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HERBICIDE ORANGE SITE CHARACTERIZATION STUDY NCBC GULFPORT MS
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HERBICIDE ORANGE SITE CHARACTERIZATION STUDY NAVAL CONSTRUCTION BATTALION CENTER

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This report contains the sampling methods, analytical procedures, and results of a 2-year study to map the horizontal and vertical extent of Herbicide Orange derived 2,4-D, 2,4,5-T, and 2,3,7,8-TCDD at the Naval Construction Battalion Center, Gulfport, MS. The Construction Battalion Center was used as a storage site for Herbicide Orange until 1977.

The old storage site was sampled in a systematic grid pattern to produce a total site map. Surface samples were analyzed for TCDD to a detection limit of 0.1 parts per billion. Subsurface samples were also collected from areas known to be "hot-spots." These samples were collected from every foot to a depth of 5 feet. Samples were collected with a power auger and split spoon samplers. Subsurface samples were analyzed to 0.01 ppb for 2,3,7,8-TCDD and 0.1 ppb for 2,4-D and 2,4,5-T.

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Contamination levels ranged between nondetectable and approximately 200 ppb. Average values were below 10 ppb in surface soils and significantly lower in subsurface samples.

EXECUTIVE SUMMARY

The Naval Construction Battalion Center is located within the city of Gulfport, Mississippi, about 2 miles from the Gulf of Mexico. From 1968 through 1977, about 12 acres of the base were used to store 850,000 gallons of Herbicide Orange in 55-gallon drums. The Herbicide Orange was determined to contain an average of 2 parts per million 2,3,7,8-tetrachlorodibenzo-o-dioxin (TCDD). This material, along with 1.37 million gallons of Herbicide Orange from Johnston Island, Pacific Ocean, was destroyed by Environmental Protection Agency-approved high-temperature incineration in the summer of 1977.

This report describes the procedures, results, and analysis of a soil sampling program performed at the former Herbicide Orange storage site on the Naval Construction Battalion Center. Over 1700 soil samples were collected from and around the 12-acre storage area, in accordance with a previously approved sampling protocol. In addition to the soil samples, over 200 laboratory analyses were performed and reported for a variety of quality assurance criteria.

Samples were composited for 20-by 20-foot plots, both inside and outside the former fenced storage area. A total of 1300 plots were sampled. To determine the depth of penetration of TCDD into the cement-stabilized soil, 35 locations were sampled in intervals up to 22 inches in depth. At 15 locations, subsurface samples were collected to a depth of 5 feet. The vertical distribution of the herbicides 2,4-D and 2,4,5-T was also investigated by analyzing all subsurface samples for these compounds.

The validated data indicate that TCDD contamination of the former fenced storage area is highly variable and random but is highest where the drums were known to be stored or handled, and decreases as the drainage path moves away from drum storage. TCDD concentrations on the surface ranged from less than a detection limit of 0.01 ppb to 646 ppb. The arithmetic mean for all surface plots inside the fenced area was 10.7 ppb.

Based on the results of subsurface sampling, it appears that, except for three samples, TCDD concentrations above 1 ppb were limited to 2 feet in depth, with a maximum of 310 ppb in the 0-3-inch interval, 93 ppb in the 3-7-inch interval, and 12 ppb in the 8-12-inch interval. The maximum in the soil/cement is 1000 ppb. There is a definite trend in the data of decreasing concentration with depth. The major contamination occurs in the surface, the soil/cement, and 6 inches beneath the soil/cement layer. One sample had a TCDD concentration of 5.1 ppb at 5 feet. The highest value obtained was a TCDD concentration of 1000 ppb in the soil/cement layer.

The 15 subsurface samples were analyzed for 2,4-D and 2,4,5-T, the main components of Herbicide Orange. The concentration values ranged from detection levels (5000 ppb) to a maximum for 2,4-D of 20,800,000 ppb and a maximum for 2,4,5-T of 27,700,000 ppb. The highest concentrations were in the soil/cement layer.

The volume of material requiring excavation for a TCDD cleanup effort has been calculated at the 65 and 95 percent confidence levels for a conservative excavation depth of 2 feet. The 95 percent confidence value for a cleanup criteria of 1 ppb TCDD is 728,800 cubic feet (26,990 cubic yards). If excavation in 6-inch intervals was performed followed by sampling the bottom of the hole, it is estimated from the data that this value would be reduced to approximately 182,200 cubic feet (6,750 cubic yards).

PREFACE

All Herbicide Orange sampling reports were prepared for the Air Force Engineering and Services Center, Engineering and Services Laboratory, Tyndall AFB Florida, and Job Order Number (JON) 1900 2067. The principal contractor, EG&G Idaho, Inc., is a captive contractor of the Department of Energy, Idaho National Engineering Laboratory.

This report is one of four reports encompassing the Air Force Soil Sampling and Analysis Program. The goal of this program was to define the vertical and horizontal extent of Herbicide Orange derived 2,3,7,8-tetrachlorodibenzo-p-dioxin at the three primary herbicide sites. In addition, an initial groundwater evaluation was prepared for the sites at the Naval Construction Battalion Center, Gulfport, Mississippi and Eglin Air Force Base, Florida.

This report has been reviewed by the public Affairs Office (PA) and is releasable to the National Technical Information Service. At NTIS it will be available to the general public, including foreign nationals.

This technical report has been reviewed and is approved for publication.

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SECTION I
INTRODUCTION

Herbicide Orange (HO) was developed as a tactical defoliant for use in Vietnam (Reference 1). It is a reddish-brown to tan liquid, soluble in diesel fuel and organic solvents, but insoluble in water. The formula contained an approximate 50/50 mixture of the herbicides 2,4-dichlorophenoxyacetic acid (2,4-D) and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) with trace amounts of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). The average concentration of TCDD in Herbicide Orange is about 2 parts per million. The use of HO was discontinued after certain uses of 2,4,5-T, which contains dioxin, were suspended in April 1970.

In September 1971, the Department of Defense directed that remaining stocks of HO in South Vietnam be returned to the United States and disposed of in an environmentally safe manner (Reference 1). After an evaluation of various disposal techniques, the United States Air Force (USAF) disposed of 0.85 million gallons of HO that had been stored at the Naval Construction Battalion Center (NCBC), plus 1.37 million gallons of HO stored on Johnston Island by Environmental Protection Agency-approved high-temperature incineration at sea.

Following disposal of the herbicide, the USAF instituted a storage site monitoring program (Reference 1) to determine the extent and magnitude of contamination degradation rates, potential for movement of residues, and managerial techniques for minimizing impacts. The results of the monitoring program at NCBC (References 1-3) show that significant contamination has been detected within the former storage area, with lower levels in the surrounding area.

A. OBJECTIVE

EG&G Idaho, Inc., has conducted a sampling program at NCBC to determine the horizontal and vertical extent of HO-derived TCDD in soils.

Similar sampling programs were conducted at Johnston Island, Pacific Ocean, and Eglin Air Force Base, Florida.

B. BACKGROUND

1. Location and Description

NCBC is located in the northern part of Gulfport, Mississippi, about 2 miles from the Gulf of Mexico (Figure 1). The elevation averages approximately 30 feet above sea level. Surface soils are primarily sand to sandy loam with minor clays. The groundwater table at the herbicide storage area ranges from approximately 3 to 10 feet below land surface.

The herbicide storage area comprises approximately 12 acres of flat land. The area is drained by a system of ditches and culverts graded to the west, discharging into a canal in the northwest corner of NCBC. The storage site surface was stabilized with a soil/Portland cement mixture about 30 years ago to provide a hardened surface for heavy equipment operation and storage.

2. Previous Sampling and Analysis

Approximately 2 to 4 acres of the site are considered contaminated with HO and dioxin. Nearly all soil samples collected in the storage area during previous sampling programs had TCDD levels in excess of 1 ppb and range as high as 263 ppb (Figure 2). Contamination resulted from leaking drums and spills during storage and handling. Shell, rock, and soil fill material was added to the storage area in locations of known spills. This cover ranges from 0 to 6 inches thick.

C. SCOPE

The overall scope of the work included the following:

1. Development of a sampling protocol (procedures for sampling and analysis)

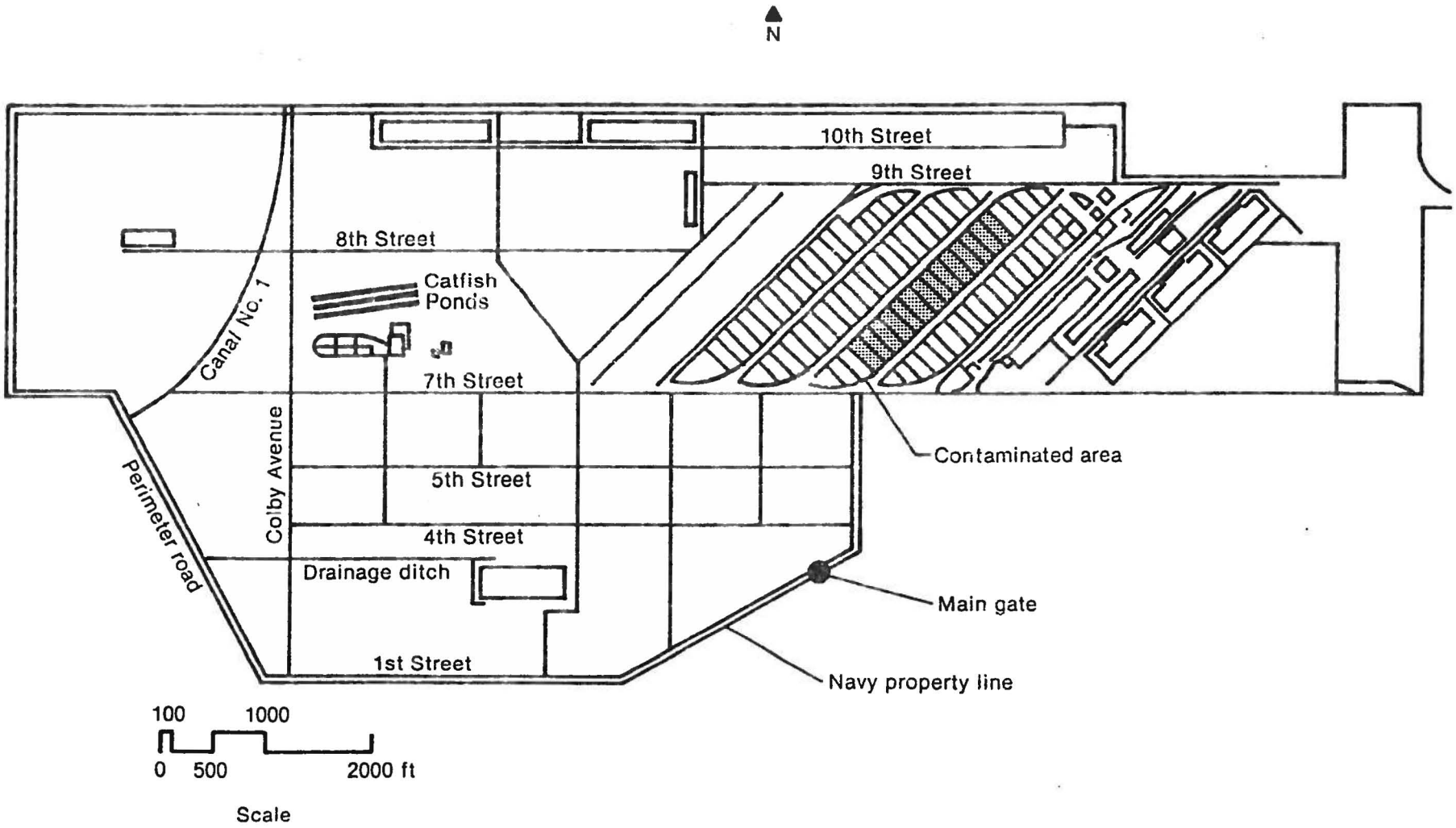
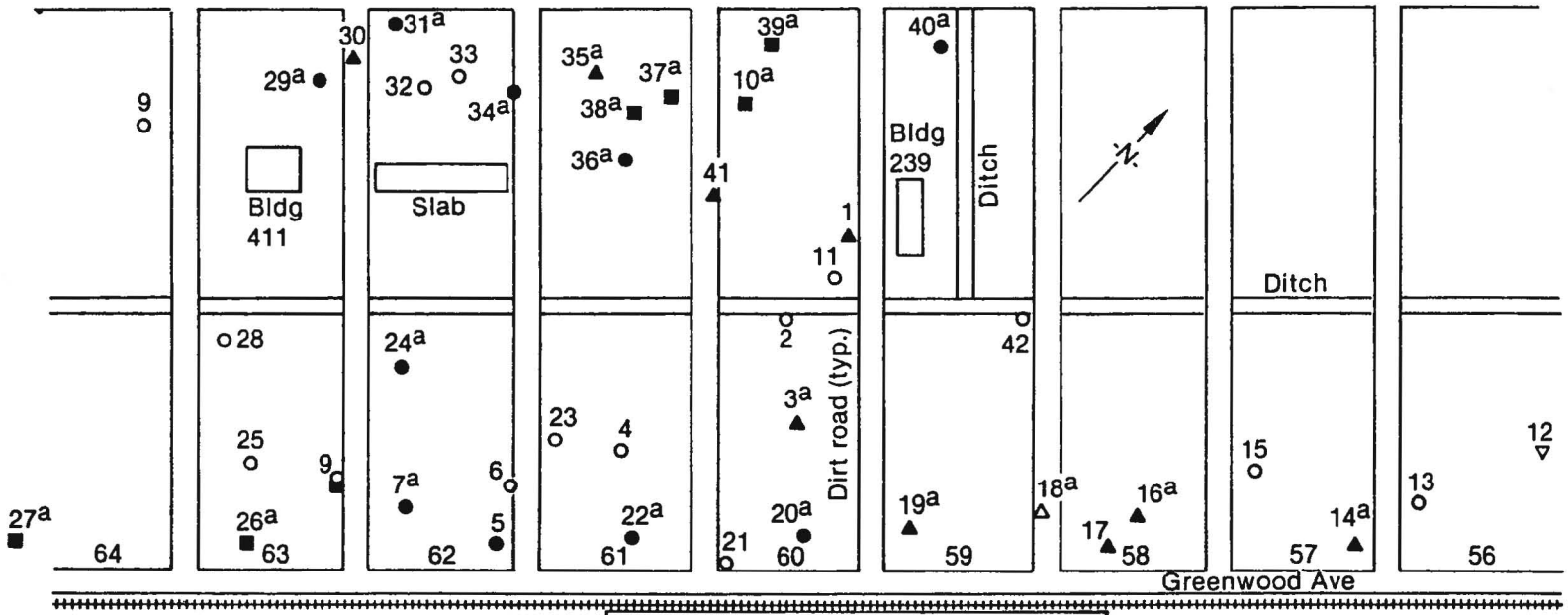


Figure 1. Location of NCBC Herbicide Orange Storage Area.



TCDD concentration in parts per billion	
○ No data	● 1 to 10
□ <0.01 ND	■ 10 to 100
△ 0.01 to 0.1	▲ 100 to 500
▽ 0.1 to 1	

a - Samples collected in 1977-78 and analyzed by the University of Utah; all other samples collected in 1980-82 and analyzed by Wright State University and California Analytical Laboratory

Figure 2. Results of Previous Sampling Studies.

2. Site layout of the sampling plots and other sampling locations

3. Collection of field samples

4. Laboratory analysis of samples for Herbicide Orange components TCDD; 2,4-D and 2,4,5-T

5. Validation procedure of the laboratory results

6. Statistical analysis of laboratory data

7. Assessment of the extent of contamination.

Under this program, 1767 samples of soil and soil/cement were submitted to U.S. Testing Laboratories for analysis. Over 200 additional analyses were performed for a variety of quality assurance criteria.

The resultant data were compiled and analyzed for validation and to determine the statistical variability. Assessing the extent of contamination at various levels of confidence based on the statistical analysis will enable subsequent remedial action planning.

SECTION II
SAMPLING PROTOCOL

The objectives of sampling at NCBC were to determine the horizontal and vertical extent of dioxin contamination. In addition, the vertical extent and concentration of 2,4-D and 2,4,5-T were determined in 15 subsurface drill holes. The results of the sampling program will be used to evaluate remedial action options; however, acceptable levels of TCDD contaminants in soils have not been determined.

A field protocol was prepared that addressed objectives, review of background data, sampling plans, site safety and decontamination, sample handling, data reporting, quality assurance, and analytical procedures. The protocol was reviewed by the USAF and, informally, by the Environmental Protection Agency (EPA) personnel. Comments were incorporated, and a final protocol was completed in October 1984. This section summarizes information contained in the protocol and includes field modifications. A USAF representative was present during sampling and approved all modifications.

A. SURFACE SAMPLING DESIGN

Existing data were found to be inadequate to design a rigorous, statistically based characterization study. Previous results indicated the "hot spot" nature of the contamination that would be expected from leaking drums. Most of the soil samples containing TCDD in excess of 1 ppb were collected within the former storage area. Therefore, most of the sampling was concentrated in that area, and a reduced sampling intensity was used for the surrounding area.

In designing the sampling plan, two different approaches were considered. Relatively large areas could be repeatedly sampled to provide a mean value (and standard deviation) that is compared against some cleanup criteria. This procedure has been used by EPA when dealing with contaminated oils spread fairly evenly over large areas. Since

contamination on NCBC is due to small spills, cleanup, theoretically, could be conducted on small plots. The alternate procedure was to divide the large area into many small areas and make a decision based upon the results of a single analysis. An advantage of the latter approach is that data from many small areas can be combined to produce a means for evaluating larger areas, as was done by EPA.

Making decisions based upon one sample, however, is generally unacceptable if data do not exist on the uncertainty associated with the value. To determine the uncertainty within sampling plots, every 30th sampling plot was sampled an additional four times. The four additional field replicate samples would be used to determine a mean and standard deviation and establish confidence intervals about the mean. These results would be used to estimate confidence limits for the other sampling plots. For example, to ensure with a 90 percent probability that all plots in excess of 10 ppb are cleaned up, it might be necessary to clean up all plots exceeding 5 ppb. The number of field samples at NCBC was based on an arbitrary decision to allocate one surface soil sample for every 400 ft^2. It was decided that 20-foot-square plots would be used. Plots of this size are probably about as small as can be reasonably cleaned up with heavy equipment. The final surface sampling design is shown in Figure 3.

The sampling design within the fenced storage area is systematic, with no designed-in randomness. A systematic grid was selected over random designs because of the relative ease of locating plots, sampling costs, the assumption that a random design would not improve the usefulness of the data (Reference 2), and the need for 100 percent coverage of the fenced portion of the former storage area. In addition, remedial action based on a systematic grid should be easier to conduct. The use of a systematic grid for collecting the five soil subsamples and four replicate samples can be criticized for a lack of randomness. However, it can be argued that the distribution of contamination within a sampling plot is random, and therefore a random sampling design is not necessary. This sampling design was arrived at after a review of EPA Region VII's recommended procedures

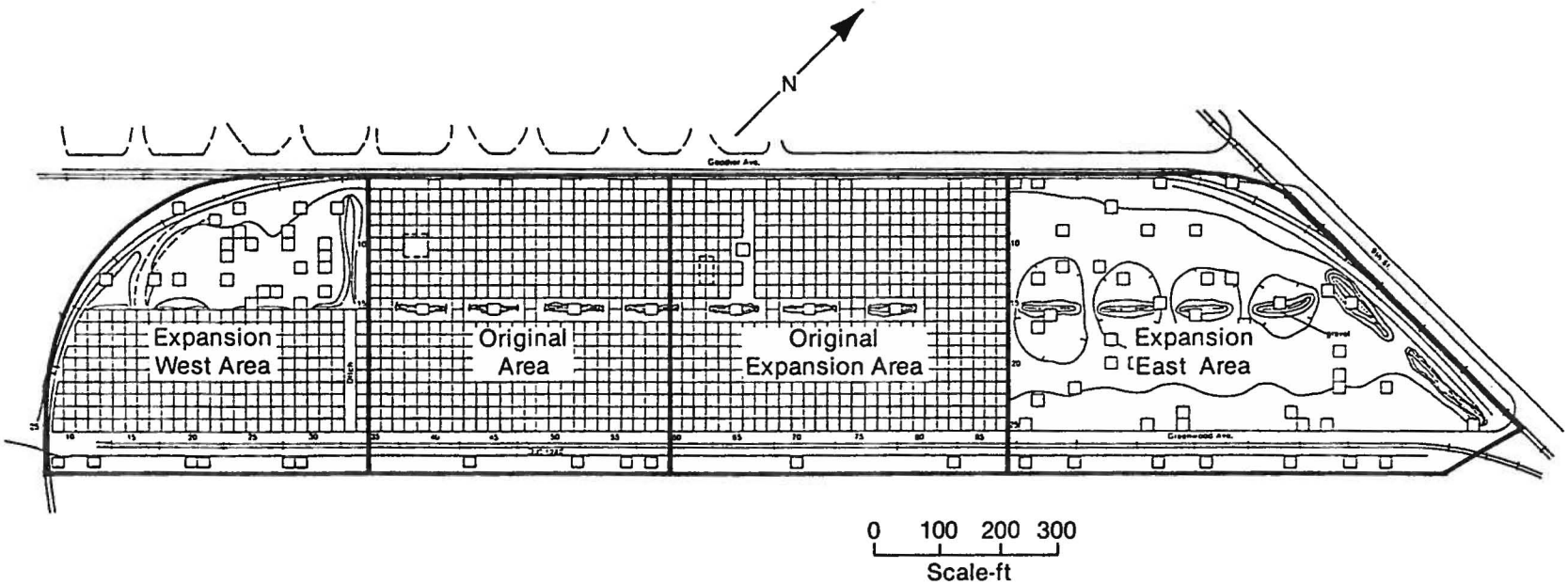


Figure 3. Herbicide Orange Study Areas.

(draft),[a] other reports (References 3 and 4), and consultation with a statistician[b] familiar with TCDD data.

To verify data indicating very little contamination in excess of 1 ppb outside the fence, 100 additional sample plots were allocated for characterizing the surrounding area. The storage area grid shown in Figure 3 was extended, and plots were randomly selected from within an area bounded by the railroad tracks, roads, and along the south side of Greenwood Avenue.

At each sampling plot, a composite sample composed of five subsamples was collected on an X pattern (four corners and a center aliquot). The center subsample was collected 6 inches away from the center stake and with the corners of the X at the ends of diagonals, 9.5 feet from the plot center. The purpose of collecting a composite sample was to obtain a more representative sample (and thus a more accurate estimate of TCDD contamination) from the sampling plot. Surface soils ranged from 0 to 6 inches thick.

To ensure data quality and utility, additional samples were collected and submitted to the analytical laboratory, including replicates, splits, blanks, rinsates, and standards. Replicate sampling, as previously discussed, involves collecting a normal sample, as noted above, and then collecting four more samples (at every 30th plot) by shifting the pattern 3 feet in four directions parallel to grid lines. These samples were essential for determining confidence limits about sample plot means. Split samples involved collecting a composite sample every 40th plot, dividing it into two jars, and sending each to a separate analytical laboratory. Blank samples at the rate of one in forty were also collected and submitted for analysis. All blanks came from one large homogeneous sample containing

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a. Field Procedure and Techniques for Use in Dioxin Site Investigations, Draft, EPA Region VIII.

b. Personal Communication, Robert Kinninson.

soil and shells. Every 20th sample was a standard or known sample. This Quality Assurance (QA) program was designed to determine the accuracy and precision of the laboratories and the total uncertainty associated with sampling and to permit detection of cross-contamination between samples. Because of the lack of timely analytical results, it was not possible to provide QA data to field personnel during sampling, as was planned.

All surface soil samples were analyzed for TCDD at a target detection limit of 0.1 ppb.

B. NEAR-SURFACE AND SUBSURFACE SAMPLING DESIGNS

Near-surface soil samples from the upper 12 inches of soil were collected to determine the vertical extent of contamination in "hot spot" areas for remedial action. Subsurface samples to a depth of 5 feet were collected to determine the maximum vertical migration of 2,4-D, 2,4,5-T, and TCDD. Sampling sites were determined in the field, based upon a limited quantity of analytical results from surface soil samples. Those sites with the highest concentrations of TCDD at the surface were chosen for subsurface sampling; sites with the next highest concentration were chosen for near-surface sampling.

Near-surface samples were collected from 35 sites at the following intervals: surface soil, soil/cement, 0-3 inches, and 3-7 inches below soil/cement. Sites were selected based on limited analytical results available. Samples were collected from near the plot center. The previously described field QA program regarding splits, blanks, rinsates, and standards also applies to near-surface sampling. All samples were analyzed for TCDD at a target detection limit of 0.1 ppb.

Subsurface soil samples were collected from 15 locations at the following depth intervals: surface to soil/cement, soil cement, 0-3 inches, 3-7 inches, and 8-12 inches below soil/cement, and at 1-foot intervals to 5 feet. Sampling sites were selected next to the most contaminated sites indicated by analytical results available at that time.

The field QA program is as previously described. Samples were prioritized for analysis. Samples below 30 inches were held, pending results of the shallow samples. All subsurface samples were analyzed for 2,4-D, 2,4,5-T, and TCDD. The detection limit specified for TCDD varied from 0.1 ppb to 0.01 ppb, based upon the estimated concentration in the sample and depth of collection. The detection limit for 2,4-D and 2,4,5-T ranged from 20 to 5000 ppb.

C. DITCH SAMPLES

Samples were collected from the sediment in the bottom of all ditch segments to determine if dioxin contamination had entered the local drainage system. Five aliquots were collected from each ditch segment and were sieved, mixed, and spooned into a jar; samples were collected using a shovel and new spoons. Nondisposable equipment was decontaminated between each sample.

D. SAMPLING PROCEDURES

Sampling sites in the former storage area and adjacent boneyard were laid out parallel to fence lines, using a level and steel tape. Sampling site centers were marked using a 2-foot steel stake and stainless steel disk stamped with the site identification number. A washer was placed on the top of the stake, elevated at least 6 inches aboveground to permit easy relocation of the sampling plot. Plots outside the storage area were surveyed in the same manner, but were marked using a 3-inch-diameter plywood disk nailed into the soil with a 6-inch galvanized spike. The stainless steel identification disk was fastened to the wooden disk using a smaller nail.

Field sampling was prioritized according to anticipated contamination levels, starting with surface soil on the former storage area (Rows 23, 24, and 25), followed by surface soils on the present heavy equipment boneyard, samples outside the storage area, the remainder of the storage area, and then near-surface and subsurface sampling. This procedure is contrary to

the usual approach of sampling cleaner areas first. In this case, analytical results were desired to guide the collection of additional samples. However, because of time lag in receiving analytical results, only a few surface soil results were available to assist in near-surface and subsurface site selection.

Surface soils were sampled from the surface to the soil cement layer, a depth ranging from 0 to 6 inches, using a new stainless steel tablespoon. The five subsamples from a plot were sieved through a disposable piece of 10-mesh (2.0 mm opening) stainless steel screen into a disposable aluminum pan. The fines were thoroughly mixed with the spoon and placed in new 8-ounce wide-mouth glass jars (two-thirds full, approximately 200 grams) with aluminum foil-lined caps. This operation took place on the sample plot. The coarse soil remaining was poured into one of the subsample holes.

Near-surface samples were collected using a jackhammer to break up the soil cement layer, then a shovel to enlarge the hole. Samples were then taken using new spoons, starting at the bottom and working up. All nondisposable sampling equipment was decontaminated between sites.

Subsurface samples were collected using a truck-mounted drill rig with hollow stem augers and a split-spoon drive sampler. Augers were advanced to the top of the sampling interval; then the split spoon was driven for 10 inches using a drop weight. The sampler was retrieved and opened, the outside soil scraped away, and the sample scooped out of the center using a new spoon. Augers, drill bit, and other drilling equipment were decontaminated between each hole. Split spoons were decontaminated between each sample.

E. SAMPLE HANDLING

Preprinted form labels were used for all samples. Labels included provisions for information on location (4 digits, 2 for row, 2 for column), sample type, depth, date and time of collection, and type of analyses

required. Labels were placed on bottles before sampling with location, sample type, and required analyses filled in. Date and time were filled in as samples passed the "hot line." All samples were recorded in a sample log that contained all of the above data plus the name of the team leader, sample logger, and shipping case number.

Sample jars were placed in plastic bags before they entered the contaminated area and were rebagged and sealed with twist ties at the "hot line." The jars were then placed in labeled one quart paint cans (1/2 gallon for rinsates) that had been lined with plastic bags. Vermiculite was placed between two bags, the outer bag was sealed with a twist tie, and the paint can lid was secured with three clips. Labels on each paint can contained the identical information as the sample jars plus warning labels: FLAMMABLE SOLID N.O.S. UN 1325; and, DANGER DO NOT LOAD ON PASSENGER AIRCRAFT.

Cans were packed in metal ice chests lined with a plastic bag and padded by vermiculite. Up to 34 cans were routinely placed in a cooler. The cooler had the same warning labels as the paint cans. Commercial express package service completed delivery to the laboratories.

F. SAFETY

All personnel collecting samples at NCBC were given physicals before and after sampling was completed. The results of the physicals have been reviewed by a physician, and no significant effects due to the project were observable.

A "hot line" was established at the site where personnel were decontaminated upon leaving the contaminated area. Within the contaminated sampling area, all personnel were equipped with level C protective gear, including Tyvek® suits and hoods, steel-toed neoprene boots and latex boot covers, surgical inner gloves and neoprene/viton outer gloves (and sometimes an outer cotton glove), and positive pressure respirators equipped with combination pesticide and particulate cartridges. Boots and

gloves were taped to the Tyvek® suits. Boots, respirators, and viton gloves were decontaminated as personnel left the contaminated area; all other protective gear was discarded. Decontamination usually consisted of a soap and water wash, water rinse, and an alcohol rinse. At least one person was always on the clean side of the "hot line" to provide assistance as needed. Personnel were always within sight of each other.

SECTION III

ANALYTICAL PROCEDURES AND LABORATORY QUALITY ASSURANCE

EG&G Idaho specified the analytical procedures to be used for the dioxin survey and validated the data obtained from the analytical laboratory. The analytical procedures selected and the quality assurance protocol used for data validation are discussed below.

A. ANALYTICAL PROCEDURES

The analytical procedures for the program were adapted from appropriate existing EPA analytical procedures. The 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) procedure was adapted from the December 1983 revision of the protocol developed by EPA Region VII (Reference 5). The detection limit for the analytical procedure as adapted was 0.1 ppb for surface samples. For the routine analytical laboratory to achieve the 0.01 ppb detection limit for subsurface samples, it was necessary to increase the effective concentration of TCDD in the final sample extract by a factor of ten. This tenfold increase in concentration was achieved by one of two methods. Either a 10-gram sample aliquot was utilized and the final volume of the sample extract was adjusted to 5 µL rather than the 50 µL called for in the procedure or, alternatively, a 50-gram sample aliquot was utilized and the final volume of the sample extract was adjusted to 25 µL. The choice of option used to obtain the 0.01 ppb detection limit was operational based upon the availability of personnel and equipment. The use of the smaller final volume (5 µL) for the sample extract required close supervision during the final volume reduction step to prevent evaporating the extract to dryness. Conversely, use of the larger sample aliquot (50 grams) resulted in larger aliquot volumes and required larger initial extract volumes, which made the various preparative manipulations more difficult. Both procedural modifications provided the required tenfold increase in TCDD concentration in the final extract, permitting the lower detection limit.

The method used for 2,4-D and 2,4,5-T was EPA Method 8150 (Reference 6). The target detection limit was 1.0 ppb for each of the herbicides. However, the detection limit actually achieved for each of the herbicides was considerably higher than this, ranging from 20 ppb to 5000 ppb (5 ppm), because of the dilution factor required during preparation of the samples for analysis. In addition, a modification to the procedure was required as follows: the sample aliquot taken for analysis was 0.5 gram rather than the 50 grams specified in the procedure. Analysis of dilute extracts was necessary because large amounts of materials present in the samples, either the compounds of interest or contaminants, caused chromatographic interferences in the analyses. Dilution and reduction of the sample aliquot size were required to minimize the effect of the interferences.

B. LABORATORY QUALITY ASSURANCE

The laboratory quality assurance (QA) program consisted of two parts. The internal QA program was carried out within the analytical laboratory. This consisted, at a minimum, of performing certain specified analyses such as the analysis of method blanks (reagent blanks), matrix spikes, and duplicate sample aliquots on a regular basis, as required by the analytical protocols. These specific analyses are discussed in more detail below. The second part of the QA program was carried out independently of the analytical laboratory. It consisted of several subparts, including analytical data review/validation, the use of samples submitted to the analytical laboratory as performance audit (PA) samples, analysis by the analytical laboratory of performance evaluation (PE) samples, and analysis of samples split between the analytical laboratory and the Quality Assurance/Quality Control (QA/QC) laboratory. These latter samples are subsequently referred to as split samples. The external phase of the QA program is discussed in detail below.

Each of the analytical procedures outlines specific QA requirements. The herbicide procedure (EPA Method 8150) addresses only the internal laboratory QA requirements, which consist of analyzing matrix spike samples

and laboratory replicates (duplicates) at unspecified frequencies. In addition, the procedure requires that a method blank be run with each set of samples. The general definitions of each of these samples and their purpose follow:

1. Method blank: This consists of determining the analytical response when analysis is performed in the absence of a sample aliquot but including all reagents and all steps of the analysis. The purpose of this analysis is to demonstrate that all reagents and glassware used are free of contamination and interference.

2. Matrix spike: This consists of adding a known amount of the compound of interest to a sample aliquot before analysis. This analysis is performed to determine the accuracy of the analytical procedure.

3. Duplicates: These consist of two subsamples or aliquots of a sample considered to be homogeneous. The aliquots are taken by the laboratory, and each is submitted for analysis using the same procedure. Duplicate analyses are performed to provide a measure of the precision of the analysis.

These analyses were performed as required by the herbicide procedure.

The QA requirements outlined in the TCDD procedure are more extensive than those of the herbicide procedure. The internal laboratory QA requirements consist not only of analyzing method blanks, matrix spikes, and duplicates at regular intervals, but also including the use of a surrogate standard in every analysis. A surrogate standard is a pure compound that is an isotopically labeled version of the compound of interest. It is added in known amounts to the sample aliquot before the aliquot is subjected to the analytical procedure. For the TCDD procedure, the surrogate is added in amounts equivalent to 1.0 ppb. The accuracy of the result for the analysis of the surrogate standard is indicative of the

accuracy of the analytical result for the unlabeled compound of interest. Thus, the use of a surrogate standard provides additional information about the accuracy of the analysis at the 1.0 ppb level. The TCDD used as a surrogate has been labeled by replacing the four chlorines of the compound with chlorine-37, which is a specific isotope of chlorine.

In addition to the internal laboratory QA requirements, the TCDD procedure also addresses specific QA requirements to be carried out external to the laboratory. These requirements include submission of the following blind samples to the analytical laboratory on a routine basis:

1. Field blank: This is a sample known to be free of contamination by the compound of interest. Analysis of the sample is used to demonstrate that there has been no contamination of the samples during sampling, transportation, storage, or analysis.

2. Field performance audit sample: This consists of a sample that contains a known amount of the compound of interest. This sample provides a routine check on the performance of the analytical laboratory in the form of analytical accuracy, precision, and bias compared with the QA/QC laboratory.

The TCDD procedure also calls for submitting to the analytical laboratory, on a nonroutine basis, a set of performance evaluation (PE) samples. Each set consists of several samples, each of which contains a known level of TCDD. The concentration of TCDD in these samples is unknown to the analytical laboratory. The purpose of these samples is to determine the quality of the laboratory performance in terms of accuracy compared with the QA/QC laboratory. As an additional part of the external QA requirements, the procedure calls for split samples to be collected at specified intervals. Each of these samples is split or divided in the field. A separate portion of each sample is sent to both the analytical laboratory and the QA/QC laboratory and is analyzed independently by each.

Various QA elements of the TCDD procedure, as noted above, were addressed as required during the analysis of the NCBC samples. The frequency of analysis, however, varied from that required by the procedure because the number of samples in each extraction batch run by the laboratory could sometimes vary from the 24 samples per batch specified in the procedure. The breakdown, by type, of total field samples submitted to the analytical laboratory is as follows:

1. Field Soil Samples (includes samples from surface, near-surface, and subsurface).

    a. Regular samples

    b. Replicate samples

    c. Split samples (portion sent to the analytical laboratory)

2. Field Blanks

3. Performance Audit Samples

4. Rinsate Samples

Table 1 lists the total number of field samples submitted and summarizes the total number of QA samples of each type analyzed, excluding additional analyses performed because of QA considerations.

All TCDD analytical data were reviewed according to the requirements outlined in the TCDD QA protocol. These requirements are detailed in the EPA document for reviewing TCDD analytical results (Reference 7). The latter document was adapted to form the working document used for detailed data review/validation. This data review/validation process formed an integral part of the external QA program, as mentioned previously.

TABLE 1. NCBC QA SAMPLE SUMMARY

Type of Sample	Number Analyzed[a]
Total field samples	1907[b]
Method blanks	80
Matrix spikes	87
Duplicates	81
Field blanks[c]	53
Performance audit samples[c]	82
Split samples[c]	38
Performance evaluation samples (sets)	2
Rinsate samples[c]	6

a. These numbers do not include additional analyses performed because of sample reruns necessitated by the QA criteria of the data review/validation process.

b. This total does not include the split samples sent to the QA laboratory.

c. These samples are included as part of the total field samples. Some of these samples may have been analyzed and reported more than once.

The criteria used to validate the analytical data for the TCDD results, as outlined in the TCDD QA protocol, are as follows:

1. To ensure isomer specificity for chromatographic separation, the TCDD must be separated from interfering isomers with no more than a 50 percent valley relative to the TCDD peak.

2. The m/z 320/322 and 332/334 ratios must be within the range of 0.67 to 0.87.

3. Ions 320, 322, and 257, which are each monitored separately but concurrently, must all be present; and the signals for all three must maximize simultaneously. The signal-to-noise ratio must be 2.5 to 1 or better for all three ions.

4. The signal-to-noise ratio must be 5 to 1 or better for the 332 and 334 ions, which are the ions due to the internal standard.

5. The retention time of the native TCDD must equal (within 3 seconds) the retention time for the isotopically labeled TCDD.

6. Positive results must be confirmed by obtaining partial scan spectra from mass 150 to mass 350 for selected samples.

7. The surrogate standard results must be within ±40 percent of the true value.

8. TCDD must be absent from the blank (both method blanks and field blanks).

9. Overall, a minimum of 80 percent of the reported values must be certified as valid.

10. The analytical laboratory must obtain satisfactory results for the performance audit and performance evaluation samples.

The above validation criteria that refer specifically to native TCDD (the species potentially present as the soil contaminant) only applied to sample results reported with positive TCDD values. These criteria refer to the 320/322 mass ratio value; the simultaneous presence of the 322, 320, and 247 ions; and the TCDD retention time. For samples in which TCDD was absent, the particular criteria above did not apply.

Analytical data meeting all the applicable validation criteria were considered valid. Failure of the data to meet all applicable criteria

resulted in the data being considered questionable. If the data were questionable because any of the associated blanks (field blank or method blank) were reported as being contaminated or because the result for the associated PA sample was not acceptable, the sample was rerun by the laboratory in an effort to provide valid data. Data that were questionable for other reasons were reported as probable results if the departure from the requirements of the validation criteria were considered relatively minor. Data were reported as invalid if there were major departures from the requirements of the validation criteria.

One analytical laboratory analyzed all routine NCBC field samples. An independent QA/QC laboratory performed the following QA functions:

1. Analyzed the matrix material used to prepare the performance audit samples to confirm that it was uncontaminated with TCDD.

2. Prepared the field performance audit samples and analyzed the prepared material to determine the TCDD levels. For NCBC, three different series of PA samples were utilized. The TCDD concentrations of the three series of PA samples, as established by analysis in triplicate for each series, were as follows: 0.080 ppb, 0.85 ppb, and 8.34 ppb.

3. Prepared a series of performance evaluation samples and established the concentration of TCDD in each level of the series by replicate analysis. The PE samples were prepared using clean (uncontaminated) Eglin Air Force Base soil as the matrix.

4. Analyzed the NCBC split samples.

The results of the work performed by the QA/QC laboratory have been summarized in various separate reports submitted by that laboratory. The reports from the QA/QC laboratory have not been appended to this document. However, pertinent data have been excerpted from them and are presented in the following discussion, as appropriate, to compare the

performance of the analytical laboratory to the QA/AC laboratory. The QA/QC laboratory also analyzed the NCBC split samples for 2,4-D and 2,4,5-T, where appropriate. These analyses have supplied external QA for the herbicide analyses performed by the routine analytical laboratory.

SECTION IV

RESULTS AND DISCUSSION

A. ANALYTICAL RESULTS

This section presents the results obtained from the analysis of the NCBC soil samples. In addition to an overall summary, each type of sample (duplicates, splits, field blanks, etc.) is presented separately.

1. Field Soil Sample Analyses

The results of the analyses of the NCBC field soil samples, including the analytical results for the herbicides, are listed in Appendix A. This summary contains TCDD results on 1766 field soil samples, which exclude rinsate samples and field performance audit samples. To prepare the summary, the TCDD results have been reviewed and assigned a validation status, as shown in Table 2. In addition, all maximum possible concentrations (MPCs), explained below, have been interpreted as reporting levels or positive concentrations, as appropriate. As shown in Table 2, the term, reporting level (RL), was adopted for use in Appendix A as a general term to cover both detection limits and maximum possible concentrations to avoid confusion, since the terms detection level (DL) and MPC have specific meanings according to the analytical protocol. A DL is reported for samples in which no unlabeled TCDD was detected. An MPC is reported for samples where interference is observed for both ions with mass 320 and 322 or when unacceptable 320/322 and/or 257/322 ion ratios prevented identification of unlabeled TCDD as a sample component.

MPCs with a 257/322 ion ratio outside the prescribed window have been interpreted as actual concentrations if there was a nonzero peak area for ion mass 257. This interpretation is consistent with current EPA practice. Conversely, MPCs with a zero peak area for ion mass 257 have been interpreted as a reporting level, and MPCs with a nonzero peak area for ion mass 257 but an unacceptable 320/322 ion ratio have been

TABLE 2. LEGEND FOR NCBC FINAL SAMPLE SUMMARY

Symbol	Explanation
Status	Validation status for the sample TCDD result, refers only to the TCDD result. Validation categories are defined below.
V	Valid; sample result is valid, all validation criteria have been met.
P	Probable; sample results interpreted as a probable concentration; not all validation criteria have been met, but the discrepancies are minor.
I	Invalid; sample result is invalid; there are major departures from the requirements of the validation criteria. No statement can be made about the results.
M	Missing; sample results are missing; the sample was either not received by the laboratory or could not be analyzed by the laboratory.
RL	Reporting limit; this term is used for the TCDD results instead of detection limit (DL) or maximum possible concentration (MPC) because the latter terms have specific definitions according to the analytical protocol. The RL is a term applied after the interpretation of the results; in some cases it will be numerically equal to a true DL, and in other cases it will be numerically equal to an MPC.

interpreted as either a probable concentration or a reporting level depending upon how far outside the acceptance window the ratio was.

Only the average of duplicate results is presented in Appendix A. When more than one result was available for a sample because of reruns, only the valid one is presented. If more than one valid result was available, the highest value has been presented in the appendix, since this would provide the best indication of the maximum contamination of any location.

The TCDD results in the summary list have been presented to two places past the decimal point (i.e., to the hundredths place). No significance should be placed on a zero in the hundredths place; the

analytical results are usually not that accurate. The zeros were added during preparation of Appendix A for data manipulation and data presentation purposes only. A maximum of two significant figures should be attributed to the analytical results because of possible analytical errors.

As shown in Table 3, 1473 samples out of the total 1766 were determined to be valid. This represents a percentage validated of 83.4 percent of the samples, which is above the level of 80 percent required by the analytical protocol.

TABLE 3. NCBC TCDD RESULTS STATUS SUMMARY

Status Category	Number of Results	Percent of Total
Missing	5	0.3
Invalid	109	6.2
Probable	179	10.1
Valid	1473	83.4
Total	1766[a]	100.0

a. The total does not include results for rinsate, field blank, or performance audit samples.

2. Method Blank Analyses

A total of 94 method blank analyses were performed during the NCBC sample analysis program. This total includes 14 method blank analyses performed during rerun of various field soil samples because the original results failed to meet specific QA requirements of the analytical protocol. In 93 of the method blanks, no TCDD was found, indicating that all reagents and glassware used were free of contaminants and interference. The remaining method blank was reported with a positive TCDD value of 0.08 ppb. This level of contamination was not considered to be significant, particularly since the

majority of the samples associated with this method blank were reported with positive TCDD values of 0.3 ppb or greater.

3. Matrix Spike Analyses

A total of 102 matrix spike analyses were performed during the NCBC sample analysis program. Included in this total are 15 matrix spike analyses performed during rerun of various field soil samples because the original results failed to meet specific QA requirements of the analytical protocol. The matrix spike samples were prepared using aliquots of clean (uncontaminated) NCBC matrix material that were subsequently spiked with native (unlabeled) TCDD. Spiking was performed either at the 1.0 ppb level in 10-gram matrix aliquots or at the 0.2 ppb level in 50-gram matrix aliquots. Five of the matrix spikes were performed at the 0.2 ppb level in 50-gram sample aliquots. The remaining matrix spikes were performed at the 1.0 ppb level in 10-gram sample aliquots. As stated previously, the purpose of these analyses was to measure the accuracy of the analytical procedure.

Out of the total 102 matrix spike analyses reported, 81 (79 percent) were reported as positive TCDD concentrations. In addition, 19 results for 19 percent of the total were reported as MPCs because the 257/322 mass ratio was outside the prescribed window. However, in keeping with current EPA practice, this condition has been relaxed, and these results have been interpreted as actual TCDD concentrations since each had a nonzero peak area at ion mass 257. Two of the results out of the total were outliers, where an outlier is defined as a result for which the spike recovery is either less than 60 percent or greater than 140 percent. The percentage of outliers was 2.0. One of the outliers is an MPC considered as an actual concentration. The spike recovery for this analysis was 153 percent. The second outlier is an MPC for which both the 320/322 mass ratio is unacceptable and the 257 mass peak is zero. In this case, the MPC was considered as a detection limit, which means that the reported concentration was 0.0 ppb for 0.0 percent spike recovery.

The average percent spike recovery for the 100 acceptable (within tolerance) matrix spike results was 103 percent, with a standard deviation of 14 percent and a recovery that ranged from 80 to 140 percent.

Because the average percent recovery is close to the theoretical value and the standard deviation is well within the guidelines of the protocol, the results of the matrix spike analyses indicated that there was no significant analytical interference or bias due to the matrix.

4. Duplicate Analyses

Table 4 lists the results of the duplicate analyses performed during the NCBC sample analysis program. A total of 90 duplicate pairs were reported. Included in the list are results for 17 samples that were rerun. These samples may be either one or both members of the original duplicate pair. All reruns have been reported separately. Where only one member of the pair was rerun, the rerun results have been compared with the other member of the original pair. If both members of the duplicate pair were rerun, the two reruns have been compared with each other.

For duplicate analyses, MPCs where the 257/322 ratio was outside the prescribed window have been considered as actual concentrations. Conversely, MPCs with unacceptable 320/322 ratios have been considered as detection limits. This interpretation is consistent with the situation discussed previously for matrix spikes. The MPC values in each category have been accordingly identified in Table 4.

Of the 90 pairs of duplicate results, 16 are outliers, i.e., 16 pairs of results have a relative percent difference (RPD) of greater than 50 percent. The percentage of outliers is 18. Thus, the results of the duplicate analyses meet the protocol guidelines regarding the percentage of outliers based on the guideline for data completeness, i.e., acceptability of 80 percent or greater of the data.

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-0590.01000	0.0	0.03[b]	0.0
NC-0590.01000D[c]	0.0	0.10[b]	
NC-0635.01000	0.1	--[d]	200[e]
NC-0635.01000D	0.0	1.90[b]	
NC-0642.02004	0.0	95.85[b]	0.0
NC-0642.02004D	0.0	91.23[b]	
NC-0742.01000	15.5	--	35
NC-0742.01000D	10.9	--	
NC-0774.51000	0.0	0.11[b]	0.0
NC-0774.51000D	0.0	0.03[b]	
NC-0776.01000	0.0	0.02[b]	0.0
NC-0776.01000D	0.0	0.06[b]	
NC-0841.01000	2.0	--	4.9
NC-0841.01000D	2.1	--	
NC-0857.01000	14.9	--	0.67
NC-0857.01000D	15.0	--	
NC-0884.51000	0.0	0.34[f]	13
NC-0884.51000D	0.3	--	
NC-0939.01000	6.6	--	24
NC-0939.01000D	0.0	5.21[f]	
NC-0953.01000	4.8	--	46

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-0953.01000D	3.0	--	
NC-0977.01000	0.0	0.20[b]	0.0
NC-0977.01000D	0.0	0.24[b]	
NC-0992.51000	0.0	0.10	0.0
NC-0992.51000D	0.0	0.1	
NC-1031.01001	0.0	0.10	0.0
NC-1031.01001D	0.0	0.10	
NC-1062.01000	2.0	--	5.1
NC-1062.01000D	1.9	--	
NC-1080.01000	0.4	--	5.1
NC-1080.01000D	0.38	--	
NC-1086.01000	1.8	--	0.0
NC-1086.01000D	1.8	--	
NC-1146.01000	5.6	--	28
NC-1146.01000D	7.4	--	
NC-1229.01000	0.2	--	0.0
NC-1229.01000D	0.2	--	
NC-1238.01000	9.4	--	4.2
NC-1238.01000D	9.8	--	
NC-1255.01000	0.1	--	11
NC-1255.01000D	0.0	0.09[f]	

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-1259.01000	11.5	--	35
NC-1259.01000D	8.1	--	
NC-1285.01000	0.0	0.26[f]	26
NC-1285.01000D	0.2	--	
NC-1353.01000	2.2	--	13
NC-1353.01000D	2.5	--	
NC-1374.01000	0.0	0.23[f]	130 [e]
NC-1374.01000D	0.0	0.05[f]	
NC-1374.01000R[g]	0.0	0.02	0.0
NC-1374.01000DR	0.0	0.02	
NC-1385.61000	0.0	0.59[f]	38
NC-1385.61000D	0.4	--	
NC-1444.01000	5.2	--	18
NC-1444.01000D	0.0	6.23[f]	
NC-1568.01000	0.0	0.10	0.0
NC-1568.01000D	0.0	0.10	
NC-1568.01000R	0.0	0.11[b]	200[e]
NC-1568.01000DR	0.1	--	
NC-1620.01000	2.0	--	0.0
NC-1620.01000D	2.0	--	
NC-1626.01000	1.0	--	200[e]

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-1626.01000D	0.0	1.41[b]	
NC-1632.01000	0.7	--	15
NC-1632.01000D	0.6	--	
NC-1685.01000	0.0	0.18[b]	200[e]
NC-1685.01000D	0.3	--	
NC-1713.01000	0.0	0.05[f]	200[e]
NC-1713.01000D	0.0	0.06[b]	
NC-1713.01000R	0.1	--	50
NC-1713.01000DR	0.0	0.06[f]	
NC-1754.01000	8.3	--	1.2
NC-1754.01000D	8.2	--	
NC-1763.01000	0.8	--	12
NC-1763.01000D	0.9	--	
NC-1780.01000	0.0	0.06[b]	0.0
NC-1780.01000D	0.0	0.08[b]	
NC-17A7.01000	0.0	0.10	0.0
NC-17A7.01000D	0.0	0.09	
NC-1823.51000	0.0	0.06[b]	0.0
NC-1823.51000D	0.0	0.09[b]	
NC-1868.01000	0.0	0.04[b]	0.0
NC-1868.01000D	0.0	0.20	

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-1884.01000	1.5	--	24
NC-1884.01000D	0.0	1.18[f]	
NC-1884.01000R	1.4	--	13
NC-1884.01000DR	1.6	--	
NC-1914.01000	0.0	1.99[f]	200[e]
NC-1914.01000D	0.0	2.13[b]	
NC-1917.01000	0.0	0.33[b]	200[e]
NC-1917.01000D	0.5	--	
NC-1923.01000	0.1	--	200[e]
NC-1923.01000D	0.0	0.13[b]	
NC-1975.01000	0.0	0.13[b]	0.0
NC-1975.01000D	0.0	0.14[b]	
NC-1985.01000	1.1	--	200[e]
NC-1985.01000D	0.0	0.10	
NC-2028.01000	1.5	--	14
NC-2028.01000D	1.3	--	
NC-2041.01000	0.4	--	29
NC-2041.01000D	0.3	--	
NC-2054.01000	0.0	0.20[b]	0.0
NC-2054.01000D	0.0	0.13[b]	
NC-20A7.61000	0.0	0.10	0.0

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-20A7.61000D	0.0	0.10	
NC-2158.01000	4.4	--	6.3
NC-2158.01000D	0.0	4.13[f]	
NC-2182.01000	0.9	--	5.4
NC-2182.01000D	0.0	0.95[f]	
NC-2268.01000	1.2	--	8.7
NC-2268.01000D	1.1	--	
NC-2271.01000	24.5	--	12
NC-2271.01000D	27.5	--	
NC-2271.01000R	14.9	--	6.9
NC-2271.01000DR	13.9	--	
NC-2277.01000	9.4	--	2.2
NC-2277.01000D	9.2	--	
NC-2277.01000R	7.5	--	2.6
NC-2277.01000DR	7.7	--	
NC-2318.01000	0.0	7.5[b]	200[e]
NC-2318.01000D	6.1	--	
NC-2318.01000R	4.9	--	22
NC-2318.01000D	6.1	--	
NC-2328.03008	0.15	--	150[e]
NC-2328.03008D	0.02	--	

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-2329.01000	5.0	--	3.9
NC-2329.01000D	5.2	--	
NC-2329.01000R	3.9	--	5.3
NC-2329.01000DR	3.7	--	
NC-2358.41000	37.6	--	12
NC-2358.41000D	0.0	33.5[f]	
NC-2365.01000	17.3	--	23
NC-2365.01000D	13.8	--	
NC-2369.03000	15.8	--	1.3
NC-2369.03000D	15.6	--	
NC-2377.02004	0.20	--	62[e]
NC-2377.02004D	0.38	--	
NC-2378.04000	1.1	--	15
NC-2378.04000D	0.95	--	
NC-2418.01000	0.0	0.78[b]	0.0
NC-2418.01000D	0.0	0.60[b]	
NC-2431.04000	154.0	--	48
NC-2431.04000D	94.8	--	
NC-2440.21000	1.4	--	25
NC-2440.21000D	1.8	--	
NC-2462.02004	34.4	--	13

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-2462.02004D	39.3	--	
NC-2482.01000	86.6	--	1.2
NC-2482.01000D	85.6	--	
NC-2516.01000	0.0	0.20[b]	0.0
NC-2516.01000D	0.0	0.20[b]	
NC-2528.03004	0.22	--	8.7
NC-2528.03004D	0.24	--	
NC-2541.01000	0.9	--	40
NC-2541.01000D	0.6	--	
NC-2550.02001	12.9	--	20
NC-2550.02001D	15.8	--	
NC-2555.01000	0.0	1.92[f]	26
NC-2555.01000D	2.5	--	
NC-2555.01000R	1.7	--	6.1
NC-2555.01000DR	1.6	--	
NC-2564.02000	35.5	--	18
NC-2564.02000D	42.5	--	
NC-2575.01000	10.7	--	3.7
NC-2575.01000D	11.1	--	
NC-2587.01000	0.0	0.38[f]	200[e]
NC-2587.01000D	0.0	1.07[b]	

TABLE 4. NCBC DUPLICATE ANALYSIS SUMMARY[a]
(CONCLUDED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-2870.01000	31.0	--	2.9
NC-2870.01000D	31.9	--	
NC-6030.81000	0.0	0.15[b]	0.0
NC-6030.81000D	0.0	0.09[b]	
NC-6041.81000	0.0	0.09[b]	200[e]
NC-6041.81000D	0.1	--	
NC-7008.01000	0.0	0.12[b]	0.0
NC-7008.01000D	0.0	9.06[b]	
NC-7025.01000	0.0	4.70[f]	2.1
NC-7025.01000D	4.8	--	
NC-8018.81000	0.19	--	71[e]
NC-8018.81000D	0.09	--	

a. Total pairs of results: 90, including 17 individual reruns; average relative percent difference: 40 percent; standard deviation: 67 percent; number of outliers: 16; percent outliers: 18.

b. Maximum possible concentration (MPC) considered as a detection limit.

c. D = Duplicate.

d. Not applicable.

e. Outlier = Pair of results with RPD >50 percent.

f. MPC considered as a positive result.

g. R = Rerun.

The overall average RPD for the duplicate analyses is 40 percent, with a standard deviation of 67 percent. The large standard deviation of 67 percent is due to the large RPD of the majority of the outliers. The average RPD meets the protocol guidelines for accuracy. However, the large standard deviation means that the protocol goal for precision, which is a relative standard deviation (RSD) of 20 percent or less, was not met.

Of the 16 pairs of duplicate results that are outliers, 10 pairs have reported low-level TCDD concentrations with all values 0.5 ppb or less. This group of outliers is of only minor significance because of the low levels of TCDD contamination involved. Specifically, it is anticipated that the low levels of TCDD contamination represented by these samples would be well below any proposed action level required by any site remedial action activity contemplated in the future. Therefore, spread in the results obtained at these concentrations, as reflected in their large contribution to the standard deviation associated with the average RPD levels, is of no practical concern.

Five of the six remaining outlier pairs each include one result that is an MCP and has been interpreted as a detection limit because the 320/322 ion ratio was unacceptable. Three of these five pairs of results would each have acceptable RPDs if the MPCs were interpreted as actual concentrations. Since reanalysis of these samples, which was not performed because it was not required by the analytical protocol, would most probably have provided data with an acceptable 320/322 ion ratio and, therefore, have dramatically reduced the RPD for each pair of results, the large contribution of these outliers to the standard deviation associated with the average RPD is also of no practical significance.

In support of this conclusion, consider the case of sample NC-2318.01000, which was reanalyzed because of QA problems with the first analysis. In the first analysis, an MPC was interpreted as a detection limit because of an unacceptable 320/322 ion ratio, which led to an RPD of 200 percent when compared to the duplicate analysis. Reanalysis of this sample produced a result that was an actual concentration of TCDD and led

to an RPD of 22 percent when compared to the same duplicate analysis. This case is typical of the results that would be anticipated if all of these MPC outliers had been reanalyzed.

To provide an indication of the significant contribution of the outliers to the average RPD and the associated standard deviation, the average RPD for the duplicate results is reduced to 11 percent, with a standard deviation of 13 percent if the outliers are eliminated. The RSD still exceeds the protocol goal of 20 percent or less, which means that the goal for precision has still not been achieved. The standard deviation measures the dispersion of clustering of the results around the average value (precision) and reflects the range of the RPD values. For the duplicate analyses, the clustering of the RPD values around the average does not meet the guidelines of the protocol. That is, there is more spread in the RPD values than would be ideal. This spread indicates that there is more scatter in the analytical results than anticipated. However, an inspection of the results of the duplicate analyses shows that with the exception of the outliers, each pair of results is consistent and meets the accuracy guidelines of the protocol. Therefore, the fact that the within-tolerance duplicate results do not meet the protocol goal for precision is of no practical significance. The lack of significance of most of the outliers has already been noted above.

5. Surrogate Standard Analyses

Table 5 summarizes the results of the surrogate standard analyses performed during the NCBC sample analysis program. Each surrogate spike was performed at a level equivalent to 1.0 ppb in a 10-gram sample aliquot. As stated previously, the purpose of these analyses was to indicate the accuracy of the analytical procedure at the 1.0 ppb level.

A total of 2543 results were reported. Of this number, 51 are outliers, representing a percentage of outliers of 2.0. An outlier is defined by the protocol as a result for which the percent surrogate accuracy is either less than 60 percent or greater than 140 percent. The

TABLE 5. NCBC SURROGATE ACCURACY SUMMARY

Parameter	Value
Total results reported	2543[a]
Total number of outliers[b]	51
Percent outliers	2.0
Surrogate accuracy for within-tolerance results	
Average	100%
Standard Deviation	19%

a. This total includes all results reported, including duplicates, method blanks, matrix spikes, performance audit samples, rinsate samples, and reruns.

b. Outlier = Result for which percent surrogate accuracy is either <60 percent or >140 percent.

average surrogate accuracy for the within-tolerance results is 100 percent, with a standard deviation of 19 percent.

The results of the surrogate standard analyses show that there are no significant analytical problems in quantifying results at the 1.0 ppb level. These results meet the protocol guidelines for accuracy and precision, which are ±40 percent for surrogate accuracy and a relative standard deviation (RSD) of 20 percent or less for precision.

6. Field Blank Analyses

As indicated previously in Table 1, 53 field blank samples were submitted to the analytical laboratory during the NCBC sample analysis program. The status of these samples and the results of the field blank analyses performed during the analysis program are listed in Table 6. Of the 53 samples submitted to the analytical laboratory, six were used as sources of material for the matrix spike analyses and four are listed as

TABLE 6. NCBC FIELD BLANK ANALYSIS SUMMARY[a]

	TCDD (ppb)	
Sample Number	Reported Concentration	Detection Limit
NC-6001.81000	MS[b]	--[c]
NC-6002.81000	MS	--
NC-6003.81000	MS	--
NC-6004.81000	MS	--
NC-6005.81000	MS	--
NC-6006.81000	MS	--
NC-6007.81000	Missing[d]	--
NC-6008.81000	0.0	0.1
NC-6009.81000	0.6[e]	--
NC-6009.81000R[f]	0.0	0.1
NC-6010.81000	0.0	0.26[g]
NC-6011.81000	3.5[e]	--
NC-6011.81000R	0.0	0.1
NC-6012.81000	0.0	0.5
NC-6013.81000	0.0	0.3
NC-6013.81000R	0.0	0.3
NC-6014.81000	0.0	0.3
NC-6015.81000	0.0	0.1
NC-6016.81000	0.0	0.1
NC-6017.81000	0.0	0.2
NC-6018.81000	0.09	--

TABLE 6. NCBC FIELD BLANK ANALYSIS SUMMARY (CONTINUED)

	TCDD (ppb)	
Sample Number	Reported Concentration	Detection Limit
NC-6019.81000	0.0	0.2
NC-6019.81000R	0.0	0.2
NC-6020.81000	0.0	0.16[g]
NC-6020.81000R	0.0	0.1
NC-6021.81000	0.0	0.12[g]
NC-6022.81000	0.0	0.1
NC-6023.81000	0.0	0.17[e,h]
NC-6023.81000R	0.0	0.09[g]
NC-6024.81000	0.0	0.1
NC-6025.81000	0.0	0.2
NC-6025.81000R	0.0	0.1[g]
NC-6026.81000	0.0	0.08[g]
NC-6027.81000	0.0	0.1
NC-6028.81000	0.4[e]	--
NC-6028.81000R	0.0	0.1
NC-6029.81000	0.0	0.02[g]
NC-6030.81000	0.0	0.15[g]
NC-6030.81000R	0.0	0.1
NC-6030.81000D[i]	0.0	0.9[g]
NC-6031.81000	Missing	--
NC-6032.81000	0.0	0.1

TABLE 6. NCBC FIELD BLANK ANALYSIS SUMMARY (CONTINUED)

	TCDD (ppb)	
Sample Number	Reported Concentration	Detection Limit
NC-6033.81000	Missing	--
NC-6034.81000	0.0	0.03[g]
NC-6035.81000	0.0	0.01[g]
NC-6035.81000R	0.0	0.01
NC-6036.81000	0.0	0.6
NC-6037.81000	0.0	0.05
NC-6038.81000	0.0	0.05
NC-6039.81000	0.0	0.18[g]
NC-6040.81000	0.0	0.04[g]
NC-6041.81000	0.0	0.09[g]
NC-6041.81000D	0.1	--
NC-6042.81000	0.0	0.06[g]
NC-6043.81000	0.0	0.1
NC-6044.81000	0.0	0.09
NC-6045.81000	Missing	--
NC-6046.82000	0.0	0.33[e,h]
NC-6047.82000	0.0	0.9
NC-6048.82000	0.2[e]	--
NC-6049.82000	0.1	--
NC-6050.83000	0.04	--

TABLE 6. NCBC FIELD BLANK ANALYSIS SUMMARY (CONCLUDED)

	TCDD (ppb)	
Sample Number	Reported Concentration	Detection Limit
NC-6051.83000	0.05	--
NC-6052.83000	0.05	--
NC-6638.81000	0.0	0.04[g]

a. Total results reported: 55; including 10 reruns and 2 duplicates; number of outliers: 6; percent outliers: 11.

b. MS = Sample used as a source of material for matrix spike analyses.

c. Not applicable.

d. Missing = Sample results are missing; the sample was either not received by the laboratory or for some reason could not be analyzed by the laboratory.

e. Outlier = A positive result with a value >0.1 ppb.

f. R = Rerun.

g. Maximum possible concentration (MPC) considered as a detection limit.

h. MPC considered as a positive result.

i. D = Duplicate.

missing, meaning that the sample was either not received by the laboratory or for some reason could not be analyzed by the laboratory. These two categories of field blank samples are appropriately identified in the table. Table 6 lists 55 analytical results for the remaining 43 field blank samples, including 10 reruns and 2 duplicate results.

Of the 55 reported results, 6 were outliers, defined as a field blank with a reported positive TCDD value of greater than 0.1 ppb. Two of the outliers were due to MPCs considered as positive results, as discussed

previously for the matrix spike analyses. The percentage of outliers was 11 percent. The outliers are appropriately identified in the table. Four of the field blanks with outlier results were reanalyzed as part of the reruns performed during the project. In each case, the rerun result showed the field blank to be free of TCDD contamination. The other two field blanks with outlier results were not reanalyzed because of project schedule restraints. The field sample results associated with these two field blanks were invalidated.

An additional six field blanks, for 11 percent out the 55 results reported, were reported with positive TCDD levels ranging from 0.04 to 0.1 ppb. The low level of suspected contamination indicated by these results did not warrant reanalyzing the respective field blanks.

Overall, the results of the field blank analyses indicate that significant contamination of the samples during sampling and analysis did not occur.

7. Field Performance Audit Sample Analyses

For the NCBC site, the QA laboratory prepared three different series of PA samples from the same batch of clean (uncontaminated) NCBC matrix material. Replicate analysis in triplicate by the QA laboratory established the true TCDD value for each series of these PA samples. The experimentally determined true value for each series of PA samples and the associated standard deviation for the replicate analyses are shown in Table 7.

Tables 8, 9, and 10 list the results of the field performance audit (PA) sample analyses performed during the NCBC sample analysis program. A total of 82 PA samples were submitted to the analytical laboratory for analysis during the NCBC sampling program. These tables also identify the MPCs. In all cases, the MPCs have been considered as positive results. The situation is similar to that noted previously for

TABLE 7. NCBC PERFORMANCE AUDIT SAMPLES: QA LABORATORY RESULTS

TCDD (ppb)	
True Concentration	Standard Deviation
0.080	0.00
0.85	0.042
8.34	0.64

matrix spikes (Section IV, A.3). In addition, in each of these three tables, various samples have been identified as missing. This notation, as explained in the footnotes to each table, means that results for the sample in question are missing; the samples were either not received by the laboratory or for some reason could not be analyzed by the laboratory, e.g., the sample container had been broken in transit.

Furthermore, in each of the three tables, several analytical laboratory PA sample results have been identified as outliers, where an outlier is defined by the analytical protocol as a result with a relative percent error (RPE) compared to the true concentration of greater than ±50 percent. In accordance with the analytical protocol, if a sample extraction batch contained a PA sample with a reported TCDD concentration so that the RPE was out of tolerance, then all samples in the extraction batch, including the PA sample, were reanalyzed. If reanalysis still failed to produce an acceptable RPE for the PA sample, then the analytical results for each of the samples in the extraction batch were invalidated.

Table 8 lists the analytical results for PA samples with a true TCDD concentration of 0.080 ppb. A total of 36 results are reported in the table, including the results for 10 samples reanalyzed (rerun) because of various QA considerations of the data validation process. Also listed in the table is the result of one duplicate analysis. The rerun and duplicate

TABLE 8. NCBC PERFORMANCE AUDIT SAMPLE ANALYSIS SUMMARY[a] (SERIES 1)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Error[b]
NC-8004.81000	0.0	0.11[c]	38
NC-8007.81000	Missing[d]		
NC-8011.81000	0.9[e]	--[f]	1000[e,g]
NC-8011.81000R[h]	0.1	--	25
NC-8013.81000	0.0	0.05	-38
NC-8013.81000R	0.2	--	150[g]
NC-8018.81000	0.19	--	140[g]
NC-8018.81000D[i]	0.09	--	13
NC-8019.81000	0.8[e]	--	900[e,g]
NC-8019.81000R	0.1	--	25
NC-8021.81000	0.0	0.14[c]	75[g]
NC-8021.81000R	0.1	--	25
NC-8022.81000	0.0	0.1[c]	25
NC-8038.81000	0.0	0.1	25
NC-8039.81000	0.0	0.1[c]	25
NC-8043.81000	0.5[e]	--	530[e,g]
NC-8043.81000R	0.1	--	25
NC-8046.81000	0.4[e]	--	400[e,g]

TABLE 8. NCBC PERFORMANCE AUDIT SAMPLE ANALYSIS SUMMARY[a] (SERIES 1) (CONTINUED)

	TCDD (ppb)		
Sample Number	Reported Concentration	Detection Limit	Relative Percent Error[b]
NC-8047.81000	0.1	--	25
NC-8049.81000	0.0	0.06[c]	-25
NC-8050.81000	0.3[e]	--	280[e,g]
NC-8050.81000R	0.6[e]	--	650[e,g]
NC-8051.81000	4.8[e]	--	5900[e,g]
NC-8051.81000R	0.1	--	25
NC-8052.81000	Missing		
NC-8054.81000	0.0	0.05[c]	-38
NC-8056.81000	0.0	0.06[c]	-25
NC-8061.81000	0.9[e]	--	1000[e,g]
NC-8061.81000R	0.1	--	25
NC-8062.81000	0.1	--	25
NC-8067.81000	0.0	0.1[c]	25
NC-8067.81000R	0.1	--	25
NC-8068.81000	0.0	0.07[c]	-13
NC-8070.81000	0.0	0.1[c]	25
NC-8072.81000	0.11	--	38

TABLE 8. NCBC PERFORMANCE AUDIT SAMPLE ANALYSIS SUMMARY[a] (SERIES 1) (CONCLUDED)

	TCDD (ppb)		
Sample Number	Reported Concentration	Detection Limit	Relative Percent Error[b]
NC-8074.81000	0.2	--	150[g]
NC-8074.81000R	0.2	--	150[g]
NC-8078.81000	0.0	0.06[c]	-25

a. Total results reported: 36, including 10 reruns and 1 duplicate; number of missing results: 2; average reported TCDD concentration: 0.11 ppb, standard deviation: 0.043 ppb; average RPE: 33 percent, standard deviation: 53 percent; bias: 38 percent; number of outliers: 13, percent outliers: 36.

b. RPE versus the true value for the PA samples; true value: 0.080 ppb.

c. Maximum possible concentration (MPC); considered as a positive result.

d. Missing = Sample results are missing; the sample was either not received by the laboratory or for some reason could not be analyzed by the laboratory.

e. Result not included in calculation of averages.

f. Not applicable.

g. Outlier = Result with a RPE >50 percent.

h. R = Rerun.

i. D = Duplicate.

TABLE 9. NCBC PERFORMANCE AUDIT SAMPLE ANALYSIS SUMMARY[a] (SERIES 2)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Error[b]
NC-8002.81000	1.0	--[c]	18
NC-8003.81000	0.3	--	-65[d]
NC-8003.81000R[e]	0.7	--	-18
NC-8008.81000	0.9	--	5.9
NC-8012.81000	0.9	--	5.9
NC-8014.81000	1.1	--	29
NC-8015.81000	0.0	0.99[f]	16
NC-8017.81000	0.8	--	-5.9
NC-8025.81000	Missing		
NC-8026.81000	0.71	--	-16
NC-8027.81000	0.92	--	8.2
NC-8028.81000	0.7	--	-18
NC-8028.81000R	0.78	--	-8.2
NC-8029.81000	1.0	--	18
NC-8030.81000	0.85	--	0.0
NC-8031.81000	0.65	--	-24
NC-8032.81000	0.78	--	-8.2
NC-8033.81000	0.86	--	1.2
NC-8034.81000	0.85	--	0.0
NC-8035.81000	0.82	--	-3.5
NC-8036.81000	1.5	--	76[d]

TABLE 9. NCBC PERFORMANCE AUDIT SAMPLE ANALYSIS SUMMARY[a] (SERIES 2) (CONCLUDED)

	TCDD (ppb)		
Sample Number	Reported Concentration	Detection Limit	Relative Percent Error[b]
NC-8037.81000	0.93	--	9.4
NC-8052.81000	Missing		
NC-8065.81000	0.8	--	-5.9
NC-8076.81000	1.1	--	29
NC-8077.81000	0.0	0.79[f]	-7.1
NC-8079.81000	1.0	--	18
NC-8080.81000	Missing		
NC-8082.81000	0.8	--	-5.9

a. Total results reported: 26, including 2 reruns; number of missing results: 3; average reported TCDD concentration: 0.87 ppb, standard deviation: 0.21 ppb; average RPE: 2.0 percent, standard deviation: 24 percent; bias: 2.4 percent; number of outliers: 2, percent outliers: 8.0.

b. RPE versus the true value for the PA samples; true value: 0.85 ppb.

c. Not applicable.

d. Outlier = Result with an RPE >50 percent.

e. R = Rerun.

f. Maximum possible concentration (MPC); considered as a positive result.

g. Missing = Sample results are missing; the sample was either not received by the laboratory or for some reason could not be analyzed by the laboratory.

