



**LAKE SHASTINA COMMUNITY SERVICES DISTRICT**

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**RESOLUTION 3-10**

**A RESOLUTION OF THE BOARD OF DIRECTORS OF THE LAKE SHASTINA COMMUNITY SERVICES DISTRICT TO APPROVE GROUNDWATER STUDY AT WASTEWATER PONDS.**

**WHEREAS**, the Board of Directors has reviewed copies of the Scope of Work and Cost Estimate from SHN Consulting Engineers & Geologists, Inc. (SHN Consulting) dated May 4, 2010, regarding an analysis of potential impact to groundwater from the development of new wastewater ponds; and

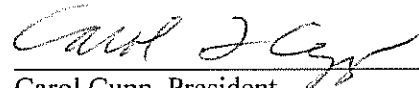
**WHEREAS**, the Board has determined that it would be in the best interest of the District to proceed with the groundwater study based on the fact that the results may assist the District with its request to the North Coast Regional Water Quality Control Board to utilize the engineered alternative liner system for the new wastewater ponds.

**NOW, THEREFORE, BE IT RESOLVED** that the Board of Directors hereby authorizes the District General Manager to enter into a contract with SHN Consulting, per Scope of Work and Cost Estimate dated May 4, 2010; cost estimate to develop the scope of work is \$16,100.

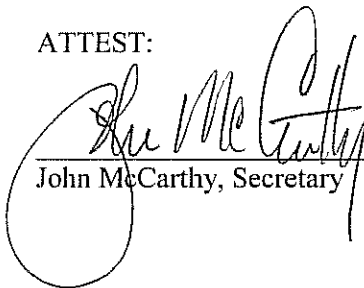
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I hereby certify that the forgoing is a full, true and correct copy of Resolution 3-10 duly passed and adopted by the Board of Directors of the Lake Shastina Community Services District, Siskiyou County, California, at a meeting thereof duly held on the 19th day of May, 2010, by the following vote:

AYES: Directors Cupp, Dean, Pavlic, Roths and Wetter  
NOES: None  
ABSENT: None

  
\_\_\_\_\_  
Carol Cupp, President

ATTEST:

  
\_\_\_\_\_  
John McCarthy, Secretary



**CONSULTING ENGINEERS & GEOLOGISTS, INC.**

350 Hartnell Avenue, Suite B • Redding, CA 96002 • 530-221-5424 • FAX 530-221-0135

Reference: 510000.027

May 4, 2010

RECEIVED  
MAY 06 2010

BY:.....

John McCarthy  
General Manager  
Lake Shastina Community Services District  
16320 Everhart Drive  
Weed, CA 96094

**Subject: Scope of Work and Cost Estimate to Analyze the Potential Impacts to Groundwater from Development of New Wastewater Ponds at the Lake Shastina Community Service District**

Dear Mr. McCarthy:

SHN Consulting Engineers & Geologists, Inc. (SHN) has been asked by Schlumpberger Consulting Engineers (SCE) to provide our expertise in evaluating the liner system proposed for development by the Lake Shastina Community Services District (LSCSD). The liner being proposed is an engineered alternative to a double lining system to meet Title 27 requirements.

In response to this request, SHN has developed the attached Scope of Work and Cost Estimate. As we have discussed in the past, SHN has had success at sites within the North Coast Regional Water Quality Control Board region on developing analysis that has allowed our clients to utilize the engineered alternative, eliminating the need for a double liner.

SHN looks forward to assisting you and SCE in development of your wastewater project. I can be reached at (530) 842-4961 or by email at [mchaney@shn-engr.com](mailto:mchaney@shn-engr.com).

Sincerely,

**SHN Consulting Engineers & Geologists, Inc.**

Mark S. Chaney  
Redding Regional Manager

MSC:lhc

c. Chuck Schlumpberger, SCE

## **Scope of Work And Cost Estimate**

### **Analysis of Potential Impacts to Groundwater From Development of New Wastewater Ponds**

#### **The Lake Shastina Community Services District**

SHN Consulting Engineers & Geologists, Inc. (SHN) has been asked by Schlumpberger Consulting Engineers (SCE) to provide our expertise in evaluating the liner system proposed for development by the Lake Shastina Community Services District (LSCSD). The liner being proposed is an engineered alternative to a double lining system to meet Title 27 requirements.

