

Attachment 1

Monitoring and Reporting Program ORDER NO. R1-2014-0036

For

Waste Discharge Requirements

For

Discharges Related to Land Management Activities
Conducted by Humboldt Redwood Company, LLC

In the
Jordan Creek Watershed

Humboldt County

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code Section (CWC) 13267(b) and requires Humboldt Redwood Company, LLC (HRC) to implement the monitoring and reporting program described below. The purpose of the monitoring and reporting program is to ensure that HRC complies with waste discharge requirements established by Order No. R1-2014-0036 (Order), to track activities covered under the Order that are completed or in progress, and to evaluate the effectiveness of HRC's management plan in protecting and restoring the beneficial uses of water. The Regional Water Quality Control Board has delegated its authority to the Executive Officer to revise, modify, and reissue the MRP.

I. MONITORING

HRC shall monitor watershed conditions according to the monitoring program described in the following section, including conducting inspections and collecting data as described below.

A. Roads

HRC shall inspect all roads within their Jordan Creek ownership at least once annually between May 1 and October 15 to ensure that drainage structures and facilities are intact and fully functional, and to identify any active or imminent road-related failures of the road prism, cutbanks, or fills which may have occurred during the previous winter and can deliver sediment to streams (i.e. development of new sediment sources).

In addition, all accessible roads shall be inspected as soon as conditions permit following any storm event that generates 3 inches or more of precipitation in a 24-hour period, as measured at the Scotia rain gauge.

B. THP Area and THP Related Erosion Control Plans

1. HRC shall inspect CAL FIRE approved THPs - including the logging area of active THPs, harvest units, appurtenant roads and individual erosion control sites - a minimum of three times per year according to the following schedule:
 - a. By November 15 to assure project areas are secure for the winter; and/or immediately following cessation of winter period timber harvest activities;
 - b. Between November 15 and March 1 after 10 inches of cumulative rainfall has fallen, to assess the effectiveness of management measures designed to address controllable sediment discharges and to determine if any new controllable sediment discharge sources have developed;
 - c. Between April 1 and June 15 to assess the effectiveness of existing management measures designed to address controllable sediment discharges and to identify if any new controllable sediment discharge sources have developed.

C. Landslides (mass wasting)

1. HRC shall monitor their property in the Jordan Creek watershed for new mass wasting activity. HRC shall conduct a watershed-wide reconnaissance level investigation for mass wasting events utilizing established protocols (WOP-08) following triggering events in or near the Jordan Creek watershed at intervals no greater than 5 years. The interval may be determined in part by the occurrence of triggering events defined as: 1) greater than 3 inches of rainfall within 24 hours as measured at Scotia; or 2) a significant earthquake. Determining if an earthquake is a triggering event is based upon earthquake magnitude and distance of epicenter from the watershed referencing Figure 2, Graph A of Keefer (1984).
2. On-the-ground landslide monitoring and reporting shall include HRC field staff (i.e. forestry, physical sciences, wildlife) contacting/notifying the HRC Geology Department in the event a new or recently active landslide is observed during the course of daily duties (i.e. road inspections, wildlife surveys, aquatics monitoring, THP layout and logging supervision).
3. HRC shall utilize the reconnaissance level investigation, observations by field staff, and new aerial photographs to update the landslide inventory contained in Appendix A of the ROWD using methodologies consistent with guidelines

presented in California Geological Survey Note 52, Guidelines for Preparing Geologic Reports for Regional-Scale Environmental and Resource Management Planning (2001).

4. HRC shall utilize color, high-angle, stereo pair aerial photographs at a scale of 1:12,000 of the Jordan Creek watershed to update the landslide inventory.
5. HRC shall obtain new aerial photographs of the Jordan Creek watershed at intervals no greater than 5 years. The most recent aerial photographs of the Jordan Creek watershed were taken in 2010. The next aerial photographic flight shall be flown no later than 2015.