TABLE 10. NCBC PERFORMANCE AUDIT SAMPLE ANALYSIS SUMMARY[a] (SERIES 3)

	TCDD (ppb)		
Sample Number	Reported Concentration	Detection Limit	Relative Percent Error[b]
NC-8005.81000	13.3	--[c]	59[d]
NC-8005.81000R[e]	9.4	--	13
NC-8006.81000	0.0	10.8[f]	29
NC-8009.81000	9.3	--	12
NC-8010.81000	6.4	--	-23
NC-8016.81000	7.8	--	-6.5
NC-8020.81000	8.5	--	1.9
NC-8023.81000	8.4	--	0.72
NC-8023.81000R	7.8	--	-6.5
NC-8024.81000	7.4	--	-11
NC-8040.81000	0.0	8.18[f]	-1.9
NC-8041.81000	11.6	--	39
NC-8042.81000	0.0	7.79[f]	-6.6
NC-8044.81000	8.4	--	0.72
NC-8045.81000	7.8	--	-6.5
NC-8048.81000	QA		
NC-8053.81000	0.0	10.7[f]	28
NC-8055.81000	6.6	--	-21
NC-8055.81000R	7.9	--	-5.3
NC-8057.81000	7.5	--	-10

TABLE 10. NCBC PERFORMANCE AUDIT SAMPLE ANALYSIS SUMMARY[a] (SERIES 3) (CONCLUDED)

Sample Number	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Error[b]
NC-8057.81000R	6.7	--	-20
NC-8058.81000	Missing		
NC-8059.81000	0.0	8.63[f]	3.5
NC-8060.81000	7.4	--	-11
NC-8063.81000	8.1	--	-2.9
NC-8064.81000	0.0	8.49[f]	1.8
NC-8066.81000	8.1	--	-2.9
NC-8069.81000	7.5	--	-10
NC-8071.81000	8.1	--	-2.9
NC-8073.81000	8.1	--	-2.9
NC-8075.81000	7.2	--	-14
NC-8081.81000	8.4	--	0.72

a. Total results reported: 30, including 4 reruns; number of missing results: 1; average reported TCDD concentration: 8.4 ppb, standard deviation: 1.5 ppb; average RPE: 0.83 percent, standard deviation: 18 percent; bias: 0.84 percent; number of outliers: 1, percent outliers: 3.3.

b. RPE versus the true value for the PA samples; true value: 8.34 ppb.

c. Not applicable.

d. Outlier = Result with an RPE >50 percent.

e. R = Rerun.

f. Maximum possible concentration (MPC); considered as a positive result.

g. QA = Sample submitted as an unknown to the QA laboratory.

h. Missing = Sample results are missing; the sample was either not received by the laboratory or for some reason could not be analyzed by the laboratory.

results are identified in the table. In addition, two samples are listed as missing, as explained above. The missing samples are also listed in the table, but have not been included as part of the total results. As noted, the true concentration for this series of PA samples was 0.080 ppb, which was below the 0.1 ppb detection limit required for the majority of the analyses. To prevent biasing the laboratory results, no attempt was made to identify to the analytical laboratory that any of the PA samples had a concentration of less than 0.1 ppb. In this regard, two of the results in Table 8 are reported as nondetected with an associated DL. For each of these results, the DL has been considered equivalent to a concentration to perform the statistical analysis of the analytical results.

Of the 36 results, 13 are outliers, and the percentage of outliers is 36. Eight of the outliers have RPEs greater than 250 percent. Because these latter results are considered extreme outliers, they were excluded when calculating both the average reported TCDD concentration and the average RPE. Both the outliers and the extreme outliers are identified in Table 8. The results for this series of PA samples fail to meet the analytical protocol guidelines regarding the percentage of outliers based upon the protocol guideline for data completeness, i.e., acceptability of 80 percent or greater of the data.

The average RPE for this series of PA samples is 33 percent, with a standard deviation of 53 percent. The average RPE meets the protocol guideline for accuracy. Of the 10 reruns reported, six resulted in RPEs within tolerance, compared to the original results which had unacceptable RPEs. For two of the reruns, the RPE for the rerun was the same as for the original result. For the remaining two reanalyses, the RPE for the rerun was significantly larger in magnitude than for the original result.

For this series of PA samples, as shown in Table 8, the average reported TCDD concentration is 0.11 ppb, with a standard deviation of 0.043 ppb. Based on this standard deviation, the results for the analyses of this series of PA samples do not meet the protocol guidelines for precision. As with other categories of analyses, the protocol guideline for precision in this case is a relative standard deviation of 20 percent

or less. Comparing the average reported TCDD concentration to the true concentration indicates an apparent bias between the analytical laboratory and the QA laboratory of 38 percent, which exceeds the protocol guideline of ±10 percent.

In summary, the analytical results for this series of PA samples, as listed in Table 8, meet the protocol guideline for accuracy, but do not meet the guidelines for percent outliers, precision, or bias. The high precentage of outliers, low precision, and the large apparent bias can all be attributed to the significant scatter evident in the analytical results. Possible sources of this scatter will be discussed below following discussion of the results for the other two series of PA samples. The problems with this series of PA samples are due to the low true concentration of the samples, which is at the extreme limits of the analytical protocol as adapted for a DL of 0.1 ppb. The scatter implies that analytical errors are more significant for low level samples, around 0.1 ppb, than for samples at the 1.0 ppb level and higher. However, since any projected cleanup of the NCBC site would probably be based on a criterion of 1.0 ppb or greater, the error in such low level samples would not have a significant impact on cleanup. To illustrate the dramatic decrease in analytical errors with increasing concentration, the analytical laboratory results for the other two series of PA samples, which had higher true TCDD concentrations, show significantly less scatter, resulting in better precision and lower bias. The other two series of PA samples will be discussed below.

Table 9 lists the analytical results for the series of PA samples with a true TCDD concentration of 0.85 ppb. A total of 26 results are reported in the table, including the results for two samples that were reanalyzed (rerun) because of various QA considerations of the data validation process. The rerun results are identified in the table. In addition, three samples are listed as missing, as explained previously. The missing samples are identified in Table 9, but they have not been included in the total results.

Of the 26 results, two are outliers, giving a percentage of outliers of 8.0. Thus, the results for this series of PA samples meet the analytical protocol guideline for outliers. The average RPE is 2.0 percent, with a standard deviation of 24 percent. The average RPE is well within the analytical protocol guideline for accuracy. In addition, the average reported TCDD concentration is 0.87 ppb, with a standard deviation of 0.21 ppb. Based on this standard deviation, the results did not meet the previously discussed protocol guideline for precision. Finally, comparing the average reported TCDD concentration to the true concentration indicates an apparent bias between the analytical laboratory and the QA laboratory of 2.4 percent, which is well within the protocol guideline.

In summary, the analytical results for this series of PA samples, as listed in Table 9, meet the protocol guidelines for accuracy, percent outliers, and bias, but do not meet the guideline for precision. For both the duplicate sample analyses and the results for the first series of PA samples, the failure to meet the goal for precision is due to the scatter in the analytical laboratory results. This failure is not considered significant for the same reasons discussed previously for the duplicate sample analyses (Section IV, A.4).

Table 10 lists the analytical results for the series of PA samples having a true TCDD concentration of 8.34 ppb. A total of 30 results are reported in the table, including the results for four samples that were rerun. One sample has been listed as missing, as explained previously, and another sample was submitted to the QA laboratory rather than being submitted to the analytical laboratory. These samples have not been included in the total results.

Of the 30 results, one is an outlier, giving a percentage of outliers of 3.3. Thus, the results for this series of PA samples meet the analytical protocol guideline regarding the percentage of outliers. The average RPE is 0.83 percent, with a standard deviation of 18 percent. The

average RPE is well within the analytical protocol guideline for accuracy. In addition, the average reported TCDD concentration is 8.4 ppb, with a standard deviation of 1.5 ppb. On the basis of this standard deviation, the results meet the analytical protocol guideline for precision. Finally, comparing the average reported TCDD concentration to the true concentration indicates a bias between the two laboratories of 0.84 percent, which is well within the analytical protocol guideline.

In summary, the analytical results for this last series of PA samples, as listed in Table 10, meet the protocol guidelines for accuracy, precision, bias, and percent outliers.

As stated above, one sample from this last series of PA samples was submitted to the QA laboratory. The specific sample, identification number NC-8048.81000, was submitted as an unknown to serve as a check on the performance of the QA laboratory. The QA laboratory reported a TCDD concentration in the sample of 7.34 ppb, giving an RPE in comparison with the previously established true concentration of 12 percent. This result provides additional confirmation of the previous results of the QA laboratory.

Throughout the analysis program, the analytical laboratory did not extract and analyze the NCBC samples strictly according to the sequence in which they were submitted. As a result, one batch of samples extracted by the laboratory in the latter stages of the analysis program contained four different PA samples, and one of the PA samples was analyzed in duplicate. For this particular extraction batch, the result for the PA sample analyzed in duplicate was an outlier, with an RPE greater than 50 percent. However, the results for the duplicate of this PA sample, as well as the results for the other three PA samples, were all within tolerance, with RPEs of less than 50 percent. Thus, for this extraction batch, the outlier PA sample result was ignored, and the sample results for the extraction batch were validated based on the presence in the batch of four PA sample results with RPEs within tolerance.

There is no obvious cause for discrepancies or apparent bias between the analytical laboratory and the QA laboratory. The same analytical protocol, including extraction procedures, was used by both laboratories, so there would be no differences resulting from procedural variations. No errors or discrepancies were found in the various calibrations and calculations of either laboratory. Furthermore, the instruments used by both laboratories were from the same manufacturer, so there was no possibility of differences because of different makes of instruments. Finally, neither laboratory reported instrument problems that could have led to discrepancies in results between the two laboratories.

Therefore, the apparent bias between the two laboratories, as well as the low precision previously noted during the discussion of the PA samples, has been attributed to significant scatter in the analytical laboratory results for certain levels of TCDD concentrations. This scatter is evidenced not only by the extreme range in the results, also reflected in the large standard deviations calculated, but also by the wide variations in the results upon reanalysis of samples. Such scatter in the results is probably because numerous personnel and several different instruments, working in multiple shifts, were employed in preparing and analyzing these samples. This scatter in results has contributed significantly to both the lack of precision and the apparent biases noted at lower levels of TCDD concentration. Scatter decreases dramatically as the TCDD levels increase. As anticipated, the analytical results show that reductions in the scatter produce concomitant improvements in the precision and reductions in the apparent bias.

8. Performance Evaluation Sample Analyses

The analytical laboratory analyzed two sets of PE samples, provided by the QA laboratory, during the analysis program. The results from the first set were inconclusive because the results reported by the analytical laboratory did not agree with the values previously determined by the QA laboratory. The analytical laboratory reported TCDD levels in several of the samples that were significantly higher than the values

determined by replicate analysis in triplicate by the QA laboratory. For these results, the RPEs were about 200 percent. One of the sample extracts was obtained from the analytical laboratory and analyzed by the QA laboratory. The QA laboratory results confirmed the analytical laboratory results. Conversely, the QA laboratory confirmed its previous analyses by reanalyzing one of its original sample extracts. Because of the requirements of the analytical schedule, the analytical laboratory did not at the same time analyze one of the sample extracts from the QA laboratory. It was decided that, in this case, the additional analytical effort was not warranted because it would have provided no conclusive additional information and would also have increased the chances of loss or contamination of the QA laboratory sample extract, all of which were maintained for reference purposes throughout the project. The same analytical protocol had been used by both laboratories, and no discrepancies in any of the calibrations or calculations were revealed. Thus, no apparent reason for the discrepancies between the laboratories could be determined for this set of PE samples. The confirmatory results obtained by the QA laboratory for the extract provided by the analytical laboratory indicated that the results reported by the analytical laboratory for this set of PE samples were at least consistent. However, the results were anomalous since they did not agree with the true values determined by the QA laboratory.

Since the problems with the first set of PE samples could not be resolved, a second set of samples was immediately submitted to the analytical laboratory. This set consisted of six samples that included two sets of duplicates and a blank. Table 11 summarizes the results of the analysis of this set of samples. The average RPE for the six samples is -7.8 percent, with a standard deviation of 7.3 percent. Furthermore, the average RPD for the two pairs of duplicates in the set is 12 percent, with a standard deviation of 2.4 percent. These results show very good agreement between the QA laboratory and the analytical laboratory and indicate that there is no significant bias between the two laboratories for these samples.

TABLE 11. NCBC PERFORMANCE EVALUATION SAMPLE ANALYSIS SUMMARY

Sample Designation	TCDD (0.080 ppb) True Concentration[a]	TCDD (0.080 ppb) Reported Concentration	Reported Results Relative Percent Difference[b]	Reported Results Relative Percent Error[c]
PE-2	0.0	0.0		0.0
PE-1	0.083	0.08	13	-3.6
PE-6	0.083	0.07		-16
PE-3	15.09	13.8	10	-8.5
PE-4	15.09	12.5		-17
PE-5	25.78	25.3		-1.9
Average:			12	-7.8
Standard deviation:			2.4	7.3

a. True value for the PE samples as determined by the QA laboratory.

b. Relative percent difference calculated between results for PE samples having the same true value.

c. Relative percent error calculated against the true value for the PE sample.

To further confirm its previous analysis of the various PE samples, the QA laboratory analyzed a separate set while the analytical laboratory was analyzing the second set of PE samples. The QA laboratory results reconfirmed the previous results obtained by that laboratory.

9. Split-Sample Analyses

The results of the split-sample analyses performed during the NCBC sample analysis program are summarized in Table 12. Forty-five pairs of results were reported, including five reruns and two duplicate analyses

TABLE 12. NCBC SPLIT-SAMPLE ANALYSIS SUMMARY[a]

Sample Number[b]	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-0639.63001	259.0	--[c]	64[d]
NC-0639.73001	504.8	--	
NC-0763.61000	0.0	22.1[e]	71[d]
NC-0763.71000	10.5	--	
NC-0763.61000R[f]	12.7	--	19
NC-0763.71000	10.5	--	
NC-0796.61000	0.0	0.20	0.0
NC-0796.71000	0.0	0.11	--
NC-0853.61000	6.7	--	1.5
NC-0853.71000	6.8	--	
NC-0944.61000	41.5	--	0.97
NC-0944.71000	41.1	--	
NC-0984.61000	0.0	0.40[g]	0.0
NC-0984.71000	0.0	0.45[g]	
NC-1073.61000	0.0	0.27[e]	200[d]
NC-1073.71000	0.0	0.18[g]	
NC-1163.61000	49.5	--	30
NC-1163.71000	36.7	--	
NC-1163.61000R			
NC-1163.71000			
NC-1163.61000R	35.0	--	18
NC-1163.71000	36.7	--	
NC-1254.61000	1.3	--	31
NC-1254.71000	0.95	--	
NC-1254.61000R	0.9	--	5.4
NC-1254.71000	0.95	--	

TABLE 12. NCBC SPLIT-SAMPLE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number[b]	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-1343.61000	5.8	--	8.3
NC-1343.71000	6.3	--	
NC-1385.61000	0.0	0.59[e]	21
NC-1385.71000	0.48	--	
NC-1385.61000D[h]	0.4	--	18
NC-1385.71000	0.48	--	
NC-13A6.61000	0.0	0.10	0.0
NC-13A6.71000	0.0	0.19	
NC-1474.61000	0.0	0.05[g]	0.0
NC-1474.71000	0.0	0.14	
NC-1718.61000	0.0	0.24[g]	0.0
NC-1718.71000	0.0	0.24[g]	
NC-1718.61000R	0.3	--	200[d]
NC-1718.71000	0.0	0.24[f]	
NC-1758.61000	5.9	--	31
NC-1758.71000	4.3	--	
NC-1821.61000	0.0	0.47[g]	0.0
NC-1821.71000	0.0	0.31[g]	
NC-1861.61000	0.0	0.2	0.0
NC-1861.71000	0.0	0.25	
NC-1924.61000	0.0	0.50[g]	0.0
NC-1924.71000	0.0	0.43[g]	
NC-1924.61000R	0.8	--	200[d]
NC-1924.71000	0.0	0.43[g]	

TABLE 12. NCBC SPLIT-SAMPLE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number[b]	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-1964.61000	0.0	0.37[e]	24
NC-1964.71000	0.0	0.47[e]	
NC-2027.61000	16.4	--	69[d]
NC-2027.71000	8.0	--	
NC-2030.63001	0.41	--	200[d]
NC-2030.73001	0.0	0.10[g]	
NC-2067.61000	0.0	0.15[g]	0.0
NC-2067.71000	0.0	0.16[g]	
NC-20A7.61000	0.0	0.10	0.0
NC-20A7.71000	0.0	0.06	
NC-20A7.61000D	0.0	0.1	0.0
NC-20A7.71000	0.0	0.06	
NC-2130.61000	31.9	--	0.31
NC-2130.71000	32.1	--	
NC-2170.61000	0.0	0.47[e]	14
NC-2170.71000	0.41	--	
NC-2273.61000	Missing	--	--
NC-2273.71000	10.7	--	
NC-2336.61000	0.0	0.60	0.0
NC-2336.71000	0.0	0.25[g]	
NC-2376.61000	179.0	--	45
NC-2376.71000	113.6	--	
NC-2377.62001	1.20	--	49
NC-2377.72001	1.98	--	
NC-2381.64000	0.22	--	67[d]
NC-2381.74000	0.11	--	

TABLE 12. NCBC SPLIT-SAMPLE ANALYSIS SUMMARY[a]
(CONTINUED)

Sample Number[b]	TCDD (ppb) Reported Concentration	TCDD (ppb) Detection Limit	Relative Percent Difference
NC-2420.62001	3.30	--	170[d]
NC-2420.72001	0.24	--	
NC-2439.61000	3.9	--	9.8
NC-2439.71000	4.3	--	
NC-2479.61000	40.1	--	5.6
NC-2479.71000	42.4	--	
NC-2527.63001	0.0	307.00[e]	69[d]
NC-2527.73001	151.3	--	
NC-2542.61000	1.5	--	40
NC-2542.71000	1.0	--	
NC-2544.62001	8.7	--	200[d]
NC-2544.72001	0.0	0.03[g]	
NC-2549.62000	0.0	226.5[e]	81[d]
NC-2549.72000	533.9	--	
NC-2582.61000	8.0	--	2.5
NC-2582.71000	8.2	--	

a. Total result pairs reported: 45; including 5 individual reruns by the analytical lab, 2 duplicates, and 1 missing sample; average RPD = 44 percent; standard deviation: 65 percent; number of outliers: 12; percent outliers: 27.

b. Sample Identification Code: NC-___.6__ = analytical laboratory sample; NC-___.7__ = QA laboratory sample.

c. Not applicable.

d. Outlier = pair of results with a relative percent difference (RPD) >50 percent.

TABLE 12. NCBC SPLIT-SAMPLE ANALYSIS SUMMARY[a]
(CONCLUDED)

e. Maximum Possible Concentrations (MPC) considered as a positive result.

f. R = Rerun.

g. MPC considered as a detection limit.

h. D = Duplicate.

by the analytical laboratory and one missing sample. Twelve are outlier pairs, giving a percentage of outliers of 27, out of a total of 45 pairs. To compare the results of the split-sample analyses, MPCs have been considered in the same way as those encountered during analysis of the results of matrix spikes (Section IV, A.3). MPCs with unacceptable 320/322 ratios have been considered as detection limits. The results of the split-sample analyses fail to meet the analytical protocol guideline for the outliers based on the guideline for data completeness.

The average RPD is 44 percent, with a standard deviation of 65 percent. The average RPD meets the analytical protocol guideline for accuracy. However, the large standard deviation means that the protocol goal for precision was not met. As with other categories of analyses, the protocol guideline for precision in this case is a relative standard deviation of 20 percent or less. The pairs of results listed in the table show significant differences between the results reported by the analytical laboratory and the QA laboratory. However, as is further evident from the results, there is also significant scatter in the data so that no clear-cut trends can be identified. The scatter in the results is also reflected by both the large standard deviation associated with the average RPD and the large number of outlier pairs. The differences between the two laboratories can be attributed to the significant scatter in the results and do not necessarily imply bias between the two laboratories. The lack of bias has been confirmed based on the conclusions reached during the preceding discussions regarding the results of both the PA and the PE samples.

The failure to meet the protocol guideline for outliers is of no practical significance because many of the outliers are either low-level samples with TCDD concentrations below 1.0 ppb or higher level samples with TCDD concentrations of around 20 ppb or higher. In the former case, the TCDD levels are below any anticipated action level that might be required by future site remedial action. In the latter case, the TCDD levels are probably higher than any action level that might be required. Thus, cleanup of contamination of these levels would be required in any event.

The failure to meet the guideline for precision is a reflection of the scatter in the data. Such failure is not of practical significance because much of the scatter results from the outliers.

In addition to the potential causes of scatter noted previously during discussion of the PA sample analyses (Section IV, A.7), another possible cause for the scatter in the results for the split samples is the heterogeneous nature of the NCBC sample matrix, which may have resulted in sample splits that were not equivalent.

10. Rinsate Sample Analyses

Six rinsate samples were collected during the NCBC sampling program. Rinsate samples were only collected during subsurface drilling operations because other samples were collected using disposable equipment. Trichloroethane rinse samples were collected after the split-spoon sampler had been cleaned, as previously described. Four of the six rinses show low levels of contamination, while the other two show levels of 61 and 1.2 ppb, respectively. These results indicate that decontamination of the split spoon was incomplete.

The sampling protocol was designed to minimize the possibility of cross-contaminating the sample by use of a contaminated tool. After the split spoon sampler was removed from the hole and carefully opened, the top 3 inches of the core were cut off and removed. The outer layer of soil (approximately 1 inch thick) was then scraped off to expose the interior of

the core. A new spoon was used to scoop the center of the core out of the sampler, leaving behind the layer of soil (approximately 1 inch thick) exposed to the other half of the split spoon. If this procedure had not been followed, samples collected with a contaminated split spoon could have been contaminated, although probably at insignificant levels (the dilution factor 1 gram of soil contamination in a 1500-gram sample is 1500). However, any cross-contamination from the sampler should have been eliminated by removing soil directly below the previous sampling interval and soil that contacted the walls of the tool. Thus, the rinsate sample indicates the potential for contamination, not that contamination actually occurred. These data do not invalidate the subsurface sampling results. Since samples were not collected in strict numerical sequence, it is not possible to determine what samples were collected using the contaminated spoons. The rinsate sample numbers relate to the rinse following the sampling of a location, i.e., sample 2030.93040 is the rinse of the spoon used to collect sample 2030.03040.

B. SURFACE SAMPLING

The results of the surface sampling task are presented in this section. The overall site is presented first, and then the site is divided into the following four areas: the original area (Rows 5-28, Columns 35-59), the original expansion area (Rows 5-28, Columns 60-87), the expansion west area (Rows 6-28, Columns 9-34), and the expansion east area (Rows 5-28, Columns 88-127). The relationship of the areas is shown in Figure 3.

1. Overall Site

TCDD concentrations for all 1300 plots are shown in Figure 4. Surface TCDD concentrations in the overall site range from less than a detection limit of 0.01 to a high of 650 ppb. Of the 1300 plots, 83 percent had TCDD concentrations less than 10 ppb, and 51 percent had TCDD concentrations less than 1 ppb (Figure 5). The major contamination occurs in areas where drums were either stored or handled. The area along

Greenwood Avenue (Rows 23-25, Columns 10-85) was drum storage. The area around Building 411 (Rows 6-14, Columns 35-53) was used for dedrumming operations, and the area around the concrete slab (Rows 6-13, Columns 60-64) was used to crush empty drums. There are additional random hot spots where leakage obviously occurred outside the above areas, but these are isolated and less than 100 ppb TCDD concentration.

The drainage of the overall site is inward toward the drainage ditches in the middle of the site. The three major areas identified above all show that leakage drained toward the ditches with further confirmation from the ditch samples, which are TCDD contaminated to a maximum of 107 ppb in these areas. The contamination in the ditches decreased downstream until reaching the filter system installed at Row 6, Column 66, preventing contamination spread offsite.

The horizontal extent of TCDD contamination in surface soils has been delineated on the overall site, including the expansion areas. The random samples taken offsite indicate no contamination except in Row 28, Column 10, with a TCDD concentration of 31 ppb. EG&G Idaho has advised AFESC/RDVW of this finding and suggested additional sampling in this area. The effort is under consideration and any results of additional sampling will become an addendum to this report.

2. Original Area

TCDD concentrations for all plots in the original area are shown in Figure 6. Figures 7 through 13 present the plots of TCDD concentration using the concentration intervals less than detection limit, detection limit to >1 ppb, >1 -10 ppb, >10-25 ppb, >25-50 ppb, and >50-100 ppb. Plots containing replicated analyses are represented by the arithmetic mean of the replicated values.

Surface TCDD concentrations in the original area using arithmetic means for replicated plots range from less than a detection limit of 0.01 to a high of 650 ppb. The ten highest values are 650, 390, 280, 240, 230,

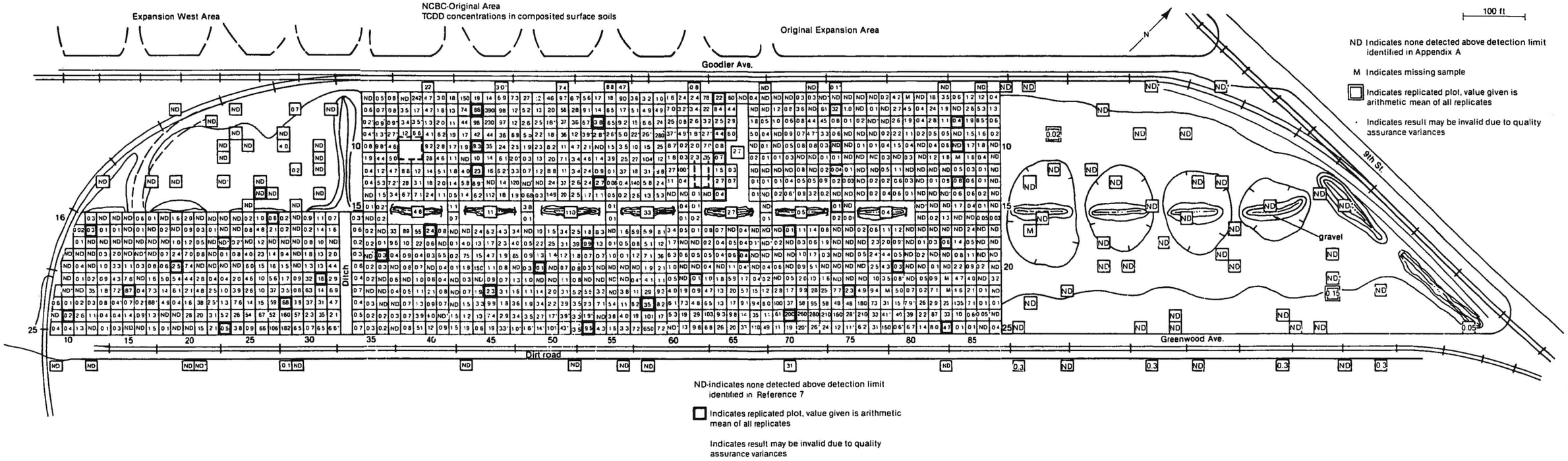

Figure 4. TCDD Concentrations for all Plots at NCBC

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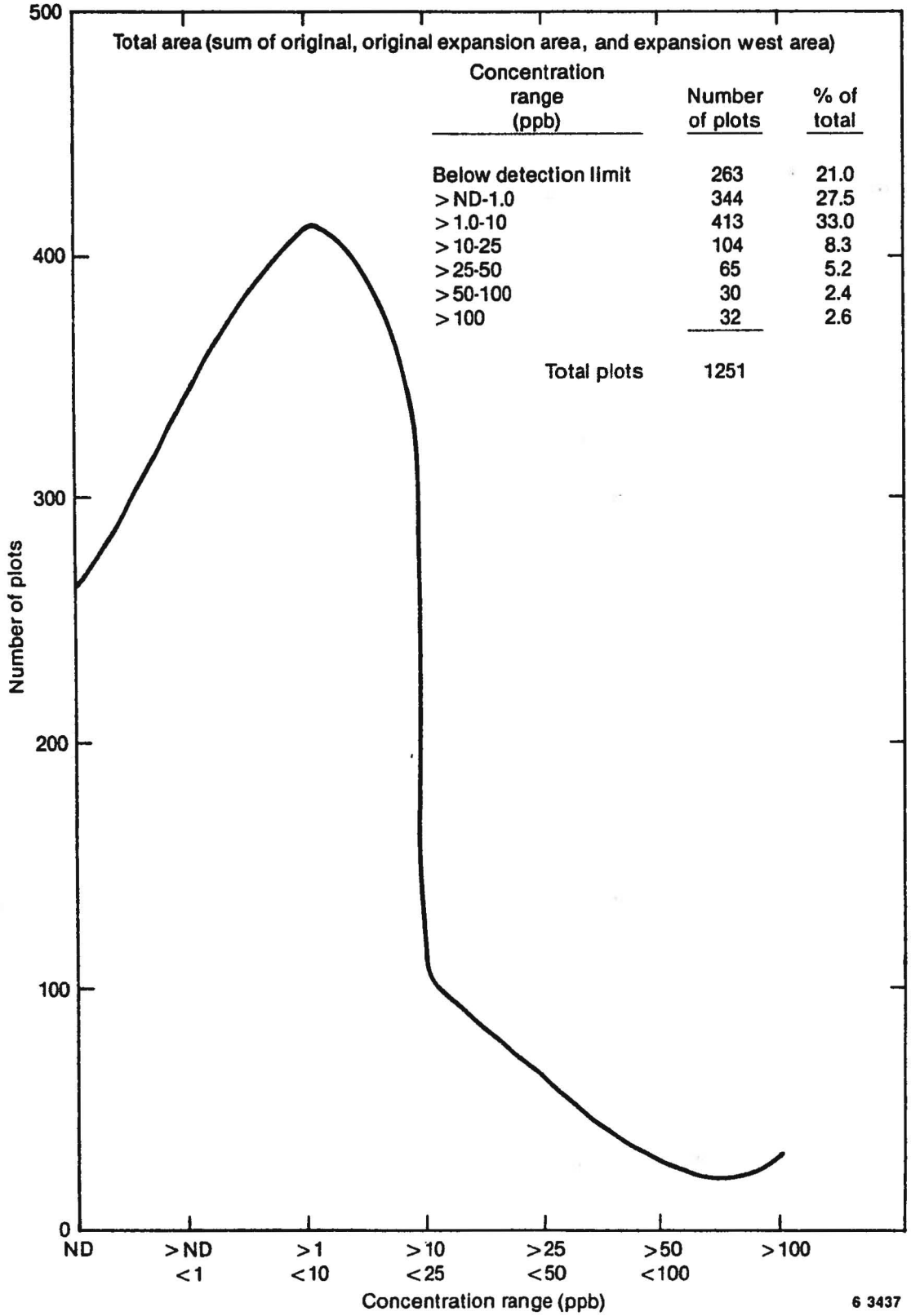
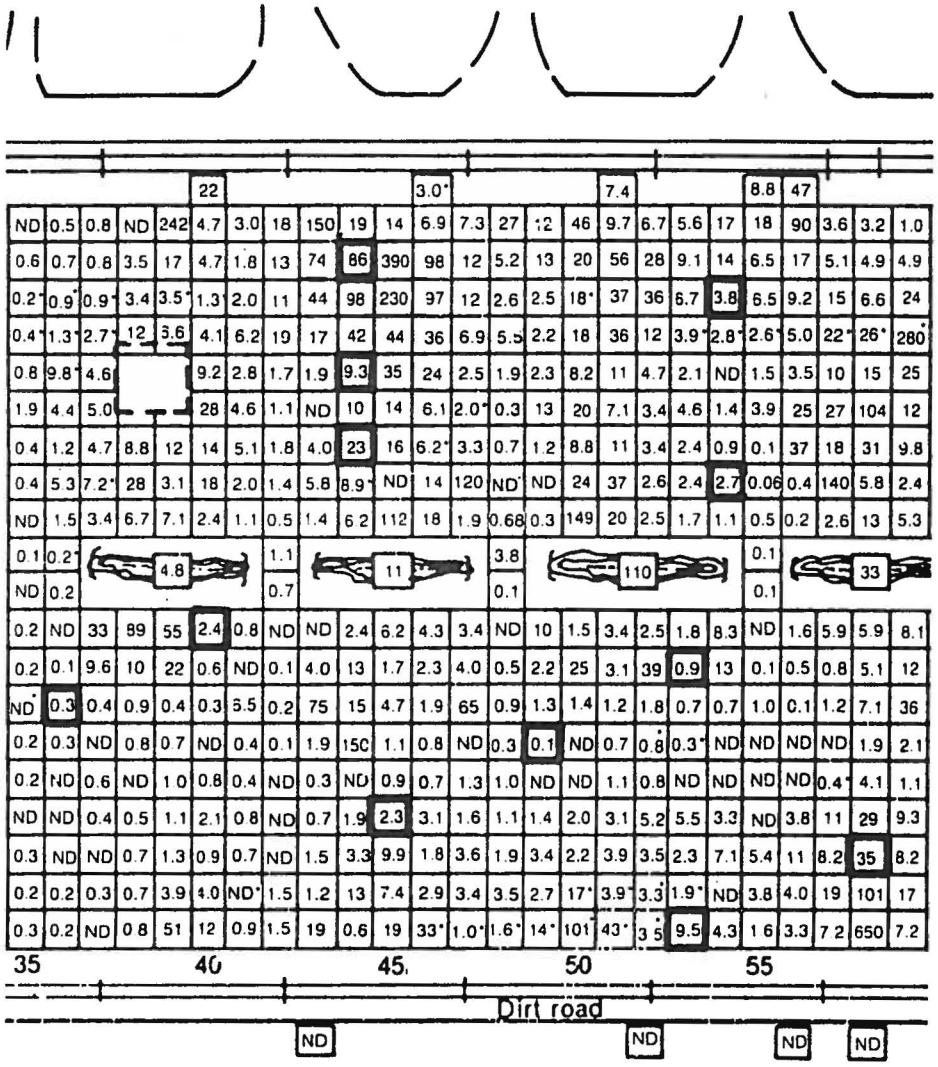


Figure 5. Storage Site (excluding randoms) Concentration Range Distribution of Surface Soil Plots.



ND-indicates none detected above detection limit identified in Appendix A

Indicated replicated plot, value given is arithmetic mean of all replicates

. Indicates result may be invalid due to quality assurance variances

Figure 6. Original Area--TCDD Concentrations in Composited Surface Soils.

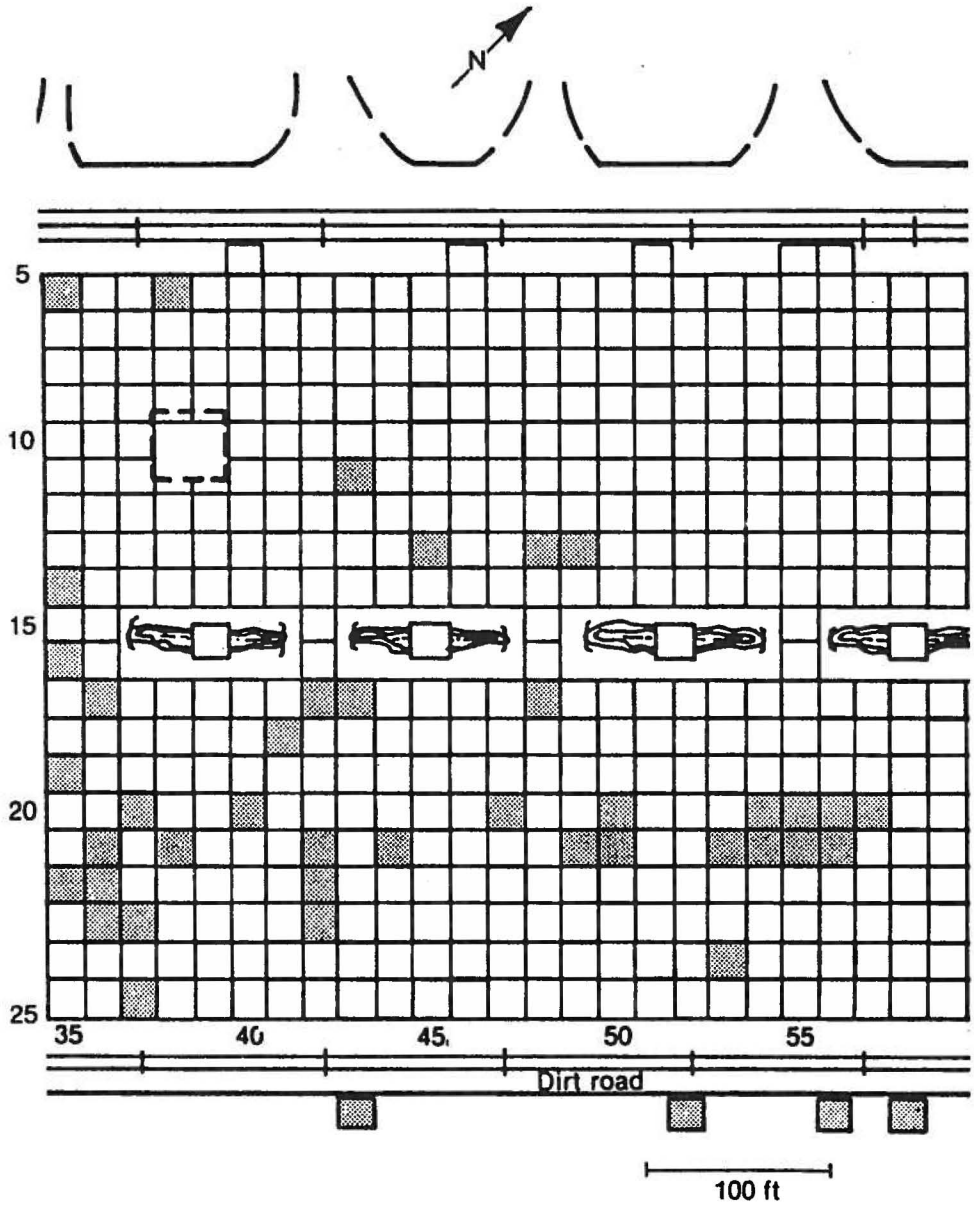


Figure 7. Original Area--TCDD Concentrations in Composited Surface Soils, Less Than Detection Limit.

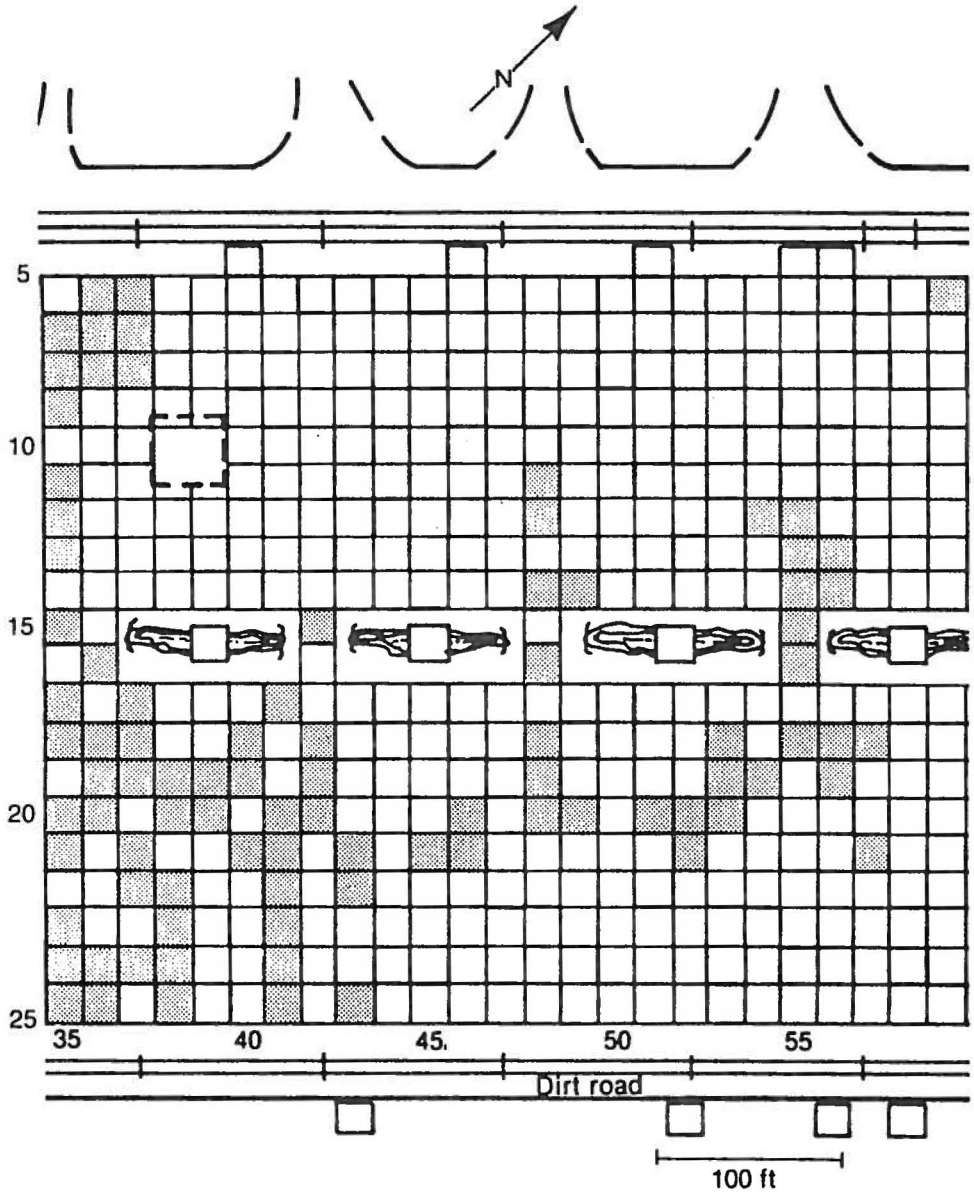


Figure 8. Original Area--TCDD Concentrations in Composited Surface Soils, ~ Detection Limit Through 1.0 ppb.

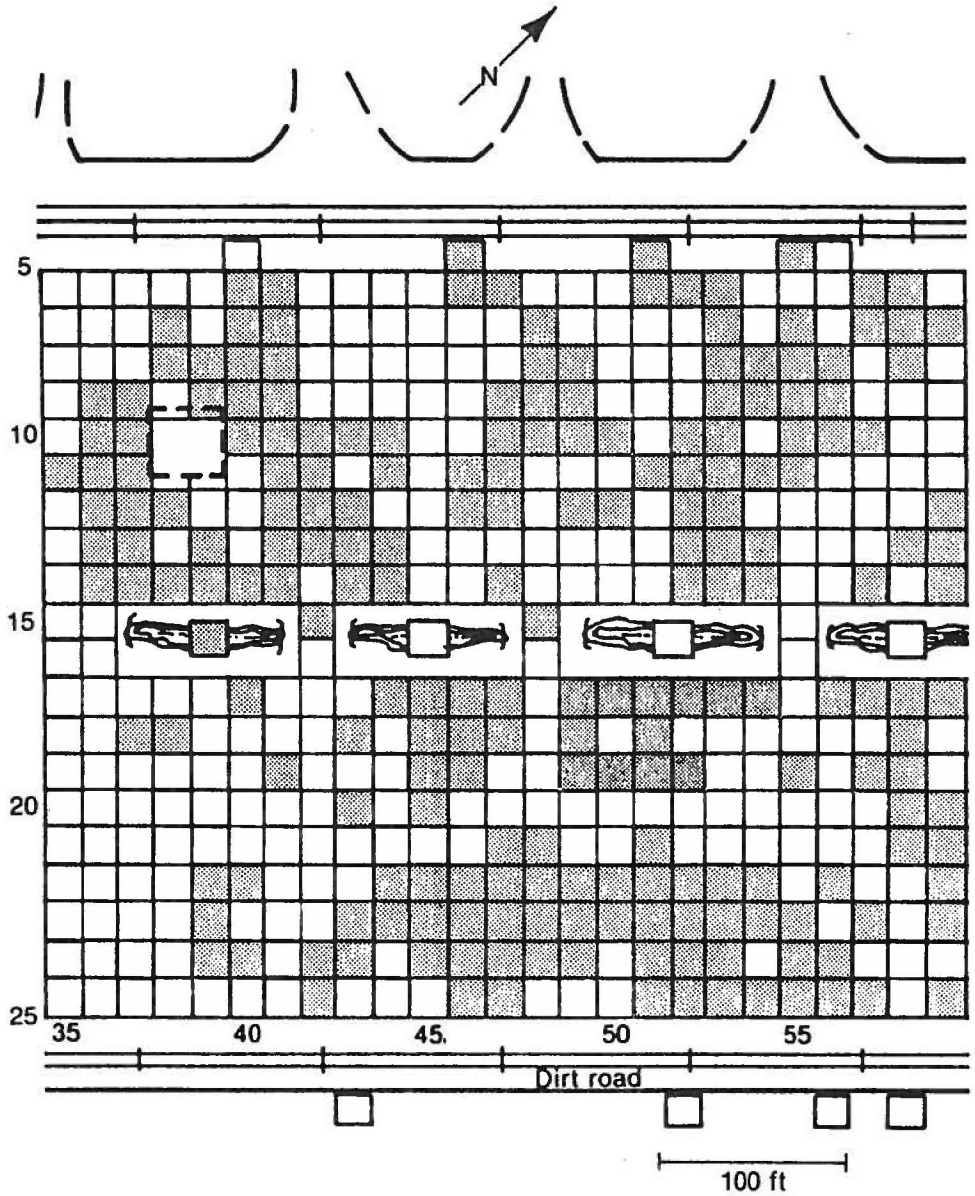


Figure 9. Original Area--TCDD Concentrations in Composited Surface Soil, >1.0 ppb Through 10 ppb.

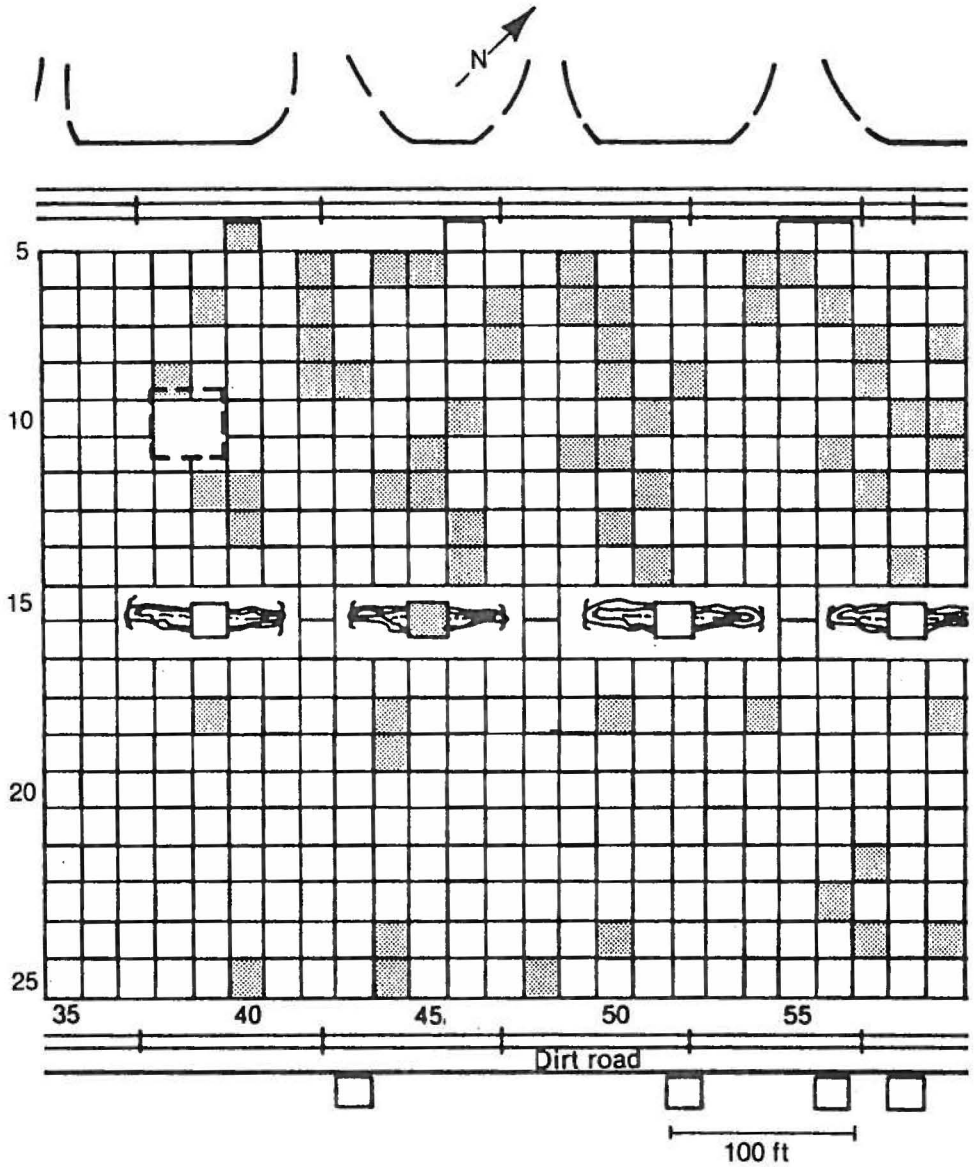


Figure 10. Original Area--TCDD Concentrations in Composited Surface Soils, >10 ppb Through 25 ppb.

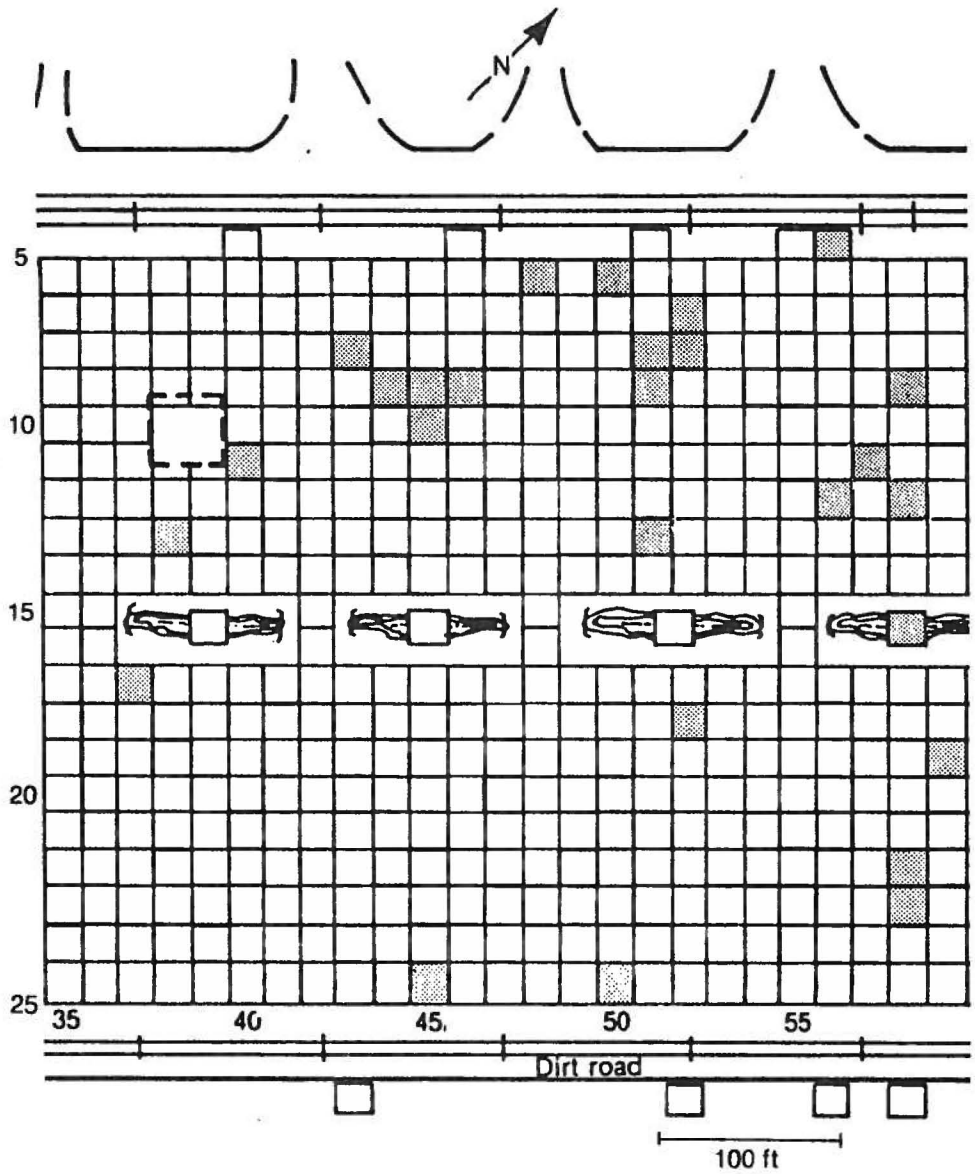


Figure 11. Original Area--TCDD Concentrations in Composited Surface Soils >25 ppb Through 50 ppb.

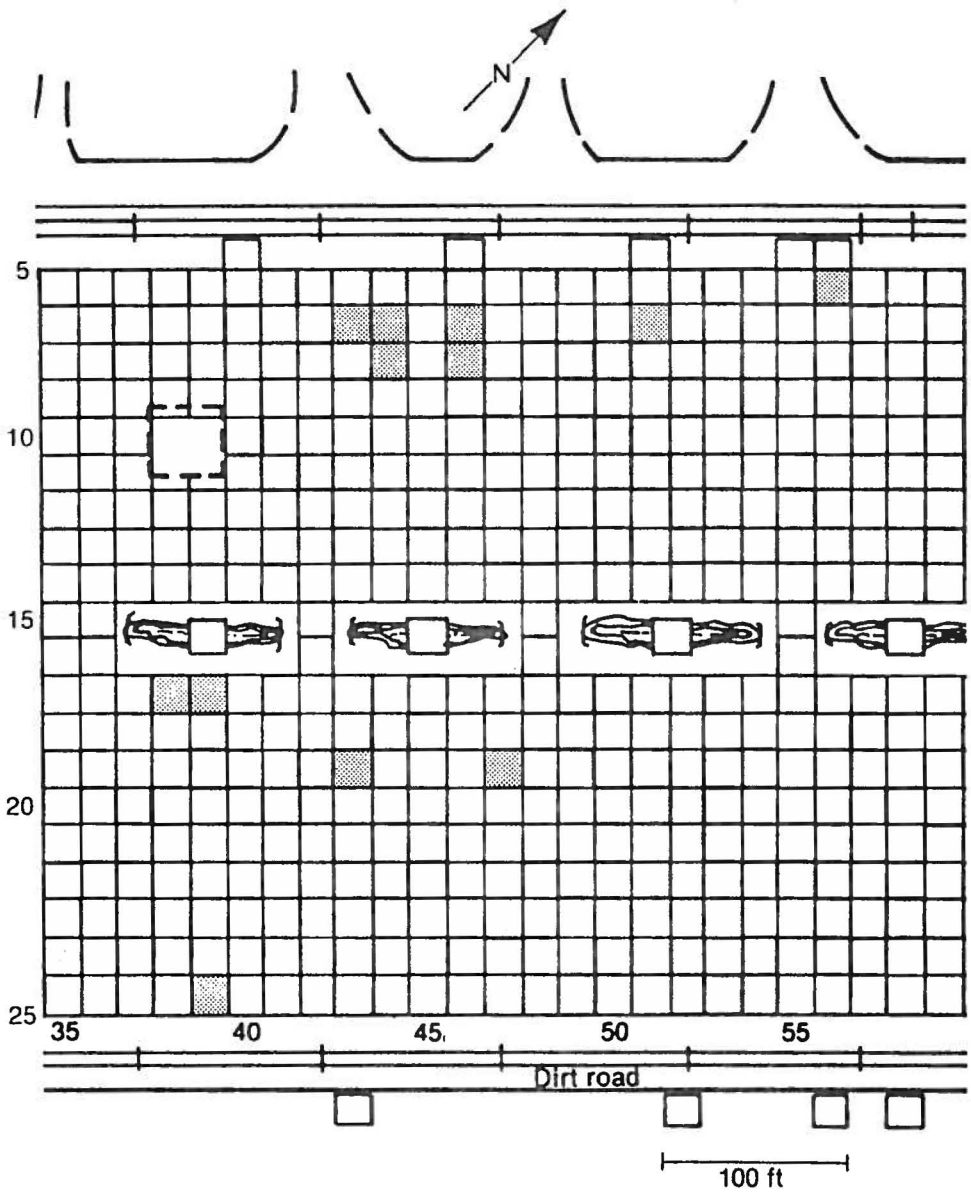


Figure 12. Original Area--TCDD Concentrations in Composited Surface Soils, >50 Through 100 ppb.

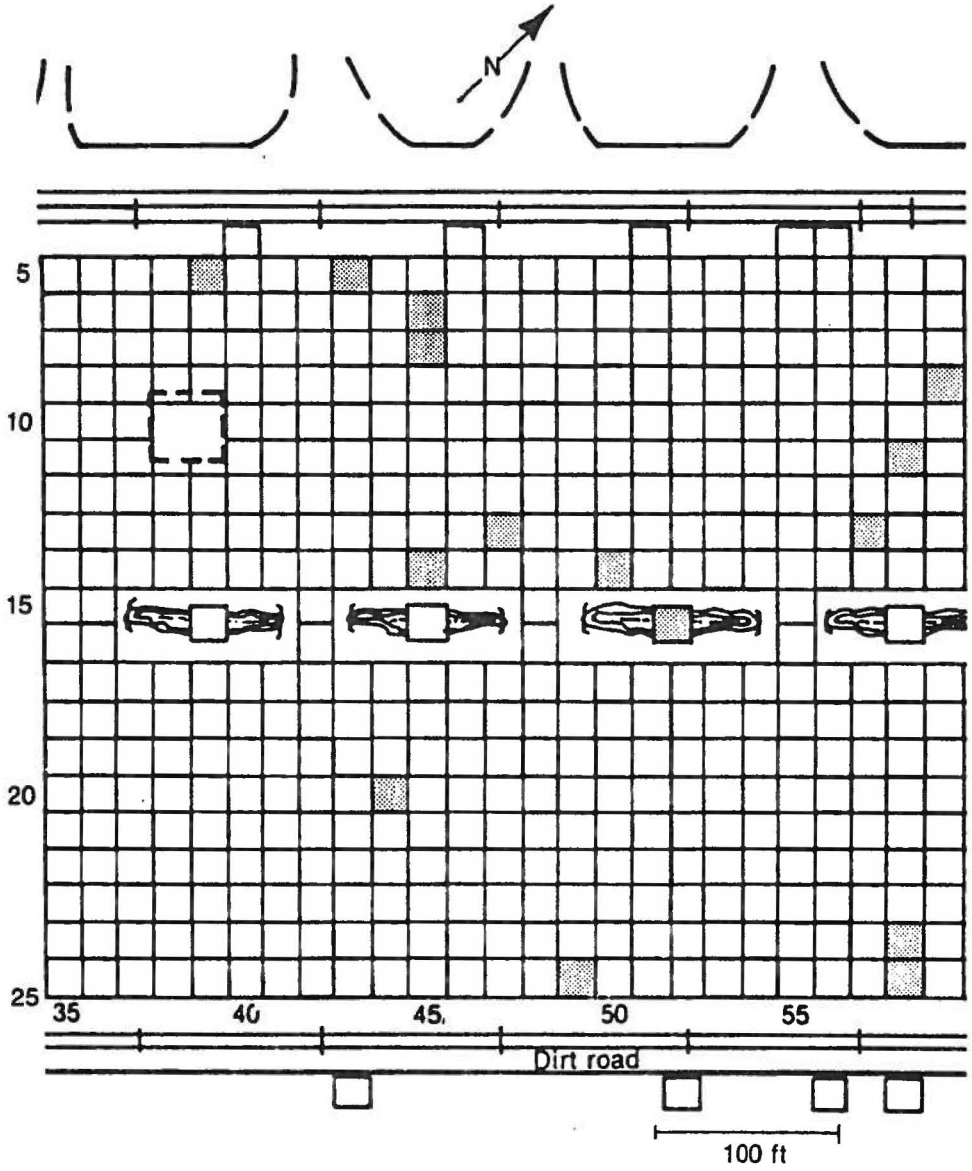


Figure 13. Original Area--TCDD Concentrations in Composited Surface Soils >100 ppb.

150 (three plots), 140, and 120 ppb. In general, the spatial distribution of TCDD appears random as would be expected from leaking drums and spills. The frequency distribution of the plots for the various TCDD concentrations intervals is given in Figure 5. As shown in Figure 5, the TCDD concentrations in over 75 percent of the plots in the original area are less than 10 ppb.

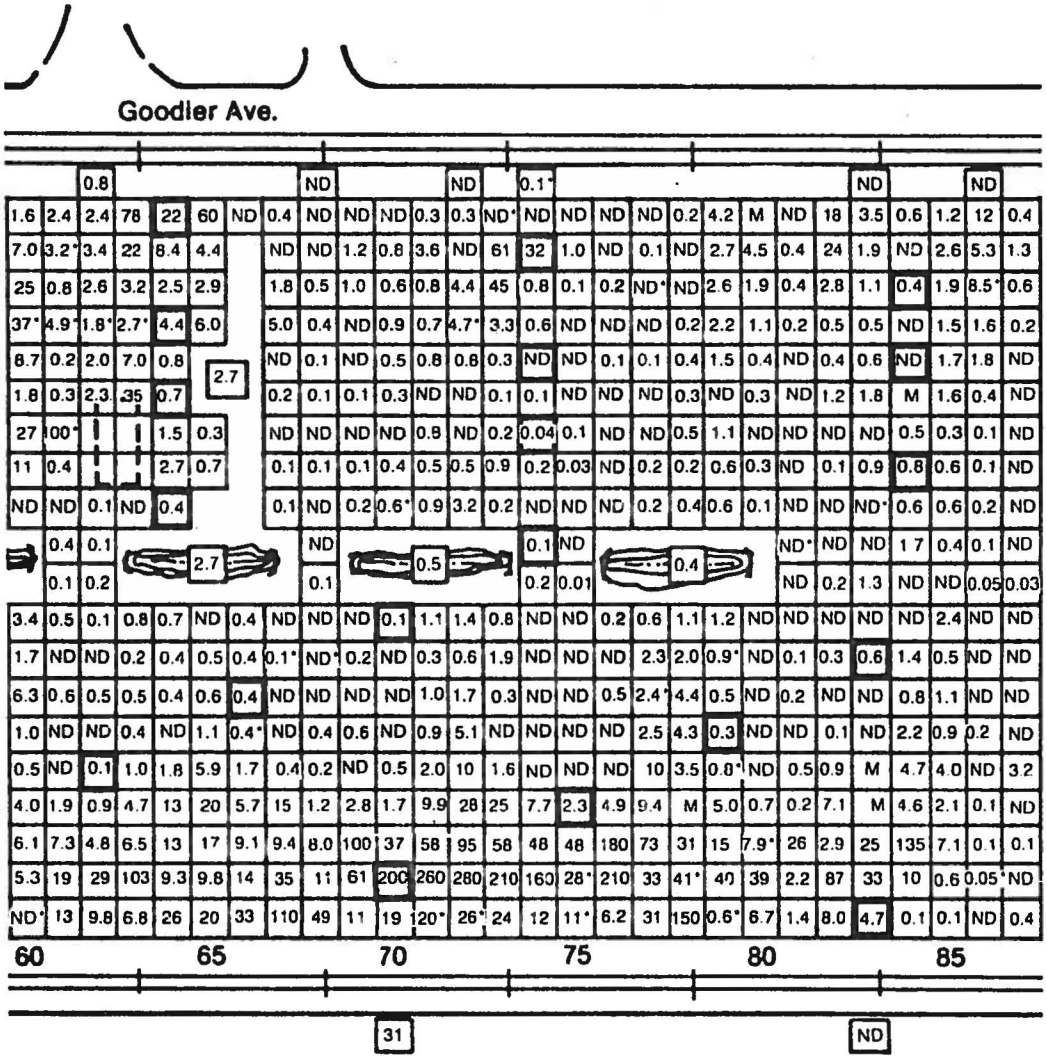
3. Original Expansion Area

The original expansion area includes 56 plots. TCDD concentrations in composited surface soils for all plots are shown in Figure 14. Figures 15 through 21 present the plots with TCDD concentrations within the intervals as stated above. Plots containing replicate analyses are represented by the arithmetic mean of the replicated values.

Surface TCDD concentrations in the original expansion area range from less than a detection limit of 0.01 ppb to 280 ppb. Thirteen plots, all located in the southeastern portion of the original expansion area, exceed 100 ppb (Figure 21). In particular, the area comprising Row 24, Columns 70 through 74, and Row 25, Columns 71 and 72, has been impacted by a significant spill. A composite sample of surface soils collected southeast of Greenwood Avenue and the railroad tracks (approximately 50 feet) from the spill area had a TCDD concentration of 31 ppb (see Figure 14).

4. Expansion West Area

Two hundred seventy plots were sampled in the expansion west area. TCDD concentrations in composited surface soils are shown in Figure 22. TCDD concentrations in replicated plots are represented by the arithmetic means of all replicates. TCDD concentrations in the expansion west area ranged from nondetectable to 182 ppb. Only 3 of 25 plots in the northwestern portion of the area had detectable levels of TCDD. The highest TCDD concentrations appear to be in the southeastern portion of the area, particularly in Rows 23, 24, and 25; Columns 25 through 29.



ND-indicates none detected above detection limit identified in Appendix A

M-indicates missing sample

☐ Indicates replicated plot, value given is arithmetic mean of all replicates

* Indicates result may be invalid due to quality assurance variances

Figure 14. Original Expansion Area - PCDD Concentrations in Composited Surface Soils.

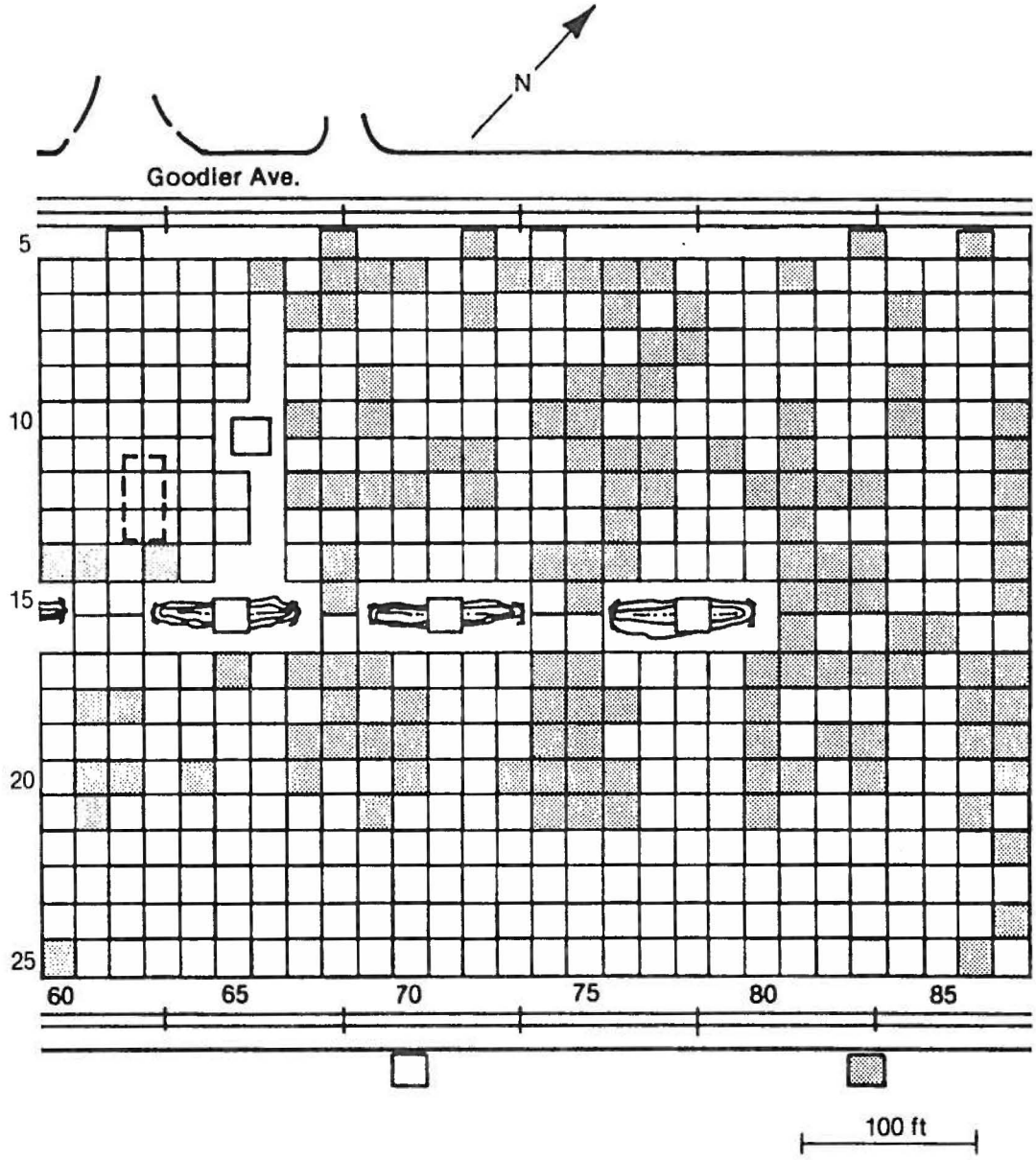


Figure 15. Original Expansion Area--TCDD Concentrations in Composited Surface Soils, < Detection Limit.

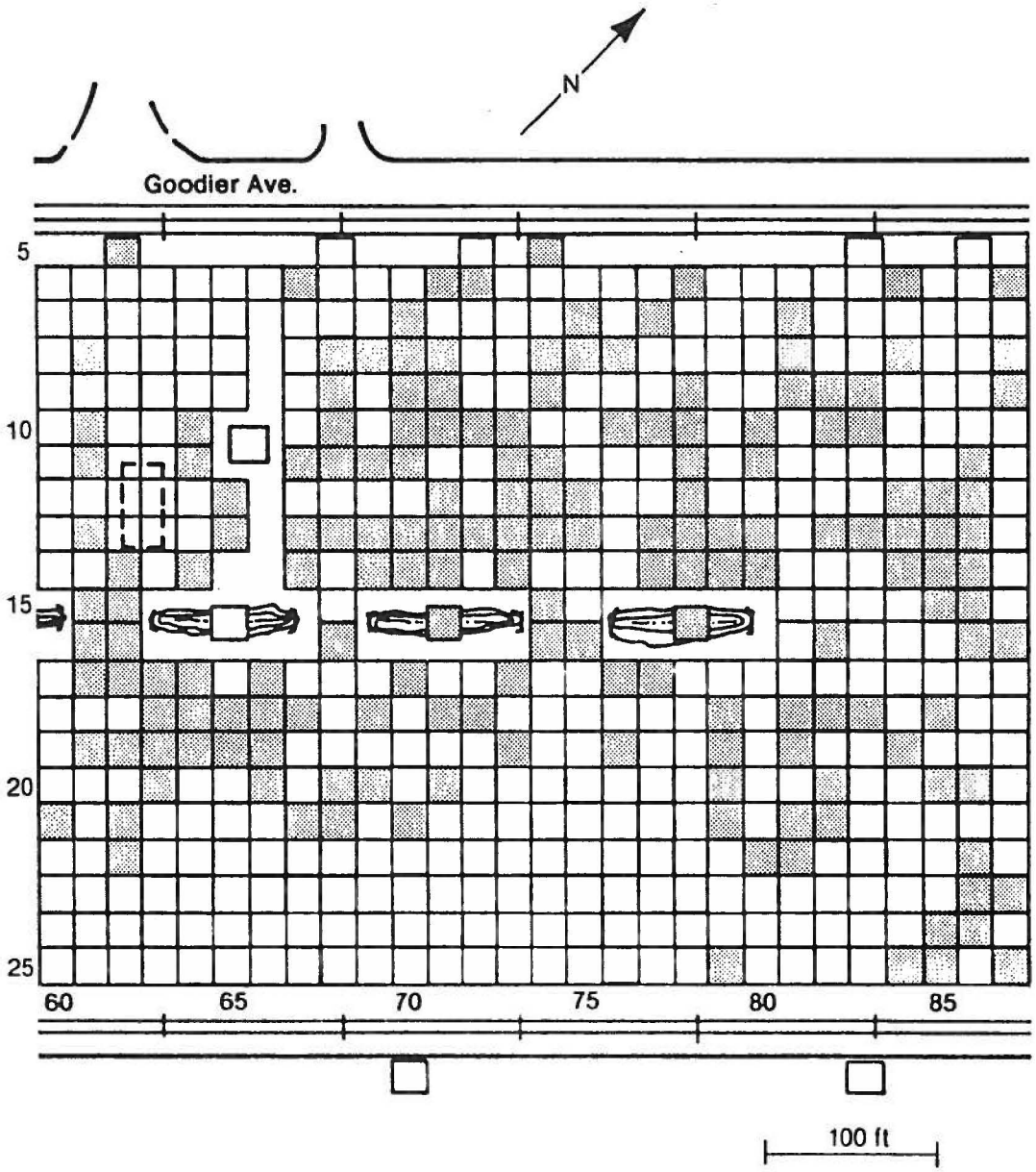


Figure 16. Original Expansion Area--TCDD Concentrations in Composited Surface Soils, > Detection Limit through 1.0 ppb.

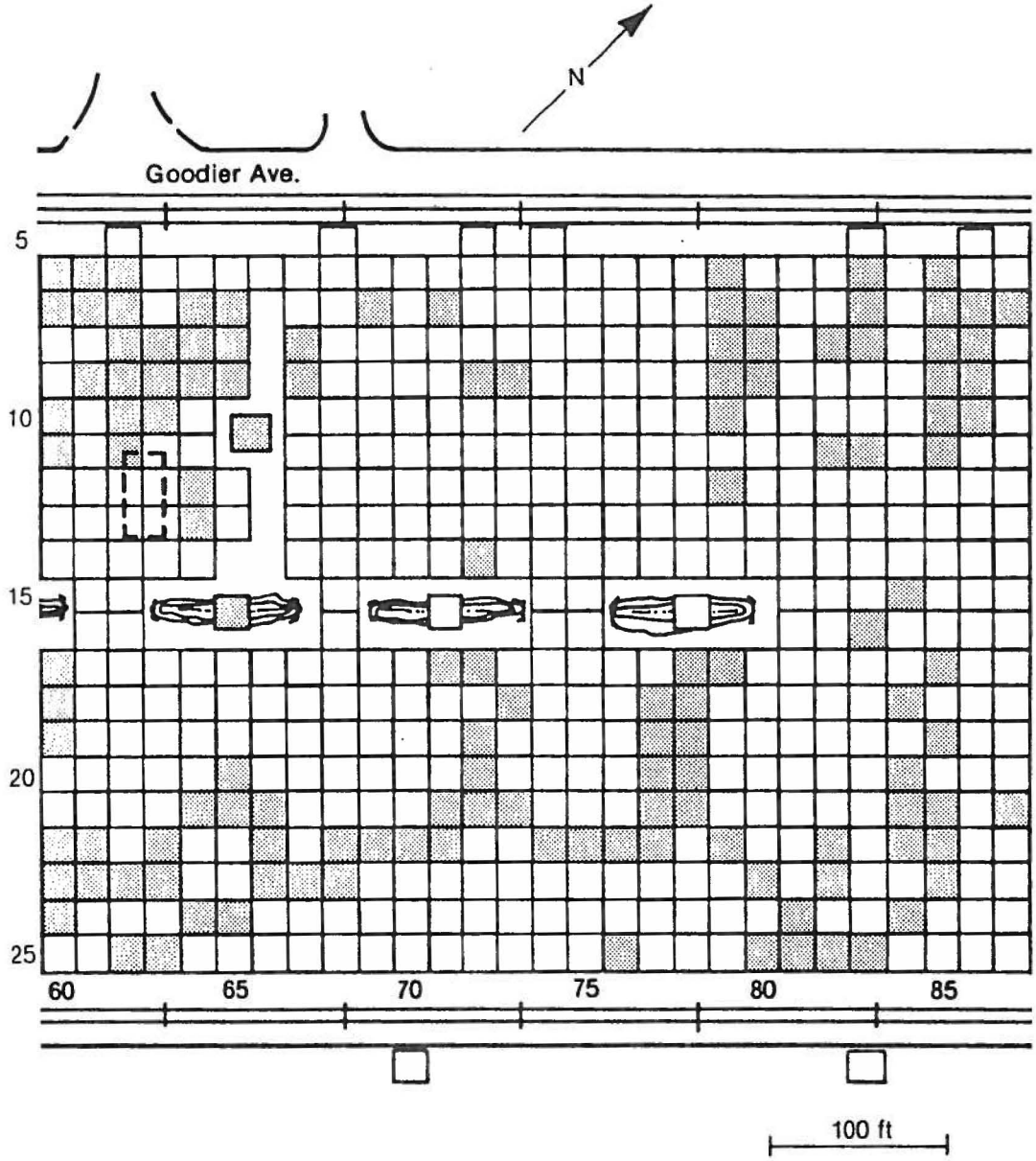


Figure 17. Original Expansion Area--TCDD Concentrations in Composited Surface Soils, >1.0 ppb through 10 ppb.

