

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0020

WASTE DISCHARGE REQUIREMENTS
FOR
WADHAM ENERGY LIMITED PARTNERSHIP
AND
ENPOWER MANAGEMENT CORP.
BIOMASS-FIRED COGENERATION FACILITY
CLASS II SURFACE IMPOUNDMENTS
COLUSA COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) finds that:

1. Wadham Energy Limited Partnership owns and Enpower Management Corp. operates a biomass-fired electrical power plant facility in Colusa County. The parties are hereafter jointly referred to as "Discharger".
2. This property is described by Assessor Parcel No. 017-090-0710 and is in Section 32, T15N, R2W, MDB&M. The facility is five miles southwest of Williams, as shown in Attachment A, which is incorporated herein and made a part of this Order.
3. The power plant is fueled by rice hulls, rice straw, and other agricultural biomass and is designed to produce 28 megawatts of power. Following use, power plant boiler blowdown water and cooling water is concentrated and discharged at a rate of approximately 1.8 gallons per minute to two, one-half acre, double-lined Class II surface impoundments. The surface impoundments have a liner, a leachate collection and removal system (LCRS), and an underdrain system designed to meet the requirements of California Code of Regulations, Title 27, Division 2, Subdivision 1 (hereafter Title 27). The facility layout is shown in Attachment B, which is incorporated herein and made a part of this Order.
4. Waste Discharge Requirements (WDRs) Order No. 97-198, adopted by the Regional Water Board on 19 September 1997, prescribed requirements for the discharge of boiler blowdown and cooling water to two Class II surface impoundments. This Order is being updated to ensure consistency with the Regional Water Board's plans and policies.

WASTES AND THEIR CLASSIFICATION

5. The State Water Resources Control Board (State Water Board) adopted regulations under Title 27 of the California Code of Regulations (Title 27 CCR), consisting of requirements, waste classifications, and waste management unit classifications designed to protect the beneficial uses of waters of the state for projects involving the discharge of designated waste to land for treatment, storage, or disposal.

6. California Water Code §13173(b) defines “designated waste” to include “[n]on hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations that exceed applicable water quality objectives or that could reasonably be expected to affect beneficial uses of waters of the state as contained in the appropriate state water quality control plan.”
7. The discharge, especially after evaporative concentration in the surface impoundments, poses a significant threat to water quality. Leachate monitoring data indicates that wastewater in the surface impoundments has electrical conductivity of about 100,000 umhos/cm. Therefore, the discharge is a ‘designated waste’ and as such must be discharged to a Class II surface impoundment as required by Title 27.
8. Other wastes which are generated at the facility include bottom ash, baghouse fly ash, particulate from boiler and air heater hoppers, cooling water treatment residue, and precipitated salts from the Class II surface impoundments.
9. Bottom ash, fly ash, boiler ash, and air heater hopper ash are collected and transported pneumatically to an on-site storage silo. Cooling water treatment residue is temporarily stored on-site in dumpsters. The bottom ash is taken to Lopez Agricultural Services in Sacramento for use at their soil blending operation. The fly ash is shipped to various domestic and international customers for use in the steel industry. The filter cake is taken to Altamont Landfill. Precipitated salts from the impoundments need to be periodically removed from the surface impoundments (approximately every 20 years) and disposed in accordance with applicable regulations at the time of disposal. Sanitary wastewater is generated from five facility restrooms and disposed of in a County-approved septic system.

SITE DESCRIPTION

10. Land within 1,000 feet of the facility is used primarily for agriculture. The single commercial facility near the facility is a vegetable canning company directly southwest of the facility.
11. The facility receives an average of 14 to 15 inches of precipitation per year, based on measurements at numerous stations by the National Weather Service between the years 1881 and 1980. The mean evaporation at this facility is estimated at 61 inches per year, based on measurements at Stony Gorge Reservoir between the years 1949 and 1978 and at East Park Reservoir between the years 1931 and 1991.

12. The 1,000-year, 24-hour precipitation event for the facility is 4.95 inches, as calculated by data obtained from a weather station about five miles northeast of the facility. The 100-year wet season is 27.7 inches.
13. The facility is not within a 100-year floodplain. However, the facility is in an area designated as "Zone C", described as an area of minimal flooding.
14. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basin, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.
15. Surface drainage is to an unnamed agricultural drain which flows to Cortina Creek which is tributary to the Colusa Basin Drain.
16. The beneficial uses of the Colusa Basin Drain, as specified in the Basin Plan are agricultural supply; water contact recreation; warm freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.
17. The first water bearing formation is about three to seven feet below ground surface. The hydraulic gradient is generally to the northeast and flows at about 0.3 to 0.4 feet per day. The quality of this water exceeds primary and secondary drinking water standards for total dissolved solids and nitrate. The regional aquifer is 150 to 200 feet below ground surface and has better water quality. Seasonal changes in water level, gradient, and quality occur in the shallow ground water, depending on nearby irrigation practices.
18. The designated beneficial uses of the underlying groundwater, as specified in the Basin Plan, are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

SUBSURFACE AND GROUNDWATER CONDITIONS

19. Exploratory borings drilled at the site indicate that the subsurface is comprised of interbedded silty clays, clayey silt, loose silty sands, and clean sands. The first water bearing formation is approximately three to seven feet below ground surface.
20. Background groundwater conditions have improved since 2001, which could be associated with the Discharger's improved Best Management Practices (BMPs) for surface water runoff at the rice hull fuel piles. Prior to that time, the rice hulls were often left uncovered and rice hulls collected in the ditches along with ponded surface water.

