November 18, 2011
Project No. 401823001

Mr. Mark Detterman
Alameda County Environmental Health
Health Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Work Plan for Remedial Investigation
Western Forge and Flange Company
540 Cleveland Avenue
Albany, California
SLIC # RO0003009
Geotracker Global ID # T10000001598

Dear Mr. Detterman:

On behalf of Western Forge and Flange Company, Ninyo & Moore is pleased to submit this Work Plan for Remedial Investigation to the Alameda County Environmental Health (ACEH), for the above-referenced site (site). The site is located at 540 Cleveland Avenue, in Albany, County of Alameda, California. The site location is presented on **Figure 1.**

SITE BACKGROUND

The site has been the subject of several environmental assessments dating back to 1984. However, only the most recent assessment and remediation activities, performed by Chemical Data Management System (CDMS) between 2008 through 2010 will be discussed in this Work Plan. The following background is based on documents prepared by CDMS from May 2009 through December 2010.

Subsurface sampling was conducted by CDMS between October and November 2008. Sampling locations and areas of concern are presented on **Figure 2**. Elevated concentrations (with respect to Regional Water Quality Control Board Environmental Screening Levels (ESLs)) of total petroleum hydrocarbons (TPH) in shallow soil were detected in the hazardous waste storage,

oil/water separator, ring roller, and boiler areas. TPH as hydraulic fluid concentrations in soil from this sampling are presented on **Figure 3**.

Groundwater samples were also collected in several areas, and various metals were reported in groundwater above regulatory guidelines used for comparison.

In January 2009, based on these sampling results, TPH-impacted soil was excavated in several areas, (referred to by the sample point locations on **Figure 3** and excavation boundaries on **Figure 4**) including the hazardous waste storage area (Area 5), the boiler areas (Area 6B), the Ring Roller area (Area 106), and an area approximately 10 to 20 feet southeast of the Ring Roller area (Area 107). Additional excavation occurred in two existing pits (Pits 1 and 2), reportedly due to hydraulic fluid being encountered in the Ring Roller Pit excavations. An excavation was also conducted near a waste oil storage area in the western section of the building. Excavation was reportedly discontinued after the slab was removed, as perched groundwater was encountered just beneath the slab, and no contamination was reported.

Results of excavation samples for Areas 5, 6B, and 107 are not discussed in CDMS' Closure Report, other than a mention of the subsurface sedimentology and depth to a perched groundwater zone. Results of the Pit 1 and 2 excavations were discussed, and it appears no impacts to soil around these pits were observed based on the data provided. TPH as hydraulic fluid concentrations in soil samples from these excavations are presented on **Figure 4**.

The Ring Roller area was further evaluated in February 2009, due to free product observed floating on the perched groundwater in the excavation. The free product was removed using skimmers and a vacuum truck, and a chemical reagent was used to treat the remaining TPH impacted soil and groundwater. The results of that treatment are not discussed in available reports.

In October 2010, CDMS completed a ***Data Gap Work Plan*** and reported the results in documentation dated December 2010. Sample results provided for several groundwater samples, including RRP, W-101, W-102, W-103, W-105, W-107, W-108, and W-111 and B1001 and B1002, indicated that TPH as hydraulic fluid concentrations in groundwater exceeded ESLs in

one water sample, which was collected from the Ring Roller Pit. TPH as hydraulic fluid in groundwater for samples collected by CDMS are presented on **Figure 5**.

In addition, CDMS reported that various samples exceeded ESLs for metals including lead, cadmium, copper, nickel and zinc. Copper was only analyzed in samples B1001, B1002, and RRP. Zinc exceeded the Gross Contamination ESL in sample W-111. No description of the depth that groundwater was encountered at or description of sampling methodology was included in the report, however boring logs indicate that soil was saturated below 6 feet in B-1001 and wet below 9 feet in B-1002.

Metals were also reported in soils above ESLs in soil samples collected from 6 inches below ground surface (bgs) at boring B-1002 (copper) and SB-111 (nickel and zinc).

TPH as hydraulic fluid was detected in shallow soils (surface to 6 inches) between 480 and 650 milligrams per kilograms (mg/kg) at both B-1001 and B1002, well above the hydraulic fluid results in deeper soil samples. Soil samples were collected in each of these borings to 10 feet bgs.

