California Regional Water Quality Control Board
North Coast Region

Monitoring and Reporting Program No. R1-2008-0092

For

TIMBER HARVESTING PLAN ACTIVITIES
CONDUCTED BY, OR ON LAND OWNED BY
THE GREEN DIAMOND RESOURCE COMPANY
IN THE SOUTH FORK ELK RIVER WATERSHED

Humboldt County

This Monitoring and Reporting Program (MRP) is issued pursuant to 13267(b) and is associated with the South Fork Elk River Watershed-wide Waste Discharge Requirements Order Number R1-2006-0043 (hereinafter referred to as "the Order"). This MRP replaces the rescinded MRP Order Number R1-2006-0043. The reasons for requiring the Discharger to provide this information, and the evidence supporting this need, can be found in the Order, the related findings adopted with the Order in Resolution No. R1-2006-0042, and the technical documents.

Under the authority of the California Water Code section 13267(b), the Discharger named above is required to comply with the following:

A. Water Quality Trend Monitoring

1. Objective
   Evaluate if the provisions of the Order, in combination with the other sediment control measures applied in the watershed, result in a consistent trajectory toward conditions supportive of beneficial uses of water.

2. Monitoring Plan Components
   a) Parameters to be measured
      - Stage (m or feet)
      - Velocity (m/sec or ft/sec)
      - Streamflow (m^3/sec or ft^3/sec)
      - Turbidity (NTU)
      - Suspended sediment concentration (mg/L)

   b) Location
      Measurement of all parameters shall be measured at the location demonstrated in Attachment 1.

   c) Method of measurement
      The Discharger has established existing and accepted methods of measurement already implemented at the monitoring location and shall provide the Executive Officer with the most updated procedures in the form of a Quality Assurance Project Plan (QAPP) and associated Standard Operating Procedures (SOPs) for their measurement at these existing stations and conduct measurements accordingly.

   d) Sampling Frequency

Turbidity and stage will be measured simultaneously, at 10 -minute increments. Streamflow shall be measured at an interval to ensure that a wide range of all flows is measured and incorporated into the stage-streamflow relationships at the monitoring locations.

e) Data analysis methods and performance standards
Standard analysis methods will be used to evaluate all data collected under the requirements of this MRP with respect to the stated objectives. More specifically, descriptive statistics will be used to describe the behavior of each stated parameter according to hydrologic year. Informational items related to streamflow, turbidity, and suspended sediment concentration shall be developed by the Discharger according to hydrologic year, including rating curves for stage-streamflow, field turbidity-lab turbidity, streamflow-turbidity, and turbidity-suspended sediment relationships. The Discharger shall utilize these relationships to develop "finalized data" which represent, stage, lab turbidity, and streamflow.

f) Reporting
   i) At a minimum, all raw data shall be submitted electronically on the 15th of each month for the previous calendar month monitoring period.
   ii) Electronic and hardcopy reports shall be submitted annually by November 1 and shall contain all raw and processed data from the previous Hydrologic Year (October 1 – September 30) monitoring period. Electronic reports shall include, at a minimum, a description of each monitoring site and equipment used in the collection of data, <u>all</u> raw and processed data in tabular form, graphics and supporting data representing the relationships used in any data transformation, and complete disclosure of all possible sources of error, as well as an activity log of monitoring activities at each site and observations made by field staff. The Discharger may choose to submit, in addition, an analysis of the data and discussion of findings, as well as recommendations for improvements or changes to the monitoring and reporting requirements.

3. Timing and Duration of Monitoring Plan
Sampling for stage, streamflow, turbidity, and suspended sediment concentration under this portion of the monitoring agreement shall begin no later than October 1 annually according to the accepted SOPs and QAPP. The monitoring shall continue each year until there has been a period of 30 continuous days of no rain, and at least until May 15. If these conditions are not met, then monitoring under this section may cease on June 30 for the remaining portion of the dry season.

B. Landslide Monitoring

1. Objective
Evaluate the landslide pattern and sediment delivery rate in the watershed and determine if there are changes in the response to land management activities.

