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Date:  
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ARCADIS Project No.:  
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Subject:  
Offsite Sources Review  
Former Georgia-Pacific Wood Products Facility  
Fort Bragg, California



**Introduction**

ARCADIS obtained and reviewed publicly available information regarding potential upgradient sources of constituents of interest (COIs) with respect to the Former Georgia-Pacific LLC (Georgia-Pacific) Wood Products Facility (site) in Fort Bragg, California. The main objective was to identify potential upgradient sources of COIs to groundwater, paying special attention to the Skunk Train Depot and suspected/known releases of total petroleum hydrocarbons (TPH) and/or chlorinated volatile organic compounds (CVOCs) east of the Parcel 3 Former Machine Shop and the Parcel 5 Former Mobile Equipment Shop. ARCADIS identified 13 upgradient facilities with open regulatory cases and 1 upgradient facility with a closed regulatory case as possible contributors of TPH and/or CVOCs to the site (Figure 1). Based on factors such as the extent of contamination, investigation status, and proximity to the site, ARCADIS classified seven of the facilities as higher risk and seven as lower risk:

Higher Risk Facilities

- Skunk Train Depot/California Western Railroad (Foot of West Laurel Street)
- Unocal 76/Tosco Gasoline Station No. 2211 (225 North Main Street)
- Coast Cleaners (327 North Franklin Street)
- Beacon/Ultramar Gasoline Station No. 493 (210 South Main Street)
- Perkins Trust (500 North Main Street)
- Severi's Service (105 North Main Street)
- One Stop Shop (105 South Main Street)

## Lower Risk Facilities

- Union Oil Bulk Plant No. 0220 (720 North Franklin Street)
- Mendocino County Department of Public Works (MCDPW) Road Yard (120 East Bush Street)
- Franklin Street Tank (447 North Franklin Street)
- SBC Fort Bragg (441 North Franklin Street)
- Judy Shepard (221 North Main Street)
- Texaco R&F Station (700 South Main Street)
- Polly Cleaners and Laundry (930 North Franklin Street)

## **Methods**

To select upgradient facilities of interest, ARCADIS reviewed information provided on the State Water Resources Control Board's GeoTracker website (<http://geotracker.swrcb.ca.gov>) and within a regulatory database search report prepared by Environmental Data Resources, Inc. (EDR, 2008). ARCADIS then reviewed available regulatory files for these facilities of interest at the California Regional Water Quality Control Board, North Coast Region (NCRWQCB). ARCADIS also reviewed regulatory files provided by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) regarding the Skunk Train Depot. Finally, ARCADIS compiled results from sampling and analysis of existing or recently installed monitoring wells MW-1.1, MW-3.17, MW-3.18, MW-3.19, MW-5.2, and MW-8.1 (Figure 1) to evaluate the current quality of shallow groundwater migrating onto the site.

## **Skunk Train Depot/California Western Railroad**

DTSC provided environmental investigation reports related to the Skunk Train Depot dating back to 1998. Some of these reports pertained to on-facility environmental impacts, while others discussed off-facility impacts. The discussion below has been divided into on-/near-facility and off-facility impacts for clarity.

### *On-/Near-Facility Impacts*

DTSC (1998) collected one waste oil and five surficial soil samples around the Roundhouse at this facility (Table 1 and Figure 2) for chemical analysis. Hazardous concentrations of total and soluble zinc, soluble lead, and soluble copper were reported (Table 1). As a result, DTSC (1998) cited California Western Railroad for illegal disposal and treatment of hazardous wastes. ARCADIS understands that no further investigation around the Roundhouse has occurred since DTSC's (1998) sampling.

Onsite monitoring well MW-3.18 is situated immediately downgradient of this facility. Interestingly, despite the known releases of oil and metals around the Roundhouse, the initial groundwater sample collected from this well in early October 2008 did not contain TPH, semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, or dissolved metals at concentrations of concern. However, the following CVOCs were detected at concentrations ranging from 0.2 to 3.3 micrograms per liter ( $\mu\text{g/L}$ ): Freon 113, 1,1-dichloroethene, 1,1-dichloroethane, *cis*-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene (TCE), and perchloroethene (PCE). Follow-up sampling in December 2008 and March 2009 resulted in similar concentrations of

CVOCs, with one new compound detected (vinyl chloride). While no exceedances of Maximum Contaminant Levels (MCLs) were noted for the CVOCs (Table 2), these detections point to a source at or upgradient of this facility. The trace-level detections of TPH as gasoline (TPHg; C6–8) at 0.012 milligram per liter (mg/L) in this well in both October 2008 and March 2009 may be indicative of the downgradient extent of a plume emanating from this facility. Georgia-Pacific plans to continue sampling this well quarterly for TPH, VOCs, PAHs, and dissolved metals to track any such upgradient plumes.

Although not installed to monitor potential releases from the Skunk Train Depot, onsite monitoring well MW-3.17 has contained TCE at concentrations up to 1.0 µg/L since October 2008. The only other CVOC that has been detected in monitoring well MW-3.17 is PCE (Table 2). The differing CVOC signatures in monitoring wells MW-3.17 and MW-3.18 as well as the presence of elevated concentrations of TPHg (900 µg/L as C8–10) in monitoring well MW-3.17 suggest that the contaminant sources affecting these two locations may differ.

