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March 12, 2006

James D. Boyd, Commissioner and Chair, Bioenergy Interagency Working Group
State of California Energy Resources Conservation and Development Commission
1516 Ninth Street
Sacramento, CA. 95814-5512

SUBJECT : Docket 06-BAP-1
Draft Bioenergy Action Plan

Dear Commissioner Boyd,

Thank you for the courtesy you extended in recognizing the distance traveled in order to speak on this important subject. The purpose of the letter is to expand on the brief comments I made at that meeting.

The Jamestown Sanitary District (JSD) operates a collection and wastewater treatment system in the Sierra foothills serving a population equivalent of less than 3,000. The JSD treatment plant currently treats its wastewater to a secondary level for discharge to a Regional Reclamation facility. That facility is operated by the Tuolumne Utilities District which stores treated effluent from both facilities for summer irrigation to pasture lands. Discharges to surface waters are needed due to lack of available storage volumes, stringent regulations on irrigation practices, and the lack of quality irrigable ground. Discharges to surface waters are regulated by the Regional Water Quality Control Board under an National Pollution Discharge Elimination System permit (NPDES)

We have been advised by the Regional Water Quality Control Board that Title 22, 2.2 Tertiary treatment will be required in the new NPDES Permit to be issued this fall. A report to the JSD Board of Directors presented on Monday March 13, 2006, estimates the **capitol costs at $8 Million** with the operating cost with capitol recovery at over **$600,000 per year** for the treatment plant alone [1]. The related energy increases are anticipated to increase by a magnitude 5 times the current usage.

[1] Wastewater Treatment and Discharge Evaluation Report, Larry Walker and Associates March 2006

JSD anticipated the need to maximize land use and compensate for lost irrigation land. For the past 8 years, JSD has planted demonstration plots of hybrid poplar on irrigated land using secondary effluent and composted biosolids. District staff traveled to Oregon and Canada to research planting and irrigation techniques, clone selection and obtain other valuable information on hybrid poplar plantations. Staff has also attended Biomass Collaborative Workshops, as well as subscribing to trade publications and acquired published material on poplar research. The District has funded all research and work, without any outside funding until this year. Dr. Jay Norton, Tuolumne County Farm Advisor, obtained the first outside study funds through a grant from the Kearney Foundation to study carbon sequestration.

The District became aware of potential funds through the legislative office of Assemblyman Cogdill. Subsequently, a draft pre-proposal and a full proposal under the ESIG Program was submitted. A project summary is attached for reference. During a telephone conversation with CEC staff, I was told that such proposals should not be considered since large quantities of biomass were available in the forest and further the project would just not work. We believe the purpose of funding such as the ESIG Program will provide adequate documentation that Dedicate Biomass Woody Crops will succeed in California. The potential to reduce treatment requirements with power savings, coupled with providing a stable, homogonous feed stock for combustion, is an extremely worthwhile pursuit. **Thus, I believe that the first barrier that must be removed in order for a dedicated biomass crop project to advance, is within the current CEC staff.**

We see the future dedicated biomass using Hybrid Poplars as meeting the goals of the Bioenergy Action Plan in the following areas:

- Projects using this technique can meet Green House Gas targets, renewable targets, and provide closed loop systems.

- The use of trees for biosolids and effluent irrigation has wide spread local community and general public acceptance.

- Dedicated biomass crops planted, harvested and utilized in rural communities will foster economic development in these areas.

- Dedicated biomass crops can help achieve water quality goals without relying on expensive treatment alternatives. Non-disinfected secondary wastewater can be utilized on trees (at a much reduced cost and power consumption) verses tertiary treatment. [2]

[2] California Health Laws Related to Recycled Water "The Purple Book"

Specific comments on the Action Plan

- The Draft Action Plan should incorporate woody crops such as hybrid poplar trees on the same level as soybeans and corn as *Dedicated Biomass Crops.*

- We strongly agree that CEC should leverage Federal Funds available for biomass research, including woody crops. Some Federal programs are inaccessible other than by State agencies.

Thank you again for extending the opportunity to comment on this very important matter.

Sincerely,

Ron Boyd-Snee

Operations Manager

Jamestown Sanitary District

Project Summary

Feasibility of wastewater-grown hybrid poplars for energy production

Prncpl Invstgtr:	Jay Norton, UC Cooperative Extension, Tuolumne County	
Collaborators:	Ron Boyd-Snee, Jamestown Sanitary Dist.	Bryan Jenkins, UC Davis Biol. & Ag. Engin.
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	Will Horwath, UC Davis LAWR Dept.	Ramakrishna Nemani, NASA Ames Rsrch. Cntr.

New technologies for generating energy from biomass have sparked interest in "closed-loop" energy production. Treated municipal wastewater is used to grow biomass, which is then used to provide electricity for wastewater treatment facility operations. This system could provide a much-needed outlet for treated wastewater and reduce energy costs for treatment, one of the most energy consumptive enterprises in California. Wide adoption of this approach by municipal, agricultural, and industrial wastewater facilities would mitigate power transmission constraints. We propose to utilize wastewater treatment and poplar plantation facilities of the Jamestown Sanitary District (JSD) as a case study for assessing this approach on a larger scale.

Treated wastewater disposal is an ominous problem faced by treatment facilities across California and alternative strategies are needed. This issue is particularly acute in rural, mountainous, and rapidly urbanizing regions like the Sierra Foothills. Treatment facilities have two options for discharging treated wastewater: land-application as irrigation or discharge into surface waters, both of which are regulated by Regional Water Quality Control Boards (RWQCBs). Secondary-level treatment is cost-effective; wastewater can be applied directly to biomass and other non-food-chain crops, but discharge into surface waters is strictly limited. Tertiary-level treatment requires as much as five times more energy, but water can be discharged into surface waters (not to exceed $1/20^{th}$ of flow), or applied to food crops or golf courses. In many rural, urbanizing regions demand for irrigation is low and streams are very small, limiting options for disposal of the growing wastewater stream, regardless of the treatment level.

Hybrid poplars are a non-food-chain crop that utilizes more water than other crops, requiring less land and minimal wastewater treatment. Experiences at the JSD poplar demonstration project suggest that the District could land-apply all their treated wastewater on a 120-acre 4-year-rotation poplar plantation. Unfortunately, a reliable, cost-effective market for poplar wood products or biomass has proven to be elusive.

Emerging modular biomass power generation technology may represent a way for treatment plants to both maximize reuse of secondary-level treated wastewater and utilize the resulting biomass to power treatment plant operations. Small biomass gasification systems can convert biomass to electricity at a rate of 3.3 lbs per kWh. At this rate, based on published poplar yield data from the Pacific Northwest and Canada, JSD could meet all their power needs with a 100-acre hybrid poplar plantation.

While wastewater disposal and energy production requirements appear to balance, poplar production data specific to California is lacking and wastewater treatment enterprises need integrated assessment of production systems, biomass power technology, and external biophysical and economic parameters to make decisions about investing in biomass-power alternatives. Our interdisciplinary team will evaluate feasibility for

energy production at the Jamestown facility and will utilize the well-documented system to address the issue on a larger scale. Specific objectives are to: 1) analyze wastewater consumption and biomass production capacities; 2) assess production, harvest, and power generation alternatives; 3) analyze costs; and 4) extrapolate biophysical and economic information to identify the types of communities where this approach may be feasible.