In 1943, Barium Products Ltd. was purchased by Westvaco Chlorine Products Corporation which subsequently merged with FMC in 1948. From the 1950s to the 1970s, a liquid residue from the processing operations was discharged to unlined evaporation ponds along the western portion of the FMC Site. The approximate boundaries of the former evaporation/disposal ponds are shown on Figure 2.

In 1961, a 4.3-acre parcel at the southwestern corner of the FMC site was purchased by the State of California for highway right-of-way needed to construct SR 99. An aerial photograph from 1957 shows that a portion of the southernmost pond on the FMC property was within the area purchased for right-of-way.

Soil in and around the pond was excavated during construction of SR 99 and stockpiled within the current Caltrans right-of-way at the location of the future State Route 132 West Freeway/Expressway project. Three distinct stockpiles are present at the Site:

- Stockpile 1, located south of Kansas Avenue and west of North Emerald Avenue,
- Stockpile 2, located south of Kansas Avenue, between North Emerald Avenue and SR 99, and
- Stockpile 3, located south of Kansas Avenue and east of SR 99.

Previous Surface Water Sampling Activities

Shaw completed a surface water sampling event at the soil stockpiles in March 2006 in general accordance with their January 2006 SAP. In total, seven surface water samples (SW01 through SW06 and SW08) were collected during a qualifying rain event (visible runoff and 72 hours of prior dry weather). Since there was no surface water migration beyond the Caltrans right-of-way, Shaw constructed shallow depressions within the right-of-way in order to collect precipitation falling on the stockpiles. The samples were analyzed for dissolved metals, polycyclic aromatic hydrocarbons (PAHs), nitrate, sulfate and sulfide.

With the sole exception of an elevated barium concentration reported for the sample collected from the northwestern side of Stockpile 3 (sample SW03), the surface water samples did not contain elevated metals concentrations. Barium was reported at a concentration of 2,000 micrograms per liter (µg/l) in sample SW03. Barium in the remaining six samples ranged from 16 to 190 µg/l. Shaw concluded that the elevated barium reported for sample SW03 was isolated and that runoff in the area was confined to Caltrans right-of-way.

We previously collected surface water samples from five designated surface runoff locations (PL1 through PL5) and two background locations (BG1 and BG2) on an on-call basis between April 2013 and January 2018. Results from these sampling events are presented on Tables 1 through 3.

Sample locations PL1 and PL2 are along North Emerald Avenue. Sample location PL3 is along the southern edge of Stockpile 2. Sample locations PL4 and PL5 are at the drainage basin next to Stockpile 3. PL4 is where storm water enters the drainage basin next to Stockpile 3 and PL5 is within three feet of the gate valve that would release storm water to the SR 99 collection system conveying storm water to the Tuolumne River, if opened. From information provided by Caltrans, the gate valve would only be opened if the basin nears a capacity that could jeopardize the northbound lanes of SR 99. Caltrans also states that there is no occurrence of the gate valve being opened in the recent past. Sample locations BG1 and BG2 are next to storm water inlets both south (Loletta Avenue) and north (North Emerald Avenue) of Stockpile 2.

The approximate sample locations are depicted on Figure 2. The sample locations were approved by the DTSC and Central Valley Water Quality Control Board (CVRWQCB). During the previous storm events we did not observe runoff migrating away from the Caltrans right-of-way.

SURFACE WATER SAMPLING ACTIVITIES

This section describes the field activities for the March 22, 2018, surface water sampling event. It was lightly raining at the time of sample collection. The rainfall total for this event which began on March 20, 2018, and ended on March 22, 2018, was approximately 0.53 inch.

Field Activities

On March 22, 2018, we collected surface water samples from designated locations PL1 through PL4 and BG1. We did not sample from locations PL5 and BG2 because there was insufficient water to sample. The approximate sample locations are depicted on Figure 2. Photos of the sample locations are attached.

We collected samples PL1 and PL2 from puddles of water located on the west and east sides of North Emerald Avenue, respectively, between Stockpiles 1 and 2 (Photos 1 and 2). During rain events, puddles of rain water pool along the shoulders of North Emerald Avenue. Sample locations PL1 and PL2 are outside of the Caltrans right-of-way.

We collected sample PL3 (Photo 3) from a puddle of water where Bennett Street intersects the alley behind Loletta Street. The sample was collected outside the Caltrans right-of-way beyond the chain-link fence that encloses the south side of Stockpile 2.

We collected sample PL4 (Photo 4) at the drainage basin outfall adjacent to Stockpile 3, northeast of the SR 99 off-ramp to Kansas Avenue. From information provided by Caltrans, storm water in the basin originates exclusively from the drainage inlets located in the depressed section of SR 99 north and south of Kansas Avenue.

We were not able to collect a water sample at PL5 due to insufficient water at this location (Photo 5). The gate valve is only opened if the basin nears a capacity that could jeopardize the northbound lanes of SR 99. The gate valve was not opened during this event.

We collected sample BG1 near a drop inlet south of Stockpile 2 on Loletta Avenue (Photo 6). We were not able to collect a water sample at BG2 due to insufficient water at this location (Photo 7).