The ponded water in contact with the rice hulls was usually dark reddish-brown in color, had high salinity, and was likely impacting groundwater quality in the vicinity of the well used to monitor background groundwater quality for the surface impoundment. The improved BMPs have resulted in greatly improved storm water runoff water quality, and may also have improved groundwater quality at the site.

21. Concentrations of total dissolved solids (TDS) at background groundwater at MW-1B prior to 2001 typically ranged from 860 mg/L to 1,240 mg/L, and have decreased to a typical range of 640 mg/L to 1,060 mg/L since 2001. Concentrations of chloride prior to 2001 typically ranged from 150 mg/L to 620 mg/L, and have decreased to 100 to 140 mg/L since 2001.

GROUNDWATER, SURFACE WATER, AND UNSATURATED ZONE MONITORING

22. There are four groundwater monitoring wells associated with the Class II surface impoundments, as shown on Attachment B. Monitoring wells MW-1A and MW-1B are the background monitoring wells, and monitoring wells MW-2 and MW-3 are the downgradient compliance wells. Monitoring wells MW-1A and MW-1B are in the same location, but MW-1A has shallow screening and is typically not sampled due to lack of water. There are also five other groundwater monitoring wells at the site that were installed as part of a study proposed by the Discharger to assess the former problem with surface water runoff from the rice hull fuel piles. These are monitoring wells MW-4, 5A, 5B, 6A, and 6B. The Discharger has continued to sample these wells as part of the assessment; however, they are not required to be sampled under this Order since they are not associated with the Class II surface impoundments.
23. Historical background data for TDS at MW-1B have ranged from 640 mg/L to 1,700 mg/L. Title 27 requires comparison of downgradient monitoring data to concentration limits calculated from the background data set using an appropriate statistical method. The concentration limit for TDS calculated from the background data is currently 1,725 mg/L. Concentration limits are recalculated annually. An assessment of current groundwater conditions indicates that groundwater downgradient from the surface impoundments are within the concentration limits for TDS, as summarized below:

Well	Date	TDS (mg/L)
MW-2	6/13/2006	810
MW-2	12/6/2006	870
MW-2	6/4/2007	870
MW-3	6/13/2006	930
MW-3	12/6/2006	1,060
MW-3	6/4/2007	1,100
2007 Concentration Limit	---	1,725

24. The Discharger conducts surface water monitoring in the drainage ditches that carry storm water runoff from the rice hull fuel pad area. These ditches also capture surface water drainage around the area of the Class II surface impoundments. Surface water monitoring is required by the attached Monitoring and Reporting Program (MRP) and is also required by the General Industrial Storm Water Permit under which the Discharger has coverage.
25. The Class II surface impoundments are equipped with a leachate collection and removal system (LCRS) beneath the primary liner. The LCRS gravity drains to a manhole located adjacent to the surface impoundments where the leachate is periodically pumped back into the impoundments. The MRP requires the Discharger to inspect the LCRS manhole for the presence of leachate weekly, and to sample leachate collected in the LCRS monthly and quarterly. Previous monitoring data indicate that very little leachate collects in the manhole. This may be due to a primary liner system that is not leaking appreciably and/or absorption of any leaks by the secondary clay liner before the leachate can drain to the manhole.
26. An underdrain system underlies the surface impoundments and is used to drain any groundwater that might otherwise come within five feet of the LCRS. The underdrain is also used as the unsaturated zone monitoring system. The underdrain is sampled at a manhole that collects the water outside of the surface impoundments. Groundwater from the underdrain is routed to the onsite drainage ditches. Flow data from the manhole pump indicate that no groundwater is pumped from the underdrain during dry years and that up to 600 gallons of groundwater are pumped during wet years. This intermittent discharge to surface waters may require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. This Order requires the Discharger to apply for coverage under the General Order for Dewatering and Other Low Threat Discharges to Surface Water, NPDES No. CAG995001 for this discharge, or to eliminate the discharge by routing the water back to the surface impoundment.
27. MRP No. R5-2008-0020 provides requirements for monitoring of leachate in the leachate sump of the Class II surface impoundments. This Order provides requirements for inspection and repair of the liner system in the impoundments if the leakage rate through the primary geomembrane exceeds 500 gallons per day, which is based on an allowable leakage rate of 500 gallons per acre per day for the two, one-half acre impoundments.

DESIGN OF CLASS II SURFACE IMPOUNDMENTS

28. The Class II surface impoundments utilize a double-liner system for the containment of 'designated waste'. The two surface impoundments are each one-half acre in area. The construction from top to bottom is as follows: a 45-mil synthetic liner (reinforced

chlorosulfonated polyethylene) serves as the primary liner, a one foot thick granular LCRS, and two-foot thick compacted clay with a permeability of 1×10^{-6} cm/sec, serves as the secondary liner. An underdrain system has been installed below the secondary liner to control the ground water level and maintain a minimum five-foot separation between the ground water and waste.

29. Title 27 requires that Class II surface impoundments have capacity to accommodate the discharge, plus the 1,000-year, 24-hour storm event, and seasonal precipitation, while maintaining two feet of freeboard. The capacity for the maximum seasonal precipitation required by this Order is for the 100-year wet season.
30. The total volume of the surface impoundments below the required two-foot freeboard level is 1,473,560 gallons. The total volume of the surface impoundments to the top of the berms is 2,368,990 gallons.
31. The approximate volume of wastewater discharged to the surface impoundments during the wet season (15 October to 15 April) is 473,000 gallons at 1.8 gpm. Using the 100-year wet season rainfall of 27.7 inches over the one-acre area of the impoundments, the total volume of rainfall during the 100-year wet season would be 752,000 gallons. The additional amount from the 1,000-year, 24-hour storm event of 4.95 inches would be 143,600 gallons. Therefore, during a 100-year wet season the wastewater discharge plus the required capacity for rainfall would be 1,368,600 gallons. This is conservative since it does not account for evaporation during the wet season. Therefore, the volume of the surface impoundments is approximately 105,000 gallons greater than the minimum requirement.
32. The Discharger uses an enhanced evaporation system to regain capacity during the dry season, and during dry periods of the wet season. This Order also requires prior to or by 1 November of each year that the surface impoundments have at least 1,368,600 gallons of capacity available (the minimum required to store the discharge and required rainfall volumes, ignoring evaporation).

