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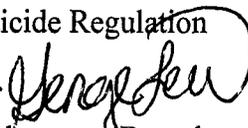
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Gray Davis
Governor

MEMORANDUM

TO: Douglas Y. Okumura, Chief
Environmental Monitoring and Pest
Management Branch
Department of Pesticide Regulation

FROM: George Lew, Chief 
Engineering and Laboratory Branch
Monitoring and Laboratory Division

DATE: January 19, 1999

SUBJECT: FINAL REPORT FOR THE 1997 LINURON AIR MONITORING

Attached is the final "Report for the Application and Ambient Air Monitoring of Linuron in Kern County." The separate volume of appendices for the report has been forwarded to Pam Wales of your staff and is available upon request. We received and appreciate your comments (January 7, 1999 memorandum) on the draft report and have made the appropriate changes.

These results are intended for identifying the presence of linuron in ambient air. Additional air monitoring near the use of linuron may be necessary if there is a need for mitigation. The locations of the ambient monitoring sites and the monitoring period should be evaluated when the 1997 linuron use data becomes available.

If you or your staff have questions or need further information, please contact me at (916) 263-1630 or Mr. Kevin Mongar at (916) 263-2063.

Attachment

cc: Ray Menebroker, SSD (w/Attachment and Appendices)
Pam Wales, DPR (w/Attachment and Appendices)
Sharon Seidel, OEHHA (w/Attachment)
Ted Davis, Kern County Agricultural Commissioner (w/Attachment)
David L. Crow, SJVUAPCD (w/Attachment)

State of California
California Environmental Protection Agency
AIR RESOURCES BOARD

**Report for the Application and
Ambient Air Monitoring
of Linuron in Kern County**

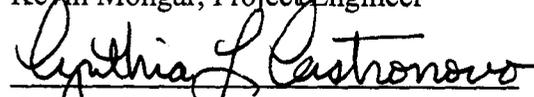
Engineering and Laboratory Branch
Monitoring and Laboratory Division

Project No. C97-043 (Application)
C97-042 (Ambient)

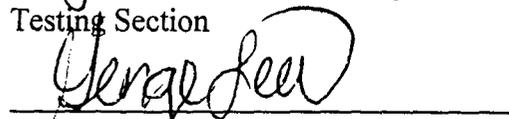
Date: January 13, 1999



Kevin Mongar, Project Engineer



Cynthia L. Castronovo, Manager
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George Lewis, Chief
Engineering and Laboratory Branch

This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Summary

Report for the Application and Ambient Air Monitoring of Linuron in Kern County

This report presents the results of application and ambient air monitoring for linuron in Kern County. Application monitoring was conducted around the use of linuron as a herbicide on 100 acres of carrots from September 15 to September 19, 1997 and ambient monitoring was conducted to coincide with the use of linuron on carrots from August 19 to September 26, 1997. Tables 4 and 7 present the results of application and ambient air monitoring for linuron respectively. A summary of the application results is presented in Table 5. Laboratory results, in units of ug/sample, equal to or above the limit of quantitation (LOQ) are reported to 3 significant figures. Air concentration results (in units of ug/m³ and pptv) are reported to 2 significant figures. Results below the LOQ but equal to or above the limit of detection (LOD) are reported as detected (Det).

The analytical LOD and LOQ for linuron were 0.020 and 0.066 ug/sample respectively. The air concentration, expressed in units of ug/m³ (or pptv), associated with the LOQ is dependent on the volume of air sampled which varies from sample to sample. For a 24-hour sampling period at 3 Lpm the air concentration would be 0.015 ug/m³ (1.5 pptv) as associated with the LOQ.

Two of the four application background samples had results slightly above the LOQ for linuron and the other two were <LOD. Of the twenty-eight application samples collected (spikes, blanks, collocated and background samples excluded) nineteen were found to be above the LOQ. The highest linuron concentration, 0.42 ug/m³ (42 pptv), was observed at the south sampling site during the 6th sampling period.

Of the 112 ambient samples collected (spikes, blanks and collocated samples excluded), none were found to be above the LOQ. Linuron was "detected" in eight samples.

Acknowledgments

Angus McPherson and Neil Adler of the ARB Testing Section collected the application samples and Bud Thoma and LaJuan Taylor of the ARB Testing Section collected the ambient samples. Assistance was provided by the Kern County Agricultural Commissioner's Office. Chemical analyses were performed by the ARB Organics Section Laboratory.

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**Report for the Application
and Ambient Air Monitoring
of Linuron in Kern County**

I. Introduction

At the request of the California Department of Pesticide Regulation (DPR) (March 3, 1997 Memorandum, Sanders to Lew), the Air Resources Board (ARB) staff determined airborne concentrations of the pesticide linuron over a six week ambient monitoring program in populated areas of Kern County, conducted to coincide with the use of linuron as an herbicide on carrots. Application monitoring was also conducted in Kern County around the use of linuron on 100 acres of carrots. This monitoring was done to fulfill the requirements of AB 1807/3219 (Food and Agricultural Code, Division 7, Chapter 3, Article 1.5) which requires the ARB "to document the level of airborne emissions of pesticides which may be determined to pose a present or potential hazard..." when requested by the DPR. Sample analyses were conducted by the ARB Organics Section Laboratory. Field monitoring was conducted by staff of the ARB Testing Section.

The "Protocol for the Application and Ambient Air Monitoring of Linuron" is enclosed separately as Appendix I (page 1 of a separate volume of appendices to this report).

The laboratory "Linuron Final Report" is enclosed separately as Appendix II (page 9 of the separate volume of appendices to this report). The sampling/analysis Standard Operating Procedures (SOP) are also enclosed in Appendix II (page 23 of the separate volume of appendices to this report).

The pesticide use report for the application study is enclosed separately as Appendix III (page 31 of the separate volume of appendices to this report).

The DPR's March 3, 1997 memorandum, "Air Monitoring Recommendation for Linuron" is enclosed separately as Appendix IV (page 32 of the separate volume of appendices to this report).

The application and ambient field log sheets are enclosed separately as Appendix V (page 40 of the separate volume of appendices to this report).

The application meteorological monitoring results are enclosed separately as Appendix VI (page 51 of the separate volume of appendices to this report). Meteorological data from a nearby *AIRS* station in Bakersfield are also included in Appendix VII (page 61 of the appendices to this report).

II. Chemical Properties of Linuron

The following information regarding the chemical properties of linuron was obtained from the DPR's March 3, 1997 "Monitoring Recommendation for Linuron" (page 32 of appendices).

Linuron (CAS: 330-55-2) exists as either colorless to white, odorless crystals or as a crystalline solid. Linuron has a molecular formula of $C_9H_{10}Cl_2N_2O_2$, a molecular weight of 249.10 g/mole. It has a water solubility of 75-81 mg/L at 25 °C, a Henry's Constant of 6.1×10^{-8} atm·m³/mol at 20-25 °C, and a vapor pressure of 1.5×10^{-5} mmHg at 20 °C. Linuron's solubility in many organic solvents is as follows: 1) acetone: 500 g/kg at 25 °C; 2) benzene: 150 g/kg at 25 °C; 3) ethanol: 150 g/kg at 25 °C; 4) n-heptane: 150 g/kg at 25 °C; and 5) xylene: 130 g/kg at 25 °C.

In soil, linuron degrades to 3,4-dichloroaniline. The soil microorganism *Bacillus sphaericus* degrades linuron to N,O-dimethylhydroxylamine and carbon dioxide; however *Aspergillus niger* degraded linuron to phenylmethylurea, phenylmethoxy-urea, chloroaniline, ammonia, and carbon dioxide. Linuron's soil half-life ($t_{1/2}$) is two to five months when applied at recommended label rates. When in aqueous solution and exposed to summer sunlight for two months, linuron's photodegradation products included 3-(3-chloro-4-hydroxyphenyl)-1-methoxy-1-methylurea, 3,4-dichlorophenylurea, and 3-(3,4-dichlorophenyl)-1-methylurea formed at yields of 13, 10, and 2 percent, respectively. Linuron's photolysis half-life in aqueous solution was approximately 97 days. In a laboratory study, after 24 days of exposure to sunlight, linuron photodecomposed to a trichlorinated biphenyl (1 percent yield) with the accompanying loss of hydrogen chloride. When in a 0.5 N sodium hydroxide solution at 20 °C, linuron's hydrolysis half-life is one day. In an alkaline solution, linuron's hydrolysis yielded an aromatic amine.

