

**Table 2-1**  
**Summary of Nitrate Trend Analyses - Port of Morrow Farm 1**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-1	Jun-87	Dec-05	11.2	42.6	24.9	22.9	72	0%	0.64	99%	Increasing	Basically flat then increasing
MW-2	Jun-87	Dec-05	4.81	47.0	24.9	25.0	67	0%	0.53	96%	Increasing	Increase then decrease
MW-3	Jun-87	Dec-04	0.07	95.4	17.9	4.3	60	0%	1.22	99%	Increasing	Flat, then increase, then decrease
MW-3a	Mar-02	Dec-05	3.2	6.0	4.0	3.8	16	0%	-0.10	39%	No Significant Trend	Flat, then decrease, then increase
MW-4	Jun-87	Dec-05	<0.08	43.2	9.3	5.5	72	1.4%	0.29	98%	Increasing	Increase, decrease, then increase
MW-5	Jun-87	Dec-05	6.98	36.0	21.5	22.1	72	0%	0.08	48%	No Significant Trend	Increase then decrease
MW-6	Jun-87	Jun-00	<0.08	9.7	0.8	0.5	47	15%	-0.03	82%	Decreasing	Decrease then increase
MW-7	Oct-91	Dec-05	9.75	39.0	20.1	15.2	57	0%	1.90	99%	Increasing	Decrease then increase
MW-8	Oct-91	Dec-05	6.48	54.5	35.1	36.2	57	0%	0.99	98%	Increasing	Increase then decrease
MW-9	Oct-91	Dec-05	5.2	34.5	20.3	21.5	57	0%	1.12	99%	Increasing	Increasing, then increasing less steep
MW-10	Oct-91	Dec-05	11.5	40.4	28.0	27.8	57	0%	1.46	99%	Increasing	Increasing
MW-11	Oct-91	Dec-05	5.35	50.5	31.2	31.6	57	0%	1.51	99%	Increasing	Increasing, increasing steeper, then level off
MW-SP1	Mar-95	Dec-05	27.8	53.6	35.0	33.9	40	0%	-0.80	99%	Decreasing	Increase then decrease
MW-SP2	Mar-96	Dec-05	29.8	49.9	38.7	38.2	40	0%	-1.51	99%	Decreasing	Decreasing

# of Increasing Trends ==>	9
# of Decreasing Trends ==>	3
# of Flat Trends ==>	0
# of Statistically Insignificant Trends ==>	2
Average slope of significant trends (ppm/yr) ==>	0.61
Average slope of all trends (ppm/yr) ==>	0.52

Notes:  
Min = minimum, Max = maximum, n = number of samples  
BDL = below detection limit, C.L. = confidence level

**Table 2-2  
Comparison of Nitrate Data and Trends Between Analyses - Port of Morrow Farm 1  
Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-1	0	0	2.2	2.8	15	0.21	< 80%	0.64	99%	0.43	Increase	From SI increasing to steeper increasing
MW-2	0	0	-0.4	0.3	15	1.65	99%	0.53	96%	-1.12	Decrease	From increasing to less steeply increasing
MW-3	0	0	-1.7	0.4	1	2.65	99%	1.22	99%	-1.43	Same	From increasing to less steeply increasing
MW-3a	Well not installed at the time of the first trend analysis							-0.10	39%	Well not installed at the time of the first trend analysis		
MW-4	0	0	0.1	-1.9	15	0.31	90%	0.29	98%	-0.02	Increase	From increasing to less steeply increasing
MW-5	0	0	0.9	0.5	17	0.67	99%	0.08	48%	-0.59	Decrease	From increasing to less steeply increasing
MW-6	0	0*	0*	0*	-4*	-0.025*	80%*	-0.028*	82%*	-0.003*	Increase*	No change*
MW-7	0	9.8	-5.5	-1.3	16	0.41	90%	1.90	99%	1.50	Increase	From increasing to steeper increasing
MW-8	0	0	-1.1	0	16	2.48	99%	0.99	98%	-1.49	Decrease	From increasing to less steeply increasing
MW-9	0	1.4	-2.2	-3.3	16	1.41	99%	1.12	99%	-0.29	Same	From increasing to less steeply increasing
MW-10	0	0.3	-3.3	-3.9	16	1.51	99%	1.46	99%	-0.05	Same	From increasing to less steeply increasing
MW-11	0	3.5	-3.3	-3.7	15	2.24	99%	1.51	99%	-0.73	Same	From increasing to less steeply increasing
MW-SP1	3.6	0	2.9	3.0	17	0.67	< 80%	-0.80	99%	-1.47	Increase	From SI increasing to decreasing
MW-SP2	2.8	0	2.8	1.5	17	-0.25	< 80%	-1.51	99%	-1.26	Increase	From SI decreasing to decreasing