CLOSURE AND FINANCIAL ASSURANCES

33. The Discharger submitted a 9 February 1998 *Closure Plan for Class II Surface Impoundments* (Closure Plan) outlining the plan for clean closure of the surface impoundments as required by Title 27, CCR. The cost estimate for clean closure in 1997 dollars included in the Closure Plan is \$146,000.
34. On 30 April 1998, the Discharger submitted financial assurance documents for closure as required by Title 27, CCR. The financial assurance mechanism is a trust fund held at the Bank of New York, and naming the Regional Water Board as beneficiary. This

Order requires the Discharger to adjust the amount of the trust fund for inflation annually, and report the amount in the fund to the Regional Water Board. As of 2007, the amount in the trust fund account was \$191,301.

35. On 20 March 2000, the Executive Officer approved the amount of a cost estimate for corrective action of all known or reasonably foreseeable releases submitted by the Discharger in the amount of \$112,000. On 18 October 2000, the Discharger submitted financial assurance documents for corrective action of all known or reasonably foreseeable releases as required by Title 27, CCR. The financial assurance mechanism is a trust fund held at the Bank of New York, and naming the Regional Water Board as beneficiary. This Order requires the Discharger to adjust the amount of the trust fund for inflation annually, and report the amount in the fund to the Regional Water Board. As of 2007, the amount in the trust fund account was \$127,553.

CEQA AND OTHER CONSIDERATIONS

36. The action to update WDRs for this facility is exempt from the provisions of the California Environmental Quality Act (Public Resources Code section 21000, et seq.), in accordance with Title 14, CCR, Section 15301.
37. On 6 July 1984, the Colusa County Board of Supervisors issued a Negative Declaration (EIR #84-46), and on 4 September 1984 they issued a Notice of Determination for the project as originally proposed. Subsequent to design changes in the proposed project, Colusa County issued an Addendum to EIR #84-46 and a Notice of Determination on the Addendum was issued on 2 November 1987. The Addendum discussed potential impacts on water quality from the redesigned project.
38. Prior to adoption of WDRs Order No. 88-099 (the original WDRs for the Class II surface impoundments), the Regional Water Board reviewed the Negative Declaration and Addendum and concurred with the finding that the project as approved would not have a significant effect on water quality.
39. This Order implements
- a. The Basin Plan and
 - b. The prescriptive standards and performance goals of the California Code of Regulations, effective 18 July 1997, and subsequent revisions.
40. Section 13267 of the California Water Code states, in part, "(a) *A regional board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region*" and "(b) (1) *In conducting an investigation..., 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 waters of the state 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 reports and the benefits to be obtained from the reports. In requiring these reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify evidence that supports requiring the person to provide the reports."

41. The technical reports required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. Wadham Energy Limited Partnership (facility owner) and Enpower Management Corp. (facility operator) are responsible for the discharges of waste at the facility subject to this Order and are, therefore, subject to CWC Section 13267(b).

PROCEDURAL REQUIREMENTS

42. All local agencies with jurisdiction to regulate land use, solid waste disposal, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
43. The Regional Water Board 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.
44. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
45. Any person adversely affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action. The petition must be received by the State Board within 30 days of the date of issuance of this Order. Copies of the law and regulations applicable to filing the petition will be provided on request.

IT IS HEREBY ORDERED that Order No. 97-198 is rescinded, and that Wadham Energy Limited Partnership and Enpower Management Corp., and its agents, assigns and successors, 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. The discharge of 'hazardous waste' at this facility is prohibited. For the purposes of this Order, the terms 'hazardous waste' and 'designated waste' are as defined in Division 2 of Title 27 of the CCR.
2. The discharge of solid waste or liquid waste to surface waters, surface water drainage courses, or ground water is prohibited.
3. The discharge of wastes outside of a waste management unit or portions of a waste management unit specifically designed for their containment is prohibited.
4. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products which, in turn:
 - a. require a higher level of containment than provided by the unit,
 - b. are 'restricted hazardous wastes', or
 - c. impair the integrity of containment structured,is prohibited.

B. DISCHARGE SPECIFICATIONS

General Specifications

1. The discharge of liquid waste to the surface impoundments shall be limited to leachate from the surface impoundment LCRS, liquids collected in the underdrain system, condensate, and concentrated boiler blowdown and cooling water from the power plant.
2. All wells within 500 feet of the surface impoundments shall have sanitary seals which meet the requirements of the Colusa County Health Department or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Regional Water Board and to the State Department of Water Resources.

3. A minimum separation of five feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying ground water including the capillary fringe.
4. At least **two feet** of freeboard shall be maintained in the Class II surface impoundments at all times.
5. The monthly average flow rate of wastewater to the Class II surface impoundments shall not exceed 1.8 gallons per minute.
6. Prior to or by **1 November** of each year, the Class II surface impoundments shall have an available storage capacity of 1,368,600 gallons available to store the discharge and required rainfall volumes during the wet season.