2. Monitoring Plan Components

a) Parameters
The landslide inventory conducted under this portion of the MRP shall include, at minimum:

- Unique identifier code
- Primary watershed name
- Subbasin name
- Aerial photo year number, and scale
- Feature type
- Reactivation status
- Landslide dimensions and volumes
- Delivery percentage, volume, and certainty
- Watercourse class affected
- Aspect of hillslope
- Geomorphic association (including inner gorge, headwall swale, planar slope, break in slope, both vertical and horizontal convex and concave slopes, other unstable areas)
- Hillslope angle
- Proximity to watercourse
- Landuse history at point of initiation, upslope, and downslope (including harvesting and roading)
- Field visit status
- Stand age at time of failure
- Geologic unit
- Field observer notes

b) Locations
All lands owned by the Discharger within the South Fork Elk River watershed shall be inventoried.

c) Method of measurement
Aerial photo review shall be coupled with a subsample of field inventories to locate and map landslide features. At a minimum, the Discharger shall utilize aerial photo sets in three-year intervals. The landslide inventory shall be updated to include all of the new landslide features not previously visible on the early photo sets.

d) Sampling Frequency
Landslide inventories shall be conducted at a three-year interval to coincide with the Discharger's photo flights.

e) Data analysis methods and performance standards
The Discharger shall develop, for each inventory, a minimum landslide size detection limit for the range of canopy conditions present on the inventory lands.

f) Reporting
i. The Discharger shall provide electronic and hardcopy reports of landslide inventories by December 31 of the most recent photo flight year. If there is some technical reason limiting the Discharger's ability to conduct the inventory and report by the due date, the Discharger shall request, in writing at least 10 working days prior to the due date, an extension with the specific reasons for the delay described.

ii. Electronic reports shall include spatially registered polygon data with all attributes described in 2(a) above and shall be provided in an ArcGIS 9.x compatible format for all landslides identified in the inventory. Metadata shall accompany the data and describe the basis for the data. Additionally the data used to develop any aerial photo-to-field inventory relationships (e.g., area to volume relationships, delivery to void relationships) shall be provided as well as their associated statistical analysis.

iii. Hardcopy reports shall include the data in tabular form, summary tables, and a written description of observed landslide patterns and possible management correlations.

3. Timing and Duration of Monitoring Plan
This component of the monitoring plan shall be implemented coincident with watershed-wide WDRs adoption, and shall be in effect throughout the life of the permit.

C. South Fork Elk River Sediment Reduction Effectiveness Monitoring Plan

1. Objectives
Assess the effectiveness of the sediment control measures utilized in GDRCo's South Fork Elk River Management Plan by:
- Evaluation and quantification of the sediment delivery from treated sites
- Provide a feedback mechanism to continue to refine the sediment control measures applied to the Discharger's lands

2. Monitoring Plan Components
a) Parameters to be measured
- Visual observations
- Photographic control points
- Void volumes
- Longitudinal profiles

b) Locations
Sampling locations shall be selected such that monitoring is conducted at a representative sample of treated sites across the categories identified, and across a range of physical, site-specific attributes (e.g., underlying geology, soil type, slope angle, drainage area, type of site, etc.).

c) Method of Measurement and Sampling Frequency
The Landowner shall develop a sampling schedule that shall include photo-point and void monitoring.

i. The Landowner shall select a subset of sites that shall be subject to photo point monitoring. Photo points shall be documented twice, before and after the first winter period following site treatment.

ii. The subset of sites will also be subject to void monitoring that will be conducted following the first winter period but prior to the second winter period and shall include an estimate of the volume of sediment

delivered to a watercourse from the treated site. If the results of the void monitoring indicate that significant site adjustments occurred, then those sites experiencing significant adjustments will be re-sampled on the third year following treatment.

d) Reporting
Reports shall be submitted annually by November 1 and shall contain
   i. Description of the sites currently being monitored, including at a minimum, the monitoring location selection criteria, the unique site ID corresponding to the inventory referred to under the South Fork Elk River Sediment Reduction Plan, site attributes, and a description of the pre-winter monitoring activities of the selected sites.
   ii. Monitoring results from sites that have been through one winter period, including at a minimum, comparative pre- and post-winter photos from the photo point monitoring, comparative pre- and post-winter longitudinal profiles, and the results of the post-winter void monitoring.

e) Program Documentation, Quality Assurance and Quality Control
The Discharger shall develop and submit to the Executive Officer in accordance with the schedule established in (i) below, SOPs and a QAPP that can meet the stated objectives of this MRP.

f) Time schedule for implementation
The photo point monitoring shall be conducted prior to the start of the winter period, as defined in the South Fork Elk River Sediment Reduction Plan, in the same year of site treatment and in the year following site treatment. The void measurement monitoring shall be conducted following the first winter period after treatment but prior to the second winter period after treatment.

