CERCLA SITE REASSESSMENT
FIELD ACTIVITY
WORK PLAN

FOR:

South California Chemical
Union, Illinois
ILD 059483081

PREPARED BY: Dave Reed
OFFICE OF SITE EVALUATION
DIVISION OF LAND POLLUTION CONTROL
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
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September 19th, 2016

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I. SITE INFORMATION

A. GENERAL

Site Name: South California Chemical

Site Location: 17415 Jefferson Street, Union, McHenry County, Illinois

Work plan prepared by: Dave Reed

Work plan approved by:

Estimated date of inspection: The week of September 26th, 2016

B. THE ASSIGNMENT

A Site Reassessment (SR) will be conducted to determine the current status of a site previously investigated under the federal superfund program. A SR consists of the compilation and evaluation of recent information on a site previously assessed under the federal superfund program to determine if further Superfund attention is needed. A SR serves as a supplement to previous assessment work, and is not a replacement for traditional assessment activities (PA, SI, and ESI). A review of information available for the South California Chemical site has indicated that additional sampling is warranted to determine how the site will proceed through the federal superfund program.

Since the past activities likely contaminated the property and the property is now vacant, the Illinois Environmental Protection Agency's (Illinois EPA's) Office of Site Evaluation (OSE) recommends the collection of additional samples as part of this SR to assess the risk to potential receptors.

The SR will be conducted to: 1) Collect data. This would incorporate hazardous waste, surface water, air, and groundwater concerns. 2) The objectives of the assessment are to determine whether site conditions have changed since the last pre-remedial investigation and if further investigation or referral to removal is warranted. If the determination is made that the site is NPL caliber, additional data will likely be needed to complete the assessment. 3) Determination of site sampling needs will be accomplished with an understanding to assure adequate data for the removal assessment and the preparation of the Hazard Ranking System (HRS) score as well as the need for possible initial sampling for the remedial investigation.

The analytical results from this SR will be combined with data collected previously at the South California Chemical site to determine if releases of hazardous compounds or petroleum products have impacted offsite migration pathways above regulatory levels of concern.

C. SITE DESCRIPTION

The South California Chemical site is located in a mixed residential, commercial, and industrial area inside the southeast boundaries of the City of Union, at 17415 Jefferson Street, McHenry County, Illinois (see Figure 1 and Figure 2). The property is bordered on the north by Jefferson Street, on the east by private businesses, on the west by Solarecrete Corporation, and on the south by the Chicago and North Western Railroad tracks. The site occupies a total of about 7 acres of land in the Northwest ¼ of the Southeast ¼ of Section 4, Township 43 North, and Range 6 East. The site is located at 42.23253 degrees latitude and -88.53596 degrees longitude.

The South California Chemical site originally consisted of three parcels of property (see Figure 3). Parcels one and two (#17-04-400-17 and #17-04-400-18) consists of the inactive manufacturing plant (Southern California Chemical Company) located at 17415

Jefferson Street. Parcels one and two contain approximately 2.5 acres of land. The property is currently owned by Phibro-Tech, Inc. of Ft. Lee, New Jersey. Phibro-Tech, Inc. has parcels one and two currently enrolled in the Site Remediation Program (SRP) at the Illinois EPA. The third parcel (#17-04-400-024) consists of a wooded dump area approximately 4.5 acres in area and is adjacent to the east side of parcels one and two. According to the tax records of McHenry County, the third parcel is privately owned.

The site topography of Parcels 1 and 2 is relatively flat. These two parcels formerly contained the four buildings and well pump house used by the Southern California Chemical Company. During the summer of 2002, the remaining buildings and structures on these parcels were demolished and removed. The concrete foundations of the former site still exist. A rail spur is also still located on the southern portion of the site. Site access to Parcels 1 and 2 are currently restricted by a security fence that surrounds most of the property.

