not Detected

Notes:
Field duplicates were not used.
µg/L = micrograms per liter
MPN/100 mL = most probable number of coliform per 100 milliliters

4.3 Evaluation of Groundwater Quality Trends

Figures 16 and 17 show TDS and NO_3-N concentrations versus time for the nine monitoring wells in the IPW land treatment system for available data through October 2012.

4.3.1 Total Dissolved Solids

TDS concentrations at MW-4, MW-8, MW-9, and MW-10 are generally above background TDS concentrations. Historically, TDS concentrations at MW-8 and MW-9 generally have been higher than those at MW-4 and MW-10; however, MW-4 generally has had higher TDS concentrations recently than the other wells in the original land treatment system. TDS is considered an indicator of salinity concentrations within groundwater at the site.

In 2005, TDS concentrations at MW-8, MW-9, and MW-10 peaked during the first quarter monitoring event (Figure 16). These peaks occurred before the land application season began, which suggests that they did not result from IPW land application. In 2006, TDS concentrations at MW-8 and MW-9 exhibited a similar peak during the second quarter monitoring event, which was also before the start of the land application season. Therefore, IPW was not a cause of this peak and the peak was due to external factors.

From 2007 through 2009, TDS concentrations at MW-7 and MW-8 exhibited decreasing trends, and they exhibited a sharp decrease in 2010. TDS concentrations at MW-9 increased in 2007 and 2008, possibly because of seasonal variations; however, TDS concentrations have decreased since the beginning of 2009. Recently, TDS concentrations at MW-10 were slightly above background TDS concentrations, but overall show a decreasing trend since the beginning of 2009. A decreasing trend recognizes that the IPW is not adding a significant amount of TDS load to the land application area.

4.3.2 Nitrate-Nitrogen

The NO_3-N concentration trends at MW-1, MW-6, MW-7, MW-8, MW-9, and MW-10 have been below background concentrations in recent years. The 2011 NO_3-N concentrations at MW-5 continued to be higher than the average background concentration of 1.67 mg/L, and continued to exhibit larger fluctuations than those at the other monitoring wells.

The 2012 NO_3-N concentrations at MW-3 have declined from a historical high in 2011. The average NO_3-N concentrations at MW-3 in 2011 and 2012 were 12.65 and 5.50 mg/L, respectively. The 2011 spike in NO_3-N concentrations is believed to have been a short-term anomaly not related to the application of IPW.

NO_3-N concentrations are usually higher at MW-5 than at the other monitoring wells (see Figure 17). CIP installed a 60-mil, HDPE liner in the domestic wastewater pond in July 2005 (CH2M HILL, 2005). The NO_3-N concentrations at MW-5 dropped sharply during the third and fourth quarters of 2006; however, concentrations have been above 10 mg/L since 2007. Because the nitrogen concentrations of groundwater have fluctuated significantly in the past 10 years, while the concentrations of the IPW have varied very little, the increase in nitrogen concentrations likely has been due to factors other than the IPW.

4.3.3 Other Constituents

Historically, the constituents described in Table 14 were monitored quarterly, but the monitoring frequency changed to semiannual in 2009. The current MRP specifies a more in-depth analysis of TDS and NO_3-N than the other constituents at the site.

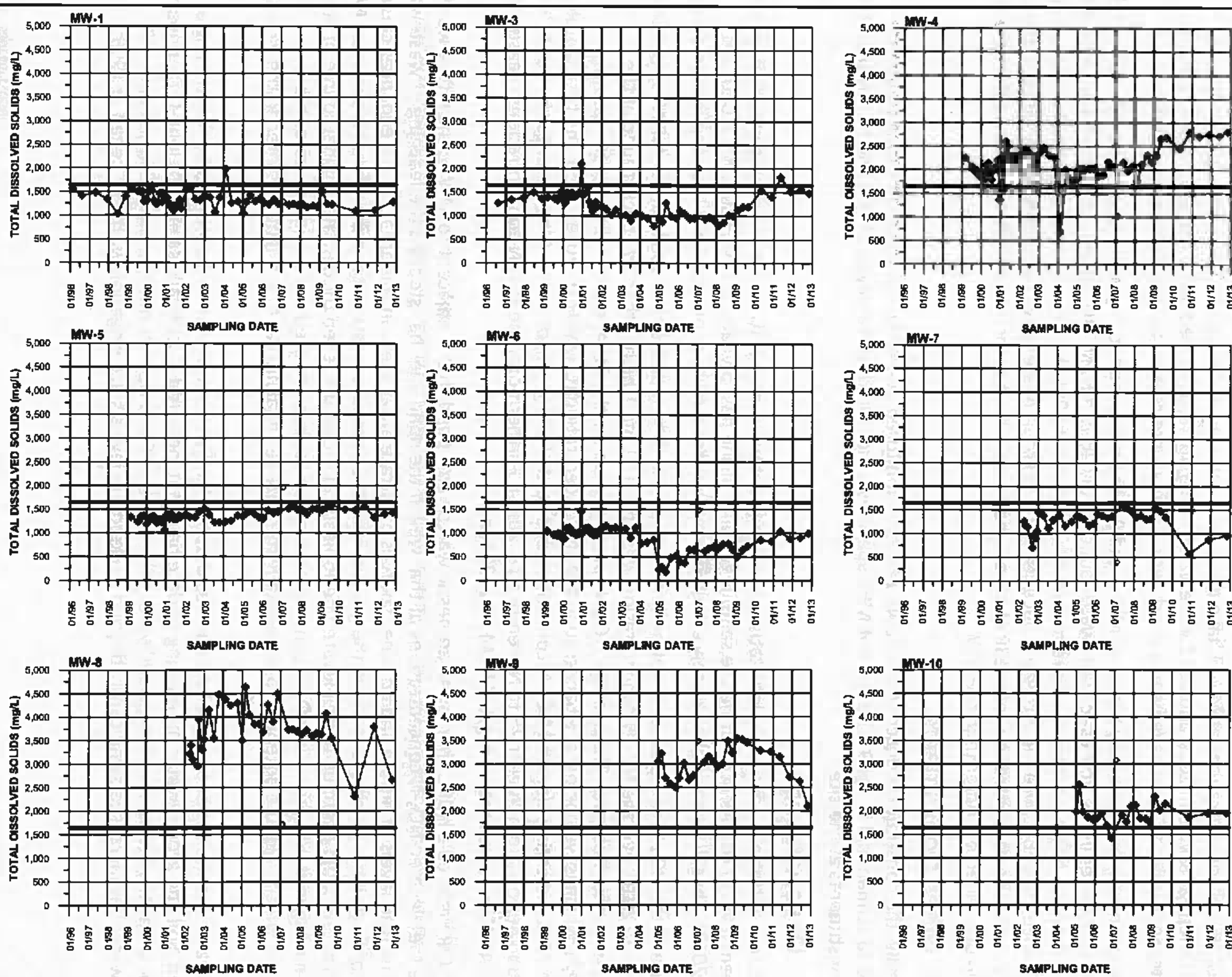
4.3.4 Observations

The TDS concentrations have not been statistically significant with respect to background concentrations at the 90 percent level of confidence during the sampling events of the past 5 years (CH2M HILL, 2009, 2010, 2011, 2012a, 2013). Thus, IPW has not adversely affected groundwater quality at or near CIP's land application areas.

The cause of the NO_3-N exceedance is not definitive; available data indicate that application of IPW is not likely the cause. In 2010, average NO_3-N concentration was only 0.11 mg/L higher than the background at the 90 percent confidence level. The average NO_3-N concentration for the other eight wells in 2010 was only 1.02 mg/L, which is well below the background NO_3-N concentration (CH2M HILL, 2011). Also, the first sampling event in 2011 indicating elevated NO_3-N concentrations at MW-5 was performed in May, prior to the 2011 IPW application period (from August 25 to November 18, 2011). Furthermore, the NO_3-N concentrations measured in the 2011 IPW were less than 1 mg/L (CH2M HILL, 2012a).

In 2005, CIP installed a HDPE liner in the domestic wastewater pond that is adjacent to MW-5; the intent was to mitigate the elevated NO_3-N concentrations at that well. If the pond liner has stopped the leaching of wastewater containing high levels of nitrate and no other sources of nitrate are present in this area, the exceedances could be a result of lingering high nitrate levels in the ground near the domestic wastewater pond. If that is the case, NO_3-N concentrations could continue to be elevated periodically in the future, even though the original source of nitrate has been mitigated. Variations in NO_3-N concentrations also could be related to fluctuating water table conditions, which have the potential to periodically mobilize residual nitrate that might be stored in the vadose zone.

Groundwater monitoring and reporting indicates that the land treatment system appears to be functioning as designed. Soil and groundwater monitoring to date have not indicated statistically significant long-term impacts to nitrogen or salinity levels in soil or groundwater (CH2M HILL, 2011). Neither nitrogen nor EC in soil and groundwater has increased significantly beyond background levels since irrigation with IPW began in 1999.



LEGEND

— BACKGROUND TDS (1,647 mg/L)

NOTES:

1. MW-9 AND MW-10 WERE FIRST SAMPLED ON JANUARY 6, 2005.
2. FLOATING OPEN SYMBOLS REPRESENT RESULTS LIKELY ASSIGNED TO THE INCORRECT LOCATION AND NOT USED FOR STATISTICAL OR TREND ANALYSES.
3. NONDETECT VALUES PLOTTED AS HALF THE DETECTION LIMIT.
4. PERIODS OF OPERATION:

08/03/99 TO 11/02/99
09/01/00 TO 10/31/00
07/23/01 TO 10/11/01
07/18/02 TO 10/22/02
07/28/03 TO 10/10/03
08/18/04 TO 11/15/04
09/06/05 TO 11/09/05
08/31/06 TO 10/27/06
09/05/07 TO 10/01/07
09/17/08 TO 11/11/08
08/19/09 TO 10/31/09
08/13/10 TO 11/09/10
08/25/11 TO 11/18/11
08/08/12 TO 10/04/12

FIGURE 16
CONCENTRATION VERSUS TIME FOR TOTAL DISSOLVED SOLIDS
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

CH2MHILL

WDRTECHREPORT_FIG16.GRF

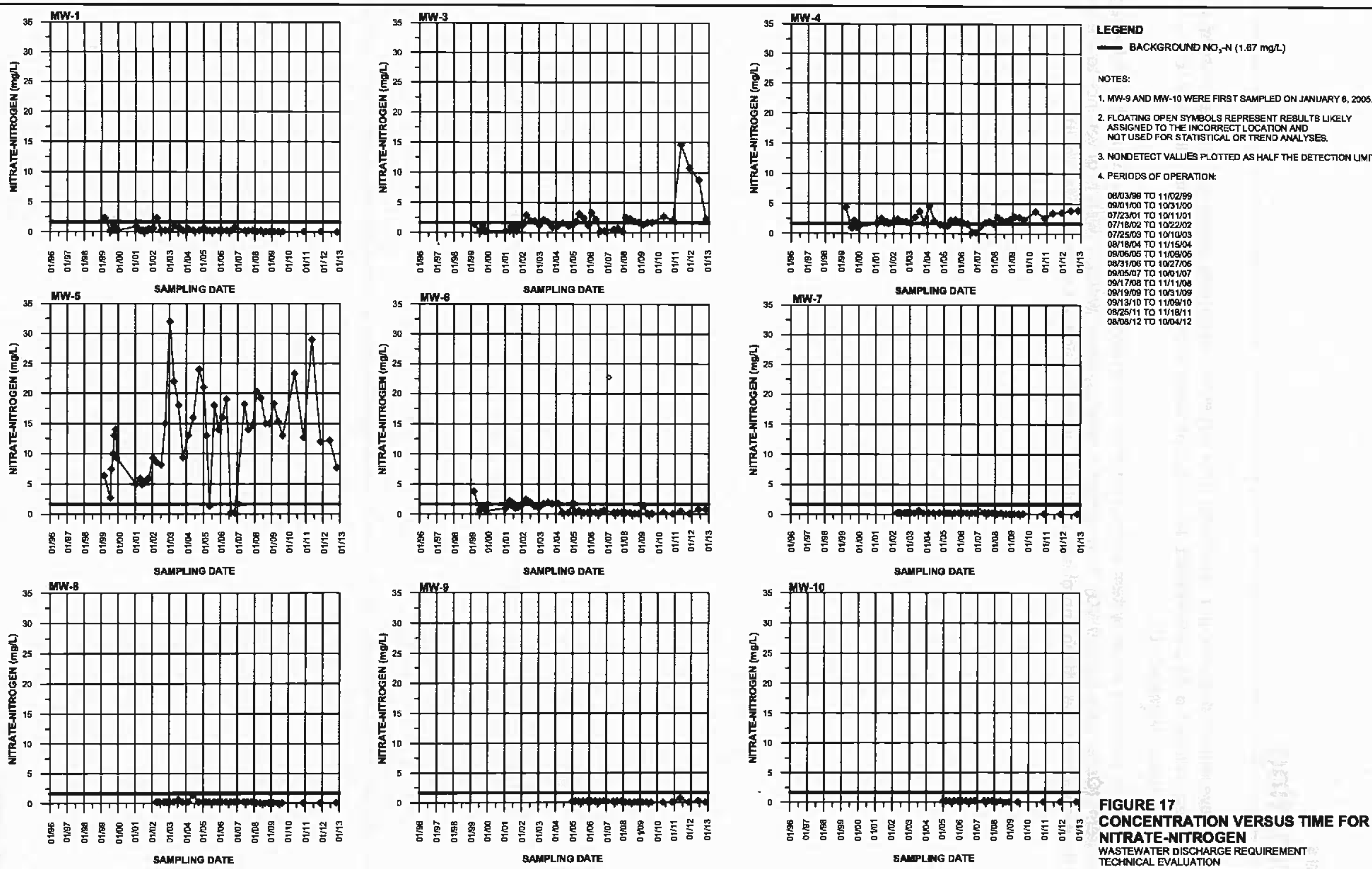


FIGURE 17
CONCENTRATION VERSUS TIME FOR NITRATE-NITROGEN
WASTEWATER DISCHARGE REQUIREMENT
TECHNICAL EVALUATION
COLUSA INDUSTRIAL PROPERTIES
COLUSA, CALIFORNIA

CH2MHILL

WDRTECHREPORT_FIG17.GRF

SECTION 5

Permitting

CIP tenants have industrial stormwater permits for their respective operations, as needed. Industrial stormwater permit numbers include No. 01-21-03P06001, issued by the Department of Environmental Health for CIP to water for domestic purposes (Appendix D).

CIP does not have a sanitary sewer system and is, therefore, exempt from the Statewide General WDR for Sanitary Sewer Systems (Order 1006-0003-DWQ). Existing tenant septic systems (with graywater conveyance to the lined Pond 1 for evaporation) have been approved by Colusa County Division of Environmental Health.

SECTION 6

Department of Water Resources Well Standards

The monitoring wells were installed at the locations shown on Figure 7, with adequate distance from known pollution and contamination sites, out of a known flooding area and with easy accessibility. The methodology for well installation followed standard operating procedures and consisted of the following tasks:

1. Cleared the well location for utilities, obtained Colusa County well construction permits, and staked the site prior to the involvement of a drill rig.
2. Set up plastic sheeting and marked the staked location through the plastic before moving the drill rig in and setting up.
3. Drilling was performed using a hollow-stem auger to bore a hole 10.7S inches in diameter to the target depths.
4. The monitoring well construction was completed through the auger, removing the drill stem or casing as the materials were placed.
5. A 20-foot screen with a slot size of 0.02 inch was placed from 10 to 30 feet bgs and a 4-inch-diameter PVC casing was installed to ground surface. Number 3 sand was used as a gravel pack around the screened interval and 1 foot above the screen to a depth of 9 feet bgs. A 1-foot bentonite seal was placed over the sand filter and hydrated. Finally, this bentonite layer was capped with a cement grout seal that extends flush to the ground surface. This prevents contaminants, flooded waters, or alien materials from entering the well.
6. The borehole was logged continuously and the complete borehole descriptions were included in a final well installation report.
7. The wells were developed using the surge-and-bail method until the following water quality characteristics stabilized between consecutive samples: pH within 0.02 unit, temperature within 1 degree Celsius, turbidity was less than 50 nephelometric turbidity units, and specific conductance within 10 percent.
8. The well locations were surveyed to determine elevation above msl and exact location on the property. Well elevations were referenced to existing wells at the site.

The water that was produced during development was discharged to the ground surface, away from the monitoring well. Surveys were performed on the horizontal and vertical positions of the tops of casings, ground surface, and monitoring well lids of the new monitoring wells. All elevations were referenced to the North American Vertical Datum of 1988, and all horizontal coordinates were referenced to California State Plane Zone 2, North American Datum of 1983. The CIP monitoring wells were disinfected in accordance with the California Department of Water Resources' (1981) Suggested Procedures for Disinfected Wells.

SECTION 7

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Appendix A
Colusa Industrial Properties
Waste Discharge Requirements

Rude

California Regional Water Quality Control Board

Central Valley Region

Robert Schneider, Chair

on H. Hickox
ecretary for Environmental Protection

Sacramento Main Office
Internet Address: http://www.swrcb.ca.gov/~rwqcb5
3443 Routier Road, Suite A, Sacramento, California 95827-3003
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Gray Davis
Governor

26 October 2001

CERTIFIED MAIL NO
7001 1140 0003 4444 6719

Mr. Ed Hulbert
Colusa Industrial Properties, Inc.
50 Sunrise Boulevard
Colusa, California 95932

NOTICE OF ADOPTION
OF
REVISED WASTE DISCHARGE REQUIREMENTS
FOR
COLUSA INDUSTRIAL PROPERTIES, INCORPORATED
COLUSA COUNTY

Enclosed is an official copy of Order No. 5-01-250 as adopted by the California Regional Water Quality Control Board, Central Valley Region, on 19 October 2001.

WILLIAM A. CROYLE, Chief
Waste Discharge to Land Unit
Lower Sacramento River Watershed

Enclosures — Adopted Order
Standard Provisions (discharger only)

cc: Ms. Frances McChesney, Office of Chief Counsel, State Water Resources Control Board, Sacramento
Division of Water Quality, State Water Resources Control Board, Sacramento
Environmental Management Branch, Department of Health Services, Sacramento
Department of Health Services, Office of Drinking Water, Sacramento
Department of Fish and Game, Region II, Rancho Cordova
Colusa County Environmental Health Department, Colusa
Colusa County Planning Department, Colusa
Mr. Pete Rude, CH2M Hill, Redding

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
ORDER NO. 5-01-250

WASTE DISCHARGE REQUIREMENTS
FOR
COLUSA INDUSTRIAL PROPERTIES, INCORPORATED
COLUSA COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. Colusa Industrial Properties, Incorporated, (hereafter Discharger) submitted a Report of Waste Discharge on 12 November 1999 and additional information dated 22 March 2000, requesting an update of Waste Discharge Requirements Order No. 99-093 to include additional acreage and increase flow for land disposal of industrial process wastewater from tomato washing operations.

2. Waste Discharge Requirements Order No. 99-093, adopted by the Board on 11 June 1999, prescribes requirements for discharge of domestic wastewater from industrial complex septic tank systems to an evaporation/percolation pond and the discharge of industrial process wastewater from agricultural food processors, Harris Moran Seeds, Inc. (seed washing) and Hanover Foods Corporation (tomato processing) approximately 127 acres of agricultural land for irrigation. The average dry weather discharge flow of the industrial process wastewater was limited to 690,000 gallons per day (gpd) May through October and 27,000 gpd November through June.

3. Order No. 99-093 is not consistent with the proposed operations. The Order is being updated by additional information submitted by the Discharger for the increased discharge flow of industrial process wastewater and the addition of agricultural disposal land.

4. The Discharger proposes to dispose of industrial process wastewater to approximately 500 useable acres within a 575 acre parcel, also referred to as the Davis property (APN 017-03-0-008-3) as well as the 127-acres of agricultural land (APNs 017-03-0-083, 017-03-0-084, 017-03-0-085 and 017-030-0-086). These parcels are hereinafter referred to as the Designated Disposal Area. In the future, the Discharger plans on using part of the 127 acres for the expansion of the facility; therefore the disposal area within the 127 acres will be reduced. The Designated Disposal Area is shown on Attachment A, which is attached hereto and part of this Order by reference.

5. The Discharger intends on using a phased approach for the incorporation of the Davis Property for process wastewater disposal. Phase I is shown on Attachment A.

6. The Discharger proposes to increase the discharge quantities with the addition of the Davis property based on crop water demands and nitrogen limitations. Production of seed rice on the Davis property would support a maximum discharge of 3.4 million gallons per day (mgd). The production of sudan grass would support a maximum of 4.1 mgd. The average daily dry weather flow to the Davis Property will not exceed the 3.4 mgd if planting seed rice and 4.1 mgd if planting sudan grass from April until October. The average daily dry weather flow to the existing 127-acre area will not exceed 0.690 mgd. The average daily dry weather flow will not exceed 27,000 gpd during the months from November to April and shall be confined to the west emergency evaporation/percolation pond.

7. Domestic wastewater generated from the tenants of the industrial park is treated in septic tank/leachfield systems (permitted by Colusa County) or disposed of via septic tanks with septic tank effluent disposed of to the Discharger's east evaporation/percolation pond. The Discharger does not dispose domestic wastewater to the Designated Disposal Area.

8. The Board is concerned with the lack of separation between the bottom of the domestic wastewater pond and groundwater (shallow groundwater depth is approximately 5 to 10 feet below grade), coliform in groundwater, elevated nitrates in the monitoring well MW-5 located down gradient of the pond and the apparent rapid infiltration observed during inspections of the pond. In order to mitigate the lack of separation between the bottom of the pond and groundwater, the pond should be reconstructed to include a pond liner or advanced treatment of the domestic wastewater should be provided. **Provision E. 3.h.** outlines a compliance schedule for the Discharger to reconstruct the pond, provide advanced domestic wastewater treatment or propose another alternative that will provide water quality protection.

9. Harris Moran Seed Company, Inc., generates approximately 25,000 gallons of wastewater per day from seed washing during the season, which lasts from approximately 15 August through 15 November. Harris Moran Seed Company was regulated under WDRs Order No. 96-046 for the pre-treatment of seed process water via two aeration ponds and one evaporation/percolation pond, however the WDR Order No. 96-046 was rescinded at the 11 May 2001 meeting of the Board. Upon adoption of this Order, the land application of Harris Moran Seed Company's process wastewater will be regulated under this Order.

10. Hanover Foods Corporation plant operates seasonally from July through October depending on harvest operations.

11. The Designated Disposal Area is in Section 8, T15N, R1W, MDB&M, with surface drainage to the Colusa Basin Drain, as shown in Attachment A, which is attached hereto and part of this Order by reference.

12. The Designated Disposal Areas will be irrigated with the industrial process wastewater via a closed system to prevent surface water from leaving the site.

13. This Order is being updated to allow for future expansion of the industrial complex. This future expansion will allow for increased flows of industrial process wastewater to an increased acreage (Davis Property).

14. Based on effluent monitoring data collected from the Harris Moran Seed Company and Hanover Foods during the 1999 processing season (August through October), the wastewater discharged to the disposal site is characterized as follows:

Constituent	Concentration Range	Average Concentration
BOD5[1] (mg/L)	630 to 1160	907
Total Dissolved Solids (mg/L)	520 to 760	623
Electrical Conductivity (μmhos/cm)	660 to 680	667
pH	4.8 to 5.8	--
Nitrate as N (mg/L)	<0.05 to <2.0	--
Total Kjeldahl Nitrogen (mg/L)	30 to 38	33
Chlorides (mg/L)	1.1 to 33	23
Phosphates as P (mg/L)	0.38 to 19	12
Ammonia (mg/L)	3.2 to 7.4	5.8
Fecal Coliform (MPN/100 mL)	>1600	>1600
Total Coliform (MPN/100 mL)	>1600	>1600

[1] 5-day, 20 °C Biochemical Oxygen Demand

15. Process wastewater samples were collected during the 2000 processing season (September and October) for Harris Moran Seed Company. The wastewater effluent is characterized as follows:

Constituent	September	October
BOD5[1] (mg/L)	470	750
Total Dissolved Solids (mg/L)	640	1330
Electrical Conductivity (μmhos/cm)	830	1500
pH	7.2	8.3
Nitrate as N (mg/L)	<0.45	<0.45
Total Kjeldahl Nitrogen (mg/L)	--	15.0
Chlorides (mg/L)	39	100
Phosphates as P (mg/L)	11	9.1

Constituent	September	October
Ammonia (mg/L)	3.6	1.7
Fecal Coliform (MPN/100 mL)	>1600	>1600
Total Coliform (MPN/100 mL)	>1600	>1600

[1] 5-day, 20 °C Biochemical Oxygen Demand

16. Six ground water monitoring wells (MW-1 through MW-6) have been installed to assess the groundwater quality directly beneath the 127-acre disposal area. These wells are currently being monitored on a monthly basis. The following data represents an averaged ground water quality for the existing 127-acre disposal area:

Well No.	Electrical Conductivity[1] (umhos/cm)	Total Dissolved Solids[1] (mg/L)	Chlorides[2] (mg/L)	Nitrates[2] mg/L
MW-1	2265	1366	155	1.0
MW-2[3]	2337	1415	181	0.6
MW-3	2420	1443	153	0.8
MW-4	3307	2004	262	1.6
MW-5	2167	1293	140	6.8
MW-6	1699	1065	109	1.4

Data from CH2M Hill, *Historical Monitoring Well Data Laboratory Results*
[1] Sample data collected March 1999 and monthly from July 1999 through May 2001
[2] Sample data collected monthly from July 1999 through May 2001
[3] As of August 2000 MW-2 is no longer being monitored due to the proximity of MW-2 to the irrigation canal

17. Total coliform organisms have been detected in all six monitoring wells during sampling from August 1996 to March 2000 ranging from 8 MPN/100 mL in MW-2 and MW-6 to greater than 1600 MPN/100 mL in MW-1, MW-4 and MW-5. Between March 2000 and May 2001, total coliform in MW-4 ranged from <2 to a high of 3500 MPN/100 mL. In MW-1 for this monitoring period, total coliform was detected ranging between 4 to 13 MPN/100 mL.

18. The water quality protection standard in the Basin Plan for total coliform organisms is 2.2 MPN/100 mL over any seven-day period.

19. Based on monthly sampling and analysis from January 2000 through May 2001, the source water is characterized as follows:

Constituent	Concentration Range	Average Concentration
pH	8.[illegible] to 8.4	--
Electrical Conductivity (µmhos/cm)	540 to 770	639
Total Dissolved Solids (mg/L)	300 to 470	372
Chlorides (mg/L)	17 to 100	53

20. According to the United States Environmental Protection Agency (USEPA), total suspended solids (TSS) loading rates should not exceed 70 lbs/acre/day and BOD loading rates should not exceed 100 lbs/acre/day to prevent development of nuisance conditions associated with applying food-processing wastewater to land for biological treatment (*Pollution Abatement in the Fruit and Vegetable Industry*, USEPA Publication No. 625/3-77-0007, hereafter *Pollution Abatement*).

21. *Pollution Abatement* recommends that water applied to crops have a pH within 6.4 to 8.4 to protect crops from damage by food processing wastewater. Acidic soil conditions can be detrimental to bacteria responsible for conversion of organic matter and nitrogen. If soil pH decreases below 5, iron and manganese may dissolve and degrade underlying groundwater if the buffering capacity of the soil is exceeded.

22. Based on the groundwater monitoring performed at the 127-acre disposal area, ground water exists at or near ground surface to 5 to 10 feet below grade surface (bgs). The direction of groundwater flow is towards the north.

23. The beneficial uses of ground waters are municipal, domestic, agricultural, industrial service supply, and industrial process supply.

24. Surface water drainage is to the Colusa Basin Drain.

25. The beneficial uses of the Colusa Basin Drain surface water body are municipal and domestic supply; agricultural irrigation and stock watering; contact and non-contact recreation, canoeing and rafting, warm and cold freshwater habitat, warm and cold migration, warm and cold spawning, wildlife habitat, and navigation.

26. The Board has considered anti degradation pursuant to State Water Resources Control Board Resolution No. 68-16 and finds that degradation of groundwater by this discharge is not consistent with maximum benefit to the people of the State. The assimilative capacity of the underlying soil should prevent degradation of groundwater from infiltration of

incidental waste constituents. The effluent and groundwater limits prescribed herein are intended to ensure that the assimilative capacity will not be exceeded. However, additional groundwater monitoring wells are necessary to fully determine compliance with the groundwater limitations contained herein. Therefore, these WDRs contain a time schedule for development and implementation of an enhanced groundwater monitoring network to characterize the downgradient and background water quality of the land application areas.

27. The Basin Plan encourages reclamation.

28. Excessive application of food processing wastewater to land application areas can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater by overloading the shallow soil profile and causing pollutants (organic carbon, nitrate, other salts, and metals) to percolate below the root zone. Because there is evidence of groundwater degradation at the facility, this Order requires the Discharger to significantly reduce waste loading rates. If sufficient information becomes available, this Order may be revised to increase or further reduce loading rates as appropriate. If the Discharger is unable to modify its waste stream or disposal methods such that groundwater quality will not be impacted, then the Board would be required to classify the waste as a designated waste and demand full containment under Title 27 of the California Code of Regulation (hereafter Title 27).

29. State regulations pertaining to water quality monitoring for waste management units are found in Title 27, Section 20380. These regulations prescribe procedures for detecting and characterizing the impact of waste constituents on groundwater quality. Although the facility is currently exempt from Title 27, the data analysis methods of Title 27 are appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

30. The Board adopted a Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins (hereafter Basin Plan), which contains water quality objectives for all waters of the Basin. This Order implements the Basin Plan.

31. This discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (hereinafter Title 27). The exemption, pursuant to Section 20090(b), is based on the following:

a. The Board is issuing waste discharge requirements,
b. The discharge complies with the Basin Plan, and,
c. The wastewater does not need to be managed according to 22 CCR, Division 4.5, Chapter 11, as a hazardous waste.

32. On 27 October 1999 Colusa County Department of Planning and Building approved a Negative Declaration for the proposed expansion of 575 acres to Colusa Industrial Properties in accordance with the provisions of the California Environmental Quality Act (CEQA), (Public Resources Code Section 21000, et seq.) and the State CEQA Guidelines.

33. On 7 August 2000 Colusa County Department of Planning and Building certified a Negative Declaration for the land application of increased flow of tomato process wastewater generated at Colusa Industrial Properties in accordance with the provisions of the California Environmental Quality Act (CEQA), (Public Resources Code Section 21000, et seq.) and the State CEQA Guidelines.

34. On 11 June 2001, the Colusa County Planning Commission held a public hearing for the proposed amendment to the Use permit clarifying the intent of the use of the Davis Property for the disposal of wastewater changing from disposal of tomato process wastewater to industrial process wastewater. Colusa County as Lead Agency determined that since a negative declaration had already been prepared and adopted, there is no substantive evidence in the record that would require a new environmental document.

35. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

36. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and issuance of this Order does not create a vested right to continue the discharge. Failure to provide the level of management required to assure best practicable treatment and control, preclude conditions that threaten pollution or nuisance, and protect groundwater quality will be sufficient reason to enforce this Order, modify it, or revoke it and prohibit further discharge. This Order prescribes limits for BOD loading, nutrient loading, water application rates, and pH, but it remains the responsibility of the Discharger to assure that its waste loading practices do not degrade groundwater or create a condition of pollution or nuisance. Acceptable loading rates established in this Order are subject to change if conditions are such that the discharge of wastewater causes, or threatens to cause, pollution or nuisance.

37. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an

opportunity for a public hearing and an opportunity to submit their written views and recommendations.

38. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that Order No. 99-093 is rescinded and Colusa Industrial Properties, Incorporated, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. By-pass or overflow of unscreened waste or overflow of untreated or partially treated wastes is prohibited.

3. Discharge of waste classified as 'hazardous,' as defined in Sections 2521(a) of Title 23, CCR, Section 2510, et seq., (hereinafter Chapter 15), or 'designated,' as defined in Section 13173 of the California Water Code, is prohibited.

4. Commingling of process wastewater and domestic wastewater is prohibited.

5. Discharge of domestic wastewater to the process wastewater evaporation and percolation pond or Designated Disposal Area is prohibited.

6. Discharge to the Designated Disposal Areas between 1 November and 30 April is prohibited.

7. Discharge of wastes in amounts that exceed the agronomic uptake of crops is prohibited.

8. Discharge of industrial process wastewater to the Davis Property without the establishment of pre-project groundwater quality is prohibited.

B. Discharge Specifications:

1. Neither the treatment nor the discharge shall cause a pollution or nuisance as defined by the Porter-Cologne Water Quality Control Act, Section 13050.

2. The discharge shall remain within Colusa County Assessor Parcel Numbers 017-03-0-085, 017-03-0-083, 017-03-0-084, 017-03-0-086, and 017-03-0-008-3 at all times.

3. The average daily dry weather industrial process wastewater flow to the Davis property shall not exceed the 3.4 mgd if planting seed rice and 4.1 mgd if planting sudan grass from April through October. The average dailty dry weather flow to the existing 127-acre area shall be limited to 0.690 mgd April through October. The discharge between November to April shall not exceed 27,000 gpd and be limited to the west evaporation/percolation pond.

4. The total dissolved solids effluent limit of the process wastewater shall not exceed 700 mg/L. The Discharger shall encourage tenants to utilize best management practices and source control to reduce the salinity of the discharge. This effluent limit is an interim limit. The discharge may not exceed this TDS limit unless otherwise approved by the Executive Officer.

5. Organic Nitrogen as N shall not be greater than 20 mg/l in the discharge to the industrial wastewater evaporation/percolation pond or Designated Disposal Area except, during July through August organic nitrogen concentrations of 40 mg/l are allowed to go to the Designated Disposal Area.

6. Wastewater application rates for the Designated Disposal Area shall comply with the following:

   a. Nutrient mass loading rates shall not exceed agronomic rates for the crop to be planted, nor rates that will preclude degradation of groundwater.
   b. Degradable organic (BOD) and salt mass loading rates shall preclude creation of a nuisance or degradation of groundwater.

7. Mass loading rates for nutrients, degradable organic compounds and salt shall be based on the character of the wastewater, crop, soil, climate, other nutrient sources and irrigation management system.

8. The maximum BOD_5 loading to the Designated Disposal Area shall not exceed the following:

   a. 300 lbs/acre on any single day;
   b. 100 lbs/acre/day as a 7-day (weekly) average; or
   c. The maximum loading rate that ensures that the discharge will not create a nuisance.

9. The maximum total nitrogen loading to the designated disposal fields shall not exceed the agronomic rate for plant available nitrogen (PAN) for the type of crop to be grown, as specified in the most recent edition of the Western Fertilizer Handbook. PAN shall be calculated as 100% of the total nitrogen content of the waste, unless and until the Discharger demonstrates that another proportion is technically justified.

10. Until Provision E.4 is satisfied, the wastewater discharged to the Designated Disposal Areas shall not have a pH of less than 6.5 nor greater than 8.5. If process wastewater is blended with irrigation water (fresh or storm water), this pH shall also apply to the blended water.

11. The discharge shall not cause the buffering capacity of the soil to be exceeded.

12. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

13. Public contact with domestic wastewater and processed wastewater shall be precluded through such means as fences, signs, and/or irrigation management practices.

14. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment facilities and Designated Disposal Areas or property owned by the Discharger.

15. Hydraulic loading of wastewater shall be at rates designed to minimize percolation below the evaporative/root zone.

16. Hydraulic rates and practices shall ensure that all applied wastewater has infiltrated or evaporated within 24 hours of ceasing the discharge to a particular irrigation check or group of checks.

17. The discharge shall be distributed uniformly on adequate acreage in compliance with Discharge Specification B.16.

18. The Designated Disposal Area shall be irrigated with the process wastewater via a closed system designed and operated to contain all tailwater and storm water runoff within the boundaries of the Designated Disposal Areas.

19. Process wastewater shall not be discharged within 100 feet of any residential property boundary or occupied commercial building.

20. The following setback distances from the Designated Disposal Area unless otherwise approved by the Executive Officer:

Setback Distance (feet)	To
25	Property line
30	Public roads
50	Drainage courses
50	Domestic/Irrigation wells

21. Application of process wastewater shall only occur where graded basins will provide uniform water distribution, minimize ponding, and provide complete tailwater control. The basins shall be no longer and slopes shall be no greater than that which permits uniform infiltration and maximum practical irrigation efficiency. The minimum basin slope shall not be less than 0.2%.

22. The Discharger shall plant, harvest and remove from the disposal site at least one crop per year.

23. The Designated Disposal Area shall be managed to prevent breeding of mosquitoes

24. No physical connection shall exist between wastewater piping and any domestic water supply well, domestic wastewater pipelines or any irrigation well.

25. Irrigation or impoundment of wastewater shall not occur within 50 feet of any domestic well unless it is demonstrated to the satisfaction of the Executive Officer that a shorter distance is justified.

26. As a means of discerning compliance with Discharge Specification B.14, the dissolved oxygen content in the upper zone (1 foot) of the wastewater evaporation/percolation ponds shall not be less than 1.0 mg/l.

27. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

   a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
   b. Weeds shall be minimized through control of water depth, harvesting, or herbicides
   c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

28. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual

precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Design shall be constructed, operated, and maintained to prevent inundation of washout due to floods with a 100-year return frequency. The vertical distance between the surface of wastewater in ponds and the lowest point of overflow from the ponds (freeboard) shall at all times be greater than or equal to two feet.

29. Before 15 October of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specification B.28.

C. Solids Disposal Requirements:

1. Collected screening, sludge and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with the *Consolidated Regulations for Treatment, Storage, Processing, or Disposal ofSolid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.

2. Any proposed change in sludge use or disposal practice from a previously approved practice shall be reported to the Executive Officer.

3. Use and disposal of sewage shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503.

4. If the State Water Resources Control Board and the Regional Water Quality Control Boards are given the authority to implement regulations contained in 40 CFR 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR 503 whether or not they have been incorporated into this Order.

D. Groundwater Limitations:

The discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than background water quality, except for coliform. For coliform, increases shall not cause the most probable number of coliform organisms to exceed 2.2/100 ml over any 7-day period.

E. **Provisions:**

1. The Discharger shall comply with the Monitoring and Reporting Program No. 5-01-250, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

2. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

3. The following reports shall be submitted pursuant to Section 13267 of the California Water Code:

   a. At least 150 days prior to discharge to a new phase of the Davis Property, the Discharger shall submit a Groundwater Monitoring Well Installation Workplan prepared by a registered professional engineer or geologist and in accordance with the first section of Attachment C: *"Monitoring Well Workplan and Monitoring Well Installation Report Guidance."* The workplan shall describe a proposed expansion to the existing groundwater monitoring network specifically designed to ensure that background and downgradient water quality is adequately characterized and any potential water quality impacts from the discharge are detected. The system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the site.

   b. At least 30 days prior to a new discharge of process wastewater to any land application area of the Davis Property, the Discharger shall submit a technical report prepared by a registered professional with experience in water quality to include an assessment and establishment of the pre-project, background and downgradient groundwater quality to the phased in land application area of the Davis Property. At least three groundwater monitoring events shall be performed and included within this report.

   c. At least 30 days prior to each processing season, a Cropping Plan shall be submitted to the Board prepared by an agronomist and shall identify the crops to be grown, present nitrogen removal calculations, and crop cutting/harvesting procedures. The report shall evaluate the effect of applying wastewater to the land application areas. For each area or phase, the report shall evaluate the Discharger's application rate. The evaluation shall include a description of the irrigation schedule, potential crop problems, water usage of recommended crops, evapotranspiration rates, infiltration rates, planting/harvesting schedules and the long term impact to soil and quality of the wastewater application. The report shall also address the loading rates of total dissolved solids, sodium chloride, BOD and nitrogen to the land application area. Salt accumulation in soil and potential groundwater impacts must be addressed. The plan shall be updated and address the previous processing season.

d. At least 30 days prior to the discharge of process wastewater to the Davis Property, the Discharger shall submit a Wastewater Infiltration Rate Report. A minimum of three infiltration rates tests shall be performed in each incorporated Phase of the Davis Property that wastewater discharge is proposed

e. By 1 February 2002 the Discharger must be in compliance with the Water Quality Order No. 91-13-DWQ (as amended), the General Permit for Discharges of Storm Water Associated with Industrial Activities by either filing a Notice of Intent or a Notice of Non-Applicability.

f. By 1 March 2002 the Discharger shall submit a Sample Collection and Analysis Plan that will be followed for groundwater monitoring. At a minimum, the Sample Collection and Analysis Plan shall include: water level elevation measurement techniques, sample collection details (purging techniques, sampling equipment to be used, and decontamination of sampling equipment), sample preservation and shipment, analytical procedures, chain of custody control, and quality assurance/quality control standards. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

g. By 1 March 2002, the Discharger shall submit a Wastewater Treatment and Disposal Operations Evaluation technical report that presents a complete engineering assessment of the efficiency of the existing pretreatment/land treatment system. At a minimum, the report shall provide a thorough technical evaluation of the need for the following:

- Additional pretreatment to reduce the mass loading of BOD to the disposal site;
- Source control and/or treatment to reduce the salt loading of the discharge to the disposal site;
- Measures to ensure hydraulic loading does not exceed the rates required to minimize infiltration below the evaporative/root zone (e.g., operational modifications, additional acreage, and/or water conservation measures);
- Modifications to current cropping practices to improve nitrogen removal by crops;
- Modifications to current irrigation practices to improve distribution of degradable organic compounds evenly over the land surface; and

- Other operational modifications to reduce the potential for nuisance odors at the property boundary.

The report shall present a complete description of measures that the Discharger has selected for implementation to ensure compliance with this Order, measures implemented during the 2002 discharge season, and measures to be implemented prior to the 2002 discharge season. The report shall include an implementation schedule for any improvements and/or system rehabilitation necessary to fully comply with this Order during each discharge season.

h. **By 1 June 2002**, the Discharger shall submit a work plan, which details the reconstruction of the domestic wastewater pond to include a pond liner, the construction of an advanced domestic wastewater treatment system or other alternative necessary to protect water quality. The treatment and hydraulic capacity shall be designed to accommodate anticipated future flows of domestic wastewater, evapotranspiration, percolation, if applicable, and precipitation. The water balance shall be prepared that the pond will have adequate treatment and hydraulic capacity from a 100-year storm event while maintaining two feet of freeboard.

i. **By 1 April 2002** the Discharger shall submit a description and evaluation of the effectiveness of the existing emergency use pond that assesses whether the construction of the pond is effective in protecting groundwater quality.

j. **By 1 April 2002**, the Discharger shall submit a report certifying that all high-salinity waste streams (i.e., boiler blowdown, softener regeneration brine, reverse osmosis reject and lye pealing solutions if used) have been segregated from the main waste stream. The report shall specify the means and methods of permanent off-site disposal of the high-salinity waste streams.

k. **By 1 February of each year** the Discharger shall submit a thorough Groundwater Assessment Report. This report must be prepared by a California Registered Geologist with experience in groundwater quality monitoring and assessment. The technical report shall include the following:

- A narrative discussion of the existing groundwater monitoring well network, disposal site hydrogeology, including subsurface stratigraphy, soil infiltration characteristics, depth to groundwater, groundwater gradient, and seasonal gradient variations over the previous monitoring year.
- Groundwater elevation contour maps for each of the preceding four quarters of monitoring (monthly maps for the discharge season are not required).
- Historical summary data tables for all monitored constituents.

- Concentration vs. time graphs for electrical conductivity, total dissolved solids, total coliform bacteria, and nitrate nitrogen. Each graph shall represent the results for a single constituent, and multiple wells may be plotted on a single graph.
- Definition of site-specific background concentration for each of the constituents listed above.
- A narrative analysis of spatial and temporal trends for each of the constituents listed above with respect to established background concentrations.
- An evaluation of monitoring data from background and compliance monitoring wells in an appropriate data analysis method as described in Title 27, Section 20415(e)(7-9). If any water quality protection standards have been exceeded, a specific plan for source control and a corrective action program and time schedule to assure compliance with the Discharge Specifications and Groundwater Limitations of this Order

4. If the Discharger requests a relaxation of the discharge pH limitation (Discharge Specification B.10), the Discharger shall submit a technical report, which demonstrates whether it complies with Discharge Specification B.10. The report shall summarize and interpret soils and wastewater monitoring data and demonstrate that the effect of the discharge on soil pH has not exceeded and will not exceed the buffering capacity of the soil profile. Following staff acceptance of the report, this Provision will be considered satisfied.

   By 1 February of each year following the satisfaction of this Provision, the Discharger shall provide an annual soil monitoring report that includes an appropriate analysis based on discharge constituents, soil pH and buffer pH (e.g. lime requirement) capacities within the Designated Disposal Areas. The report shall demonstrate that the (1) the resulting effect of the discharge of soil pH will not exceed the buffering capacity of the of the soil profile, and (2) it does not cause or contribute to cause soluble metals (e.g. iron and manganese) to leach into and degrade groundwater. All soil monitoring reports submitted pursuant to this Provision must be prepared by a registered professional (e.g. civil engineer, certified soil scientist, agricultural engineer) with experience in land treatment of industrial processing wastewater.

5. The Discharger shall maintain a copy of a current Operation and Maintenance Plan (O&M Plan) shall be kept at the facility for the reference by operating personnel and they shall be familiar with its contents. The O&M Plan shall discuss all aspects of managing the discharge operation to comply with the terms and conditions of this order and how to make field adjustments as necessary to preclude nuisance conditions. The O&M Plan shall also include the current cropping plan for each processing season.

6. In the event that additional processors intend to discharge their industrial process wastewater to the Designated Disposal Area, a report must be submitted to the Board detailing the waste characterization, projected flow, operating season, chemicals used during the process, pre-treatment processes for the wastewater, salinity source control measures and a thorough description of the process. The discharge of the wastewater from additional operations will not be permitted until approval from the Executive Officer is issued.

7. The Discharger is ultimately responsible for the effectiveness of its treatment and control measures in assuring compliance with groundwater limitations, and liable for remediation of any impact on groundwater not authorized herein. Failure to properly operate and maintain best practicable treatment and control, or failure of such measures to perform effectively, shall be grounds to rescind this Order, reclassify the waste and designated, and require compliance with Title 27 prescribed waste containment standards or initiate enforcement, as appropriate.

8. The Discharger shall use the best practicable cost-effective control technique(s) currently available to comply with discharge limits specified in this order.

9. The Discharger shall report promptly to the Board any material change or proposed change in character, location, or volume of discharge.

10. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

11. The Discharger shall submit to the Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Board in writing when it returns to compliance with the time schedule.

12. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

13. In the event of any change in control or ownership of land or waste discharge facilities described herein, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

14. Pursuant to Section 13267 of the California Water Code, the Discharger may be required to submit technical reports as directed by the Regional Board.

15. The Board will review this Order periodically and will revise requirements when necessary.

I, GARY M. CARLTON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 19 October 2001.

for Thomas R Pinkos
GARY M. CARLTON, Executive Officer

10/19/01

Thomas R. Pinkos
Assistant Executive Officer

Appendix B
Revised Monitoring and Reporting Program
(No. 5-01-250 REV 2)

Linda S. Adams
Secretary for Environmental Protection

California Regional Water Quality Control Board
Central Valley Region
Karl E. Longley, ScD, P.E., Chair

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Arnold Schwarzenegger
Governor

26 October 2009

Mr. Ed Hulbert, General Manager
Colusa Industrial Properties
50 Sunrise Boulevard
Colusa, CA 95932

REVISED MONITORING AND REPORTING PROGRAM, COLUSA INDUSTRIAL PROPERTIES PROCESS WASTEWATER TREATMENT FACILITY, COLUSA COUNTY

Pursuant to your 26 March 2009 request, staff has prepared Revised Monitoring and Reporting Program (MRP) No. 5-01-250 (REV. 2) for the subject facility. A draft version of the revised MRP was transmitted on 6 August and we received your consultant's comments on 4 September 2009. We incorporated the requested revisions, and a copy of the final Revised MRP is enclosed for your use.

If you have any questions, please contact me at (916) 464-4732 or mserra@waterboards.ca.gov.

Mary E Serra

MARY E. SERRA, P.E., Chief
Waste Discharge to Land Permitting Unit

Enclosure Revised Monitoring and Reporting Program No. 5-01-250 (REV. 2)

cc w/enc: Wendy Wyels, Central Valley Water Board, Rancho Cordova
Colusa County Environmental Health Department, Colusa
Peter Rude, CH2M Hill, Redding

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM NO. 5-01-250 (REV. 2)

FOR
COLUSA INDUSTRIAL PROPERTIES, INCORPORATED
COLUSA COUNTY

This Monitoring and Reporting Program (MRP) replaces and rescinds the previous Revised MRP No. 5-01-250, which was issued by the Executive Officer on 14 July 2004. The Discharger shall comply with this MRP, which prescribes requirements for monitoring industrial process wastewater, wastewater ponds, land application areas, process water supply and groundwater. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

Section 13267 of the California Water Code states, in part:

"In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

Section 13268 of the California Water Code states, in part:

"(a) Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, or failing or refusing to furnish a statement of compliance as required by subdivision (b) of Section 13399.2, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in accordance with subdivision (b).

(b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars ($1 000) for each day in which the violation occurs."

The Discharger owns and operates the facility that is subject to the WDRs cited herein, the reports are necessary to ensure that Colusa Industrial Properties, Inc. complies with the WDRs. Pursuant to Section 13267 of the California Water Code, the Discharger shall implement this MRP and shall submit the monitoring reports described herein.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The user is trained in proper use and maintenance of the instruments;
2. The instruments are field-calibrated prior to monitoring events at the frequency recommended by the manufacturer;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

GENERAL POND MONITORING

The domestic wastewater process wastewater ponds shall be monitored as follows. Samples shall be collected from an established sampling station located in an area that will provide a sample representative of the water in each pond. Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen [1]	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Berm condition	--	Observation	Monthly	Monthly

1 Samples shall be collected opposite the inlet at a depth of one foot from each pond in use between 0700 and 0900 hours.

DOMESTIC WASTEWATER POND MONITORING

The domestic wastewater pond shall be monitored in accordance with the following:

Constituent	Units	Sample Type	Sampling Frequency	Reporting Frequency
Influent Flow	gpd	Continuous	Daily	Monthly
Sludge Depth	inches	Measurement	Annually	Annually

PROCESS WASTEWATER MONITORING

The Discharger shall monitor process wastewater in accordance with the following. Grab samples shall be obtained from each active processing facility and from the process wastewater storage pond near the outlet to the Designated Disposal Area. Process wastewater monitoring shall only be performed during periods when process wastewater is generated or stored in the pond. If the pond is dry and/or no wastewater was generated, the monitoring report shall so note. Process wastewater monitoring shall include, at a minimum, the following:

Constituent/Parameter	Units	Sample Type	Sampling Frequency by Waste Type: High Strength [2]	Low Strength [3]	Reporting Frequency
pH	pH units	Grab	Weekly	Monthly [4]	Monthly
Electrical conductivity	umhos/cm	Grab	Weekly	Monthly [4]	Monthly
BOD_5 [1]	mg/L	Grab	Weekly	Monthly [4]	Monthly
Fixed dissolved solids	mg/L	Grab	Weekly	Monthly [4]	Monthly
Total l nitrogen	mg/L	Grab	Weekly	Monthly [4]	Monthly
Sodium	mg/L	Grab	Weekly	Monthly [4]	Monthly
Chloride	mg/L	Grab	Weekly	Monthly [4]	Monthly

1 5-day, 20°C Biochemical Oxygen Demand
2 High strength waste is any waste that exhibits a BOD_5 greater than 300 mg/L or FDS greater than 700 mg/L or total nitrogen greater than 50 mg/L.
3 Low strength waste is any non-designated waste that does not meet the above criteria for high strength waste.
4 At least two samples shall be analyzed per processing season.

PROCESS WASTEWATER FLOW MONITORING

The Discharger shall monitor daily process wastewater flows as follows:

Flow Source	Units	Type of Measurement	Monitoring Frequency	Reporting Frequency
Discharge to storage pond from each industrial facility)	gpd	Meter Observation	Daily [1]	Monthly
Discharge from storage pond to land application areas	gpd	Meter Observation	Daily [2]	Monthly
Daily subtotal to each irrigation field or check	gpd and inches	Calculation	Daily [2]	Monthly

1 Report as total daily flow from each flow source to the pond.
2 Calculated based on total daily flows, flow rates, checks in use, and length of set time for each check

DESIGNATED DISPOSAL AREA MONITORING

A. Daily Inspections

The Discharger shall inspect the land application areas at least **once daily** prior to and during irrigation events, and observations from those inspections shall be documented for inclusion in the monthly monitoring reports. The following items shall be documented for each check or field to be irrigated on that day:

1. Evidence of erosion;
2. Berm condition;
3. Condition of each standpipe and flow control valve;
4. Proper use of valves;
5. Soil saturation;
6. Ponding;
7. Potential runoff to off-site areas;
8. Potential and actual discharge to surface water;
9. Accumulation of organic solids at soil surface;
10. Soil clogging;
11. Odors that have the potential to be objectionable at or beyond the property boundary; and
12. Insects.

Temperature; wind direction and relative strength; and other relevant field conditions shall be also be observed and recorded. The notations shall also document any corrective actions taken based on observations made. A copy of entries made in the log during each month shall be submitted as part of the Monthly Monitoring Report.

B. Routine Monitoring

The Discharger shall perform the following routine monitoring and loading calculations and shall present the data in the Monthly and Annual Reports.

Parameter	Units	Sample Type	Sampling Frequency	Reporting Frequency
Precipitation	inches	Rain Gauge	Daily	Monthly
Checks receiving wastewater [1]	--	Observation	Daily	Monthly
Hydraulic loading rate	inches/acre	Calculated [2]	Daily	Monthly
BOD_5 loading rate	lb/acre	Calculated [2,3]	Daily	Monthly
Total nitrogen loading rate	lb/acre	Calculated [2,4]	Daily	Monthly

Parameter	Units	Sample Type	Sampling Frequency	Reporting Frequency
Fertilizer loading rates	lb/acre	Calculated [2,5]	Monthly	Monthly

1 Designate identification numbers for discrete checks within each disposal site or area.

2 Rate shall be calculated for each discrete check.

3 BOD_5 shall be calculated using the applied volume of wastewater, actual application area, and the average of the three most recent results of effluent BOD_5.

4 Total nitrogen loading rates shall be calculated using the applied volume of wastewater, actual application area, and the average of the three most recent results of effluent total nitrogen.

5 Loading rates for fertilizer constituents (i.e. nitrogen and phosphorous) shall be calculated using the actual load and the application area.

GROUNDWATER MONITORING

The Discharger shall monitor groundwater in accordance with the following schedule.

	Sampling and Reporting Frequency	
Monitoring Well ID[1]	Low Discharge Years[2]	High Discharge Years[3]
MW-1	Annually[4]	Semiannually
MW-3	Semiannually[5]	Semiannually
MW-4	Semiannually	Semiannually
MW-5	Semiannually	Semiannually
MW-6	Semiannually	Semiannually
MW-7	Annually	Semiannually
MW-8	Annually	Semiannually
MW-9	Semiannually	Semiannually
MW-10	Annually	Semiannually

1 Monitoring well locations are shown on the attached Facility Plan.

2 A low discharge year is defined as a calendar year during which the tomato cannery does not operate.

3 A high discharge year is defined as a calendar year during which the tomato cannery operates.

4 Annual monitoring shall be conducted during the 4th quarter.

5 Semiannual monitoring shall be conducted in the 2nd and 4th quarters.

Prior to construction of any new groundwater monitoring wells, the Discharger shall submit a *Monitoring Well Installation Workplan* for review and approval.

Prior to well purging, groundwater elevations shall be measured. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. The monitoring wells shall be purged of at least three well volumes or until temperature, pH, and electrical conductivity have stabilized. Samples shall be collected and analyzed using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent/Parameter	Units	Sample Type
Depth to groundwater	0.01 feet	Measurement
Groundwater elevation [1]	0.01 feet	Calculated
Gradient magnitude	feet/feet	Calculated
Gradient direction	degrees	Calculated
pH	pH Units	Grab
Electrical conductivity	umhos/cm	Grab
Total dissolved solids	mg/L	Grab
Fixed dissolved solids	mg/L	Grab
Ammonia nitrogen	mg/L	Grab
Nitrate nitrogen	mg/L	Grab
Iron	mg/L	Grab
Manganese	mg/L	Grab
Chloride	mg/L	Grab
Standard minerals [2]	mg/L	Grab

1 Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed elevation reference point on the well casing.

2 Standard Minerals shall include at least the following: barium, calcium, magnesium, potassium, sodium, sulfate, total alkalinity (including alkalinity series) and total hardness as $CaCO_3$.