To characterize impacts to soil and groundwater from multiple potential sources in the area just to the north of the Skunk Train Depot (Roundhouse area), ARCADIS collected primary and step-out soil and grab groundwater samples between monitoring wells MW-3.17 and MW-3.18 as part of its Operable Unit C (OU-C) investigation. One of the suspected sources of subsurface contamination is a former diesel aboveground storage tank (AST) that was operated by the Skunk Train. Soil and grab groundwater samples collected in the area of this AST contained TPHg and TPH as diesel (TPHd) at “actionable” concentrations (greater than 10 times applicable screening levels). Furthermore, grab groundwater samples in this area also contained certain VOCs (e.g., naphthalene, 1,2,4-trimethylbenzene, and PCE) and PAHs at actionable concentrations. These findings, along with the fact that TPHg and TPHd have never been detected in monitoring well MW-3.16R (located downgradient of a [former] potential onsite source; Figure 1), support the theory of an offsite source in this area.

### *Off-Facility Impacts*

Following up on complaints filed with Mendocino County Air Quality District against California Western Railroad, DTSC (1999) collected soil and ash samples from locations along the Noyo River where disposal and burning of railroad ties originating from the Skunk Train Depot occurred. Samples were analyzed for one or more of the following: metals (arsenic, chromium, and copper); SVOCs; and dioxins/furans (D/F). Maximum metals concentrations were 26,300 milligrams per kilogram (mg/kg) for arsenic, 4,750 mg/kg for chromium, and 18,700 mg/kg for copper. The maximum D/F concentration was 700 picograms per gram on a toxic equivalent basis.

### *Regulatory Status*

DTSC (2001) issued a draft Corrective Action Consent Agreement, stating that a facility assessment would be performed to identify areas that may require investigation and/or remediation. Within 30 days of the facility assessment, negotiations would be initiated in a separate consent agreement to address necessary investigation and/or remediation activities. On 26 June 2001, the above-mentioned consent agreement was finalized and a project coordinator was assigned to the case. On California Western Railroad's behalf, Erler & Kalinowski, Inc. (2001)

submitted a *Preliminary Assessment Report* to DTSC. Subsequently, DTSC (2002) identified 35 solid waste management units along the right-of-way between Fort Bragg and Willits.

Due to a change in ownership from California Western Railroad to Mendocino Railway (a division of Sierra Northern Railway [DTSC, 2008]), DTSC (2005) issued another consent agreement. It required the preparation of a Current Conditions Report, RCRA Facility Investigation, Corrective Measures Study, and Public Participation Plan. On Mendocino Railway's behalf, Environmental Resources Management, Inc. (2005) submitted an *Interim Measures Work Plan* to DTSC outlining plans for the removal and disposal of remaining ash at the former burn areas along the right-of-way between Fort Bragg and Willits to prevent or minimize the potential spread of contamination. As of March 2008, DTSC had requested a revised *Interim Measures Work Plan* to include several burn areas omitted in the initial version as well as a detailed description of the burn locations. It appears that a revised *Interim Measures Work Plan* has not been prepared because such a document was not provided by DTSC for review.

#### **Unocal 76/Tosco Gasoline Station No. 2211**

From October 1998 through January 1999, facility upgrades were performed at Unocal 76/Tosco Gasoline Station No. 2211 that included removal, replacement, and abandonment of several used oil and gasoline underground storage tanks (USTs). During this time, a release of gasoline occurred at the facility from the USTs being abandoned. Soil samples were collected and maximum concentrations of the following constituents were detected: TPHg at 4,680 mg/kg; TPHd at 32 mg/kg; total recoverable petroleum hydrocarbons at 1,320 mg/kg; benzene at 2.7 mg/kg; and methyl *tert*-butyl ether (MTBE) at 14 mg/kg. Groundwater collected from the excavation pits contained TPHg up to 7,080 µg/L, TPHd up to 480 µg/L, benzene up to 60.6 µg/L, and MTBE up to 491 µg/L (Miller Brooks Environmental, Inc., 2004; Stantec Consulting Corporation [Stantec], 2009). Samples from groundwater monitoring wells subsequently installed at the facility contained even higher concentrations of these contaminants. A sensitive receptor survey identified the closest active domestic water supply well to be approximately 1,300 feet northwest of the facility.

Several methods, such as ozone injection and groundwater extraction, have been used to remediate the groundwater at this facility (Secor International, Inc. [Secor], 2007; Stantec, 2009). Quarterly groundwater monitoring has occurred since the third quarter 1999. According to the latest available monitoring report (Stantec, 2009), the following constituents were present at the indicated maximum concentrations: MTBE at 73 µg/L, TPHg at 5,800 µg/L, benzene at 1,100 µg/L, and TPHd at 580 µg/L. Secor (2007) and Stantec (2009) believe TPH impacts to soil have been adequately delineated: residual contamination is present around the abandoned USTs and a former tank pit. However, because impacts to groundwater in the downgradient direction have not been fully defined (Stantec, 2009), NCRWQCB (2009b) has requested that additional investigation be conducted. The GeoTracker database indicates that a work plan for such an investigation has been submitted, but no electronic copy is available for review.