Protection From Storm Events

7. Surface impoundments and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year wet season precipitation without using the required two feet of freeboard.
8. Precipitation and drainage control systems shall be designed, constructed, and maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 1,000-year, 24-hour precipitation conditions.
9. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site.

Class II Surface Impoundment Design and Operation

10. The surface impoundments shall have double liners with an intervening primary blanket-type LCRS, and unsaturated zone monitoring.
11. The design capacity of the surface impoundments shall accommodate rainfall and leachate produced from a 1,000-year, 24-hour precipitation event, and the 100-year wet season precipitation.
12. The Class II surface impoundments shall have permanent markings on the liner, or a permanent freeboard gauge so that the freeboard can be observed and recorded

at any time. The markings or gauge shall have increments no greater than 6-inches.

13. The unsaturated zone monitoring shall be capable of measuring both saturated and unsaturated flows that may occur as a result of an outer liner leak.
14. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the surface impoundments.
15. Materials used to construct LCRSs shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the surface impoundments and the post-closure maintenance period.
16. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by each surface impoundment and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation.
17. The LCRS shall be designed and operated to function without clogging through the scheduled closure of the surface impoundments. The surface impoundments shall be equipped to facilitate annual testing to demonstrate proper operation as required by §20340(d) of Title 27.
18. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
19. The surface impoundments shall be designed, constructed, and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.
20. Leachate removed from a surface impoundment's primary LCRS shall be discharged to the impoundment from which it originated.
21. If leakage is detected by the unsaturated zone monitoring system of a surface impoundment, then the Discharger shall immediately notify the Regional Water Board in writing in seven days. Notification shall include a timetable for remedial action to repair the liners of the impoundment.
22. Solids which accumulate in the surface impoundments shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient

capacity for surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Title 27, Division 2, Subdivision 1, Chapter 3, Subchapter 1, Article 2. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Regional Water Board staff for review.

23. The depth of the fluid in the leachate sump of the Class II surface impoundments shall be kept at the minimum needed for efficient pump operation (given the pump intake height and cycle frequency), and shall not allow leachate to back up onto the secondary liner system outside of the sump area. If leachate generation in the Class II surface impoundments exceeds 500 gallons per day (gpd) at any time, the Discharger shall inspect and repair the primary geomembrane in each impoundment prior to the next wet season. If inspection and repair do not reduce the leakage rate below 500 gpd, the Discharger shall conduct an electronic leak location survey to locate and repair leaks in the primary liner.
24. Leachate generation by a surface impoundment LCRS shall not exceed 85% of the design capacity of (a) the LCRS, or (b) the sump pump. If leachate generation exceeds this value and/or if the depth of the fluid in an LCRS exceeds the minimum needed for safe pump operation, then the Discharger shall immediately cease the discharge of waste, excluding leachate, to the impoundment and shall notify the Regional Water Board in writing within **seven days**. Notification shall include a timetable for a remedial action to repair the upper liner of the impoundment or other action necessary to reduce leachate production.
25. Sediment or solids that accumulate in the Class II surface impoundments shall be removed when necessary to maintain the designed storage capacity. Sludge and solids removal shall be accomplished in a manner that ensures the continued integrity of liners and leachate collection systems in accordance with the facility's operations plan.
26. Following sediment/solids removal from the Class II surface impoundments, the liner system shall be inspected for damage within 30 days and any damage shall be repaired within 60 days prior to the discharge of additional wastewater.

Class II Surface Impoundment Closure

27. The closure of each surface impoundments shall be under the direct supervision of a California registered civil engineer or certified engineering geologist.

28. At closure of surface impoundments, all residual wastes, including liquids, sludges, precipitates, settled solids, and liner materials and adjacent natural geologic materials contaminated by wastes, shall be completely removed and discharged to a waste management unit approved by Regional Water Board staff. If after reasonable attempts, the Discharger demonstrates the removal of all remaining contamination is infeasible, the impoundments shall be closed as a landfill.

C. RECEIVING WATER LIMITATION

Water Quality Protection Standards

The concentrations of Constituents of Concern in waters passing through the Points of Compliance shall not exceed the Concentration Limits established pursuant to Monitoring and Reporting Program No. R5-2008-0020, which is attached to and made part of this Order.

D. FINANCIAL ASSURANCE

1. The Discharger shall maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the surface impoundments. The Discharger shall also maintain an irrevocable closure fund or other means for clean closure of each waste management unit.
2. The Discharger shall, by **30 April each year**, submit a report to the Regional Water Board that reports the adjustments the financial assurance funds required by Financial Assurance D.1 to account for inflation and any changes in facility design, construction, or operation.

E. PROVISIONS

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Discharges Regulated by Title 27 CCR, dated September 2003, which are hereby incorporated into this Order. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
2. The Discharger shall comply with Monitoring and Reporting Program No. R5-2008-0020. This compliance includes, but is not limited to, maintenance of waste containment facilities and precipitation and drainage controls and monitoring ground water, the unsaturated zone, and surface waters throughout the active life

of the waste management units and the post-closure maintenance period. A violation of Monitoring and Reporting Program No. R5-2008-0020 is a violation of these waste discharge requirements.

