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Contributions of organophosphorus pesticides from residential land uses during dry and wet weather

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DISCLAIMER

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The statements and conclusions in this report are solely those of the authors. The mention of commercial products, their source, or their use in connection with material reported herein is not to be construed as actual or implied endorsement of such products.

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EXECUTIVE SUMMARY

Diazinon and chlorpyrifos are commonly used organophosphorus (OP) pesticides in agricultural and urban watersheds. Significant concentrations of OP pesticides have been measured in receiving waters downstream from applications of OP pesticides. Unlike the agricultural watersheds, however, OP pesticides are not well-regulated in urban watersheds and are commonly used in and around residential and other urban land use areas. The lack of regulation is due, in part, to an incomplete understanding of the sources, runoff characteristics, and fate in urban environments. The goal of this study was to quantify the contribution of diazinon and chlorpyrifos in wet and dry weather runoff from residential land uses. In addition, two sub-objectives were identified to help understand and manage contributions of these pesticides from urban watersheds. The first sub-objective attempted to quantify the effectiveness of public education versus a technology-based best management practice (BMP) for controlling OP pesticide contributions from residential land uses during dry weather. The second sub-objective attempted to quantify the relationship between rainfall characteristics and OP pesticide concentrations during wet weather runoff from residential land uses.

To accomplish these objectives, three similar neighborhoods were sampled three days, every other week, between December 2000 and December 2002. In June 2001, part way through the study, two different interventions of BMPs were applied. An educational BMP was applied in one neighborhood, the technology + education BMP was applied in a second neighborhood, and the third was left untouched and used as a control. The education BMP consisted of an information packet, plus monthly reminders of ecologically sound irrigation, herbicide, and pesticide practices. The technology-based BMP consisted of remotely-controlled sprinkler timers that varied the timing and frequency of irrigation based on local weather data. Four wet weather events were sampled by targeting 10 individual grab samples per event representing rising, peak, and receding flows of the hydrograph. In all, 465 dry weather and 120 wet weather samples were collected

The results and conclusions can be summarized as:

- Mean concentrations of OP pesticides were typically greater during dry weather than wet weather at all three neighborhoods. Mean dry weather concentrations ranged from 20 to 572 ng/L chlorpyrifos and from 1,031 to 1,726 ng/L diazinon. Mean wet weather concentrations ranged from 6 to 156 ng/L chlorpyrifos and from 685 to 1,812 ng/L diazinon.

- Temporal plots of OP pesticide concentrations during dry weather did not indicate any seasonal patterns, nor was there a noticeable change in concentration following the initiation of the technological or educational BMPs.

- There was substantial variability in OP pesticide concentrations both within and among storm events at all three neighborhoods. Event mean concentrations

ranged from 3 to 250 ng/L chlorpyrifos and from 183 to 28,640 ng/L diazinon. At least part of the variability in diazinon concentrations was correlated to rainfall quantity and duration.

- Mass emissions of diazinon and chlorpyrifos during wet weather exceeded emissions during dry weather by roughly an order of magnitude. This was a function of substantially more volume during storm events than during dry weather.

- Concentrations of OP pesticides from the test neighborhoods appeared high relative to other residential land uses in nearby watersheds and relative to water quality thresholds recommended by the California Department of Fish and Game.

- Diazinon and chlorpyrifos are currently being phased out for indoor and outdoor residential uses. This study began prior to the onset of the phase out and can serve as a benchmark to assess reductions in these OP pesticide concentrations over time.

INTRODUCTION

The organophosphorous (OP) pesticides diazinon (*O,O*-diethyl-*O*-(2-isopropyl-6-methyl-4-pyrimidinyl) phosphorothioate) and chlorpyrifos (*O,O*-diethyl-*O*-(3,5,6-trichloro-2-pyridyl) phosphorothioate) are toxic to a wide variety of non-target aquatic organisms including fish and invertebrates (Menconi et al. 1994a, 1994b). OP pesticide usage in California watersheds has migrated into ambient surface waters and resulted in toxicity to the freshwater cladoceran *Ceriodaphnia dubia* (deVlaming et al. 2000) and the marine mysid *Mysidopsis bahia* (Lee et al. 1999). The ambient toxicity resulting from OP pesticides in California receiving waters has led to 102 waterbody/segment being placed on the 2002 §303d list for diazinon and chlorpyrifos by State regulators.

In order for watershed managers and regulators to effectively reduce OP pesticides in receiving waters, there is a need to identify and assess sources of diazinon and chlorpyrifos. Large quantities of OP pesticides are applied to agricultural and urbanized watersheds in California every year. An estimated 387 metric tons (mt) of diazinon and another 927 mt of chlorpyrifos were applied in 1999 for agricultural, landscape maintenance, and exterior pest control uses based upon records kept by the Department of Pesticide Regulation (DPR 2000). Additional significant users of OP pesticides are residential homeowners, commercial, and industrial facilities for exterior pest control. In southern California, where more than 17 million people reside and work, undocumented use of OP pesticides has the potential to be enormous. Unfortunately, there are no estimates of diazinon or chlorpyrifos usage during these applications although these pesticides can be purchased over-the-counter at most home improvement stores. Over the counter purchases in the San Diego Creek watershed (a relatively small watershed of 290km^2) are estimated at 4.5 and 0.3 mt for diazinon and chlorpyrifos, respectively (Wilen 2001)

Contributions of OP pesticides from undocumented home use applications or documented pest control operators can occur during wet and dry weather when precipitation or over-irrigation results in transport to receiving waters. This transport mechanism is enhanced due to the large proportion of impervious surfaces in urban environments. However, neither wet or dry weather contributions of OP pesticides from residential land uses have been well-documented. Some wet weather contributions have been measured from urban watersheds in the San Francisco Bay region (Bailey et al. 2000) and the Los Angeles area (Schiff and Sutula 2002). Both of these studies identified concentrations of diazinon at sufficient concentrations to induce aquatic toxicity in non-target organisms. However, there is a complete lack of published data on dry weather contributions of diazinon and chlorpyrifos from residential land uses.

The objective of this study was to quantify the contribution of diazinon and chlorpyrifos in wet and dry weather runoff from residential land uses. In addition, two sub-objectives were identified to help understand and manage contributions of these pesticides from urban watersheds. The first sub-objective attempted to quantify the effectiveness of public education versus a technology-based potential best management practice (BMP) for controlling OP pesticide contributions from residential land uses during dry weather.

The second sub-objective attempted to quantify the relationship between rainfall characteristics and OP pesticide concentrations during wet weather runoff from residential land uses.

This project builds upon a larger study focused on assessment of residential runoff contributions of nutrients, trace metals, bacteria, and toxicity (Berg, et al 2003). The two studies are similar in their design to assess the effectiveness of BMPs. The two studies differ in that this project was designed around dry and wet weather, while the larger study only focused on dry weather. The larger study was a collaborative project among the Orange County Water District, the Irvine Ranch Water District, and the Regional Water Quality Control Board. While these water management agencies are concerned about water quality, an equally important goal was to assess water conservation. This study added two additional participants, including the Orange County Public Facilities and Resources Department and the California Department of Pesticide Regulation, whose primary goal was to assess OP pesticide contributions.

METHODS

The concentration of OP pesticides in wet and dry weather runoff was quantified from three replicate residential neighborhoods. Each of the neighborhoods was relatively similar in age, size, orographics, and imperviousness. Runoff from each of the neighborhoods could be isolated and sampled at a single point from within their municipal separate storm sewer system enabling each neighborhood to be treated as an individual treatment.

In order to evaluate the effectiveness of potential BMPs, one of the neighborhoods received an intensive public education campaign, the second neighborhood received public education and the technology-based BMP, and the third neighborhood received neither education nor technology and served as a control.

Dry weather samples were collected three days a week, every other week, starting in January 2000 until June 2001. At this time, the technology and educational BMPs were implemented and sampling continued as before until November 2002. The dry weather OP data were used to estimate concentrations from each of the three neighborhoods. By comparing concentrations before and after BMP implementation, we can assess the effectiveness of these management actions.

A total of four storm events were collected at each neighborhood during the 2000/2001 and 2001/2002 wet seasons. Ten grab samples per neighborhood were targeted during each event, at time intervals of 15 to 30 minutes, depending upon the storm duration. The goal was to capture water quality over the course of the entire event including rising, peak, and tailing storm flows. Multiple samples per storm enabled comparisons of:

1) average concentrations and fluxes during an event to compare among neighborhoods; 2) comparison of concentrations within a neighborhood among storm events, and 3) comparison of concentrations within a neighborhood during a storm event.

Technology-based and Public Education BMPs

The technology-based BMP consisted of an evapotranspiration (ET) controller that is described in detail elsewhere (Berg et al, 2003, Appendix A). This BMP is similar to most automatic sprinkler timers available at home improvement stores and nurseries, but with the capacity to receive radio signals that will alter sprinkler timing based on current weather conditions. If the weather is hot and dry, the radio signals call for longer or more frequent irrigation. If the weather is cool and moist, such as recent precipitation, the radio signals call for shorter or less frequent irrigation. For this study, the existing sprinkler timers that are set manually by the homeowner were replaced with the radio controlled ET controller systems. Trained technicians were used to ensure successful installation; ET controller requires programming for each valve including area (size of yard or planter per valve), soil type (clay, sand, etc.), and landscape type (turfgrass, shrubbery, etc.). The remaining irrigation system was unchanged, including piping and sprinkler head configuration.

Public education during this study consisted of an initial informational packet containing three items. The first item was an introductory letter that described the purpose of the packet. The second item was a booklet with irrigation, fertilization and weed and pest control information. The centerfold of the booklet was a month-by-month guide to irrigating, fertilizing and pesticide application suitable for posting near their sprinkler timer. Third, each homeowner was supplied a soil probe for measuring the water content of their landscaped soils. In addition to the initial packet, monthly reminders were mailed to each homeowner including landscape maintenance tips such as irrigation system, water schedule, fertilizing, and weed and insect control. Suggested sprinkler run times (for the non-ET sprinkler neighborhood) and fertilizer or pesticide application usage, including non-toxic alternatives, were also provided in the monthly newsletter.

Residential Neighborhoods

The three neighborhoods were located within a three mile radius in Irvine, CA (Figure 1). The selection criteria for the neighborhoods included similarity in: 1) age of neighborhood (approximately 20 years old); 2) primary land use (single family residential); 3) irrigation management factors (precipitation rate, soil type, plant type, slope and sun exposure); and 4) proximity to radio signal for ET controller. Although each of the three neighborhoods met the selection criteria, there were some differences worth noting (Table 1). First, the two treatment neighborhoods were larger, up to twice as large as the control neighborhood. Second, the two treatment neighborhoods were more impervious, up to 50% as much impervious area, as the control neighborhood. Third, the two treatment neighborhoods had greater proportions of landscaped common areas than the control neighborhood. These three factors could contribute to increased flows.

The treatments were not uniformly applied to all homeowners in either the technology + education or education only neighborhoods. In the case of technology + education, roughly one third of the pervious area actually retrofit their sprinkler systems. These homeowners, condominium complexes, school and city landscaped areas were recruited by trained personnel. In order to keep the relative percentages approximately the same between treatment neighborhoods, homeowners representing roughly 30% of the pervious area were selected to receive the education materials in the education only neighborhood. These homeowners were selected at random.

Sampling

Each of the three neighborhoods were hydrologically self-contained and drained to a single underground pipe unique to each neighborhood. At each of these three locations, samples were collected for flow and water quality. Stage (water depth) and velocity were recorded at 5 min intervals using an ultrasonic height sensor mounted at the pipe invert and a velocity sensor mounted on the floor of the pipe. Flow was calculated as the product of velocity and wetted cross-sectional area as defined by the stage and pipe circumference. Despite the relatively continuous measurement of flow, many of the flow measurements were excluded due to faulty readings. These faulty readings were the result of blocked or broken sensors, uncalibrated meters, and/or out of range records. Synoptic flow and water quality measurements were only available for two sites over the course of the entire study (i.e. before and after intervention), including the technology + education and education only sites. Flow measurements at the time of water quality sampling for the control site were considered faulty and discarded. Similarly, flow data was not available for all sites during all storms. The lack of flow data does hinder the ability to estimate mass emissions form the residential neighborhoods for all time periods of interest.

Grab samples for water quality were collected just downstream of the flow sensors in the early morning on Tuesdays, Thursdays, and Sundays every other week starting in January 2000 until November 2002. Presurvey evaluations of daily flow did not indicate significant changes in flow among weekdays or weekends, therefore both weekend and weekdays were sampled. In all, 465 dry weather samples were collected. Samples were collected using peristaltic pumps and pre-cleaned Teflon tubing. Samples were placed in individual pre-cleaned jars, placed on ice, and transported to the laboratory within one hour. Each sample was analyzed for diazinon and chlorpyrifos. Water quality sampling during wet weather were collected similar to dry weather samples, except for the sampling was focused on individual storm events. These events occurred on April 7, 2001, November 29, 2001, November 29, 2002, and December 16, 2002. Storm sampling targeted events where precipitation was forecast to be $\geq$ 0.63 cm and there was a minimum of 72 h antecedent rainfall. In all, 120 wet weather samples were collected.

Chemical Analysis

Water samples were measured for diazinon and chlorpyrifos (reporting level = 20 ng/L). Water samples were extracted by passing 1L of sample through a preconditioned (ethyl acetate followed by methanol) 90 mm 3M C18 solid phase extraction (SPE) disk. Analytes were eluted from the SPE disk using ethyl acetate. The eluate was dried over sodium sulfate and rotoevaporated at 35 °C to 1ml with solvent exchange to hexane. The hexane extract was then concentrated under nitrogen to 0.5 ml for analysis.

Gas chromatographic (GC) analyses were performed using a Varian 3800 GC equipped with DB-XLB capillary column (60 m x 0.32 mm x 025 µm.) and a Varian Saturn 2000 Ion Trap. Helium was used as a carrier gas at constant flow of 1.2 ml/min. Samples were fortified with 1-Bromo-2-nitrobenzene as an internal standard and injected in splitless mode in an injector at 250 °C. The oven temperature profile was: 50 °C for 1 min; 50-100 °C at 25 °C/min; 100-310 °C at 10 °C/min for 7 min.

Data Analysis

Data analysis focused on three areas: 1) comparison of mean dry and wet weather concentrations of diazinon and chlorpyrifos in each of the three neighborhoods; 2) dry weather comparisons; and 3) wet weather comparisons. The comparison of mean dry and wet weather concentrations of diazinon and chlorpyrifos in each of the three neighborhoods consisted of t-tests of combined concentration data from the dry weather sampling versus the wet weather concentration for each neighborhood.

Dry weather comparisons consisted of three elements. The first dry weather element examined temporal trends in diazinon and chlorpyrifos concentrations over the course of the study. Average monthly concentrations were plotted by neighborhood. All of the data were examined for seasonality and then tested by regression for overall increasing or decreasing levels. The second dry weather element was a comparison of diazinon and chlorpyrifos concentrations between the three neighborhoods prior to intervention of the education or technology-based BMPs. This step was conducted by using analysis of variance (ANOVA) and Tukey's post hoc testing for differences among neighborhoods and concentrations (Zar 1984). All data were tested for normality and homogeneous variance prior to testing. The goal was to determine if there were significantly different concentration being discharged from each of the three test neighborhoods. The third dry weather element examined the effect of the BMPs by using a t-test (Zar 1984) of diazinon or chlorpyrifos concentration before versus after BMP intervention within a neighborhood. The comparisons were made for the education only, technology + education, and difference between the technology + education and education only neighborhoods. Each of these comparisons were normalized to the control neighborhood on the day of sampling prior to t-testing.

Wet weather comparisons consisted of four elements. The first wet weather element examined the storm characteristics of each of the sampled events. These characteristics included rainfall quantity, duration and intensity, as well as runoff volume, peak flow, and average flow. The second wet weather element compared diazinon and chlorpyrifos

concentration among storms for each neighborhood. These comparisons were evaluated using event mean concentrations (EMCs). Since we did not have flow data to accompany every storm event in every neighborhood, we calculated EMCs as the arithmetic mean of all samples within a given event. Nondetectable concentrations were treated as zero. The comparison of EMCs among neighborhoods and constituents was conducted using ANOVA and Tukey's post hoc test. The third wet weather element examined the relationship between storm characteristics and EMCs for individual events. This relationship was quantified using a Spearman Rank correlation testing procedure. The fourth wet weather element examined within storm variability for diazinon or chlorpyrifos at each neighborhood. This was accomplished by plotting flow and concentration over time for each event and neighborhood.

RESULTS

Mean dry weather concentrations of OP pesticides were typically higher during dry weather than wet weather (Table 2). Mean concentrations of chlorpyrifos at all three neighborhoods were higher during dry weather than wet weather. Mean concentrations of diazinon at two of three neighborhoods were greater during dry weather than wet weather. Mean concentrations ranged from 1.5- to 8-fold greater during dry weather compared to wet weather, depending upon the neighborhood. The overall variability in dry and wet weather concentrations of chlorpyrifos and diazinon was relatively high, however, and this precluded significant differences among wet and dry weather samples within a neighborhood. For example, coefficients of variation (standard deviation relative to the mean) were as high as 1,100% and averaged between 500% and 300% for chlorpyrifos and diazinon, respectively. Only mean chlorpyrifos concentrations at the control neighborhood were significantly different between wet and dry weather.

The mean dry weather flux and mass emission of diazinon was generally higher and more consistent than either the dry weather flux or mass emission of chlorpyrifos from the three residential neighborhoods (Table 3). For example, the mean flux of diazinon ranged one order of magnitude during dry weather among the three neighborhoods (2.0 to 5.8 ng/km^2/day) compared to chlorpyrifos that ranged two orders of magnitude (0.05 to 1.1 ng/km^2/day). Similarly, the average mass emission of diazinon was within a factor of two among the three neighborhoods (1.0 to 1.9 ng/day) compared to chlorpyrifos that ranged by a factor of 30 (0.02 to 0.6 ng/day).