<b>Summary of Differences</b>	
<p><b>Minimum and Maximum</b> 15% of stations (2 wells) exhibited a new minimum (2.8 to 3.6 ppm lower). 31% of stations (4 wells) exhibited new maximums (0.3 to 9.8 ppm higher).</p> <p><b>Mean</b> 54% of stations (7 wells) exhibited lower means (0.4 to 5.5 ppm lower) 38% of stations (5 wells) exhibited higher mean values (0.1 to 2.9 ppm higher). 8% of stations (1 well) was not sampled again so no change in mean.</p> <p><b>Median</b> 38% of stations (5 wells) exhibited lower median values (1.3 to 3.9 ppm lower). 15% of stations (2 wells) exhibited no change in median value 46% of stations (6 wells) exhibited an increase in median values (0.3 to 3.0 ppm higher).</p>	<p><b>Trend Slope</b> 83% of stations (10 wells) exhibited improving trends 17% of stations (2 wells) exhibited worsening trends</p> <p><b>Trend Confidence Level</b> 33% of stations (4 wells) exhibited the same confidence level 25% of stations (3 wells) exhibited lower confidence levels 42% of wells (5 wells) exhibited increased confidence levels</p> <p><b>Site-Wide Average Trend Slope</b> Decreased from 1.1 ppm/yr to 0.6 ppm/yr</p>

\* = A more robust method of dealing with censored values when estimating summary statistics and calculating trends was used in the second trend analysis.  
The apparent difference in the MW-4 minimum value and all values from MW-6 reflects the difference in the statistical methods rather than an actual change in nitrate concentrations.  
The detection limit for 4 samples from MW-6 could not be determined so those results were not included in the second trend analysis.

**Table 2-3**  
**Summary of Nitrate Trend Analyses - Port of Morrow Farm 2**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics									Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	Skewness	n	% BDL	Slope (ppm/yr)	C.L.		
MW-12	Dec-91	Dec-05	13	46.0	32.3	32.9	-0.67	56	0%	1.10	99%	Increasing	Increasing, then increasing less steeply
MW-13	Dec-91	Dec-05	16.8	61.6	44.4	45.9	-0.77	57	0%	1.05	99%	Increasing	Increasing then decreasing
MW-14	Dec-91	Dec-05	0.02	45.2	27.5	31.8	-0.43	57	0%	0.88	98%	Increasing	Increasing then decreasing
MW-14s	Jan-95	Dec-05	8.12	49.2	35.9	38.2	-1.53	28	0%	-0.03	0%	No Significant Trend	Increasing then decreasing
MW-15	Dec-91	Dec-05	9.7	56.7	39.8	43.4	-0.84	57	0%	1.94	99%	Increasing	Increasing, then increasing less steeply
MW-15s	Jan-95	Dec-05	15.5	55.2	40.2	42.7	-1.27	27	0%	3.02	99%	Increasing	Increasing, then increasing less steeply
MW-16	Dec-91	Dec-05	6.06	58.3	42.3	43.4	-0.73	57	0%	0.09	17%	No Significant Trend	Increasing then decreasing
MW-17	Dec-91	Dec-05	5.89	53.4	40.9	44.7	-1.59	57	0%	1.22	99%	Increasing	Increasing, then increasing less steeply
MW-18	Dec-91	Dec-05	0.03	14.8	7.4	6.7	0.06	57	0%	0.84	99%	Increasing	Increasing

# of Increasing Trends ==>	7
# of Decreasing Trends ==>	0
# of Flat Trends ==>	0
# of Statistically Insignificant Trends ==>	2
Average slope of significant trends (ppm/yr) ==>	1.4
Average slope of all trends (ppm/yr) ==>	1.1

Notes:  
 Min = minimum, Max = maximum, n = number of samples  
 BDL = below detection limit, C.L. = confidence level  
 E:\LUB\LandApp\2006 Trend Analysis\All Trends.xls\POM Farm2 thru 2005