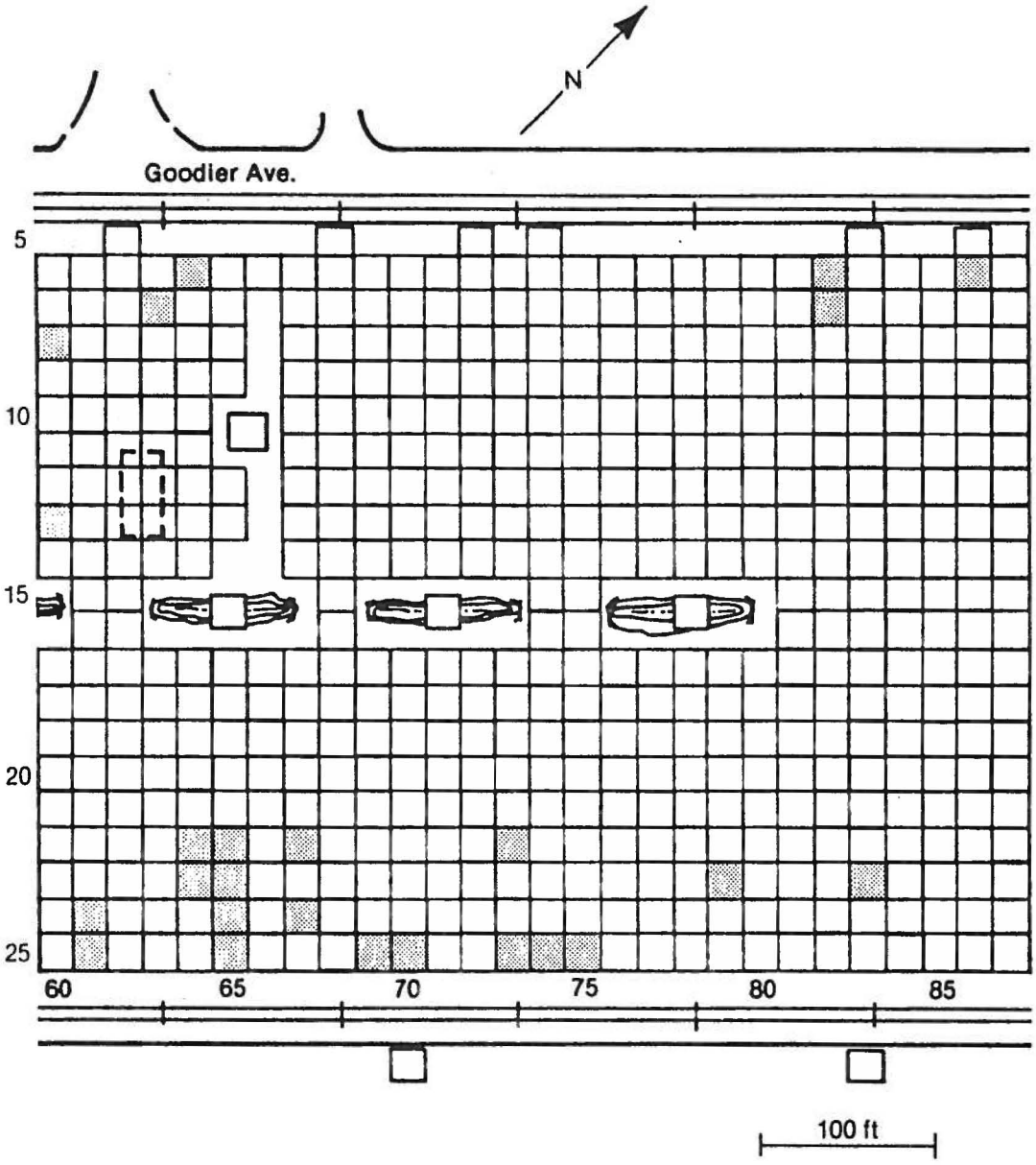


Figure 18. Original Expansion Area--TCDD Concentrations in Composited Surface Soils, >10 ppb through 25 ppb.

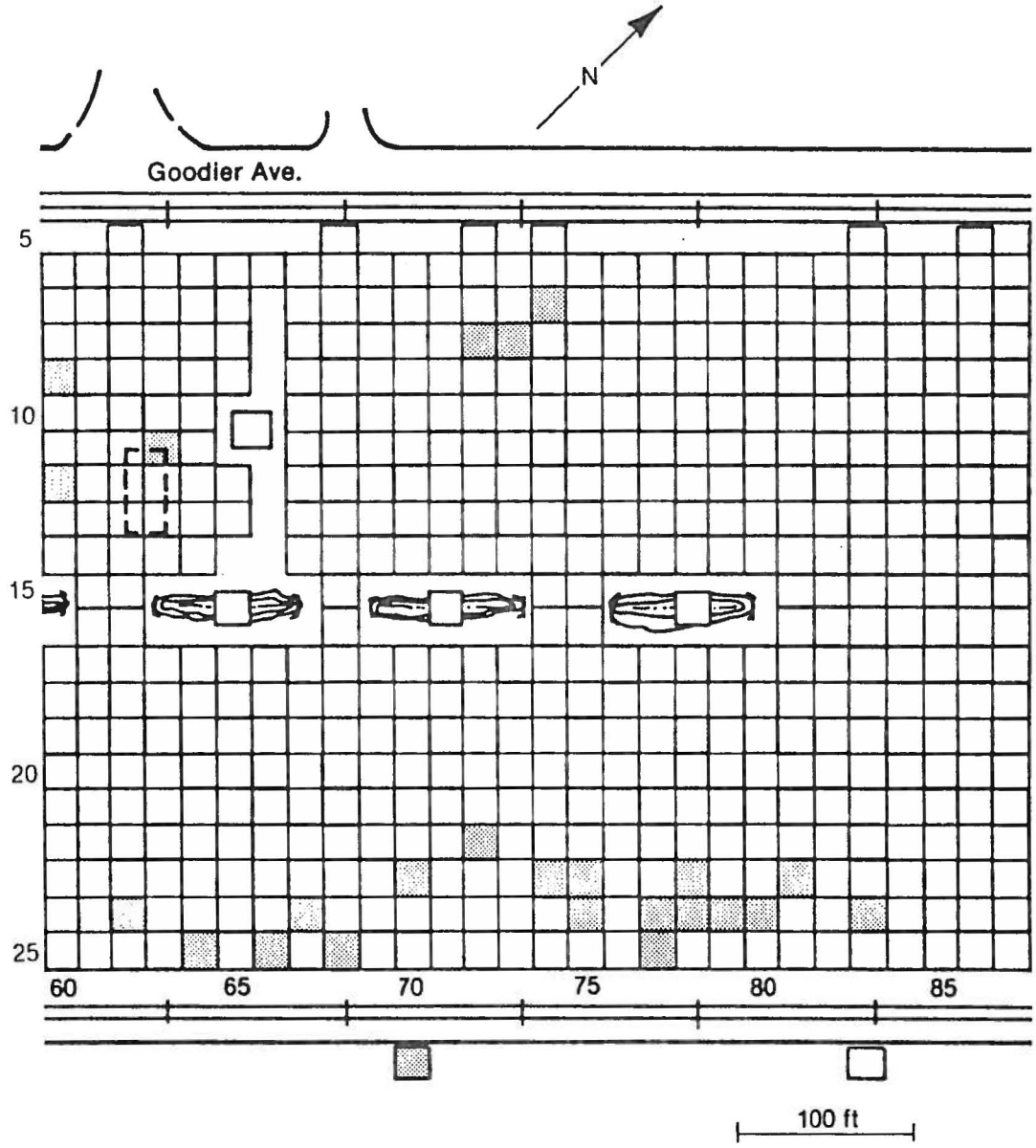


Figure 19. Original Expansion Area--TCDD Concentrations in Composited Surface Soils, >25 ppb through 50 ppb.

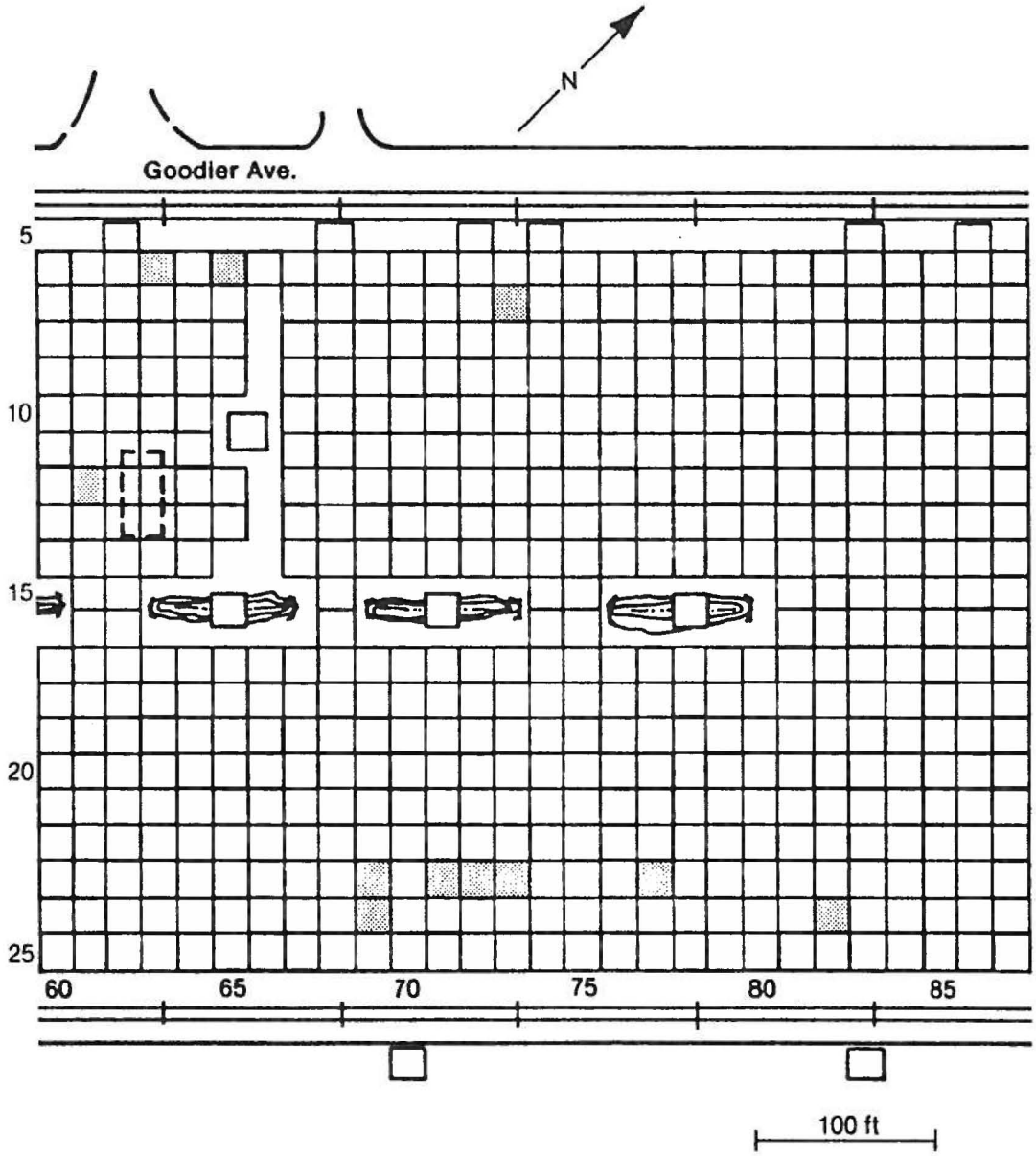


Figure 20. Original Expansion Area--TCDD Concentrations in Composited Surface Soils, >50 ppb through 100 ppb.

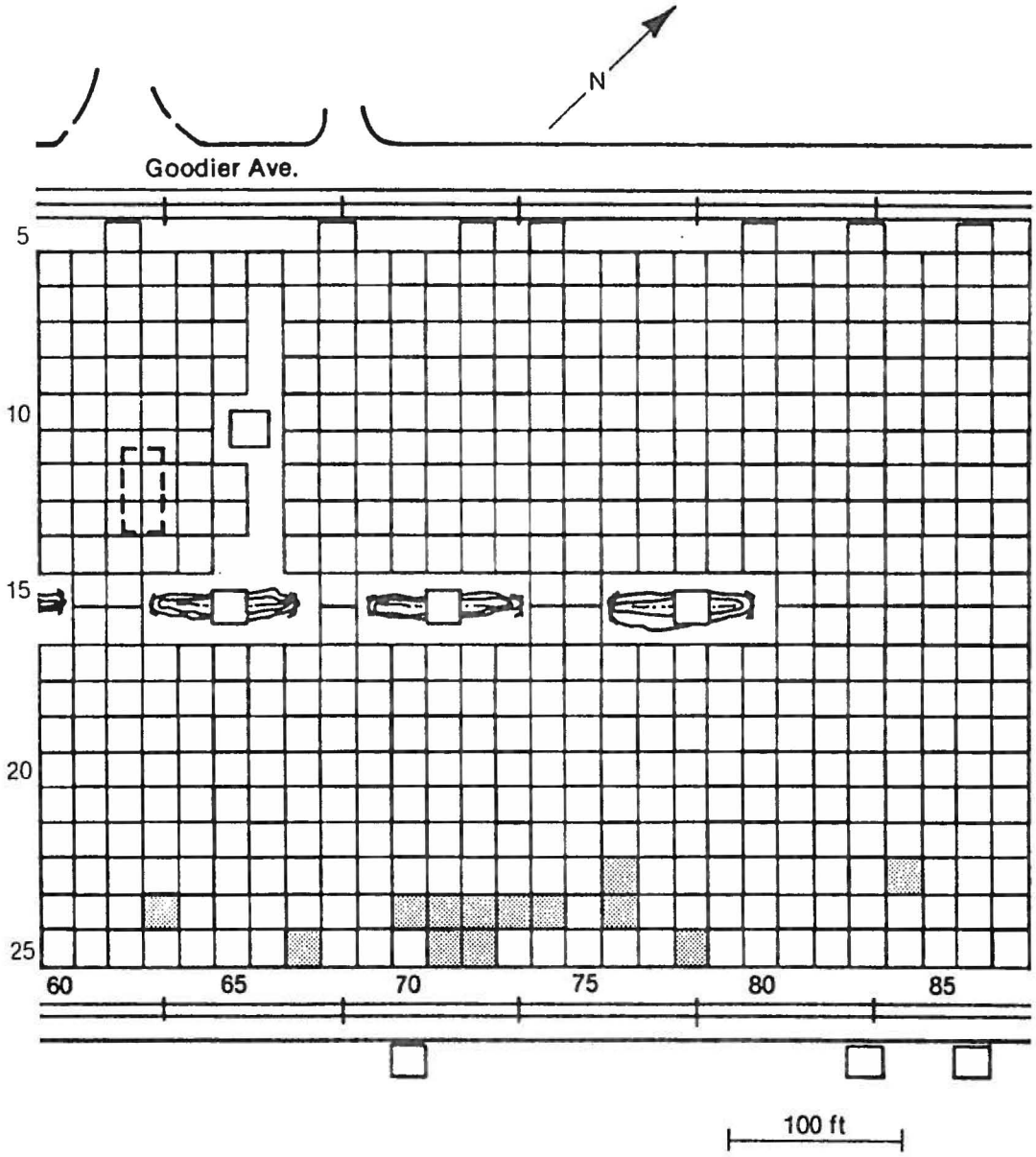
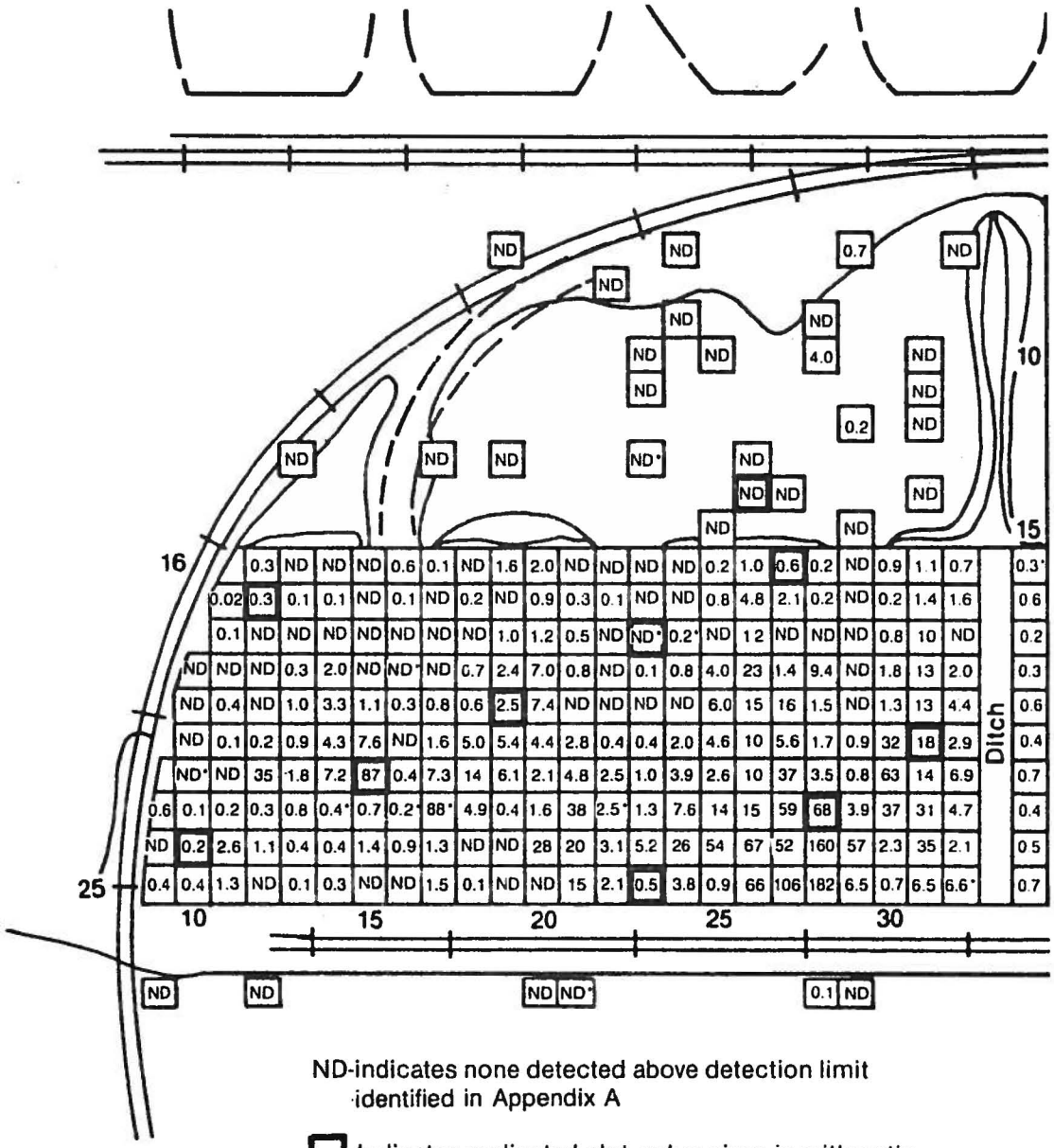


Figure 21. Original Expansion Area--TCDD Concentrations in Composited Surface Soils, >100 ppb.



ND-indicates none detected above detection limit identified in Appendix A

Indicates replicated plot, value given is arithmetic mean of all replicates

* Indicates result may be invalid due to quality assurance variances

Figure 22. Expansion West Area--TCDD Concentrations in Composited Surface Soils.

Figures 23 through 29 present the plots with TCDD concentrations within the intervals listed in Figure 5. TCDD concentrations in over 86 percent of all plots in the expansion west area are less than 10 ppb. Almost 60 percent of the plots has concentrations less than 1 ppb. In general, the expansion west area has lower overall TCDD concentrations than both the original area and the original expansion area.

5. Expansion East Area

The expansion east area is next to the original expansion area to the northeast of the fenced-in area. To determine the presence, if any, of TCDD contamination, 49 plots were randomly scattered throughout the area. Trace levels of TCDD concentration were found in 7 of the 49 plots, ranging from 0.02 to 0.3 ppb. One of the 49 composited samples is missing. Figure 30 shows the locations and TCDD concentrations of the composited sample plots.

C. NEAR-SURFACE SAMPLING

Near-surface soil samples were collected from 35 locations identified in Figure 31. Sampling sites were determined in the field based on a limited amount of analytical results from surface soil samples. Those sites with the highest concentrations of TCDD in surface composites were selected for subsurface sampling at 15 locations.

Near-surface samples were collected at the following intervals: surface soil that varied in thickness from 0 to 6 inches and averaged 2 to 3 inches; soil/cement layer averaging 6 to 9 inches thick; 0 to 3 inches below the soil/cement layer; and 3 to 7 inches below the soil/cement layer.

The analytical results of the near-surface samples are summarized in Table 13. TCDD concentrations of surface soils ranged from 0.64 ppb to 430 ppb. The arithmetic mean for the surface soils is 89 ppb. TCDD

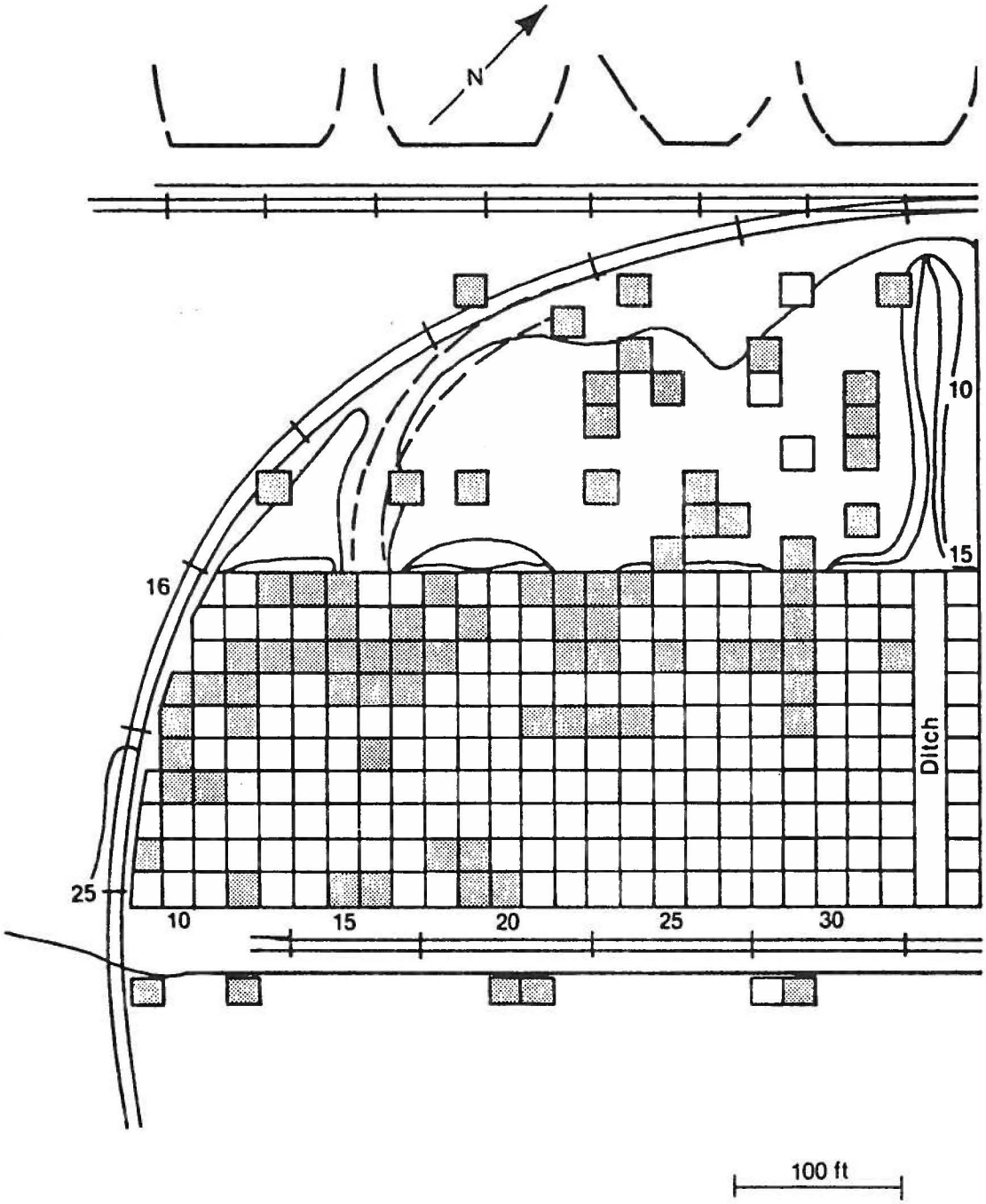


Figure 23. Expansion West Area--TCDD Concentrations in Composited Surface Soils, > Detection Limit.

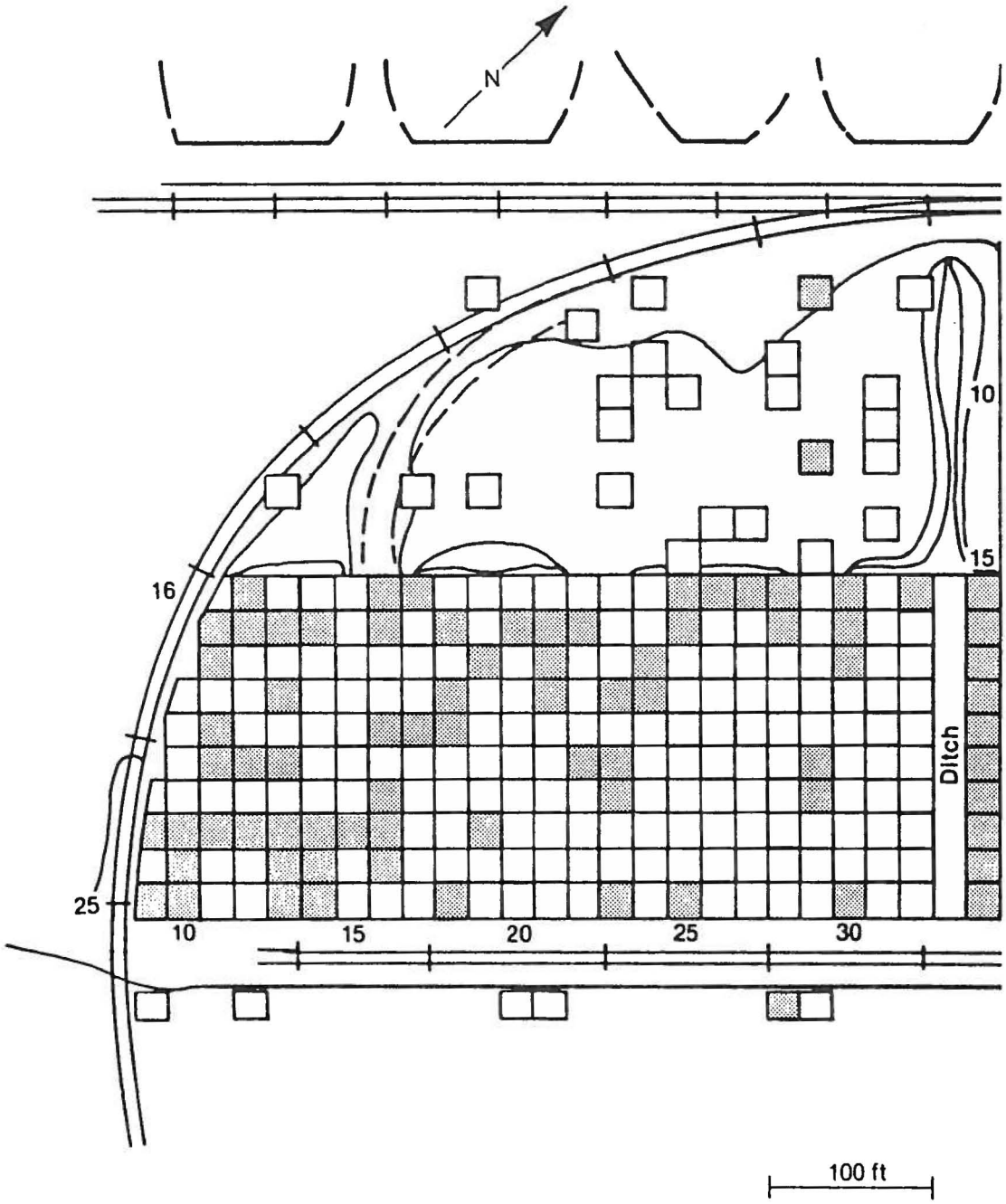


Figure 24. Expansion West Area--TCDD Concentrations in Composited Surface Soils, > Detection Limit through 1.0 ppb.

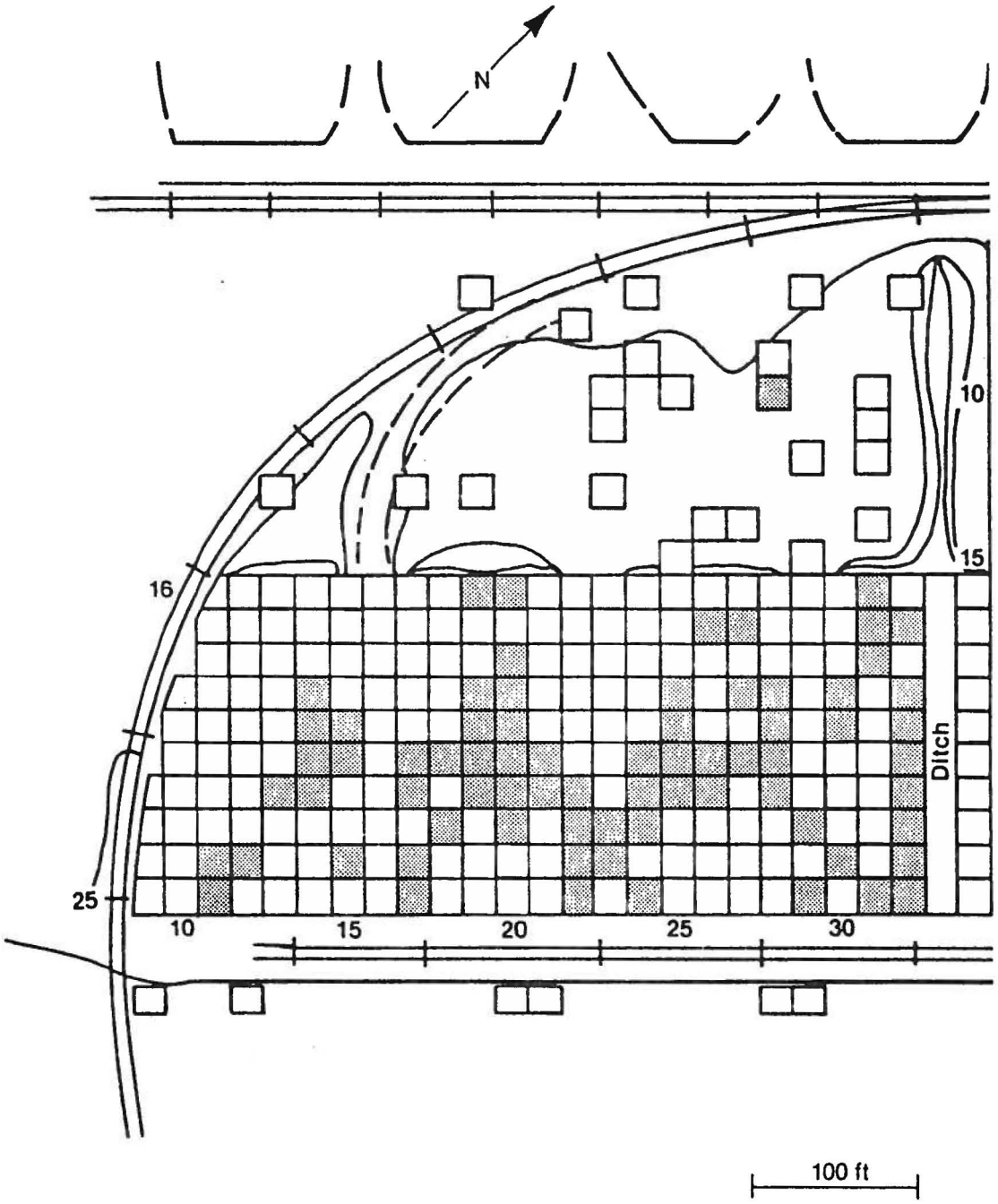


Figure 25. Expansion West Area--TCDD Concentrations in Composited Surface Soils, >1.0 ppb through 10 ppb.

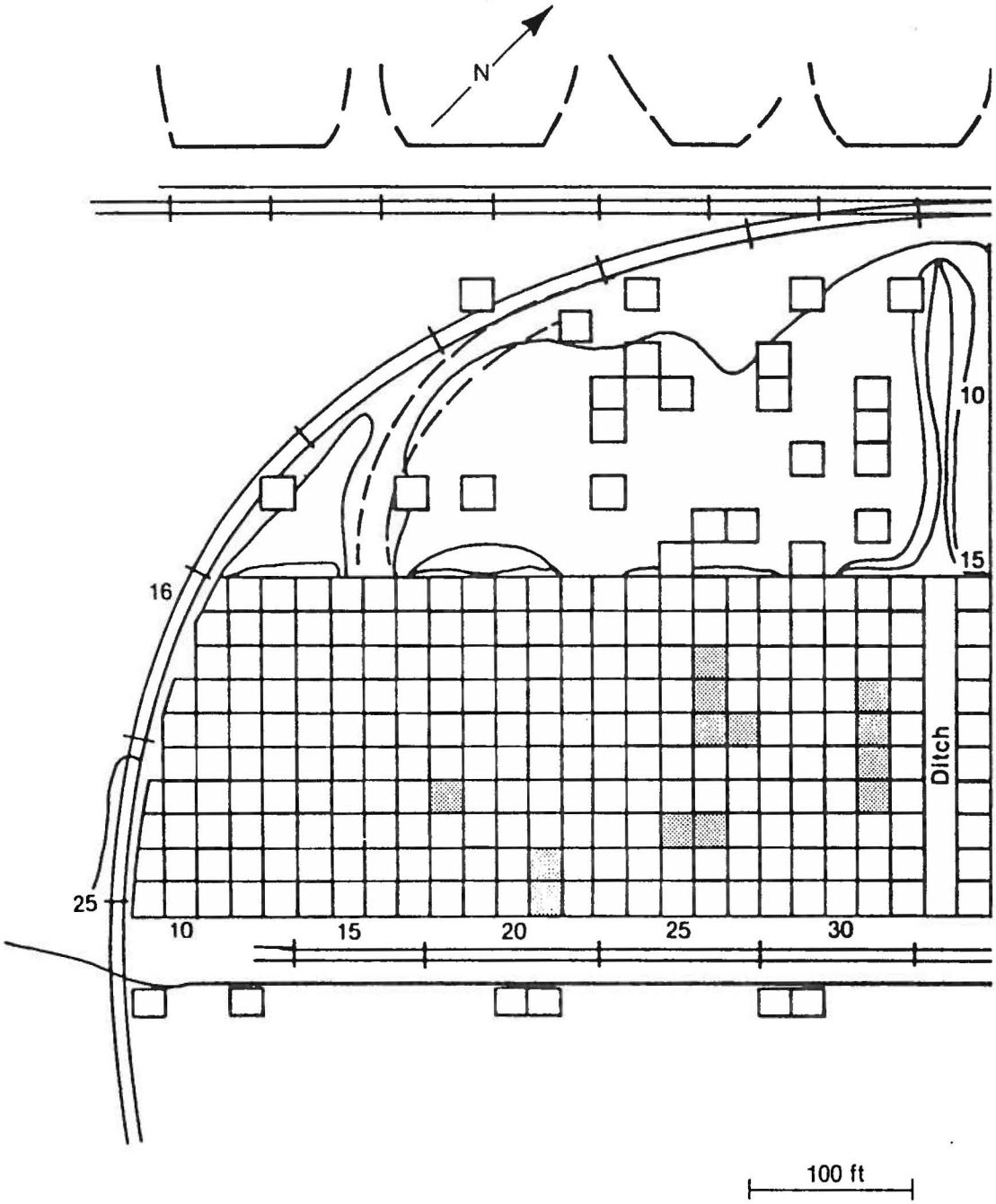


Figure 26. Expansion West Area--TCDD Concentrations in Composited Surface Soils, >10 ppb through 25 ppb.

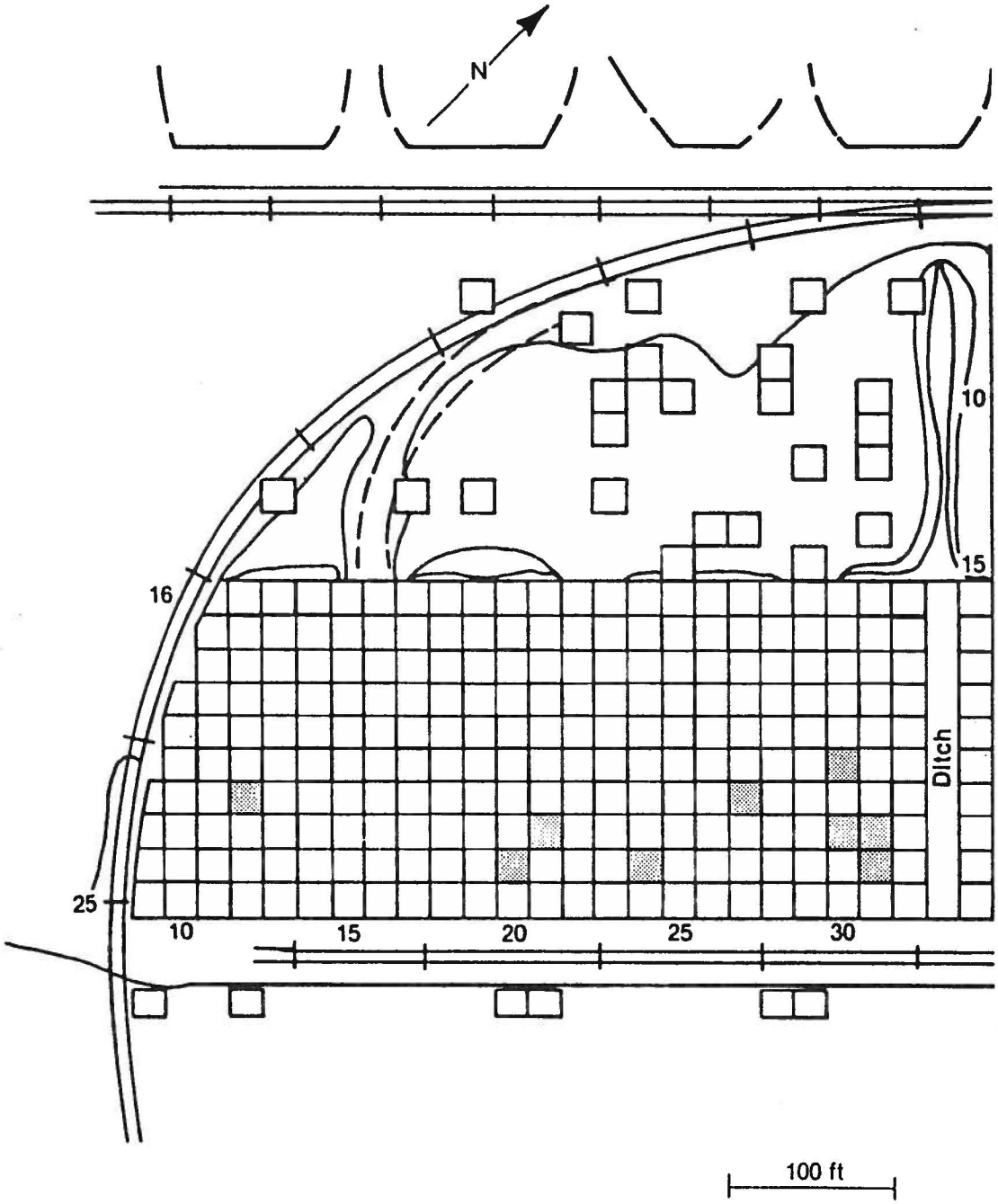


Figure 27. Expansion West Area--TCDD Concentrations in Composited Surface Soils, >25 ppb through 50 ppb.

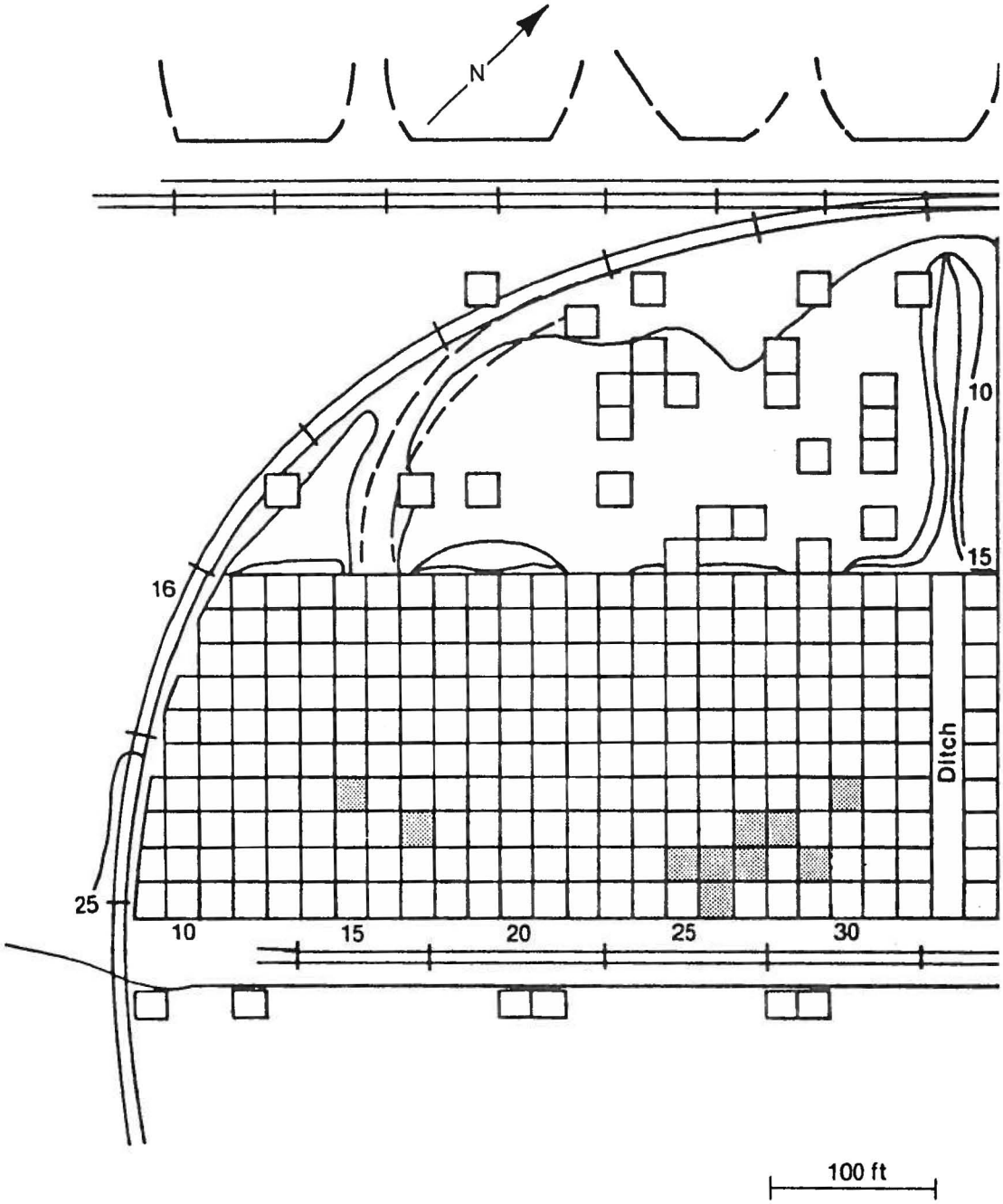


Figure 28. Expansion West Area--TCDD Concentrations in Composited Surface Soils, >50 ppb through 100 ppb.

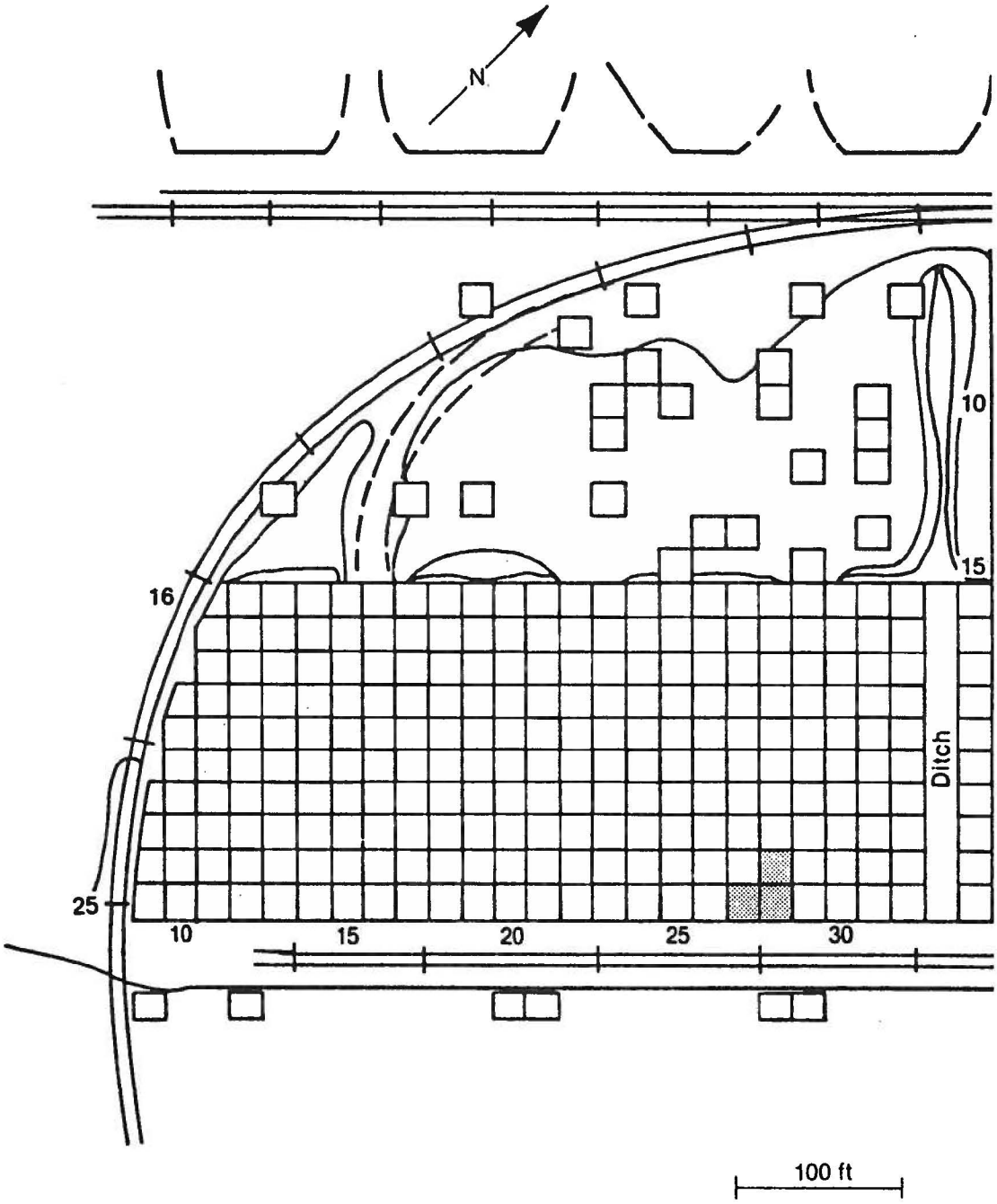


Figure 29. Expansion West Area--TCDD Concentrations in Composited Surface Soils, >100 ppb.

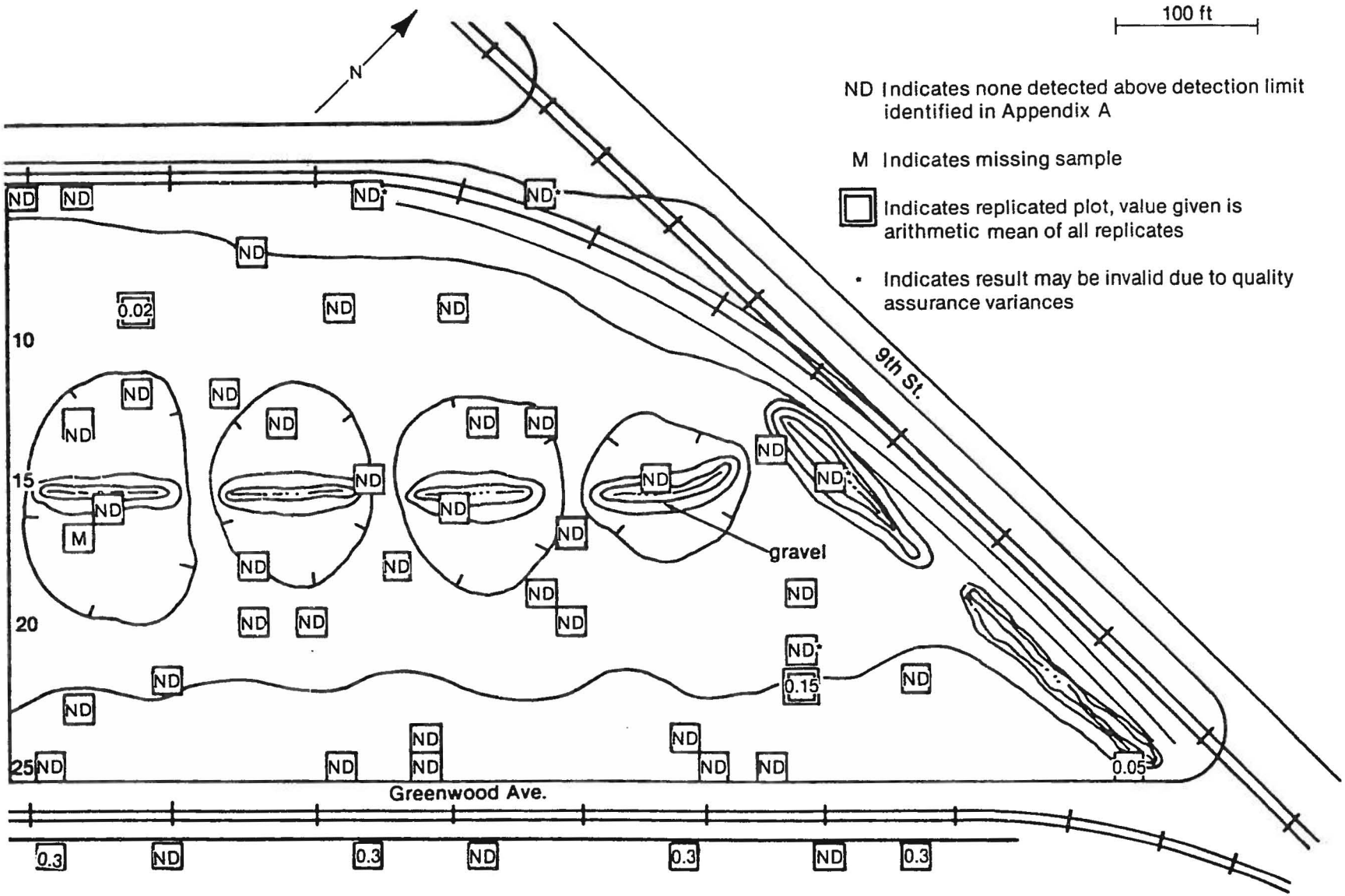


Figure 30. Expansion East Area--TCDD Concentrations in Composited Surface Soils.

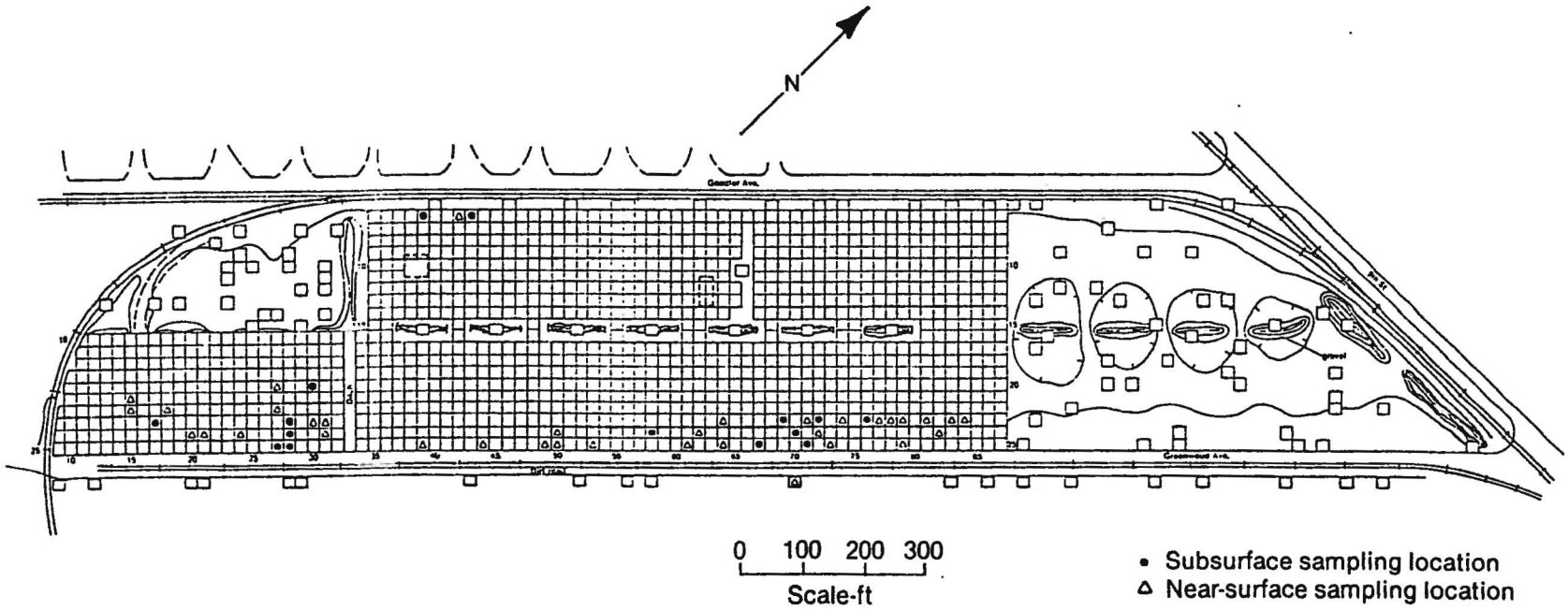


Figure 31. Location of Near Surface and Subsurface Samples.

TABLE 13. SUMMARY OF NEAR-SURFACE SAMPLES

Location	Depth[a]	TCDD (ppb)
0642	Surface	370
0642	Soil/cement	150
0642	0-3 inches	145
0642	3-7 inches	96
2027	Surface	12
2027	Soil/cement	5.0
2027	0-3 inches	0.08
2027	3-7 inches	0.12
2115	Surface	8.4
2115	Soil/cement	0.17
2115	0-3 inches	7.6
2115	3-7 inches	8.5
2215	Surface	425
2215	Soil/cement	8.77
2215	0-3 inches	95
2215	3-7 inches	75
2218	Surface	14[c]
2218	Soil/cement	6.2
2218	0-3 inches	7.6
2218	3-7 inches	0.34
2227	Surface	17
2227	Soil/cement	0.85
2227	0-3 inches	<0.02[b]
2227	3-7 inches	0.22
2330	Surface	3.4
2330	Soil/cement	0.26
2330	0-3 inches	<0.01[b]
2330	3-7 inches	<0.04[b]

TABLE 13. SUMMARY OF NEAR-SURFACE SAMPLES (CONTINUED)

Location	Depth[a]	TCDD (ppb)
2331	Surface	37
2331	Soil/cement	2.7
2331	0-3 inches	0.66
2331	3-7 inches	3.1
2364	Surface	12
2364	Soil/cement	<0.12[b]
2364	0-3 inches	0.10
2364	3-7 inches	0.08
2371	Surface	78
2371	Soil/cement	150
2371	0-3 inches	17
2371	3-7 inches	2.6
2374	Surface	105
2374	Soil/cement	1.9
2374	0-3 inches	0.77
2374	3-7 inches	0.36
2377	Surface	48
2377	Soil/cement	2.0
2377	0-3 inches	1.2
2377	3-7 inches	0.20
2378	Surface	12
2378	Soil/cement	1.1
2378	0-3 inches	0.13
2378	3-7 inches	0.48
2379	Surface	6.5
2379	Soil/cement	1.6
2379	0-3 inches	5.8
2379	3-7 inches	0.27
2381	Surface	0.64
2381	Soil/cement	0.22
2381	0-3 inches	0.32
2381	3-7 inches	<0.09[b]

TABLE 13. SUMMARY OF NEAR-SURFACE SAMPLES (CONTINUED)

Location	Depth[a]	TCDD (ppb)
2383	Surface	18
2383	Soil/cement	8.0
2383	0-3 inches	4.2
2383	3-7 inches	0.59
2384	Surface	12
2384	Soil/cement	<0.17[b]
2384	0-3 inches	0.19
2384	3-7 inches	0.28
2420	Surface	130
2420	Soil/cement	2.2
2420	0-3 inches	3.3
2420	3-7 inches	0.61
2421	Surface	5.3
2421	Soil/cement	0.17
2421	0-3 inches	0.41
2421	3-7 inches	6.7
2424	Surface	21
2424	Soil/cement	15
2424	0-3 inches	0.04
2424	3-7 inches	0.11
2431	Surface	190
2431	Soil/cement	120
2431	0-3 inches	4.2
2431	3-7 inches	315[c]
2450	Surface	49
2450	Soil/cement	0.16
2450	0-3 inches	0.21
2450	3-7 inches	4.1
2462	Surface	100
2462	Soil/cement	94
2462	0-3 inches	76
2462	3-7 inches	39

TABLE 13. SUMMARY OF NEAR-SURFACE SAMPLES (CONTINUED)

Location	Depth[a]	TCDD (ppb)
2472	Surface	430[c]
2472	Soil/cement	1000
2472	0-3 inches	6.6
2472	3-7 inches	3.7
2482	Surface	88
2482	Soil/cement	1.9
2482	0-3 inches	2.0
2482	3-7 inches	18
2539	Surface	410[c]
2539	Soil/cement	230[c]
2539	0-3 inches	3.5
2539	3-7 inches	4.4
2544	Surface	3.6
2544	Soil/cement	2.4
2544	0-3 inches	8.7
2544	3-7 inches	0.49
2549	Surface	230[c]
2549	Soil/cement	140
2549	0-3 inches	150
2549	3-7 inches	8.5
2550	Surface	<160[b]
2550	Soil/cement	280
2550	0-3 inches	14[c]
2550	3-7 inches	2.2
2553	Surface	140
2553	Soil/cement	310[c]
2553	0-3 inches	8.3
2553	3-7 inches	18[c]
2561	Surface	12
2561	Soil/cement	<4.6[b]
2561	0-3 inches	7.8
2561	3-7 inches	0.59

TABLE 13. SUMMARY OF NEAR-SURFACE SAMPLES (CONCLUDED)

Location	Depth[a]	TCDD (ppb)
2564	Surface	36
2564	Soil/cement	2.8
2564	0-3 inches	<0.04[b]
2564	3-7 inches	0.13
2573	Surface	15
2573	Soil/cement	9.2
2573	0-3 inches	0.23
2573	3-7 inches	0.23
2579	Surface	7.6
2579	Soil/cement	2.9
2579	0-3 inches	0.65[c]
2579	3-7 inches	0.24
2870	Surface	5.7
2870	Soil/cement	0.95
2870	0-3 inches	0.13
2870	3-7 inches	1.2

a. Measured depths are from the bottom of the soil/cement layer.

b. None detected above the detection limit given.

c. Result may be invalid due to quality assurance variances.

concentrations in the soil/cement layer for near-surface samples ranged from less than 0.12 ppb to 1000 ppb, with an arithmetic mean of 73 ppb.

The near-surface samples collected from a depth of 0 to 3 inches below the soil cement layer had TCDD concentrations ranging from less than 0.01 ppb to 150 ppb, averaging 16 ppb. Samples collected from 3 to 7 inches below the soil cement layer had TCDD concentrations ranging from less than 0.04 ppb to 315 ppb. However, the outlier value of 315 ppb is invalid because of quality assurance variances. The average concentration of TCDD for this depth, eliminating the potentially invalid

result, is 8.7 ppb. Including the value of 315 raises the average concentration to 17.5 ppb.

The results of the analyses of near-surface samples indicate that the soil/cement layer was a restriction but not an impervious boundary to the vertical transport of TCDD. In general, the data indicate (based on the arithmetic means) that the average TCDD concentration decreases significantly from 92 ppb at the surface to about 9 ppb at an approximate depth of 1 foot.

D. SUBSURFACE SAMPLING

Subsurface samples were collected from the surface to an approximate depth of 5 feet at 15 locations shown in Figure 31. As previously discussed, the locations were selected based on preliminary analytical data identifying those plots with the highest TCDD concentrations in surface soils. As a result, most locations were concentrated in the southern portion of the study area. Notable exceptions are two locations in the original area (Row 5, Columns 39 and 43) that had composited surface soil TCDD concentrations of 242 ppb and 150 ppb.

The results of the subsurface sampling are tabulated in Table 14, and plots of TCDD concentration vs. depth are presented in Figures 32 through 35. The results indicate that, in general, TCDD concentrations decrease with depth, and the soil/cement layer is a restriction but not an impervious barrier to downward transport of TCDD. TCDD concentrations at 7 to 12 inches below soil/cement ranged from less than 0.01 to 12 ppb, with an arithmetic mean of 1.7 ppb. At an approximate depth of 2 feet below soil/cement, TCDD concentrations ranged from less than 0.01 to 8.0 ppb, and averaged 1.0 ppb. At 3 feet below the soil/cement layer, TCDD concentrations ranged from less than 0.01 to 3.4 ppb, with a mean of 0.31 ppb. At 4 feet below the soil/cement layer, TCDD concentrations ranged from less than 0.01 ppb to 5.1 ppb, with a mean of 0.62 ppb.

TABLE 14. SUMMARY OF SUBSURFACE SAMPLES

Location	Depth[a]	TCDD (ppb)
0639	Surface	242
0639	Soil/cement	440
0639	0-3 inches	260[c]
0639	3-7 inches	<0.99[b]
0639	8-12 inches	1.2
0639	23-26 inches	0.02
0639	35-38 inches	0.02
0639	45-48 inches	<0.01[b]
0643	Surface	650
0643	Soil/cement	6.0
0643	0-3 inches	<0.01[b,c]
0643	3-7 inches	93
0643	8-12 inches	0.25
0643	23-26 inches	0.03
0643	35-38 inches	0.02
0643	45-48 inches	1.9
2030	Surface	2.3
2030	Soil/cement	0.03
2030	0-3 inches	0.41
2030	3-7 inches	0.07
2030	8-12 inches	<0.01[b]
2030	23-26 inches	0.01
2030	35-38 inches	0.02
2030	45-48 inches	0.02
2317	Surface	120
2317	Soil/cement	2.0
2317	0-3 inches	1.2
2317	3-7 inches	0.28
2317	8-12 inches	0.04
2317	23-26 inches	0.07
2317	35-38 inches	0.01
2317	45-48 inches	<0.01[b]
2328	Surface	14
2328	Soil/cement	13
2328	0-3 inches	<0.05[b,c]
2328	3-7 inches	0.30

TABLE 14. SUMMARY OF SUBSURFACE SAMPLES (CONTINUED)

Location	Depth[a]	TCDD (ppb)
2328	8-12 inches	0.15
2328	23-26 inches	0.06
2328	35-38 inches	0.01
2328	45-48 inches	<0.01[b]
2369	Surface	16
2369	Soil/cement	0.19
2369	0-3 inches	0.19
2369	3-7 inches	0.20
2369	8-12 inches	0.03
2369	23-26 inches	<0.01[b]
2369	35-38 inches	<0.01[b]
2369	45-48 inches	<0.01[b]
2372	Surface	26
2372	Soil/cement	22
2372	0-3 inches	7.9
2372	3-7 inches	2.5
2372	8-12 inches	8.9
2372	23-26 inches	8.0
2372	35-38 inches	3.4
2372	45-48 inches	5.1
2376	Surface	13
2376	Soil/cement	1.4
2376	0-3 inches	0.56
2376	3-7 inches	0.12
2376	8-12 inches	0.03
2376	23-26 inches	0.03
2376	35-38 inches	<0.01[b]
2376	45-48 inches	<0.01[b]
2428	Surface	200
2428	Soil/cement	<3.5[b]
2428	0-3 inches	46
2428	3-7 inches	12
2428	8-12 inches	0.06
2428	23-26 inches	0.02
2428	35-38 inches	0.10
2428	45-48 inches	<0.01[b]

TABLE 14. SUMMARY OF SUBSURFACE SAMPLES (CONTINUED)

Location	Depth[a]	TCDD (ppb)
2458	Surface	74
2458	Soil/cement	5.2
2458	0-3 inches	1.1
2458	3-7 inches	0.73
2458	8-12 inches	0.04
2458	23-26 inches	0.08
2458	35-38 inches	<0.01[b]
2458	45-48 inches	0.01
2470	Surface	21[c]
2470	Soil/cement	310
2470	0-3 inches	3.6
2470	3-7 inches	6.5
2470	8-12 inches	12
2470	23-26 inches	0.01
2470	35-38 inches	0.21
2470	45-48 inches	0.11
2527	Surface	1.7
2527	Soil/cement	1.8
2527	0-3 inches	310
2527	3-7 inches	9.3
2527	8-12 inches	0.33
2527	23-26 inches	4.5
2527	35-38 inches	0.73
2527	45-48 inches	2.0
2528	Surface	0.67
2528	Soil/cement	0.50
2528	0-3 inches	0.17
2528	3-7 inches	0.22
2528	8-12 inches	0.03
2528	23-26 inches	<0.01[b]
2528	35-38 inches	<0.01[b]
2528	45-48 inches	<0.01[b]
2567	Surface	58
2567	Soil/cement	6.6
2567	0-3 inches	26
2567	3-7 inches	12
2567	8-12 inches	0.40
2567	23-26 inches	0.01
2567	35-38 inches	<0.01[b]
2567	45-48 inches	0.03

TABLE 14. SUMMARY OF SUBSURFACE SAMPLES (CONCLUDED)

Location	Depth[a]	TCDD (ppb)
2571	Surface	590
2571	Soil/cement	480
2571	0-3 inches	120
2571	3-7 inches	78
2571	8-12 inches	1.8
2571	23-26 inches	2.1
2571	35-38 inches	0.01
2571	45-48 inches	0.04

a. Measured depths are from the bottom of the soil/cement layer.

b. None detected above the detection limit given.

c. Result may be invalid because of quality assurance variances.

Table 15 summarizes both the near-surface and the subsurface samples and indicates the total number of samples, the range in ppb, and the arithmetic mean for each sampling depth. As shown in Table 15, the arithmetic mean decreases consistently from a high of 107 ppb at the surface to 0.31 ppb at 3 feet below the soil/cement. The mean then increases to 0.62 ppb at a depth of 4 feet below the soil/cement.

A plot of the data in Table 15 is shown in Figure 38. The trend of decreasing TCDD concentration with depth is apparent. A significant break between the slope of the best-fit lines is seen at the 1.5- to 2-foot depth below ground surface. This may be due to a change in the number of samples in the data base from 50 to 15, or it may also reflect retardation of downward transport of TCDD at the 1.5- to 2-foot level; however, the first hypothesis is more likely.

E. HERBICIDE ORANGE ANALYTICAL RESULTS

All subsurface samples were analyzed for the herbicides 2,4-D and 2,4,5-T in addition to TCDD. The results of the herbicide analyses at the

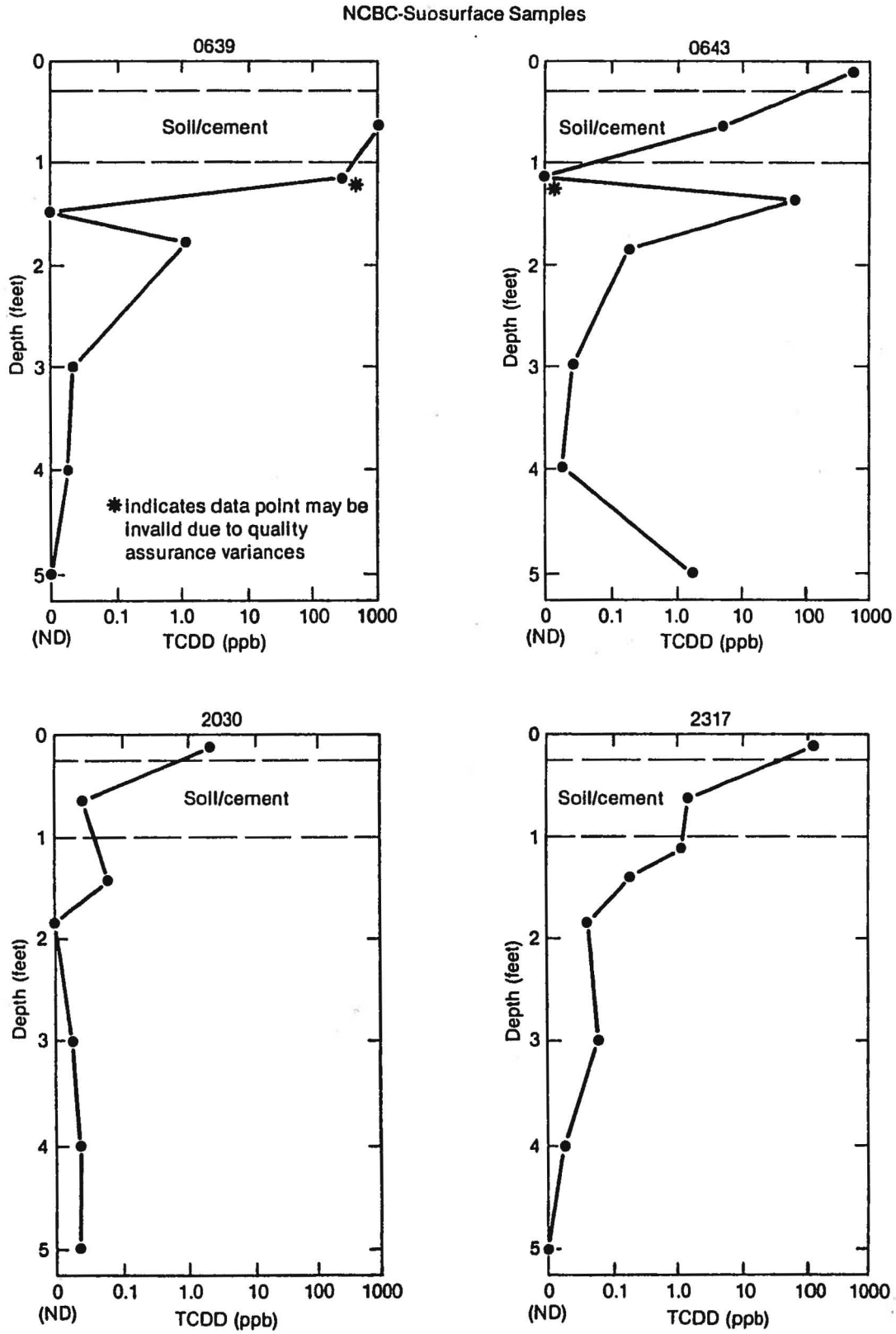


Figure 32. Subsurface Samples--TCDD Concentrations vs. Depth: 0639, 0643, 2030, and 2317.

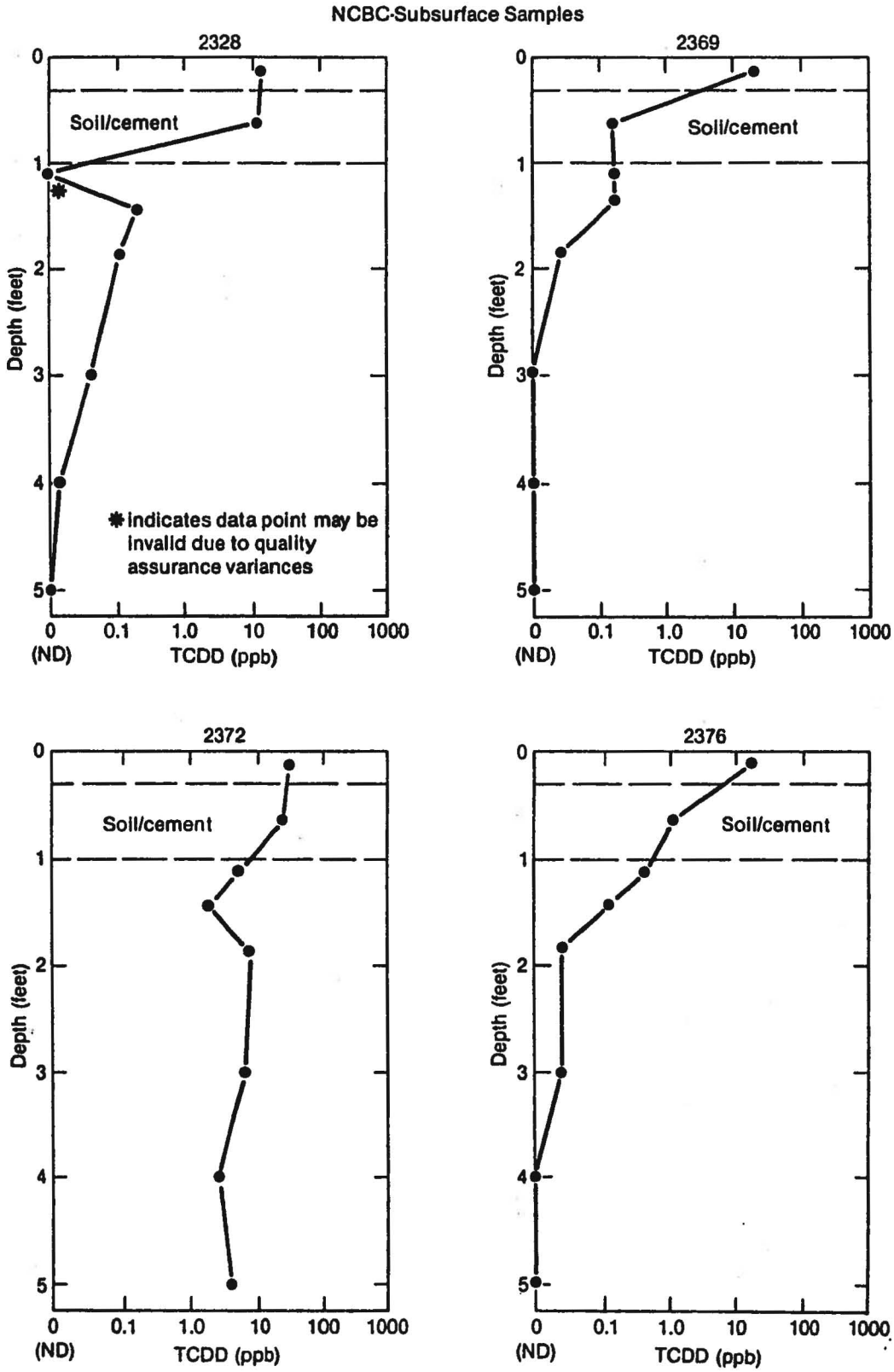


Figure 33. Subsurface Samples--TCDD Concentrations vs. Depth: 2328, 2369, 2372, and 2376.