Dry Weather Comparisons

There were no significant differences in water quality during dry weather among sites prior to BMP intervention (Table 4). The education neighborhood had the greatest mean concentration of chlorpyrifos, roughly 2- to 3-fold greater than the mean concentration at the technology + education or control neighborhoods, respectively. The control neighborhood had the greatest mean concentration of diazinon, roughly 2- to 3-fold

greater than the mean concentration at the technology + education or education neighborhoods, respectively.

OP pesticide concentrations were highly variable over time during the study period (Figure 2). Temporal plots of monthly mean concentrations demonstrated that there was no seasonal trend and no overall trend with time. Most importantly, there was no distinct increase or decrease following BMP intervention in June 2001. There were, however, large spikes in concentrations. For example, the mean monthly concentration of chlorpyrifos peaked in July 2001, exceeding 10,000 ng/L at both the education and technology + education neighborhoods, but not in the control neighborhood.

Pre- and post-BMP pairwise testing revealed that the dry weather concentrations of chlorpyrifos significantly increased following intervention (Table 5). These significant differences were observed in the education only neighborhood, and the difference between the technology + education minus education neighborhood, relative to the control neighborhood. These statistically significant differences were the result of the large spike in chlorpyrifos concentration in the education and technology + education neighborhoods during July 2001. Since the spike was not observed in the control neighborhood, the net difference in concentrations between controls and treatments increased following the intervention. Removal of the abnormally high sample in the education and technology + education resulted in no significant difference among treatment effects relative to controls before intervention compared to after intervention. In fact, mean concentrations before and after intervention were within a factor of two after the removal of the abnormally high sample.

Dry weather flux (or mass) of OP pesticides followed similar patterns as the concentration data over the study period. There were no systematic increases or decreases in the flux of diazinon or chlorpyrifos. There were, however, periodic spikes in flux that were commensurate with spikes in concentration (i.e. July 2001, Figure 2). This is because ranges in concentration varied nearly two orders of magnitude while changes in flow rates varied by only a factor of two. The changes in concentration, thus, led to significant differences in mean pre- and post-intervention flux rates (Table 4). These significant differences were only observed for chlorpyrifos and, like differences in concentrations, were only observed in the education only and in the difference between technology + education and education only neighborhoods.

Wet Weather Comparisons

The four storms sampled as part of this study had a range of rainfall characteristics (Table 6). Rainfall quantities ranged three-fold, while rainfall intensity ranged by a factor of two. Antecedent rainfall similarly varied, ranging from two days to nearly three weeks. A subset of 9 site-events had associated flow data; 3 site events had faulty flow data and had to be discarded. Only the control neighborhood had measurable flow data during all four storm events. Of the remaining flow measurements, the education only neighborhood generally had the greatest runoff volumes and peak flows.

OP pesticide concentrations varied both among storms and among neighborhoods (Table 7). For example, EMCs of chlorpyrifos ranged two- to five-fold among storms within each of the respective neighborhoods. EMCs for diazinon had even greater variability among storms ranging between two- to 20-fold differences within a neighborhood. The education neighborhood consistently had the highest EMC of chlorpyrifos during individual storm events while the control neighborhood consistently had the lowest EMC. No single neighborhood consistently had the highest or lowest EMC of diazinon.

Rainfall volume and duration were the only storm characteristics that were significantly correlated to EMCs of diazinon (r^2 = 0.34 and 0.37, respectively) (Figure 3). Diazinon concentrations generally increased with increasing rainfall volume and duration, but the trend was not consistent within single neighborhoods. Therefore, the predictive ability of rainfall volume and duration to estimate diazinon concentration is limited. Chlorpyrifos concentrations were tested and no correlation was found with any of the storm characteristics measured.

Variability of within storm concentrations of diazinon did not reveal any predictable patterns (Figure 4, Appendix A). Two storms at the control site (Apr 7 and Nov 29) indicated a tail flush, where concentrations were greatest on receding flows. One storm at the control site (Dec 16) indicated a first flush of diazinon concentration. One storm at the control site (Nov 12) had a concentration maxima mid-event, following peak flow. Within storm concentrations of chlorpyrifos were similarly unpredictable. Three events (Nov 12, Nov 29, Dec 16) were characterized by largely non-detectable concentrations. The fourth event (April 7) at the control site was characterized by largely variable chlorpyrifos concentrations. In only one storm (Nov 12) did the same sample (at 17:30) contain the maxima of chlorpyrifos and diazinon.

Mass emission and flux of OP pesticides among storm events was, like concentrations, highly variable (Table 7). No emissions or flux were able to be calculated for several events due to a lack of flow data. Of those storms where flow data was available, the education site had the greatest emissions of both chlorpyrifos and diazinon. This may be due, in part, to the larger size of the education catchment. Unlike concentration, however, there was no correlation with any of the rainfall characteristics and mass emission or flux for either of the OP pesticides evaluated.

DISCUSSION

It appears that mass emissions of both diazinon and chlorpyrifos are greater during wet weather than during dry weather in the residential neighborhoods sampled as part of this study. For example, the wet weather flux of chlorpyrifos was measured in 10^2 mg/km^2/storm while dry weather flux was measured in units of 10^0 mg /km^2/day. Assuming an average wet year of 12 storms, and that our storms were representative of these events, the mass emissions during wet weather would be approximately 4,500 mg of chlorpyrifos and 55,000 mg of diazinon from one of our neighborhoods. In contrast,

the remaining 353 dry days would generate approximately 250 mg chlorpyrifos and 8,000 mg of diazinon from one of our neighborhoods. Interestingly, concentrations were generally greater in dry weather than wet weather. Instead, the disparity in emissions during the different runoff regimes was attributable to differences in runoff volume. Wet weather generated tremendous volumes, up to three orders of magnitude more flow on average, during storm events compared to dry weather.

Wet weather concentrations of diazinon from the neighborhoods measured in this study appear high relative to residential land uses in nearby locations (Figure 5). Schiff and Sutula (2002), using a similar approach to wet weather sampling and analysis in this study, estimated mean diazinon concentrations in residential neighborhoods from Los Angeles County that were an order of magnitude lower than mean wet weather diazinon concentrations in this study. In fact, concentrations from residential neighborhoods from this study were greater than any other land use measured in Los Angeles County except mixed agriculture. Similarly, the concentrations of chlorpyrifos were higher in this study than in Los Angeles County. While mean wet weather chlorpyrifos concentrations measured herein ranged from 5 to 155 ng/L among the three neighborhoods, concentrations in Los Angeles County were routinely below detection limits (20 ng/L), regardless of land use. The discrepancy in wet weather concentrations between the two counties is, at this point in time, unknown.

This study was unable to find large, significant reductions in dry weather concentrations as a result of education and/or technology. This may indicate that the technology and/or education are inefficient for improvements in water quality. Equally as important, however, was the absence of meaningful increases in concentrations. Of the concentrations that did show significant increases, each could be explained by highly variable spikes in concentrations reminiscent of isolated entries to the storm drain system as opposed to ongoing chronic inputs or the effects of best management practices evaluated in this study. The isolated entries to the storm drain system could be the effect of illegal discharges (i.e. residential dumping) or inappropriate application (i.e. immediately prior to irrigation). Since no source or application evaluation was conducted as part of this study, it is difficult to surmise the exact route of the unusually high OP pesticides concentrations found in our dry weather runoff samples.

If significant changes did occur, our study design may not have detected these changes due to two factors. First, the variability in concentrations within and between sites is naturally high and our study simply collected too few samples. After taking into account the variability and relative differences in mean concentrations, we used *post-hoc* power analysis to estimate our ability to detect meaningful differences. Assuming that our sampling yielded the true mean and variance structure that actually existed at the three sites, we had sufficient power to detect the differences we observed in diazinon concentrations during this study had they really existed. Now that we know the variance structure of dry weather runoff from these neighborhoods, alternative sampling designs to detect differences in concentration or load may be devised and improved to answer specific questions. For example, managers may wish to assess if reductions occur as the use of diazinon and chlorpyrifos decrease as a result of the re-registration process and

lack of public availability of these pesticides. To answer this question, which may take up to five years, a focused temporal design may be more appropriate whereby more effort is allocated into specific time periods rather than distributing effort over the entire time period.

The second factor that could have hindered our ability to detect meaningful differences in water quality is that the technology and education treatments were applied at the spatial scale of individual homes, while our study design sampled at the neighborhood scale. This problem was exacerbated in this study because only a fraction (approximately one-third) of the homes within the neighborhoods we sampled had the technological or educational treatments. Therefore, the treatments were effectively diluted, decreasing our ability to detect these differences in water quality. Future studies may wish to either increase the relative proportion of participating homeowners or, alternatively, reduce the spatial scale to achieve samples from individual parcels.

Concentrations measured during both dry and wet weather were frequently above thresholds expected to induce aquatic toxicity. A threshold of 80 ng/L diazinon has been recommended by the California Department of Fish and Game for acute toxicity to aquatic life. Applying this threshold to the current study indicated that between 89 and 98% of all dry weather samples, depending upon neighborhood, exceeded this threshold (Figure 6). All but three samples exceeded this threshold during wet weather. In our companion study, toxicity tests using the mysid *Mysidopsis bahia* on dry weather runoff samples indicated that mysids are sensitive to dry weather runoff from these residential neighborhoods (Berg et al, 2003). Toxicity was observed nearly every month tested between December 2000 and June 2002 in at least one of the neighborhoods we sampled during this study. While no toxicity identification evaluations were conducted, mysid toxicity was significantly negatively correlated to diazinon concentrations.

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Table 1. Characteristics of the three treatment study neighborhoods.

	Neighborhood		
	Technology + Education	Control	Education Only
Total Area (km^2)	0.48	0.36	0.57
Impervious Area (%)	64.3	54.8	82.2
Land Use (%)			
Single Family Res	34.4	53.8	47.9
Condo	7.7	0.0	1.1
Homeowners Assoc	1.6	1.0	4.3
School	3.8	9.0	4.2
Landscape	16.3	0.0	12.5
Street	29.2	28.2	28.1
Unknown	7.0	8.0	1.9

Table 2. Mean (± 95% confidence interval) OP pesticide concentrations during dry and wet weather at three neighborhoods in Orange County, CA

	Technology + Education		Control		Education	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Dry Weather (ng/L)						
Chlorpyrifos	317.6	569.9	19.5	8.1	572.0	978.8
Diazinon	1031.4	335.6	1762.9	1222.4	1576.1	514.4
Wet Weather (ng/L)						
Chlorpyrifos	40.7	20.2	5.5	2.7	156.3	44.5
Diazinon	685.2	288.9	900.3	605.5	1812.0	672.9

Table 3. Mean (± 95% confidence interval) OP pesticide flux and mass emissions during dry weather at three neighborhoods in Orange County, CA

	Technology + Education		Control		Education	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Flux (mg/km^2/day)						
Chlorpyrifos	0.29	0.11	1.02	0.57	2.62	1.73
Diazinon	13.0	7.3	45.8	18.2	79.2	45.2
Mass Emission (mg/day)						
Chlorpyrifos	0.14	0.05	0.37	0.21	1.5	1.0
Diazinon	6.3	3.5	16.5	6.5	45.2	26.1

Table 4. Mean concentration (and 95% confidence interval) of constituents in dry weather discharges collected before and after intervention at three residential neighborhoods in Orange County, CA.

Parameter	Technology + Education				Control				Education			
	Pre-Intervention		Post-Intervention		Pre-Intervention		Post-Intervention		Pre-Intervention		Post-Intervention	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Concentration (ng/L)												
Chlorpyrifos	22.7	9.3	442.8	827.3	45.5	33.5	11.3	6.3	75.3	64.4	803.4	1433.3
Diazinon	1680.5	1379.4	829.6	338.7	3265.4	3277.2	1650.5	1540.9	1159.1	553.0	1738.6	721.4
Flux (mg/km^2/day)												
Chlorpyrifos	0.45	0.36	0.25	0.11	1.77	1.94	0.86	0.55	0.89	0.71	3.12	2.21
Diazinon	22.4	25.2	11.3	7.3	83.5	84.5	37.4	11.8	19.6	10.0	97.1	58.9

Table 5. Significance of T-test results (P value) for the effect of technology + education, education alone, and the difference between technology + education and education alone relative to control concentrations.

	Effect of Technology + Education	Effect of Education Alone	Difference Between Technology + Education and Education Alone
Chlorpyrifos	0.45	0.01	0.03
Diazinon	0.82	0.96	0.76

Table 6. Rainfall[a] and runoff characteristics from the wet weather sampling program in three neighborhoods in Orange County, CA.

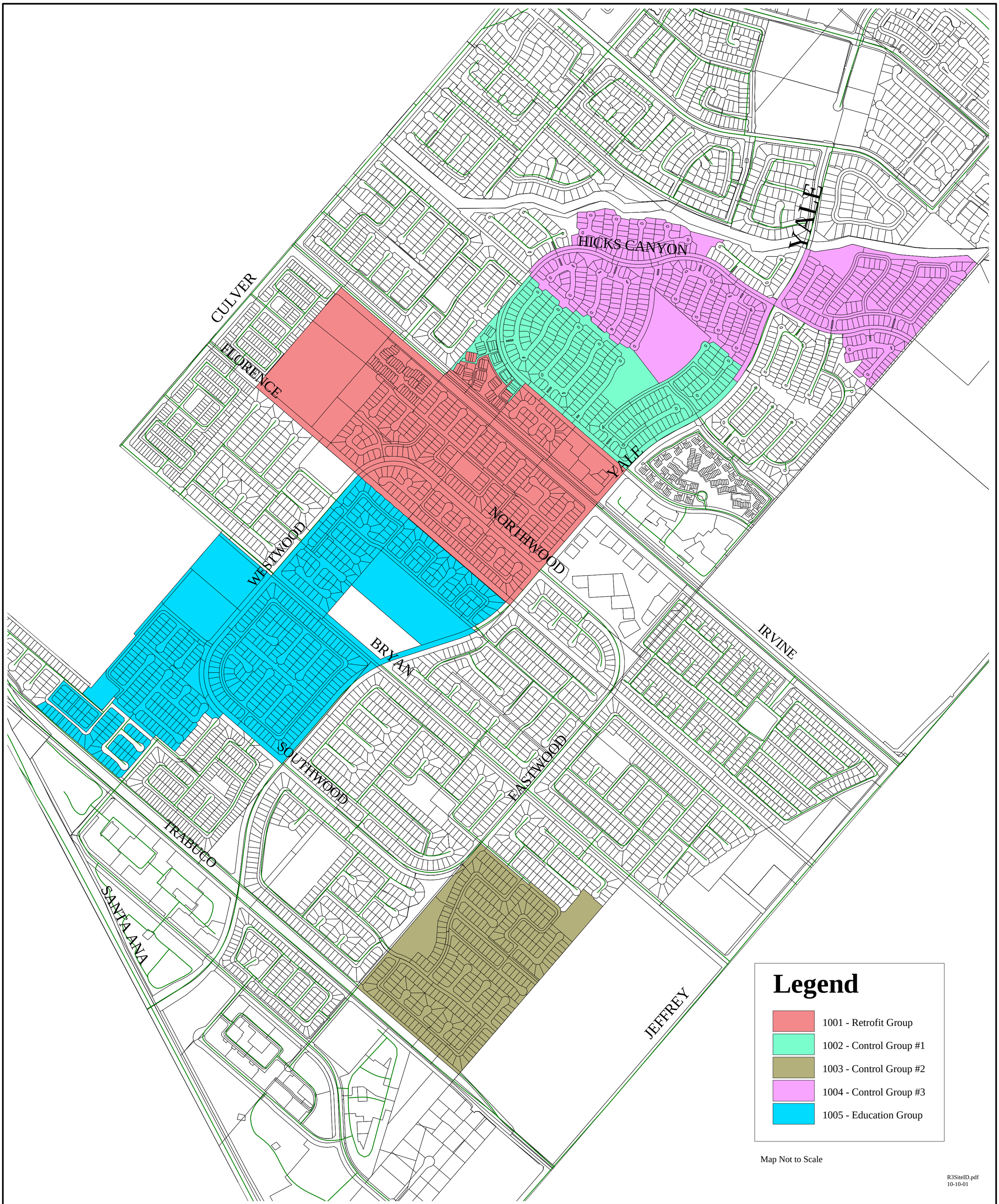
	Storm Event Rainfall					Storm Event Runoff		
	Total	Duration	Intensity	Antecedent		Volume	Peak Flow	Mean Flow
Storm Event Date	(cm)	(hr)	(cm/hr)	(d, hr)	Neighborhood	(10^6 L)	(cfs)	(cfs)
April 7, 2001	1.63	9	0.33	2, 2	Technology + Ed	-[b]	-	-
					Control	3.44	429.3	39.9
					Education	2.85	311.2	32.9
November 12, 2001	0.71	1	0.41	1, 11	Technology + Ed	-	-	-
					Control	0.62	377.7	7.1
					Education	-	-	-
November 29, 2002	1.14	3	0.46	19, 11	Technology + Ed	1.54	382.0	17.8
					Control	0.87	148.5	10.0
					Education	2.62	894.9	30.3
December 16, 2002	2.24	7	0.64	16, 9	Technology + Ed	4.55	875.4	52.7
					Control	3.97	616.4	45.9
					Education	6.62	1248.5	76.6

[a] one rain gage was used for all sites
[b] - indicates no data

Table 7. Mean (± 95 % confidence intervals) of wet weather concentrations, mass emissions, and flux from four wet weather events at three residential neighborhoods in Orange County CA.