Linuron's acute oral LD₅₀ is approximately 1,500 mg/kg for rats. Its LC₅₀ (96 hour) is 16 mg/L for rainbow trout and bluegill sunfish. Linuron entered the risk assessment process at DPR under the SB 950 (Birth Defect Prevention Act of 1984) based on its use rate and known oncogenic and reproductive toxicity.

III. Sampling

A sketch of the sampling apparatus is shown in Figure 1 of Appendix I (appendices pg. 8). Samples were collected by passing a measured volume of ambient air through XAD-2 resin. The XAD-2 resin tubes were obtained from SKC (#226-30-06). Calibrated rotameters were used to set and measure sample flow rates. The rotameters were calibrated using a certified digital bubble flowmeter. The flow rate, 3 Lpm, was accurately measured and the sampling system operated continuously with the exact operating interval noted. Samplers were leak checked prior to and after each sampling period with the sampling cartridges installed. Any change in the flow rates was recorded in the field log book (see appendices pg. 40). The resin tubes were protected from direct sunlight and supported about 1.5 meters above the ground (or roof) during the sampling period. At the end of each sampling period the tubes were capped and placed in culture tubes with an identification label affixed. The field log book was used to record start and stop times, sample

identifications and any other significant comments. Subsequent to sampling, the samples were transported on dry ice, as soon as reasonably possible, to the ARB Organics Section Laboratory. The samples were stored in the freezer or extracted/analyzed immediately.

A. Application Monitoring

A 100 acre field of carrots was chosen for the application monitoring site. Refer to Figure 2 for a diagram of the application site. Refer to Appendix III (page 31 of appendices) for a copy of the pesticide use report.

Information collected regarding the application included: 1) the elevation of each sampling station with respect to the field, 2) the orientation of the field with respect to North (identified as either true or magnetic), 3) an accurate record of the positions of the monitoring equipment with respect to the field, including the distance each monitor is positioned away from the edge of the field and an accurate drawing of the monitoring site showing the precise location of the monitoring equipment and any wind obstacles with respect to the field, 4) the field size, 5) the application rate, 6) formulation and 7) method and length of application. Details regarding the site and application are summarized below in Table 1.

Table 1.
Application Information

Range/Township/Section:	R26E/T29S/S36
Product Applied:	Lorox DF (dry flowable powder)
Type of Application:	Ground spray (electrostatic)
Application Rate:	2.5 pounds Lorox DF per acre (1.25 lbs. linuron A.I. per acre)
Applicator/Grower:	Bolt House Farms

A three day monitoring period was recommended in the DPR's March 3, 1997 "Air Monitoring Recommendation for Linuron" with intended sampling times as follows: (where the first sample is started at the start of application) application + 1 hour, followed by one 2-hour sample, one 4-hour sample, two 8-hour samples and two 24-hour samples.

Background samples were taken at each position to establish if any linuron was detectable in the air before the application (i.e., from nearby applications). The background samples were collected from 1545 on September 15 to 0745 on September 16, 1997 (21 hours). The September 16, 1997 application started at 0800 and ended at 1730. Referring to Figure 2, the application started at the northwest corner and proceeded in a north/south direction. Table 2 lists the actual sampling periods.

Table 2.
Application Sampling Periods

<u>Period</u>		<u>Date</u>	<u>Time</u>
1	Application plus 1 hour	9/16/97	0745 to 1845
2	1 3/4 hours	9/16/97	1845 to 2030
3	4 hours	9/16-17/97	2030 to 0030
4	8 hours	9/17/97	0030 to 0830
5	7 1/4 hours	9/17/97	0830 to 1545
6	24 hours	9/17-18/97	1545 to 1545
7	23.5 hours	9/18-19/97	1545 to 1515

Four samplers were positioned, one on each side of the field. A fifth sampler was collocated at the east position. The west, north, east and south samplers were positioned approximately 510 yards, 20 yards, 20 yards and 25 yards from the field respectively. All samplers were at the same elevation as the field. The meteorological station was positioned just south of the east samplers (oriented toward geographic north) and the height of the meteorological measurements was 15 feet.

The meteorological station was set up to determine wind speed and direction, barometric pressure, relative humidity and air temperature. This station continued to operate continuously throughout the sampling period collecting data at 1 minute intervals using a data logger. However, upon review of the collected data it was determined that the wind direction data was not collected correctly. We do not know the exact cause of the problem but it was probably due to incorrectly configured equipment. The raw meteorological station data will be provided on a 1.44 MB diskette (comma delimited format). Appendix VI (page 51 of the appendices) lists the meteorological station data for the barometric pressure, relative humidity and air temperature in 15 minute averages for the test period. Meteorological data from a nearby *AIRS* station in Bakersfield is also included in Appendix VII (page 61 of the appendices to this report). The *AIRS* station was approximately 10 miles east of the application site. ARB staff noted the degree of cloud cover, on the sample log sheet, whenever sample cartridges were changed. The skies were clear or partly cloudy during most of the study period.

B. Ambient Monitoring

Ambient monitoring took place during a six week period from August 19 to September 26, 1997. Four sampling sites were selected by ARB personnel from the areas of Kern County where carrot farming is predominant and in populated areas or in areas frequented by people. Sites were selected with considerations for both accessibility and security of the sampling equipment. Background samples were collected at the ARB air monitoring station in downtown Bakersfield. The five sites are listed in Table 3. Twenty-four hour (approximate) samples were taken Monday through Friday (4 samples/week) at a flow rate of 3 Lpm. Twenty-three discrete sampling-days were monitored at the BAK, VIN and ALV sites and 22 days were monitored for the RUS and MET sites for a total of 112 samples (plus 30 collocated samples, 6 trip blanks and 15 quality assurance spikes).

Table 3.
Ambient Sampling Sites

BAK	ARB Ambient Monitoring Station 5558 California Ave., Suite 460 Bakersfield, CA 93309 Range/Township/Section: R.20E/T.13S/S.22-SE1/4 of SE1/4	(916) 322-3719 Pete Ouchida
VIN	Vineland School 14327 Vineland Road Weed Patch, CA 96023 Range/Township/Section: R.29E/T.31S/S.17-SW1/4 of SW1/4	(805) 845-3713 Steve Greenfield Superintendent
MET	Kern County Fire Department 5642 Victor Mettler, CA Range/Township/Section: R.28E/T.11N/S.1-SW1/4	(805) 858-2490 Chief Hailey
RUS	Rosedale Union (Middle) School 2553 Old Farm Road Bakersfield, CA 93312 Range/Township/Section: R.26E/T.29S/S.25-NW1/4 of NW1/4	(805) 588-6030 Mr. Freney, Assist. Superintendent
ALV	Bear Mountain Elementary School 737 Bear Mt. Blvd. Arvin, CA 93203 Range/Township/Section: R.29E/T.31S/S.26-NW1/4	(805) 636-9402 Mrs. Winston Principal

The background monitoring (BAK) was conducted at the ARB's ambient air monitoring station in downtown Fresno. The nearest carrot fields were approximately 10 miles away. The sampling unit was placed on the roof of the two-story building and the sampling cartridges were positioned approximately 4 feet above the roof. Air was sampled through the cartridges at a height of approximately 35 feet.

The Vineland School is situated in the small town of Weed Patch. There were watermelons fields directly to the north and south, onions to the east and carrots at a distance of approximately 1/2 mile to the west. The sampling unit was placed on the roof of a single story building at a height of approximately 11 feet. The sampling cartridges were positioned approximately 4 feet above the roof. Thus, air was sampled through the cartridges at a height of approximately 15 feet.