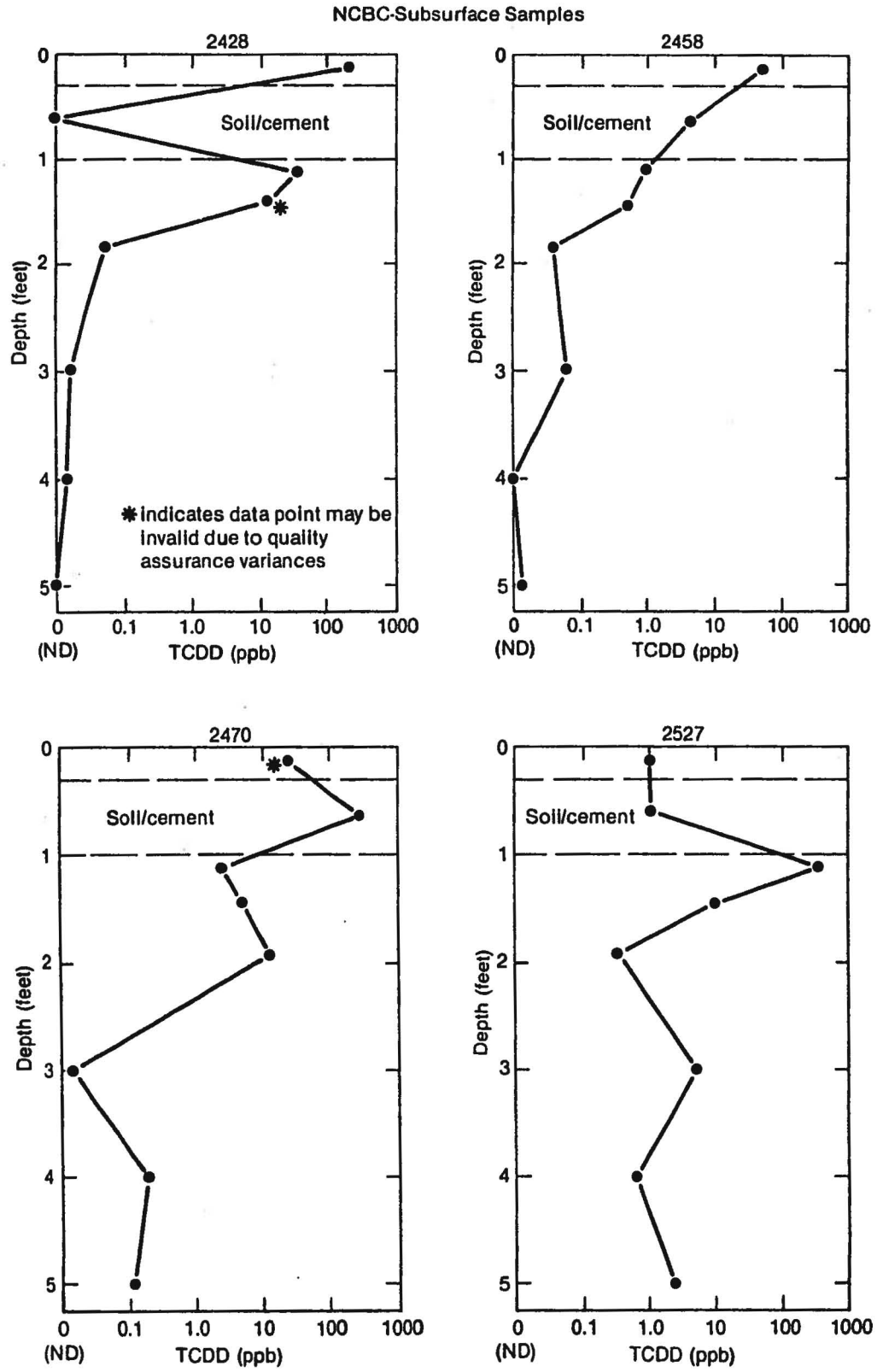


Figure 34. Subsurface Samples--TCDD Concentrations vs. Depth: 2428, 2458, 2470, and 2527.

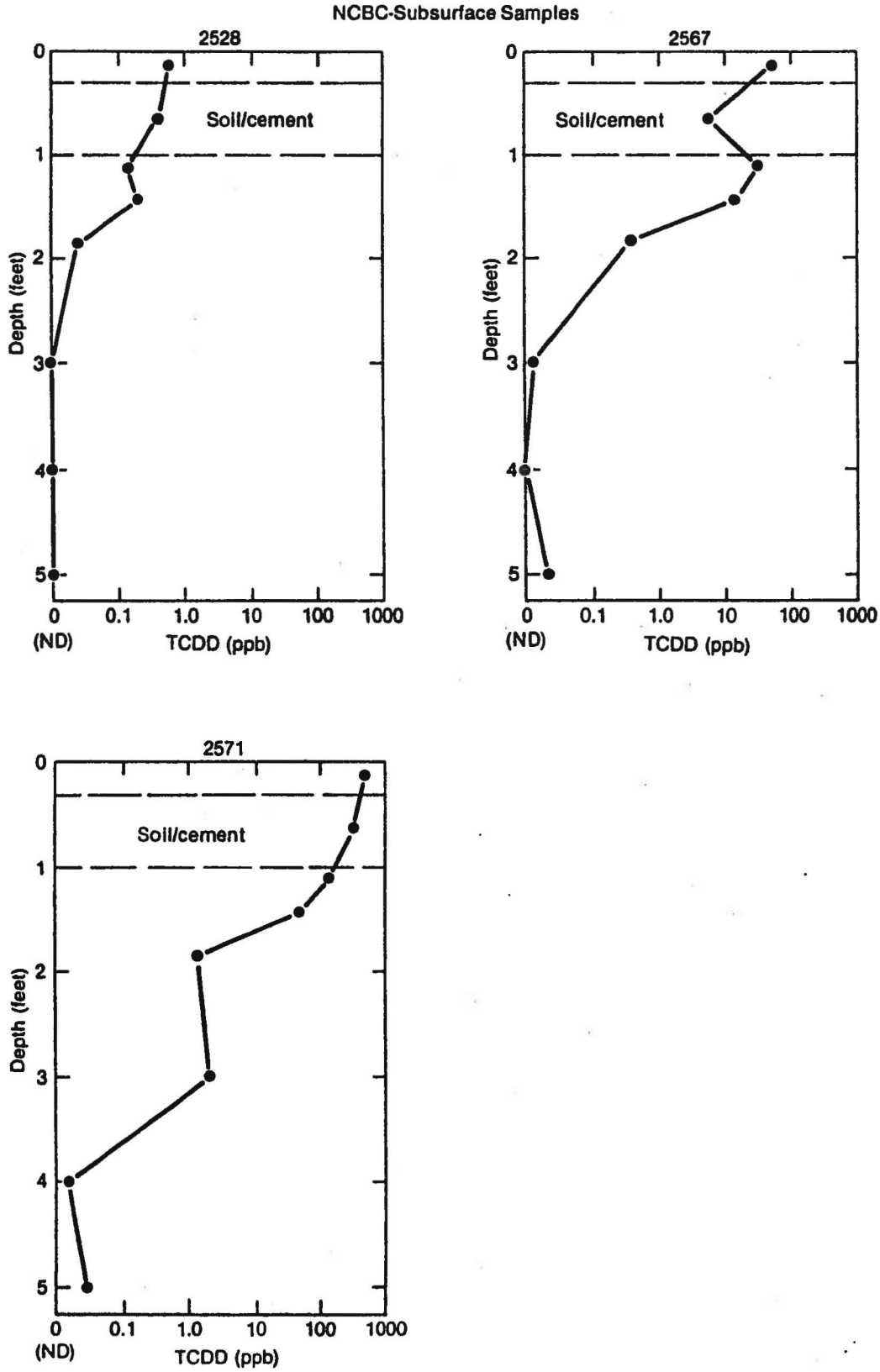


Figure 35. Subsurface Samples--TCDD Concentrations vs. Depth: 2528, 2567, and 2571.

TABLE 15. SUMMARY OF NEAR-SURFACE AND SUBSURFACE SAMPLE RESULTS

Depth[a]	Number of Samples	Range (ppb)	Arithmetic Mean (ppb)
Surface	50	0.64-650	107
Soil/Cement	50	<0.12-1000	77
0-3 inches	50	<0.01-310	27
3-7 inches	50	<0.04-315	17
7-12 inches	15	<0.01-12	1.7
23-26 inches	15	<0.01-8.0	1.0
35-38 inches	15	<0.01-3.4	0.31
45-48 inches	15	<0.01-5.1	0.62

a. Measured depths are from the bottom of the soil/cement layer.

15 subsurface locations are presented in Appendix A. Concentrations of 2,4-D ranged from less than a detection limit of 20 ppb to 20,800,000 ppb. The highest concentrations appear to be located in the soil/cement layer. Note that detection limits for both 2,4-D and 2,4,5-T ranged as high as 5000 ppb. Concentrations of 2,4,5-T ranged from less than a detection limit of 20 ppb to 27,700,000 ppb. The highest concentration was again in the soil/cement at Row 6, Column 39. A discussion of the correlation of 2,4-D, 2,4,5-T, and TCDD is presented in Section V.

F. MISCELLANEOUS SAMPLES

Three groups of miscellaneous samples were obtained on, or near, the HO storage site. The first group of four samples consisted of three taken around the equipment storage shed located southeast from grid 2839 and across Greenwood Avenue, the tracks, and the dirt road. Offsite work was

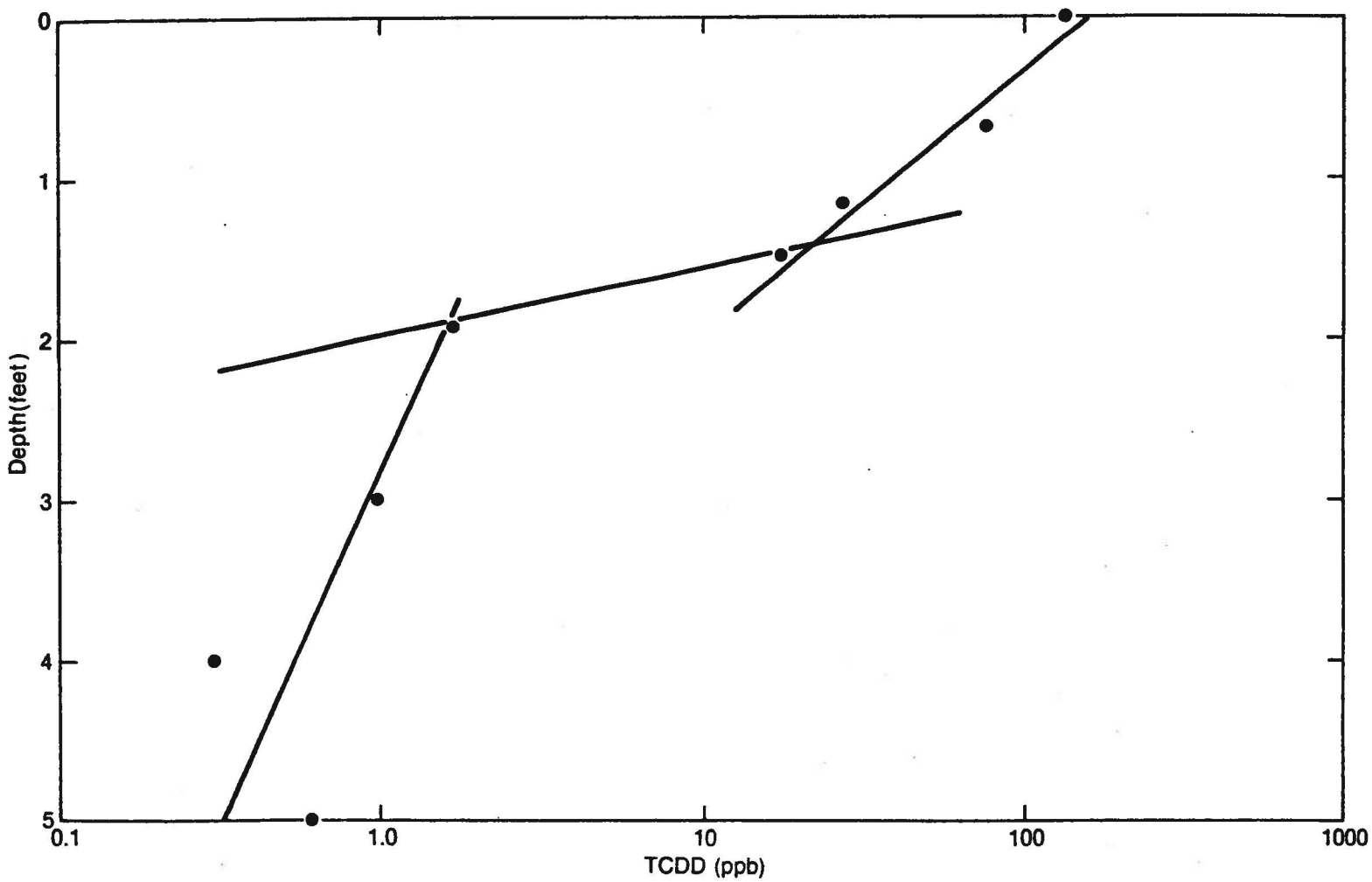


Figure 36. Average TCDD Concentrations in Near-Surface and Subsurface Soils vs. Depth.

performed in and around this shed without protective clothing. The analysis showed no contamination. The fourth sample was a random sample taken in the expansion east area around grid 1597 but not in the 20- by 20-foot grid layout. The analysis showed no contamination.

The second group of ten samples was obtained on the HO site. These samples were taken from tar, asphalt, or road oil that was randomly found on the site surface. At the start of the analysis of NCBC samples, the contract laboratory had identified problems in cleanup of extracts and consequent faulty TCDD readings. These samples were sent to the laboratory to refine its cleanup techniques. The laboratory was successful in this effort, which resulted in the high validation percentage of grid samples.

The third group of 11 samples was obtained from the drainage ditches according to the sampling protocol. These were to determine the TCDD levels in the ditches. The results of all samples are presented in Table 16. The values of the ditch samples vary from nondetectable to a maximum of 107 ppb of TCDD. The values show similarity to the more contaminated areas of the site.

TABLE 16. MISCELLANEOUS SAMPLES

Sample Number[a]	Corresponds To Plots	Remarks	Concentration (ppb)
7001	2839	Taken around Equipment Storage shed	0.10[b]
7002	2839	near dirt road intersection in	0.10[b]
7003	2839	Plot 40	0.10[b]
7004	1958	Tar	4.46[c]
7005	2436 2437 2536 2537	Tar	1.3[c]
7006	2540	Tar	0.30[b]
7007	1441 1442 1541 1542	Tar	0.50[b]
7008	1351	Tar	9.1
7009	2573 2574	Tar	5.91[b]
7010	1764	Tar	0.04
7011	2380	Tar	0.12[b]
7012	2065 2066	Tar	0.53[b]
7013	1270 1370	Tar	0.50
7014	1543 1548 1648 1643	Ditch	10.60
7015	1597	Random sample	0.08[b]
7016	2585 2586 1686 1585	Ditch	1.70

TABLE 16. MISCELLANEOUS SAMPLES (CONCLUDED)

Sample Number[a]	Corresponds To Plots	Remarks	Concentration (ppb)
7017	1549 1554 1649 1654	Ditch	107.00
7018	1556 1561 1656 1661	Ditch	33.20
7019	1582 1585 1682 1685	Ditch	0.90
7020	1575 1580 1675 1670	Ditch	0.40
7021	1562 1567 1662 1667	Ditch	2.70
7022	0660 0666 1565 1566	Ditch	2.67
7023	1569 1574 1669 1674	Ditch	0.20[b]
7024	1691	Ditch	0.10
7025	1536 1541 1636 1641	Ditch	4.80

a. Sample numbers are preceded by NC-, and followed by 01000. All are surface samples.

b. None detected above the detection limit given.

c. Result may be invalid due to quality assurance variances.

SECTION V
STATISTICAL ANALYSIS

A. SURFACE, NEAR-SURFACE, AND SUBSURFACE SAMPLING

Tables 17 and 18 provide descriptive statistics on all surface samples at NCBC. Statistics are presented, both with and without the possible invalid results, and are presented separately for the original area, original expansion area, expansion east, and expansion west. Table 19 combines these areas to characterize all surface samples at NCBC. Approximately 85 percent of the results in the expansion east area is less than detectable, and the maximum positive result is 0.3 ppb, so there is strong evidence of little TCDD contamination in that area.

The plots with replicate composite samples were used to estimate the within-plot variance. Less-than-detectable results were replaced by the

TABLE 17. SURFACE SAMPLING SUMMARY EXCLUDING INVALID RESULTS

Parameters (ppb)	Expansion West	Original Area	Original Expansion Area	Expansion East
Number of samples[a,b]	260	425	487	44
Arithmetic mean	7.1	14.3	9.2	0.12
Arithmetic standard deviation	20.6	44.9	30.3	0.09
Median	0.7	3.2	0.6	0.1
Maximum	182	646	282	0.5
Geometric mean	0.91	2.9	0.83	0.10
Geometric standard deviation	7.5	6.3	8.5	1.9

a. Less than detectables replaced by reporting limit.

b. Replicated plots represented by the arithmetic mean of the composite samples.

TABLE 18. SURFACE SAMPLING SUMMARY INCLUDING INVALID RESULTS

Parameters (ppb)	Expansion West	Original Area	Original Expansion Area	Expansion East
Number of samples[a,b]	270	465	516	48
Arithmetic mean	7.2	14.5	10.0	0.12
Arithmetic standard deviation	20.8	44.9	32.3	0.09
Median	0.7	3.1	0.6	0.1
Maximum	182	646	282	0.5
Geometric mean	0.90	2.9	0.87	0.10
Geometric standard deviation	7.5	6.3	8.8	2.0

a. Less than detectables replaced by reporting limit.

b. Replicated plots represented by the arithmetic mean of the composite samples.

TABLE 19. COMPOSITE SURFACE SAMPLING SUMMARY

Parameter	
Number of samples[a,b]	1300
Arithmetic mean	10.7
Arithmetic standard deviation	35.2
Median	1.1
Maximum	626
Geometric mean	1.2
Geometric standard deviation	8.4

a. Less than detectables replaced by reporting limit.

b. Replicated plots represented by the arithmetic mean of the composite samples.

reporting limit. Plots with 0 or 1 positive results were discarded, because they provide an estimate of the variance of the reporting limit rather than estimating the variance of the results. The sample results were transformed using the natural logarithm. The Shapiro-Wilk W test (Reference 8) for normality indicated that the composite samples within the replicated plots are better fit by a log-normal than a normal distribution. It is necessary to assume that the within-plot variation is consistent from plot to plot because of the lack of replicate samples within each plot. The estimate of the pooled variance (a weighted average of the individual variances from each replicated plot) combines both sampling and analytical variability, and this estimate was used to calculate upper confidence limits on the surface samples. These limits are presented in Appendix B for 65, 80, 90, and 95 percent confidence levels. For replicated plots, the upper confidence limit is a limit on the geometric mean of the composite samples. In plots with a single sample, it is a limit on the single composite result. Figures 37 through 61 display the plots with upper 65 and 95 percent confidence limits exceeding cleanup criteria of 1.0, 10.0, 25.0, and 50.0 ppb. Figure 62 presents the probability of not cleaning up a plot for a range of values of the true mean TCDD concentration. The probabilities are plotted for the cleanup criteria of 1.0, 10.0, 25.0, and 50.0 ppb with 95 percent confidence.

Sample NC-0540 has a composite result of 21.8 ppb, with a 95 percent upper confidence limit of 130.2 ppb. This can be interpreted, for example, as follows: there is 95 percent confidence that the true concentration of TCDD in the plot is less than 130.2 ppb. The confidence statement calculation may be inverted to say that the true mean concentration is less than 10 ppb with 95 percent confidence when the field sample is less than 1.7 ppb. Alternatively, one can state with 95 percent confidence that the true mean concentration is less than 25 ppb when the composite sample result is less than 4.2 ppb.

The near-surface samples are summarized in Tables 20 and 21. The differences between the means, medians, and maximum values in Table 20 and those in Table 21 indicate that several samples that could not be validated

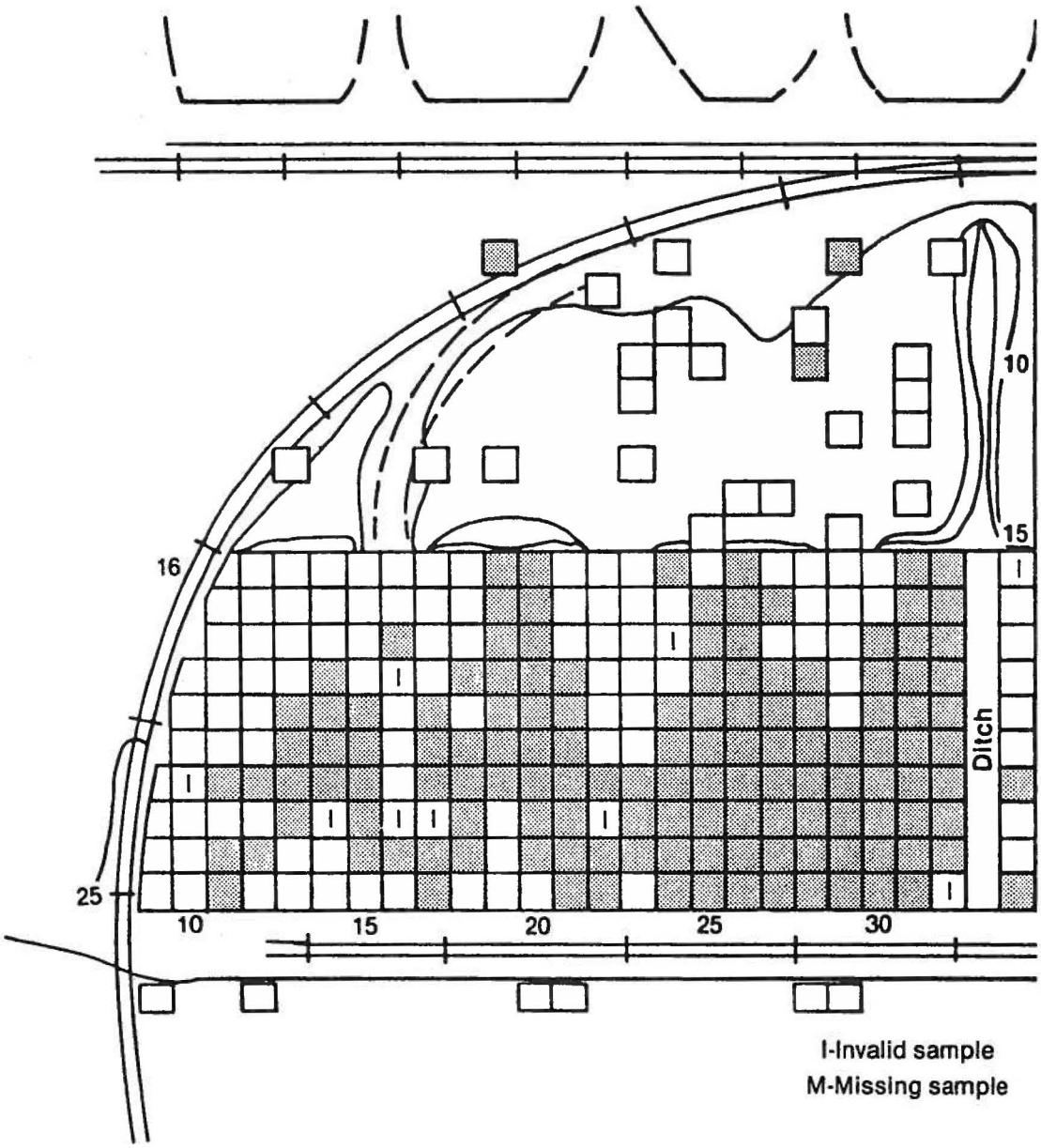
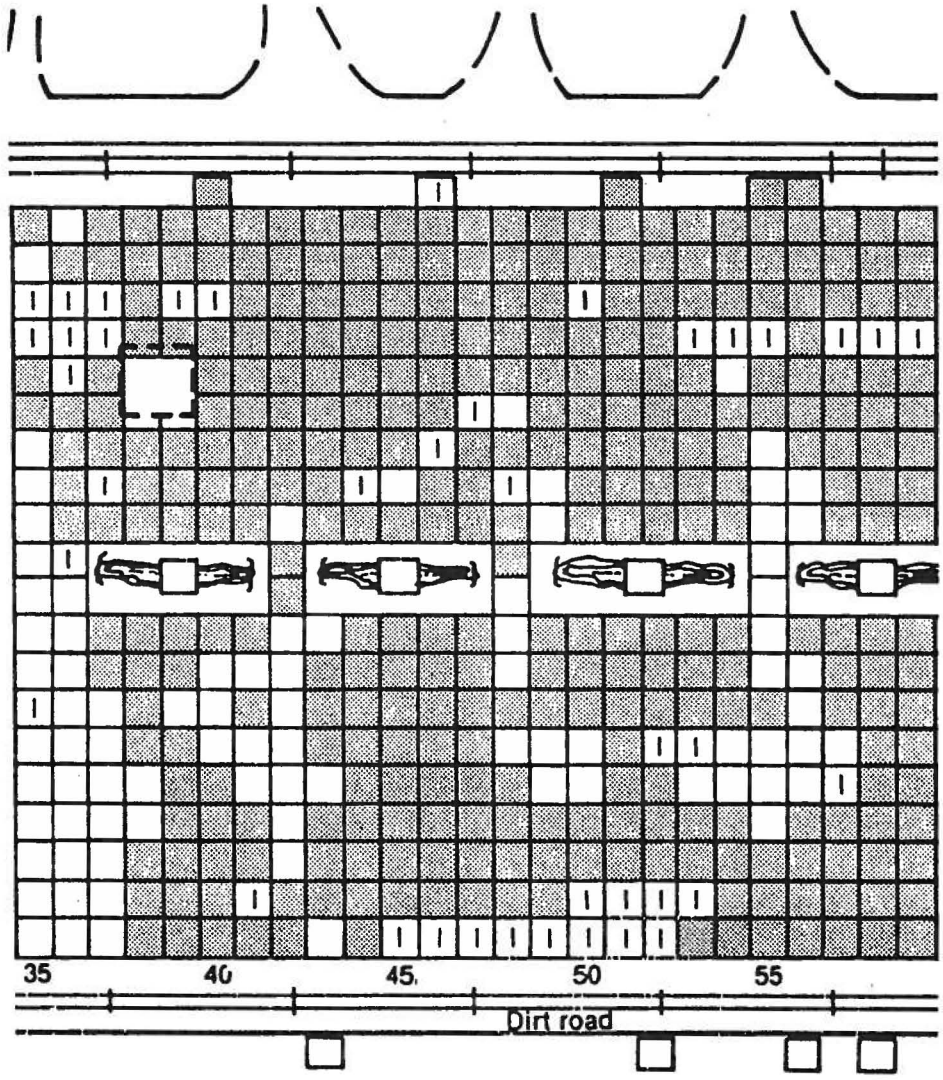


Figure 37. NCBC Expansion West Plots With 65 Percent Upper Confidence Limit Exceeding 1 ppb.



I-Invalid sample
M-Missing sample

Figure 38. NCBC Original Area Plots With 65 Percent Upper Confidence Limit Exceeding 1 ppb.

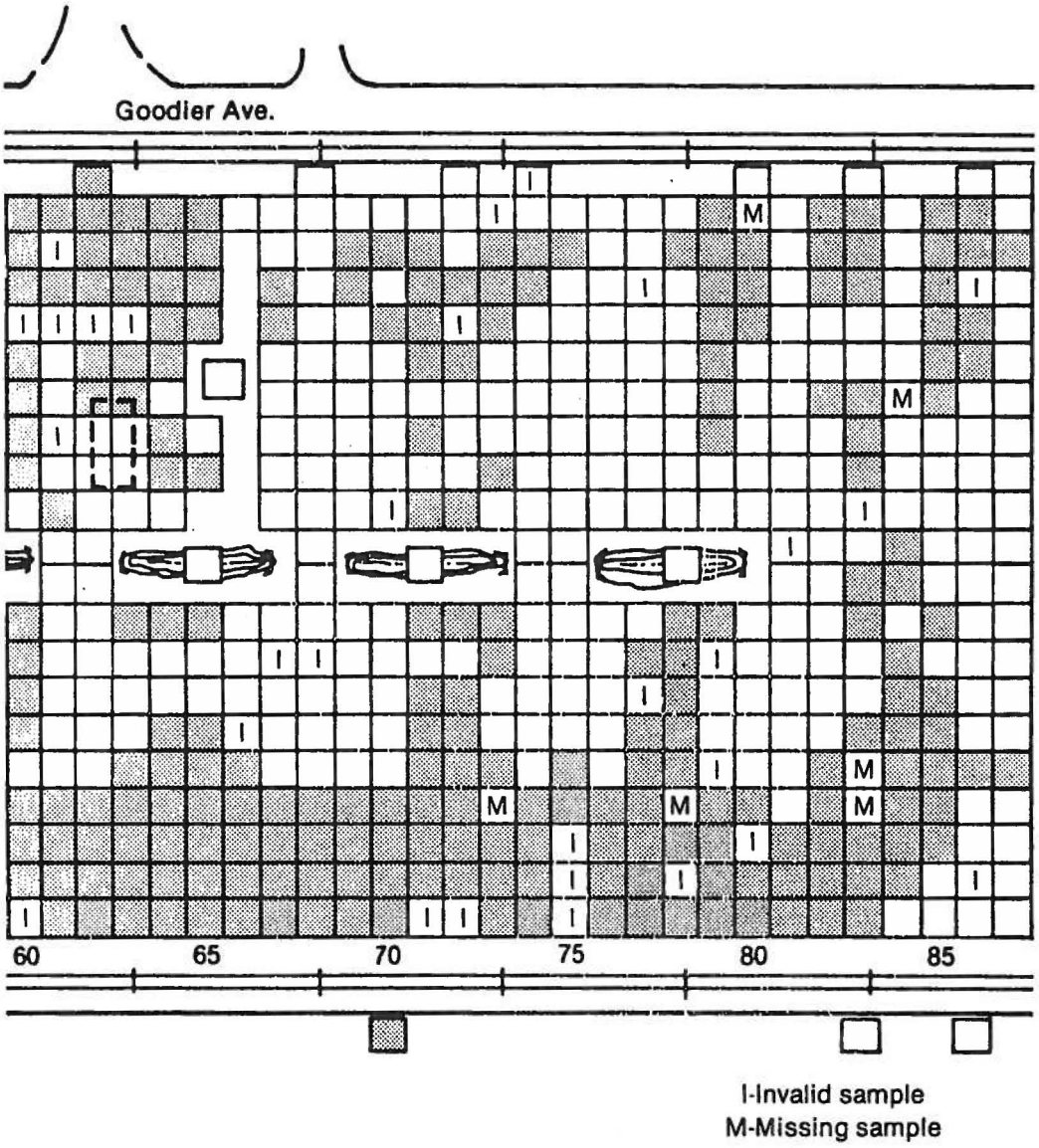


Figure 39. NCBC Original Expansion Area Plots with 65 Percent Upper Confidence Limit Exceeding 1 ppb.

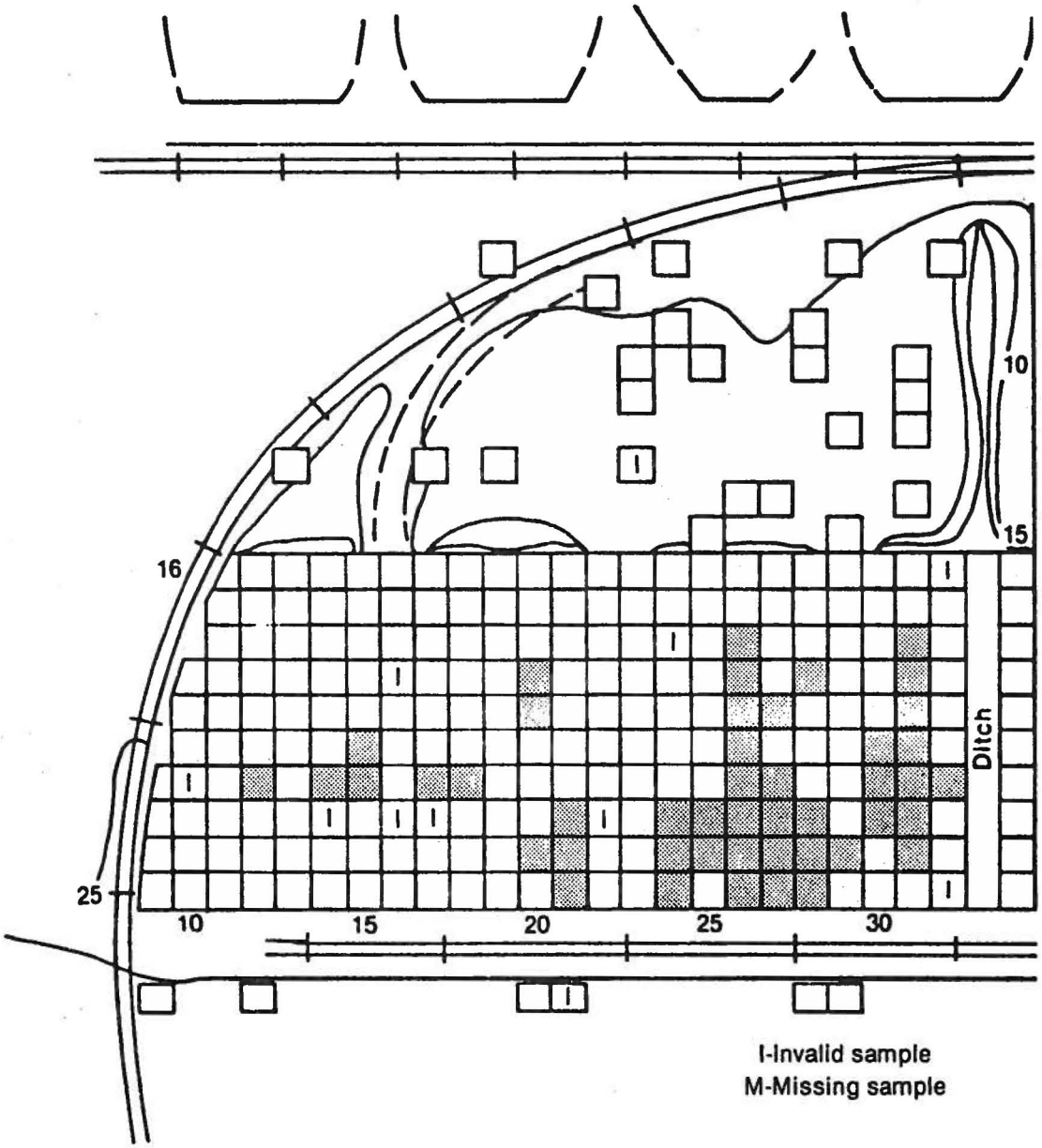


Figure 40. NCBC Expansion West Plots With 65 Percent Upper Confidence Limit Exceeding 10 ppb.

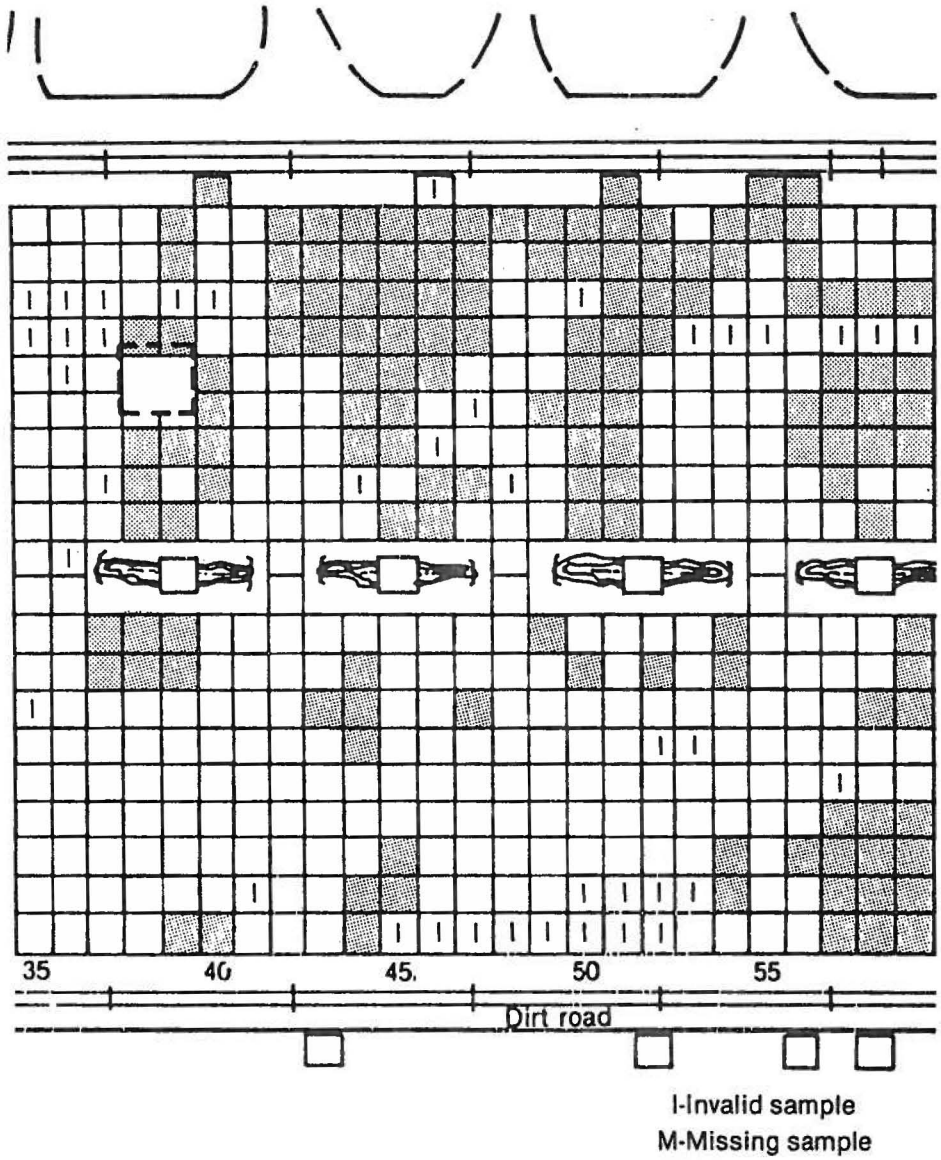


Figure 41. Original Area Plots With 65 Percent Upper Confidence Limit Exceeding 10 ppb.

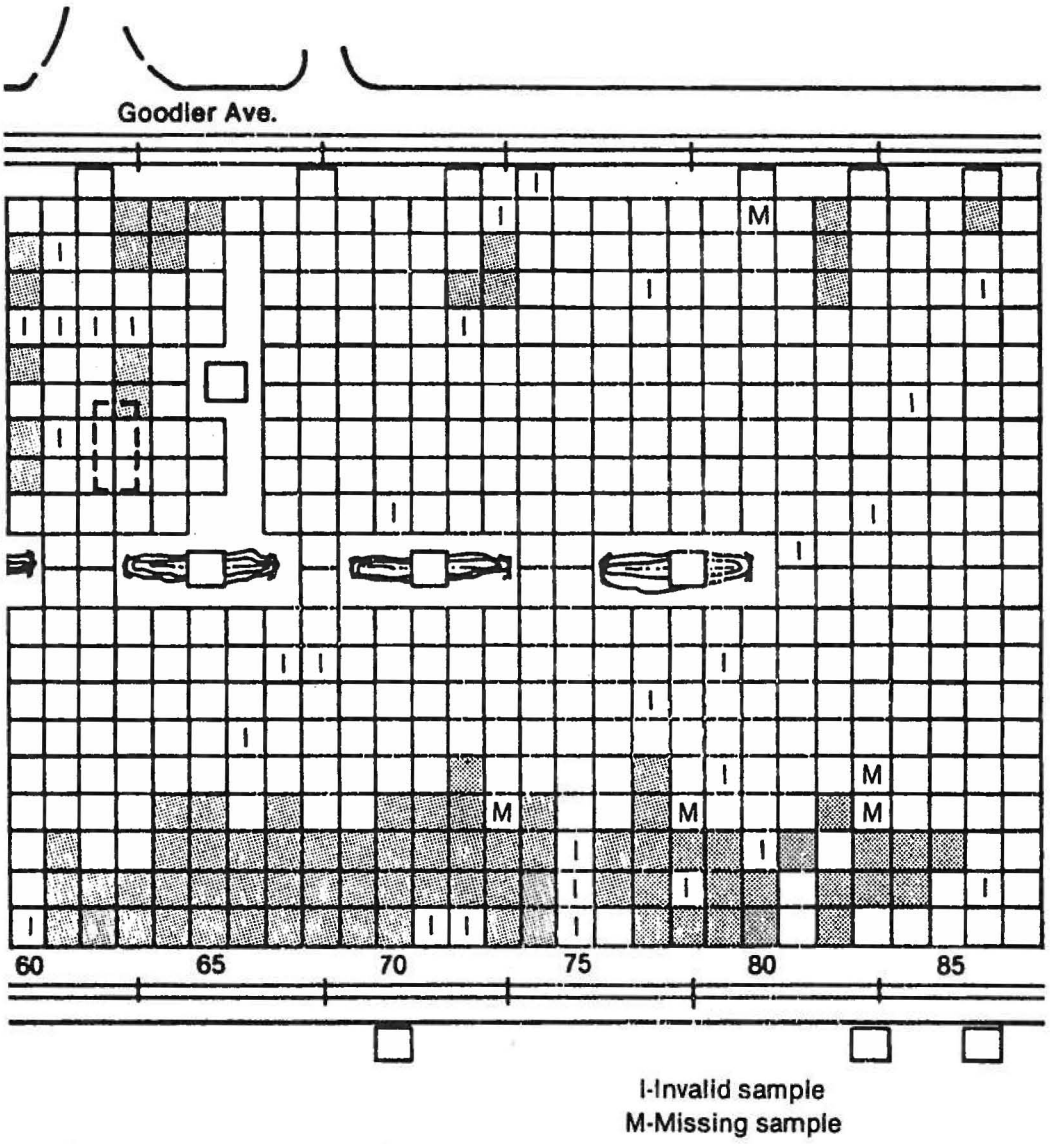


Figure 42. NCBC Original Expansion Area Plots With 65 Percent Upper Confidence Limit Exceeding 10 ppb.

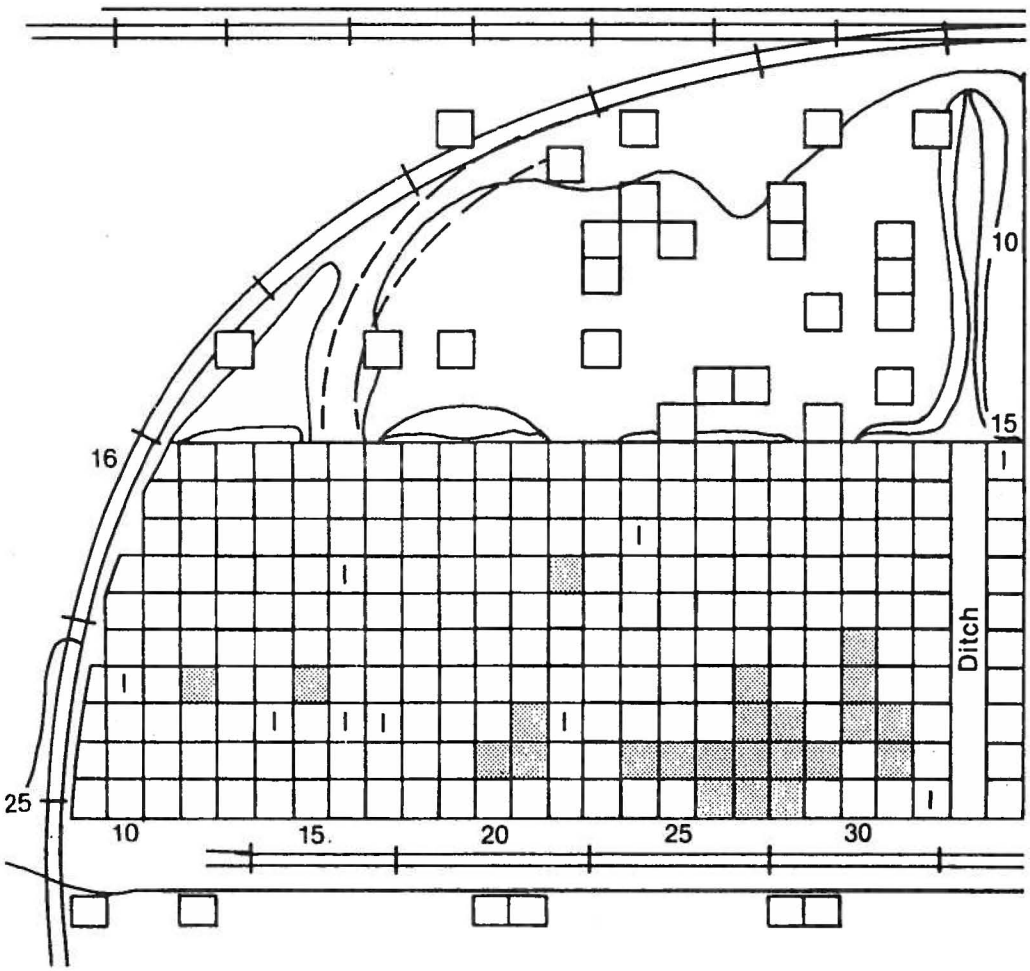


Figure 43. NCBC Expansion West Plots With 65 Percent Upper Confidence Limit Exceeding 25 ppb.

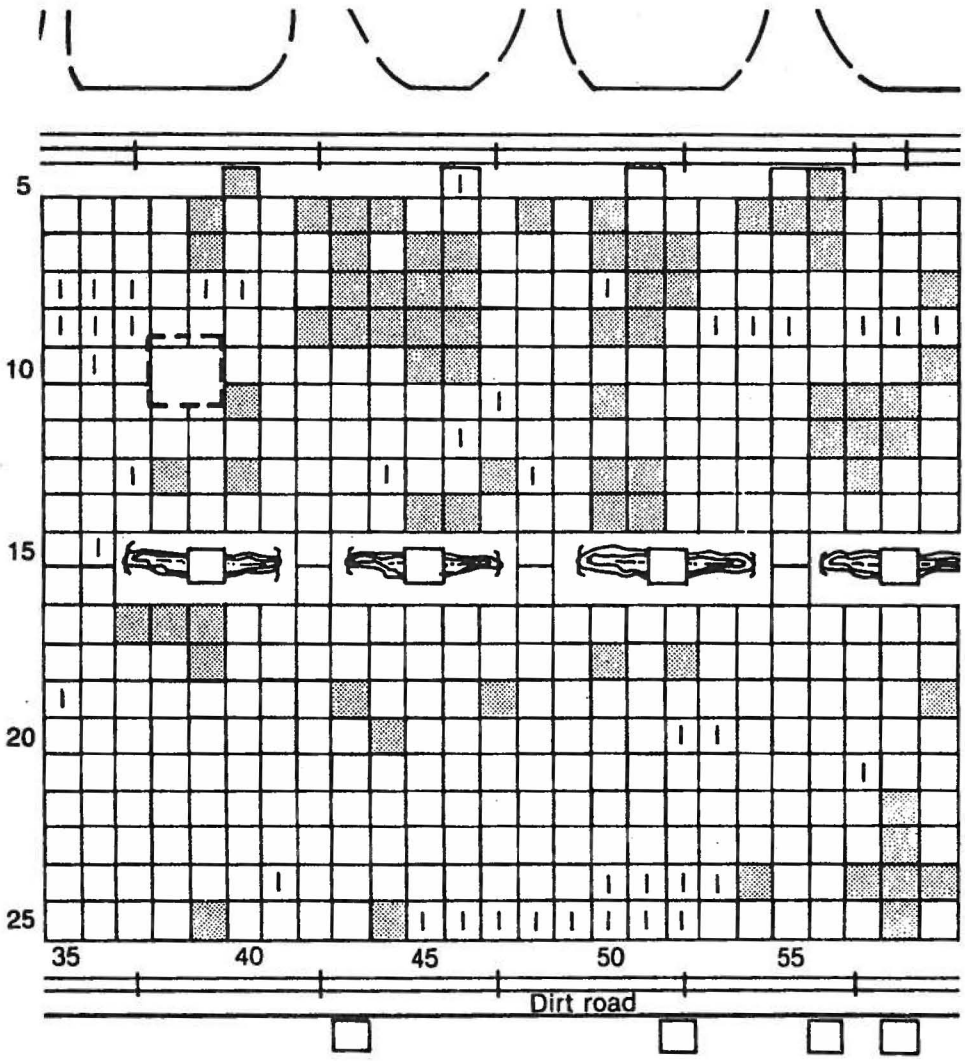


Figure 44. Original Area Plots With 65 Percent Upper Confidence Limit Exceeding 25 ppb.

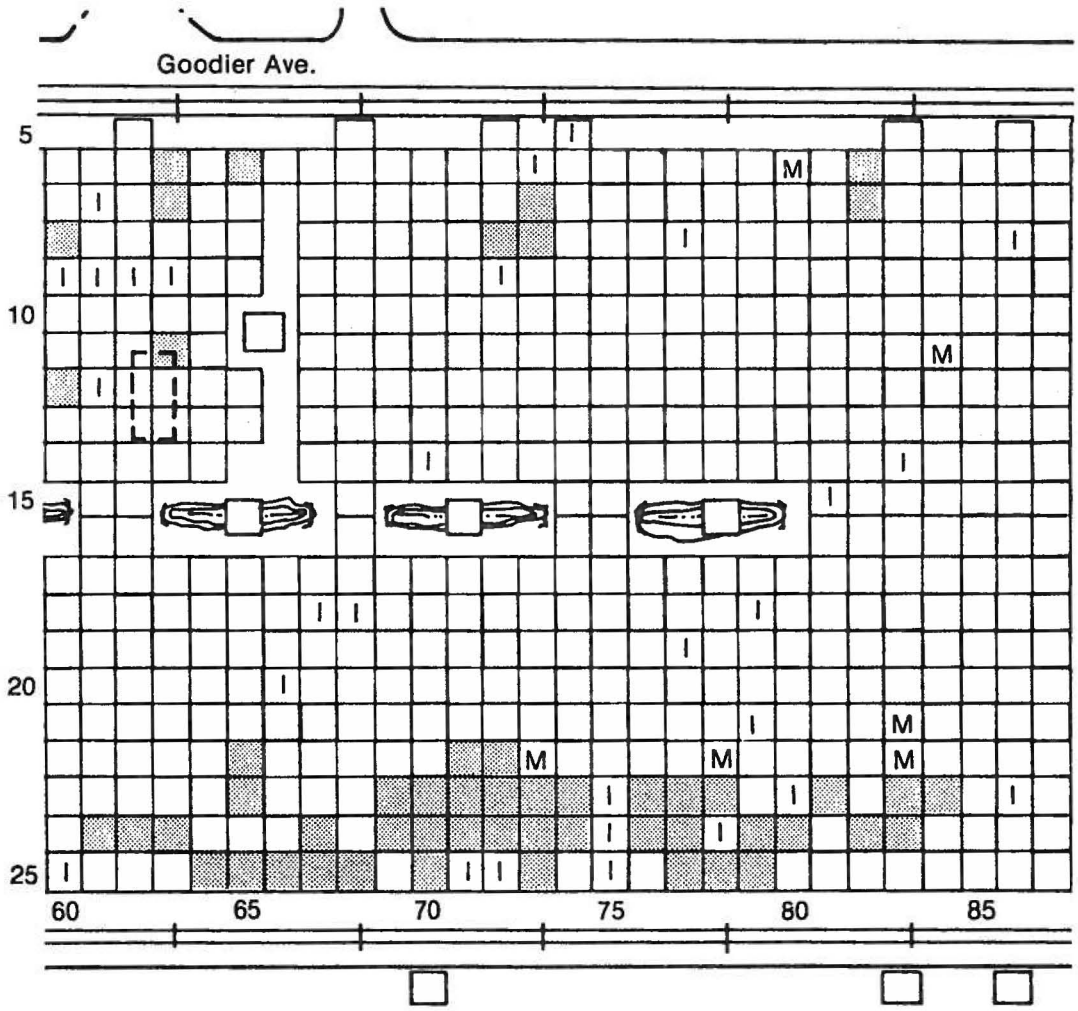


Figure 45. NCBC Original Expansion Area Plots With 65 Percent Upper Confidence Limit Exceeding 25 ppb.

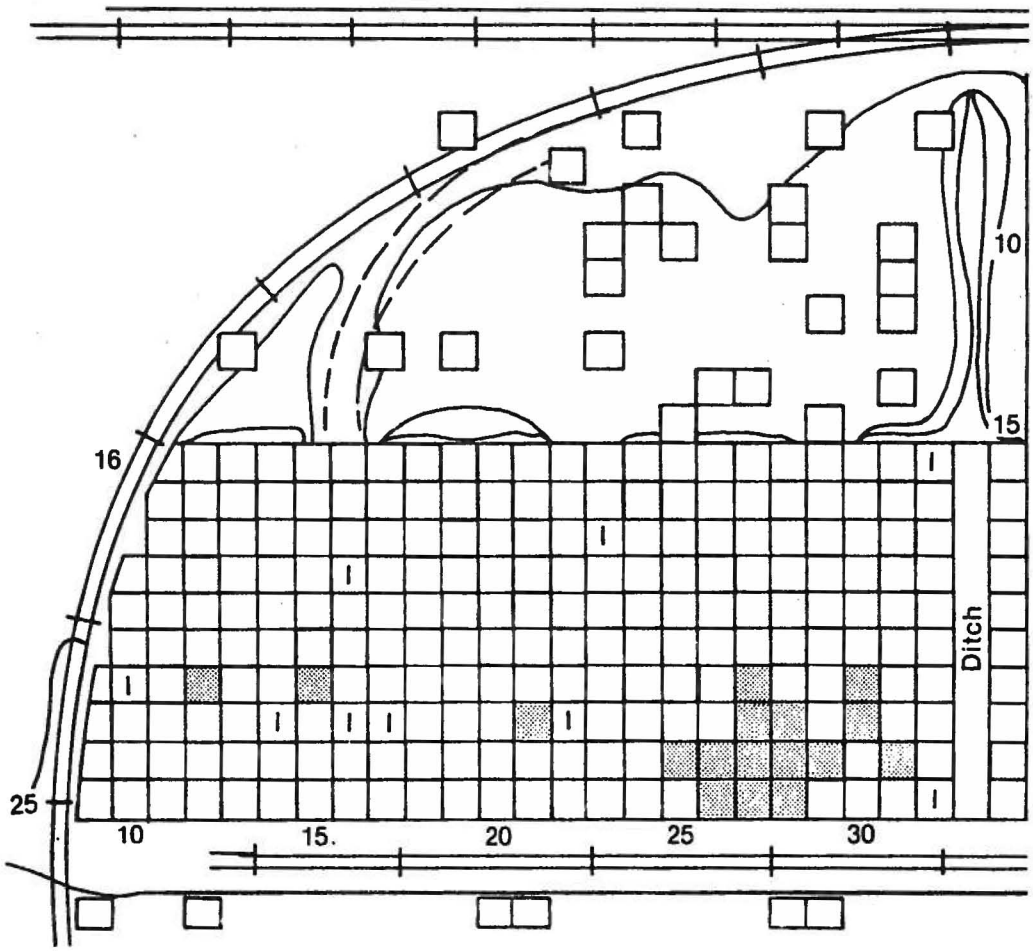


Figure 46. NCBC Expansion West Plots With 65 Percent Upper Confidence Limit Exceeding 50 ppb.

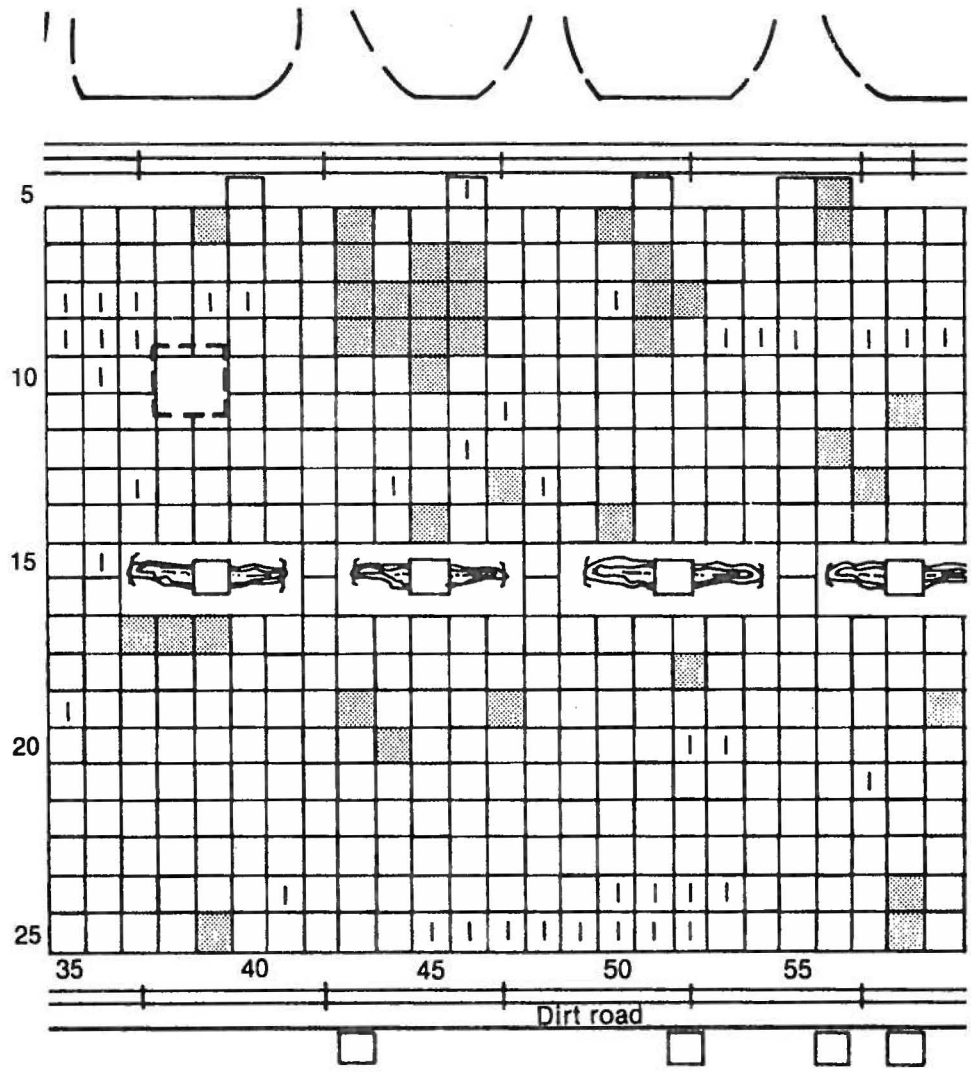


Figure 47. Original Area Plots With 65 Percent Upper Confidence Limit Exceeding 50 ppb.

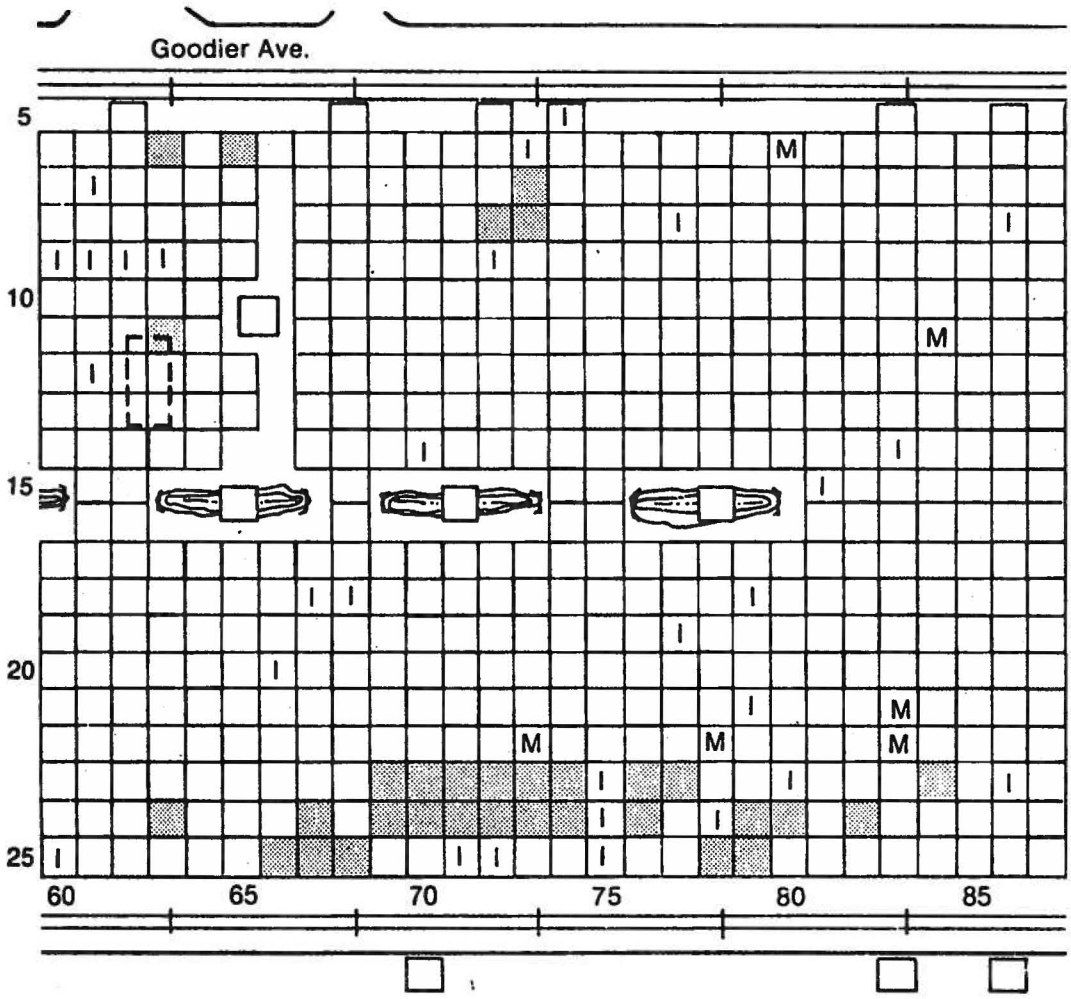


Figure 48. NCBC Original Expansion Area Plots With 65 Percent Upper Confidence Limit Exceeding 50 ppb.

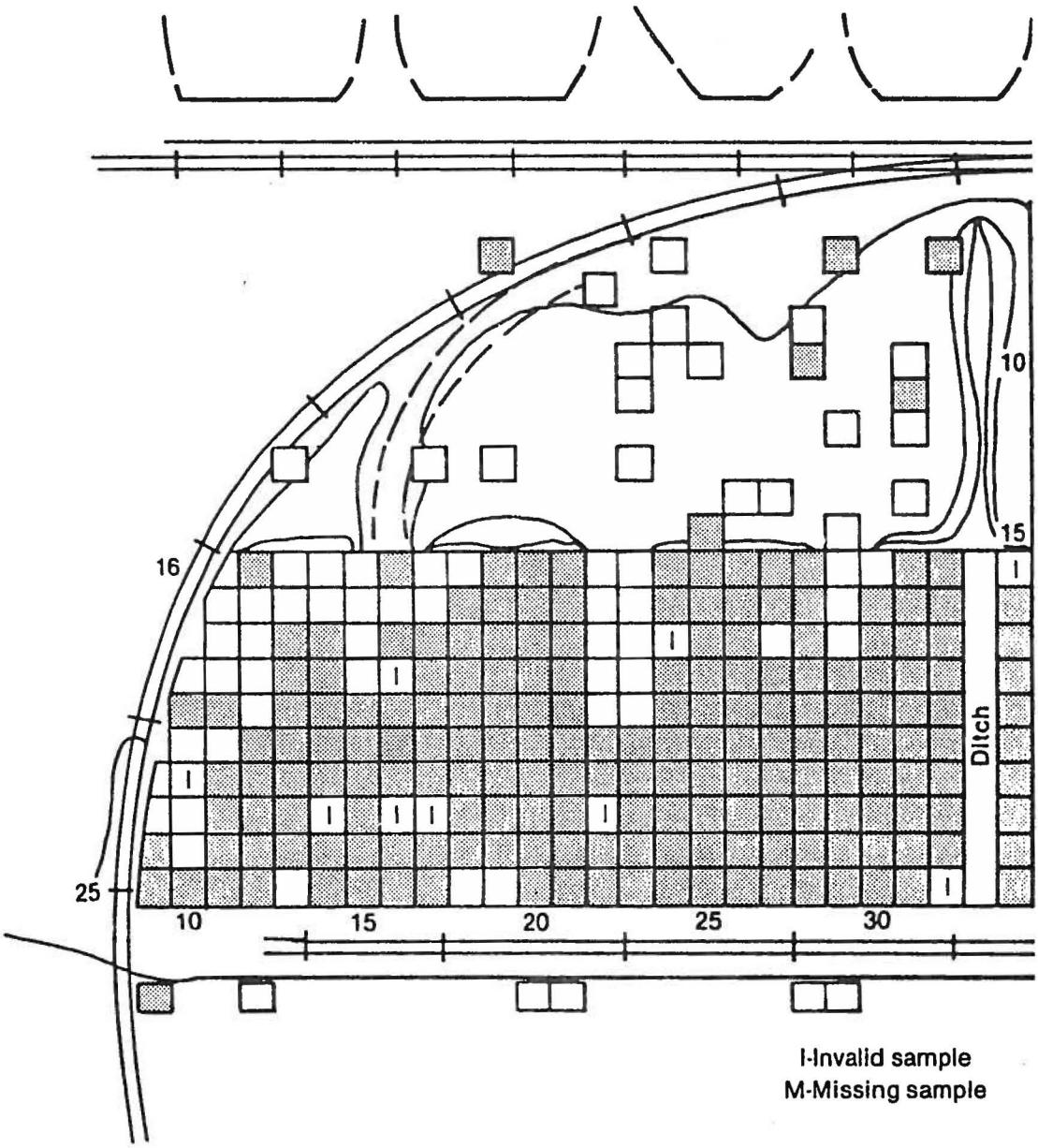


Figure 49. NCBC Expansion West Plots With 95 Percent Upper Confidence Limit Exceeding 1 ppb.

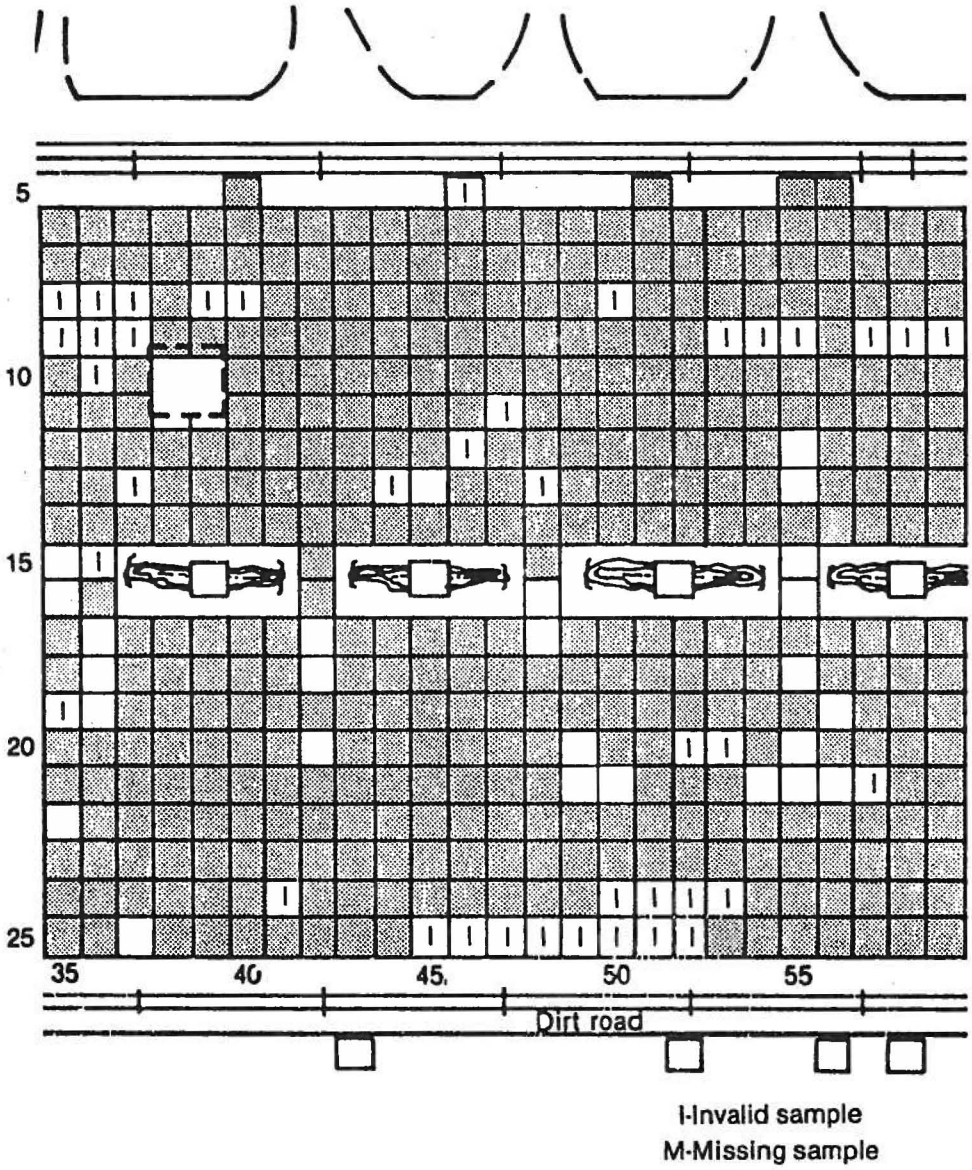


Figure 50. NCBC Original Area Plots With 95 Percent Upper Confidence Limit Exceeding 1 ppb.

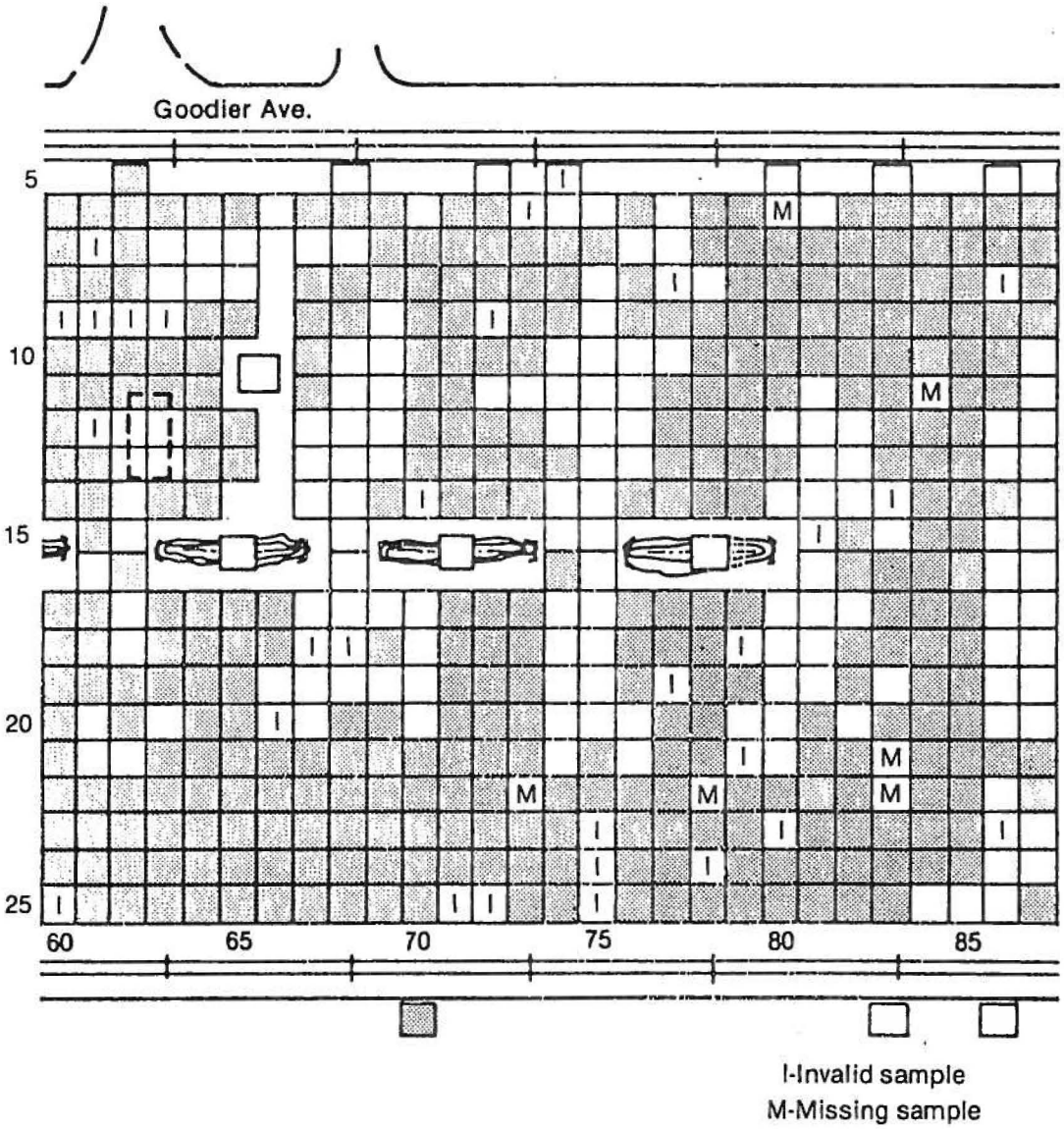


Figure 51. NCBC Original Expansion Area Plots With 95 Percent Upper Confidence Limit Exceeding 1 ppb.