WATER SUPPLY MONITORING

The Discharger shall monitor the process water supply and shall report the following minimum monitoring data for each water supply well:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Volume pumped to distribution system	MG	--	--	Annually
Total dissolved solids	mg/L	Grab	Annually	Annually

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Electrical conductivity	umhos/cm	Grab	Annually	Annually
Nitrate nitrogen	mg/L	Grab	Annually	Annually
Standard minerals [1]	mg/L	Grab	Annually	Annually
Metals [2]	ug/L	Grab	Annually	Annually

1 Standard Minerals shall include, at a minimum, the following elements/compounds: boron, bromide, calcium, chloride, fluoride, magnesium, phosphate, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness as $CaCO_3$.

2 At a minimum, the following metals shall be included: arsenic, copper, lead, iron, manganese, nickel and zinc. Analytical methods shall be selected to provide reporting limits below the applicable water quality limit for each constituent.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., influent, effluent, groundwater) and the reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report. The results of all monitoring performed by the industrial dischargers, or other parties, which are reported to the Discharger, shall be included in the next regularly scheduled monitoring report.

A. Monthly Monitoring Reports

Monthly Monitoring Reports for shall be submitted to the Central Valley Water Board by the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). **Each report shall bear the certification and signature of the Discharger's authorized representative.** Monthly Monitoring Reports shall be submitted regardless of whether there is any process wastewater generated. At a minimum, the monthly monitoring reports shall include:

1. Results of pond, domestic wastewater, process wastewater, process wastewater flow, and designated disposal area monitoring. Data shall be presented in tabular format.

2. Daily precipitation data in tabular form accompanied by starting and ending dates of irrigation for each field or check.

3. Daily pre-application inspection reports

4. Calibration log(s) verifying calibration of any field monitoring instruments (e.g., DO, pH, and EC meters) used to obtain data

5. Daily discharge volumes and acres irrigated shall be tabulated, and the report shall include a discussion of the discharge volumes and irrigation practices used (method of application, application period/duration, drying times, etc.) for each check or group of checks utilized during the month. Hydraulic loading rates (inches/acre/month) shall be calculated.

6. Maximum daily BOD_5 loading rates (lbs/acre/day) shall be calculated for each irrigation check using the total volume applied on the day of application, estimated application area, and a running average of the three most recent results of BOD_5 for the applicable source water, which also shall be reported along with supporting calculations. Average BOD_5 loading rates shall be calculated using the total volume applied on the day of application, the total application period (i.e.: day of application and drying time), estimated application area on the day of application, and a running average of the three most recent results of BOD_5 for the applicable source water.

7. Total nitrogen loading rates (lbs/acre/month) shall be calculated for each irrigation check on monthly basis using the daily applied volume of wastewater, estimated daily application area, and the most recent monitoring results, which shall also be reported along with supporting calculations.

8. Nitrogen loading rates for other sources (i.e., fertilizers) shall be calculated for each irrigation check on a monthly basis using the daily applied load and the estimated daily application area.

9. Cumulative nitrogen loading rates for each irrigation check for the calendar year to date shall be calculated as a running total of monthly loadings to date from all sources.

10. A comparison of monitoring data to the discharge specifications and effluent limitations, disclosure of any violations of the WDRs, and an explanation of any violation of those requirements. Copies of laboratory analytical report(s).

B. Semiannual Monitoring Reports

Semiannual groundwater monitoring reports shall be submitted to the Central Valley Water Board by the 1st **day of the second month** after sampling (e.g. the first semiannual report is due July1st) each year.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1 all groundwater monitoring reports shall be prepared under the direct supervision of a registered professional engineer or geologist and signed by the registered professional.

At a minimum, the report shall contain:

1. Results of groundwater monitoring.

2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to

verify compliance with the WDRs, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged.

3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any.

4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable).

5. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements.

6. Summary data tables of historical and current water table elevations and analytical results.

7. A scaled map showing relevant structures and features of the facility, the land application area and irrigation check boundaries, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.

8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

An Annual Report shall be submitted to the Central Valley Water Board by **1 February** of each year. The Annual Report may also include the contents of the 4th Quarter Monitoring Report as described above. The Annual Report shall present a summary of all monitoring data obtained during the previous calendar year and shall include the following:

1. Type of crop and planting and harvest dates for each field, including those that did not receive wastewater during the previous year.

2. Tabular and graphical summaries of historical monthly total loading rates for water (hydraulic loading in gallons and inches), BOD, total nitrogen, and total dissolved solids.

3. A mass balance relative to constituents of concern and hydraulic loading along with supporting data and calculations.

4. An evaluation of the groundwater quality beneath the wastewater ponds and land application areas.

5. A comprehensive evaluation of the effectiveness of the past year's wastewater application operation based on current and historical data including evidence of waste

constituent migration, the effectiveness of land treatment, potential for groundwater degradation, and recommendations for operational modifications to reduce waste constituent migration and prevent nuisance conditions.

6. A narrative description of solids disposal practices, including the name and contact information for each disposal facility and the quantity disposed.

7. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

8. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions, General Reporting Requirements Section B.3.

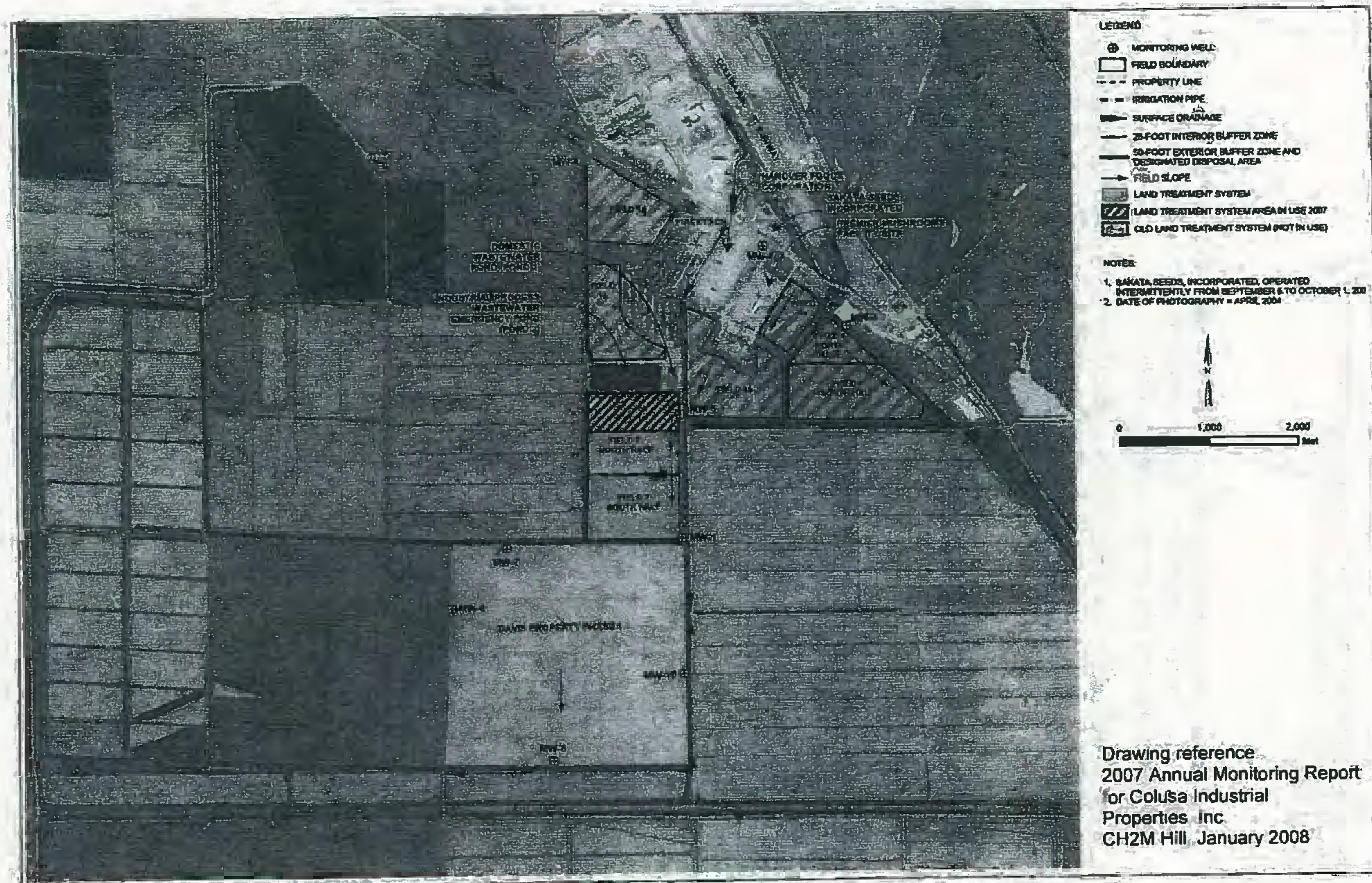
The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: ______________________
PAMELA C. CREEDON, Executive Officer

October 26, 2009
(Date)

ALO:10/20/2009

FACILITY SITE PLAN
REVISED MRP NO. 5-01-250 (REV. 2)



Appendix C
California Regional Water Quality Control Board
Site Visit Memorandum

California Regional Water Quality Control Board
Central Valley Region
Katherine Hart, Chair

Matthew Rodriquez
Secretary for Environmental Protection

11020 Sun Center Drive, #200 Rancho Cordova, California 95670-6114
(916) 464-3291 • FAX (916) 464-4645
http://www.waterboards.ca.gov/centralvalley

Edmund G. Brown Jr.
Governor

12 August 2011

Ed Hulbert
Colusa Industrial Properties, Inc.
P.O. Box 731
Colusa, CA 95932

REPORT OF RECENT INSPECTION, COLUSA INDUSTRIAL PROPERTIES, COLUSA COUNTY

Colusa Industrial Properties is regulated by Waste Discharge Requirements (WDRs) Order 5-01-250 for average dry weather discharge flows of up to 690,000 gallons per day (gpd) May through October and 27,000 gpd November through June. Wastewater flows from the facility include both domestic and industrial. Domestic wastewater flows are discharged into lined pond, and industrial wastewater flows from agricultural food processors are discharged directly to land application areas.

On 3 August 2011, I conducted an inspection of Colusa Industrial Properties wastewater systems and was accompanied by Ed Hulbert. A site inspection photograph log is enclosed with this letter.

The following summarizes the observations made and information obtained during the inspection.

- Two water supply wells connected to a water treatment facility is used to supply water to Colusa Industrial Properties.
- Mr. Hulbert indicated that the only active industrial discharge at the site is Sakata Seed America. At the time of the inspection, there were no industrial discharges to the land application areas. Hanover Foods, a tomato processor has not been in operation over the past seasons.
- Mr. Hulbert indicated that the seed processing facility would be operating sometime during middle of August through September. Wastewater generated from this operation is applied to approximately three acres of land that is planted with a rice crop.
- The freeboard in the domestic wastewater pond was approximately four feet.
- No odors noted around the domestic wastewater pond.

Inspection Summary
No violations were observed during the inspection. If you have any questions or comments about this inspection report, please contact me at (916) 464-4648

GUY CHILDS, P.G.
Engineering Geologist
Waste Discharge to Land Compliance Unit

Enclosure: Inspection photographs

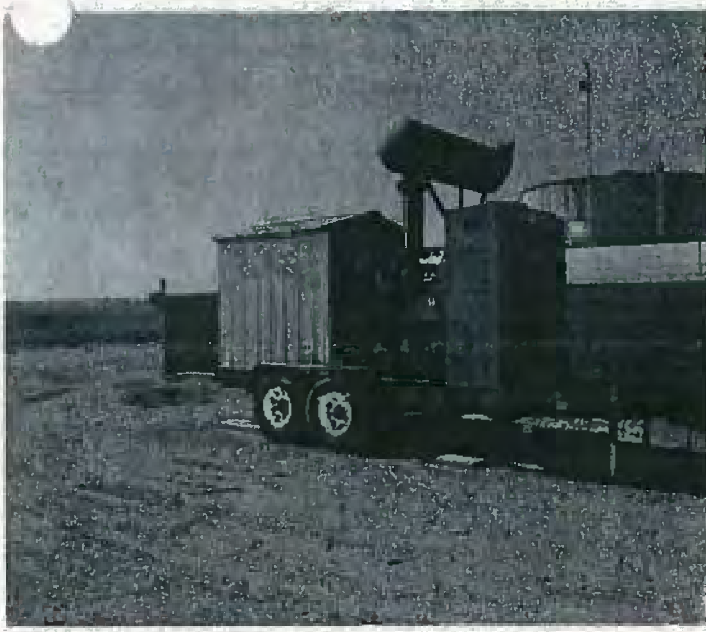
cc: Colusa County Department of Environmental Health, Colusa

CWIQS Inspection Report No. 528417

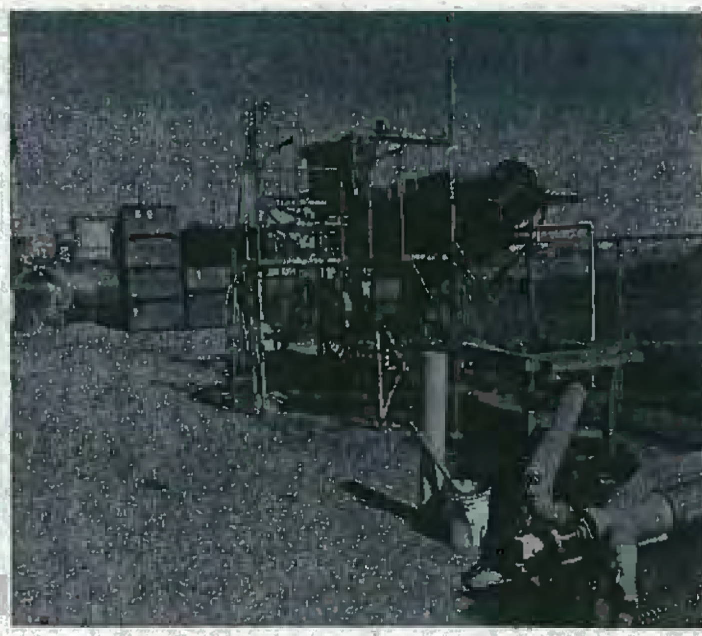
gjc: 12 Aug-11

One of two water supply wells at the site

Water Treatment Facility



Backup portable generator for the Water Treatment Plant.



Seed Processing Equipment associated with Sakata Seed America.

Hanover Foods tomato processing facility that has been inactive for the last four processing seasons.

Looking west at the domestic wastewater pond. Freeboard approximately 4 feet.

Looking south at a portion of the Davis Property that is used to grow rice. Because of the low industrial discharge volumes, wastewater is not applied to this field.

Appendix D
Colusa Industrial Properties, Inc., Water Supply Permit

State Water Resources Control Board

Linda S. Adams
Secretary for Environmental Protection

Division of Water Quality
1001 I Street o Sacramento, California 95814 o (916) 341-5536
Mailing Address: P.O. Box 1977 o Sacramento, California o 95812-1977
FAX (916) 341-5543 o Internet Address: http://www.waterboards.ca.gov
Email Address:stormwater@waterboards.ca.gov

Arnold Schwarzenegger
Governor

Approved Date: 11/13/2006

NOV 27 2007

Ed Hulbert
CIP
50 Sunrise Blvd
Colusa, CA 95932

RECEIPT OF YOUR NOTICE OF INTENT (NOI)

The State Water Resources Control Board (State Water Board) has received and processed your NOI to comply with the terms of the General Permit for Storm Water Discharges Associated with Construction Activity. Accordingly, you are required to comply with the permit requirements.

The Waste Discharger Identification (WDID) number is: **5S06C344448** .
Please use this number in any future communications regarding this permit.

SITE DESCRIPTION

OWNER:	CIP
DEVELOPER:	Cinecon Group
SITE INFORMATION:	Premier Mushrooms
SITE LOCATION:	2847 Niagara Ave Colusa, CA 95932
COUNTY:	Colusa
TOTAL DISTRUBED ACRES:	6.0
START DATE:	10/23/2006
COMPLETION DATE:	06/01/2007

When construction is complete or ownership is transferred, dischargers are required to submit a Notice of Termination (NOT) to the local Regional Water Board. All State and local requirements must be met in accordance with Special Provision No. 7 of the General Permit. If you do not submit a NOT when construction activity is completed you will continue and are responsible to pay the annual fee invoiced each October.

If you have any questions regarding permit requirements, please contact your Regional Water Board at**(916) 464-3291**. Please visit the storm water web page at www.waterboards.ca.gov/stormwtr/index.html to obtain an NOT and other storm water related information and forms.

Sincerely,

Storm Water Section
Division of Water Quality

EH

State of California

STATE WATER RESOURCES CONTROL BOARD

2002-2003

ANNUAL REPORT

FOR

STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITIES

REPORTING PERIOD JULY 1, 2002 THROUGH JUNE 30, 2003

An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. *This document must be certified and signed, under penalty of perjury, by the appropriate official of your company.* Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. Retain a copy of the completed Annual Report for your records.

If any information contained in Items A, B, and C below differs from the information provided in your Notice of Intent (NOI), encircle or highlight the information that differs from your NOI.

If you have any questions, please contact your Regional Board Storm Water Program Contact. The address of the Regional Board (where the Annual Report must be filed) along with the name and telephone number of the contact is indicated on the last page of this Annual Report. To find your Regional Board information, match the first digit of your WDID number with the corresponding number that appears in parenthesis on the second line of each Regional Board office.

GENERAL INFORMATION:

A. FACILITY WDID NO: 5S06S017080

B. FACILITY OPERATOR:

Name: CALIFORNIA TOMATO PRODUCTS

Contact Person: FRED TYLER

Mailing Address: P O BOX 1341

Title:

City: COLUSA

State: CA Zip: 95932 Phone: 5304582244

C. FACILITY INFORMATION:

Facility Name: CALIFORNIA TOMATO PRODUCTS

Mailing Address: 2855 NIAGARA AVE

City: COLUSA

State: CA Zip: 95932 Phone: 5304582244

Contact Person: FRED TYLER

Standard Industrial Classification (SIC) Code(s): 2033

Annual Report Prepared by Frog Environmental
Call Toll-Free1-877-FROG-ENV

STATE OF CALIFORNIA

DEPARTMENT OF HEALTH SERVICES

Certificate of Issuance

OF A

WATER SUPPLY PERMIT

TO

Colusa Industrial Properties, Inc.

This is to certify that a water supply permit (**Permit # 01-21-03P06001**) has been issued to Colusa Industrial Properties, Inc., on **September 19, 2003**, to supply water for domestic purposes to Colusa Industrial Properties. The permit was issued by the Department of Health Services, pursuant to the provisions of Division 104, Part 12, Chapter 4, Article 7, of the California Health and Safety Code. The permit is subject to the requirements of Title 22, California Code of Regulations, and to the conditions provided in the water supply permit.

A copy of the water supply permit is on file with Colusa Industrial Properties Water System or may be obtained by contacting the Valley District Office of the Department of Health Services, Drinking Water Field Operations Branch, 415 Knollcrest Drive, Suite 110, Redding, CA 96002.

Gunther Sturm, P.E., Valley District Engineer

JAKE

STATE OF CALIFORNIA

DOMESTIC WATER SUPPLY PERMIT

Issued To

Colusa Industrial Properties, Inc.

By The

California Department of Health Services,

Division of Drinking Water & Environmental Management Branch

PERMIT NUMBER 01-21-03(P)06001 **DATE:** September 19, 2003

WHEREAS:

1. Ed Hulbert, President, on behalf of Colusa Industrial Properties Inc., submitted a permit amendment application dated *June 2, 2003,* to the California Department of Health Services to include a second well, Well #2, in the system. The application was submitted in accordance with Section 116525 of the California Health and Safety Code.

2. The public water system is known as the Colusa Industrial Properties Water System and is located at 50 Sunrise Blvd., Colusa, CA 95932.

3. The legal owner of the Colusa Industrial Properties Water System is Colusa Industrial Properties, Inc. Therefore, Colusa Industrial Properties, Inc., is responsible for compliance with all statutory and regulatory drinking water requirements and the conditions set forth in this permit.

4. The public water system for which the permit amendment application has been submitted is as described briefly below (a more detailed description of the permitted system is described in the attached Permit Report):

   The area served is a 450-acre industrial park and an adjacent golf course. The sources of supply are two wells. The only treatment the system provides is chlorination. Storage consists of a 5,000-gallon pressure tank and a 45,000-gallon fire-water storage tank.

7/3/11

5. The service area of the Colusa Industrial Properties Water System is indicated on the Site Plan which can be found in Appendix A of the Permit Report.

And WHEREAS:

1. Colusa Industrial Properties, Inc., has submitted all of the required information relating to the proposed operation of the Colusa Industrial Properties Water System.
2. The California Department of Health Services has evaluated all the information submitted by Colusa Industrial Properties, Inc., and has conducted a physical investigation of the existing Colusa Industrial Properties Water System facilities.
3. The California Department of Health Services has the authority to issue domestic water supply permits pursuant to Health and Safety Code Section 116540.

THEREFORE: The California Department of Health Services has determined the following:

1. The Colusa Industrial Properties Water System meets the criteria for and is hereby classified as a non-transient non-community water system.
2. The applicant has demonstrated adequate technical, managerial, and financial capacity to operate reliably the proposed water system.
4. Provided the following conditions are complied with, the Colusa Industrial Properties Water System should be capable of providing water to consumers that is pure, wholesome, and potable and in compliance with statutory and regulatory drinking water requirements at all times.

COLUSA INDUSTRIAL PROPERTIES, INC., IS HEREBY ISSUED THIS DOMESTIC WATER SUPPLY PERMIT TO OPERATE THE COLUSA INDUSTRIAL PROPERTIES WATER SYSTEM.

Colusa Industrial Properties, Inc., shall comply with the following permit conditions:

1. No source of water or treatment facilities other than those outlined in the permit report shall be used by this system without prior permit approval from the Department of Health Services.
2. Colusa Industrial Properties, Inc., a California Corporation, must maintain "good standing" with the Secretary of State and provide verification to the Department of Health Services annually that the Corporation is duly registered with the Secretary of State.

3. The system must perform quarterly raw water bacteriological sampling of both sources, Well #1 and Well #2.

These conditions are being imposed in order to assure a safe and reliable supply of water to the people and businesses served by the system.

This permit supersedes all previous domestic water supply permits issued for this public water system and shall remain in effect unless and until it is amended, revised, reissued, or declared to be null and void by the California Department of Health Services. This permit is non-transferable. Should the Colusa Industrial Properties Water System undergo a change of ownership, the new owner must apply for and receive a new domestic water supply permit.

Any change in the source of water for the water system, any modification of the method of treatment as described in the Permit Report, or any addition of distribution system storage reservoirs shall not be made unless an application for such change is submitted to the California Department of Health Services.

This permit shall be effective as of the date shown below.

FOR THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES

Gunther L. Sturm

Gunther L. Sturm, P.E.
Valley District Engineer
Drinking Water Field
Operations Branch

Dated: September 19, 2003

RRL: 9/2003

Appendix E
Historical Groundwater Data

TABLE D-1

Historical Monitoring Well Data

Wastewater Discharge Requirement Techical Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)
MW-1	2/7/2006	42.54	170	1220	100	60	0.45	7.9	1260		
MW-1	5/9/2006	42.57	170	1140	150	72	0.45	7.9	1230		
MW-1	8/15/2006	39.86	170	1064	150	186	0.45	8	1330		
MW-1	11/7/2006	38.22	160	1040	157	NR	0.81	7.7	1240		
MW-1	2/13/2007	41.80	169**	1190**	90**	50**	ND**	7.9**	1290**		
MW-1	5/31/2007	41.14	165	1160	150	70	ND	8.8	1220		
MW-1	8/21/2007	41.34	155	1140	ND	150	ND	8.8	1240		
MW-1	11/20/2007	37.03	153	1140	50	130	ND	7.8	1210		
MW-1	2/14/2008	43.15	163	1100	80	40	ND	8.19	1230		
MW-1	5/13/2008	39.27	147	1000	430	180	0.2	9.09	1170	1945	
MW-1	8/26/2008	41.15	151	960	90	140	ND	8.95	1200	1922	
MW-1	11/13/2008	38.30	158	1080	2800	730	ND	8.02	1180	1900	
MW-1	2/19/2009	41.69	200	1380	2040	50	ND	8.01	1510	2.42	
MW-1	5/21/2009	39.63	170	1090	320	40	ND	7.93	1240	1951	
MW-1	8/27/2009	41.03	158	1110	300	330	ND	8.07	1230	1900	
MW-1	11/18/2010	39.18	158	850	80	70	ND	8.12	1090	1900	
MW-1	11/16/2011	38.11	151	880	ND	50	ND	7.43	1110	1900	ND
MW-1	10/31/2012	37.55	152	1050	ND	80	ND	9.43	1290	1840	
MW-3	2/7/2006	42.84	130	1080	100	20	3.3	8.2	1110		
MW-3	5/9/2006	44.06	120	900	100	20	2.2	8.1	1040		
MW-3	8/15/2006	38.32	120	852	100	20	0.45	8.2	940		
MW-3	11/7/2006	38.39	120	930	100	NR	0.45	8	950		
MW-3	2/13/2007	40.62	240**	1850**	90**	150**	ND**	8.3**	2010**		
MW-3	5/31/2007	37.89	127	890	100	ND	2.4	9	940		
MW-3	8/21/2007	37.03	124	890	ND	ND	3	8.3	970		
MW-3	11/20/2007	37.15	136	860	ND	ND	0.4	8	910		
MW-3	2/14/2008	42.31	145	660	70	ND	2.5	8.5	800		

TABLE D-1

Historical Monitoring Well Data

Wastewater Discharge Requirement Techincal Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)
MW-3	5/13/2008	38.17	138	720	70	10	2.3	9.28	860	1473	
MW-3	8/26/2008	36.45	218	840	80	ND	1.8	7.12	1010	1718	
MW-3	11/13/2008	36.23	195	910	80	ND	1.7	8	990	1688	
MW-3	2/19/2009	39.19	160	980	50	ND	1.3	8.09	1120	1781	
MW-3	5/21/2009	36.88	310	1090	170	ND	1.7	8.06	1190	1977	
MW-3	8/27/2009	36.34	273	1110	ND	ND	1.7	8.08	1190	1912	
MW-3	5/6/2010	41.19	420	1380	ND	ND	2.7	8.13	1530	1840	
MW-3	11/18/2010	37.33	350	1250	ND	ND	2.1	8.14	1400	2290	0.3
MW-3	5/12/2011	40.31	440	1540	ND	ND	14.6	7.85	1820	2970	0.3
MW-3	11/16/2011	37.49	340	1340	ND	ND	10.7	7.47	1520	2550	ND
MW-3	5/31/2012	37.34	330	1360	ND	ND	8.7	7.58	1550	2610	
MW-3	10/31/2012	36.78	210	1320	70	ND	2.3	9.67	1480	2340	
MW-4	2/7/2006	42.65	270	1680	100	20	1.8	7.6	1860		
MW-4	5/9/2006	44.55	250	1710	1020	25	1.6	7.6	1890		
MW-4	8/15/2006	38.94	300	2080	100	34	0.45	7.6	2160		
MW-4	11/7/2006	38.54	300	1980	100	NR	0.17	7.4	2060		
MW-4	2/13/2007	40.53	127**	940**	60**	ND**	4.9**	7.6**	1020**		
MW-4	5/31/2007	33.66	320	2010	130	ND	8.2	9.5	2150		
MW-4	8/21/2007	37.12	280	1850	60	ND	8.8	8.5	1980		
MW-4	11/20/2007	36.80	360	1940	60	ND	7.5	7.6	2080		
MW-4	2/14/2008	41.84	300	1600	140	ND	2.7	7.74	1760		
MW-4	5/13/2008	33.51	560	1900	520	20	2.2	9.37	2110	3.32	
MW-4	8/26/2008	34.87	340	2010	130	ND	2.1	8.57	2310	3.69	
MW-4	11/13/2008	31.01	330	1970	150	ND	2.4	7.56	2160	3.18	
MW-4	2/19/2009	37.85	330	2110	150	ND	2.8	7.5	2300	3.3	
MW-4 (FD)	2/19/2009	37.85	330	2160	170	10	2.9	NS	2350		
MW-4	5/21/2009	34.40	380	2430	270	ND	2.7	7.46	2650	3.71	

TABLE D-1
Historical Monitoring Well Data
Wastewater Discharge Requirement Techical Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)
MW-4	8/27/2009	34.47	390	2430	80	ND	2.3	7.54	2680	3.77	
MW-4	5/6/2010	38.29	360	2230	60	ND	3.7	7.73	2450	3750	
MW-4	11/18/2010	36.88	410	2450	130	ND	2.6	7.64	2790	3990	0.6
MW-4	5/12/2011	36.98	400	2410	50	ND	3.4	7.44	2710	3990	ND
MW-4	11/16/2011	36.86	420	2470	ND	ND	3.5	6.99	2750	4080	ND
MW-4	5/31/2012	32.81	410	2490	110	ND	3.8	7.45	2720	4030	
MW-4	10/31/2012	34.98	420	2420	ND	ND	3.9	8.57	2810	4130	
MW-5	2/7/2006	42.35	110	1200	100	53	16	7.8	1300		
MW-5	5/9/2006	42.86	120	1160	100	360	19	7.8	1470		
MW-5	8/15/2006	38.11	120	988	100	660	ND	7.7	1410		
MW-5	11/7/2006	38.54	120	1110	106	NR	0.2	7.5	1440		
MW-5	2/13/2007	41.29	280**	1810**	90**	ND**	1.72**	7.7**	1960**		
MW-5	5/31/2007	38.59	120	1330	120	500	18.43	8.6	1510		
MW-5	8/21/2007	40.17	128	1370	50	480	14.21	8.6	1580		
MW-5	11/20/2007	37.03	120	1310	60	620	14.93	7.6	1480		
MW-5	2/14/2008	43.07	110	1110	70	100	20.3	8.01	1470		
MW-5	5/13/2008	39.15	220	1090	120	310	19.2	8.93	1390	2.46	
MW-5	8/26/2008	39.98	130	1180	100	260	15	8.77	1500	2.54	
MW-5	11/13/2008	37.31	140	1270	110	610	15	7.68	1500	2.34	
MW-5	2/19/2009	40.31	130	1210	90	130	18.3	7.73	1480	2.27	
MW-5	5/21/2009	38.65	130	1230	300	60	15.3	7.69	1530	2.35	
MW-5	8/27/2009	39.93	140	1290	60	420	13	7.76	1570	2.41	
MW-5	5/6/2010	41.17	130	1060	50	250	23.3	7.78	1490	1681	
MW-5	11/18/2010	39.15	130	1070	50	730	12.7	7.89	1470	2240	ND
MW-5	5/12/2011	40.17	130	1150	ND	395	29	7.58	1550	2370	ND
MW-5	11/16/2011	37.95	130	970	50	890	12	7.22	1320	2190	ND
MW-5	5/31/2012	40.39	130	1150	50	230	12.2	7.42	1400	2290	

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Historical Monitoring Well Data

Wastewater Discharge Requirement Techincal Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)
MW-5	10/31/2012	37.34	130	1240	ND	840	7.7	9.19	1430	2230	
MW-6	2/7/2006	42.08	24	320	1570	420	0.45	7.6	390		
MW-6	5/9/2006	44.66	22	270	3340	390	0.45	7.7	370		
MW-6	8/15/2006	38.78	48	532	1190	400	0.45	7.9	650		
MW-6	11/7/2006	38.63	51	1410	354	NR	0.63	7.7	640		
MW-6	2/13/2007	40.62	120**	1310**	90**	120**	102**	7.8**	1480**		
MW-6	5/31/2007	36.40	51	580	490	360	ND	8.9	620		
MW-6	8/21/2007	36.48	55	590	920	510	ND	7.9	680		
MW-6	11/20/2007	37.04	57	640	600	370	ND	7.7	700		
MW-6	2/14/2008	41.75	62	560	970	470	0.2	8.33	670		
MW-6	5/13/2008	36.98	62	610	2390	420	0.2	9.06	760	1255	
MW-6	8/26/2008	35.17	68	570	1900	670	ND	8.91	770	1217	
MW-6	11/13/2008	34.89	62	540	950	470	ND	7.8	650	1120	
MW-6	2/19/2009	38.56	45	390	1580	60	1.3	7.56	500	856	
MW-6	5/21/2009	35.98	53	550	770	70	ND	7.69	640	1037	
MW-6	8/27/2009	35.12	70	610	6670	1450	ND	7.8	720	1139	
MW-6	5/6/2010	40.78	76	640	530	150	0.3	7.81	850	1043	
MW-6	11/18/2010	37.00	90	600	440	870	ND	7.93	820	1370	0.2
MW-6	5/12/2011	39.34	97	860	170	57.1	0.5	7.7	1030	1610	ND
MW-6	11/16/2011	37.37	95	720	230	800	ND	7.26	880	1480	ND
MW-6	5/31/2012	36.05	108	770	150	30	0.8	7.45	900	1590	
MW-6	10/31/2012	36.05	109	860	ND	430	0.8	9.4	990	1600	
MW-7	2/7/2006	43.19	200	1160	100	98	0.45	7.4	1410		
MW-7	5/9/2006	42.16	210	1110	1530	210	0.45	7.4	1370		
MW-7 (FD)	8/15/2006	44.00	190	960	194	233	ND	7.4	1290		
MW-7	8/15/2006	44.00	190	976	217	215	0.45	7.3	1330		
MW-7	11/7/2006	40.92	210	1160	103	NR	0.45	7.3	1360		

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Historical Monitoring Well Data

Wastewater Discharge Requirement Techincal Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)
MW-7	2/13/2007	44.11	29**	350**	1690**	230**	2.6**	7.4**	400**		
MW-7	5/31/2007	44.31	280	1460	150	250	ND	8.7	1600		
MW-7	8/21/2007	44.41	215	1350	70	220	ND	8.2	1540		
MW-7	11/20/2007	42.58	210	1320	70	240	ND	7.4	1460		
MW-7	2/14/2008	43.22	180	1110	90	20	ND	7.72	1340		
MW-7	5/13/2008	43.76	180	1100	2360	230	0.2	9.19	1370	2.22	
MW-7	8/26/2008	44.09	200	990	120	260	ND	8.64	1300	1940	
MW-7	11/13/2008	43.18	190	1160	160	210	ND	7.36	1310	1937	
MW-7	2/19/2009	43.51	250	1260	100	110	ND	7.35	1540	2.3	
MW-7	5/21/2009	43.46	250	1230	110	250	ND	7.3	1470	2.28	
MW-7 (FD)	5/21/2009	43.46	260	1300	430	260	ND	NS	1540		
MW-7	8/27/2009	44.26	190	1130	70	250	ND	7.4	1340	2.09	
MW-7	11/18/2010	41.52	168	940	100	290	ND	7.61	1160	1850	ND
MW-7 (FD)	11/18/2010	41.52	169	880	60	270	0.1		1150	1850	ND
MW-7	11/16/2011	38.56	90	660	ND	340	ND	6.99	870	1430	ND
MW-7	10/31/2012	38.21	118	660	ND	390	ND	8.79	960	1360	
MW-8	2/7/2006	40.74	290	3600	ND	140	ND	7.5	3680		
MW-8 (FD)	2/7/2006	40.74	ND	ND	ND	ND	ND	ND	ND		
MW-8	5/9/2006	39.67	270	3740	640	140	0.45	7.5	4260		
MW-8	8/15/2006	41.81	260	3604	167	164	0.45	7.7	3900		
MW-8	11/7/2006	37.90	250	4120	141	NR	0.45	7.2	4500		
MW-8	2/13/2007	41.31	300**	1540**	110**	110**	ND**	7.4**	1720**		
MW-8	5/31/2007	41.82	300	3540	210	160	ND	8.5	3730		
MW-8	8/21/2007	41.82	240	3430	130	170	ND	8.6	3740		
MW-8	11/20/2007	37.68	180	3420	100	170	ND	7.3	3690		
MW-8	2/14/2008	41.77	170	3180	150	160	ND	7.84	3630		
MW-8	5/13/2008	40.51	180	3170	920	230	ND	8.89	3720	4.44	

TABLE D-1

Historical Monitoring Well Data

Wastewater Discharge Requirement Techincal Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)
MW-8	8/26/2008	42.07	330	2860	240	220	ND	8.62	3590	4.31	
MW-8	11/13/2008	41.12	260	3250	180	190	ND	7.38	3650	4.04	
MW-8	2/19/2009	41.87	260	3180	120	200	ND	7.43	3630	4.17	
MW-8	5/21/2009	41.39	240	3660	230	230	ND	7.37	4080	4.11	
MW-8	8/27/2009	41.82	210	3220	150	240	ND	7.42	3550	3.98	
MW-8	11/18/2010	38.92	240	1940	140	230	ND	7.59	2310	4510	ND
MW-8	11/16/2011	38.02	240	3240	70	290	ND	6.94	3790	4470	ND
MW-8	10/31/2012	37.51	230	2370	60	200	ND	8.88	2660	3340	
MW-9	2/7/2006	43.05	250	2680	100	32	0.45	7.9	2700		
MW-9	5/9/2006	41.21	240	2840	100	80	0.45	7.9	3020		
MW-9	8/15/2006	43.41	230	2804	100	34	0.45	7.9	2660		
MW-9	11/7/2006	39.98	230	2960	114	NR	0.45	7.7	2760		
MW-9 (FD)	11/7/2006	39.98	ND	ND	ND		ND	ND	ND		
MW-9	2/13/2007	43.20	270**	3230**	150**	110**	ND**	7.8**	3490**		
MW-9	5/31/2007	43.60	250	2930	130	20	ND	8.6	3040		
MW-9	8/21/2007	43.48	270	2970	60	ND	ND	8	3160		
MW-9	11/20/2007	41.41	250	2930	ND	20	ND	7.8	3050		
MW-9	2/14/2008	42.64	240	2740	80	20	ND	8.02	2940		
MW-9	5/13/2008	42.78	12	2730	110	20	ND	9.07	3000	4.44	
MW-9	8/26/2008	43.34	250	3100	140	20	ND	8.69	3490	4.46	
MW-9 (FD)	8/26/2008	43.34	ND	ND	ND	ND	ND		ND		
MW-9	11/13/2008	43.34	260	2970	130	10	ND	7.77	3240	4.24	
MW-9	2/19/2009	43.09	260	3250	130	20	ND	7.74	3540	4.6	
MW-9	5/21/2009	43.32	270	3310	230	20	ND	7.65	3520	4.59	
MW-9	8/27/2009	43.46	250	3190	90	20	ND	7.71	3450	4.47	
MW-9 (FD)	8/27/2009	43.46	250	3200	90	20	ND	NS	3430		
MW-9	5/6/2010	40.85	260	2940	80	30	ND	7.85	3280	4520	

TABLE D-1
Historical Monitoring Well Data
Wastewater Discharge Requirement Techical Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)
MW-9	11/18/2010	40.29	250	2880	90	30	ND	7.83	3260	4420	ND
MW-9	5/12/2011	43.21	240	2780	50	12.5	0.7	7.6	3150	4230	ND
MW-9	11/16/2011	38.50	200	2450	ND	20	ND	7.14	2720	3820	ND
MW-9	5/31/2012	43.39	160	2380	100	20	0.3	7.46	2630	3710	
MW-9	10/31/2012	38.29	170	1890	ND	20	ND	9.07	2100	3040	
MW-10	2/7/2006	42.76	190	1840	100	120	0.45	7.3	1840		
MW-10	5/9/2006	41.01	170	1740	ND	140	ND	7.4	1950		
MW-10 (FD)	5/9/2006	41.01	ND	ND	ND	ND	ND	ND	ND		
MW-10	8/15/2006	43.03	160	1295	100	117	0.45	7.4	1690		
MW-10	11/7/2006	38.30	170	1350	110	NR	0.45	7.2	1420		
MW-10	2/13/2007	43.05	230**	2930**	100**	20**	ND**	7.3**	3080**		
MW-10	5/31/2007	43.46	240	1860	170	160	ND	8.4	1910		
MW-10	8/21/2007	43.11	160	1690	60	150	ND	9	1770		
MW-10	11/20/2007	37.50	190	2020	80	230	ND	7.2	2100		
MW-10	2/14/2008	42.84	210	1900	110	250	ND	7.67	2120		
MW-10	5/13/2008	40.43	180	1630	140	250	0.2	8.74	1840	2.79	
MW-10	8/26/2008	41.93	200	1620	140	280	ND	8.67	1830	2.85	
MW-10	11/13/2008	40.31	210	1600	140	290	ND	7.41	1750	2.6	
MW-10 (FD)	11/13/2008	40.31	220	1590	150	280			1760		
MW-10	2/19/2009	43.06	290	2060	0.09	310	1	7.34	2300	3.08	
MW-10	5/21/2009	41.35	260	1920	340	260	ND	7.37	2020	2.89	
MW-10	8/27/2009	41.72	250	2060	70	320	ND	7.57	2150	2.98	
MW-10	11/18/2010	39.02	190	1560	80	280	ND	7.67	1860	2660	ND
MW-10	11/16/2011	38.10	200	1760	ND	380	ND	7.04	1950	2810	ND
MW-10	10/31/2012	37.91	170	1890	ND	300	ND	8.94	1950	2760	

TABLE D-1

Historical Monitoring Well Data

Wastewater Discharge Requirement Techincal Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Groundwater Elevation (feet msl)	Chloride (mg/L)	IDS (mg/L)	Iron (µg/L)	Manganese (µg/L)	Nitrate-Nitrogen[a] (mg/L)	pH	TDS (mg/L)	Conductivity (µmhos/cm)	Ammonia (mg/L)

[a] The California Department of Health Services has established a detection limit of 0.45 mg/L for reporting for nitrate-nitrogen.

Notes:
** = results potentially assigned to the incorrect location and not used for statistical or trend analyses
FD = field duplicate
msl = (above, or referenced to) mean sea level
ND = not detected
NR = no result because of laboratory equipment failure
No data indicates not sampled

TABLE D-2

Monitoring Well Standard Minerals Data

Wastewater Discharge Requirement Techincal Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Alkalinity (mg/L)	Barium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	EC (µmhos/cm)	Iron (µg/L)	Magnesium (mg/L)	Manganese (µg/L)	pH	Potassium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Total Hardness (mg/L)
MW-1	6/19/2008	510.0	NA	24.0	140.0	1940.0	50.0	29.0	70.0	8.9	1.0	332.0	220.0	1180.0	179.0
MW-1	6/18/2009	540.0	0.1	24.0	160.0	2010.0	ND	28.0	570.0	7.8	1.0	417.0	270.0	1250.0	175.0
MW-1	11/18/2010	520.0	0.1	25.0	158.0	1900.0	80.0	29.0	70.0	8.1	2.0	427.0	260.0	1090.0	182.0
MW-1	11/16/2011	520.0	0.1	23.0	151.0	1900.0	ND	27.0	50.0	7.4	1.0	425.0	240.0	1110.0	168.0
MW-1	10/31/2012	510.0	0.0	22.0	152.0	1840.0	ND	25.0	80.0	9.4	ND	484.0	240.0	1290.0	158.0
MW-3	6/19/2008	230.0	NA	14.0	216.0	1720.0	ND	15.0	ND	9.1	ND	303.0	200.0	1000.0	96.6
MW-3	6/18/2009	280.0	0.1	23.0	330.0	2130.0	ND	21.0	ND	8.0	ND	420.0	270.0	1200.0	144.0
MW-3	11/18/2010	380.0	0.1	28.0	350.0	2290.0	ND	26.0	ND	8.1	1.0	506.0	330.0	1400.0	177.0
MW-3	11/16/2011	450.0	0.1	30.0	340.0	2550.0	ND	29.0	ND	7.5	ND	534.0	340.0	1520.0	194.0
MW-3	10/31/2012	630.0	0.1	30.0	210.0	2340.0	70.0	29.0	ND	9.7	ND	617.0	310.0	1480.0	194.0
MW-4	6/19/2008	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	6/18/2009	550.0	0.1	79.0	250.0	2850.0	60.0	67.0	ND	7.6	2.0	522.0	610.0	1900.0	473.0
MW-4	11/18/2010	730.0	0.1	134.0	410.0	3990.0	130.0	112.0	ND	7.6	2.0	755.0	950.0	2790.0	795.0
MW-4	11/16/2011	750.0	0.1	121.0	420.0	4080.0	ND	102.0	ND	7.0	2.0	717.0	1000.0	2750.0	722.0
MW-4	10/31/2012	730.0	0.0	121.0	420.0	4130.0	ND	106.0	ND	8.6	2.0	950.0	1010.0	2810.0	738.0
MW-5	6/19/2008	840.0	NA	58.0	110.0	2280.0	70.0	45.0	640.0	8.7	2.0	362.0	168.0	1450.0	330.0
MW-5	6/18/2009	850.0	0.1	63.0	130.0	2360.0	ND	48.0	200.0	7.6	2.0	457.0	191.0	1510.0	355.0
MW-5	11/18/2010	810.0	0.1	64.0	130.0	2240.0	50.0	47.0	730.0	7.9	2.0	461.0	172.0	1470.0	353.0
MW-5	11/16/2011	800.0	0.1	63.0	130.0	2190.0	50.0	46.0	890.0	7.2	2.0	393.0	163.0	1320.0	346.0
MW-5	10/31/2012	830.0	0.1	58.0	130.0	2230.0	ND	43.0	840.0	9.2	2.0	582.0	165.0	1430.0	322.0
MW-6	6/19/2008	350.0	NA	35.0	62.0	1160.0	270.0	26.0	720.0	9.0	2.0	174.0	137.0	700.0	194.0
MW-6	6/18/2009	340.0	0.1	33.0	57.0	1040.0	60.0	24.0	40.0	7.7	2.0	177.0	117.0	630.0	181.0
MW-6	11/18/2010	430.0	0.1	55.0	90.0	1370.0	440.0	41.0	870.0	7.9	3.0	226.0	160.0	820.0	306.0
MW-6	11/16/2011	460.0	0.2	60.0	95.0	1480.0	230.0	47.0	800.0	7.3	2.0	242.0	172.0	880.0	343.0
MW-6	10/31/2012	490.0	0.1	67.0	109.0	1600.0	ND	53.0	430.0	9.4	2.0	238.0	192.0	990.0	385.0
MW-7	6/19/2008	440.0	NA	102.0	186.0	1990.0	110.0	93.0	230.0	8.5	ND	197.0	330.0	1250.0	637.0

TABLE D-2

Monitoring Well Standard Minerals Data

Wastewater Discharge Requirement Techincal Report, Colusa Industrial Properties, Inc.

Monitoring Well	Sample Date	Alkalinity (mg/L)	Barium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	EC (µmhos/cm)	Iron (µg/L)	Magnesium (mg/L)	Manganese (µg/L)	pH	Potassium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Total Hardness (mg/L)
MW-7	6/18/2009	460.0	0.1	121.0	240.0	2260.0	60.0	110.0	240.0	7.3	ND	247.0	460.0	1450.0	754.0
MW-7	11/18/2010	450.0	0.1	93.0	169.0	1850.0	60.0	86.0	270.0	7.6	1.0	229.0	340.0	1150.0	586.0
MW-7	11/16/2011	430.0	0.1	69.0	90.0	1430.0	ND	62.0	340.0	7.0	ND	193.0	204.0	870.0	427.0
MW-7	10/31/2012	420.0	0.0	60.0	118.0	1360.0	ND	53.0	390.0	8.8	ND	176.0	119.0	960.0	368.0
MW-8	6/19/2008	1250.0	NA	353.0	160.0	4220.0	200.0	178.0	200.0	8.6	ND	438.0	1900.0	3570.0	1610.0
MW-8	6/18/2009	420.0	0.0	343.0	210.0	4010.0	110.0	164.0	200.0	7.3	ND	481.0	1870.0	3360.0	1530.0
MW-8	11/18/2010	380.0	0.0	389.0	240.0	4510.0	140.0	207.0	230.0	7.6	1.0	592.0	2230.0	2310.0	1820.0
MW-8	11/16/2011	380.0	0.0	408.0	240.0	4470.0	70.0	200.0	290.0	6.9	ND	676.0	2230.0	3790.0	1840.0
MW-8	10/31/2012	450.0	ND	279.0	230.0	3340.0	60.0	113.0	200.0	8.9	ND	496.0	1260.0	2660.0	1160.0
MW-9	6/19/2008	490.0	NA	62.0	220.0	4190.0	90.0	88.0	20.0	8.7	ND	673.0	1220.0	3130.0	517.0
MW-9	6/18/2009	540.0	ND	93.0	270.0	4710.0	70.0	131.0	20.0	7.6	1.0	918.0	1790.0	3470.0	771.0
MW-9	11/18/2010	560.0	0.0	104.0	250.0	4420.0	90.0	139.0	30.0	7.8	2.0	884.0	1720.0	3260.0	831.0
MW-9	11/16/2011	550.0	0.0	93.0	200.0	3820.0	ND	128.0	20.0	7.1	ND	815.0	1380.0	2720.0	759.0
MW-9	10/31/2012	560.0	ND	52.0	170.0	3040.0	ND	67.0	20.0	9.1	ND	791.0	840.0	2100.0	405.0
MW-10	6/19/2008	540.0	NA	230.0	180.0	2690.0	110.0	57.0	230.0	8.6	ND	299.0	600.0	1850.0	808.0
MW-10	6/18/2009	510.0	0.0	190.0	250.0	2800.0	60.0	56.0	220.0	7.4	1.0	409.0	700.0	1920.0	704.0
MW-10	11/18/2010	520.0	0.0	200.0	190.0	2660.0	80.0	57.0	280.0	7.7	2.0	398.0	730.0	1860.0	734.0
MW-10	11/16/2011	520.0	0.0	168.0	200.0	2810.0	ND	57.0	380.0	7.0	1.0	604.0	790.0	1950.0	654.0
MW-10	10/31/2012	560.0	ND	172.0	170.0	2760.0	ND	53.0	300.0	8.9	1.0	529.0	790.0	1950.0	647.0

Notes:

NA = not applicable
ND = not detected
NS - not sampled

Andam, Lani@Waterboards

From:	Charissa L. Villanueva <cvillanueva@adamsbroadwell.com>
Sent:	Monday, April 28, 2014 5:05 PM
To:	Andam, Lani@Waterboards; Olson, Anne@Waterboards
Cc:	Meghan A. Quinn
Subject:	EMAIL 4 - FINAL EMAIL - Comments on the Tentative Waste Discharge Requirements for Colusa Industrial Properties, Inc. WDR Order No. R5-2014
Attachments:	Attachment D.pdf; Attachment E.pdf; Attachment F.pdf; Attachment G.pdf; Attachment H.pdf; Attachment I.pdf; Attachment J.pdf

Attached in PDF format are the comments written on behalf of **Colusa County Citizens for Responsible Industry.** **Please be advised that the attachments to these comments will follow in separate emails for ease of sending.** If you encounter problems with the receipt of this document, please contact Charissa Villanueva at the phone number or e-mail address listed below.

Charissa L. Villanueva
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080
(650) 589-1660
cvillanueva@adamsbroadwell.com

ATTACHMENT D

From: Andam, Lani@Waterboards [mailto:Lani.Andam@waterboards.ca.gov]
Sent: Friday, March 14, 2014 9:00 AM
To: 'Ed Hulbert'
Cc: Isbell, Brett/RDD
Subject: RE: Colusa Industrial Properties

Ed,

Thank you for the info. Yes, please check the water balance. I suspect that we will need a revised water balance. Also, I noticed that there are two supply wells. Do both wells supply water to your tenants in the industrial park? Or is one specific to the park and the other building complex/offices?

Lani

From: Ed Hulbert [mailto:ehulbert@cipcorp.com]
Sent: Thursday, March 13, 2014 3:23 PM
To: Andam, Lani@Waterboards
Cc: Brett.Isbell@CH2M.com
Subject: RE: Colusa Industrial Properties

Hello Lani, I will email you Water tests and CCR.
The Davis land is 100% rice and all farmed. This
Year because of water cuts there will be less
Planted. Several factors have increased domestic
Flows. Premier Mushroom expansion, Bringing the
Greencor building and Hanover building back on
Line with new tenants with more employees. We
Have had some meter problems and are upgrading
Our electric/meter setup on pond#1. I will have
Brett check balance and make sure we are ok
With enough capacity. Call me with any ? and
Thanks for the help. Ed

From: Andam, Lani@Waterboards [mailto:Lani.Andam@waterboards.ca.gov]
Sent: Wednesday, March 12, 2014 9:08 AM
To: Ed Hulbert (ehulbert@cipcorp.com)
Cc: Brett Isbell (Brett.Isbell@CH2M.com)
Subject: Colusa Industrial Properties

Hi Ed,

I have a few questions for you.

1. Do you have more recent data for your supply well? Maybe a copy of your 2013 Consumer Confidence Report from the County you could email to me?
2. The remaining Davis Property, are they currently cropped with rice or remain fallow?
3. I noticed in your 2013 Annual Report, that the monthly domestic flows between September and December ranged from 6,000 to 12,000 gpd. Not typical of historic flows, which typically fall between 3,000 and 4,800 gpd. Last year's domestic flows has doubled from the previous years. What's changed? The revised WDRs will set an average daily flow limit and annual flow limit based on the water balance. However, the water balance does not reflect these most recent flows.

If you are able to reply in the next few days, I'd appreciate it. Thank you.

Lani Andam

ATTACHMENT E

Application to the Colusa County Air Pollution Control District for an Authority to Construct for a Biomass Power Plant in Colusa, California

Submitted by

Colusa Bio-Energy, LLC
Colusa, California

March 2013

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95811
(916) 444-6666

APPLICATION
to the
COLUSA COUNTY AIR POLLUTION CONTROL DISTRICT
for an
AUTHORITY TO CONSTRUCT
for a
BIOMASS POWER PLANT
in
COLUSA, CALIFORNIA

Submitted by:

Colusa Bio-Energy, LLC
Colusa, California

March 2013

Prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95811
(916) 444-6666

SUMMARY

Colusa Bio-Energy, LLC, (CBE) is submitting this application requesting an Authority to Construct (ATC) Permit for a biomass-fueled 35 MW (gross) power plant in Colusa, California. The power plant will be located in an industrial park south of the Colusa County Airport. CBE will install a new biomass-fired bubbling fluidized bed (BFB) boiler, steam turbine, biomass storage/handling operation, storage silos (for ash and dry chemicals), cooling tower, an emergency generator, and emergency fire pump.

The new BFB boiler will incorporate best available control technology (BACT) to reduce emissions of carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (less than 10 microns in diameter, or PM_{10}), reactive organic compounds (ROC), and sulfur oxides (SOx). The new Emergency Generator and Emergency Fire Pump will also satisfy BACT for NOx. BACT will not otherwise be required for the Plant. CBE will provide emission reduction credits (ERCs) to offset NOx, PM_{10}, and SOx emission increases for the Plant but will <u>not</u> be required to offset the emission increases of CO, PM less than 2.5 microns in diameter ($PM_{2.5}$), or ROC. Ambient air quality impacts associated with emissions from the biomass conversion project will not cause or significantly worsen an exceedance of any ambient air quality standards. Health risks associated with air toxic emissions from the biomass conversion project will not exceed generally accepted risk management thresholds.

APPLICATION
to the
COLUSA COUNTY AIR POLLUTION CONTROL DISTRICT
for an
AUTHORITY TO CONSTRUCT
for a
BIOMASS POWER PLANT
in
COLUSA, CALIFORNIA

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APPLICATION
to the
COLUSA COUNTY AIR POLLUTION CONTROL DISTRICT
for an
AUTHORITY TO CONSTRUCT
for a
BIOMASS POWER PLANT
in
COLUSA, CALIFORNIA

I. PROJECT DESCRIPTION

A. Applicant's Name and Business Description

Name of Applicant:	Colusa Bio-Energy, LLC (CBE)
Mailing Address:	P.O. Box 3381 Auburn, CA 95604-3381
Facility Address:	Niagara Avenue Colusa, CA 95932
General Business:	Electricity Generation
Submitting Official:	Steve Carpenter, Chief Executive Officer Colusa Bio-Energy, LLC (530) 368-0984
Application Contact:	Thom Shelton, Director of Development Industrial Power Technology (770) 528-8900
Consultants:	Sierra Research, Inc. 1801 J Street Sacramento, California 95811 Contact: Dan Welch (916) 444-6666
Type of Use Entitlement:	Colusa Bio-Energy, LLC will own and operate the new equipment described in this application.
Estimated Construction Date:	Construction of the project is anticipated to begin in October 2013.

B. Type of Application

This is an application to the Colusa County Air Pollution Control District (District) for an Authority to Construct (ATC) for a new biomass-fired power plant (Plant).