			Concentration (ng/L)				Mass (mg/storm)				Flux (mg/km^2/storm)			
			Chlorpyrifos		Diazinon		Chlorpyrifos		Diazinon		Chlorpyrifos		Diazinon	
Storm Date	Neighborhood	N	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.
	Technology + Ed	13	52.2	5.6	2013.8	524.7	nc[a]	nc	nc	nc	nc	nc	nc	nc
April 7, 2001	Control	8	48.0	35.6	480.4	147.3	165.1	122.5	1652.6	506.7	458.7	340.2	4590.5	1407.5
	Education only	8	59.6	24.4	726.6	183.8	169.9	69.5	2070.8	523.8	298.0	122.0	3633.0	919.0
	Technology + Ed	12	21.6	5.4	182.7	14.6	nc	nc	nc	nc	nc	nc	nc	nc
November 12, 2001	Control	6	13.2	33.9	511.8	423.9	8.2	21.0	317.3	262.8	22.7	58.4	881.4	730.1
	Education only	6	64.2	18.1	203.0	31.6	nc	nc	nc	nc	nc	nc	nc	nc
	Technology + Ed	13	39.7	41.8	287.7	82.7	61.1	64.4	443.1	127.4	29.3	30.9	212.7	61.1
November 29, 2002	Control	8	0.0	0.0	291.1	43.9	nd[b]	nd	253.3	38.2	nd	nd	703.5	106.1
	Education only	8	270.5	80.6	1167.9	242.7	708.7	211.2	3059.9	635.9	1243.4	370.5	5368.2	1115.6
	Technology + Ed	9	111.0	80.3	460.8	162.8	505.1	365.4	2096.6	740.7	242.4	175.4	1006.4	355.6
December 16, 2002	Control	10	3.1	6.9	635.1	292.2	12.3	27.4	2521.3	1160.0	34.2	76.1	7003.7	3222.3
	Education only	9	249.4	76.5	4326.8	2423.4	1651.0	506.4	28643.4	16042.9	2896.5	888.5	50251.6	28145.5

[a] not calculated, no flow data
[b] not detected



Residential Runoff Reduction Study
Study Site Identification Map

N
W E
S

Figure 2. Monthly average OP concentrations in dry weather discharges from five residential neighborhoods in Orange County, CA.

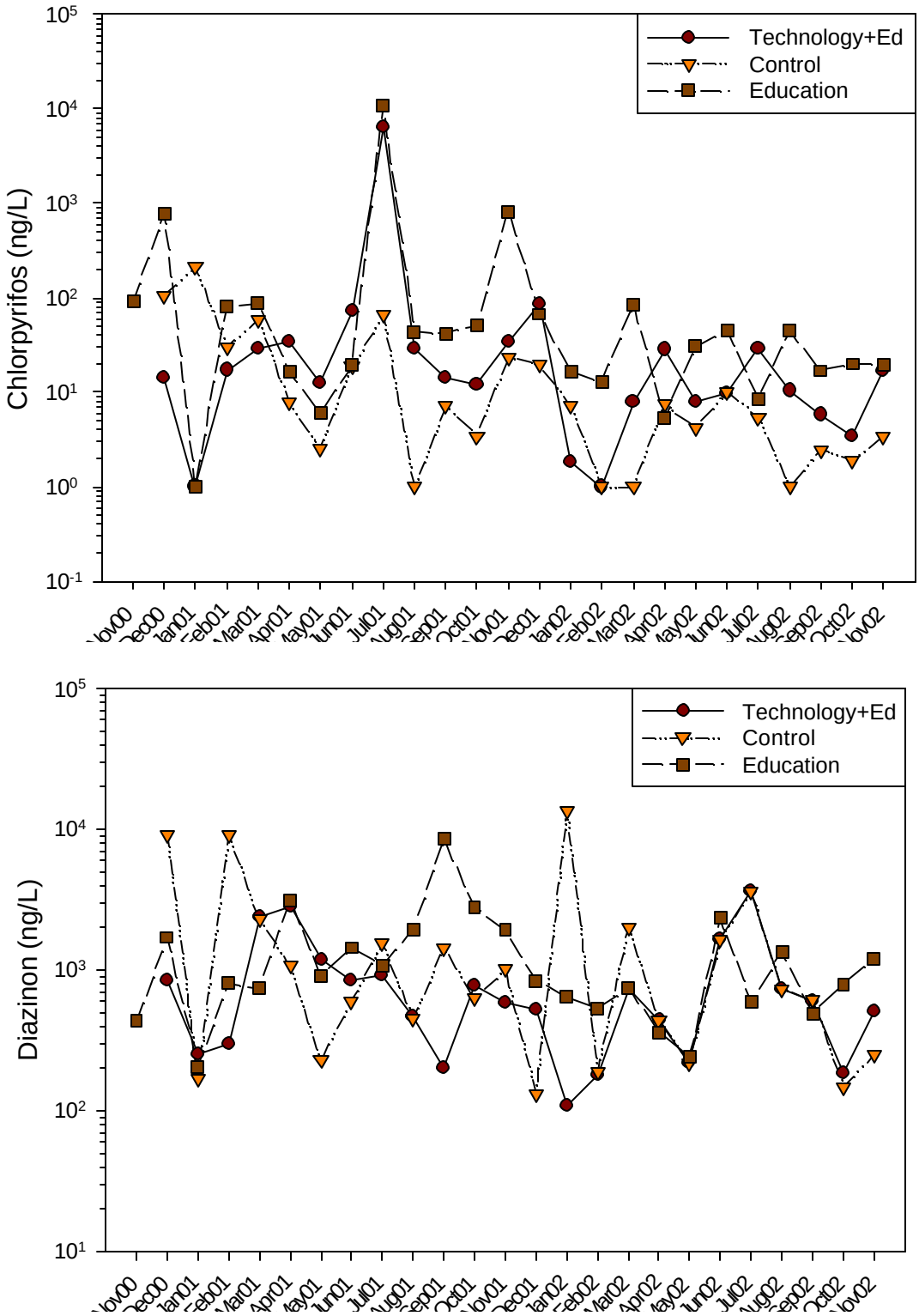
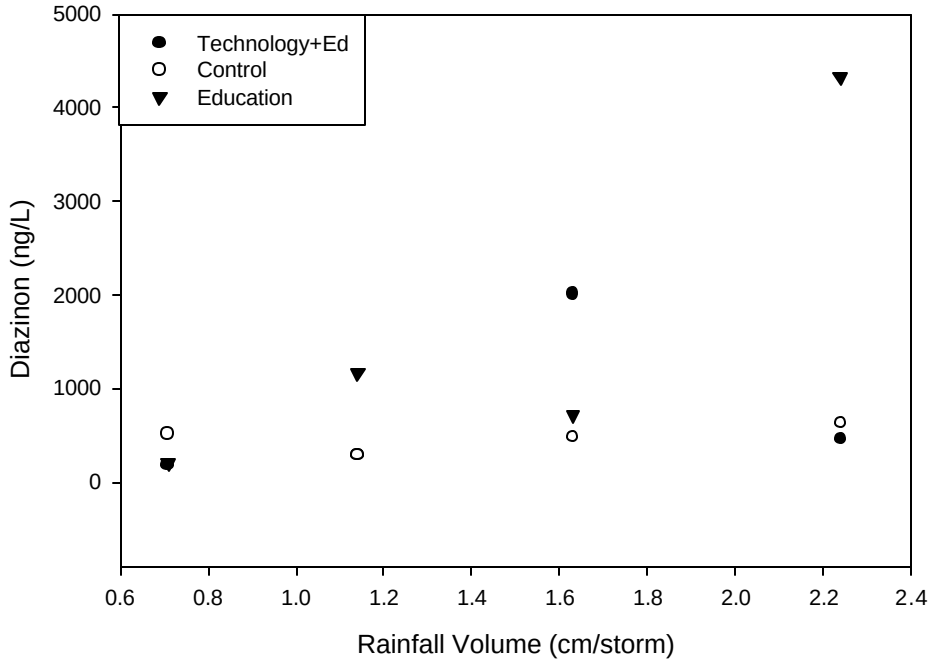


Figure 3. Rainfall characteristics versus diazinon concentration.



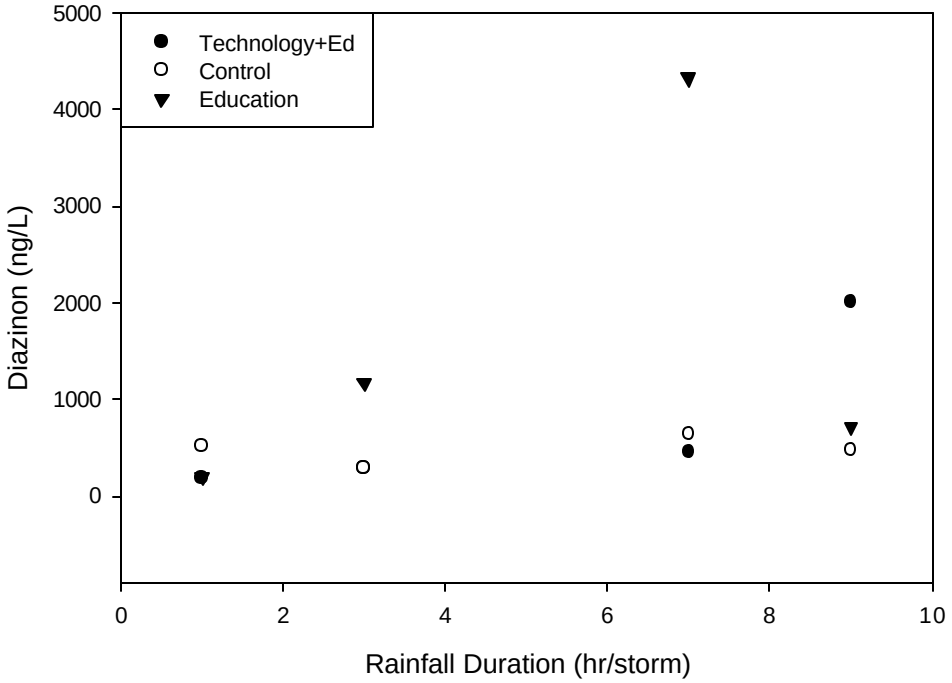


Figure 4. Time concentration series of flow, chlorpyrifos, and diazinon during four storm events at a residential neighborhood in Orange County, CA.

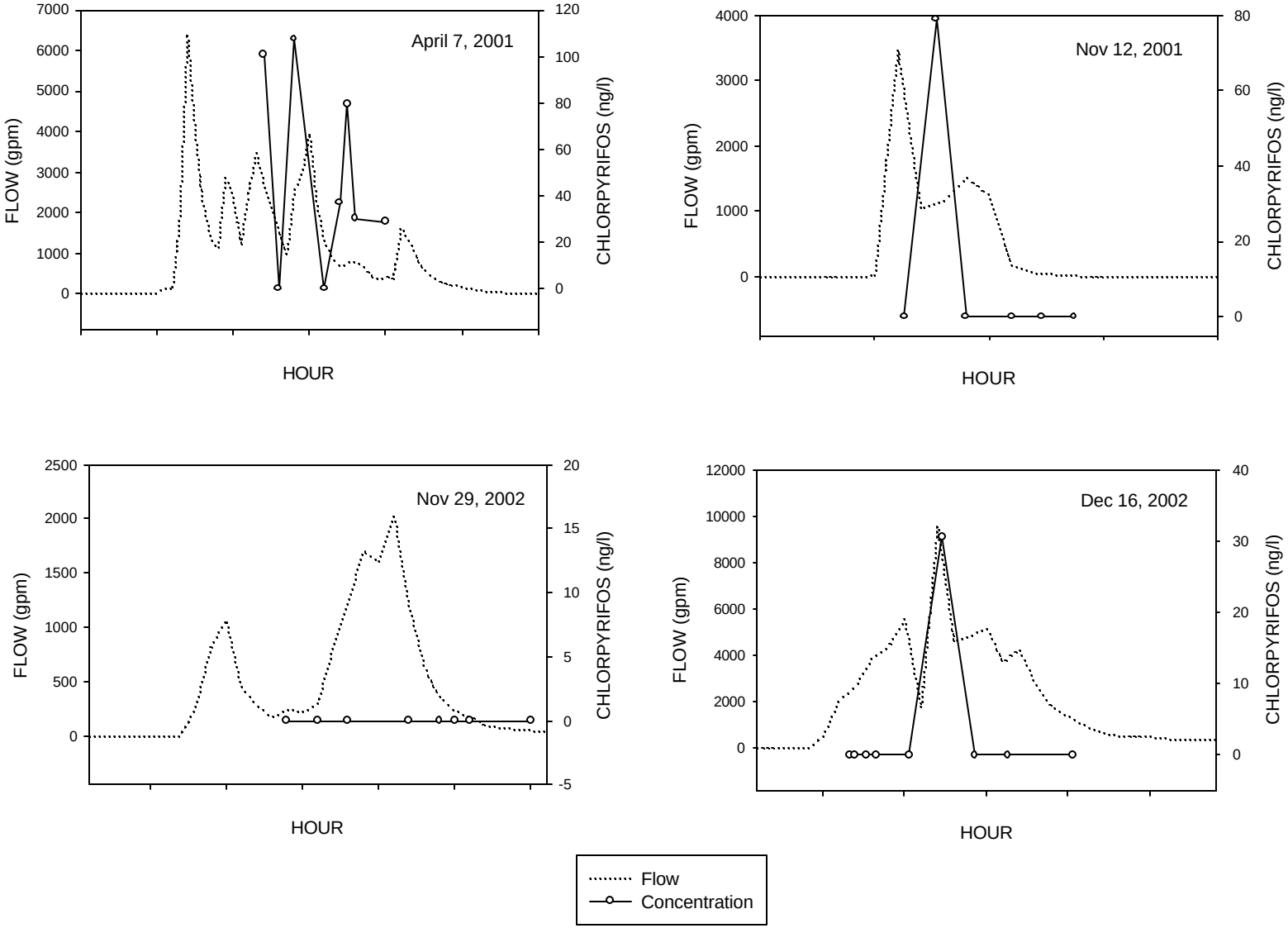


Figure 4. continued

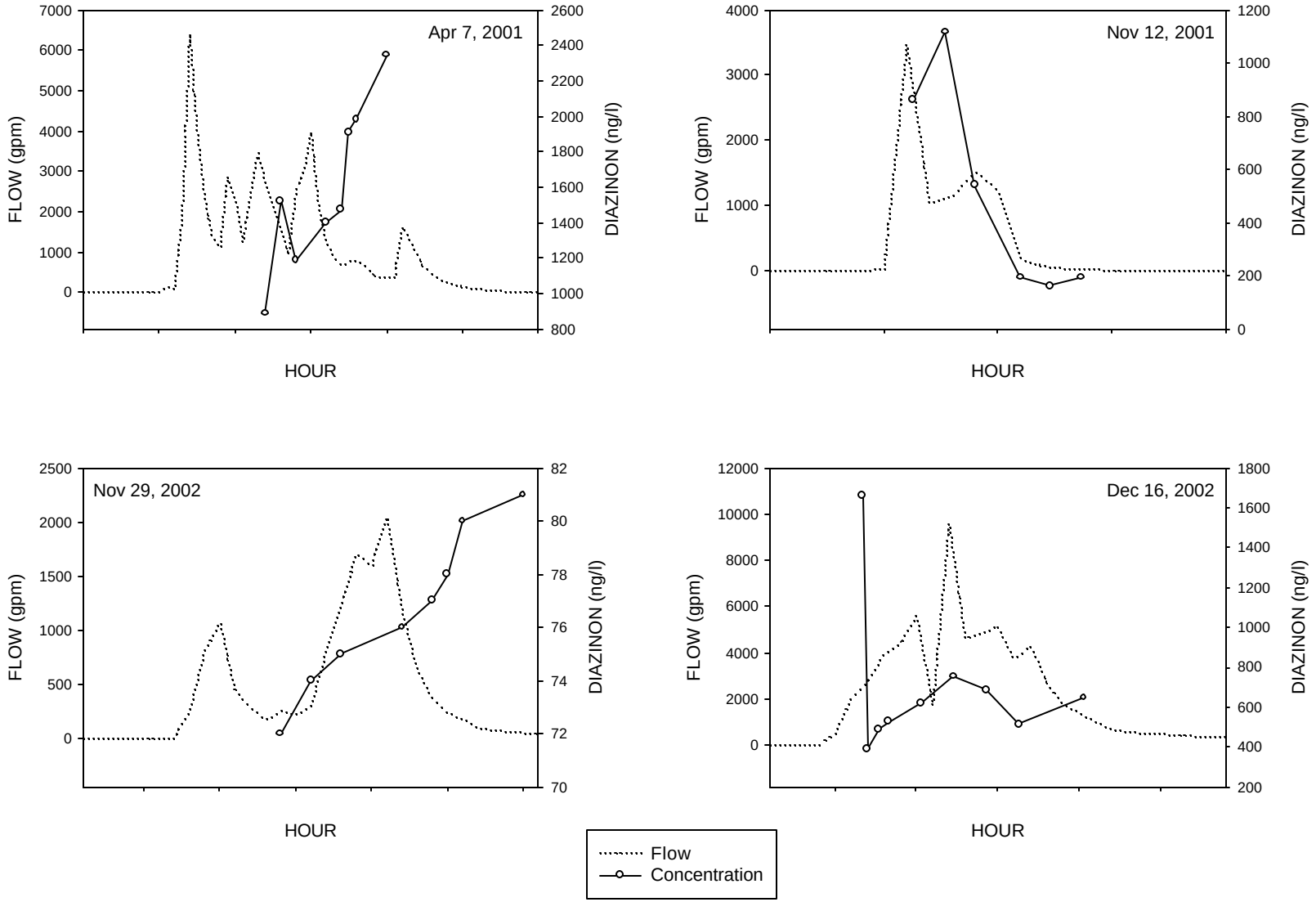


Figure 5. Mean concentrations (± 95% confidence intervals) of diazinon from storm events sampled from three residential neighborhoods in this study and various land uses sampled in Los Angeles County (from Schiff and Sutula 2002).

