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Copy Randy, Susan, Paul, Joe, Daron Henry (Fax)

LLBe ACT/007/035 #2

## Sunnyside Cogeneration Associates

# Fax Cover Sheet

DATE: February 24, 1995 TIME: 2:29 PM

TO: Mike Herkimer

FROM: Bob Evans PHONE: 801-888-4476
FAX: 801-888-2538

RE: Creek Mitigation Plan

cc:
Bill Bates
Paul Clark
Bill Malencik
Mark Page
Henry Sauer

**Number of pages including cover sheet: 8**

**Message**

Mike,

A letter of transmittal will follow this fax, but wanted you to have the plan ASAP. As per this plan, we will notify you as soon as we have word from the driller that discharges will cease; approximately 24 hours later, we will begin our work in the creek.

Thanks for your help.

Sincerely,

Bob Evans

# Creek Mitigation Plan

**Submitted to**

**State of Utah**
**Division of Water Quality**
**Department of Environmental Quality**

**Prepared By**

**Sunnyside Cogeneration Associates**
**February 24, 1995**

# I. Background

Sunnyside Cogeneration Associates ("SCA") is currently drilling a well in Water Canyon to provide a consistent water supply to its power plant. In the process of drilling, drill cuttings and fluids ("Materials") have been discharged to Grassy Trail Creek ("Creek") . The part of the Creek between the discharge point and the power plant normally dries up when water in Grassy Trail Reservoir ("Reservoir) no longer overflows its discharge structure. However, as snow melt in the canyon fills the Reservoir, water is released to the Creek and the dry runs carry water.

In order to reduce downstream impacts of discharged Materials during and after spring runoff, SCA will collect in its reservoir the first flush of such Materials. In the following sections, SCA will outline elements of a plan which support this objective.

# II. Elements of Plan: General Description

## A. Collect Settled Drill Cuttings

Just after acquiring controlling interests in the Joint Venture Partnership and learning of the extent to which Materials were being discharged, NRG Energy, Inc. and B&W required that additional precautions be taken to prevent drill cuttings from migrating downstream. As part of such precautions, additional siltation fences were placed across the Creek bed at locations below the discharge point. As a first step in reducing future downstream migration of drill cuttings, SCA will vacuum up cuttings which have settled upstream of the siltation fences (where such areas are accessible and where use of the equipment specified in Section III.A. is feasible).

## B. Pressure-Spray Accessible Surfaces

Although the polymer used to help stabilize the walls of the drill hole is water soluble, its chemical characteristics cause it to preferentially bind to organic substrates. As a result, a film of varying thickness can be noted on the surface of rocks and leaves in or along side the Creek bed. To assist in the sloughing of this film, SCA will pressure spray noticeably affected and accessible surfaces in the stretch of the Creek between the discharge point and Diversion No. 4 (approximately 2.5 miles of Creek). This activity will not take place until drill cuttings have been vacuumed as per Section II.A.

## C. Collect Materials in SCA Pond

The City of East Carbon has verbally approved releasing water from the Reservoir in concert with SCA's plan for cleaning the stretch of Creek impacted by the Materials. This plan has been discussed with the Division of Water Rights and approved subject to limiting such early releases to the capacity of the pipe diverting water into SCA's water storage reservoir. The combination of SCA's mitigation efforts and the controlled release of water from the Reservoir should flush Materials downstream without overflowing the dam placed at Diversion No. 4.

SCA will divert into its reservoir all water reaching Diversion No. 4 during this early release period. Three days following the initial release of water from the Reservoir and subject to approval by the Division of Water Quality, SCA will close the valve on its diversion gate to re-establish proper diversion of Creek flows.

### D. Evaluate Success of Mitigation Efforts

At a specified frequency, flow measurements and water samples will be taken at the weir located immediately prior to SCA's water storage reservoir. Samples will be analyzed for the concentration of polymer to determine, in combination with the flow rate measured, mass discharges rates. Such rates will be plotted versus time to determine whether a peak in the discharge of polymer is observed.

SCA will take all water coursing down the Creek until pressure spraying has been completed and:

1. Three days have elapsed from the time mitigation efforts were initiated; or
2. A peak in polymer discharge rate has been monitored and is consistently decreasing; or
3. Visual conditions suggest the concentration of polymer and/or drill cuttings have been properly removed and the Division of Water Quality has approved re-establishing proper diversion of Creek flows.

If either Condition 1 or 2 is true, SCA will request authorization from the Division of Water Quality to re-establish proper diversion of Creek flows.

## III. Materials & Methods

### A. Contractor

SCA will use BMW Industrial Service, Inc. (BMW) to conduct the mitigation plans identified in Section II. BMW has performed previous mitigation activities in the Creek bed and has sufficient equipment and resources to allow the work indicated to be conducted over a relatively short timeframe.

### B. Equipment

#### 1. Vacuum Truck & Operation

BMW will use a Vactor Model 2045 vacuum truck and a two person crew to remove settled drill cuttings as noted in Section II. A. Additional SCA operating staff and/or hired laborers will assist in moving the vacuum hose from location to location.