**Table 2-4**  
**Comparison of Nitrate Data and Trends Between Analyses - Port of Morrow Farm 2**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-12	0	0.6	2.3	1.9	16	1.63	99%	1.10	99%	-0.53	same	from increasing to less steep increasing
MW-13	0	0	0.8	0	18	2.73	99%	1.05	99%	-1.68	same	from increasing to less steep increasing
MW-14	0	0	-0.2	-0.7	17	3.59	99%	0.88	98%	-2.71	slight decrease	from increasing to less steep increasing
MW-14s	0	0	-0.7	-1.3	6	2.27	80%	-0.03	0%	-2.31	decrease	from increasing to less steep decreasing
MW-15	0	0.8	3.5	4.8	17	2.69	99%	1.94	99%	-0.75	same	from increasing to less steep increasing
MW-15s	0	0	1.6	3.2	6	3.85	99%	3.02	99%	-0.83	same	from increasing to less steep increasing
MW-16	0	0	-2.6	-7.0	18	2.63	99%	0.09	17%	-2.54	decrease	from increasing to less steep increasing
MW-17	0	0	1.7	1.5	17	2.32	99%	1.22	99%	-1.10	same	from increasing to less steep increasing
MW-18	0	0.4	1.8	1.5	17	0.89	99%	0.84	99%	-0.05	same	from increasing to less steep increasing

**Summary of Differences**

**Minimum and Maximum**

No stations exhibited a new minimum.  
 33% of stations (3 wells) exhibited new maximums (0.4 to 0.8 ppm higher).

**Mean**

33% of stations (3 wells) exhibited lower means (0.2 to 2.6 ppm lower)  
 67% of stations (6 wells) exhibited higher mean values (0.8 to 3.5 ppm higher).

**Median**

33% of stations (3 wells) exhibited lower median values (0.7 to 7 ppm lower).  
 11% of stations (1 well) exhibited no change in median value  
 56% of stations (5 wells) exhibited an increase in median values (1.5 to 4.8 ppm higher)

**Trend Slope**

100% of stations (9 wells) exhibited improving trends

**Trend Confidence Level**

67% of stations (6 wells) exhibited the same confidence level  
 33% of stations (3 wells) exhibited lower confidence levels

**Site-Wide Average Trend Slope**

Decreased from 2.5 ppm/yr to 1.1 ppm/yr

**Table 2-5**  
**Summary of Nitrate Trend Analyses - Port of Morrow Farm 3**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics									Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	Skewness	n	% BDL	Slope (ppm/yr)	C.L.		
MW-19	Mar-02	Dec-05	11.5	22.4	15.9	14.5	0.87	16	0%	-2.00	97%	Decreasing	Decrease then increase
MW-20	Mar-02	Dec-05	10.1	42.3	20.2	18.4	1.40	16	0%	-3.17	99%	Decreasing	Increase then decrease
MW-21	Mar-02	Dec-05	13.6	37.6	26.0	26.5	-0.05	16	0%	6.92	99%	Increasing	Increase
MW-22	Mar-02	Dec-05	19.2	49.6	34.4	33.6	0.01	16	0%	7.51	99%	Increasing	Increase
MW-23	Mar-02	Dec-05	42.9	68.0	54.9	54.7	0.14	16	0%	5.02	99%	Increasing	Increase then level off
MW-24	Mar-02	Dec-05	42.1	52.9	46.7	46.6	0.42	16	0%	-0.21	0%	No Significant Trend	Decrease then increase

# of Increasing Trends ==>	3
# of Decreasing Trends ==>	2
# of Flat Trends ==>	0
# of Statistically Insignificant Trends ==>	1
Average slope of significant trends (ppm/yr) ==>	2.9
Average slope of all trends (ppm/yr) ==>	2.3

Notes:  
Min = minimum, Max = maximum, n = number of samples  
BDL = below detection limit, C.L. = confidence level  
E:\LUB\LandApp\2006 Trend Analysis\[All Trends.xls]POM Farm3 thru 2005