Confirmation samples from Area 107 indicated elevated concentrations of hydraulic fluid in the north, west and south wall samples, ranging from 9,400 to 30,000 mg/kg. Several metals were also elevated in comparison to the other confirmation samples from the north wall, including total chromium at 180 mg/kg. No indication of sample depths were included in the report. All constituents of concern were very low and below ESLs in the bottom sample collected in Area 107.

Confirmation samples collected from the Ring Roller (Area 106) indicated high concentrations of hydraulic fluid from the north (10,000 mg/kg) and south (24,000 mg/kg) walls. The west wall sample was very low, and below (residential)ESLs.

Confirmation sample results from Area 5 indicated a high (1,300 mg/kg) concentration of hydraulic fluid in the west wall confirmation sample. The confirmation sample collected from the

remaining sidewalls and bottom sample were either below reporting limits or very low (below Residential ESLs) for hydraulic fluid.

The confirmation sample collected from the sidewall and bottom samples from Area 6B were either below reporting limits or below ESLs for hydraulic fluid. The highest hydraulic fluid concentration was 120 mg/kg in south wall sample. Elevated concentrations of lead and zinc were detected in the south wall compared to the other confirmation samples. Lead was above the residential criteria but below the commercial/industrial criteria in the Residential ESLs.

Based on Ninyo & Moore's review of the site environmental data and discussions with the ACEH, additional soil and groundwater characterization and soil remediation activities will be necessary to obtain unrestricted closure of the site. Areas to be further investigated and potentially remediated include a large portion of hydraulic oil and metal-impacted shallow soils (undetermined depth) in the southwestern section (including areas already partially remediated), shallow soils (above 2 feet bgs) impacted with hydraulic oil in the western section of the site, and shallow groundwater in the southwestern section of the site (which may have been impacted by shallow soils).

PURPOSE

This Work Plan has being prepared to define the lateral and vertical extent of hydraulic oil and metal contamination to the subsurface at the site.

PRE-FIELD TASKS

Prior to mobilizing to the site for invasive activities, Ninyo & Moore will conduct the following tasks:

- Submit this Work Plan to ACEH for comments and approval.
- Prepare a Site Specific Health and Safety Plan;
- Mark the locations of proposed soil borings at the site;
- Obtain the appropriate drilling permits from ACEH;

- Notify Underground Services Alert (USA) of proposed drilling so USA can mark underground utilities entering the site;
- Contract with a private utility locator to clear proposed locations and potentially locate subsurface utilities not identified by USA; and

SOIL BORING ADVANCEMENT

Subsequent to approval of this Work Plan by ACEH, and the completion of the tasks described above, Ninyo & Moore will mobilize to the site for the advancement of soil borings. Up to 20 soil borings will be advanced at the site. The proposed boring locations are indicated on **Figure 6.**

These proposed boring locations are located either adjacent to previous sampling locations, in the vicinity of historical operations which may have impacted the subsurface, and/or in areas where heavy oil staining was visible during a site visit conducted by Ninyo & Moore (July 27, 2011). As boring locations from previous assessments are difficult to identify on the site, proposed boring nomenclature is simplified below.

Borings will be advanced in the following areas:

- Borings B-1, B-2 and B-5 - adjacent to and in the area of a former oil/water separator and a waste oil tank (near west building exit);
- Borings B-3, B-4 and B-7 near open pits adjacent to Pit No. 2 and the forge area;
- Borings B-6, B-8, B-9, B-10, B-13 and B-14 in and near the Ring Roller area and pit; and
- Borings B-11, B-12, B-15, B-16, B-17 and B-18 near the maintenance area (southwest portion of building), the hazardous waste storage area, and the small hammer pit (central portion of building).

Two additional borings may be advanced at additional locations to be determined in the field.

The soil borings will be advanced by a truck or track-mounted Geoprobe® type direct-push rig. According to previous investigations conducted at the site, groundwater should be encountered at depths of approximately six to ten feet below ground surface (bgs). Therefore, the soil borings will be advanced to a maximum depth of 10 feet bgs. The boring locations and depths may

change to accommodate actual site conditions such as site lithology, auger refusal or availability of groundwater for sampling.

SOIL AND GROUNDWATER SAMPLING

Soil samples will be collected directly from the Geoprobe® acetate sleeves, and from boring depths where physical signs of soil impacts are observed. Up to four samples will be collected from each boring.