C. Purpose

The purpose of the project is to construct a new greenhouse gas neutral, biomass-fired power plant, which will increase the renewable energy electrical generation portfolio in California. The Plant will be fueled primarily by rice hulls and a variety of other agricultural waste derived from agricultural operations within a 60-mile radius of the facility. The Plant will consume approximately 280,000 tpy of biomass waste.

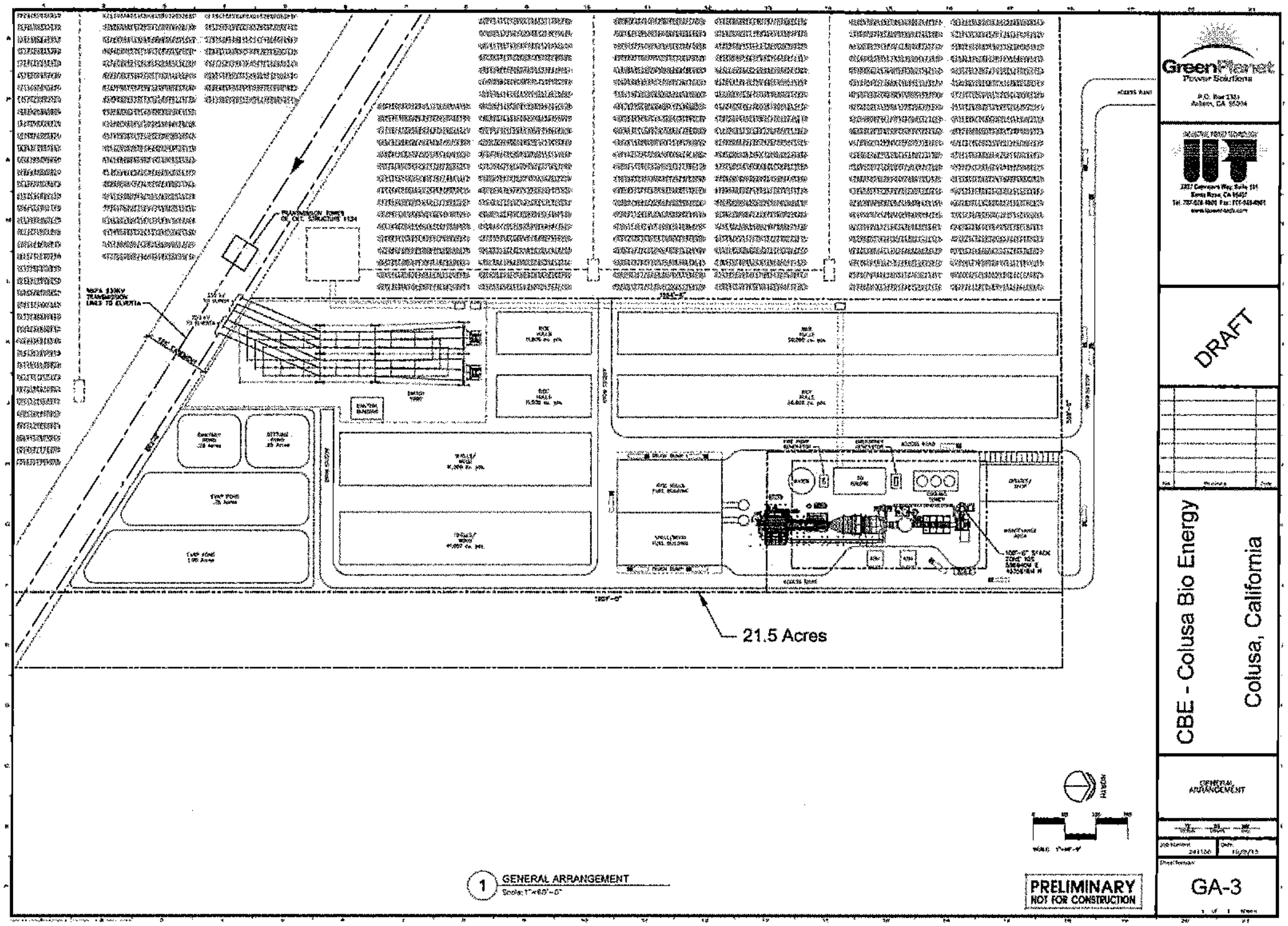
D. Project Background

CBE is a subsidiary of Green Planet Power Solutions, Inc. (GPPS). GPPS is a privately held renewable energy company that develops clean energy through cutting edge technology as well as proprietary technology and streamlining of the construction process. Founded in 2008 in Northern California, the GPPS team has over 50 years combined experience in alternative energy construction and development. GPPS' focus is primarily utility scale solar and biomass developments.

The Plant will be interconnected to the power grid via the Western Area Power Administration's existing 230 kV transmission line adjacent to the Plant. CBE will sell the entire 30 MW net output of the Plant to Roseville Electric under a long-term Power Purchase Agreement (PPA) to help fulfill the Renewable Portfolio Standard (RPS) imposed by California Public Utility Commission regulations. The Plant will be located on 21.5 acres in a newly annexed area of the Colusa Industrial Park (CIP) south of the Colusa County Airport and west of Highway 20/45 in Colusa County, just south of the Colusa City limits, as illustrated in Figure 1. The Plant site will be accessible from Highway 20/45, which forms the eastern boundary of the CIP. The Plant site will have an approximate elevation of 50 feet above sea level. A site plan identifying the locations of the Plant components is illustrated in Figure 2.

Figure 1
Location Map – Colusa Bio-Energy Power Plant

Figure 2
Site Plan –Colusa Bio-Energy Power Plant



E. Process and Equipment Description

The Plant includes the following new sources of air pollutant emissions:

- Bubbling Fluidized Bed (BFB) Boiler;
- Biomass Receiving/Storage/Handling System;
- Cooling Tower;
- Two Ash Silos;
- Lime Silo;
- Emergency Generator; and
- Emergency Fire Pump.

1. BFB Boiler

Fluidized bed combustion is a combustion technology used in power plants that burn solid fuels. Fluidization combines solid fuels and inert bed material in suspension during the combustion process, which creates turbulent mixing of combustion gas and solid fuels. The state of bed fluidization is dictated by the gas velocity and bed particle size. A BFB combustor is characterized by relatively low velocities and more coarse bed particle size than other fluidized bed combustion technologies. Combustion temperatures in the BFB are typically between 1,400°F and 1,700°F, which prevents softening of the bed material and minimizes the formation of thermal nitrogen oxide (NOx) emissions. Furthermore, the tumbling nature of the fluidized bed creates abrasive action between the bed material mixing and the solid fuel. The abrasion strips ash away from biomass particles as it is generated, removing barriers to air/fuel interface and heat transfer.

The proposed BFB Boiler will contain a bed of sand. As bed sand is lost through abrasion and entrainment (in the flue gases), a pneumatic system will feed makeup sand to the fluidized bed to replenish losses, as needed. An underfire air fan will inject air upwards, underneath the bed, with sufficient velocity to fluidize the sand bed (and fuel). A high pressure blower will feed some biomass fuel directly into the fluidized bed. Chutes will deposit additional biomass fuel onto the fluidized bed. An overfire air fan will feed additional combustion air at varying depths of the bed to ensure adequate air for the combustion process while simultaneously minimizing excess air that would generate NOx emissions at a greater rate. The BFB Boiler will be equipped with a selective non-catalytic reduction (SNCR) system to further control NOx emissions. A metering pump will inject a urea solution, which contains ammonia (NH_3), above the fluidized bed, prior to the boiler section, where the operating temperatures best suit the optimal temperature range of the SNCR reaction. NH_3 will react with NOx (nitrogen oxide [NO] and nitrogen dioxide [NO_2]) to form nitrogen gas and water. The combustion gases will contain nitrogen, excess oxygen, combustion by-products, fine particles (sand and freshly created ash from the biomass combustion), and unreacted NH_3 (i.e., slip).

The hot combustion gases will pass through a series of heat exchangers and then into a multiclone. The first heat exchanger will superheat high-pressure steam; the second heat exchanger will superheat low pressure steam. An evaporator will convert the high-pressure boiler feed water to saturated high-pressure steam. A multiclone will gravimetrically separate, from the exhaust gas, much of the sand/ash/calcium sulfate, which then will be collected in a hopper and pneumatically conveyed to the Ash Silos. The multiclone will discharge the hot combustion gases into a selective catalytic reduction (SCR) reactor, into which aqueous NH_3 will be injected. The catalyzed oxidation-reduction reaction will convert NH_3 and NOx to nitrogen gas and water. The hot combustion gases will pass through the SCR reactor into additional heat exchangers. An economizer will pre-heat high pressure boiler feed water, and air preheaters will heat underfire and overfire combustion air. The BFB Boiler will also be equipped with a dry scrubber to control sulfur oxides (SOx) and a baghouse to further control particulate matter (PM) emissions. A pneumatic injection system will feed hydrated lime into the dry scrubber while a pump adds water simultaneously. The water will quench the exhaust gas to a temperature more suitable for the downstream baghouse. The lime will react with SOx, formed by the oxidation of sulfur present in the biomass, to form particulate calcium sulfate, which then will be removed in the downstream baghouse. An induced draft fan will draw the exhaust gas through a baghouse, which will filter the exhaust through a series of parallel filter bags that will remove residual ash/sand and newly formed calcium sulfate. The induced draft fan will discharge exhaust gas through the stack to the atmosphere. The filter bags will be cleaned periodically and the filtered fines will be deposited into a hopper. A pneumatic system will convey the fines to the Ash Silos.

BFB boilers are particularly well suited for the efficient combustion of biomass fuels such as rice hulls, shells, and wood. The proposed Outotec FBSG 3035 BFB Boiler will generate 300,000 lb/hr of superheated high-pressure steam (at 900°F and 1,515 psig) to drive the 35 MW steam turbine that will generate electric power. The BFB Boiler will primarily burn rice hulls; shells/wood from orchard operations (e.g., almond growing) also will be burned as a supplemental fuel. The BFB Boiler will also be equipped with three natural gas startup burners with a combined heat input rating of 115 MMBtu/hr; two 50 MMBtu/hr burners will be located above the combustion bed and one 15 MMBtu/hr will be located under the combustion bed. The maximum heat input rating of the BFB Boiler will be 410 MMBtu/hr (at the higher heating value, or HHV). A process flow diagram showing the BFB Boiler technology and air pollution control train is illustrated in Figure 3. Equipment specifications for the BFB Boiler are summarized in Table 1. Manufacturer's drawings and specifications are contained in Appendix A.

Figure 3
Process Flow Diagram – BFB Boiler Emission Control Systems

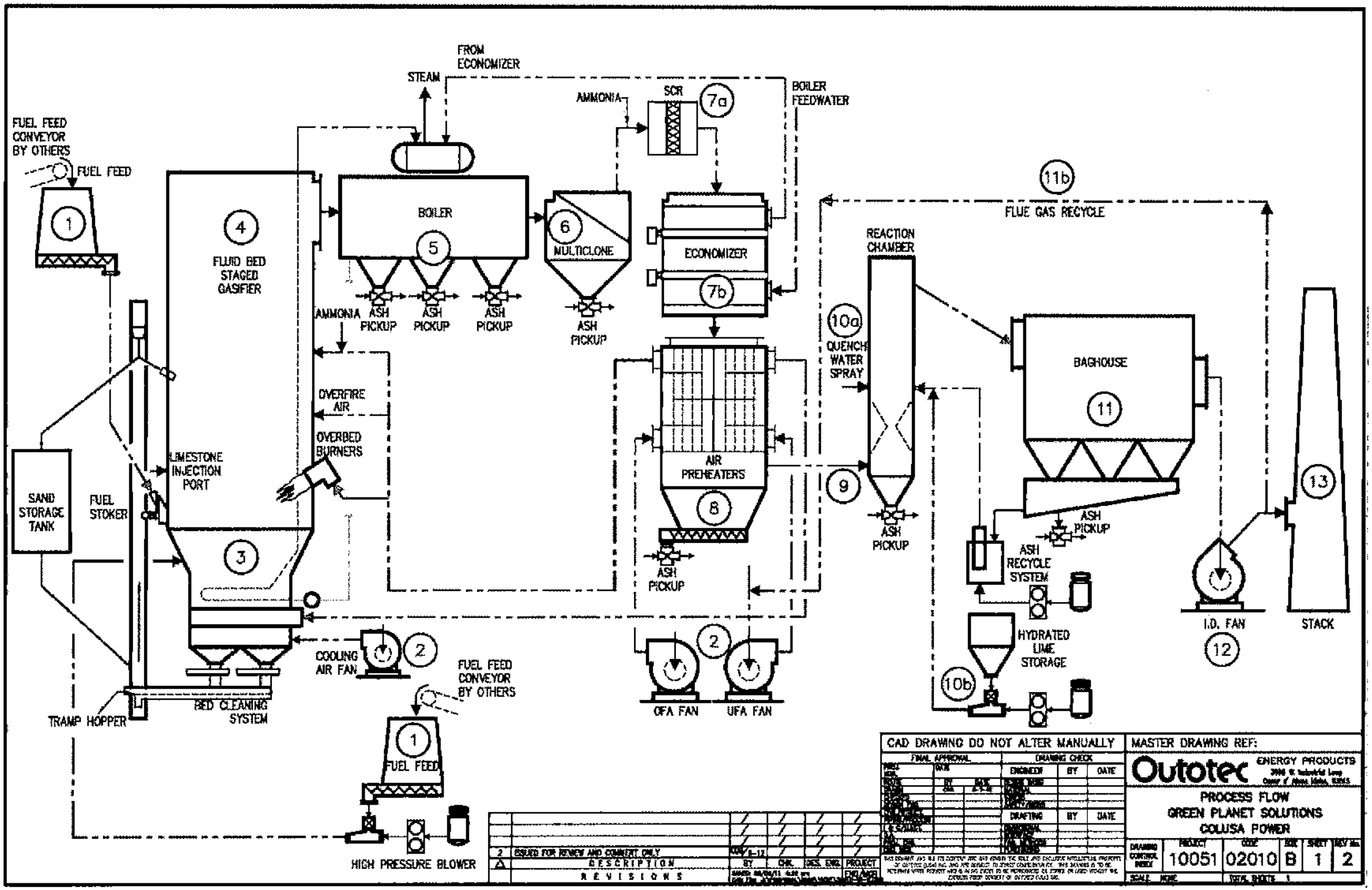


Table 1 Design Specifications for the BFB Boiler	
Manufacturer	Outotec Energy Products
Model	FBSG 3035
Fuel Primary Supplemental Startup	 Rice Hulls Shells/Wood (e.g., Almond) Natural Gas
Heat Input Rate	410 MMBtu/hr [1]
Steam Production	300,000 lb/hr [1]
Steam Pressure	1,515 psig [1]
Steam Temperature	900 °F [1]
Exhaust Temperature	182 °F [1]
Exhaust Flow Rate	163,030 wacfm [1]
Stack Diameter	8.5 feet [2]
Stack Height	100 feet [2]
Emission Controls	SNCR/SCR Dry Scrubber Baghouse

Notes:
[1] Specified by Outotec, the BFB boiler manufacturer.
[2] Specified by Colusa Bio-Energy.

2. Biomass Receiving/Storage/Handling System

Trucks will deliver biomass to the truck unloading area during weekday, workday hours (i.e., 8 hours per day, 5 days per week). As such, biomass will be delivered to the Plant faster than the BFB Boiler can consume it. Accordingly, the biomass handling system will be designed to absorb the surges in delivery and to supply the BFB Boiler with fuel during non-workday hours (i.e., evenings, nights, and weekends). CBE is proposing to install separate fuel receiving/storage/handling facilities for the rice hulls and shells/wood. CBE has not yet completed the detailed design of the biomass receiving/storage/handling operation; therefore, this ATC Application presents a conceptual design for a biomass receiving/storage/handling operation. This conceptual design assumes approximately 46 transfer points. The conveyors will be covered to minimize fugitive dust emissions. Twenty-seven (27) of the 46 transfer points also will be covered. A spreadsheet containing detailed biomass throughput rates, associated with each of these 46 transfer points, is presented in Appendix B.

Rice Hulls

Trucks will deliver their rice hull loads to the Plant year-round; deliveries will peak in August, just before harvest commences, as millers increase rice production to clear storage space for the incoming harvest. A process flow diagram illustrating the rice hulls receiving/storage/handling operation is shown in Figure 4. A truck will deliver its rice hull load directly to one of two truck unloaders, which will deposit the rice hulls into a hopper. Screw Feeder A will empty the hopper onto fully enclosed Conveyor A, which will be equipped with belt scales to weigh the rice hulls. Conveyor A will discharge rice hulls to an indoor stockpile at the Rice Hulls Building. A front-end loader will gather rice hulls from the stockpile and load them into a hopper mounted on Stacker #1. The hopper will discharge the rice hulls onto the Stacker, which will deposit the rice hulls onto fully enclosed Conveyor B. Conveyor B will transport the rice hulls to Metering Bin #1.

The Rice Hulls Building will not be able to accommodate the entire plant intake of rice hulls at the rate it arrives; therefore, a receiving/storage/handling system for the surplus rice hull supply will be needed. Trucks will deliver surplus rice hulls to four outdoor Stockpiles:

- Two 840 ft x 80 ft Stockpiles (A/B), each with a capacity of 50,000 cy; and
- Two 180 ft x 80 ft Stockpiles (C/D), each with a capacity of 11,000 cy.

A truck will discharge rice hulls directly into a hopper mounted upon one of two Stackers (#2-#3). The hopper will discharge the rice hulls onto the Stacker, which will deposit the rice hulls onto the Stockpile. During evenings/nights/weekends, when truck deliveries are not occurring and the rice hull supply in the Rice Hulls Building begins to dwindle, surplus rice hulls will be recovered from the Stockpiles and transported to the Rice Hulls Building. In this case, a front-end loader will gather rice hulls from the Stockpiles and load them into a hopper mounted on Stacker #2 (or #3). The hopper will discharge the rice hulls onto the Stacker, which will deposit the rice hulls onto a fully enclosed conveyor (Conveyor C for Stockpiles A/B and Conveyor D for Stockpiles C/D). Conveyors C/D will discharge to fully enclosed Conveyor E, which will transport the combined rice hull supply from all four stockpiles. Conveyor E will deposit the rice hulls onto fully enclosed Conveyor F, which will carry the rice hulls into the Rice Hulls Building and deposit them on the indoor stockpile.

Shells/Wood

Trucks will deliver their shells/wood loads to the Plant during the two-month period (mid-September to mid-November) between the end of harvest and the beginning of the rainy season. A process flow diagram illustrating the shells/wood receiving/storage/handling operation is shown in Figure 5. Trucks will deliver their shells/wood loads directly to two truck unloaders, which will deposit the shells/wood into hoppers. Screw Feeder B will empty the hopper onto fully enclosed Conveyor G, which will be equipped with belt scales to weigh the shells/wood. Conveyor G will discharge shells/wood to a disc screen for size separation. An electromagnet will remove tramp metal from the shells/wood and collect the metal in a tramp metal bin. The disc screen will discharge the undersized shells/wood to fully enclosed Conveyor H. The disc screen will discharge

Figure 4
Process Flow Diagram – Rice Hulls Receiving/Storage/Handling System

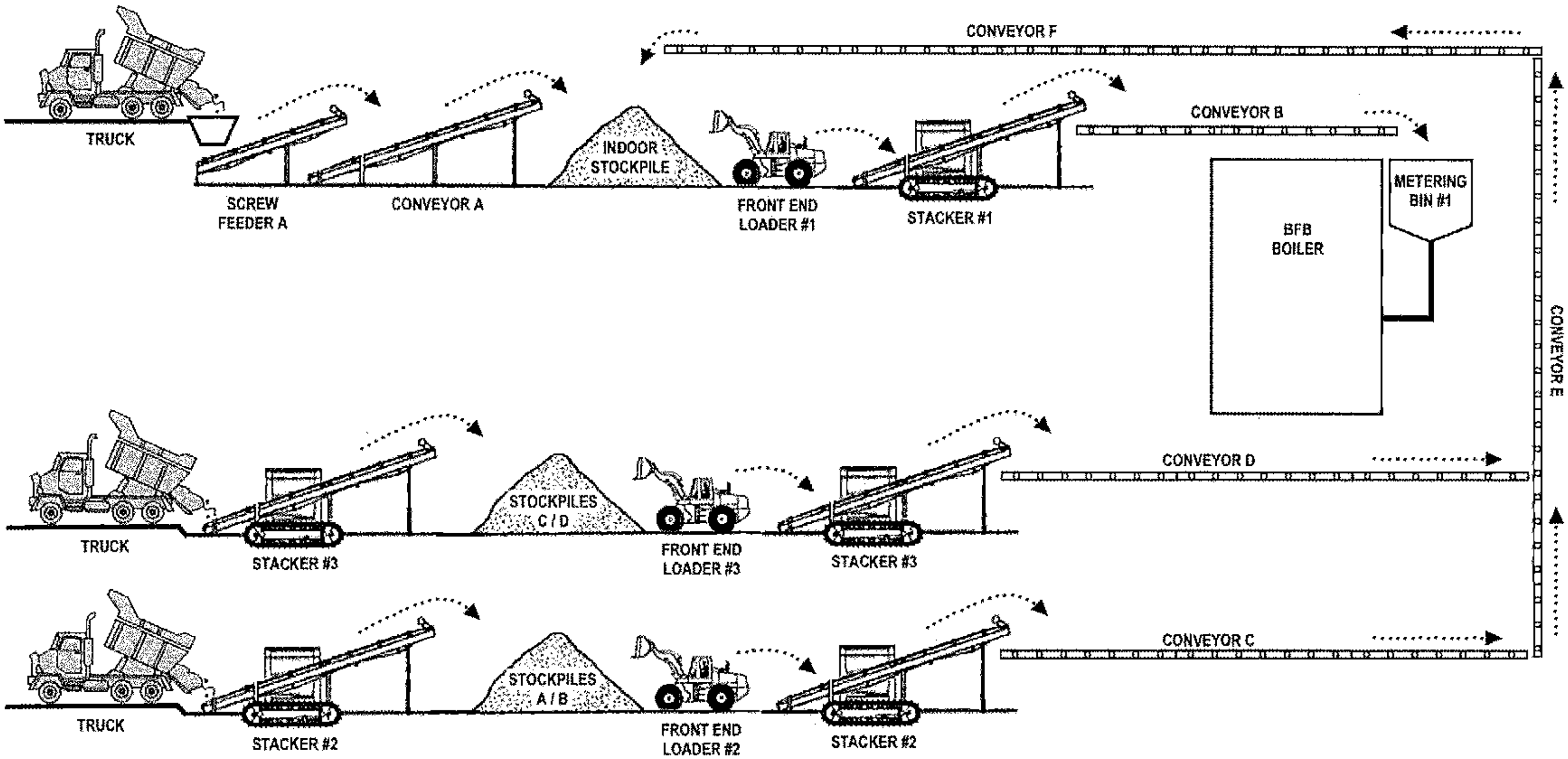
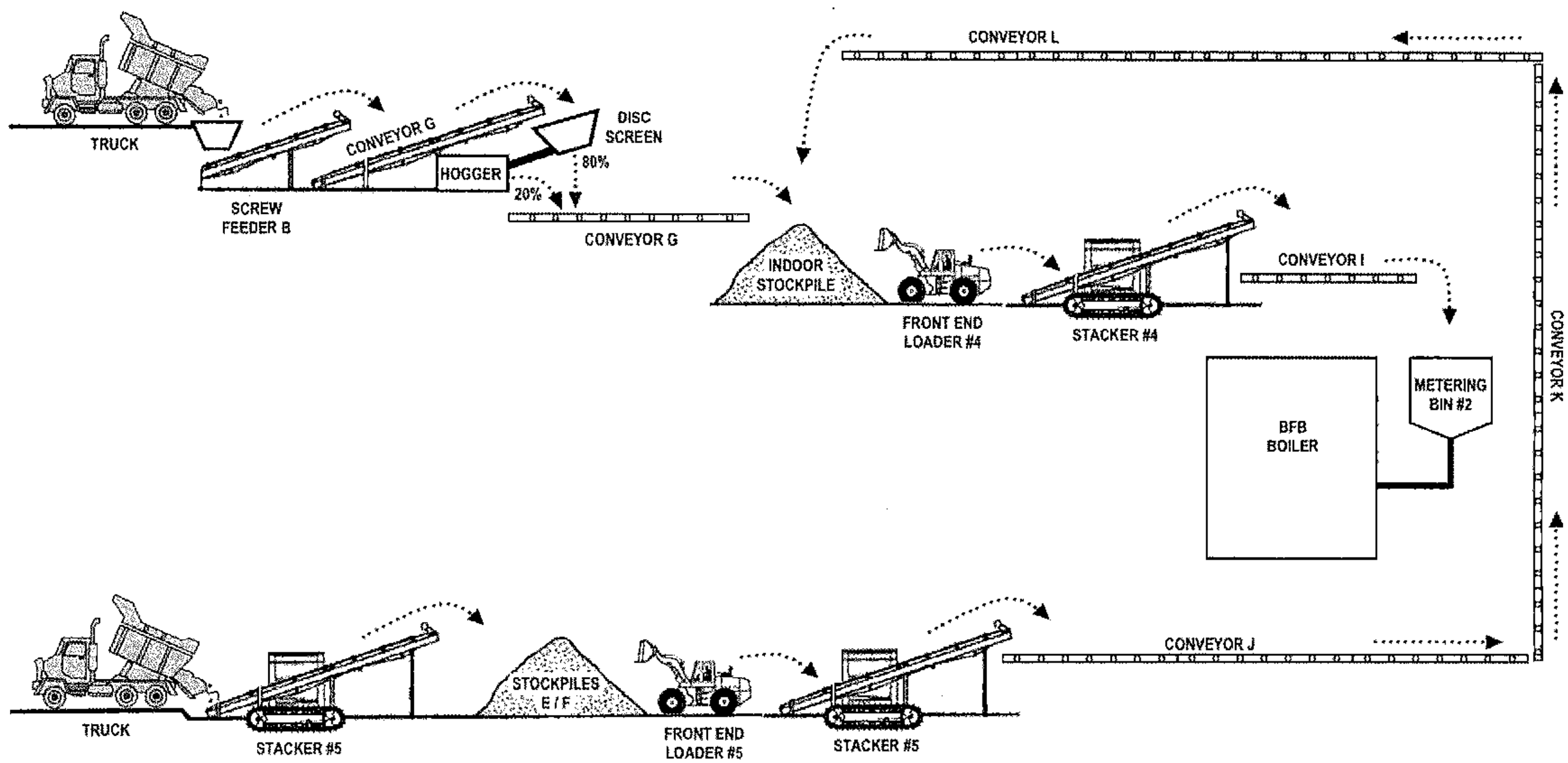


Figure 5
Process Flow Diagram – Shells/Wood Receiving/Storage/Handling System



screened oversized biomass into an electric hogger for size reduction. CBE estimates that 80% of the delivered biomass will be undersized while 20% will be oversized. The electric hogger will discharge hogged wood to Conveyor H. Conveyor H will deposit undersized shells/wood and hogged wood to an indoor stockpile at the Shells/Wood Building. A front-end loader will gather shells/wood from the stockpile and load them into a hopper mounted on Stacker #4. The hopper will discharge the shells/wood onto the Stacker, which will deposit the shells/wood onto fully enclosed Conveyor I. Conveyor I will transport the shells/wood to Metering Bin #2.

The Shells/Wood Building will not be able to accommodate the entire plant intake of shells/wood at the rate it arrives; therefore, a receiving/storage/handling system for the surplus shells/wood supply will be needed. Trucks will deliver surplus shells/wood to two 480 ft x 100 ft outdoor Stockpiles (E-F), each with a capacity of 41,000 cy. A truck will discharge shells/wood directly into a hopper mounted upon Stacker #5. The Stacker will deposit rice hulls onto the Stockpile. During evenings/nights/weekends/months, when truck deliveries are not occurring and the shells/wood supply in the Shells/Wood Building begins to dwindle, surplus shells/wood will be recovered from the Stockpiles and transported to the Shells/Wood Building. In this case, a front-end loader will gather shells/wood from the Stockpiles and load them into a hopper mounted on Stacker #5. The hopper will discharge the shells/wood onto Stacker #5, which will deposit the shells/wood onto fully enclosed Conveyor J. Conveyor J will discharge to fully enclosed Conveyor K, which will deposit the shells/wood onto fully enclosed Conveyor L. Conveyor L will transport the shells/wood into the Shells/Wood Building and deposit them on the indoor stockpile.

3. Cooling Tower

A three-cell Marley Sigma Model 1261 cooling tower will remove heat from the cooling water return stream so that the warm cooling water can be cooled and recycled to the steam condenser. A circulating water pump will feed cooling water, at a rate of 30,000 gpm (10,000 gpm per cell), from the cooling tower through the steam condenser, in which the cooling water will absorb heat from the expanded low-pressure steam discharged from the steam turbine, thus condensing the turbine steam. Warm cooling water will be discharged from the steam condenser to the top of the cooling tower and will flow downward through the cooling tower. A fan will pull cooling air upwards through the cooling tower, where the air will absorb heat from the warm cooling water in a direct contact, countercurrent mode, thus cooling the warm cooling water for reuse in the steam condenser. The fan will discharge warm saturated air to the atmosphere at a rate of 4,356,000 wacfm (1,452,000 wacfm per cell). The total dissolved solids (TDS) concentration in the concentrated cooling water will not exceed 4,700 mg/L. The cooling tower will be equipped with a mist-eliminator, with a drift rate of 0.0005%, to minimize particulate drift (i.e., entrained water droplets). The cooling tower will exhaust to the atmosphere. Equipment specifications for the cooling tower are summarized in Table 2. Manufacturer's drawings and specifications are contained in Appendix A.

Table 2 Design Specifications for the Cooling Tower	
Manufacturer	Marley
Model	Sigma 1261
Number of Cells [1]	3
Recirculation Rate [1]	30,000 gpm (10,000 gpm per cell)
Total Dissolved Solids [1]	$\leq$ 4,700 mg/L
Exhaust Temperature [1]	91 °F
Exhaust Flow Rate (per cell)	4,356,000 wacfm [1] (1,452,000 wacfm per cell) 3,969,307 dscfm [2]
Drift Rate [1]	0.0005%, wt
Fan Deck Elevation (above grade) [1]	14.5 feet
Fan Cone Top Elevation (above grade) [1]	21.5 feet
Fan Cone Diameter [1]	18 feet

Note:
[1] Specified by Marley.
[2] Calculated from the exhaust flow rate (in wacfm), the exhaust temperature (in °F), and the vapor pressure of water at the exhaust temperature (37.3 mm Hg).

4. Ash Silos

Biomass contains an inert component, as much as 20% by mass in the case of rice hulls, that yields ash when combusted. The multiclone and the baghouse will remove particulates, including ash, from the combustion gases. Pneumatic systems will convey the ash from the multiclone and baghouse hoppers to two 200 ton Ash Silos. Trucks will collect ash from the Ash Silos daily, five days per week, for off-site disposal, including use in agricultural applications. A pneumatic system will convey ash from an Ash Silo to the truck, returning displaced particulate-laden air to the Ash Silo. A single fan will actively ventilate each Ash Silo and will draw dust-laden air through a baghouse. Dust-laden air will be filtered through fabric filters, and the filtered air will be discharged to the atmosphere through a stack. The filter bags will be cleaned periodically and the filtered fines will be returned to Ash Silo. Specifications for the equipment associated with the Ash Silos are summarized in Table 3.

Table 3 Equipment Specifications for the Ash Silo System		
Component ID	Ash Silo A	Ash Silo A
Storage Capacity (tons) [1]	200	200
Nominal Throughput [1]	200 tpd 21,000 tpy	200 tpd 21,000 tpy
Emission Controls	Baghouse	Baghouse
Baghouse Manufacturer	TBD	TBD
Baghouse Model	TDB	TDB
Ventilation Rate (acfm) [1]	7,500	7,500
PM Exhaust Conc (gr/acf) [1]	0.2	0.2

Note:
[1] Specified by Colusa Bio-Energy.

5. Lime Silo

A pneumatic system will convey the hydrated lime from the Lime Silo into the dry scrubber, where it will react with SOx—a byproduct of the combustion of trace levels of sulfur in the biomass fuels—to form calcium sulfate. Trucks will periodically deliver hydrated lime to the Plant. A blower will provide compressed air to the delivery truck to pneumatically transfer the hydrated lime from the truck to a 20-ton Lime Silo. A single fan will actively ventilate the Ash Lime Silo and will draw dust-laden air through a baghouse. Dust-laden air will be filtered through fabric filters and the filtered air will be discharged to the atmosphere through a stack. The filter bags will be cleaned periodically and the filtered fines will be returned to Lime Silo. Specifications for the equipment associated with the Lime Silo are summarized in Table 4.

Table 4 Equipment Specifications for the Lime Silo System	
Component ID	Lime Silo
Storage Capacity (tons) [1]	20
Nominal Throughput [1]	20 tpd 1,000 tpy
Emission Controls	Baghouse
Baghouse Manufacturer	TBD
Baghouse Model	TDB
Ventilation Rate (acfm) [1]	770
PM Exhaust Conc (gr/acf) [1]	0.2

Note:
[1] Specified by Colusa Bio-Energy.

6. Emergency Generator

An emergency generator will provide emergency electrical generating capacity for the Plant. A Caterpillar C27 ATAAC engine (or equivalent) will drive a nominal 750 kW electrical generator. The emergency generator will be fueled exclusively with diesel. The engine is a four-stroke, compression ignition (CI) design with turbocharging and aftercooling. The engine will meet the U.S. Environmental Protection Agency's (USEPA's) Tier 2 emission standards for non-road diesel engines. Equipment specifications for the emergency generator are summarized in Table 5; manufacturer's specifications are contained in Appendix A.

Table 5
Design Specifications for the Emergency Generator

Manufacturer (Generator/Engine)	Caterpillar
Model (Generator/Engine)	C27 ATAAC
Fuel	Diesel
Generator Power Output [1]	750 kW
Fuel Consumption Rate [1]	53.6 gal/hr
Heat Input Rate @ HHV [2]	7.5 MMBtu/hr
Heat Rate @ HHV [3]	9,860 Btu/bhp-hr
Engine Work Output [4]	761 bhp
Exhaust Temperature [1]	864 °F
Exhaust Flow Rate [1]	5,611 wacfm
Exhaust O_2 Concentration [5]	8.7 %
Exhaust Pipe Diameter [6]	8 inches
Exhaust Pipe Exit Height Above Grade [6]	28 feet

Notes:
1 Provided by Caterpillar.
2 Calculated from the fuel consumption rate (in gal/hr) using a diesel HHV of 140,000 Btu/gal.
3 Estimated by Industrial Power Technology.
4 Calculated from the heat input rate (in MMBtu/hr) and the assumed heat rate (in Btu/bhp-hr).
5 Calculated from the heat input rate (in MMBtu/hr), the USEPA Method 19 fuel oil wet F-factor (10,320 wscf/MMBtu @ 0% O_2), the exhaust flow rate (in wacfm), and the exhaust temperature (in °F).
6 Provided by Colusa Bio-Energy.

7. Emergency Fire Pump

An emergency fire pump will provide pressurized water, as necessary, for firefighting. A 601 bhp Caterpillar C18 ACERT engine (or equivalent) will drive the fire pump. The fire pump engine will be fueled exclusively with diesel. The engine is a four-stroke, CI design with turbocharging and aftercooling. The engine will meet USEPA's Tier 3 emission standards for non-road diesel engines. Equipment specifications for the emergency fire pump are summarized in Table 6; manufacturer's specifications are contained in Appendix A.

Table 6 Design Specifications for the Fire Pump	
Manufacturer	Caterpillar
Model	C18 ACERT
Fuel	Diesel
Engine Work Output [1]	601 bhp
Fuel Consumption Rate [1]	31.4 gal/hr
Heat Input Rate @ HHV [2]	4.4 MMBtu/hr
Heat Rate @ HHV [3]	7,317 Btu/bhp-hr
Exhaust Temperature [4]	975 °F
Exhaust O_2 Concentration [4]	5.0%
Exhaust Flow Rate [5]	2,743 wacfm
Exhaust Pipe Diameter [6]	8 inches
Exhaust Pipe Height [6]	28 feet

Notes:
[1] Provided by Caterpillar.
[2] Calculated from the fuel consumption rate (in gal/hr) using a diesel HHV of 140,000 Btu/gal.
[3] Calculated from the heat input rate (in MMBtu/hr) and the engine work ouptut (in bhp).
[4] Reflects values for other Tier 3 emergency fire pumps.
[5] Calculated from the heat input rate (in MMBtu/hr), the USEPA Method 19 fuel oil wet F-factor (10,320 wscf/MMBtu @ 0% O_2), and the exhaust O_2 concentration (in %).
[6] Provided by Industrial Power Technology.

F. Plant Operations

District Rule 3.6 (Standards for Authority to Construct, or New Source Review [NSR]) provides the basis for calculating emission increases used to determine the applicability of various NSR requirements such as best available control technology (BACT) and emission offsets. Operating conditions for the various emissions sources were established to provide the basis for the subsequent calculation of Plant emissions. The BFB Boiler and cooling tower will be operated as much as 24 hours per day and 8,520 hr/yr. The maximum biomass daily intake rate will be 2,343 tpd of rice hulls, reflecting three times the average delivery rate over a five-day work week, or 1,862 tpd of shells/wood, reflecting deliveries of the biomass supply five days per week over a nine-week period. The maximum biomass daily intake rate will be 279,000 tpy, reflecting 70% rice hulls and 30% shells/wood for 355 days of operation. Maximum operations are summarized in Table 7.

Table 7
Proposed Maximum Operations for the Colusa Bio-Energy Power Plant

Source	Maximum Operating Rate		
	Hourly	Daily	Annual
BFB Boiler (MMBtu)	410	9,840 [1]	3,493,200 [2]
Materials Receiving/Storage/Handling			
Plant Intake (tons)			
Rice Hulls	N/A	2,343 [3]	195,250 [5]
Shells/Wood		1,862 [4]	83,780 [5]
Truck Unloading Area (tons)			
Rice Hulls	N/A	282 [6]	49,996 [7]
Shells/Wood		225 [6]	17,091 [8]
Rice Hulls Building (tons)	N/A	845 [9]	195,250 [10]
Shells/Wood Building (tons)	N/A	674 [9]	83,780 [10]
Rice Hulls Stockpiles (tons)			
Loading	N/A	2,061 [11]	145,254 [11]
Unloading		563 [11]	145,254 [11]
Shells/Wood Stockpile (tons)			
Loading	N/A	1,637 [11]	66,689 [11]
Unloading		449 [11]	66,689 [11]
Boiler (tons)			
Rice Hulls		845 [5]	195,250 [10]
Shells/Wood		674 [5]	83,780 [10]
Cooling Tower (hours)	N/A	24 [5]	8,520 [5]
Ash Silo, each (tons)	N/A	200 [5]	21,000 [5]
Lime Silo (tons)	N/A	20 [5]	1,000 [5]
Emergency Generator (bhp-hr)	N/A	24 [5]	200 [12]
Emergency Fire Pump (bhp-hr)	N/A	24 [5]	200 [12]

Notes:
1 Calculated from the maximum heat input rate of 410 MMBtu/hr at 24 hr/day.
2 Calculated from the maximum heat input rate of 410 MMBtu/hr at 8,520 hr/yr.
3 Calculated at 3 times the average daily delivery rate, which is based upon a five-day work week.
4 Calculated at the annual delivery rate, 5 days per week over a nine-week period.
5 Provided by Colusa Bio-Energy.
6 Reflects one-third of the boiler feed rate (i.e., an eight-hour delivery day).
7 Reflects 70% of the daily rate at 253.5 days per year.
8 Reflects 30% of the daily rate at 253.5 days per year.
9 Reflects the boiler usage rate as specified by Colusa Bio-Energy.
10 Reflects the plant intake rate.
11 Reflects the plant intake rate less the truck unloading rate.
12 Includes an allowance for non-emergency and emergency operation.

II. EMISSION ASSESSMENT

The Plant will emit affected pollutants including carbon monoxide (CO), NOx, PM less than 10 microns in diameter (PM_{10}), PM less than 2.5 microns in diameter ($PM_{2.5}$), reactive organic compounds (ROCs), and SOx. This emission assessment characterizes the emissions associated with the Plant. A detailed discussion of the emissions assessment, with supporting spreadsheets and underlying assumptions, is contained in Appendix B. This emission assessment also addresses air toxics emissions associated with the Plant. A detailed discussion of the air toxics emissions, with supporting spreadsheets and underlying assumptions, is contained in Appendix C. This section presents the following:

- Maximum emissions from the BFB Boiler;
- Maximum emissions from the Biomass Receiving/Storage/Handling operation;
- Maximum emissions from the Cooling Tower;
- Maximum emissions from the two Ash Silos;
- Maximum emissions from the Lime Silo;
- Maximum emissions from the Emergency Generator;
- Maximum emissions from the Emergency Fire Pump;
- Maximum emissions from the Plant; and
- Maximum air toxics emissions from the Plant.

A. <u>Maximum Emissions from the BFB Boiler</u>

Emissions from the BFB Boiler were characterized under the following operating scenarios to allow further regulatory analyses of impacts associated with the operation of the BFB Boiler:

- Base-load operations;
- Startup; and
- Commissioning.

Maximum emissions from base-load operation, including startup, of the proposed BFB Boiler are summarized in Table 8. Hourly baseload emissions reflect full load operation at 410 MMBtu/hr). Hourly emissions during startup of the proposed BFB Boiler could be greater than during normal base-load operation, because all air pollution controls are not necessarily functioning optimally while the boiler temperature is gradually raised from ambient to its design operating value. CO, PM_{10}, $PM_{2.5}$, and ROC emission rates are not expected to increase during startup; as such, startup CO, PM_{10}, $PM_{2.5}$, and ROC emission rates reflect the base-load emission rates. Hourly NOx/SOx startup emissions will exceed the hourly base-load emissions only during Hours 7 and 8 of startup, when biomass combustion will occur and will not necessarily be fully controlled, because the natural gas emission rates are lower than the base-load emission rates and the capacity of the natural gas burners is much lower than that of the biomass combustor. Furthermore, emissions during an 8-hour startup will not exceed emissions during 8 base-load hours because emissions during the first 6 hours, when burning only natural gas at a much lower heat input rate, will be so much lower than the hourly base-load emissions. Maximum daily emissions reflect the last two hours of an 8-hour cold startup sequence followed by 22 hours of base-load operation. Maximum annual emissions for the BFB Boiler reflect 8,520 hours of base-load operation because emissions during an 8-hour cold startup are less than 8 hours of base-load emissions.

Table 8 Maximum Baseload Emissions from the BFB Boiler				
	Maximum Emissions			
Pollutant	Startup (lb/hr) [1]	Baseload (lb/hr)	Daily (lb/day) [2]	Annual (tpy) [3]
CO	33.2	33.2	797	141
NOx	95.9	30.8	804	131
PM_{10}	9.84	9.84	236	41.9
$PM_{2.5}$	9.84	9.84	236	41.9
ROC	2.05	2.05	49.2	8.73
SOx	70.5	12.3	359	52.4

Notes:

[1] Reflects Hour 8 of an 8-hour cold start event, where boiler is burning biomass at100% load.

[2] Reflects the last two hours of an 8-hour cold startup hours and 22 hours of base-load operation.

[3] Reflects 8,520 hours of base-load operation because emissions during an 8-hour cold startup are less than 8 hours of base-load emissions.

The "commissioning period" for a new power plant (or generating unit) is typically defined as the period beginning with first firing of the unit and ending when the initial compliance and certification tests are complete. The commissioning period can last up to six months (i.e., 180 days). While an operator can usually meet its emission limits during most of the commissioning period, emission rates during the early commissioning period often exceed the typical startup and base-load emission limits because the unit is not yet completely tuned nor are the air pollution controls yet installed or fully optimized. "Commissioning activities" during the early commissioning period, for which the corresponding emissions are expected to exceed the routine startup and base-load emission rates, include first firing, testing, and tuning of the boiler and associated air pollution control systems. Commissioning emissions will not affect the maximum annual emissions associated with the Plant. Maximum hourly and daily commissioning emissions are summarized in Table 9. Commissioning emission rates were based upon information obtained from the San Joaquin Solar Project (08-AFC-12, November 2008). Although the CO emission rates (in lb/MMBtu) during commissioning may exceed the base-load CO emission rate hourly and daily CO emissions are not expected to exceed the base-load rates.

Table 9 Commissioning Emissions from the BFB Boiler		
	Maximum Commissioning Emissions	
Pollutant	(lb/hr)	(lb/day)
CO	33.2	797
NOx	100	1,005
PM_{10}	488	4,879
$PM_{2.5}$	420	4,201
ROC	2.87	49.2
SOx	49.4	987

Notes:

[1] Reflects the base-load emission rates. Hourly and daily emissions are not expected to exceed the base-load rates; the lb/MMBtu CO emission rates during commissioning may exceed the base-load CO emission rate of 0.081 lb/MMBtu.

[2] Based upon commissioning information obtained from the San Joaquin Solar Project (08-AFC-12, November 2008).

[3] PM_{10} was assumed to comprise 86% $PM_{2.5}$ as derived from Table 1.6-1 of AP-42 (September 2003).

[4] Reflects a heat input rate of 287 MMBtu/hr.

[5] Reflects 10 hours per day at the hourly commissioning emission rate.

[6] Reflects 20 hours per day at the hourly commissioning emission rate.

B. Maximum Emissions from the Biomass Receiving/Storage/Handling System

The Biomass Receiving/Handling/Storage System will be a source of fugitive PM emissions. Emissions were characterized for the following operations:

- Biomass receiving and handling; and
- Biomass Outdoor Stockpiles.

The biomass handling operations, as grouped into six operating areas. Maximum emissions from these six operating areas are summarized in Table 10. Maximum daily emissions from the combined biomass receiving/handling operations reflect the maximum value for <u>either</u> the rice hulls operation or the shells/wood operation while maximum annual emissions reflect the sum of both. A 50% control efficiency was applied to the emission factors for those covered transfer points.

Table 10 Maximum Emissions from the Biomass Receiving/Handling System				
	PM_{10} Emissions		$PM_{2.5}$ Emissions	
Source Group	(lb/day)	(tpy)	(lb/day)	(tpy)
Rice Hulls Truck Unloading	1.41E-02	1.25E-03	2.13E-03	1.89E-04
Rice Hulls Building	7.50E-02	8.54E-03	1.14E-02	1.29E-03
Rice Hulls Stockpiles	2.62E-01	1.45E-02	3.97E-02	2.20E-03
Shells/Wood Truck Unloading	1.55E-02	5.90E-04	2.35E-03	8.94E-05
Shells/Wood Building	1.89	0.35	0.29	0.05
Shells/Wood Stockpiles	2.88E-01	9.21E-03	4.36E-02	1.39E-03
Rice Hulls Subtotal	3.68E-01	2.43E-02	5.58E-02	3.68E-03
Shells/Wood Subtotal	2.21	0.36	0.33	0.05
TOTALS [1]	2.21 [2]	0.38	0.33 [2]	0.06

Notes:
[1] Apparent minor inaccuracies in table summations are attributable to rounding.
[2] Total maximum daily emissions reflect only the Shells/Wood operation since it was assumed that only one fuel type will be processed on any given day.

CBE will operate six outdoor biomass stockpiles. CBE will cover the inactive portions of the outdoor rice hulls and shells/wood stockpiles, which will reduce fugitive dust emissions. A control efficiency of 90% was assumed for the covered stockpiles. The maximum emissions from the biomass stockpiles are summarized in Table 11.

Table 11 Maximum Emissions from the Outdoor Biomass Stockpiles				
	PM_{10} Emissions		$PM_{2.5}$ Emissions	
Source Group	(lb/day)	(tpy)	(lb/day)	(tpy)
Stockpile A (Rice Hulls)	0.012	0.002	0.00008	0.00002
Stockpile B (Rice Hulls)	0.012	0.002	0.00008	0.00002
Stockpile C (Rice Hulls)	0.002	0.0004	0.00002	0.000003
Stockpile D (Rice Hulls)	0.002	0.0004	0.00002	0.000003
Stockpile E (Shells/Wood)	0.008	0.001	0.00006	0.00001
Stockpile F (Shells/Wood)	0.008	0.001	0.00006	0.00001
TOTALS [1]	0.04	0.007	0.0003	0.00006

Note:
[1] Apparent minor inaccuracies in table summations are attributable to rounding.

C. Maximum Emissions from the Cooling Tower

The Cooling Tower will emit only PM. PM is assumed to be 100% $PM_{2.5}$. Maximum PM emissions from the Cooling Tower will be 8.46 lb/day and 1.50 tpy.

D. Maximum Emissions from the Ash and Lime Silos

The Ash and Lime Silos will emit only PM. The maximum emissions from each Silo are summarized in Table 12.

Table 12 **Maximum Emissions from Each Ash Silo**				
	Maximum Emissions			
	Each Ash Silo		Lime Silo	
Pollutant	(lb/day)	(tpy)	(lb/day)	(tpy)
PM_{10}	0.32	0.06	0.03	0.0008
$PM_{2.5}$	0.12	0.02	0.01	0.0003

E. Maximum Emissions from the Emergency Generator

The maximum emissions from the emergency generator are summarized in Table 13. Maximum daily emissions were calculated from the hourly emissions at 24 hr/day. Maximum annual emissions reflect a 200 hr/yr allowance for emergency and non-emergency operation.

Table 13 **Maximum Emissions for the Emergency Generator**			
	Maximum Potential Emissions		
Pollutant	Hourly (lb/hr)	Daily (lb/day)	Annual (tpy)
CO	0.42	10.1	0.04
NOx	8.80	211	0.88
PM_{10}	0.04	0.84	0.004
$PM_{2.5}$	0.04	0.84	0.004
ROC	0.05	1.21	0.005
SOx	0.01	0.27	0.001

F. Maximum Emissions from the Emergency Fire Pump

The maximum emissions from the emergency fire pump are summarized in Table 14. Maximum daily emissions were calculated from the hourly emissions at 24 hr/day. Maximum annual emissions reflect a 200 hr/yr allowance for emergency and non-emergency operation.

Table 14
Maximum Emissions for the Fire Pump

Pollutant	Maximum Potential Emissions Hourly (lb/hr)	Daily (lb/day)	Annual (tpy)
CO	3.44	82.6	0.34
NOx	3.77	90.5	0.38
PM_{10}	0.20	4.76	0.02
$PM_{2.5}$	0.20	4.76	0.02
ROC	0.20	4.76	0.02
SOx	0.007	0.16	0.0007

G. Maximum Emissions from the Plant

Maximum annual emissions from the Plant are summarized in Table 15.

Table 15
Maximum Emissions from the Plant

Source	Maximum Potential Emissions (tpy) CO	NOx	PM_{10}	$PM_{2.5}$	ROC	SOx
BFB Boiler [1]	141	131	41.9	41.9	8.73	52.4
Biomass Receiving/Handling [2]	N/A	N/A	0.38	0.06	N/A	N/A
Biomass Storage [3]	N/A	N/A	< 0.01	< 0.01	N/A	N/A
Cooling Tower [4]	N/A	N/A	1.50	1.50	N/A	N/A
Ash Silos [5]	N/A	N/A	0.11	0.04	N/A	N/A
Lime Silo [6]	N/A	N/A	< 0.01	< 0.01	N/A	N/A
Emergency Generator [7]	0.04	0.88	< 0.01	< 0.01	< 0.01	< 0.01
Emergency Fire Pump [8]	0.34	0.38	0.02	0.02	0.02	< 0.01
TOTALS [9]	142	132	43.9	43.5	8.76	52.4

H. Air Toxic Emissions

Maximum toxic air contaminant (TAC) emissions from the Plant were calculated to determine the health risk assessment (HRA) applicability under the California Air Pollution Control Officers Association's (CAPCOA) *Facility Prioritization Guidelines* (July 1990) and, if necessary, to further determine the associated health risks. Hourly TAC emissions were estimated to determine the acute prioritization score (and health hazards, if necessary). Annual TAC emissions were estimated to determine carcinogenic and chronic prioritization scores (and excess cancer risks and chronic health hazards, if necessary). Annual TAC emissions were also estimated to determine the applicability of preconstruction review of major sources of hazardous air pollutants (HAPs) and federal National Emission Standards for Hazardous Air Pollutants (NESHAPs). Maximum hourly and annual TAC emissions from the Plant are summarized in Tables 16 and 17, respectively. Federal HAPs are a subset of the TACs regulated in California; HAPs do not include NH_3, barium, copper, and DPM. The maximum facility emissions of any single HAP (9.71 tpy for HCl) and total HAPs (14.6 tpy).

Table 16
Maximum Hourly TAC Emissions for the Colusa Bio-Energy Plant

Pollutant	Maximum Potential Emissions (lb/hr)				
	BFB Boiler	Cooling Tower	Emergency Generator	Fire Pump	Project Totals
Acetaldehyde	6.59E-03				6.89E-03
Acrolein	4.62E-03				4.71E-03
Ammonia	2.87				2.87
Arsenic	5.53E-04	1.80E-07			5.54E-04
Barium		7.01E-06			7.01E-06
Benzene	2.71E-02				5.14E-02
Beryllium	7.61E-05				7.61E-05
Cadmium	3.13E-03				3.13E-03
Chromium, Hexavalent	1.51E-03				1.51E-03
Copper	2.17E-03	4.51E-06			2.17E-03
Diesel Particulate			3.52E-02	0.20	0.23
Dioxins					
Dioxin 4D: 2,3,7,8	1.57E-08				1.57E-08
Dioxin 5D: 1,2,3,7,8	3.88E-08				3.88E-08
Dioxin 6D: 1,2,3,4,7,8	4.30E-08				4.30E-08
Dioxin 6D: 1,2,3,6,7,8	4.48E-08				4.48E-08
Dioxin 6D: 1,2,3,7,8,9	4.05E-08				4.05E-08
Dioxin 7D: 1,2,3,4,6,7,8	2.96E-07				2.96E-07
Dioxin 8D: 1,2,3,4,6,7,8,9	2.05E-06				2.05E-06
Formaldehyde	0.82				0.83
Furans					
Furan 4F: 2,3,7,8	1.13E-07				1.13E-07

Table 16 Maximum Hourly TAC Emissions for the Colusa Bio-Energy Plant					
	Maximum Potential Emissions (lb/hr)				
Pollutant	BFB Boiler	Cooling Tower	Emergency Generator	Fire Pump	Project Totals
Furan 5F: 1,2,3,7,8	1.09E-07				1.09E-07
Furan 5F: 2,3,4,7,8	1.58E-07				1.58E-07
Furan 6F: 1,2,3,4,7,8	5.39E-08				5.39E-08
Furan 6F: 1,2,3,6,7,8	5.50E-08				5.50E-08
Furan 6F: 1,2,3,7,8,9	2.29E-08				2.29E-08
Furan 6F: 2,3,4,6,7,8	6.17E-08				6.17E-08
Furan7F: 1,2,3,4,6,7,8	2.58E-07				2.58E-07
Furan 7F: 1,2,3,4,7,8,9	2.62E-08				2.62E-08
Furan 8F: 1,2,3,4,6,7,8,9	1.85E-07				1.85E-07
Hydrochloric Acid	2.21				2.21
Lead	2.31E-03				2.31E-03
Manganese	1.01E-02	4.51E-06			1.01E-02
Mercury	6.77E-03				6.77E-03
Nickel	1.59E-03				1.59E-03
PAHs					
Acenaphthene	4.23E-04				4.97E-04
Acenaphthylene	3.34E-03				3.43E-03
Anthracene	4.23E-04				4.46E-04
Benzo(a)anthracene	4.23E-04				4.35E-04
Benzo(a)pyrene	4.23E-04				4.35E-04
Benzo(b)fluoranthene	4.23E-04				4.35E-04
Benzo(g,h,i)perylene	4.23E-04				4.35E-04
Benzo(k)fluoranthene	4.23E-04				4.35E-04
Chrysene	4.23E-04				4.36E-04
Dibenz(a,h)anthracene	4.23E-04				4.35E-04
Fluoranthene	1.69E-03				1.72E-03
Fluorene	4.23E-04				5.32E-04
Indeno(1,2,3-cd)pyrene	4.23E-04				4.35E-04
Napthalene	0.25				0.25
Phenanthrene	3.98E-03				4.32E-03
Pyrene	1.74E-03				1.76E-03
Selenium	6.70E-04				6.70E-04
Toluene	4.51E-03				1.17E-02
Vinyl Chloride	1.91E-02				1.91E-02
Xylene	5.29E-03				7.57E-03
Zinc	1.18E-02				1.18E-02

Table 17 Maximum Annual TAC Emissions for the Colusa Bio-Energy Plant					
	Maximum Potential Emissions (lb/yr)				
Pollutant	BFB Boiler	Cooling Tower	Emergency Generator	Fire Pump	Project Totals
Acetaldehyde	54.1				54.1
Acrolein	37.9				37.9
Ammonia	25,141				25,141
Arsenic	4.54	7.68E-07			4.54
Barium		2.99E-05			2.99E-05
Benzene	223				227
Beryllium	0.62				0.62
Cadmium	25.6				25.6
Chromium, Hexavalent	12.4				12.4
Copper	17.8	1.92E-05			17.8
Diesel Particulate			7.04	39.7	46.7
Dioxins					
Dioxin 4D: 2,3,7,8	1.29E-04				2.99E-05
Dioxin 5D: 1,2,3,7,8	3.18E-04				3.18E-04
Dioxin 6D: 1,2,3,4,7,8	3.53E-04				3.53E-04
Dioxin 6D: 1,2,3,6,7,8	3.67E-04				3.67E-04
Dioxin 6D: 1,2,3,7,8,9	3.32E-04				3.32E-04
Dioxin 7D: 1,2,3,4,6,7,8	2.43E-03				2.43E-03
Dioxin 8D: 1,2,3,4,6,7,8,9	1.68E-02				1.68E-02
Formaldehyde	6,764				6,765
Furans					
Furan 4F: 2,3,7,8	9.25E-04				9.25E-04
Furan 5F: 1,2,3,7,8	8.93E-04				8.93E-04
Furan 5F: 2,3,4,7,8	1.29E-03				1.29E-03
Furan 6F: 1,2,3,4,7,8	4.42E-04				4.42E-04
Furan 6F: 1,2,3,6,7,8	4.51E-04				4.51E-04
Furan 6F: 1,2,3,7,8,9	1.88E-04				1.88E-04
Furan 6F: 2,3,4,6,7,8	5.06E-04				5.06E-04
Furan7F: 1,2,3,4,6,7,8	2.12E-03				2.12E-03
Furan 7F: 1,2,3,4,7,8,9	2.15E-04				2.15E-04
Furan 8F: 1,2,3,4,6,7,8,9	1.51E-03				1.51E-03
Hydrochloric Acid	19,395				19,395
Lead	18.9				18.9
Manganese	82.7	1.92E-05			82.7
Mercury	55.5				55.5
Nickel	13.0				13.0
PAHs					
Acenaphthene	3.47				3.48

Table 17 Maximum Annual TAC Emissions for the Colusa Bio-Energy Plant					
	Maximum Potential Emissions (lb/yr)				
Pollutant	BFB Boiler	Cooling Tower	Emergency Generator	Fire Pump	Project Totals
Acenaphthylene	27.4				27.4
Anthracene	3.47				3.47
Benzo(a)anthracene	3.47				3.47
Benzo(a)pyrene	3.47				3.47
Benzo(b)fluoranthene	3.47				3.47
Benzo(g,h,i)perylene	3.47				3.47
Benzo(k)fluoranthene	3.47				3.47
Chrysene	3.47				3.47
Dibenz(a,h)anthracene	3.47				3.47
Fluoranthene	13.8				13.9
Fluorene	3.47				3.49
Indeno(1,2,3-cd)pyrene	3.47				3.47
Napthalene	2,072				2,073
Phenanthrene	32.7				32.7
Pyrene	14.2				14.3
Selenium	5.49				5.49
Toluene	37.0				38.4
Vinyl Chloride	157				157
Xylene	43.4				43.8
Zinc	97.1				97.1
MAXIMUM HAP (lb/yr) [1,2]					19,395
TOTAL HAPs (lb/yr) [2]					29,225
MAXIMUM HAP (tpy)					9.70
TOTAL HAPs (tpy)					14.6

Notes:

[1] HCl is the individual HAP with the highest emissions.

