State Water Resources Control Board – Office of Enforcement
Inspection Report

Inspection Date & Time:	02/01/2016 11:47am –3:11 pm	**Inspected By:**	*State Water Resources Control Board, Office of Enforcement:* Dylan Seidner Sr. Environmental Scientist & Bryan Elder Water Resource Control Engineer see **Additional Attendees**, below
SMARTS WDID:	1 23CN602948	**Report By:**	Dylan Seidner
Owner/Operator:	Sierra Northern Railway, 341 Industrial Way, Woodland, CA 95776 Mendocino Railway – Skunk Train, Foot of Laurel St., Fort Bragg		
Site Type:	Railway construction - tunnel cave-in repair		
Site Name:	Skunk Train, Tunnel 1 West Portal		
Site Address:	Approximately 39°26'49.55"N, 123°45'46.10"W (Pudding Creek bridge)		
Site Contact:	Robert Pinoli, Vice President, Skunk Train rjp@mcn.org; 707.964.6371		
Site Staff Present for Inspection:	Robert Pinoli, Vice President, Skunk Train Kennan Beard III, President and CEO, Sierra Northern Railway kbeard@sierrarailroad.com; 530.666.9646 ext. 101 Teri Jo Barber, Storm Water Consultant, Ridge to River Environmental Services terijo@ridgetoriver.com; 707.357.0857 Josh Bumpus, Manager, Maintenance of Way, Sierra Northern Railway jbumpus@sierrarailroad.com; 530.66.9646 (Present only at closing conference)		
Additional Attendees:	Ryan Bey, Environmental Scientist Allison Clark, Scientific Aid Devon Jorgenson, Engineering Geologist *North Coast Regional Way Quality Control Board* Angela Liebenberg, Environmental Scientist Brian Laird, Warden *Department of Fish and Wildlife*		

Consent:	Yes, inspection, photos, samples. See report.		
Weather:	Approximately 48 °F, no precipitation	**Evidence of Discharge:**	Yes, evidence of historical and current discharges.

All photos by Dylan Seidner unless noted otherwise. This report does not constitute all photos taken during the inspection. Report photos may be modified from their original format.

Site History

The Skunk Train is a scenic railroad operation that runs from Fort Bragg to Willits. The section inspected and documented in this report is Tunnel 1, also referred to as the West Portal, approximately 3 miles from the Fort Bragg terminal. The site included in this inspection includes activities and land on the north and south sides of Pudding Creek, the collapsed tunnel and hillside, and the associated rail bridge over the creek.

According to Mr. Robert Pinoli, Vice President of Skunk Train, between February and June of 2015 over several events, portions of the hillside and tunnel (also referred to as the portal) collapsed and were under repair by a contractor. In June 2015, the contractor was relived of working on the site, and Mr. Pinoli and Mr. Kennan Beard said that there are pending legal actions and insurance claims in regards to work performed by the contractor and the resulting hillside destabilization. Mr. Pinoli said that currently, work at the site is intended to stabilize the site and prevent sediment from moving into the creek.

Partial Timeline

- 10/28/2015, Ryan Bey of the North Coast Regional Water Quality Control Board (North Coast Board) inspected the site, and made Mr. Pinoli aware of the potential threat of discharges of sediment to Pudding Creek.
- 11/13/2015, The North Coast Board mails a copy of a 13267 Order / Notice of Violation to Mr. Pinoli that requires plans to control the discharge of pollutants and sediment from the site.
- 12/17/2015, North Coast Board staff inspects the site and notes problems with erosion and sediment management practices.
- 12/19/2015 – First Notice of Noncompliance for failure to obtain coverage under the Construction General Permit sent to Mr. Pinoli.
- 1/20/2016 – Second Notice of Noncompliance for failure to obtain coverage under the Construction General Permit sent to Mr. Pinoli.