We collected surface water samples PL1 through PL4 and BG1 into disposable bailers using a suction pump, and subsequently transferred them into laboratory-provided containers. We field filtered samples to be analyzed for dissolved metals by passing the samples through 0.45-micron filters. We capped, labeled, chilled and transported the samples to Advanced Technology Laboratories, Inc. (ATL) utilizing chain-of-custody procedures. During the sampling activities, we monitored the samples for pH, electrical conductivity, temperature, turbidity, and oxygen-reduction potential (ORP), and dissolved oxygen (DO). The measured field parameters are on Table 1.

We followed Quality Assurance/Quality Control (QA/QC) procedures during the field sampling activities including the use of disposable bailers and providing chain-of-custody documentation for each water sample transferred to the laboratory.

Laboratory Analyses

We delivered the surface water samples to ATL for the following analyses under chain-of-custody protocol:

- Dissolved metals, following the United States Environmental Protection Agency (EPA) Test Method 6020/7470A;
- Chloride, nitrate as nitrogen and sulfate by EPA Test Method 300.0;
- Sulfide by Standard Method (SM) 4500-S-D;
- Total alkalinity, bicarbonate alkalinity, carbonate alkalinity by SM 2320B;
- Total dissolved solids (TDS) by SM 2540C; and
- Total suspended solids (TSS) by SM 2540D.

Surface water analytical results for this monitoring event are summarized on Tables 2 and 3. The laboratory report and chain-of-custody documentation are in Appendix A.

Analytical Results

Dissolved Metals

Analytical results for dissolved metals are summarized on Table 2.

Antimony, arsenic, barium, calcium, chromium, cobalt, copper, lead, manganese, magnesium, molybdenum, nickel, potassium, sodium, strontium, vanadium, and zinc were reported for some or all of the samples. Lead was detected in sample PL3 at a concentration of 46 micrograms per liter (µg/l) which exceeds its primary maximum contaminant level (MCL) for drinking water of 15 µg/l. Manganese was detected in samples PL2 through PL4 and BG1 at concentrations ranging from 54 to 370 µg/l which exceeds its secondary MCL (taste & odor or welfare-based) for drinking water of 50 µg/l.

None of the other reported metals concentrations exceed their respective primary or secondary MCLs. Beryllium, cadmium, mercury, selenium, silver, and thallium were not detected in the samples at concentrations equal to or greater than their respective laboratory reporting limits.

General Minerals

To further characterize the geochemistry of the water, general minerals analyses were conducted. The analytical results for general minerals are summarized on Table 3.

None of the reported general minerals concentrations exceed their respective primary or secondary MCLs. The analytical results are within the same general range of concentrations as previously reported at each sample location.

Laboratory QA/QC

We reviewed the analytical laboratory QA/QC provided with the laboratory report. The laboratory notes state that samples PL1 through PL4 and BG1 were diluted for metals due to either high concentrations of target analyte, failing internal standard in the original run, or high concentrations of non-target analyte. Samples PL1 through PL3 and BG1 were also diluted for sulfide due to possible matrix inference.

GeoTracker and EnviroStor Submittal

The laboratory prepared electronic data files for submittal to the State Water Resources Control Board GeoTracker database. The GeoTracker database is accessible via the GeoTracker website at http://geotracker.waterboards.ca.gov. The electronic data was uploaded to GeoTracker on April 11, 2018. The confirmation number is 8392300546. DTSC personnel will upload the report to EnviroStor.

SURFACE WATER MANAGEMENT

Except for the elevated concentration of lead in the sample collected outside the right-of-way at location PL3, analytical results for the remainder of the samples collected on March 22, 2018, are generally consistent with the results from previous events which began in 2013.

Surface water originating from the western slope of Stockpile 2 along North Emerald Avenue will continue to be managed by maintaining the stockpile's vegetative/fiber cover and straw wattles which have been placed to intercept and redirect surface water slope flow to areas within the Caltrans right-of-way.

The interceptor berm at the base of the gravel-covered south side access ramp to Stockpile 2 (north end of Bennett Street) appeared to have functioned as designed by directing stormwater runoff to the area adjacent to the ramp where it remains within the boundary of Stockpile 2.

Observations made during the sampling event and from site reconnaissance did not identify any area or location where stormwater runoff appeared to be migrating offsite. Stormwater falling on the stockpiles appeared to be retained within the Caltrans right-of-way.

Caltrans plans to conduct additional surface water sampling during qualifying rain events in 2018.

We appreciate the opportunity to provide our services on this project. Please contact us if you have any questions concerning the contents of this Report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

Rebecca L. Silva
Project Manager

John E. Juhrend, PE, CEG
Senior Engineer

(1) DTSC, Dean Wright and Randy Adams
(1) CVRWQCB, Steve Meeks (pdf only)

Attachments:
Figure 1, Vicinity Map
Figure 2, Site Plan
Photographs 1 through 7
Table 1, Summary of Surface Water Field Parameters
Table 2, Summary of Surface Water Analytical Results – Title 22 Metals (Dissolved)
Table 3, Summary of Surface Water Analytical Results – General Minerals
Laboratory Report and Chain-of-custody Documentation