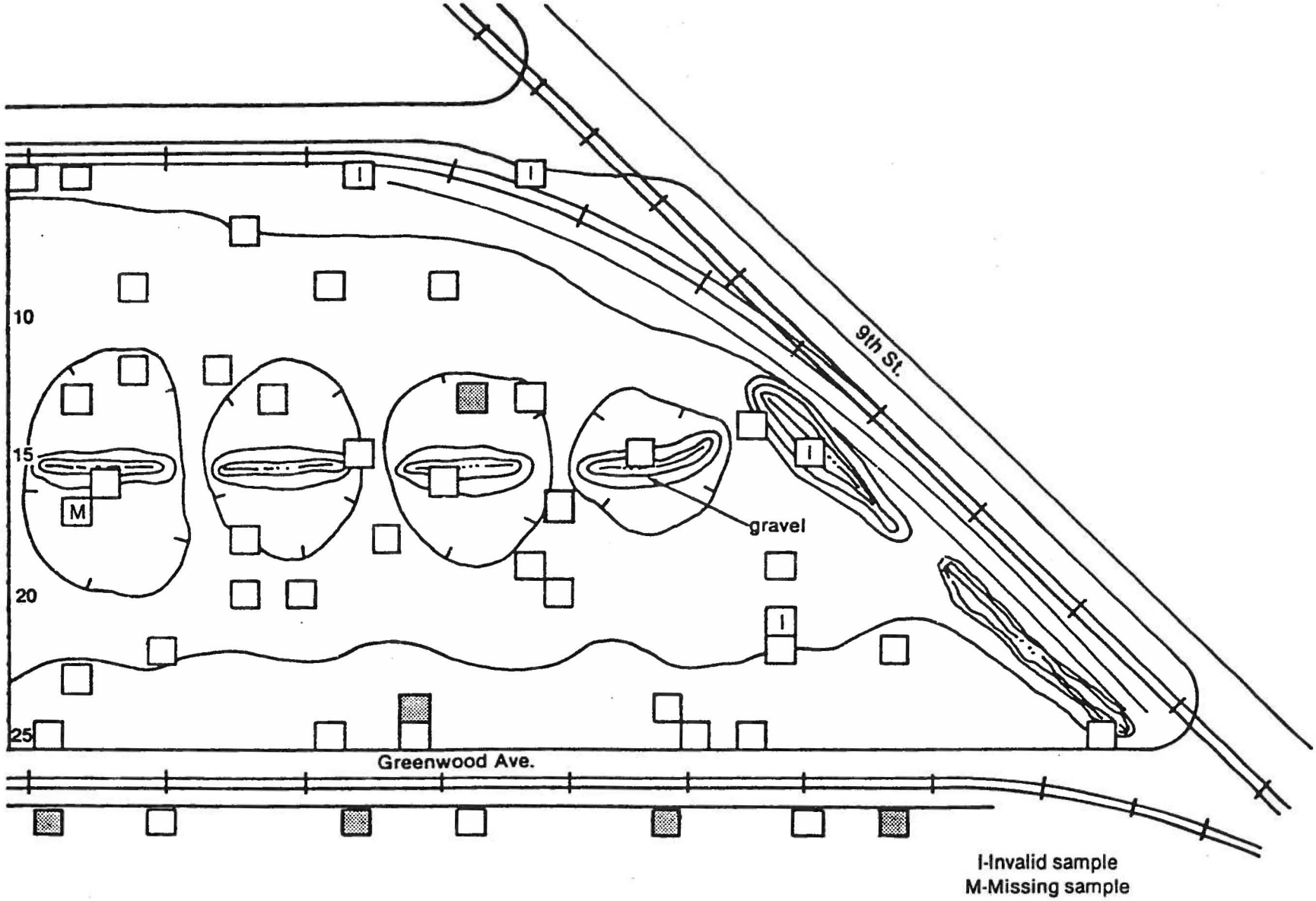


Figure 52. NCBC Expansion East Plots With 95 Percent Upper Confidence Limit Exceeding 1 ppb.

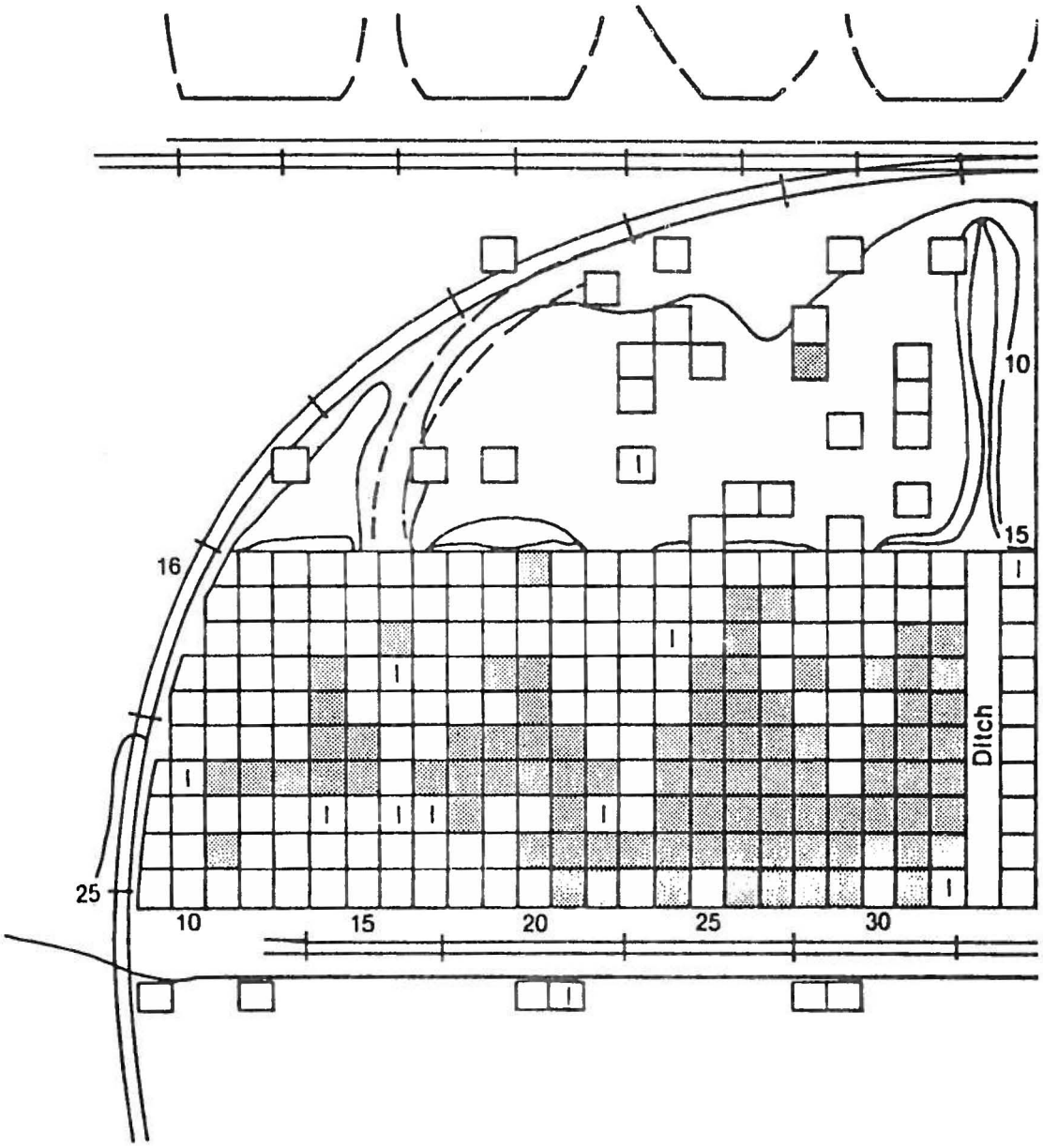


Figure 53. NCBC Expansion Area West Plots With 95 Percent Upper Confidence Limit Exceeding 10 ppb.

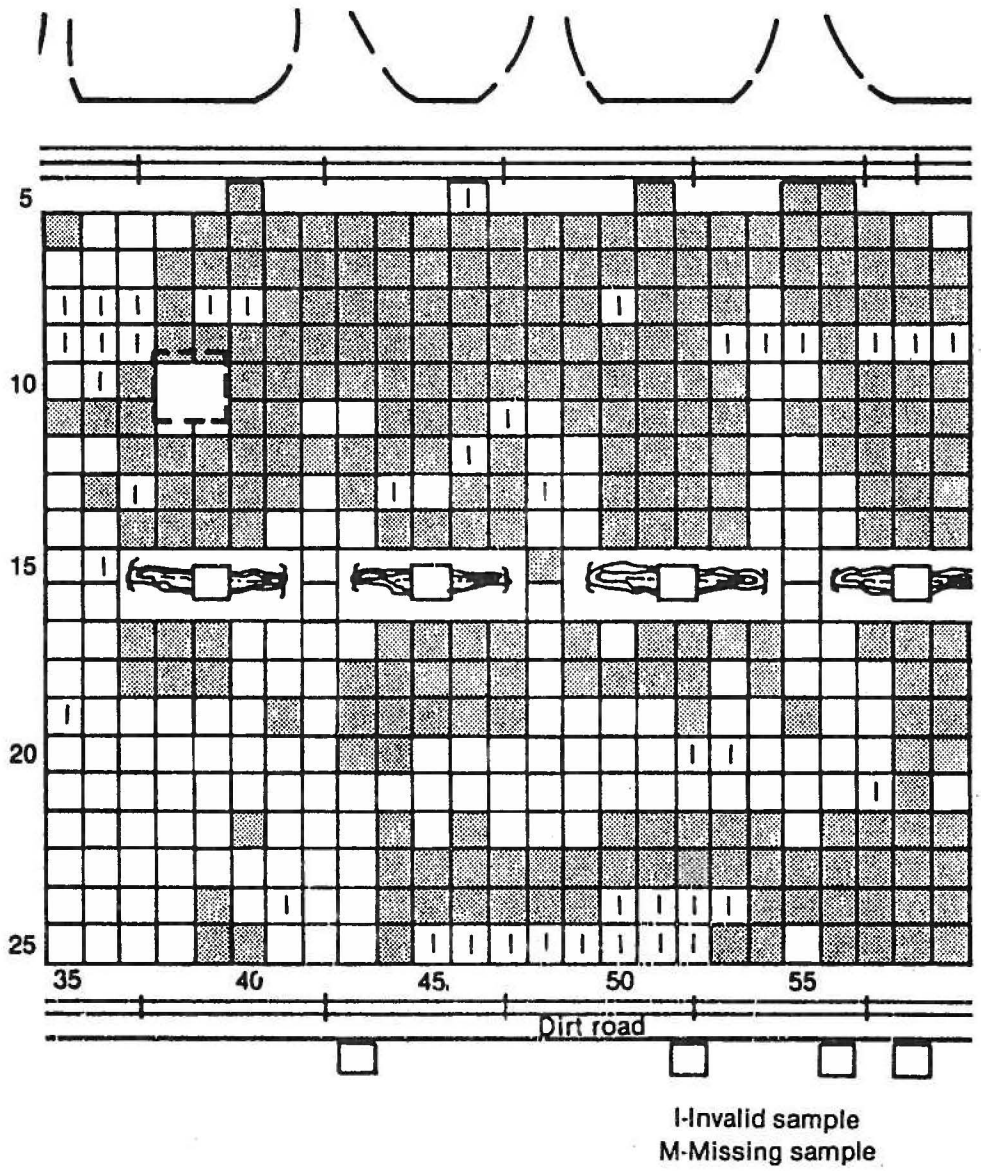


Figure 54. NCBC Original Area Plots With 95 Percent Upper Confidence Limit Exceeding 10 ppb.

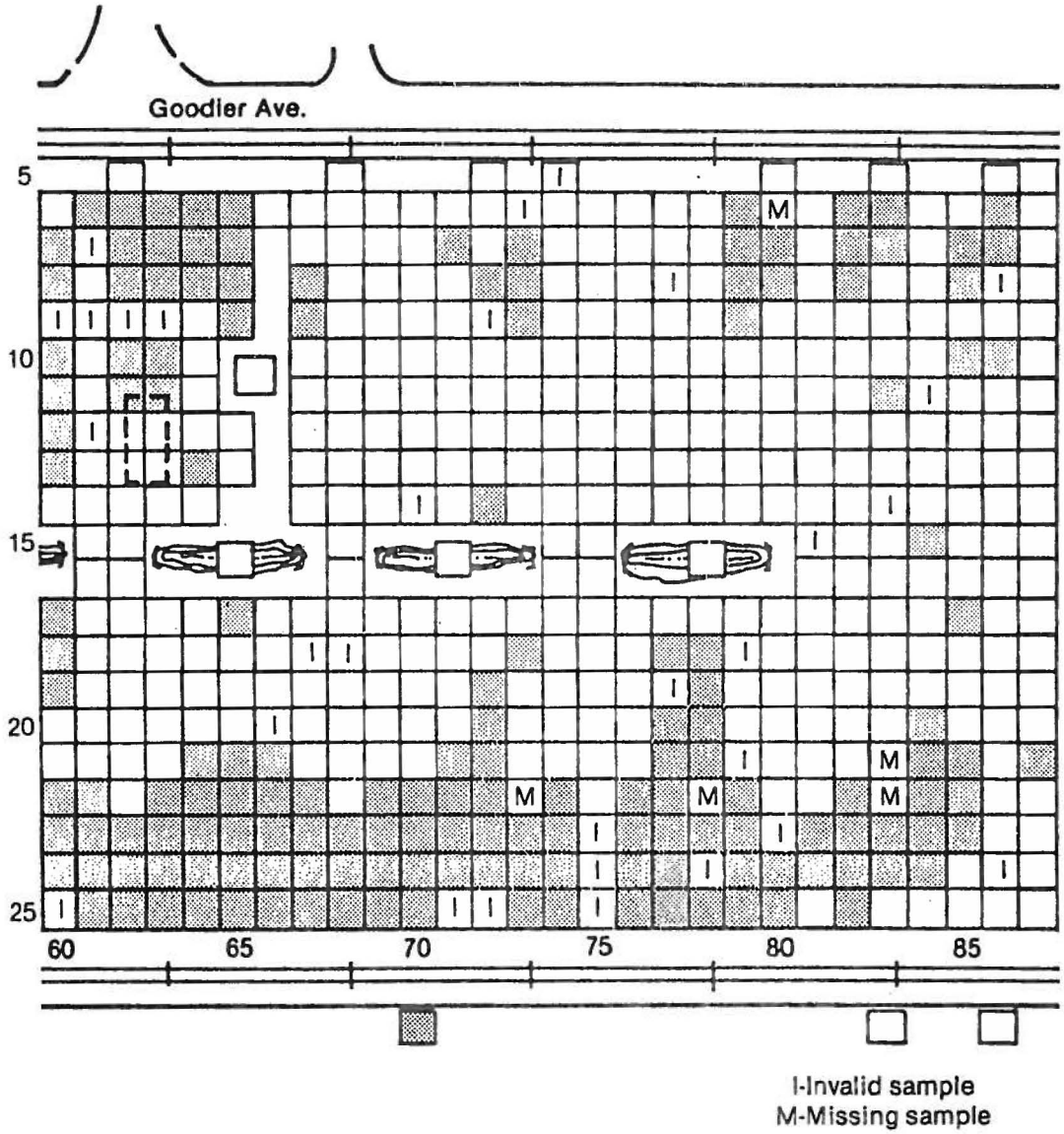


Figure 55. NCBC Original Expansion Area Plots With 95 Percent Upper Confidence Limit Exceeding 10 ppb.

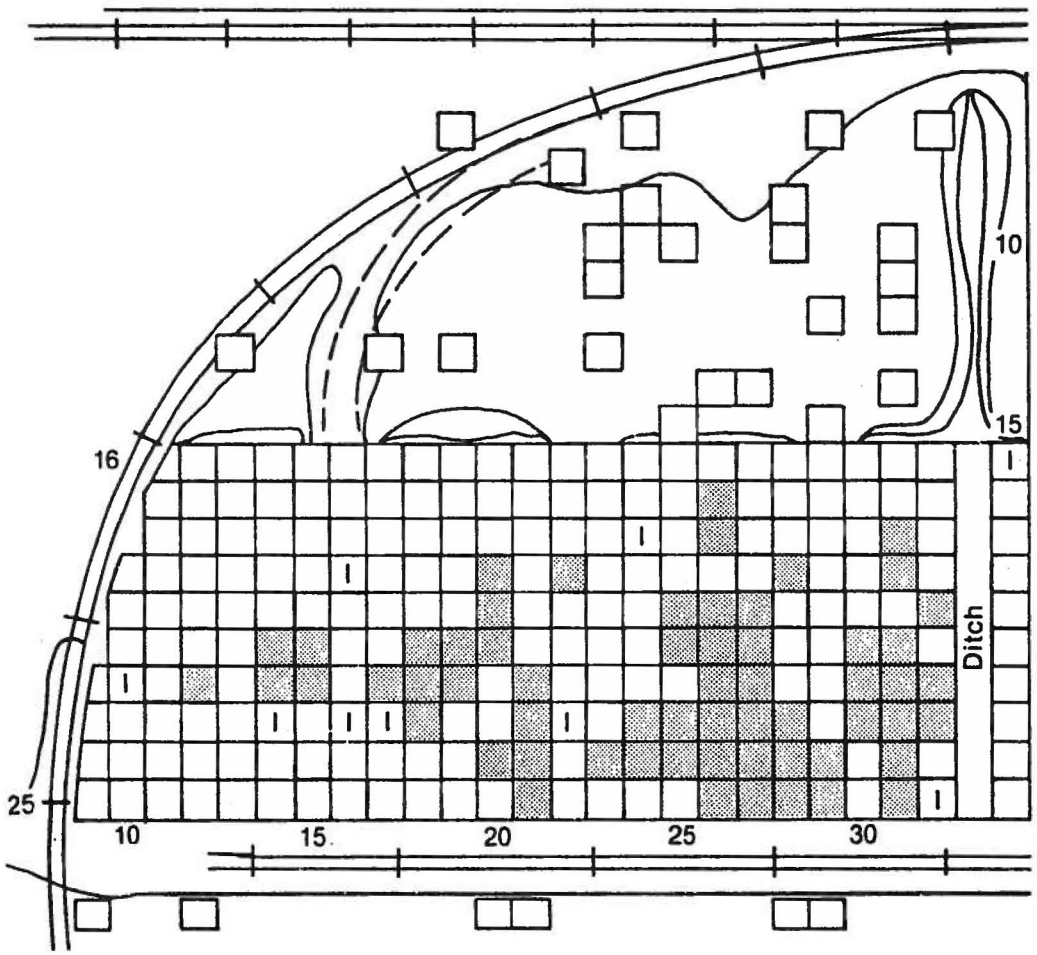


Figure 56. NCBC Expansion Area West Plots With 95 Percent Upper Confidence Limit Exceeding 25 ppb.

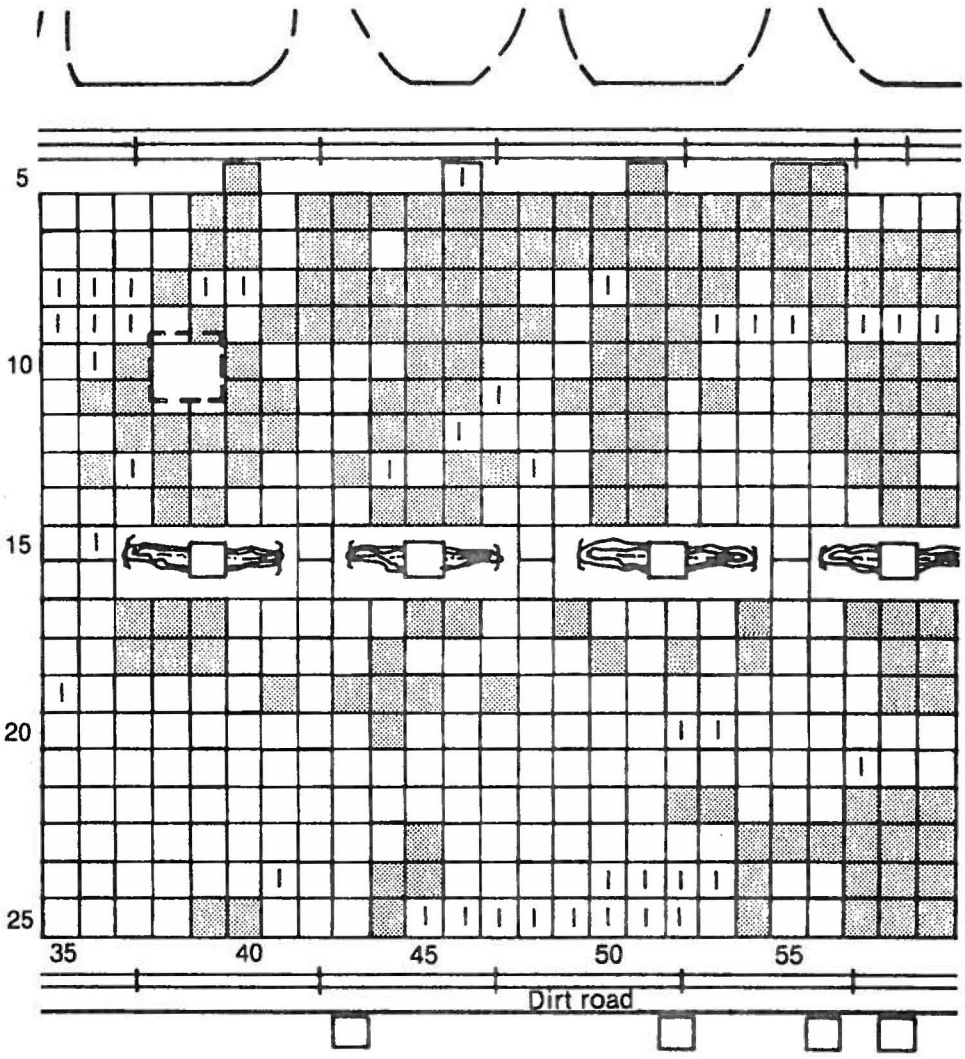


Figure 57. NCBC Original Area Plots With 95 Percent Upper Confidence Limit Exceeding 25 ppb.

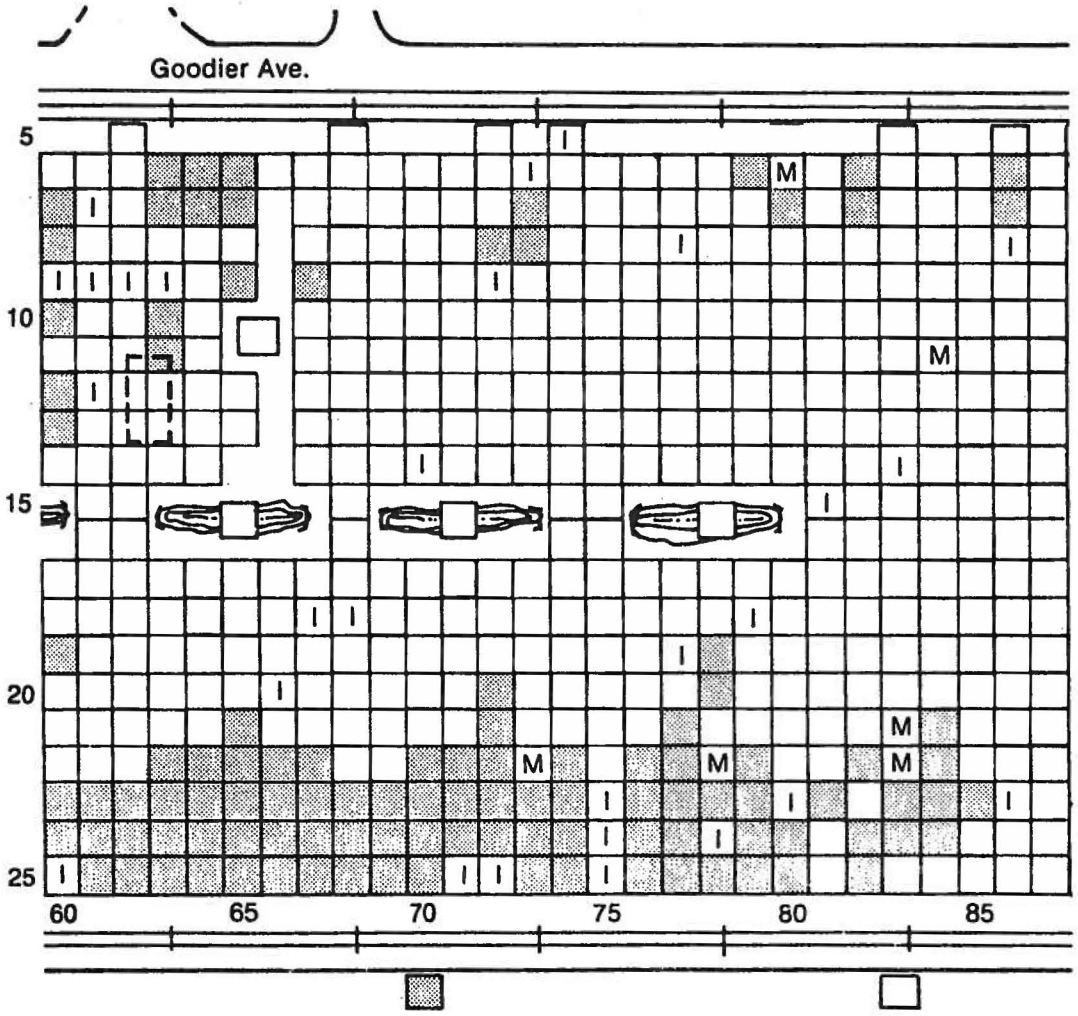


Figure 58. NCBC Original Expansion Area Plots With 95 Percent Upper Confidence Limit Exceeding 25 ppb.

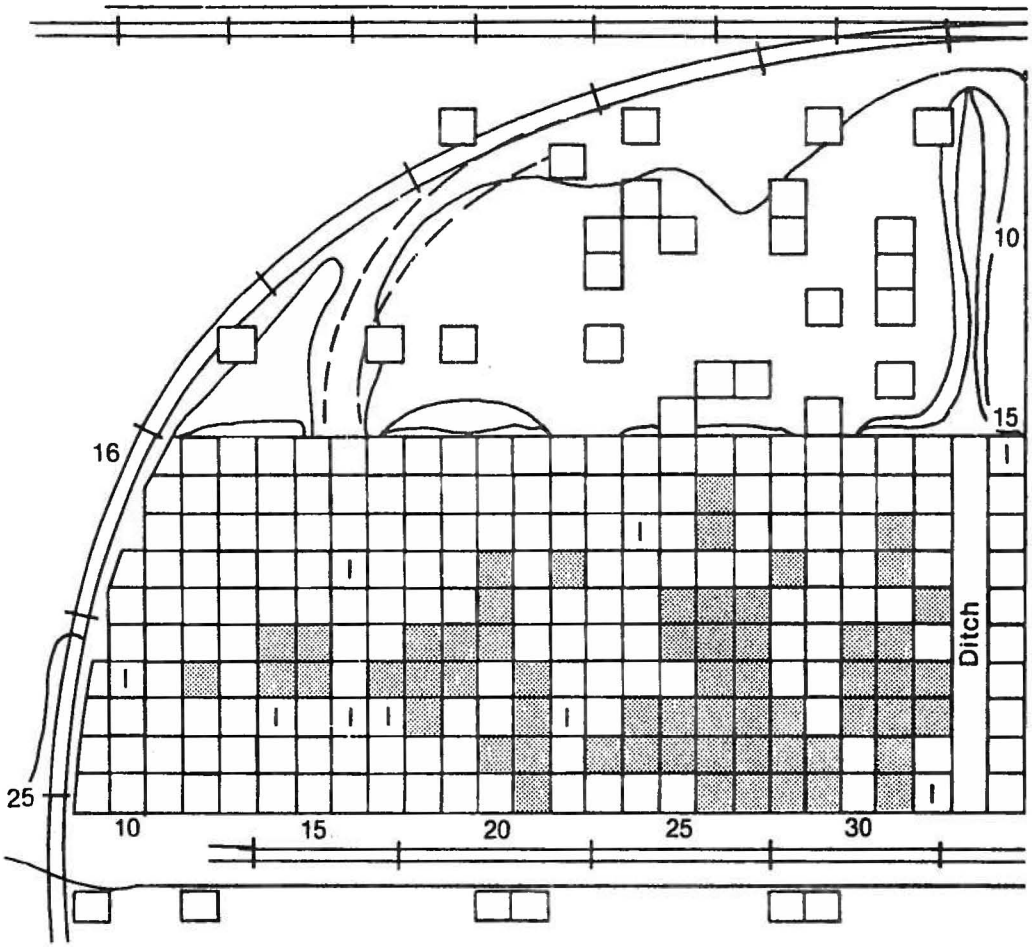


Figure 59. NCBC Expansion Area West Plots With 95 Percent Upper Confidence Limit Exceeding 50 ppb.

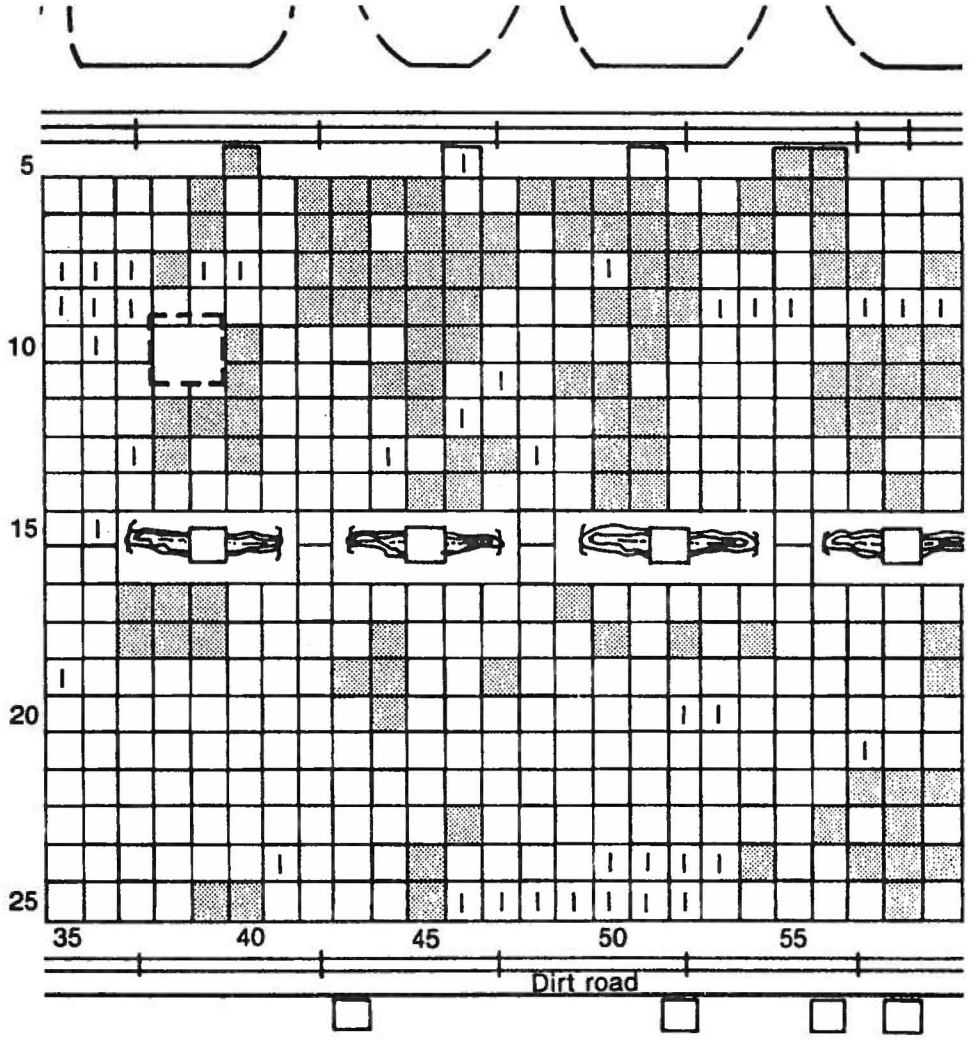


Figure 60. NCBC Original Area Plots With 95 Percent Upper Confidence Limit Exceeding 50 ppb.

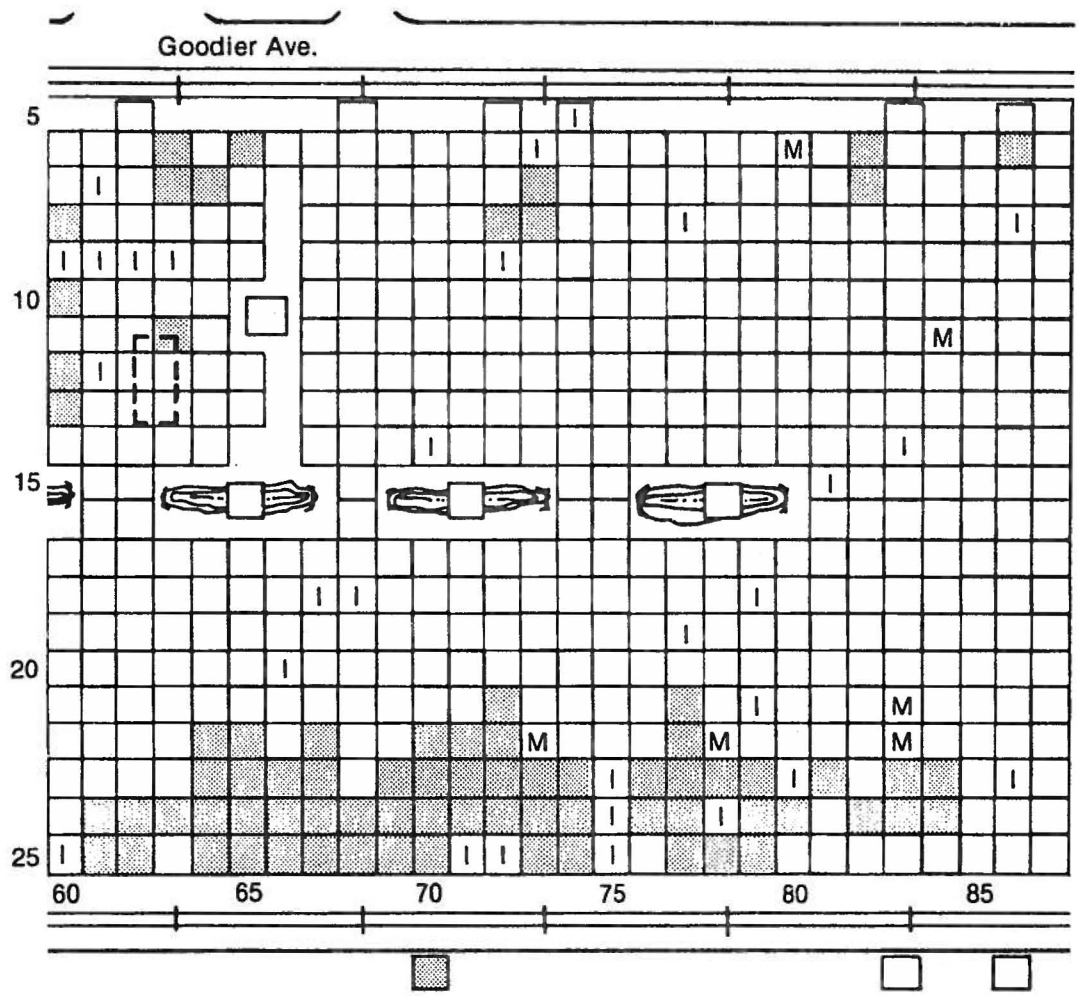


Figure 61. NCBC Original Expansion Area Plots With 95 Percent Upper Confidence Limit Exceeding 50 ppb.

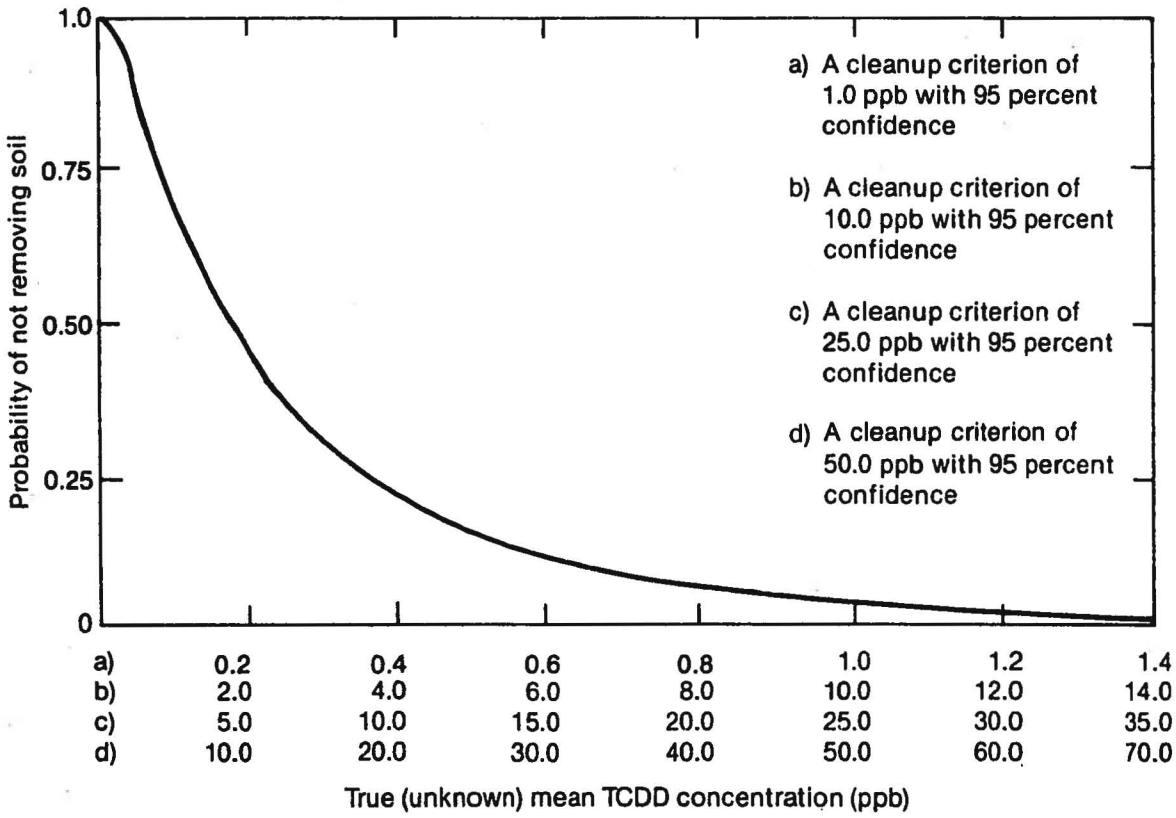


Figure 62. Probability of Not Removing Soil From the Plot With Cleanup Criteria of 1.0, 10.0, 25.0, and 50.0 ppb with 95 Percent Confidence.

TABLE 20. NEAR-SURFACE SAMPLING SUMMARY EXCLUDING INVALID RESULTS

Parameter	Depth			
	Surface	Soil/Cement	0-3 Inches (Below Soil/Cement)	3-7 Inches (Below Soil/Cement)
Number of samples[a,b]	31	32	33	33
Arithmetic mean (ppb)	65.5	62.3	16.8	8.4
Arithmetic standard deviation (ppb)	100.5	182.7	39.1	21.3
Median (ppb)	17.9	2.5	2.0	0.59
Maximum (ppb)	425	998	147	95.5
Geometric mean (ppb)	24.9	4.0	1.4	1.0
Geometric standard deviation (ppb)	4.5	11.9	13.5	7.8

a. Excludes possible invalid results.

b. Less than detectables replaced by reporting limit.

TABLE 21. NEAR-SURFACE SAMPLING SUMMARY INCLUDING INVALID RESULTS

Parameter	Depth			
	Surface	Soil/Cement	0-3 Inches (Below Soil/Cement)	3-7 Inches (Below Soil/Cement)
Number of samples[a,b]	35	35	35	35
Arithmetic mean (ppb)	89.0	72.5	16.3	17.5
Arithmetic standard deviation (ppb)	129.0	181.9	38.0	55.8
Median (ppb)	21.1	2.8	2.0	0.59
Maximum (ppb)	432.0	998	147	315
Geometric mean (ppb)	30.7	5.1	1.4	1.3
Geometric standard deviation (ppb)	4.95	13.0	12.9	9.6

a. Includes possible invalid results.

b. Less than detectables replaced by reporting limit.

are high values. The summary indicates a drop in TCDD concentrations below the soil/cement, although there are still validated samples as high as 95.5 at 1 foot below the soil/cement.

Subsurface sampling results are summarized in Tables 22 and 23. Again, there is indication of decreasing TCDD concentrations with geometric means of 0.03 ppb and 0.04 ppb at 3 feet and 4 feet, respectively, below soil/cement.

Several locations, however, have consistently higher concentrations at depth. Location 2372 has a result of 5.1 ppb at 4 feet below the soil/cement, and location 2527 has 2.0 ppb at 4 feet.

B. HERBICIDE ORANGE

All subsurface samples were analyzed for Herbicide Orange (2,4-D and 2,4,5-T). The results are presented in Appendix A. Depth profiles for each location are given in Figures 63 through 77.

These profiles indicate that, except for the increase at the soil/cement level, HO concentrations decrease with depth. This follows the tendency of the TCDD concentrations to decrease with depth, with the exception of locations 2372 and 2527. The concentrations at these two locations remain within a limited range.

TABLE 22. SUBSURFACE SAMPLING SUMMARY EXCLUDING INVALID RESULTS

Depth	Number[a] of Samples	Maximum	Arithmetic Mean (ppb)	Arithmetic Standard Deviation (ppb)	Geometric Mean (ppb)	Geometric Standard Deviation (ppb)
Surface	13	646	135.6	222.5	28.4	8.7
Soil/cement	15	482	86.1	171.1	5.7	15.8
0-3 inches (below soil/cement)	12	307	43.0	90.4	3.9	12.9
3-7 inches (below soil/cement)	14	93.2	14.6	30.4	1.5	10.6
7-12 inches (below soil/cement)	15	11.6	1.7	3.6	0.20	8.8
24 inches (below soil/cement)	15	8.0	1.0	2.3	0.06	10.1
36 inches (below soil/cement)	15	3.4	0.31	0.88	0.03	6.4
48 inches (below soil/cement)	15	5.1	0.62	1.4	0.04	9.4

a. Excludes possible invalid results.

b. Less than detectables replaced by the reporting limit.

TABLE 23. SUBSURFACE SAMPLING SUMMARY INCLUDING INVALID RESULTS

Depth	Number[a] of Samples	Maximum (ppb)	Arithmetic Mean (ppb)	Arithmetic Standard Deviation (ppb)	Geometric Mean (ppb)	Geometric Standard Deviation (ppb)
Surface	14	646	127.4	215.9	27.8	8.0
Soil/cement	15	482	86.1	171.1	5.7	15.8
0-3 inches (below soil/cement)	15	307	51.7	99.7	2.6	24.0
3-7 inches (below soil/cement)	15	93.2	14.4	29.3	1.7	10.3
7-12 inches (below soil/cement)	15	11.6	1.7	3.6	0.20	8.8
24 inches (below soil/cement)	15	8.0	1.0	2.3	0.06	10.1
36 inches (below soil/cement)	15	3.4	0.31	0.88	0.03	6.4
48 inches (below soil/cement)	15	5.1	0.62	1.4	0.04	9.4

a. Includes possible invalid results.

b. Less than detectables replaced by the reporting limit.

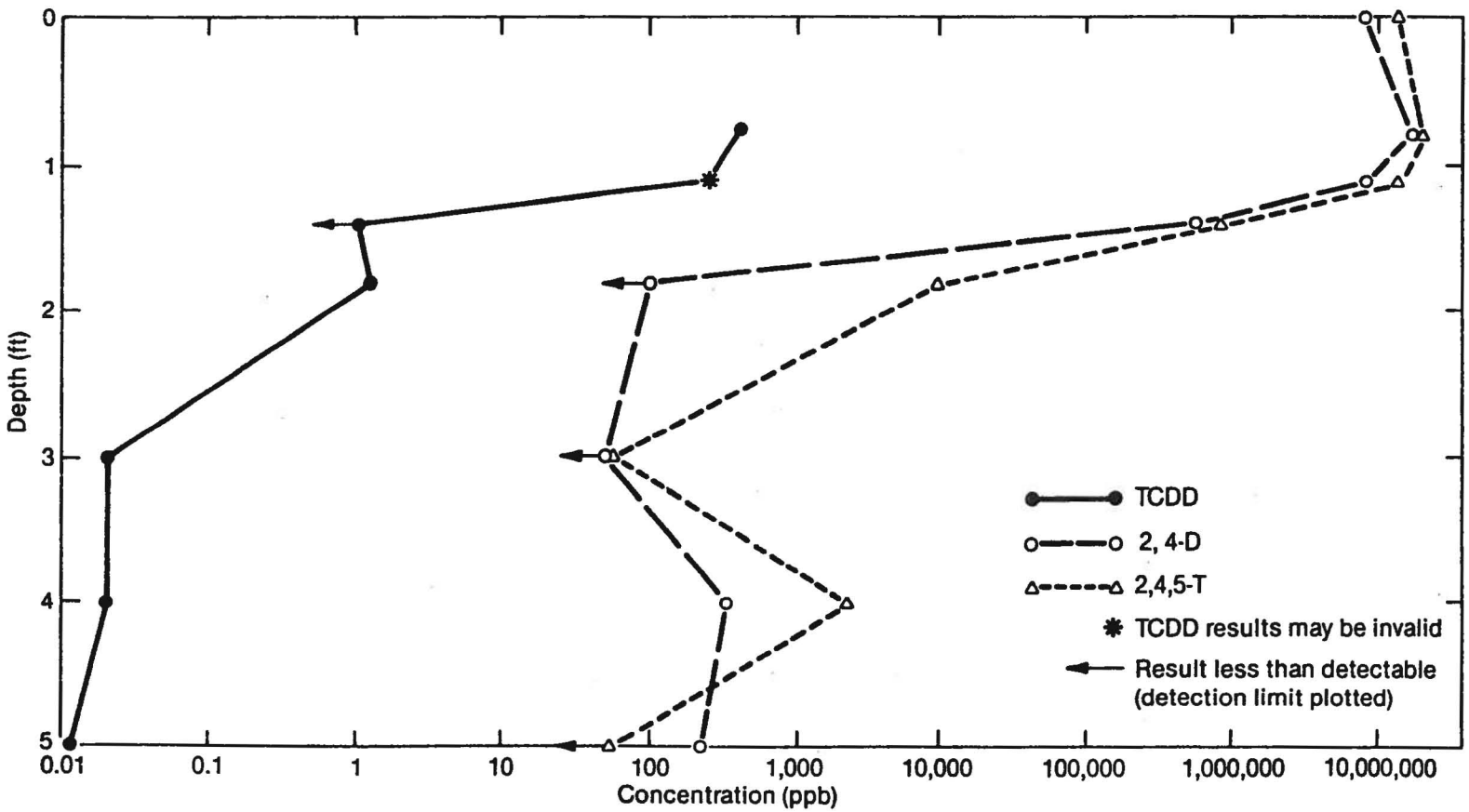


Figure 68. NCBC Herbicide Orange Depth Profile, Location 0639.

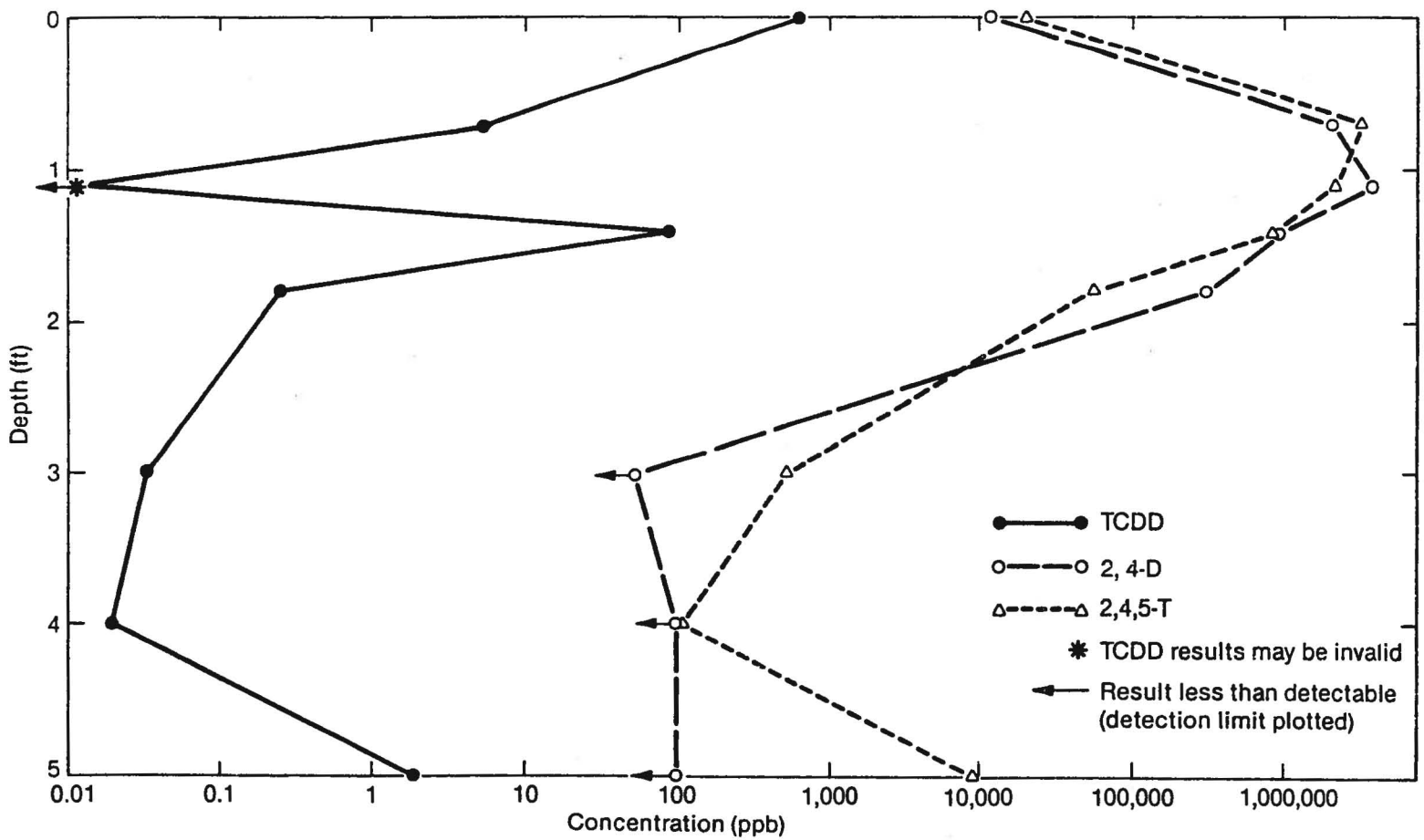


Figure 69. NCBC Herbicide Orange Depth Profile, Location 0643.

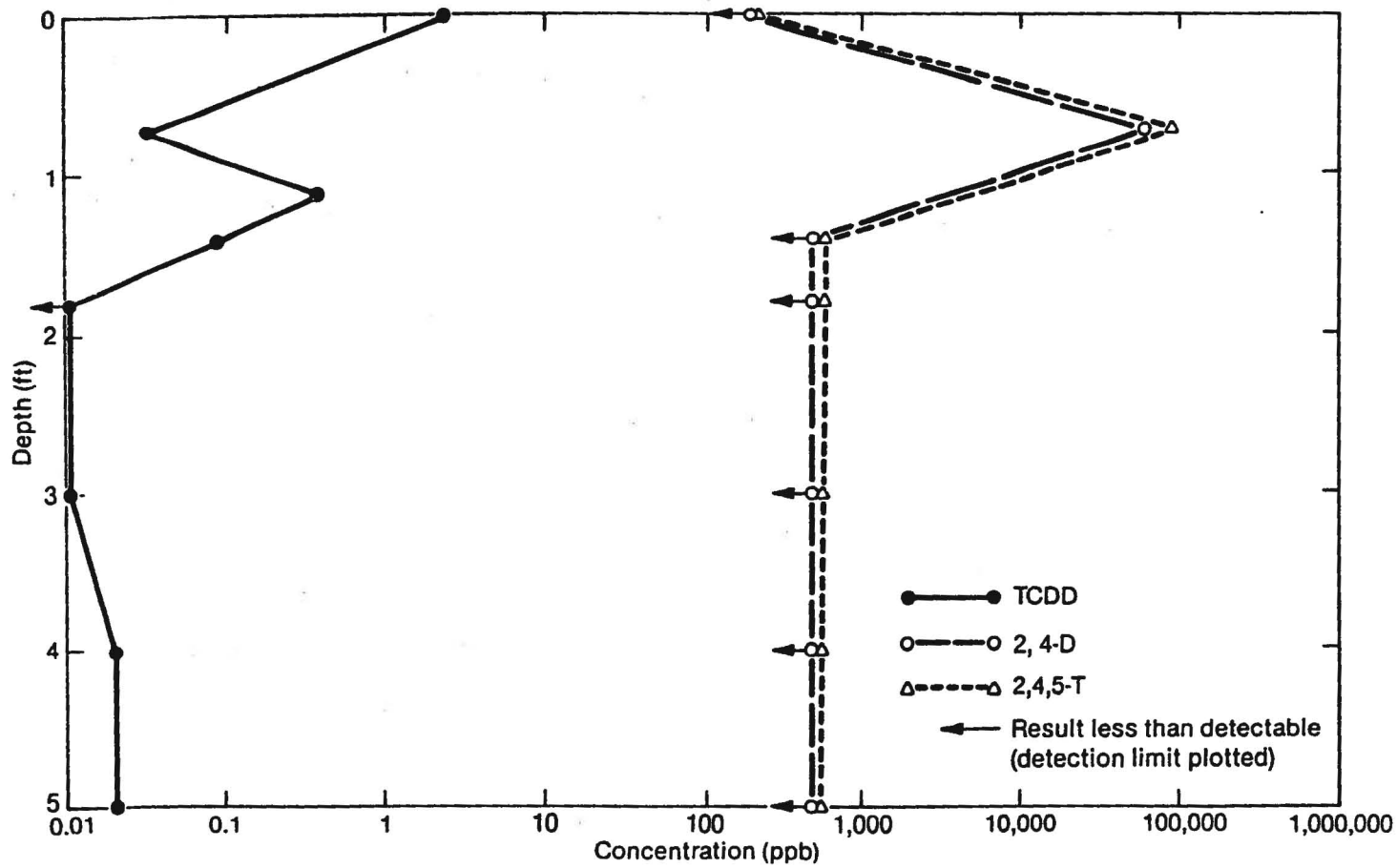


Figure 65. NCBC Herbicide Orange Depth Profile, Location 2030.

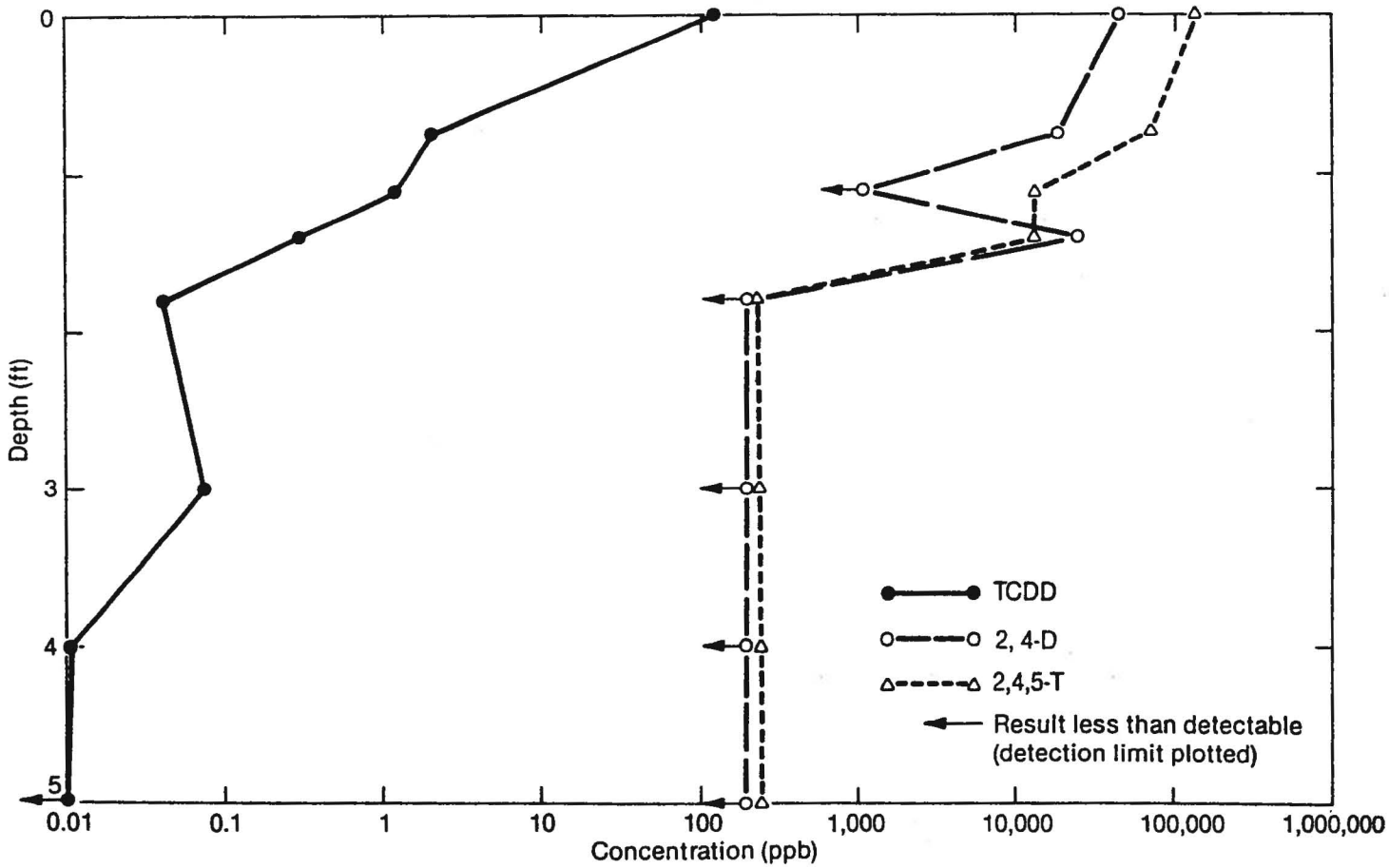


Figure 66. NCBC Herbicide Orange Depth Profile, Location 2312.

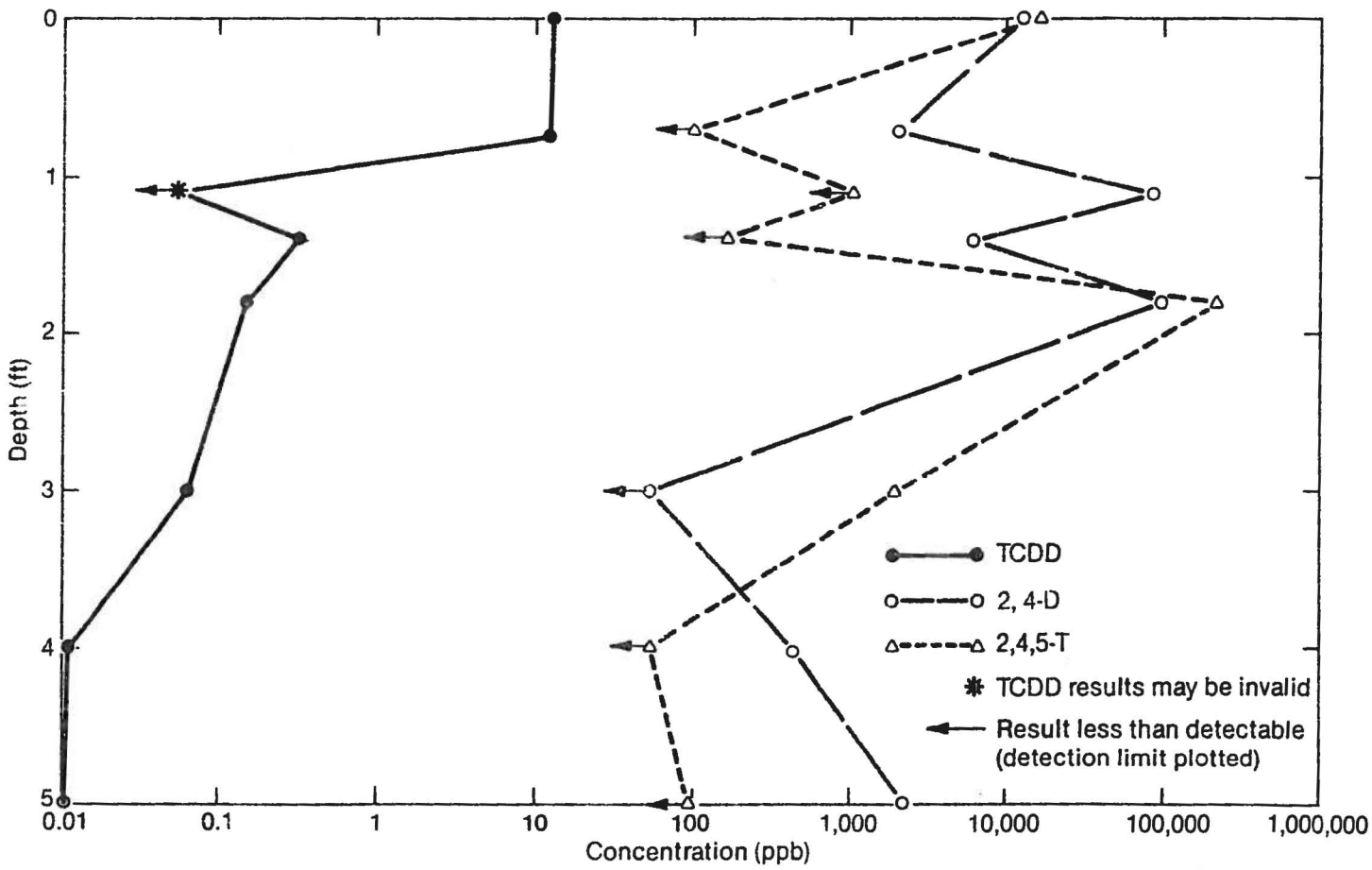


Figure 67. NCBC Herbicide Orange Depth Profile, Location 2328.

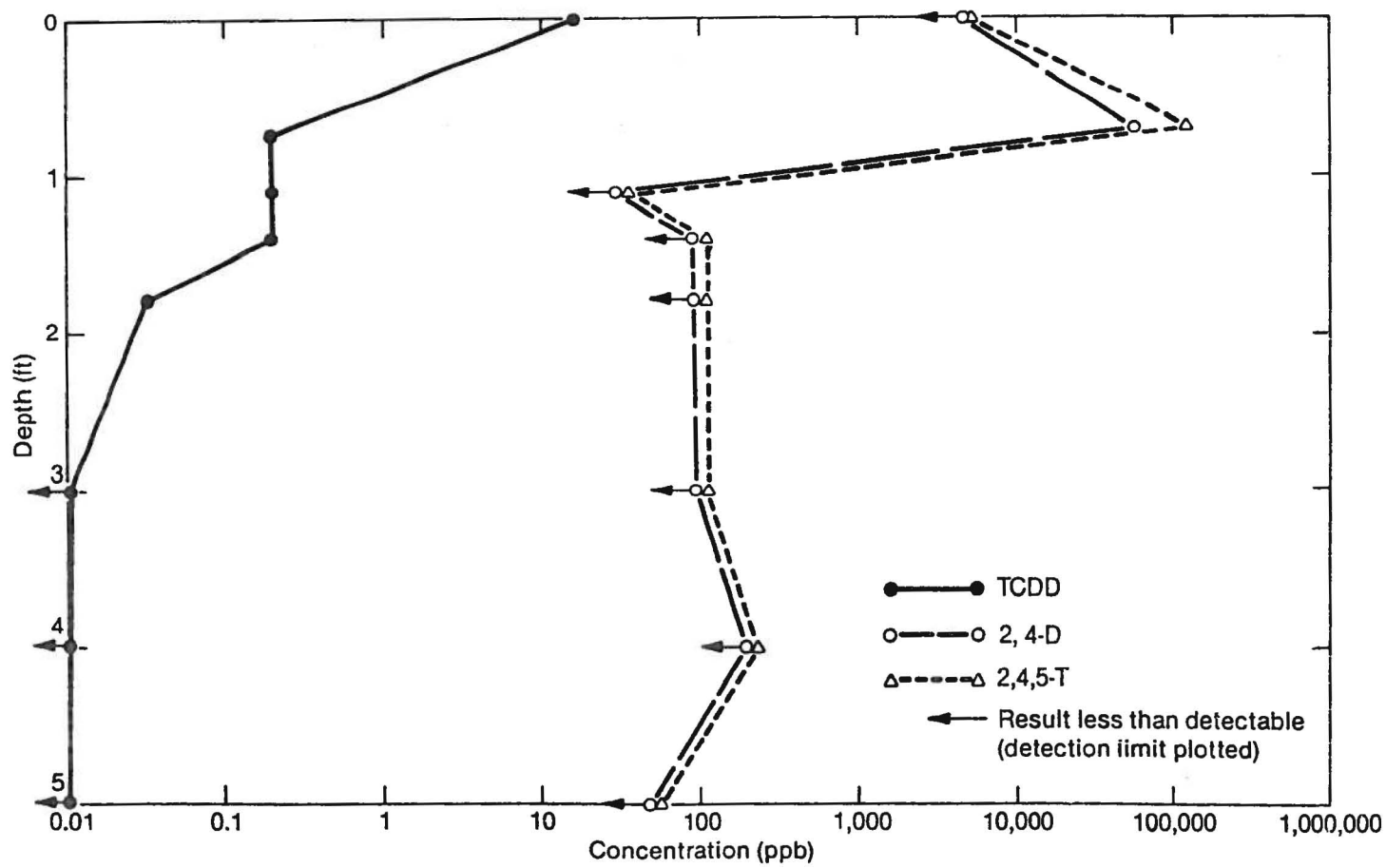


Figure 68. NCBC Herbicide Orange Depth Profile, Location 2369.

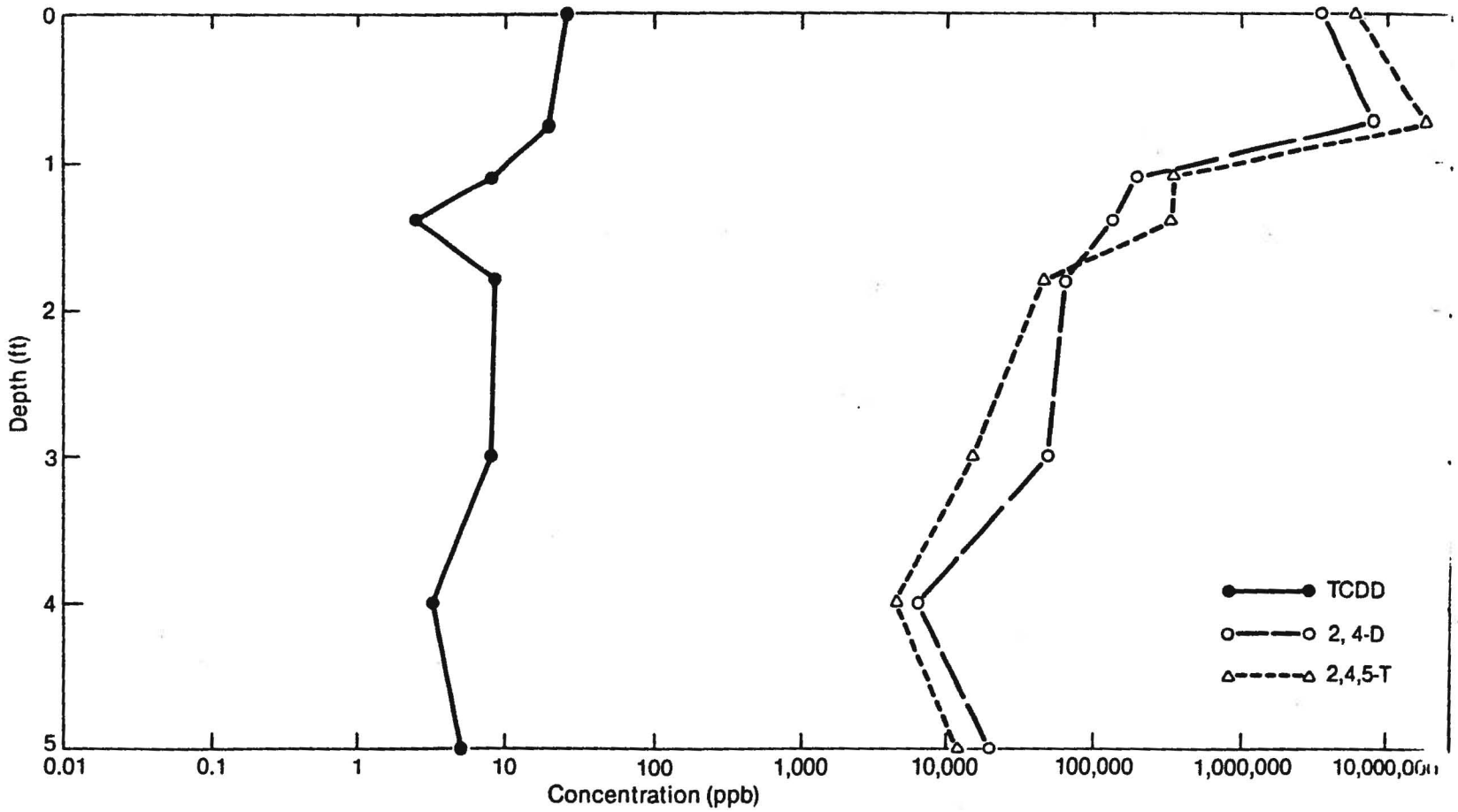


Figure 69. NCBC Herbicide Orange Depth Profile, Location 2372.

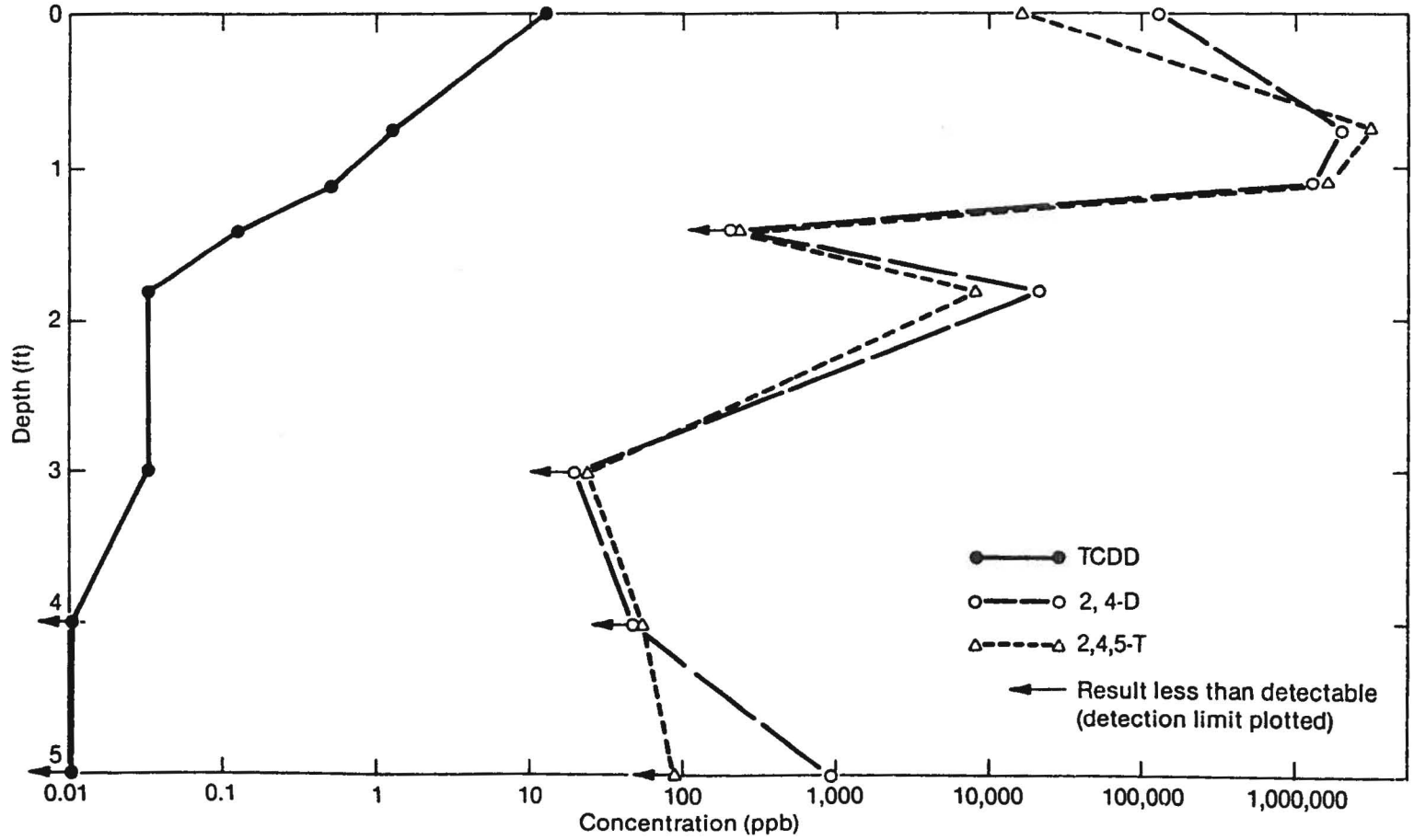


Figure 70. NCBC Herbicide Orange Depth Profile, Location 2376.