Groundwater samples will be collected from up to five boring locations, where soil impacts are observed near the soil/groundwater interface. Subsequent to reaching the final depth in the borings selected for groundwater sampling, a new screened PVC casing will be installed in the borehole. Groundwater samples will be collected using a peristaltic pump, or by using polyethylene tubing combined with a bottom check-valve. If the peristaltic pump is used, it will be operated at a low speed to minimize disturbance of groundwater, which could result in the release of volatile organic compounds (VOCs).

The samples will be placed into the appropriate laboratory-supplied jars or vials, the jars will be labeled for identification, and stored in coolers on ice for transportation under chain-of-custody, to a state-certified analytical laboratory for analysis.

LABORATORY ANALYSIS

The following laboratory analyses will be conducted on selected soil samples:

- Approximately forty (40) soil samples will be analyzed for TPH as hydraulic fluid by EPA Method 8015B using Silica Gel Cleanup ;
- Approximately five (5) soil samples will be analyzed for CAM 17 Metals by EPA Methods 6010B/7471, and hexavalent chromium using EPA Method 7196A;
- Two to three discreet shallow soil samples, if photo-ionization detector readings indicate the presence of organic compounds, will be analyzed for volatiles organic compounds (VOCs – full list) by EPA Method 8260B;

- Two or three soil samples, selected randomly, will be analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082A; and
- Five groundwater samples will be analyzed for TPH as hydraulic fluid by EPA Method 8015M using Silica Gel Cleanup, and CAM 17 Metals by EPA Methods 6010B/7471. Select groundwater samples will also be analyzed for hexavalent chromium using EPA Method 7196A

Additional laboratory analysis may be required, pending the results from the analyses described above. Soil samples will selected for specific analyses based on field observations, results from previous sampling events (where sampling locations are identifiable), and historical operations. Collected soil samples that are not immediately laboratory analyzed will be placed on hold at the laboratory, pending the results of previous samples.

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) SAMPLES

Field QA/QC samples in the form of duplicate samples and equipment rinsate samples will be collected from the project site during field sample collection. The number of duplicate samples will be dependent upon the number of samples collected in one field day and the various sample media (i.e. soil or groundwater). At a minimum, one duplicate soil sample will be collected per day of field work. Sample duplicates will be submitted blind to the analytical laboratory.

Equipment rinsate blanks will be collected to evaluate field sampling and decontamination procedures by pouring deionized water through or over the decontaminated sampling equipment used each day. One equipment rinsate blank will be collected for each day that sampling equipment is decontaminated in the field.

LABORATORY QA/QC

Laboratory QA/QC will include the preparation of method blanks, surrogates, lab control samples, and matrix spike and matrix spike duplicate samples. Ninyo & Moore will perform Level II Data Validation on all chemical analysis, as a check of overall quality. The data quality check process will include a review of COC forms, holding times, laboratory analytical reports, method blanks, surrogate recoveries, matrix spike, matrix spike duplicates, lab control samples, and de-

tection limits. The laboratory analytical report Case Narrative will also be reviewed for accuracy. A laboratory QA/QC section will be included in the final report discussing general comments in the laboratory analytical report.

FIELD VARIANCES

As conditions in the field may vary, minor modifications may be implemented to sampling as presented in this plan. Sampling locations may be adjusted according to information obtained from underground utility locating conducted prior to sampling or due to accessibility issues. When appropriate, the QA Manager will be notified and a verbal approval will be obtained before implementing the changes. Modifications to the approved plan will be documented in the project report.

BOREHOLE COMPLETION

As required by State and local regulations, all boreholes will be backfilled with Portland cement grout upon completion. Boreholes will be tremie grouted with Portland cement grout. Grout will be poured into bore the hole through a tremie pipe, filling the hole from the total depth to approximately 0.5 feet bgs. The top 0.5 feet will be patched with asphalt patch or concrete to match the existing ground surface. A representative from ACEH will be notified of the drilling schedule and may visit the site to observe borehole grouting.

INVESTIGATION DERIVED WASTE

Investigation derived waste, such as drill cuttings and development water will be placed in 55-gallon metals drums and temporarily stored on site, pending laboratory analysis.

REPORTING

Following the completion of field activities and the receipt of analytical data, Ninyo & Moore will issue a report documenting the field methods and results of the investigation. The report will include:

- A description of site background;
- Documentation of pre-field preparations;
- Documentation of drilling and sampling methods;
- A discussion of investigation findings;
- Field and laboratory QA/QC procedures;
- Conclusions and recommendations;
- A series of figures showing locations of soil borings and the analytical results;
- A tabular presentation of shallow soil and groundwater analytical data;
- Copies of drilling permits;
- Soil boring logs; and
- Copies of analytical reports.