**Table 3-1**  
**Summary of Nitrate Trend Analyses - ConAgra North Farm**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-1	Oct-95	Nov-05	2.14	56.6	17.3	15.8	40	0%	-0.36	75%	No Significant Trend	Decreasing
MW-2	Oct-95	Nov-05	15.1	46.1	19.1	18.4	40	0%	0.18	99%	Increasing	Basically flat (slight increase then slight decrease)
MW-3	Oct-95	Nov-05	7.53	50.4	9.8	8.4	41	0%	-0.17	99%	Decreasing	Basically flat (slight decrease)
MW-4	Oct-95	Nov-05	20.6	29.2	25.2	25.3	41	0%	0.25	99%	Increasing	Increase then slight decrease
MW-5	Nov-95	Nov-05	19.4	50.6	27.3	27.7	41	0%	0.61	99%	Increasing	Increasing
MW-6	Nov-95	Nov-05	3.09	9.2	6.0	5.9	41	0%	0.63	99%	Increasing	Increasing
MW-7	Oct-95	Nov-05	11.4	62.8	41.1	43.9	41	0%	3.67	99%	Increasing	Increasing, then start to level off
MW-8	Oct-95	Nov-05	7.92	129	51.3	49.5	41	0%	0.22	45%	No Significant Trend	Increasing then decreasing
MW-9	Oct-95	Nov-05	5.94	8.1	6.9	7.0	41	0%	-0.13	99%	Decreasing	Flat, then decreasing
MW-10	Jan-96	Nov-05	9.08	64.7	47.4	48.9	39	0%	0.04	7%	No Significant Trend	Basically flat (slight increase then slight decrease)
# of Increasing Trends ==>									5			
# of Decreasing Trends ==>									2			
# of Flat Trends ==>									0			
# of Statistically Insignificant Trends ==>									3			
Average slope of significant trends (ppm/yr) ==>									0.72			
Average slope of all trends (ppm/yr) ==>									0.50			

Notes:

Min = minimum, Max = maximum, n = number of samples

BDL = below detection limit, C.L. = confidence level

**Table 3-2**  
**Comparison of Nitrate Data and Trends Between Analyses - ConAgra North Farm**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-1	-6.26	0	-2.2	-1.5	16	0.43	< 80%	-0.36	75%	-0.79	No change	From SI increasing to SI decreasing
MW-2	0	25.1	1.1	0.2	16	0.31	99%	0.18	99%	-0.13	No change	From increasing to less steeply increasing
MW-3	-0.37	0	-0.9	-0.4	16	-0.33	99%	-0.17	99%	0.17	No change	From decreasing to less steeply decreasing
MW-4	0	2.1	0.5	0.2	16	0.76	99%	0.25	99%	-0.52	No change	From increasing to less steeply increasing
MW-5	0	22.2	1.9	1.7	16	0.30	< 80%	0.61	99%	0.31	Increase	From SI increasing to steeper increasing
MW-6	0	1.0	1.2	1.4	16	0.60	99%	0.63	99%	0.03	No change	Essentially no change (very slight increase)
MW-7	0	7.0	5.3	4.8	16	6.93	99%	3.67	99%	-3.26	No change	From increasing to less steeply increasing
MW-8	0	58.6	1.6	-0.6	16	1.66	< 80%	0.22	45%	-1.43	No change	From SI increasing to less steeply SI increasing
MW-9	-0.28	0	-0.3	-0.1	16	-0.03	80%	-0.13	99%	-0.10	Increase	From decreasing to more steeply decreasing
MW-10	0	0	0.8	-0.2	16	0.78	80%	0.04	7%	-0.74	Decrease	From increasing to less steeply increasing

**Summary of Differences**

**Minimum and Maximum**

30% of stations (3 wells) exhibited a new minimum (0.28 to 6.26 ppm lower).  
 60% of stations (6 wells) exhibited new maximums (1.0 to 58.6 ppm higher).

**Mean**

30% of stations (3 wells) exhibited lower means (0.3 to 2.2 ppm lower)  
 70% of stations (7 wells) exhibited higher mean values (0.8 to 5.3 ppm higher).

**Median**

50% of stations (5 wells) exhibited lower median values (0.1 to 1.5 ppm lower).  
 50% of stations (5 wells) exhibited higher median values (0.2 to 4.8 ppm higher).

