Lahontan Regional Water Quality Control Board

EXECUTIVE OFFICER'S REPORT

June 2008

NORTH BASIN

1. ***Pilot BMP - Cultured Ecology -*** *Daniel Sussman*

In April 2008, staff attended a presentation in Incline Village, Nevada by Bio x Design and Desert Research Institute about a pilot tested, cultured ecology Best Management Practice (BMP). The presented technology uses periphyton (attached algae) growth as a means to remove nutrients and fine sediment from detained stormwater flows.

The cultured ecology BMP is intended to "polish" stormwater after large particles are settled out by a traditional detention basin. Detention basin water is pumped through a series of Plexiglas containers with a fabric growth matrix (Figure 1) and is agitated in the modules to increase periphyton growth rates. The periphyton growth removes Nitrogen and Phosphorus from the water, and the mucilaginous algae matrix created by its growth traps fine sediment. The biomass with associated sediment is vacuumed off the growth matrix for disposal about once each month. The three filtration tanks take about three hours to treat a full volume of water (~450 gallons). With a flow rate of just 2.5 gallons per minute, this treatment is being designed as a supplemental treatment of detained runoff, not for treatment during actual storm events.

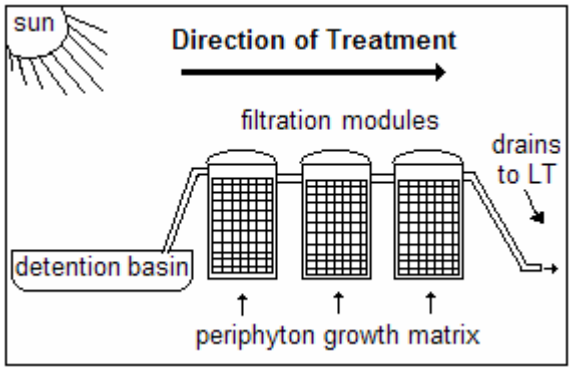

Figure 1. Diagram of cultured ecology pilot BMP

Results from the cultured ecology BMP study are promising. During a four month period from April to July 2007 the system removed 3.6 grams of Phosphorus per square meter of periphyton matrix (g $P/m^{2)}$. Extending this treatment time to one year would provide an estimated 11 grams of phosphorus removal per square meter each year (3x3.6≈ 11). A typical wetland, natural or constructed, sequesters about 1g $P/m^2/yr$. Researchers also tested the system for removal of fine particles using Washoe County sweepings as a source of the sediment in the test sample. The pilot system reduced turbidity of storm water from a detention basin from 52 NTU to 8 NTU and about 50% of the particles removed were less than 11 micrometers in diameter, with removal of ~80% of sediment mass across all particle sizes.

While preliminary results of this cultured ecology BMP are promising, the researchers stressed that the technology is

beyond the initial experimental stage but it is not quite ready for implementation. This BMP requires full sunlight, an electricity source for the water pump, and base flow for continual treatment. Maintenance requirements include periodic algae removal and winter snowfall maintenance. Nutrient and sediment removal by periphyton growth can occur year round, though the periphyton growth must begin prior to the onset of winter.

2. *Innovations in Street Sweeping* - *Hannah Schembri*

Large dust clouds are becoming less common from street sweepers, as the technology for picking up and retaining the finest particles continues to improve. "Dustless" street sweeping may be one of the best ways to reduce urban and atmospheric pollutant loads from entering waterbodies, such as Lake Tahoe.

Tymco International LTD (www.tymco.com). demonstrated a new street sweeping model at the Tahoe Regional Planning Agency in April of 2008. Tymco claimed its new street sweeper could effectively remove fine sediment from paved roads. The fine sediment less than 20 micrometers in size is the dominant stressor to Lake Tahoe clarity loss.

After describing the vehicle's general operation, Tymco staff showed the vehicle in action. To the surprise of many onlookers, the vehicle didn't emit a visible cloud of dust during the sweeping. This sweeper model removed visible fine sediment from the roadway while not using water or impacting the surrounding air quality. Waterless operations means that street sweeping can be conducted year-round, without concern of below freezing temperatures.

A Canadian Environmental Technology Verification Program in the City of Toronto tested the Tymco DST-6 Regenerative-Air Street Sweeper. The test showed a removal efficiency of test material (average particle size of 3 micrometers) of greater than 90%. The DST-6 sweeper model also cleans the exhausted air to 99.999% of 0.5 micrometer size particles.