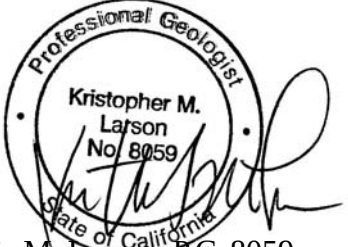
The report will be submitted to the ACEH.

SCHEDULE

Ninyo & Moore anticipates that field work will begin within 2 to 3 weeks of approval of this Work Plan, depending upon subcontractor availability. The field activities should be completed within 3 days. The report will be submitted to the ACEH approximately 6 weeks following the receipt of final laboratory reports.

Should you have any questions regarding this Work Plan, please conduct us at your convenience.

Sincerely,
NINYO & MOORE



Lise Marie Bisson
Senior Geologist

Kris M. Larson, P.G. 8059
Principal Environmental Geologist

LMB/KML/cab

Attachments: Figures (6)
Distribution: (1) Addressee (via e-mail)

11/18/11

Mr. Mark Detterman
Alameda County Environmental Health
Health Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577Alameda County Department of Environmental Health
Re: Perjury Statement
I declare, under penalty of perjury, that the information or recommendations contained in the attached Work Plan are true and correct to the best of my knowledge.

Walter R. Pierce
President and CEO
Western Forge & Flange Company

REFERENCE: METRO AREAS OF ALAMEDA, CONTRA COSTA, MARIN, SAN FRANCISCO, SAN MATEO, AND SANTA CLARA COUNTIES, THOMAS GUIDE, 2008.