**Trend Slope**

70% of stations (7 wells) exhibited improving trends  
 20% of stations (2 wells) exhibited worsening trends  
 10% of stations (1 well) exhibited essentially the same trend (very slight worsening)

**Trend Confidence Level**

70% of stations (7 wells) exhibited the same confidence level  
 20% of stations (2 wells) exhibited a higher confidence level  
 10% of stations (1 wells) exhibited a lower confidence level

**Site-Wide Average Trend Slope**

Decreased from 1.14 ppm/yr to 0.50 ppm/yr

**Table 3-3**  
**Summary of Nitrate Trend Analyses - ConAgra Madison Ranch**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Well Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
		Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-1	Onsite	Jan-96	Apr-00	2.93	7.44	5.9	6.4	7	0%	-0.14	< 80%	No Significant Trend	Increasing then decreasing
MW-2		Nov-95	Dec-05	0.05	0.47	0.2	0.2	33	0%	0.009	99%	Increasing	Increasing, decreasing, then increasing
MW-3		Jan-96	Dec-05	2.68	13.2	3.7	3.3	36	0%	0.11	99%	Increasing	Increasing
MW-4a		Nov-95	Dec-05	0.65	1.11	0.9	0.9	36	0%	0.003	20%	No Significant Trend	Increasing then decreasing
MW-6		Nov-95	Dec-05	8.37	40.9	23.9	25.9	37	0%	2.03	99%	Increasing	Increasing then increasing less steeply
MW-7		Nov-95	Dec-05	0.34	1.05	0.5	0.4	37	0%	0.02	99%	Increasing	Flat then increasing
MW-8		Nov-95	Dec-05	3.52	5.44	4.7	4.8	37	0%	0.08	99%	Increasing	Increasing then increasing less steeply
MW-9		Nov-95	Dec-05	0.2	3.21	1.2	0.8	37	0%	0.20	99%	Increasing	Flat then increasing
MW-10		Nov-95	Dec-05	2.9	14.3	6.9	6.1	37	0%	-0.47	99%	Decreasing	Increasing then decreasing
MW-12		Nov-95	Sep-05	2.77	9.26	5.7	5.4	33	0%	0.22	95%	Increasing	Increasing, decreasing, then leveling off
MW-5	Offsite	Nov-95	Dec-05	5.04	26.1	8.4	7.4	38	0%	-0.48	99%	Decreasing	Decreasing
MW-11		Nov-95	Dec-05	4.8	25.5	7.8	7.3	38	0%	-0.32	99%	Decreasing	Increasing then decreasing
# of Increasing Trends (onsite wells only) ==>										7			
# of Decreasing Trends (onsite wells only) ==>										1			
# of Flat Trends (onsite wells only) ==>										0			
# of Statistically Insignificant Trends (onsite wells only) ==>										2			
Average slope of significant trends (onsite wells only) ==>										0.28			
Average slope of all trends (onsite wells only) ==>										0.21			

Notes:

Min = minimum, Max = maximum, n = number of samples  
BDL = below detection limit, C.L. = confidence level

**Table 3-4  
Comparison of Nitrate Data and Trends Between Analyses - ConAgra Madison Ranch  
Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Well Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
		Min *	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-1	Onsite	0	0	0	0	0	-0.14	< 80%	-0.14	< 80%	0	Same	<i>No change because no additional data</i>
MW-2		0	0.02	0	0	13	0.012	95%	0.009	99%	-0.004	Increase	From increasing to less steeply increasing
MW-3		0	0	0.1	0.1	13	0.05	95%	0.11	99%	0.07	Increase	From increasing to steeper increasing
MW-4a		0	0	0	0	12	0.05	90%	0.003	20%	-0.047	Decrease	From increasing to SI less steeply increasing
MW-6		0	0	4.7	8.0	13	3.16	99%	2.03	99%	-1.13	Same	From increasing to less steeply increasing
MW-7		0	0.57	0.1	0	13	0.0	< 80%	0.02	99%	0.02	Increase	From SI flat trend to increasing trend
MW-8		0	0.38	0.4	0.1	13	0.24	99%	0.08	99%	-0.16	Same	From increasing to less steeply increasing
MW-9		0	0	0.4	0.1	13	0.04	95%	0.20	99%	0.16	Increase	From increasing to steeper increasing
MW-10		0	0	-0.9	-1.9	13	-0.68	< 80%	-0.47	99%	0.22	Increase	From SI decreasing to less steeply decreasing
MW-12		0	0	0.3	0.4	10	1.03	99%	0.22	95%	-0.81	Decrease	From increasing to less steeply increasing
MW-5	Offsite	-1.20	0	-1.3	-1.2	14	-0.32	< 80%	-0.48	99%	-0.16	Increase	<i>From SI decreasing to steeper decreasing</i>
MW-11		-0.62	0	-0.6	-0.7	13	0.05	< 80%	-0.32	99%	-0.37	Increase	<i>From SI increasing to decreasing</i>

**Summary of Differences (except MW-1 which has not been sampled since April 2000 & MW-5 and MW-11 which are now considered offsite wells)**

**Minimum and Maximum**

No stations exhibited a new minimum  
33% of stations (3 wells) exhibited new maximums (0.02 to 0.57 ppm higher).