#### **Scope of Work**

Our scope of work is based the following requirements for an Engineered Alternative outlined in a letter to the LSCSD from the North Coast Regional Water Quality Control Board (RWQCB) dated September 2, 2009. That letter states, in part, "Development of an engineered alternative would require characterization of the site geology, up gradient and down gradient groundwater's, liner leakage rates and development of a model to indicate whether the engineered liner system would be protective of groundwater quality, meaning that the groundwater quality would meet the applicable water quality objectives."

In order to develop the required information to determine if the proposed liner system would meet these requirements, SHN proposes to implement the following Scope of Work.

#### **Task 1 Soils Analysis**

SHN will provide soil investigations at the proposed evaporation pond and in the area of influence around the pond system to adequately characterize in-situ soils and determine their structural properties through laboratory analysis. Results from these investigations will be used in the leakage and groundwater impact analysis, and will include a brief geological report prepared by a California Professional Geologist as a letter of findings. The report will include soils logs, a general description of soil characteristics in the project area, and an estimate of hydraulic conductivity (permeability) based on soil gradation and plastic index.

Our scope of work for this task includes:

- A maximum of four (4) test pits within the proposed footprint of Pond 4. Test pits will be excavated to a maximum depth of 10 feet or equipment refusal.
- Two (2) down gradient test pits located outside Pond 4. Test pits will be excavated to a maximum depth of 10 feet or equipment refusal.
- Collection of representative undisturbed samples for laboratory testing during the advancement of the borings
- Laboratory tests will include a maximum of twelve (12) Plastic Indexes per ATSM 4318 and a maximum of 12 Fine sieve analysis per ASTM C136.
- Develop a letter of findings that includes:

- Descriptions of site conditions based on the field and subsurface investigations;
- A site plan showing exploration locations;
- Test pit logs;
- A description of site conditions based on the field and subsurface investigations that will include an estimate of soil hydraulic conductivity based on soil plasticity and gradation.

SHN's scope of work assumes that there is a lack of uniformity in the subsurface conditions across the reservoir site. If varying conditions are not observed during the sampling event, our sampling frequency may be reduced. Additionally, SHN assumes that the LSCSD will provide an excavator that has the capability of excavating to a depth of at least 10 feet. If the District wants SHN to arrange for a suitable excavator, this can be accomplished as an extra cost, billed at actual cost for equipment time.

## **Task 2 Leakage Analysis**

SHN will determine the potential size and number of leaks based on the type of liner specified. The analysis will assume that an electronic leak detection survey will follow installation of the proposed liner so that ASTM standards for the minimum leak detected can be employed. Our scope of work and cost estimate does not include a leak detection survey.

Evaluating the potential flow requires characterization of the nature of flow based on the permeability of the soil layer under the installed membrane. If the membrane is underlain by highly permeable soils, leakage can be estimated for free flow. If a lower permeability layer is present, leakage is mitigated by lateral flow between the membrane and the soil. This interface flow is dependent upon the degree of contact between the membrane and substrate. Assumptions regarding contact conditions will be made based upon the specifications supplied by the LSCSD about proposed liner installation and subgrade preparation.

## **Task 3 Impact to Groundwater**

### **3.1 Hydrology**

#### **Background Information**

It is our understanding that the LSCSD has hydrologic information for the analysis area that can be used by SHN in developing groundwater modeling for this site. To reduce redundant work, SHN assumes that we will be provided this information for our use. At a minimum, the hydrologic information needed for our analysis must include the information listed below:

- Depth to groundwater at the area proposed for development;
- Groundwater gradients at the area proposed for development;
- Distance to municipal and domestic wells within a 1 mile area around the project site.

Should the information available not be sufficient for our analysis, SHN will contact the LSCSD with the needed additional information and have either 1) the District provide this data, or 2) provide the District with a cost estimate for SHN to provide this information as extra work.

### Hydrological Description

SHN's hydrogeologist shall characterize the hydrology of the site based on the hydrologic information provided by LSCSD and the results of soil sampling and analysis developed by SHN. It will be necessary to define where the mixing of pond effluent and groundwater will occur and the degree to which dilution will mitigate impact on groundwater. The movement of groundwater and potential impact on downgradient wells will also influence which contaminants are considered constituents of concern by the RWQCB

### 3.2 Constituents of Concern:

#### Background Information

The LSCSD will provide SHN with water quality information on the wastewater ponds and background concentrations in the lagoon. If available sampling is not sufficient to determine the impact on what are considered constituents of concern, SHN will inform the District that additional sampling is required.