The Kern County Fire Department is located in the small town of Mettler. There are agricultural fields to the east and west at a distance of approximately 1/4 to 1/2 miles (unknown crop). The sampling unit was placed on the top of a shed/building attached to the back of the fire department building at a height of approximately 10 feet. The sampling cartridges were positioned

approximately 4 feet above the roof. Thus, air was sampled through the cartridges at a height of approximately 14 feet.

The Rosedale Union School is situated in a residential area on the west side of Bakersfield. The nearest agriculture (unknown crops) was at a distance of approximately ½ to 1 mile to the south, southwest and northwest. The sampling unit was placed on the roof of a single story building at a height of approximately 12 feet. The sampling cartridges were positioned approximately 4 feet above the roof. Thus, air was sampled through the cartridges at a height of approximately 16 feet.

The Bear Mountain Elementary School is located in a residential area on the southeast edge of the small town of Arvin. There were grapes directly to the west and agriculture (unknown crops) to the north, south and east at a distance of approximately a mile. The sampling unit was placed on the roof of a single story building at a height of approximately 20 feet. The sampling cartridges were positioned approximately 4 feet above the roof. Thus, air was sampled through the cartridges at a height of approximately 24 feet.

IV. Analytical Methodology

The "Standard Operating Procedures for the Determination of Linuron in Ambient Air Using High Performance Liquid Chromatography" are enclosed as Appendix III (page 23 of appendices). The procedures specify that the exposed XAD-2 resin tubes are stored in an ice chest on dry ice or in a freezer until desorbed with 2 mL of acetonitrile. The reverse phase chromatographic method employs a gradient acetonitrile/water mobile phase and a silica/C18 bonded stationary phase with ultraviolet spectrometric detection.

V. Application and Ambient Results

Tables 4 and 7 present the results of application and ambient air monitoring for linuron respectively. A summary of the application results is presented in Table 5. Laboratory results, in units of ug/sample, equal to or above the limit of quantitation (LOQ) are reported to 3 significant figures. Air concentration results (in units of ug/m³ and pptv) are reported to 2 significant figures. Results below the LOQ but equal to or above the limit of detection (LOD) are reported as detected (Det). The equation used to convert linuron air concentration from units of ug/m³ to volume/volume units at 1 atmosphere and 25 °C is:

$$\text{pptv} = 1000 \times (\text{ug/m}^3) \times \frac{(0.0820575 \text{ liter-atm/mole-}^\circ\text{K})(298^\circ\text{K})}{(1 \text{ atm})(249.10 \text{ gram/mole})} = (98.1659) \times (\text{ug/m}^3)$$

The Organics Section Laboratory determined the analytical LOD as: $X_{\text{int}} + 3(s)$; where s is the standard deviation of the concentration (ng/mL) calculated for seven replicate injections near the detection limit. The LOD was 0.010 ug/mL and multiplying by the 2 mL extraction volume, the LOD was 0.020 ug/sample. The LOQ, 0.066 ug/sample, is calculated as 3.3 times the LOD. The

air concentration, expressed in units of ug/m^3 (or pptv), associated with the LOQ is dependent on the volume of air sampled which varies from sample to sample. For a 24-hour sampling period at 3 Lpm the air concentration would be $0.015 \text{ ug}/\text{m}^3$ (1.5 pptv) as associated with the LOQ.

A. Application Monitoring Results

Two of the four application background samples had results slightly above the LOQ for linuron and the other two were <LOD. Of the twenty-eight application samples collected (spikes, blanks, collocated and background samples excluded) nineteen were found to be above the LOQ. The highest linuron concentration, $0.42 \text{ ug}/\text{m}^3$ (42 pptv), was observed at the south sampling site during the 6th sampling period.

B. Ambient Monitoring Results

Of the 112 ambient samples collected (spikes, blanks and collocated samples excluded), none were found to be above the LOQ. Linuron was "detected" in eight samples.

VI. Quality Assurance

Field quality control (QC) for the application monitoring included the following:

- 1) Four field spikes (same environmental and experimental conditions as those occurring at the time of ambient sampling) prepared by the Testing Section staff. The field spikes were obtained by sampling ambient air at 3 Lpm for the same period of time as the background samples (collocated with a background sample);
- 2) five trip spikes;
- 3) replicate samples (collocated) collected at one of the four sampling sites;
- 4) a trip blank; and
- 5) a background sample from each side of the field.

The DPR's March 3, 1997 memo, "Air Monitoring Recommendation for Linuron", stated that "Trip blank and field spike samples should be collected at the same environmental (temperature, humidity, exposure to sunlight) and experimental (similar air flow rates) conditions as those occurring at the time of sampling." The background samples were collected at the same environmental and experimental conditions as those occurring at the time of sampling (except for total sample volume). However, no field blanks were collected. Collection of true field blanks ("same flow rate" with clean air) would involve rather complicated procedures and is not practical under field conditions. The trip blank was collected at the time of the sampling but did not experience the same environmental and experimental conditions except for transport and storage.

Field QC for the ambient monitoring included the following:

- 1) Five field spikes (same environmental and experimental conditions as those occurring

at the time of ambient sampling) prepared by the Testing Section staff; the field spikes were obtained by sampling ambient air at the background monitoring site for 24 hour periods at 3 Lpm (collocated with an ambient sample);

- 2) five trip spikes;
- 3) replicate (collocated) samples taken for six dates at each sampling location; and
- 4) trip blanks collected once per week (see comment above regarding field blanks).

The instrument dependent parameters (reproducibility, linearity and LOQ) are discussed in the SOP (page 23 of the appendices.) A chain of custody sheet accompanied all samples. Rotameters were calibrated before the monitoring using a certified digital bubblemeter. The rotameter calibrations were also checked at the end of the study and found to be unchanged.

VII. Quality Assurance Results

A. Method Development

Refer to Appendix I (page 23 of the appendices), "Standard Operating Procedure for the Sampling and Analysis of Linuron", for discussion and results of method development studies. Linuron was very stable in freezer storage stability tests with recoveries averaging 94% after a three week storage period. All samples were analyzed within two weeks of receipt.

B. Trip Blanks

The application and ambient trip blank results were all less than the LOD of 0.020 ng/sample for linuron.

C. Application Background Sample Results

Two of the application background samples had results less than the LOD for linuron and two (east and south sites) were "detected".

D. Collocated Sample Results

The results of the application collocated samples are listed in Table 6. The relative differences for all six data pairs were less than 10%. The results of all ambient collocated samples were less than the LOD and so no evaluation can be made.

E. Laboratory Spikes

Laboratory spikes are prepared at the same time and at the same level as the trip spike and field spike sets. The laboratory spikes are kept in a freezer until extraction and analysis. The extraction and analysis of laboratory, trip and field spikes normally occurs at the same time. Laboratory spikes for the ambient study were prepared by Testing Section staff.

No laboratory spikes were analyzed for the application study. The laboratory spike results for the ambient study are listed in Table 10. Each of the five ambient lab spike cartridges was spiked with 0.200 ug of linuron. The average recovery for the ambient lab spikes was 94%.

F. Trip Spikes

Trip spikes are prepared at the same time and at the same level as the laboratory spike and field spike sets. The trip spikes are kept in a freezer until transported to the field. The trip spike samples are kept on dry ice in an ice chest (the same one used for samples) during transport to and from the field and at all times while in the field except for trip spike sample log-in and labeling. Trip spikes for the application and ambient studies were prepared by Testing Section staff.