D. Water Quality Trend Monitoring

HRC shall continue to conduct an annual assessment of watercourse characteristics for Jordan Creek at aquatic trend monitoring (ATM) stations 174 and 205, and as described in the report titled *Jordan Creek Aquatic Habitat and Water Quality Monitoring Report* (Appendix F of the ROWD). The report lists the parameters and sampling procedures for each parameter. HRC's Watershed Operating Protocols (WOP) provide a more detailed description of sampling methods for each parameter and are included in the Reference section at the end of this attachment. Monitoring station locations are shown on Figure 1.

1. Channel Dimensions

- a. Photographic documentation of channel changes
HRC shall take yearly photographs of the channel of Jordan Creek ATM stations 174 and 205 (Figure 1) to maintain a photographic record of changes to the channel and riparian zone over time.
- b. HRC shall conduct assessments of the channel dimensions at ATM stations 174 and 205, including measuring channel gradient, width, cross-sectional area, and thalweg elevation profiles. Measurements shall be done according to the methods described in WOP 10 – *Basics of Topographic Surveying*, WOP 15 – *Aquatic Trends Monitoring Site Selection, Monumenting, and Documentation*, and WOP 31 – *Survey with Total Station*, and used to determine streambed elevation and area changes over time.

2. Streambed Particle Size

- a. HRC shall continue to measure the median surface particle size (D_{50}) of the channel of Jordan Creek at ATM stations 174 and 205, according to the methods described in WOP 13 - *Surface and Sub-surface Sediment Sampling*.
- b. HRC shall continue to measure the percent fractions <0.85 mm and <6.35 mm, the geometric mean diameter, the 75th and 25th percentile fractions, and

the Fredle Index of the subsurface stream bed particles of the channel of Jordan Creek at ATM stations 174 and 205, according to the methods described in WOP 07 - *Bulk Sediment Laboratory Processing*, and WOP 13 - *Surface and Sub-surface Sediment Sampling*.

3. Pool Characteristics
HRC shall continue to measure pool area and spacing, residual pool depth, and the percent pools associated with wood at ATM stations 174 and 205, according to the methods described in WOP 14 - *Stream Habitat Typing*.
4. Large Woody Debris Characteristics
HRC shall continue to measure large woody debris frequency, spacing, diameter, and length within the channel of Jordan Creek at ATM stations 174 and 205, according to the methods described in WOP 33 - *LWD Recruitment*.
5. Water Temperature
HRC shall continue to measure water temperature at ATM stations 174 and 205 over the warmest part of the year (June through September) with continuous recording data logger devices (Hobos or Optic Stowaways), according to the methods described in WOP 09 - *Temperature Instrumentation and Deployment*. Temperature data shall be used to calculate the Maximum Weekly Average Temperature (MWAT) and Maximum Daily Average Temperature (MDAT).
6. Riparian Overstory Canopy
HRC shall measure mid-channel canopy cover over the channel and the riparian overstory canopy cover annually along Jordan Creek at ATM 174 and 205 according to the methods described in WOP 11 - *Stream and Riparian Canopy Cover Measurements*.

II. REPORTING

HRC shall provide the following reports described in each section to the Regional Water Board Executive Officer according to the following schedule:

A. Inspection Reports

1. Roads and THP Erosion Control Plans
By June 30 of each year, HRC shall submit an annual summary report describing all inspections of roads, erosion control plans associated with timber harvest plans, and landslides conducted during the previous year according to the specifications described in the ROWD and relevant Appendices. The annual summary report shall include at a minimum, the following information for each inspection:
 - a. date of the inspection,
 - b. inspector(s) name,

- c. area or sites inspected,
- d. observations, including problems identified that result, or have the potential to result in controllable sediment discharge, including discharge notifications,
- e. actions needed to prevent or minimize sediment discharge,
- f. actions taken to prevent or minimize sediment discharge,
- g. a brief evaluation of the causes of the erosional problems and the adaptive management measures that must be taken to prevent recurrence.