The main components of the Regenerative-Air Street Sweeper include the blower, pickup head, pressurized hopper, multipass cylindrical centrifugal dust separator, and air filters. During dry operations, a high velocity blast of air is directed from the pickup head at the pavement and into the cracks releasing the dirt (the operator can also choose to use the rotating cylindrical broom concurrently). The air and debris are drawn from the pickup head into the hopper, the velocity decreases allowing the larger debris to settle, the air then enters the centrifugal dust separator. The centrifugal dust separator continues to clean the air as it spins on the curved wall of the chamber, skimming off dust particles and returning them to the hopper. The clean air is then sent back to the pickup head to start the cycle again. A small portion of the air is exhausted after final treatment through a bank of small cyclone pre-cleaners and finally through four membrane filters.

During the presentation, Tymco staff gave a price estimate of around $250,000 for the DST-6 model. The sweepers are made in Waco, Texas and the company has been in operation for over 30 years.

3. *Water Board Staff Visit Area Proposed for Fuel Reduction and Habitat Restoration near the West Shore of Lake Tahoe –* *Andrea Stanley*

In May 2008, Water Board staff met with John Pickett of the Tahoe Fire and Fuels Team to tour portions of approximately 200 acres proposed for mechanical and manual vegetation management near the west shore of Lake Tahoe. The purpose of the proposed project is to reduce the risk of high intensity, stand replacement wildfire which could put human health and property at risk, and could result in significant natural resource damage and impacts to water quality. Additionally, these activities will

contribute to the restoration of meadow and riparian functions of the area. Areas within the project exhibit impacts associated with livestock grazing, historic stream diversion, legacy channels built for grazing management, and suppression of the natural fire regime. These activities have resulted in conifer encroachment into meadow areas and heavy vegetative fuel loading.

Water Board staff support the goals of the project, and anticipate permitting the proposed activities under Resolution R6T-2007-0008, Waiver of Waste Discharge Requirements for Discharges Related to Timber Harvest and Vegetation Management Activities (Timber Waiver). Water Board staff anticipate receiving a Timber Waiver Application and project description from the Tahoe Fire and Fuels Team at the end of May.

The proposed project area includes Stream Environment Zones (SEZs). Proposed project activities will include the use of low-ground-pressure harvest equipment within SEZs. Project activities will be designed and conducted such that mechanized equipment will operate as much as possible from the existing network of legacy forest roads and thereby limiting new disturbance within the SEZs. However, the proposed activities will result in equipment leaving these areas of existing disturbance and operating on dry soils within the SEZs. Therefore, I plan to consider a Prohibition Exception for permanent disturbance within SEZs associated with the proposed project based on the anticipated finding that the proposed activities qualify as a habitat restoration, or similar project, that meets the following criteria: (a) The Project is necessary for environmental protection; (b) There is no reasonable alternative, including relocation, which avoids or reduces the extent of encroachment in the SEZ; and (c) Impacts are fully mitigated; pursuant to Chapter 5.8 of the Water Quality Control Plan for the Lahontan Region. I also find the project to be necessary for public health and safety.

4. ***Butler II-Slide Post-Fire Fuels Reduction Project*** - *Taylor Farnum*

On April 30 and June 1, 2008, Non-Point Source unit staff met with the Forest Service Mountaintop Ranger District personnel to conduct a field visit of the Butler II-Slide Post-Fire Fuels Reduction Project. The 2007 Butler II-Slide fire burned 26,600 acres of forest within San Bernardino County near the City of Fawnskin. The fire was located east of Lake Arrowhead and west of Big Bear Lake affecting both the Holocomb Creek and Grout Creek watersheds. The Butler II-Slide Post-Fire Fuels Reduction Project involves 17,642 acres within the burned area and falls entirely within the Wildland Urban Interface. The project area contains burned and unburned areas and fuel reduction efforts are needed in both areas to reduce the excessive fuel loading. The project surrounds several communities and runs along several major roads and highways. This fuels reduction project will consist of mechanical thinning and prescribed fire to reduce the amount of hazardous fuels. The thinning of the dead and live trees is expected to restore forest health and function by improving resistance to drought as well as insect and disease outbreaks. The reduction in fuels will also reduce flammability and improve firefighter safety.

Water Board staff identified existing and potentially significant water quality issues while touring the burn areas. Methods to reduce sediment delivery were discussed and reasonable solutions were agreed upon by both parties. Runoff from roads appeared to be the largest cause of sediment delivery. The Forest Service plans to make road improvements as part of this project.

The visit was successful in both improving relations between the Water Board and Forest Service and ensuring water quality standards are being met.

SOUTH BASIN

5. *Dairies in the Southern Lahontan Region* *- Ghasem Pour-ghasemi*

Water board staff are aware of twelve dairies and one feed lot within the southern Lahontan Region. Nine of these are located near the Mojave River, two are in El Mirage, one in Newberry Springs, and one in the Antelope Valley. These dairies cluster animals on a small land area and produce wastewater and manure, which contain nutrients and salts, that, if not properly managed, may adversely affect groundwater quality. Water Board staff is focusing its limited resources to more directly address groundwater pollution from these operations.

