APPENDIX B STATISTICAL ANALYSIS

──────── **5/4/2006 11:01:03 AM** ─────────────────────────────

5/4/2006: A test to determine whether the medians of the samples taken during two rain events is greater than the mean of the samples taken during a nonrain sampling events. The test does not require a normal distribution, and the pairs do not need to be matched. However, in order to avoid bias, I only used data where a rain event sample was followed by a nonrain event sample.

The P-value shows that the medians are not equal. The median of samples from rain sampling is statistically greater than the median of samples taken from nonrain sampling events.

Mann-Whitney Test and CI: Rain Samples, NonrainSamples

```
RainSamp  N =  20    Median =      2685.0
NonrainS  N =  20    Median =       223.5
Point estimate for ETA1-ETA2 is     2408.0
95.0 Percent CI for ETA1-ETA2 is (1459.8,4623.8)
W = 561.0
Test of ETA1 = ETA2  vs  ETA1 not = ETA2 is significant at 0.0000
The test is significant at 0.0000 (adjusted for ties)
```

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Here is the Mann-Whitney test using the Hₐ that the RainSamples have a greater
median.
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Mann-Whitney Test and CI: RainSamples, NonrainSamples

```
RainSamp   N =  20    Median =      2685.0
NonrainS   N =  20    Median =       223.5
Point estimate for ETA1-ETA2 is     2408.0
95.0 Percent CI for ETA1-ETA2 is (1459.8,4623.8)
W = 561.0
Test of ETA1 = ETA2  vs  ETA1 > ETA2 is significant at 0.0000
The test is significant at 0.0000 (adjusted for ties)
```

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Here is the Paird-t test testing the means of rain vs nonrain data.
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Paired T-Test and CI: RainSamples, NonrainSamples

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Paired T for RainSamples - NonrainSamples

                 N     Mean    StDev   SE Mean
RainSamples      20    3860     3288       735
NonrainSampl     20     555      811       181
Difference       20    3306     3406       762


95% CI for mean difference: (1712, 4899)
T-Test of mean difference = 0 (vs not = 0): T-Value = 4.34  P-Value = 0.000
```

Data used in statistical analysis:

	RainSamples	NonrainSamples
ALI-AIR	12590	120
GAB-CRA	2620	249
GAB-HER	4730	121
GAB-NAT	2750	520
GAB-OSR	323	31
GAB-VET	5630	100
OLS-MON	410	573
SAL-BLA	95	52
SAL-DAV	323	168
SRC-COR	1710	3270
TEM-MOL	1600	246
TEM-PRE	1610	1450
TOW-OSR	4040	384
GAB-CRA	6570	201
GAB-HER	6200	168
GAB-NAT	7570	1970
GAB-OSR	2280	31
SAL-DAV	2460	52
TEM-PRE	8820	630
TOW-OSR	4870	754