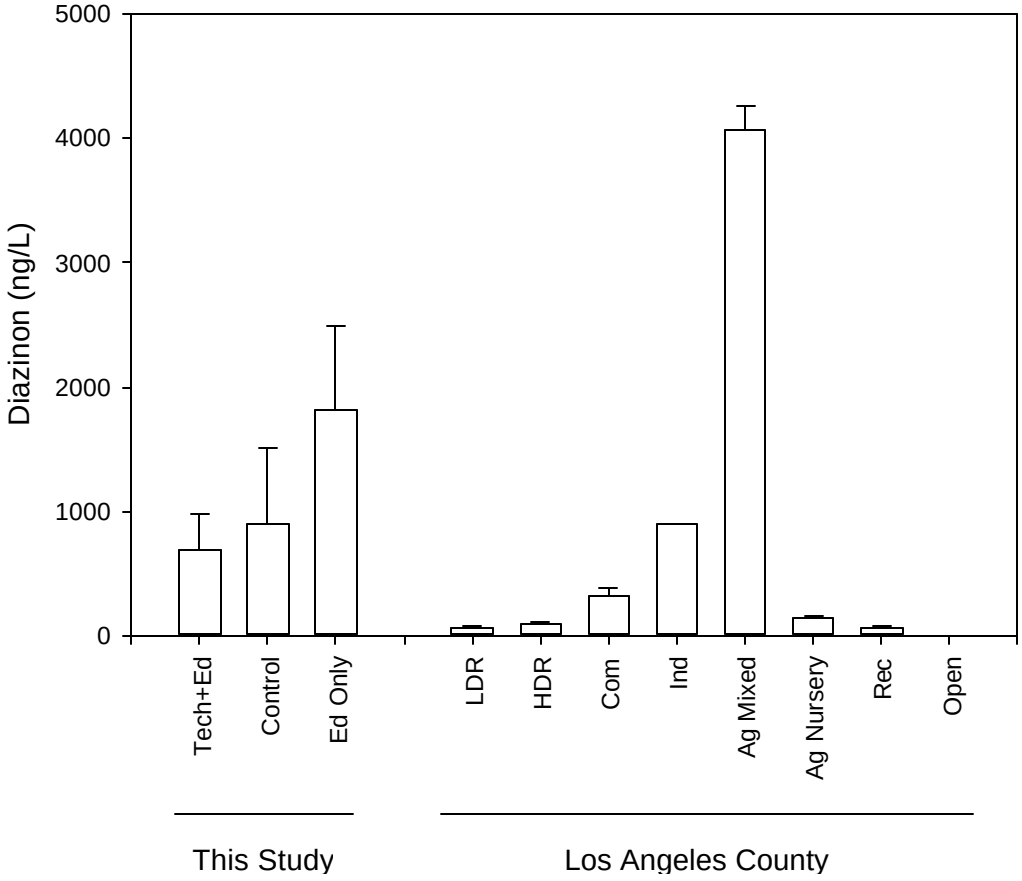
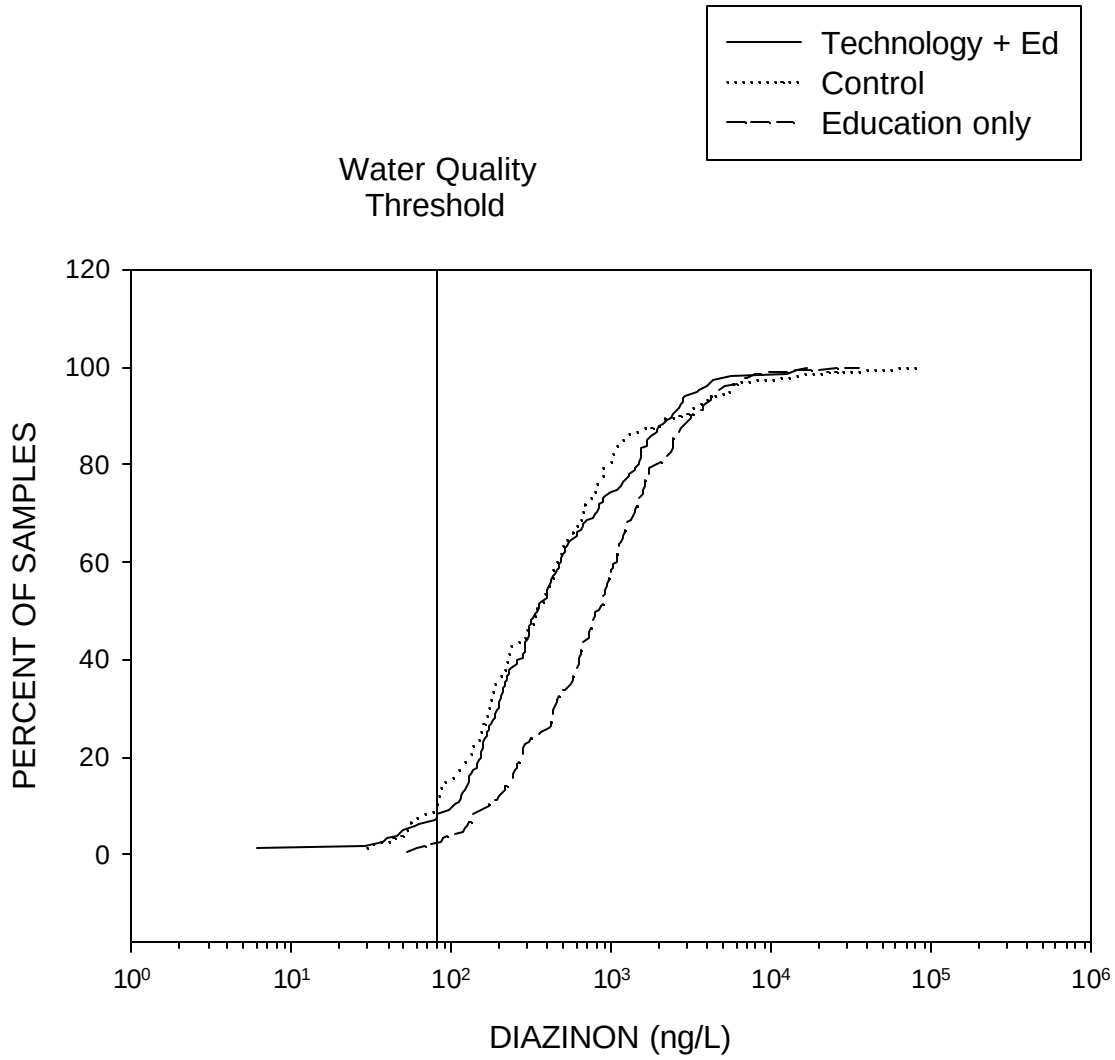


Figure 6. Cumulative distribution frequency of diazinon in dry weather samples taken from three residential neighborhoods in Orange County, CA. The acute water quality threshold = 80 ng/L)



APPENDIX A

Technology-Based BMP

HydroPoint data systems, inc.

news | company | partners | products & services | customer service

WeatherTRAK
ET Everywhere

The WeatherTRAK Solution

The WeatherTRAK ET Controller and Data Service represent the most reliable, cost effective, automated irrigation solution on the market proven to:

- conserve water
- reduce runoff
- promote plant health
- protect landscape investments

The patented WeatherTRAK technology is ideally suited for both residential and commercial sites. It can be can be used with brand new irrigation systems and can easily be retrofit into any current irrigation system by replacing the existing controller or timer.

Order the WeatherTRAK ET Controller today and never have to adjust your irrigation controller again. Realize proven savings and benefits from the most advanced, automated irrigation solution available.

Compare WeatherTRAK

Intelligent Irrigation Scheduling Engine

Each WeatherTRAK ET Controller includes an intelligent, irrigation scheduling engine that automatically calculates a proper watering schedule for your specific landscape. **Never again will you have to guess how much to water or when.**

The proven scheduling engine utilizes a revolutionary approach to landscape irrigation by combining real time weather ET data with landscape specific parameters such as plant type, soil type, slope, sprinkler type, sun exposure and skip days. The result is an irrigation schedule tailored to your landscape that automatically adjusts itself as your weather changes.

Real Time Weather Based ET Data Service

Each day, the WeatherTRAK Data Service transmits location based weather updates in the form of ET values directly to the WeatherTRAK ET Controller via HydroPoint's patented wireless communications system. This unique combination of an intelligent scheduling engine with daily, location specific weather data provides users with the most reliable and cost effective automated landscape irrigation solution.

Tunable Network and Updatable Architecture

Combined, the WeatherTRAK's various technologies represent an 'irrigation network' that can be continually tuned toward greater overall efficiency on both a global and local level, without the need for expensive hardware upgrades to the controller. WeatherTRAK's constant wireless communication between the Data Center and each controller allows HydroPoint to continually pass on improvements made by our experienced team of scientists and engineers in response to valuable customer feedback and continual data analysis.

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HydroPoint data systems, inc.

Product Specs

Residential Controller

The WeatherTRAK residential controller can be configured for 4 to 12 stations, providing independent irrigation schedules for each station. The WeatherTRAK works with most standard irrigation systems and is designed to easily replace existing controllers. Once configured, the WeatherTRAK controller automatically creates the most intelligent irrigation schedule for your landscape based on the changing local weather.

Program Features:

- 4 to 12 station configurations
- Station specific programs automatically generated and run daily
- Program includes days, watering duration and multiple soak and run cycles
- Built-in sprinkler, soil and horticultural databases for easy programming
- Daily local ET transmitted from HydroPoint's Data Center
- Custom Group ID and ET Zone Number features allow for location specific data
- User defined "no water day"
- User defined start times
- User set test cycles
- User set syringe cycle
- Rain pause via optional rain sensor or user entered delay cycle of up to 14 days
- Manual control capabilities with one click transition back to automatic mode
- Station specific Adjust feature allows user to fine tune watering -50% to +25%
- Simple 3 knob interface and large LCD display for easy setup
- One touch copy feature allows user to copy information from station to station
- Pump start / master valve option included
- Advanced mode allows for exact user specified irrigation system precipitation rates

Hardware and Electrical Specifications:

- Retains all program information and user settings in case of power failure without battery
- Transformer Input: 105-125 VAC 60Hz
- Transformer Output: 24 VAC 60Hz
- Physical Dimensions: (indoor mounted unit) 7" H x 6" W x 2" D (included radio antenna extends 4")
- Two amp fuse protects controller
- Optional outdoor weather proof enclosures available
- Optional rain sensor available

Commercial Controller

The WeatherTRAK commercial controller is currently in production and is scheduled for general availability in October 2003. The commercial controller will be configurable for up to 48 stations and will be based on the same proven technology used in the current residential controller. Additionally the commercial controller will include advanced features such as: weather resistant enclosure, remote control, and user definable water window.

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How to Buy

Page 1 of 1

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WeatherTRAK
ET Everywhere
benefits

How to Buy

Please contact HydroPoint's sales team for information on how to purchase WeatherTRAK controllers and service.

Sales Phone - 800.362.8774
Sales Email - sales@hydropoint.com

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http://www.hydropoint.com/products/howtobuy.html

06/30/2003

APPENDIX B

Public Education BMP

Residential Runoff Reduction Study Team & Sponsors:

U.S. Environmental Protection Agency

U.S. Bureau of Reclamation

National Water Research Institute

Irvine Ranch Water District

Municipal Water District of Orange County

Metropolitan Water District of So. California

Southern California Coastal Water Research Project

State Water Resources Control Board

California Department of Pesticide Regulation

CTSI Corporation

Monthly
Landscape
Maintenance Guide
for
Water Use Efficiency
&
Runoff Reduction

Home Landscape Tips and Facts to Reduce WaterRunoff from Your Home

Irrigation:

- Checktheirrigationsystemforleaks,overspray and mistingbyturningoneach valve; adjust sprinkler heads so theysprayonlyon theplants,andrepairbroken,clogged,mis-alignedor leakingheads.Itwillsavemoney and create a healthierlandscape.
- Use a soilprobetochecksoilmoisture.Ifthesoiliswetor moist, youdon'tneedtowater. Take anotherday offfromwatering.If the soiliswet, the wateryouapplywill runoffinto thestreetandouttothebayandbeaches.
- Look forwetsoilintheshadedareasoftheyard.Turnwaterdowninthoseareasuntilthe soildries.
- Remember, turf(grass) isthehighestwater usingplantintheyard.Allotherplantstake 25%-50%lesswaterthanturf. Plants willbehealthierwhenthey receive the rightamountof water.
- Turn sprinklersystemsoffbeforerainstorms. Useasoilprobetoevaluatesoilmoistureafter rains andbefore turning irrigationcontrollers backon.Too much watercanreduceplant healthandappearance.

Fertilization:

- Fertilizer causesplantstogrow faster, resultinginmoremowingandpruningandgreater wateruse.Limitapplicationstoreduceyardwork.
- Followinstructions on fertilizerlabel.A littlefertilizer isgood;alotofferfertilizer is notbetter.
- Fertilizer,usedimproperly,becomes a toxicchemical.Apply thefertilizeronlytothe plants/soil. Donotletthefertilizergetonsidewalks,patiosandstreets,whereitwashesinto stormdrains.
- Use "slowrelease" fertilizer(askyourgarden center forbrands)to producean even,long-lastinggreenappearance inyouryard. UsetheMonthlyLandscapeGuidecalendarfor fertilizer timing.
- Note:specialtyplantssuchasroses,annualsandperennialsmay require differentfertilizer applications.Followguidelinesforthoseplantswithwaterrunoffinmind.

Weed&PestControl:

- Look closely atyourplants.Ifthedamagefrominsects isnotgreat,don'tapplypesticides. Pest controlchemicalsalsokillbeneficialinsects,suchasladybugsandlacewings.
- Tryusingahardsprayofwaterto"knock"insectsoffofplants.Thisiseffectiveforaphids and grasshoppers, for example.
- Alightmixtureofdishsoaporinsecticidalsoap(fromnurseries)iseffectiveonmanygarden insects,andisbio-degradableintheenvironment.Usesoapstospraydirectlyoninsect-infestedplants.
- Aneasywaytocontrolweedsintheyardiswitha2"layer oforganicmulch.Mulchwillkeep most weeds from germinatingandweedseed from taking rootin your yard.
- Use compostedorganicmulchforthebestresults.Itwillsupplynutrientstothesoil,keep weedsdownandhelpto retain water in thesoil.Donotusegrass clippingsorshreddedwood chips.Bothwillrobthesoilofnutrients.
- Use chemicalsinthegardenonlyasdirectedonthecontainerlabels.Disposeofunused gardenchemicalsinaresponsiblemanner.Don'tletgardenchemicalsgetintothewaterways and pollute thebaysand beaches.

Savingmoney,havinga healthylandscapeand improving thelocal environment go handinhand.

Glossary(continued)

frompetwastein to local waterways, causingpollution.

Watering Schedule

Theschedulingofhowoftentoruntheirrigationsystemtowatertheyard. See the **MonthlyLandscapeMaintenanceGuide** calendarforsuggested water days.Iftheguideshows **3▶2** for thatmonthitmeans thatthe weatherischanging,gettingcooler.You may start the month watering3 days perweekbutcanlaterreducewateringto two days per week. If the guide shows **4▶5** theweathergenerally gets warmer, andmayrequirean extradayofirrigation.

UsingtheMonthly Landscape Maintenance Guide

Tohaveahealthyyardandtousewaterresourcesefficiently,refertothe MonthlyLandscapeMaintenanceGuidecalendar.Thiscalendarisbasedon university research and the maintenance practices of landscape professionals.The guide is specific to Orange County soils and historic weather patterns.Thisisaguideonly. This guide does not hold public agencies responsible for the health and appearance of your home landscape.

Thisguideisnotintendedtoincreaseyouruseofwater,fertilizerorother gardenproducts.

Thisguideisintendedtoincrease awareness ofwaterandchemicalusein the home landscape with the goal to decrease waterrunoff and water pollution.

Glossary (continued)

Glossary of Landscape Terms

Mulch
Organicmaterials,generallycompost,thatcoverthesoilsurfaceto reduce weedgrowth,providesoilnutrientsand improve soil waterholding capacity. Apply atleast 2 inchesoforganic mulch forthe bestresults.

Nitrogen
Themostnecessary ofplantnutrients.Most plants, particularlyturf grass, needregular applicationsofnitrogenfor green healthy growth.

Overspray
Spray fromsprinklersthat hitsstreets,walls,sidewalks,cars, etc.,often resultinginwaterrunoff.

Pesticides
Chemicalsandinsecticidal soapsapplied tocontrollandscape pests, including aphids,ants, gophers,whitefly,etc.Application ofpesticides should conform to the recommended amountsas describedon packagelabels/instructions. **Pesticides,whenimproperlyapplied, can behazardoustothe environment.**

Root-ZoneWatering
Apply wateronlyas deepastheplantrootzone.Forturf,the rootzonemay be2inchesto 6 inchesdeep.Use thesoilprobe tocheckthe turfrootdepth inyour yard. Treesbenefit fromdeepwatering during hot months.

SlowReleaseFertilizer
Atype offertilizerthatreleasesnutrientsslowlyover a longerperiodof time. Thisslowreleaseactionallowstheplantstoreceivesmalldosesof nutrients, reducingrapidplant growth or wastedfertilizer. Ask forslow release fertilizer fromgardenersand nurseries.

SoilProbe
A landscapetoolthatisusedtomonitor/evaluatesoil moisture.Directions for using a soil probe:(1)push theprobeintothe soilinanyplantingarea(turf, shrubs,groundcovers,etc.),(2)touchthesoilcorefor moisture, (3) ifthe soilis wet, don'twater;ifthesoil is dry, it'stimetowater.If moisture is reachingsignificantlybelow the roots,waterfewerminutes.

Turf
Grass or lawn. Turfgenerallyrequiresmuchmorewaterthan shrubs or groundcovers.

WaterEfficiency
Applyingonly the amountof water plants need tobehealthy.Plants can't use morewaterthanthe local weather dictates.Use a soil probe tomonitorsoil moisture.