D. Quality Assurance and Quality Control Project Plan (QAPP)

1. The Discharger shall develop a comprehensive Quality Assurance Project Plan (QAPP) and associated Standard Operating Procedures (SOPs) for the monitoring and reporting activities to be implemented. The QAPPs and SOPs shall meet the specification of this MRP and meet the guidelines available from the US Environmental Protection Agency (USEPA). Collectively, the QAPP and SOP documents shall address all aspects of the monitoring program and shall contain, at a minimum, but not be limited to:
   a) Description of parameters to be measured
   b) Description of sampling frequencies
   c) Standard procedures for the establishment of repeatable sampling locations;
   d) Standard operating procedures for each field method and piece of equipment used;
   e) Standard operating procedures for each laboratory method and piece of equipment used;
   f) Standard operating procedures for data analysis methods;
   g) Standard reporting procedures;
   h) Measures for quality assurance associated with monitoring and reporting procedures;

i) Measures for quality control associated with monitoring and reporting procedures;
j) A training program for personnel conducting monitoring activities; and,
k) Measures for adapting the QAPP and SOPs, when necessary. The Discharger may propose to use an existing QAPP for these measurements as long as it addresses the above list of elements.

2. Following implementation of the approved QAPP and SOPs, the Discharger may propose changes to the procedures and control measures specified in the QAPP and SOPs as necessary, and submit the changes to the Regional Water Board Executive Officer for approval. Following approval of changes to the QAPP, the Discharger shall document such changes and implement the new procedures and control measures immediately.

E. Work Conducted by Licensed Professionals

The practice of geology is identified and regulated under Chapter 12.5 (Geologists and Geophysicists Act) of the Business and Professions (B&P) Code, including Rules and Regulations (CCR Title 16, Division 29) and any related sections of the B&P Code, Government Code, Penal Code, and/or Evidence Code. The practice of engineering in California is identified and regulated under Chapter 7 (Professional Engineers Act) of the B&P Code, including rules and regulations (CCR Title 16, Division 5) and any related sections of the B&P Code, Government Code, Penal Code, and/or Evidence Code. The Discharger shall fully comply with all aspects of existing statutes and regulations regarding the practice of geology and/or engineering while satisfying the Terms and Provisions of this Order.

F. Signatory Requirements

All required technical reports, inspection reports, certifications, and other reports prepared in accordance with the Terms and Provisions of this Order submitted to the Regional Water Board shall be signed by the Discharger or the Discharger's duly authorized representative(s). All persons signing a document under this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete."

G. Request for Extensions

Requests for extensions to required time lines specified within this Plan shall be submitted, in writing, at least 10 working days prior to the due date. Requests for extension must provide a reason or reasons for the request. Approval of any request for an extension of time to comply with required deadlines is subject to the approval of the Regional Water Board's Executive Officer. If the Landowner does not receive written approval of any requested extensions, it should not be assumed

that the due dates are extended indefinitely or have been approved. The Landowner shall be accountable for all due dates set out in this Plan in the absence of written approval from the Executive Officer.

H. Failure to comply with the terms of this Order can result in civil liabilities of up to $5,000 per day under Water Code section 13268(a)(b)&(d)(1), or misdemeanor prosecution under Water Code section 13268(c)&(d)(2).

I. Any person affected by this action of the Board may petition the State Water Resources Control Board (State Water Board) to review the action in accordance with Section 13320 of the California Water Code and Title 23, California Code of Regulations, Section 2050. The petition must be received by the State Water Board within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request. In addition to filing a petition with the State Water Board, any person affected by this Order may request the Regional Water Board to reconsider this Order. To be timely, such request must be made within 30 days of the date of this Order. Note that even if reconsideration by the Regional Water Board is sought, filing a petition with the State Water Board within the 30-day period is necessary to preserve the petitioner's legal rights. If you choose to appeal this Order, be advised that you must comply with this Order while your appeal is being considered.

Ordered by: _____
Catherine Kuhlman
Executive Officer

July 14, 2008