Onsite monitoring well MW-3.19 is situated approximately 250 feet crossgradient of this facility. Despite the known releases of fuels at this facility, the initial groundwater sample collected from this well in October 2008 did not contain TPH, SVOCs, PAHs, PCB congeners, or dissolved metals at concentrations of concern. However, PCE was detected at 6.2 µg/L, just above the MCL of 5 µg/L. TCE was also detected at an estimated concentration of 0.4 µg/L. Because

of a lack of detections, SVOC and PCB congener analyses of samples collected from this well were subsequently discontinued, but follow-up TPH, VOC, and PAH analyses in December 2008 and March 2009 corroborate the October 2008 groundwater impacts (Table 2).<sup>1</sup>

The lack of detections of the other CVOCs observed in monitoring well MW-3.18 suggests that the sources and/or timing of contamination that may be migrating from these two facilities (Skunk Train Depot and Unocal/Tosco Gasoline Station No. 2211) may differ. It is also possible that another upgradient source of CVOCs exists (see discussion for Coast Cleaners below). Finally, the trace-level detections of TPHg in this well may be indicative of the downgradient extent of a plume emanating from this facility. ARCADIS plans to continue sampling this well quarterly for TPH, VOCs, PAHs, and dissolved metals to track any such upgradient plumes.

### **Coast Cleaners**

Although NCRWQCB leaking underground storage tank (LUST) Case No. 1TMC297 for Coast Cleaners (diesel release to soil only) has been closed since 1995, the presence of CVOCs in shallow groundwater samples collected from onsite monitoring wells MW-3.18 and MW-3.19 suggests that there is an offsite source of chlorinated solvents. Coast Cleaners may or may not be the source, but given its location, known use as a dry-cleaning business, active status under the Resource Conservation and Recovery Act as a small-quantity generator of wastes containing halogenated solvents, and lack of investigation for COIs other than TPH, it warrants additional consideration. Unfortunately, limited information is available, and Georgia-Pacific requests that NCRWQCB and DTSC further investigate this potential source.

### **Beacon/Ultramar Gas Station No. 493**

This facility was leased by Ultramar from 1967 until 2004. Two leaks of unleaded gasoline and corresponding soil and groundwater contamination were discovered in 1989 following an inspection by the Mendocino County Public Health Division. Shortly thereafter, NCRWQCB (1990) issued a Cleanup and Abatement Order, which indicated that a premium unleaded tank had been leaking at a rate of 0.64 gallon per hour. By 1990, groundwater contamination by TPHg had reached 96,000 µg/L, and benzene, toluene, ethylbenzene, and xylenes (BTEX) were present at concentrations ranging from 1,700 to 15,000 µg/L. The facility was demolished in June 1997 and all USTs, dispensers, and associated piping were removed. TPH-impacted soil was also excavated and transported offsite for disposal. As of March 2005, several contaminants were still being detected in groundwater at the facility: TPHg at 700 µg/L; benzene at 100 µg/L; toluene at 1.4 µg/L; ethylbenzene at 29 µg/L; xylenes at 1.0 µg/L; and MTBE at 4.2 µg/L (Horizon Environmental, 2005).

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<sup>1</sup>It should be noted that although monitoring well MW-3.19 is proximate to the impacts at this facility, the groundwater flow direction in this area is southwesterly, making the well too far crossgradient to adequately assess potential onsite impacts. However, the position of the well is suitable for detecting potential onsite impacts from the Coast Cleaners facility, as discussed below.

Onsite monitoring well MW-5.2 is situated approximately 750 feet crossgradient of this facility. The only organic compound detected in recent sampling of this well was pentachlorophenol (PCP). Several dissolved metals have also been detected in this well, but at fairly low concentrations.

## **Perkins Trust**

NCRWQCB has an open LUST Case No. 1TMC439 for this facility in the post-remedial-action monitoring phase (EDR, 2008). A gasoline release was first discovered in 2000, and a subsequent preliminary investigation detected impacts to groundwater. The most recent groundwater monitoring report (The McEdwards Group, 2008) indicates groundwater is impacted by TPHg (up to 1,500 µg/L), TPHd (up to 220 µg/L), and TPH as Stoddard solvent (up to 570 µg/L).

Onsite monitoring well MW-3.17 is situated about 500 feet roughly downgradient of this facility. A sample collected from this well in October 2008 contained TCE at a trace concentration of 0.2 µg/L, TPHg (C8–10) at 900 µg/L, a variety of noncarcinogenic PAHs at fairly low concentrations, and PCP at a trace concentration of 0.3 µg/L. Because of a lack of detections, SVOC and PCB congener analyses of samples collected from this well were subsequently discontinued, but follow-up TPH, VOC, and PAH analyses in December 2008 and March 2009 corroborate the October 2008 groundwater impacts, including new detections of PCE (up to 0.9 µg/L in March 2009) and increasing TCE concentrations (up to 1.0 µg/L in March 2009) (Table 2). The Perkins Trust LUST may be a potential contributor of TPH-related contamination to the site. It may also be a potential contributor of CVOCs to the site, but it is impossible to confirm due to the lack of CVOC data.