Summary of Findings on Inspection

-**Evidence of discharges of sediment on the south Pudding Creek bank from the Portal Spoils soil stockpile.**
See pages 17-18

-**Perimeter sediment control best management practices at the Portal and North Spoils soil stockpiles are inadequate for controlling sediment flows, allowing sediment to travel beyond silt fencing and straw bale barriers.**
See pages 17-18 and 20-21

-Sediment traps are near capacity, and do not follow specifications indicated in the site erosion control plan. Sediment traps lack detail about design, operation, clean-out and maintenance, and management of discharges.
See pages 7-11

-Plastic sheeting applied to Collapse Area slopes is not installed to specification and requires maintenance, rendering it an ineffective form of erosion control for this area.
See pages 12-14

-**Surface sheen on pooled water throughout the site should be evaluated for potential pollutants.**
See page 11, Photo 13

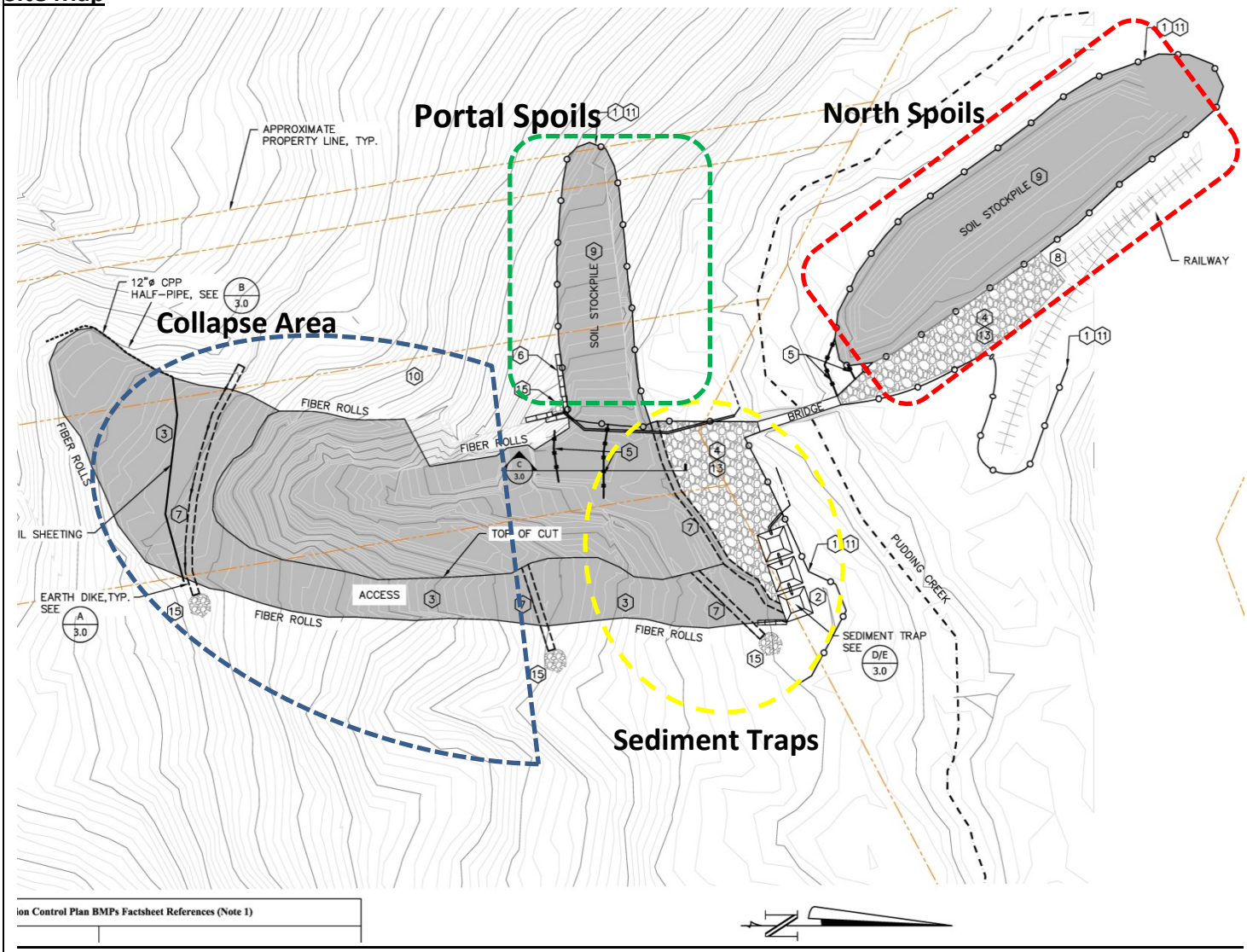
-**The long-term erosion control plan for the site (required by the November 13, 2015 Requirement for Information Pursuant to Water Code section 13267) has not been submitted or developed as of the date of inspection.**
See page 22