2. Landslides

By June 30 of each year, HRC shall submit an updated landslide inventory, describing any landslide activity observed within the past year, including;

- a. A map showing locations of landslide activity,
- b. Whether landslide is new or reactivation of existing landslide,
- c. Estimated volume of sediment discharged,
- d. Management activities (such as timber harvesting or road work) that may reasonably be considered to have caused or affected landslide activity

3. Water quality trends monitoring data

By May 1st of each year, a synthesis of the results of water quality monitoring data collected during the previous year as specified in Section I(D), including: stream flow, sediment, water temperature, channel form, and large wood in the channel, according to the specifications of Appendix F2 of the ROWD. The synthesis shall highlight observed trends and provide analysis of the findings.

B. Annual Summary Report

By January 31 of each year, an update of all of their activities conducted during the previous year to comply with the Order by submitting an Annual Summary Report to the Executive Officer. The Annual Summary Report shall summarize activities conducted during the previous calendar year (from January 1 through December 31) and shall include, at a minimum, the following information:

1. Timber Harvest

- a. The total acreage harvested, including;
 - i. THP numbers
 - ii. Acres harvested by silviculture method

2. Measures Implemented to Prevent or Minimize Controllable Sediment Discharge from roads and Erosion Control Plans

- a. An updated inventory and maps of road related sediment discharge sources, including:

- i. New road related controllable sediment discharge sources identified during the previous year,
 - ii. road related controllable sediment discharge source treated in the past year,
 - iii. An updated summary of total road length that conforms to the storm proofed standard, as defined in Appendix E of the ROWD,
 - b. A summary of road grading, including a map showing all road segments graded over the past year.
 - c. A summary of new road construction, including a map showing all road segments constructed during the past year.
 - d. A summary of controllable sediment discharge sources treated during the past year, including:
 - i. A map showing the location of each CSDS treated
 - ii. A brief description of prevention and minimization measures implemented at each treated site
3. In-stream Restoration and Riparian Restoration Activities
An annual update on progress towards development and implementation of an In-Stream and Riparian Restoration Plan. The update shall include at a minimum, the following:
 - a. A narrative description of progress towards developing a plan;
 - b. A restoration plan when completed;
 - c. A schedule for implementation of restoration work;
 - d. A narrative description of restoration work conducted;
 - e. The results of monitoring of restoration activities.

C. Annual Work Plan

By November 15 of each year, an annual work plan to the Regional Water Board describing management activities HRC plans to conduct during the upcoming calendar year (January 1 to December 31). HRC shall certify that the activities included in the work plan are in compliance with the waste discharge requirements of Order R1-2014-0036.

Regional Water Board staff will review and may provide written comments and or request additional information as necessary by December 15. If directed, HRC shall submit a revised final annual work plan to the Regional Water Board by December 31.

Regional Water Board and HRC staff shall also meet annually, if requested by either party, to review proposed work to discuss the timing of and type of activities planned for the year.

The proposed activities for upcoming year annual work plan shall include, at a minimum, the following information:

1. Timber harvest

- a. The total acreage HRC anticipates harvesting in the coming year pursuant to Section I(A) of the Order, including;
 - i. Name of harvest plan (and CAL FIRE THP number when available);
 - ii. Acres to be harvested by silviculture method;
 - iii. Engineering geologic reports for harvest area as required in Section I (B) (3).
 - iv. Road construction, reconstruction, and maintenance work, planned to be conducted pursuant to Section 1(C) of the Order
 - v. Description and map location of all road construction, reconstruction, or decommissioning planned for the coming year,
 - vi. Types of routine work, including maintenance and inspections (location does not need to be included in the annual report.)
 - vii. Erosion Control Plan, anticipated to be conducted pursuant to Section 1(D) of the Order
 - viii. Prevention and minimization measures for controllable sediment discharge sources planned for the upcoming year
 - ix. Location of planned projects for large wood repositioning and stabilization and riparian zone planting to be conducted as part of a restoration plan
 - x. Location and Measures to prevent and minimize sediment discharge from existing landslides as required by Section I(B)(5)
 - xi. Notification of revisions to the annual work plan

The annual work plan should be considered a planning document. The actual work conducted in the upcoming year may differ from what is described in the plan due to changes in conditions or other considerations.