## **Severi's Service**

During the 15 October 2008 monthly project meeting for the site, Mr. Craig Hunt indicated that the NCRWQCB recently opened LUST Case No. 1TMC603 for Severi's Service (now Kevin Young's Auto Repair). Indeed, although this facility was identified in the EDR (2008) report on the historical UST and UST lists, it was not identified as a LUST case at that time (August). Given that the case was just opened, Georgia-Pacific requests that NCRWQCB provide any additional information.

Onsite monitoring well MW-5.2 is situated approximately 400 feet crossgradient of this facility. PCP was detected at 0.86 µg/L (just less than the MCL of 1 µg/L) in the sample collected from this well in September 2008, but it was not detected in the two subsequent monitoring rounds (December 2008 and March 2009) (Table 2). Dissolved metals concentrations in the samples collected over the past three rounds from this well have been relatively low. The migration of potentially contaminated groundwater from Severi's Service onto the site cannot be adequately assessed based on the crossgradient position of monitoring well MW-5.2.

**One Stop Shop**

The first reported contaminant release at One Stop Shop occurred in 1998, when a petroleum product was released from an unknown source. After the removal of three USTs in late 1998 (LACO Associates, 2008), soil surrounding the tank was believed to have been contaminated, with soil beneath the pump islands considered very contaminated (NCRWQCB, 1999). Gasoline, ethylbenzene, xylenes, and MTBE were all detected in soil and groundwater samples from the excavation pit and pitwater samples, with benzene and toluene additionally detected in pitwater samples. Site investigation began in 2000 with the installation of three monitoring wells (LACO Associates, 2008). A remedial action plan was submitted in 2004, and as of the second quarter 2008, groundwater beneath the facility was still being monitored quarterly. The latest monitoring report (LACO Associates, 2008) indicated contamination was still present at the site: TPHg at 12,000 µg/L, benzene at 2.8 µg/L, toluene at 30 µg/L, ethylbenzene at 300 µg/L, and xylenes at 1,200 µg/L.

Onsite monitoring well MW-5.2 is situated approximately 400 feet crossgradient of this facility. As mentioned above, PCP was the only organic compound detected in recent sampling of this well (Table 2), and dissolved metals concentrations have been relatively low. Insufficient data are available to confirm that groundwater contamination at and around the One Stop Shop is migrating onto the site, but it is possible given the proximity of the facility and the known groundwater impacts.

**Union Oil Bulk Plant No. 0220**

The initial investigation of this facility occurred in 1988. TPHg and TPHd were detected in groundwater at concentrations up to 8,800 and 160,000 µg/L, respectively (Law Office of Jack Silver, 2006; Stantec, 2008). Benzene was also detected at concentrations up to 87 µg/L at that time. Over the next two decades, several monitoring wells were installed and site investigation continued. TPHg, TPHd, and BTEX were consistently detected beneath the facility. The diesel release was first reported in March 1997 (NCRWQCB, 1997).

Diesel was also released in April 2007 after a fuel delivery truck began to leak. The results of the cleanup of the spill were summarized by Apex Envirotech (2007). A complainant had observed leaks from pipes associated with the AST, oil sheens on standing pools of water, drums stored on sparge wells, as well as the leaking fuel truck. Following this second release, impacted soil was excavated and transported to a landfill. During this time, two soil samples were collected and TPHd was detected at 6,700 and 3,400 mg/kg. Quarterly groundwater monitoring still occurs at the facility. The most recent available reports (Secor, 2008; Stantec, 2008) indicate that TPHg and TPHd are still present at the site at concentrations up to 69,000 and 30,000 µg/L, respectively. BTEX and MTBE were not detected in any of the sampled wells during the first and second quarters of 2008.

Onsite monitoring well MW-1.1 is situated about 1,300 feet crossgradient of this facility. The initial groundwater sample from this well collected in early October 2008 contained no TPH, VOCs, SVOCs, PAHs, PCB congeners, chlorophenols, or dissolved metals at concentrations of concern (Table 2). Organic analyses of samples collected from this well were subsequently discontinued, but follow-up dissolved metals analyses in December 2008 and March

2009 have confirmed the lack of exceedances for these particular COIs (Table 2). Releases from Union Oil Bulk Plant No. 0220 are likely not impacting groundwater migrating onto the site.

### **MCDPW Road Yard**

According to EDR (2008), NCRWQCB has an open LUST Case No. 1TMC337 in the pollution-characterization phase for this facility. A gasoline release was first discovered in 1996, and as of 2000, the extent of impacts was still being characterized. Groundwater is noted to have been affected, with a maximum reported MTBE concentration of 1,600 µg/L. It does not appear that any further investigative or remedial activity has occurred at this facility since 2000 (GeoTracker lists the site as open but inactive). Given the distance from the site, it is unlikely releases from the MCDPW Road Yard are impacting groundwater migrating onto the site. No further information was obtained during our file review at NCRWQCB or was available on GeoTracker.

### **Franklin Street Tank**

The first documented release to occur at the Franklin Street Tank involved a leak of diesel fuel oil and additives in July 2007. Soil samples collected in June 2007 contained TPHd at relatively low concentrations (up to 32 mg/kg). Groundwater grab samples were not collected at that time, but Kleinfelder's (2007) work plan for site investigation included plans for installation of two 20-foot-deep soil borings to begin groundwater sampling. More current information regarding this site was not available.