Background
Since 1984, the Regional Board adopted waste discharge requirements (WDR) for those dairies located on the Mojave River floodplain where groundwater is shallow and most likely to be degraded by dairy operations. This approach was based on a 1983 study conducted by the Department of Water Resources that concluded the Mojave River would most likely be impaired by percolation of dairy wastes from operations within 1.5 miles of the river floodplain. The WDRs require each dairy to mitigate the impact to groundwater from its operations by directing them to limit manure disposal on fields to three tons/acre/year and to implement best management practices (BMPs) for wash-water disposal, manure management, and rainfall-runoff control. WDRs were also adopted for two dairies in El Mirage where nitrates and salts were observed in local wells.

Groundwater Pollution
Water Board staff has determined that five of the dairies in the Mojave River Basin have contributed to groundwater pollution. Recent monitoring at these dairies have identified nitrate ranging from 19 to 81 mg/l and total dissolved solids (TDS) from 520-4,6000 mg/l. The primary drinking water standard for nitrate as nitrogen (nitrate-N) is 10 milligrams per liter (mg/L) and the secondary standard for TDS is 500 mg/L.

Over the next fiscal year, staff will request technical reports to determine the vertical and lateral extent of groundwater pollution at these dairies. This effort will be aimed, first at the dairies with the highest concentrations of pollutants in groundwater.

Monitoring Program
Adequate groundwater monitoring programs are necessary to identify effective BMP implementation and prevent degradation of water quality or the impairment of beneficial uses of waters of the State. Some regulated dairies have as little as one monitoring well per facility, which provides little useful monitoring information. A minimum of three monitoring wells are required to provide groundwater direction, gradient, and an indication of the source of pollutants. Water Board staff will evaluate the monitoring and reporting programs of each dairy to determine which need to be revised.

6. *City of Barstow Compliance with Enforcement Orders* *– Joe Koutsky*

The City of Barstow (City) continues to comply with the Cease and Desist Order and Clean-up and Abatement Order (CAO) and to abide by the WDRs for the Barstow Wastewater Treatment Plant.

Since the April 2008 Board meeting, the City has submitted a Revised Final Compliance Plan for a plant upgrade to meet the effluent conditions contained in the WDRs. Because of the slowdown in the housing market, the City does not require greater capacity. Rather, the City is only proposing to make process changes to the plant in order to comply with the Cease and Desist Order. The City's consultant continues to assist the City with the design-build specifications for the project. The plan includes the following: (1) a conceptual

design plan for retrofitting the existing plant to use a biological nitrogen removal process; (2) a detailed implementation schedule and task list including milestones for engineering, construction, demolition, and start up; and (3) a cost estimate. However, the plan does not provide design details that demonstrate that the effluent from the upgraded plant will not cause a concentration of nitrogen in the ground water to exceed the drinking water standard.

The City is in compliance with the effluent limits contained in the WDRs and the interim effluent limit for total nitrogen of 26 mg/L in the Cease and Desist Order. The total daily effluent flow of wastewater has not exceeded 4.5 million gallons, and the peak-flow rates have been below 7.65 million gallons per day. Since July 2007 until the present, the undisinfected secondary-treated wastewater discharged to the percolation ponds and to the south irrigation field for reclamation purposes has not exceeded the effluent limits for biochemical oxygen demand, methylene blue active substances, total dissolved solids, and oil and grease.

The City continues to conduct residential well sampling of the 41 drinking water wells in the Soapmine Road area, as required by the CAO. Currently, the City is supplying 28 residences with uninterrupted replacement water service (bottled water) where nitrate has been detected at concentrations in private wells at or exceeding 5 milligrams per liter (mg/L) nitrate nitrogen. The analytical results of the first quarter 2008 monitoring event show one additional well with detected nitrate-nitrogen concentrations exceeding 5 mg/L. The next monitoring event is scheduled for June 2008.

Investigations are on-going to determine the extent of pollution in the groundwater under the Mojave River. The City recently sampled eight shallow groundwater monitoring wells in the study area north of the region for trihalomethanes (THMs) and heavy metals. The results of this monitoring event showed that THMs were not detected (ND <0.50 micrograms per liter, µg/L). Concentrations of metals in samples collected from the northern region monitoring wells were below their respective state and federal drinking water standards, except for arsenic. Samples collected from two wells upgradient of the site, exceeded the drinking water standard for arsenic (10 µg/L) with concentrations of 14.2 µg/L and 13.9 µg/L. The City's consultant has indicated that there are no residential wells used for domestic drinking water in this area.