**Trend Slope**

56% of stations (5 wells) exhibited improving trends  
44% of stations (4 wells) exhibited worsening trends

**Mean**

11% of stations (1 well) exhibited a lower mean (0.9 ppm lower)  
67% of stations (6 wells) exhibited higher mean values (0.1 to 4.7 ppm higher).

**Trend Confidence Level**

22% of stations (2 wells) exhibited the same confidence level  
56% of stations (5 wells) exhibited a higher confidence level  
22% of stations (2 wells) exhibited a lower confidence level

**Median**

11% of stations (1 well) exhibited a lower median values (1.9 ppm lower).  
33% of stations (3 wells) exhibited no change in median value  
56% of stations (5 wells) exhibited an increase in median values (0.1 to 8 ppm higher)

**Site-Wide Average Trend Slope**

Decreased from 0.29 ppm/yr to 0.11 ppm/yr (if all 12 wells are compared)  
Decreased from 0.38 ppm/yr to 0.21 ppm/yr (if only the 9 current onsite wells are compared)

\* = The October 1995 nitrate concentrations should have been trimmed from the data set during the previous analysis because November 1995 values are closer to mid-quarter. The October 1995 values were also anomalously low. The change in minimum concentrations is calculated after the October 1995 samples were deleted from the data set.

**Table 4-1**  
**Summary of Nitrate Trend Analyses - Simplot Plant Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-10S	Feb-92	Aug-05	0.05	44.9	4.5	1.2	54	26%	0.59	99%	Increasing	Increase, decrease, then increase steeper
MW-10D	Feb-92	Aug-05	0.05	4.9	0.4	1.0	54	54%	0	22%	No Significant Trend	Increase then level off
MW-11S	Feb-88	Nov-05	6.0	18.0	11.6	11.3	68	0%	-0.12	93%	Decreasing	Decrease, increase, then decrease
MW-11D	Feb-88	Nov-05	0.5	3.5	1.1	1.0	68	18%	0.07	99%	Increasing	Level, then increasing
MW-12	Feb-88	Aug-05	12.7	39.2	20.4	19.9	67	0%	0.03	30%	No Significant Trend	Basically level with some fluctuation
MW-13S	Nov-88	Nov-05	3.9	53.0	15.3	14.0	69	0%	0.05	31%	No Significant Trend	Slight decrease then slight increase
MW-13D	Nov-88	Aug-05	0.4	17.0	2.2	1.7	67	0%	0.03	96%	Increasing	Basically level
MW-16	Nov-88	Aug-05	0.2	100	15.4	3.1	68	40%	-2.40	99%	Decreasing	Decreasing then level
MW-17	Nov-88	Aug-05	0.02	31.4	0.9	1.0	66	46%	0	26%	No Significant Trend	Slight increase
MW-18	Nov-88	May-96	0.50	99.3	8.2	2.6	31	29%	0.29	86%	Increasing	Increase then decrease
MW-19	Nov-88	Nov-05	0.05	1.9	0.3	1.0	68	46%	0	40%	No Significant Trend	Increase then level off
MW-20	Nov-88	Aug-05	<1.0	43.3	13.3	11.8	68	10%	-1.46	99%	Decreasing	Decreasing
MW-21	Nov-88	Aug-05	0.05	8.9	0.9	1.0	68	46%	-0.10	94%	Decreasing	Basically level
MW-45	Feb-92	Aug-05	<1.0	48.3	9.8	4.1	54	33%	-1.95	99%	Decreasing	Decreasing then level
MW-46	Feb-96	Nov-04	5.1	13.2	8.6	8.6	26	0%	0.10	18%	No Significant Trend	Decrease then increase
MW-47	Feb-96	Feb-05	12.0	28.3	17.4	16.2	32	0%	0.22	27%	No Significant Trend	Increase then decrease
MW-48	Feb-96	Feb-05	17.4	45.8	33.2	36.1	36	0%	-2.82	99%	Decreasing	Increase then decrease
MW-49	Feb-96	Aug-05	<0.5	1.2	0.6	0.5	39	77%	-0.09	84%	Decreasing	Flat
MW-50	Feb-96	Nov-05	0.5	1.3	0.6	0.5	40	78%	-0.09	98%	Decreasing	Flat
MW-56	Feb-96	Nov-04	<1.0	31.8	9.0	8.6	25	4%	0.33	92%	Increasing	Slight increase
MW-57	Feb-96	Aug-05	1.0	18.5	7.6	6.5	39	0%	-0.20	94%	Decreasing	Basically level with some fluctuation
MW-58	May-96	Feb-05	<1.0	18.2	8.5	5.6	36	25%	0	25%	No Significant Trend	Decrease then increase
MW-59	Aug-96	Aug-05	0.5	1.1	<1.0	<1.0	37	84%	0	59%	No Significant Trend	Flat
# of Increasing Trends (onsite wells only) ==>									4			
# of Decreasing Trends (onsite wells only) ==>									8			
# of Flat Trends (onsite wells only) ==>									0			
# of Statistically Insignificant Trends (onsite wells only) ==>									7			
Average slope of significant trends at onsite wells (ppm/yr) ==>									-0.67			
Average slope of all trends at onsite wells (ppm/yr) ==>									-0.40			