[2] HAPs do not include NH_3, barium, copper, and DPM.

III. COMPLIANCE WITH APPLICABLE RULES AND REGULATIONS

Rule 3.0 (General Requirements) requires applicants to demonstrate to the satisfaction of the District that a new source can be expected to comply with all the applicable state laws and District regulations and rules. This section discusses the compliance status of the proposed Plant with respect to each of the applicable District requirements as listed below.

- Rule 3.1 – Permits Required;
- Rule 3.6 – Standards for Authority to Construct (New Source Review);
- Federal NSR for $PM_{2.5}$;
- Rule 3.17 – Title V Permits;
- Rule 3.18 – Regulation of Construction of Major Sources of HAPs;
- 40 CFR Part 72 – Acid Rain;
- 40 CFR Part 60 – New Source Performance Standards;
- 40 CFR Part 63 – National Emissions Standards for HAPs;
- Rule 2.10 – Nuisance;
- Rule 2.13 – Visible Emissions;
- Rule 2.15 – Particulate Matter Concentration;
- Rule 2.16 – Dust and Fumes;
- Rule 2.22 – Sulfur Oxides;
- Rule 2.29 – Hexavalent Chromium Airborne Toxic Control Measure for Cooling Towers;
- Rule 2.36 – Stationary Internal Combustion Engines;
- Rule 2.39 – Industrial/Institutional/Commercial Boilers NOx Control Measure; and
- ATCM for Stationary CI Engines.

A. Rule 3.1: Permits Required

Rule 3.1 specifies that any owner/operator constructing, altering, replacing or operating any source that emits or controls air pollutants to first obtain, from the District, an ATC. This ATC Permit Application satisfies this requirement for the Plant.

B. Rule 3.6: Standards for Authority to Construct (New Source Review)

The District adopted Rule 3.6 to establish preconstruction review requirements for new stationary sources for the use of BACT, for air quality impact analyses (AQIA) to ensure that the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards, and to ensure that no net increase in emissions occurs from new stationary sources that have the potential to emit 25 tpy or more of any nonattainment pollutant (or their precursors). Rule 3.6 applies to all new stationary sources that are subject to District permit requirements and may emit affected pollutants. Rule 3.6 contains the following regulatory elements:

- BACT;
- Emission offsets;
- AQIA; and
- Compliance by other owned sources.

1. Best Available Control Technology

Section c.1 of Rule 3.6 requires an applicant to apply BACT, on a pollutant-specific basis, to any new emissions unit that has maximum daily emissions exceeding specified thresholds. The maximum daily emissions from the emission sources at the Plant are compared with the District's BACT thresholds in Table 18. The District has not yet adopted a BACT threshold for $PM_{2.5}$. The maximum daily emissions of all affected pollutants from the proposed BFB Boiler will exceed the District's BACT thresholds. The maximum daily NOx emissions from the proposed Emergency Generator and Emergency Fire Pump also will exceed the District's BACT thresholds. Therefore, BACT analyses were conducted for the BFB Boiler, Emergency Generator, and Emergency Fire Pump to identify BACT. Detailed BACT Analyses are presented Appendix D. These BACT analyses concluded the following:

- A CO emission limit of 0.09 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design CO emission rate of 0.081 lb/MMBtu (24-hour average), the proposed BFB Boiler will satisfy BACT.

- A NOx emission limit of 0.075 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design NOx emission rate of 0.075 lb/MMBtu (24-hour average), the proposed BFB Boiler will satisfy BACT.

- A PM_{10} emission limit of 0.024 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design PM_{10} emission rate of 0.024 lb/MMBtu, the proposed BFB Boiler will satisfy BACT.

- A SOx emission limit of 0.054 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design SOx emission rate of 0.030 lb/MMBtu (30-day average), the proposed BFB Boiler will satisfy BACT.

- A VOC emission limit of 0.009 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design VOC emission rate of 0.005 lb/MMBtu, the proposed BFB Boiler will satisfy BACT.

- The Tier 2 NOx+VOC standard of 4.8 g/bhp constitutes BACT for an emergency diesel generator rated greater than 750 bhp. The proposed Emergency Generator is a Tier 2 engine and thus will satisfy BACT.

- The Tier 3 NOx+VOC standard of 3.0 g/bhp constitutes BACT for an emergency fire pump rated between 600 and 750 bhp. The proposed Emergency Fire Pump is a Tier 3 engine and thus will satisfy BACT.

Table 18
BACT Applicability

Source	Maximum Daily Emissions (lb/day)					
	CO	NOx	PM_{10}	$PM_{2.5}$	ROC	SOx
BFB Boiler	797	804	236	236	49.2	359
Rice Hulls Receiving/Handling	N/A	N/A	0.37	0.06	N/A	N/A
Shells/Wood Receiving/Handling	N/A	N/A	2.21	0.36	N/A	N/A
Rice Hulls Stockpiles	N/A	N/A	0.03	0.004	N/A	N/A
Shells/Wood Stockpiles	N/A	N/A	0.02	0.002	N/A	N/A
Cooling Tower	N/A	N/A	8.46	8.46	N/A	N/A
Ash Silos	N/A	N/A	0.32	0.12	N/A	N/A
Lime Silo	N/A	N/A	0.03	0.01	N/A	N/A
Emergency Generator	10.1	211	0.84	0.84	1.21	0.27
Emergency Fire Pump	82.6	90.5	4.76	4.76	4.76	0.16
BACT Threshold	500.0	25.0	80.0	N/A	25.0	80.0
Source	BACT Applicable?					
	CO	NOx	PM_{10}	$PM_{2.5}$	ROC	SOx
BFB Boiler	Yes	Yes	Yes	N/A	Yes	Yes
Rice Hulls Receiving/Handling	N/A	N/A	No	N/A	N/A	N/A
Shells/Wood Receiving/Handling	N/A	N/A	No	N/A	N/A	N/A
Rice Hulls Stockpiles	N/A	N/A	No	N/A	N/A	N/A
Shells/Wood Stockpiles	N/A	N/A	No	N/A	N/A	N/A
Cooling Tower	N/A	N/A	No	N/A	N/A	N/A
Ash Silos	N/A	N/A	No	N/A	N/A	N/A
Lime Silo	N/A	N/A	No	N/A	N/A	N/A
Emergency Generator	No	Yes	No	N/A	No	No
Emergency Fire Pump	No	Yes	No	N/A	No	No

2. Emission Offsets

Section C.2 of Rule 3.6 requires an applicant to offset the calendar quarter emission increases from a new facility, on a pollutant specific basis, for those nonattainment pollutants whose facility emissions equal or exceed the District's 25 tpy offset threshold. Section b.20 of Rule 3.6 defines a "nonattainment pollutant" as any pollutant (including their precursors) that has been designated nonattainment by the USEPA or CARB. Colusa County has two relevant nonattainment designations, as shown below.

- CARB has classified Colusa County as a "nonattainment-transitional" area for the California ozone ambient air quality standard (AAQS). As such, NOx and ROC, as ozone precursors, are nonattainment pollutants.

- CARB has classified Colusa County as a "nonattainment" area for the California PM_{10} AAQS. As such, PM_{10} is a nonattainment pollutant. Also, NOx, ROC, and SOx – as PM precursors – are also nonattainment pollutants.

The maximum emissions from the proposed Plant are compared with the District's offset thresholds in Table 19. Offsets will not be required for CO and $PM_{2.5}$, which are not nonattainment pollutants. Maximum facility emissions of all nonattainment pollutants, except ROC, will exceed the District's 25 tpy offset threshold. Therefore, CBE must offset the emission increases of NOx/PM_{10}/SOx associated with the Plant. CO, $PM_{2.5}$, and ROC are not addressed further in this offset analysis.

Table 19
Emission Offset Applicability

Pollutant	Maximum Facility Emissions (tpy)	Offset Threshold (tpy)	Offsets Required?
CO	142	N/A [1]	No
NOx	132	25	Yes
PM_{10}	43.9	25	Yes
$PM_{2.5}$	43.5	N/A [1]	No
ROC	8.76	25	No
SOx	52.4	25	Yes

Note:
[1] Not a nonattainment pollutant (or a precursor for a nonattainment pollutant).

Section c.2.A specifies that the offset liability for a new stationary source shall be, on a pollutant specific basis, that portion of the potential to emit that exceeds 25 tpy. Section d.3 of Rule 3.6 similarly stipulates that the emissions increase for a new source be calculated as the proposed maximum emissions. Section d.2 of Rule 3.6 further requires that the emission increases be calculated separately for each calendar quarter. Since the proposed Plant will be a new stationary source, the emissions increases were calculated as the maximum emissions from the proposed Plant. Since Rule 3.6 does not exempt emergency equipment from the offset provisions, maximum emissions from the Emergency Generator and Emergency Fire Pump – including allowances for emergency operation – are included in the emission increase calculations. The emission increases for the Plant are summarized in Table 20. The offsettable emission increases, for those nonattainment pollutants for which maximum facility emissions exceed the offset threshold (i.e., NOx, PM_{10}, and SOx) were calculated as the emission increases less the offset threshold. Table 20 also shows the offsettable emissions increase on a quarterly basis. The offsettable emission increases were quartered evenly for the purposes of the offset analysis.

Table 20
Offsettable Emissions Increase

Pollutant	Emissions Increase (tpy)	Offset Threshold (tpy)	Offsettable Emission Increase [2] (tpy)	(lb/quarter)
CO	142	N/A [1]	0	0
NOx	132	25	107	53,626
PM_{10}	43.9	25	18.9	9,470
$PM_{2.5}$	43.5	N/A [1]	0	0
ROC	8.76	25	0	0
SOx	52.4	25	27.4	13,700

Notes:
[1] Not a nonattainment pollutant (or a precursor for a nonattainment pollutant).
[2] Calculated as the emissions increase less the offset threshold.

The emission offset liability for the proposed Plant is summarized in Table 21. Section c.3 of Rule 3.6 specifies the offset ratios that must be used to offset emission increases from a project. An offset ratio of 1.5:1 was assumed for the purposes of this offset analysis. The final offset analysis will be updated to reflect the actual location of the portfolio of emission reduction credits (ERCs) used to provide the offsets. Offset ratios vary according to the distance of the origin of the emission reductions to the proposed facility, as follows:

- An offset ratio of 1:1 for on-site emission reductions;
- An offset ratio of 1.2:1 for emission reductions originating within 20 miles;
- An offset ratio of 1.5:1 for emission reductions originating between 20 and 50 miles; and
- An offset ratio of 2:1 for emission reductions originating beyond 50 miles.

Table 21 Offset Liability			
Pollutant	Offsettable Emissions Increase (lb/quarter)	Offset Ratio [1]	Offset Liability (lb/quarter) [2]
CO	0	N/A	0
NOx	53,626	1.5	80,439
PM_{10}	9,470	1.5	14,205
$PM_{2.5}$	0	N/A	0
ROC	0	N/A	0
SOx	13,700	1.5	20,550

Notes:
[1] Assumes all sources of ERCs originate between 20 and 50 miles of the Plant for the purposes of this offset analysis.
[2] Calculated as the offsettable emissions increase times the offset ratio. The final offset liability will be recalculated after all sources of ERCs are identified.

3. Ambient Air Quality Standards

Section c.5 of Rule 3.6 specifies that emissions from a new stationary source shall not cause or worsen a violation of any AAQS. Therefore, an air quality impact analysis (AQIA) was performed to estimate the maximum ground-level concentrations associated with emissions from the Plant, during both base-load operation, startup, and commissioning, to determine whether such impacts are significant, and to demonstrate that such concentrations – when combined with background concentrations – will not cause or worsen a violation of any AAQS. A detailed discussion of the AQIA is presented in Appendix E.

Base-Load Operation

USEPA considers impacts from a project to be *de minimis* (i.e., would not cause or worsen a violation of an AAQS) if the modeled impacts from the project do not exceed the significant impact levels (SILs) specified in 40 CFR 51.165(b)(2). USEPA has not yet defined SILs for the more recently adopted one-hour NO_2 and SO_2 impacts. However, USEPA has suggested that, until SILs have been promulgated, interim values of 4 ppb (7.5 $\mu g/m^3$) for NO_2 and 3 ppb (7.8 $\mu g/m^3$) for SO_2 may be used. These values were used as SILs in this AQIA. Also, the United States Court of Appeals recently vacated the $PM_{2.5}$ SIL and remanded it back to USEPA for further consideration. This essentially removes the SILs for 24-hour and annual $PM_{2.5}$ impacts from 40 CFR 51.165(b)(2). The suggested SILs for one-hour NO_2 and SO_2, as well as the prior SILs for $PM_{2.5}$, were used in this analysis as interim SILs in accordance with the Air

Dispersion Modeling and Health Risk Assessment Protocol (January 2013) that Sierra Research submitted to the District.

The modeled impacts from base-load operation the proposed Plant are compared with the SILs in Table 22. The AQIA indicates that CO, annual PM_{10}, and 3-hour/24-hour/annual SO_2 impacts from the proposed Project would be *de mininis* and, therefore, would not significantly cause or worse a violation of the associated AAQS. Impacts for the other pollutants/averaging periods exceeded the SILs and, therefore, were evaluated further.

Table 22
Significant Air Quality Impact Determination

Pollutant	Averaging Period	Concentration (ug/m^3) Modeled Impact	Significance Levels	Significant?
CO	1-hour	299	2,000 [1]	No
	8-hour	82.2	500 [1]	No
NO_2	1-hour	241	7.5 [2]	Yes
	Annual	2.30	1 [1]	Yes
PM_{10}	24-hour	7.90	5 [1]	Yes
	Annual	0.68	1 [1]	No
$PM_{2.5}$	24-hour	5.56	1.2 [3]	Yes
	Annual	0.65	0.3 [3]	Yes
SO_2	1-hour	23.5	7.8 [2]	Yes
	3-hour	14.7	25 [1]	No
	24-hour	5.75	5 [1]	Yes
	Annual	0.77	1 [1]	No

Note:
1 Significance levels were obtained from 40 CFR 51.165(b)(2).
2 USEPA has not yet defined SILs for one-hour NO_2 and SO_2 impacts. However, USEPA has suggested that, until SILs have been promulgated, interim values of 4 ppb (7.5 μg/m^3) for NO_2 and 3 ppb (7.8 μg/m^3) for SO_2 may be used. These values were used as SILs in this AQIA.
3 The United States Court of Appeals recently vacated the $PM_{2.5}$ SIL and remanded it back to USEPA for further consideration. This essentially removes the SILs for 24-hour and annual $PM_{2.5}$ impacts. The prior SILs were used as SILs in this AQIA.

A full AQIA was performed for NO_2, $PM_{2.5}$, 24-hour PM_{10}, and 1-hour/24-hr SO_2 impacts, whose impacts, as shown in Table 23, are not *de minimis*. The ambient impacts associated with base-load emissions from the proposed Plant were added to background concentrations. The resulting total impacts are compared with the relevant AAQSs in Table 23. The AQIA indicates that emissions from the proposed Plant would not cause an exceedance of the NO_2, $PM_{2.5}$, and 1-hour/24-hour SO_2 AAQS. Impacts for PM_{10}, whose background concentrations are already close to the AAQS, exceeded the 24-hour PM_{10} AAQS. Therefore, 24-hour PM_{10} impacts were evaluated further.

Table 23 Air Quality Impact Analysis for Base-Load Operation						
		Concentration (ug/m^3)				
Pollutant	Averaging Period	Background	Modeled Impact	Total Impact	AAQS [6]	Compliant?
NO_2	1-hour	N/A	N/A	191 [2,5]	191	Yes
	Annual	17.2 [1,2]	2.30	19.5	57	Yes
PM_{10}	24-hour	69.7 [3]	7.90	77.6	50	No
$PM_{2.5}$	24-hour	27.3 [3]	5.56	32.9	35	Yes
	Annual	7.1 [3]	0.65	7.7	12	Yes
SO_2	1-hour	13.3 [1,4]	23.5	36.8	200	Yes
	24-hour	5.3 [1,4]	5.75	11.1	106	Yes

Notes:

1 Concentrations (in ppm or ppb) were converted to units of ug/m^3 using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

2 Background NO_2 data were obtained from the Yuba City monitoring station for 2009-2011.

3 Background PM_{10} and $PM_{2.5}$ data were obtained from the Colusa monitoring station for 2009-2011.

4 Background SO_2 data were obtained from the Sacramento North Highlands and Del Paso Manor monitoring station for 2009-2011.

5 Total impacts were modeled using the PVMRM option within AERMOD.

6 Reflects the more stringent state or federal AAQS. NO_2 and SO_2 AAQSs (in ppm or ppb) were converted to units of ug/m^3 using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

A more refined daily PM_{10} AQIA was performed to evaluate PM_{10} impacts associated with Plant emissions, relative to the 24-hour PM_{10} SIL, on those days when the total impacts (i.e., project plus background) exceeded the 24-hour PM_{10} AAQSs. Total daily impacts were calculated, for each day of each modeled year, from daily background concentrations and modeled daily impacts. The maximum modeled 24-hour PM_{10} impacts from the proposed Plant for each modeling year, from only those days whose total impacts exceeded the 24-hour AAQS, were compared with the PM_{10} SIL. Total impacts exceeded the 24-hour PM_{10} AAQS 94 days in the five-year period. The maximum modeled PM_{10} impacts from the proposed Plant from these 24-hour PM_{10} AAQS exceedances days (94 days), for each modeling year, are compared with the SIL in Table 24. Of these 94 modeled exceedances, the Plant impact exceeded the PM_{10} SIL only once – on October 11, 2010. 24-hour impacts on October 11, 2010 were evaluated further.

Table 24 Daily PM Air Quality Impact Analysis						
			Date of	Concentration ($\mu g/m^3$)		
Pollutant	Year	Days Above AAQS	Maximum Modeled Impact [1]	Maximum Modeled Impact	Significance Level [2]	Significant?
PM_{10}	2007	0	N/A	N/A	5	N/A
	2008	62	7/11	3.77	5	No
	2009	24	9/30	3.29	5	No
	2010	8	10/11	7.69 [3]	5	Yes
	2011	22	11/1	3.58	5	No

Notes:

1 Reflects only those days in which the combined impacts exceeded the 24-hour AAQS.

2 Significance levels for PM_{10} were obtained from 40 CFR 51.165(b)(2).

3 This was the only day where modeled impacts exceeded the SIL on a day where the combined impacts exceeded the 24-hour PM_{10} AAQS.

The AERMOD 24-hour PM_{10} output was evaluated in more detail for October 11, 2010. The discrete impacts associated with each modeled source at the Plant were characterized separately for the 12 receptors whose total impact exceeded the 5.0 $\mu g/m^3$ 24-hour PM_{10} SIL. The Emergency Fire Pump is the largest single contributor to the Plant impact and contributes a majority of the Plant impact for 11 of these 12 receptors. The Emergency Fire Pump impacts were conservatively assumed to reflect 24 hours of full load operation during an emergency event. Such lengthy emergency operation is unlikely on any day. Furthermore, the Emergency Fire Pump will only be operated up to one hour per week for routine testing and maintenance. The only other operation will be for emergency use or District required testing. The allowance for emergency operation is only 150 hr/yr (of a total allowance of 200 hr/yr). Therefore, the probability of such heavy Emergency Fire Pump usage coinciding with the poor ambient air quality and poor dispersion conditions realized on October 11, 2011 is highly unlikely.

For example, one hour of full load operation, which would match the daily allowance for non-emergency operation, would yield daily emissions that are 4% of those based upon 24-hours of full load operation. Additionally, the probability of 24 hours of full load emergency operation on any given day would be well below 2% (150 hours/8760 hours/yr as a conservative estimate, since most emergency operation would be less than 24 hours). Furthermore, non-emergency operation will occur only once per week (a probability of 14% that operation will occur on any given day). Therefore, using 1 hour per day of full load operation to characterize daily impacts from the Emergency Fire Pump still provides a very conservative estimate of air quality impacts. Consequently, Plant impacts at these 12 highest affected receptors were recalculated assuming 1 hour of full load operation of the Emergency Fire Pump (i.e., 4% of the impacts associated with 24 hours of full load emergency operation), as summarized in Table 25. Such a conservative assumption would nonetheless lower the worst-case 24-hour PM_{10} impact on October 11, 2010 from 7.69 $\mu g/m^3$ to 4.22 $\mu g/m^3$. Thus, the daily AQIA indicates that PM_{10} emissions from the proposed Plant would not significantly worsen the existing violations of the 24-hour PM_{10} AAQS.

Table 25 **Worst Case PM_{10} Receptors – October 11, 2010**						
Receptor Coordinates		24-Hour Plant Impact (µg/m³)				
		AERMOD Output		Recalculated		
UTM X	UTMY	Plant	Fire Pump	Fire Pump [1]	Plant [2]	Significant?
586685	4335414	7.90	3.84	0.15	4.22	No
586685	4335391	7.22	4.03	0.16	3.35	No
586686	4335438	6.49	3.29	0.13	3.34	No
586685	4335367	5.99	3.87	0.15	2.28	No
586700	4335375	5.92	3.35	0.13	2.70	No
586700	4335350	5.81	3.50	0.14	2.45	No
586700	4335325	5.37	3.38	0.14	2.13	No
586685	4335343	5.35	3.54	0.14	1.96	No
586710	4335342	5.26	3.09	0.12	2.29	No
586709	4335319	5.20	3.18	0.13	2.15	No
586700	4335400	5.14	2.88	0.12	2.38	No
586709	4335295	4.94	3.09	0.12	2.21	No

Note:
1 Reflects 4% of the AERMOD 24-hour operation output.
2 Reflects the AERMOD output Plant total minus the AERMOD modeled Emergency Fire Pump impacts plus the recalculated Emergency Fire Pump impacts.

Startup

The results of the AQIA for startup are summarized in Table 26. The ambient impacts associated with startup emissions from the proposed Plant were added to background concentrations. The AQIA indicates that startup emissions from the proposed Plant would not cause an exceedance of any of the short-term NO_2 or SO_2 AAQS.

Table 26 **Air Quality Impact Analysis for Startup**						
		Concentration (ug/m³)				
Pollutant	Averaging Period	Background	Modeled Impact	Total Impact	AAQS [4]	Compliant?
NO_2	1-hour	N/A	N/A	97.1 [3]	191	Yes
SO_2	1-hour	13.3 [1,2]	106	120	200	Yes
	3-hour	13.3 [1,2]	56.1	69.4	1,330	Yes

Notes:
1 Background SO_2 data were obtained from the Sacramento North Highlands and Del Paso Manor monitoring station for 2009-2011.
2 Concentrations (in ppm or ppb) were converted to units of ug/m³, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.
3 Total impacts were modeled using the PVMRM option within AERMOD. Background NO_2 data were obtained from the Yuba City monitoring station for 2009-2011.

[4] Reflects the more stringent state or federal AAQS. NO_2 and SO_2 AAQSs (in ppm or ppb) were converted to units of ug/m^3, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

Commissioning

The results of the AQIA for commissioning are summarized in Table 27. The AQIA indicates that commissioning emissions from the BFB Boiler would not cause an exceedance of any of the AAQS, except for the 24-hour AAQS for PM_{10} and $PM_{2.5}$. The AQIA indicates that commissioning CO/NOx/SOx emissions from the BFB Boiler would not significantly contribute to violations of the associated short-term AAQS. The 24-hour PM_{10} and $PM_{2.5}$ impacts during commissioning would exceed the 24-hour PM_{10} and $PM_{2.5}$ SILs. 24-hour PM_{10} and $PM_{2.5}$ impacts were evaluated further.

Table 27
Air Quality Impact Analysis for Commissioning

Pollutant	Averaging Period	Concentration (ug/m^3)				
		Background	Modeled Impact	Total Impact	AAQS [6]	Compliant?
CO	1-hour	3,259 [1,2]	65.2	3,325	23,282	Yes
	8-hour	2,736 [1,2]	30.1	2,766	10,477	Yes
NO_2	1-hour	N/A	N/A	108 [5]	191	Yes
PM_{10}	24-hour	69.7 [3]	133	202	50	No
$PM_{2.5}$	24-hour	27.3 [3]	115	142	35	No
SO_2	1-hour	13.3 [2,4]	112	126	200	Yes
	3-hour	13.3 [2,4]	89.5	103	1,330	Yes
	24-hour	5.3 [2,4]	26.9	32.2	106	Yes

Notes:

[1] Background CO data were obtained from the Chico monitoring station for 2009-2011.

[2] Concentrations (in ppm or ppb) were converted to units of ug/m^3, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

[3] Background PM_{10} and $PM_{2.5}$ data were obtained from the Colusa monitoring station for 2009-2011.

[4] Background SO_2 data were obtained from the Sacramento North Highlands and Del Paso Manor monitoring station for 2009-2011.

[5] Total impacts were modeled using the PVMRM option within AERMOD. Background NO_2 data were obtained from the Yuba City monitoring station for 2009-2011.

[6] Reflects the more stringent state or federal AAQS. CO/NO_2/SO_2 AAQSs (in ppm or ppb) were converted to units of ug/m^3, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

A more refined daily PM_{10} AQIA was performed to evaluate PM_{10} impacts associated with commissioning emissions from the BFB Boiler, relative to the 24-hour PM_{10} and $PM_{2.5}$ SILs, on those days when the total impacts (i.e., project plus background) exceeded the 24-hour PM_{10} AAQSs. Total daily impacts were calculated, for each day of each modeled year, from daily background concentrations and modeled daily impacts. Since ambient PM_{10} concentrations at the Colusa monitoring station were measured every six days, measured values were repeated until superseded with new data pursuant to CARB guidance. The maximum modeled 24-hour PM_{10} impacts from the proposed Plant for each modeling year, from only those days whose total impacts exceeded the 24-hour AAQS, were compared with the PM_{10} SIL. Total impacts exceeded the 24-hour PM_{10} AAQS 798 days in the five-year period and the 24-hour $PM_{2.5}$ AAQS 1,017 days. Spreadsheets containing detailed daily calculations are presented in Appendix D.

4. Compliance by Other Owned Sources

Section c.7 of Rule 3.6 specifies that the owner of a new stationary source shall demonstrate that all major stationary sources, owned or operated by the applicant in California and subject to emission limitations, are in compliance or on a schedule for compliance with all applicable emission limitations and standards. CBE does not own any other major stationary sources in California.

C. Federal NSR for $PM_{2.5}$

In 1997, USEPA promulgated a federal $PM_{2.5}$ AAQS. In 2001, the District incorporated $PM_{2.5}$ into its monitoring program. In December 2004, USEPA designated Colusa County as attainment for the 1997 federal $PM_{2.5}$ AAQS based upon $PM_{2.5}$ monitoring data collected in 2001–2003. In 2006, USEPA lowered the federal $PM_{2.5}$ AAQS. In May 2008, USEPA promulgated rules governing how states should implement the NSR permitting program for the federal $PM_{2.5}$ AAQS; USEPA requires new major sources or major modifications of $PM_{2.5}$, located in $PM_{2.5}$ nonattainment areas without local permit programs addressing $PM_{2.5}$, to undergo NSR permitting via 40 CFR 51, Appendix S. Rule 3.6 does not address $PM_{2.5}$. However, in October 2009, USEPA designated Colusa County as attainment for the 2006 federal $PM_{2.5}$ AAQS based upon $PM_{2.5}$ monitoring data collected in 2006–2008. Since Colusa County is not designated as a federal $PM_{2.5}$ nonattainment area, the preconstruction permitting of the Plant is not subject to federal NSR for $PM_{2.5}$.

D. Rule 3.17: Permits to Operate for Title V Sources

Rule 3.17 established an operating permit program, which implements the requirements of Title V of the federal 1999 Amendments to the Clean Air Act, for major sources and affected facilities under the Acid Rain program. The maximum emissions from the Plant are compared with the District's major source thresholds in Table 28. Maximum emissions of CO and NOx from the proposed Plant will exceed the District's major source thresholds. Therefore, the Plant will be a major source and will require a Title V Permit. Section d.2.A.2 of Rule 3.17 requires a major source to file an initial Title V application within 12 months of commencing operation. CBE will file the initial Title V Permit application within 12 months of commencing operation.

Table 28 Major Source Determination			
Pollutant	Maximum Facility Emissions (tpy) [1]	Major Source Threshold (tpy)	Major Source?
CO	142	100	Yes
NOx	132	100	Yes
PM_{10}	43.9	100	No
$PM_{2.5}$	43.5	100	No
ROC	8.76	100	No
SOx	52.4	100	No

Note:
[1] Presented previously in Table 20.

E. Rule 3.18: Regulation of Construction of Major Sources of HAPs

Rule 3.18 requires the installation of best available control technology for toxics (T-BACT) at any new major source of HAPs. All T-BACT determinations must ensure a level of control that the District determines to be, at a minimum, no less stringent than new source maximum achievable control technology (MACT) as required by the federal National Emissions Standards for HAPs (NESHAPs). Section b of Rule 3.18 defines a major source as a facility that has the potential to emit more than 10 tpy of any single HAP or more than 25 tpy for all HAPs. Maximum HAP emissions are compared with the major source thresholds in Table 29. HCl is the individual TAC with the highest emissions. Maximum HAP emissions from the Plant will not exceed the major source thresholds. Therefore, the Plant will not be subject to the preconstruction requirements of Rule 3.18.

Table 29 HAP Major Sources Determination			
HAP	Maximum Emissions (tpy)	Major Source Threshold (tpy)	Major HAP Source?
HCl	9.7	10	No
Total HAPs	14.6	25	No

F. 40 CFR 72: Acid Rain Program

40 CFR Part 72 established the operating permit program requirements for affected sources and affected units under the Acid Rain Program, which was implemented in response to the 1990 Amendments to the Clean Air Act. Part 72 requires the owner of any new electrical generating unit, with a nameplate capacity of more than 25 MW and any amount of fossil fuel firing (including natural gas startup burners), to submit a

complete Phase II Acid Rain permit application to the permitting authority at least 24 months before the unit commences operation. CBE has included the Phase II Acid Rain permit application with this ATC Permit Application.

G. 40 CFR 60: New Source Performance Standards (NSPS)

40 CFR 60 established emissions standards for new, modified, and existing sources of emissions. Part 60 does not distinguish between major and non-major facilities. Rather, Part 60 regulates discrete source categories and establishes applicability thresholds for each. Part 60 source category regulations applicable to the proposed Plant include NSPS for boilers and stationary CI engines.

1. Subpart Db: Industrial/Commercial/Institutional Steam Generating Units

40 CFR Part 60 Subpart Db contains the applicable NSPS for new biomass-fired boilers with a maximum heat input capacity exceeding 100 MMBtu/hr. Subpart Db establishes emission limits for NOx, PM, SOx, and opacity. The proposed BFB Boiler, with a maximum heat input rating of 410 MMBtu/hr, will be subject to the Subpart Db emission limits as follows:

- New biomass boilers that do not burn coal or oil are not subject to a SOx emission limit pursuant to 40 CFR 60.42b. Therefore, the proposed BFB Boiler, which will only burn biomass and natural gas, will not be subject to a SOx emission limit under Subpart Db.

- New biomass-fired boilers that burn less than 10% natural gas are not subject to a NOx emission limit pursuant to 40 CFR 60.44b(d). Therefore, the proposed BFB Boiler, whose natural gas startup burners will burn much less than 10% natural gas on an annual basis, will not be subject to a NOx emission limit under Subpart Db.

- New biomass-fired boilers are subject to a PM emission limit of 0.030 lb/MMBtu pursuant to 40 CFR 60.43b(h)(1). The BFB Boiler will be equipped with a multi-clone/baghouse for PM control. At a PM_{10} emission rate of 0.024 lb/MMBtu, the BFB Boiler is will meet the NSPS for PM.

- New biomass-fired boilers are subject to an opacity limit of 27%, except during startup/shutdown/malfunction, pursuant to 40 CFR 60.43b(f). The BFB Boiler will be equipped with a multi-clone/baghouse for PM control and is expected to meet the NSPS for opacity.

2. Subpart IIII: CI Engines

Subpart IIII established emission limits and operating limits for stationary CI ICEs. New CI ICEs, including fire pumps manufactured as certified by the National Fire Protection

Association (NFPA), are subject to Subpart IIII. Subpart IIII specifies different emission standards for fire pumps than for other emergency ICEs. Emission standards for other emergency ICEs reflect USEPA's Tier 2 non-road CI engine standards specified in 40 CFR 89.112. Emission standards for fire pumps are specified in Table 4 of Subpart IIII. Engine certification testing results for the proposed Emergency Generator and Emergency Fire Pump are compared with the Subpart IIII emission limits in Table 30. The proposed Emergency Generator and Emergency Fire Pump will meet the emission limits of Subpart IIII.

Table 30
Subpart IIII Emission Limits

Pollutant	Emissions (g/bhp-hr)		Emission Limit (g/bhp-hr)	
	Emergency Generator [1]	Fire Pump [2]	Emergency Generator [3]	Fire Pump [4]
CO	≤ 2.6	≤ 2.6	2.6	2.6
NOx + VOC	≤ 4.8	≤ 3.0	4.8	3.0
PM_{10}	≤ 0.15	≤ 0.15	0.15	0.15

Notes:
[1] Reflects USEPA's Tier 2 nonroad diesel engine emissions standards for engines $\geq$ 750 bhp.
[2] Reflects USEPA's Tier 3 nonroad diesel engine emissions standards for engines rated between 600 and 750 bhp.
[3] Reflects the Tier 2 emission standards for non-road CI ICEs $\geq$ 560 kW as specified in Table 1 of 40 CRF 89.112.
[4] Specified in Table 4 of 40 CFR 60 Subpart IIII.

H. 40 CFR 63: National Emissions Standards for HAPs

40 CFR 63 established emissions standards for new, modified, and existing sources of HAPs. Part 63 primarily regulates source categories located at major sources; however, Part 63 does regulate some source categories located at non-major (i.e., area) sources. Part 63 source category regulations applicable to the proposed Plant include NESHAPs for industrial boilers and reciprocating ICEs (RICE).

1. Subpart JJJJJJ: Industrial/Commercial/Institutional Boilers

40 CFR Part 63, Subpart JJJJJJ regulates HAP emissions from industrial/commercial/ institutional boilers located at area sources. As presented previously in Section III.E, the proposed Plant will not be a major source of HAPs. As such, the proposed Plant will be an area source. The proposed BFB Boiler will comply with all applicable requirements of Subpart JJJJJJ as follows:

- A PM emission limit of 0.03 lb/MMBtu pursuant to 40 CFR 63.11201(a). The BFB Boiler will be equipped with a multi-clone/baghouse for PM control. At a PM_{10} emission rate of 0.024 lb/MMBtu, the BFB Boiler will meet the emission limit for PM.

- Minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures pursuant to 40 CFR 63.11201(b). If the manufacturer's recommended procedures are not available, recommended procedures for a unit of similar design – for which the manufacturer's recommended procedures are available – must be followed. The proposed BFB Boiler will be equipped with three natural gas-fired startup burners that will be used exclusively during the first six hours of a cold startup event, which will comprise eight hours total. While not necessarily minimizing the duration of a startup even, this startup procedure will serve to minimize startup emissions associated with biomass firing. CBE will operate the BFB Boiler in accordance with Outotec Energy Products recommended startup procedures. Therefore, the proposed BFB Boiler will meet the work practice standard of Subpart JJJJJJ.

- An opacity limit of 10% (daily block average) pursuant to 40 CFR 63.11201(c). The BFB Boiler will be equipped with a multi-clone/baghouse for PM control and is expected to meet the opacity limit.

- Install and operate a bag leak detection system. The bag leak detection system alarm must not sound more than 5% of the operating time during each 6-month period. The proposed BFB Boiler will be equipped with a bag leak detection system installed in accordance with the specifications of 40 CFR 63.11224(f).

2. <u>Subpart ZZZZ: RICE</u>

40 CFR Part 63 Subpart ZZZZ regulates stationary RICE at both major and area sources. 40 CFR 63.6592(c)(1) specifies that a new stationary CI RICE located at an area source must meet the requirements of 40 CFR 60, Subpart IIII. As discussed previously in Section G.2, the Emergency Generator and Emergency Fire Pump will comply with the emission limits of 40 CFR 60, Subpart IIII. No further requirements under Subpart ZZZZ will apply to the proposed Emergency Generator and Emergency Fire Pump.

I. <u>Rule 2.10: Nuisance</u>

Rule 2.10 prohibits the discharge of air contaminants that do the following:

- Cause injury, detriment, nuisance or annoyance to the public nuisance
- Endanger the comfort, repose, health or safety of the public; or
- Cause injury or damage to business or property.

The proposed BFB Boiler will be equipped with a dry scrubber to control acid gas TACs, a multi-clone/baghouse to control metals/particulate TACs, and BFB combustion technology to control volatile organic TACs. The biomass storage piles will be covered to control particulate emissions. The proposed biomass receiving/handling operations will incorporate covered conveyors to control particulate emissions. The Ash Silos and

Lime Silo Health will be equipped with a baghouse to control particulate emissions. The Emergency Generator and Emergency Fire Pump will meet the applicable Tier emission standards, which will also serve to minimize emissions of organic/particulate TACs. Therefore, the Plant will not be expected to cause a public nuisance due to either dust or toxics emissions.

Furthermore, under Rule 2.10, the District evaluates new sources to determine whether there is the potential to emit toxic air pollutants and whether best available control technology for toxics (T-BACT) will be required. The California Air Pollution Control Officers Association's (CAPCOA) developed procedures for prioritizing facilities for the purposes of requiring the preparation of health risk assessments (HRAs). A health risk prioritization analysis was conducted in accordance with the CAPCOA *Facility Prioritization Guidelines* (July 1990). The prioritization score provides a common frame of reference for comparing the relative risks between different facilities. CAPCOA generally recommends that health risk assessments be performed for High Priority facilities but not for Low Priority facilities. CAPCOA further recommends that Districts exercise discretion whether to require health risk assessments for Intermediate Priority facilities. The cancer, chronic non-cancer, and acute non-cancer prioritization scores of the proposed Plant are summarized in Table 3 and compared with the CAPCOA prioritization thresholds. Since a health risk assessment for an Intermediate Priority facility is a discretionary decision for the local District, an HRA was performed for this ATC Application. A detailed description of the prioritization score is presented in Appendix F.

Table 31
Project Prioritization Scores

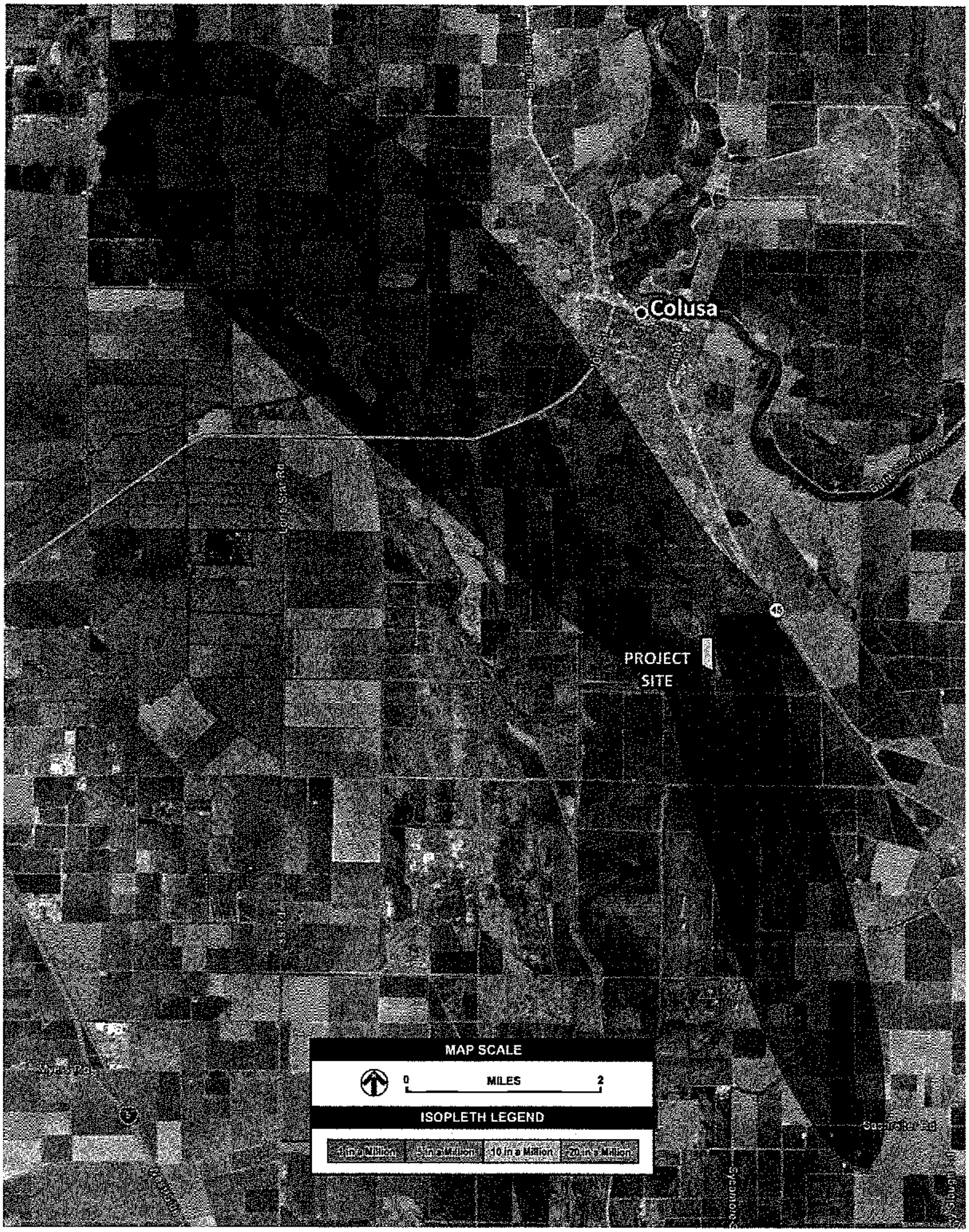
Risk Criteria	Prioritization Score		Prioritization	
	Residential	Off-Site Worker	Residential	Off-Site Worker
Carcinogenic	4.95 [1]	4.51 [1]	Intermediate	Intermediate
Chronic Non-carcinogenic	0.20 [2]	1.46 [2]	Low	Intermediate
Acute Non-Carcinogenic	0.08 [3]	0.59 [3]	Low	Low

Notes:

[1] Hexavalent chromium is the largest contributor.
[2] Hydrochloric acid is the largest contributor.
[3] Formaldehyde is the largest contributor.

Excess cancer risk isopleths are illustrated in Figure 6. The 1-in-a-million isopleth impacts mostly agricultural lands to the northwest and south-southeast of the Plant. The 1-in-a-million is contained nearly entirely within the Colusa County Census Tract 2 (population 5,121). The isopleth barely grazes the boundary of the Colusa County Census Tract 5 (population 2,565), which contains the City of Colusa proper. Health risks were determined for the point of maximum impact (PMI), maximally exposed resident (RES), maximally exposed worker (WKR), and maximally exposed sensitive receptor (SEN). The PMI, RES, WKR, and SEN, as characterized by excess cancer risk

Figure 6
Excess Cancer Risk Isopleths



(the highest risks relative to the risk thresholds) and illustrated in Figure 7, are located as follows:

- The PMI occurs 295 meters northwest of the main stack on vacant agricultural land.
- The RES occurs 1,665 meters northwest of the Plant along the prevailing wind direction; this is also the location of the nearest resident.
- The WKR occurs 3,550 meters northwest of the Plant; that the nearest off-site worker is located 800 meters north-northeast of the Plant.
- The SEN occurs 4,275 meters north-northwest of the Plant.

Health risks associated with TAC emissions from the Plant are summarized in Table 32. Generally accepted risk management policy specifies cumulative risk thresholds for cancer risk and chronic non-cancer and acute non-cancer hazard indices (HI) for new sources of TAC emissions. The excess cancer risk threshold is 10 in one million when T-BACT is applied and the chronic and acute HI thresholds are 1. The proposed BFB Boiler, Cooling Tower, Emergency Generator, and Emergency Fire Pump will satisfy T-BACT. The risks for the PMI is for information purposes only as no receptor occupies that location. Cancer risks for the sensitive reflect the residential exposure assumptions (i.e., 70 years of continuous exposure) and have not been discounted to reflect the considerably reduced exposure periods at a high school (i.e., 8 hours per day, 5 days per week, 37 weeks per year, 4 years). Even when considering age sensitivity factors, the reduced exposure period lowers the actual risks at the sensitive receptor to much less than 1 in a million. The HRA concludes that the health risks to nearby residents, workers, and sensitive receptors are within generally accepted risk management guidelines.

Figure 7
Maximally Exposed Receptors

Table 32 Project Health Risks			
Risk Criteria	Receptor	Project Risk	Risk Threshold
Excess Cancer Risk	PMI	22.4 in a million	N/A
	RES	3.71 in a million	10×10^{-6}
	WKR	0.36 in a million	10×10^{-6}
	SEN	1.28 in a million	10×10^{-6}
Chronic Hazard Index	PMI	0.19	N/A
	RES	0.03	1
	WKR	0.02	1
	SEN	0.01	1
Acute Hazard Index	PMI	0.04	N/A
	RES	0.007	1
	WKR	0.02	1
	SEN	0.006	1

Note:
[1] Based upon a 70-year residential exposure. Risks based upon student exposure frequencies (i.e., 8 hours per day, 5 days per week, 37 weeks per year, 4 years) will be less than 1 in a million.

J. Rule 2.13: Visible Emissions

Rule 2.13 prohibits visible emissions exceeding No. 2 on the Ringelmann Chart for any period aggregating to three minutes in any one hour. Emissions from the following sources are not expected to exceed Ringelmann No. 2:

- The BFB Boiler will be equipped with a multi-clone/baghouse to control PM;
- The biomass stockpiles will be covered;
- The biomass receiving/handling conveyors will be covered and the operations immediately supplying the BFB Boiler will be located inside dedicated buildings (i.e., Rice Hulls Building and Shells/Wood Building);
- The Cooling Tower will be equipped with a high efficiency drift;
- The Ash and Silos will be equipped with a baghouse to control PM;
- The Emergency Generator and Emergency Fire Pump will meet the applicable USEPA Tier standards for off-road diesel engines.

K. Rule 2.15: Particulate Matter Concentration

Rule 2.15 prohibits particulate matter emissions in excess of 0.3 gr/dscf (@ 12% CO_2 for combustion sources). The PM emission rates from the BFB Boiler, Cooling Tower, Ash Silos, Lime Silo, Emergency Generator, and Emergency Fire Pump are compared with the Rule 2:15 PM emission limits in Table 33. All sources will comply with the Rule 2.15 PM emission limit.

Table 33
Rule 2:15 PM Emission Limits

Source	PM_{10} Emission Rate (gr/dscf)	PM Emission Limit(gr/dscf)
BFB Boiler	0.011 [1]	0.3
Cooling Tower	0.00001 [2]	0.3
Ash Silos	0.02 [3]	0.3
Lime Silo	0.02 [4]	0.3
Emergency Generator	0.003 [5]	0.3
Emergency Fire Pump	0.027 [6]	0.3

Notes:

1 Calculated from the hourly PM_{10} emission rate (9.84 lb/hr), heat input rating (410 MMBtu/hr), and USEPA Method 19 CO_2 F-Factor (1,830 dscf CO_2/MMBtu for wood).

2 Calculated from the hourly PM_{10} emission rate (0.35 lb/hr) and exhaust flow (3,969,307 dscfm).

3 Presented previously in Table 3.

4 Presented previously in Table 4.

5 Calculated from the hourly PM_{10} emission rate (0.04 lb/hr), heat input rating (7.5 MMBtu/hr), and USEPA Method 19 CO_2 F-Factor (1,420 dscf CO_2/MMBtu for fuel oil).

6 Calculated from the hourly PM_{10} emission rate (0.20 lb/hr), the heat input rating (4.4 MMBtu/hr), and the USEPA Method 19 CO_2 F-Factor (1,420 dscf CO_2/MMBtu for fuel oil).

L. Rule 2.16: Dust and Fumes

Rule 2.16 limits emissions of PM on the basis of production rates. The PM emission rates from the BFB Boiler, Rice Hulls Receiving/Handling, Rice Hulls Stockpiles, Shells/Wood Receiving/Handling, Shells/Wood Stockpiles, Cooling Tower, Ash Silos, Lime Silo, Emergency Generator, and Emergency Fire Pump are compared with the Rule 4202 PM emission limits in Table 34. All sources will comply with the Rule 2.16 PM emission limits.

Table 34 Rule 2:16 PM Emission Limits			
Source	PM_{10} Emission Rate (lb/hr)	Throughput Rate (tph)	PM Emission Limit (lb/hr) [10]
BFB Boiler	9.84	35.2 [3]	~ 41.3
Rice Hulls Receiving/Handling	0.02 [1]	97.6 [4]	~ 51.2
Rice Hulls Stockpiles	0.0012 [2]	85.9 [4]	~50
Shells/Wood Receiving/Handling	0.09 [1]	77.6 [4]	~ 48.7
Shells/Wood Stockpiles	0.0007 [2]	68.2 [4]	~47.5
Cooling Tower	0.35	7,506 [5]	> 92.7
Ash Silos	0.11	66.7 [6]	~ 47.3
Lime Silo	0.02	10 [7]	19.2
Emergency Generator	0.04	0.19 [8]	1.35
Emergency Fire Pump	0.20	0.24 [9]	1.56

Notes:

[1] Calculated from the daily PM_{10} emissions (Table 9) at 24 hr/day.
[2] Calculated from the daily PM_{10} emissions (Table 10) at 24 hr/day.
[3] Calculated from the heat input rate of 410 MMBtu/hr and a rice hulls HHV of 5,816 Btu/lb.
[4] Derived from the daily throughput presented previously in Table 7 at 24 hr/day.
[5] Calculated from the cooling water recirculation rate of 30,000 gpm.
[6] Derived from the daily throughput presented previously in Table 3 at 3 hr/day.
[7] Derived from the daily throughput presented previously in Table 4 at 2 hr/day.
[8] Calculated from the fuel consumption rate of 53.6 gal/hr and a diesel density of 7.1 lb/gal.
[9] Calculated from the fuel consumption rate of 31.4 gal/hr and a diesel density of 7.1 lb/gal.
[10] ApproXimated from the emission limit table shown in Rule 2:16.

M. Rule 2.22: Sulfur Oxides

Rule 2.22 prohibits emissions of sulfur oxides in excess of 0.2% by volume (dry) as SO_2, or 2,000 ppmv. The BFB Boiler, Emergency Generator, and Emergency Fire Pump will be subject to Rule 2.22 because each will burn fuel that contains sulfur, which is converted to sulfur oxides in the combustion process. Each will comply with the Rule 2.22 SOx emission limit, as shown below.

- The exhaust SO_2 concentration from the proposed BFB Boiler (17 ppmv @ 3% O_2) was calculated from the maximum hourly SOx emission rate (12.3 lb/hr), the heat input rating (410 MMBtu/hr), and the USEPA Method 19 F-Factor (9,240 dscf/MMBtu @ 0% O_2 for wood), and a reference O_2 concentration of 3%.

- The exhaust SO_2 concentration from the proposed Emergency Generator (0.6 ppmv) was calculated from the maximum hourly SOx emission rate (0.01 lb/hr), the heat input rating (7.5 MMBtu/hr), and the USEPA Method 19 F-Factor (9,190 dscf/MMBtu @ 0% O_2 for fuel oil), and the estimated actual O_2 concentration of 8.66%.

- The exhaust SO_2 concentration from the proposed Emergency Fire Pump (0.8 ppmv) was calculated from the maximum hourly SOx emission rate (0.007 lb/hr), the heat input rating (4.4 MMBtu/hr), and the USEPA Method 19 F-Factor (9,190 dscf/MMBtu @ 0% O_2 for fuel oil), and the estimated actual O_2 concentration of 5%.

N. Rule 2.29.2: Hexavalent Chromium from Cooling Towers

Rule 2.29.2 adopted, by reference, CARB's ATCM for hexavalent chromium from cooling towers. The ATCM prohibits the use of hexavalent chromium as an additive to cooling water in cooling towers. CBE will not use hexavalent chromium in any additives to the proposed Cooling Tower. As such, the Cooling Tower will comply with Rule 2.29.2.

O. Rule 2.36: Stationary Internal Combustion Engines

Rule 2.36 limits the emissions of CO and NOx from stationary ICEs. Rule 2.36 applies to any ICE with a rated brake horsepower greater than 50 horsepower. The proposed Emergency Generator (with an estimated rating of 761 bhp) and Emergency Fire Pump (rated at 601 bhp) will be subject to Rule 2.36. However, Section c.2 of Rule 2.36 exempts emergency standby engines, which operate less than 100 hours per year for non-emergency purposes, from the emission limits of Rule 2.36. Since the Emergency Generator and the Emergency Fire Pump will be operated not more than 50 hours per year for maintenance and testing (excluding District-required emissions testing) pursuant to the ATCM for Stationary CI Engines, the Emergency Generator and Emergency Fire Pump will be exempt from the emission standards of Rule 2.36. The proposed Emergency Generator and Emergency Fire Pump will be equipped with a non-resettable elapsed operating time meter in accordance with the ATCM and CBE will maintain records in accordance with Section f.3.B of Rule 2.36 to verify compliance with the 100 hr/yr exemption threshold.