3. All technical and monitoring reports required by this Order or the MRP shall be submitted pursuant to Section 13267 of the California Water Code.
4. By **22 February 2008**, the Discharger shall either apply for coverage under the General Order for Dewatering and Other Low Threat Discharges to Surface Water, NDPEs No. CAG995001 for the discharge from the surface impoundment underdrain, or shall eliminate the discharge by routing the underdrain water back to the surface impoundments.
5. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
6. The Discharger shall maintain legible records of the volume and type of waste discharged to the surface impoundments and the manner and location of the discharge. Such records shall be maintained at the facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Regional Water Board and of the State Water Resources Control Board at anytime during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Regional Water Board.
7. The Discharger shall provide proof to the Regional Water Board within sixty days after completing final closure that the deed to the surface impoundment facility property, or some other instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:
 - a. the parcel has been used for disposal of liquid wastes;
 - b. land use options for the parcel are restricted in accordance with any post-closure land uses set forth in the post-closure plan and in WDRs for the surface impoundments; and

- c. in the event that the Discharger defaults on carrying out either the post-closure maintenance plan or any corrective action needed to address a release, then the responsibility for carrying out such work falls to the property owner.
8. In the event of any change in control or ownership of the facility or disposal areas, the Discharger must 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. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision VIII.A.5 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.
9. The Regional Water Board will review this Order periodically and may revise requirements when necessary.

I, PAMELA C. CREEDON, 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 25 January 2008.

PAMELA C. CREEDON, Executive Officer

WLB: 1/25/2008

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Compliance with this Monitoring and Reporting Program (MRP), and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements Order No. R5-2008-0020 (WDRs). Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements dated September 2003, constitutes noncompliance with the WDRs and with California Water Code Section 13267, which can result in the imposition of civil monetary liability.

A. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Monitoring Specifications in Standard Provisions and Reporting Requirements (2003). All point-of-compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, surface water monitoring points, unsaturated zone monitoring devices, and leachate monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in the tables of this MRP.

The Discharger may, upon approval, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

The Discharger shall conduct inspections and monitoring as described in the summary table below. Detailed monitoring and inspection requirements are provided in the following sections.

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of §20415 of Title 27. The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program at least quarterly, and report the results semiannually, including the times of highest and lowest elevations of the

water levels in the wells. Quarterly water level measurements shall be taken in monitoring wells MW-1A, MW-1B, MW-2, MW-3, and any wells installed after the adoption of this MRP.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in the following table:

Groundwater Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameter</u>			
Groundwater Elevation	feet & hundredths, MSL	Quarterly	Semiannually
Temperature	°C	Semiannually	Semiannually
Specific Conductance	umhos/cm	Semiannually	Semiannually
pH	pH number	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Nitrate as Nitrogen	mg/L	Semiannually	Semiannually
<u>Constituents of Concern:</u>			
Total Organic Carbon	mg/L	5-years	5-years
Carbonate	mg/L	5-years	5-years
Bicarbonate	mg/L	5-years	5-years
Total Alkalinity	mg/L	5-years	5-years
Standard Minerals ¹	mg/L	5-years	5-years
Chemical Oxygen	mg/L	5-years	5-years

¹ Boron, calcium, chromium, iron, manganese, magnesium, potassium, sodium, zinc

2. Surface Water Monitoring

Surface water flows from on and around the surface impoundment shall be sampled at the point(s) where they leave the facility boundary, during the first storm of the rainy season of each year which produces significant flow. Samples shall be collected from all stations and analyzed at the frequency and for the monitoring parameters specified the table below.

Surface water monitoring shall be submitted with the corresponding semi-annual groundwater monitoring and shall include evaluation of potential impacts of the facility on surface water quality and compliance with the Water Quality Protection Standard.

Surface Water Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameter</u>			
Temperature	°C	Semiannually	Semiannually
Specific Conductance	umhos/cm	Semiannually	Semiannually
pH	pH number	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Suspended Solids	mg/L	Twice per year	Semiannually
Total Dissolved Solids	mg/L	Twice per year	Semiannually
Chloride	mg/L	Twice per year	Semiannually
Sulfate	mg/L	Twice per year	Semiannually
Nitrate as Nitrogen	mg/L	Twice per year	Semiannually
<u>Constituents of Concern:</u>			
Total Organic Carbon	mg/L	5-years	5-years
Carbonate	mg/L	5-years	5-years
Bicarbonate	mg/L	5-years	5-years
Total Alkalinity	mg/L	5-years	5-years
Chemical Oxygen Demand	mg/L	5-years	5-years
Standard Minerals ¹	mg/L	5-years	5-years

¹ Boron, calcium, chromium, iron, manganese, magnesium, potassium, sodium, zinc

3. Surface Impoundment Monitoring

Samples shall be collected from the surface impoundment in accordance with the table below:

Surface Impoundment Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameter</u>			
Flow	gallons	Monthly	Semiannually
Freeboard	feet and tenths	Weekly	Semiannually
Remaining Capacity	acre-feet	Monthly	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Nitrate as Nitrogen	mg/L	Semiannually	Semiannually
<u>Constituents of Concern:</u>			
Total Organic Carbon	mg/L	5-years	5-years
Carbonate	mg/L	5-years	5-years
Bicarbonate	mg/L	5-years	5-years
Total Alkalinity	mg/L	5-years	5-years
Standard Minerals ¹	mg/L	5-years	5-years
Chemical Oxygen Demand	mg/L	5-years	5-years

¹ Boron, calcium, chromium, iron, manganese, magnesium, potassium, sodium, zinc

4. LCRS/Leachate Monitoring and Annual LCRS Test

The leachate collection and removal systems (LCRS) sump shall be inspected weekly for leachate generation. Upon detection of leachate in a previously dry LCRS, the Dischargers shall immediately sample the leachate and shall continue to sample and report the leachate at the frequencies listed in the table below. Leachate monitoring will be incorporated into all future expansions.

All LCRS shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Regional Water Board and shall include comparison with earlier test made under comparable conditions.