-The monthly progress report for January 2016 (documenting implementation of the submitted erosion control plan) was not submitted as of the date of inspection.
See page 22

Pre-inspection Meeting

At approximately 11:47am I arrived at the Skunk Train Depot in Fort Bragg along with Water Board staff Bryan Elder, Ryan Bey, Allison Clark, and Devon Jorgenson. We quickly met with Fish and Wildlife staff Brian Laird and Angela M. Liebenberg, and boarded a train to transport the inspection group from the depot to the site. On the train we met with staff representing the site, Robert Pinoli, Vice President of Skunk Train, Kennan Beard, President and CEO of Sierra Northern Railway, and Teri Jo Barber, storm water consultant for Ridge to River Environmental Services. During the train ride, Mr. Pinoli provided a summary of site operations and answered questions about site history. Mr. Pinoli briefly discussed a disagreement that the site required a Construction General Storm Water Permit, but said that Skunk Train / Sierra Northern Railway would continue their application for a permit. At 11:55am, I asked Mr. Pinoli for consent to conduct the inspection, take photos, and, if needed, take soil and water samples, to which he agreed.

Site Map



Map 1 - Cropped area of the *BMP Implementation Plan*, part of the *Erosion Control Plan* (dated 11/10/2015) submitted in response to *the Requirement for Information Pursuant to Water Code section 13267, for Mendocino Railway, Fort Bragg, Mendocino County* (11/13/2015).

For orientation later in this report, four areas are defined and labelled on Map 1: **Collapse Area** (half circle in blue), **Portal Spoils** (rectangle in green), **Sediment Traps** (circle in yellow), and **North Spoils** (rectangle in red). Pudding Creek and the rail bridge over Pudding Creek are to the left of the **North Spoils** area.

Inspection

At approximately 12:06pm, the train arrived at the site, stopping near the North Spoils soil stockpile (see Map 1) and the adjacent construction staging area.

Photo 1 – Train stationed at the rail line adjacent to the North Spoils area. North Spoils stockpile is on the left, covered with plastic sheeting held in place with sandbags, and partially bordered by a fiber roll. Rocked area in the foreground is used for staging construction equipment.

Photo 2 – View looking from the North Spoils toward Pudding Creek, the Sediment Traps and Collapse Area. Plastic sheeting is held in place on the stockpile with sandbags and lumber.

The inspection group walked from the train arrival location, past the North Spoils (described in detail later on page 21). Mr. Pinoli said the rocked area is where construction equipment and supplies are staged, and that the rocked area is underlain with filter fabric. The intent of the rocked area was explained as a preventative measure for sediment tracking that could occur if operations were staged on bare soil.

The inspection team continued south across the rail bridge over Pudding Creek (Photo 3), toward the Sediment Traps and Collapse Area.

Photo 3 – Rail bridge over Pudding Creek, looking toward the Collapse Area and Sediment Traps.

Pudding Creek Bridge

On the south side of the Pudding Creek rail bridge, straw was applied to soils on both sides of bridge. Application of straw continued down the banks and partially into Pudding Creek (Photo 4). Straw bales are staked into the south bank on both sides of and underneath the bridge (Photo 5).

Photo 4 – South bank of Pudding Creek at the rail bridge.

Closer inspection of the straw application and bales underneath the bridge showed a point of discharge, seen in Photo 5. Ms. Barber said that this discharge is the result of sediment traps dewatering and flowing over soil surface between the traps and Pudding Creek.

Photo 5 – Discharge point identified underneath the rail bridge on the south bank of Pudding Creek. Ms. Barber indicated that the source of this discharge is likely sediment trap dewatering.