While maintaining the hose at the base of the Creek bed, the crew will fan the hose across the bed's width to remove cuttings which have settled between siltation fences. The crew will advance downstream repeating this action until reaching the final siltation fence.

The capacity of the vacuum truck is about 5300 gallons. Once filled, the truck will be driven to SCA's plant site where it will discharge the contents of its storage tank into the old reservoir. An attempt will be made to keep solids in the tank from entering the reservoir; after being allowed to dry, such solids will be returned to the sedimentation basins at the drilling site.

#### 2. Hydroblaster & Operation

BMW will bring two hydroblasters and a crew of two individuals to the discharge point. SCA will supervise a brief test of this equipment to determine which is better suited for loosening Materials adhering to the Creek's surfaces: a 0-10,000 psi, 0-20 gpm unit and a

0-3,000 psi, 0-60 gpm "line flusher". The hydroblasters will use clean water to spray accessible surfaces in the Creek bed. SCA will provide BMW a 4,000 gallon tank truck to reduce the time needed to recharge the hydroblaster.

When the vacuuming crew reaches the final silt fence, all such fences will be removed and the hydroblasting crew will begin working its way downstream from the point of discharge. This crew will focus on removing Materials which remain adhered to surfaces and on resuspending settled solids so that they continue to move downstream.

Debris which accumulates during pressure spraying will be collected and removed by SCA operators/laborers. Such debris will be allowed to dry and be taken to the sedimentation basins for ultimate burial.

### 3. Mitigation Assessment

#### *a) Water Samples and Flow Measurements*

On the morning of February 27th, SCA will begin collecting water samples and flow measurements at the inlet weir of its water storage reservoir. Thereafter, flow measurements and water samples will be periodically collected until the diversion valve is closed from its completely open position. During the daytime, water samples and flow measurements will be taken every two hours; between midnight and 0800 water samples and flow measurements will be taken every four hours.

#### *b) Sample Analysis*

Samples collected will be analyzed for the presence of the polymer used in drilling activities. The analytical method is attached as Exhibit 1. With the exception of the midnight and 04:00 samples, SCA will analyze all samples as soon as they are collected.

A calibration curve across a wide concentration range will be prepared through serial dilution of a known quantity of the polymer utilized. Settling times will be plotted versus polymer concentrations and a series of unknowns will be prepared as a quality control check on the analytical work being performed. If the detection limit of the analysis is insufficient to quantify levels below the 96 hour LC50 for Rainbow Trout (811 ppm), Option 1 or 3 under Section II.D will be utilized to determine proper mitigation.

#### *c) Data Analysis*

The concentration of polymer will be multiplied by the flow rate to determine the polymer's mass discharge rate. The mass discharge rates so determined will be plotted versus time and used to determine whether SCA's work in the Creek bed can be analytically verified.

## IV. Implementation Schedule

### *A. Discontinue Discharge*

Provided there are no equipment breakdowns and the hole remains intact, discharges associated with well drilling activities will cease sometime in the week of February 27th. The Divisions of

Water Quality, Water Rights and the City of East Carbon will be notified as soon as such discharge is discontinued.

### *B. Initiate Creek Mitigation Measures*

Creek mitigation work as described in Section II.A. is expected to begin within 24 hours after the discharge of Materials is discontinued. Hydroblasting is expected to start later on in the day and be completed after the second day of work.

### *C. Release of Water from the Reservoir*

SCA has requested East Carbon to withhold the release of water from the Reservoir until given notice. It is hoped that water released from the Reservoir will reach the discharge point about the same time that vacuuming is completed and hydroblasting begins.

### *D. Restriction of SCA Diversion Gate*

SCA's divertor valve will be kept wide open throughout the Creek mitigation work. Once work is completed, SCA will seek authorization from the Division of Water Quality to re-establish proper diversion of Creek flows.

## V. Recording Mitigation Efforts

SCA will record progress of the mitigation work by taking pictures and logging times at which they were taken. SCA will assemble a report documenting its work in the Creek, the results of all chemical analyses and compare the concentration of polymer in the stream to the aquatic toxicity thresholds specified by the material supplier. The assembled report will be submitted to the Division of Water Quality for future reference.

# Exhibit 1

STANDARD TEST METHOD NO:

REVISED: 04/13/88

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TITLE: METHOD OF DETERMINATION OF THE PRESENCE OF POLYMER

METHOD:

1.0 APPARATUS AND REAGENTS

100ml stoppered measuring cylinders
1% by weight, of calcium chloride solution
Kaolin "K-3" lab grade clay, obtainable from Fisher Scientific.

2.0 METHOD

1. Prepare a slurry by thoroughly mixing 1 part Kaolin K-3 to 2 parts 1% calcium chloride solution.
2. Add 5ml of above slurry to 100ml graduated cylinder.
3. Add 90ml of sample to be tested to graduated cylinder and invert 3 times.
4. Observe absence or presence of flocculation.
5. Using tap water as a sample, run a blank to confirm a positive test.

The same procedure can be used, tentatively, to determine the quantity of polymer in solution. The procedure involves applying known dosages of product and measuring settlement rate. Then, after constructing a graph of settlement rate versus dose, the concentration of polymer in a sample can be determined.