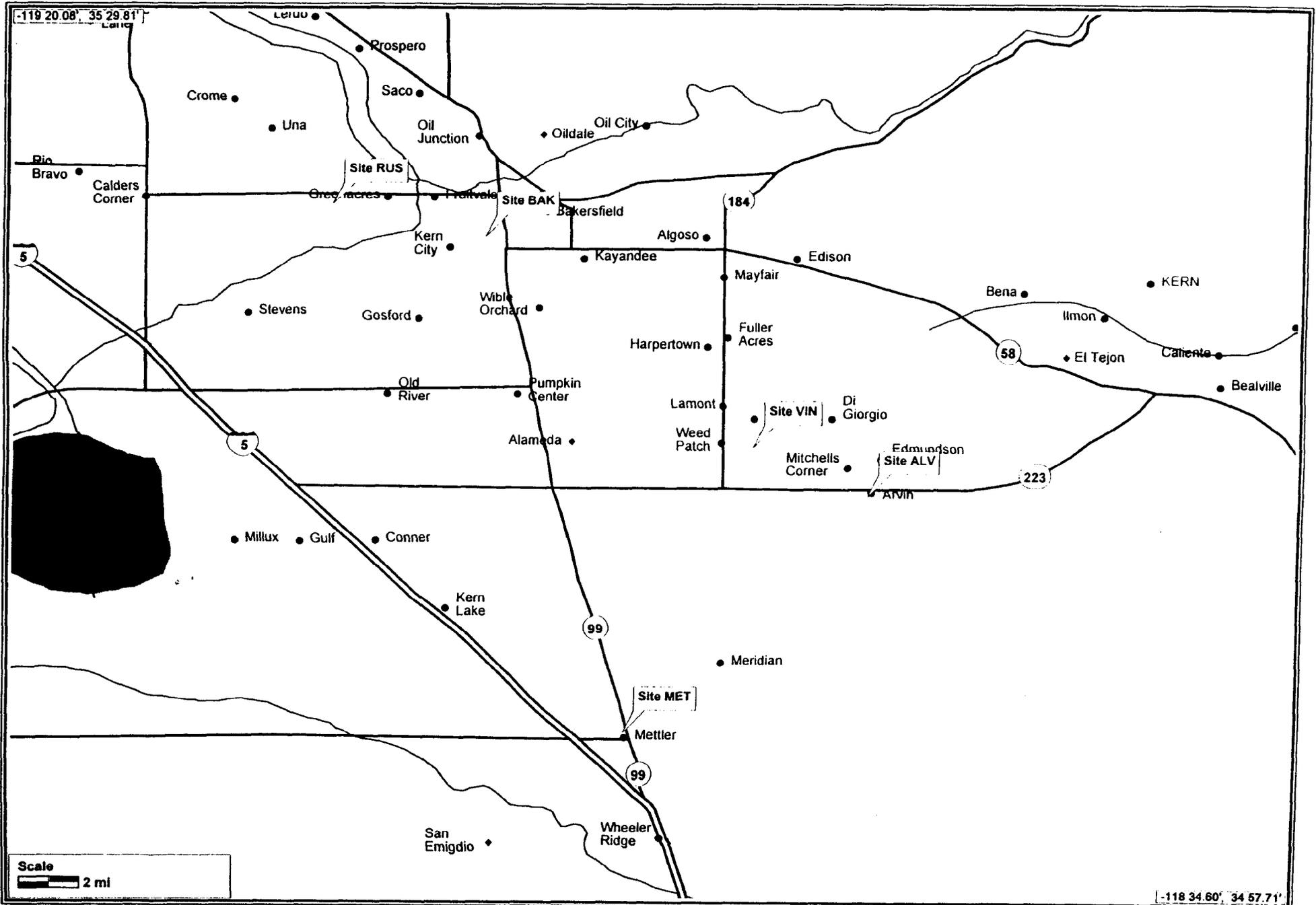
The trip spike results for the application and ambient studies are listed in Tables 8 and 11 respectively. Each of the five application spike cartridges was spiked with 0.200 ug and each of the five ambient spike cartridges was spiked with 0.200 ug of linuron. The average recoveries for the application trip spikes was 89% and for the ambient trip spikes was 90%. These results are consistent with the lab spike results and indicate that the sample transport, storage and analytical procedures used in this study produce acceptable results for linuron.

G. Field Spikes

Field spikes are prepared at the same time and at the same level as the laboratory spike and trip spike sets. The field spikes are kept in a freezer until transported to the field. The field spike samples are kept on dry ice in an ice chest (the same one used for samples) during transport to and from the field and at all times while in the field except for the sampling period. Field spikes were collected at the same environmental and experimental conditions as those occurring at the time of ambient sampling. The field spikes were obtained by sampling ambient air through a previously spiked cartridge. (i.e., spiked then collocated with an ambient or background sample). Field spike results are corrected by subtracting the amount of linuron found in the collocated, unspiked sample. Field spike sets for the application and ambient studies were prepared by Testing Section staff.

The field spike results for the application and ambient studies are listed in Tables 9 and 12 respectively. Each of the four application spike cartridges was spiked with 0.200 ug and each of the five ambient spike cartridges was spiked with 0.200 ug of linuron. The average recovery for the application and ambient field spikes was 100% and 105% respectively. Sample FS-2 (ambient field spike) showed an unusually low recovery of 11% and was not included in the average (may not have been spiked properly). These results are consistent with the lab and trip spike results and indicate that the sampling, sample transport, storage and analytical procedures used in this study produce acceptable results for linuron.

FIGURE 1. LINURON MONITORING AREA, KERN COUNTY

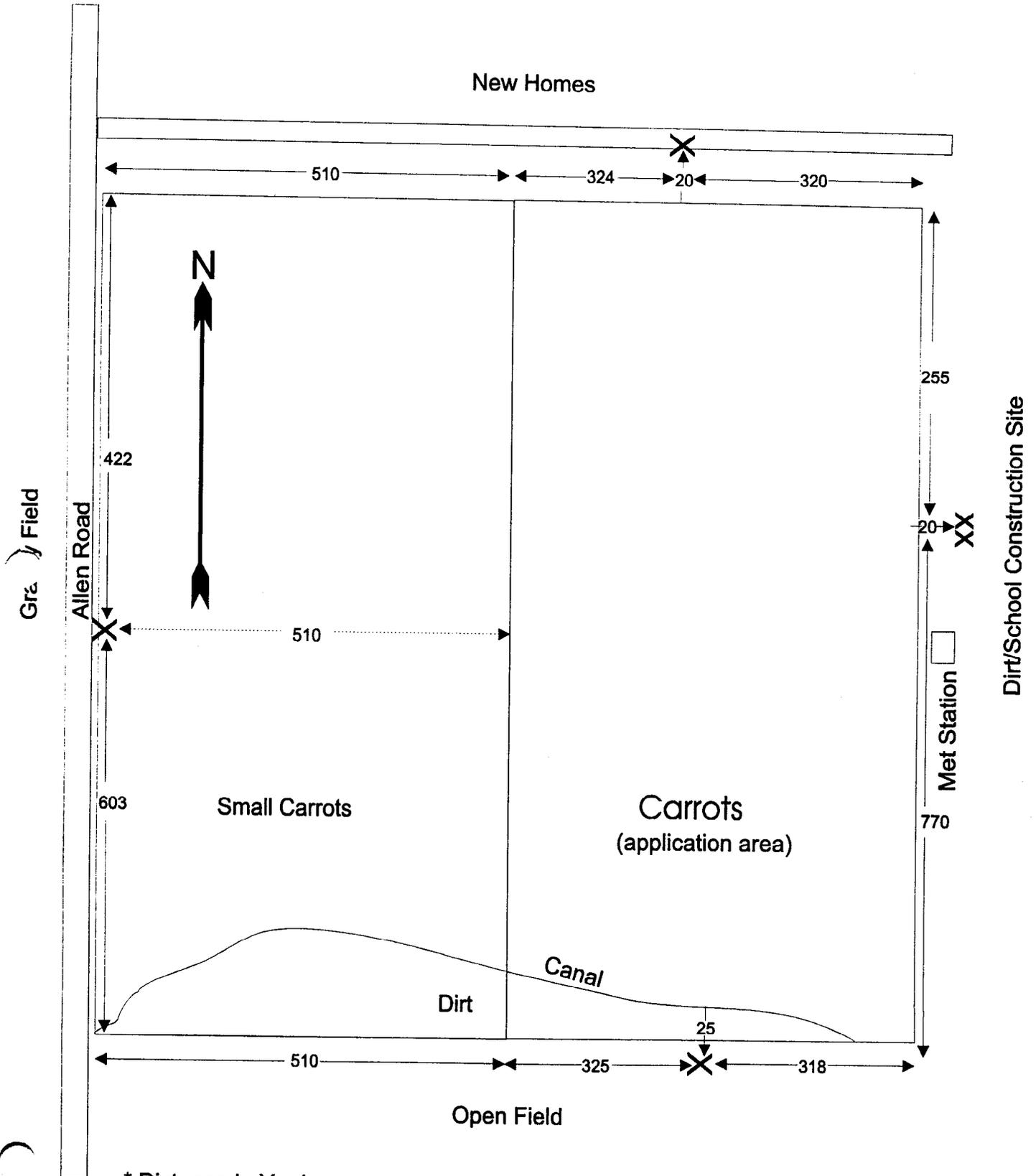


Scale
 2 mi

Map created using Precision Mapping 3.0

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Figure 2 Linuron Application Site