WaterRunoff
Water that runsinto thestreetandstorm drain system.The source ofwater canbe fromyardsprinklers,pavementwash-down,carwashing,etc.The water washes toxins frompesticides,nutrients fromfertilizers andbacteria

BalancedFertilizer
Atype offertilizerthatsuppliesmultiple plant nutrients.Ask for a balanced fertilizerfrom gardeners andnurseriesunlessa specificnutrient problem exists inthesoil.

BlockedSprinklers
Anirrigationsprayheadwhereturfgrass hasgrownhightoblockthenormal sprayofwater;trees,shrubsand groundcovers mayalsoblockthe normal spraypattern ofsprinklerheads.

CloggedSprinklers
Sprinklersthatcannotprovideenoughwaterspreadacrosstheplantarea dueto dirtclogging the sprayemitter.

DeepWatering
Theactionof putting water deeply intothesoil to reachtherootsoftrees; deepwateringgenerallymeanslettingwaterrun**slowly** aroundthe base anddrip-line (leafline)ofa tree to avoid water run-off.Generally deep wateringfortreesis doneonlyonceineachhotmonth.

Dry Spots
Areas ofyour yardthatdo not receiveenoughwater(dueto blocked, sunken,clogged,mistingorbrokensprinklers).

Fertilizer
Chemicals appliedto plants/soilstoaidplantgrowth,healthandappearance. Fertilizersshouldincludemajornutrients (nitrogen, phosphorous,potassium) andminornutrients (such assulfer,iron, magnesium, zinc,etc.).Plantscan only "takeup"small amountsofnutrientsatatime.Applicationsof fertilizer should conformtorecommended amountsasdescribedonpackage labels/instructions. **Fertilizer,whenimproperlyapplied, canbe hazardoustothe environment.**

Herbicides
Chemicals appliedto controlweedsinthelandscape.Applicationof herbicidesshouldconform tothe recommended amounts as describedon packagelabels/instructions. **Herbicides,when improperly applied,can be hazardoustotheenvironment.**

Irrigation System
All partsofthesystemthat deliverwater tothe landscape, including irrigationtimers(controller),undergroundpipe, sprinklerheads,drip irrigationlines,etc.

Misting
Afine mistof water that evaporatesinto theair insteadoflandingonthe plants/soil.Causedbyhigh pressure in thesprinklersystem.

(Continuesonpagefollowing the LandscapeMaintenanceGuideCalendar)

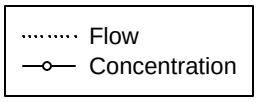
Monthly Landscape Maintenance Guide for Water Use Efficiency & Runoff Reduction

Seasons	Fall		Winter			Early Spring		Late Spring		Summer		
Month	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**
Irrigation System												
Check for: Runoff, from broken, blocked, clogged heads or overspray	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Check for Misting	✓				✓		✓		✓		✓	
Check for Dry Spots	✓							✓	✓	✓	✓	✓
Watering Schedule If two numbers are shown (i.e. 3 ▶ 2) adjust the number of days as indicated sometime during the month.												
Turf (grass) or Annuals Days to water per week	3▶2	2▶1	1	1	1▶2	2▶3	3	3	4	4▶5	4	4▶3
Trees, Shrubs Groundcovers	2▶1	1	1	1	1	1▶2	2	2	2	2	2	2
Deep Watering (trees)									●	●	●	●
Root zone watering: Use the soil probe anytime you think there is too much or too little water in the yard. If soil is moist in the plant root zone, irrigation level is OK. If the soil is very wet, reduce your watering.												
	✓	✓	✓	✓	✓	✓	✓					
Rain potential: Turn controllers to "rain pause" or off. Use a soil probe to determine when to turn controllers back on.												
Fertilizing (specialty plants like roses or annuals may have different fertilizer requirements)												
Turf	Balanced ✓ slow release					Nitrogen slow ✓ release		Nitrogen slow ✓ Release			Nitrogen slow ✓ release	
Groundcovers	Balanced ✓ slow release					Balanced ✓ slow release			Balanced ✓ slow release			
Shrubs							Balanced ✓ slow release					Balanced ✓ slow release
Trees						Balanced ✓ slow release						Balanced ✓ slow release
Weed/Insect Control												
Mulch	✓							✓				
Pesticides (insects)						✓	✓		✓			✓
Herbicides (weeds)					✓		✓				✓ Optional	

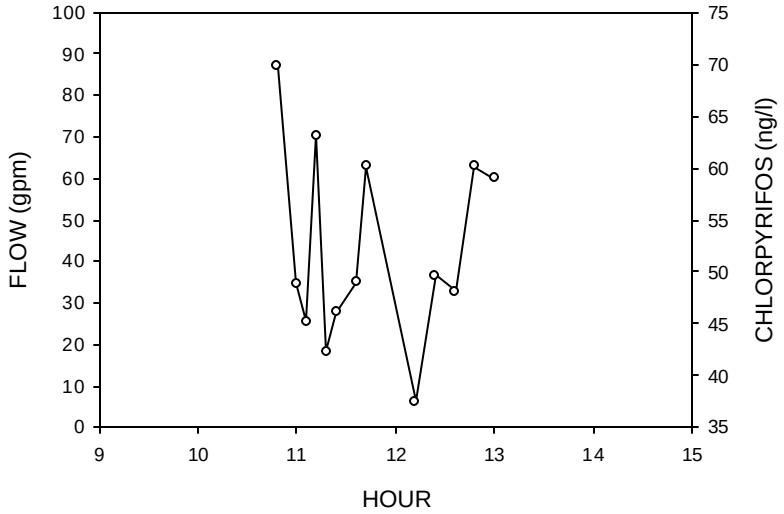
APPENDIX C

Wet Weather Time Concentration Series

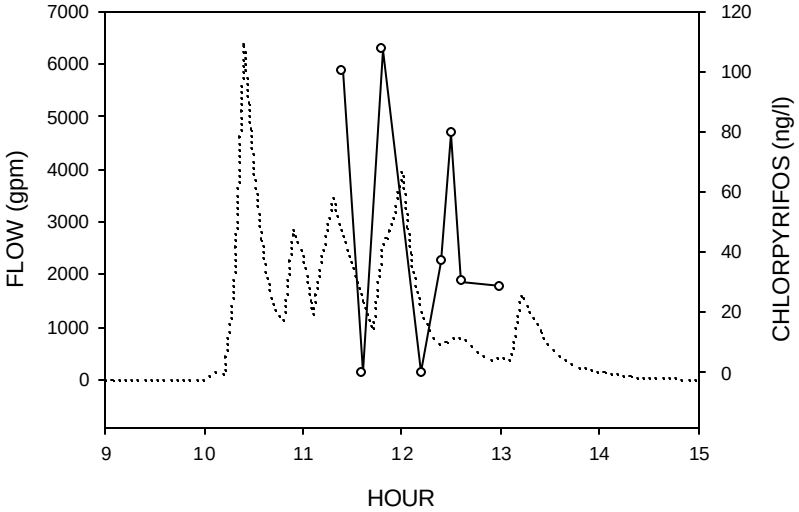
APRIL 7, 2001



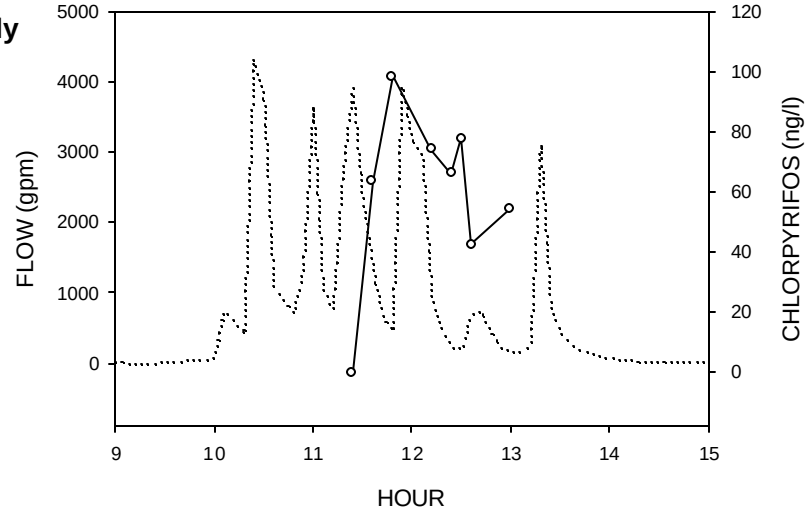
A) Technology + Education



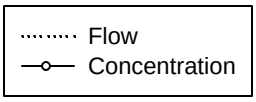
B) Control



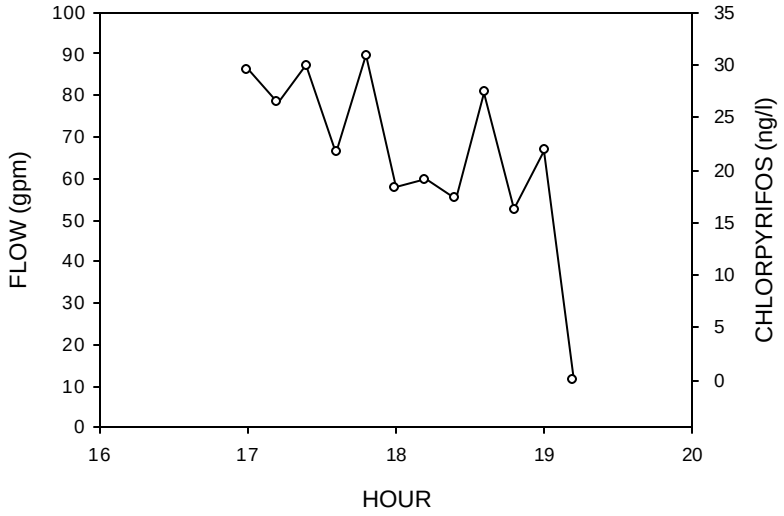
C) Education Only



November 12, 2001



A) Technology + Education



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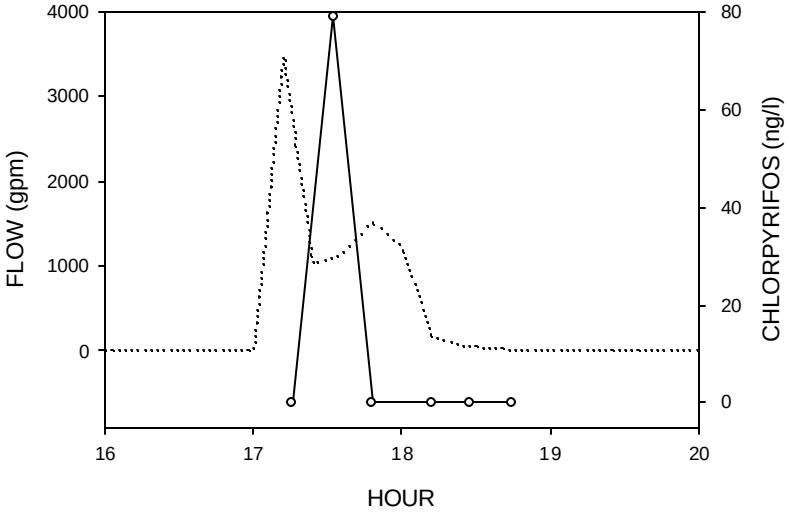

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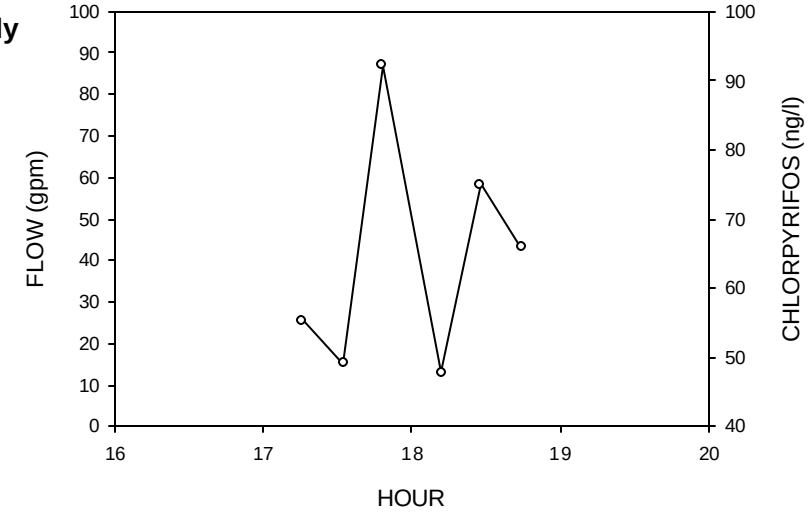
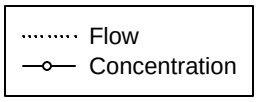
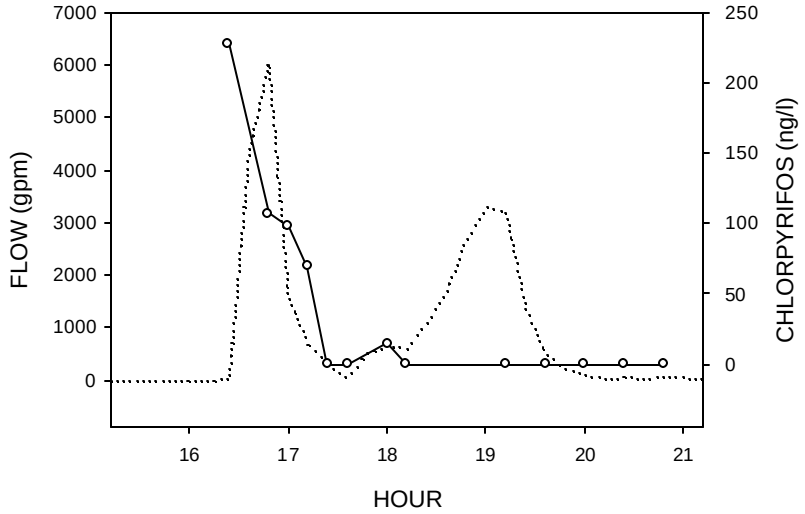


November 29, 2002



A) Technology + Education



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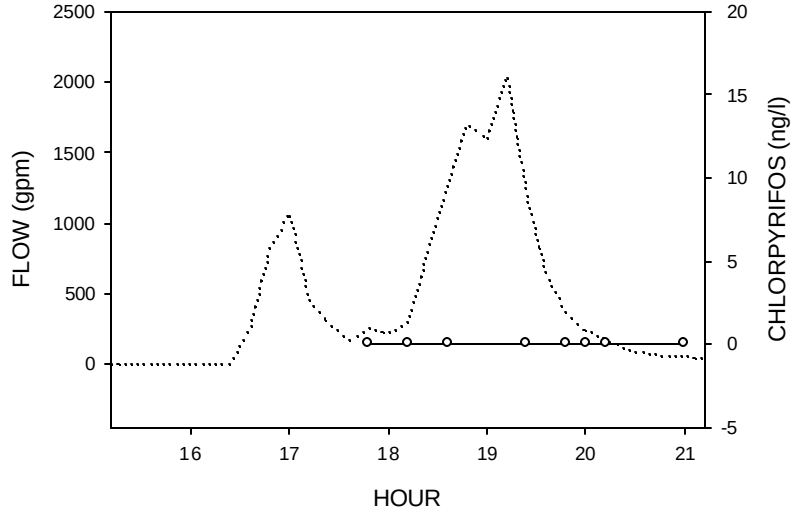
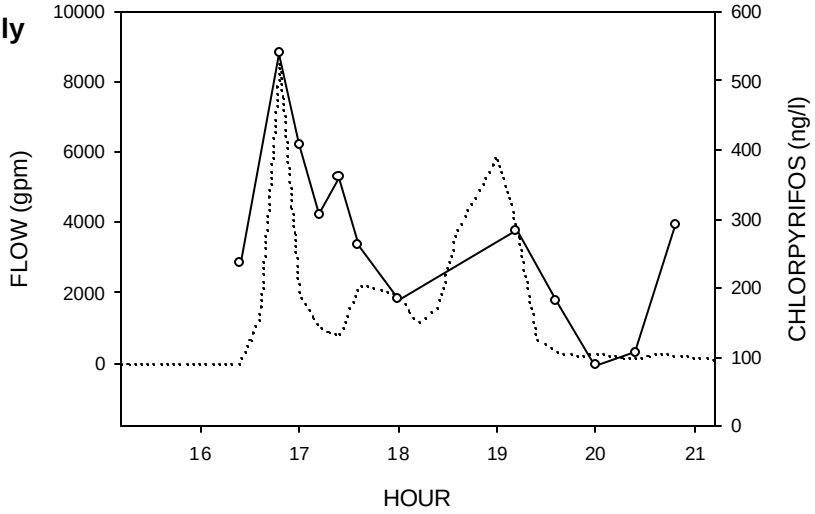
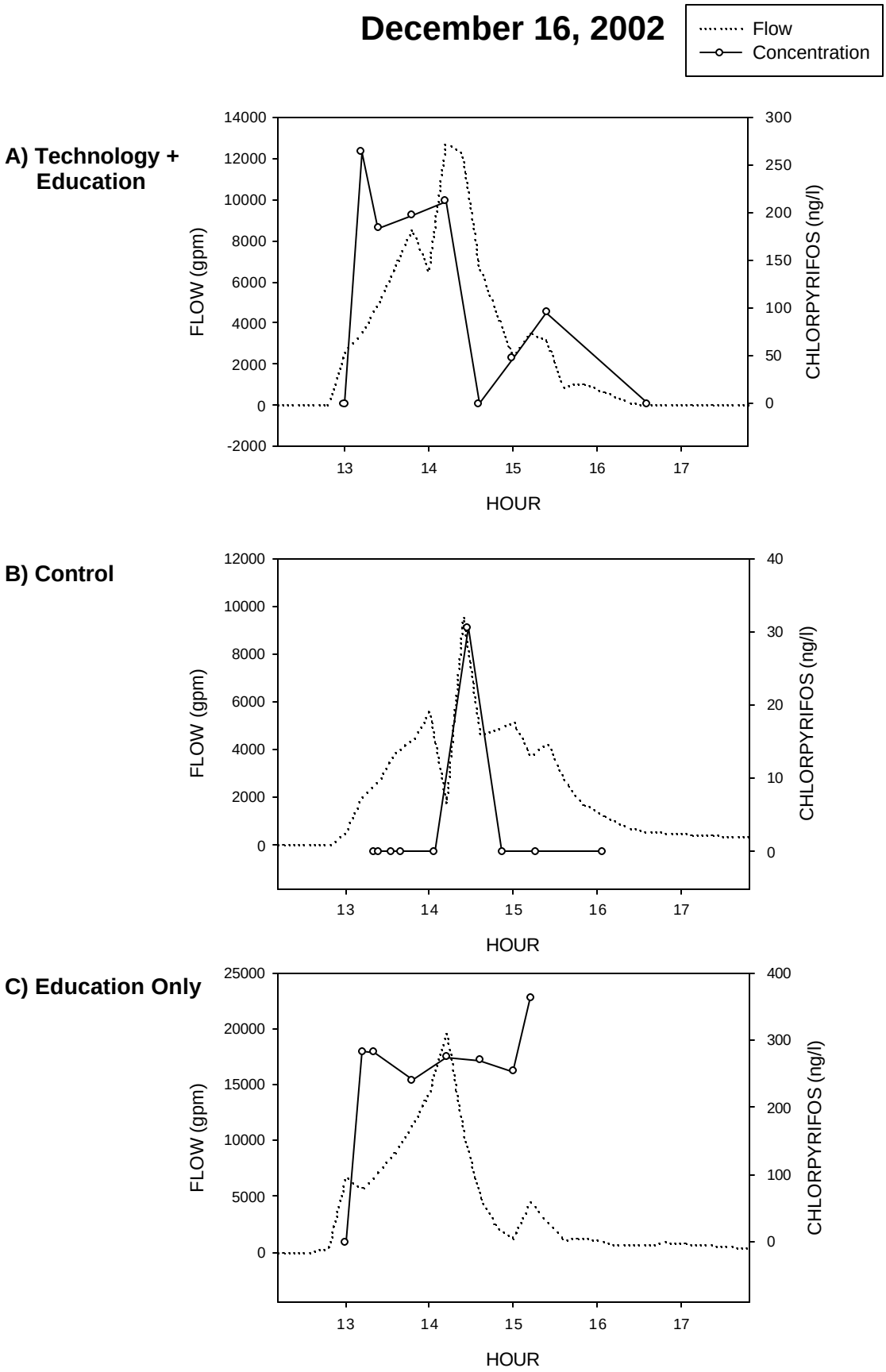
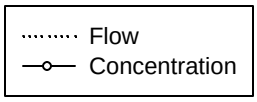