### **SBC Fort Bragg**

Two LUST cases exist for this facility: one is closed (Pacific Bell TD-027/NCRWQCB Case No. 1TMC025) and the other is open (SBC Fort Bragg/NCRWQCB Case No. 1TMC572). Regarding the closed case, in January 1988, a 1,000-gallon UST that was once used to hold diesel fuel was removed from the facility. Groundwater samples collected during the removal contained TPHd up to 570 µg/L (County of Mendocino, 1988). The diesel release, though not reported until March 1988, was believed to have happened during the removal of the UST. Monitoring wells were installed, but later removed due to installation errors. The release was remediated and the case was administratively closed in February 1998.

In September 2004, AT&T removed a 1,000-gallon diesel UST from the facility (Environmental Resolutions, Inc. [ERI], 2006a<sup>2</sup>). Soil samples could not be collected at that time because of the prevalence of pea gravel fill and the potential for undermining a building. However, one groundwater and two soil samples (11.5 and 12 feet below ground surface [bgs] in separate borings) were collected in February 2005 (Shaw Environmental, Inc. [Shaw], 2005). Although TPHd, BTEX, MTBE, and 1,2-dichloroethane (1,2-DCA) were not detected in the soil samples, TPHd was detected at a concentration of 1,800 µg/L in groundwater (BTEX, MTBE, and 1,2-DCA were not detected). ERI (2006b)

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<sup>2</sup>Note that the address provided for the facility in this and other reports is 447 North Franklin Street, but NCRWQCB has 441 North Franklin Street in its records.

subsequently installed and sampled four monitoring wells at the facility. TPHd, BTEX, and MTBE were not detected in the groundwater samples, but TPHd was detected at 210 µg/L in water collected from a basement access sump. No groundwater or sump samples collected during the next three quarters of monitoring contained TPHg, TPHd, BTEX, or MTBE (ERI, 2007; Shaw, 2007a,b). No further action was requested (Shaw, 2007b), but the case remains open.

### **Judy Shepard**

Limited information is available regarding this site assessment case that has been open with NCRWQCB since 1995. Although not technically a LUST case, it appears to be related to a release of some sort to soil. There has been no regulatory activity for this facility since 1995.

### **Texaco R&F Station**

The Texaco R&F Station has been in service since 1966, when an oil-water separator that discharged to a dry well was installed in the service bay. Discharges of wastes to the dry well had occurred and went undetected until 1990 (NCRWQCB, 1993). In late 1989, oily waste was observed floating on the groundwater surface in the dry well. It was also in 1989 that the first unauthorized leak was reported of waste grease. By 1992, another unauthorized leak occurred, resulting in groundwater contamination by TPHd (10,000 µg/L) and BTEX (2,200 to 21,000 µg/L) (NCRWQCB, 1993). In 1999, it was determined that severe contamination and highly impacted soil were present. A Corrective Action Plan was submitted for the remediation of soil and groundwater contamination in June 2007 (NCRWQCB, 2007).

Onsite monitoring well MW-8.1 is situated approximately 150 feet west of this facility. Despite the known releases of fuels at this facility, the initial groundwater sample collected from this well in October 2008 did not contain TPH, VOCs, SVOCs, PAHs, PCB congeners, chlorophenols, or dissolved metals at concentrations of concern. All analyses except dissolved metals have since been discontinued, and recent results corroborate the lack of detection of dissolved metals at concentrations of concern (Table 2). Note that the groundwater flow direction in this area appears to have a strong northerly component (Advanced GeoEnvironmental, Inc., 2008), so monitoring well MW-8.1 is not suitably positioned to assess the potential migration of impacted groundwater from this facility onto the site.

### **Polly Cleaners and Laundry**

NCRWQCB (2008) opened this case in July 2008 in response to a documented release of PCE to soil and groundwater (Ceres Associates, 2007). Polly Cleaners and Laundry was operated as a dry-cleaning facility from approximately the early 1990s until February 2007. Ceres Associates (2007) advanced six Geoprobe<sup>®</sup> borings at the facility and collected soil and groundwater grab samples for VOC analyses. Groundwater was encountered at 23 feet bgs in mostly sandy soils.

PCE was the only VOC detected in soil. Although concentrations were fairly low—ranging from not detected to 0.074 mg/kg—and no soil samples collected below 5 feet bgs had hits, all four groundwater grab samples contained PCE at

concentrations ranging from 0.89 to 9.50 µg/L. The only other VOC detected in groundwater was toluene (0.58 to 1.6 µg/L).

Based on these results, NCRWQCB (2008) requested a work plan for additional investigation and reviewed (NCRWQCB, 2009a) such a plan prepared for the site by EBA Engineering in November 2008 (document not available for ARCADIS's review). A revised work plan addressing NCRWQCB (2009a) comments is due in July.

Ceres Associates (2007) estimated the groundwater flow direction to be to the northwest. ARCADIS agrees with this estimation and given the local topography, proximity to Pudding Creek, and distance to the site, it would appear that releases from this facility are not likely to impact the site. However, this case highlights the potential for the Coast Cleaners facility (discussed above), which was only investigated to delineate a diesel leak from a UST in the mid-1990s, to be a potential contributor of CVOCs to the site.