Sediment Traps

The group continued to the Sediment Traps, located below the Collapse Area and Portal Spoils (see Map 1). A review of the site's Erosion Control Plan indicates that a designed 3 basin sediment trap system was to be installed to collect sediment laden runoff from the slopes within the Collapse Area, with each sediment basin measuring 16 feet by 16 feet by 4 feet deep (shown in detail on the Erosion Control Plan, page 23, Sections D&E – Sediment Trap Section & Plan). According to Mr. Beard and Mr. Pinoli, the designed sediment basin in the plan was abandoned in favor of building 3 sediment traps with the available space between the tunnel collapse and Pudding Creek (Photo 6). I asked for documentation on the engineering and design specifications, and operation and maintenance of the installed sediment traps. Mr. Pinoli and Mr. Beard indicated that none were available. When asked about the procedure and schedule for maintenance such as sediment clean-out, Mr. Beard said no maintenance had occurred since the trap installation in December 2015, and that plans for clean-out maintenance were in progress. I noted my concern that the traps appeared close to capacity, and that they may overtop and discharge sediment if they are incorrectly managed prior to the next storm event.

Discharge points for the traps are via indirect dewatering through the trap liner at basin edges. Water seeping from the traps has saturated adjacent soils that lie between the traps and south bank of Pudding Creek (see Photo 12 and 10). Saturated soils in this area were covered with hay, and a straw bale barrier is installed between the East Sediment Trap and the south bank of Pudding Creek.

A discharge from the overland flow produced by dewatering of the sediment traps into Pudding Creek is shown in Photo 5, underneath the rail bridge on the south bank of Pudding Creek.

The 3 sediment traps did not have formal designations in the erosion control plan. For the purpose of this report they will be referred to as the Portal Trap, West Trap and East Trap. Outlines of the traps are seen in Photo 6.

During the inspection, Bryan Elder was able to approximate the dimensions of the 3 traps and provided the following estimates for trap volume:

- **Portal Sediment Trap --136,000 gallons**
  Encompassing the collapsed tunnel, outlined red in Photo 6, seen in Photo 7
  *Difficult to gauge as the pond extends an unknown distance into the tunnel
- **East Sediment Trap -- 32,000 gallons**
  Outlined in white in Photo 6, seen in Photos 11-12
- **West Sediment Trap -- 3,000 gallons**
  Outlined in blue in Photo 6, seen in Photo 9

Photo 6 - View of the 3 sediment traps as seen from the top of the Collapse Area slope looking north toward Pudding Creek. Outlined in red is the Portal Trap, consisting of the collapsed tunnel space, slopes of the collapse area and stacked gabions. Outlined in blue is the West Trap, smallest, composed of filter fabric liner and crushed rock. Outlined in white is the East Trap, also composed of filter fabric and crushed rock. Pudding Creek and the rail bridge are visible above the lower two sediment traps.

The Portal Trap basin area is composed of the voided space from the portal/tunnel collapse, 2 sides composed of gabions and crushed rock, and 2 sides consisting of slopes within the Collapse Area. The trap contains a mix of solid sediment and sediment-laden water. Skunk Train staff said that the major source of sediments in this trap are the collapse area slopes above it. The trap was full to a height within 2 feet of the top of the lowest gabions. Mr. Pinoli said that the lowest gabions are stacked 3 to 4 high. Each gabion is 3 feet tall, making the estimated depth of the trap 9-12 feet.

Photo 7 – View of the Portal Trap, looking south toward the Collapse Area slopes and the tunnel. Photo by Bryan Elder.

Photo 8 – Sediment and water within the Portal Trap, looking northeast toward the East Trap, at left. Photo by Bryan Elder.

Photo 9 – West Trap, looking toward the portal and collapse area.

The west sediment trap is downslope and below the portal sediment trap. Although not visible, Mr. Pinoli said that the trap is underlain with filter fabric. Crushed rock is placed along the sides. The trap contained sediment and sediment laden water.

Photo 10 – South bank of Pudding Creek below the West Trap, at the rail bridge. Straw applied along the bank was observed floating in the creek below (see Photos 4 and 5). Straw in this area was saturated. Ms. Barber said that straw was applied as ground cover and as a sediment filter for discharges that are de-watering from the sediment basins. A discharge point to Pudding Creek is shown in Photo 5, under the rail bridge.