The site topography of Parcel 3 is also relatively flat. This parcel was specifically excluded from the purchase agreement of 1984, when Phibro-Tech purchased Parcels 1 and 2 of the Southern California Chemical Company facility. Parcel 3 was formerly part of the Southern California Chemical Company facility, but is currently a fenced, densely wooded area with a pond covering a little bit less than ½ acre, on the southern portion of the parcel. According to the STEP investigation which was completed in 1999, Parcel 3 was the location of a dump area for the Southern California Chemical Company facility.

D. SITE HISTORY

The South California Chemical site was leased by the Southern California Chemical Company in 1970 and later purchased by the same company in 1982. Although the site is officially listed as "South California Chemical" for CERCLA investigations, the Southern California Chemical Company is the actual name of the company that is

believed to have contributed to the bulk of the contamination found at the site.

Prior to Southern California Chemical Company leasing the South California Chemical property, the site was the previous location of several different types of plants. These plants included a grain plant, a milk plant, and possibly a shingle manufacturing plant according to some of the records. The original manufacturing facility consisted of four buildings of approximately 24,000 square feet.

Activities conducted by Southern California Chemical Company involved the manufacture of various inorganic chemical including copper sulfate pentahydrate, copper oxide, proprietary and patented continuous ammonia etchants as well as the recycling and refining of spent circuit board etchant which was resold to the printed circuit board operators after purification. Southern California Chemical Company mainly manufactured inorganic chemical products for the aerospace and electronics, but also sold by-product of their copper oxide residuals to the agricultural and wood preserving industries.

Southern California Chemical Company manufactured solder strippers, brighteners, conditioners, and etchants. Feedstocks for the etchant recycling process consisted of a portion of the spent etchant being placed in a reaction vessel charged with sodium hydroxide, which resulted in a reaction that formed ammonia and a suspension of cupric oxide. The ammonia was scrubbed with hydrogen chloride which resulted in a solution of ammonium chloride. The ammonium chloride was placed along with the other portion of the spent etchant, into another reactor vessel where anhydrous ammonia and air were added. This process resulted in a refined printed circuit board etchant which was sold back to the circuit board manufacturers.

The company had a number of hazardous waste storage containers. These included six aboveground storage tanks (located on Parcels 1 and 2) ranging from six to ten thousand gallon capacity and potential storage capacity for up to twelve hundred fifty-

five gallon drums. Additionally, the land east of the manufacturing area (Parcel 3) had exposed fragments of buried circuit boards which were deposited over the years that the facility was in operation.

In 1984, Parcels 1 and 2 of the Southern California Chemical Company facility were purchased by Phibro-Tech. In the purchase agreement, Phibro-Tech specifically stated that Parcel 3 was excluded from this purchase. Following the purchase of Parcels 1 and 2, Phibro-Tech operated their portion of the South Chemical Site as an inorganic chemical manufacturing plant until 1988. In 1988, Phibro-Tech ceased production and the process equipment was subsequently dismantled.

II. SAFETY CONSIDERATIONS

A. PHYSICAL HAZARDS

Physical hazards facing Illinois EPA personnel will be generated by the investigative activities themselves and the weather conditions at the time of the investigation. Soil borings completed during the investigation will consist of a combination of shallow hand auger borings (approximately 2-feet bgs) and soil borings completed using direct push technology. The Illinois EPA's Geoprobe® 6600 will use direct push technology to install soil borings to characterize subsurface conditions to approximately 8-feet in various areas around the site. Physical hazards inherent to use of the Illinois EPA Geoprobe® include underground utilities, overhead mechanical parts, and handling of direct push tooling. Standard Operating Procedures (SOPs) will be employed during use of the Geoprobe® to minimize physical hazards. Hardhats, steel toed boots, hearing protection, and safety glasses will be used by the Geoprobe® operators and other personal around the Geoprobe® at all times. Proper protective clothing will also be utilized at all times. The exact personal protective equipment to be worn while on site will be addressed within the site safety plan. Should investigative activities occur

within the right of way of local streets safety cones and reflective wests will be used to caution motorists.