LCRS/Leachate Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameter</u>			
Total Flow	gallons	Monthly	Semiannually
Flow Rate	gallons per day	Monthly	Semiannually
Specific Conductance	umhos/cm	Monthly	Semiannually
pH	pH number	Monthly	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Nitrate as Nitrogen	mg/L	Semiannually	Semiannually
<u>Constituents of Concern:</u>			
Total Organic Carbon	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Standard Minerals ¹	mg/L	5-years	5-years

¹ Boron, calcium, chromium, iron, manganese, magnesium, potassium, sodium, zinc

5. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 of Title 27. Unsaturated zone samples shall be collected from the sump of the surface impoundment underdrain system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in the following table.

Unsaturated Zone Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameter</u>			
Specific Conductance	umhos/cm	Semiannually	Semiannually
pH	pH number	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Nitrate as Nitrogen	mg/L	Semiannually	Semiannually

6. Water Supply Monitoring

A sample of the process water supply for the facility shall be collected annually and analyzed for total dissolved solids, chloride, sulfate, nitrate as nitrogen, and standard minerals (see list from tables above).

7. Solids Monitoring

The amount of each process waste or by-product removed from the facility per month shall be reported and the receiver and ultimate disposition shall be identified (e.g., landfilled, materials recovery, land applied for soil amendment, sold as a commercial product, etc.).

8. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess any damage to the drainage control system, the groundwater monitoring equipment (including wells, *etc.*), the surface impoundment liner system, and shall include the Standard Observations contained in Section XII.S of the Standard Provisions and Reporting Requirements. The inspection shall also verify that the Class II surface impoundment has sufficient capacity for the 100-year wet season. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following major storm events. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

B. REPORTING

The Discharger shall report all required monitoring data and information, and results of all required facility inspections **semiannually** as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements.

Semiannual reports shall be submitted by the first day of the second month following the end of the previous half-year (i.e., the First Half 2008 report is due by 1 August 2008 and the Second Half 2008 report is due 1 February 2009). Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Historical and current monitoring data shall be graphed at least once annually. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. A short discussion of the monitoring results, including notations of any water quality violations shall precede the tabular summaries. Data shall also be submitted in an acceptable digital format.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Field and laboratory tests shall be reported in the semiannual monitoring reports. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Regional Water Board.

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 Engineer or Professional Geologist and signed/stamped by the registered professional.

REQUIRED MONITORING REPORTS AND SUBMITTAL DATES:

1. Semiannual Monitoring Reports

Semiannual monitoring reports shall include all water quality data and observations collected during the reporting period and submitted as follows. Semiannual reports shall be submitted by the first day of the second month following the end of the previous half-year (i.e., the First Half 2009 report is due by 1 August 2009). At a minimum, the sampling and data collection required in the tables of this Monitoring and Reporting Program, Standard Provisions and Reporting Requirements (2003), and Waste Discharge Requirements shall be reported. The second semiannual and the Annual Monitoring Summary Report (see below) shall be submitted as one report.

2. Annual Monitoring Summary Report

The Discharger shall submit an Annual Monitoring Summary Report covering the previous monitoring year. The report is due by 1 February of each year. The annual report shall contain the information specified in Standard Provisions and Reporting Requirements (2003), Section VIII.B of the "*Reports to be Filed with the Board*", including, but not limited to the requirement to plot the concentration of select constituents graphically for at least the past five years. The Annual Report shall also include the results of the annual LCRS testing required by Section A.4 of this MRP.

3. Constituents of Concern (COC) 5-Year Report

The Dischargers shall submit reports of the results of groundwater monitoring for the Constituents of Concern every five years, or more frequently if required. The groundwater monitoring for COC Report shall alternate between the fall and spring seasons. The COC Report may be combined with a Detection Monitoring Report or an Annual Summary Report having a Reporting Period that ends at the same time. The next COC Report is due on 1 February 2009 for samples collected during the second half of 2008.

4. Response to a Release

If the Discharger determines that there is either significant statistical evidence of a release (*i.e.* the initial statistical comparison or non-statistical comparison indicates, for any Constituent of Concern or Monitoring Parameter, that a release is tentatively identified) or physical evidence of a release, the Discharger shall immediately notify the Regional Water Board verbally as to the Monitoring Point(s) and constituent(s) or parameter(s) involved, shall provide written notification by certified mail within seven days of such determination and implement the "Response to Release" section of the Standard Provisions and Reporting Requirements (2003).

5. Facility Monitoring Report

By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs, as required in Section A.8.a of this MRP, above.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points. The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. Any modifications to the Water Quality Protection Standard shall be submitted for review and approval.

The Water Quality Protection Standard shall:

- a. Identify **all distinct bodies of surface and groundwater** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the groundwater monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in the tables for each monitored medium.

3. Monitoring Parameters

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a

reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in the tables for each monitored medium.

4. Monitoring Points

Monitoring Points for groundwater and surface water detection monitoring shall be as follows, and as shown on Attachment B:

Groundwater: Background: MW-1A and MW-1B
Detection: MW-2 and MW-3

Surface Water: Background: SW-1
Detection: SW-2

5. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415(e)(8) of Title 27; or
- b. By an acceptable alternate statistical method in accordance with §20415(e)(8)(E) of Title 27.

Concentration Limits shall be based a set of background monitoring data adequate for the statistical analysis to be used.

6. Point of Compliance

The point of compliance for the Concentration Limits at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

7. Compliance Period

The Compliance period is the number of years equal to the active life of the surface impoundments plus the closure period. Each time the Water Quality Protection Standard is exceeded (i.e., a release is discovered), the surface impoundments begins a Compliance Period on the date the Regional Water Board directs the Dischargers to begin an Evaluation Monitoring Program. If the Discharger's Corrective Action Program (CAP) has not achieved compliance with the Standard by

the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the surface impoundments has been in continuous compliance for at least three consecutive years.