N

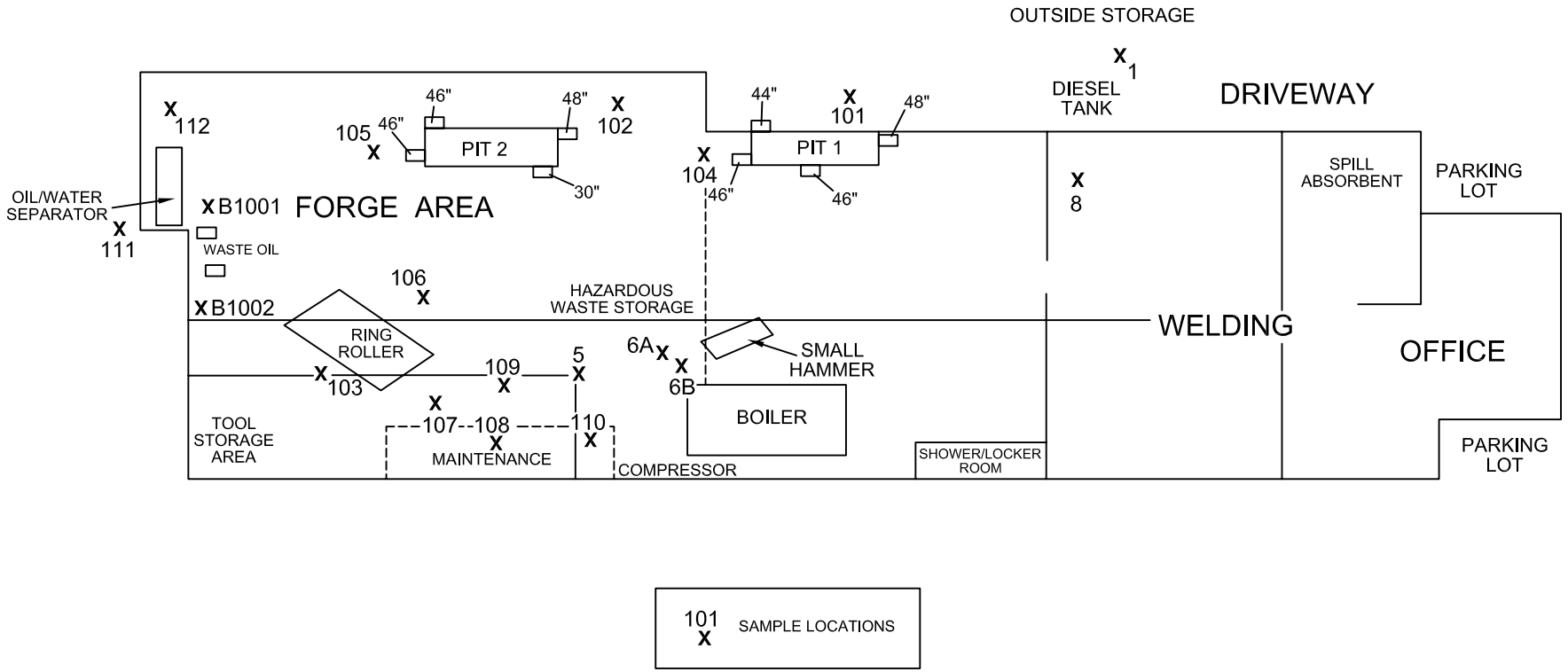
SCALE IN FEET

0 2000 4000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore	SITE LOCATION	FIGURE
PROJECT NO. 401823001 / DATE 11/11	WESTERN FORGE & FLANGE 540 CLEVELAND AVENUE ALBANY, CALIFORNIA	1

401823001-FIG1.dwg, Nov 18, 2011, 9:46am, snguyen



N

SCALE IN FEET

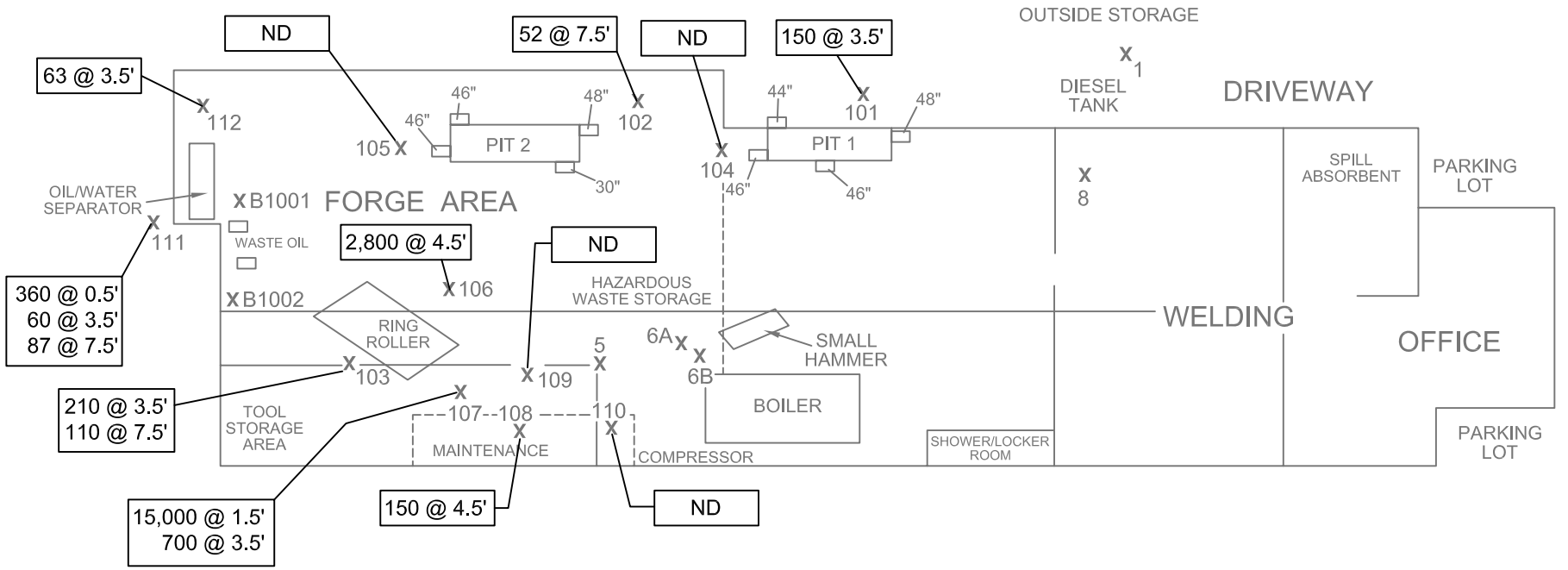
0 30 60

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: RECREATED FROM CDMS, FIGURE 2, DATED DECEMBER 2008 AND DOCUMENTS DATED 2010.