C) Education Only

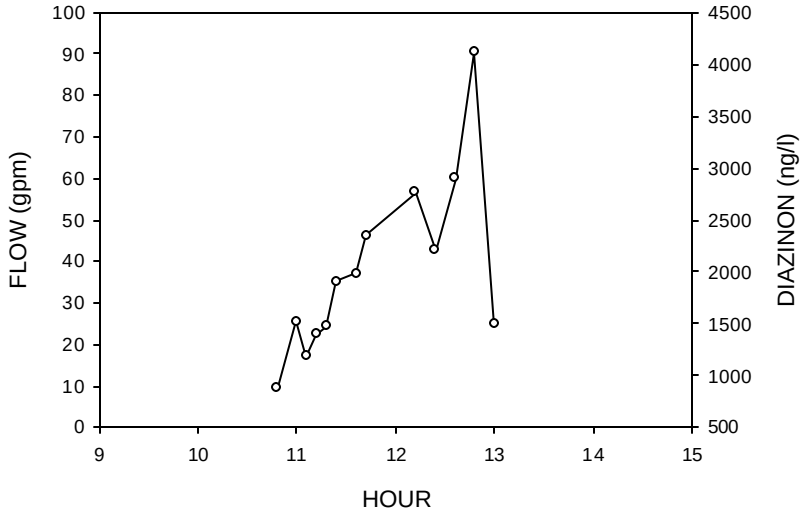



December 16, 2002
Flow
Concentration
A) Technology + Education
FLOW (gpm)
CHLORPYRIFOS (ng/l)
HOUR
B) Control
FLOW (gpm)
CHLORPYRIFOS (ng/l)
HOUR
C) Education Only
FLOW (gpm)
CHLORPYRIFOS (ng/l)
HOUR

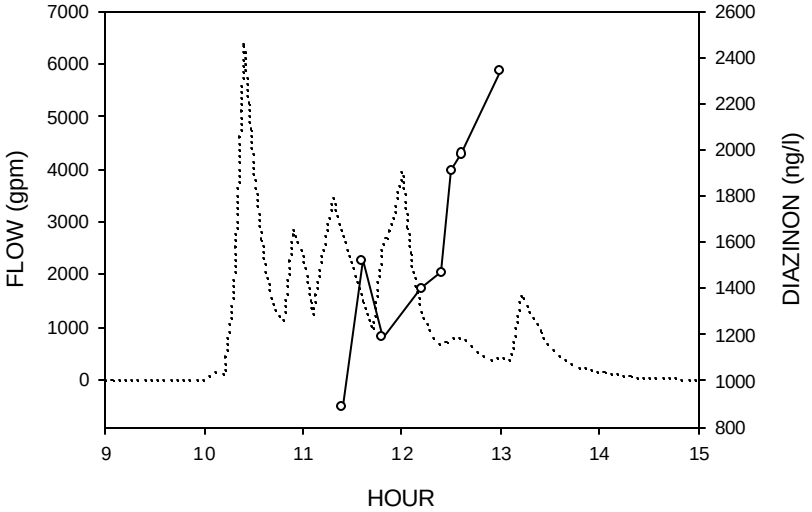
APRIL 7, 2001



A) Technology + Education



B) Control



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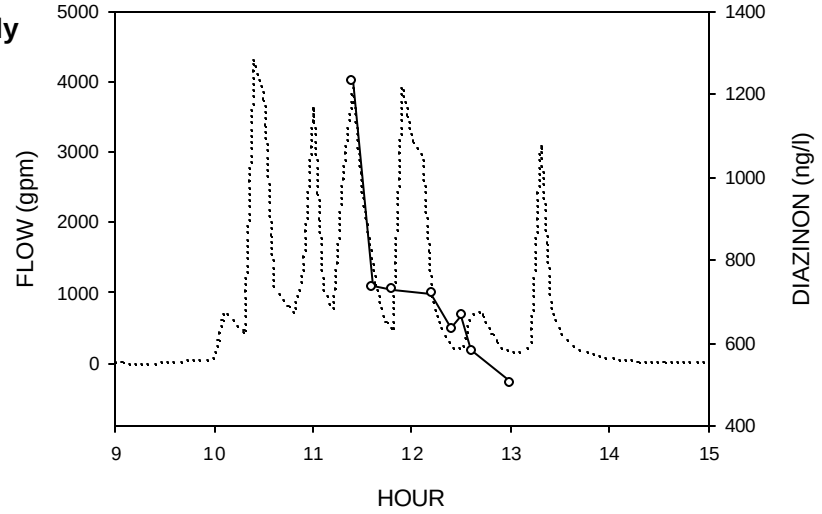
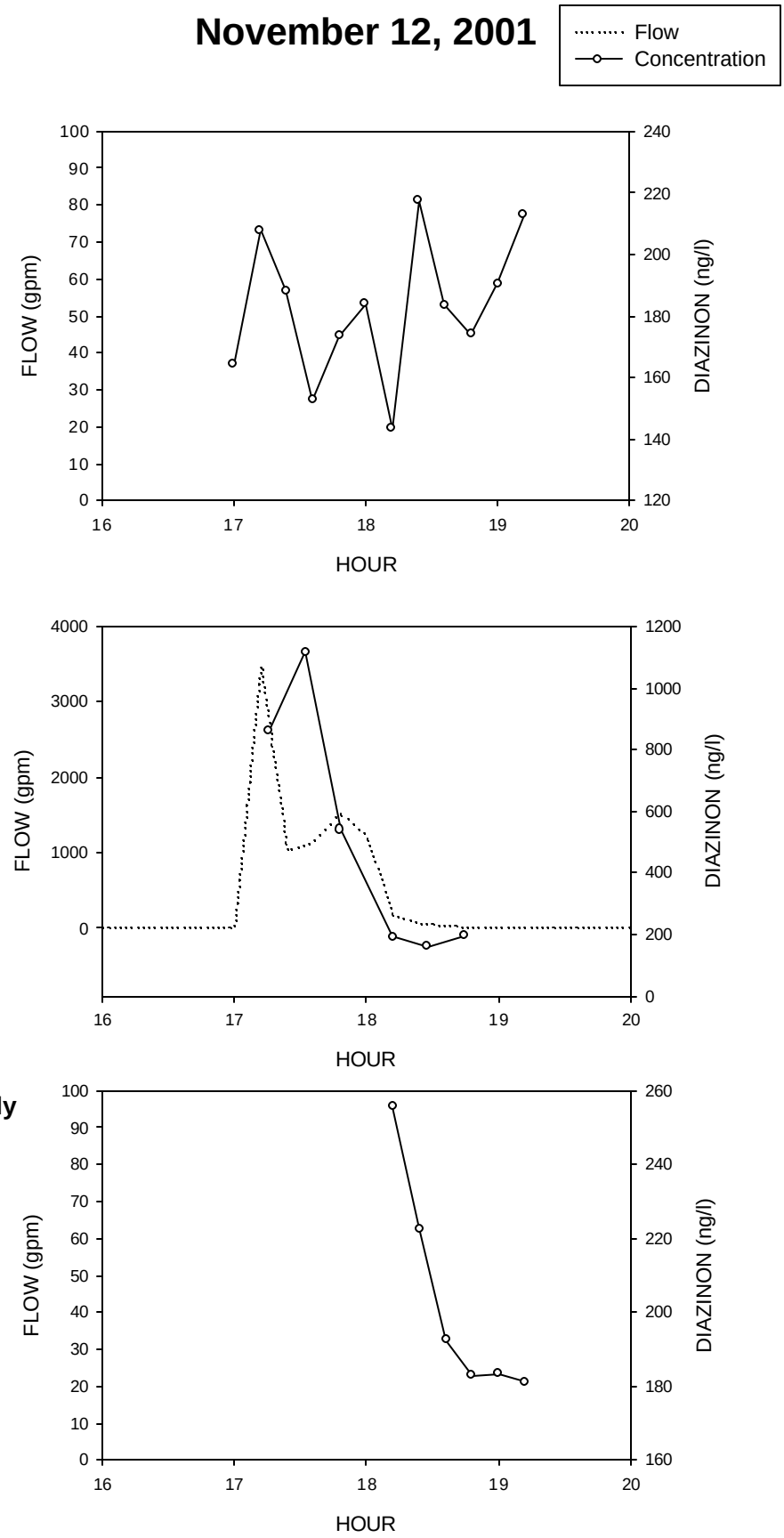


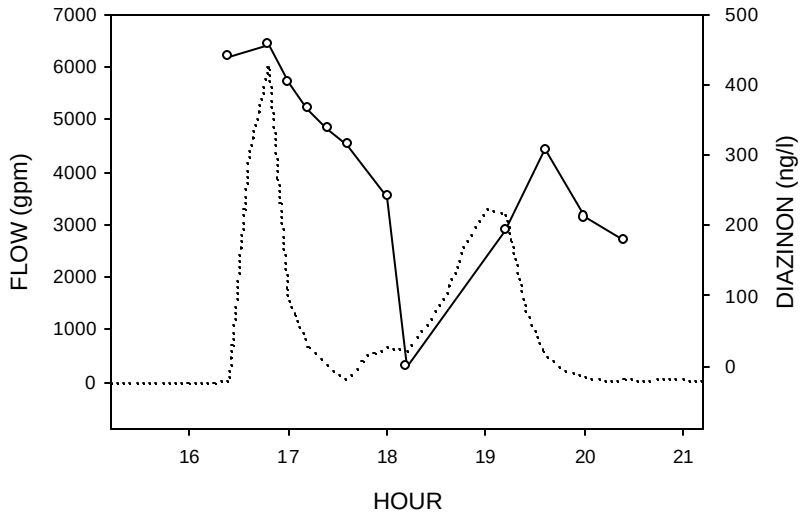
November 12, 2001



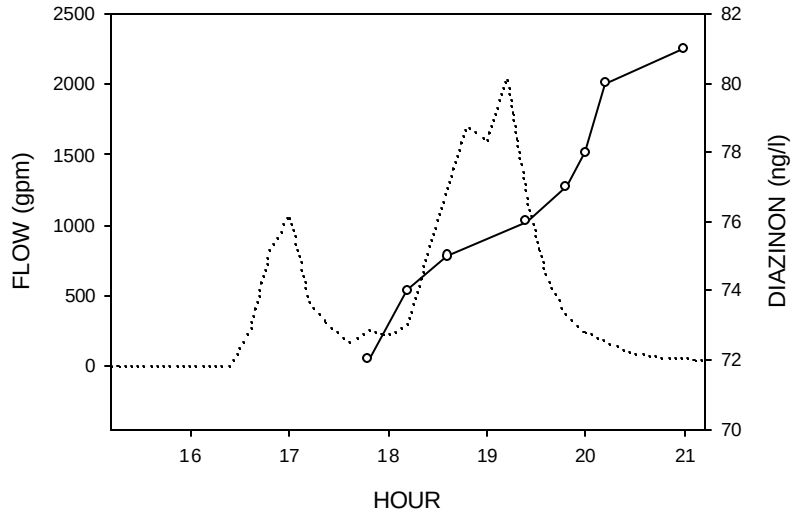
November 29, 2002

Flow
Concentration

A) Technology + Education



B) Control



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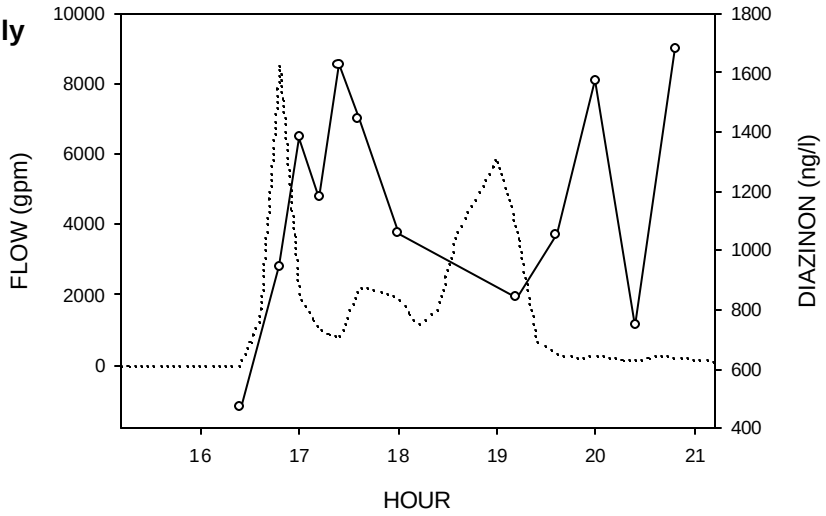
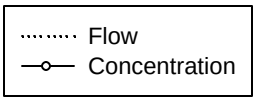
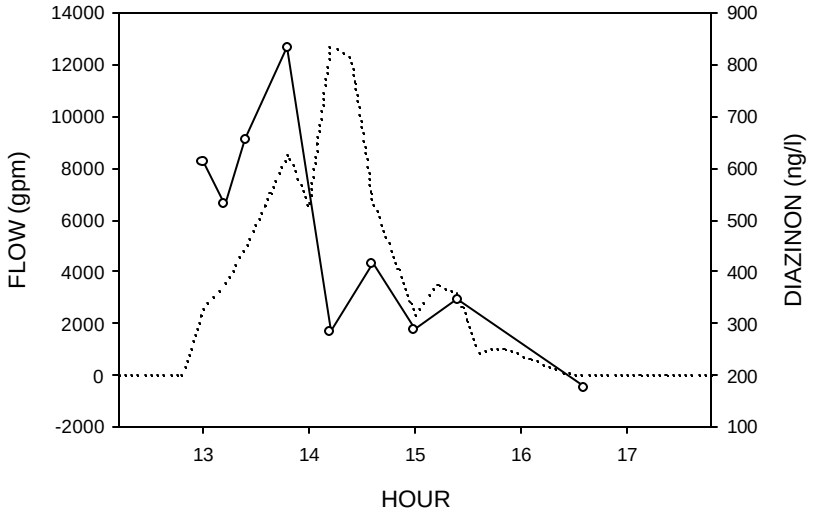