B. CHEMICAL HAZARDS AT SITE

Sampling activities proposed for this investigation include the collection soil samples using the Illinois EPA Geoprobe® unit and hand operated bucket augers. Historical information indicates the investigation area was used as a dump area for various operations that went on at the plant; therefore, exposure to hazardous compounds may exist. A photoionization detector (PID) will be present during the investigation to monitor the breathing zone and sample material for the presence of Volatile Organic Compounds (VOCs). Although unlikely, should VOCs be present in the breathing zone above designated action levels, appropriate respiratory personal protective equipment (PPE) will be utilized to eliminate potential exposure. Appropriate PPE will also be worn by the sampling crew to avoid dermal exposure to hazardous compounds present in the soil and groundwater. Emergency contacts will be identified in the Health and Safety Plan.

C. DERMAL AND RESPIRATORY PROTECTION

Illinois EPA SOPs will be adhered to during the collection of environmental samples. Modified Level D protection will be used during sample collection. Chemical resistant gloves will be worn during the collection of soil and groundwater samples. Sampling areas will be monitored using a PID for the presence of VOCs. PID readings will be used to select the appropriate level of respiratory protection. The level of protection will be based on the following:

Instrument Reading	Action

0-5 units over background	Level C
5-50 units over background	Level B
50-500 units over background	Level A, Site Assessment Unit will vacate the area and contact the Illinois EPA Health and Safety Unit and re-evaluate the situation.

D. EMERGENCY INFORMATION

Fire Service:	Village of Union Fire Department Emergency 911 / Non-Emergency (815) 923-4488
Police:	Village of Union Police Department Emergency 911 / Non-Emergency (815) 923-2341
Nearest Hospital:	SwedishAmerican Medical Center-Belvidere 1625 S State St, Belvidere, IL 61008 (815) 547-5441

III. FIELD ACTIVITIES

A. TEAM ASSIGNMENTS

Name	Responsibility
Dave Reed	Project Manager / Safety Officer
Ken Corkill	GeoProbe Operator
Jerry Willman	Chain of Custody Officer
Bruce Everetts	Sampler

B. FIELD WORK PROPOSED

All work conducted over the course of this CERCLA investigation will be performed in accordance with the Bureau of Land SOPs. Field work proposed for this SR includes the collection soil samples for chemical analysis.

IV. SAMPLING

A. PROCEDURES

All samples will be collected in accordance with the Illinois EPA's BOL, SOPs, and the U.S. EPA approved QAPP. Samples will be placed in sample containers provided by the Illinois EPA's organic laboratory bottle shop, and proper federal contract laboratory chain of custody protocols will be followed throughout the sampling activities. All environmental samples will be laboratory analyzed for parts of the Target Compound List which include Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Total Metals and Cyanide. Quality Assurance (QA) and Quality Control (QC) samples will be collected to estimate the precision and accuracy of analytical results and to examine sources of error introduced by field and laboratory practices. The type and frequency of QA/QC samples to be collected during this SR are specified in the U.S. EPA approved QAPP. A federal contract laboratory had not been assigned when this work plan was prepared.

Figure – 1 contains the proposed sampling locations for this SR. At select locations readily accessible to the Illinois EPA Geoprobe®, continuous four-foot soil cores will be collected to approximately 12-feet to characterize subsurface conditions. The Illinois EPA will collect the majority of the samples from the top two feet of material. The contents from each one foot interval will be placed in a stainless steel pan and will be field analyzed for VOCs using a PID, and total metals using an X-Ray Fluorescence Instrument. The Illinois EPA project manager will collect a soil sample for analysis

based on the screening results and visual inspection of the sample material. Materials from the soil cores will be visually inspected and classified. The contents of the soil cores will be analyzed using field based characterization methods to identify potential zones of contamination. Field based characterization will include analysis for VOCs using a PID, and analysis for heavy metals using X-Ray Fluorescence (XRF) instrumentation. A minimum of one soil sample will be collected from each boring for analytical testing. Materials encountered during completion of the soil boring, and field analytical results will be recorded in a field logbook to aid in characterizing the site. Soil samples will be collected within the upper 2-feet of material since the soil exposure pathway is to be evaluated. Additional soil samples may be collected from greater depths if conditions warrant.