In their letter to the LSCSD the RWQCB stated, in part, that:

*"If the LSCSD decides to take groundwater samples to demonstrate either that the ponds are exempt from Title 27 under wastewater exemption in section 20090(b), or for the purpose of developing of an engineered alternative to the Title 27 prescriptive liner requirements, sufficient upgradient and downgradient groundwater samples need to be collected for the following constituents to identify the impacts of the ponds and to show the groundwater gradient:*

- 1. All constituents contained in Table 3-1 of the Basin Plan applicable to groundwaters in the Shasta Valley Hydrological Area (specific conductance, pH, hardness, Boron).*
- 2. All constituents contained in Table 3-2 of the Basin Plan.*
- 3. Total and fecal coliform organisms.*
- 4. All chemical constituents specified in the Chemical Constituents section of the General Objectives for groundwaters contained in the Basin Plan. "*

The groundwater sampling data provided by the LSCSD must contain sufficient information for SHN to determine if constituents of concern will be impacted from development of this project. If data collected does not contain sufficient information to make this determination, SHN will contact the District for additional data collection.

During development of this analysis, SHN recommends that the LSCSD and SHN discuss with the RWQCB specific constituents of concern for development of modeling impacts. Some constituents in the Basin Plan either cannot be modeled, or are not considered a constituent of concern for this type of project and would not be subject to modeling. Clarification of this process early will reduce modeling costs. SHN's scope assumes that we can discuss relevant issues with the District and the RWQCB by phone, and no meetings in Santa Rosa are planned.

### **Definition**

Based on the background information provided, and through discussions with the RWQCB, SHN will describe constituents of concern to be modeled. At this time we expect that at a minimum we will model the following:

- Expected nitrate concentrations based on background levels and total nitrogen in the evaporation pond.

Scope and costs for modeling additional constituents will be developed after our meeting with the RWQCB, should additional parameters need to be developed.

### **3.3 Analysis**

SHN will develop a model to estimate the expected impact on groundwater of contaminants leaking from the evaporation ponds. The analysis will be based on the following information:

- Leakage rate (developed in Task 1);
- Water quality sampling data for pond and groundwater (provided by the LSCSD);
- Transport as defined by soil permeability and hydrological information.

The analysis is expected to yield an estimate of expected concentrations for the contaminants defined as "constituents of concern"; this model will not be a complete groundwater model for the area of concern. If a complete groundwater model for the area is required, SHN can develop this as extra work.

### **Task 4 Summary and Recommendations**

Based on the analysis of information provided by others to SHN and through our direct investigations outlined above, SHN will provide LSCSD with a summary of the results of our analysis and recommendations. This report will be provided to the District in Draft form for one (1) round of review and comments, and then the final report will be prepared.

### **Cost Estimate**

Based on the information provided to SHN and the Scope of Work outlined above, SHN's cost estimate to develop the scope of work is \$16,100.



# LAKE SHASTINA

## COMMUNITY SERVICES DISTRICT

Regular Meeting  
 Wednesday, May 19, 2010 – 5:00 p.m.  
 Administration Building  
**MINUTES**

**CALL TO ORDER:**

LSCSD Board Roll Call: Cupp  Dean  Pavlic  Roths  Wetter

Also present were GM McCarthy, PW Supervisor Moser, PC Alves, Acting FC McWilliams, AA Charvez and Sr. Accounting Clerk Nelle. There were approximately 15 people in the audience.

**CLOSED SESSION:** called to order at 4:00 p.m.

1. A. Personnel (Gov. Code Section 54957): General Manager Evaluation
  - B. Personnel (Gov. Code Section 54957): Fire Chief Position
  - C. Personnel (Gov. Code Section 54957): Senior Accounting Clerk Position
- GM McCarthy reported out of Closed Session: The Board gave the General Manager an evaluation. The Fire Chief position was discussed, no action taken. The Senior Accounting Clerk Position was discussed, no action taken.