## Conclusions and Recommendations

Recent detections and variable signatures of CVOCs in onsite monitoring wells MW-3.17, MW-3.18, and MW-3.19 suggest that more than one offsite source of chlorinated solvents may be impacting the quality of shallow groundwater migrating onto the site. In addition to the Skunk Train Depot, potential sources include Coast Cleaners and Perkins Trust. Georgia-Pacific requests that NCRWQCB and DTSC consider investigating these two facilities in greater detail to help resolve the source(s) of CVOCs migrating onto the site. In the meantime, Georgia-Pacific will continue with quarterly sampling of these wells for VOCs (in addition to TPH, PAHs, and dissolved metals) to monitor the contamination.

TPH detections were relatively minor in each of the above-mentioned wells except MW-3.17, despite the suspected upgradient sources of fuel releases such as Perkins Trust, Skunk Train Depot, and Unocal 76/Tosco Station No. 2211. However, recent groundwater grab samples collected in this area as part of the OU-C investigation support the presence of one or more offsite sources, as most of the hits are located between monitoring wells MW-3.17 and MW-3.18 near the eastern boundary of the site. Furthermore, TPHg and TPHd have never been detected in monitoring well MW-3.16R, which is located downgradient of a (former) potential onsite source. Oil and metal releases to soil are documented in the Roundhouse area of the Skunk Train Depot. To the north of the Roundhouse, a former Skunk Train Depot diesel AST may be contributing to onsite TPH detections in soil and shallow groundwater observed during the OU-C investigation. Georgia-Pacific requests that DTSC further investigate the Skunk Train Depot.

The lack of significant fuel contamination observed in recent groundwater samples collected from onsite monitoring well MW-3.19 suggests that Unocal 76/Tosco Station No. 2211 is currently not a source of petroleum to groundwater migrating onto the site. However, although located proximate to that facility, monitoring well MW-3.19 is crossgradient hydrogeologically, so there are insufficient data to make a conclusion. Nevertheless, recent observations made during onsite soil excavation being conducted as part of the interim remedial actions strongly indicate that TPH-related contaminants are, in fact, migrating onto the site from this facility. Furthermore, PCE was detected in monitoring well MW-3.19 above the MCL, indicating an offsite source of CVOCs at or upgradient of this facility, perhaps Perkins Trust

or Coast Cleaners. As mentioned above, the difference in VOC signatures between the samples from monitoring wells MW-3.17, MW-3.18, and MW-3.19 implies more than one source is upgradient of the site.

## Attachments

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| Figure 1 | Offsite Facilities of Interest   |
| Figure 2 | Skunk Train Depot Sampling Locations and Selected Results  |
| Table 1  | COIs Detected in Skunk Train Depot Oil and Soil Samples  |
| Table 2  | Qualitative Summary of COIs Detected in Upgradient Onsite Monitoring Wells between October 2008 and March 2009 |

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LEGEND:  
 — CITY PARCEL BOUNDARIES  
 [ ] FACILITY PARCEL

T0604500319  
 ONE STOP SHOP  
 105 SOUTH MAIN STREET

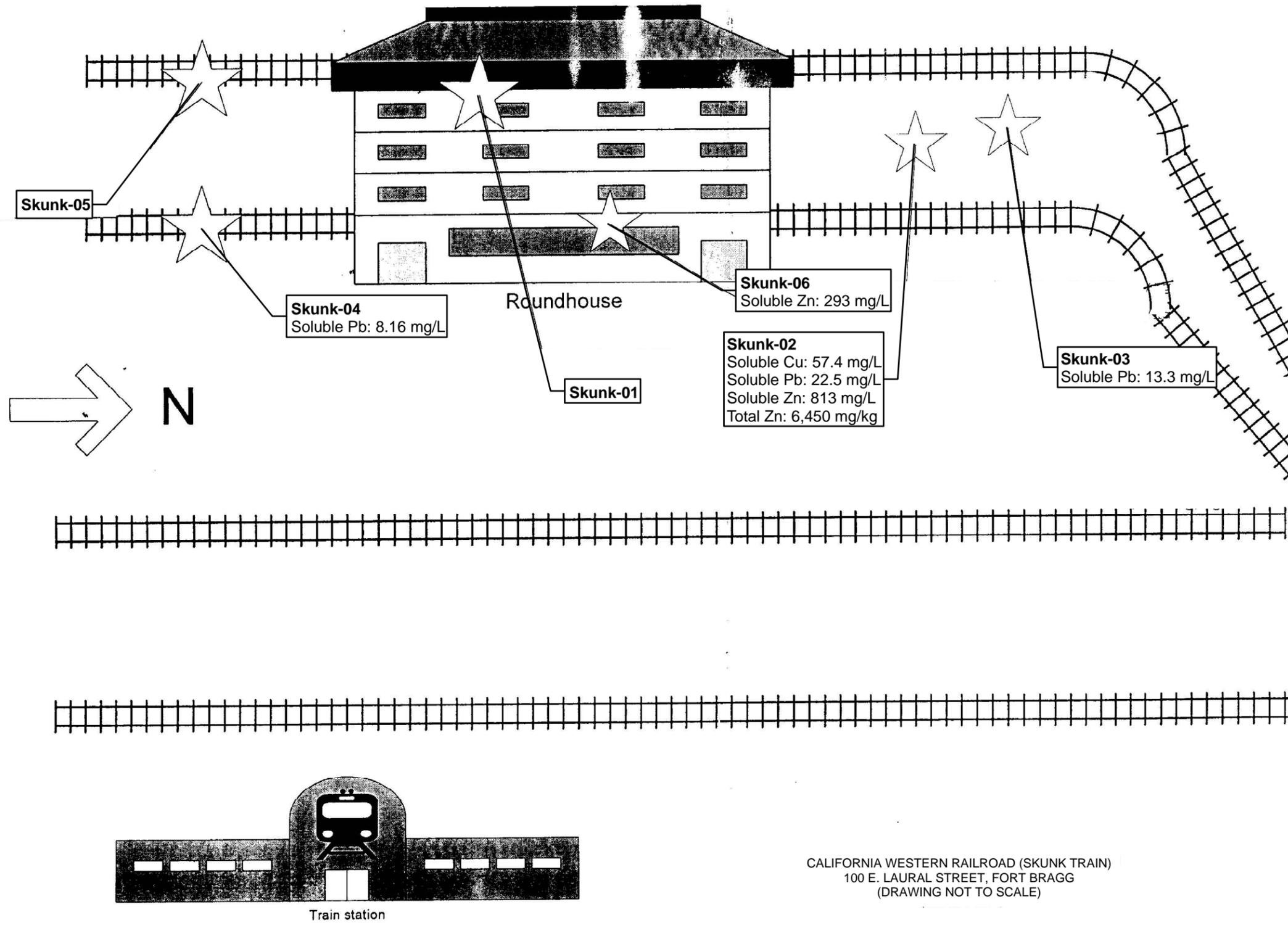
GEOTRACKER ID  
 SITE NAME  
 STREET ADDRESS