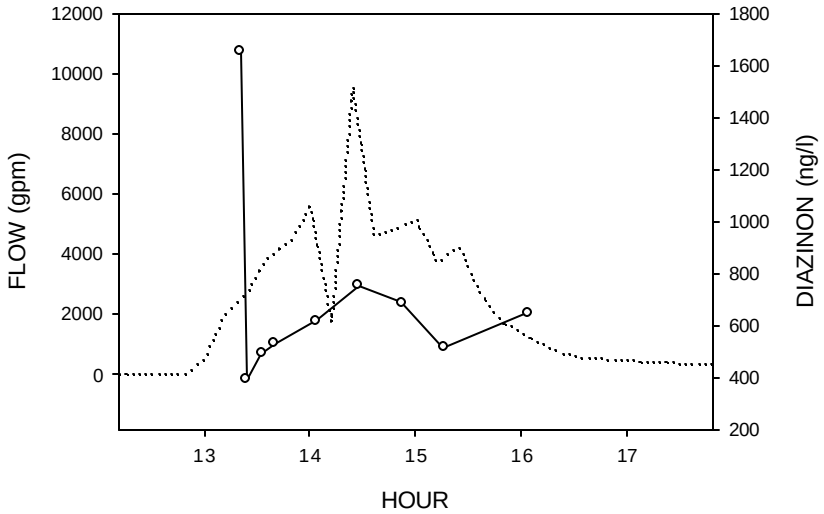
December 16, 2002



A) Technology + Education



B) Control



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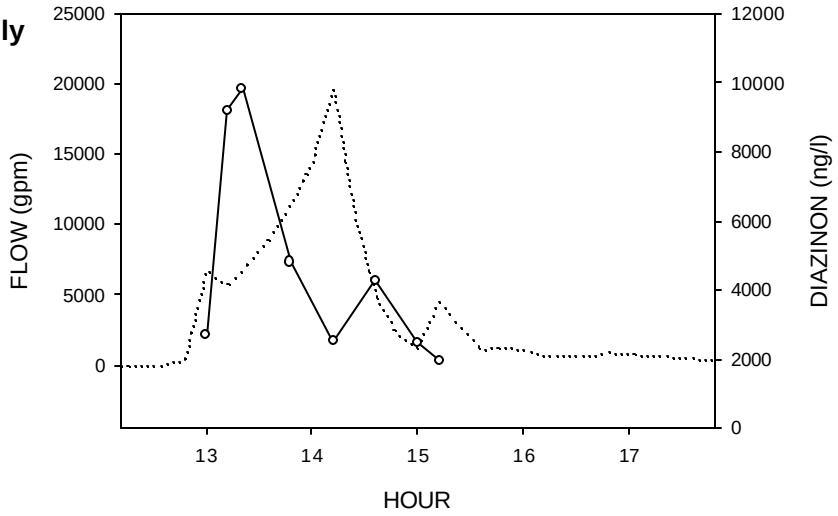

APPENDIX D

Raw Data

SiteID	CollectionDate	CollectionTime	ParameterCode	SampleType	TestMaterial	Qualifier	Result	RL/MDL	MeanDailyFlow(GPM)
RRR1001									
	19-Dec-00	00-Jan-00	Chlorpyrifos	DUP	Freshwater	ND	-99.00	20	8.61
	19-Dec-00	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	8.61
	19-Dec-00	00-Jan-00	Chlorpyrifos	SPK	Freshwater		118.87	20	8.61
	30-Jan-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater	ND	-99.00	20	2.01
	30-Jan-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	2.01
	30-Jan-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		100.00	20	2.01
	01-Feb-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater	ND	-99.00	20	3.83
	01-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.83
	01-Feb-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		100.00	20	3.83
	04-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	6.16
	15-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		29.04	20	4.48
	15-Feb-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater		27.65	20	4.48
	15-Feb-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		100.00	20	4.48
	20-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		29.94	20	1.81
	10-Apr-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater		56.79	20	1.47
	10-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		52.32	20	1.47
	10-Apr-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		100.00	20	1.47
	12-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		30.16	20	3.79
	15-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	5.18
	26-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		11.07	20	15.00
	29-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	24.11
	08-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		90.59	10	10.53
	10-May-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater		32.58	10	5.49
	10-May-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	10	5.49
	10-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		32.47	10	5.49
	13-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		20.86	10	20.72
	22-May-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater	ND	-99.00	10	16.16
	22-May-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	10	16.16
	22-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		10.57	10	16.16

24-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	21.02
24-May-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater	ND	-99.00	10	21.02
24-May-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	10	21.02
03-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	18.67
03-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	50	18.67
05-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		13.82	10	0.30
07-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	0.68
10-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	0.40
10-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	50	0.40
10-Jun-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater	ND	-99.00	10	0.40
10-Jun-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater	ND	-99.00	50	0.40
10-Jun-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	10	0.40
10-Jun-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	50	0.40
19-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		204.30	20	2.18
21-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		213.73	20	3.04
24-Jun-01	00-Jan-00	Chlorpyrifos	Dup	Freshwater		150.24	20	2.14
24-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		160.13	20	2.14
24-Jun-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	2.14
03-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		48.99	20	2.76
05-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		52.42	20	2.12
08-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		62.20	20	2.64
08-Jul-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		62.25	20	2.64
08-Jul-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		1000.00	20	2.64
19-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		123.16	20	2.37
22-Jul-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		52.93	20	2.26
22-Jul-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	2.26
22-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		52.10	20	2.26
02-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.12	20	4.12
02-Sep-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		16.18	20	4.12
02-Sep-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	4.12

11-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		12.96	20	1.91
13-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		11.56	20	1.81
16-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.39	20	2.70
16-Sep-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		15.19	20	2.70
16-Sep-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	2.70
25-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.00	20	6.63
27-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		11.81	20	4.99
30-Sep-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		12.56	20	1.57
30-Sep-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	1.57
30-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		13.42	20	1.57
09-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.16
11-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	4.07
14-Oct-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		10.46	20	4.06
14-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		10.32	20	4.06
14-Oct-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	4.06
23-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		27.70	20	10.81
28-Oct-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		16.13	20	14.77
28-Oct-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	14.77
28-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		17.16	20	14.77
06-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		65.83	20	8.79
15-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		17.90	20	3.05
20-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		13.75	20	0.72
18-Dec-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		53.79	20	0.39
18-Dec-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	0.39
18-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		52.71	20	0.39
20-Dec-01	00-Jan-00	Chlorpyrifos	dup	Freshwater		23.65	20	3.16
20-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		24.69	20	3.16
20-Dec-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	3.16
08-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		11.09	20	5.43
10-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	7.19

13-Jan-02	00-Jan-00	Chlorpyrifos	dup	Freshwater	ND	-99.00	20	6.78
13-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	6.78
13-Jan-02	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	6.78
22-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	9.29
24-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	13.47
27-Jan-02	00-Jan-00	Chlorpyrifos	dup	Freshwater	ND	-99.00	20	10.15
27-Jan-02	00-Jan-00	Chlorpyrifos	SPK	Freshwater		200.00	20	10.15
27-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	10.15
05-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	10.22
07-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	15.70
19-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	7.21
21-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	7.51
09-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		44.10	10	5.13
11-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		47.60	10	2.39
14-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		50.90	10	5.02
23-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		7.50	10	3.61
25-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	4.85
28-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		20.40	10	8.70
07-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	0.93
09-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		10.30	10	3.71
12-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	10.51
21-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		18.20	10	4.63
23-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		9.50	10	3.28
04-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	1.00
09-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		11.60	10	2.01
18-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	5.43
20-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.40	10	3.90
23-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.45	10	5.34
09-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	5.16
11-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		166.00	10	5.24

14-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	3.73
23-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	4.86
25-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	4.55
28-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		9.20	10	4.31
06-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	1.22
08-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		30.60	10	5.30
18-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	2.15
20-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	5.88
22-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		31.90	10	4.77
25-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	16.10
03-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	3.98
05-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		3.60	10	4.24
08-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		14.90	10	3.32
17-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.30	10	0.59
19-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	3.73
22-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	3.99
08-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	2.01
10-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	4.77
20-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		20.30	10	1.86
22-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	1.45
24-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	1.98
27-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	2.12
05-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		14.00	10	0.35
10-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	3.21
19-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		23.00	10	1.29
21-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	2.63
25-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		47.10	10	0.97
19-Dec-00	00-Jan-00	Diazinon	DUP	Freshwater		1103.46	20	8.61
19-Dec-00	00-Jan-00	Diazinon	Result	Freshwater		1151.54	20	8.61
19-Dec-00	00-Jan-00	Diazinon	SPK	Freshwater		1243.62	20	8.61

30-Jan-01	00-Jan-00	Diazinon	DUP	Freshwater		173.05	20	2.01
30-Jan-01	00-Jan-00	Diazinon	Result	Freshwater		180.10	20	2.01
30-Jan-01	00-Jan-00	Diazinon	SPK	Freshwater		100.00	20	2.01
01-Feb-01	00-Jan-00	Diazinon	DUP	Freshwater		509.53	20	3.83
01-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		507.36	20	3.83
01-Feb-01	00-Jan-00	Diazinon	SPK	Freshwater		100.00	20	3.83
04-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		184.81	20	6.16
15-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		62.75	20	4.48
15-Feb-01	00-Jan-00	Diazinon	DUP	Freshwater		60.57	20	4.48
15-Feb-01	00-Jan-00	Diazinon	SPK	Freshwater		100.00	20	4.48
20-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		550.72	20	1.81
10-Apr-01	00-Jan-00	Diazinon	DUP	Freshwater		5660.17	20	1.47
10-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		5611.52	20	1.47
10-Apr-01	00-Jan-00	Diazinon	SPK	Freshwater		100.00	20	1.47
12-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		514.02	20	3.79
15-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		314.93	20	5.18
26-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		128.11	20	15.00
29-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		499.47	20	24.11
08-May-01	00-Jan-00	Diazinon	Result	Freshwater		105.90	10	10.53
10-May-01	00-Jan-00	Diazinon	DUP	Freshwater		144.99	10	5.49
10-May-01	00-Jan-00	Diazinon	SPK	Freshwater		200.00	10	5.49
10-May-01	00-Jan-00	Diazinon	Result	Freshwater		158.74	10	5.49
13-May-01	00-Jan-00	Diazinon	Result	Freshwater	ND	-99.00	10	20.72
22-May-01	00-Jan-00	Diazinon	DUP	Freshwater		4218.82	10	16.16
22-May-01	00-Jan-00	Diazinon	SPK	Freshwater		200.00	10	16.16
22-May-01	00-Jan-00	Diazinon	Result	Freshwater		4341.09	10	16.16
24-May-01	00-Jan-00	Diazinon	Result	Freshwater		174.56	10	21.02
24-May-01	00-Jan-00	Diazinon	DUP	Freshwater		185.34	10	21.02
24-May-01	00-Jan-00	Diazinon	SPK	Freshwater		200.00	10	21.02
03-Jun-01	00-Jan-00	Diazinon	Result	Freshwater		2442.03	10	18.67

03-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	2086.52	50	18.67
05-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	145.03	10	0.30
07-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	156.82	10	0.68
10-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1518.39	10	0.40
10-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1528.50	20	0.40
10-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1528.50	50	0.40
10-Jun-01	00-Jan-00	Diazinon	DUP	Freshwater	1502.82	50	0.40
10-Jun-01	00-Jan-00	Diazinon	DUP	Freshwater	1502.82	20	0.40
10-Jun-01	00-Jan-00	Diazinon	DUP	Freshwater	1524.97	10	0.40
10-Jun-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	10	0.40
10-Jun-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	50	0.40
19-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	80.96	20	2.18
21-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	345.40	20	3.04
24-Jun-01	00-Jan-00	Diazinon	Dup	Freshwater	59.27	20	2.14
24-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	58.25	20	2.14
24-Jun-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	2.14
03-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	145.60	20	2.76
05-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	195.27	20	2.12
08-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	1935.94	20	2.64
08-Jul-01	00-Jan-00	Diazinon	dup	Freshwater	1879.72	20	2.64
08-Jul-01	00-Jan-00	Diazinon	SPK	Freshwater	1000.00	20	2.64
19-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	658.10	20	2.37
22-Jul-01	00-Jan-00	Diazinon	dup	Freshwater	247.82	20	2.26
22-Jul-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	2.26
22-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	255.90	20	2.26
02-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	118.66	20	4.12
02-Sep-01	00-Jan-00	Diazinon	dup	Freshwater	114.86	20	4.12
02-Sep-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	4.12
11-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	303.80	20	1.91
13-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	427.08	20	1.81

16-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	125.75	20	2.70
16-Sep-01	00-Jan-00	Diazinon	dup	Freshwater	128.75	20	2.70
16-Sep-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	2.70
25-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	100.43	20	6.63
27-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	198.41	20	4.99
30-Sep-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	1.57
30-Sep-01	00-Jan-00	Diazinon	dup	Freshwater	149.82	20	1.57
30-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	153.89	20	1.57
09-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	328.81	20	3.16
11-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	603.29	20	4.07
14-Oct-01	00-Jan-00	Diazinon	dup	Freshwater	504.16	20	4.06
14-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	469.82	20	4.06
14-Oct-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	4.06
23-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	288.41	20	10.81
28-Oct-01	00-Jan-00	Diazinon	dup	Freshwater	3125.60	20	14.77
28-Oct-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	14.77
28-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	2683.86	20	14.77
06-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	465.47	20	8.79
15-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	128.86	20	3.05
20-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	399.37	20	0.72
18-Dec-01	00-Jan-00	Diazinon	dup	Freshwater	567.72	20	0.39
18-Dec-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	0.39
18-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	533.39	20	0.39
20-Dec-01	00-Jan-00	Diazinon	dup	Freshwater	1059.21	20	3.16
20-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	1068.03	20	3.16
20-Dec-01	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	3.16
08-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	28.94	20	5.43
10-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	79.87	20	7.19
13-Jan-02	00-Jan-00	Diazinon	dup	Freshwater	46.04	20	6.78
13-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	46.04	20	6.78

13-Jan-02	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	6.78
22-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	136.41	20	9.29
24-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	184.77	20	13.47
27-Jan-02	00-Jan-00	Diazinon	dup	Freshwater	160.95	20	10.15
27-Jan-02	00-Jan-00	Diazinon	SPK	Freshwater	200.00	20	10.15
27-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	167.45	20	10.15
05-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	48.91	20	10.22
07-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	218.30	20	15.70
19-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	173.65	20	7.21
21-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	211.59	20	7.51
09-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	831.00	10	5.13
11-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	290.00	10	2.39
14-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	257.00	10	5.02
23-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	787.00	10	3.61
25-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	39.10	10	4.85
28-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	424.00	10	8.70
07-May-02	00-Jan-00	Diazinon	Result	Freshwater	164.00	10	0.93
09-May-02	00-Jan-00	Diazinon	Result	Freshwater	128.00	10	3.71
12-May-02	00-Jan-00	Diazinon	Result	Freshwater	168.00	10	10.51
21-May-02	00-Jan-00	Diazinon	Result	Freshwater	225.00	10	4.63
23-May-02	00-Jan-00	Diazinon	Result	Freshwater	313.00	10	3.28
04-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	3921.50	10	1.00
09-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	390.00	10	2.01
18-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	218.00	10	5.43
20-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	290.00	10	3.90
23-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	3378.50	10	5.34
09-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	1398.00	10	5.16
11-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	16590.00	10	5.24
14-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	282.00	10	3.73
23-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	114.00	10	4.86

	25-Jul-02	00-Jan-00	Diazinon	Result	Freshwater		917.00	10	4.55
	28-Jul-02	00-Jan-00	Diazinon	Result	Freshwater		2516.00	10	4.31
	06-Aug-02	00-Jan-00	Diazinon	Result	Freshwater		238.00	10	1.22
	08-Aug-02	00-Jan-00	Diazinon	Result	Freshwater		2651.00	10	5.30
	18-Aug-02	00-Jan-00	Diazinon	Result	Freshwater		841.00	10	2.15
	20-Aug-02	00-Jan-00	Diazinon	Result	Freshwater		292.50	10	5.88
	22-Aug-02	00-Jan-00	Diazinon	Result	Freshwater		774.00	10	4.77
	25-Aug-02	00-Jan-00	Diazinon	Result	Freshwater		6.10	10	16.10
	03-Sep-02	00-Jan-00	Diazinon	Result	Freshwater		171.00	10	3.98
	05-Sep-02	00-Jan-00	Diazinon	Result	Freshwater		134.00	10	4.24
	08-Sep-02	00-Jan-00	Diazinon	Result	Freshwater		442.00	10	3.32
	17-Sep-02	00-Jan-00	Diazinon	Result	Freshwater		1271.00	10	0.59
	19-Sep-02	00-Jan-00	Diazinon	Result	Freshwater		660.00	10	3.73
	22-Sep-02	00-Jan-00	Diazinon	Result	Freshwater		979.00	10	3.99
	08-Oct-02	00-Jan-00	Diazinon	Result	Freshwater		223.00	10	2.01
	10-Oct-02	00-Jan-00	Diazinon	Result	Freshwater		159.00	10	4.77
	20-Oct-02	00-Jan-00	Diazinon	Result	Freshwater		190.00	10	1.86
	22-Oct-02	00-Jan-00	Diazinon	Result	Freshwater		228.00	10	1.45
	24-Oct-02	00-Jan-00	Diazinon	Result	Freshwater		96.30	10	1.98
	27-Oct-02	00-Jan-00	Diazinon	Result	Freshwater		220.00	10	2.12
	05-Nov-02	00-Jan-00	Diazinon	Result	Freshwater		487.00	10	0.35
	10-Nov-02	00-Jan-00	Diazinon	Result	Freshwater		197.00	10	3.21
	19-Nov-02	00-Jan-00	Diazinon	Result	Freshwater		1660.00	10	1.29
	21-Nov-02	00-Jan-00	Diazinon	Result	Freshwater		77.80	10	2.63
	25-Nov-02	00-Jan-00	Diazinon	Result	Freshwater		151.00	10	0.97
RRR1004									
	04-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		65.00	20	3.42
	15-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	25.24
	18-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	9.76
	20-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		85.41	20	53.51

01-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	28.93
04-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	7.25
07-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	5.28
13-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		125.25	20	6.84
15-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		74.86	20	16.15
18-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		146.90	20	13.62
29-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	2.67
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		100.52	20	632.03
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	632.03
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		107.51	20	632.03
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	632.03
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		37.14	20	632.03
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		79.62	20	632.03
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		30.29	20	632.03
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		28.70	20	632.03
10-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	14.43
10-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	14.43
12-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	1.94
24-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.46
26-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		9.30	20	1.86
29-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.76
10-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	95.66
13-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	60.78
22-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	94.65
24-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	104.67
03-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	4.17
05-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	1.26
07-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	2.27
07-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	50	2.27
10-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	1.35