**REGULAR MEETING:** called to order at 5:00 p.m.

**PLEDGE OF ALLEGIANCE:** Pres. Cupp led the Pledge of Allegiance.

**PUBLIC COMMENTS:** None

**CONSENT CALENDAR:**

**Motion by Dir. Wetter second by Dir. Roths to approve Consent Calendar.**

**Ayes: Directors Cupp, Dean, Pavlic, Roths and Wetter**  
**Noes: None**  
**Absent: None**

2. A. Approval of Minutes: Regular Meeting April 21, 2010
- B. Ratification of Disbursements: April 1 to April 30, 2010
- C. Budget Comparison 2009/2010 YTD

**DISCUSSION / ACTION ITEMS:**

3. Fire Department monthly report (Acting FC McWilliams): Acting Fire Chief McWilliams discussed the need to replace the old rescue unit with a new pumper truck. Dir. Wetter asked that both the Fire and Police Departments publish incident reports in the Shastina News.
4. Police Department monthly report (PC Alves): PC Alves and the Board discussed incident report. PC Alves updated the Board on the Car Show scheduled for May 22, 2010.
5. Wastewater Ponds/Permit Status (GM McCarthy): GM McCarthy reported that the Water Board issued a waiver for spray irrigation until October 15, 2010. The District received an offer for a loan to build the new pond; the Committee will review all options for paying for the new pond.
- ✓ 6. SHN Consulting Engineers & Geologists, Inc. groundwater study at wastewater ponds (Resolution 3-10) (GM McCarthy): The Board discussed the groundwater study proposal. GM McCarthy reported that completion of the entire study would cost approximately \$30,000.

**Motion by Dir. Wetter second by Dir. Roths to approve Resolution 3-10 authorizing the District General Manager to enter into a contract with SHN Consulting Engineers & Geologists, Inc. per Scope of Work and Cost Estimate dated May 4, 2010, not-to-exceed \$16,100.**

**Ayes: Directors Cupp, Dean, Pavlic, Roths and Wetter**  
**Noes: None**  
**Absent: None**

- 7. Public Hearing for consideration of approval of FY 2010/2011 Budget (Resolution 2-10) (Pres. Cupp): GM McCarthy stated that the proposed budget was prepared by the Budget Committee and reviewed by the Board at their April meeting. Pres. Cupp opened the Public Hearing at 5:56 p.m. There were no public comments. Pres. Cupp closed the Public Hearing at 5:56 p.m.

**Motion by Dir. Roths second by Dir. Dean to approve Resolution 2-10 approving FY 2010/2011 Budget, as presented.**

**Ayes: Directors Cupp, Dean, Pavlic, Roths and Wetter**  
**Noes: None**  
**Absent: None**

- 8. Aiello, Goodrich & Teuscher (AGT) CPA Engagement Letter: audit for year ended June 30, 2010 (Resolution 4-10) (GM McCarthy)

**Motion by Dir. Wetter second by Dir. Roths to approve Resolution 4-10 authorizing the President to sign AGT Engagement Letter regarding audit for year ended June 30, 2010.**

**Ayes: Directors Cupp, Dean, Pavlic, Roths and Wetter**  
**Noes: None**  
**Absent: None**

- 9. Future Planning Committee Update (Denny Daleiden): The Board and Denny Daleiden discussed the Future Planning Committee's scope and request for funding. Pres. Cupp stated the District was responsible for Fire, Police, Sewer and Water; that funding a private committee, not governed by the District, with a scope beyond the District's latent powers, may not be allowed or in the best interest of the District. Pres. Cupp directed GM McCarthy to research this issue. The Board recommended that the Committee concentrate on specifics to the Community such as immediately needed facilities.

BOARD MEMBER COMMENTS: (Dir. Wetter – Jim Cook is willing to give a workshop regarding grant funding; the Board agreed to hold a special meeting for the workshop.)

ADJOURNMENT:

**Motion by Dir. Dean second by Dir. Wetter to adjourn meeting at 6:42 p.m. to Regular Meeting on June 16, 2010 at 5:00 p.m.**

**Ayes: Directors Cupp, Dean, Pavlic, Roths and Wetter**  
**Noes: None**  
**Absent: None**

Approval Date: \_\_\_\_\_

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Carol Cupp, President

ATTEST:

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John McCarthy, District Secretary