Ninyo & Moore	CDMS SAMPLE LOCATIONS	FIGURE
PROJECT NO. 401823001 / DATE 11/11	WESTERN FORGE & FLANGE 540 CLEVELAND AVENUE ALBANY, CALIFORNIA	2

401823001-FIG2.dwg, Nov 18, 2011, 9:47am, snguyen



N

SCALE IN FEET

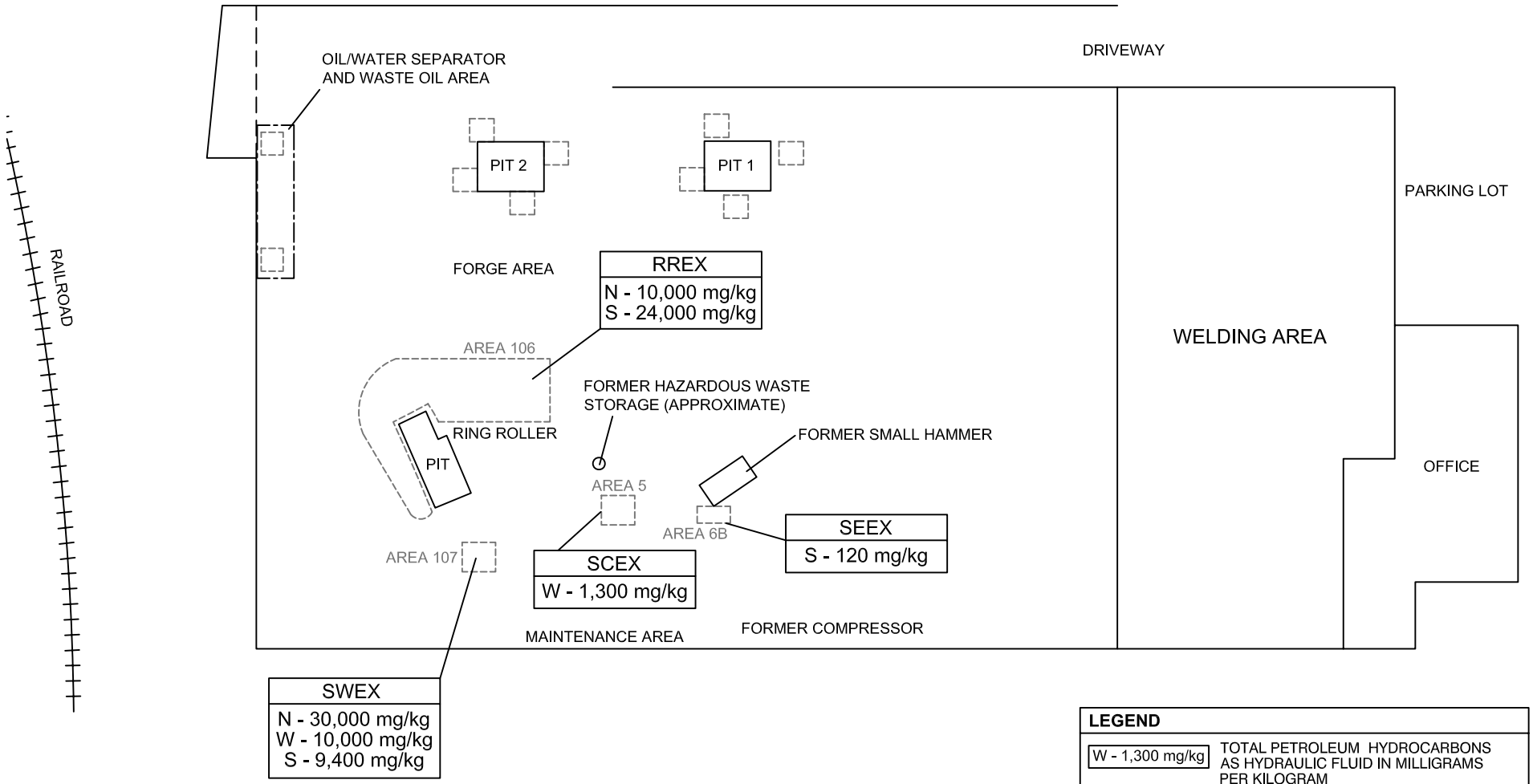
0 30 60

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: RECREATED FROM CDMS, FIGURE 2, DATED DECEMBER 2008 AND DOCUMENTS DATED 2010.