Photo 11 - East Trap, also composed of filter fabric and crushed rock. To the right of the photo is the beginning of the slopes of the Collapse Area. This portion of the slope is covered with plastic sheeting held in place by sandbags.

Photo 12 – Ground adjacent to the east sediment trap (to the left of Photo 11). Pudding Creek is out of view, to the left of this photo location. Ms. Barber said that liquid and sediments dewater from the east sediment trap onto the ground north of the trap. Surface flows of water appeared to travel north, toward Pudding Creek. Straw is applied sporadically on the ground adjacent to the trap.

Photo 13 – Example close up of surface sheen in pooled water adjacent to the east sediment trap. The source of the sheen was unknown to Skunk Train staff. Surface sheen on pooled water was seen at several other locations throughout the site.

Collapse Area

The inspection group then hiked up the eastern wooded portion of the slopes leading to the top of the cleared and eroded portions of Collapse Area. Views of the Collapse Area are seen in previous Photos 3, 7, and 9. Potions of the Collapse Area are covered with plastic sheeting as an erosion control BMP. The coverage of the slope with sheeting is incomplete when compared to the erosion control plan, which shows complete coverage of the Collapse Area with 10mm sheeting. On inspection, plastic sheeting was installed at the lower portion of the slopes, adjacent to the east sediment trap (seen in Photos 3, 8, 12) and partial coverage of the upper slope (seen in Photo 14 and 15).

Application of plastic sheeting on slopes in the Collapse Area did not meet the implementation specifications as stated in the erosion control plan. Plastic sheeting was not keyed in at the top of slopes, edges were not embedded 6" into soil, sandbag and weight placement was not at regular intervals and was often more than 10 feet apart, and overlap between sheeting seams was irregular.

Due to the above issues with plastic sheeting implementation and maintenance, the BMP was not an effective form of erosion control for this area. I employed spot checks under sheeting that was not keyed in or embedded and saw indications of surface erosion, and gaps that would allow surface runoff to flow under sheeting and cause additional surface erosion underneath the plastic. Partial application of plastic sheeting on slopes in the Collapse Area has the potential to concentrate runoff, increase its velocity, and funnel it into the downslope portions that are not covered by sheeting, which are the most heavily eroded and steepest portions of the Collapse Area (seen in Photos 14 and 15).

Photo 14 – Upper portion of the Collapse Area. Plastic sheeting is incompletely applied, and not to implementation specifications. The area outlined in white is the steepest portion of the Collapse Area, and also where plastic sheeting is not applied due to safety concerns. In the foreground is a trench with plastic drainage pipe. According to Ms. Barber, the drainage pipe and trench are used to manage storm water run-on and ground water flows. The discharge point for the drainage pipe is shown in Photo 16.

Photo 15 – Lower portion of the Collapse Area. At the left, the lower portion of the slope is covered with plastic sheeting. At the center, the steepest and most eroded portion of the collapse area is uncovered by plastic sheeting, or contains plastic sheeting that is not maintained. Photo by Bryan Elder.

Photo 16 – Discharge point for plastic drainage pipe (seen in Photo 14) used to manage storm water run-on and ground water flows from the upper portion of the Collapse Area. It was flowing water at the time of the inspection. The discharge point is in the woods east and downslope of the upper portion of the Collapse Area.

Portal Spoils

The inspection group returned down the Collapse Area slope and the headed west to see the slopes of the Portal Spoils soil stockpile.

Photo 17 – Portal Spoils, seen from an area adjacent to the tunnel and West Trap. Plastic sheeting is applied to the east slope and held in place with sandbags and rocks. The north slope (which faces Pudding Creek, and seen in Photo 18) does not have erosion controls applied to the slope face. Photo by Bryan Elder.

Similar to plastic sheeting applied in the Collapse Area, the sheeting on the Portal Spoils did not meet the implementation specifications of the BMP as stated in the erosion control plan. Plastic sheeting was not keyed in at the top of slopes, edges were not embedded 6" into soil, sandbag and weight placement was often more than 10 feet apart, and overlap between sheeting seams was irregular.