P. Rule 2.39: Industrial/Institutional/Commercial Boilers NOx Control Measure

Rule 2.39 limits NOx, CO, and NH_3 emissions from Industrial/Institutional/Commercial Boilers to levels consistent with Reasonably Available Control Technology (RACT). Rule 2.39 applies to any boiler with a heat input rating greater than 1 MMBtu/hr. The proposed BFB Boiler (rated at 410 MMBtu/hr) will be subject to Rule 2.39. Rule 2.39 established NOx emission limits of 0.084 lb/MMBtu for natural gas firing and 0.15 lb/MMBtu for solid fuel firing, CO emission limit of 400 ppmv @ 3% O_2 for all fuels, and an NH_3 emission limit of 20 ppmv @ 3% O_2. NOx emission rates of 0.062 lb/MMBtu for natural gas and 0.075 lb/MMBtu for biomass were presented previously in Tables 8 and 10, respectively. The CO emission rate of 0.081 lb/MMBtu, also shown previously in Table 8, equates to an exhaust concentration of 103 ppmv @ 3% O_2. The NH_3 emission rate of 0.007 lb/MMBtu, shown previously in Table 21, equates to an exhaust concentration of 15 ppmv @ 3% O_2. Therefore, the NOx, CO, and NH_3 emissions from the proposed BFB Boiler will comply with the Rule 2.39 emission limits.

Q. ATCM for Stationary CI Engines

CARB adopted an ATCM to reduce DPM and criteria pollutant emissions from stationary diesel-fired CI ICEs with a rating of greater than 50 bhp. The ATCM is contained in Section 93116 of Title 17 of the California Code of Regulations. Section 93116.6(a)(3) limits the operation of new emergency standby CI engines (meeting a DPM emission standard of 0.15 g/bhp-hr) to less than 50 hr/yr for maintenance and testing (excluding District-required emissions testing). CBE is further proposing to limit non-emergency operation of the Emergency Generator and Emergency Fire Pump to 50 hr/yr for maintenance and testing. The ATCM also requires new direct-drive CI emergency standby fire pump engines to meet the Tier 2 emission standards for off-road CI engines. The emission limits of 40 CFR 60, Subpart IIII are as (or more) stringent than the ATCM emission limits. Since the Emergency Generator and Emergency Fire Pump will comply with Subpart IIII, they will also comply with the ATCM emission limits. The ATCM also prohibits non-emergency use, including maintenance and testing, between 7:30 am and 3:30 pm if the engine is located within 500 feet of school grounds. The nearest school—Colusa High School—is located over 4 km north-northwest of the Plant. Therefore, non-emergency operation of the Emergency Generator and Emergency Fire Pump between 7:30 am and 3:30 pm will be allowable. The proposed Emergency Generator and Emergency Fire Pump will meet the emission limits of the ATCM.

Appendix A

Equipment Specifications and Drawings

Appendix B

Emissions Assessment

Emissions Assessment
Colusa Bio-Energy Power Plant
Colusa, California

Maximum Emissions from the BFB Boiler

Emissions from the BFB Boiler were characterized under the following operating scenarios to allow further regulatory analyses of impacts associated with the operation of the BFB Boiler:

- Base-load operations;
- Startup; and
- Commissioning.

Base-Load Operations

Maximum hourly emissions from base-load operation of the proposed BFB Boiler, as summarized in Table B-1, were calculated from the emission rate (in lb/MMBtu) and the heat input rate (410 MMBtu/hr). Outotec Energy Products provided emission rates for all pollutants, except for PM_{10} and $PM_{2.5}$. The PM_{10} emission rate reflects BACT. PM_{10} was conservatively assumed to comprise 100% of $PM_{2.5}$.

Table B-1
Maximum Hourly Emissions from Routine Base-Load Operation of the BFB Boiler

Pollutant	Emission Factor (lb/MMBtu) [1]	Maximum Emissions (lb/hr)
CO	0.081 [1]	33.2
NOx	0.075 [1]	30.8
PM_{10}	0.024 [2]	9.84
$PM_{2.5}$	0.024[3]	9.84
ROC	0.005 [1]	2.05
SOx	0.030 [1]	12.3

Notes:
[1] Provided by Outotec Energy Products; does not reflect SU/SD emissions.
[2] PM_{10} reflects BACT.
[3] PM_{10} was conservatively assumed to comprise 100% $PM_{2.5}$.

Startup

A cold startup profile was characterized to subsequently calculate startup emissions. A cold startup event will take as long as eight hours until the BFB boiler is operating at its routine base-load emission rates. The BFB Boiler will be equipped with one 15 MMBtu/hr and two 50 MMBtu/hr natural gas fired startup burners. Initially, the two 50 MMBtu/hr burners mounted above the sand bed will be fired at 50% load (25 MMBtu/hr each). The load on these two burners will be increased to 75% in Hour 2 and incrementally to 100% in Hour 5. The 15 MMBtu/hr burner mounted below the sand bed will be ignited in Hour 5. After two hours at full startup burner load, biomass addition at 25% load will commence in Hour 7. In Hour 8, natural gas combustion will cease and biomass operation will increase to 100% load. All air pollution controls will be fully operational in Hour 9, effectively ending the startup. The 8-hour startup profile is summarized in Table B-2.

Table B-2
Cold Startup Profile for the BFB Boiler

	Natural Gas			Biomass	
Hour	Burners	Load [1]	Heat Input Rate (MMBtu/hr) [2]	Load [1]	Heat Input Rate (MMBtu/hr) [2]
1	2	50%	50	0%	0
2	2	75%	75	0%	0
3	2	80%	80	0%	0
4	2	90%	90	0%	0
5	3	100%	115	0%	0
6	3	100%	115	0%	0
7	3	100%	115	25%	103
8	0	0%	0	100%	410

Notes:
[1] Reflects the load for each burner, which matches the startup profile for the San Joaquin Solar Project (08-AFC-12, November 2008).
[2] Calculated from the startup load and the maximum heat input rate.

Startup emission rates are summarized in Table B-3 for natural gas and biomass. Natural gas emission rates (in lb/MMBtu) for CO and NOx were obtained from the Application for Certification for the San Joaquin Solar Project (08-ADC-12, November 2008), for which a comparable Outotec Energy Products BFB Boiler was specified. Natural gas emission rates (in lb/MMBtu) for PM_{10}, ROC, and SOx were obtained from Tables 1.4-1 and 1.4-2 of AP-42 (March 1998). Natural gas PM_{10} emissions were assumed to comprise 100% $PM_{2.5}$. Biomass CO, PM_{10}, $PM_{2.5}$, and ROC emission rates are not expected to change during startup; as such, startup biomass CO, PM_{10}, $PM_{2.5}$, and ROC emission rates reflect the base-load emission rates. Startup NOx and SOx emission rates (in lb/MMBtu) reflect uncontrolled routine emission rates specified by Outotec Energy Products.

Table B-3 **Startup Emission Rates from the BFB Boiler**		
Pollutant	Startup Emission Rate (lb/MMBtu)	
	Natural Gas	Biomass
CO	0.050 [1]	0.081 [4]
NOx	0.062 [1]	0.234 [5]
PM_{10}	0.0075 [2]	0.024 [4]
$PM_{2.5}$	0.0075 [3]	0.024 [4]
ROC	0.0054 [2]	0.005 [4]
SOx	0.0006 [2]	0.172 [5]

Notes:
1 Reflects the emission rates for the San Joaquin Solar Project natural gas burners (08-AFC-12, November 2008).
2 Obtained from Table 1.4-1 and 1.4-2 of AP-42 for natural gas combustion (March 1998).
3 PM_{10} was assumed to comprise 100% $PM_{2.5}$.
4 Reflects the base-load emission rate.
5 Reflects the uncontrolled emission rate as specified by Outotec Energy Products.

Hourly startup emissions will exceed the maximum hourly base-load emissions only during Hours 7 and 8 of startup, when biomass combustion will occur and will not necessarily be fully controlled, because the natural gas emission rates are lower than the base-load emission rates and the capacity of the natural gas burners is much lower than that of the biomass combustor. Startup emissions are summarized in Table B-4 for Hours 7/8 and an entire 8-hour cold startup event. Emissions during an 8-hour startup will not exceed emissions during 8 base-load hours because emissions during the first 6 hours, when burning only natural gas at a much lower heat input rate, will be so much lower than the hourly base-load emissions.

Table B-4
Startup Emissions from the BFB Boiler

Pollutant	Startup Emissions (lb/hr) Hour 7 [1]	Startup Emissions (lb/hr) Hour 8 [3]	Total 8-Hr Startup Emissions (lb/event)	8-Hr Base-Load Emissions (lb) [4]
CO	14.1 [2]	33.2 [2]	73.5	266
NOx	31.1	95.9	160	246
PM_{10}	3.32 [2]	9.84 [2]	17.1	78.7
$PM_{2.5}$	3.32 [2]	9.84 [2]	17.1	78.7
ROC	1.13 [2]	2.05 [2]	6.01	16.4
SOx	17.7	70.5	88.5	98.4

Notes:
[1] Reflects the three natural gas startup burners at 100% and the biomass combustor at 25% load.
[2] Startup emissions do not exceed base-load emissions.
[3] Reflects the biomass combustor at 100% load with no natural gas combustion.
[4] 8-hour base-load emissions exceed 8-hour cold startup emissions.

Maximum daily and annual emissions, as summarized in Table B-5, reflect both startup emissions and base-load emissions. Maximum daily emissions were calculated to subsequently determine the applicability of BACT and the associated ambient air quality impacts. Maximum daily emissions reflect the last two hours of an 8-hour cold startup sequence followed by 22 hours of base-load operation. Maximum annual emissions were calculated to subsequently determine the applicability of emission offsets, the emission offset liability, and the associated ambient air quality impacts. Maximum annual emissions for the BFB Boiler reflect 8,520 hours of base-load operation.

Table B-5 Maximum Emissions from the BFB Boiler		
	Maximum Emissions	
Pollutant	(lb/day)	(tpy) [3]
CO	797 [1]	141
NOx	804 [2]	131
PM_{10}	236 [1]	41.9
$PM_{2.5}$	236 [1]	41.9
ROC	49.2 [1]	8.73
SOx	359 [2]	52.4

Notes:
[1] Reflects 24 hours of base-load operation because the startup emission rates are less than the base-load emission rates.
[2] Reflects the last two hours of an 8-hour cold startup hours and 22 hours of base-load operation.
[3] Reflects 8,520 hours of base-load operation because emissions during an 8-hour cold startup are less than 8 hours of base-load emissions.

Commissioning

Maximum commissioning emissions are summarized in Table B-6. Maximum hourly commissioning emissions, except for CO, were calculated from the worst-case emission rates (in lb/MMBtu) and a heat input rate of 287 MMBtu. Commissioning emission rates (in lb/MMBtu) were derived from commissioning information presented in the Application for Certification for the San Joaquin Solar Project (08-AFC-12, November 2008), except for $PM_{2.5}$. $PM_{2.5}$ was assumed to comprise 86% of uncontrolled PM_{10} as derived from Table 1.6-1 of AP-42 (September 2003). Maximum hourly CO emissions reflect the base-load value presented previously in Table B-1, although CO emissions during commissioning activities may exceed the base-load emission rate of 0.081 lb/MMBtu. Although CO and ROC emissions during commissioning may exceed the base-load emission rates of 0.081 and 0.005 lb/MMBtu, respectively, maximum daily emissions of CO and ROC reflect the base-load values presented previously in Table B-5. Although commissioning operations may exceed 20 hours per day, maximum daily emissions of NOx, PM_{10}, and $PM_{2.5}$ reflect 10 hours of operation per day at the hourly commissioning emission rates and maximum daily SOx emissions reflect 20 hours of operation per day at the hourly commissioning emission rate.

Table B-6 Commissioning Emissions from the BFB Boiler			
Pollutant	Emission Rate (lb/MMBtu)	Maximum Commissioning Emissions (lb/hr)	(lb/day) [3]
CO	0.081 [1]	33.2 [1]	797 [1]
NOx	0.35 [2]	100 [4]	1,005 [5]
PM_{10}	1.70 [2]	488 [4]	4,879 [5]
$PM_{2.5}$	1.46 [3]	420 [4]	4,201 [5]
ROC	0.01 [2]	2.87 [4]	49.2 [1]
SOx	0.172 [2]	49.4 [4]	987 [6]

Notes:

[1] Reflects the base-load emission rates. Hourly and daily emissions are not expected to exceed the base-load rates; the lb/MMBtu CO emission rates during commissioning may exceed the base-load CO emission rate of 0.081 lb/MMBtu.

[2] Based upon commissioning information obtained from the San Joaquin Solar Project (08-AFC-12, November 2008).

[3] PM_{10} was assumed to comprise 86% $PM_{2.5}$ as derived from Table 1.6-1 of AP-42 (September 2003).

[4] Reflects a heat input rate of 287 MMBtu/hr.

[5] Reflects 10 hours per day at the hourly commissioning emission rate.

[6] Reflects 20 hours per day at the hourly commissioning emission rate.

Maximum Emissions from the Biomass Receiving/Storage/Handling System

The Biomass Receiving/Handling/Storage System will be a source of fugitive PM emissions. Emissions were characterized for the following operations:

- Biomass receiving and handling; and
- Biomass Outdoor Stockpiles.

Biomass Receiving/Handling

PM emissions from the separate rice hulls and shells/wood receiving/handling operations were calculated from emission factors (in lb/ton) and the biomass throughput rates for each transfer point. Biomass throughput rates for each transfer point were derived from the description presented previously in I.E.2. Uncontrolled $PM_{10}/PM_{2.5}$ emission factors were calculated from Equation 1 of Section 13.2.4 of AP-42 (November 2006):

$$E = 0.0032 * k * \left(\frac{u}{5} \right)^{1.3} * \left(\frac{M}{2} \right)^{1.4} \qquad \text{Equation 1}$$

Where: E = emission rate (in lb/ton)
k = particle size multiplier
u = mean wind speed (in mph)
M = moisture content (in %)

Particle size multipliers (0.35 for PM_{10} and 0.053 for $PM_{2.5}$) were obtained from Section 13.2.4.3 of AP-42 (November 2006). The mean wind speed (2.2 mph) reflects 2007-2011 meteorology data obtained for the Colusa meteorology station. Moisture content (11.5% for rice hulls and 9.12% for shells/wood) was provided by Colusa Bio-Energy. The following uncontrolled PM emission factors were calculated for the rice hulls and shells/wood:

- $3.33E^{-5}$ lb PM_{10}/ton for rice hulls;
- $5.04E^{-6}$ lb $PM_{2.5}$/ton for rice hulls;
- $4.60E^{-5}$ lb PM_{10}/ton for shells/wood; and
- $6.97E^{-6}$ lb $PM_{2.5}$/ton for shells/wood.

A 50% control efficiency was applied to the emission factors for those covered transfer points. PM emissions were also calculated for the Hogger in the Wood/Shells Building. An uncontrolled PM_{10} emission rate of 0.04 lb/ton was assumed for the Hogger, based emissions estimates for comparable equipment. An uncontrolled PM_{10} emission rate of 0.006 lb/ton was assumed for the Hogger, reflecting the ratio of $PM_{2.5}$ to PM_{10} emissions for shells/wood shown above. The maximum emissions from the biomass handling operations, as grouped into six operating areas, are summarized in Table B-7. Maximum daily emissions from the combined biomass receiving/handling operations reflect the maximum value for <u>either</u> the rice hulls operation or the shells/wood operation while maximum annual emissions reflect the sum of both.

Table B-7
Maximum Emissions from the Biomass Handling System

Source Group	PM_{10} Emissions (lb/day)	PM_{10} Emissions (tpy)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (tpy)
Rice Hulls Truck Unloading	1.41E-02	1.25E-03	2.13E-03	1.89E-04
Rice Hulls Building	7.50E-02	8.54E-03	1.14E-02	1.29E-03
Rice Hulls Stockpiles	2.62E-01	1.45E-02	3.97E-02	2.20E-03
Shells/Wood Truck Unloading	1.55E-02	5.90E-04	2.35E-03	8.94E-05
Shells/Wood Building	1.89	0.35	0.29	0.05
Shells/Wood Stockpiles	2.88E-01	9.21E-03	4.36E-02	1.39E-03
Rice Hulls Subtotal	3.68E-01	2.43E-02	5.58E-02	3.68E-03
Shells/Wood Subtotal	2.21	0.36	0.33	0.05
TOTALS [1]	2.21 [2]	0.38	0.33 [2]	0.06

Notes:
[1] Apparent minor inaccuracies in table summations are attributable to rounding.
[2] Total maximum daily emissions reflect only the Shells/Wood operation since it was assumed that only one fuel type will be processed on any given day.

Biomass Storage Piles

PM emissions from the biomass stockpiles were calculated from emission factors (in lb/acre/day) and the stockpile footprint (in acres). CBE provided the stockpile footprint areas. Maximum daily <u>uncontrolled</u> $PM_{10}/PM_{2.5}$ emission factors of 0.076 lb PM_{10}/acre/day and 0.011 lb $PM_{2.5}$/acre/day, respectively, were calculated from the following equation obtained from Section 9.3 of the WRAP Fugitive Dust Handbook (September 2006):

$$EF_d = 1.7 * \left(\frac{s}{1.5} \right) * \left(\frac{f_d}{15} \right) * PM_i$$

Where: EF_d, maximum daily emission factor (lb/acre/day)
- s = silt content (2%)
- f_d = maximum daily percentage of time the wind speed is greater than 12 mph (100%)
- PM_{10} = 0.5 lb PM_{10}/lb PM
- $PM_{2.5}$ = 0.075 lb $PM_{2.5}$/lb PM

The San Joaquin Valley Air Pollution Control District (SJVAPCD) assumed a biomass silt content of 2% in its Preliminary Determination of Compliance (PDOC) for the San Joaquin Solar Project (October 2009); an identical silt content value was used for these estimates. Wind speed data (2010-2011) were obtained from the Colusa meteorology station; the worst-case day experienced wind speeds greater than 12 mph during all 24 hours. The SJVAPCD assumed biomass PM_{10} and $PM_{2.5}$ fractions of 0.5 and 0.075, respectively, in its San Joaquin Solar PDOC; identical PM fractions were used for these estimates. CBE will cover the inactive portions of the outdoor rice hulls and shells/wood stockpiles, which will reduce fugitive dust emissions. A control efficiency of 90% was assumed for the covered stockpiles, which yields maximum daily <u>controlled</u> $PM_{10}/PM_{2.5}$ emission factors of 0.0076 lb PM_{10}/acre/day and 0.0011 lb $PM_{2.5}$/acre/day, respectively.

Maximum annual <u>uncontrolled</u> $PM_{10}/PM_{2.5}$ emission factors of 1.03 lb PM_{10}/acre/yr and 0.20 lb $PM_{2.5}$/acre/yr, respectively, were calculated from the following equation obtained from Section 9.3 of the WRAP Fugitive Dust Handbook (September 2006):

$$EF_a = 1.7 * \left(\frac{s}{1.5} \right) * \left(\frac{f_a}{15} \right) * PM_i * 365 * \left(\frac{(365 - p)}{235} \right)$$

Where: EF_d, maximum daily emission factor (lb/acre/day)
- s = silt content (2%)
- f_a = annual average percentage of time the wind speed is greater than 12 mph (3.16%)
- PM_{10} = 0.5 lb PM_{10}/lb PM

$PM_{2.5}$ = 0.075 lb $PM_{2.5}$/lb PM
365 = day per year (converts from lb PM/acre/day to lb PM/acre/yr)
p = Annual days with greater than 0.01 inches of precipitation (88 day/yr)

Wind speed data (2010-2011) were obtained from the Colusa meteorology station; 2010 and 2011 experienced wind speeds greater than 12 mph during 247 hours and 306 hours, respectively, yielding an annual average of 3.16% (compared to 100% for the maximum day). Daily precipitation data (2010-2011) were obtained from the California Department of Water Resources, California Data Exchange Center for the Chico (Butte Creek) Station; 2010 and 2011 experienced rainfall greater than 0.01 inch during 99 days and 77 days, respectively, yielding an annual average of 88 days. The maximum emissions from the biomass storage piles are summarized in Table B-8.

Table B-8
Maximum Emissions from the Biomass Storage Piles

Source Group	Area (acres)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (tpy)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (tpy)
Stockpile A (Rice Hulls)	1.54	0.012	0.002	0.00008	0.00002
Stockpile B (Rice Hulls)	1.54	0.012	0.002	0.00008	0.00002
Stockpile C (Rice Hulls)	0.33	0.002	0.0004	0.00002	0.000003
Stockpile D (Rice Hulls)	0.33	0.002	0.0004	0.00002	0.000003
Stockpile E (Shells/Wood)	1.10	0.008	0.001	0.00006	0.00001
Stockpile F (Shells/Wood)	1.10	0.008	0.001	0.00006	0.00001
TOTALS [1]		0.04	0.007	0.0003	0.00006

Note:
[1] Apparent minor inaccuracies in table summations are attributable to rounding.

Maximum Emissions from the Cooling Tower

The Cooling Tower will emit only PM. Maximum daily PM emissions of 8.46 lb/day from the cooling tower were calculated from the recirculation rate (30,000 gpm), the mist eliminator drift rate (0.0005%), the cooling water TDS concentration (4,700 mg/L), and the maximum daily operating hours (24 hr/day). Maximum annual PM emissions of 1.50 tpy reflect operation for 8,520 full load equivalent hours per year. PM is assumed to be 100% $PM_{2.5}$ (and therefore PM_{10}).

Maximum Emissions from the Ash Silo

The Ash Silos will emit only PM. PM emissions were calculated from emission factors (in lb/ton) and throughput rates (200 tpd and 21,000 tpy). $PM_{10}/PM_{2.5}$ emission factors of $1.6E^{-03}$ lb/ton and $6.0E^{-04}$ lb/ton, respectively, were obtained from Table 11.19.2-4 AP-42 (August 2004). The maximum emissions from each Ash Silo are summarized in Table B-9.

Table B-9 **Maximum Emissions from Each Ash Silo**				
	PM_{10} Emissions		$PM_{2.5}$ Emissions	
Source Group	(lb/day)	(tpy)	(lb/day)	(tpy)
Emission Factors [1]	1.6E-03 lb/ton		6.0E-04 lb/ton	
Emission Rate	0.32 [2]	0.06 [3]	0.12 [2]	0.02 [3]

Notes:
[1] Obtained from Table 11.19.2.4 of AP-42 (August 2004).
[2] Calculated from the emission rate (in lb/ton) and the maximum daily throughput (200 tpd).
[3] Calculated from the emission rate (in lb/ton) and the maximum annual throughput (21,000 tpy).

Maximum Emissions from the Lime Silo

The Lime Silo will emit only PM. PM emissions were calculated from emission factors (in lb/ton) and throughput rates (20 tpd and 1,000 tpy). $PM_{10}/PM_{2.5}$ emission factors of $1.6E^{-03}$ lb/ton and $6.0E^{-04}$ lb/ton, respectively, were obtained from Table 11.19.2-4 AP-42 (August 2004). The maximum emissions from the Lime Silo are summarized in Table B-10.

Table B-10 **Maximum Emissions from the Lime Silo**				
	PM_{10} Emissions		$PM_{2.5}$ Emissions	
Source Group	(lb/day)	(tpy)	(lb/day)	(tpy)
Emission Factors [1]	1.6E-03 lb/ton		6.0E-04 lb/ton	
Emission Rate	0.03 [2]	0.0008 [3]	0.01 [2]	0.0003 [3]

Notes:
[1] Obtained from Table 11.19.2.4 of AP-42 (August 2004).
[2] Calculated from the emission rate (in lb/ton) and the maximum daily throughput (20 tpd).
[3] Calculated from the emission rate (in lb/ton) and the maximum annual throughput (1,000 tpy).

Maximum Emissions from the Emergency Generator

Maximum hourly emissions were calculated from emission factors (in g/bhp-hr) and the engine work output (in bhp). CO, NOx, PM_{10}, and ROC emission factors (in g/bhp-hr) were specified by Caterpillar. PM_{10} was assumed to comprise 100% $PM_{2.5}$. The SOx emission factor reflects a fuel sulfur content of 15 ppmw. Maximum daily emissions were calculated from the hourly emissions at 24 hr/day. Maximum annual emissions were calculated from the hourly emissions and the annual operating hours. CBE specified a 200 hr/yr allowance for emergency and non-emergency operation. The maximum emissions from the emergency generator are summarized in Table B-11.

Table B-11
Maximum Potential Emissions for the Emergency Generator

Pollutant	Emission Factor (g/bhp-hr)	Maximum Potential Emissions Hourly (lb/hr) [4]	Daily (lb/day) [5]	Annual (tpy) [6]
CO	0.25 [1]	0.42	10.1	0.04
NOx	5.25 [1]	8.80	211	0.88
PM_{10}	0.021 [1]	0.04	0.84	0.004
$PM_{2.5}$	0.021 [2]	0.04	0.84	0.004
ROC	0.03 [1]	0.05	1.21	0.005
SOx	0.007 [3]	0.01	0.27	0.001

Notes:
[1] Specified by Caterpillar.
[2] PM_{10} was assumed to comprise 100% $PM_{2.5}$.
[3] Reflects a fuel sulfur limit of 15 ppmw.
[4] Calculated from emission factors (in g/bhp-hr) and the estimated engine work output (761 bhp).
[5] Calculated from the hourly emissions at 24 hr/day.
[6] Calculated from the hourly emissions at 200 hr/yr, as specified by CBE; includes both emergency and non-emergency operation.

Maximum Emissions from the Emergency Fire Pump

Maximum hourly emissions were calculated from emission factors (in g/bhp-hr) and the engine work output (in bhp). The CO, NOx, and ROC emission factors (in g/bhp-hr) reflect the USEPA Tier 3 emission standards (a combined value) for non-road diesel engines. NOx and ROC are regulated with a combined emissions standard; NOx emissions were assumed to be 95% of the combined emissions standard. The PM_{10} emission limit (in g/bhp-hr) reflects the emission limit specified in the California Air Resources Board's (CARB) Air Toxics Control Measure (ATCM) for Stationary Compression Ignition Engines. PM_{10} was assumed to comprise 100% $PM_{2.5}$. The SOx emission factor reflects a fuel sulfur content of 15 ppmw. Maximum daily emissions were calculated from the hourly emissions at 24 hr/day. Maximum annual emissions were calculated from the hourly emissions and the annual operating hours. CBE specified a 200 hr/yr allowance for emergency and non-emergency operation. The maximum emissions from the emergency fire pump are summarized in Table B-12.

Table B-12 Maximum Potential Emissions for the Fire Pump				
Pollutant	Emission Factor (g/bhp-hr)	Maximum Potential Emissions Hourly (lb/hr) [6]	Daily (lb/day) [7]	Annual (tpy) [8]
CO	2.60 [1]	3.44	82.6	0.34
NOx	2.85 [1,2]	3.77	90.5	0.38
PM_{10}	0.15 [3]	0.20	4.76	0.02
$PM_{2.5}$	0.15 [4]	0.20	4.76	0.02
ROC	0.15 [1]	0.20	4.76	0.02
SOx	0.005 [5]	0.007	0.16	0.0007

Notes:
[1] Reflects the USEPA Tier 3 emission standards for non-road Diesel engines..
[2] NOx and VOC are regulated with a combined emission standard. NOx emissions were assumed to comprise 95% of the combined value.
[3] Reflects the emission limit in the ATCM for Stationary CI Engines.
[4] PM_{10} was assumed to comprise 100% $PM_{2.5}$.
[5] Reflects a fuel sulfur limit of 15 ppmw.
[6] Calculated from emission factors (in g/bhp-hr) and the estimated engine work output (601 bhp).
[7] Calculated from the hourly emissions at 24 hr/day.
[8] Calculated from the hourly emissions at 200 hr/yr, as specified by CBE; includes both emergency and non-emergency operation.

Appendix C

Air Toxics Emissions and Prioritization Score

Air Toxics Emissions
Colusa Bio-Energy Power Plant
Colusa, California

BFB Boiler

Maximum hourly emissions of all TACs—except for NH_3 and hydrochloric acid (HCl)—were calculated from emission factors (in lb/ton), the maximum heat input rate (410 MMBtu/hr @ HHV), and the minimum HHV (5,816 Btu/lb for rice hulls versus 7,140 Btu/lb for shells/wood). TAC emission factors were obtained from the SJVAPCD default emission factors for external biomass-fired combustion.[1] The SJVAPCD's default biomass emission factors or agricultural waste were used to estimate TAC emissions from the BFB Boiler. However, this database does not include emission factors for acetaldehyde, acrolein, toluene, and xylene, which one would reasonably expect to encounter in agricultural waste. Therefore, the SJVAPCD's default biomass emission factors for agricultural waste and urban waste were used to estimate emissions of acetaldehyde, acrolein, toluene, and xylene in the absence of emission factors for only agricultural waste. Maximum hourly emissions of NH_3 and HCl were calculated from emission rates (in lb/MMBtu) and the maximum heat input rate (410 MMBtu/hr). Outotec Energy Products provided the NH_3 and HCl emission rates. Maximum annual TAC emissions were calculated based upon full-load operation for 8,520 hr/yr. Maximum TAC emissions from the BFB Boiler are summarized in Table C-1.

Table C-1
TAC Emissions for the BFB Boiler

Pollutant	Emission Factor (lb/ton) [1]	Maximum Emissions Hourly (lb/hr)	Maximum Emissions Annual (lb/yr)	Maximum Emissions Annual (tpy)
Acetaldehyde	1.87E-04	6.59E-03	54.1	2.70E-02
Acrolein	1.31E-04	4.62E-03	37.9	1.89E-02
Ammonia (lb/MMBtu)	0.007 [2]	2.87	25,141	12.6
Arsenic	1.57E-05	5.53E-04	4.54	2.27E-03
Benzene	7.70E-04	2.71E-02	223	1.11E-01
Beryllium	2.16E-06	7.61E-05	0.62	3.12E-04
Cadmium	8.87E-05	3.13E-03	25.6	1.28E-02
Chromium, Hexavalent	4.28E-05	1.51E-03	12.4	6.19E-03
Copper	6.15E-05	2.17E-03	17.8	8.89E-03
Dioxins				
Dioxin 4D: 2,3,7,8	4.46E-10	1.57E-08	1.29E-04	6.45E-08
Dioxin 5D: 1,2,3,7,8	1.10E-09	3.88E-08	3.18E-04	1.59E-07

1 *http://www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/External%20Combustion/BiomassCombustionAll.xls*

Table C-1 TAC Emissions for the BFB Boiler				
	Emission	Maximum Emissions		
	Factor	Hourly	Annual	
Pollutant	(lb/ton) [1]	(lb/hr)	(lb/yr)	(tpy)
Dioxin 6D: 1,2,3,4,7,8	1.22E-09	4.30E-08	3.53E-04	1.76E-07
Dioxin 6D: 1,2,3,6,7,8	1.27E-09	4.48E-08	3.67E-04	1.84E-07
Dioxin 6D: 1,2,3,7,8,9	1.15E-09	4.05E-08	3.32E-04	1.66E-07
Dioxin 7D: 1,2,3,4,6,7,8	8.41E-09	2.96E-07	2.43E-03	1.22E-06
Dioxin 8D: 1,2,3,4,6,7,8,9	5.81E-08	2.05E-06	1.68E-02	8.40E-06
Formaldehyde	2.34E-02	8.25E-01	6,764	3.38
Furans				
Furan 4F: 2,3,7,8	3.20E-09	1.13E-07	9.25E-04	4.62E-07
Furan 5F: 1,2,3,7,8	3.09E-09	1.09E-07	8.93E-04	4.47E-07
Furan 5F: 2,3,4,7,8	4.48E-09	1.58E-07	1.29E-03	6.47E-07
Furan 6F: 1,2,3,4,7,8	1.53E-09	5.39E-08	4.42E-04	2.21E-07
Furan 6F: 1,2,3,6,7,8	1.56E-09	5.50E-08	4.51E-04	2.25E-07
Furan 6F: 1,2,3,7,8,9	6.51E-10	2.29E-08	1.88E-04	9.41E-08
Furan 6F: 2,3,4,6,7,8	1.75E-09	6.17E-08	5.06E-04	2.53E-07
Furan7F: 1,2,3,4,6,7,8	7.32E-09	2.58E-07	2.12E-03	1.06E-06
Furan 7F: 1,2,3,4,7,8,9	7.43E-10	2.62E-08	2.15E-04	1.07E-07
Furan 8F: 1,2,3,4,6,7,8,9	5.24E-09	1.85E-07	1.51E-03	7.57E-07
Hydrochloric Acid (lb/MMBtu)	0.0054 [2]	2.21	19,395	9.70
Lead	6.54E-05	2.31E-03	18.9	9.45E-03
Manganese	2.86E-04	1.01E-02	82.7	4.13E-02
Mercury	1.92E-04	6.77E-03	55.5	2.77E-02
Nickel	4.50E-05	1.59E-03	13.0	6.50E-03
PAHs				
Acenaphthene	1.20E-05	4.23E-04	3.47	1.73E-03
Acenaphthylene	9.47E-05	3.34E-03	27.4	1.37E-02
Anthracene	1.20E-05	4.23E-04	3.47	1.73E-03
Benzo(a)anthracene	1.20E-05	4.23E-04	3.47	1.73E-03
Benzo(a)pyrene	1.20E-05	4.23E-04	3.47	1.73E-03
Benzo(b)fluoranthene	1.20E-05	4.23E-04	3.47	1.73E-03
Benzo(g,h,i)perylene	1.20E-05	4.23E-04	3.47	1.73E-03
Benzo(k)fluoranthene	1.20E-05	4.23E-04	3.47	1.73E-03
Chrysene	1.20E-05	4.23E-04	3.47	1.73E-03
Dibenz(a,h)anthracene	1.20E-05	4.23E-04	3.47	1.73E-03
Fluoranthene	4.79E-05	1.69E-03	13.8	6.92E-03
Fluorene	1.20E-05	4.23E-04	3.47	1.73E-03
Indeno(1,2,3-cd)pyrene	1.20E-05	4.23E-04	3.47	1.73E-03
Napthalene	7.17E-03	2.53E-01	2,072	1.04
Phenanthrene	1.13E-04	3.98E-03	32.7	1.63E-02
Pyrene	4.93E-05	1.74E-03	14.2	7.12E-03
Selenium	1.90E-05	6.70E-04	5.49	2.75E-03
Toluene	1.28E-04	4.51E-03	37.0	1.85E-02

Table C-1 TAC Emissions for the BFB Boiler				
	Emission Factor	Maximum Emissions		
		Hourly	Annual	
Pollutant	(lb/ton) [1]	(lb/hr)	(lb/yr)	(tpy)
Vinyl Chloride	5.43E-04	1.91E-02	157	7.85E-02
Xylene	1.50E-04	5.29E-03	43.4	2.17E-02
Zinc	3.36E-04	1.18E-02	97.1	4.86E-02

Notes:

[1] Reflects SJVAPCD default values for external biomass-fired combustion, except for NH_3 and HCl. All but acetaldehyde, acrolein, toluene, and xylene reflect agricultural waste; these other four TACs reflect a mixture of agricultural urban waste in the absence of emission factor for only agricultural waste, even though CBE does not plan to burn urban waste.

[2] Specified by Outotec Energy Products.

Cooling Tower

Maximum hourly HAP emissions from the cooling tower were calculated from the recirculation rate (30,000 gpm), the mist eliminator drift rate (0.0005%), the concentration of metals in the raw water (in mg/L), and the concentration from 10 cycles of concentration (120.2%). Cooling water metal concentrations were provided by CBE. The concentration was calculated through an iterative process (for repetitive passes through the tower) with a cooling water loss of 1.68% in the tower (or 503 gpm, primarily from evaporation as drift losses are negligible), a blowdown rate of 2,497 gpm, and a makeup rate of 3,000 gpm (blowdown plus tower losses equal 10% of the throughput rate for 10 cycles of concentration). Maximum annual HAP emissions reflect operation for 8,520 hr/yr. HAP emissions from the cooling tower are summarized in Table C-2.

Table C-2 HAP Emissions from the Cooling Tower			
	Raw Water Concentration	Maximum Emissions	
Pollutant	(mg/L) [1]	Hourly (lb/hr) [2]	Annual (tpy) [3]
Arsenic	2	1.80E-07	7.68E-07
Barium	77.8	7.01E-06	2.99E-05
Copper	50	4.51E-06	1.92E-05
Manganese	50	4.51E-06	1.92E-05

Notes:

[1] Raw water concentrations were provided by CBE.

[2] Calculated from the recirculation rate (30,000 gpm), the mist eliminator drift rate (0.0005%), the concentration of metals in the raw water (in mg/L), and the concentration from 10 cycles of concentration (120.2%).

[3] Reflects operation for 8,520 hr/yr.

Emergency Generator

Diesel particulate matter (DPM) is used as a surrogate for TACs from diesel engines. Maximum hourly PM_{10} emissions of 0.04 lb/hr were presented previously in Table B-11. PM_{10} emissions were assumed to comprise 100% DPM. Maximum annual DPM emissions of 0.004 tpy were calculated from the hourly emissions and the 200 hr/yr allowance, specified by CBE, for emergency and non-emergency operation.

Emergency Fire Pump

Maximum PM_{10} emissions of 0.20 lb/hr were presented previously in Table B-12. PM_{10} emissions were assumed to comprise 100% DPM. Maximum annual DPM emissions of 0.02 tpy were calculated from the hourly emissions and the 200 hr/yr allowance, specified by CBE, for emergency and non-emergency operation.

Appendix D

Best Available Control Technology Analysis

Best Available Control Technology
Colusa Bio-Energy Power Plant
Colusa, California

Section c.1 of Rule 3.6 requires an applicant to apply BACT, on a pollutant-specific basis, to any new emissions unit that has maximum daily emissions exceeding specified thresholds. Section III.B.1 previously presented the assessment of BACT applicability and concluded that CBE must apply BACT for CO, NOx, PM_{10}, ROC, and SOx emissions from the BFB Boiler, as well as NOx emissions from the Emergency Generator and Emergency Fire Pump. BACT will not be required for the Rice Hulls Receiving/Handling operation, Rice Hulls Stockpiles, Shells/Wood Receiving/Handling operation, Shells/Wood Stockpiles, Cooling Tower, and Ash Silos, Lime Silo. BACT also will not be required for the Emergency Generator and Emergency Fire Pump, except for NOx. Therefore, BACT analyses were conducted for the BFB Boiler, Emergency Generator, and Emergency Fire Pump to identify BACT. This section presents the results of these BACT analyses.

The District defines BACT as the most stringent emission limitation or control technique of the following criteria:

- The most effective emission control device, emission limit, or technique that has been required or used for the type of equipment comprising such emissions unit; or

- Any other emission control device or technique, alternative basic equipment, different fuel or process, determined to be technologically feasible and cost-effective by the District.

The first criterion listed above is typically referred to as the "achieved in practice" standard while the last is commonly known as the "technologically feasible" standard. Furthermore, BACT must not be less stringent than the emission control required by any applicable provision of District, State, or Federal laws or regulations, unless the applicant demonstrates to the satisfaction of the District that such limits are not achievable.

As summarized in the following sections, the BACT analyses made the following conclusions, as shown below.

- A CO emission limit of 0.09 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design CO emission rate of 0.081 lb/MMBtu (24-hour average), the proposed BFB Boiler will satisfy BACT.

- A NOx emission limit of 0.075 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design NOx emission rate of 0.075 lb/MMBtu (24-hour average), the proposed BFB Boiler will satisfy BACT.

- A PM_{10} emission limit of 0.024 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design PM_{10} emission rate of 0.024 lb/MMBtu, the proposed BFB Boiler will satisfy BACT.

- A SOx emission limit of 0.054 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design SOx emission rate of 0.030 lb/MMBtu (30-day average), the proposed BFB Boiler will satisfy BACT.

- A VOC emission limit of 0.009 lb/MMBtu constitutes BACT for a biomass-fired boiler. At a design VOC emission rate of 0.005 lb/MMBtu, the proposed BFB Boiler will satisfy BACT.

- The Tier 2 NOx+VOC standard of 4.8 g/bhp constitutes BACT for an emergency diesel generator rated greater than 750 bhp. The proposed Emergency Generator is a Tier 2 engine and thus will satisfy BACT.

- The Tier 3 NOx+VOC standard of 3.0 g/bhp constitutes BACT for an emergency fire pump rated between 600 and 750 bhp. The proposed Emergency Fire Pump is a Tier 3 engine and thus will satisfy BACT.

BFB Boiler

Achieved in Practice BACT

The SJVAPCD is the only major California air district that has recently published BACT determinations for biomass-fired boilers. The SJVAPCD published its most recent BACT Determination for biomass boilers in April 2011 in the Application Review for the DTE Stockton LLC project, as summarized in Table D-1. The proposed emission limits for the BFB Boiler meet the SJVAPCD's "achieved in practice" BACT Guidelines for all pollutants.

Table D-1
SJVAPCD BACT Guideline for Biomass-Fired Boilers

Pollutant	Achieved in Practice	Technologically Feasible
CO	0.1 lb/MMBtu	0.09 lb/MMBtu
NOx	0.075 lb/MMBtu	0.065 lb/MMBtu
PM_{10}	0.024 lb/MMBtu	0.0214 lb/MMBtu
SOx	0.054 lb/MMBtu	0.012 lb/MMBtu
VOC	0.01 lb/MMBtu	0.009 lb/MMBtu

Technologically Feasible BACT

The proposed emission limits for the BFB Boiler also meet the SJVAPCD's "technologically feasible" guidelines for CO and ROC. Furthermore, the proposed BFB Boiler will be equipped with the emissions controls that the SJVAPCD deems to be technologically feasible:

- SNCR and SCR systems to control NOx emissions;
- Multiclones and a baghouse to control PM_{10} emissions; and
- Dry flue gas desulfurization (FGD) to control SOx emissions.

A search of USEPA's RACT/BACT/LAER Clearinghouse (RBLC) database indicates that a BFB Boiler operating a hot SCR system to control NOx emissions has yet to be built. The technological feasibility of a hot SCR will be evaluated to determine whether emission rates lower than 0.075 lb/MMBtu are feasible.

Conclusions

BACT must be the most stringent emission limit that is either "achieved in practice" or "technologically feasible." BACT must be at least as stringent as the most stringent BACT determination, federal NSPS, or district prohibitory rule. Based upon the results of this analysis, the emission controls and emission limits summarized in Table D-2 were determined to constitute BACT for a biomass-fired boiler.

Table D-2
Comparison of Proposed Emissions with BACT –
Biomass-Fired Boilers

Pollutant	BACT [1]	Proposed Emissions Controls
CO	0.09 lb/MMBtu Oxidation Catalyst	0.081 lb/MMBtu (24-hour average) BFB Technology
NOx	SCR	0.075 lb/MMBtu (24-hour average) SNCR/SCR
PM_{10}	Multiclone/Electrostatic Precipitator	0.024 lb/MMBtu Multiclone/Baghouse
ROC	0.009 lb/MMBtu Oxidation Catalyst	0.005 lb/MMBtu BFB Technology
SOx	Wet FGD	0.030 lb/MMBtu (24-hour average) Dry Scrubber

Notes:
[1] Based upon April 2011 BACT Determination published in the Application Review for Project 1101175 (DTE Stockton LLC).

Emergency Generator

Published BACT determinations from the SJVAPCD, Bay Area Air Quality Management District (BAAQMD), and South Coast AQMD (SCAQMD) for diesel emergency generators were reviewed. The SJVAPCD's BACT guidelines specify that the latest EPA Tier Certification level, for the applicable horsepower range, constitutes BACT for NOx; the Tier 2 NOx+VOC standard of 4.8 g/bhp-hr is the most current standard for an engine rated above 750 bhp. The BAAQMD BACT Guidelines specify that the CARB ATCM (Stationary Compression Ignition Engines) standard for NOx, for the applicable horsepower rating, constitutes BACT for NOx; the ATCM NOx+VOC standard is 4.8 g/bhp-hr for an engine rated above 750 bhp. Although the SCAQMD database contains several determinations for emergency diesel ICEs, none was more recent than 2003 and the determinations failed to specify the actual emission limits that constituted BACT.

40 CFR 60, Subpart IIII established emission limits for stationary CI ICEs. As discussed previously in Section III.G.2, 40 CFR 89.112 contains USEPA's Tier 2 non-road compression ignition engine standards, for engines rated above 750 bhp that constitute the Subpart IIII emission limits for diesel emergency generators.

None of these BACT guidelines identified other NOx limits that were technologically feasible. Therefore, a NOx+VOC limit of 4.8 g/bhp-hr constitutes BACT for an emergency diesel engine rated at more than 750 bhp. The proposed Emergency Generator will incorporate a Tier 2 engine whose certification test results confirmed compliance with the NOx+VOC standard of 4.8 g/bhp-hr.

Emergency Fire Pump

The same general conclusions for the Emergency Generator also apply to the Emergency Fire Pump, though the Emergency Fire Pump will belong in a different horsepower range. The Tier 3 NOx+VOC standard of 3.0 g/bhp-hr is the most current standard for an engine rated between 600 bhp and 750 bhp. The ATCM NOx+VOC standard similarly is 3.0 g/bhp-hr for an engine rated between 600 bhp and 750 bhp. Therefore, a NOx+VOC limit of 3.80 g/bhp-hr constitutes BACT for an emergency diesel engine rated between 600 and 750 bhp. The proposed Emergency Fire Pump will incorporate a Tier 3 engine whose certification test results confirmed compliance with the NOx+VOC standard of 3.0 g/bhp-hr.

Appendix E

Air Quality Impact Analysis

Air Quality Impact Analysis
Colusa Bio-Energy Power Plant
Colusa, California

As noted previously in Section III.B.3, CBE must demonstrate that emissions associated with the proposed Plant will not cause or worsen a violation of any AAQS. An AQIA was performed, in accordance with the Air Dispersion Modeling and Health Risk Assessment Protocol (January 2013) that Sierra Research submitted to the District, to characterize ambient concentrations associated with emissions from the proposed Plant, when added to background levels, and to determine whether these combined ambient concentrations comply with the AAQS. This section describes the methods used to perform the AQIA and the subsequent results.

Project Location

The Plant will be located in a newly annexed area of the Colusa Industrial Park (CIP) south of the Colusa County Airport and west of Highway 20/45 in Colusa County, just south of the Colusa City limits, as illustrated previously in Figure 1. The UTM coordinates (NAD 83) of the Plant site are approximately 586,805 meters Easting and 4,336,017 meters Northing. The nominal site elevation is approximately 50 feet above mean sea level. The area immediately surrounding the proposed Plant site can be characterized as rural with a mix of land consisting primarily of agricultural but also including industrial and commercial property. Residential areas in the City of Colusa are located at least 1.7 km north of the proposed Plant. The only prominent terrain feature in the vicinity of the Plant is the Sutter Buttes, located approximately 14 km to the east-northeast, which rise to an elevation of approximately 2,100 feet above mean sea level.

The climate of the Sacramento Valley is characterized by hot summers, mild winters, and small amounts of precipitation. The major climatic controls in the Sacramento Valley are the mountains on three sides—the Coastal Ranges to the west, the Sierra Nevada mountain range to the east, and the Cascade Range to the north—and the semi-permanent Pacific High pressure system over the eastern Pacific Ocean. This high is centered between the 140°W and 150°W meridians, and oscillates in a north-south direction seasonally. The position of the Pacific High governs California's weather. In the summer, the high moves to its northernmost position and dominates the regional climate, producing persistent temperature inversions and a predominantly southeasterly wind field. Clear skies, high temperatures, and low humidity characterize this season. Very little precipitation occurs during summer months because migrating storm systems are blocked by the Pacific High. Occasionally, tropical air moves into the area and thunderstorms may occur over the adjacent mountains.

In the fall, the Pacific High weakens and shifts southwestward toward Hawaii, and its dominance is diminished in the Sacramento Valley. Primarily in the winter, the Great Basin High pressure system to the east also affects the Sacramento Valley. During the transition period, the storm belt and zone of strong westerly winds also moves southward into California. The prevailing weather patterns during this time of year include storm periods with rain and gusty winds, clear weather that can occur after a storm or because of the Great Basin High pressure area, or persistent fog caused by temperature inversion.

The winds in the Colusa area are light (18% calm conditions) and predominantly from the southeastern quadrant. On an annual basis, approximately 45% of the winds come from the southeast quadrant between east-southeast and south-southeast, inclusive. The wind direction and wind speed frequency distribution ("wind rose") recorded at the Colusa meteorological station during calendar years 2007-2011 are illustrated in Figure E-1.

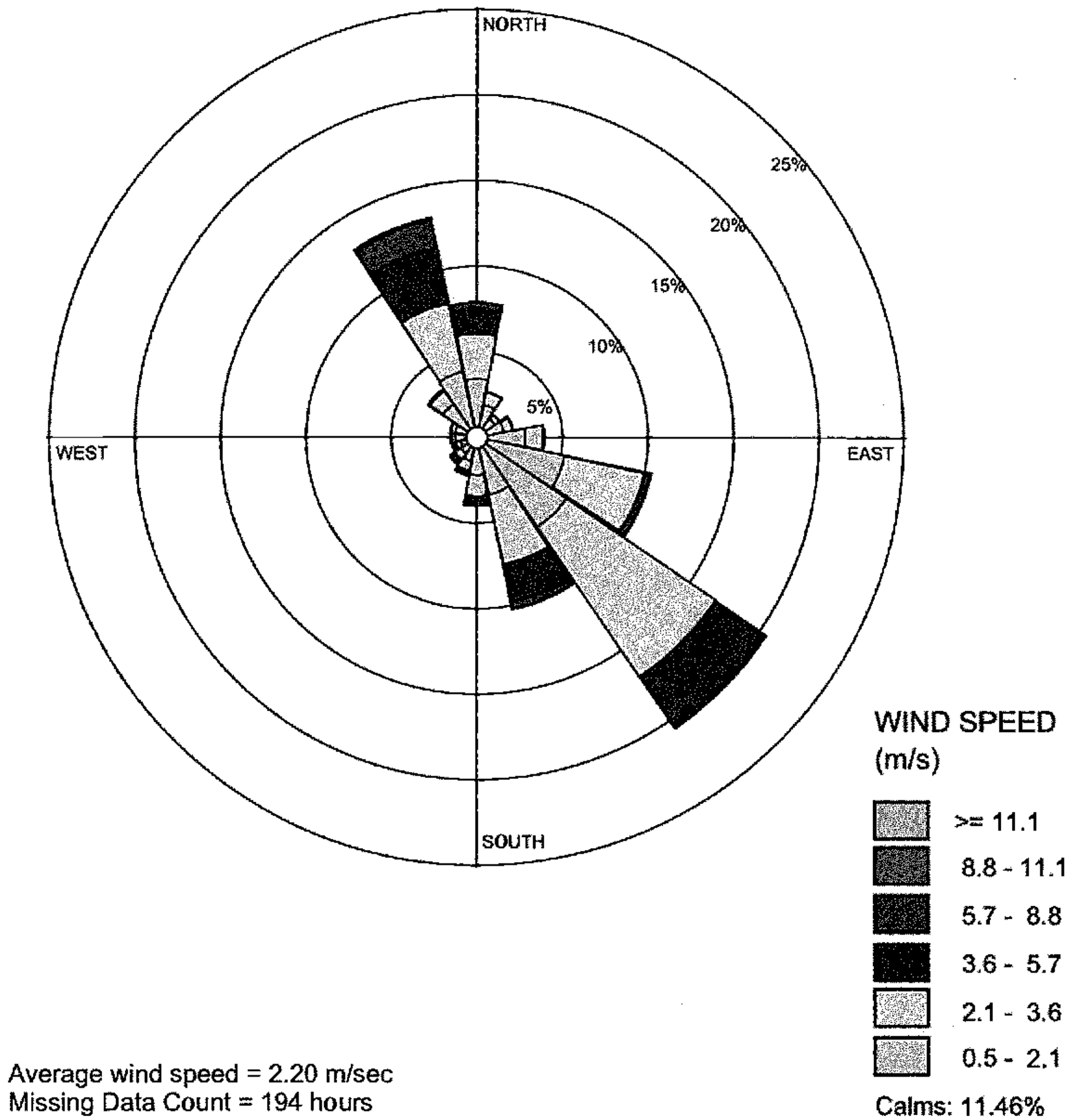
A marine climate influences mixing heights. Often, the base of the inversion is found at the top of a layer of marine air because of the cooler nature of the marine environment. However, inland areas, where the marine influence is absent, often experience strong ground-based inversions that inhibit mixing and can result in high pollutant concentrations. Low mixing heights are observed during the winter in the Sacramento Valley. The Sutter Buttes, located 14 km to the east but off of the axes of the primary and secondary wind directions in Colusa, may exert a slight effect on the meteorology at the Plant; no terrain or other steering mechanisms that would have an effect on the meteorology exist near the Plant. The surface roughness, height, and length of large-scale terrain features are consistent throughout the area, and play a large role in the effect on the horizontal and vertical wind patterns. There is no slope or topographical aspect in the vicinity (i.e., < 10 km) of the Plant that would reasonably affect meteorological conditions.

Dispersion Models

The ambient air quality dispersion modeling analysis was performed using USEPA's preferred/recommended dispersion model for NSR and Prevention of Significant Deterioration (PSD) air quality impact assessments—the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee (AERMIC) model, also known as AERMOD (Version 12345)—to evaluate impacts on ambient concentrations of CO, NO_2, PM_{10}, $PM_{2.5}$, and SO_2 associated with emissions from the proposed Plant. The AERMOD air dispersion model is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (i.e., complex terrain). AERMOD is considered a steady-state model because it assumes that there is no variability in meteorological parameters over a one-hour time period. It can be used to model the dispersion of emissions from point, area, and volume sources, all of which contribute to the total emissions from the proposed Plant.

The AERMOD model allows the selection of a number of options that affect model output. Standard AERMOD control parameters were used for this AQIA, including stack tip downwash, non-screening mode, non-flat terrain, and sequential

Figure E-1
Wind Rose – Colusa Meteorological Station



meteorological data check. The stack-tip downwash algorithm was used to adjust the effective stack height downward if the stack exit velocity is less than 1.5 times the wind speed at stack top. The rural default option was used by not invoking the URBANOPT option. The use of the rural default in modeling for this project is consistent with the project's rural location.[2] The AERMOD data files are included on compact disks enclosed with this application.

Source Data

As presented previously in Section II, emissions sources from the proposed Plant will include the following:

- Combustion sources – the BFB Boiler, the Emergency Generator, and the Emergency Fire Pump; and

- Particulate sources – the Materials Receiving/Handling/Storage system, the Cooling Tower, the Ash Silo, and the Lime Silo.

The BFB Boiler, the Emergency Generator, the Emergency Fire Pump, the Cooling Tower, Ash Silos, and Lime Silo were modeled as point sources. The Biomass Receiving/Handling/Storage operation was modeled as a combination of area and volume sources.

Stack characteristics for the point and area/volume emission sources associated with the Plant are summarized in Tables E-1 and E-2, respectively. The emission rates for base-load operation that were modeled for combustion and particulate sources are summarized in Tables E-3 and E-4. The following operating and emission scenarios were assumed for the determination of project impacts with respect to each AAQS:

- 1-Hour and 8-hour CO – BFB Boiler in base-load operation with both emergency engines also operating.
- 1-Hour NO_2 – BFB Boiler in base-load operation with either (but not both) emergency engine also operating. The Emergency Generator was modeled at 50 minutes of operation rather than a full 60-minute hour.
- Annual NO_2 – BFB Boiler and the emergency engines at the annual emission rate.
- 24-Hour $PM_{10}/PM_{2.5}$ – All point, area, and volume sources at the daily emission rate; this overstates biomass receiving/handling emissions (and associated impacts) because it assumes that the Plant is receiving rice hulls and shells/wood simultaneously and feeding both the BFB Boiler at the full rate.

[2] The rural versus urban option in AERMOD is primarily designed to set the fraction of incident heat flux that is transferred into the atmosphere. This fraction becomes important in urban areas having an appreciable "urban heat island" effect due to a large presence of land covered by concrete, asphalt, and buildings. This situation does not exist for the proposed Plant site.

- Annual $PM_{10}/PM_{2.5}$ – All point, area, and volume sources at the annual emission rate.
- 1-Hour SO_2 and 3-Hour SO_2 – BFB Boiler in base-load operation with both emergency engines also operating.
- 24-Hour SO_2 – BFB Boiler and both emergency engines at the daily emission rate.
- Annual SO_2 – BFB Boiler and emergency engines at the annual emission rate.