Notes:

Min = minimum, Max = maximum, n = number of samples

BDL = below detection limit, C.L. = confidence level

For these calculations, values reported as BDL and those reported as equal to or less than one-half the highest detection limit were counted as BDL.

Wells MW-56 through MW-59 are offsite wells. All other wells are onsite wells.

**Table 4-2**  
**Comparison of Nitrate Data and Trends Between Analyses - Simplot Plant Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-10S	*	31.0	1.8	0.7	15	0	< 80%	0.59	99%	0.59	Increase	From SI flat to increasing
MW-10D	*	0	0	0.5	15	0	< 80%	0	22%	0	Same	No change
MW-11S	-1.2	0	-0.2	-0.3	16	-0.14	80%	-0.12	93%	0.02	Increase	From decreasing to slightly less steeply decreasing
MW-11D	0	1.1	0.3	0.2	16	0	< 80%	0.07	99%	0.07	Increase	From SI flat to increasing
MW-12	0	0	-0.2	0.1	15	0.10	< 80%	0.03	30%	-0.07	Same	From SI increasing to less steeply increasing SI trend
MW-13S	-5.0	0	-0.4	0.6	16	-0.13	< 80%	0.05	31%	0.18	Same	From SI decreasing to SI increasing
MW-13D	0	13.7	0.5	0.1	15	0.01	< 80%	0.03	96%	0.01	Increase	From SI increasing to increasing
MW-16	*	0	-4.4	-5.5	15	-2.39	99%	-2.40	99%	-0.01	Same	Essentially no change
MW-17	*	0	-0.4	0.5	14	0	< 80%	0	26%	0	Same	No change
MW-18	*	0	0.0	0	0	0.22	80%	0.29	86%	0.07	Increase	No additional data to evaluate
MW-19	*	0	-0.3	0.5	16	0	< 80%	0	40%	0	Same	No change
MW-20	*	0	-3.0	-2.8	15	-1.50	99%	-1.46	99%	0.04	Same	To slightly less steeply decreasing
MW-21	*	0	-0.4	0.5	15	0	99%	-0.10	94%	-0.10	Decrease	From flat to decreasing
MW-45	*	0	-3.4	-2.0	15	-2.92	99%	-1.95	99%	0.97	Same	From decreasing to less steeply decreasing
MW-46	0	2.1	0.4	0	6	-0.13	< 80%	0.100	18%	0.23	Same	From SI decreasing to SI increasing
MW-47	0	0	-0.7	-0.4	8	1.52	95%	0.22	27%	-1.30	Decrease	From increasing to less steeply increasing
MW-48	-13.1	0	-5.9	-4.4	12	-0.38	< 80%	-2.82	99%	-2.44	Increase	From SI decreasing to decreasing
MW-49	*	0	0	0	15	0	80%	-0.09 *	84%	-0.09 *	Increase	From flat to decreasing *
MW-50	0	0	0	0	16	0	95%	-0.09 *	98%	-0.09 *	Increase	From flat to decreasing *
MW-56	*	0	0	0.4	4	0.40	80%	0.33	92%	-0.07	Increase	To slightly less steeply increasing
MW-57	0	0.8	-0.2	-0.5	15	-0.26	< 80%	-0.20	94%	0.06	Increase	From SI decreasing to slightly less steeply decreasing
MW-58	*	1.3	-0.6	-4.0	13	-0.50	< 80%	0	25%	0.50	Same	From SI decreasing to SI flat
MW-59	0	0	*	*	15	0	< 80%	0	59%	0	Same	No change