* Distance In Yards
N = Geographic North

Table 4. Linuron Application Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample volume (m ³)	Linuron (ug/sample)	(ug/m3)	*(pptv)
2	NB	9/15/97 15:40	9/16/97 07:40	960	16.0	2.9	<LOD	<LOD	<LOD
4	EB	9/15/97 15:45	9/16/97 07:45	960	16.0	2.9	Det.	Det.	Det.
6	SB	9/15/97 15:50	9/16/97 07:50	960	16.0	2.9	Det.	Det.	Det.
8	WB	9/15/97 16:00	9/16/97 08:00	960	16.0	2.9	<LOD	<LOD	<LOD
9	N1	9/16/97 07:40	9/16/97 18:40	660	11.0	2.0	6.80E-02	3.4E-02	3.4E+00
10	E1	9/16/97 07:45	9/16/97 18:45	660	11.0	2.0	Det.	Det.	Det.
11	S1	9/16/97 07:50	9/16/97 18:30	640	10.7	1.9	1.54E-01	8.0E-02	7.9E+00
12	W1	9/16/97 08:00	9/16/97 18:35	635	10.6	1.9	<LOD	<LOD	<LOD
13	E1D	9/16/97 07:45	9/16/97 18:45	660	11.0	2.0	Det.	Det.	Det.
14	E2	9/16/97 18:45	9/16/97 20:30	105	1.7	0.3	Det.	Det.	Det.
15	E2D	9/16/97 18:45	9/16/97 20:30	105	1.7	0.3	Det.	Det.	Det.
16	S2	9/16/97 18:30	9/16/97 20:30	120	2.0	0.4	<LOD	<LOD	<LOD
17	W2	9/16/97 18:35	9/16/97 20:35	120	2.0	0.4	<LOD	<LOD	<LOD
18	N2	9/16/97 18:40	9/16/97 20:25	105	1.7	0.3	<LOD	<LOD	<LOD
19	E3	9/16/97 20:30	9/17/97 00:20	230	3.8	0.7	1.09E-01	1.6E-01	1.6E+01
20	E3D	9/16/97 20:30	9/17/97 00:20	230	3.8	0.7	1.09E-01	1.6E-01	1.6E+01
21	S3	9/16/97 20:30	9/17/97 00:30	240	4.0	0.7	1.82E-01	2.5E-01	2.5E+01
22	W3	9/16/97 20:35	9/17/97 00:35	240	4.0	0.7	Det.	Det.	Det.
23	N3	9/16/97 20:25	9/17/97 00:15	230	3.8	0.7	1.75E-01	2.5E-01	2.5E+01
24	E4	9/17/97 00:20	9/17/97 08:35	495	8.3	1.5	1.05E-01	7.1E-02	6.9E+00
25	E4D	9/17/97 00:20	9/17/97 08:35	495	8.3	1.5	1.03E-01	6.9E-02	6.8E+00
26	S4	9/17/97 00:30	9/17/97 08:40	490	8.2	1.5	2.79E-01	1.9E-01	1.9E+01
27	W4	9/17/97 00:35	9/17/97 08:45	490	8.2	1.5	1.11E-01	7.6E-02	7.4E+00
28	N4	9/17/97 00:15	9/17/97 08:30	495	8.3	1.5	3.06E-01	2.1E-01	2.0E+01
29	N5	9/17/97 08:30	9/17/97 15:30	420	7.0	1.3	7.50E-02	6.0E-02	5.8E+00
30	E5	9/17/97 08:35	9/17/97 15:40	425	7.1	1.3	1.25E-01	9.8E-02	9.6E+00
31	E5D	9/17/97 08:35	9/17/97 15:40	425	7.1	1.3	1.22E-01	9.6E-02	9.4E+00
32	S5	9/17/97 08:40	9/17/97 15:50	430	7.2	1.3	1.68E-01	1.3E-01	1.3E+01
33	W5	9/17/97 08:45	9/17/97 16:00	435	7.2	1.3	Det.	Det.	Det.

LOD = 0.020 ug/sample
 LOQ = 0.066 ug/sample
 Det. = <LOQ but ≥LOD
 * pptv at 25 C and 1 atm
 NA = Not Applicable

Table 4. Linuron Application Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample volume (m ³)	Linuron (ug/sample)	(ug/m3)	*(pptv)
34	N6	9/17/97 15:30	9/18/97 15:35	1445	24.1	4.3	2.58E-01	6.0E-02	5.8E+00
35	E6	9/17/97 15:40	9/18/97 15:45	1445	24.1	4.3	1.09E+00	2.5E-01	2.5E+01
36	E6D	9/17/97 15:40	9/18/97 15:45	1445	24.1	4.3	1.02E+00	2.3E-01	2.3E+01
37	S6	9/17/97 15:50	9/18/97 15:55	1445	24.1	4.3	1.84E+00	4.2E-01	4.2E+01
38	W6	9/17/97 16:00	9/18/97 16:05	1445	24.1	4.3	Det.	Det.	Det.
39	N7	9/18/97 15:35	9/19/97 15:00	1405	23.4	4.2	2.35E-01	5.6E-02	5.5E+00
40	E7	9/18/97 15:45	9/19/97 15:05	1400	23.3	4.2	4.42E-01	1.1E-01	1.0E+01
41	E7D	9/18/97 15:45	9/19/97 15:05	1400	23.3	4.2	4.62E-01	1.1E-01	1.1E+01
42	S7	9/18/97 15:55	9/19/97 15:10	1395	23.3	4.2	6.29E-01	1.5E-01	1.5E+01
43	W7	9/18/97 16:05	9/19/97 15:15	1390	23.2	4.2	7.80E-02	1.9E-02	1.8E+00
44	TB	9/19/97 15:15	9/19/97 15:15	0	0.0	0.0	<LOD	NA	NA

LOD = 0.020 ug/sample
 LOQ = 0.066 ug/sample
 Det. = <LOQ but ≥LOD
 * pptv at 25 C and 1 atm
 NA = Not Applicable

Table 5. Summary of Linuron Application Results (ug/m3)

Sampling Period	East	East Collocated	North	South	West
Background	Det.		<LOD	Det.	<LOD
Period 1	Det.	Det.	0.034	0.080	<LOD
Period 2	Det.	Det.	<LOD	<LOD	<LOD
Period 3	0.16	0.16	0.25	0.25	Det.
Period 4	0.071	0.069	0.21	0.19	0.076
Period 5	0.10	0.10	0.060	0.13	Det.
Period 6	0.25	0.23	0.060	0.42	Det.
Period 7	0.11	0.11	0.056	0.15	0.019

Table 6. Linuron Application Collocated Results (ug/m3)

Sampling Period	East	East Collocated	Average	RD
Period 1	Det.	Det.	Det.	NA
Period 2	Det.	Det.	Det.	NA
Period 3	0.16	0.16	0.16	0.0%
Period 4	0.071	0.069	0.070	1.9%
Period 5	0.10	0.10	0.10	2.4%
Period 6	0.25	0.23	0.24	7.0%
Period 7	0.11	0.11	0.11	4.4%