Table E-1
Point Source Stack Characteristics

Source	Stack Height (m)	Exhaust Temperature (°K)	Exhaust Velocity (m/sec)	Stack Diameter (m)
BFB Boiler [1]	30.5	357	14.6	2.59
Cooling Tower (each cell) [2]	6.56	306	29.0	5.49
Ash Silo (each) [3]	14.0 [5]	294 [6]	48.5 [7]	0.305 [5]
Lime Silo [4]	4.58 [5]	294 [6]	44.9 [8]	0.102 [5]
Emergency Generator [3]	8.54	736	81.7	0.203
Emergency Fire Pump [4]	8.54	797	39.9	0.203

Notes:
[1] Calculated from data presented previously in Table 1.
[2] Calculated from data presented previously in Table 2.
[3] Calculated from data presented previously in Table 5.
[4] Calculated from data presented previously in Table 6.
[5] Assumed for the purposes of this AQIA.
[6] Reflects the annual average ambient temperature.
[7] Calculated from the exhaust flow rate, presented previously in Table 3, and stack diameter.
[8] Calculated from the exhaust flow rate, presented previously in Table 4, and stack diameter.

Table E-2
Area/Volume Source Characteristics

Source	Source Type	Release Height (m)	Length (m)	Width (m)
Rice Hulls Truck Unloading	Area	0.305	59.7	3.47
Rice Hulls Building (2) [1]	Volume	15.3	29.5	N/A
Stockpiles A/B (4) [1]	Volume	9.15	61.1	N/A
Stockpiles C/D	Volume	9.15	56.9	N/A
Shells/Wood Truck Unloading	Area	0.305	59.7	3.47

Shells/Wood Building (2) [1]	Volume	15.3	29.5	N/A
Stockpiles E/F (2) [1]	Volume	9.15	67.0	N/A

Notes:
[1] Source was modeled as the (specified number) of volume sources.

Table E-3
Modeled Emission Rates for Base-Load Operation – Combustion Sources

Pollutant	Averaging Period	Emissions (g/sec)		
		BFB Boiler	Emergency Generator [3]	Emergency Fire Pump [5]
CO	1-hour	4.19 [1]	0.053	0.434
	8-hour	4.19 [1]	0.053	0.434
NO_2	1-hour	3.88 [1]	0.925 / 0 [4]	0.476 / 0 [6]
	Annual	3.77 [2]	0.0253	0.0109
SO_2	1-hour	1.55 [1]	0.00144	0.00084
	3-hour	1.55 [1]	0.00144	0.00084
	24-hour	1.89 [2]	0.00144	0.00084
	Annual	1.51 [2]	0.0000329	0.0000193

Notes:
[1] Calculated from the emission rates presented previously in Table B-1.
[2] Calculated from the emission rates presented previously in Table B-5.
[3] Calculated from the emission rates presented previously in Table B-11.
[4] Modeled three times. First, at 0.925 g/sec, which reflects 50 minutes of operation, to evaluate impacts during emergency operation (fire pump also operating). Second, at 0.925 g/sec to evaluate impacts during non-emergency operation, without the fire pump (but with the BFF Boiler). Third, not operating while the fire pump was evaluated during non-emergency operation (with the BFF Boiler).
[5] Calculated from the emission rates presented previously in Table B-12.
[6] Modeled three times. First, at 0.476 g/sec to evaluate impacts during emergency operation (emergency generator also operating). Second, at 0.476 g/sec to evaluate impacts during non-emergency operation, without the emergency generator (but with the BFF Boiler). Third, not operating while the emergency generator was evaluated during non-emergency operation (with the BFF Boiler).

Table E-4
Modeled Emission Rates for Base-Load Operation – Particulate Sources

Emission Source	Averaging Period	Emissions (g/sec)	
		PM_{10}	$PM_{2.5}$
BFB Boiler [1]	24-hour	1.24	1.24
	Annual	1.21	1.21
Cooling Tower (3) [2]	24-hour	0.015	0.015

Table E-4
Modeled Emission Rates for Base-Load Operation – Particulate Sources

Emission Source	Averaging Period	Emissions (g/sec)	
		PM_{10}	$PM_{2.5}$
	Annual	0.014	0.014
Ash Silo (2) [3]	24-hour	0.00084	0.00032
	Annual	0.00082	0.00031
Lime Silo [4]	24-hour	0.00017	0.000063
	Annual	0.000023	0.0000086
Emergency Generator [5]	24-hour	0.0044	0.0044
	Annual	0.000101	0.000101
Emergency Fire Pump [6]	24-hour	0.025	0.025
	Annual	0.00057	0.00057
Rice Hulls Truck Unloading [7,8]	24-hour	3.57E-07	5.40E-08
	Annual	1.73E-07	2.63E-08
Rice Hulls Building (2) [7,9]	24-hour	1.97E-04	2.98E-05
	Annual	1.23E-04	1.86E-05
Stockpiles A/B (4) [9,10]	24-hour	3.13E-04	4.73E-05
	Annual	8.67E-05	1.32E-05
Stockpiles C/D [10]	24-hour	2.75E-04	4.15E-05
	Annual	7.63E-05	1.16E-05
Shells/Wood Truck Unloading [7,8]	24-hour	3.94E-07	5.96E-08
	Annual	8.20E-08	1.24E-08
Shells/Wood Building (2) [7,9]	24-hour	2.47E-04	3.75E-05
	Annual	8.36E-05	1.27E-05
Stockpiles E/F (2) [9,10]	24-hour	8.01E-04	1.21E-04
	Annual	1.34E-04	2.04E-05

Notes:

1 Calculated from the emission rates presented previously in Table B-5.
2 Calculated from the emission rates presented previously in Section 3 of Appendix B.
3 Calculated from the emission rates presented previously in Table B-9.
4 Calculated from the emission rates presented previously in Table B-10.
5 Calculated from the emission rates presented previously in Table B-11.
6 Calculated from the emission rates presented previously in Table B-12.
7 Calculated from the emission rates presented previously in Table B-7.
8 Reflects units of $g/sec/m^2$ for an area source.
9 Reflects emission rate for each of the multiple emission sources used to characterize the volume source.
10 Calculated from the emission rates presented previously in Table B-8.

BFB Boiler startup emissions were included in the 24-hour (i.e., daily) emission rates specified in Table B-5; however, shorter-term (i.e., 1-hr, 3-hr, and 8-hr) emission rates reflected BFB Boiler base-load emissions. Since hourly NOx and SOx emissions during startup will be higher than during base-load operation, startup emission rates for the BFB Boiler, as summarized in Table E-5, were also evaluated. It was assumed that neither emergency engine will be operating during startup of the BFB Boiler. Since startup emissions of CO, PM_{10}, and $PM_{2.5}$ will not exceed the base-load emission rates, startup impacts associated with these pollutants were not considered. Listed below are the operating and emission scenarios assumed for the determination of Plant impacts with respect to each AAQS.

- 1-Hour NO_2 and SO_2 – BFB Boiler at the maximum startup rate (i.e., Hour 8).
- 3-Hour SO_2 – BFB Boiler at the maximum startup rate (i.e., Hours 7 and 8) plus one hour of base-load operation.

Table E-5
Modeled Startup Emission Rates – BFB Boiler

Pollutant	Averaging Period	Emissions (g/sec)
NO_2	1-hour	12.1 [1]
SO_2	1-hour	8.89 [1]
	3-hour	6.45 [2]

Note:
[1] Calculated from the startup emission rates presented previously in Table B-4.
[2] Calculated from the startup emission rates presented previously in Table B-4 and the base-load emission rates presented previously in Table B-1.

Hourly and daily emissions during commissioning activities will be higher than during base-load operation, as discussed previously in Section 1.3 of Appendix B. The commissioning emission rates that were modeled are summarized in Tables E-6 and E-7. Since commissioning emissions will not affect maximum annual emissions from the BFB Boiler, annual impacts were not evaluated. Since shells/wood are not expected to be stored on site during the early phase of the commissioning period, the Shells/Wood Receiving/Storage/Handling operation was not evaluated. The Lime Silo (i.e., filling) and emergency engines are also not expected to be operated during commissioning activities and, accordingly, were not evaluated. Listed below are the operating and emission scenarios assumed for the determination of Plant impacts with respect to each AAQS.

- 1-Hour CO and 8-Hour CO – BFB Boiler at the hourly commissioning emission rate.

- 1-Hour NOx – BFB Boiler at the hourly commissioning emission rate.

- 24-Hour $PM_{10}/PM_{2.5}$ – BFB Boiler at the daily commissioning rate and the Cooling Tower, Ash Silos, and Rice Hulls Receiving/Storage/Handling operation at the daily emission rate.

- 1-Hour SOx and 3-Hour SOx – BFB Boiler at the hourly commissioning emission rate.

- 24-Hour SOx – BFB Boiler at the hourly commissioning emission rate, assuming 20 hours of operation per day.

Table E-6
Modeled Commissioning Emission Rates – BFB Boiler

Pollutant	Averaging Period	Emissions [1] (g/sec)
CO	1-hour	3.62
	8-hour	3.62
NO_2	1-hour	12.7
SO_2	1-hour	6.23
	3-hour	6.23
	24-hour	5.19

Note:

[1] Calculated from the emission rates presented previously in Table B-6.

Table E-7 Modeled PM Emission Rates for Commissioning			
Emission Source	Averaging Period	Emissions (g/sec)	
		PM_{10}	$PM_{2.5}$
BFB Boiler [1]	24-hour	25.6	22.1
Cooling Tower [2]	24-hour	0.015	0.015
Ash Silo (each) [3]	24-hour	0.00084	0.00032
Rice Hulls Truck Unloading [4,5]	24-hour	3.57E-07	5.40E-08
Rice Hulls Building (2) [4,6]	24-hour	1.97E-04	2.98E-05
Stockpiles A/B (4) [6,7]	24-hour	3.13E-04	4.73E-05
Stockpiles C/D [7]	24-hour	2.75E-04	4.15E-05

Notes:
[1] Calculated from the emission rates presented previously in Table B-6.
[2] Calculated from the emission rates presented previously in Section 3 of Appendix B.
[3] Calculated from the emission rates presented previously in Table B-9.
[4] Calculated from the emission rates presented previously in Table B-7.
[5] Reflects units of g/sec/m^2 for an area source.
[6] Reflects emission rate for each of the multiple emission sources used to characterize the volume source.
[7] Calculated from the emission rates presented previously in Table B-8.

Building Downwash

A building or structure is considered sufficiently close to a stack to cause downwash effects when the distance between the stack and the nearest part of the building is less than or equal to five times the lesser of the height or the projected width of the building. Existing and planned buildings/structures at the Plant were evaluated to identify those that would cause downwash to emission plumes from the emission sources at the Plant. Building/structure dimensions were provided by CBE. Fifteen (15) buildings/structures, whose dimensions are summarized in Table E-8, were identified as potentially causing downwash.

Table E-8 Building/Structure Dimensions			
	Dimensions (ft)		
Description	Length	Width	Height
Offices/Shop	150	70	24
Cooling Tower	84	37.5	23
Turbine Generator Building	100	50	24
Water Storage Tank	N/A [1]	50 [1]	50
Baghouse	50	35	66
Scrubber	N/A [1]	27 [1]	101
Economizer	28	13	61
Multiclone	25	16	61
BFB Boiler	39	35	114
Gasifier	36	30	75
Sand Tank	N/A [1]	18 [1]	25
Rice Hulls Building	200	100	50
Shells/Wood Building	200	100	50
Ash Silo #1	30	30	25
Ash Silo #2	30	30	25

Note:

[1] N/A reflects round structures (i.e., tanks), where the width is the diameter.

AERMOD also evaluates building downwash effects on dispersing plumes. Stack locations and heights and building locations and dimensions were input to the Building Profile Input Program – Plume Rise Model Enhancements (BPIP-PRIME, Version 04274). The first part of BPIP-PRIME determines whether a stack is being subjected to wake effects from a structure or structures; the second part calculates direction-specific building dimensions for each structure, which are used by AERMOD to evaluate wake effects. The BPIP-PRIME output is formatted for use in AERMOD input files.

Meteorological Data

AERMOD requires hourly meteorological data consisting of wind direction and speed (with reference height), temperature (with reference height), Monin-Obukhov length, surface roughness length, heights of the mechanically and convectively generated boundary layers, surface friction velocity, convective velocity scale, and vertical potential temperature gradient in the 500-meter layer above the planetary boundary layer. Meteorological data collected between 2007 and 2011 from the Colusa meteorological station, located approximately 2.5 km north Plant, were used for the modeling of impacts associated with emissions from the Plant. These datasets were processed using AERMET to generate AERMOD-compatible meteorological data for air dispersion modeling.

The meteorological data used in the AERMOD model included the following meteorological data sets:

- Surface meteorological data, obtained from CARB (*http://www.arb.ca.gov/aqmis2/metselect.php*), collected in 2007-2011 at the Colusa meteorological station;

- Cloud cover data, obtained from the National Climatic Data Center (*ftp://ftp.ncdc.noaa.gov/pub/data/noaa/*), collected in 2007-2011 at Beale Air Force Base near Yuba City; and

- Upper air meteorological data, obtained from the National Oceanic and Atmospheric Administration (Global Systems Division of the Earth System Research Laboratory) radiosonde observation (RAOB) web site (*http://raob.fsl.noaa.gov/*), (in FSL-format) collected in 2007-2011 at the Oakland sounding station.

Upon reviewing the Modeling Protocol, the District expressed some concerns, about the use of meteorological data from the Colusa station, associated with the siting of the anemometer. The height of the anemometer is only 6 meters above ground, rather than the standard 10 meter height. Furthermore, there is a tree located south of the anemometer that could introduce error in the wind speed and direction data. The wind rose for the Colusa Meteorological Station was compared to a wind rose generated for the nearby (38 km from the Plant) Yuba City Meteorological Station. The wind direction and wind speed data for the two stations were comparable. Therefore, the Colusa Meteorological Station would appear to provide representative data for the Plant. Furthermore, datasets were processed using AERMET with a specified anemometer of 6 meters to more accurately account for the peculiarities of the site specific data from the Colusa Meteorological Station.

Receptor Grids

Cartesian coordinate receptor grids were used to provide adequate spatial coverage surrounding the Plant for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. A 250-meter resolution coarse receptor grid was developed and extends outwards 10 km. For the full impact analyses, nested grids were developed to fully represent the maximum impact areas. The receptor grids were constructed as follows:

- One row of receptors spaced 25 meters apart along the facility's fence line;

- Four tiers of receptors spaced 25 meters apart, extending 100 meters from the fence line;

- Additional tiers of receptors spaced 100 meters apart, extending from 100 meters to 1,000 meters from the fenceline; and

- Additional tiers of receptors spaced 250 meters apart, out to 10 km from the most distant source modeled.

Additional refined receptor grids with 25-meter resolution were placed around the maximum first-high or maximum second-high coarse grid impacts and extended out 1,000 meters in all directions. Concentrations within the facility fenceline were not evaluated.

National Elevation Dataset (NED) data from the U.S. Geological Survey (USGS) were used to identify receptor elevations in the GeoTIFF format at a horizontal resolution of 1 arc-second (approximately 30 meters). All coordinates are referenced to UTM North American Datum 1983 (NAD83), Zone 10. The AERMOD receptor elevations were interpolated among the DEM nodes according to standard AERMAP procedure. For determining concentrations in elevated terrain, the AERMAP terrain preprocessor receptor-output (ROU) file option was used. The Regions imported in Geographical Coordinates for the USGS NED data are bounded as follows:

- South West corner: UTM Zone 10 (NAD 83) 576,600 m, 4,325,400 m; and
- North East corner: UTM Zone 10 (NAD 83) 596,600 m, 4,345,400 m.

Background Air Quality Data

Background concentrations were obtained from the ambient air quality monitoring stations listed below and depicted in Figure E-2.

- Ozone, PM_{10}, and $PM_{2.5}$ data for 2009-2011 were obtained from the Colusa monitoring station located approximately 2.5 km north of the Plant.

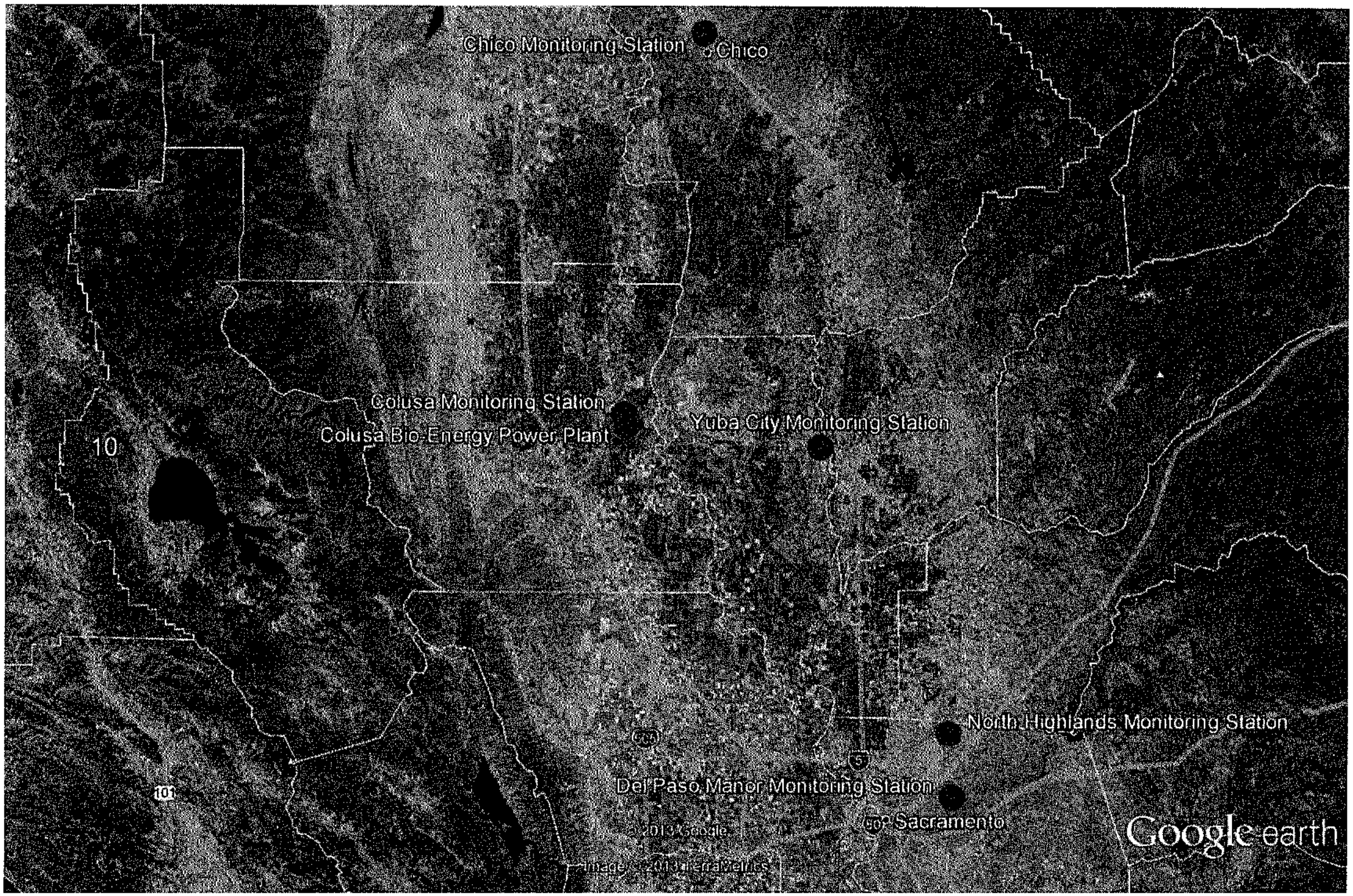
- CO data for 2009-2011 were obtained from the Chico (Butte County) monitoring station located approximately 67 km north-northeast of the Plant.

- NO_2 data for 2009-2011 were obtained from the Yuba City (Yuba County) monitoring station located approximately 33 km east of the plant.

- SO_2 data for 2009-2011 were obtained from the North Highlands (Sacramento County) monitoring station located approximately 74 km southeast of the Plant; the Del Paso Manor (Sacramento County) monitoring station was used to complete gaps in the North Highlands data.

- $CO/NO_2/SO_2$ concentrations (in ppm or ppb) were converted to units of ug/m^3 using a standard temperature of 68 °F as defined in Section "dy" of Rule 1.2.

Figure E-2
Ambient Air Quality Monitoring Stations near the Proposed Colusa Bio-Energy Power Plant



Ambient Air Quality Impacts

Ambient air quality impacts associated with emissions from the Plant were characterized during both base-load operation, startup, and commissioning. First, a significant impact determination was performed for each operating scenario to determine whether impacts were *de minimis*. For those impacts that were not de minimis, background concentrations were added to project impacts to determine whether the combined impacts would exceed any AAQS. The AERMOD data files are included on compact disks enclosed with this application.

Base-Load Operations

USEPA considers impacts from a project to be *de minimis* (i.e., would <u>not</u> cause or worsen a violation of an AAQS) if the modeled impacts from the project do <u>not</u> exceed the significance levels specified in 40 CFR 51.165(b)(2). USEPA has not yet defined SILs for the more recently adopted one-hour NO_2 and SO_2 impacts. However, USEPA has suggested that, until SILs have been promulgated, interim values of 4 ppb (7.5 $\mu g/m^3$) for NO_2 and 3 ppb (7.8 $\mu g/m^3$) for SO_2 may be used. These values were used as SILs in this AQIA. Also, the United States Court of Appeals recently vacated the $PM_{2.5}$ SIL and remanded it back to USEPA for further consideration. This essentially removes the SILs for 24-hour and annual $PM_{2.5}$ impacts from 40 CFR 51.165(b)(2). The suggested SILs for one-hour NO_2 and SO_2, as well as the prior SILs for $PM_{2.5}$, were used in this analysis as interim SILs in accordance with the Air Dispersion Modeling and Health Risk Assessment Protocol (January 2013) that Sierra Research submitted to the District.
The modeled impacts from base-load operation the proposed Plant are compared with the SILs in Table E-9. The AQIA indicates that CO, annual PM_{10}, and 3-hour/24-hour/annual SO_2 impacts from the proposed Project would be *de minimis* and, therefore, would not significantly cause or worse a violation of the associated AAQS. Impacts for the other pollutants/averaging periods exceeded the SILs and, therefore, were evaluated further.

Table E-9 Significant Air Quality Impact Determination				
		Concentration ($\mu g/m^3$)		
Pollutant	Averaging Period	Modeled Impact	Significance Levels	Significant?
CO	1-hour	299	2,000 [1]	No
	8-hour	82.2	500 [1]	No
NO_2	1-hour	241	7.5 [2]	Yes
	Annual	2.30	1 [1]	Yes
PM_{10}	24-hour	7.90	5 [1]	Yes
	Annual	0.68	1 [1]	No
$PM_{2.5}$	24-hour	5.56	1.2 [3]	Yes
	Annual	0.65	0.3 [3]	Yes
SO_2	1-hour	23.5	7.8 [2]	Yes
	3-hour	14.7	25 [1]	No
	24-hour	5.75	5 [1]	Yes
	Annual	0.77	1 [1]	No

Note:

[1] Significance levels were obtained from 40 CFR 51.165(b)(2).

[2] USEPA has not yet defined SILs for one-hour NO_2 and SO_2 impacts. However, USEPA has suggested that, until SILs have been promulgated, interim values of 4 ppb (7.5 $\mu g/m^3$) for NO_2 and 3 ppb (7.8 $\mu g/m^3$) for SO_2 may be used. These values were used as SILs in this AQIA.

[2] The United States Court of Appeals recently vacated the $PM_{2.5}$ SIL and remanded it back to USEPA for further consideration. This essentially removes the SILs for 24-hour and annual $PM_{2.5}$ impacts. The prior SILs were used as SILs in this AQIA.

A full AQIA was performed for NO_2, $PM_{2.5}$, 24-hour PM_{10}, and 1-hour/24-hour SO_2 impacts, whose impacts, as shown in Table 56, are not *de minimis*. The ambient impacts associated with base-load emissions from the proposed Plant were added to background concentrations. The resulting total impacts are compared with the relevant AAQSs in Table E-10. The AQIA indicates that emissions from the proposed Plant would not cause an exceedance of the NO_2, $PM_{2.5}$, and 1-hour/24-hour SO_2 impacts AAQS. Impacts for PM_{10}, whose background concentrations are already close to the AAQS, exceeded the 24-hour for PM_{10} AAQS. Therefore, 24-hour PM_{10} impacts were evaluated further.

Table E-10 Air Quality Impact Analysis for Base-Load Operation						
		Concentration ($\mu g/m^3$)				
Pollutant	Averaging Period	Background	Modeled Impact	Total Impact	AAQS [6]	Compliant?
NO_2	1-hour	N/A	N/A	191 [5]	191	Yes
	Annual	17.2 [1,2]	2.30	19.5	57	Yes
PM_{10}	24-hour	69.7 [3]	7.90	77.6	50	No
$PM_{2.5}$	24-hour	27.3 [3]	5.56	32.9	35	Yes
	Annual	7.1 [3]	0.65	7.7	12	Yes
SO_2	1-hour	13.3 [2,4]	23.5	36.8	200	Yes
	21-hour	5.3 [2,4]	5.75	11.1	106	Yes

Notes:

1 Background NO_2 data were obtained from the Yuba City monitoring station for 2009-2011.

2 Concentrations (in ppm or ppb) were converted to units of $\mu g/m^3$, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

3 Background PM_{10} and $PM_{2.5}$ data were obtained from the Colusa monitoring station for 2009-2011.

4 Background SO_2 data were obtained from the Sacramento North Highlands and Del Paso Manor monitoring station for 2009-2011.

5 Total impacts were modeled using the PVMRM option within AERMOD. Background NO_2 data were obtained from the Yuba City monitoring station for 2009-2011.

6 Reflects the more stringent state or federal AAQS. NO_2 and SO_2 AAQSs (in ppm or ppb) were converted to units of $\mu g/m^3$, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

A more refined daily PM_{10} AQIA was performed to evaluate PM_{10} impacts associated with Plant emissions, relative to the 24-hour PM_{10} SIL, on those days when the total impacts (i.e., project plus background) exceeded the 24-hour PM_{10} AAQSs. Total daily impacts were calculated, for each day of each modeled year, from daily background concentrations and modeled daily impacts. Since ambient PM_{10} concentrations at the Colusa monitoring station were measured every six days, measured values were repeated until superseded with new data pursuant to CARB guidance. The maximum modeled 24-hour PM_{10} impacts from the proposed Plant for each modeling year, from only those days whose total impacts exceeded the 24-hour AAQS, were compared with the PM_{10} SIL. Total impacts exceeded the 24-hour PM_{10} AAQS 94 days in the five-year period. The maximum modeled PM_{10} impacts from the proposed Plant from these 24-hour PM_{10} AAQS exceedance days (94 days), for each modeling year, are compared with the SIL in Table E-11. Of these 94 modeled exceedances, the Plant impact exceeded the PM_{10} SIL only once – on October 11, 2010. 24-hour impacts on October 11, 2010 were evaluated further. Spreadsheets containing detailed daily calculations are presented in Appendix D.

Table E-11 Daily PM Air Quality Impact Analysis						
			Date of	Concentration ($\mu g/m^3$)		
Pollutant	Year	Days Above AAQS	Maximum Modeled Impact [1]	Maximum Modeled Impact	Significance Level [2]	Significant?
PM_{10}	2007	0	N/A	N/A	5	N/A
	2008	62	7/11	3.77	5	No
	2009	24	9/30	3.29	5	No
	2010	9	10/11	7.90 [3]	5	Yes
	2011	22	11/1	3.58	5	No

Notes:
[1] Reflects only those days in which the combined impacts exceeded the 24-hour AAQS.
[2] Significance levels for PM_{10} were obtained from 40 CFR 51.165(b)(2).
[3] This was the only day where modeled impacts exceeded the SIL on a day where the combined impacts exceeded the 24-hour AAQS.

The 24-hour PM_{10} impacts were evaluated in more detail for October 11, 2010. The discrete impacts associated with each modeled source at the Plant were characterized separately for the 12 receptors whose total impact exceeded the 5.0 $\mu g/m^3$ 24-hour PM_{10} SIL. The top three contributing sources each relevant receptor are summarized in Table E-12. The Emergency Fire Pump is the largest single contributor to the Plant impact and contributes a majority of the Plant impact for of 11 these 12 receptors.

Table E-12 Worst Case PM10 Receptors – October 11, 2010						
Receptor Coordinates		Plant Impact ($\mu g/m^3$)				
UTM X	UTMY	Plant	Fire Pump	Boiler	S/W Truck [1]	Top 3
586685	4335414	7.90	3.84	0.96	2.56	93%
586685	4335391	7.22	4.03	0.94	1.61	91%
586686	4335438	6.49	3.29	0.95	1.82	93%
586685	4335367	5.99	3.87	0.92	0.54	89%
586700	4335375	5.92	3.35	0.94	1.04	90%
586700	4335350	5.81	3.50	0.92	0.76	89%
586700	4335325	5.37	3.38	0.89	0.44	87%
586685	4335343	5.35	3.54	0.89	0.20	86%
586710	4335342	5.26	3.09	0.91	0.66	89%
586709	4335319	5.20	3.18	0.88	0.50	88%
586700	4335400	5.14	2.88	0.96	0.80	90%
586709	4335295	4.94	3.09	0.85	0.33	86%

Note:
[1] Shells/Wood Truck Unloading area source.

The Emergency Fire Pump impacts were conservatively assumed to reflect 24 hours of full load operation during an emergency event. Such lengthy emergency operation is unlikely on any day. Furthermore, the Emergency Fire Pump will be operated up to one hour per week for routine testing and maintenance. The only other operation will be for emergency use or District required testing. The allowance for emergency operation is only 150 hr/yr (of a total allowance of 200 hr/yr). Therefore, the probability of such heavy Emergency Fire Pump usage coinciding with the poor ambient air quality and poor dispersion conditions realized on October 11, 2011 is highly unlikely.

For example, one hour of full load operation, which would match the daily allowance for non-emergency operation, would yield daily emissions that are 4% of those based upon 24-hours of full load operation. Additionally, the probability of 24 hours of full load emergency operation on any given day would be well below 2% (150 hours/8760 hours/yr as a conservative estimate, since most emergency operation would be less than 24 hours). Furthermore, non-emergency operation will occur only once per week (a probability of 14% that operation will occur on any given day). Therefore, using 1 hour per day of full load operation to characterize daily impacts from the Emergency Fire Pump still provides a very conservative estimate of air quality impacts. Consequently, Plant impacts at these 12 highest affected receptors were recalculated assuming 1 hour of full load operation of the Emergency Fire Pump (i.e., 4% of the impacts associated with 24 hours of full load emergency operation), as summarized in Table E-13. Such a conservative assumption would nonetheless lower the worst-case 24-hour PM_{10} impact on October 11, 2010 from 7.69 $\mu g/m^3$ to 4.22 $\mu g/m^3$. Thus, the daily AQIA indicates that PM_{10} emissions from the proposed Plant would not significantly worsen the existing violations of the 24-hour PM_{10} AAQS.

Table E-13
Recalculated Worst Case PM10 Receptors – October 11, 2010

Receptor Coordinates		24-Hour Plant Impact ($\mu g/m^3$)				
		AERMOD Output		Recalculated		
UTM X	UTMY	Plant	Fire Pump	Fire Pump [1]	Plant [2]	Significant?
586685	4335414	7.90	3.84	0.15	4.22	No
586685	4335391	7.22	4.03	0.16	3.35	No
586686	4335438	6.49	3.29	0.13	3.34	No
586685	4335367	5.99	3.87	0.15	2.28	No
586700	4335375	5.92	3.35	0.13	2.70	No
586700	4335350	5.81	3.50	0.14	2.45	No
586700	4335325	5.37	3.38	0.14	2.13	No
586685	4335343	5.35	3.54	0.14	1.96	No
586710	4335342	5.26	3.09	0.12	2.29	No
586709	4335319	5.20	3.18	0.13	2.15	No
586700	4335400	5.14	2.88	0.12	2.38	No
586709	4335295	4.94	3.09	0.12	2.21	No

Note:
1 Reflects 4% of the AERMOD output.
2 Reflects the AERMOD output Plant total minus the AERMOD modeled Emergency Fire Pump impacts plus the recalculated Emergency Fire Pump impacts.

Startup

An AQIA was performed to characterize 1-hour NO_2 and 1-hour/3-hour SO_2 impacts during startup. The ambient impacts associated with startup emissions from the proposed Plant were added to background concentrations. The resulting total impacts are compared with the relevant AAQSs in Table E-14. The AQIA indicates that startup emissions from the proposed Plant would not cause an exceedance of any of the short-term NO_2 or SO_2 AAQS.

Table E-14
Air Quality Impact Analysis for Startup

Pollutant	Averaging Period	Concentration (ug/m^3)				
		Background	Modeled Impact	Total Impact	AAQS [4]	Compliant?
NO_2	1-hour	N/A	N/A	97.1 [3]	191	Yes
SO_2	1-hour	13.3 [1,2]	106	120	200	Yes
	3-hour	13.3 [1,2]	56.1	69.4	1,330	Yes

Notes:
1 Background SO_2 data were obtained from the Sacramento North Highlands and Del Paso Manor monitoring station for 2009-2011.
2 Concentrations (in ppm or ppb) were converted to units of ug/m^3 using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.
3 Total impacts were modeled using the PVMRM option within AERMOD. Background NO_2 data were obtained from the Yuba City monitoring station for 2009-2011.
4 Reflects the more stringent state or federal AAQS. NO_2 and SO_2 AAQSs (in ppm or ppb) were converted to units of ug/m^3 using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

Commissioning

An AQIA was performed to characterize short-term impacts during commissioning of the BFB Boiler. The ambient impacts associated with commissioning emissions from the proposed BFB Boiler were added to background concentrations. The resulting total impacts are compared with the relevant AAQSs in Table E-15. The AQIA indicates that commissioning CO/NOx/SOx emissions from the proposed BFB Boiler would not cause an exceedance of any of the short-term AAQS. The 24-hour PM_{10} and $PM_{2.5}$ impacts during commissioning would exceed the 24-hour PM_{10} and $PM_{2.5}$ SILs. 24-hour PM_{10} and $PM_{2.5}$ impacts were evaluated further.

Table E-15
Air Quality Impact Analysis for Commissioning

Pollutant	Averaging Period	Concentration (ug/m^3) Background	Modeled Impact	Total Impact	AAQS [6]	Compliant?
CO	1-hour	3,259 [1,2]	65.2	3,325	23,282	Yes
	8-hour	2,736 [1,2]	30.1	2,766	10,477	Yes
NO_2	1-hour	N/A	N/A	108 [5]	191	Yes
PM_{10}	24-hour	69.7 [3]	133	202	50	No
$PM_{2.5}$	24-hour	27.3 [3]	115	142	35	No
SO_2	1-hour	13.3 [2,4]	112	126	200	Yes
	3-hour	13.3 [2,4]	89.5	103	1,330	Yes
	24-hour	5.3 [2,4]	26.9	32.2	106	Yes

Notes:
1 Background CO data were obtained from the Chico monitoring station for 2009-2011.
2 Concentrations (in ppm or ppb) were converted to units of ug/m^3, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.
3 Background PM_{10} and $PM_{2.5}$ data were obtained from the Colusa monitoring station for 2009-2011.
4 Background SO_2 data were obtained from the Sacramento North Highlands and Del Paso Manor monitoring station for 2009-2011.
5 Total impacts were modeled using the PVMRM option within AERMOD. Background NO_2 data were obtained from the Yuba City monitoring station for 2009-2011.
6 Reflects the more stringent state or federal AAQS. $CO/NO_2/SO_2$ AAQSs (in ppm or ppb) were converted to units of ug/m^3, using a standard temperature of 68 °F as defined in Section dy of Rule 1.2.

A more refined daily PM_{10} AQIA was performed to evaluate PM_{10} impacts associated with commissioning emissions from the BFB Boiler, relative to the 24-hour PM_{10} and $PM_{2.5}$ SILs, on those days when the total impacts (i.e., project plus background) exceeded the 24-hour PM_{10} AAQSs. Total daily impacts were calculated, for each day of each modeled year, from daily background concentrations and modeled daily impacts. Since ambient PM_{10} concentrations at the Colusa monitoring station were measured every six days, measured values were repeated until superseded with new data pursuant to CARB guidance. The maximum modeled 24-hour PM_{10} impacts from the proposed Plant for each modeling year, from only those days whose total impacts exceeded the 24-hour AAQS, were compared with the PM_{10} SIL. Total impacts exceeded the 24-hour PM_{10} AAQS 798 days in the five-year period and the 24-hour $PM_{2.5}$ AAQS 1,017 days. Spreadsheets containing detailed daily calculations are presented in Appendix D.

Appendix F

Health Risk Assessment

Health Risk Assessment
Colusa Bio-Energy Power Plant
Colusa, California

Dose-Response Assessment

The dose-response assessment characterizes both the potential carcinogenic and non-carcinogenic health effects resulting from exposure to the following TACs that will be emitted by the Plant:

- Acetaldehyde;
- Acrolein;
- Ammonia;
- Arsenic;
- Barium;
- Benzene;
- Beryllium;
- Cadmium;
- Chromium, Hexavalent;
- Copper;
- Diesel Particulate Matter;
- Dioxins
  - 4D 2,3,7,8;
  - 5D 1,2,3,7,8;
  - 6D 1,2,3,4,7,8;
  - 6D 1,2,3,6,7,8;
  - 6D 1,2,3,7,8,9;
  - 7D 1,2,3,4,6,7,8;
  - 8D 1,2,3,4,6,7,8,9;
- Formaldehyde;
- Furans
  - 4F 2,3,7,8;
  - 5F 1,2,3,7,8;
  - 5F 2,3,4,7,8;
  - 6F 1,2,3,4,7,8;
  - 6F 1,2,3,6,7,8;
  - 6F 1,2,3,7,8,9;
  - 6F 2,3,4,6,7,8;
  - 7F 1,2,3,4,6,7,8;
  - 7F 1,2,3,4,7,89;
  - 8F 1,2,3,4,6,7,8,9;
- Hydrochloric Acid;
- Lead;
- Manganese;
- Mercury;
- Nickel;
- PAHs
  - Acenaphthene;
  - Acenaphthylene;
  - Anthracene;
  - Benz(a)anthracene;
  - Benzo(a)pyrene;
  - Benzo(b)fluoranthene;
  - Benzo(g,h,i)perylene;
  - Benzo(k)fluoranthene;
  - Chrysene;
  - Dibenz(a,h)anthracene;
  - Fluoranthene;
  - Fluorene;
  - Indeno(1,2,3-cd)pyrene;
  - Naphthalene;
  - Phenanthrene;
  - Pyrene;
- Selenium;
- Toluene;
- Vinyl Chloride;
- Xylene; and
- Zinc.

Cancer dose-response relationships use potencies, expressed as inverse doses, to characterize the probability or risk of cancer associated with a given exposure level (e.g., per 1 ug/m^3 ambient concentration). A potency slope (in kg-day/mg) reflects multiple exposure pathway scenarios while a unit risk factor (URF, in m^3/ug) characterizes only the inhalation pathway. Cancer URFs for the inhalation pathway were obtained from

CARB's "Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Values" (May 2012).

Chronic and acute non-cancer dose-response relationships use reference exposure levels (REL, in ug/m^3 for inhalation pathways and mg/kg-day for non-inhalation pathways) to characterize the acceptable level of exposure. RELs represent levels below which no adverse health effects are anticipated. Chronic and acute non-cancer dose-response relationships can be further characterized as an HI, defined as the ratio of the ambient concentration to the REL. Chronic and acute non-cancer RELs for the inhalation pathway also were obtained from CARB's "Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Values."

Inhalation dose-response values for the relevant TACs are summarized in Table F-1.

Table F-1
Dose-Response Values

TAC	Cancer URF [1] (m^3/ug)	Chronic REL [1] (ug/m^3)	Acute REL [1] (ug/m^3)
Acetaldehyde	2.7E-06	140	470
Acrolein	N/A	0.35	2.5
Ammonia	N/A	200	3,200
Arsenic	3.3E-03	1.5E-02	0.20
Barium	N/A	N/A	N/A
Benzene	2.9E-05	60	1,300
Beryllium	2.4E-03	7.0E-03	N/A
Cadmium	4.2E-03	2.0E-02	N/A
Chromium, Hexavalent	0.15	0.20	N/A
Copper	N/A	N/A	100
Diesel Particulate Matter	3.0E-04	5	N/A
Dioxins			
4D 2,3,7,8	38	4.0E-05	N/A
5D 1,2,3,7,8	38	4.0E-05	N/A
6D 1,2,3,4,7,8	3.8	4.0E-04	N/A
6D 1,2,3,6,7,8	3.8	4.0E-04	N/A
6D 1,2,3,7,8,9	3.8	4.0E-04	N/A
7D 1,2,3,4,6,7,8	0.38	4.0E-03	N/A
8D 1,2,3,4,6,7,8,9	0.011	0.13	N/A
Formaldehyde	6.0E-06	9.0	55
Furans			
4F 2,3,7,8	3.8	4.0E-04	N/A
5F 1,2,3,7,8	1.1	1.3E-03	N/A
5F 2,3,4,7,8	11	1.3E-04	N/A
6F 1,2,3,4,7,8	3.8	4.0E-04	N/A

Table F-1
Dose-Response Values

TAC	Cancer URF [1] (m^3/ug)	Chronic REL [1] (ug/m^3)	Acute REL [1] (ug/m^3)
6F 1,2,3,6,7,8	3.8	4.0E-04	N/A
6F 1,2,3,7,8,9	3.8	4.0E-04	N/A
6F 2,3,4,6,7,8	3.8	4.0E-05	N/A
7F 1,2,3,4,6,7,8	0.38	4.0E-03	N/A
7F 1,2,3,4, 7,8,9	0.38	4.0E-03	N/A
8F 1,2,3,4,6,7,8,9	0.011	0.13	N/A
Hydrochloric Acid	N/A	9.0	2,100
Lead	1.2E-05	N/A	N/A
Manganese	N/A	9.0E-02	N/A
Mercury	N/A	3.0E-02	0.60
Nickel	2.6E-04	1.4E-02	0.20
PAHs			
Acenaphthene	N/A	N/A	N/A
Acenaphthylene	N/A	N/A	N/A
Anthracene	N/A	N/A	N/A
Benz(a)anthracene	1.1E-04	N/A	N/A
Benzo(a)pyrene	1.1E-03	N/A	N/A
Benzo(b)fluoranthene	1.1E-04	N/A	N/A
Benzo(g,h,i)perylene	N/A	N/A	N/A
Benzo(k)fluoranthene	1.1E-04	N/A	N/A
Chrysene	1.1E-05	N/A	N/A
Dibenz(a,h)anthracene	1.2E-03	N/A	N/A
Fluoranthene	N/A	N/A	N/A
Fluorene	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	1.1E-04	N/A	N/A
Naphthalene	3.4E-05	9	N/A
Phenanthrene	N/A	N/A	N/A
Pyrene	N/A	N/A	N/A
Selenium	N/A	20	N/A
Toluene	N/A	300	37,000
Vinyl Chloride	7.8E-05	N/A	180,000
Xylenes	N/A	700	22,000
Zinc	N/A	N/A	N/A

Note:
[1] Obtained from CARB's "Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Values" (May 2012).

Health Risk Prioritization

A health risk prioritization analysis was conducted in accordance with the CAPCOA *Facility Prioritization Guidelines* (July 1990). The prioritization score provides a common frame of reference for comparing the relative risks between different facilities. This comparison allows a District to identify those projects whose TAC emissions require further characterization with an HRA. The CAPCOA Guidelines recommend a three-tier ranking system, by prioritization score, for facilities:

- High Priority – Prioritization Score $\geq$ 10
- Intermediate Priority – 10 > Prioritization Score $\geq$ 1
- Low Priority -- Prioritization Score < 1

CAPCOA generally recommends that health risk assessments be performed for High Priority facilities but not for Low Priority facilities. CAPCOA further recommends that Districts exercise discretion whether to require health risk assessments for Intermediate Priority facilities. The CAPCOA Guidelines rely upon the following parameters to establish a prioritization score:

- TAC emissions;
- Inhalation pathway dose-response data;
- Dispersion;
- Receptor proximity; and
- Exposure factor.

The maximum hourly and annual TAC emissions from the Plant were presented previously in Tables 17 and 18. Inhalation-pathway URFs and RELs were presented above in Table F-1. Appendix E of the CAPCOA Guidelines specifies dispersion adjustment factors, as a function of stack height, to be used in the prioritization calculations. The stack height for the proposed BFB Boiler, the primary source of TAC emissions, is 30.5 meters (100 feet). Appendix F of the Guidelines specifies receptor proximity factors, as a function of both stack height and the receptor distance, to be used in the prioritization calculations. Both residential and off-site workers were considered. The nearest residential receptor is located approximately 1,650 meters to the northwest of the Plant, off Wescott Road (see Figure 8); the nearest off-site worker is located approximately 800 meters to the north-northeast of the Plant off Niagara Avenue. The cancer score for the nearest worker was adjusted to reflect workplace exposure based upon 8 hours per day, 5 days per week, 49 weeks per year, and 40 years (i.e., 13% of the comparable residential score). The cancer, chronic non-cancer, and acute non-cancer prioritization scores of the proposed Plant are summarized in Table F-2 and compared with the CAPCOA prioritization thresholds.

Table F-2
Prioritization Scores for the Colusa Bio-Energy Plant

TAC	Residential Prioritization Score			Off-Site Worker Prioritization Score		
	Cancer	Chronic	Acute	Cancer	Chronic	Acute
Acetaldehyde	3.31E-04	8.93E-06	2.97E-05	3.02E-04	6.35E-05	2.11E-04
Acrolein	N/A	2.50E-03	3.81E-03	N/A	1.78E-02	2.71E-02
Ammonia	N/A	2.91E-03	1.82E-03	N/A	2.07E-02	1.29E-02
Arsenic	3.40E-02	6.99E-03	5.60E-03	3.10E-02	4.97E-02	3.99E-02
Barium	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	1.50E-02	8.76E-05	8.00E-05	1.36E-02	6.23E-04	5.69E-04
Beryllium	3.40E-03	2.06E-03	N/A	3.10E-03	1.47E-02	N/A
Cadmium	0.24	2.96E-02	N/A	0.22	0.21	N/A
Chromium, Hexavalent	4.21	1.43E-03	N/A	3.84	1.02E-02	N/A
Copper	N/A	N/A	4.40E-05	N/A	N/A	3.13E-04
Diesel Particulate	3.18E-02	2.16E-04	N/A	2.90E-02	1.54E-03	N/A
Dioxins						
4D 2,3,7,8	2.58E-03	1.73E-05	N/A	2.35E-03	1.23E-04	N/A
5D 1,2,3,7,8	2.74E-02	1.84E-04	N/A	2.50E-02	1.31E-03	N/A
6D 1,2,3,4,7,8	3.04E-03	2.04E-05	N/A	2.77E-03	1.45E-04	N/A
6D 1,2,3,6,7,8	3.16E-03	2.12E-05	N/A	2.88E-03	1.51E-04	N/A
6D 1,2,3,7,8,9	2.86E-03	1.92E-05	N/A	2.61E-03	1.37E-04	N/A
7D 1,2,3,4,6,7,8	2.09E-03	1.40E-05	N/A	1.91E-03	9.99E-05	N/A
8D 1,2,3,4,6,7,8,9	4.19E-04	2.99E-06	N/A	3.82E-04	2.12E-05	N/A
Formaldehyde	9.21E-02	1.74E-02	3.06E-02	8.39E-02	0.12	0.22
Furans						
4F 2,3,7,8	7.97E-03	5.35E-05	N/A	7.27E-03	3.80E-04	N/A
5F 1,2,3, 7,8	2.23E-03	1.59E-05	N/A	2.03E-03	1.13E-04	N/A
5F 2,3,4,7,8	3.23E-02	2.30E-04	N/A	2.95E-02	1.64E-03	N/A
6F 1,2,3,4,7,8	3.81E-03	2.56E-05	N/A	3.47E-03	1.82E-04	N/A
6F 1,2,3,6,7,8	3.89E-03	2.61E-05	N/A	3.54E-03	1.85E-04	N/A
6F 1,2,3,7,8,9	1.62E-03	1.09E-05	N/A	1.48E-03	7.73E-05	N/A
6F 2,3,4,6,7,8	4.36E-03	2.92E-04	N/A	3.97E-03	2.08E-03	N/A
7F 1,2,3,4,6,7,8	1.82E-03	1.22E-05	N/A	1.66E-03	8.69E-05	N/A
7F 1,2,3,4, 7,8,9	1.85E-04	1.24E-06	N/A	1.69E-04	8.83E-06	N/A
8F 1,2,3,4,6,7,8,9	3.78E-05	2.69E-07	N/A	3.44E-05	1.92E-06	N/A
Hydrochloric Acid	N/A	4.98E-02	2.13E-03	N/A	0.35	1.52E-02
Lead	5.14E-04	N/A	N/A	4.69E-04	N/A	N/A
Manganese	N/A	2.12E-02	N/A	N/A	0.15	N/A
Mercury	N/A	4.28E-02	0.02	N/A	0.30	0.16
Nickel	7.67E-03	2.15E-02	1.61E-02	6.99E-03	0.15	0.11
PAHs						
Acenaphthene	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthylene	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	N/A	N/A	N/A	N/A	N/A	N/A
Benz(a)anthracene	8.66E-04	N/A	N/A	7.89E-04	N/A	N/A
Benzo(a)pyrene	8.66E-03	N/A	N/A	7.89E-03	N/A	N/A
Benzo(b)fluoranthene	8.66E-04	N/A	N/A	7.89E-04	N/A	N/A
Benzo(g,h,i)perylene	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	8.66E-04	N/A	N/A	7.89E-04	N/A	N/A
Chrysene	8.66E-05	N/A	N/A	7.89E-05	N/A	N/A
Dibenz(a,h)anthracene	9.45E-03	N/A	N/A	8.61E-03	N/A	N/A

Table F-2 Prioritization Scores for the Colusa Bio-Energy Plant						
	Residential Prioritization Score			Off-Site Worker Prioritization Score		
TAC	Cancer	Chronic	Acute	Cancer	Chronic	Acute
Fluoranthene	N/A	N/A	N/A	N/A	N/A	N/A
Fluorene	N/A	N/A	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	8.66E-04	N/A	N/A	7.89E-04	N/A	N/A
Naphthalene	0.16	5.32E-03	N/A	0.15	3.79E-02	N/A
Phenanthrene	N/A	N/A	N/A	N/A	N/A	N/A
Pyrene	N/A	N/A	N/A	N/A	N/A	N/A
Selenium	N/A	6.35E-06	N/A	N/A	4.51E-05	N/A
Toluene	N/A	2.96E-06	6.42E-07	N/A	2.11E-05	4.57E-06
Vinyl Chloride	2.78E-02	N/A	2.15E-07	2.53E-02	N/A	1.53E-06
Xylenes	N/A	1.45E-06	6.96E-07	N/A	1.03E-05	4.95E-06
Zinc	N/A	N/A	N/A	N/A	N/A	N/A
TOTALS [1]	4.95 [2]	0.20 [3]	0.08 [4]	4.51 [2]	1.46 [3]	0.59 [4]
Prioritization Rank	Intermediate	Low	Low	Intermediate	Intermediate	Low
HRA Required?	Discretionary	No	No	Discretionary	Discretionary	No

Notes:

[1] Apparent minor inaccuracies in table summations are attributable to rounding.
[2] Hexavalent chromium is the largest contributor.
[3] Hydrochloric acid is the largest contributor.
[4] Formaldehyde is the largest contributor.

Hexavalent chromium emissions from the BFB Boiler were the largest contributor to the cancer prioritization score. Hydrochloric acid emissions from the BFB Boiler were the largest contributor to the chronic non-cancer prioritization score. Formaldehyde emissions from the BFB Boiler were the largest contributor to the acute non-cancer prioritization score. None of the prioritization scores for the nearest resident or off-site worker exceed the High Priority threshold. Furthermore, chronic and acute non-cancer prioritization scores for the nearest resident, as well as the acute non-cancer prioritization scores for the nearest off-site worker are below the Low Priority threshold. However, the cancer prioritization scores for the nearest resident, as well as the cancer and chronic non-cancer prioritization scores for the nearest off-site worker, exceed the Intermediate Priority threshold. Since a health risk assessment for an Intermediate Priority facility is a discretionary decision for the local District, an HRA was performed for this ATC Application in accordance with the California Office of Environmental Health Hazard Assessment's (OEHHA) "Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments" (August 2003), or OEHHA Guidance Manual and the Air Dispersion Modeling and Health Risk Assessment Protocol (January 2013) that Sierra Research submitted to the District, to characterize health risks associated with TAC emissions from the Plant.

Exposure Assessment and Risk Characterization

Traditionally, the exposure assessment and risk characterizations were performed as two separate steps in the HRA process. The exposure assessment used a dispersion model to estimate the ambient concentrations associated with TAC emissions from the project, while the risk characterization calculated the health risks corresponding to those ambient concentrations. The introduction of CARB's Hotspots Analysis and Reporting Program (HARP) computer program integrated the risk characterization into the exposure assessment. HARP estimated both ambient concentration and risks associated with TAC emissions. HARP has become a widely accepted HRA tool within the regulatory community. HARP was used in the preparation of HRAs in accordance with the Air Dispersion Modeling and Health Risk Assessment Protocol (January 2013) that Sierra Research submitted to the District.

HARP originally contained the Industrial Source Complex, Short Term (ISCST3) dispersion model as an internal module. Historically, ISCST3 was the refined dispersion model used in exposure assessments. AERMOD has replaced ISCST3 as the preferred refined dispersion model in the regulatory community. This evolution prompted CARB to develop the HARP On-Ramp program to allow HARP to import unit impact data generated externally by AERMOD. The HRA modeling was performed using HARP (Version 1.4f, May 2012) and AERMOD with the HARP On-Ramp. The AERMOD dispersion model, meteorological data, receptor grid, and stack characteristics for the HRA were identical to those used in the AQIA, which was discussed previously in Section V. Discrete sensitive receptors located within 3 miles of the Plant, whose locations are summarized in Table F-3, were also evaluated.

Table F-4
Project Health Risks

Receptor	UTM Coordinate X	UTM Coordinate Y	Distance from Plant (meters)
Colusa High School	584621	4339494	4,275 NNW
Colusa Day Care Center	584731	4339526	4,370 NNW
Colusa Regional Medical Center	586314	4340211	4,600 N
Colusa Community Hospital	586297	4340455	4,725 N

The HARP On-Ramp converts unit impact data from AERMOD into a format that HARP can process. The HARP On-Ramp is also used to input TAC emission rates. The TAC emission rates for the BFB Boiler and Cooling Tower were presented previously in Tables B-1 and B-2. The TAC emission rates for Emergency Generator and Emergency Fire Pump were presented previously in Sections 3 and 4 of Appendix B. HARP integrated the unit impact data and emission rate data from the HARP On-Ramp with HARP's toxicity database to characterize the cancer risks and non-cancer hazards. HARP and associated guidance in the OEHHA Air Toxics Hot Spots Program Guidance

Manual for Preparation of Health Risk Assessments (August 2003) were used to characterize multi-pathway cancer risks, chronic non-cancer HIs, and acute non-cancer HIs for each TAC. The following risk assessment options were selected for the HARP modeling, in accordance with the Air Dispersion Modeling and Health Risk Assessment Protocol (January 2013) that Sierra Research submitted to the District.

- Deposition velocity – 0.02 m/sec

- For cancer risk and chronic non-cancer hazard estimates, the "Derived OEHHA" risk analysis option will used. In this approach, the two dominant exposure pathways use the high-end point-estimates of exposure, while the remaining exposure pathways use average point estimates.

- The cancer risk estimates, including the Derived OEHHA equations, are based on 70-year exposures.

- Pathways considered for residential exposure include inhalation, soil ingestion, dermal absorption, and mother's milk.

- Pathways considered for worker exposure include inhalation, soil ingestion, and dermal absorption.

Health Risks

Excess cancer risk isopleths are illustrated in Figure F-1. The 1-in-a-million isopleth impacts mostly agricultural lands to the northwest and south-southeast of the Plant. The 1-in-a-million is contained nearly entirely within the Colusa County Census Tract 2 (population 5,121). The isopleth barely grazes the boundary of the Colusa County Census Tract 5 (population 2,565), which contains the City of Colusa proper. Health risks were determined for the point of maximum impact (PMI), maximally exposed resident (RES), maximally exposed worker (WKR), and maximally exposed sensitive receptor (SEN). The PMI, RES, WKR, and SEN, as characterized by excess cancer risk (the highest risks relative to the risk thresholds) and illustrated in Figure F-2, are located as follows:

- The PMI occurs 295 meters northwest of the main stack on vacant agricultural land.
- The RES occurs 1,665 meters northwest of the Plant along the prevailing wind direction; this is also the location of the nearest resident.
- The WKR occurs 3,550 meters northwest of the Plant; that the nearest off-site worker is located 800 meters north-northeast of the Plant (off the axis of the prevailing wind direction).
- The SEN (Colusa High School) occurs 4,275 meters north-northwest of the Plant.