7. *Proposed Nursery Products Hawes Composting Facility* – *Joe Koutsky*

On April 22, 2008, Nursery Products, LLC (Nursery Products), submitted a Report of Waste Discharge to the Water Board staff for the Nursery Products Hawes Composting Facility (Project). The proposed Project is a biosolids / green waste co-composting facility located on approximately 79 acres of a 160-acre parcel within an unincorporated area of San Bernardino County, south of State Route 58, approximately 12.3 miles east of Kramer Junction and 22 miles west of Barstow. The facility would produce agricultural-grade compost and would treat and store up to 320,000 tons per year of sewage sludge and green waste.

San Bernardino County Superior Court Judge John Vander Fear ruled on April 11, 2008, that San Bernardino County must conduct further environmental review and consider the feasibility of enclosing the proposed Project. In its Statement of Decision, the court set aside the certification of the EIR, and directed the County to comply with CEQA regarding this Project.

On May 16, 2008, Nursery Products withdrew its Report of Waste Discharge application.

8. *Elizabeth Lake Road, Ritter Ranch Development* *- Doug Feay*

The Water Board adopted Ritter Ranch WDRs in April 2008, and specifically requested Water Board staff to follow-up on construction activities associated with Elizabeth Lake Road. Water Board staff confirmed that Suncal Companies were responsible for Elizabeth Lake Road construction in the area of the Ritter Ranch Development project. Suncal Companies and the City of Palmdale are still in negotiations over the length of the road to be paved now and the length that would be paved when construction resumes.

Water Board staff also inspected the project site on May 22, 2008 to assess the current conditions of BMP implementation and maintenance. Staff found the BMPs at the site to be in need of maintenance, and additional BMPs were needed to stabilize soil piles along Elizabeth Lake Road. Staff notified Suncal that it must implement the Stormwater Pollution Prevention Plan (SWPPP) and maintain all BMPs until the construction project is finished. As a result of the inspection, the site supervisor scheduled a crew to be at the site and install new BMPs and repair all existing BMPs by the first week in June of 2008.

9. *Searles Valley Minerals, Compliance Status (December 16, 2007 – May 15, 2008* *- Omar Pacheco*

Compliance Status

Effluent monitoring data from the Trona, Argus, and Westend facilities has shown compliance with the waste discharge requirements throughout the reporting period for all three facilities with one exception. One daily sample collected from Trona effluent on April 9, 2008, contained a total recoverable petroleum hydrocarbon (TPH) concentration of 7.2 milligrams per liter, exceeding the waste discharge requirements limit of 6.2 milligrams per liter. As a corrective action, the Trona Plant was shut down to clean the TPH removal system. Subsequent sampling showed the discharge to be in compliance.

Collection Tanks at Trona

At Trona, a collection tank and auxiliary equipment were installed to improve the reliability of the hydrocarbon removal system. The most recent status report for this project, submitted as required by Administrative Civil Liability Order No. R6V-2002-0025, describes that the system's operation was optimized seven months after the initial installation of the froth tank when the spent brine return from the froth tank was rerouted to the header of the Wemco inlet. This improved distribution of the flows in each Wemco unit and therefore improved Wemco performance. Overall, the froth tank project is a success in that it improves reliability of the overall system.

Cleanup and Abatement Order No. 6-00-64, 6-00-64A1, 6-00-64A2

Searles Valley Minerals (SVM) continues to be in compliance with the CAO. As part of its lakebed cleanup, SVM has developed proposed site-specific cleanup levels for each of the 32 sites. The submitted report entitled *Site-Specific Guidance Values (SSGV)* proposes cleanup levels based on the leaching potential for both "light" or diesel-kerosene range hydrocarbons (C10-C24) and "heavy" or hydraulic–motor oil range hydrocarbons (C18 - C40+) and site conditions. SVM's rationale for choosing the leaching approach is the following.

1. Leaching potential testing most accurately represents the transport of solutes that have the potential to migrate from affected soil or salt and threaten water quality;

2. The conditions of a dry lake in terms of climate and substrate materials are unique. Therefore, modeling or best professional judgment are well suited; and

3. The leaching potential approach is similar to the process used in the July 1996 report entitled *Soil Screening Guidance: User's Guide, Second Edition* published by the United States Environmental Protection Agency (U.S. EPA).

To develop a cleanup level for the various site conditions, SVM collected a total of 50 samples to determine the leaching potential at various sites representative of conditions at the lake. SVM is proposing to cleanup sites such that any remaining contaminants would not cause lakebed brines to exceed constituent concentrations allowed to be in the brine according to its Waste Discharge Requirements.

The site specific cleanup levels based on leaching potential would not result in brine exceeding limits in the WDRs.

Water Board staff are evaluating the submittal and will provide comments to SVM. SVM will base cleanup for each site on the site's leaching potential and provide reports as cleanup proceeds.

Bird Report

SVM continues daily bird monitoring and collection activities with the assistance of staff from Flys Free Wildlife Rescue. Bird mortality rates are lower this year than last year and have not exceeded the California Department of Fish and Game's take permit.