Photo 18 – The north slope of the Portal Spoils, which faces Pudding Creek (out of frame, to the left of the photo). The slope face does not have erosion controls. Fiber rolls and a straw bale barrier are applied as sediment control at the toe. Plastic sheeting visible at the top of the photo is at the top of the east slope.

Photo 19 – Toe of the north slope of the Portal Spoils stockpile, and the point furthest west that sediment controls are applied to the slope toe. Sediment deposits on the ground are evidence of previous flows passing fiber rolls, and moving through and around the straw bale barrier, down the bank of the south bank of Pudding Creek (out of frame of the photo, to the left). Arrows indicate areas of sediment deposits and evidence of movement direction of previous sediment flows.

Photo 20 – Close up of silt fence at a straw bale barrier (part of the longer straw bale barrier seen in Photo 19). Fine sediment here has passed through the straw barrier and silt fence. Pudding Creek is to the left of this photo.

Photo 21 – Bank of Pudding Creek, to the left of Photo 20. Outlined in white is the approximate location of light color sediment deposits that have passed the straw bale barrier and silt fence shown in Photo 20. Sediment deposits on the banks to the water line indicate a previous discharge of sediment.

The straw bale barriers, fiber rolls, and silt fence applied along the northern slope toe of the Portal Spoils are currently not effective at controlling sediment flows coming off the north slope. The current condition of no erosion controls on the slope face, combined with evidence of damaged, unmaintained, or improperly implemented sediment controls (shown in Photos 18-20), has resulted in one or more previous discharges of sediment to Pudding Creek, evidenced by light colored sediment deposits seen in Photos 20-21, and deposits of sediment past BMP sediment barriers seen in Photo 19.

North Spoils

After the straw bale barrier and the south banks of Pudding Creek were examined, the inspection continued back across the rail bridge to the North Spoils stockpile (previously seen in Photos 1 and 2).

Bryan Elder was able to estimate the footprint of the spoils pile via GPS measurement at 11,280 square feet. By estimating that the average height of the pile is 10 feet, a maximum width of 60 feet, and applying a rounding factor of 0.75, the estimated volume of soil in the stockpile is 3,100 cubic yards.

Photo 22 – Southeast edge of the North Spoils pile, to the left of this photo (out of frame) is the rail bridge and Pudding Creek. Plastic sheeting is applied over the pile, and a hay bale barrier is employed as sediment control at the spoils pile edge, which is also the top of the north bank of Pudding Creek.

Photo 23 – Southwest side of the North Spoils. The dashed area highlights sediment that has travelled beyond the silt fence and fiber roll at the pile's edge. Both the silt fence and fiber roll show signs of incorrect installation per specifications in the site's erosion control plan, and are in need of maintenance or replacement (see Photo 24-25). Pudding Creek is to the right of the riparian vegetation in the photo.

Photo 24 – Close-up of sediment controls along the southwest side of the North Spoils. The stockpile is on the right; riparian vegetation along Pudding Creek is to the left. The fiber roll shown requires replacement, and is missing stakes. The fiber roll is incorrectly installed overlapping a silt fence, rendering the fence and roll ineffective.

Photo 25 - Close-up of sediment controls along the southwest side of the North Spoils. The fiber roll shown here was not installed flush against the soil surface, and has allowed sediment to migrate under the fiber roll toward riparian vegetation along the banks of Pudding Creek.

End of Field Inspection & Closing Conference

At approximately 2pm, all staff on the inspection at the site boarded the train, and rode back to Skunk Train Depot, arriving there at 2:29pm.

I asked Skunk Train staff if we could break for 10-15 minutes, and then reconvene for the inspection closing and summary, and they agreed. Mr. Laird (DFW) departed from the depot, and was not in attendance at the closing conference. Water Board staff along with Ms. Liebenberg of DFW unloaded field equipment and discussed inspection observations during this time.

A closing conference was held inside the Skunk Train Depot office. In attendance were Robert Pinoli, Kennan Beard, Teri Jo Barber, Josh Bumpus, all Water 5 Board staff (including myself), and Angela Liebenberg.