For groundwater samples, grab samples will be collected. Depth to groundwater at the site is suspected to be 8-12 feet. The Geoprobe® Screen Point 16 Groundwater Sampler (SP16) is used to collect grab groundwater samples from soil boring locations. The SP16 consists of a four foot stainless steel wire wrapped screen which is housed inside an outer steel sheath. The sampling device is advanced to the desired depth then retracted 4-feet to expose the screen to the formation. A peristaltic pump and polyethylene tubing are then used to purge water from the sampler. Water quality readings for temperature, pH, and conductivity are measured and recorded approximately every five minutes until the purge water has cleared and stabilized. Groundwater samples are collected once the water quality measurements stabilize.

Sampling equipment used for the collection of soil samples will be decontaminated in the field using a Liquinox detergent solution prior to reuse. Soil borings completed during the investigation will be backfilled with material previously removed or granular bentonite. Sampling locations will be recorded using Global Positioning System (GPS) technology for map preparation and future reference.

B. LOCATION OF SAMPLES

Figure – 1 contains the location of proposed sampling locations. Sample locations are subject to change based on changing site conditions and project manager discretion. For instance, one of the soil borings will be collected near the old trash piles that use to be on-site but the exact location of that boring can't be determined until the sampling team arrives at the site. (Additionally, if permission can be obtained from a nearby resident, the soil and groundwater background sample will be moved off-site.) Soil boring locations will be designated by a "SB" prefix followed by a numeric progression beginning with "101". Soil samples will be designated by an "X" prefix followed by a numeric progression matching the Geoprobe location number. In the event two soil samples are collected from one boring, the first sample will be given an "A" suffix and the second sample will be given a "B" suffix. Thirteen sample locations have been proposed for the SR. Approximately 14 soil samples and 5 groundwater samples will be submitted for laboratory analysis. A residential well sample will be collected (G201) at the residence directly south of the site. Waste samples will likely not be taken because the trash piles have been removed since the SSI was completed in 1992. The numbers of samples in both matrices include the samples and associated Quality Control samples.

Sample	Type	Justification
X-101, X-102	Soil	Background
X-103, X-104, X-105, X-107	Soil	Suspected former disposal area
X-106, X-108, X-109	Soil	Determination of Source Area
X-110	Soil	Duplicate Sample (Location to be determined)
G-101, G-102	Groundwater	Background
G-103	Groundwater	Suspected former disposal area
G-104, G-105	Groundwater	Downgradient of Source Area
G-106	Groundwater	Duplicate Sample (Location to be

determined)

C. ANALYTICAL SERVICES

All samples collected during this CERCLA inspection will be analyzed through the USEPA Contract Lab Program. Analytical laboratories had not been assigned at the time this work plan was prepared. Based on the operational history of the site and the results of previous samples collected from the site, all samples will be analyzed for the TCL. Proper Chain of Custody procedures will be utilized throughout sample collection, preservation and distribution.

V. ATTACHMENTS

A. RECORDS AND DOCUMENTATION (Check the records or documents that will be generated during this project)

√ Work Plan

√ Safety Plan

√ Sampling Plan

√ Log Book

√ Chain of Custody Records

√ Sample Analysis Records

√ Photographs

√ Drilling Logs

√ Correspondence

√ Maps

√ Projected HRS Score (Quick-Score)

Other (specify)