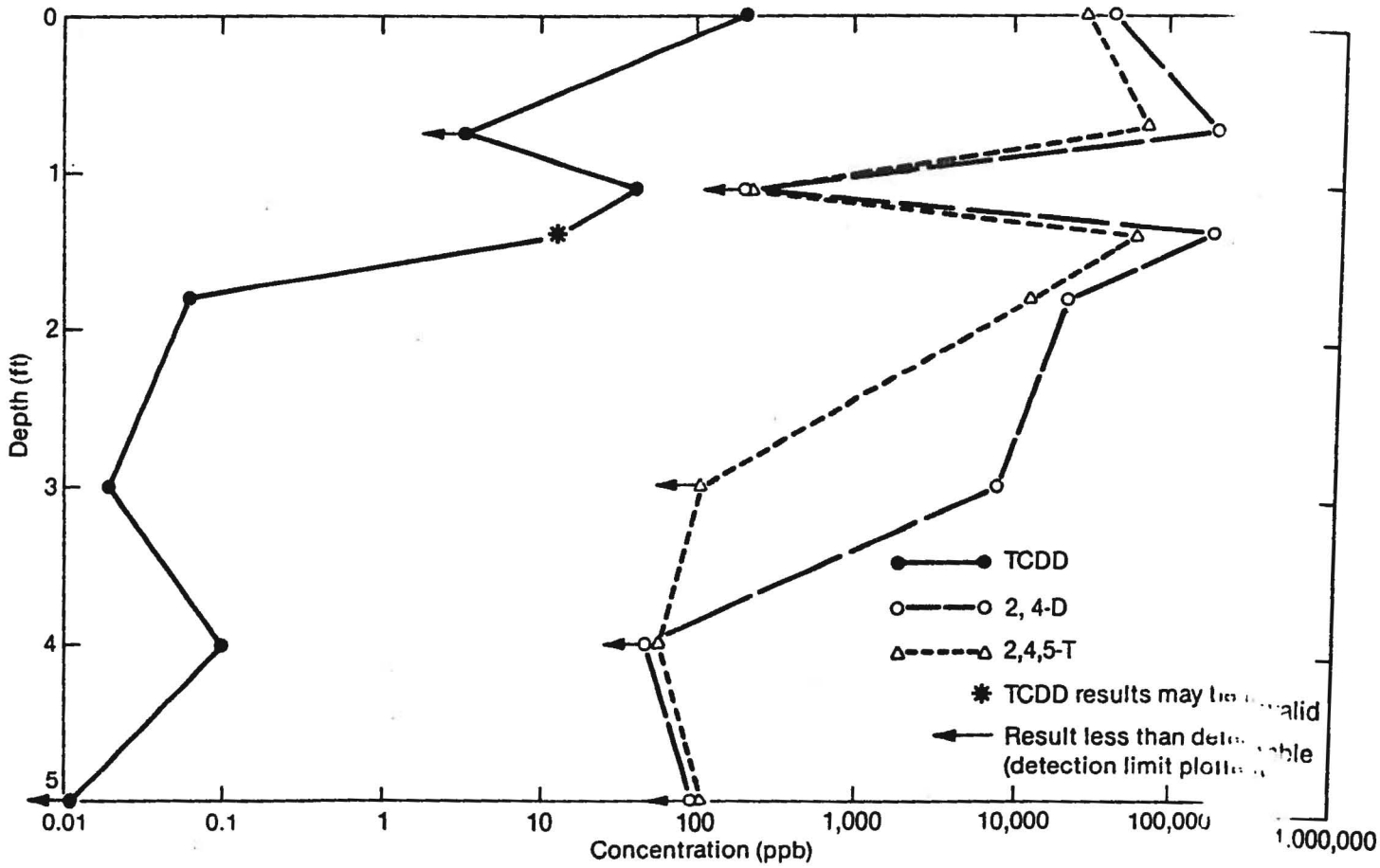


Figure 71. NCBC Herbicide Orange Depth Profile, Location 2428.

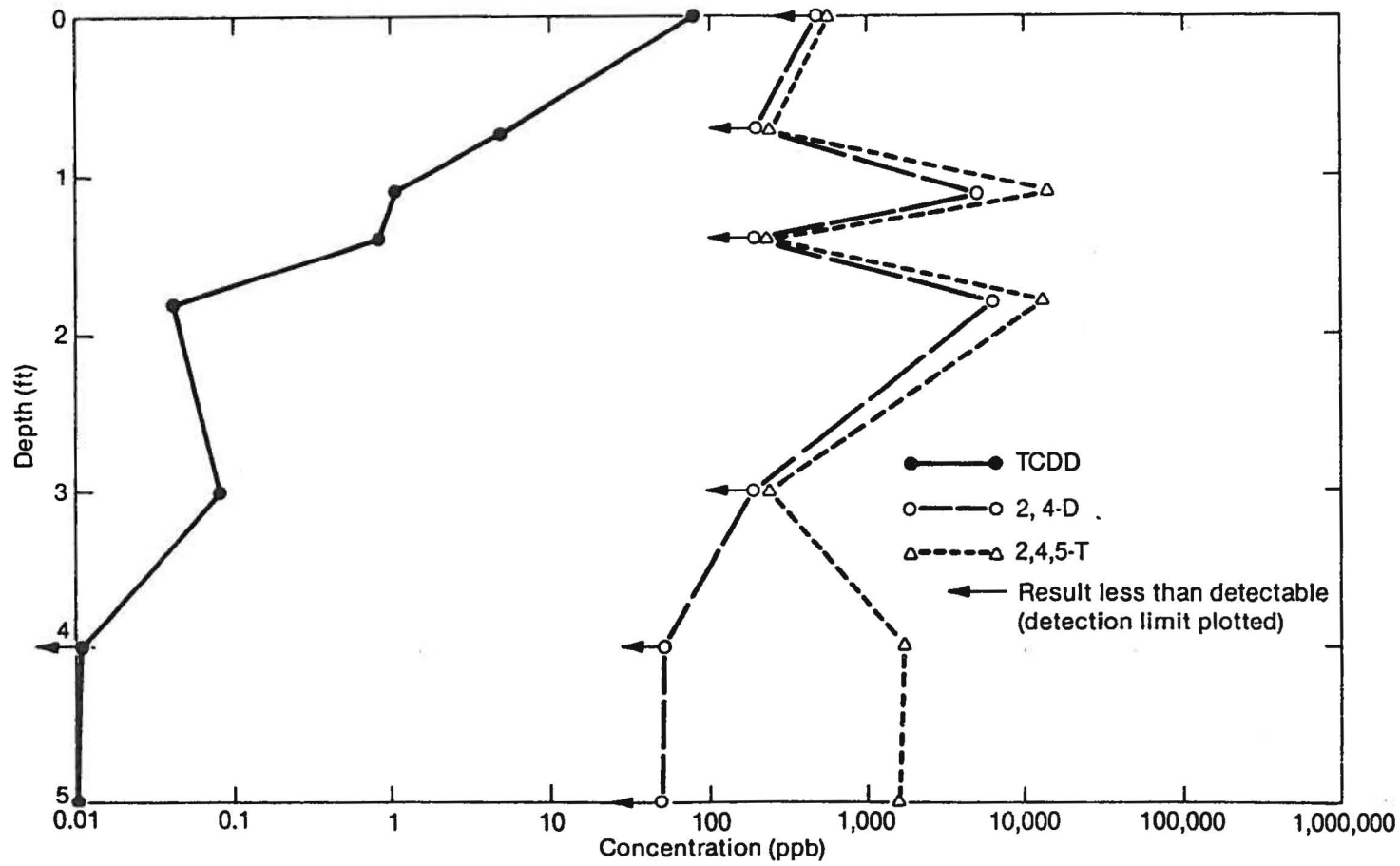


Figure 72. NCBC Herbicide Orange Depth Profile, Location 2458.

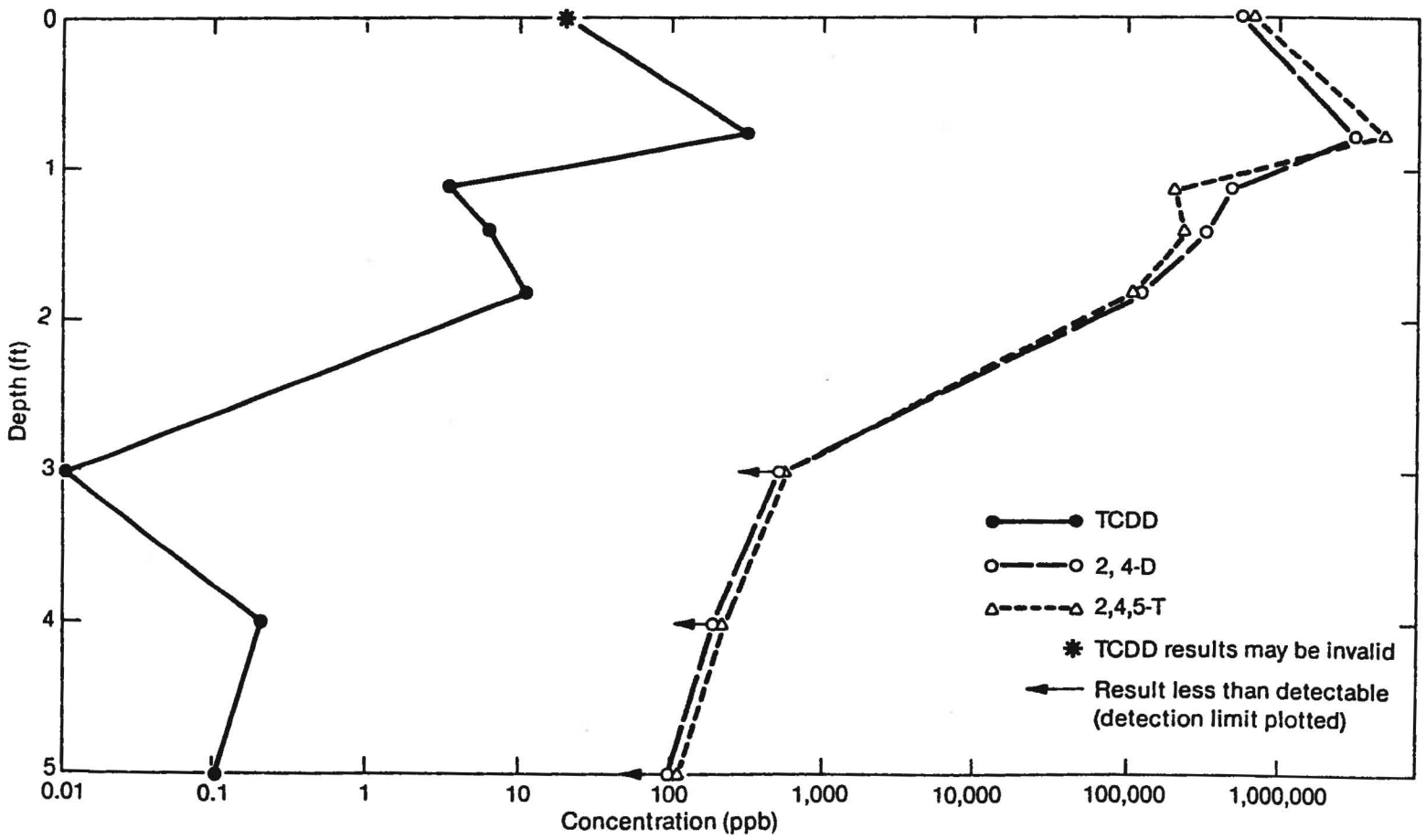


Figure 73. NCBC Herbicide Orange Depth Profile, Location 2470.

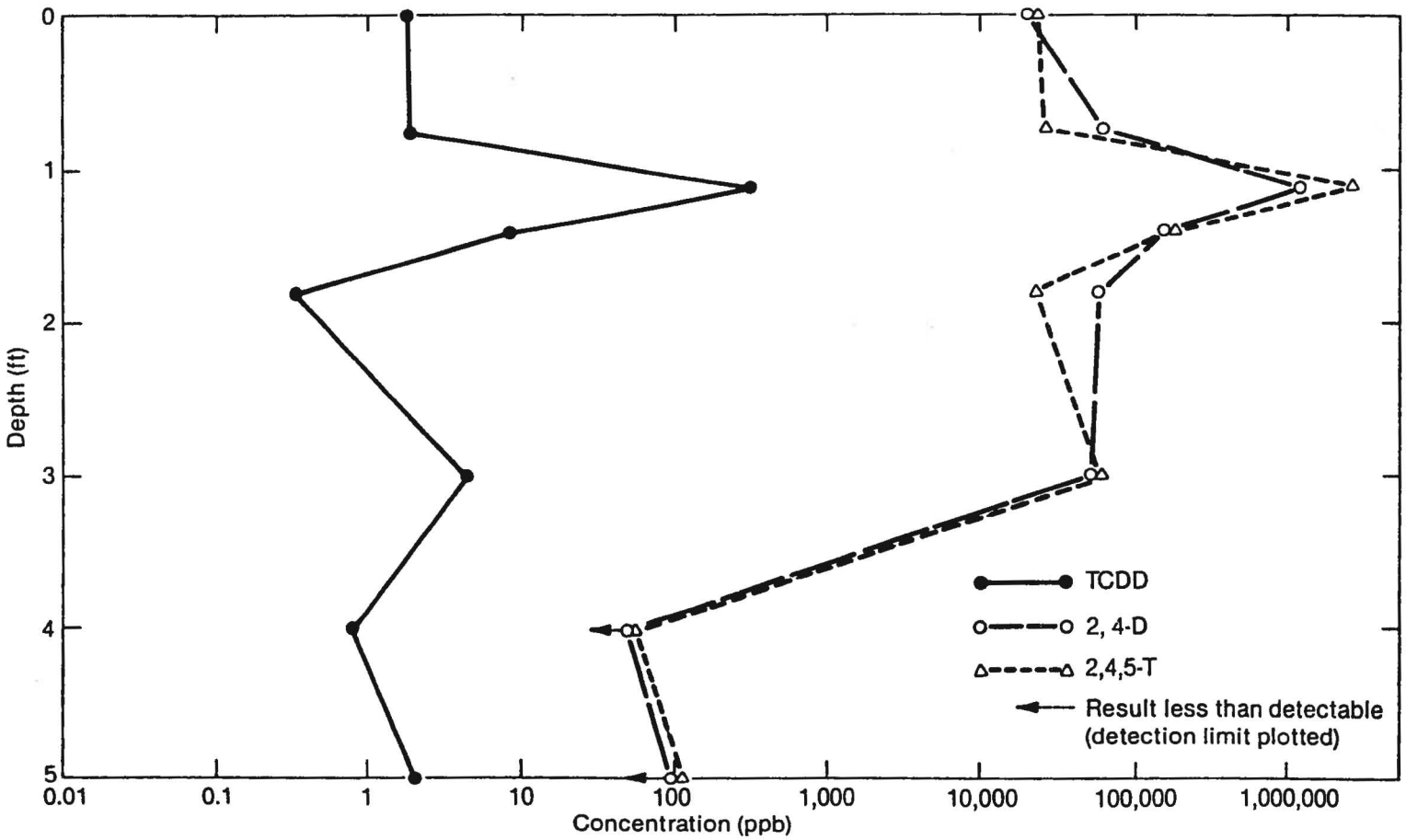


Figure 74. NCBC Herbicide Orange Depth Profile, Location 2527.

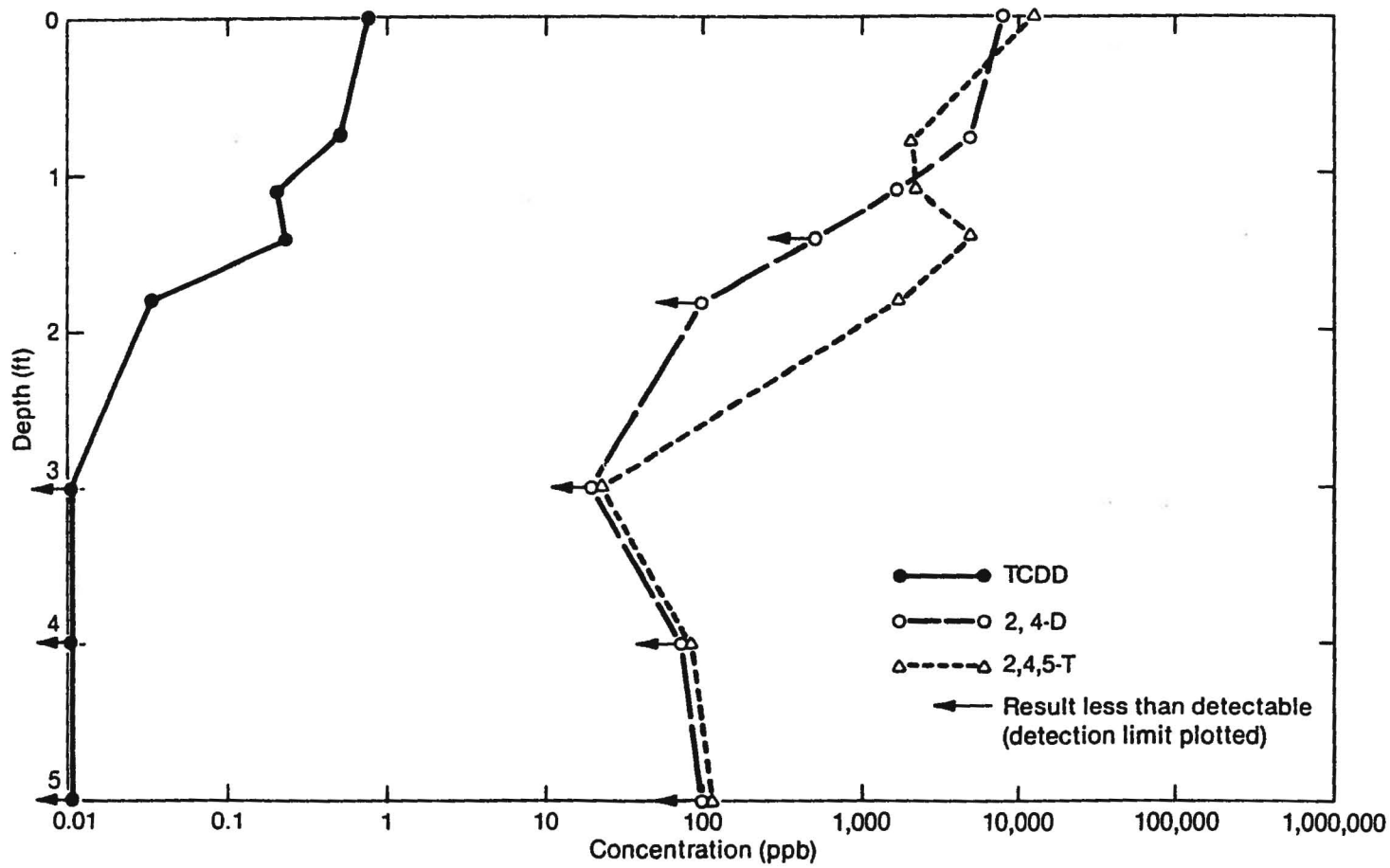


Figure 75. NCBC Herbicide Orange Depth Profile, Location 2528.

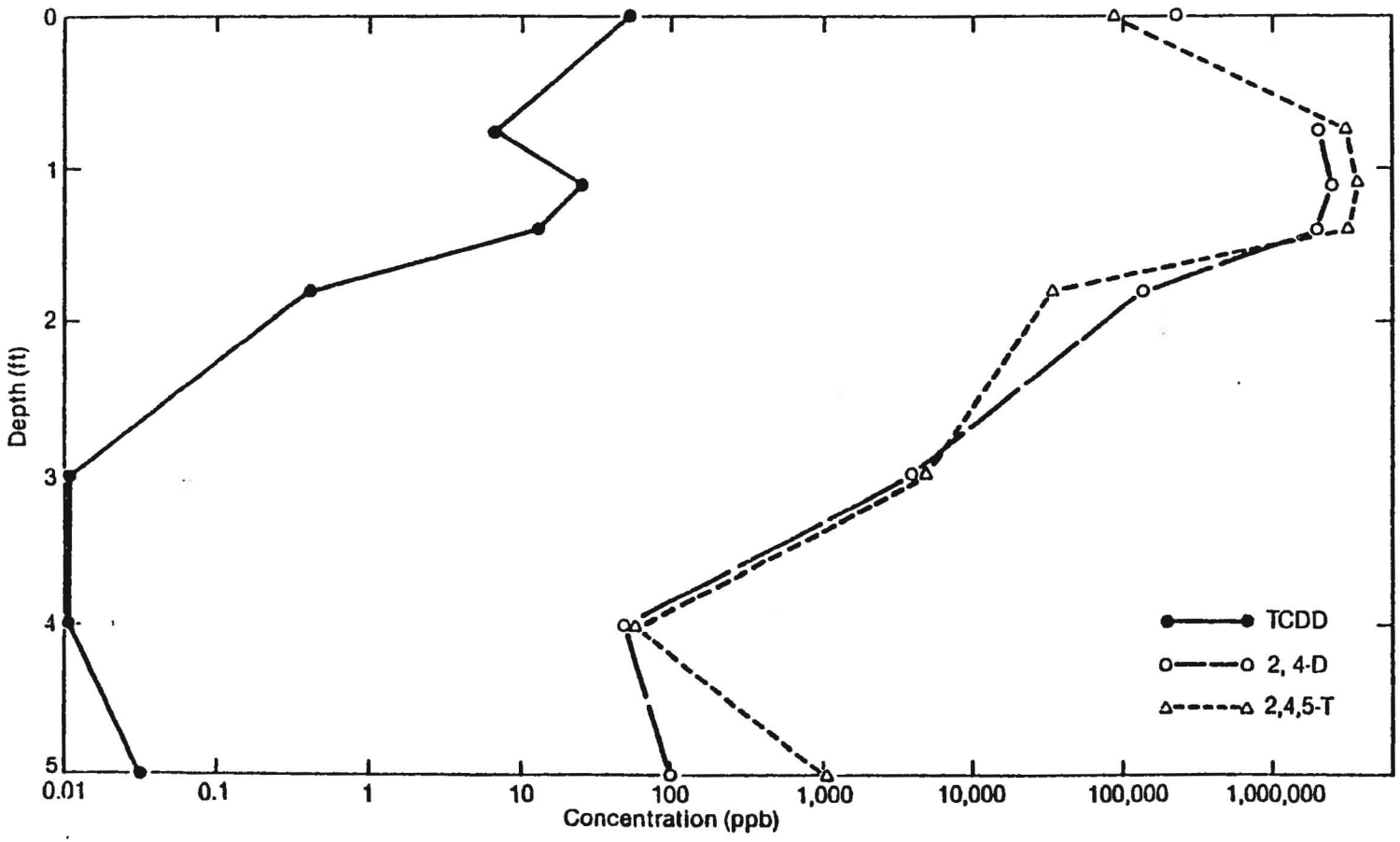


Figure 76. NCBC Herbicide Orange Depth Profile, Location 2567.

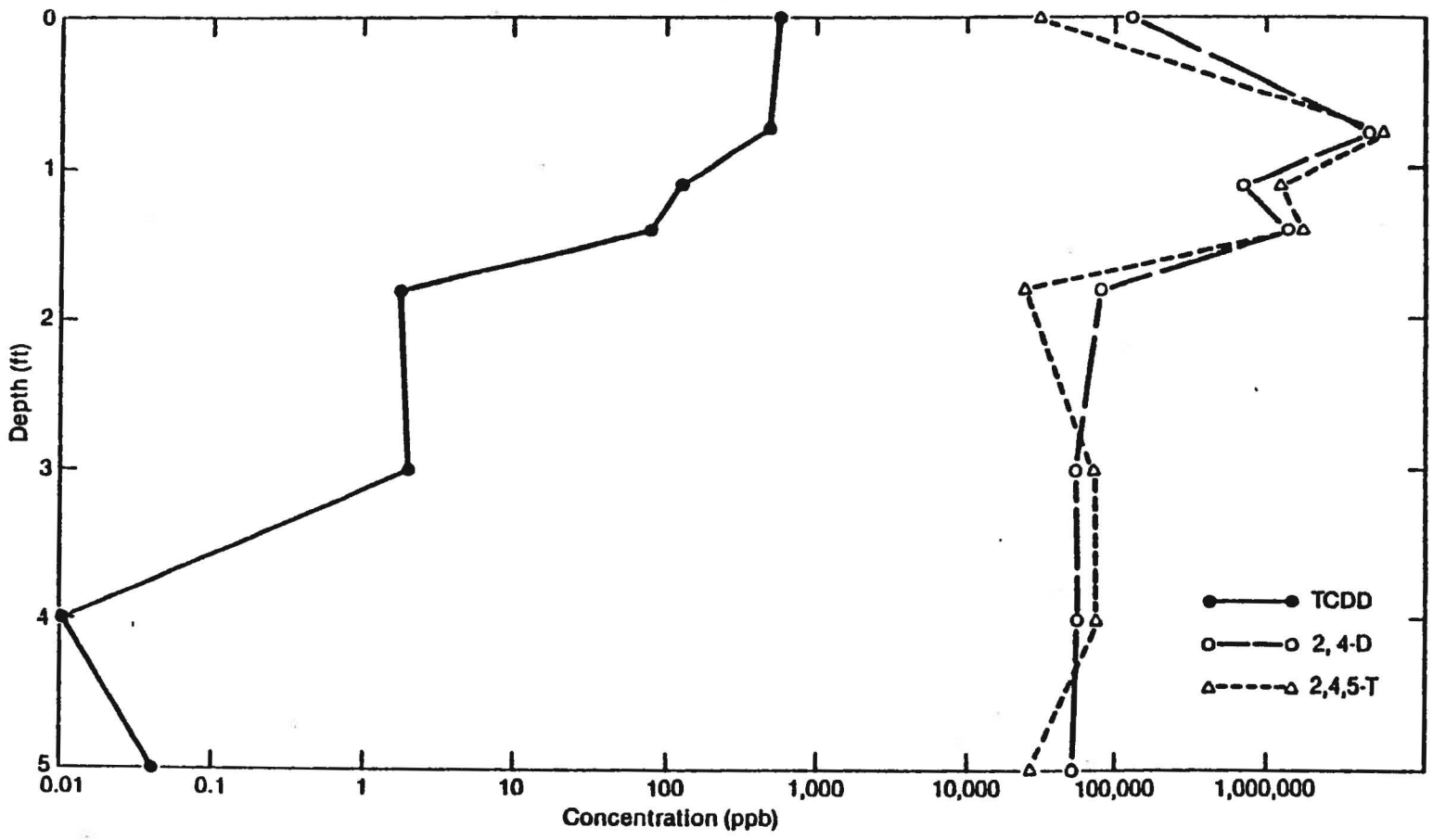


Figure 77. NCBC Herbicide Orange Depth Profile, Location 2571.

SECTION VI
CONCLUSIONS

The results of the validation process indicate that the laboratory analysis has been performed in accordance with all laboratory protocols, providing a valid data set. The quality assurance data show that analytical variation becomes more significant as TCDD concentrations approach the detection limit or typically below 1 ppb. This inherent variation in low concentration samples should not have a significant impact on remedial action since the cleanup level will likely be based on a criterion of 1 ppb or greater.

The horizontal extent of TCDD contamination in surface soils has been adequately delineated, with the exception of an area southeast of Greenwood Avenue and the railroad tracks (outside the fenced area) where a plot on Column 70 had a TCDD concentration of 31 ppb. EG&G Idaho recommends additional sampling to determine the horizontal extent of TCDD contamination, and this is under consideration. Any further results will become an addendum to this report. The expansion east area and the northwest portion of the expansion west area have not been impacted by Herbicide Orange storage at the site and should be eliminated from inclusion in any remedial action plan.

Of the 1300 plots sampled and analyzed for TCDD, 86.5 percent had concentrations less than 25 ppb. Forty-seven percent of all surface plots had concentrations less than 1 ppb. There are a few random, isolated hot spots with TCDD concentrations less than 100 ppb. The major contamination occurs where drums were stored along Greenwood Avenue, and where drums were emptied and crushed onsite. The leakage followed the site drainage to the ditches, with resultant contamination of the ditches in these areas to a maximum TCDD concentration of 107 ppb. The contaminated ditches would need to be included in any remedial action.

The vertical extent of TCDD contamination was determined to a depth of approximately 2 feet at 35 locations and to a depth of 5 feet at another

15 locations. In all, 50 location samples were taken from the current stabilized soil layer. Three of the 15 subsurface samples show contamination >1.0 ppb at 5 feet, with a maximum of 5.1 ppb. However, there is a definite trend of decreasing concentration with depth. A significant break is seen at the 1.5- to 2-foot depth below ground surface. At 1.5 feet, 42 percent of the data show contamination >1 ppb, with a maximum of 315 ppb. At 2 feet, only 13 percent of the data show contamination >1 ppb, with a maximum of 12 ppb.

Very high concentrations of 2,4-D and 2,4,5-T were found in the subsurface samples. Up to 20,800,000 ppb (2 percent) of 2,4-D and up to 27,700,000 ppb (2.8 percent) 2,4,5-T were reported. The highest concentrations of these compounds were found in the soil/cement layer in contrast to TCDD, which did not appear to concentrate in the soil/cement.

It appears that the soil/cement layer provided some restriction to the vertical downward transport of TCDD, even though data show contamination to 5 feet. This rationale is based on the periods of time involved. Storage of HO on the site began in 1968, and it was not removed until 1977, with sampling in 1985. Thus, leakage lasted for 9 years and data were obtained eight years later; yet contamination is basically in the top 3 feet.

To estimate the volume of soil to be removed in any cleanup effort, it is necessary to determine an overall depth. Surface values were evaluated at 65 percent, 80 percent, 90 percent, and 95 percent confidence levels since excavation of a plot would be dependent on the surface value. Results show contamination of 5.1 ppb at a depth of 5 feet in one subsurface sample that had a surface value of 95 ppb. The other extreme is the highest reading of all results of 1000 ppb in the soil/cement, which had decreased to 4 ppb at 6 inches below the soil/cement. Since a definite break point can be shown at 1.5 to 2 feet below surface, the estimate will use 2 feet, which is highly conservative when applied to the entire site.

SOIL VOLUME REQUIRED FOR CLEANUP (ft^3) AS A FUNCTION OF CONFIDENCE LEVEL

Cleanup Criteria (ppb)	Confidence Level	
	65 Percent	95 Percent
1	497,600	728,800
10	218,400	388,000
25	121,600	260,800
50	68,000	188,800

Realistically, the entire site would not be excavated to a depth of 2 feet. Twenty-six of the 50 near-surface and subsurface results show TCDD contamination at 1 ppb or less immediately underneath the soil/cement layer. Therefore, the table values could be decreased by 50 percent. In addition, the actual distance from the surface to the bottom of the soil/cement layer is only 6 inches in excavations performed in adjacent areas. Another 50 percent decrease would result. If these factors are applied to the 1 ppb cleanup, at 95 percent confidence level, it is reduced to 182,200 ft^3.

Based on the above considerations, it is recommended that excavation of the soil take place in 6-inch intervals. Following excavation, the bottom of the hole should be sampled and the TCDD level obtained to determine if additional excavation is required to meet whatever cleanup level is established.

SECTION VII

REFERENCES

1. Channell, R. E., and Stoddart, T. L., Herbicide Orange Monitoring Program: Interim Report, January 1980-December 1982, ESL-TR-83-56, Engineering and Services Laboratory, Air Force Engineering and Services Center, Tyndall AFB, Florida, April 1980.

2. Young, A. L., Cairney, W. J., and Thalken, C. E., "Persistence, Movement and Decontamination Studies of TCDD in Storage Sites Massively Contaminated with Phenoxy Herbicides," Chemosphere, Vol. 4/5, Pergamon Press, 1983, pp. 713-726.

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4. Harris, D. J., Report on TCDD Sampling Methods, unpublished, Environmental Sciences Division, Region VII, U.S. Environmental Protection Agency, Cincinnati, Ohio, December 1983.

5. 2,3,7,8-Tetrachlorodibenzo-p-dioxin in Soil and Sediment by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry, EPA Region VII, December 1983.

6. U.S. Environmental Protection Agency, Test Methods for Evaluating Solid Waste: Physical Chemical Methods, SW-846, second edition, July 1982.

7. Review of Contractor Data from the IFB WA84-A002 Chemical Analytical Services for 2,3,7,8-Tetrachlorodibenzo-p-dioxin, Environmental Protection Agency, November 20, 1984.

8. Hahn, G. J., and Shapiro, S. S., Statistical Models in Engineering, John Wiley & Sons, Inc., New York, 1967, pp. 295-302.

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APPENDIX A

LISTING OF SAMPLE ANALYSES

TABLE A-1. LEGEND FOR NAVAL CONSTRUCTION BATTALION CENTER FINAL SAMPLE SUMMARY

Symbol	Explanation
Status	Validation status for the sample TCDD result, refers only to the TCDD result. The various validation categories are defined below.
V	Valid; sample result is valid; all validation criteria have been met.
P	Probably; sample results interpreted as a probable concentration; not all validation criteria have been met but the discrepancies are minor.
I	Invalid; sample result is invalid; there are major departures from the requirements of the validation criteria. No statement can be made about the results.
M	Missing; sample results are missing; the sample was either not received by the laboratory or for some reason could not be analyzed by the laboratory.
RL	Reporting limit; this term is used for the TCDD results instead of detection limit (DL) or maximum possible concentration (MPC) because the latter terms have specific definitions according to the analytical protocol. The RL is a term applied after the interpretation of the results; in some cases, it will be numerically equal to a true DL and, in other cases, it will be numerically equal to a MPC.
DL	Detection limit

TABLE A-2. NAVAL CONSTRUCTION BATTALION CENTER TCDD RESULTS STATUS SUMMARY

Status Category	Number of Results	Percent of Total
Missing	5	0.3
Invalid	109	6.2
Probable	179	10.1
Valid	1473	83.4
Total	1766[a]	100.0

a. The total does not include results for rinsate, field blank, or performance audit samples.

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-0540.01000	21.80	--[a]	V	--	--	--	--
NC-0546.01000	3.06	--	I	--	--	--	--
NC-0551.01000	7.40	--	V	--	--	--	--
NC-0555.01000	8.80	--	V	--	--	--	--
NC-0556.01000	46.80	--	V	--	--	--	--
NC-0562.01000	0.80	--	V	--	--	--	--
NC-0568.01000	0.00	0.04	V	--	--	--	--
NC-0572.01000	0.00	0.10	V	--	--	--	--
NC-0574.01000	0.10	--	I	--	--	--	--
NC-0583.01000	0.00	0.01	V	--	--	--	--
NC-0586.01000	0.00	0.10	V	--	--	--	--
NC-0588.01000	0.00	0.10	V	--	--	--	--
NC-0590.01000	0.00	0.03	V	--	--	--	--
NC-0635.01000	0.00	1.90	V	--	--	--	--
NC-0636.01000	0.50	--	V	--	--	--	--
NC-0637.01000	0.80	--	P	--	--	--	--
NC-0638.01000	0.00	1.56	P	--	--	--	--
NC-0639.01000	242.00	--	V	--	--	--	--
NC-0639.03000	--	--	M	8209453	--	15111586	--
NC-0639.63001	259.00	--	I	8024098	--	14078859	--
NC-0639.03004	0.00	0.99	P	582993	--	873532	--
NC-0639.03008	1.20	--	V	0	100	9664	--
NC-0639.03020	0.02	--	V	0	50	0	50
NC-0639.03030	0.02	--	V	336	--	2301	--
NC-0639.03040	0.00	0.01	V	236	--	0	50
NC-0639.04000	438.00	--	P	20793097	--	27744082	--
NC-0640.01000	4.70	--	V	--	--	--	--
NC-0641.01000	3.00	--	V	--	--	--	--
NC-0642.01000	18.00	--	V	--	--	--	--
NC-0642.02000	365.50	--	V	--	--	--	--
NC-0642.02001	145.00	--	V	--	--	--	--
NC-0642.02004	95.50	--	P	--	--	--	--
NC-0642.04000	123.00	--	V	--	--	--	--
NC-0643.01000	148.00	--	V	--	--	--	--
NC-0643.03000	646.00	--	V	11834	--	21678	--
NC-0643.03001	0.00	0.01	I	4064541	--	2283542	--
NC-0643.03004	93.20	--	V	837274	--	834695	--
NC-0643.03008	0.25	--	V	326674	--	60652	--
NC-0643.03020	0.03	--	V	0	50	571	--
NC-0643.03030	0.02	--	V	0	100	0	100
NC-0643.03040	1.90	--	P	0	100	9604	--
NC-0643.04000	6.00	--	V	2252245	--	3397848	--
NC-0644.01000	18.90	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-0645.01000	13.90	--	V	--	--	--	--
NC-0646.01000	6.90	--	V	--	--	--	--
NC-0647.01000	7.30	--	V	--	--	--	--
NC-0648.01000	26.80	--	V	--	--	--	--
NC-0649.01000	12.30	--	V	--	--	--	--
NC-0650.01000	46.50	--	V	--	--	--	--
NC-0651.01000	9.70	--	V	--	--	--	--
NC-0652.01000	6.70	--	V	--	--	--	--
NC-0653.01000	5.65	--	V	--	--	--	--
NC-0654.01000	17.10	--	V	--	--	--	--
NC-0655.01000	17.80	--	V	--	--	--	--
NC-0656.01000	90.30	--	V	--	--	--	--
NC-0657.01000	3.60	--	V	--	--	--	--
NC-0658.01000	3.20	--	V	--	--	--	--
NC-0659.01000	1.00	--	V	--	--	--	--
NC-0660.01000	1.60	--	V	--	--	--	--
NC-0661.01000	2.40	--	V	--	--	--	--
NC-0662.01000	2.40	--	V	--	--	--	--
NC-0663.01000	78.10	--	V	--	--	--	--
NC-0664.11000	45.60	--	P	--	--	--	--
NC-0664.21000	9.66	--	V	--	--	--	--
NC-0664.31000	50.00	--	V	--	--	--	--
NC-0664.41000	2.18	--	V	--	--	--	--
NC-0664.51000	4.20	--	P	--	--	--	--
NC-0665.01000	60.00	--	V	--	--	--	--
NC-0666.01000	0.00	0.04	V	--	--	--	--
NC-0667.01000	0.40	--	V	--	--	--	--
NC-0668.01000	0.00	0.18	V	--	--	--	--
NC-0669.01000	0.00	0.48	V	--	--	--	--
NC-0670.01000	0.00	0.02	V	--	--	--	--
NC-0671.01000	0.30	--	V	--	--	--	--
NC-0672.01000	0.30	--	P	--	--	--	--
NC-0673.01000	0.00	0.01	I	--	--	--	--
NC-0674.01000	0.00	0.10	V	--	--	--	--
NC-0675.01000	0.00	0.02	V	--	--	--	--
NC-0676.01000	0.00	0.34	V	--	--	--	--
NC-0677.01000	0.00	0.10	V	--	--	--	--
NC-0678.01000	0.18	--	V	--	--	--	--
NC-0679.01000	4.20	--	V	--	--	--	--
NC-0680.01000	--	--	M	--	--	--	--
NC-0681.01000	0.00	0.10	V	--	--	--	--
NC-0682.01000	17.90	--	V	--	--	--	--
NC-0683.01000	3.50	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-0684.01000	0.60	--	V	--	--	--	--
NC-0685.01000	1.20	--	V	--	--	--	--
NC-0686.01000	11.60	--	V	--	--	--	--
NC-0687.01000	0.40	--	V	--	--	--	--
NC-06A0.01000	0.00	0.10	I	--	--	--	--
NC-06A6.01000	0.00	0.01	I	--	--	--	--
NC-0719.01000	0.00	1.01	V	--	--	--	--
NC-0724.01000	0.00	0.10	V	--	--	--	--
NC-0729.01000	0.70	--	V	--	--	--	--
NC-0732.01000	0.00	0.39	V	--	--	--	--
NC-0735.01000	0.60	--	V	--	--	--	--
NC-0736.01000	0.70	--	V	--	--	--	--
NC-0737.01000	0.78	--	V	--	--	--	--
NC-0738.01000	3.50	--	V	--	--	--	--
NC-0739.01000	16.80	--	P	--	--	--	--
NC-0740.01000	4.70	--	V	--	--	--	--
NC-0741.01000	1.80	--	V	--	--	--	--
NC-0742.01000	13.20	--	V	--	--	--	--
NC-0743.01000	73.80	--	V	--	--	--	--
NC-0744.11000	160.00	--	V	--	--	--	--
NC-0744.21000	0.12	--	P	--	--	--	--
NC-0744.31000	0.37	--	V	--	--	--	--
NC-0744.41000	169.00	--	V	--	--	--	--
NC-0744.51000	114.00	--	V	--	--	--	--
NC-0745.01000	386.00	--	V	--	--	--	--
NC-0746.01000	98.10	--	V	--	--	--	--
NC-0747.01000	12.00	--	V	--	--	--	--
NC-0748.01000	5.21	--	V	--	--	--	--
NC-0749.01000	13.20	--	V	--	--	--	--
NC-0750.01000	20.10	--	V	--	--	--	--
NC-0751.01000	55.50	--	V	--	--	--	--
NC-0752.01000	28.00	--	V	--	--	--	--
NC-0753.01000	9.10	--	V	--	--	--	--
NC-0754.01000	13.50	--	V	--	--	--	--
NC-0755.01000	6.50	--	V	--	--	--	--
NC-0756.01000	16.70	--	V	--	--	--	--
NC-0757.01000	5.06	--	V	--	--	--	--
NC-0758.01000	4.90	--	P	--	--	--	--
NC-0759.01000	4.90	--	P	--	--	--	--
NC-0760.01000	7.00	--	V	--	--	--	--
NC-0761.01000	3.20	--	I	--	--	--	--
NC-0762.01000	3.40	--	V	--	--	--	--
NC-0763.61000	22.10	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-0764.01000	8.40	--	V	--	--	--	--
NC-0765.01000	4.41	--	V	--	--	--	--
NC-0767.01000	0.00	0.10	V	--	--	--	--
NC-0768.01000	0.00	0.10	V	--	--	--	--
NC-0769.01000	1.20	--	V	--	--	--	--
NC-0770.01000	0.80	--	V	--	--	--	--
NC-0771.01000	3.60	--	V	--	--	--	--
NC-0772.01000	0.00	0.29	V	--	--	--	--
NC-0773.01000	61.40	--	V	--	--	--	--
NC-0774.11000	0.50	--	V	--	--	--	--
NC-0774.21000	57.40	--	V	--	--	--	--
NC-0774.31000	99.60	--	V	--	--	--	--
NC-0774.41000	0.97	--	V	--	--	--	--
NC-0774.51000	0.00	0.11	V	--	--	--	--
NC-0775.01000	0.98	--	V	--	--	--	--
NC-0776.01000	0.00	0.02	V	--	--	--	--
NC-0777.01000	0.10	--	P	--	--	--	--
NC-0778.01000	0.00	1.03	V	--	--	--	--
NC-0779.01000	2.70	--	V	--	--	--	--
NC-0780.01000	4.46	--	V	--	--	--	--
NC-0781.01000	0.40	--	V	--	--	--	--
NC-0782.01000	24.20	--	V	--	--	--	--
NC-0783.01000	1.90	--	V	--	--	--	--
NC-0784.01000	0.00	0.19	V	--	--	--	--
NC-0785.01000	2.60	--	V	--	--	--	--
NC-0786.01000	5.30	--	V	--	--	--	--
NC-0787.01000	1.30	--	V	--	--	--	--
NC-0796.61000	0.00	0.10	V	--	--	--	--
NC-0822.01000	0.00	0.10	V	--	--	--	--
NC-0835.01000	0.20	--	I	--	--	--	--
NC-0836.01000	0.90	--	I	--	--	--	--
NC-0837.01000	0.90	--	I	--	--	--	--
NC-0838.01000	3.40	--	V	--	--	--	--
NC-0839.01000	3.50	--	I	--	--	--	--
NC-0840.01000	1.30	--	I	--	--	--	--
NC-0841.01000	2.00	--	V	--	--	--	--
NC-0842.01000	10.80	--	V	--	--	--	--
NC-0843.01000	44.10	--	V	--	--	--	--
NC-0844.01000	98.50	--	V	--	--	--	--
NC-0845.01000	234.00	--	V	--	--	--	--
NC-0846.01000	96.70	--	V	--	--	--	--
NC-0847.01000	12.30	--	V	--	--	--	--
NC-0848.01000	2.60	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-0849.01000	2.50	--	V	--	--	--	--
NC-0850.01000	18.40	--	I	--	--	--	--
NC-0851.01000	37.00	--	V	--	--	--	--
NC-0852.01000	36.40	--	V	--	--	--	--
NC-0853.61000	6.70	--	V	--	--	--	--
NC-0854.11000	3.60	--	V	--	--	--	--
NC-0854.21000	2.90	--	V	--	--	--	--
NC-0854.31000	4.80	--	P	--	--	--	--
NC-0854.41000	4.60	--	V	--	--	--	--
NC-0854.51000	0.00	3.19	V	--	--	--	--
NC-0855.01000	6.50	--	V	--	--	--	--
NC-0856.01000	9.21	--	V	--	--	--	--
NC-0857.01000	15.00	--	V	--	--	--	--
NC-0858.01000	6.60	--	V	--	--	--	--
NC-0859.01000	24.40	--	V	--	--	--	--
NC-0860.01000	24.60	--	V	--	--	--	--
NC-0861.01000	0.77	--	V	--	--	--	--
NC-0862.01000	2.60	--	V	--	--	--	--
NC-0863.01000	3.24	--	V	--	--	--	--
NC-0864.01000	2.50	--	P	--	--	--	--
NC-0865.01000	2.91	--	P	--	--	--	--
NC-0867.01000	1.80	--	V	--	--	--	--
NC-0868.01000	0.50	--	V	--	--	--	--
NC-0869.01000	1.00	--	V	--	--	--	--
NC-0870.01000	0.60	--	V	--	--	--	--
NC-0871.01000	0.77	--	V	--	--	--	--
NC-0872.01000	43.90	--	V	--	--	--	--
NC-0873.01000	45.30	--	V	--	--	--	--
NC-0874.01000	0.79	--	V	--	--	--	--
NC-0875.01000	0.08	--	V	--	--	--	--
NC-0876.01000	0.21	--	V	--	--	--	--
NC-0877.01000	0.00	0.58	I	--	--	--	--
NC-0878.01000	0.00	0.16	V	--	--	--	--
NC-0879.01000	2.60	--	V	--	--	--	--
NC-0880.01000	1.90	--	V	--	--	--	--
NC-0881.01000	0.40	--	V	--	--	--	--
NC-0882.01000	2.80	--	P	--	--	--	--
NC-0883.01000	1.08	--	V	--	--	--	--
NC-0884.11000	0.00	0.67	V	--	--	--	--
NC-0884.21000	1.10	--	V	--	--	--	--
NC-0884.31000	0.00	0.33	V	--	--	--	--
NC-0884.41000	0.40	--	P	--	--	--	--
NC-0884.51000	0.34	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-0885.01000	1.90	--	V	--	--	--	--
NC-0886.01000	8.46	--	I	--	--	--	--
NC-0887.01000	0.60	--	V	--	--	--	--
NC-0924.01000	0.00	0.10	V	--	--	--	--
NC-0928.01000	0.00	0.10	V	--	--	--	--
NC-0935.01000	0.40	--	I	--	--	--	--
NC-0936.01000	1.30	--	I	--	--	--	--
NC-0937.01000	2.70	--	I	--	--	--	--
NC-0938.01000	11.50	--	V	--	--	--	--
NC-0939.01000	6.60	--	V	--	--	--	--
NC-0940.01000	4.10	--	V	--	--	--	--
NC-0941.01000	6.20	--	V	--	--	--	--
NC-0942.01000	19.00	--	V	--	--	--	--
NC-0943.01000	17.00	--	V	--	--	--	--
NC-0944.61000	41.50	--	V	--	--	--	--
NC-0945.01000	44.40	--	V	--	--	--	--
NC-0946.01000	35.60	--	V	--	--	--	--
NC-0947.01000	6.90	--	V	--	--	--	--
NC-0948.01000	5.50	--	V	--	--	--	--
NC-0949.01000	2.20	--	V	--	--	--	--
NC-0950.01000	17.60	--	V	--	--	--	--
NC-0951.01000	35.70	--	V	--	--	--	--
NC-0952.01000	12.50	--	V	--	--	--	--
NC-0953.01000	3.90	--	I	--	--	--	--
NC-0954.01000	2.80	--	I	--	--	--	--
NC-0955.01000	2.60	--	I	--	--	--	--
NC-0956.01000	5.00	--	V	--	--	--	--
NC-0957.01000	22.20	--	I	--	--	--	--
NC-0958.01000	25.50	--	I	--	--	--	--
NC-0959.01000	275.00	--	I	--	--	--	--
NC-0960.01000	37.20	--	I	--	--	--	--
NC-0961.01000	4.40	--	I	--	--	--	--
NC-0962.01000	1.80	--	I	--	--	--	--
NC-0963.01000	2.70	--	I	--	--	--	--
NC-0964.11000	2.33	--	V	--	--	--	--
NC-0964.21000	1.30	--	V	--	--	--	--
NC-0964.31000	3.20	--	V	--	--	--	--
NC-0964.41000	11.70	--	V	--	--	--	--
NC-0964.51000	3.70	--	V	--	--	--	--
NC-0965.01000	6.00	--	V	--	--	--	--
NC-0967.01000	5.00	--	V	--	--	--	--
NC-0968.01000	0.40	--	V	--	--	--	--
NC-0969.01000	0.00	0.12	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-0970.01000	0.87	--	V	--	--	--	--
NC-0971.01000	0.70	--	V	--	--	--	--
NC-0972.01000	4.70	--	I	--	--	--	--
NC-0973.01000	3.30	--	V	--	--	--	--
NC-0974.01000	0.60	--	V	--	--	--	--
NC-0975.01000	0.00	0.11	V	--	--	--	--
NC-0976.01000	0.00	0.50	V	--	--	--	--
NC-0977.01000	0.00	0.20	V	--	--	--	--
NC-0978.01000	0.20	--	V	--	--	--	--
NC-0979.01000	2.20	--	V	--	--	--	--
NC-0980.01000	1.10	--	V	--	--	--	--
NC-0981.01000	0.20	--	V	--	--	--	--
NC-0982.01000	0.50	--	V	--	--	--	--
NC-0983.01000	0.50	--	V	--	--	--	--
NC-0984.61000	0.00	0.40	V	--	--	--	--
NC-0985.01000	1.50	--	V	--	--	--	--
NC-0986.01000	1.60	--	V	--	--	--	--
NC-0987.01000	0.20	--	V	--	--	--	--
NC-0992.01000	0.00	0.10	V	--	--	--	--
NC-0992.11000	0.00	0.02	V	--	--	--	--
NC-0992.21000	0.00	0.20	P	--	--	--	--
NC-0992.31000	0.00	0.01	V	--	--	--	--
NC-0992.41000	0.00	0.10	I	--	--	--	--
NC-0992.51000	0.10	--	V	--	--	--	--
NC-0999.01000	0.00	0.10	V	--	--	--	--
NC-09A3.01000	0.00	0.10	V	--	--	--	--
NC-1023.01000	0.00	0.10	V	--	--	--	--
NC-1025.01000	0.00	0.10	V	--	--	--	--
NC-1028.01000	4.00	--	V	--	--	--	--
NC-1031.01000	0.00	0.10	V	--	--	--	--
NC-1035.01000	0.80	--	P	--	--	--	--
NC-1036.01000	9.80	--	I	--	--	--	--
NC-1037.01000	4.60	--	P	--	--	--	--
NC-1040.01000	9.20	--	V	--	--	--	--
NC-1041.01000	2.80	--	V	--	--	--	--
NC-1042.01000	1.70	--	V	--	--	--	--
NC-1043.01000	1.90	--	V	--	--	--	--
NC-1044.11000	11.20	--	V	--	--	--	--
NC-1044.21000	8.10	--	V	--	--	--	--
NC-1044.31000	13.30	--	V	--	--	--	--
NC-1044.41000	5.65	--	V	--	--	--	--
NC-1044.51000	8.02	--	V	--	--	--	--
NC-1045.01000	34.60	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1046.01000	24.10	--	V	--	--	--	--
NC-1047.01000	2.50	--	V	--	--	--	--
NC-1048.01000	1.90	--	P	--	--	--	--
NC-1049.01000	2.30	--	V	--	--	--	--
NC-1050.01000	8.20	--	V	--	--	--	--
NC-1051.01000	10.80	--	V	--	--	--	--
NC-1052.01000	4.70	--	V	--	--	--	--
NC-1053.01000	2.10	--	V	--	--	--	--
NC-1054.01000	0.00	0.41	V	--	--	--	--
NC-1055.01000	1.50	--	P	--	--	--	--
NC-1056.01000	3.50	--	V	--	--	--	--
NC-1057.01000	10.00	--	V	--	--	--	--
NC-1058.01000	14.60	--	V	--	--	--	--
NC-1059.01000	25.10	--	V	--	--	--	--
NC-1060.01000	8.70	--	V	--	--	--	--
NC-1061.01000	0.23	--	V	--	--	--	--
NC-1062.01000	2.00	--	V	--	--	--	--
NC-1063.01000	7.00	--	V	--	--	--	--
NC-1064.01000	0.80	--	V	--	--	--	--
NC-1067.01000	0.00	0.17	V	--	--	--	--
NC-1068.01000	0.09	--	V	--	--	--	--
NC-1069.01000	0.00	0.16	V	--	--	--	--
NC-1070.01000	0.50	--	P	--	--	--	--
NC-1071.01000	0.80	--	V	--	--	--	--
NC-1072.01000	0.80	--	V	--	--	--	--
NC-1073.61000	0.27	--	V	--	--	--	--
NC-1074.11000	0.00	0.18	V	--	--	--	--
NC-1074.21000	0.00	0.10	V	--	--	--	--
NC-1074.31000	0.00	0.01	V	--	--	--	--
NC-1074.41000	0.00	0.01	V	--	--	--	--
NC-1074.51000	0.00	0.10	V	--	--	--	--
NC-1075.01000	0.00	0.10	V	--	--	--	--
NC-1076.01000	0.10	--	V	--	--	--	--
NC-1077.01000	0.10	--	V	--	--	--	--
NC-1078.01000	0.40	--	V	--	--	--	--
NC-1079.01000	1.50	--	V	--	--	--	--
NC-1080.01000	0.40	--	V	--	--	--	--
NC-1081.01000	0.00	0.40	V	--	--	--	--
NC-1082.01000	0.40	--	V	--	--	--	--
NC-1083.01000	0.63	--	V	--	--	--	--
NC-1084.11000	0.00	0.23	P	--	--	--	--
NC-1084.21000	0.00	0.58	P	--	--	--	--
NC-1084.31000	0.00	0.59	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1084.41000	0.00	0.43	V	--	--	--	--
NC-1084.51000	0.00	0.57	V	--	--	--	--
NC-1085.01000	1.70	--	V	--	--	--	--
NC-1086.01000	1.80	--	V	--	--	--	--
NC-1087.01000	0.00	0.10	V	--	--	--	--
NC-1123.01000	0.00	0.10	V	--	--	--	--
NC-1131.01000	0.00	0.29	V	--	--	--	--
NC-1135.01000	1.90	--	V	--	--	--	--
NC-1136.01000	4.40	--	V	--	--	--	--
NC-1137.01000	5.00	--	V	--	--	--	--
NC-1140.01000	28.10	--	V	--	--	--	--
NC-1141.01000	4.60	--	P	--	--	--	--
NC-1142.01000	1.14	--	V	--	--	--	--
NC-1143.01000	0.00	0.85	V	--	--	--	--
NC-1144.01000	10.50	--	V	--	--	--	--
NC-1145.01000	14.20	--	V	--	--	--	--
NC-1146.01000	6.10	--	V	--	--	--	--
NC-1147.01000	2.00	--	I	--	--	--	--
NC-1148.01000	0.30	--	V	--	--	--	--
NC-1149.01000	12.90	--	V	--	--	--	--
NC-1150.01000	20.40	--	V	--	--	--	--
NC-1151.01000	7.10	--	V	--	--	--	--
NC-1152.01000	3.40	--	V	--	--	--	--
NC-1153.01000	4.60	--	V	--	--	--	--
NC-1154.01000	1.40	--	V	--	--	--	--
NC-1155.01000	3.90	--	V	--	--	--	--
NC-1156.01000	24.80	--	V	--	--	--	--
NC-1157.01000	27.00	--	P	--	--	--	--
NC-1158.01000	104.00	--	P	--	--	--	--
NC-1159.01000	11.50	--	V	--	--	--	--
NC-1160.01000	1.80	--	P	--	--	--	--
NC-1161.01000	0.30	--	P	--	--	--	--
NC-1162.01000	2.30	--	V	--	--	--	--
NC-1163.61000	35.00	--	V	--	--	--	--
NC-1164.11000	0.84	--	V	--	--	--	--
NC-1164.21000	1.10	--	V	--	--	--	--
NC-1164.31000	0.30	--	V	--	--	--	--
NC-1164.41000	1.10	--	V	--	--	--	--
NC-1164.51000	0.30	--	V	--	--	--	--
NC-1167.01000	0.20	--	V	--	--	--	--
NC-1168.01000	0.07	--	V	--	--	--	--
NC-1169.01000	0.10	--	P	--	--	--	--
NC-1170.01000	0.30	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1171.01000	0.00	0.52	V	--	--	--	--
NC-1172.01000	0.00	0.09	V	--	--	--	--
NC-1173.01000	0.08	--	V	--	--	--	--
NC-1174.01000	0.07	--	V	--	--	--	--
NC-1175.01000	0.00	0.09	V	--	--	--	--
NC-1176.01000	0.00	0.06	V	--	--	--	--
NC-1177.01000	0.00	0.34	V	--	--	--	--
NC-1178.01000	0.30	--	V	--	--	--	--
NC-1179.01000	0.00	0.95	V	--	--	--	--
NC-1180.01000	0.27	--	V	--	--	--	--
NC-1181.01000	0.00	0.03	V	--	--	--	--
NC-1182.01000	1.20	--	V	--	--	--	--
NC-1183.01000	1.78	--	V	--	--	--	--
NC-1185.01000	1.55	--	V	--	--	--	--
NC-1186.01000	0.40	--	V	--	--	--	--
NC-1187.01000	0.00	0.10	V	--	--	--	--
NC-1229.01000	0.20	--	V	--	--	--	--
NC-1231.01000	0.00	0.10	V	--	--	--	--
NC-1235.01000	0.36	--	V	--	--	--	--
NC-1236.01000	1.20	--	V	--	--	--	--
NC-1237.01000	4.70	--	V	--	--	--	--
NC-1238.01000	8.80	--	V	--	--	--	--
NC-1239.01000	11.60	--	V	--	--	--	--
NC-1240.01000	13.70	--	V	--	--	--	--
NC-1241.01000	5.10	--	V	--	--	--	--
NC-1242.01000	1.80	--	V	--	--	--	--
NC-1243.01000	4.00	--	V	--	--	--	--
NC-1244.11000	8.30	--	V	--	--	--	--
NC-1244.21000	6.60	--	V	--	--	--	--
NC-1244.31000	49.30	--	V	--	--	--	--
NC-1244.41000	8.80	--	V	--	--	--	--
NC-1244.51000	44.40	--	V	--	--	--	--
NC-1245.01000	15.60	--	V	--	--	--	--
NC-1246.01000	6.18	--	I	--	--	--	--
NC-1247.01000	3.30	--	V	--	--	--	--
NC-1248.01000	0.70	--	V	--	--	--	--
NC-1249.01000	1.20	--	V	--	--	--	--
NC-1250.01000	8.80	--	P	--	--	--	--
NC-1251.01000	11.20	--	V	--	--	--	--
NC-1252.01000	3.40	--	V	--	--	--	--
NC-1253.01000	2.40	--	V	--	--	--	--
NC-1254.61000	0.90	--	V	--	--	--	--
NC-1255.01000	0.10	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1256.01000	36.80	--	V	--	--	--	--
NC-1257.01000	17.90	--	V	--	--	--	--
NC-1258.01000	30.80	--	V	--	--	--	--
NC-1259.01000	9.80	--	V	--	--	--	--
NC-1260.01000	26.90	--	V	--	--	--	--
NC-1261.01000	102.00	--	I	--	--	--	--
NC-1264.01000	1.50	--	V	--	--	--	--
NC-1265.01000	0.34	--	V	--	--	--	--
NC-1267.01000	0.00	0.10	V	--	--	--	--
NC-1268.01000	0.00	0.05	V	--	--	--	--
NC-1269.01000	0.00	0.10	V	--	--	--	--
NC-1270.01000	0.00	0.53	V	--	--	--	--
NC-1271.01000	0.80	--	V	--	--	--	--
NC-1272.01000	0.00	0.39	V	--	--	--	--
NC-1273.01000	0.20	--	V	--	--	--	--
NC-1274.11000	0.10	--	P	--	--	--	--
NC-1274.21000	0.10	--	P	--	--	--	--
NC-1274.31000	0.00	0.06	V	--	--	--	--
NC-1274.41000	0.00	0.07	V	--	--	--	--
NC-1274.51000	0.00	0.04	V	--	--	--	--
NC-1275.01000	0.07	--	V	--	--	--	--
NC-1276.01000	0.00	0.10	V	--	--	--	--
NC-1277.01000	0.00	0.32	V	--	--	--	--
NC-1278.01000	0.50	--	V	--	--	--	--
NC-1279.01000	1.10	--	V	--	--	--	--
NC-1280.01000	0.00	0.07	V	--	--	--	--
NC-1281.01000	0.00	0.07	V	--	--	--	--
NC-1282.01000	0.00	0.09	P	--	--	--	--
NC-1283.01000	0.00	0.90	V	--	--	--	--
NC-1284.01000	0.50	--	V	--	--	--	--
NC-1285.01000	0.26	--	V	--	--	--	--
NC-1286.01000	0.10	--	V	--	--	--	--
NC-1287.01000	0.00	0.01	V	--	--	--	--
NC-1292.01000	0.00	0.10	V	--	--	--	--
NC-1295.01000	0.00	0.10	V	--	--	--	--
NC-1312.01000	0.00	0.10	V	--	--	--	--
NC-1317.01000	0.00	0.10	V	--	--	--	--
NC-1319.01000	0.00	0.10	V	--	--	--	--
NC-1323.01000	0.00	0.10	I	--	--	--	--
NC-1326.01000	0.00	0.06	V	--	--	--	--
NC-1335.01000	0.40	--	V	--	--	--	--
NC-1336.01000	5.30	--	V	--	--	--	--
NC-1337.01000	7.17	--	I	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1338.01000	27.60	--	V	--	--	--	--
NC-1339.01000	3.10	--	V	--	--	--	--
NC-1340.01000	17.90	--	V	--	--	--	--
NC-1341.01000	2.00	--	V	--	--	--	--
NC-1342.01000	1.40	--	V	--	--	--	--
NC-1343.61000	5.80	--	V	--	--	--	--
NC-1344.01000	8.95	--	I	--	--	--	--
NC-1345.01000	0.00	0.04	V	--	--	--	--
NC-1346.01000	13.70	--	V	--	--	--	--
NC-1347.01000	116.00	--	V	--	--	--	--
NC-1348.01000	0.00	0.10	I	--	--	--	--
NC-1349.01000	0.00	0.19	P	--	--	--	--
NC-1350.01000	24.20	--	V	--	--	--	--
NC-1351.01000	37.40	--	V	--	--	--	--
NC-1352.01000	2.60	--	P	--	--	--	--
NC-1353.01000	2.40	--	V	--	--	--	--
NC-1354.11000	4.00	--	V	--	--	--	--
NC-1354.21000	7.35	--	V	--	--	--	--
NC-1354.31000	1.30	--	V	--	--	--	--
NC-1354.41000	0.40	--	V	--	--	--	--
NC-1354.51000	0.45	--	V	--	--	--	--
NC-1355.01000	0.06	--	V	--	--	--	--
NC-1356.01000	0.40	--	V	--	--	--	--
NC-1357.01000	145.00	--	V	--	--	--	--
NC-1358.01000	5.80	--	V	--	--	--	--
NC-1359.01000	2.40	--	V	--	--	--	--
NC-1360.01000	11.10	--	V	--	--	--	--
NC-1361.01000	0.40	--	V	--	--	--	--
NC-1364.01000	2.70	--	V	--	--	--	--
NC-1365.01000	0.70	--	V	--	--	--	--
NC-1367.01000	0.11	--	P	--	--	--	--
NC-1368.01000	0.10	--	V	--	--	--	--
NC-1369.01000	0.07	--	V	--	--	--	--
NC-1370.01000	0.40	--	V	--	--	--	--
NC-1371.01000	0.50	--	V	--	--	--	--
NC-1372.01000	0.50	--	P	--	--	--	--
NC-1373.01000	0.90	--	V	--	--	--	--
NC-1374.01000	0.23	--	V	--	--	--	--
NC-1375.01000	0.03	--	V	--	--	--	--
NC-1376.01000	0.00	0.08	V	--	--	--	--
NC-1377.01000	0.20	--	V	--	--	--	--
NC-1378.01000	0.23	--	V	--	--	--	--
NC-1379.01000	0.55	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1380.01000	0.30	--	V	--	--	--	--
NC-1381.01000	0.00	0.02	V	--	--	--	--
NC-1382.01000	0.10	--	V	--	--	--	--
NC-1383.01000	0.92	--	V	--	--	--	--
NC-1384.11000	1.60	--	V	--	--	--	--
NC-1384.21000	0.55	--	V	--	--	--	--
NC-1384.31000	0.51	--	V	--	--	--	--
NC-1384.41000	0.70	--	V	--	--	--	--
NC-1384.51000	0.50	--	V	--	--	--	--
NC-1385.61000	0.59	--	V	--	--	--	--
NC-1386.01000	0.11	--	P	--	--	--	--
NC-1387.01000	0.00	0.10	V	--	--	--	--
NC-1390.01000	0.00	0.10	V	--	--	--	--
NC-1397.01000	0.00	0.10	V	--	--	--	--
NC-13A4.01000	0.00	0.50	V	--	--	--	--
NC-13A6.61000	0.00	0.10	V	--	--	--	--
NC-1426.11000	0.00	0.10	V	--	--	--	--
NC-1426.21000	0.00	0.10	V	--	--	--	--
NC-1426.31000	0.00	0.08	V	--	--	--	--
NC-1426.41000	0.00	0.10	V	--	--	--	--
NC-1426.51000	0.00	0.40	I	--	--	--	--
NC-1427.01000	0.00	0.10	V	--	--	--	--
NC-1431.01000	0.00	0.10	V	--	--	--	--
NC-1435.01000	0.00	0.36	V	--	--	--	--
NC-1436.01000	1.50	--	V	--	--	--	--
NC-1437.01000	3.45	--	V	--	--	--	--
NC-1438.01000	6.70	--	V	--	--	--	--
NC-1439.01000	7.10	--	V	--	--	--	--
NC-1440.01000	2.40	--	V	--	--	--	--
NC-1441.01000	1.10	--	V	--	--	--	--
NC-1442.01000	0.50	--	V	--	--	--	--
NC-1443.01000	1.39	--	V	--	--	--	--
NC-1444.01000	6.23	--	V	--	--	--	--
NC-1445.01000	112.00	--	V	--	--	--	--
NC-1446.01000	18.00	--	V	--	--	--	--
NC-1447.01000	1.90	--	V	--	--	--	--
NC-1448.01000	0.68	--	V	--	--	--	--
NC-1449.01000	0.30	--	V	--	--	--	--
NC-1450.01000	149.00	--	V	--	--	--	--
NC-1451.01000	19.80	--	V	--	--	--	--
NC-1452.01000	2.50	--	V	--	--	--	--
NC-1453.01000	1.70	--	V	--	--	--	--
NC-1454.01000	1.10	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1455.01000	0.50	--	V	--	--	--	--
NC-1456.01000	0.21	--	V	--	--	--	--
NC-1457.01000	2.60	--	V	--	--	--	--
NC-1458.01000	13.40	--	V	--	--	--	--
NC-1459.01000	5.28	--	V	--	--	--	--
NC-1460.01000	0.00	0.49	V	--	--	--	--
NC-1461.01000	0.00	1.30	V	--	--	--	--
NC-1462.01000	0.14	--	V	--	--	--	--
NC-1463.01000	0.00	0.20	V	--	--	--	--
NC-1464.11000	0.70	--	P	--	--	--	--
NC-1464.21000	0.00	0.88	V	--	--	--	--
NC-1464.31000	0.00	0.46	V	--	--	--	--
NC-1464.41000	0.50	--	V	--	--	--	--
NC-1464.51000	0.70	--	V	--	--	--	--
NC-1467.01000	0.15	--	V	--	--	--	--
NC-1468.01000	0.00	0.10	V	--	--	--	--
NC-1469.01000	0.19	--	V	--	--	--	--
NC-1470.01000	0.56	--	I	--	--	--	--
NC-1471.01000	0.90	--	V	--	--	--	--
NC-1472.01000	3.20	--	V	--	--	--	--
NC-1473.01000	0.17	--	V	--	--	--	--
NC-1474.61000	0.00	0.05	V	--	--	--	--
NC-1475.01000	0.00	0.10	V	--	--	--	--
NC-1476.01000	0.00	0.28	V	--	--	--	--
NC-1477.01000	0.20	--	V	--	--	--	--
NC-1478.01000	0.40	--	P	--	--	--	--
NC-1479.01000	0.60	--	P	--	--	--	--
NC-1480.01000	0.10	--	V	--	--	--	--
NC-1481.01000	0.00	0.08	V	--	--	--	--
NC-1482.01000	0.00	0.12	V	--	--	--	--
NC-1483.01000	0.00	0.77	I	--	--	--	--
NC-1484.01000	0.60	--	V	--	--	--	--
NC-1485.01000	0.56	--	V	--	--	--	--
NC-1486.01000	0.20	--	P	--	--	--	--
NC-1487.01000	0.00	0.10	V	--	--	--	--
NC-14B4.01000	0.00	0.10	V	--	--	--	--
NC-1525.01000	0.00	0.21	V	--	--	--	--
NC-1528.01000	0.00	0.14	V	--	--	--	--
NC-1535.01000	0.10	--	P	--	--	--	--
NC-1536.01000	0.20	--	I	--	--	--	--
NC-1542.01000	1.10	--	P	--	--	--	--
NC-1548.01000	3.80	--	V	--	--	--	--
NC-1555.01000	0.10	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1561.01000	0.40	--	P	--	--	--	--
NC-1562.01000	0.10	--	V	--	--	--	--
NC-1568.01000	0.00	0.11	V	--	--	--	--
NC-1574.11000	0.00	0.13	V	--	--	--	--
NC-1574.21000	0.09	--	V	--	--	--	--
NC-1574.31000	0.20	--	P	--	--	--	--
NC-1574.41000	0.00	0.06	V	--	--	--	--
NC-1574.51000	0.20	--	V	--	--	--	--
NC-1575.01000	0.00	0.06	V	--	--	--	--
NC-1581.01000	0.00	0.10	I	--	--	--	--
NC-1582.01000	0.00	0.06	V	--	--	--	--
NC-1583.01000	0.00	0.15	V	--	--	--	--
NC-1584.01000	1.70	--	V	--	--	--	--
NC-1585.01000	0.40	--	P	--	--	--	--
NC-1586.01000	0.10	--	V	--	--	--	--
NC-1587.01000	0.00	0.10	V	--	--	--	--
NC-15A0.01000	0.00	0.10	V	--	--	--	--
NC-15B0.01000	0.00	0.10	V	--	--	--	--
NC-15B6.01000	0.00	0.20	I	--	--	--	--
NC-1612.01000	0.31	--	V	--	--	--	--
NC-1613.01000	0.00	0.08	P	--	--	--	--
NC-1614.01000	0.00	0.09	V	--	--	--	--
NC-1615.01000	0.00	0.10	V	--	--	--	--
NC-1616.01000	0.60	--	V	--	--	--	--
NC-1617.01000	0.10	--	V	--	--	--	--
NC-1618.01000	0.00	0.05	V	--	--	--	--
NC-1619.01000	1.60	--	P	--	--	--	--
NC-1620.01000	2.00	--	V	--	--	--	--
NC-1621.01000	0.00	0.40	V	--	--	--	--
NC-1622.01000	0.00	0.10	V	--	--	--	--
NC-1623.01000	0.00	0.10	V	--	--	--	--
NC-1624.01000	0.00	0.80	P	--	--	--	--
NC-1625.01000	0.17	--	V	--	--	--	--
NC-1626.01000	1.00	--	V	--	--	--	--
NC-1627.11000	0.51	--	V	--	--	--	--
NC-1627.21000	0.56	--	V	--	--	--	--
NC-1627.31000	0.00	0.10	V	--	--	--	--
NC-1627.41000	1.24	--	P	--	--	--	--
NC-1627.51000	0.69	--	V	--	--	--	--
NC-1628.01000	0.20	--	V	--	--	--	--
NC-1629.01000	0.00	0.01	V	--	--	--	--
NC-1630.01000	0.09	--	V	--	--	--	--
NC-1631.01000	1.14	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1632.01000	0.70	--	V	--	--	--	--
NC-1634.01000	0.30	--	I	--	--	--	--
NC-1635.01000	0.00	0.13	V	--	--	--	--
NC-1636.01000	0.20	--	V	--	--	--	--
NC-1642.01000	0.70	--	V	--	--	--	--
NC-1648.01000	0.10	--	V	--	--	--	--
NC-1655.01000	0.10	--	V	--	--	--	--
NC-1661.01000	0.10	--	P	--	--	--	--
NC-1662.01000	0.20	--	V	--	--	--	--
NC-1668.01000	0.10	--	P	--	--	--	--
NC-1674.01000	0.18	--	V	--	--	--	--
NC-1675.01000	0.01	--	V	--	--	--	--
NC-1681.01000	0.00	0.10	V	--	--	--	--
NC-1682.01000	0.19	--	V	--	--	--	--
NC-1683.01000	1.30	--	V	--	--	--	--
NC-1684.01000	0.00	0.90	V	--	--	--	--
NC-1685.01000	0.00	0.18	V	--	--	--	--
NC-1686.01000	0.05	--	V	--	--	--	--
NC-1687.01000	0.03	--	V	--	--	--	--
NC-1691.01000	0.00	0.03	V	--	--	--	--
NC-16A3.01000	0.00	0.10	V	--	--	--	--
NC-1711.01000	0.02	--	V	--	--	--	--
NC-1712.11000	0.00	0.17	V	--	--	--	--
NC-1712.21000	1.51	--	V	--	--	--	--
NC-1712.31000	0.00	0.07	V	--	--	--	--
NC-1712.41000	0.00	0.22	V	--	--	--	--
NC-1712.51000	0.20	--	P	--	--	--	--
NC-1713.01000	0.05	--	V	--	--	--	--
NC-1714.01000	0.09	--	V	--	--	--	--
NC-1715.01000	0.00	0.10	V	--	--	--	--
NC-1716.01000	0.10	--	V	--	--	--	--
NC-1717.01000	0.00	0.03	V	--	--	--	--
NC-1718.61000	0.24	--	V	--	--	--	--
NC-1719.01000	0.00	0.90	V	--	--	--	--
NC-1720.01000	0.90	--	V	--	--	--	--
NC-1721.01000	0.30	--	V	--	--	--	--
NC-1722.01000	0.10	--	P	--	--	--	--
NC-1723.01000	0.00	0.14	V	--	--	--	--
NC-1724.01000	0.00	0.36	V	--	--	--	--
NC-1725.01000	0.80	--	V	--	--	--	--
NC-1726.01000	4.75	--	V	--	--	--	--
NC-1727.01000	2.05	--	V	--	--	--	--
NC-1728.01000	0.18	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1729.01000	0.00	0.11	V	--	--	--	--
NC-1730.01000	0.20	--	P	--	--	--	--
NC-1731.01000	1.40	--	P	--	--	--	--
NC-1732.01000	1.58	--	V	--	--	--	--
NC-1734.01000	0.60	--	V	--	--	--	--
NC-1735.01000	0.20	--	V	--	--	--	--
NC-1736.01000	0.00	0.11	V	--	--	--	--
NC-1737.01000	33.40	--	V	--	--	--	--
NC-1738.01000	88.70	--	V	--	--	--	--
NC-1739.01000	55.10	--	V	--	--	--	--
NC-1740.11000	4.70	--	P	--	--	--	--
NC-1740.21000	1.50	--	V	--	--	--	--
NC-1740.31000	1.70	--	V	--	--	--	--
NC-1740.41000	1.20	--	P	--	--	--	--
NC-1740.51000	3.10	--	V	--	--	--	--
NC-1741.01000	0.80	--	V	--	--	--	--
NC-1742.01000	0.00	0.09	V	--	--	--	--
NC-1743.01000	0.00	0.45	V	--	--	--	--
NC-1744.01000	2.40	--	V	--	--	--	--
NC-1745.01000	6.20	--	P	--	--	--	--
NC-1746.01000	4.30	--	V	--	--	--	--
NC-1747.01000	3.40	--	V	--	--	--	--
NC-1748.01000	0.00	0.04	V	--	--	--	--
NC-1749.01000	10.20	--	V	--	--	--	--
NC-1750.01000	1.50	--	V	--	--	--	--
NC-1751.01000	3.38	--	V	--	--	--	--
NC-1752.01000	2.50	--	V	--	--	--	--
NC-1753.01000	1.80	--	V	--	--	--	--
NC-1754.01000	8.30	--	V	--	--	--	--
NC-1755.01000	0.00	0.27	V	--	--	--	--
NC-1756.01000	1.60	--	V	--	--	--	--
NC-1757.01000	5.90	--	V	--	--	--	--
NC-1758.61000	5.90	--	V	--	--	--	--
NC-1759.01000	8.10	--	V	--	--	--	--
NC-1760.01000	3.40	--	V	--	--	--	--
NC-1761.01000	0.50	--	V	--	--	--	--
NC-1762.01000	0.10	--	V	--	--	--	--
NC-1763.01000	0.80	--	V	--	--	--	--
NC-1764.01000	0.70	--	V	--	--	--	--
NC-1765.01000	0.00	2.01	V	--	--	--	--
NC-1766.01000	0.44	--	V	--	--	--	--
NC-1767.01000	0.00	0.07	V	--	--	--	--
NC-1768.01000	0.00	0.07	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1769.01000	0.00	0.04	V	--	--	--	--
NC-1770.11000	0.20	--	V	--	--	--	--
NC-1770.21000	0.20	--	V	--	--	--	--
NC-1770.31000	0.00	0.20	V	--	--	--	--
NC-1770.41000	0.00	0.27	V	--	--	--	--
NC-1770.51000	0.20	--	V	--	--	--	--
NC-1771.01000	1.10	--	P	--	--	--	--
NC-1772.01000	1.40	--	V	--	--	--	--
NC-1773.01000	0.83	--	V	--	--	--	--
NC-1774.01000	0.00	0.16	V	--	--	--	--
NC-1775.01000	0.00	0.10	V	--	--	--	--
NC-1776.01000	0.20	--	V	--	--	--	--
NC-1777.01000	0.60	--	V	--	--	--	--
NC-1778.01000	1.10	--	V	--	--	--	--
NC-1779.01000	1.15	--	V	--	--	--	--
NC-1780.01000	0.00	0.06	V	--	--	--	--
NC-1781.01000	0.00	0.03	V	--	--	--	--
NC-1782.01000	0.00	0.20	P	--	--	--	--
NC-1783.01000	0.00	0.69	V	--	--	--	--
NC-1784.01000	0.00	0.41	V	--	--	--	--
NC-1785.01000	2.40	--	V	--	--	--	--
NC-1786.01000	0.00	0.01	V	--	--	--	--
NC-1787.01000	0.00	0.10	V	--	--	--	--
NC-1790.01000	--	--	M	--	--	--	--
NC-17A7.01000	0.00	0.10	V	--	--	--	--
NC-1811.01000	0.06	--	V	--	--	--	--
NC-1812.01000	0.00	0.10	V	--	--	--	--
NC-1813.01000	0.00	0.26	V	--	--	--	--
NC-1814.01000	0.00	0.40	V	--	--	--	--
NC-1815.01000	0.00	0.10	V	--	--	--	--
NC-1816.01000	0.00	2.30	V	--	--	--	--
NC-1817.01000	0.00	0.24	V	--	--	--	--
NC-1818.01000	0.00	0.60	V	--	--	--	--
NC-1819.01000	0.96	--	V	--	--	--	--
NC-1820.01000	1.20	--	V	--	--	--	--
NC-1821.61000	0.47	--	V	--	--	--	--
NC-1822.01000	0.00	0.05	V	--	--	--	--
NC-1823.11000	0.00	0.04	I	--	--	--	--
NC-1823.21000	0.00	0.10	V	--	--	--	--
NC-1823.31000	0.07	--	V	--	--	--	--
NC-1823.41000	0.00	1.09	V	--	--	--	--
NC-1823.51000	0.00	0.06	V	--	--	--	--
NC-1824.01000	0.20	--	I	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1825.01000	0.00	1.20	V	--	--	--	--
NC-1826.01000	11.80	--	V	--	--	--	--
NC-1827.01000	0.00	0.03	V	--	--	--	--
NC-1828.01000	0.00	0.30	V	--	--	--	--
NC-1829.01000	0.00	0.10	V	--	--	--	--
NC-1830.01000	0.80	--	V	--	--	--	--
NC-1831.01000	10.40	--	P	--	--	--	--
NC-1832.01000	0.00	2.52	V	--	--	--	--
NC-1834.01000	0.20	--	V	--	--	--	--
NC-1835.01000	0.23	--	V	--	--	--	--
NC-1836.01000	0.15	--	V	--	--	--	--
NC-1837.01000	9.60	--	V	--	--	--	--
NC-1838.01000	10.10	--	V	--	--	--	--
NC-1839.01000	21.70	--	V	--	--	--	--
NC-1840.01000	0.60	--	V	--	--	--	--
NC-1841.01000	0.00	0.35	V	--	--	--	--
NC-1842.01000	0.13	--	V	--	--	--	--
NC-1843.01000	4.04	--	V	--	--	--	--
NC-1844.01000	13.20	--	V	--	--	--	--
NC-1845.01000	1.69	--	V	--	--	--	--
NC-1846.01000	2.30	--	V	--	--	--	--
NC-1847.01000	4.00	--	V	--	--	--	--
NC-1848.01000	0.46	--	V	--	--	--	--
NC-1849.01000	2.20	--	V	--	--	--	--
NC-1850.01000	25.30	--	V	--	--	--	--
NC-1851.01000	3.10	--	V	--	--	--	--
NC-1852.01000	38.60	--	V	--	--	--	--
NC-1853.11000	1.50	--	V	--	--	--	--
NC-1853.21000	0.80	--	P	--	--	--	--
NC-1853.31000	0.70	--	V	--	--	--	--
NC-1853.41000	0.70	--	V	--	--	--	--
NC-1853.51000	0.90	--	V	--	--	--	--
NC-1854.01000	13.30	--	V	--	--	--	--
NC-1855.01000	0.10	--	P	--	--	--	--
NC-1856.01000	0.50	--	V	--	--	--	--
NC-1857.01000	0.80	--	V	--	--	--	--
NC-1858.01000	5.10	--	V	--	--	--	--
NC-1859.01000	11.50	--	V	--	--	--	--
NC-1860.01000	1.70	--	V	--	--	--	--
NC-1861.61000	0.00	0.20	V	--	--	--	--
NC-1862.01000	0.00	0.14	V	--	--	--	--
NC-1863.01000	0.20	--	V	--	--	--	--
NC-1864.01000	0.36	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1865.01000	0.50	--	V	--	--	--	--
NC-1866.01000	0.43	--	V	--	--	--	--
NC-1867.01000	0.14	--	I	--	--	--	--
NC-1868.01000	0.00	0.04	I	--	--	--	--
NC-1869.01000	0.18	--	V	--	--	--	--
NC-1870.01000	0.00	0.11	V	--	--	--	--
NC-1871.01000	0.30	--	V	--	--	--	--
NC-1872.01000	0.60	--	V	--	--	--	--
NC-1873.01000	1.90	--	P	--	--	--	--
NC-1874.01000	0.00	0.10	V	--	--	--	--
NC-1875.01000	0.00	0.10	V	--	--	--	--
NC-1876.01000	0.00	0.62	V	--	--	--	--
NC-1877.01000	2.30	--	V	--	--	--	--
NC-1878.01000	2.00	--	V	--	--	--	--
NC-1879.01000	0.90	--	I	--	--	--	--
NC-1880.01000	0.00	0.10	V	--	--	--	--
NC-1881.01000	0.10	--	V	--	--	--	--
NC-1882.01000	0.30	--	P	--	--	--	--
NC-1883.11000	0.00	0.71	V	--	--	--	--
NC-1883.21000	0.40	--	P	--	--	--	--
NC-1883.31000	0.50	--	V	--	--	--	--
NC-1883.41000	0.40	--	P	--	--	--	--
NC-1883.51000	1.60	--	V	--	--	--	--
NC-1884.01000	1.40	--	V	--	--	--	--
NC-1885.01000	0.50	--	V	--	--	--	--
NC-1886.01000	0.00	0.07	V	--	--	--	--
NC-1887.01000	0.00	0.10	V	--	--	--	--
NC-1896.01000	0.00	0.10	V	--	--	--	--
NC-18A1.01000	0.00	0.10	V	--	--	--	--
NC-1910.01000	0.00	0.10	V	--	--	--	--
NC-1911.01000	0.00	0.02	V	--	--	--	--
NC-1912.01000	0.00	0.13	V	--	--	--	--
NC-1913.01000	0.30	--	V	--	--	--	--
NC-1914.01000	1.99	--	V	--	--	--	--
NC-1915.01000	0.00	0.07	V	--	--	--	--
NC-1916.01000	0.00	1.85	I	--	--	--	--
NC-1917.01000	0.00	0.33	V	--	--	--	--
NC-1918.01000	0.70	--	V	--	--	--	--
NC-1919.01000	2.40	--	V	--	--	--	--
NC-1920.01000	7.00	--	V	--	--	--	--
NC-1921.01000	0.80	--	V	--	--	--	--
NC-1922.01000	0.00	0.10	V	--	--	--	--
NC-1923.01000	0.10	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1924.61000	0.80	--	V	--	--	--	--
NC-1925.01000	4.00	--	V	--	--	--	--
NC-1926.01000	22.60	--	V	--	--	--	--
NC-1927.01000	1.40	--	V	--	--	--	--
NC-1928.01000	9.40	--	V	--	--	--	--
NC-1929.01000	0.00	0.30	V	--	--	--	--
NC-1930.01000	1.80	--	V	--	--	--	--
NC-1931.01000	13.00	--	V	--	--	--	--
NC-1932.01000	1.99	--	V	--	--	--	--
NC-1934.01000	0.30	--	V	--	--	--	--
NC-1935.01000	0.00	0.25	I	--	--	--	--
NC-1936.11000	0.00	0.23	I	--	--	--	--
NC-1936.21000	0.60	--	V	--	--	--	--
NC-1936.31000	0.25	--	V	--	--	--	--
NC-1936.41000	0.30	--	V	--	--	--	--
NC-1936.51000	0.10	--	V	--	--	--	--
NC-1937.01000	0.40	--	V	--	--	--	--
NC-1938.01000	0.90	--	V	--	--	--	--
NC-1939.01000	0.40	--	V	--	--	--	--
NC-1940.01000	0.30	--	V	--	--	--	--
NC-1941.01000	6.50	--	V	--	--	--	--
NC-1942.01000	0.20	--	V	--	--	--	--
NC-1943.01000	74.90	--	V	--	--	--	--
NC-1944.01000	14.80	--	V	--	--	--	--
NC-1945.01000	4.70	--	V	--	--	--	--
NC-1946.01000	1.90	--	V	--	--	--	--
NC-1947.01000	64.70	--	V	--	--	--	--
NC-1948.01000	0.90	--	V	--	--	--	--
NC-1949.01000	1.30	--	P	--	--	--	--
NC-1950.01000	1.40	--	V	--	--	--	--
NC-1951.01000	1.20	--	V	--	--	--	--
NC-1952.01000	1.80	--	V	--	--	--	--
NC-1953.01000	0.70	--	V	--	--	--	--
NC-1954.01000	0.70	--	V	--	--	--	--
NC-1955.01000	3.00	--	V	--	--	--	--
NC-1956.01000	0.10	--	V	--	--	--	--
NC-1957.01000	1.20	--	V	--	--	--	--
NC-1958.01000	7.13	--	V	--	--	--	--
NC-1959.01000	35.50	--	V	--	--	--	--
NC-1960.01000	6.30	--	V	--	--	--	--
NC-1961.01000	0.60	--	P	--	--	--	--
NC-1962.01000	0.50	--	V	--	--	--	--
NC-1963.01000	0.50	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-1964.61000	0.37	--	V	--	--	--	--
NC-1965.01000	0.60	--	V	--	--	--	--
NC-1966.11000	0.60	--	V	--	--	--	--
NC-1966.21000	0.20	--	V	--	--	--	--
NC-1966.31000	0.60	--	V	--	--	--	--
NC-1966.41000	0.00	0.14	V	--	--	--	--
NC-1966.51000	0.42	--	V	--	--	--	--
NC-1967.01000	0.00	0.10	V	--	--	--	--
NC-1968.01000	0.00	0.02	V	--	--	--	--
NC-1969.01000	0.00	0.10	V	--	--	--	--
NC-1970.01000	0.00	0.04	V	--	--	--	--
NC-1971.01000	1.00	--	V	--	--	--	--
NC-1972.01000	1.70	--	V	--	--	--	--
NC-1973.01000	0.31	--	V	--	--	--	--
NC-1974.01000	0.00	0.10	V	--	--	--	--
NC-1975.01000	0.00	0.13	V	--	--	--	--
NC-1976.01000	0.50	--	V	--	--	--	--
NC-1977.01000	2.40	--	I	--	--	--	--
NC-1978.01000	4.40	--	V	--	--	--	--
NC-1979.01000	0.50	--	P	--	--	--	--
NC-1980.01000	0.00	0.10	V	--	--	--	--
NC-1981.01000	0.15	--	V	--	--	--	--
NC-1982.01000	0.00	0.05	V	--	--	--	--
NC-1983.01000	0.00	0.31	V	--	--	--	--
NC-1984.01000	0.80	--	V	--	--	--	--
NC-1985.01000	1.10	--	V	--	--	--	--
NC-1986.01000	0.00	0.09	V	--	--	--	--
NC-1987.01000	0.00	0.10	V	--	--	--	--
NC-19A6.01000	0.00	0.10	V	--	--	--	--
NC-19B5.01000	0.00	0.10	V	--	--	--	--
NC-2010.01000	0.00	0.17	V	--	--	--	--
NC-2011.01000	0.35	--	V	--	--	--	--
NC-2012.01000	0.00	0.02	V	--	--	--	--
NC-2013.01000	1.00	--	V	--	--	--	--
NC-2014.01000	3.30	--	V	--	--	--	--
NC-2015.01000	1.09	--	V	--	--	--	--
NC-2016.01000	0.30	--	P	--	--	--	--
NC-2017.01000	0.80	--	V	--	--	--	--
NC-2018.01000	0.60	--	V	--	--	--	--
NC-2019.11000	2.50	--	V	--	--	--	--
NC-2019.21000	2.70	--	P	--	--	--	--
NC-2019.31000	2.80	--	V	--	--	--	--
NC-2019.41000	1.90	--	P	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2019.51000	2.70	--	V	--	--	--	--
NC-2020.01000	7.40	--	P	--	--	--	--
NC-2021.01000	0.00	1.46	V	--	--	--	--
NC-2022.01000	0.00	0.14	V	--	--	--	--
NC-2023.01000	0.00	0.15	V	--	--	--	--
NC-2024.01000	0.00	1.20	V	--	--	--	--
NC-2025.01000	6.00	--	V	--	--	--	--
NC-2026.01000	14.80	--	V	--	--	--	--
NC-2027.61000	16.40	--	V	--	--	--	--
NC-2027.02000	11.80	--	V	--	--	--	--
NC-2027.02001	0.08	--	V	--	--	--	--
NC-2027.02004	0.12	--	P	--	--	--	--
NC-2027.04000	5.00	--	V	--	--	--	--
NC-2028.01000	1.50	--	V	--	--	--	--
NC-2029.01000	0.00	0.53	V	--	--	--	--
NC-2030.01000	1.30	--	V	--	--	--	--
NC-2030.03000	2.30	--	V	0	200	0	200
NC-2030.63001	0.41	--	V	17962	--	0	600
NC-2030.03004	0.07	--	V	0	500	0	500
NC-2030.03008	0.00	0.01	V	0	500	0	500
NC-2030.03020	0.01	--	V	0	500	0	500
NC-2030.03030	0.02	--	V	0	500	0	500
NC-2030.03040	0.02	--	P	0	500	0	500
NC-2030.04000	0.03	--	V	67265	--	96982	--
NC-2031.01000	12.70	--	V	--	--	--	--
NC-2032.01000	4.40	--	V	--	--	--	--
NC-2034.01000	0.60	--	V	--	--	--	--
NC-2035.01000	0.20	--	P	--	--	--	--
NC-2036.01000	0.26	--	V	--	--	--	--
NC-2037.01000	0.00	0.41	V	--	--	--	--
NC-2038.01000	0.80	--	V	--	--	--	--
NC-2039.01000	0.68	--	V	--	--	--	--
NC-2040.01000	0.00	0.27	V	--	--	--	--
NC-2041.01000	0.40	--	V	--	--	--	--
NC-2042.01000	0.08	--	V	--	--	--	--
NC-2043.01000	1.90	--	V	--	--	--	--
NC-2044.01000	147.00	--	V	--	--	--	--
NC-2045.01000	1.10	--	V	--	--	--	--
NC-2046.01000	0.80	--	V	--	--	--	--
NC-2047.01000	0.00	1.12	V	--	--	--	--
NC-2048.01000	0.30	--	V	--	--	--	--
NC-2049.11000	0.00	0.10	V	--	--	--	--
NC-2049.21000	0.27	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2049.31000	0.00	0.92	V	--	--	--	--
NC-2049.41000	0.00	0.24	V	--	--	--	--
NC-2049.51000	0.00	0.30	V	--	--	--	--
NC-2050.01000	0.00	0.65	V	--	--	--	--
NC-2051.01000	0.71	--	V	--	--	--	--
NC-2052.01000	0.80	--	I	--	--	--	--
NC-2053.01000	0.30	--	I	--	--	--	--
NC-2054.01000	0.00	0.20	V	--	--	--	--
NC-2055.01000	0.00	0.01	V	--	--	--	--
NC-2056.01000	0.00	0.30	V	--	--	--	--
NC-2057.01000	0.00	0.63	V	--	--	--	--
NC-2058.01000	1.95	--	V	--	--	--	--
NC-2059.01000	2.10	--	V	--	--	--	--
NC-2060.01000	1.00	--	V	--	--	--	--
NC-2061.01000	0.00	0.02	V	--	--	--	--
NC-2062.01000	0.00	0.12	V	--	--	--	--
NC-2063.01000	0.45	--	P	--	--	--	--
NC-2064.01000	0.00	1.57	V	--	--	--	--
NC-2065.01000	1.07	--	V	--	--	--	--
NC-2066.01000	0.44	--	I	--	--	--	--
NC-2067.61000	0.00	0.15	V	--	--	--	--
NC-2068.01000	0.42	--	V	--	--	--	--
NC-2069.01000	0.60	--	V	--	--	--	--
NC-2070.01000	0.00	0.16	V	--	--	--	--
NC-2071.01000	0.86	--	V	--	--	--	--
NC-2072.01000	5.10	--	V	--	--	--	--
NC-2073.01000	0.00	0.27	V	--	--	--	--
NC-2074.01000	0.00	0.10	V	--	--	--	--
NC-2075.01000	0.00	0.01	V	--	--	--	--
NC-2076.01000	0.00	0.13	V	--	--	--	--
NC-2077.01000	2.51	--	P	--	--	--	--
NC-2078.01000	4.30	--	V	--	--	--	--
NC-2079.11000	1.00	--	V	--	--	--	--
NC-2079.21000	0.00	0.23	V	--	--	--	--
NC-2079.31000	0.40	--	I	--	--	--	--
NC-2079.41000	0.00	0.21	V	--	--	--	--
NC-2079.51000	0.00	0.27	V	--	--	--	--
NC-2080.01000	0.00	0.10	V	--	--	--	--
NC-2081.01000	0.00	0.26	V	--	--	--	--
NC-2082.01000	0.09	--	V	--	--	--	--
NC-2083.01000	0.00	0.96	V	--	--	--	--
NC-2084.01000	2.18	--	V	--	--	--	--
NC-2085.01000	0.87	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2086.01000	0.16	--	V	--	--	--	--
NC-2087.01000	0.00	0.04	V	--	--	--	--
NC-2096.01000	0.00	0.10	V	--	--	--	--
NC-2098.01000	0.00	0.10	V	--	--	--	--
NC-20A7.61000	0.00	0.10	V	--	--	--	--
NC-2110.01000	0.00	0.10	V	--	--	--	--
NC-2111.01000	0.10	--	P	--	--	--	--
NC-2112.01000	0.20	--	V	--	--	--	--
NC-2113.01000	0.90	--	P	--	--	--	--
NC-2114.01000	4.30	--	V	--	--	--	--
NC-2115.01000	7.60	--	V	--	--	--	--
NC-2115.02000	8.40	--	V	--	--	--	--
NC-2115.02001	7.60	--	V	--	--	--	--
NC-2115.02004	8.50	--	V	--	--	--	--
NC-2115.04000	0.17	--	V	--	--	--	--
NC-2116.01000	0.00	0.40	V	--	--	--	--
NC-2117.01000	1.60	--	V	--	--	--	--
NC-2118.01000	5.00	--	V	--	--	--	--
NC-2119.01000	5.40	--	P	--	--	--	--
NC-2120.01000	4.40	--	V	--	--	--	--
NC-2121.01000	2.80	--	P	--	--	--	--
NC-2122.01000	0.40	--	V	--	--	--	--
NC-2123.01000	0.44	--	V	--	--	--	--
NC-2124.01000	2.00	--	V	--	--	--	--
NC-2125.01000	4.60	--	V	--	--	--	--
NC-2126.01000	10.50	--	V	--	--	--	--
NC-2127.01000	5.60	--	P	--	--	--	--
NC-2128.01000	1.70	--	V	--	--	--	--
NC-2129.01000	0.90	--	V	--	--	--	--
NC-2130.61000	31.90	--	V	--	--	--	--
NC-2131.11000	24.30	--	V	--	--	--	--
NC-2131.21000	15.80	--	V	--	--	--	--
NC-2131.31000	14.80	--	V	--	--	--	--
NC-2131.41000	21.10	--	P	--	--	--	--
NC-2131.51000	13.90	--	I	--	--	--	--
NC-2132.01000	2.90	--	V	--	--	--	--
NC-2134.01000	0.40	--	V	--	--	--	--
NC-2135.01000	0.20	--	V	--	--	--	--
NC-2136.01000	0.00	0.22	V	--	--	--	--
NC-2137.01000	0.60	--	P	--	--	--	--
NC-2138.01000	0.00	0.56	V	--	--	--	--
NC-2139.01000	1.00	--	V	--	--	--	--
NC-2140.01000	0.80	--	P	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2141.01000	0.40	--	V	--	--	--	--
NC-2142.01000	0.00	0.20	V	--	--	--	--
NC-2143.01000	0.30	--	P	--	--	--	--
NC-2144.01000	0.00	0.86	V	--	--	--	--
NC-2145.01000	0.90	--	P	--	--	--	--
NC-2146.01000	0.70	--	V	--	--	--	--
NC-2147.01000	1.30	--	V	--	--	--	--
NC-2148.01000	0.97	--	V	--	--	--	--
NC-2149.01000	0.00	0.13	V	--	--	--	--
NC-2150.01000	0.00	0.05	V	--	--	--	--
NC-2151.01000	1.10	--	V	--	--	--	--
NC-2152.01000	0.80	--	V	--	--	--	--
NC-2153.01000	0.00	0.26	V	--	--	--	--
NC-2154.01000	0.00	0.05	P	--	--	--	--
NC-2155.01000	0.00	0.10	V	--	--	--	--
NC-2156.01000	0.00	0.10	V	--	--	--	--
NC-2157.01000	0.40	--	I	--	--	--	--
NC-2158.01000	4.13	--	V	--	--	--	--
NC-2159.01000	1.08	--	V	--	--	--	--
NC-2160.01000	0.50	--	V	--	--	--	--
NC-2161.01000	0.00	0.08	V	--	--	--	--
NC-2162.11000	0.21	--	V	--	--	--	--
NC-2162.21000	0.00	0.12	V	--	--	--	--
NC-2162.31000	0.00	0.09	V	--	--	--	--
NC-2162.41000	0.20	--	I	--	--	--	--
NC-2162.51000	0.00	0.05	V	--	--	--	--
NC-2163.01000	1.00	--	V	--	--	--	--
NC-2164.01000	1.80	--	V	--	--	--	--
NC-2165.01000	5.90	--	V	--	--	--	--
NC-2166.01000	1.70	--	V	--	--	--	--
NC-2167.01000	0.37	--	V	--	--	--	--
NC-2168.01000	0.20	--	V	--	--	--	--
NC-2169.01000	0.00	0.19	V	--	--	--	--
NC-2170.61000	0.47	--	V	--	--	--	--
NC-2171.01000	2.00	--	V	--	--	--	--
NC-2172.01000	10.00	--	V	--	--	--	--
NC-2173.01000	1.60	--	V	--	--	--	--
NC-2174.01000	0.00	0.10	V	--	--	--	--
NC-2175.01000	0.00	0.67	V	--	--	--	--
NC-2176.01000	0.00	0.13	V	--	--	--	--
NC-2177.01000	9.95	--	V	--	--	--	--
NC-2178.01000	3.50	--	V	--	--	--	--
NC-2179.01000	0.80	--	I	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2180.01000	0.00	0.15	V	--	--	--	--
NC-2181.01000	0.48	--	V	--	--	--	--
NC-2182.01000	0.90	--	V	--	--	--	--
NC-2184.01000	4.68	--	V	--	--	--	--
NC-2185.01000	4.02	--	V	--	--	--	--
NC-2186.01000	0.00	1.41	V	--	--	--	--
NC-2187.01000	3.20	--	V	--	--	--	--
NC-21B5.01000	0.00	0.10	I	--	--	--	--
NC-2210.01000	0.00	0.80	I	--	--	--	--
NC-2211.01000	0.00	2.60	P	--	--	--	--
NC-2212.01000	34.60	--	V	--	--	--	--
NC-2213.01000	1.75	--	V	--	--	--	--
NC-2214.01000	7.20	--	P	--	--	--	--
NC-2215.02000	425.00	--	P	--	--	--	--
NC-2215.02001	94.50	--	V	--	--	--	--
NC-2215.02004	74.90	--	V	--	--	--	--
NC-2215.04000	8.70	--	V	--	--	--	--
NC-2215.11000	59.00	--	V	--	--	--	--
NC-2215.21000	69.60	--	V	--	--	--	--
NC-2215.31000	53.90	--	V	--	--	--	--
NC-2215.41000	156.00	--	V	--	--	--	--
NC-2215.51000	95.20	--	V	--	--	--	--
NC-2216.01000	0.40	--	P	--	--	--	--
NC-2217.01000	7.30	--	P	--	--	--	--
NC-2218.01000	13.50	--	V	--	--	--	--
NC-2218.02000	13.50	--	I	--	--	--	--
NC-2218.02001	7.60	--	V	--	--	--	--
NC-2218.02004	0.34	--	V	--	--	--	--
NC-2218.04000	6.20	--	V	--	--	--	--
NC-2219.01000	6.10	--	V	--	--	--	--
NC-2220.01000	2.10	--	V	--	--	--	--
NC-2221.01000	4.80	--	V	--	--	--	--
NC-2222.01000	2.50	--	V	--	--	--	--
NC-2223.01000	1.00	--	V	--	--	--	--
NC-2224.01000	3.90	--	V	--	--	--	--
NC-2225.01000	2.60	--	V	--	--	--	--
NC-2226.01000	10.20	--	P	--	--	--	--
NC-2227.01000	37.20	--	V	--	--	--	--
NC-2227.02000	17.30	--	V	--	--	--	--
NC-2227.02001	0.00	0.02	V	--	--	--	--
NC-2227.02004	0.22	--	V	--	--	--	--
NC-2227.04000	0.85	--	V	--	--	--	--
NC-2228.01000	3.50	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2229.01000	0.80	--	V	--	--	--	--
NC-2230.01000	63.00	--	P	--	--	--	--
NC-2231.01000	14.30	--	V	--	--	--	--
NC-2232.01000	6.90	--	V	--	--	--	--
NC-2234.01000	0.70	--	V	--	--	--	--
NC-2235.01000	0.00	0.26	V	--	--	--	--
NC-2236.01000	0.00	0.20	V	--	--	--	--
NC-2237.01000	0.40	--	V	--	--	--	--
NC-2238.01000	0.50	--	V	--	--	--	--
NC-2239.01000	1.10	--	V	--	--	--	--
NC-2240.01000	2.10	--	P	--	--	--	--
NC-2241.01000	0.80	--	V	--	--	--	--
NC-2242.01000	0.00	0.21	V	--	--	--	--
NC-2243.01000	0.70	--	V	--	--	--	--
NC-2244.01000	1.90	--	V	--	--	--	--
NC-2245.11000	2.40	--	V	--	--	--	--
NC-2245.21000	4.30	--	V	--	--	--	--
NC-2245.31000	0.00	0.10	V	--	--	--	--
NC-2245.41000	3.45	--	V	--	--	--	--
NC-2245.51000	1.30	--	V	--	--	--	--
NC-2246.01000	3.10	--	V	--	--	--	--
NC-2247.01000	1.60	--	V	--	--	--	--
NC-2248.01000	1.10	--	P	--	--	--	--
NC-2249.01000	1.40	--	P	--	--	--	--
NC-2250.01000	2.00	--	V	--	--	--	--
NC-2251.01000	3.06	--	V	--	--	--	--
NC-2252.01000	5.20	--	V	--	--	--	--
NC-2253.01000	5.50	--	V	--	--	--	--
NC-2254.01000	3.30	--	V	--	--	--	--
NC-2255.01000	0.00	0.18	V	--	--	--	--
NC-2256.01000	3.80	--	V	--	--	--	--
NC-2257.01000	11.30	--	V	--	--	--	--
NC-2258.01000	29.10	--	V	--	--	--	--
NC-2259.01000	9.30	--	V	--	--	--	--
NC-2260.01000	4.00	--	V	--	--	--	--
NC-2261.01000	1.90	--	P	--	--	--	--
NC-2262.01000	0.95	--	P	--	--	--	--
NC-2263.01000	4.70	--	V	--	--	--	--
NC-2264.01000	13.30	--	V	--	--	--	--
NC-2265.01000	19.80	--	V	--	--	--	--
NC-2266.01000	5.70	--	V	--	--	--	--
NC-2267.01000	14.70	--	V	--	--	--	--
NC-2268.01000	1.20	--	P	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2269.01000	2.80	--	V	--	--	--	--
NC-2270.01000	9.90	--	V	--	--	--	--
NC-2271.01000	27.50	--	V	--	--	--	--
NC-2272.01000	25.30	--	V	--	--	--	--
NC-2273.61000	--	--	M	--	--	--	--
NC-2274.01000	7.68	--	V	--	--	--	--
NC-2275.11000	2.00	--	V	--	--	--	--
NC-2275.21000	2.20	--	V	--	--	--	--
NC-2275.31000	2.30	--	V	--	--	--	--
NC-2275.41000	1.10	--	V	--	--	--	--
NC-2275.51000	3.80	--	V	--	--	--	--
NC-2276.01000	4.90	--	V	--	--	--	--
NC-2277.01000	9.40	--	V	--	--	--	--
NC-2278.01000	--	--	M	--	--	--	--
NC-2279.01000	5.00	--	V	--	--	--	--
NC-2280.01000	0.70	--	P	--	--	--	--
NC-2281.01000	0.20	--	P	--	--	--	--
NC-2282.01000	7.10	--	P	--	--	--	--
NC-2284.01000	4.58	--	P	--	--	--	--
NC-2285.01000	2.10	--	V	--	--	--	--
NC-2286.01000	0.10	--	V	--	--	--	--
NC-2287.01000	0.00	0.21	V	--	--	--	--
NC-2293.01000	0.00	0.10	V	--	--	--	--
NC-22B5.11000	0.07	--	V	--	--	--	--
NC-22B5.21000	0.40	--	V	--	--	--	--
NC-22B5.31000	0.30	--	V	--	--	--	--
NC-22B5.41000	0.00	0.10	V	--	--	--	--
NC-22B5.51000	0.00	0.10	V	--	--	--	--
NC-22B9.01000	0.00	0.10	V	--	--	--	--
NC-2309.01000	0.06	--	V	--	--	--	--
NC-2310.01000	0.10	--	V	--	--	--	--
NC-2310.01000	0.10	--	V	--	--	--	--
NC-2311.01000	0.20	--	V	--	--	--	--
NC-2312.01000	0.30	--	V	--	--	--	--
NC-2313.01000	0.75	--	V	--	--	--	--
NC-2314.01000	0.40	--	I	--	--	--	--
NC-2315.01000	0.70	--	V	--	--	--	--
NC-2316.01000	0.20	--	I	--	--	--	--
NC-2317.01000	87.80	--	I	--	--	--	--
NC-2317.03000	118.00	--	V	47350	--	138268	--
NC-2317.03001	1.20	--	V	0	1000	15152	--
NC-2317.03004	0.28	--	V	25900	--	13655	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2317.03008	0.04	--	V	0	200	0	200
NC-2317.03020	0.07	--	V	0	200	0	200
NC-2317.03030	0.01	--	V	0	200	0	200
NC-2317.03040	0.00	0.01	V	0	200	0	200
NC-2317.04000	2.00	--	V	18135	--	72628	--
NC-2318.01000	4.90	--	P	--	--	--	--
NC-2319.01000	0.40	--	V	--	--	--	--
NC-2320.01000	1.60	--	V	--	--	--	--
NC-2321.01000	38.00	--	V	--	--	--	--
NC-2322.01000	2.50	--	I	--	--	--	--
NC-2323.01000	1.30	--	V	--	--	--	--
NC-2324.01000	7.63	--	V	--	--	--	--
NC-2325.01000	13.90	--	V	--	--	--	--
NC-2326.01000	15.10	--	V	--	--	--	--
NC-2327.01000	59.30	--	V	--	--	--	--
NC-2328.03000	14.40	--	V	12271	--	17958	--
NC-2328.03001	0.00	0.05	I	79595	--	0	1000
NC-2328.03004	0.30	--	P	6341	--	0	200
NC-2328.03008	0.15	--	V	98245	--	238596	--
NC-2328.03020	0.06	--	V	0	50	1916	--
NC-2328.03030	0.01	--	V	401	--	0	50
NC-2328.03040	0.00	0.01	V	2391	--	0	100
NC-2328.04000	13.10	--	V	2037	--	0	100
NC-2328.11000	51.00	--	V	--	--	--	--
NC-2328.21000	13.40	--	V	--	--	--	--
NC-2328.31000	114.00	--	V	--	--	--	--
NC-2328.41000	85.80	--	V	--	--	--	--
NC-2328.51000	75.30	--	V	--	--	--	--
NC-2329.01000	3.90	--	V	--	--	--	--
NC-2330.01000	37.30	--	P	--	--	--	--
NC-2330.02000	3.40	--	V	--	--	--	--
NC-2330.02001	0.00	0.01	V	--	--	--	--
NC-2330.02004	0.00	0.04	V	--	--	--	--
NC-2330.04000	0.26	--	V	--	--	--	--
NC-2331.01000	31.20	--	V	--	--	--	--
NC-2331.02000	36.90	--	V	--	--	--	--
NC-2331.02001	0.66	--	V	--	--	--	--
NC-2331.02004	3.10	--	P	--	--	--	--
NC-2331.04000	2.70	--	V	--	--	--	--
NC-2332.01000	4.70	--	P	--	--	--	--
NC-2334.01000	0.40	--	V	--	--	--	--
NC-2335.01000	0.30	--	P	--	--	--	--
NC-2336.61000	0.00	0.60	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2337.01000	0.00	0.52	V	--	--	--	--
NC-2338.01000	0.70	--	P	--	--	--	--
NC-2339.01000	1.30	--	V	--	--	--	--
NC-2340.01000	0.90	--	P	--	--	--	--
NC-2341.01000	0.70	--	V	--	--	--	--
NC-2342.01000	0.00	0.42	V	--	--	--	--
NC-2343.01000	1.50	--	V	--	--	--	--
NC-2344.01000	3.30	--	P	--	--	--	--
NC-2345.01000	9.90	--	V	--	--	--	--
NC-2346.01000	1.79	--	V	--	--	--	--
NC-2347.01000	3.60	--	V	--	--	--	--
NC-2348.01000	1.91	--	V	--	--	--	--
NC-2349.01000	3.37	--	V	--	--	--	--
NC-2350.01000	2.24	--	V	--	--	--	--
NC-2351.01000	3.88	--	V	--	--	--	--
NC-2352.01000	3.50	--	V	--	--	--	--
NC-2353.01000	2.34	--	V	--	--	--	--
NC-2354.01000	7.14	--	V	--	--	--	--
NC-2355.01000	5.42	--	V	--	--	--	--
NC-2356.01000	10.80	--	V	--	--	--	--
NC-2357.01000	8.21	--	V	--	--	--	--
NC-2358.11000	35.90	--	V	--	--	--	--
NC-2358.21000	40.60	--	V	--	--	--	--
NC-2358.31000	28.60	--	V	--	--	--	--
NC-2358.41000	37.60	--	V	--	--	--	--
NC-2358.51000	30.60	--	V	--	--	--	--
NC-2359.01000	8.20	--	V	--	--	--	--
NC-2360.01000	6.05	--	V	--	--	--	--
NC-2361.01000	7.31	--	V	--	--	--	--
NC-2362.01000	4.80	--	V	--	--	--	--
NC-2363.01000	6.50	--	V	--	--	--	--
NC-2364.01000	13.40	--	V	--	--	--	--
NC-2364.02000	12.20	--	V	--	--	--	--
NC-2364.02001	0.10	--	V	--	--	--	--
NC-2364.02004	0.08	--	P	--	--	--	--
NC-2364.04000	0.00	0.12	V	--	--	--	--
NC-2365.01000	17.30	--	P	--	--	--	--
NC-2366.01000	9.10	--	V	--	--	--	--
NC-2367.01000	9.40	--	V	--	--	--	--
NC-2368.01000	8.00	--	V	--	--	--	--
NC-2369.01000	100.00	--	V	--	--	--	--
NC-2369.03000	15.80	--	V	0	5000	0	5000
NC-2369.03001	0.19	--	P	0	30	0	30