The conference included the following topics and observations:

-**Evidence of discharges of sediment on the south Pudding Creek bank from the Portal Spoils soil stockpile.** Sediment deposits were observed beyond the applied perimeter sediment controls (seen in Photos 19) and on the banks of Pudding Creek indicating a previous discharge of sediment (Photos 20-21). Erosion and sediment controls in this area are currently under maintained and insufficient at preventing discharges of sediment to Pudding Creek.

-**Sediment best management practices at the Portal and North Spoils soil stockpile perimeters are inadequate to control sediment flows.** At the Portal Spoils area, inspection of the straw bale barrier and silt fence (seen in Photos 19-20) showed that sediment is moving through or beyond these BMPs. At the North Spoils area, silt

fence and fiber rolls along the west side of the pile (following the banks of Pudding Creek) were installed incorrectly per specifications of the site's erosion control plan, or required maintenance or replacement (Photos 23 – 25). Sediment from the North Spoils pile was observed migrating under or through gaps in perimeter control, toward the north bank of Pudding Creek.

-Sediment traps are near capacity, and do not follow specifications indicated in the site erosion control plan. Sediment traps in use lack detail about design, operation, clean-out, and management of discharges. Traps seen on inspection were near capacity with sediment, with no defined operation for clean-out and disposal of settled sediment. If capacity of traps is not sufficient to account for storm water runoff sediment loads, or if a clean-out is not developed and implemented prior to a heavy storm event, the traps threaten to overtop and discharge sediment to the adjacent Pudding Creek. Current discharge points for the traps are via indirect dewatering at basin edges, which may generate additional surface water flows and sediment discharges from land adjacent to Pudding Creek if managed incorrectly.

Under the Construction Storm Water General Permit, sediment basins at the site must be designed according to methods provided in CASQA's Construction BMP Guidance Handbook.

- Plastic sheeting applied to Collapse Area slopes as erosion control is not installed to specification and requires maintenance, reducing effectiveness. Plastic sheeting is not keyed in at the top of slopes, edges were not embedded 6" into soil, plastic coverage of the slope was partial, and weight placement and sheeting overlap is irregular. Due to these issues, surface erosion was noted under plastic sheeting at the Collapse Area, and the BMP may increase surface erosion when high velocity concentrated runoff from plastic sheeting is directed onto adjacent, downslope, uncovered soil in the Collapse Area.

-**Surface sheen on pooled water throughout the site (example in Photo 13) should be evaluated for potential pollutants.** Skunk Train staff was unaware of potential sources of pollution that could cause this sheen. Further evaluation is required to ensure that the sheen is not the result of oil or grease or other pollutants that may contaminate soil or discharge to Pudding Creek.

-**The long-term erosion control plan for the site (required by the November 12, 2015 Requirement for Information Pursuant to Water Code section 13267) has not been submitted or developed.** During the closing conference, I asked Mr. Pinoli and Mr. Beard about the erosion control plan developed for the site (and referenced in this report). They indicated that the submitted erosion control plan was considered short-term, and that no long term stabilization plan had been developed for the site nor was one submitted in response to the November 12, 2015 Requirement for Information. A long-term erosion control plan was to be submitted by December 11, 2015 per the Requirement for Information.

-The monthly progress report for January 2016 (documenting implementation of the submitted erosion control plan) was not submitted as of the date of inspection. Per the November 12, 2015 Requirement for Information, the report for January was to be submitted the last business day of the month, January 29, 2016. Skunk Train staff said that the timeline for report submission was problematic, since time required for report preparation would mean that several days at the end of the month would not be accounted for in the report. I suggested that Mr. Pinoli contact staff at the Regional Board office to discuss the issue. Mr. Pinoli had not previously contacted staff about submitting the reports as required by the Requirement for Information.

The conference closed and the inspection ended at 3:11pm.

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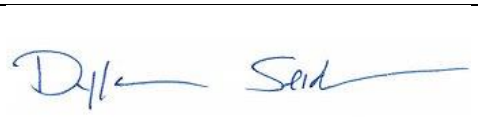
Dylan Seidner		3/21/2016
INSPECTOR NAME	**INSPECTOR SIGNATURE**	**DATE**
Matthew Buffleben		3/21/2016
REVIEWER NAME	**REVIEWER SIGNATURE**	**DATE**