HRC shall notify the Regional Water Board no less than quarterly in writing when it becomes apparent that a deviation from the current annual work plan is necessary. The notification shall include a description of how the work differs from the annual work plan and an explanation for the change.

D. Five Year Summary Report

HRC shall provide a five year retrospective summary and evaluation of the effectiveness of their management activity in preventing and minimizing discharges of sediment and protection of water temperature increases that may impact the beneficial uses of water in Jordan Creek.

By no later than August 30, 2019, HRC shall submit the first five year update and evaluation to the Regional Water Board. The report content may be developed in consultation with the Regional Water Board staff, such that the report may be useful to evaluate the General and Specific requirements of the WDR and provide insight into future revisions to the WDR. The five year update and evaluation shall include the following information:

1. Landslide Inventory

An updated landslide inventory and evaluation of the effectiveness of management measures intended to reduce the potential for management related landslides. The updated inventory shall include a description of all landslide activity identified during the previous five years based on field observations, interpretation of updated aerial photographs, and other available data sources, including;

- a. An updated landslide inventory, describing any landslide activity observed within the past year,
- b. Whether landslide is new or reactivation of existing landslide,
- c. Estimated volume of sediment discharged,
- d. A map showing locations of landslide activity that has occurred during the previous five years,
- e. A description of data sources,
- f. Copies of aerial photographs from the previous five year period (may be scanned)
- g. A discussion of association observed during the previous five year period between management activities and active landslides

2. Road Survey

HRC shall conduct a survey of the road system in the Jordan Creek watershed to evaluate the effectiveness of prescriptions to control sediment from roads. The survey shall report the following:

- a. Length of road hydrologically connected to watercourses,
- b. For road segments that are hydrologically connected to watercourses, a description of methods used to prevent surface erosion (e.g. what percentage are rocked, seed and mulched, etc.),

- c. Identification of stream crossings that are not sized to pass 100 year return interval flow and anticipated debris or do not have a structure in place to prevent stream diversion.

III. CERTIFICATION

All reports required by this Monitoring and Reporting Program or other information requested by the Regional Water Board determination of compliance shall be signed a duly authorized representative of HRC. Any person signing a document under this requirement 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. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Any person failing to furnish technical or monitoring reports or falsifying any information therein is guilty of a misdemeanor, and may be subject to civil liability. (Water Code section 13268)

Ordered by: _____
Matthias St. John, Executive Officer
August 14, 2014

References

California Geological Survey, 2001, Note 52, Geologic Reports for Regional-Scale Projects

HRC, 2004. Aquatic trends monitoring site selection, monumenting and documentation, WOP-15, Humboldt Redwood Company, Scotia, CA.

HRC, 2004. Basics of topographic surveying, WOP-10, Humboldt Redwood Company LLC, Scotia, CA.

HRC, 2004. Bulk Sediment Laboratory Processing, WOP 07, Humboldt Redwood Company LLC, Scotia, CA.

HRC, 2004. LWD Recruitment, WOP-33, Humboldt Redwood Company, Scotia, CA.

HRC, 2004, Stream and Riparian Canopy Cover Measurement, WOP-11, Humboldt Redwood Company, Scotia, CA.

HRC, 2004. Stream Habitat Typing and Measurement, WOP-14, Humboldt Redwood Company, Scotia, CA.

HRC, 2004. Surface and Subsurface Stream Sediment Sampling, WOP-13, Humboldt Redwood Company, Scotia, CA.

HRC, 2004. Temperature Instrumentation and Deployment, WOP-09, Humboldt Redwood Company, Scotia, CA.

HRC, 2005. Survey with Total Station, WOP-31, Humboldt Redwood Company, Scotia, CA.

Keefer, D.K., 1984, Landslides Caused by Earthquakes, Geological Society of America, .95, p.406-421.