Ninyo & Moore	TPH AS HYDRAULIC FLUID IN SOIL	FIGURE
PROJECT NO. 401823001 / DATE 11/11	WESTERN FORGE & FLANGE 540 CLEVELAND AVENUE ALBANY, CALIFORNIA	3

401823001-FIG3.dwg, Nov 18, 2011, 9:49am, snguyen



LEGEND

W - 1,300 mg/kg	TOTAL PETROLEUM HYDROCARBONS AS HYDRAULIC FLUID IN MILLIGRAMS PER KILOGRAM
	EXCAVATIONS
	RESULTS WERE REPORTED BY CDMS FOR SAMPLING CONDUCTED IN 2010

N

SCALE IN FEET

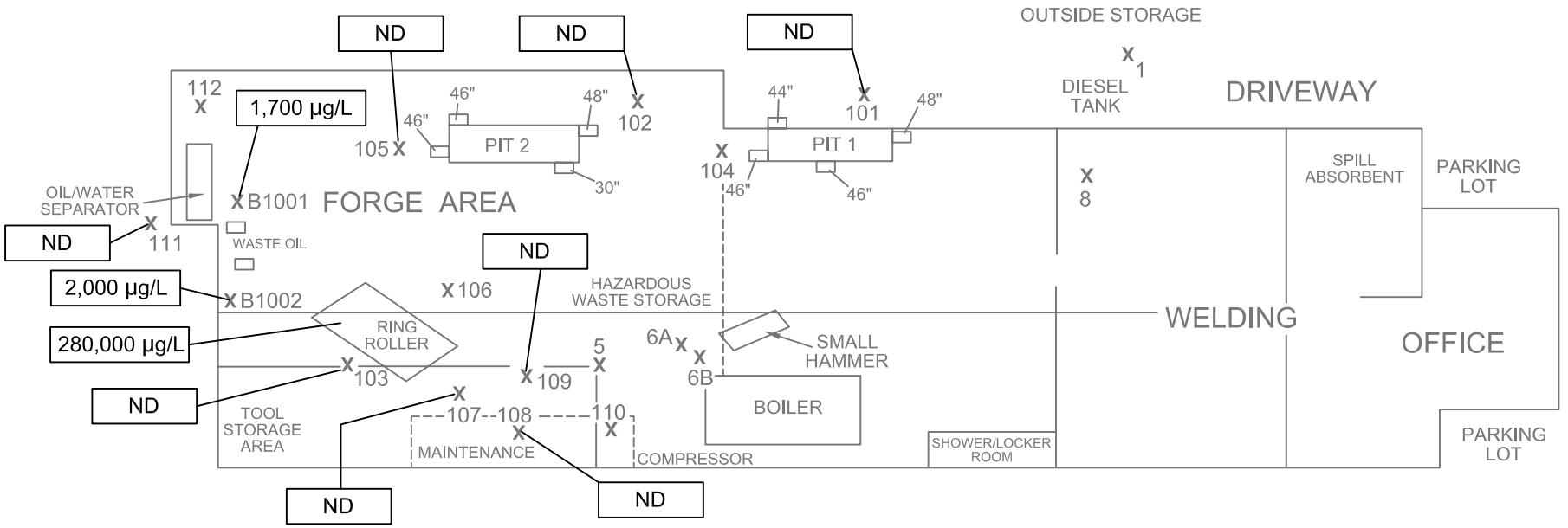
0 30 60

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: MASTER LAYOUT FIGURE, CDMS, 1998, REV. 2008, NINYO & MOORE MEASUREMENTS OCTOBER 2011.

Ninyo & Moore		TPH AS HYDRAULIC FLUID IN EXCAVATIONS WALLS	FIGURE
PROJECT NO.	DATE	WESTERN FORGE & FLANGE 540 CLEVELAND AVENUE ALBANY, CALIFORNIA	4
401823001	11/11		

401823001-FIG4.dwg, Nov 18, 2011, 10:54am,snguyen



101 SAMPLE LOCATIONS

LEGEND

2,000 µg/L	TOTAL PETROLEUM HYDROCARBONS AS HYDRAULIC FLUID INMICROGRAMS PER LITER
ND	NOT DETECTED
	RESULTS WERE REPORTED BY CDMS FOR SAMPLING CONDUCTED IN 2008 AND 2010