RD = (Difference/Average)100

LOD = 0.020 ug/sample

LOQ = 0.066 ug/sample

Det. = <LOQ but ≥LOD

Table 7. Linuron Ambient Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample Volume (m3)	Linuron (ug/sample)	(ug/m3)	*(pptv)
1	BAK1	8/19/97 09:45	8/20/97 09:30	1425	23.8	4.3	<LOD	<LOD	<LOD
2	VIN1	8/19/97 12:50	8/20/97 10:30	1300	21.7	3.9	<LOD	<LOD	<LOD
3	MET1	8/19/97 13:15	8/20/97 11:20	1325	22.1	4.0	<LOD	<LOD	<LOD
4	RUS1	8/19/97 11:10	8/20/97 09:00	1310	21.8	3.9	<LOD	<LOD	<LOD
5	ALV1	8/19/97 12:30	8/20/97 10:50	1340	22.3	4.0	<LOD	<LOD	<LOD
6	RUS2	8/20/97 09:00	8/21/97 08:15	1395	23.3	4.2	<LOD	<LOD	<LOD
7	RUS2D	8/20/97 09:00	8/21/97 08:15	1395	23.3	4.2	<LOD	<LOD	<LOD
8	BAK2	8/20/97 09:30	8/21/97 08:35	1385	23.1	4.2	<LOD	<LOD	<LOD
9	BAK2D	8/20/97 09:30	8/21/97 08:35	1385	23.1	4.2	<LOD	<LOD	<LOD
10	VIN2	8/20/97 10:30	8/21/97 09:10	1360	22.7	4.1	<LOD	<LOD	<LOD
11	VIN2D	8/20/97 10:30	8/21/97 09:10	1360	22.7	4.1	<LOD	<LOD	<LOD
12	ALV2	8/20/97 10:50	8/21/97 09:20	1350	22.5	4.1	<LOD	<LOD	<LOD
13	ALV2D	8/20/97 10:50	8/21/97 09:20	1350	22.5	4.1	<LOD	<LOD	<LOD
14	MET2	8/20/97 11:20	8/21/97 09:50	1350	22.5	4.1	<LOD	<LOD	<LOD
15	MET2D	8/20/97 11:20	8/21/97 09:50	1350	22.5	4.1	<LOD	<LOD	<LOD
16	BLANK1	8/20/97 09:00	8/20/97 09:00	0	0.0	0.0	<LOD	NA	NA
17	RUS3	8/21/97 08:15	8/22/97 10:40	1585	26.4	4.8	<LOD	<LOD	<LOD
18	BAK3	8/21/97 08:35	8/22/97 10:10	1535	25.6	4.6	<LOD	<LOD	<LOD
19	VIN3	8/21/97 09:10	8/22/97 09:50	1480	24.7	4.4	<LOD	<LOD	<LOD
20	ALV3	8/21/97 09:20	8/22/97 08:45	1405	23.4	4.2	<LOD	<LOD	<LOD
21	MET3	8/21/97 09:50	8/22/97 08:15	1345	22.4	4.0	<LOD	<LOD	<LOD
22	RUS4	8/25/97 12:00	8/26/97 08:30	1230	20.5	3.7	<LOD	<LOD	<LOD
23	BAK4	8/25/97 12:30	8/26/97 09:00	1230	20.5	3.7	<LOD	<LOD	<LOD
24	VIN4	8/25/97 13:10	8/26/97 10:00	1250	20.8	3.7	<LOD	<LOD	<LOD
25	ALV4	8/25/97 13:30	8/26/97 10:15	1245	20.8	3.7	<LOD	<LOD	<LOD
26	MET4	8/25/97 14:00	8/26/97 10:40	1240	20.7	3.7	<LOD	<LOD	<LOD
27	RUS5	8/26/97 08:30	8/27/97 08:00	1410	23.5	4.2	<LOD	<LOD	<LOD
28	BAK5	8/26/97 09:00	8/27/97 08:30	1410	23.5	4.2	<LOD	<LOD	<LOD
29	VIN5	8/26/97 10:00	8/27/97 09:15	1395	23.3	4.2	<LOD	<LOD	<LOD

LOD = 0.020 ug/sample
 LOQ = 0.066 ug/sample
 Det. = <LOQ but ≥LOD
 * pptv at 25 C and 1 atm
 NA = Not Applicable

Table 7. Linuron Ambient Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample Volume (m3)	Linuron (ug/sample)	(ug/m3)	*(pptv)
30	ALV5	8/26/97 10:15	8/27/97 09:30	1395	23.3	4.2	<LOD	<LOD	<LOD
31	MET5	8/26/97 10:40	8/27/97 10:00	1400	23.3	4.2	<LOD	<LOD	<LOD
32	RUS6	8/27/97 08:00	8/28/97 08:10	1450	24.2	4.4	<LOD	<LOD	<LOD
33	RUS6D	8/27/97 08:00	8/28/97 08:10	1450	24.2	4.4	<LOD	<LOD	<LOD
34	BAK6	8/27/97 08:30	8/28/97 08:35	1445	24.1	4.3	<LOD	<LOD	<LOD
35	BAK6D	8/27/97 08:30	8/28/97 08:35	1445	24.1	4.3	<LOD	<LOD	<LOD
36	VIN6	8/27/97 09:15	8/28/97 09:00	1425	23.8	4.3	<LOD	<LOD	<LOD
37	VIN6D	8/27/97 09:15	8/28/97 09:00	1425	23.8	4.3	<LOD	<LOD	<LOD
38	ALV6	8/27/97 09:30	8/28/97 09:15	1425	23.7	4.3	<LOD	<LOD	<LOD
39	ALV6D	8/27/97 09:30	8/28/97 09:15	1425	23.7	4.3	<LOD	<LOD	<LOD
40	MET6	8/27/97 10:00	8/28/97 09:35	1415	23.6	4.2	<LOD	<LOD	<LOD
41	MET6D	8/27/97 10:00	8/28/97 09:35	1415	23.6	4.2	<LOD	<LOD	<LOD
42	BLANK2	8/27/97 09:00	8/27/97 09:00	0	0.0	0.0	<LOD	NA	NA
43	RUS7	8/28/97 08:10	8/29/97 10:15	1565	26.1	4.7	<LOD	<LOD	<LOD
44	BAK7	8/28/97 08:35	8/29/97 10:00	1525	25.4	4.6	<LOD	<LOD	<LOD
45	VIN7	8/28/97 09:00	8/29/97 09:25	1465	24.4	4.4	<LOD	<LOD	<LOD
46	ALV7	8/28/97 09:15	8/29/97 09:10	1435	23.9	4.3	<LOD	<LOD	<LOD
47	MET7	8/28/97 09:35	8/29/97 08:30	1375	22.9	4.1	<LOD	<LOD	<LOD
48	BAK8	9/01/97 11:00	9/02/97 08:55	1315	21.9	3.9	<LOD	<LOD	<LOD
49	VIN8	9/01/97 11:30	9/02/97 09:35	1325	22.1	4.0	<LOD	<LOD	<LOD
50	ALV8	9/01/97 11:40	9/02/97 09:40	1320	22.0	4.0	<LOD	<LOD	<LOD
51	MET8	9/01/97 12:05	9/02/97 10:05	1320	22.0	4.0	<LOD	<LOD	<LOD
52	RUS9	9/02/97 08:30	9/03/97 08:10	1420	23.7	4.3	<LOD	<LOD	<LOD
53	BAK9	9/02/97 08:55	9/03/97 08:30	1415	23.6	4.2	<LOD	<LOD	<LOD
54	VIN9	9/02/97 09:35	9/03/97 09:05	1410	23.5	4.2	<LOD	<LOD	<LOD
55	ALV9	9/02/97 09:40	9/03/97 09:55	1455	24.2	4.4	<LOD	<LOD	<LOD
56	MET9	9/02/97 10:05	9/03/97 10:35	1470	24.5	4.4	<LOD	<LOD	<LOD
57	RUS10	9/03/97 08:10	9/04/97 08:00	1430	23.8	4.3	<LOD	<LOD	<LOD
58	RUS10D	9/03/97 08:10	9/04/97 08:00	1430	23.8	4.3	<LOD	<LOD	<LOD