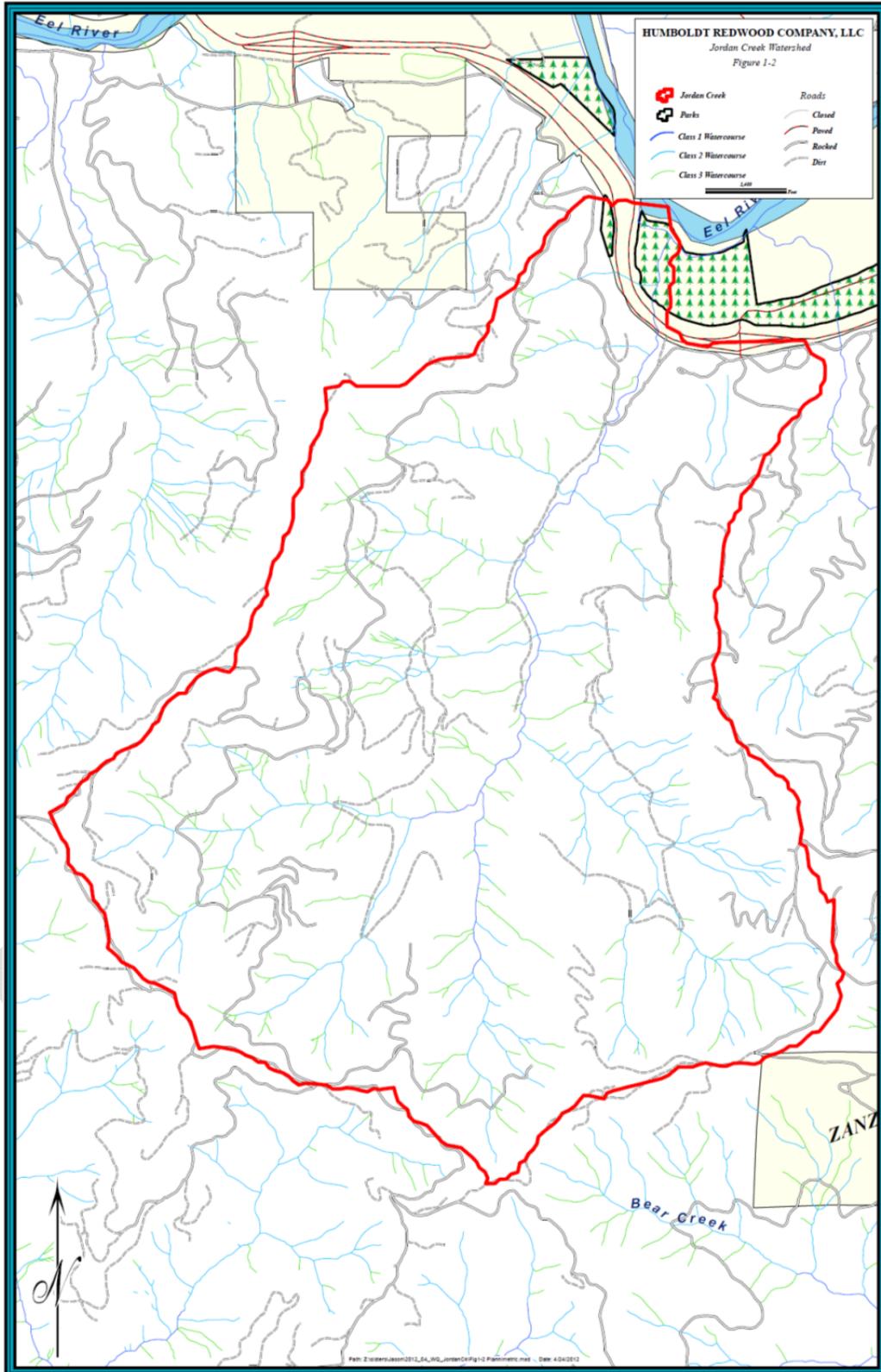


Figure 1: Jordan Creek Watershed.

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