Figure -1

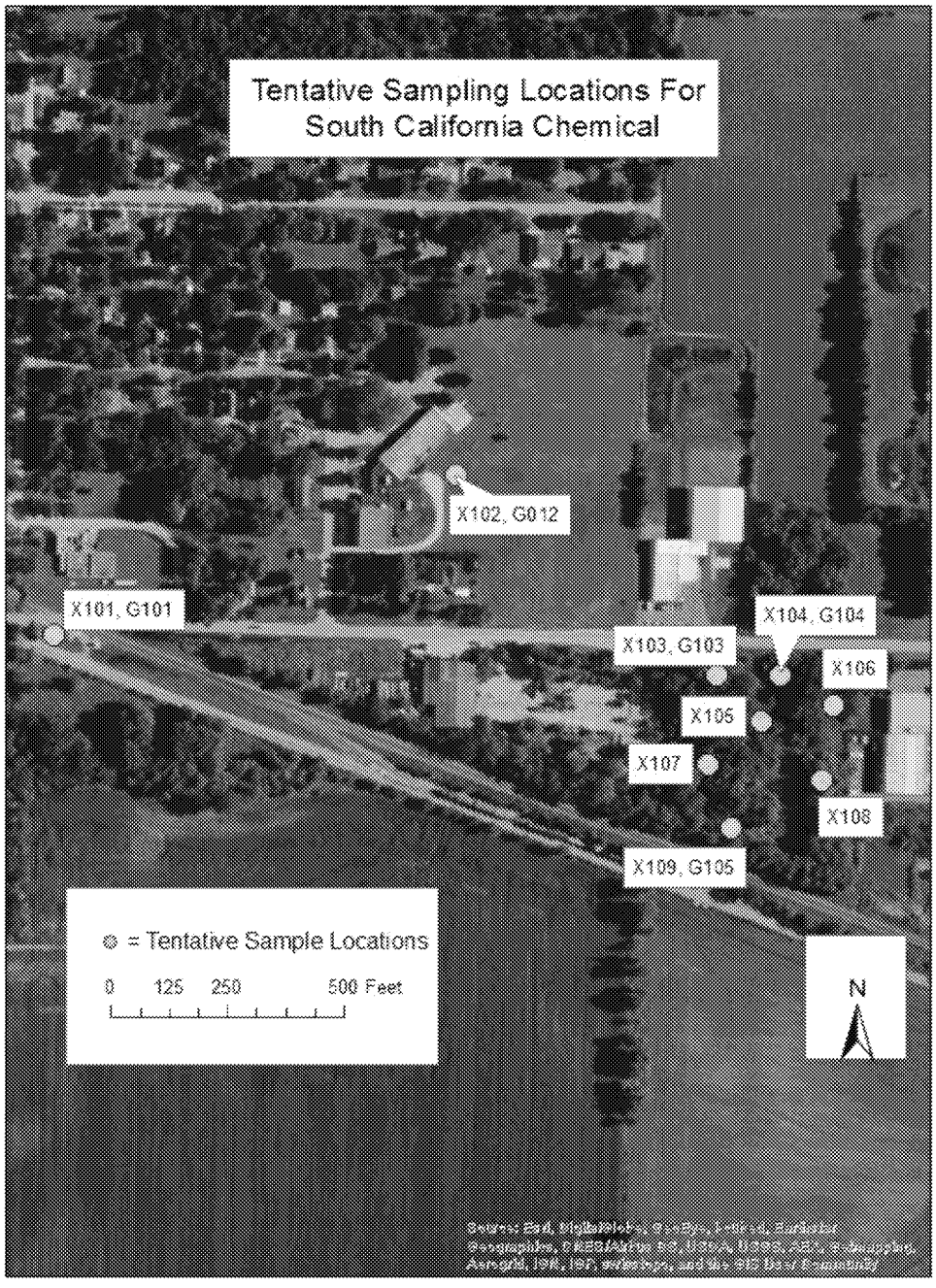
Tentative Sampling Locations For
South California Chemical
X102, G012
X101, G101
X104, G104
X103, G103
X106
X105
X107
X108
X109, G105
= Tentative Sample Locations
0 125 250 500 Feet
N

Figure -2

Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community