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2369.03004	0.20	--	V	0	100	0	100
NC-2369.03008	0.03	--	V	0	100	0	100
NC-2369.03020	0.00	0.01	V	0	100	0	100
NC-2369.03030	0.00	0.01	V	0	200	0	200
NC-2369.03040	0.00	0.01	V	0	50	0	50
NC-2369.04000	0.19	--	V	66061	--	124200	--
NC-2370.01000	36.70	--	V	--	--	--	--
NC-2371.01000	57.80	--	V	--	--	--	--
NC-2371.02000	78.40	--	V	--	--	--	--
NC-2371.02001	17.00	--	P	--	--	--	--
NC-2371.02004	2.60	--	V	--	--	--	--
NC-2371.04000	152.00	--	P	--	--	--	--
NC-2372.01000	94.60	--	V	--	--	--	--
NC-2372.03000	26.20	--	V	3591055	--	5860641	--
NC-2372.03001	7.90	--	V	207792	--	385622	--
NC-2372.03004	2.50	--	V	145805	--	364568	--
NC-2372.03008	8.93	--	P	68684	--	56238	--
NC-2372.03020	8.03	--	P	50523	--	15963	--
NC-2372.03030	3.40	--	V	6734	--	4591	--
NC-2372.03040	5.10	--	V	20615	--	14600	--
NC-2372.04000	21.50	--	V	7705410	--	22174064	--
NC-2373.01000	58.10	--	P	--	--	--	--
NC-2374.01000	47.60	--	P	--	--	--	--
NC-2374.02000	105.00	--	V	--	--	--	--
NC-2374.02001	0.77	--	V	--	--	--	--
NC-2374.02004	0.36	--	V	--	--	--	--
NC-2374.04000	1.90	--	V	--	--	--	--
NC-2375.01000	48.20	--	I	--	--	--	--
NC-2376.61000	179.00	--	V	--	--	--	--
NC-2376.03000	12.80	--	P	122597	--	18168	--
NC-2376.03001	0.56	--	V	1254030	--	1621606	--
NC-2376.03004	0.12	--	V	0	200	0	200
NC-2376.03008	0.03	--	V	22444	--	7426	--
NC-2376.03020	0.03	--	P	0	20	0	20
NC-2376.03030	0.00	0.01	V	0	50	0	50
NC-2376.03040	0.00	0.01	V	961	--	0	100
NC-2376.04000	1.40	--	V	1960502	--	3567426	--
NC-2377.01000	72.60	--	V	--	--	--	--
NC-2377.02000	47.60	--	V	--	--	--	--
NC-2377.62001	1.20	--	V	--	--	--	--
NC-2377.02004	0.20	--	V	--	--	--	--
NC-2377.04000	2.00	--	V	--	--	--	--
NC-2378.01000	31.40	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2378.02000	12.30	--	P	--	--	--	--
NC-2378.02001	0.13	--	V	--	--	--	--
NC-2378.02004	0.48	--	V	--	--	--	--
NC-2378.04000	1.10	--	V	--	--	--	--
NC-2379.01000	14.80	--	V	--	--	--	--
NC-2379.02000	6.50	--	V	--	--	--	--
NC-2379.02001	5.80	--	V	--	--	--	--
NC-2379.02004	0.27	--	V	--	--	--	--
NC-2379.04000	1.60	--	P	--	--	--	--
NC-2380.01000	7.90	--	I	--	--	--	--
NC-2381.01000	25.70	--	V	--	--	--	--
NC-2381.02000	0.64	--	V	--	--	--	--
NC-2381.02001	0.32	--	V	--	--	--	--
NC-2381.02004	0.00	0.09	V	--	--	--	--
NC-2381.64000	0.22	--	P	--	--	--	--
NC-2382.01000	2.90	--	V	--	--	--	--
NC-2383.01000	25.20	--	V	--	--	--	--
NC-2383.02000	17.90	--	V	--	--	--	--
NC-2383.02001	4.20	--	V	--	--	--	--
NC-2383.02004	0.59	--	V	--	--	--	--
NC-2383.04000	8.00	--	V	--	--	--	--
NC-2384.01000	135.00	--	V	--	--	--	--
NC-2384.02000	12.20	--	V	--	--	--	--
NC-2384.02001	0.19	--	V	--	--	--	--
NC-2384.02004	0.28	--	V	--	--	--	--
NC-2384.04000	0.00	0.17	V	--	--	--	--
NC-2385.01000	7.10	--	V	--	--	--	--
NC-2386.01000	0.10	--	V	--	--	--	--
NC-2387.01000	0.10	--	V	--	--	--	--
NC-2390.01000	0.00	0.10	V	--	--	--	--
NC-2409.01000	0.00	0.30	P	--	--	--	--
NC-2410.11000	0.00	0.20	V	--	--	--	--
NC-2410.21000	0.80	--	V	--	--	--	--
NC-2410.31000	0.30	--	P	--	--	--	--
NC-2410.41000	0.00	0.20	V	--	--	--	--
NC-2410.51000	0.00	0.05	V	--	--	--	--
NC-2411.01000	2.60	--	V	--	--	--	--
NC-2412.01000	1.11	--	V	--	--	--	--
NC-2413.01000	0.40	--	V	--	--	--	--
NC-2414.01000	0.40	--	V	--	--	--	--
NC-2415.01000	1.40	--	V	--	--	--	--
NC-2416.01000	0.90	--	V	--	--	--	--
NC-2417.01000	1.30	--	P	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2418.01000	0.00	0.78	V	--	--	--	--
NC-2419.01000	0.00	0.50	V	--	--	--	--
NC-2420.01000	28.20	--	V	--	--	--	--
NC-2420.02000	130.80	--	P	--	--	--	--
NC-2420.62001	3.30	--	V	--	--	--	--
NC-2420.02004	0.61	--	V	--	--	--	--
NC-2420.04000	2.20	--	P	--	--	--	--
NC-2421.01000	19.90	--	P	--	--	--	--
NC-2421.02000	5.30	--	V	--	--	--	--
NC-2421.02001	0.41	--	V	--	--	--	--
NC-2421.02004	6.70	--	V	--	--	--	--
NC-2421.04000	0.17	--	V	--	--	--	--
NC-2422.01000	3.10	--	V	--	--	--	--
NC-2423.01000	5.20	--	P	--	--	--	--
NC-2424.01000	26.50	--	V	--	--	--	--
NC-2424.02000	21.10	--	V	--	--	--	--
NC-2424.02001	0.04	--	V	--	--	--	--
NC-2424.02004	0.11	--	V	--	--	--	--
NC-2424.04000	14.80	--	V	--	--	--	--
NC-2425.01000	54.20	--	V	--	--	--	--
NC-2426.01000	66.60	--	V	--	--	--	--
NC-2427.01000	52.10	--	V	--	--	--	--
NC-2428.01000	164.00	--	V	--	--	--	--
NC-2428.03000	200.00	--	V	44299	--	29809	--
NC-2428.03001	46.00	--	V	0	200	0	200
NC-2428.03004	12.20	--	I	201138	--	63888	--
NC-2428.03008	0.06	--	V	23423	--	12275	--
NC-2428.03020	0.02	--	P	7688	--	0	100
NC-2428.03030	0.10	--	V	0	50	0	50
NC-2428.03040	0.00	0.01	V	0	100	0	100
NC-2428.04000	0.00	3.50	P	220168	--	74555	--
NC-2429.01000	56.80	--	V	--	--	--	--
NC-2430.01000	2.30	--	V	--	--	--	--
NC-2431.01000	35.40	--	V	--	--	--	--
NC-2431.02000	192.00	--	V	--	--	--	--
NC-2431.02001	4.20	--	V	--	--	--	--
NC-2431.02004	315.00	--	I	--	--	--	--
NC-2431.04000	124.00	--	V	--	--	--	--
NC-2432.01000	2.10	--	P	--	--	--	--
NC-2434.01000	0.50	--	P	--	--	--	--
NC-2435.01000	0.20	--	V	--	--	--	--
NC-2436.01000	0.20	--	V	--	--	--	--
NC-2437.01000	0.26	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2438.01000	0.70	--	V	--	--	--	--
NC-2439.61000	3.90	--	V	--	--	--	--
NC-2440.11000	4.20	--	V	--	--	--	--
NC-2440.21000	1.60	--	V	--	--	--	--
NC-2440.31000	6.30	--	V	--	--	--	--
NC-2440.41000	5.60	--	V	--	--	--	--
NC-2440.51000	2.49	--	V	--	--	--	--
NC-2441.01000	0.00	2.25	I	--	--	--	--
NC-2442.01000	1.50	--	V	--	--	--	--
NC-2443.01000	1.20	--	V	--	--	--	--
NC-2444.01000	13.40	--	V	--	--	--	--
NC-2445.01000	7.40	--	V	--	--	--	--
NC-2446.01000	2.90	--	P	--	--	--	--
NC-2447.01000	3.40	--	V	--	--	--	--
NC-2448.01000	3.50	--	P	--	--	--	--
NC-2449.01000	2.70	--	V	--	--	--	--
NC-2450.01000	17.40	--	I	--	--	--	--
NC-2450.02000	48.80	--	V	--	--	--	--
NC-2450.02001	0.21	--	P	--	--	--	--
NC-2450.02004	4.10	--	V	--	--	--	--
NC-2450.04000	0.16	--	V	--	--	--	--
NC-2451.01000	3.90	--	I	--	--	--	--
NC-2452.01000	3.30	--	I	--	--	--	--
NC-2453.01000	1.90	--	I	--	--	--	--
NC-2454.01000	0.00	32.30	V	--	--	--	--
NC-2455.01000	3.80	--	V	--	--	--	--
NC-2456.01000	4.00	--	V	--	--	--	--
NC-2457.01000	18.90	--	V	--	--	--	--
NC-2458.01000	101.00	--	V	--	--	--	--
NC-2458.03000	74.30	--	P	0	500	0	500
NC-2458.03001	1.10	--	V	4960	--	15371	--
NC-2458.03004	0.73	--	V	0	200	0	200
NC-2458.03008	0.04	--	V	6536	--	14783	--
NC-2458.03020	0.08	--	V	0	200	0	200
NC-2458.03030	0.00	0.01	V	0	50	1861	--
NC-2458.03040	0.01	--	V	0	50	1786	--
NC-2458.04000	5.22	--	P	0	200	0	200
NC-2459.01000	17.10	--	V	--	--	--	--
NC-2460.01000	5.30	--	V	--	--	--	--
NC-2461.01000	18.80	--	V	--	--	--	--
NC-2462.01000	28.90	--	V	--	--	--	--
NC-2462.02000	101.90	--	V	--	--	--	--
NC-2462.02001	76.35	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2462.02004	39.30	--	V	--	--	--	--
NC-2462.04000	94.30	--	V	--	--	--	--
NC-2463.01000	103.00	--	V	--	--	--	--
NC-2464.01000	9.30	--	V	--	--	--	--
NC-2465.01000	9.80	--	V	--	--	--	--
NC-2466.01000	14.40	--	V	--	--	--	--
NC-2467.01000	34.70	--	V	--	--	--	--
NC-2468.01000	10.80	--	V	--	--	--	--
NC-2469.01000	61.20	--	V	--	--	--	--
NC-2470.03000	21.20	--	I	612921	--	846192	--
NC-2470.03001	3.60	--	P	557331	--	185949	--
NC-2470.03004	6.50	--	V	365000	--	260000	--
NC-2470.03008	11.60	--	V	124719	--	117198	--
NC-2470.03020	0.01	--	V	0	500	0	500
NC-2470.03030	0.21	--	V	0	200	0	200
NC-2470.03040	0.11	--	V	0	100	0	100
NC-2470.04000	310.00	--	V	3160765	--	5121922	--
NC-2470.11000	166.00	--	V	--	--	--	--
NC-2470.21000	288.00	--	V	--	--	--	--
NC-2470.31000	152.00	--	V	--	--	--	--
NC-2470.41000	237.00	--	V	--	--	--	--
NC-2470.51000	144.00	--	P	--	--	--	--
NC-2471.01000	264.00	--	V	--	--	--	--
NC-2472.01000	282.00	--	V	--	--	--	--
NC-2472.02000	432.00	--	I	--	--	--	--
NC-2472.02001	6.60	--	V	--	--	--	--
NC-2472.02004	3.70	--	V	--	--	--	--
NC-2472.04000	998.00	--	V	--	--	--	--
NC-2473.01000	207.00	--	V	--	--	--	--
NC-2474.01000	163.00	--	V	--	--	--	--
NC-2475.01000	27.80	--	I	--	--	--	--
NC-2476.01000	207.00	--	V	--	--	--	--
NC-2477.01000	32.60	--	V	--	--	--	--
NC-2478.01000	41.40	--	I	--	--	--	--
NC-2479.61000	40.10	--	V	--	--	--	--
NC-2480.01000	38.60	--	V	--	--	--	--
NC-2481.01000	2.19	--	P	--	--	--	--
NC-2482.01000	86.60	--	V	--	--	--	--
NC-2482.02000	87.60	--	V	--	--	--	--
NC-2482.02001	2.00	--	P	--	--	--	--
NC-2482.02004	18.00	--	V	--	--	--	--
NC-2482.04000	1.90	--	P	--	--	--	--
NC-2483.01000	32.70	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2484.01000	10.40	--	V	--	--	--	--
NC-2485.01000	0.58	--	V	--	--	--	--
NC-2486.01000	0.05	--	I	--	--	--	--
NC-2487.01000	0.00	0.03	V	--	--	--	--
NC-24A2.01000	0.00	0.20	P	--	--	--	--
NC-24B1.01000	0.00	0.10	V	--	--	--	--
NC-2509.01000	0.40	--	P	--	--	--	--
NC-2510.01000	0.40	--	V	--	--	--	--
NC-2511.01000	1.30	--	P	--	--	--	--
NC-2512.01000	0.00	0.28	V	--	--	--	--
NC-2513.01000	0.09	--	V	--	--	--	--
NC-2514.01000	0.30	--	V	--	--	--	--
NC-2515.01000	0.00	0.30	V	--	--	--	--
NC-2516.01000	0.00	0.20	V	--	--	--	--
NC-2517.01000	1.50	--	P	--	--	--	--
NC-2518.01000	0.10	--	P	--	--	--	--
NC-2519.01000	0.00	0.10	V	--	--	--	--
NC-2520.01000	0.00	0.20	V	--	--	--	--
NC-2521.01000	14.70	--	V	--	--	--	--
NC-2522.01000	2.10	--	V	--	--	--	--
NC-2523.11000	0.20	--	P	--	--	--	--
NC-2523.21000	1.00	--	V	--	--	--	--
NC-2523.31000	0.00	0.50	V	--	--	--	--
NC-2523.41000	0.20	--	V	--	--	--	--
NC-2523.51000	1.30	--	V	--	--	--	--
NC-2524.01000	3.80	--	P	--	--	--	--
NC-2525.01000	0.90	--	P	--	--	--	--
NC-2526.01000	66.50	--	V	--	--	--	--
NC-2527.01000	106.00	--	V	--	--	--	--
NC-2527.03000	1.70	--	V	18790	--	19928	--
NC-2527.63001	307.00	--	V	1216597	--	2846529	--
NC-2527.03004	9.30	--	V	157704	--	165940	--
NC-2527.03008	0.33	--	V	59766	--	23738	--
NC-2527.03020	4.50	--	V	45586	--	59647	--
NC-2527.03030	0.73	--	V	0	50	0	50
NC-2527.03040	2.00	--	V	0	100	0	100
NC-2527.04000	1.80	--	V	68638	--	29432	--
NC-2528.01000	182.00	--	V	--	--	--	--
NC-2528.03000	0.67	--	V	8628	--	14214	--
NC-2528.03001	0.17	--	V	1766	--	1993	--
NC-2528.03004	0.22	--	V	0	500	5227	--
NC-2528.03008	0.03	--	V	0	100	1702	--
NC-2528.03020	0.00	0.01	V	0	20	0	20

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2528.03030	0.00	0.01	V	0	75	0	75
NC-2528.03040	0.00	0.01	V	0	100	0	100
NC-2528.04000	0.50	--	V	5368	--	1935	--
NC-2529.01000	6.50	--	V	--	--	--	--
NC-2530.01000	0.70	--	V	--	--	--	--
NC-2531.01000	6.50	--	V	--	--	--	--
NC-2532.01000	6.60	--	I	--	--	--	--
NC-2534.01000	0.70	--	P	--	--	--	--
NC-2535.01000	0.30	--	V	--	--	--	--
NC-2536.01000	0.20	--	V	--	--	--	--
NC-2537.01000	0.00	0.13	V	--	--	--	--
NC-2538.01000	0.80	--	V	--	--	--	--
NC-2539.01000	51.30	--	V	--	--	--	--
NC-2539.02000	410.90	--	I	--	--	--	--
NC-2539.02001	3.50	--	V	--	--	--	--
NC-2539.02004	4.40	--	V	--	--	--	--
NC-2539.04000	230.10	--	I	--	--	--	--
NC-2540.01000	11.50	--	V	--	--	--	--
NC-2541.01000	0.90	--	V	--	--	--	--
NC-2542.61000	1.50	--	V	--	--	--	--
NC-2543.01000	0.60	--	V	--	--	--	--
NC-2544.01000	18.80	--	V	--	--	--	--
NC-2544.02000	3.60	--	V	--	--	--	--
NC-2544.62001	8.70	--	V	--	--	--	--
NC-2544.02004	0.49	--	V	--	--	--	--
NC-2544.04000	2.37	--	V	--	--	--	--
NC-2545.01000	33.00	--	I	--	--	--	--
NC-2546.01000	0.99	--	I	--	--	--	--
NC-2547.01000	1.57	--	I	--	--	--	--
NC-2548.01000	14.00	--	I	--	--	--	--
NC-2549.01000	101.00	--	I	--	--	--	--
NC-2549.62000	226.50	--	I	--	--	--	--
NC-2549.02001	147.00	--	V	--	--	--	--
NC-2549.02004	8.50	--	P	--	--	--	--
NC-2549.04000	139.00	--	V	--	--	--	--
NC-2550.01000	43.10	--	I	--	--	--	--
NC-2550.02000	0.00	164.90	V	--	--	--	--
NC-2550.02001	14.40	--	I	--	--	--	--
NC-2550.02004	2.20	--	V	--	--	--	--
NC-2550.04000	284.00	--	V	--	--	--	--
NC-2551.01000	3.48	--	I	--	--	--	--
NC-2552.01000	9.00	--	I	--	--	--	--
NC-2553.02000	137.00	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2553.02001	8.30	--	V	--	--	--	--
NC-2553.02004	18.40	--	I	--	--	--	--
NC-2553.04000	312.00	--	I	--	--	--	--
NC-2553.11000	3.30	--	V	--	--	--	--
NC-2553.21000	6.00	--	P	--	--	--	--
NC-2553.31000	4.50	--	P	--	--	--	--
NC-2553.41000	28.30	--	V	--	--	--	--
NC-2553.51000	5.50	--	V	--	--	--	--
NC-2554.01000	4.30	--	V	--	--	--	--
NC-2555.01000	1.60	--	V	--	--	--	--
NC-2556.01000	3.30	--	V	--	--	--	--
NC-2557.01000	7.20	--	V	--	--	--	--
NC-2558.01000	646.00	--	V	--	--	--	--
NC-2559.01000	7.20	--	P	--	--	--	--
NC-2560.01000	0.00	0.40	I	--	--	--	--
NC-2561.01000	13.40	--	V	--	--	--	--
NC-2561.02000	12.40	--	V	--	--	--	--
NC-2561.02001	7.80	--	V	--	--	--	--
NC-2561.02004	0.59	--	V	--	--	--	--
NC-2561.04000	0.00	4.58	V	--	--	--	--
NC-2562.01000	9.80	--	V	--	--	--	--
NC-2563.01000	6.80	--	V	--	--	--	--
NC-2564.01000	25.70	--	V	--	--	--	--
NC-2564.02000	35.50	--	V	--	--	--	--
NC-2564.02001	0.00	0.04	V	--	--	--	--
NC-2564.02004	0.13	--	V	--	--	--	--
NC-2564.04000	2.80	--	V	--	--	--	--
NC-2565.01000	20.10	--	V	--	--	--	--
NC-2566.01000	33.30	--	V	--	--	--	--
NC-2567.01000	106.00	--	V	--	--	--	--
NC-2567.03000	57.80	--	V	226753	--	96084	--
NC-2567.03001	25.80	--	V	2692861	--	3657825	--
NC-2567.03004	12.10	--	V	1953125	--	3237567	--
NC-2567.03008	0.40	--	V	140508	--	36401	--
NC-2567.03020	0.01	--	V	4255	--	4987	--
NC-2567.03030	0.00	0.01	V	0	50	0	50
NC-2567.03040	0.03	--	V	0	100	1097	--
NC-2567.04000	6.60	--	V	2235597	--	2987651	--
NC-2568.01000	49.10	--	V	--	--	--	--
NC-2569.01000	11.00	--	V	--	--	--	--
NC-2570.01000	19.00	--	V	--	--	--	--
NC-2571.01000	122.00	--	I	--	--	--	--
NC-2571.03000	593.00	--	V	131066	--	33512	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2571.03001	122.00	--	P	712264	--	1440217	--
NC-2571.03004	77.50	--	V	1509997	--	1725714	--
NC-2571.03008	1.80	--	V	81496	--	25535	--
NC-2571.03020	2.10	--	V	60783	--	74339	--
NC-2571.03030	0.01	--	V	58169	--	76331	--
NC-2571.03040	0.04	--	V	49145	--	26382	--
NC-2571.04000	482.00	--	V	5012811	--	6630406	--
NC-2572.01000	263.00	--	I	--	--	--	--
NC-2573.01000	23.90	--	V	--	--	--	--
NC-2573.02000	15.20	--	V	--	--	--	--
NC-2573.02001	0.23	--	V	--	--	--	--
NC-2573.02004	0.23	--	V	--	--	--	--
NC-2573.04000	9.20	--	V	--	--	--	--
NC-2574.01000	11.90	--	V	--	--	--	--
NC-2575.01000	10.70	--	I	--	--	--	--
NC-2576.01000	6.20	--	V	--	--	--	--
NC-2577.01000	31.10	--	V	--	--	--	--
NC-2578.01000	147.00	--	V	--	--	--	--
NC-2579.01000	45.10	--	V	--	--	--	--
NC-2579.02000	7.60	--	V	--	--	--	--
NC-2579.02001	0.65	--	I	--	--	--	--
NC-2579.02004	0.24	--	V	--	--	--	--
NC-2579.04000	2.90	--	I	--	--	--	--
NC-2580.01000	6.70	--	V	--	--	--	--
NC-2581.01000	1.40	--	V	--	--	--	--
NC-2582.61000	8.00	--	V	--	--	--	--
NC-2583.11000	2.20	--	V	--	--	--	--
NC-2583.21000	0.50	--	V	--	--	--	--
NC-2583.31000	0.50	--	V	--	--	--	--
NC-2583.41000	18.10	--	V	--	--	--	--
NC-2583.51000	2.00	--	V	--	--	--	--
NC-2584.01000	0.10	--	V	--	--	--	--
NC-2585.01000	0.15	--	V	--	--	--	--
NC-2586.01000	0.00	0.10	V	--	--	--	--
NC-2587.01000	0.38	--	V	--	--	--	--
NC-2589.01000	0.00	0.01	V	--	--	--	--
NC-2599.01000	0.00	0.10	V	--	--	--	--
NC-25A2.01000	0.00	0.10	V	--	--	--	--
NC-25B2.01000	0.00	0.10	P	--	--	--	--
NC-25B4.01000	0.00	0.10	V	--	--	--	--
NC-25C6.01000	0.05	--	V	--	--	--	--
NC-2809.01000	0.00	0.20	V	--	--	--	--
NC-2812.01000	0.00	0.10	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONTINUED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-2820.01000	0.00	0.04	V	--	--	--	--
NC-2821.01000	0.00	0.02	I	--	--	--	--
NC-2828.01000	0.10	--	V	--	--	--	--
NC-2829.01000	0.00	0.10	V	--	--	--	--
NC-2843.01000	0.00	0.10	V	--	--	--	--
NC-2852.01000	0.00	0.10	V	--	--	--	--
NC-2856.01000	0.00	0.10	V	--	--	--	--
NC-2858.01000	0.00	0.10	V	--	--	--	--
NC-2870.01000	31.00	--	V	--	--	--	--
NC-2870.02000	5.70	--	P	--	--	--	--
NC-2870.02001	0.13	--	V	--	--	--	--
NC-2870.02004	1.20	--	P	--	--	--	--
NC-2870.04000	0.95	--	P	--	--	--	--
NC-2883.01000	0.00	0.02	V	--	--	--	--
NC-2889.01000	0.30	--	V	--	--	--	--
NC-2893.01000	0.00	0.10	V	--	--	--	--
NC-28A4.01000	0.30	--	V	--	--	--	--
NC-28AO.01000	0.00	0.04	V	--	--	--	--
NC-28B1.01000	0.30	--	V	--	--	--	--
NC-28B6.01000	0.00	0.10	V	--	--	--	--
NC-28B9.01000	0.30	--	V	--	--	--	--
NC-2928.01000	0.70	--	V	--	--	--	--
NC-7001.01000	0.00	0.10	V	--	--	--	--
NC-7002.01000	0.00	0.14	V	--	--	--	--
NC-7003.01000	0.00	0.04	V	--	--	--	--
NC-7004.01000	0.00	4.46	I	--	--	--	--
NC-7005.01000	0.00	1.30	P	--	--	--	--
NC-7006.01000	0.00	0.30	V	--	--	--	--
NC-7007.01000	0.00	0.50	V	--	--	--	--
NC-7008.01000	9.06	--	P	--	--	--	--
NC-7009.01000	0.00	5.91	I	--	--	--	--
NC-7010.01000	0.04	--	V	--	--	--	--
NC-7011.01000	0.00	0.12	V	--	--	--	--
NC-7012.01000	0.00	0.53	V	--	--	--	--
NC-7013.01000	0.50	--	V	--	--	--	--
NC-7014.01000	10.60	--	P	--	--	--	--
NC-7015.01000	0.00	0.08	V	--	--	--	--
NC-7016.01000	1.70	--	V	--	--	--	--
NC-7017.01000	107.00	--	P	--	--	--	--
NC-7018.01000	33.20	--	V	--	--	--	--
NC-7019.01000	0.90	--	V	--	--	--	--
NC-7020.01000	0.40	--	V	--	--	--	--
NC-7021.01000	2.70	--	V	--	--	--	--

TABLE A-3. NAVAL CONSTRUCTION BATTALION CENTER LISTING OF SAMPLE ANALYSES (CONCLUDED)

	TCDD (ppb)			2,4-D (ppb)		2,4,5-T (ppb)	
Sample Number	Reporting Conc.	Reporting Limit	Status	Conc.	Detection Limit	Conc.	Detection Limit
NC-7022.01000	2.67	--	V	--	--	--	--
NC-7023.01000	0.00	0.20	V	--	--	--	--
NC-7024.01000	0.10	--	V	--	--	--	--
NC-7025.01000	4.80	--	V	--	--	--	--

a. Not applicable.