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 a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

The Dischargers shall implement the above monitoring program on the effective date of this Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

25 January 2008

(Date)

WLB: 1/25/2008

INFORMATION SHEET

ORDER NO. R5-2008-0020
WADHAM ENERGY LIMITED PARTNERSHIP AND
ENPOWER MANAGEMENT CORP.
BIOMASS-FIRED COGENERATION FACILITY
CLASS II SURFACE IMPOUNDMENTS
COLUSA COUNTY

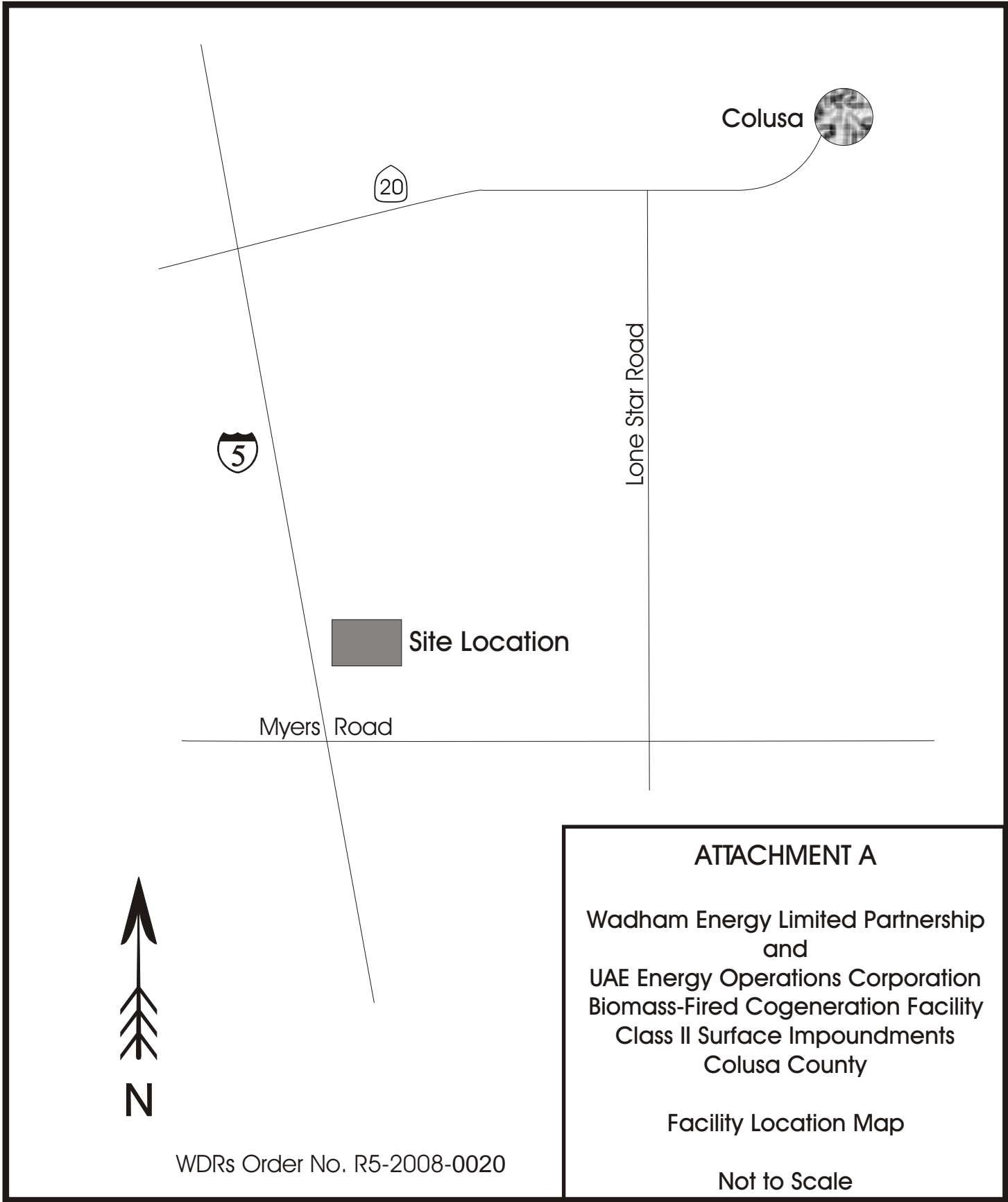
Wadham Energy Limited Partnership owns and Enpower Management Corp. operates a biomass-fired electrical power plant. The plant is fueled by rice hulls, rice straw, and other agricultural biomass and produces approximately 28 megawatts of electricity. The facility is in Colusa County, approximately five miles southwest of Williams. The land on which the facility is located is owned by Wadham Energy Limited Partnership, a California limited partnership.

Concentrated cooling water from the power plant is produced at a maximum rate of 1.8 gpm and discharged to two, one-half acre, double-lined Class II surface impoundments. The wastewater is very high in salinity, especially after evapoconcentrating in the surface impoundments, and is a designated waste as defined in the California Water Code. Wastewater treatment residue from the concentrator also exceeds designated level guidelines for trace metals and total dissolved solids. The residue is disposed in an appropriate class landfill. Sanitary wastewater is disposed at an on-site septic system approved by Colusa County.