- NEW BACKGROUND MONITORING WELL
- EXISTING BACKGROUND MONITORING WELL
- OTHER MONITORING WELL
- OPEN REGULATORY CASE
- CLOSED REGULATORY CASE



FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY  
 FORT BRAGG, CALIFORNIA  
**OFFSITE SOURCES REVIEW MEMO**

**OFFSITE FACILITIES OF INTEREST**



**NOTES:**

1. SOURCE: DEPARTMENT OF TOXIC SUBSTANCES CONTROL (1998)
2. CONCENTRATIONS PRESENTED IN THE FIGURE ARE LIMITED TO THOSE INDICATING HAZARDOUS LEVELS. FOR A SUMMARY OF ALL DATA, REFER TO TABLE 1.
3. SAMPLES COLLECTED ON SEPTEMBER 23, 1998.
4. mg/kg = MILLIGRAMS PER KILOGRAM
5. mg/L = MILLIGRAMS PER LITER

6. Cu = COPPER
7. Pb = LEAD
8. Zn = ZINC

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY  
FORT BRAGG, CALIFORNIA  
**OFFSITE SOURCES REVIEW MEMO**

**SKUNK TRAIN DEPOT SAMPLING LOCATIONS  
AND SELECTED RESULTS**



CITY: San Francisco DIV/GROUP: 85 DB/ME LD: PIC: PM: TM: TR: Project #66111.000.00011 C:\SF\Transportation\SiteSources\RM\Map\Fig 2 SkunkTrainDenoSampleLocs.mxd - 4/12/2009 @ 4:24:26 PM

**Table 1**  
**COIs Detected in Skunk Train Depot Oil and Soil Samples**

**Offsite Sources Review Memo**  
**Former Georgia-Pacific Wood Products Facility**  
**Fort Bragg, California**

| Sample ID | Medium/Description                   | Analyte    | Copper       |             | Lead         |             | Zinc          |            | TPHmo                      |
|-----------|--------------------------------------|------------|--------------|-------------|--------------|-------------|---------------|------------|----------------------------|
|           |                                      |            | Total        | Soluble     | Total        | Soluble     | Total         | Soluble    |                            |
|           |                                      | CHSLr      | <b>3,000</b> | --          | <b>150</b>   | --          | <b>23,000</b> | --         | --                         |
|           |                                      | PRGr       | <b>3,100</b> | --          | <b>150</b>   | --          | <b>23,000</b> | --         | --                         |
|           |                                      | RSLr       | <b>3,100</b> | --          | <b>400</b>   | --          | <b>23,000</b> | --         | --                         |
|           |                                      | TTLC       | <b>2,500</b> | --          | <b>1,000</b> | --          | <b>5,000</b>  | --         | --                         |
|           |                                      | STLC       | --           | <b>25</b>   | --           | <b>5</b>    | --            | <b>250</b> | --                         |
|           |                                      | RBSC       | --           | --          | --           | --          | --            | --         | <b>1,672</b>               |
|           |                                      | BkMSB      | <b>36</b>    | --          | <b>22</b>    | --          | <b>84</b>     | --         | --                         |
|           |                                      | BkF        | <b>53</b>    | --          | <b>25</b>    | --          | <b>160</b>    | --         | --                         |
| Sample ID | Medium/Description                   | Date/Units | mg/kg        | mg/L        | mg/kg        | mg/L        | mg/kg         | mg/L       | mg/kg                      |
| Skunk-01  | Oil in 5-gallon bucket under railcar | 09/23/98   | <b>53.1</b>  | --          | <b>38.6</b>  | --          | <b>644</b>    | --         | <b>370,000<sup>a</sup></b> |
| Skunk-02  | Black sand-like material (ash)       | 09/23/98   | <b>569</b>   | <b>57.4</b> | <b>330</b>   | <b>22.5</b> | <b>6,450</b>  | <b>813</b> | 200                        |
| Skunk-03  | Oily soil                            | 09/23/98   | --           | --          | <b>404</b>   | <b>13.3</b> | --            | --         | <b>28,000</b>              |
| Skunk-04  | "Blacked" soil                       | 09/23/98   | --           | --          | <b>308</b>   | <b>8.16</b> | --            | --         | <b>12,000</b>              |
| Skunk-05  | "Blacked" soil                       | 09/23/98   | --           | --          | <b>117</b>   | 3.17        | --            | --         | <b>13,000</b>              |
| Skunk-06  | bucket                               | 09/23/98   | <b>295</b>   | 17.2        | <b>160</b>   | 4.75        | <b>3,310</b>  | <b>293</b> | <200                       |