LOD = 0.020 ug/sample

LOQ = 0.066 ug/sample

Det. = <LOQ but ≥LOD

* pptv at 25 C and 1 atm

NA = Not Applicable

Table 7. Linuron Ambient Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample Volume (m3)	Linuron (ug/sample)	(ug/m3)	*(pptv)
59	BAK10	9/03/97 08:30	9/04/97 08:20	1430	23.8	4.3	<LOD	<LOD	<LOD
60	BAK10D	9/03/97 08:30	9/04/97 08:20	1430	23.8	4.3	<LOD	<LOD	<LOD
61	VIN10	9/03/97 09:05	9/04/97 08:50	1425	23.8	4.3	<LOD	<LOD	<LOD
62	VIN10D	9/03/97 09:05	9/04/97 08:50	1425	23.8	4.3	<LOD	<LOD	<LOD
63	ALV10	9/03/97 09:55	9/04/97 09:05	1390	23.2	4.2	<LOD	<LOD	<LOD
64	ALV10D	9/03/97 09:55	9/04/97 09:05	1390	23.2	4.2	<LOD	<LOD	<LOD
65	MET10	9/03/97 10:35	9/04/97 09:35	1380	23.0	4.1	<LOD	<LOD	<LOD
66	MET10D	9/03/97 10:35	9/04/97 09:35	1380	23.0	4.1	<LOD	<LOD	<LOD
67	BLANK3	9/03/97 09:05	9/03/97 09:05	0	0.0	0.0	<LOD	NA	NA
68	RUS11	9/04/97 08:00	9/05/97 09:45	1545	25.7	4.6	<LOD	<LOD	<LOD
69	BAK11	9/04/97 08:20	9/05/97 09:30	1510	25.2	4.5	<LOD	<LOD	<LOD
70	VIN11	9/04/97 08:50	9/05/97 09:15	1465	24.4	4.4	<LOD	<LOD	<LOD
71	ALV11	9/04/97 09:05	9/05/97 09:00	1435	23.9	4.3	<LOD	<LOD	<LOD
72	MET11	9/04/97 09:35	9/05/97 08:30	1375	22.9	4.1	<LOD	<LOD	<LOD
73	RUS12	9/08/97 12:30	9/09/97 08:40	1210	20.2	3.6	<LOD	<LOD	<LOD
74	BAK12	9/08/97 13:00	9/09/97 09:15	1215	20.3	3.6	<LOD	<LOD	<LOD
75	VIN12	9/08/97 13:30	9/09/97 10:25	1255	20.9	3.8	<LOD	<LOD	<LOD
76	ALV12	9/08/97 13:45	9/09/97 10:35	1250	20.8	3.7	<LOD	<LOD	<LOD
77	MET12	9/08/97 14:30	9/09/97 11:15	1245	20.8	3.7	<LOD	<LOD	<LOD
78	RUS13	9/09/97 08:40	9/10/97 08:35	1435	23.9	4.3	<LOD	<LOD	<LOD
79	BAK13	9/09/97 09:15	9/10/97 08:55	1420	23.7	4.3	<LOD	<LOD	<LOD
80	VIN13	9/09/97 10:25	9/10/97 09:40	1395	23.3	4.2	<LOD	<LOD	<LOD
81	ALV13	9/09/97 10:35	9/10/97 09:55	1400	23.3	4.2	<LOD	<LOD	<LOD
82	MET13	9/09/97 11:15	9/10/97 10:30	1395	23.3	4.2	<LOD	<LOD	<LOD
83	RUS14	9/10/97 08:35	9/11/97 08:30	1435	23.9	4.3	<LOD	<LOD	<LOD
84	RUS14D	9/10/97 08:35	9/11/97 08:30	1435	23.9	4.3	<LOD	<LOD	<LOD
85	BAK14	9/10/97 08:55	9/11/97 09:05	1450	24.2	4.3	<LOD	<LOD	<LOD
86	BAK14D	9/10/97 08:55	9/11/97 09:05	1450	24.2	4.3	<LOD	<LOD	<LOD
87	VIN14	9/10/97 09:40	9/11/97 09:45	1445	24.1	4.3	<LOD	<LOD	<LOD

LOD = 0.020 ug/sample

LOQ = 0.066 ug/sample

Det. = <LOQ but ≥LOD

* pptv at 25 C and 1 atm

NA = Not Applicable

Table 7. Linuron Ambient Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample Volume (m3)	Linuron (ug/sample)	(ug/m3)	*(pptv)
88	VIN14D	9/10/97 09:40	9/11/97 09:45	1445	24.1	4.3	<LOD	<LOD	<LOD
89	ALV14	9/10/97 09:55	9/11/97 10:05	1450	24.2	4.4	<LOD	<LOD	<LOD
90	ALV14D	9/10/97 09:55	9/11/97 10:05	1450	24.2	4.4	<LOD	<LOD	<LOD
91	MET14	9/10/97 10:30	9/11/97 10:30	1440	24.0	4.3	<LOD	<LOD	<LOD
92	MET14D	9/10/97 10:30	9/11/97 10:30	1440	24.0	4.3	<LOD	<LOD	<LOD
93	RUS15	9/11/97 08:30	9/12/97 08:20	1430	23.8	4.3	<LOD	<LOD	<LOD
94	BAK15	9/11/97 09:05	9/12/97 08:45	1420	23.7	4.3	<LOD	<LOD	<LOD
95	VIN15	9/11/97 09:45	9/12/97 09:15	1410	23.5	4.2	<LOD	<LOD	<LOD
96	ALV15	9/11/97 10:05	9/12/97 09:30	1405	23.4	4.2	<LOD	<LOD	<LOD
97	MET15	9/11/97 10:30	9/12/97 10:00	1410	23.5	4.2	<LOD	<LOD	<LOD
98	BLANK4	9/12/97 10:00	9/12/97 10:00	0	0.0	0.0	<LOD	NA	NA
99	RUS16	9/15/97 12:35	9/16/97 08:25	1190	19.8	3.6	<LOD	<LOD	<LOD
100	BAK16	9/15/97 13:00	9/16/97 08:50	1190	19.8	3.6	<LOD	<LOD	<LOD
104	VIN16	9/15/97 13:40	9/16/97 09:55	1215	20.3	3.6	<LOD	<LOD	<LOD
105	ALV16	9/15/97 13:55	9/16/97 10:15	1220	20.3	3.7	<LOD	<LOD	<LOD
106	MET16	9/15/97 14:25	9/16/97 10:45	1220	20.3	3.7	<LOD	<LOD	<LOD
107	RUS17	9/16/97 08:25	9/17/97 08:30	1445	24.1	4.3	Det.	Det.	Det.
108	BAK17	9/16/97 08:50	9/17/97 09:05	1455	24.2	4.4	Det.	Det.	Det.
111	VIN17	9/16/97 09:55	9/17/97 10:25	1470	24.5	4.4	<LOD	<LOD	<LOD
112	ALV17	9/16/97 10:15	9/17/97 10:45	1470	24.5	4.4	<LOD	<LOD	<LOD
113	MET17	9/16/97 10:45	9/17/97 11:15	1470	24.5	4.4	<LOD	<LOD	<LOD
114	RUS18	9/17/97 08:30	9/18/97 08:20	1430	23.8	4.3	<LOD	<LOD	<LOD
115	RUS18D	9/17/97 08:30	9/18/97 08:20	1430	23.8	4.3	<LOD	<LOD	<LOD
116	BAK18	9/17/97 09:05	9/18/97 08:45	1420	23.7	4.3	<LOD	<LOD	<LOD
117	BAK18D	9/17/97 09:05	9/18/97 08:45	1420	23.7	4.3	<LOD	<LOD	<LOD
118	VIN18	9/17/97 10:25	9/18/97 09:35	1390	23.2	4.2	<LOD	<LOD	<LOD
119	VIN18D	9/17/97 10:25	9/18/97 09:35	1390	23.2	4.2	<LOD	<LOD	<LOD
120	ALV18	9/17/97 10:45	9/18/97 09:50	1385	23.1	4.2	<LOD	<LOD	<LOD
121	ALV18D	9/17/97 10:45	9/18/97 09:50	1385	23.1	4.2	<LOD	<LOD	<LOD