N

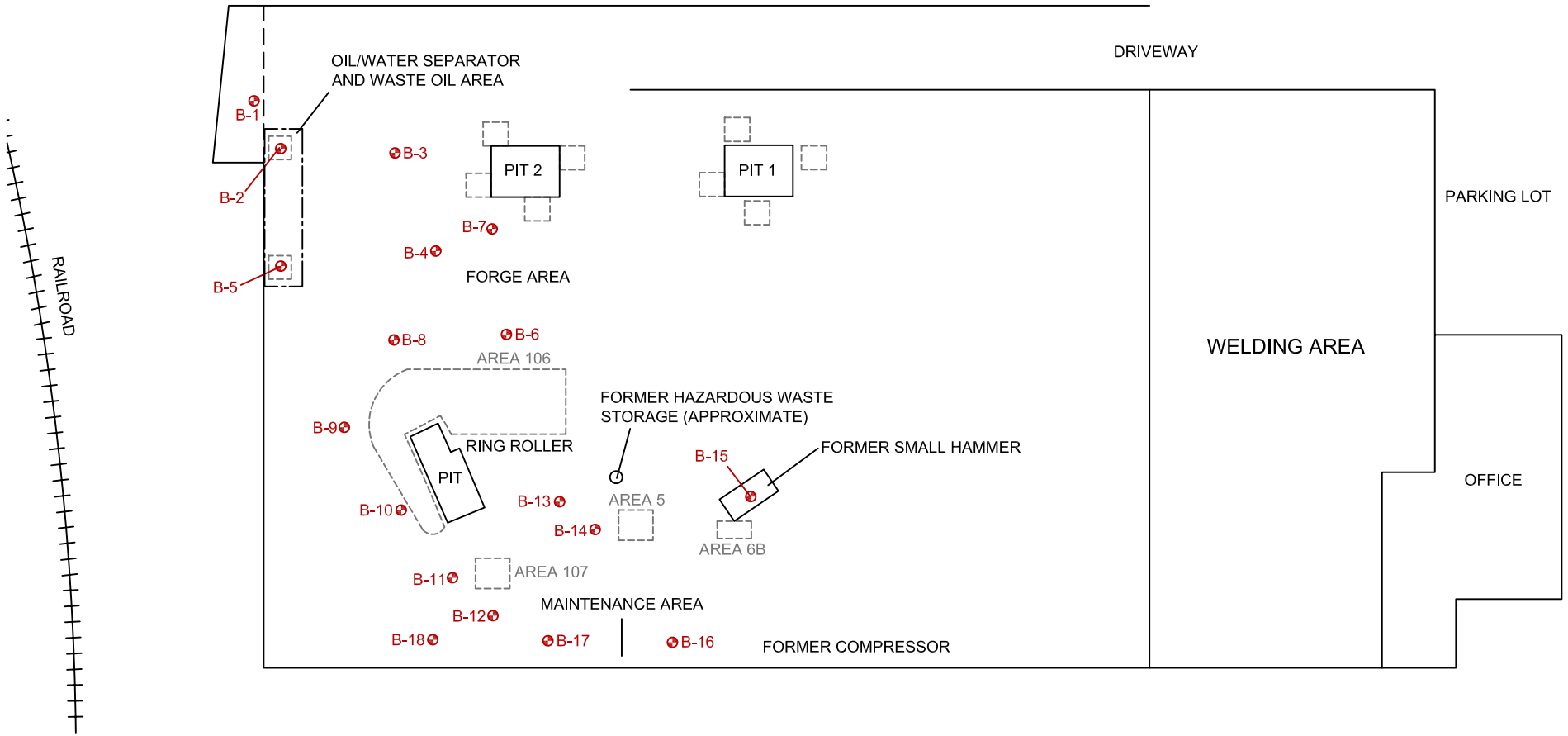
SCALE IN FEET

0 30 60

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: RECREATED FROM CDMS, FIGURE 2, DATED DECEMBER 2008 AND DOCUMENTS DATED 2010.

Ninyo & Moore	TPH AS HYDRAULIC FLUID IN GROUNDWATER	FIGURE
PROJECT NO. 401823001 / DATE 11/11	WESTERN FORGE & FLANGE 540 CLEVELAND AVENUE ALBANY, CALIFORNIA	5



LEGEND

B-18 APPROXIMATE LOCATION OF PROPOSED SOIL BORING

EXCAVATIONS

N

SCALE IN FEET

0 30 60

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: MASTER LAYOUT FIGURE, CDMS, 1998, REV. 2008, NINYO & MOORE MEASUREMENTS OCTOBER 2011.

Ninyo & Moore	PROPOSED BORING LOCATIONS	FIGURE
PROJECT NO. 401823001 / DATE 11/11	WESTERN FORGE & FLANGE 540 CLEVELAND AVENUE ALBANY, CALIFORNIA	6