Notes:

Data obtained from Department of Toxic Substances Control (1998).

**Bolded results exceed one or more screening levels.**

**Yellow highlighted results are considered hazardous concentrations.**

a = sample met recycled oil specifications and is not considered hazardous

BkF = background concentration in fill at the adjacent Georgia-Pacific Former Wood Products Facility (see ARCADIS BBL, 2007a)

BkMSB = background concentration in marine sediment/bedrock at the adjacent Georgia-Pacific Former Wood Products Facility (see ARCADIS BBL, 2007a)

CHSLr = California Human Health Screening Level for residential land use

COI = constituent of interest

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

PRGr = Preliminary Remediation Goal for residential land use

RBSC = combined direct contact, indoor air, and leaching to groundwater risk-based screening concentration for aromatics (see ARCADIS BBL, 2007b)

RSLr = Regional Screening Level for residential land use

STLC = soluble threshold limit concentration

TPHmo = total petroleum hydrocarbons as motor oil

TTLC = total threshold limit concentration

-- = not applicable or not available

**Table 2**  
**Qualitative Summary of COIs Detected in Upgradient Onsite Monitoring Wells between October 2008 and March 2009**

**Offsite Sources Review Memo**  
**Former Georgia-Pacific Wood Products Facility**  
**Fort Bragg, California**

| Well ID | TPH    |        |       | VOCs   |        | SVOCs | PAHs         |                 | PCB Congeners | Chloro-phenols | Dissolved Metals | Comments   |
|---------|--------|--------|-------|--------|--------|-------|--------------|-----------------|---------------|----------------|------------------|--|
|         | TPHg   | TPHd   | TPHmo | CVOCs  | Others |       | Carcinogenic | Noncarcinogenic |               |                |                  |  |
| MW-1.1  | Yellow | Green  | Green | Green  | Yellow | Green | Green        | Green           | Green         | Green          | Yellow           | Trace hit of TPHg; acetone was only VOC detected       |
| MW-3.17 | Red    | Yellow | Green | Yellow | Yellow | Green | Green        | Red             | Green         | Green          | Yellow           | TCE and PCE were only CVOCs detected                   |
| MW-3.18 | Yellow | Green  | Green | Yellow | Yellow | Green | Green        | Green           | Green         | Green          | Yellow           | Trace hits of TPHg; PCE and daughter products detected |
| MW-3.19 | Yellow | Green  | Green | Red    | Yellow | Green | Green        | Green           | Green         | Green          | Yellow           | PCE concentration exceeded MCL                         |
| MW-5.2  | Green  | Green  | Green | Green  | Green  | Green | Green        | Green           | Green         | Green          | Yellow           | PCP detected once unexpectedly; no longer present      |
| MW-8.1  | Green  | Green  | Green | Green  | Yellow | Green | Green        | Green           | Green         | Green          | Yellow           | Acetone was only VOC detected                          |

Notes:  
 For a quantitative summary of COI detections, refer to ARCADIS's *Third Quarter 2008 Groundwater Monitoring Report* (published), *Fourth Quarter 2008 Groundwater Monitoring Report* (published), and *First Quarter 2009 Groundwater Monitoring Report* (in preparation).

- = not detected
- = detected at concentrations below screening levels
- = detected at concentrations above screening levels

- COI = constituent of interest
- (C)VOCs = (chlorinated) volatile organic compounds
- MCL = Maximum Contaminant Level
- PAHs = polycyclic aromatic hydrocarbons
- PCB = polychlorinated biphenyl
- PCE = tetrachloroethene
- PCP = pentachlorophenol
- SVOCs = semivolatile organic compounds
- TCE = trichloroethene
- TPH = total petroleum hydrocarbons
- TPHd = total petroleum hydrocarbons as diesel
- TPHg = total petroleum hydrocarbons as gasoline
- TPHmo = total petroleum hydrocarbons as motor oil