LOD = 0.020 ug/sample

LOQ = 0.066 ug/sample

Det. = <LOQ but ≥LOD

* pptv at 25 C and 1 atm

NA = Not Applicable

Table 7. Linuron Ambient Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample Volume (m3)	Linuron (ug/sample)	(ug/m3)	*(pptv)
122	MET18	9/17/97 11:15	9/18/97 10:20	1385	23.1	4.2	<LOD	<LOD	<LOD
123	MET18D	9/17/97 11:15	9/18/97 10:20	1385	23.1	4.2	<LOD	<LOD	<LOD
124	BLANK5	9/18/97 09:55	9/18/97 09:55	0	0.0	0.0	<LOD	NA	NA
125	RUS19	9/18/97 08:20	9/19/97 08:05	1425	23.8	4.3	<LOD	<LOD	<LOD
126	BAK19	9/18/97 08:45	9/19/97 08:30	1425	23.7	4.3	<LOD	<LOD	<LOD
127	VIN19	9/18/97 09:35	9/19/97 09:05	1410	23.5	4.2	<LOD	<LOD	<LOD
128	ALV19	9/18/97 09:50	9/19/97 09:20	1410	23.5	4.2	<LOD	<LOD	<LOD
129	MET19	9/18/97 10:20	9/19/97 09:45	1405	23.4	4.2	<LOD	<LOD	<LOD
135	RUS20	9/22/97 12:30	9/23/97 08:10	1180	19.7	3.5	Det.	Det.	Det.
136	BAK20	9/22/97 12:50	9/23/97 08:35	1185	19.8	3.6	<LOD	<LOD	<LOD
137	VIN20	9/22/97 13:35	9/23/97 09:25	1190	19.8	3.6	Det.	Det.	Det.
138	ALV20	9/22/97 13:50	9/23/97 09:40	1190	19.8	3.6	<LOD	<LOD	<LOD
139	MET20	9/22/97 14:20	9/23/97 10:10	1190	19.8	3.6	<LOD	<LOD	<LOD
140	BLANK6	9/24/97 08:05	9/24/97 08:05	0	0.0	0.0	<LOD	NA	NA
141	RUS21	9/23/97 08:10	9/24/97 08:10	1440	24.0	4.3	Det.	Det.	Det.
142	BAK21	9/23/97 08:35	9/24/97 08:40	1445	24.1	4.3	Det.	Det.	Det.
143	VIN21	9/23/97 09:25	9/24/97 09:15	1430	23.8	4.3	<LOD	<LOD	<LOD
144	ALV21	9/23/97 09:40	9/24/97 09:35	1435	23.9	4.3	<LOD	<LOD	<LOD
145	MET21	9/23/97 10:10	9/24/97 10:05	1435	23.9	4.3	<LOD	<LOD	<LOD
146	RUS22	9/24/97 08:10	9/25/97 08:15	1445	24.1	4.3	<LOD	<LOD	<LOD
147	RUS22D	9/24/97 08:10	9/25/97 08:15	1445	24.1	4.3	<LOD	<LOD	<LOD
148	BAK22	9/24/97 08:40	9/25/97 08:35	1435	23.9	4.3	<LOD	<LOD	<LOD
149	BAK22D	9/24/97 08:40	9/25/97 08:35	1435	23.9	4.3	<LOD	<LOD	<LOD
150	VIN22	9/24/97 09:15	9/25/97 09:15	1440	24.0	4.3	<LOD	<LOD	<LOD
151	VIN22D	9/24/97 09:15	9/25/97 09:15	1440	24.0	4.3	<LOD	<LOD	<LOD
152	ALV22	9/24/97 09:35	9/25/97 09:30	1435	23.9	4.3	<LOD	<LOD	<LOD
153	ALV22D	9/24/97 09:35	9/25/97 09:30	1435	23.9	4.3	<LOD	<LOD	<LOD
154	MET22	9/24/97 10:05	9/25/97 10:05	1440	24.0	4.3	<LOD	<LOD	<LOD
155	MET22D	9/24/97 10:05	9/25/97 10:05	1440	24.0	4.3	<LOD	<LOD	<LOD

LOD = 0.020 ug/sample
 LOQ = 0.066 ug/sample
 Det. = <LOQ but ≥LOD
 * pptv at 25 C and 1 atm
 NA = Not Applicable

Table 7. Linuron Ambient Monitoring Results, Kern County

Log #	Sample ID	Start Date/Time	End Date/Time	Sample Time (min)	Sample Time (hours)	Sample Volume (m3)	Linuron		
							(ug/sample)	(ug/m3)	*(pptv)
156	RUS23	9/25/97 08:15	9/26/97 08:10	1435	23.9	4.3	<LOD	<LOD	<LOD
157	BAK23	9/25/97 08:35	9/26/97 08:40	1445	24.1	4.3	<LOD	<LOD	<LOD
158	VIN23	9/25/97 09:15	9/26/97 09:15	1440	24.0	4.3	Det.	Det.	Det.
159	ALV23	9/25/97 09:30	9/26/97 09:40	1450	24.2	4.4	Det.	Det.	Det.
160	RUS23 *	9/24/97 08:10	*Invalid sample	NA	NA	NA	NA	NA	NA

LOD = 0.020 ug/sample
 LOQ = 0.066 ug/sample
 Det. = <LOQ but ≥LOD
 * pptv at 25 C and 1 atm
 NA = Not Applicable

Table 8. Linuron Application Trip Spike Results

Sample ID	Linuron Amount (ug)	Expected Amount (ug)	Percent Recovery
TS1	0.183	0.200	92%
TS2	0.194	0.200	97%
TS3	0.167	0.200	84%
TS4	0.173	0.200	87%
TS5	0.171	0.200	86%

Table 9. Linuron Application Field Spike Results

Sample ID	Linuron Amount (ug)	Background * Amount (ug)	Corrected Amount (ug)	Expected Amount (ug)	Percent Recovery
NFS1	0.228	<LOD	0.228	0.200	114%
EFS2	0.233	**Det.	0.190	0.200	95%
SFS3	0.218	**Det.	0.175	0.200	88%
WFS4	0.203	<LOD	0.203	0.200	102%

*The mass of linuron found in the collocated sample.

**Values were corrected by subtracting $(LOD+LOQ)/2 = 0.043$ ug

Table 10. Linuron Ambient *Lab* Spike Results

Sample ID	Linuron Amount (ug)	Expected Amount (ug)	Percent Recovery
LS1	0.169	0.200	85%
LS2	0.180	0.200	90%
LS3	0.197	0.200	99%
LS4	0.201	0.200	101%
LS5	0.190	0.200	95%

Table 11. Linuron *Ambient Trip* Spike Results

Sample ID	Linuron Amount (ug)	Expected Amount (ug)	Percent Recovery
TS1	0.181	0.200	91%
TS2	0.184	0.200	92%
TS3	0.186	0.200	93%
TS4	0.164	0.200	82%
TS5	0.188	0.200	94%

Table 12. Linuron *Ambient Field* Spike Results

Sample ID	Linuron Amount (ug)	Background * Amount (ug)	Corrected Amount (ug)	Expected Amount (ug)	Percent Recovery
FS1	0.236	<LOD	0.236	0.200	118%
FS2***	0.021	<LOD	0.021	0.200	11%
FS3	0.193	<LOD	0.193	0.200	97%
FS4	0.252	**Det.	0.209	0.200	105%
FS5	0.242	**Det.	0.199	0.200	100%

*The mass of linuron found in the collocated sample.

Values were corrected by subtracting (LOD+LOQ)/2 = 0.043 ug

***Field spike invalidated (may not have been spiked properly)