Health risks associated with TAC emissions from the proposed Plant are summarized in Table F-5. Health risks are presented for the PMI, RES, WKR, and SEN.

Table F-5
Project Health Risks

Risk Criteria	Receptor	Project Risk	Risk Threshold
Excess Cancer Risk	PMI	22.4 in a million	N/A
	RES	3.71 in a million	10×10^{-6}
	WKR	0.36 in a million	10×10^{-6}
	SEN	1.28 in a million	10×10^{-6}
Chronic Hazard Index	PMI	0.19	N/A
	RES	0.03	1
	WKR	0.02	1
	SEN	0.01	1
Acute Hazard Index	PMI	0.04	N/A
	RES	0.007	1
	WKR	0.02	1
	SEN	0.006	1

Figure F-2
Excess Cancer Risk Isopleths

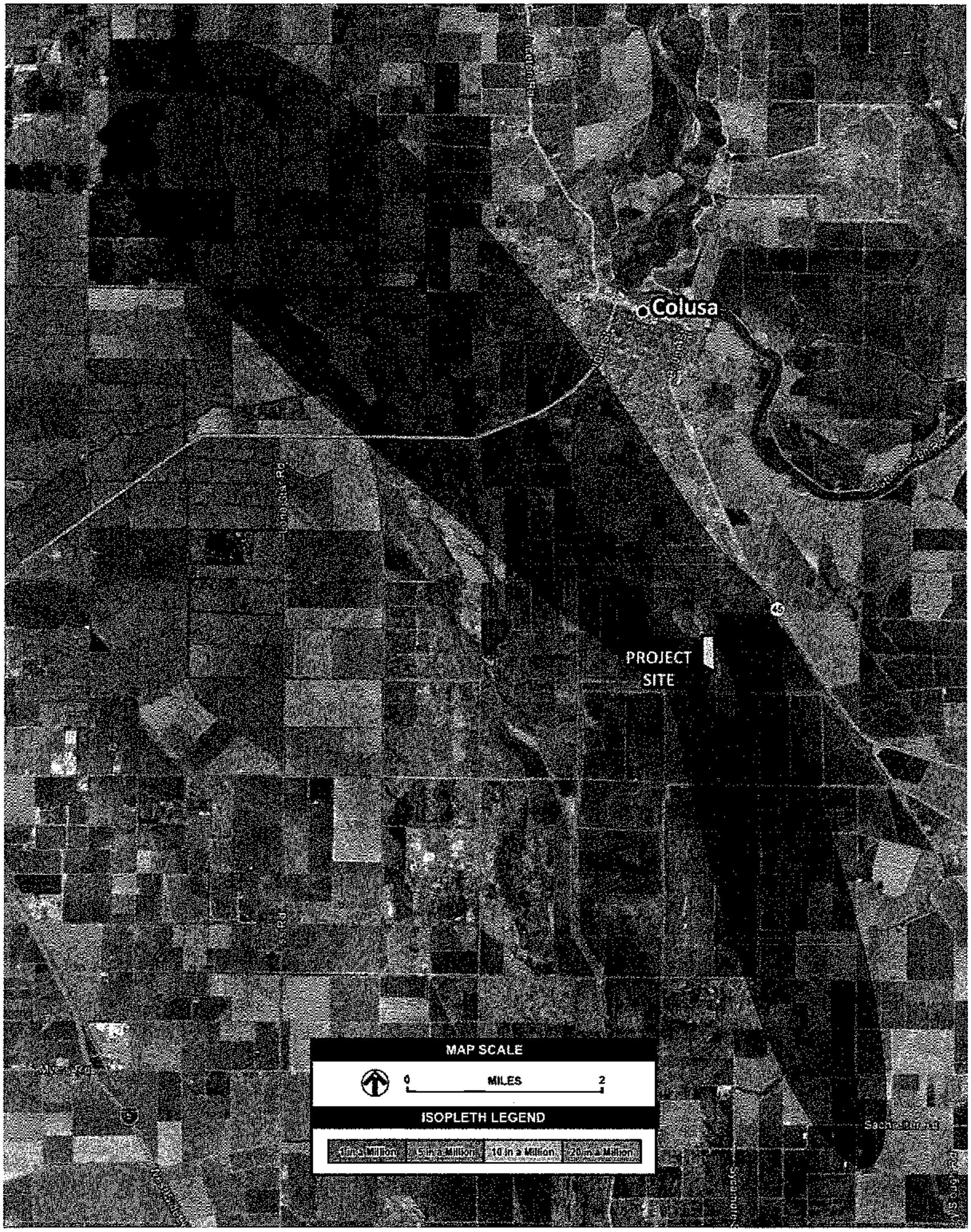


Figure F-2
Nearest Receptors

Generally accepted risk management policy practiced by most air districts throughout California specifies cumulative risk thresholds for cancer risk and chronic non-cancer and acute non-cancer HIs for new sources of TAC emissions. The excess cancer risk threshold is 10 in one million when T-BACT is applied and the chronic and acute HI thresholds are 1. The Plant will be equipped with T-BACT as follows:

- The BFB Boiler will be equipped with BFB combustion technology for CO control, multiclones/baghouse for PM control, and a dry scrubber for SOx control; these controls will serve as T-BACT for volatile toxics, particulate toxics, and acid gases.

- The Cooling Tower will be equipped with a high efficiency drift eliminator for PM control, which will also serve as T-BACT for toxic metals contained in the cooling water.

- The Emergency Generator and Emergency Fire Pump will comply with the RICE NESHAP, as previously discussed in Section III.H.2, and will therefore satisfy T-BACT.

The data for the PMI is for information only as no receptor occupies that location. Cancer risks for the sensitive reflect the residential exposure assumptions (i.e., 70 years of continuous exposure) and have not been discounted to reflect the considerably reduced exposure periods at a high school (i.e., 8 hours per day, 5 days per week, 37 weeks per year, 4 years). Even when considering age sensitivity factors, the reduced exposure period lowers the actual risks at the sensitive receptor to much less than 1 in a million. The HRA concludes that the health risks to nearby residents, workers, and sensitive receptors are The HRA concludes that the health risks for the Plant are within generally accepted risk management guidelines. The AERMOD data files are included on compact disks enclosed with this application.

ATTACHMENT F

REPORT

REPORT OF WASTE DISCHARGE - LINED WASTEWATER EVAPORATION POND - SAN JOAQUIN SOLAR 1 & 2 HYBRID POWER PLANT PROJECT

Prepared for

San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC

URS Project No. 27658033.00500

Stuart St. Clair

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Project Civil Engineer

Matthew C. Moore

Matt Moore, PE
Project Engineer

November 12, 2009

REGISTERED PROFESSIONAL ENGINEER
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November 12, 2009

Mr. Shelton R. Gray
Senior Engineering Geologist
Regional Water Quality Control Board
1685 "E" Street
Fresno, California 93707

Subject: Report of Waste Discharge - Lined Wastewater Evaporation Pond
San Joaquin Solar 1 & 2 Hybrid Power Plant Project
Fresno County, California
URS Job No. 27658033

Dear Mr. Gray:

URS Corporation Americas (URS) prepared the enclosed Report of Waste Discharge on behalf of San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC, collectively referred to as San Joaquin Solar 1&2 (SJS 1&2, Client). Appended to the report is the completed Form 200 signed by an authorized SJS 1&2 representative.

We look forward to receiving comments from you at your earliest convenience and working with you in obtaining Waste Discharge Requirements from your Board for the project.

Please do not hesitate to contact us if you have any questions or comments, or need any additional information.

Sincerely,

URS CORPORATION

Stuart St. Clair

Stuart St. Clair, PE
Project Civil Engineer

Matthew C. Moore

REGISTERED PROFESSIONAL ENGINEER
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SECTION 1 PROJECT OVERVIEW

1.1 INTRODUCTION

URS Corporation Americas (URS) prepared this Report of Waste Discharge (ROWD) for San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC, collectively referred to as San Joaquin Solar 1&2 (SJS 1&2, Client). SJS 1&2 plans to construct and operate two hybrid solar thermal electricity generating plants (Project) in an unincorporated area of southwestern Fresno County, California, approximately 5 miles east of the city of Coalinga (Figure 1).

1.2 PROJECT DESCRIPTION

Each of the plants will include a solar field and a biomass facility and will produce up to a nominal 53.4 megawatts (MW) net of renewable energy. SJS 1&2 is currently in the process of obtaining certification for the Project from the California Energy Commission (CEC). Documents pertinent to the certification process are available on the Internet at http://www.energy.ca.gov/sitingcases/sjsolar/index.html. The Project is scheduled for construction beginning in late 2010 and operation in 2012.

The Project will use secondary treated effluent from the City of Coalinga's wastewater treatment facility (WWTF) as the main water supply, augmented by groundwater from an on-site well, as necessary. Tertiary treatment for the WWTF effluent will be provided at the Project site and will include multimedia filtration followed by carbon filtration. The tertiary-treated WWTF effluent and the groundwater will be treated by a soda-lime softener, a sand filter, a reverse osmosis (RO) system, and a demineralizer. Internal recycling of various water streams will be used to the extent possible. However, due to the mineral concentrations in the source water, the water can only be cycled through the system a limited number of times, and a wastewater stream is needed to remove minerals from the system. SJS 1&2 propose to construct an on-site lined wastewater evaporation pond to receive the wastewater stream. The purpose of this ROWD is to provide the information needed by the California Regional Water Quality Control Board, Central Valley Region (RWQCB) to prepare Waste Discharge Requirements (WDRs) for the pond. A completed Form 200 signed by an authorized SJS 1&2 representative is provided in Appendix A.

This ROWD pertains only to the Project's wastewater that will be discharged to the lined evaporation pond. Storm water management during construction and operation of the Project is not addressed by this ROWD, nor is management of other waste streams that will be generated by the Project.

1.3 REPORT ORGANIZATION

The remainder of this ROWD is organized as follows:

- Background information is provided in Section 2.
- A description of the planned facility is provided in Section 3.
- A description of the proposed waste discharge is provided in Section 4.
- The RO wastewater pond design and construction are provided in Section 5.

- Operation of the RO wastewater pond is discussed in Section 6.
- The groundwater monitoring plan is provided in Section 7.
- Figures and appendices appear after Section 7.

1.4 LIMITATIONS

URS prepared this document for the sole use of Client. URS relied on information provided by Client, Client's consultants, and published sources in preparing this document. URS prepared this document in a manner consistent with the level of care and skill ordinarily exercised by professional consultants in the geographic area of the project site. URS provides no other warranties, either express or implied, concerning the contents of this document.

SECTION 2 GENERAL SITE INFORMATION

Background information regarding the facility site is provided below.

2.1 SITE LOCATION AND DESCRIPTION

The facility site is in the unincorporated area of southwestern Fresno County, about 5 miles east of the city of Coalinga (Figure 1). The Project will be situated on approximately 639 acres of land which is divided into three parcels having Assessor's Parcel Numbers of 085-030-55S, 085-030-57S, and 085-030-58S. The site is on the south side of West Jayne Avenue, about 3 miles west of Interstate Highway 5. The site occupies the whole of Section 3, Township 21 South, Range 16 East, Mount Diablo Base and Meridian.

The three parcels are owned by Mouren Farming. SJS 1&2 has a written agreement with Mouren Farming with an option to lease the parcels, and intends to exercise that option prior to construction of the Project.

The site currently consists primarily of previously disturbed cropland. The Coalinga State Hospital and the Pleasant Valley State Prison are location on the section of land immediately west of the site. Other land uses in the site vicinity are principally cropland and rangeland (Figure 2).

2.2 SITE TOPOGRAPHY AND GEOLOGY

The site topography is relatively flat, sloping gently downward to the southwest. The ground surface elevation ranges approximately from 640 feet above mean sea level (amsl) at the northeast corner of the site to 570 feet amsl at the southwest corner of the site (Figure 1).

The site is in the Pleasant Valley alluvial basin, in the southwestern portion of the San Joaquin Valley, and on the southwestern flank of the Guijarral Hills. The site lies primarily on alluvial fan deposits at the transition between the California Coast Ranges to the west and the San Joaquin Valley to the east. The site is mapped as underlain by Quaternary-age alluvium and Plio-Pleistocene-age sedimentary rocks that are described as alluvial fan sediments.

2.3 SITE HYDROGEOLOGY AND GROUNDWATER QUALITY

The facility site is located in the Pleasant Valley Subbasin of the San Joaquin Valley Groundwater Basin. Geologic units comprising the Pleasant Valley Subbasin include Holocene alluvium, the Plio-Pleistocene Tulare Formation, and possibly the upper part of the San Joaquin Formation (DWR Bulletin 118). The Corcoran-Clay aquitard does not appear to extend into the subbasin (USGS Water Supply Paper 1360-G). The fresh-water-bearing deposits appear to be generally a single zone extending as much as 3,000 feet or more below ground surface and consisting of highly lenticular poorly sorted clay, silt, and sand intercalated with occasional strata of well-sorted sand. The groundwater in this zone appears to be semi-confined to unconfined.

Groundwater elevation data available on the California Department of Water Resources (DWR) Internet website indicate that groundwater levels within Pleasant Valley have declined for several decades. A well in the section immediately west of the facility had a depth to groundwater of approximately 150 feet below ground surface (bgs) in the 1960s, and by the 1990s the depth to groundwater had increased to approximately 275 feet bgs. The water level in the on-site supply well was measured in February 2009 at approximately 320 feet bgs.

Historical groundwater elevation contour maps for the Pleasant Valley Subbasin, prepared by DWR, indicate that, within the Subbasin as a whole, the typical groundwater flow direction is generally easterly. For the facility site itself, however, the contour maps do not provide a clear indication of the typical groundwater flow direction – the best estimate appears to be an easterly to southeasterly flow direction. The groundwater flow direction at the site may be substantially influenced by localized factors such as recharge derived from the nearby Guijarral Hills or extraction from nearby irrigation wells, which are not well represented on the DWR contour maps.

Limited information is available regarding the quality of first-encountered groundwater near the project site. According to DWR Bulletin 118, the total dissolved solids (TDS) concentration of groundwater within the Pleasant Valley Subbasin is estimated to range from 1,000 to 3,000 milligrams per liter (mg/L). A monitoring plan for first-encountered groundwater near the lined wastewater evaporation pond is provided in Section 7.0.

Groundwater beneficial uses established for the Pleasant Valley Subbasin are municipal and domestic supply, agricultural supply, and industrial service supply (RWQCB Water Quality Control Plan for the Tulare Lake Basin).

2.4 SITE HYDROLOGY

The climate in the site vicinity is semi-arid, with long, hot, dry summers and mild, intermittently wet winters. The average annual precipitation at the Coalinga weather station (No. 041864), located approximately 8 miles west of the site, is 7.3 inches, based on 48 years of data (source: www.worldclimate.com). The 1000-year, 24-hour precipitation event at the site is estimated to be approximately 3.5 inches. The Coalinga monthly average precipitation is provided below:

Table 2.4-1 Coalinga Average Precipitation (Inches)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.4	1.4	1.2	0.6	0.2	0.0	0.0	0.0	0.2	0.3	0.8	1.2

According to the Western Regional Climate Center, administered by the National Oceanic and Atmospheric Administration, the average annual pan evaporation at a station identified as "Avenal 9 SSE", presumably located approximately 10 miles southeast of the site, is 112 inches, based on 7 years of data. The average annual pan evaporation at the Los Banos Detention Reservoir, located about 60 miles northwest of the site in a similar climatic setting, is 108 inches, based on 38 years of data. The monthly average pan evaporation at Avenal 9 SSE is provided below:

Table 2.4-2 Avenal 9 SSE Average Pan Evaporation (Inches)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.80	2.90	6.20	9.39	12.96	16.73	18.67	16.37	12.61	8.05	3.89	2.44

Several small, ephemeral streams enter the Pleasant Valley basin from the surrounding mountains. These streams include Los Gatos, Warthan, Jacalitos, Avenal, and Zapato Chino Creeks. The Project's surface water drainage is tributary to Zapato Chino Creek, which passes approximately ¼ mile southeast of the site (Figure 1).

According to Flood Insurance Rate Maps published by the Federal Emergency Management Agency, the site is entirely within Flood Zone X, defined as areas determined to be outside the 500-year floodplain.

SECTION 3 PLANNED FACILITY DESCRIPTION

The planned facility consists of two thermal electricity generating plants, each with a solar field and a biomass facility to provide heat during periods of limited solar radiation (including at night). Each plant will have a steam turbine generator. Heat to produce steam will come from: (a) a hot circulating oil that passes over the mirrors of the solar field, and/or (b) combustion of biomass. An aerial rendering of the Project is provided as Figure 3, and a site plan is provided as Figure 4. The solar field for one plant will occupy the northern portion of the site, and the solar field for the other plant will occupy the southern portion. In between the two solar fields will be the biomass blocks, steam-generation blocks, power blocks, water treatment plants, and shared facilities including control buildings and the lined wastewater evaporation pond. A water balance diagram for the Project, illustrating the various water streams and processes, is provided as Figure 5.

SECTION 4 PROPOSED WASTE DISCHARGE

The proposed waste discharge to the planned on-site lined wastewater evaporation pond consists of saline wastewater from the Project's water treatment system. The location, volume, and character of the wastewater discharge are discussed below.

4.1 LOCATION

The approximate latitude and longitude of the planned lined wastewater evaporation pond are provided on the Form 200 in Appendix A. The location of the pond is shown on Figures 3 and 4.

4.2 VOLUME

As shown on Figure 5, the average wastewater discharge rate to the lined evaporation pond is estimated to be approximately 15 gallons per minute (gpm) on a continuous basis. Therefore, the Project is anticipated to discharge approximately 24.2 acre-feet per year (afy) of wastewater to the pond. This discharge rate is a rough estimate. To provide a reasonable margin of operational flexibility, SJS 1&2 proposes that the WDRs allow for discharge of up to 27.4 afy of wastewater – this volume is based on a continuous discharge of up to 17 gpm.

4.3 CHARACTERISTICS

At present, limited information is available regarding the anticipated chemical composition of the wastewater to be discharged to the lined evaporation pond. The best-available estimate of the wastewater quality is provided below:

Table 4.3-1 Estimated Wastewater Quality

Parameter	Concentration (mg/L)
Calcium	8
Bicarbonate/Carbonate	23
Chloride	143
Magnesium	5
Nitrate	10
Phosphate	5
Potassium	3
Silica (SiO_2)	6
Sodium	668
Sulfate	1,215
Total Dissolved Solids	2,086
Suspended Solids	< 10

For the purposes of this ROWD, it is assumed that the wastewater quality will be worse than the quality of the first-encountered groundwater at the site, and thus that the wastewater will be classified as a "designated waste" and that the lined evaporation pond will need to comply with the requirements for a Class II surface impoundment set forth in California Code of Regulations (CCR) Title 27.

SECTION 5 EVAPORATION POND DESIGN AND CONSTRUCTION

The on-site lined wastewater evaporation pond will meet the requirements of a Class II surface impoundment set forth in CCR Title 27. SJS 1&2 proposes to install an engineered alternative liner system, rather than the prescriptive liner requirements of CCR Title 27. The proposed engineered alternative liner system consists of the following components from the top down:

a. A soil layer approximately 1 foot thick to protect the primary liner;
b. A primary 60-mil-thick high density polyethylene (HDPE) geomembrane;
c. A geonet drainage layer, operating as a leachate collection and removal system (LCRS);
d. A secondary 60-mil-thick HDPE geomembrane in lieu of the prescriptive clay liner;
e. A 4-inch-thick gravel layer as a capillary break; and
f. Compacted subgrade, free of rocks, sticks, or other materials that could damage the geomembrane.

The above liner system will be installed on the side slopes and bottom of the pond. The inboard side slope will be at a slope of 3 or 4 feet horizontally for every vertical foot. The outboard side slope will be at a slope of 2 feet horizontally for every vertical foot. The berm width at the crest will be approximately 20 feet.

The LCRS sump(s) will include a fail-safe mechanism designed to prevent the sump(s) from overflowing with leachate. The LCRS sump(s) will include a pipe from the ground surface to allow monitoring and removal of leachate collected in the sump(s) – any leachate removed will be discharged back to the pond. For unsaturated-zone monitoring purposes, a 40-mil-thick HDPE-lined pan lysimeter will be constructed under the LCRS sump(s). The pan lysimeter(s) will include a pipe from the ground surface to allow monitoring and sampling of leachate collected in the lysimeter(s).

The horizontal interior dimensions of the pond at the top of the berm will be approximately 548 feet by 748 feet. The pond depth will be approximately six feet. The horizontal interior pond dimensions at the bottom of the berm will be approximately 500 feet by 700 feet. A water-balance spreadsheet was prepared for the pond using the monthly precipitation and pan evaporation data discussed in Section 2.4. The monthly pan evaporation rates were reduced first by a pan-coefficient of 0.7 and second by another coefficient of 0.70 to account for the reduced evaporation rate as the salinity in the pond increases over time. The spreadsheet printout is provided in Appendix B. The water-balance calculations indicate that the pond is large enough to handle a continuous 17-gpm inflow of wastewater. The electronic spreadsheet documenting these calculations can be provided to RWQCB staff for review if necessary.

The construction quality assurance program will include compaction testing of the subgrade and electrical leak location surveys to be conducted on both the primary and secondary geomembranes.

Unsuitable subgrade soil will be re-compacted until it meets the specification of the geotechnical engineer. Any leaks detected by the electrical surveys will be repaired in accordance with the manufacturer's instructions, and re-tested with electrical leak-location methods, prior to installing the immediately overlying layer of the liner system.

SECTION 6 EVAPORATION POND OPERATION AND MAINTENANCE

Wastewater from the Project will be discharged to the lined evaporation pond on a continuous basis. The water level in the pond will be maintained at least two feet below the top of the pond at all times. Wastewater discharge to the pond will cease if the water level reaches an elevation of two feet below the elevation of the top of the pond. The pond will have a permanent vertical freeboard-measurement rod installed from the bottom of the pond and extending vertically to an elevation greater than the top of the surrounding berm. To allow visual determination of freeboard in the pond, and of the sediment/sludge depth when the pond is sufficiently dry, the freeboard-measurement rods will include permanent labeled markings at intervals of 0.1 vertical foot beginning at the elevation of the lowest point at the top of the surrounding berm and continuing to the design bottom elevation of the pond. The rods will also contain a prominent marking at the two-foot freeboard level (i.e., at the design capacity of the pond).

Sediment/sludge will be removed from the pond on an as-needed basis to maintain the necessary capacity of the pond. Removed sediment/sludge will be disposed of or re-used in accordance with all applicable legal requirements.

If any leaks in the primary or secondary geomembrane become apparent due to increased leachate production in the LCRS sump(s) or the pan lysimeter(s), respectively, corrective action measures will be implemented to identify the location of the leaks and to repair them.

SECTION 7 GROUNDWATER MONITORING PLAN

Three groundwater monitoring wells screened within first-encountered groundwater are proposed. The proposed locations of the monitoring wells are shown on Figure 6. The wells will be installed using the direct rotary wash drilling method by a California-licensed well drilling contractor. The wells will be screened from approximately 20 feet above the water table to 40 feet below the water table. The anticipated total depth of each well is approximately 360 feet bgs. The well casing will consist of 4-inch diameter, polyvinyl chloride (PVC) material in 20-foot long threaded sections. The screened-portion of the casing will have factory-machined slots. The bottom of the casing will have a threaded cap. Materials in the annular space between the casing and the borehole will be placed using tremie pipe. From the bottom of the borehole upward, the annular materials will consist of filter-pack sand to approximately 10 feet above the top of the screen, then a 10-foot thick layer of hydrated bentonite chips, and then sand-cement slurry to the ground surface. The slot size and filter-pack size will be selected based on the adjoining geologic materials. Surface completion will include a locked, steel, aboveground protective monument. The monument will be surrounded by four steel bollards placed in concrete in separate holes and extending to approximately four feet above ground surface.

The new wells will be developed using airlift pumping, surging, and/or swabbing for several hours until clear water is consistently obtained.

In accordance with Geotracker requirements, a California-registered land surveyor will measure the horizontal location of each of the three wells to an accuracy of less than one meter, and the vertical elevation of the top of casing of each well to an accuracy of less than 0.01 foot.

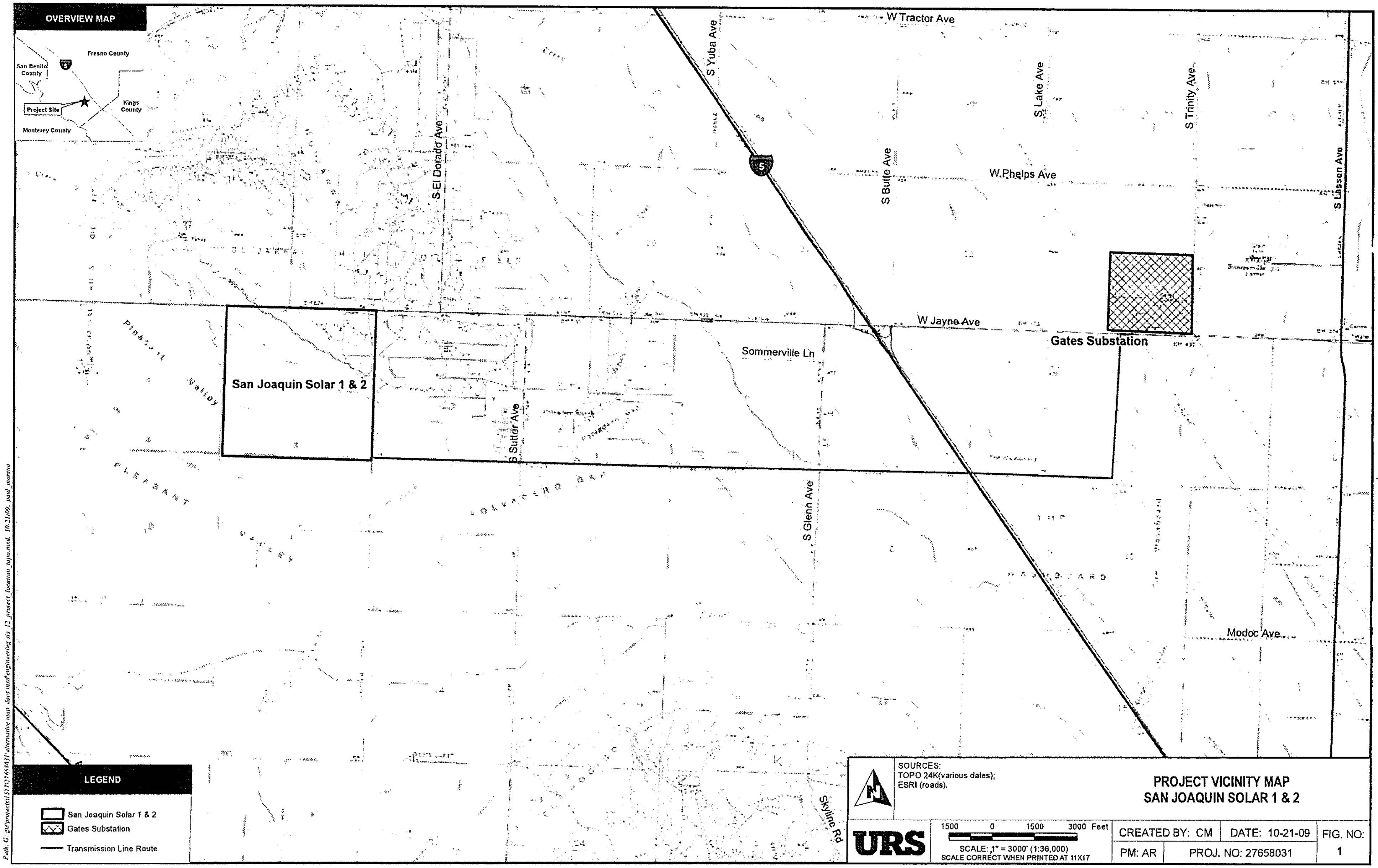
At least one of the groundwater monitoring wells will be installed at least four months prior to commencement of wastewater discharge to the lined evaporation pond. To provide a background data set, the well will be monitored at least four times prior to the commencement of wastewater discharge. The first monitoring event will occur at least one week after well development is finished. The following three monitoring events will be spaced at least one month apart from each other.

For each monitoring event, the well will be monitored in accordance with the following procedure:

- An electric sounder will be used to measure the depth to water and the total depth of the well prior to purging.
- The monitoring well will be purged with an electric submersible pump or a disposable bailer until: (1) at least three well-casing volumes are removed and the field-measured pH, electrical conductivity (EC), and temperature of the purged groundwater stabilize within 10-percent for three successive measurements; or (2) the removal of water exceeds the well's recharge capacity, causing the well to go dry, in which case at least 15 minutes will be allowed for the well to recharge prior to sampling. The purged groundwater will be placed on the ground surface near the well in a manner that promotes infiltration without erosion.
- After purging is completed at each well, a groundwater sample will be collected directly from the bailer or the pump's discharge tubing into laboratory-supplied bottles that contain appropriate preservatives.

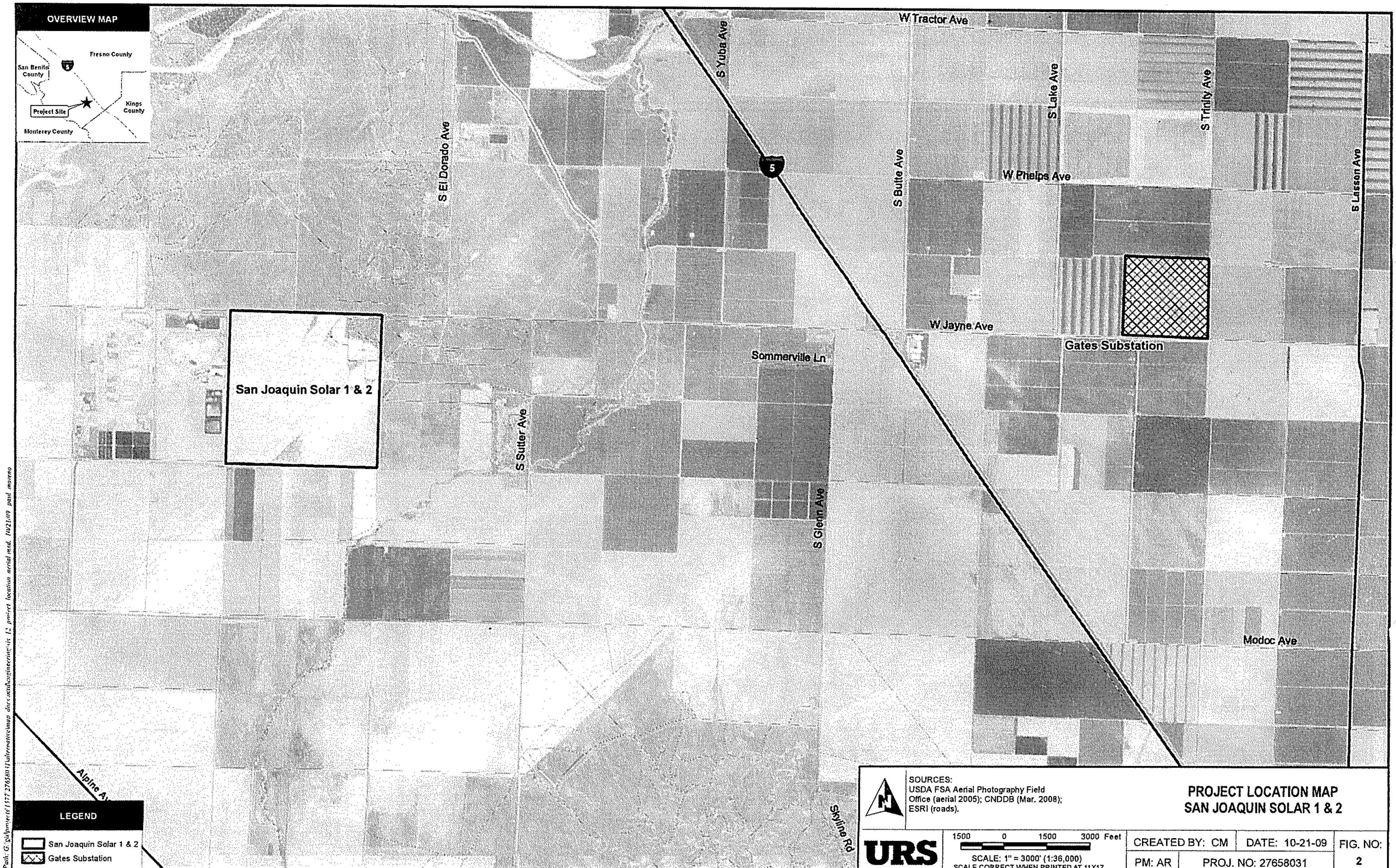
- The sample will be labeled and placed immediately on ice in a cooler for delivery to the laboratory for analysis. Chain of custody procedures will be maintained for all samples collected.
- All down-hole, non-disposable sampling equipment, including the pump, will be decontaminated between each well using a mild solution of Liquinox, rinsed in purified water, and air dried.

Groundwater samples will be analyzed by a California-accredited laboratory using U.S. Environmental Protection Agency (USEPA) or other standard methods for the following constituents and parameters: pH, EC, total dissolved solids (TDS), total alkalinity, hardness, bicarbonate, calcium, carbonate, chloride, magnesium, nitrate, potassium, silica, sodium, sulfate, and CAM-17 metals.



PROJECT VICINITY MAP
SAN JOAQUIN SOLAR 1 & 2

CREATED BY: CM	DATE: 10-21-09	FIG. NO:
PM: AR	PROJ. NO: 27658031	1



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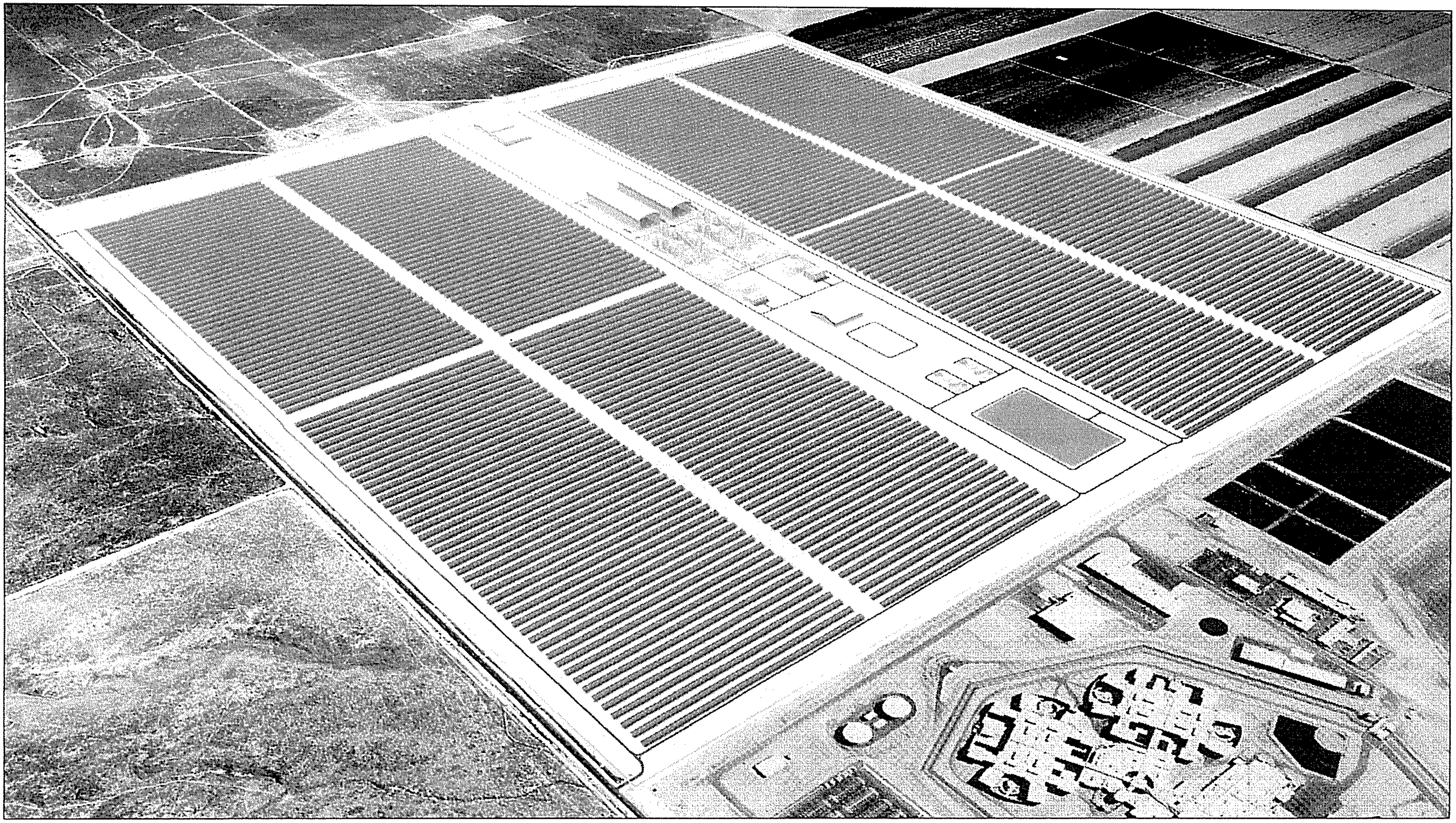
CaSIL, the California Resources Agency, and the State of California are 2005 California NAIP Imagery funding partners



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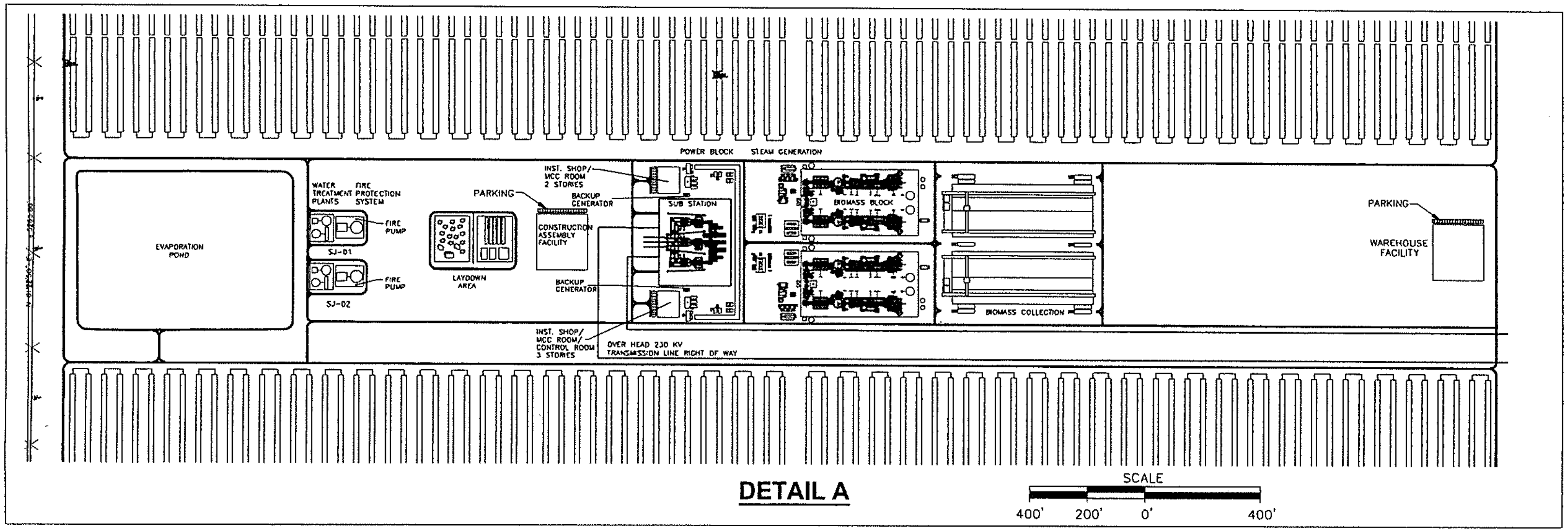
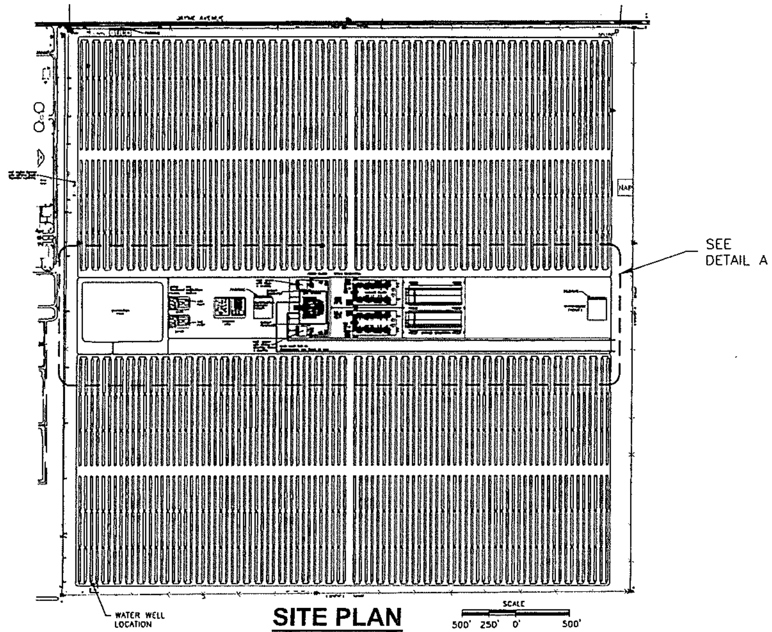
AERIAL RENDERING OF SAN JOAQUIN SOLAR 1 & 2

NO SCALE	CREATED BY: JW	DATE: 11.14.08	FIG. NO: 3
	PM:AR	PROJ. NO: 27658031	



DETAIL A



SITE PLAN

LEGEND

—X—X—X—	FENCE LINE/PROPERTY BOUNDARY
———	UTILITY ROAD

SOURCE:
Ford, Davis, and Bacon
(drawing 05-22-09)

SITE PLAN
SAN JOAQUIN SOLAR 1 & 2

URS	NO SCALE	CHECKED BY: CM	DATE: 10-30-09	FIG. NO: 4
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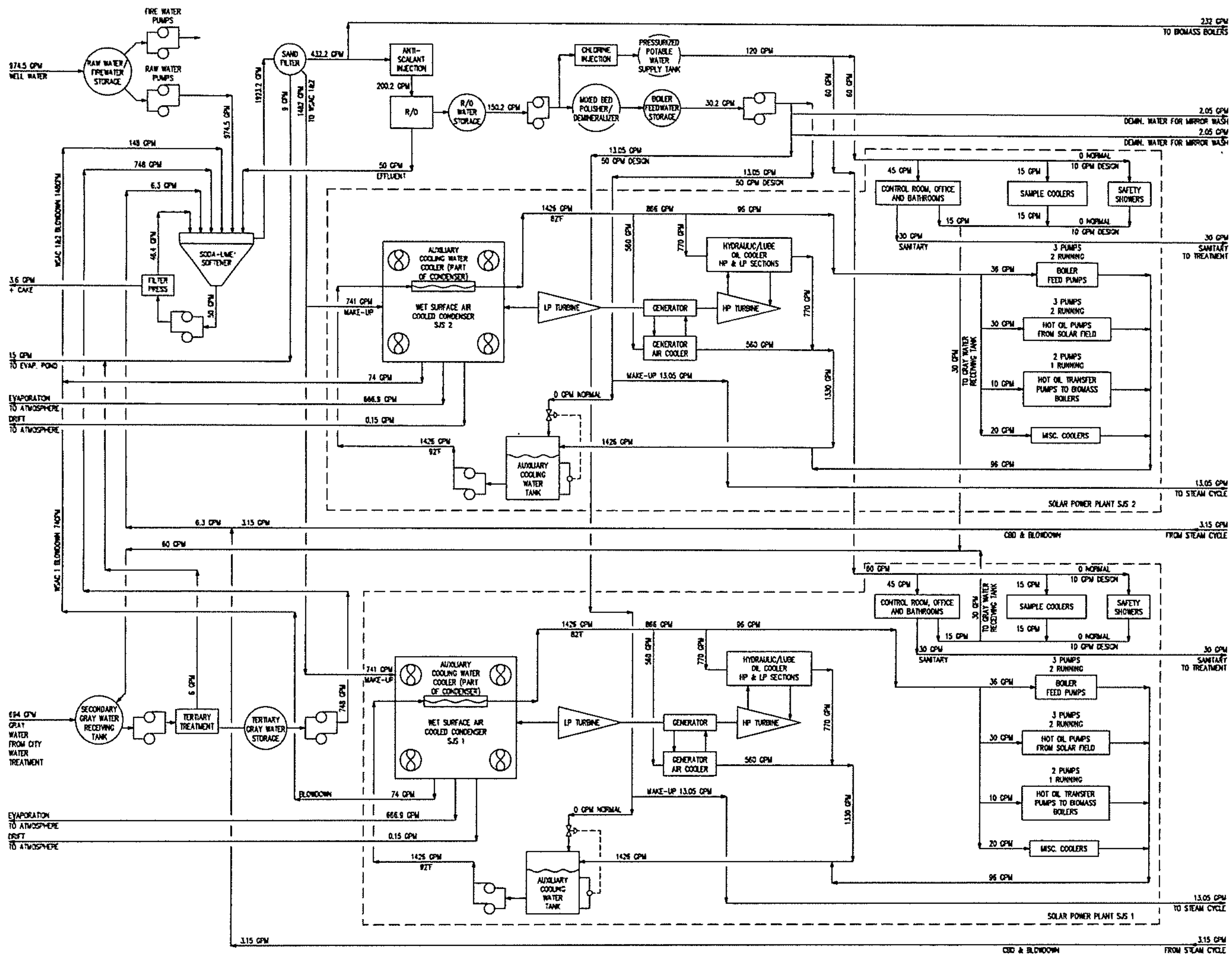

SOURCE:
Ford, Davis and Bacon (drawing 2009)

WATER BALANCE
SAN JOAQUIN SOLAR 1 & 2

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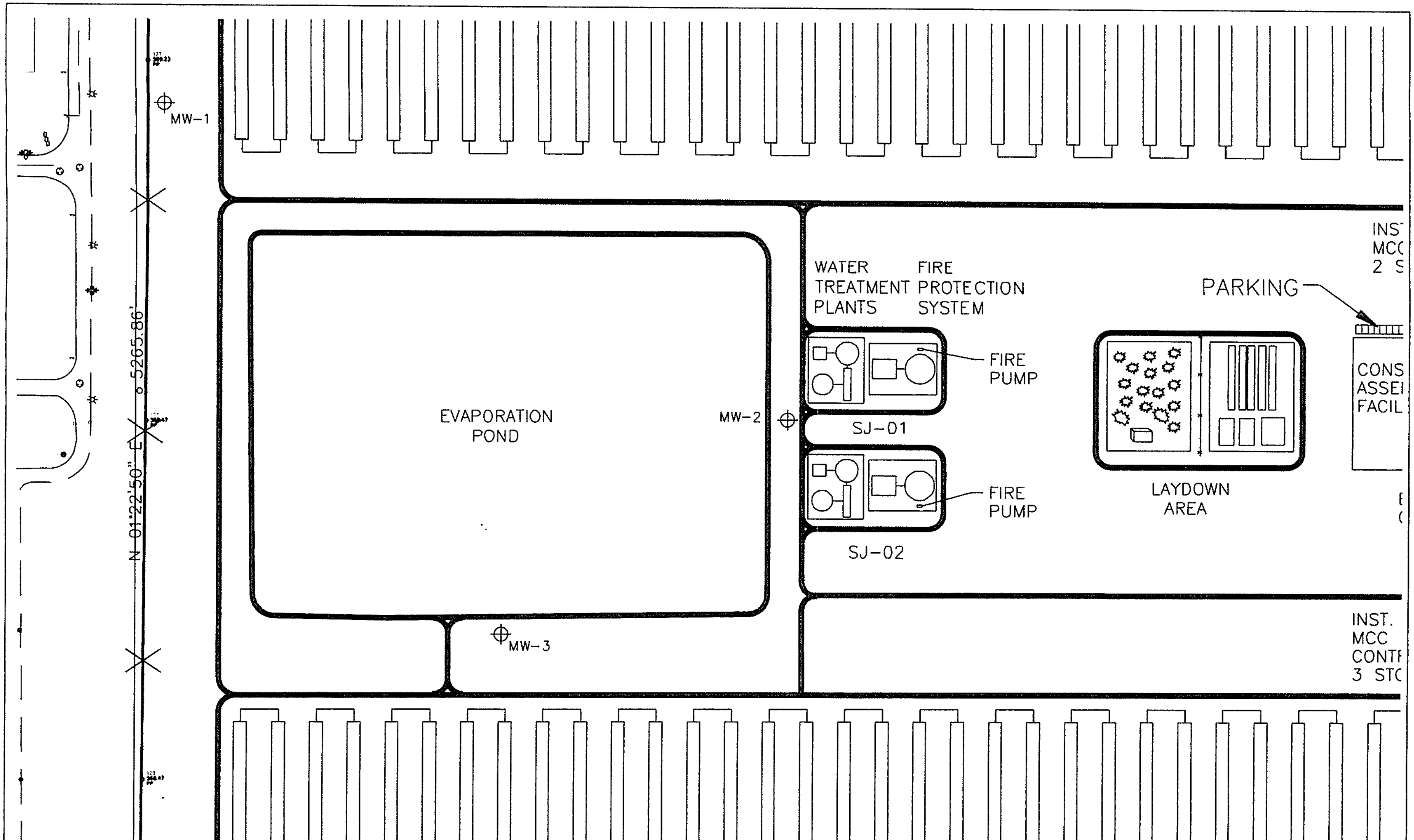
		PM: AR	PROJ. NO: 27658031	5

G:\gis\projects\1577\27658031\alternative\plot\pdf\engineering\Figure 5 - Waterbalance.pdf



LEGEND

MW-1 ⊕ PLANNED GROUNDWATER MONITORING WELL

SOURCE:
Ford, Davis, and Bacon
(drawing 05-22-09)

EVAPORATION POND
SAN JOAQUIN SOLAR 1 & 2

URS	NO SCALE	CHECKED BY: CM	DATE: 10-30-09	FIG. NO: 6
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INTRODUCTION

This application package constitutes a Report of Waste Discharge (ROWD) pursuant to California Water Code Section 13260. Section 13260 states that persons discharging or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, shall file a ROWD containing information which may be required by the appropriate Regional Water Quality Control Board (RWQCB).

This package is to be used to start the application process for all waste discharge requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permits* issued by a RWQCB except:

a) Those landfill facilities that must use a joint Solid Waste Facility Permit Application Form, California Integrated Waste Management Board Form E-1-77; and
b) General WDRs or general NPDES permits that use a Notice of Intent to comply or specify the use of an alternative application form designed for that permit.

This application package contains:

1. Application/General Information Form for WDRs and NPDES Permits [Form 200 (10/97)].
2. Application/General Information Instructions.

Instructions

Instructions are provided to assist you with completion of the application. If you are unable to find the answers to your questions or need assistance with the completion of the application package, please contact your RWQCB representative. *The RWQCBs strongly recommend that you make initial telephone or personal contact with RWQCB regulatory staff to discuss a proposed new discharge before submitting your application.* The RWQCB representative will be able to answer procedural and annual fee related questions that you may have. (See map and telephone numbers inside of application cover.)

All dischargers regulated under WDRs and NPDES permits must pay an annual fee, except dairies, which pay a filing fee only. The RWQCB will notify you of your annual fee based on an evaluation of your proposed discharge. Please do NOT submit a check for your first annual fee or filing fee until requested to do so by a RWQCB representative. Dischargers applying for reissuance (renewal) of an existing NPDES permit or update of an existing WDR will be billed through the annual fee billing system and are therefore requested NOT to submit a check with their application. Checks should be made payable to the State Water Resources Control Board.

Additional Information Requirements

A RWQCB representative will notify you within 30 days of receipt of the application form and any supplemental documents whether your application is complete. If your application is incomplete, the RWQCB representative will send you a detailed list of discharge specific information necessary to complete the application process. The completion date of your application is normally the date when all required information, including the correct fee, is received by the RWQCB.

*** NPDES PERMITS:** If you are applying for a permit to discharge to surface water, you will need an NPDES permit which is issued under both State and Federal law and may be required to complete one or more of the following Federal NPDES permit application forms: Short Form A, Standard Form A, Forms 1, 2B, 2C, 2D, 2E, and 2F. These forms may be obtained at a RWQCB office or can be ordered from the National Center for Environmental Publications and Information at (513) 891-6561.

CALIFORNIA ENVIRONMENTAL
PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE
GENERAL INFORMATION FORM FOR
WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

INSTRUCTIONS

FOR COMPLETING THE APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR: WASTE DISCHARGE REQUIREMENTS/NPDES PERMIT

If you have any questions on the completion of any part of the application, please contact your RWQCB representative. A map of RWQCB locations, addresses, and telephone numbers is located on the reverse side of the application cover.

I. FACILITY INFORMATION

You must provide the factual information listed below for ALL owners, operators, and locations and, where appropriate, for ALL general partners and lease holders.

A. **FACILITY:**
Legal name, physical address including the county, person to contact, and phone number at the facility. (**NO P.O. Box numbers!** If no address exists, use street and nearest cross street.)

B. **FACILITY OWNER:**
Legal owner, address, person to contact, and phone number. Also include the owner's Federal Tax Identification Number.

OWNER TYPE:
Check the appropriate Owner Type. The legal owner will be named in the WDRs/NPDES permit.

C. **FACILITY OPERATOR (The agency or business, not the person):**
If applicable, the name, address, person to contact, and telephone number for the facility operator. Check the appropriate Operator Type. If identical to B. above, enter "same as owner".

D. **OWNER OF THE LAND:**
Legal owner of the land(s) where the facility is located, address, person to contact, and phone number. Check the appropriate Owner Type. If identical to B. above, enter "same as owner".

E. **ADDRESS WHERE LEGAL NOTICE MAY BE SERVED:**
Address where legal notice may be served, person to contact, and phone number. If identical to B. above, enter "same as owner".

F. **BILLING ADDRESS**
Address where annual fee invoices should be sent, person to contact, and phone number. If identical to B. above, enter "same as owner".

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

II. TYPE OF DISCHARGE

Check the appropriate box to describe whether the waste will be discharged to: A. Land, or B. Surface Water.

Check the appropriate box(es) which best describe the activities at your facility.

Hazardous Waste - **If you check the Hazardous Waste box,** STOP **and contact a representative of the RWQCB for further instructions.**

Landfills - **A separate form, APPLICATION FOR SOLID WASTE FACILITY PERMIT/WASTE DISCHARGE REQUIREMENTS, California Integrated Waste Management Board Form E-1-77, may be required. Contact a RWQCB representative to help determine the appropriate form for your discharge.**

III. LOCATION OF THE FACILITY

1. Enter the Assessor's Parcel Number(s) (APN), which is located on the property tax bill. The number can also be obtained from the County Assessor's Office. Indicate the APN for both the facility and the discharge point.

2. Enter the Latitude of the entrance to the proposed/existing facility and of the discharge point. Latitude and longitude information can be obtained from a U.S. Geological Survey quadrangle topographic map. Other maps may also contain this information.

3. Enter the Longitude of the entrance to the proposed/existing facility and of the discharge point.

IV. REASON FOR FILING

NEW DISCHARGE OR FACILITY:
A discharge or facility that is proposed but does not now exist, or that does not yet have WDRs or an NPDES permit.

CHANGE IN DESIGN OR OPERATION:
A material change in design or operation from existing discharge requirements. Final determination of whether the reported change is material will be made by the RWQCB.

CHANGE IN QUANTITY/TYPE OF DISCHARGE:
A material change in characteristics of the waste from existing discharge requirements. Final determination of whether the reported change would have a significant effect will be made by the RWQCB.

CHANGE IN OWNERSHIP/OPERATOR:
Change of legal owner of the facility. Complete Parts I, III, and IV only and contact the RWQCB to determine if additional information is required.

WASTE DISCHARGE REQUIREMENTS UPDATE OR NPDES PERMIT REISSUANCE:
WDRs must be updated periodically to reflect changing technology standards and conditions. A new application is required to reissue an NPDES permit which has expired.

OTHER:
If there is a reason other than the ones listed, please describe the reason on the space provided. (If more space is needed, attach a separate sheet.)