APPENDIX B

UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-0540.01000	21.80	33.120	54.280	87.562	130.17
NC-0551.01000	7.40	11.242	18.425	29.723	44.19
NC-0555.01000	8.80	13.369	21.911	35.346	52.55
NC-0556.01000	46.80	71.101	116.527	187.977	279.45
NC-0562.01000	0.80	1.215	1.992	3.213	4.78
NC-0568.01000	0.04	0.061	0.100	0.161	0.24
NC-0572.01000	0.10	0.152	0.249	0.402	0.60
NC-0583.01000	0.01	0.015	0.025	0.040	0.06
NC-0586.01000	0.10	0.152	0.249	0.402	0.60
NC-0588.01000	0.10	0.152	0.249	0.402	0.60
NC-0590.01000	0.03	0.046	0.075	0.120	0.18
NC-0635.01000	1.90	2.887	4.731	7.632	11.35
NC-0636.01000	0.50	0.760	1.245	2.008	2.99
NC-0637.01000	0.80	1.215	1.992	3.213	4.78
NC-0638.01000	1.56	2.370	3.884	6.266	9.31
NC-0639.01000	242.00	367.658	602.554	972.017	1445.01
NC-0640.01000	4.70	7.140	11.703	18.878	28.06
NC-0641.01000	3.00	4.558	7.470	12.050	17.91
NC-0642.01000	18.00	27.346	44.818	72.299	107.48
NC-0643.01000	148.00	224.849	368.504	594.457	883.72
NC-0644.01000	18.90	28.714	47.059	75.914	112.85
NC-0645.01000	13.90	21.118	34.610	55.831	83.00
NC-0646.01000	6.90	10.483	17.180	27.715	41.20
NC-0647.01000	7.30	11.091	18.176	29.321	43.59
NC-0648.01000	26.80	40.716	66.729	107.645	160.03
NC-0649.01000	12.30	18.687	30.626	49.404	73.44
NC-0650.01000	46.50	70.645	115.780	186.772	277.66
NC-0651.01000	9.70	14.737	24.152	38.961	57.92
NC-0652.01000	6.70	10.179	16.682	26.911	40.01
NC-0653.01000	5.65	8.584	14.068	22.694	33.74
NC-0654.01000	17.10	25.979	42.577	68.684	102.11
NC-0655.01000	17.80	27.043	44.320	71.495	106.29
NC-0656.01000	90.30	137.188	224.837	362.699	539.19
NC-0657.01000	3.60	5.469	8.964	14.460	21.50
NC-0658.01000	3.20	4.862	7.968	12.853	19.11
NC-0659.01000	1.00	1.519	2.490	4.017	5.97
NC-0660.01000	1.60	2.431	3.984	6.427	9.55
NC-0661.01000	2.40	3.646	5.976	9.640	14.33
NC-0662.01000	2.40	3.646	5.976	9.640	14.33
NC-0663.01000	78.10	118.653	194.461	313.696	466.34
NC-0664.R0000	11.51	13.877	17.310	21.435	25.59
NC-0665.01000	60.00	91.155	149.394	240.996	358.27
NC-0666.01000	0.04	0.061	0.100	0.161	0.24
NC-0667.01000	0.40	0.608	0.996	1.607	2.39
NC-0668.01000	0.18	0.273	0.448	0.723	1.07

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-0669.01000	0.48	0.729	1.195	1.928	2.87
NC-0670.01000	0.02	0.030	0.050	0.080	0.12
NC-0671.01000	0.30	0.456	0.747	1.205	1.79
NC-0672.01000	0.30	0.456	0.747	1.205	1.79
NC-0674.01000	0.10	0.152	0.249	0.402	0.60
NC-0675.01000	0.02	0.030	0.050	0.080	0.12
NC-0676.01000	0.34	0.517	0.847	1.366	2.03
NC-0677.01000	0.10	0.152	0.249	0.402	0.60
NC-0678.01000	0.18	0.273	0.448	0.723	1.07
NC-0679.01000	4.20	6.381	10.458	16.870	25.08
NC-0681.01000	0.10	0.152	0.249	0.40	0.60
NC-0682.01000	17.90	27.195	44.569	71.90	106.88
NC-0683.01000	3.50	5.317	8.715	14.06	20.90
NC-0684.01000	0.60	0.912	1.494	2.41	3.58
NC-0685.01000	1.20	1.823	2.988	4.82	7.17
NC-0686.01000	11.60	17.623	28.883	46.59	69.26
NC-0687.01000	0.40	0.608	0.996	1.61	2.39
NC-0719.01001	1.01	1.534	2.515	4.06	6.03
NC-0724.01001	0.10	0.152	0.249	0.40	0.60
NC-0729.01001	0.70	1.063	1.743	2.81	4.18
NC-0732.01001	0.39	0.593	0.971	1.57	2.33
NC-0735.01000	0.60	0.912	1.494	2.41	3.58
NC-0736.01000	0.70	1.063	1.743	2.81	4.18
NC-0737.01000	0.78	1.185	1.942	3.13	4.66
NC-0738.01000	3.50	5.317	8.715	14.06	20.90
NC-0739.01000	16.80	25.523	41.830	67.48	100.31
NC-0740.01000	4.70	7.140	11.703	18.88	28.06
NC-0741.01000	1.80	2.735	4.482	7.23	10.75
NC-0742.01000	13.20	20.054	32.867	53.02	78.82
NC-0743.01000	73.80	112.121	183.754	296.43	440.67
NC-0744.R0000	10.65	12.840	16.017	19.83	23.68
NC-0745.01000	386.00	586.430	961.099	1550.41	2304.84
NC-0746.01000	98.10	149.038	244.259	394.03	585.76
NC-0747.01000	12.00	18.231	29.879	48.20	71.65
NC-0748.01000	5.21	7.915	12.972	20.93	31.11
NC-0749.01000	13.20	20.054	32.867	53.02	78.82
NC-0750.01000	20.10	30.537	50.047	80.73	120.02
NC-0751.01000	55.50	84.318	138.189	222.92	333.40
NC-0752.01000	28.00	42.539	69.717	112.46	167.19
NC-0753.01000	9.10	13.825	22.658	36.55	54.34
NC-0754.01000	13.50	20.510	33.614	54.22	80.61
NC-0755.01000	6.50	9.875	16.184	26.11	38.81
NC-0756.01000	16.70	25.371	41.581	67.08	99.72
NC-0757.01000	5.06	7.687	12.599	20.32	30.21
NC-0758.01000	4.90	7.444	12.200	19.68	29.26
NC-0759.01000	4.90	7.444	12.200	19.68	29.26

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-0760.01000	7.00	10.635	17.429	28.12	41.80
NC-0762.01000	3.40	5.165	8.466	13.66	20.30
NC-0763.61000	22.10	33.575	55.027	88.77	131.96
NC-0764.01000	8.40	12.762	20.915	33.74	50.16
NC-0765.01000	4.41	6.700	10.980	17.71	26.33
NC-0767.01000	0.10	0.152	0.249	0.40	0.60
NC-0768.01000	0.10	0.152	0.249	0.40	0.60
NC-0769.01000	1.20	1.823	2.988	4.82	7.17
NC-0770.01000	0.80	1.215	1.992	3.21	4.78
NC-0771.01000	3.60	5.469	8.964	14.46	21.50
NC-0772.01000	0.29	0.441	0.722	1.16	1.73
NC-0773.01000	61.40	93.282	152.879	246.62	366.63
NC-0774.R0000	3.14	3.786	4.722	5.85	6.98
NC-0775.01000	0.98	1.489	2.440	3.94	5.85
NC-0776.01000	0.02	0.030	0.050	0.08	0.12
NC-0777.01000	0.10	0.152	0.249	0.40	0.60
NC-0778.01000	1.03	1.565	2.565	4.14	6.15
NC-0779.01000	2.70	4.102	6.723	10.84	16.12
NC-0780.01000	4.46	6.776	11.105	17.91	26.63
NC-0781.01000	0.40	0.608	0.996	1.61	2.39
NC-0782.01000	24.20	36.766	60.255	97.202	144.50
NC-0783.01000	1.90	2.887	4.731	7.632	11.35
NC-0784.01000	0.19	0.289	0.473	0.763	1.13
NC-0785.01000	2.60	3.950	6.474	10.443	15.52
NC-0786.01000	5.30	8.052	13.196	21.288	31.65
NC-0787.01000	1.30	1.975	3.237	5.222	7.76
NC-0796.61000	0.10	0.152	0.249	0.402	0.60
NC-0822.01001	0.10	0.152	0.249	0.402	0.60
NC-0838.01000	3.40	5.165	8.466	13.656	20.30
NC-0841.01000	2.00	3.038	4.980	8.033	11.94
NC-0842.01000	10.80	16.408	26.891	43.379	64.49
NC-0843.01000	44.10	66.999	109.804	177.132	263.33
NC-0844.01000	98.50	149.646	245.255	395.635	588.15
NC-0845.01000	234.00	355.504	582.635	939.884	1397.24
NC-0846.01000	96.70	146.911	240.773	388.405	577.41
NC-0847.01000	12.30	18.687	30.626	49.404	73.44
NC-0848.01000	2.60	3.950	6.474	10.443	15.52
NC-0849.01000	2.50	3.798	6.225	10.041	14.93
NC-0851.01000	37.00	56.212	92.126	148.614	220.93
NC-0852.01000	36.40	55.301	90.632	146.204	217.35
NC-0853.61000	6.70	10.179	16.682	26.911	40.01
NC-0854.R0000	3.74	4.509	5.625	6.965	8.32
NC-0855.01000	6.50	9.875	16.184	26.108	38.81
NC-0856.01000	9.21	13.992	22.932	36.993	54.99
NC-0857.01000	15.00	22.789	37.348	60.249	89.57
NC-0858.01000	6.60	10.027	16.433	26.510	39.41

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-0859.01000	24.40	37.070	60.753	98.005	145.69
NC-0860.01000	24.60	37.374	61.251	98.808	146.89
NC-0861.01000	0.77	1.170	1.917	3.093	4.60
NC-0862.01000	2.60	3.950	6.474	10.443	15.52
NC-0863.01000	3.24	4.922	8.067	13.014	19.35
NC-0864.01000	2.50	3.798	6.225	10.041	14.93
NC-0865.01000	2.91	4.421	7.246	11.688	17.38
NC-0867.01000	1.80	2.735	4.482	7.230	10.75
NC-0868.01000	0.50	0.760	1.245	2.008	2.99
NC-0869.01000	1.00	1.519	2.490	4.017	5.97
NC-0870.01000	0.60	0.912	1.494	2.410	3.58
NC-0871.01000	0.77	1.170	1.917	3.093	4.60
NC-0872.01000	43.90	66.695	109.306	176.329	262.13
NC-0873.01000	45.30	68.822	112.792	181.952	270.49
NC-0874.01000	0.79	1.200	1.967	3.173	4.72
NC-0875.01000	0.08	0.122	0.199	0.321	0.48
NC-0876.01000	0.21	0.319	0.523	0.843	1.25
NC-0878.01000	0.16	0.243	0.398	0.643	0.96
NC-0879.01000	2.60	3.950	6.474	10.443	15.52
NC-0880.01000	1.90	2.887	4.731	7.632	11.35
NC-0881.01000	0.40	0.608	0.996	1.607	2.39
NC-0882.01000	2.80	4.254	6.972	11.246	16.72
NC-0883.01000	1.08	1.641	2.689	4.338	6.45
NC-0884.R0000	0.51	0.615	0.767	0.950	1.13
NC-0885.01000	1.90	2.887	4.731	7.632	11.35
NC-0887.01000	0.60	0.912	1.494	2.410	3.58
NC-0924.01001	0.10	0.152	0.249	0.402	0.60
NC-0928.01001	0.10	0.152	0.249	0.402	0.60
NC-0938.01000	11.50	17.471	28.634	46.191	68.67
NC-0939.01000	6.60	10.027	16.433	26.510	39.41
NC-0940.01000	4.10	6.2289	10.209	16.468	24.482
NC-0941.01000	6.20	9.4193	15.437	24.903	37.021
NC-0942.01000	19.00	28.8657	47.308	76.315	113.451
NC-0943.01000	17.00	25.8272	42.328	68.282	101.509
NC-0944.61000	41.50	63.0489	103.331	166.689	247.801
NC-0945.01000	44.40	67.4547	110.551	178.337	265.117
NC-0946.01000	35.60	54.0853	88.640	142.991	212.571
NC-0947.01000	6.90	10.4828	17.180	27.715	41.201
NC-0948.01000	5.50	8.3559	13.694	22.091	32.841
NC-0949.01000	2.20	3.3423	5.478	8.837	13.136
NC-0950.01000	17.60	26.7388	43.822	70.692	105.091
NC-0951.01000	35.70	54.2372	88.889	143.393	213.168
NC-0952.01000	12.50	18.9906	31.124	50.207	74.639
NC-0956.01000	5.00	7.5962	12.449	20.083	29.855
NC-0964.R0000	3.35	4.0390	5.038	6.239	7.449
NC-0965.01000	6.00	9.1155	14.939	24.100	35.827

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-0967.01000	5.00	7.5962	12.449	20.083	29.855
NC-0968.01000	0.40	0.6077	0.996	1.607	2.388
NC-0969.01000	0.12	0.1823	0.299	0.482	0.717
NC-0970.01000	0.87	1.3217	2.166	3.494	5.195
NC-0971.01000	0.70	1.0635	1.743	2.812	4.180
NC-0973.01000	3.30	5.0135	8.217	13.255	19.705
NC-0974.01000	0.60	0.9115	1.494	2.410	3.583
NC-0975.01000	0.11	0.1671	0.274	0.442	0.657
NC-0976.01000	0.50	0.7596	1.245	2.008	2.986
NC-0977.01000	0.20	0.3038	0.498	0.803	1.194
NC-0978.01000	0.20	0.3038	0.498	0.803	1.194
NC-0979.01000	2.20	3.3423	5.478	8.837	13.136
NC-0980.01000	1.10	1.6712	2.739	4.418	6.568
NC-0981.01000	0.20	0.3038	0.498	0.803	1.194
NC-0982.01000	0.50	0.7596	1.245	2.008	2.986
NC-0983.01000	0.50	0.7596	1.245	2.008	2.986
NC-0984.61000	0.40	0.6077	0.996	1.607	2.388
NC-0985.01000	1.50	2.2789	3.735	6.025	8.957
NC-0986.01000	1.60	2.4308	3.984	6.427	9.554
NC-0987.01000	0.20	0.3038	0.498	0.803	1.194
NC-0992.R0000	0.05	0.0603	0.075	0.093	0.111
NC-0999.01000	0.10	0.1519	0.249	0.402	0.597
NC-09A3.01000	0.10	0.1519	0.249	0.402	0.597
NC-1023.01001	0.10	0.1519	0.249	0.402	0.597
NC-1025.01001	0.10	0.1519	0.249	0.402	0.597
NC-1028.01001	4.00	6.0770	9.960	16.066	23.884
NC-1031.01001	0.10	0.1519	0.249	0.402	0.597
NC-1035.01000	0.80	1.2154	1.992	3.213	4.777
NC-1037.01000	4.60	6.9885	11.454	18.476	27.467
NC-1040.01000	9.20	13.9771	22.907	36.953	54.934
NC-1041.01000	2.80	4.2539	6.972	11.246	16.719
NC-1042.01000	1.70	2.5827	4.233	6.828	10.151
NC-1043.01000	1.90	2.8866	4.731	7.632	11.345
NC-1044.R0000	8.86	10.6822	13.325	16.500	19.701
NC-1045.01000	34.60	52.5660	86.150	138.974	206.600
NC-1046.01000	24.10	36.6139	60.006	96.800	143.904
NC-1047.01000	2.50	3.7981	6.225	10.041	14.928
NC-1048.01000	1.90	2.8866	4.731	7.632	11.345
NC-1049.01000	2.30	3.4943	5.727	9.238	13.734
NC-1050.01000	8.20	12.4578	20.417	32.936	48.963
NC-1051.01000	10.80	16.4079	26.8909	43.379	64.488
NC-1052.01000	4.70	7.1405	11.7025	18.878	28.064
NC-1053.01000	2.10	3.1904	5.2288	8.435	12.539
NC-1054.01000	0.41	0.6229	1.0209	1.647	2.448
NC-1055.01000	1.50	2.2789	3.7348	6.025	8.957
NC-1056.01000	3.50	5.3174	8.7146	14.058	20.899

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1057.01000	10.00	15.1925	24.8989	40.166	59.711
NC-1058.01000	14.60	22.1810	36.3525	58.642	87.178
NC-1059.01000	25.10	38.1332	62.4963	100.817	149.875
NC-1060.01000	8.70	13.2175	21.6621	34.944	51.949
NC-1061.01000	0.23	0.3494	0.5727	0.924	1.373
NC-1062.01000	2.00	3.0385	4.9798	8.033	11.942
NC-1063.01000	7.00	10.6347	17.4293	28.116	41.798
NC-1064.01000	0.80	1.2154	1.9919	3.213	4.777
NC-1067.01000	0.17	0.2583	0.4233	0.683	1.015
NC-1068.01000	0.09	0.1367	0.2241	0.361	0.537
NC-1069.01000	0.16	0.2431	0.3984	0.643	0.955
NC-1070.01000	0.50	0.7596	1.2449	2.008	2.986
NC-1071.01000	0.80	1.2154	1.9919	3.213	4.777
NC-1072.01000	0.80	1.2154	1.9919	3.213	4.777
NC-1073.61000	0.27	0.4102	0.6723	1.084	1.612
NC-1074.R0000	0.04	0.0482	0.0602	0.074	0.089
NC-1075.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1076.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1077.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1078.01000	0.40	0.6077	0.9960	1.607	2.388
NC-1079.01000	1.50	2.2789	3.7348	6.025	8.957
NC-1080.01000	0.40	0.6077	0.9960	1.607	2.388
NC-1081.01000	0.40	0.6077	0.9960	1.607	2.388
NC-1082.01000	0.40	0.6077	0.9960	1.607	2.388
NC-1083.01000	0.63	0.9571	1.5686	2.530	3.762
NC-1084.R0000	0.45	0.5426	0.6768	0.838	1.001
NC-1085.01000	1.70	2.5827	4.2328	6.828	10.151
NC-1086.01000	1.80	2.7346	4.4818	7.230	10.748
NC-1087.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1123.01001	0.10	0.1519	0.2490	0.402	0.597
NC-1131.01001	0.29	0.4406	0.7221	1.165	1.732
NC-1135.01000	1.90	2.8866	4.7308	7.632	11.345
NC-1136.01000	4.40	6.6847	10.9555	17.673	26.273
NC-1137.01000	5.00	7.5962	12.4495	20.083	29.855
NC-1140.01000	28.10	42.6909	69.9660	112.866	167.788
NC-1141.01000	4.60	6.9885	11.4535	18.476	27.467
NC-1142.01000	1.14	1.7319	2.8385	4.579	6.807
NC-1143.01000	0.85	1.2914	2.1164	3.414	5.075
NC-1144.01000	10.50	15.9521	26.1439	42.174	62.697
NC-1145.01000	14.20	21.5733	35.3565	57.036	84.790
NC-1146.01000	6.10	9.2674	15.1884	24.501	36.424
NC-1148.01000	0.30	0.4558	0.7470	1.205	1.791
NC-1149.01000	12.90	19.5983	32.1196	51.814	77.027
NC-1150.01000	20.40	30.9927	50.7938	81.939	121.810
NC-1151.01000	7.10	10.7867	17.6782	28.518	42.395
NC-1152.01000	3.40	5.1654	8.4656	13.656	20.302

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1153.01000	4.60	6.9885	11.4535	18.476	27.467
NC-1154.01000	1.40	2.1269	3.4859	5.623	8.360
NC-1155.01000	3.90	5.9251	9.7106	15.665	23.287
NC-1156.01000	24.80	37.6774	61.7494	99.612	148.083
NC-1157.01000	27.00	41.020	67.227	108.448	161.220
NC-1158.01000	104.00	158.002	258.949	417.726	620.994
NC-1159.01000	11.50	17.471	28.634	46.191	68.668
NC-1160.01000	1.80	2.735	4.482	7.230	10.748
NC-1161.01000	0.30	0.456	0.747	1.205	1.791
NC-1162.01000	2.30	3.494	5.727	9.238	13.734
NC-1163.61000	35.00	53.174	87.146	140.581	208.988
NC-1164.R0000	0.62	0.748	0.932	1.155	1.379
NC-1167.01000	0.20	0.304	0.498	0.803	1.194
NC-1168.01000	0.07	0.106	0.174	0.281	0.418
NC-1169.01000	0.10	0.152	0.249	0.402	0.597
NC-1170.01000	0.30	0.456	0.747	1.205	1.791
NC-1171.01000	0.52	0.790	1.295	2.089	3.105
NC-1172.01000	0.09	0.137	0.224	0.361	0.537
NC-1173.01000	0.08	0.122	0.199	0.321	0.478
NC-1174.01000	0.07	0.106	0.174	0.281	0.418
NC-1175.01000	0.09	0.137	0.224	0.361	0.537
NC-1176.01000	0.06	0.091	0.149	0.241	0.358
NC-1177.01000	0.34	0.517	0.847	1.366	2.030
NC-1178.01000	0.30	0.456	0.747	1.205	1.791
NC-1179.01000	0.95	1.443	2.365	3.816	5.673
NC-1180.01000	0.27	0.410	0.672	1.084	1.612
NC-1181.01000	0.03	0.046	0.075	0.120	0.179
NC-1182.01000	1.20	1.823	2.988	4.820	7.165
NC-1183.01000	1.78	2.704	4.432	7.150	10.629
NC-1185.01000	1.55	2.355	3.859	6.226	9.255
NC-1186.01000	0.40	0.608	0.996	1.607	2.388
NC-1187.01000	0.10	0.152	0.249	0.402	0.597
NC-1229.01000	0.20	0.304	0.498	0.803	1.194
NC-1231.01001	0.10	0.152	0.249	0.402	0.597
NC-1235.01000	0.36	0.547	0.896	1.446	2.150
NC-1236.01000	1.20	1.823	2.988	4.820	7.165
NC-1237.01000	4.70	7.140	11.703	18.878	28.064
NC-1238.01000	8.80	13.369	21.911	35.346	52.546
NC-1239.01000	11.60	17.623	28.883	46.593	69.265
NC-1240.01000	13.70	20.814	34.112	55.027	81.804
NC-1241.01000	5.10	7.748	12.698	20.485	30.453
NC-1242.01000	1.80	2.735	4.482	7.230	10.748
NC-1243.01000	4.00	6.077	9.960	16.066	23.884
NC-1244.R0000	16.02	19.315	24.092	29.834	35.622
NC-1245.01000	15.60	23.700	38.842	62.659	93.149
NC-1247.01000	3.30	5.014	8.217	13.255	19.705

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1248.01000	0.70	1.063	1.743	2.812	4.180
NC-1249.01000	1.20	1.823	2.988	4.820	7.165
NC-1250.01000	8.80	13.369	21.911	35.346	52.546
NC-1251.01000	11.20	17.016	27.887	44.986	66.876
NC-1252.01000	3.40	5.165	8.466	13.656	20.302
NC-1253.01000	2.40	3.646	5.976	9.640	14.331
NC-1254.61000	0.90	1.367	2.241	3.615	5.374
NC-1255.01000	0.10	0.152	0.249	0.402	0.597
NC-1256.01000	36.80	55.908	91.628	147.811	219.736
NC-1257.01000	17.90	27.195	44.569	71.897	106.883
NC-1258.01000	30.80	46.793	76.689	123.711	183.910
NC-1259.01000	9.80	14.889	24.401	39.363	58.517
NC-1260.01000	26.90	40.868	66.978	108.047	160.623
NC-1264.01000	1.50	2.279	3.735	6.025	8.957
NC-1265.01000	0.34	0.517	0.847	1.366	2.030
NC-1267.01000	0.10	0.152	0.249	0.402	0.597
NC-1268.01000	0.05	0.076	0.124	0.201	0.299
NC-1269.01000	0.10	0.152	0.249	0.402	0.597
NC-1270.01000	0.53	0.805	1.320	2.129	3.165
NC-1271.01000	0.80	1.215	1.992	3.213	4.777
NC-1272.01000	0.39	0.593	0.971	1.566	2.329
NC-1273.01000	0.20	0.304	0.498	0.803	1.194
NC-1274.R0000	0.07	0.084	0.105	0.130	0.156
NC-1275.01000	0.07	0.106	0.174	0.281	0.418
NC-1276.01000	0.10	0.152	0.249	0.402	0.597
NC-1277.01000	0.32	0.486	0.797	1.285	1.911
NC-1278.01000	0.50	0.760	1.245	2.008	2.986
NC-1279.01000	1.10	1.671	2.739	4.418	6.568
NC-1280.01000	0.07	0.106	0.174	0.281	0.418
NC-1281.01000	0.07	0.106	0.174	0.281	0.418
NC-1282.01000	0.09	0.137	0.224	0.361	0.537
NC-1283.01000	0.90	1.367	2.241	3.615	5.374
NC-1284.01000	0.50	0.760	1.245	2.008	2.986
NC-1285.01000	0.26	0.395	0.647	1.044	1.552
NC-1286.01000	0.10	0.152	0.249	0.402	0.597
NC-1287.01000	0.01	0.015	0.025	0.040	0.060
NC-1292.01000	0.10	0.152	0.249	0.402	0.597
NC-1295.01000	0.10	0.152	0.249	0.402	0.597
NC-1312.01000	0.10	0.152	0.249	0.402	0.597
NC-1317.01000	0.10	0.152	0.249	0.402	0.597
NC-1319.01000	0.10	0.152	0.249	0.402	0.597
NC-1326.01000	0.06	0.091	0.149	0.241	0.358
NC-1335.01000	0.40	0.608	0.996	1.607	2.388
NC-1336.01000	5.30	8.052	13.196	21.288	31.647
NC-1338.01000	27.60	41.931	68.721	110.858	164.802
NC-1339.01000	3.10	4.710	7.719	12.451	18.510

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1340.01000	17.90	27.195	44.569	71.897	106.883
NC-1341.01000	2.00	3.038	4.980	8.033	11.942
NC-1342.01000	1.40	2.127	3.486	5.623	8.360
NC-1343.01000	5.80	8.812	14.441	23.296	34.632
NC-1345.01000	0.04	0.061	0.100	0.161	0.239
NC-1346.01000	13.70	20.814	34.112	55.027	81.804
NC-1347.01000	116.00	176.233	288.828	465.926	692.648
NC-1349.01000	0.19	0.289	0.473	0.763	1.135
NC-1350.01000	24.20	36.766	60.255	97.202	144.501
NC-1351.01000	37.40	56.820	93.122	150.221	223.319
NC-1352.01000	2.60	3.950	6.474	10.443	15.525
NC-1353.01000	2.40	3.646	5.976	9.640	14.331
NC-1354.R0000	1.47	1.772	2.211	2.738	3.269
NC-1355.01000	0.06	0.091	0.149	0.241	0.358
NC-1356.01000	0.40	0.608	0.996	1.607	2.388
NC-1357.01000	145.00	220.291	361.035	582.407	865.809
NC-1358.01000	5.80	8.812	14.441	23.296	34.632
NC-1359.01000	2.40	3.646	5.976	9.640	14.331
NC-1360.01000	11.10	16.864	27.638	44.584	66.279
NC-1361.01000	0.40	0.608	0.996	1.607	2.388
NC-1364.01000	2.70	4.102	6.723	10.845	16.122
NC-1365.01000	0.70	1.063	1.743	2.812	4.180
NC-1367.01000	0.11	0.167	0.274	0.442	0.657
NC-1368.01000	0.10	0.152	0.249	0.402	0.597
NC-1369.01000	0.07	0.106	0.174	0.281	0.418
NC-1370.01000	0.40	0.608	0.996	1.607	2.388
NC-1371.01000	0.50	0.760	1.245	2.008	2.986
NC-1372.01000	0.50	0.760	1.245	2.008	2.986
NC-1373.01000	0.90	1.367	2.241	3.615	5.374
NC-1374.01000	0.23	0.349	0.573	0.924	1.373
NC-1375.01000	0.03	0.046	0.075	0.120	0.179
NC-1376.01000	0.08	0.122	0.199	0.321	0.478
NC-1377.01000	0.20	0.304	0.498	0.803	1.194
NC-1378.01000	0.23	0.349	0.573	0.924	1.373
NC-1379.01000	0.55	0.836	1.369	2.209	3.284
NC-1380.01000	0.30	0.456	0.747	1.205	1.791
NC-1381.01000	0.02	0.030	0.050	0.080	0.119
NC-1382.01000	0.10	0.152	0.249	0.402	0.597
NC-1383.01000	0.92	1.398	2.291	3.695	5.493
NC-1384.R0000	0.69	0.832	1.038	1.285	1.534
NC-1385.61000	0.59	0.896	1.469	2.370	3.523
NC-1386.01000	0.11	0.167	0.274	0.442	0.657
NC-1387.01000	0.10	0.152	0.249	0.402	0.597
NC-1390.01000	0.10	0.152	0.249	0.402	0.597
NC-1397.01000	0.10	0.152	0.249	0.402	0.597
NC-13A4.01000	0.50	0.760	1.245	2.008	2.986

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-13A6.61000	0.10	0.152	0.249	0.402	0.22
NC-1426.R0000	0.09	0.11	0.14	0.22	0.200
NC-1427.01000	0.10	0.152	0.249	0.402	0.597
NC-1431.01000	0.10	0.152	0.249	0.402	0.597
NC-1435.01000	0.36	0.547	0.896	1.446	2.150
NC-1436.01000	1.50	2.279	3.735	6.025	8.957
NC-1437.01000	3.45	5.241	8.590	13.857	20.600
NC-1438.01000	6.70	10.179	16.682	26.911	40.006
NC-1439.01000	7.10	10.787	17.678	28.518	42.395
NC-1440.01000	2.40	3.646	5.976	9.640	14.331
NC-1441.01000	1.10	1.671	2.739	4.418	6.568
NC-1442.01000	0.50	0.760	1.245	2.008	2.986
NC-1443.01000	1.39	2.112	3.461	5.583	8.300
NC-1444.01000	6.23	9.465	15.512	25.023	37.200
NC-1445.01000	112.00	170.156	278.868	449.859	668.763
NC-1446.01000	18.00	27.346	44.818	72.299	107.480
NC-1447.01000	1.90	2.887	4.731	7.632	11.345
NC-1448.01000	0.68	1.033	1.693	2.731	4.060
NC-1449.01000	0.30	0.456	0.747	1.205	1.791
NC-1450.01000	149.00	226.368	370.994	598.473	889.694
NC-1451.01000	19.80	30.081	49.300	79.529	118.228
NC-1452.01000	2.50	3.798	6.225	10.041	14.928
NC-1453.01000	1.70	2.583	4.233	6.828	10.151
NC-1454.01000	1.10	1.671	2.739	4.418	6.568
NC-1455.01000	0.50	0.760	1.245	2.008	2.986
NC-1456.01000	0.21	0.319	0.523	0.843	1.254
NC-1457.01000	2.60	3.950	6.474	10.443	15.525
NC-1458.01000	13.40	20.358	33.365	53.822	80.013
NC-1459.01000	5.28	8.022	13.147	21.208	31.527
NC-1460.01000	0.49	0.744	1.220	1.968	2.926
NC-1461.01000	1.30	1.975	3.237	5.222	7.762
NC-1462.01000	0.14	0.213	0.349	0.562	0.836
NC-1463.01000	0.20	0.304	0.498	0.803	1.194
NC-1464.R0000	0.63	0.760	0.947	1.173	1.401
NC-1467.01000	0.15	0.22789	0.37348	0.6025	0.8957
NC-1468.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1469.01000	0.19	0.28866	0.47308	0.7632	1.1345
NC-1471.01000	0.90	1.36732	2.24090	3.6149	5.3740
NC-1472.01000	3.20	4.86160	7.96766	12.8531	19.1075
NC-1473.01000	0.17	0.25827	0.42328	0.6828	1.0151
NC-1474.61000	0.05	0.07596	0.12449	0.2008	0.2986
NC-1475.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1476.01000	0.28	0.42539	0.69717	1.1246	1.6719
NC-1477.01000	0.20	0.30385	0.49798	0.8033	1.1942
NC-1478.01000	0.40	0.60770	0.99596	1.6066	2.3884
NC-1479.01000	0.60	0.91155	1.49394	2.4100	3.5827

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1480.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1481.01000	0.08	0.12154	0.19919	0.3213	0.4777
NC-1482.01000	0.12	0.18231	0.29879	0.4820	0.7165
NC-1484.01000	0.60	0.91155	1.49394	2.4100	3.5827
NC-1485.01000	0.56	0.85078	1.39434	2.2493	3.3438
NC-1486.01000	0.20	0.30385	0.49798	0.8033	1.1942
NC-1487.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-14B4.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1525.01000	0.21	0.31904	0.52288	0.8435	1.2539
NC-1528.01000	0.14	0.21269	0.34859	0.5623	0.8360
NC-1535.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1542.01000	1.10	1.67117	2.73888	4.4183	6.5682
NC-1548.01000	3.80	5.77315	9.46160	15.2631	22.6902
NC-1555.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1561.01000	0.40	0.60770	0.99596	1.6066	2.3884
NC-1562.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1568.01000	0.11	0.16712	0.27389	0.4418	0.6568
NC-1574.R0000	0.12	0.14468	0.18047	0.2235	0.2668
NC-1575.01000	0.06	0.09115	0.14939	0.2410	0.3583
NC-1582.01000	0.06	0.09115	0.14939	0.2410	0.3583
NC-1583.01000	0.15	0.22789	0.37348	0.6025	0.8957
NC-1584.01000	1.70	2.58272	4.23282	6.8282	10.1509
NC-1585.01000	0.40	0.60770	0.99596	1.6066	2.3884
NC-1586.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1587.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-15A0.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-15B0.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1612.01000	0.31	0.47097	0.77187	1.2451	1.8510
NC-1613.01000	0.08	0.12154	0.19919	0.3213	0.4777
NC-1614.01000	0.09	0.13673	0.22409	0.3615	0.5374
NC-1615.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1616.01000	0.60	0.91155	1.49394	2.4100	3.5827
NC-1617.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1618.01000	0.05	0.07596	0.12449	0.2008	0.2986
NC-1619.01000	1.60	2.43080	3.98383	6.4266	9.5538
NC-1620.01000	2.00	3.03850	4.97979	8.0332	11.9422
NC-1621.01000	0.40	0.60770	0.99596	1.6066	2.3884
NC-1622.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1623.01000	0.10	0.15192	0.24899	0.4017	0.5971
NC-1624.01000	0.80	1.21540	1.99192	3.2133	4.7769
NC-1625.01000	0.17	0.25827	0.42328	0.6828	1.0151
NC-1626.01000	1.00	1.51925	2.48989	4.0166	5.9711
NC-1627.R0000	0.48	0.57872	0.72187	0.8939	1.0673
NC-1628.01000	0.20	0.30385	0.49798	0.8033	1.1942
NC-1629.01000	0.01	0.015	0.025	0.040	0.060
NC-1630.01000	0.09	0.137	0.224	0.361	0.537

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1631.01000	1.14	1.732	2.838	4.579	6.807
NC-1632.01000	0.70	1.063	1.743	2.812	4.180
NC-1635.01000	0.13	0.198	0.324	0.522	0.776
NC-1636.01000	0.20	0.304	0.498	0.803	1.194
NC-1642.01000	0.70	1.063	1.743	2.812	4.180
NC-1648.01000	0.10	0.152	0.249	0.402	0.597
NC-1655.01000	0.10	0.152	0.249	0.402	0.597
NC-1661.01000	0.10	0.152	0.249	0.402	0.597
NC-1662.01000	0.20	0.304	0.498	0.803	1.194
NC-1668.01000	0.10	0.152	0.249	0.402	0.597
NC-1674.01000	0.18	0.273	0.448	0.723	1.075
NC-1675.01000	0.01	0.015	0.025	0.040	0.060
NC-1681.01000	0.10	0.152	0.249	0.402	0.597
NC-1682.01000	0.19	0.289	0.473	0.763	1.135
NC-1683.01000	1.30	1.975	3.237	5.222	7.762
NC-1684.01000	0.90	1.367	2.241	3.615	5.374
NC-1685.01000	0.18	0.273	0.448	0.723	1.075
NC-1686.01000	0.05	0.076	0.124	0.201	0.299
NC-1687.01000	0.03	0.046	0.075	0.120	0.179
NC-1691.01000	0.03	0.046	0.075	0.120	0.179
NC-16A3.01000	0.10	0.152	0.249	0.402	0.597
NC-1711.01000	0.02	0.030	0.050	0.080	0.119
NC-1712.R0000	0.24	0.289	0.361	0.447	0.534
NC-1713.01000	0.05	0.076	0.124	0.201	0.299
NC-1714.01000	0.09	0.137	0.224	0.361	0.537
NC-1715.01000	0.10	0.152	0.249	0.402	0.597
NC-1716.01000	0.10	0.152	0.249	0.402	0.597
NC-1717.01000	0.03	0.046	0.075	0.120	0.179
NC-1718.61000	0.24	0.365	0.598	0.964	1.433
NC-1719.01000	0.90	1.367	2.241	3.615	5.374
NC-1720.01000	0.90	1.367	2.241	3.615	5.374
NC-1721.01000	0.30	0.456	0.747	1.205	1.791
NC-1722.01000	0.10	0.152	0.249	0.402	0.597
NC-1723.01000	0.14	0.213	0.349	0.562	0.836
NC-1724.01000	0.36	0.547	0.896	1.446	2.150
NC-1725.01000	0.80	1.215	1.992	3.213	4.777
NC-1726.01000	4.75	7.216	11.827	19.079	28.363
NC-1727.01000	2.05	3.114	5.104	8.234	12.241
NC-1728.01000	0.18	0.273	0.448	0.723	1.075
NC-1729.01000	0.11	0.167	0.274	0.442	0.657
NC-1730.01000	0.20	0.304	0.498	0.803	1.194
NC-1731.01000	1.40	2.127	3.486	5.623	8.360
NC-1732.01000	1.58	2.400	3.934	6.346	9.434
NC-1734.01000	0.60	0.912	1.494	2.410	3.583
NC-1735.01000	0.20	0.304	0.498	0.803	1.194
NC-1736.01000	0.11	0.167	0.274	0.442	0.657

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1737.01000	33.40	50.743	83.162	134.154	199.435
NC-1737.01000	88.70	134.757	220.854	356.272	529.637
NC-1739.01000	55.10	83.711	137.193	221.315	329.008
NC-1740.R1000	2.14	2.580	3.218	3.985	4.759
NC-1741.01000	0.80	1.215	1.992	3.213	4.777
NC-1742.01000	0.09	0.137	0.224	0.361	0.537
NC-1743.01000	0.45	0.684	1.120	1.807	2.687
NC-1744.01000	2.40	3.646	5.976	9.640	14.331
NC-1745.01000	6.20	9.4193	14.4373	24.9029	37.0208
NC-1746.01000	4.30	6.5328	10.7065	17.2714	25.6757
NC-1747.01000	3.40	5.1654	8.4656	13.6564	20.3017
NC-1748.01000	0.04	0.0608	0.0996	0.1607	0.2388
NC-1749.01000	10.20	15.4963	25.3969	40.9693	60.9052
NC-1750.01000	1.50	2.2789	3.7348	6.0249	8.9566
NC-1751.01000	3.38	5.1351	8.4158	13.5761	20.1823
NC-1752.01000	2.50	3.7981	6.2247	10.0415	14.9277
NC-1753.01000	1.80	2.7346	4.4818	7.2299	10.7480
NC-1754.01000	8.30	12.6098	20.6661	33.3378	49.5601
NC-1755.01000	0.27	0.4102	0.6723	1.0845	1.6122
NC-1756.01000	1.60	2.4308	3.9838	6.4266	9.5538
NC-1757.01000	5.90	8.9636	14.6904	23.6979	35.2295
NC-1758.61000	5.90	8.9636	14.6904	23.6979	35.2295
NC-1759.01000	8.10	12.3059	20.1681	32.5345	48.3659
NC-1760.01000	3.40	5.1654	8.4656	13.6564	20.3017
NC-1761.01000	0.50	0.7596	1.2449	2.0083	2.9855
NC-1762.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-1763.01000	0.80	1.2154	1.9919	3.2133	4.7769
NC-1764.01000	0.70	1.0635	1.7429	2.8116	2.1798
NC-1765.01000	2.01	3.0537	5.0047	8.0734	12.0019
NC-1766.01000	0.44	0.6685	1.0956	1.7673	2.6273
NC-1767.01000	0.07	0.1063	0.1743	0.2812	0.4180
NC-1768.01000	0.07	0.1063	0.1743	0.2812	0.4180
NC-1769.01000	0.04	0.0608	0.0996	0.1607	0.2388
NC-1770.R0000	0.21	0.2532	0.3158	0.3911	0.4670
NC-1771.01000	1.10	1.6712	2.7389	4.4183	6.5682
NC-1772.01000	1.40	2.1269	3.4859	5.6232	8.3595
NC-1773.01000	0.83	1.2610	2.0666	3.3338	4.9560
NC-1774.01000	0.16	0.2431	0.3984	0.6427	0.9554
NC-1775.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-1776.01000	0.20	0.3038	0.4980	0.8033	1.1942
NC-1777.01000	0.60	0.9115	1.4939	2.4100	3.5827
NC-1778.01000	1.10	1.6712	2.7389	4.4183	6.5682
NC-1779-01000	1.15	1.7471	2.8634	4.6191	6.8668
NC-1780.01000	0.06	0.0912	0.1494	0.2410	0.3583
NC-1781.01000	0.03	0.0456	0.0747	0.1205	0.1791
NC-1782.01000	0.20	0.3038	0.4980	0.8033	1.1942

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1783.01000	0.69	1.0483	1.7180	2.7715	4.1201
NC-1784.01000	0.41	0.6229	1.0209	1.6468	2.4482
NC-1785.01000	2.40	3.6462	5.9757	9.6398	14.3306
NC-1786.01000	0.01	0.0152	0.0249	0.0402	0.0597
NC-1787.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-17A7.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-1811.01000	0.06	0.0912	0.1494	0.2410	0.3583
NC-1812.01000	0.10	0.1519	0.2490	0.4017	0.4971
NC-1813.01000	0.26	0.3950	0.6474	1.0443	1.5525
NC-1814.01000	0.40	0.6077	0.9960	1.6066	2.3884
NC-1815.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-1816.01000	2.30	3.4943	5.7268	9.2382	13.7335
NC-1817.01000	0.24	0.3646	0.5976	0.9640	1.4331
NC-1818.01000	0.60	0.9115	1.4939	2.4100	3.5827
NC-1819.01000	0.96	1.4585	2.3903	3.8559	5.7323
NC-1820.01000	1.20	1.8231	2.9879	4.8199	7.1653
NC-1821.01000	0.47	0.7140	1.1703	1.8878	2.8064
NC-1822.01000	0.05	0.0760	0.1245	0.201	0.299
NC-1823.01000	0.15	0.18	0.24	0.37	0.334
NC-1825.01000	1.20	1.8231	2.9879	4.820	7.165
NC-1826.01000	11.80	17.9271	29.3807	47.396	70.459
NC-1827.61000	0.03	0.0456	0.0747	0.120	0.179
NC-1828.01000	0.30	0.4558	0.7470	1.205	1.791
NC-1829.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1830.01000	0.80	1.2154	1.9919	3.213	4.777
NC-1831.01000	10.40	15.8002	25.8949	41.773	62.099
NC-1832.01000	2.52	3.8285	6.2745	10.122	15.047
NC-1834.01000	0.20	0.3038	0.4980	0.803	1.194
NC-1835.01000	0.23	0.3494	0.5727	0.924	1.373
NC-1836.01000	0.15	0.2279	0.3735	0.602	0.896
NC-1837.01000	9.60	14.5848	23.9030	38.559	57.323
NC-1838.01000	10.10	15.3444	25.1479	40.568	60.308
NC-1839.01000	21.70	32.9677	54.0307	87.160	129.573
NC-1840.01000	0.60	0.9115	1.4939	2.410	3.583
NC-1841.01000	0.35	0.5317	0.8715	1.406	2.090
NC-1842.01000	0.13	0.1975	0.3237	0.522	0.776
NC-1843.01000	4.04	6.1378	10.0592	16.227	24.123
NC-1844.01000	13.20	20.0541	32.8666	53.019	78.819
NC-1845.01000	1.69	2.5675	4.2079	6.788	10.091
NC-1846.01000	2.30	3.4943	5.7268	9.238	13.734
NC-1847.01000	4.00	6.0770	9.9596	16.066	23.884
NC-1848.01000	0.46	0.6989	1.1454	1.848	2.747
NC-1849-01000	2.20	3.3423	5.4778	8.837	13.136
NC-1850.01000	25.30	38.4370	62.9943	101.620	151.069
NC-1851.01000	3.10	4.7097	7.7187	12.451	18.510
NC-1852.01000	38.60	58.6430	96.1099	155.041	230.484

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1853.R1000	0.88	1.0610	1.3234	1.639	1.957
NC-1854.01000	13.30	20.2060	33.1156	53.421	79.416
NC-1855.01000	0.10	0.1419	0.2490	0.402	0.597
NC-1856.01000	0.50	0.7596	1.2449	2.008	2.986
NC-1857.01000	0.80	1.2154	1.9919	3.213	4.777
NC-1858.01000	5.10	7.7482	12.6985	20.485	30.453
NC-1859.01000	11.50	17.4714	28.6338	46.191	68.668
NC-1860.01000	1.70	2.5827	4.2328	6.828	10.151
NC-1861.61000	0.20	0.3038	0.4980	0.803	1.194
NC-1862.01000	0.14	0.2127	0.3486	0.562	0.836
NC-1863.01000	0.20	0.3038	0.4980	0.803	1.194
NC-1864.01000	2.36	0.5469	0.8964	1.446	2.150
NC-1865.01000	0.50	0.7596	1.2449	2.008	2.986
NC-1866.01000	0.43	0.6533	1.0707	1.727	2.568
NC-1869.01000	0.18	0.2735	0.4482	0.723	1.075
NC-1870.01000	0.11	0.1671	0.2739	0.442	0.657
NC-1871.01000	0.30	0.4558	0.7470	1.205	1.791
NC-1872.01000	0.60	0.9115	1.4939	2.410	3.583
NC-1873.01000	1.90	2.8866	4.7308	7.632	11.345
NC-1874.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1875.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1876.01000	0.62	0.9419	1.5437	2.490	3.702
NC-1877.01000	2.30	3.4943	5.7268	9.238	13.734
NC-1878.01000	2.00	3.0385	4.9798	8.033	11.942
NC-1880.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1881.01000	0.10	0.1519	0.2490	0.402	0.597
NC-1882.01000	0.30	0.4558	0.7470	1.205	1.791
NC-1883.01000	0.62	0.478	0.932	1.155	1.379
NC-1884.01000	1.40	2.127	3.486	5.623	8.360
NC-1885.01000	0.50	0.760	1.245	2.008	2.986
NC-1886.01000	0.07	0.106	0.174	0.281	0.418
NC-1887.01000	0.10	0.152	0.249	0.402	0.597
NC-1896.01000	0.10	0.152	0.249	0.402	0.597
NC-18A1.01000	0.10	0.152	0.249	0.402	0.597
NC-1910.01000	0.10	0.152	0.249	0.402	0.597
NC-1911.01000	0.02	0.030	0.050	0.080	0.119
NC-1912.01000	0.13	0.198	0.324	0.522	0.776
NC-1913.01000	0.30	0.456	0.747	1.205	1.791
NC-1914.01000	1.99	3.023	4.955	7.993	11.882
NC-1915.01000	0.07	0.1063	0.174	0.281	0.418
NC-1917.01000	0.33	0.501	0.822	1.325	1.970
NC-1918.01000	0.70	1.063	1.743	2.812	4.180
NC-1919-01000	2.40	3.646	5.976	0.640	14.331
NC-1920.01000	7.00	10.635	17.429	28.116	41.798
NC-1921.01000	0.80	1.215	1.992	3.213	4.777
NC-1922.01000	0.10	0.152	0.249	0.402	0.597

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1923.01000	0.10	0.152	0.249	0.402	0.597
NC-1924.61000	0.40	0.608	0.996	1.607	2.388
NC-1925.01000	4.00	6.077	9.960	16.066	23.884
NC-1926.01000	22.60	34.335	56.272	90.775	134.947
NC-1927.01000	1.40	2.127	3.486	5.623	8.360
NC-1928.01000	9.40	14.281	23.405	37.756	56.128
NC-1929.01000	0.30	0.456	0.747	1.205	1.791
NC-1930.01000	1.80	2.735	4.482	7.230	10.748
NC-1931.61000	13.00	19.750	32.369	52.216	77.624
NC-1932.01000	1.99	3.023	4.955	7.993	11.882
NC-1934.01000	0.30	0.456	0.747	1.205	1.791
NC-1936.R0000	0.26	0.32	0.41	0.64	0.578
NC-1937.01000	0.40	0.608	0.996	1.607	2.388
NC-1938.01000	0.90	1.367	2.241	3.615	5.374
NC-1939.01000	0.40	0.608	0.996	1.607	2.388
NC-1940.01000	0.30	0.456	0.747	1.205	1.791
NC-1941.01000	6.50	9.875	16.184	26.108	38.812
NC-1942.01000	0.20	0.304	0.498	0.803	1.194
NC-1943.01000	74.90	113.792	186.493	300.843	447.235
NC-1944.01000	14.80	22.485	36.850	59.446	88.372
NC-1945.01000	4.70	7.140	11.703	18.878	28.064
NC-1946.01000	1.90	2.887	4.731	7.632	11.345
NC-1947.01000	64.70	98.295	161.096	259.874	386.330
NC-1948.01000	0.90	1.367	2.241	3.615	5.374
NC-1949.01000	1.30	1.975	3.237	5.222	7.762
NC-1950.01000	1.40	2.127	3.486	5.623	8.360
NC-1951.01000	1.20	1.823	2.988	4.820	7.165
NC-1952.01000	1.80	2.735	4.482	7.230	10.748
NC-1953.01000	0.70	1.063	1.743	2.812	4.180
NC-1954.01000	0.70	1.063	1.743	2.812	4.180
NC-1955.01000	3.00	4.558	7.470	12.050	17.913
NC-1956.01000	0.10	0.152	0.249	0.402	0.597
NC-1957.01000	1.20	1.823	2.988	4.820	7.165
NC-1958.01000	7.13	10.832	17.753	28.638	42.574
NC-1959.01000	35.50	53.933	88.391	142.589	211.974
NC-1960.01000	6.30	9.571	15.686	25.305	37.618
NC-1961.01000	0.60	0.912	1.494	2.410	3.583
NC-1962.01000	0.50	0.7596	1.2449	2.0083	2.9855
NC-1963.01000	0.50	0.7596	1.2449	2.0083	2.9855
NC-1964.61000	0.37	0.5621	0.9213	1.4861	2.2093
NC-1965.01000	0.60	0.9115	1.4939	2.4100	3.5827
NC-1966.R0000	0.34	0.4099	0.5113	0.6332	0.7560
NC-1967.01000	0.10	0.1519	0.2490	0.4017	0.4971
NC-1968.01000	0.02	0.0304	0.0498	0.0803	0.1194
NC-1969.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-1970.01000	0.04	0.0608	0.0996	0.1607	0.2388

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-1971.01000	1.00	1.5192	2.4899	4.0166	5.9711
NC-1972.01000	1.70	2.5827	4.2328	6.8282	10.1509
NC-1973.01000	0.31	0.4710	0.7719	1.2451	1.8510
NC-1974.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-1975.01000	0.13	0.1975	0.3237	0.5222	0.7762
NC-1976.01000	0.50	0.7596	1.2449	2.0083	2.9855
NC-1978.01000	4.40	6.6847	10.9555	17.6730	26.2728
NC-1979.01000	0.50	0.7596	1.2449	2.0083	2.9855
NC-1980.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-1981.01000	0.15	0.2279	0.3735	0.6025	0.8957
NC-1982.01000	0.05	0.0760	0.1245	0.2008	0.2986
NC-1983.01000	0.31	0.4710	0.7719	1.2451	1.8510
NC-1984.01000	0.80	1.2154	1.9919	3.2133	4.7769
NC-1985.01000	1.10	1.6712	2.7389	4.4183	6.5682
NC-1986.01000	0.09	0.1367	0.2241	0.3615	0.5374
NC-1987.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-19A6.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-19B5.01000	0.10	0.1519	0.2490	0.4017	0.5971
NC-2010.01000	0.17	0.2583	0.4233	0.6828	1.0151
NC-2011.01000	0.35	0.5317	0.8715	1.4058	2.0899
NC-2012.01000	0.02	0.0304	0.0498	0.0803	0.1194
NC-2013.01000	1.00	1.5192	2.4899	4.0166	5.9711
NC-2014.01000	3.30	5.0135	8.2167	13.2548	19.7046
NC-2015.01000	1.09	1.6560	2.7140	4.3781	6.5085
NC-2016.01000	0.30	0.4558	0.7470	1.2050	1.7913
NC-2017.01000	0.80	1.2154	1.9919	3.2133	4.7769
NC-2018.01000	0.60	0.9115	1.4939	2.4100	3.5827
NC-2019.R0000	2.50	3.0142	3.7597	4.6557	5.5590
NC-2020.01000	7.40	11.2424	18.4252	29.7228	44.1861
NC-2021.01000	1.46	2.2181	3.6352	5.8642	8.7178
NC-2022.01000	0.14	0.2127	0.3486	0.5623	0.8360
NC-2023.01000	0.15	0.2279	0.3735	0.6025	0.8957
NC-2024.01000	1.20	1.8231	2.9879	4.8199	7.1653
NC-2025.01000	6.00	9.1155	14.9394	24.0996	35.8266
NC-2027.61000	16.40	24.9157	40.8343	65.8722	97.9260
NC-2026.01000	14.80	22.4849	36.8504	59.4457	88.3723
NC-2028.01000	1.50	2.2789	3.7348	6.0249	8.9566
NC-2029.01000	0.53	0.8052	1.3196	2.1288	3.1647
NC-2030.01000	1.30	1.9750	3.2369	5.2216	7.7624
NC-2031.01000	12.70	19.2945	31.6217	51.0108	75.8330
NC-2032.01000	4.40	6.6847	10.9555	17.6730	26.2728
NC-2034.01000	0.60	0.9115	1.4939	2.4100	3.5827
NC-2035.01000	0.20	0.3038	0.4980	0.8033	1.1942
NC-2036.01000	0.26	0.3950	0.6474	1.0443	1.5525
NC-2037.01000	0.41	0.6229	1.0209	1.6468	2.4482
NC-2038.01000	0.80	1.2154	1.9919	3.2133	4.7769

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2039.01000	0.68	1.0331	1.6931	2.7313	4.0603
NC-2040.01000	0.27	0.410	0.672	1.084	1.612
NC-2041.01000	0.40	0.608	0.996	1.607	2.388
NC-2042.01000	0.08	0.122	0.199	0.321	0.478
NC-2043.01000	1.90	2.887	4.731	7.632	11.345
NC-2044.01000	147.00	223.330	366.014	590.440	877.752
NC-2045.01000	1.10	1.671	2.739	4.418	6.568
NC-2046.01000	0.80	1.215	1.992	3.213	4.777
NC-2047.01000	1.12	1.702	2.789	4.499	6.688
NC-2048.01000	0.30	0.456	0.747	1.205	1.791
NC-2049.R0000	0.28	0.338	0.421	0.521	0.623
NC-2050.01000	0.65	0.988	1.618	2.611	3.881
NC-2051.01000	0.71	1.079	1.768	2.852	4.239
NC-2054.01000	0.20	0.304	0.498	0.803	1.194
NC-2055.01000	0.01	0.015	0.025	0.040	0.060
NC-2056.01000	0.30	0.456	0.747	1.205	1.791
NC-2057.01000	0.63	0.957	1.569	2.530	3.762
NC-2058.01000	1.95	2.963	4.855	7.832	11.644
NC-2059.01000	2.10	3.190	5.229	8.435	12.539
NC-2060.01000	1.00	1.519	2.490	4.017	5.971
NC-2061.01000	0.02	0.030	0.050	0.080	0.119
NC-2062.01000	0.12	0.182	0.299	0.482	0.717
NC-2063.01000	0.45	0.684	1.120	1.807	2.687
NC-2064.01000	1.57	2.385	3.909	6.306	9.375
NC-2065.01000	1.07	1.626	2.664	4.298	6.389
NC-2067.61000	0.15	0.228	0.373	0.602	0.896
NC-2068.01000	0.42	0.638	1.046	1.687	2.508
NC-2069.01000	0.60	0.912	1.494	2.410	3.583
NC-2070.01000	0.16	0.243	0.398	0.643	0.955
NC-2071.01000	0.86	1.307	2.141	3.454	5.135
NC-2072.01000	5.10	7.748	12.698	20.485	30.453
NC-2073.01000	0.27	0.410	0.672	1.084	1.612
NC-2074.01000	0.10	0.152	0.249	0.402	0.597
NC-2075.01000	0.01	0.015	0.025	0.040	0.060
NC-2076.01000	0.13	0.198	0.324	0.522	0.776
NC-2077.01000	2.51	3.813	6.250	10.082	14.987
NC-2078.01000	4.30	6.533	10.707	17.271	25.676
NC-2079.R0000	0.34	0.42	0.54	0.83	0.756
NC-2080.01000	0.10	0.152	0.249	0.402	0.597
NC-2081.01000	0.26	0.395	0.647	1.044	1.552
NC-2082.01000	0.09	0.137	0.224	0.361	0.537
NC-2083.01000	0.96	1.458	2.390	3.856	5.732
NC-2084.01000	2.18	3.312	5.428	8.756	13.017
NC-2085.01000	0.87	1.322	2.166	3.494	5.195
NC-2086.01000	0.16	0.243	0.398	0.643	0.955
NC-2087.01000	0.04	0.061	0.100	0.161	0.239

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2096.01000	0.10	0.152	0.249	0.402	0.597
NC-2098.01000	0.10	0.152	0.249	0.402	0.597
NC-20A7.61000	0.10	0.152	0.249	0.402	0.597
NC-2110.01000	0.10	0.152	0.249	0.402	0.597
NC-2111.01000	0.10	0.152	0.249	0.402	0.597
NC-2112.01000	0.20	0.304	0.498	0.803	1.194
NC-2113.01000	0.90	1.367	2.241	3.615	5.374
NC-2114.01000	4.30	6.533	10.707	17.271	25.676
NC-2115.01000	7.60	11.546	18.923	30.526	45.380
NC-2116.01000	0.40	0.608	0.996	1.607	2.388
NC-2117.01000	1.60	2.431	3.984	6.427	9.554
NC-2118.01000	5.00	7.5962	12.4495	20.083	29.855
NC-2119.01000	5.40	8.2039	13.4454	21.690	32.244
NC-2120.01000	4.40	6.6847	10.9555	17.673	26.273
NC-2121.01000	2.80	4.2539	6.9717	11.246	16.719
NC-2122.01000	0.40	0.6077	0.9960	1.607	2.388
NC-2123.01000	0.44	0.6685	1.0956	1.767	2.627
NC-2124.01000	2.00	3.0385	4.9798	8.033	11.942
NC-2125.01000	4.60	6.9885	11.4535	18.476	27.467
NC-2126.01000	10.50	15.9521	26.1439	42.174	62.697
NC-2127.01000	5.60	8.5078	13.9434	22.493	33.438
NC-2128.01000	1.70	2.5827	4.2328	6.828	10.151
NC-2129.01000	0.90	1.3673	2.2409	3.615	5.374
NC-2130.61000	31.90	48.4641	79.4276	128.130	190.478
NC-2131.R0000	18.60	22.93	29.35	45.5	41.359
NC-2132.01000	2.90	4.4058	7.2207	11.648	17.316
NC-2134.01000	0.40	0.6077	0.9960	1.607	2.388
NC-2135.01000	0.20	0.3038	0.4980	0.803	1.194
NC-2136.01000	0.22	0.3342	0.5478	0.884	1.314
NC-2137.01000	0.60	0.9115	1.4939	2.410	3.583
NC-2138.01000	0.56	0.8508	1.3943	2.249	3.344
NC-2139.01000	1.00	1.5192	2.4899	4.017	5.971
NC-2140.01000	0.80	1.2154	1.9919	3.213	4.777
NC-2141.01000	0.40	0.6077	0.9960	1.607	2.388
NC-2142.01000	0.20	0.3038	0.4980	0.803	1.194
NC-2143.01000	0.30	0.4558	0.7470	1.205	1.791
NC-2144.01000	0.86	1.3066	2.1413	3.454	5.135
NC-2145.01000	0.90	1.3673	2.2409	3.615	5.374
NC-2146.01000	0.70	1.0635	1.7429	2.812	4.180
NC-2147.01000	1.30	1.9750	3.2369	5.222	7.762
NC-2148.01000	0.97	1.4737	2.4152	3.896	5.792
NC-2149.01000	0.13	0.1975	0.3237	0.522	0.776
NC-2150.01000	0.05	0.0760	0.1245	0.201	0.299
NC-2151.01000	1.10	1.6712	2.7389	4.418	6.568
NC-2152.01000	0.80	1.2154	1.9919	3.213	4.777
NC-2153.01000	0.26	0.3950	0.6474	1.044	1.5552

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2154.01000	0.05	0.0760	0.1245	0.201	0.299
NC-2155.01000	0.10	0.1519	0.2490	0.402	0.597
NC-2156.01000	0.10	0.1519	0.2490	0.402	0.597
NC-2158.01000	4.13	6.2745	10.2833	16.589	24.661
NC-2159.01000	1.08	1.6408	2.6891	4.338	6.449
NC-2160.01000	0.50	0.7596	1.2449	2.008	2.986
NC-2161.01000	0.08	0.1215	0.1992	0.321	0.478
NC-2162.R0000	0.10	0.12	0.16	0.24	0.222
NC-2163.01000	1.00	1.5192	2.4899	4.017	5.971
NC-2164.01000	1.80	2.7346	4.4818	7.230	10.748
NC-2165.01000	5.90	8.9636	14.6904	23.698	35.229
NC-2166.01000	1.70	2.5827	4.2328	6.828	10.151
NC-2167.01000	0.37	0.5621	0.9213	1.486	2.209
NC-2168.01000	0.20	0.3038	0.4980	0.803	1.194
NC-2169.01000	0.19	0.2887	0.4731	0.763	1.135
NC-2170.61000	0.47	0.7140	1.1703	1.888	2.806
NC-2171.01000	2.00	3.0385	4.9798	8.033	11.942
NC-2172.01000	10.00	15.1925	24.8989	40.166	59.711
NC-2173.01000	1.60	2.4308	3.9838	6.427	9.554
NC-2174.01000	0.10	0.1519	0.2490	0.402	0.597
NC-2175.01000	0.67	1.0179	1.6682	2.691	4.001
NC-2176.01000	0.13	0.1975	0.324	0.522	0.776
NC-2177.01000	9.95	15.1165	24.774	39.965	59.412
NC-2178.01000	3.50	5.3174	8.715	14.058	20.899
NC-2180.01000	0.15	0.2279	0.373	0.602	0.896
NC-2181.01000	0.48	0.7292	1.195	1.928	2.866
NC-2182.01000	0.90	1.3673	2.241	3.615	5.374
NC-2184.01000	4.68	7.1101	11.653	18.798	27.945
NC-2185.01000	4.02	6.1074	10.009	16.147	24.004
NC-2186.01000	1.41	2.1421	3.511	5.663	8.419
NC-2187.01000	3.20	4.8616	7.968	12.853	19.108
NC-2211.01000	2.60	3.9500	6.474	10.443	15.525
NC-2212-01000	34.60	52.5660	86.150	138.974	206.600
NC-2213.01000	1.75	2.6587	4.357	7.029	10.449
NC-2214.01000	7.20	10.9386	17.927	28.920	42.992
NC-2215.R0000	80.05	96.5139	120.387	149.077	177.999
NC-2216.01000	0.40	0.6077	0.996	1.607	2.388
NC-2217.01000	7.30	11.0905	18.176	29.321	43.589
NC-2218.01000	13.50	20.5099	33.614	54.224	80.610
NC-2219.01000	6.10	9.2674	15.188	24.501	36.424
NC-2220.01000	2.10	3.1904	5.229	8.435	12.539
NC-2221.01000	4.80	7.2924	11.951	19.280	28.661
NC-2222.01000	2.50	3.7981	6.225	10.041	14.928
NC-2223.01000	1.00	1.5192	2.490	4.017	5.971
NC-2224.01000	3.90	5.9251	9.711	15.665	23.287
NC-2225.01000	2.60	3.9500	6.474	10.443	15.525

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2226.01000	10.20	15.4963	25.397	40.969	60.905
NC-2227.01000	37.20	56.5161	92.624	149.418	222.125
NC-2228.01000	3.50	5.3174	8.715	14.058	20.899
NC-2229.01000	0.80	1.2154	1.992	3.213	4.777
NC-2230.01000	63.00	95.7127	156.863	253.046	376.179
NC-2231.01000	14.30	21.7253	35.605	57.437	85.387
NC-2232.01000	6.90	10.4828	17.180	27.715	41.201
NC-2234.01000	0.70	1.0635	1.743	2.812	4.180
NC-2235.01000	0.26	0.3950	0.647	1.044	1.552
NC-2236.01000	0.20	0.3038	0.498	0.803	1.194
NC-2237.01000	0.40	0.6077	0.996	1.607	2.388
NC-2238.01000	0.50	0.7596	1.245	2.008	2.986
NC-2239.01000	1.10	1.6712	2.739	4.418	6.568
NC-2240.01000	2.10	3.1904	5.229	8.435	12.539
NC-2241.01000	0.80	1.2154	1.992	3.213	4.777
NC-2242.01000	0.21	0.3190	0.523	0.843	1.254
NC-2243.01000	0.70	1.0635	1.743	2.812	4.180
NC-2244.01000	1.90	2.8866	4.731	7.632	11.345
NC-2245.R0000	1.36	1.6397	2.045	2.533	3.024
NC-2246.01000	3.10	4.7097	7.719	12.451	18.510
NC-2247.01000	1.60	2.4308	3.984	6.427	9.554
NC-2248.01000	1.10	1.6712	2.739	4.418	6.568
NC-2249.01000	1.40	2.1269	3.486	5.623	8.360
NC-2250.01000	2.00	3.0385	4.980	8.033	11.942
NC-2251.01000	3.06	4.6489	7.619	12.291	18.272
NC-2252.01000	5.20	7.9001	12.947	20.886	31.050
NC-2253.01000	5.50	8.3559	13.694	22.091	32.841
NC-2254.01000	3.30	5.0135	8.217	13.255	19.705
NC-2255.01000	0.18	0.2735	0.448	0.723	1.075
NC-2256.01000	3.80	5.7731	9.462	15.263	22.690
NC-2257.01000	11.30	17.1675	28.136	45.388	67.473
NC-2258.01000	29.10	44.2102	72.456	116.883	173.759
NC-2259.01000	9.30	14.1290	23.156	37.354	55.531
NC-2260.01000	4.00	6.0770	9.960	16.066	23.884
NC-2261.01000	1.90	2.8866	4.731	7.632	11.345
NC-2262.01000	0.95	1.4433	2.365	3.816	5.673
NC-2263.01000	4.70	7.1405	11.703	18.878	28.064
NC-2264.01000	13.30	20.2060	33.116	53.421	79.416
NC-2265.01000	19.80	30.0811	49.300	79.529	118.228
NC-2266.01000	5.70	8.6597	14.192	22.895	34.035
NC-2267.01000	14.70	22.3330	36.601	59.044	87.775
NC-2268.01000	1.20	1.8231	2.988	4.820	7.165
NC-2269.01000	2.80	4.2539	6.972	11.246	16.719
NC-2270.01000	1.70	2.5827	4.233	6.828	10.151
NC-2270.01000	9.90	15.0406	24.650	39.764	59.114
NC-2271.01000	27.50	41.7794	68.472	110.456	164.205

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2272.01000	25.30	38.4370	62.994	101.620	151.069
NC-2274.01000	7.68	11.6678	19.122	30.847	45.858
NC-2275.R0000	2.11	2.5440	3.173	3.929	4.692
NC-2276.01000	4.90	7.4443	12.200	19.681	29.258
NC-2277.01000	9.40	14.2809	23.405	37.756	56.128
NC-2279.01000	5.00	7.5962	12.449	20.083	29.855
NC-2280.01000	0.70	1.0635	1.743	2.812	4.180
NC-2281.01000	0.20	0.3038	0.498	0.803	1.194
NC-2282.01000	7.10	10.7867	17.678	28.518	42.395
NC-2284.01000	4.58	6.9582	11.404	18.396	27.348
NC-2285.01000	2.10	3.1904	5.229	8.435	12.539
NC-2286.01000	0.10	0.1519	0.249	0.402	0.597
NC-2287.01000	0.21	0.3190	0.523	0.843	1.254
NC-2293.01000	0.10	0.1519	0.249	0.402	0.597
NC-2285.R0000	0.15	0.1809	0.226	0.279	0.334
NC-2289.01000	0.10	0.1519	0.249	0.402	0.597
NC-2309.01000	0.06	0.0912	0.149	0.241	0.358
NC-2310.01000	0.10	0.1519	0.249	0.402	0.597
NC-2310.01000	0.10	0.1519	0.249	0.402	0.597
NC-2311.01000	0.20	0.3038	0.498	0.803	1.194
NC-2312.01000	0.30	0.4558	0.747	1.205	1.791
NC-2313.01000	0.75	1.1394	1.867	3.012	4.478
NC-2315.01000	0.70	1.0635	1.743	2.812	4.180
NC-2318.01000	4.90	7.4443	12.200	19.681	29.258
NC-2319.01000	0.40	0.6077	0.996	1.607	2.388
NC-2320.01000	1.60	2.4308	3.984	6.427	9.554
NC-2321.01000	38.00	57.7315	94.616	152.631	226.902
NC-2323.01000	1.30	1.9750	3.237	5.222	7.762
NC-2324.01000	7.63	11.5919	18.998	30.647	45.559
NC-2325.01000	13.90	21.1176	34.610	55.831	82.998
NC-2326.01000	15.10	22.9407	37.597	60.651	90.164
NC-2327.01000	59.30	90.0915	147.651	238.184	354.086
NC-2328.R0000	55.00	66.3118	82.714	102.426	122.298
NC-2329.01000	3.90	5.9251	9.711	15.665	23.287
NC-2330.01000	37.30	56.6680	92.873	149.819	222.722
NC-2331.01000	31.20	47.4006	77.685	125.318	186.298
NC-2332.01000	4.70	7.1405	11.703	18.878	28.064
NC-2334.01000	0.40	0.6077	0.996	1.607	2.388
NC-2335.01000	0.30	0.4558	0.747	1.205	1.791
NC-2336.61000	0.60	0.912	1.494	2.410	3.58
NC-2337.01000	0.52	0.790	1.295	2.089	3.10
NC-2338.01000	0.70	1.063	1.743	2.812	4.18
NC-2339.01000	1.30	1.975	3.237	5.222	7.76
NC-2340.01000	0.90	1.367	2.241	3.615	5.37
NC-2341.01000	0.70	1.063	1.743	2.812	4.18
NC-2342.01000	0.42	0.638	1.046	1.687	2.51

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2343.01000	1.50	2.279	3.735	6.025	8.96
NC-2344.01000	3.30	5.014	8.217	13.255	19.70
NC-2345.01000	9.90	15.041	24.650	39.764	59.11
NC-2346.01000	1.79	2.719	4.457	7.190	10.69
NC-2347.01000	3.60	5.469	8.964	14.460	21.50
NC-2348.01000	1.91	2.902	4.756	7.672	11.40
NC-2349.01000	3.37	5.120	8.391	13.536	20.12
NC-2350.01000	2.24	3.403	5.577	8.997	13.38
NC-2351.01000	3.88	5.895	9.661	15.584	23.17
NC-2352.01000	3.50	5.317	8.715	14.058	20.90
NC-2353.01000	2.34	3.555	5.826	9.399	13.97
NC-2354.01000	7.14	10.847	17.778	28.679	42.63
NC-2355.01000	5.42	8.234	13.495	21.770	32.36
NC-2356.01000	10.80	16.408	26.891	43.379	64.49
NC-2357.01000	8.21	12.473	20.442	32.976	49.02
NC-2358.R0000	34.37	41.439	51.689	64.007	76.43
NC-2359.01000	8.20	12.458	20.417	32.936	48.96
NC-2360.01000	6.05	9.191	15.064	24.300	36.13
NC-2361.01000	7.31	11.106	18.201	29.361	43.65
NC-2362.01000	4.80	7.292	11.951	19.280	28.66
NC-2363.01000	6.50	9.875	16.184	26.108	38.81
NC-2364.01000	13.40	20.358	33.365	53.822	80.01
NC-2365.01000	17.30	26.283	43.075	69.487	103.30
NC-2366.01000	9.10	13.825	22.658	36.551	54.34
NC-2367.01000	9.40	14.281	23.405	37.756	56.13
NC-2368.01000	8.00	12.154	19.919	32.133	47.77
NC-2369.01000	100.00	151.925	248.989	401.660	597.11
NC-2370.01000	36.70	55.756	91.379	147.409	219.14
NC-2371.01000	57.80	87.813	143.916	232.159	345.13
NC-2372.01000	94.60	143.721	235.544	379.970	564.87
NC-2373.01000	58.10	88.268	144.663	233.364	346.92
NC-2374.01000	47.60	72.316	118.519	191.190	284.22
NC-2376.61000	179.00	271.946	445.691	718.971	1068.83
NC-2377.01000	72.60	110.298	180.766	291.605	433.50
NC-2378.01000	31.40	47.704	78.183	126.121	187.49
NC-2379.01000	14.80	22.485	36.850	59.446	88.37
NC-2381.01000	25.70	39.045	63.990	103.227	153.46
NC-2382.01000	2.90	4.406	7.221	11.648	17.32
NC-2383.01000	25.20	38.285	62.745	101.218	150.47
NC-2384.01000	135.00	205.099	336.136	542.241	806.10
NC-2385.01000	7.10	10.787	17.678	28.518	42.39
NC-2386.01000	0.10	0.152	0.249	0.402	0.60
NC-2387.01000	0.10	0.152	0.249	0.402	0.60
NC-2390.01000	0.10	0.152	0.249	0.402	0.60
NC-2409.01000	0.30	0.456	0.747	1.205	1.79
NC-2410.R0000	0.22	0.265	0.331	0.410	0.49

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2411.01000	2.60	3.950	6.474	10.443	15.52
NC-2412.01000	1.11	1.686	2.764	4.458	6.63
NC-2413.01000	0.40	0.608	0.996	1.607	2.39
NC-2414.01000	0.40	0.608	0.996	1.61	2.39
NC-2415.01000	1.40	2.127	3.486	5.62	8.36
NC-2416.01000	0.90	1.367	2.241	3.61	5.37
NC-2417.01000	1.30	1.975	3.237	5.22	7.76
NC-2418.01000	0.78	1.185	1.942	3.13	4.66
NC-2419.01000	0.50	0.760	1.245	2.01	2.99
NC-2420.01000	28.20	42.843	70.215	113.27	168.39
NC-2421.01000	19.90	30.233	49.549	79.93	118.82
NC-2422.01000	3.10	4.710	7.719	12.45	18.51
NC-2423.01000	5.20	7.900	12.947	20.89	31.05
NC-2424.01000	26.50	40.260	65.982	106.44	158.23
NC-2425.01000	54.20	82.343	134.952	217.70	323.63
NC-2426.01000	66.60	101.182	165.827	267.51	397.68
NC-2427.01000	52.10	79.153	129.723	209.26	311.09
NC-2428.01000	164.00	249.157	408.343	658.72	979.26
NC-2429.01000	56.80	86.293	141.426	228.14	339.16
NC-2430.01000	2.30	3.494	5.727	9.24	13.73
NC-2431.01000	35.40	53.781	88.142	142.19	211.38
NC-2432.01000	2.10	3.190	5.229	8.43	12.54
NC-2434.01000	0.50	0.760	1.245	2.01	2.99
NC-2435.01000	0.20	0.304	0.498	0.80	1.19
NC-2436.01000	0.20	0.304	0.498	0.80	1.19
NC-2437.01000	0.26	0.395	0.647	1.04	1.55
NC-2438.01000	0.70	1.063	1.743	2.81	4.18
NC-2439.61000	3.90	5.925	9.711	15.66	23.29
NC-2440.R0000	3.58	4.316	5.384	6.67	7.96
NC-2442.01000	1.50	2.279	3.735	6.02	8.96
NC-2443.01000	1.20	1.823	2.988	4.82	7.17
NC-2444.01000	13.40	20.358	33.365	53.82	80.01
NC-2445.01000	7.40	11.242	18.425	29.72	44.19
NC-2446.01000	2.90	4.406	7.221	11.65	17.32
NC-2447.01000	3.40	5.165	8.466	13.66	20.30
NC-2448.01000	3.50	5.317	8.715	14.06	20.90
NC-2449.01000	2.70	4.102	6.723	10.84	16.12
NC-2454.01000	32.30	49.072	80.424	129.74	192.87
NC-2455.01000	3.80	5.773	9.462	15.26	22.69
NC-2456.01000	4.00	6.077	9.960	16.07	23.88
NC-2457.01000	18.90	28.714	47.059	75.91	112.85
NC-2458.01000	101.00	153.444	251.479	405.68	603.08
NC-2459.01000	17.10	25.979	42.577	68.68	102.11
NC-2460.01000	5.30	8.052	13.196	21.29	31.65
NC-2461.01000	18.80	28.562	46.810	75.51	112.26
NC-2462.01000	28.90	43.906	71.958	116.08	172.56

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2463.01000	103.00	156.483	256.459	413.71	615.02
NC-2464.01000	9.30	14.129	23.156	37.35	55.53
NC-2465.01000	9.80	14.889	24.401	39.36	58.52
NC-2466.01000	14.40	21.877	35.854	57.84	85.98
NC-2467.01000	34.70	52.718	86.399	139.38	207.20
NC-2468.01000	10.80	16.408	26.891	43.38	64.49
NC-2469.01000	61.20	92.978	152.382	245.82	365.43
NC-2470.R0000	190.06	229.150	285.831	353.95	422.62
NC-2471.01000	264.00	401.082	657.332	1060.38	1576.37
NC-2472.01000	282.00	428.428	702.150	1132.68	1683.85
NC-2473.01000	207.00	314.485	515.408	831.44	1236.02
NC-2474.01000	163.00	247.638	405.853	654.71	973.29
NC-2476.01000	207.00	314.485	515.408	831.44	1236.02
NC-2477.01000	32.60	49.528	81.17	130.94	194.66
NC-2479.61000	40.10	60.922	99.84	161.07	239.44
NC-2480.01000	38.60	58.643	96.11	155.04	230.48
NC-2481.01000	2.19	3.327	5.45	8.80	13.08
NC-2482.01000	86.60	131.567	215.62	347.84	517.10
NC-2483.01000	32.70	49.679	81.42	131.34	195.25
NC-2484.01000	10.40	15.800	25.89	41.77	62.10
NC-2485.01000	0.58	0.881	1.44	2.33	3.46
NC-2487.01000	0.03	0.046	0.07	0.12	0.18
NC-24A2.01000	0.20	0.304	0.50	0.80	1.19
NC-24B1.01000	0.10	0.152	0.25	0.40	0.60
NC-2509.01000	0.40	0.608	1.00	1.61	2.39
NC-2510.01000	0.40	0.608	1.00	1.61	2.39
NC-2511.01000	1.30	1.975	3.24	5.22	7.76
NC-2512.01000	0.28	0.425	0.70	1.12	1.67
NC-2513.01000	0.09	0.137	0.22	0.36	0.54
NC-2514.01000	0.30	0.456	0.75	1.20	1.79
NC-2515.01000	0.30	0.456	0.75	1.20	1.79
NC-2516.01000	0.20	0.304	0.50	0.80	1.19
NC-2517.01000	1.50	2.279	3.73	6.02	8.96
NC-2518.01000	0.10	0.152	0.25	0.40	0.60
NC-2519.01000	0.10	0.152	0.25	0.40	0.60
NC-2520.01000	0.20	0.304	0.50	0.80	1.19
NC-2521.01000	14.70	22.333	36.60	59.04	87.78
NC-2522.01000	2.10	3.190	5.23	8.43	12.54
NC-2523.R0000	0.48	0.579	0.72	0.89	1.07
NC-2524.01000	3.80	5.773	9.46	15.26	22.69
NC-2525.01000	0.90	1.367	2.24	3.61	5.37
NC-2526.01000	66.50	101.030	165.58	267.10	397.08
NC-2527.01000	106.00	161.040	263.93	425.76	632.94
NC-2528.01000	182.00	276.503	453.16	731.02	1086.74
NC-2529.01000	6.50	9.875	16.18	26.11	38.81
NC-2530.01000	0.70	1.063	1.74	2.81	4.18

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONTINUED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-2531.01000	6.50	9.875	16.18	26.11	38.81
NC-2534.01000	0.70	1.063	1.74	2.81	4.18
NC-2535.01000	0.30	0.456	0.75	1.20	1.79
NC-2536.01000	0.20	0.304	0.50	0.80	1.19
NC-2537.01000	0.13	0.198	0.32	0.52	0.78
NC-2538.01000	0.80	1.215	1.99	3.21	4.78
NC-2539.01000	51.30	77.938	127.73	206.05	306.32
NC-2540.01000	11.50	17.471	28.63	46.19	68.67
NC-2541.01000	0.90	1.367	2.24	3.61	5.37
NC-2542.61000	1.50	2.279	3.73	6.02	8.96
NC-2543.01000	0.60	0.912	1.49	2.41	3.58
NC-2544.01000	18.80	28.562	46.81	75.51	112.26
NC-2553.R0000	6.74	8.126	10.14	12.55	14.99
NC-2554.01000	4.30	6.533	10.71	17.27	25.68
NC-2555.01000	1.60	2.431	3.98	6.43	9.55
NC-2556.01000	3.30	5.014	8.22	13.25	19.70
NC-2557.01000	7.20	10.939	17.93	28.92	42.99
NC-2558.01000	646.00	981.435	1608.47	2594.72	3857.33
NC-2559.01000	7.20	10.939	17.93	28.92	42.99
NC-2561.01000	13.40	20.358	33.36	53.82	80.01
NC-2562.01000	9.80	14.889	24.40	39.36	58.52
NC-2563.01000	6.80	10.331	16.93	27.31	40.60
NC-2564.01000	25.70	39.045	63.99	103.23	153.46
NC-2565.01000	20.10	30.537	50.047	80.734	120.019
NC-2566.01000	33.30	50.591	82.913	133.753	198.838
NC-2567.01000	106.00	161.040	263.929	425.760	632.937
NC-2568.01000	49.10	74.595	122.254	197.215	293.181
NC-2569.01000	11.00	16.712	27.389	44.183	65.682
NC-2570.01000	19.00	28.866	47.308	76.315	113.451
NC-2573.01000	23.90	36.310	59.508	95.997	142.709
NC-2574.01000	11.90	18.079	29.630	47.798	71.056
NC-2576.01000	6.20	9.419	15.437	24.903	37.021
NC-2577.01000	31.10	47.249	77.436	124.916	185.701
NC-2578.01000	147.00	223.330	366.014	590.440	877.752
NC-2579.01000	45.10	68.518	112.294	181.149	269.297
NC-2580.01000	6.70	10.179	16.682	26.911	40.006
NC-2581.01000	1.40	2.127	3.486	5.623	8.360
NC-2582.61000	8.00	12.154	19.919	32.133	47.769
NC-2583.R0000	1.82	2.194	2.737	3.389	4.047
NC-2584.01000	0.10	0.152	0.249	0.402	0.597
NC-2585.01000	0.15	0.228	0.373	0.602	0.896
NC-2586.01000	0.10	0.152	0.249	0.402	0.597
NC-2587.01000	0.38	0.577	0.946	1.526	2.269
NC-2589.01000	0.01	0.015	0.025	0.040	0.060
NC-2599.01000	0.10	0.152	0.249	0.402	0.597
NC-25A2.01000	0.10	0.152	0.249	0.402	0.597

TABLE B-1. UPPER CONFIDENCE LIMITS FOR SURFACE SAMPLES (CONCLUDED)

Sample Number	[a]Sample TCDD Result (ppb)	Upper Confidence Limits 65%	80%	90%	95%
NC-25B2.01000	0.10	0.152	0.249	0.402	0.597
NC-25B4.01000	0.10	0.152	0.249	0.402	0.597
NC-25C6.01000	0.05	0.076	0.124	0.201	0.299
NC-2809.01000	0.20	0.304	0.498	0.803	1.194
NC-2812.01000	0.10	0.152	0.249	0.402	0.597
NC-2820.01000	0.04	0.061	0.100	0.161	0.239
NC-2828.01000	0.10	0.152	0.249	0.402	0.597
NC-2829.01000	0.10	0.152	0.249	0.402	0.597
NC-2843.01000	0.10	0.152	0.249	0.402	0.597
NC-2852.01000	0.10	0.152	0.249	0.402	0.597
NC-2856.01000	0.10	0.152	0.249	0.402	0.597
NC-2858.01000	0.10	0.152	0.249	0.402	0.597
NC-2870.01000	31.00	47.097	77.187	124.515	185.104
NC-2883.01000	0.02	0.030	0.050	0.080	0.119
NC-2889.01000	0.30	0.456	0.747	1.205	1.791
NC-2893.01000	0.10	0.152	0.249	0.402	0.597
NC-28A4.01000	0.30	0.456	0.747	1.205	1.791
NC-28A0.01000	0.04	0.061	0.100	0.161	0.239
NC-28B1.01000	0.30	0.456	0.747	1.205	1.791
NC-28B6.01000	0.10	0.152	0.249	0.402	0.597
NC-28B9.01000	0.30	0.456	0.747	1.205	1.791
NC-2928.01000	0.70	1.063	1.743	2.812	4.180

a. NC-____.R0000 indicates that plot is a replicated plot, and sample result is the geometric mean of the composite samples.

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