19-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		73.00	20	6.10
21-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		52.99	20	11.53
24-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		22.94	20	9.83
03-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	11.80
08-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		283.00	20	15.20
17-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		19.28	20	15.67
19-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	12.96
22-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		139.12	20	16.57
28-Aug-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	52.17
30-Aug-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	51.07
02-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	42.40
11-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.47	20	5.71
13-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		18.54	20	11.22
16-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		14.91	20	11.97
25-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	12.31
27-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	10.87
30-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	17.46
09-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	14.46
11-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.09
14-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	5.83
23-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	12.81
25-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		10.51	20	10.73
28-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		10.24	20	9.88
06-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	19.22
08-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	14.55
15-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		67.69	20	33.91
20-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		33.12	20	59.87
25-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		40.39	20	166.11
04-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		30.95	20	5.71
06-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		15.65	20	1.68

16-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		24.13	20	20.73
18-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		22.97	20	8.40
20-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	33.01
23-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		23.54	20	5.21
08-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		23.36	20	7.13
10-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		8.54	20	5.28
13-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	8.45
05-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	8.13
07-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	10.63
19-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	5.54
21-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	6.95
24-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	4.71
05-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	2.77
07-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	110.44
19-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	1.99
21-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	1.62
24-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	2.02
09-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		7.30	10	6.69
11-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		4.80	10	6.83
14-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		6.80	10	13.64
23-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		15.00	10	7.41
07-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		13.50	10	7.04
09-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	6.83
21-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		11.90	10	15.82
23-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	21.51
26-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	10.98
06-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		12.25	10	10.30
18-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		22.60	10	21.45
23-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	20.30
09-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	32.81

11-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	60.44
14-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	85.02
23-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	4.52
25-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		15.00	10	5.04
28-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		17.40	10	6.00
06-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	22.99
08-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	18.24
18-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	16.07
20-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	11.78
22-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	11.70
25-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	9.28
03-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	3.57
05-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		14.80	10	19.71
08-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	6.81
17-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	11.07
19-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	9.31
22-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	14.58
08-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	10.15
20-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	9.84
22-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	9.97
24-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	9.71
27-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		11.50	10	9.06
05-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		17.20	10	9.20
10-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	74.70
21-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	14.32
25-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	18.21
04-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		41401.58	20	3.42
15-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		55.96	20	25.24
18-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		103.35	20	9.76
20-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		3267.81	20	53.51

01-Mar-01	00-Jan-00	Diazinon	Result	Freshwater		42.31	20	28.93
04-Mar-01	00-Jan-00	Diazinon	Result	Freshwater		84.03	20	7.25
07-Mar-01	00-Jan-00	Diazinon	Result	Freshwater		235.64	20	5.28
13-Mar-01	00-Jan-00	Diazinon	Result	Freshwater		152.91	20	6.84
15-Mar-01	00-Jan-00	Diazinon	Result	Freshwater		164.02	20	16.15
18-Mar-01	00-Jan-00	Diazinon	Result	Freshwater		295.58	20	13.62
29-Mar-01	00-Jan-00	Diazinon	Result	Freshwater		695.09	20	2.67
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		361.21	20	632.03
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		325.03	20	632.03
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		506.34	20	632.03
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		658.50	20	632.03
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		430.22	20	632.03
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		661.09	20	632.03
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		216.43	20	632.03
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		684.44	20	632.03
10-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		85.06	20	14.43
10-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		3854.37	20	14.43
12-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		1994.71	20	1.94
24-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		117.80	20	3.46
26-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		227.03	20	1.86
29-Apr-01	00-Jan-00	Diazinon	Result	Freshwater		179.36	20	3.76
10-May-01	00-Jan-00	Diazinon	Result	Freshwater		212.58	10	95.66
13-May-01	00-Jan-00	Diazinon	Result	Freshwater		81.09	10	60.78
22-May-01	00-Jan-00	Diazinon	Result	Freshwater		51.08	10	94.65
24-May-01	00-Jan-00	Diazinon	Result	Freshwater	ND	-99.00	10	104.67
03-Jun-01	00-Jan-00	Diazinon	Result	Freshwater		164.83	10	4.17
05-Jun-01	00-Jan-00	Diazinon	Result	Freshwater		890.50	10	1.26
07-Jun-01	00-Jan-00	Diazinon	Result	Freshwater		1391.94	10	2.27
07-Jun-01	00-Jan-00	Diazinon	Result	Freshwater		1192.41	50	2.27
10-Jun-01	00-Jan-00	Diazinon	Result	Freshwater		490.34	20	1.35

19-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1094.82	20	6.10
21-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	221.22	20	11.53
24-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	170.99	20	9.83
03-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	184.94	20	11.80
08-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	3039.15	20	15.20
17-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	1478.47	20	15.67
19-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	648.85	20	12.96
22-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	4363.23	20	16.57
28-Aug-01	00-Jan-00	Diazinon	Result	Freshwater	813.56	20	52.17
30-Aug-01	00-Jan-00	Diazinon	Result	Freshwater	225.34	20	51.07
02-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	391.21	20	42.40
11-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	230.69	20	5.71
13-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	680.46	20	11.22
16-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	983.39	20	11.97
25-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	3750.36	20	12.31
27-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	997.53	20	10.87
30-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	3026.96	20	17.46
09-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	1082.13	20	14.46
11-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	344.48	20	3.09
14-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	792.29	20	5.83
23-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	272.45	20	12.81
25-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	338.22	20	10.73
28-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	912.41	20	9.88
06-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	729.64	20	19.22
08-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	2508.08	20	14.55
15-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	182.23	20	33.91
20-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	223.95	20	59.87
25-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	378.04	20	166.11
04-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	54.85	20	5.71
06-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	83.97	20	1.68

16-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	134.70	20	20.73
18-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	29.24	20	8.40
20-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	433.73	20	33.01
23-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	50.47	20	5.21
08-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	29.88	20	7.13
10-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	58.68	20	5.28
13-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	121.33	20	8.45
05-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	589.06	20	8.13
07-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	134.63	20	10.63
19-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	83.58	20	5.54
21-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	97.36	20	6.95
24-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	86.72	20	4.71
05-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	107.50	20	2.77
07-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	41.55	20	110.44
19-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	5582.90	20	1.99
21-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	5499.40	20	1.62
24-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	487.57	20	2.02
09-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	498.00	10	6.69
11-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	474.00	10	6.83
14-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	434.00	10	13.64
23-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	348.00	10	7.41
07-May-02	00-Jan-00	Diazinon	Result	Freshwater	79.50	10	7.04
09-May-02	00-Jan-00	Diazinon	Result	Freshwater	382.00	10	6.83
21-May-02	00-Jan-00	Diazinon	Result	Freshwater	425.00	10	15.82
23-May-02	00-Jan-00	Diazinon	Result	Freshwater	128.00	10	21.51
26-May-02	00-Jan-00	Diazinon	Result	Freshwater	289.00	10	10.98
06-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	652.00	10	10.30
18-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	1975.00	10	21.45
23-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	200.00	10	20.30
09-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	405.00	10	32.81

11-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	184.00	10	60.44
14-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	155.00	10	85.02
23-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	1161.00	10	4.52
25-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	884.00	10	5.04
28-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	801.00	10	6.00
06-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	218.00	10	22.99
08-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	215.00	10	18.24
18-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	154.00	10	16.07
20-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	5754.00	10	11.78
22-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	888.00	10	11.70
25-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	845.00	10	9.28
03-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	1034.00	10	3.57
05-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	498.00	10	19.71
08-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	377.00	10	6.81
17-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	403.00	10	11.07
19-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	464.00	10	9.31
22-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	181.00	10	14.58
08-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	65.40	10	10.15
20-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	124.00	10	9.84
22-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	134.00	10	9.97
24-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	170.00	10	9.71
27-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	336.00	10	9.06
05-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	192.00	10	9.20
10-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	84.80	10	74.70
21-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	112.00	10	14.32
25-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	791.00	10	18.21
RRR1005							
04-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	51.92	20	4.43
15-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	152.07	20	9.06
18-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	179.20	20	12.39

20-Feb-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		27.28	20	4.99
01-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		135.35	20	2.58
04-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.55
07-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		76.56	20	22.58
13-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	1.36
15-Mar-01	00-Jan-00	Chlorpyrifos	DUP	Freshwater		468.76	20	4.14
15-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		434.61	20	4.14
15-Mar-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		100.00	20	4.14
18-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	9.61
27-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	1.46
29-Mar-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		49.28	20	2.93
01-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		98.02	20	1.75
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		63.54	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		98.21	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	SPK	Freshwater		100.00	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		74.15	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		66.00	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		77.79	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		42.58	20	522.31
07-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		54.51	20	522.31
12-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.39
15-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	3.13
24-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	12.84
26-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	8.42
29-Apr-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	5.80
08-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	3.29
10-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		30.46	10	3.41
13-May-01	00-Jan-00	Chlorpyrifos	Dup	Freshwater	ND	-99.00	20	14.03
13-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	14.03

22-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	10.78
24-May-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	7.71
03-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		39.92	20	101.14
03-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	50	101.14
03-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		39.92	10	101.14
05-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	50	14.52
05-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	10	14.52
07-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		43.78	10	25.36
10-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		31.10	20	16.52
10-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	200	16.52
10-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		31.10	10	16.52
19-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	86.27
21-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		28.49	20	35.56
24-Jun-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		18.33	20	51.35
03-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	116.99
05-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		12.59	20	89.33
08-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		10.16	20	84.09
17-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		100.54	20	36.64
19-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		109.57	20	48.70
22-Jul-01	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	98.45
11-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		40.14	20	1.43
16-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		36.47	20	5.56
25-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		27.13	20	48.10
27-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		37.01	20	32.48
30-Sep-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		75.37	20	21.22
14-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		37.63	20	60.33
23-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		87.46	20	3.06
25-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		53.48	20	5.55
28-Oct-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		47.42	20	7.15
06-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		38.85	20	4.42

08-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		51.91	20	25.93
15-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		4114.63	20	7.52
20-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		620.90	20	6.02
25-Nov-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		77.16	20	16.03
04-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		27.99	20	1.46
06-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.31	20	0.91
16-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		99.07	20	8.61
18-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		47.48	20	2.72
20-Dec-01	00-Jan-00	Chlorpyrifos	Result	Freshwater		50.45	20	20.97
13-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		14.84	20	6.80
22-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		19.35	20	8.29
27-Jan-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		14.55	20	270.43
19-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		32.65	20	4.55
21-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	8.03
24-Feb-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	-99.00	20	11.65
05-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		10.14	20	5.91
07-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		95.57	20	7.84
19-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		159.14	20	15.54
21-Mar-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		126.27	20	19.70
09-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	14.07
11-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.10	10	5.72
14-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		8.10	10	2.70
23-Apr-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	8.63
07-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		28.90	10	4.27
09-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		22.70	10	2.11
12-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		50.80	10	1.61
26-May-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		22.60	10	8.66
04-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		31.65	10	5.84
06-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		4.26	10	7.16
09-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		142.00	10	8.30

18-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		14.50	10	8.80
20-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		40.10	10	11.71
23-Jun-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	4.82
23-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	7.39
25-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	7.48
28-Jul-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		42.30	10	6.50
06-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		37.40	10	11.36
08-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	4.45
18-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	5.10
20-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		104.00	10	7.12
22-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		65.70	10	4.29
25-Aug-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		60.40	10	9.28
03-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		9.80	10	16.29
05-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	8.52
08-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.50	10	8.63
17-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		57.90	10	25.71
19-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		16.90	10	11.72
22-Sep-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		0.01	10	7.27
20-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	18.90
22-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	9.77
24-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	37.45
27-Oct-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		13.50	10	26.30
05-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		26.10	10	1.28
10-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		20.80	10	851.34
19-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		37.60	10	1.44
21-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater		13.70	10	1.70
25-Nov-02	00-Jan-00	Chlorpyrifos	Result	Freshwater	ND	0.00	10	1.24
04-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		2734.13	20	4.43
15-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		282.42	20	9.06
18-Feb-01	00-Jan-00	Diazinon	Result	Freshwater		313.95	20	12.39

20-Feb-01	00-Jan-00	Diazinon	Result	Freshwater	554.80	20	4.99
01-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	95.75	20	2.58
04-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	255.05	20	3.55
07-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	219.24	20	22.58
13-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	74.86	20	1.36
15-Mar-01	00-Jan-00	Diazinon	DUP	Freshwater	184.90	20	4.14
15-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	193.86	20	4.14
15-Mar-01	00-Jan-00	Diazinon	SPK	Freshwater	100.00	20	4.14
18-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	229.47	20	9.61
27-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	1405.44	20	1.46
29-Mar-01	00-Jan-00	Diazinon	Result	Freshwater	3460.47	20	2.93
01-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	7910.19	20	1.75
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	1233.61	20	522.31
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	736.55	20	522.31
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	730.88	20	522.31
07-Apr-01	00-Jan-00	Diazinon	SPK	Freshwater	100.00	20	522.31
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	719.95	20	522.31
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	636.41	20	522.31
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	667.56	20	522.31
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	582.95	20	522.31
07-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	505.15	20	522.31
12-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	4138.50	20	3.39
15-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	409.96	20	3.13
24-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	282.11	20	12.84
26-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	5111.26	20	8.42
29-Apr-01	00-Jan-00	Diazinon	Result	Freshwater	1007.73	20	5.80
08-May-01	00-Jan-00	Diazinon	Result	Freshwater	652.31	10	3.29
10-May-01	00-Jan-00	Diazinon	Result	Freshwater	955.13	10	3.41
13-May-01	00-Jan-00	Diazinon	Result	Freshwater	1596.97	10	14.03
13-May-01	00-Jan-00	Diazinon	Result	Freshwater	1570.55	20	14.03

22-May-01	00-Jan-00	Diazinon	Result	Freshwater	938.67	10	10.78
24-May-01	00-Jan-00	Diazinon	Result	Freshwater	455.06	10	7.71
03-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1621.84	10	101.14
03-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1606.02	50	101.14
05-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1201.97	50	14.52
05-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1476.39	10	14.52
07-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	613.98	10	25.36
10-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	4161.41	10	16.52
10-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	3825.26	200	16.52
19-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	60.36	20	86.27
21-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	450.52	20	35.56
24-Jun-01	00-Jan-00	Diazinon	Result	Freshwater	1716.38	20	51.35
03-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	202.73	20	116.99
05-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	120.97	20	89.33
08-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	133.40	20	84.09
17-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	1437.78	20	36.64
19-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	3108.63	20	48.70
22-Jul-01	00-Jan-00	Diazinon	Result	Freshwater	1224.20	20	98.45
11-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	34837.62	20	1.43
16-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	2603.03	20	5.56
25-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	2414.44	20	48.10
27-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	2410.71	20	32.48
30-Sep-01	00-Jan-00	Diazinon	Result	Freshwater	2967.94	20	21.22
14-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	1466.50	20	60.33
23-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	6951.20	20	3.06
25-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	641.41	20	5.55
28-Oct-01	00-Jan-00	Diazinon	Result	Freshwater	4672.54	20	7.15
06-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	1081.72	20	4.42
08-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	6589.35	20	25.93
15-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	1084.76	20	7.52

20-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	944.13	20	6.02
25-Nov-01	00-Jan-00	Diazinon	Result	Freshwater	906.92	20	16.03
04-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	432.57	20	1.46
06-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	3169.99	20	0.91
16-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	619.44	20	8.61
18-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	171.34	20	2.72
20-Dec-01	00-Jan-00	Diazinon	Result	Freshwater	245.12	20	20.97
13-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	255.64	20	6.80
22-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	571.79	20	8.29
27-Jan-02	00-Jan-00	Diazinon	Result	Freshwater	2479.14	20	270.43
19-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	129.56	20	4.55
21-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	126.41	20	8.03
24-Feb-02	00-Jan-00	Diazinon	Result	Freshwater	1506.06	20	11.65
05-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	87.48	20	5.91
07-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	1178.33	20	7.84
19-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	263.94	20	15.54
21-Mar-02	00-Jan-00	Diazinon	Result	Freshwater	1603.45	20	19.70
09-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	153.00	10	14.07
11-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	2097.00	10	5.72
14-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	1629.00	10	2.70
23-Apr-02	00-Jan-00	Diazinon	Result	Freshwater	133.00	10	8.63
07-May-02	00-Jan-00	Diazinon	Result	Freshwater	366.00	10	4.27
09-May-02	00-Jan-00	Diazinon	Result	Freshwater	986.00	10	2.11
12-May-02	00-Jan-00	Diazinon	Result	Freshwater	868.00	10	1.61
26-May-02	00-Jan-00	Diazinon	Result	Freshwater	6151.00	10	8.66
04-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	668.00	10	5.84
06-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	623.50	10	7.16
09-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	546.00	10	8.30
18-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	415.00	10	8.80
20-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	571.00	10	11.71

23-Jun-02	00-Jan-00	Diazinon	Result	Freshwater	2814.00	10	4.82
23-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	792.00	10	7.39
25-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	1095.00	10	7.48
28-Jul-02	00-Jan-00	Diazinon	Result	Freshwater	1083.00	10	6.50
06-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	1006.00	10	11.36
08-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	1338.00	10	4.45
18-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	2263.00	10	5.10
20-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	428.00	10	7.12
22-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	1921.00	10	4.29
25-Aug-02	00-Jan-00	Diazinon	Result	Freshwater	844.00	10	9.28
03-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	218.00	10	16.29
05-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	3763.00	10	8.52
08-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	658.00	10	8.63
17-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	594.00	10	25.71
19-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	1193.00	10	11.72
22-Sep-02	00-Jan-00	Diazinon	Result	Freshwater	1017.00	10	7.27
20-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	308.00	10	18.90
22-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	245.00	10	9.77
24-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	288.00	10	37.45
27-Oct-02	00-Jan-00	Diazinon	Result	Freshwater	446.00	10	26.30
05-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	249.00	10	1.28
10-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	782.00	10	851.34
19-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	2403.00	10	1.44
21-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	1696.00	10	1.70
25-Nov-02	00-Jan-00	Diazinon	Result	Freshwater	887.00	10	1.24