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

It should be emphasized that communication with the appropriate RWQCB staff is vital before starting the CEQA documentation, and is recommended before completing this application. There are Basin Plan issues which may complicate the CEQA effort, and RWQCB staff may be able to help in providing the needed information to complete the CEQA documentation.

Name the Lead Agency responsible for completion of CEQA requirements for the project, i.e., completion and certification of CEQA documentation.

Check YES or NO. Has a public agency determined that the proposed project is exempt from CEQA?
If the answer is YES, state the basis for the exemption and the name of the agency supplying the exemption on the space provided. (Remember that, if extra space is needed, use an extra sheet of paper, but be sure to indicate the attached sheet under Section VII. Other.)

Check YES or NO. Has the "Notice of Determination" been filed under CEQA? If YES, give the date the notice was filed and enclose a copy of the Notice of Determination and the Initial Study, Environmental Impact Report, or Negative Declaration. If NO, check the box of the expected type of CEQA document for this project, and include the expected date of completion using the timelines given under CEQA. The date of completion should be taken as the date that the Notice of Determination will be submitted. (If not known, write "Unknown")

VI. OTHER REQUIRED INFORMATION

To be approved, your application MUST include a COMPLETE characterization of the discharge. If the characterization is found to be incomplete, RWQCB staff will contact you and request that additional specific information be submitted.

This application MUST be accompanied by a site map. A USGS 7.5' Quadrangle map or a street map, if more appropriate, is sufficient for most applications.

VII. OTHER

If any of the answers on your application form need further explanation, attach a separate sheet. Please list any attachments with the titles and dates on the space provided.

VIII. CERTIFICATION

Certification by the owner of the facility or the operator of the facility, if the operator is different from the owner, is required. The appropriate person must sign the application form.
Acceptable signatures are:

1. **for a corporation,** a principal executive officer of at least the level of senior vice-president;
2. **for a partnership or individual (sole proprietorship),** a general partner or the proprietor;
3. **for a governmental or public agency,** either a principal executive officer or ranking elected/appointed official.

DISCHARGE SPECIFIC INFORMATION

In most cases, a request to supply additional discharge specific information will be sent to you by a representative of the RWQCB. If the RWQCB determines that additional discharge specific information is not needed to process your application, you will be so notified.

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

I. FACILITY INFORMATION

A. Facility:

Name: San Joaquin Solar 1 & 2			
Address: West Jayne Avenue			
City: Coalinga	County: Fresno	State: CA	Zip Code: 93210
Contact Person: Elizabeth Ingram		Telephone Number: (858) 427-6536	

B. Facility Owner:

Name: Martifer Renewables Solar Thermal LLC			Owner Type (Check One): 1. ☐ Individual 2. ☐ Corporation 3. ☐ Governmental Agency 4. ☑ Partnership 5. ☐ Other:
Address: 12555 High Bluff Drive, Suite 100			
City: San Diego	State: CA	Zip Code: 92130	
Contact Person: Elizabeth Ingram		Telephone Number: (858) 427-6536	Federal Tax ID: 26-1562843

C. Facility Operator (The agency or business, not the person):

Name: Martifer Renewables Solar Thermal LLC			Operator Type (Check One): 1. ☐ Individual 2. ☐ Corporation 3. ☐ Governmental Agency 4. ☑ Partnership 5. ☐ Other:
Address: 12555 High Bluff Drive, Suite 100			
City: San Diego	State: CA	Zip Code: 92130	
Contact Person: Lisa Matich		Telephone Number: (858) 947-7038	

D. Owner of the Land:

Name: William J. Mouren Farming, Inc.			Owner Type (Check One): 1. ☐ Individual 2. ☑ Corporation 3. ☐ Governmental Agency 4. ☐ Partnership 5. ☐ Other:
Address: P.O. Box 835			
City: Coalinga	State: CA	Zip Code: 93210	
Contact Person: William Anderson		Telephone Number: (559) 935-1681	

E. Address Where Legal Notice May Be Served:

Address: Joyce Law Group; P.O. Box 9056		
City: La Jolla	State: CA	Zip Code: 92038
Contact Person: Robert Joyce		Telephone Number: (858) 454-2018

F. Billing Address:

Address: 12555 High Bluff Drive, Suite 100		
City: San Diego	State: CA	Zip Code: 92130
Contact Person: Lisa Matich		Telephone Number: (858) 947-7038

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

II. TYPE OF DISCHARGE

Check Type of Discharge(s) Described in this Application (A or B):

☑ **A. WASTE DISCHARGE TO LAND** ☐ **B. WASTE DISCHARGE TO SURFACE WATER**

Check all that apply:

☐ Domestic/Municipal Wastewater Treatment and Disposal	☐ Animal Waste Solids	☐ Animal or Aquacultural Wastewater
☐ Cooling Water	☐ Land Treatment Unit	☐ Biosolids/Residual
☐ Mining	☐ Dredge Material Disposal	☐ Hazardous Waste (see instructions)
☐ Waste Pile	☑ Surface Impoundment	☐ Landfill (see instructions)
☐ Wastewater Reclamation	☑ Industrial Process Wastewater	☐ Storm Water
☐ Other, please describe: ______		

III. LOCATION OF THE FACILITY

Describe the physical location of the facility.

1. Assessor's Parcel Number(s)	2. Latitude	3. Longitude
Facility: 085-030-55S, -57S, -58S	Facility: 36.1369 degrees N	Facility: 120.2351 degrees W
Discharge Point: 085-030-57S	Discharge Point: 36.1306 deg N	Discharge Point: 120.2337 deg W

IV. REASON FOR FILING

☑ New Discharge or Facility ☐ Changes in Ownership/Operator (see instructions)

☐ Change in Design or Operation ☐ Waste Discharge Requirements Update or NPDES Permit Reissuance

☐ Change in Quantity/Type of Discharge ☐ Other: ______

V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Name of Lead Agency: California Energy Commission, CEQA-equivalent process

Has a public agency determined that the proposed project is exempt from CEQA? ☐ Yes ☑ No

If Yes, state the basis for the exemption and the name of the agency supplying the exemption on the line below.
Basis for Exemption/Agency: ______

Has a "Notice of Determination" been filed under CEQA? ☐ Yes ☑ No

If Yes, enclose a copy of the CEQA document, Environmental Impact Report, or Negative Declaration. If no, identify the expected type of CEQA document and expected date of completion.

Expected CEQA Documents:

☐ **EIR** ☐ **Negative Declaration** **Expected CEQA Completion Date:** CEQA equiv. May 2010

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

VI. OTHER REQUIRED INFORMATION

Please provide a COMPLETE characterization of your discharge. A complete characterization includes, but is not limited to, design and actual flows, a list of constituents and the discharge concentration of each constituent, a list of other appropriate waste discharge characteristics, a description and schematic drawing of all treatment processes, a description of any Best Management Practices (BMPs) used, and a description of disposal methods.

Also include a site map showing the location of the facility and, if you are submitting this application for an NPDES permit, identify the surface water to which you propose to discharge. Please try to limit your maps to a scale of 1:24,000 (7.5' USGS Quadrangle) or a street map, if more appropriate.

VII. OTHER

Attach additional sheets to explain any responses which need clarification. List attachments with titles and dates below:

Please see accompanying Report of Waste Discharge, dated November 6, 2009.

You will be notified by a representative of the RWQCB within 30 days of receipt of your application. The notice will state if your application is complete or if there is additional information you must submit to complete your Application/Report of Waste Discharge, pursuant to Division 7, Section 13260 of the California Water Code.

VIII. CERTIFICATION

"I certify under penalty of law that this document, including all attachments and supplemental information, were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name: Lisa Matich　　Title: Controller

Signature: ____________　　Date: 11/12/09

FOR OFFICE USE ONLY

Date Form 200 Received:	Letter to Discharger:	Fee Amount Received:	Check #:

California Environmental Protection Agency
Bill of Rights for Environmental
Permit Applicants

California Environmental Protection Agency (Cal/EPA) recognizes that many complex issues must be addressed when pursuing reforms of environmental permits and that significant challenges remain. We have initiated reforms and intend to continue the effort to make environmental permitting more efficient, less costly, and to ensure that those seeking permits receive timely responses from the boards and departments of the Cal/EPA. To further this goal, Cal/EPA endorses the following precepts that form the basis of a permit applicant's "Bill of Rights."

1. Permit applicants have the right to assistance in understanding regulatory and permit requirements. All Cal/EPA programs maintain an Ombudsman to work directly with applicants. Permit Assistance Centers located throughout California have permit specialists from all the State, regional, and local agencies to identify permit requirements and assist in permit processing.

2. Permit applicants have the right to know the projected fees for review of applications, how any costs will be determined and billed, and procedures for resolving any disputes over fee billings.

3. Permit applicants have the right of access to complete and clearly written guidance documents that explain the regulatory requirements. Agencies must publish a list of all information required in a permit application and of criteria used to determine whether the submitted information is adequate.

4. Permit applicants have the right of timely completeness determinations for their applications. In general, agencies notify the applicant within 30 days of any deficiencies or determine that the application is complete. California Environmental Quality Act (CEQA) and public hearing requests may require additional information.

5. Permit applicants have the right to know exactly how their applications are deficient and what further information is needed to make their applications complete. Pursuant to California Government code Section 65944, after an application is accepted as complete, an agency may not request any new or additional information that was not specified in the original application.

6. Permit applicants have the right of a timely decision on their permit application. The agencies are required to establish time limits for permit reviews.

7. Permit applicants have the right to appeal permit review time limits by statute or administratively that have been violated without good cause. For state environmental agencies, appeals are made directly to the Cal/EPA Secretary or to a specific board. For local environmental agencies, appeals are generally made to the local governing board or, under certain circumstances, to Cal/EPA. Through this appeal, applicants may obtain a set date for a decision on their permit and, in some cases, a refund of all application fees (ask boards and departments for details).

8. Permit applicants have the right to work with a single lead agency where multiple environmental approvals are needed. For multiple permits, all agency actions can be consolidated under a lead agency. For site remediation, all applicable laws can be administered through a single agency.

9. Permit applicants have the right to know who will be reviewing their application and the time required to complete the full review process.

Water Balance for Lined Wastewater Pond
San Joaquin Solar 1 & 2
12-Nov-09

	Water Inputs to Pond				Water Outputs from Pond					Month End Values			
	Wastewater		Precipitation*		Pan Evaporation	70% Pan Evaporation	70% Fresh-Water Evaporation	Evaporation Area	Max. Volume Evaporated	Volume in Pond	Water Height in Pond	Freeboard	Assumed Initial Water Height in Pond on January 1
Month	gallons	cf	inches	cf	inches	inches	inches	sf	cf	cf	ft	ft	ft
January	758,880	101,455	1.4	54,057	1.80	1.26	0.88	350,000	25,725	409,786	1.2	4.8	0.8
February	691,560	92,455	4.9	** 189,199	2.90	2.03	1.42	359,664	42,590	648,849	1.8	4.2	
March	758,880	101,455	1.2	46,334	6.20	4.34	3.04	359,664	91,055	705,583	2.0	4.0	
April	734,400	98,182	0.6	23,167	9.39	6.57	4.60	359,664	137,904	689,028	1.9	4.1	
May	758,880	101,455	0.2	7,722	12.96	9.07	6.35	359,664	190,334	607,871	1.7	4.3	
June	734,400	98,182	0.0	0	16.73	11.71	8.20	359,664	245,701	460,351	1.3	4.7	
July	758,880	101,455	0.0	0	18.67	13.07	9.15	359,664	274,193	287,613	0.8	5.2	
August	758,880	101,455	0.0	0	16.37	11.46	8.02	350,000	233,955	155,113	0.4	5.6	
September	734,400	98,182	0.2	7,722	12.61	8.83	6.18	350,000	180,218	80,799	0.2	5.8	
October	758,880	101,455	0.3	11,584	8.05	5.64	3.94	350,000	115,048	78,790	0.2	5.8	
November	734,400	98,182	0.8	30,890	3.89	2.72	1.91	350,000	55,595	152,266	0.4	5.6	
December	758,880	101,455	1.2	46,334	2.44	1.71	1.20	350,000	34,872	265,184	0.8	5.2	
Totals	8,941,320	1,195,364	10.8	417,010	112.01	78.41	54.88		1,627,189				

Continuous Discharge Rate (gpm)	17
Total Wastewater Discharge (afy)	27.4
Precipitation Area (sf)	463,344

Pond Depth (ft)	Water Height (ft)	Pond Area (sf)
0		409,904
1	5	399,600
2	4	389,424
3	3	379,376
4	2	369,456
5	1	359,664
6	0	350,000

*Assumes that none of the site's storm water enters the pond except for the rain that actually falls on the pond and surrounding berm.
**Assumes average annual precipitation, plus the 1000-year, 24-hour storm of 3.5 inches in February.
ft = feet
sf = square feet
cf = cubic feet
afy = acre feet per year

ATTACHMENT G

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 99-093

WASTE DISCHARGE REQUIREMENTS
FOR
COLUSA INDUSTRIAL PROPERTIES, INCORPORATED
WASTEWATER TREATMENT SYSTEM
COLUSA COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The Colusa Industrial Properties, Incorporated (hereafter Discharger) submitted a Report of Waste Discharge, dated 5 February 1999, and site evaluation and for a wastewater treatment and disposal/reclamation system. The property, Assessor Parcel Numbers 017-03-014 and 021 and 017-03-0-083, 084, 085, and 086, are owned by the Discharger.

2. Waste Discharge Requirements Order No. 96-047, adopted by the Board on 23 February 1996, prescribes requirements for a discharge from an industrial complex septic tank system to evaporation and percolation ponds and to approximately 127 acres of agricultural land for reclamation disposal. Order No. 96-047 limits the discharge flow to 27,000 gallons per day (gpd) average dry weather flow. The Discharger has requested Waste Discharge Requirements to be modified to allow higher flows to include a new on-site tomato processing business called Hanover Foods.

3. The Order No. 96-047 is being updated by new information submitted with the Discharger's Report of Waste Discharge for the proposed addition of Hanover Foods.

4. Domestic wastewater from the existing office complex at the site is treated in septic tanks approved by Colusa County. Effluent from the septic tanks flows into the facility's east wastewater pond. Industrial wastewater flows from the facility, including agricultural food processors, Harris Moran Seeds, Inc. (seed washing) and Hanover Foods (tomato processing) flow directly to the land reclamation area. These business are associated with the processing or washing of agricultural products and do not include the use of processing chemicals.

5. Harris Moran Seed Company, Inc., currently pre-treats a maximum of 25,000 gpd of seed washing wastewater in three ponds, two of which are aerated basins. The effluent from the ponds is then piped to the Discharger's disposal/reclamation system. The seed washing season typically runs from 15 August through 15 November. Harris Moran Seed Company, Inc. has been issued Waste Discharge Requirements Order No. 96-046 for the operation of the aerated ponds.

6. Hanover Foods West plant operates seasonally from July through October depending on harvest operations. Estimated flow will be 665,000 gpd on a 90 day production schedule. Estimated annual wastewater discharge from Hanover Foods is 59.8 million gallons or 183 acre-feet.

7. The Colusa Industrial Properties, Inc. industrial park is in Section 8, T15N, R1W, MDB&M, with surface water drainage to the Colusa Basin Drain, as shown in Attachment A, which is attached hereto and part of the Order by reference.

8. The Board adopted a Water Quality Control Plan, Fourth Edition, for the Sacramento River and the San Joaquin River Basins (hereafter Basin Plan) which contains water quality objectives for waters of the Basins. These requirements implement the Basin Plan.

9. The beneficial uses of Colusa Basin Drain are municipal, and agricultural supply; recreation; aesthetic enjoyment; navigation; ground water recharge; fresh water replenishment; and preservation and enhancement of fish, wildlife, and other aquatic resources.

10. The beneficial uses of the underlying ground water are domestic, industrial, and agricultural supply.

11. Existing quality of the first groundwater at this site has elevated levels of Nitrate, Total Coliform, and Total Dissolved Solids.

12. The California Department of Health Services has established statewide reclamation criteria in Title 22, California Code of Regulations (CCR), Section 60301, et seq. (hereafter Title 22) for the use of reclaimed water and has developed guidelines for specific uses.

13. The Basin Plan encourages reclamation.

14. The action to update waste discharge requirements for this facility is exempt from the provisions of the California Environmental Quality Act (CEQA), in accordance with Title 14, CCR, Section 15301 Existing Facilities.

15. This discharge is exempt from the requirements of Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et. seq. (hereafter Title 27). The exemption, pursuant to Section 20090(b), is based on the following:

    a. The Board is issuing waste discharge requirements,
    b. The discharge complies with the Basin Plan, and
    c. The wastewater does not need to be managed according to Title 22, CCR, Division 4.5, Chapter 11, as a hazardous waste.

16. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

17. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that Order No. 96-047 is rescinded and Colusa Industrial Properties, Incorporated, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. By-pass or overflow of untreated or partially treated waste is prohibited.

3. Discharge of waste classified as 'hazardous', as defined in Sections 2521(a) of Title 23, CCR, Section 2510, et seq. (hereafter Chapter 15), or 'designated', as defined in Section 13173 of the California Water Code, is prohibited.

B. Discharge Specifications:

1. The monthly average dry weather wastewater discharge flow for evaporation and percolation pond and land application reclamation system shall not exceed 690,000 gpd for the months of July through October. Flow to the system for November through June shall not exceed 27,000 gpd.

2. The use of reclaimed water shall be limited to surface irrigation of orchards, and fodder, fiber, and seed crops and shall comply with the Department of Health Services' guidelines for the use of reclaimed water. All tail water must be returned to the ponds.

3. Grazing of milking animals within the area irrigated with reclaimed water is prohibited.

4. Public contact with wastewater and reclaimed water shall be precluded through such means as fences, signs, and irrigation management practices.

5. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas or property owned by the Discharger.

6. As a means of discerning compliance with Discharge Specification No. 5, the dissolved oxygen content in the upper zone (1 foot) of the wastewater ponds shall not be less than 1.0 mg/l.

7. Organic Nitrogen as N shall not be greater than 20 mg/l in the discharge to the evaporation and percolation pond and land reclamation system except, during July through August where 40 mg/l are allowed to go to the land reclamation system only.

8. The discharge shall not cause degradation of any water supply.

9. Total Dissolved Solids (TDS) in the discharge shall not be greater that 560 mg/l. Discharger shall encourage tenants to utilize best management practices to reduce TDS in the discharge.

10. Discharge shall not have a pH less that 6.5 or greater than 8.5.

11. There shall be no standing water in the irrigation disposal area 24 hours after wastewater is applied.

12. Ponds and reclamation areas, as shown in Attachment B, which is attached hereto and part of the Order by reference. shall be managed to prevent breeding of mosquitoes. In particular,

    a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
    b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

13. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Design shall be constructed, operated, and maintained to prevent inundation of washout due to floods with a 100-year return frequency. Free board shall never be less than two feet (measured vertically to the lowest point of overflow).

14. Before 1 July of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specification No. 13.

C. Sludge Disposal:

1. Collected screenings, sludge, grease and oil, and other solids removed from liquid wastes shall be disposed of in a manner that is consistent with CCR, Title 27 and approved by the Executive Officer.

2. Any proposed change in sludge use or disposal practice from a previously approved practice shall be reported to the Executive Officer and US Environmental Protection Agency Regional Administrator at least 90 days in advance of the change.

3. Use and disposal of sewage shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR part 503.

   If the State Water Resources Control Board and the Regional Water Quality Control Boards are given the authority to implement regulations contained in the 40 CFR part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR part 503 whether or not they have been incorporated into this Order.

4. The Discharger is encouraged to comply with the State Guidance Manual issued by the Department of Health Services titled *Manual of Good Practice for Landspreading of Sewage Sludge*.

D. Groundwater Limitations:

1. The discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than background water quality, except for coliform. For coliform, increases shall not cause the most probable number of total coliform organisms to exceed 2.2/100 ml over any 7-day period.

E. Provisions:

1. The Discharger shall comply with the Monitoring and Reporting Program (MRP) No. 99-093, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

2. The Discharger shall report promptly any material change or proposed change in the discharge character, location, or volume and/or the treatment train and/or the wastewater treatment facility components.

3. The Discharger shall use the best management practicable for cost effective control technique currently available to meet Basin Plan salinity goals.

4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements," dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

5. In the event of any change in control or ownership of land or waste discharge facilities described herein, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

6. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

7. At least 90 days prior to termination or expiration of any lease, contract, or agreement involving disposal or reclamation areas, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

8. Ongoing site sampling shows wastewater discharge contains elevated levels of ammonia and/or total nitrogen as well as groundwater containing elevated levels of TDS and coliform contamination. The Discharger shall submit on or before **1 July 2000**, a groundwater assessment technical report, by a Registered Engineer with experience in water quality. The technical report shall include, if necessary, a corrective action program and time schedule to assure compliance with Section D. Groundwater Limitations of this Order.

   If after review of the study results it is determined that the Discharger has a reasonable potential to cause or contribute to an exceedance of a water quality objective or degrade groundwater quality, this Order will be reopened and effluent limitations added for total nitrogen, TDS, and/or coliform.

9. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

10. The Board will review this Order periodically and will revise requirements when necessary.

I, GARY M. CARLTON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 11 June 1999.

GARY M. CARLTON, Executive Officer

GWL

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ATTACHMENT H

PUBLICATION 8066 FWQP REFERENCE SHEET 9.10

Irrigation Water Salinity and Crop Production

STEPHEN R. GRATTAN, Plant-Water Relations Specialist, University of California, Davis

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources
http://anrcatalog.ucdavis.edu

In partnership with

NRCS
Natural Resources Conservation Service
http://www.nrcs.usda.gov

Farm Water Quality Planning

A Water Quality and Technical Assistance Program for California Agriculture
http://waterquality.ucanr.org

This Reference Sheet is part of the **Farm Water Quality Planning (FWQP)** series, developed for a short course that provides training for growers of irrigated crops who are interested in implementing water quality protection practices. The short course teaches the basic concepts of watersheds, nonpoint source pollution (NPS), self-assessment techniques, and evaluation techniques. Management goals and practices are presented for a variety of cropping systems.

UC PEER REVIEWED

Irrigation water quality can have a profound impact on crop production. All irrigation water contains dissolved mineral salts, but the concentration and composition of the dissolved salts vary depending on the source of the irrigation water. For example, snow melt or water supplies from the Sierra Nevada contain very small amounts of salt whereas groundwater or wastewater typically has higher salt levels. Too much salt can reduce or even prohibit crop production while too little salt can reduce water infiltration, which indirectly affects the crop. An understanding of the quality of water used for irrigation and its potential negative impacts on crop growth is essential to avoid problems and to optimize production. For more information on any of the issues found in this publication, please contact your local University of California Cooperative Extension office.

DISSOLVED SALTS

Dissolved salts in irrigation water form ions. The most common salts in irrigation water are table salt (sodium chloride, NaCl), gypsum (calcium sulfate, $CaSO_4$), Epsom salts (magnesium sulfate, $MgSO_4$), and baking soda (sodium bicarbonate, $NaHCO_3$). Salts dissolve in water and form positive ions (cations) and negative ions (anions). The most common cations are calcium (Ca^{2+}), magnesium (Mg^{2+}), and sodium (Na^+) while the most common anions are chloride (Cl^-), sulfate (SO_4^{2-}), and bicarbonate (HCO_3^-). The ratios of these ions, however, vary from one water supply to another. Potassium (K^+), carbonate (CO_3^{2-}), and nitrate (NO_3^-) also exist in water supplies, but concentrations of these constituents are comparatively low. In addition, some irrigation waters, particularly from groundwater sources, contain boron at levels that may be detrimental to certain crops.

It should be noted that substantial salinization potential is realized through natural weathering and dissolution of soil parent materials, and these salt contributions will attenuate or augment irrigation water ionic constituents.

CHARACTERIZING SALINITY

There are two common water quality assessments that characterize the salinity of irrigation water. The salinity of irrigation water is sometimes reported as the total salt concentration or total dissolved solids (TDS). The units of TDS are usually expressed in milligrams of salt per liter (mg/L) of water. This term is still used by commercial analytical laboratories and represents the total number of milligrams of salt that would remain after 1liter of water is evaporated to dryness. TDS is also often reported as parts per million (ppm) and is the same numerically as mg/L. The higher the TDS, the higher the salinity of the water.

The other measurement that is documented in water quality reports from commercial labs is specific conductance, also called electrical conductivity (EC). EC is a much more useful measurement than TDS because it can be made instantaneously and easily by irrigators or farm managers in the field. Salts that are dissolved in water conduct electricity, and, therefore, the salt content in the water is directly related to the EC. The EC can be reported based on the irrigation water source (ECw) or on the saturated soil extract (ECe). Units of EC reported by labs are usually in millimhos per centimeter (mmhos/cm) or decisiemens per meter (dS/m). One mmho/cm = 1 dS/m. EC is also reported in micrommhos per centimeter (μmhos/cm). 1 μmho = 1/1000 mmho.

Often conversions between ECw and TDS are made, but caution is advised because conversion factors depend both on the salinity level and composition of the water. For example:

TDS (mg/L) = 640 x ECw (dS/m) when ECw $<$ 5 dS/m

TDS (mg/L) = 800 x ECw (dS/m) when ECw $>$ 5 dS/m

Sulfate salts do not conduct electricity in the same way as other types of salts. Therefore, if water contains large quantities of sulfate salts, the conversion factors are invalid and must be adjusted upward.

IRRIGATION WATER SALINITY, SOIL SALINITY, AND LEACHING

Many irrigation water supplies contain a substantial amount of salt. For example, a water source with an EC of 1.0 mmho/cm, a quality suitable for irrigation of most crops, contains nearly 1 ton of salt in every acre-foot of water applied. Irrigation can contribute a substantial amount of salt to a field over the season.

Salts accumulate in the rootzone by two processes: the upward movement of a shallow saline-water table and salts left in the soil due to insufficient leaching. To control salinity from high saline water tables, drains must be installed in the field. To battle against salts that accumulate in the rootzone from the irrigation water, the soil must be adequately leached.

Leaching is the process of applying more water to the field than can be held by the soil in the crop rootzone such that the excess water drains below the root system, carrying salts with it. The more water that is applied in excess of the crop water requirement, the less salinity there is left in the rootzone despite the fact that more salt has actually been added to the field. The term *leaching fraction* (LF) is used to relate the fraction or percent of water applied to the field that actually drains below the rootzone. For example, if 1 acre-foot of water is applied to 1 acre of land, and 0.1 acre-foot drains below the rootzone, the leaching fraction is 1/10 (10 percent).

Below are some useful relationships between the salinity in irrigation water (electrical conductivity of irrigation water, ECw) and the average rootzone salinity (ECe). These relationships were developed by Ayers and Westcot (1985) and assume steady state conditions. ECe is the electrical conductivity of the saturated soil paste (soil samples are saturated with distilled water, the soil water is then extracted, and the EC is measured on the extracted water). These relationships predict what will happen over the long term if the leaching fractions indicated are achieved and assuming that the ECe in the rootzone increases with depth (which would be evidence of leaching).

LF 10% leads to ECw x 2.1 = ECe

LF 15-20% leads to ECw x 1.5 = ECe

LF 30% leads to ECw = ECe

ESTIMATING YIELD POTENTIAL

How could you use these relationships to estimate the yield potential? Maas and Grattan (1999) provide an extensive list of salinity coefficients for a number of horticultural and agronomic crops. These coefficients consist of a *threshold* and *slope.* The salinity threshold (a) is the maximum average soil salinity (ECe) the crop can tolerate in the rootzone without a decline in yield. The slope coefficient (b) is the percent loss in relative yield the crop will experience for every unit increase in ECe above the threshold. Using these coefficients, the yield potential (% Yield) can be estimated from the following expression:

% Yield = 100 – b (ECe – a)

Tables 1 and 2 provide water quality guidelines for the most commonly grown crops in California. Table 1 assumes that the soil is well drained and that an LF of 15 to 20 percent is achieved. It is based on the formulas above and provides guidelines for trees and vines. Table 2 provides the same type of guidelines for vegetable and row crops. These tables provide the salinity level in the irrigation water (ECw) that, if used continuously to achieve an LF of 15 to 20 percent, would result in yield potentials of 100, 90, 75, and 50 percent. The ECw values at 100% yield represent the poorest quality water that, if used continuously, will produce ECe levels equal to the salinity thresholds. For example, lettuce has the following salinity coefficients:

a = 1.3 dS/m

and

b = 13 when expressed as ECe

If the average rootzone ECe throughout the season was 3.2 dS/m, then the yield potential is 75 percent. If the average rootzone salinity value of 3.2 is then converted to irrigation water salinity assuming an LF of 15 to 20 percent, ECw is 2.1 dS/m. The guidelines also assume that all other factors such as fertility, irrigation scheduling, and pest control are managed to optimize crop performance.

It is important to note that most of the experiments that were used to generate these guidelines were conducted in the interior regions of California where the climate is hot and dry during the summer. Crops grown in the coastal regions where the climate is milder will likely tolerate greater salinities than indicated above. Furthermore, much of the groundwater used for irrigation in coastal areas of California contains high levels of dissolved gypsum, which elevates the salinity of the water. However, crops irrigated with this water do not suffer the same detrimental effects as Cl-dominated waters with an equal EC.

In fields where salinity has increased in the rootzone to damaging levels, *reclamation leaching* is recommended. A common rule of thumb is that the salinity in the top 1 foot of the rootzone can be reduced 80 to 90 percent by intermittently applying 1 acre-foot of water per acre of land.

Table 1. Estimated yield of tree and vine crops with long-term use of irrigation water with different levels of soil salinity (potential yields are based on a 15 to 20 percent leaching fraction and do not account for the effects of specific elements)

	ECw (mmhos/cm) Yield potential[1]				
Tree and vine crops	**100%**	**90%**	**75%**	**50%**	**Rating[2]**
Almond	1.0	1.4	1.9	2.8	S
Apple	—	—	—	—	S
Apricot[3]	1.1	1.3	1.8	2.5	S
Avocado[3]	—	—	—	—	S
Blackberry	1.0	1.3	1.5	2.5	S
Boysenberry	1.0	1.3	1.8	2.5	S
Cherry	—	—	—	—	S
Date Palm	2.7	4.5	7.3	12.0	T
Fig[3]	—	—	—	—	MT
Grape[3]	1.0	1.7	2.7	4.5	MS
Grapefruit	1.2	1.6	2.2	3.3	S
Lemon	1.0	1.5	2.3	3.6	S
Lime	—	—	—	—	S
Olive	—	—	—	—	MT
Orange	1.1	1.6	2.2	3.2	S
Peach	1.1	1.5	1.9	2.7	S
Pear	—	—	—	—	S
Pecan	—	—	—	—	MS
Persimmon	—	—	—	—	S
Pistachio	—	—	—	—	MS–MT
Plum	1.0	1.4	1.9	2.9	S
Pomegranate[3]	—	—	—	—	MS
Walnut[3]	—	—	—	—	S

— Data not available.
[1] Based on data from Maas and Grattan 1999.
[2] Tolerance to soil salinity is rated as sensitive (S), moderately sensitive (MS), moderately tolerant (MT), and tolerant (T).
[3] Tolerance is based on growth or injury rather than yield.

Table 2. Estimated yield of vegetable and row crops with long-term use of irrigation water of different qualities (potential yields are based on a 15 to 20 percent leaching fraction and do not account for the effects of specific elements)

	ECw (mmhos/cm) Yield potential[1]				Rating[2]	
Vegetable and row crops	**100%**	**90%**	**75%**	**50%**	**Salt**	**Boron**
Asparagus	2.7	6.1	11.1	19.4	T	VT
Bean	0.7	1.0	1.5	2.4	S	S
Beet, red	2.7	3.4	4.5	6.4	MT	T
Broccoli	1.9	2.6	3.7	5.5	MS	MS
Cabbage	1.2	1.9	2.9	4.6	M	MT
Carrot	0.7	1.1	1.9	3.0	S	MS
Cauliflower	1.9	2.6	3.7	5.5	MS	MT
Celery	1.2	2.3	3.9	6.6	MS	VT
Corn, sweet	1.1	1.7	2.5	3.9	MS	VT
Cucumber	1.7	2.2	2.9	4.2	MS	MS
Eggplant	0.7	1.7	3.1	5.6	MS	—
Lettuce	0.9	1.4	2.1	3.4	MS	MS
Onion	0.8	1.2	1.8	2.9	S	S
Pepper	1.0	1.5	2.2	3.4	MS	MS
Potato	1.1	1.7	2.5	3.9	MS	MS
Radish	0.8	1.3	2.1	3.4	MS	—
Spinach	1.3	2.2	3.5	5.7	MS	—
Squash, scallop	2.1	2.6	3.2	4.2	MS	MT
Squash, zucchini	3.1	3.8	4.9	6.7	MT	MT
Strawberry	0.7	0.9	1.2	1.7	S	S
Sweet potato	1.0	1.6	2.5	4.0	MS	—
Tomato	1.7	2.3	3.4	5.0	MS	T
Turnip	0.6	1.3	2.5	4.3	MS	MT

— Data not available.
1 Based on data from Maas and Grattan 1999.
2 Sensitive (S), moderately sensitive (MS), moderately tolerant (MT), tolerant (T), and very tolerant (VT).

CROP TOXICITY TO SPECIFIC ELEMENTS

In addition to salinity, some crops are injured by certain elements, notably sodium (Na^+), chloride (Cl^-), and boron (B). With drip and furrow irrigation, chloride and sodium injury do not generally occur in vegetable and row crops unless salinity in irrigation water is severe. Leaf injury can occur in strawberries, however, particularly under hot, dry conditions. Under sprinkler irrigation, injury may occur to wetted leaves of susceptible plants such as pepper, potatoes, and tomato if the ECw exceeds 1.5 mmhos/cm.

Some vegetable and row crops are sensitive to boron. Generally, leaf injury must be severe to cause reduced yields and crop quality. Long-term use of irrigation water containing more than 0.5 ppm boron can reduce the yields of bean, onion, garlic, and strawberry; 0.7 ppm can reduce the yields of broccoli, carrot, potato, and lettuce; and concentrations greater than 2 ppm can reduce yields of cabbage and cauliflower.

Under cool, moist climatic conditions, greater levels of boron can be tolerated, and for short-term use, boron levels given here can be doubled. In addition, soil properties influence the time it takes for injury to occur. The finer the soil texture, the longer it will take for injury to occur.

Unlike most annual crops, tree and vine crops are generally sensitive to boron, chloride, and sodium toxicity. Tolerances vary among varieties and rootstocks. Tolerant varieties and rootstocks resist the uptake and accumulation of toxic ions in the stem and leaf tissue. Continued use of irrigation water with boron concentrations in excess of 0.75 ppm can reduce the yields of grapes and many deciduous tree and fruit crops. This represents a threshold concentration and does not imply that irrigation water with boron at or slightly above this level cannot be used successfully.

Chloride moves readily with the soil water and is taken up by the roots. It is then transported to the stems and leaves. Sensitive berries and avocado rootstocks can tolerate only up to 120 ppm of chloride, while grapes can tolerate up to 700 ppm or more.

The ability of a tree to tolerate sodium varies considerably. Sodium injury on avocado, citrus, and stone-fruit trees has been reported at concentrations as low as 115 ppm. Initially, sodium is retained in the roots and lower trunk, but after 3 to 4 years the conversion of sapwood to heartwood apparently releases the accumulated sodium, which then moves to the leaves causing leaf burn.

INFILTRATION OF IRRIGATION WATER

There are two water quality parameters to consider when assessing irrigation water quality for potential water infiltration problems. These are the ECw and the sodium adsorption ratio (SAR). The SAR is an indicator of the amount of sodium in the water relative to calcium and magnesium. The higher the ratio of sodium to calcium plus magnesium, the higher the SAR. Both a low salt content (low ECw) and high SAR can mean there is a high potential for permeability or water infiltration problems.

A low ECw or high SAR can act separately or collectively to disperse soil aggregates, which in turn reduces the number of large pores in the soil. These large pores are responsible for aeration and drainage. A negative effect from the breakdown of soil aggregates is soil sealing and crust formation. Below is a table that can be used to assess the likelihood of potential water infiltration problems based on both ECw and SAR.

Table 3 indicates that water infiltration problems are likely if the ECw is less than 0.3 mmho/cm regardless of the SAR. For example, if the ECw falls below 0.3 mmho/cm, infiltration rates can drop to less than 0.1 inch per hour. An infiltration rate of 0.1 inch per hour would require 30 hours for a full irrigation of 3 inches to infiltrate the soil. Therefore, pure water or very high-quality water such as that in the Friant-Kern Canal (ECw 0.05 and SAR 0.6) will cause infiltration problems even when applied on soils with high sand content.

The good news is that infiltration problems due to low salt content or high SAR can easily be improved by the addition of gypsum to either the irrigation water or soil. When the irrigation water comes into contact with gypsum, it dissolves into Ca^{2+} and SO_4^{2-} ions that slightly increase the salinity of the water while simultaneously reducing the SAR. The Ca^{2+} cations are then free to displace Na^+ cations adsorbed onto the negatively charged clay particles, thereby enhancing flocculation, improving soil structure, and increasing the water infiltration rate.

Estimating the amount of gypsum to be applied to the irrigation water can be achieved by calculating how much $CaSO_4$ is needed to increase the EC or decrease the SAR. For example, Friant-Kern Canal water has an average ECw of only 0.05 mmho/cm and SAR of 0.6. By adding 6 meq/L Ca^{2+} (equivalent to 1,400 lb pure gypsum per acre-ft), the ECw will increase to 0.65 and SAR will drop to 0.2. According to table 3, this will substantially improve the quality of this water in terms of reducing its permeability hazard.

Determining how much gypsum to add to the soil is a bit more complicated than determining how much to add to the irrigation water. The amount to apply depends on the soil, how much sodium is adsorbed onto the clay surfaces, how much Ca^{2+} is needed to replace the adsorbed Na^+, and to what depth you intend to reclaim the soil. Usually, no more than 1 to 2 tons of gypsum per acre should be applied at any one time. Lighter, more frequent applications of gypsum tend to be more effective than a single heavy application.

Table 3. Combined effect of electrical conductivity (ECw) of irrigation water and sodium adsorption ratio (SAR) on the likelihood of water infiltration (permeability) problems

Sodium adsorbtion ration (SAR) of irrigation or soil	Water infiltration problem	
	Unlikely when ECw (dS/m) is more than	**Likely when ECw (dS/m) is less than**
0–3	0.6	0.3
3–6	1.0	0.4
6–12	2.0	0.5
12–20	3.0	1.0
20–40	5.0	2.0

Source: Ayers and Westcot 1985.

OTHER WATER QUALITY CONSTITUENTS

Irrigation water supplies, particularly those from wells, can contain other constituents that may affect water quality. Of particular concern are nitrate (NO_3^-) and bicarbonate (HCO_3^-).

Nitrates are often measured as NO_3-N, which refers to the nitrogen concentration in the water that is in the nitrate form. From a public health perspective, there are concerns when excessive levels of nitrates are found in domestic wells. The public drinking water standard is set at 10 mg/L (or ppm) NO_3-N. From an irrigation perspective, NO_3^- in the groundwater can be viewed as a resource. For example, 27 pounds of nitrogen is applied to a field with each acre-foot of water if the water supply contains 10 ppm NO_3-N (45 ppm when expressed as NO_3^-). It is important that the grower with water of such quality reduces the nitrogen application rates in the field accordingly to accommodate this extra input of nitrogen. Should this be ignored, there may be problems associated with excessive vegetative growth and contamination of the groundwater.

Excessive amounts of bicarbonate can also be problematic. In fields that are irrigated with low-pressure systems, such as drip or mini-sprinklers, calcite or scale can build up near the orifice of the sprinkler or emitter, which can reduce the water discharge. This type of problem can be corrected by injecting acid-forming materials (such as sulfuric acid) in the irrigation water. In addition, bicarbonate could increase the SAR of the soil water by precipitating calcium and magnesium. This can be corrected by frequent gypsum applications to the soil surface.

REFERENCES

Ayers, R. S., and D. W. Westcot. 1985. Water quality for agriculture. Food and Agricultural Organization (FAO) of the United Nations. FAO Irrigation and Drainage Paper 29.

Maas, E. V., and S. R. Grattan. 1999. Crop yields as affected by salinity. In R. W. Skaggs and J. van Schilfgaarde, eds., Agricultural Drainage. Agron. Monograph 38. ASA, CSSA, SSSA, Madison, WI.

Hanson, B., S. R. Grattan, and A. Fulton. 1999. Agricultural salinity and drainage. Oakland: University of California Division of Agriculture and Natural Resources Publication 3375.

FOR MORE INFORMATION

You'll find detailed information on many aspects of turfgrass management in these titles and in other UC ANR products:

Agricultural Salinity and Drainage, Publication 3375

Irrigation and Drainage, Slide Set 93/105

Drip Irrigation for Row Crops, Publication 3376

To order these products, visit our online catalog at http://anrcatalog.ucdavis.edu You can also place orders by mail, phone, or fax, or request a printed catalog of publications, slide sets, and videos from

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UC PEER REVIEWED

This publication has been anonymously peer reviewed for technical accuracy by University of California scientists and other qualified professionals. This review process was managed by the ANR Associate Editor for Natural Resources.

ATTACHMENT I

CH2M HILL
2525 Airpark Drive
Redding, CA
96001
Tel 530.243.5831
Fax 530.243.1654

October 2, 2013

Mr. Ed Hulbert
50 Sunrise Blvd.
Colusa, CA 95932

Subject: Colusa Industrial Properties Land Application System: Preliminary Industrial Process Water Evaluation for a New Biomass Plant by GreenPlanet Power Solutions

Dear Mr. Hulbert:

Colusa Industrial Properties (CIP) requested that CH2M HILL conduct a preliminary assessment of industrial process water (IPW) to be generated from a proposed new biomass plant by GreenPlanet Power Solutions (GreenPlanet). GreenPlanet proposes to use CIP's land treatment system for agronomic benefit and to manage IPW generated from their new biomass plant. The preliminary assessment presented herein discusses the following: CIP's existing land application permit, estimated preliminary GreenPlanet IPW characterization, and anticipated permitting requirements for GreenPlanet to utilize CIP's land application area.

CIP's Existing Land Application Permit

CIP has an existing permit for their land application system. The land treatment system consists of 268 acres of agricultural land. The permit is Waste Discharge Requirement WDR Order No. 5-01-250, and was issued by the Central Valley Regional Water Quality Control Board (RWQCB) in October 2001. The corresponding Monitoring and Reporting Program (MRP) is dated October 26, 2009.

CIP is currently in the process of updating their land application permit as requested by the RWQCB. The RWQCB requested that CIP update IPW discharge information to support a revised Report of Waste Discharge (ROWD) and corresponding land application permit. In response, CH2M HILL prepared a ROWD on behalf of CIP. The ROWD was submitted to the RWQCB in May 2013. RWQCB responded with a request for clarification and additional information. A response was returned to RWQCB September 2013. CIP anticipates their updated permit will be approved by the RWQCB in December 2013.

Estimated Preliminary GreenPlanet IPW Characterization

GreenPlanet is currently in the initial planning and permitting phase of their proposed Colusa Biomass Plant. Two attachments are provided that support preliminary GreenPlanet IPW characterization:

- Draft preliminary process flow diagram (Attachment 1)
- Estimated Biomass Plant IPW Constituent Concentrations (Attachment 2)

The two attachments are discussed in the following subsections.

Draft Preliminary Process Flow Diagram

GreenPlanet plans to generate energy (electricity) from biomass combustion. The attached draft preliminary process flow diagram illustrates the general concept of the biomass combustion facility. GreenPlanet will utilize a 300,000 pound-per-hour biomass capacity boiler to generate steam. Steam energy will be converted to electricity and transmitted to the electric grid. The process requires a cooling tower/condenser that generates water outflow. GreenPlanet intends to manage outflow from the cooling tower/condenser by conveying it to a 5,000 gallon IPW storage tank, and intends to utilize IPW by land applying it to agricultural crops on CIP's land application system. Estimated average daily IPW outflow is 1,800 gallons per day (gpd). Estimated peak daily IPW outflow is 3,000 gpd. CIP currently maintains approximately 3,300,000 gpd of available land application capacity – there is ample hydraulic loading capacity for CIP to accept and manage IPW flows from the GreenPlanet facility.

Preliminary Biomass Plant IPW Characterization

To assess suitability for land application, anticipated biomass plant IPW constituent concentrations were compared to monitoring data and to CIP's land application permit limits. CIP maintains nine groundwater monitoring wells. CIP collects groundwater samples either quarterly or semi-annually in accordance with the current MRP and reports the results to the RWQCB. Consistent groundwater sampling and data analysis has been performed since 1999. Therefore, CIP has a comprehensive dataset characterizing existing groundwater conditions in nine groundwater monitoring wells in and around CIP's land application area.

In order to estimate anticipated biomass plant IPW constituent concentrations, GreenPlanet provided analytical results that estimate the anticipated Colusa Biomass Plant IPW concentrations (i.e., the combined IPW flow that would be land applied). The analytical results provided (see Attachment 2) were taken from an existing IPW flow from a similar biomass plant that is operating in a different location. The analytical results show constituent concentrations of the same order of magnitude as background groundwater quality (those measured in CIP's groundwater wells) for the following constituents: iron, manganese, alkalinity, hardness, magnesium, sulfate, and total dissolved solids. Silica is not measured in the existing MRP.

The existing permit limit for total dissolved solids (TDS) in land-applied IPW is 700 mg/L. The average TDS background concentration is 1,647 mg/L (average TDS background concentration was determined from 47 groundwater samples collected prior to the first IPW land application in 1999). The analytical data provided by GreenPlanet suggest that the TDS concentration in IPW from the proposed biomass facility (1,158 mg/L) would exceed the current permit limit of 700 mg/L, but would be less than the background concentration of 1,647 mg/L. Additional characterization is recommended to confirm expected TDS concentrations; if estimated concentrations remain above the existing permit limits, water treatment or process modifications to reduce TDS concentrations to below the current permit limits should be evaluated.

Anticipated IPW Discharge Permitting Requirements

Because the proposed biomass facility and associated IPW discharge is not specifically authorized by the existing WDR, a revision to the WDR is required to authorize and condition the proposed discharge to the land application system. It is recommended that GreenPlanet, in conjunction with CIP, set up a meeting with the RWQCB regarding the proposed IPW land application for the purpose of defining information needs, estimated discharge limits, and determining the target schedule for obtaining RWQCB authorization for the discharge. Once GreenPlanet has better defined its proposed biomass facility and associated processes and equipment, a new ROWD would be submitted to the RWQCB that describes the individual sources of IPW, the combined IPW prior to treatment, any proposed water treatment operations, and estimated water quality following treatment. A groundwater anti-degradation analysis specific to the GreenPlanet facility would likely be required to support the ROWD.

Additional development permits, including a conditional use permit (County), may be required for this project and may require additional wastewater evaluation that is beyond the scope of this letter.

Summary

Keys items that summarize the status of GreenPlanet utilization of CIP's land application system follow:

- Preliminary data suggest that GeenPlanet biomass plant IPW may be suitable for CIP land application, but may not comply with current permit limits for TDS.

- CIP has ample hydraulic loading capacity available to accept and manage IPW flows from the GreenPlanet facility.
- Salinity control strategies may need to be incorporated into the biomass IPW management process to reduce TDS concentrations prior to land application.
- An ROWD, or revised ROWD, and supporting data and information are required to characterize GreenPlanet IPW once the project is further defined.

Sincerely,

CH2M HILL

Brett Isbell, P.E.
Water Resources Engineer

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WBG081213023431RDD

ATTACHMENT J

6657
00-21

CALIFORNIA DEPARTMENT OF FISH AND GAME

CERTIFICATE OF FEE EXEMPTION

FILED

AUG 1 1 2000

KATHLEEN MORAN
COLUSA COUNTY CLERK-RECORDER

De Minimis Impact Finding

Project Title/Location (include county): ED #00-23 Colusa Industrial Properties

AP #17-030-08, south of Colusa Industrial Properties and east of Wescott Road, Colusa County.

Project Description: Increase in the maximum discharge limitation for the disposal of tomato process water on agricultural land.

Findings of Exemption (attach as necessary):

There is no evidence that the proposed project will have any potential for adverse effect on wildlife resources.

Certification:

I hereby certify that the public agency has made the above finding and that the project will not individually or cumulatively have an adverse effect on wildlife resources, as defined in Section 711.2 of the Fish and Game Code.

David Kelley
(Chief Planning Official)

Title: Director of Planning & Building
Lead Agency Colusa County
Date August 7, 2000

Section 711.4, Fish and Game Code
DFG:12/90

AUG 1 1 2000

Tomato

COLUSA COUNTY
DEPARTMENT OF PLANNING & BUILDING

220 12TH STREET
COLUSA, CALIFORNIA 95932
(530) 458-0480

Approved
To planning Commission

STAFF REPORT

CONTROL NO.: ED #00-23

TO: TAC/Planning Commission

SUBJECT: Use Permit for Colusa Industrial Properties

ASSESSOR'S PARCEL NO.: 17-03-0-008-3

LOCATION: The project site is located south of Colusa Industrial Properties and east of Wescott Road.

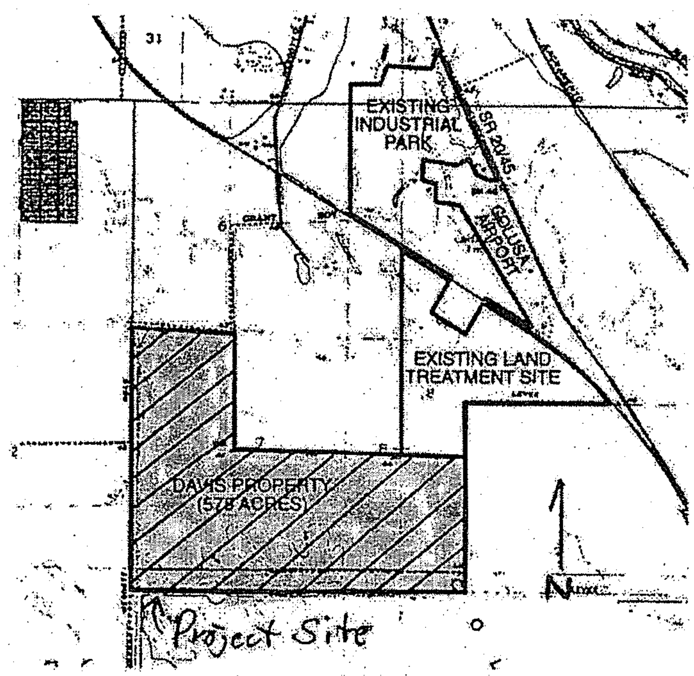
OWNER:
Colusa Industrial Properties
PO Box 731
Colusa, CA 95932

APPLICANT/ENGINEER:
Colusa Industrial Properties
PO Box 731
Colusa, CA 95932

REQUEST: To allow the disposal of tomato processing water to irrigate pasture crops on the site.

ENVIRONMENTAL DOCUMENT: Mitigated Negative Declaration.

VICINITY MAP:



CONDITIONS
FOR
AMENDED USE PERMIT #99-10-1 COLUSA INDUSTRIAL PROPERTIES

Air Pollution Control District:

1. In accordance with Section 41700 of the California Health and Safety Code, there shall not be discharge from any source whatsoever where such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or the public or which cause or have a natural tendency to cause injury or damage to business or property. In the event complaints are received and odors are not controlled, the APCD will take action in the form of orders of abatement and/or penalties.

Planning & Building:

2. The applicant shall utilize the subject property (APN: 17-30-08) as described in the Initial Study as prepared by CH2M Hill.

3. The applicant shall comply with all requirements of the Regional Water Quality Control Board (RWQCB).

Environmental Health:

4. All cleaners/chemicals used in the Industrial process water shall be disclosed to RWQCB.

5. Applicant shall comply with the Tentative Waste Discharge Requirements (5/5/00) for Colusa Industrial Properties.

6. Applicant shall comply with requirements as stated in the RWQBC letter to CIP dated April 18, 2001.

7. Discharge of fuels, oils or other petroleum products, chemicals, detergents, cleaners, or similar chemicals to the surface of the ground or to adjacent drainage ways is prohibited.

COUNTY OF COLUSA

DEPARTMENT OF
PLANNING AND BUILDING ADMINISTRATION

220 12th Street
Colusa, California 95932
Telephone: (530) 458-0480

David Kelley
Director

AMENDED **USE PERMIT** #99-10-1

VARIANCE #________

ISSUED TO: Colusa Industrial Properties

PURPOSE: Clarifying the intent of the use of the property for disposal of wastewater, changing from disposal of tomato process wastewater to industrial process wastewater.

LOCATION: AP #17-030-08, south of Colusa Industrial Properties and east of Wescott Road.

CONDITIONS: See attached conditions.

Approved by the Planning Commission June 11, 2001.

COLUSA COUNTY PLANNING COMMISSION

Chairman

David Kelley
Secretary

NOTE:

Colusa County Code, Sec. 7.25.1 - Time for Appeal: The decision or non-decision of the Zoning Administrator shall become final ten days from the date thereof, unless an appeal has been filed within that time.

Colusa County Code, Sec. 7.29(a) - Revocation: Except where a different provision is made in the conditions granting a use permit, a use permit shall automatically terminate at the end of one year if not used within that period. (b) - The Commission may revoke any use permit upon a finding that the conditions set forth in the use permit have been violated or that the uses ceased for one year. The Commission may make such a finding only after a public hearing, upon notice given in accordance with this code.

Copy to Molly
+ Pete

Notice of Determination

LA

To: X Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

X County Clerk
County of Colusa
546 Jay Street
Colusa, CA 95932

From: (Public Agency) Colusa County Planning Dept.
220 - 12th Street
Colusa, CA 95932
(Address)

ENDORSED
FILED
JUN 11 1992
KATHLEEN MORAN
COLUSA COUNTY CLERK
By ________ Deputy

Subject:
Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

EIR #90-124 Colusa Industrial Properties
Project Title

State Clearinghouse Number (If submitted to Clearinghouse)	Lead Agency Contact Person	Area Code/Telephone/Extension
	Stanley M. Walker	916/458-8877

AP #17-030-14 and #17-030-21, approximately 600' southwest of intersection of Niagara
Project Location (include county) Avenue and State Highway 20, Colusa County.

Project Description: Supplemental EIR to EIR #80-67 for the future expansion of industrial park and park waste disposal plant.

This is to advise that the Colusa County Planning Commission has approved the above described project on
[X] Lead Agency [ ] Responsible Agency
June 8, 1992 and has made the following determinations regarding the above described project:
(Date)

1. The project [X will [ ] will not] have a significant effect on the environment.
2. [X] An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   [ ] A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [X were [ ] were not] made a condition of the approval of the project.
4. A statement of Overriding Considerations [[ ] was [X] was not] adopted for this project.
5. Findings [X were [ ] were not] made pursuant to the provisions of CEQA.

RECEIVED
SACRAMENTO
CVRWQCB
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This is to certify that the final EIR with comments and responses and record of project approval is available to the General Public at:
Colusa County Planning Department, 220 - 12th Street, Colusa, CA 95932.

Signature (Public Agency)	Date	Title
Lemuel J. Pi...	June 8, 1992	Chairman

Date received for filing at OPR:

Revised October 1989

Notice of Determination

To: X Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

X County Clerk
County of Colusa
546 Jay Street
Colusa, CA 95932

From: (Public Agency) Colusa County Planning Dept.
220 - 12th Street
(Address)
Colusa, CA 95932

ENDORSED
FILED
AUG 1 1 2000
KATHLEEN MORAN
COLUSA COUNTY CLERK-RECORDER

Subject:
Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

ED #00-23 Colusa Industrial Properties
Project Title

	David Kelley	530/458-0480
State Clearinghouse Number (If submitted to Clearinghouse)	Lead Agency Contact Person	Area Code/Telephone/Extension

AP #17-030-08, south of Colusa Industrial Properties and east of Wescott Road,
Project Location (include county) Colusa County.

Project Description: Increase in the maximum discharge limitation for the disposal of tomato process water on agricultural land.

CIP to Industrial

This is to advise that the Colusa County Planning Commission has approved the above described project on
[X] Lead Agency [ ] Responsible Agency
August 7, 2000 and has made the following determinations regarding the above described project:
(Date)

1. The project [ ] will [X] will not] have a significant effect on the environment.
2. [ ] An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   [X] A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [X] were [ ] were not] made a condition of the approval of the project.
4. A statement of Overriding Considerations [ ] was [X] was not] adopted for this project.
5. Findings [X] were [ ] were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval is available to the General Public at:

[signature]	August 7, 2000	Chairman
Signature (Public Agency)	*Date*	*Title*

Date received for filing at OPR:

AUG 1 1 2000

Revised October 1989