The disposal ponds are designed and constructed to Class II surface impoundment standards, and operated, maintained, and monitored in accordance with the requirements of Title 27, Division 2, Subdivision 1, California Code of Regulations. Requirements include a double-liner system, a blanket type leachate collection and removal system (LCRS), an underdrain system, groundwater monitoring, and monitoring of discharges and contents of the pond. The liner system consists of a 45-mil synthetic primary liner, a one-foot thick granular LCRS, a two-foot thick clay liner, and an underdrain system to ensure a minimum five foot separation between wastewater and the shallow groundwater. The underdrain system is also used for unsaturated zone monitoring. Two additional ponds are located adjacent to the surface impoundments. One pond contains well water which would be used in case of fire, and is lined to prevent loss of the water to the subsurface. The second pond is also lined and used for temporary storage of boiler blow-down water in case of plant shutdown. Neither of these two ponds are regulated under Title 27 or these waste discharge requirements.

Land surrounding the facility is primarily agricultural. Groundwater has been encountered on-site from three to seven feet below ground surface. Surface drainage from the facility is to an unnamed agricultural drain which flows to Cortina Creek, which is tributary to the Colusa Trough and the Sacramento River. Average rainfall is estimated at 15 inches per year, evaporation is estimated at 61 inches per year, and the 1,000-year, 24-hour storm event is estimated at 4.95 inches.

WLB: 1/25/2008



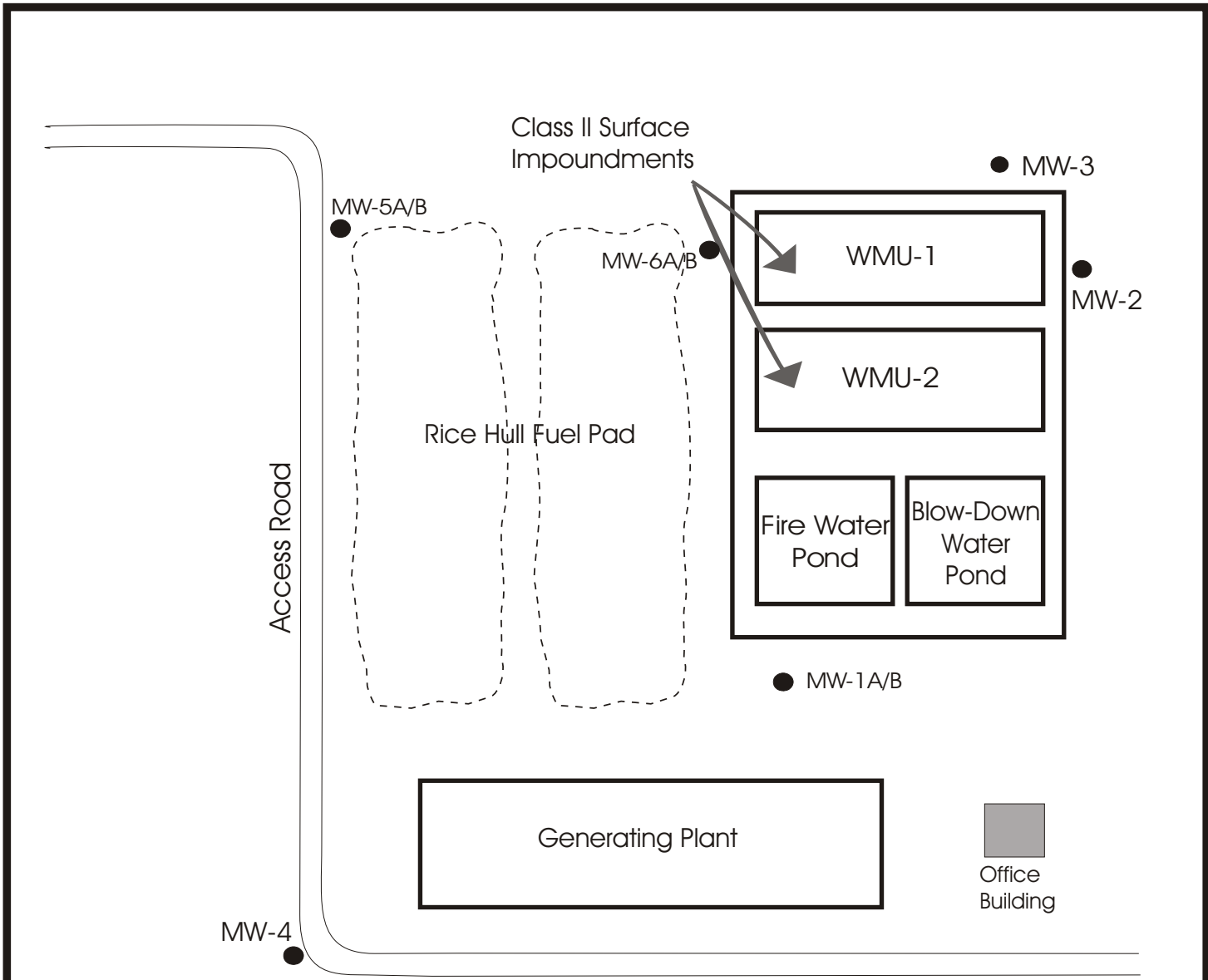
WDRs Order No. R5-2008-0020

ATTACHMENT A

Wadham Energy Limited Partnership
and
UAE Energy Operations Corporation
Biomass-Fired Cogeneration Facility
Class II Surface Impoundments
Colusa County

Facility Location Map

Not to Scale



LEGEND

● Monitoring Well

ATTACHMENT B

Wadham Energy Limited Partnership
and
UAE Energy Operations Corporation
Biomass-Fired Cogeneration Facility
Class II Surface Impoundments
Colusa County

Facility Map

Not to Scale