**Summary of Differences at Onsite Wells (except MW-18 which has not been sampled since May 1996)**

**Minimum and Maximum**

17% of stations (3 wells) exhibited a new minimum (1.2 to 13.1 ppm lower).  
 22% of stations (4 wells) exhibited new maximums (0.8 to 31.0 ppm higher).

**Trend Slope**

22% of stations (4 wells) exhibited improving trends  
 33% of stations (6 wells) exhibited worsening trends  
 50% of stations (8 wells) exhibited essentially no change in trend (less than 0.03 ppm/yr)

**Mean**

61% of stations (11 wells) exhibited lower means (0.2 to 5.9 ppm lower)  
 22% of stations (4 wells) exhibited higher mean values (0.3 to 1.8 ppm higher).

**Trend Confidence Level**

50% of stations (9 wells) exhibited the same confidence level  
 39% of stations (7 wells) exhibited a higher confidence level  
 11% of stations (2 wells) exhibited a lower confidence level

**Median**

33% of stations (6 wells) exhibited lower median values (0.3 to 5.5 ppm lower).  
 17% of stations (3 wells) exhibited no change in median value  
 50% of stations (9 wells) exhibited an increase in median values (0.1 to 0.7 ppm higher)

**Site-Wide Average Trend Slope**

Decreased from -0.30 ppm/yr to -0.44 ppm/yr

E:\LUB\LandApp\2006 Trend Analysis\All Trends.xls\Simplot Plant Comparison

**Notes:**

\* = A more robust method of dealing with censored values when estimating summary statistics and calculating trends was used in the second trend analysis.  
 Values marked with an asterisk (\*) reflect differences in the statistical methods rather than an actual changes in nitrate concentrations.

**Table 4-3**  
**Summary of Nitrate Trend Analyses - Simplot Terrace Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-14	Nov-88	Aug-05	9.0	45.3	27.7	28.4	67	0%	1.80	99%	Increasing	Increasing
MW-15	Nov-88	Feb-98	6.2	17.3	10.4	10.0	35	0%	0.73	99%	<i>Increasing</i>	<i>Increasing with some fluctuation</i>
MW-22	Nov-88	Nov-05	10.3	34.1	24.9	26.2	67	0%	0.96	99%	Increasing	Increasing then level
MW-38	May-92	Aug-05	2.3	21.1	12.3	12.2	53	0%	0.97	99%	Increasing	Increasing with some fluctuation
MW-39	May-92	Aug-05	9.2	37.2	18.5	15.4	54	0%	-0.11	41%	No Significant Trend	Increase then decrease
MW-40	May-92	Nov-05	1.2	34.2	18.4	16.4	55	0%	1.70	99%	Increasing	Increasing
MW-51	Feb-96	Aug-05	9.0	22.9	17.5	19.0	39	0%	0.71	99%	Increasing	Increase then level off
MW-52	Feb-96	Nov-05	10.7	35.2	25.2	26.0	40	0%	0.41	50%	No Significant Trend	Increase then decrease
MW-53	Feb-96	Nov-05	20.8	72.3	54.6	58.1	40	0%	-2.07	99%	Decreasing	Increase then decrease
MW-54	Feb-96	Nov-05	14.7	24.8	19.7	20.0	40	0%	0.62	99%	Increasing	Increasing
# of Increasing Trends ==>									7			
# of Decreasing Trends ==>									1			
# of Flat Trends ==>									0			
# of Statistically Insignificant Trends ==>									2			
Average slope of significant trends (ppm/yr) ==>									0.68			
Average slope of all trends (ppm/yr) ==>									0.57			

Notes:

Min = minimum, Max = maximum, n = number of samples

BDL = below detection limit, C.L. = confidence level

For these calculations, values reported as BDL and those reported as equal to or less than one-half the highest detection limit were counted as BDL.

**Table 4-4**  
**Comparison of Nitrate Data and Trends Between Analyses - Simplot Terrace Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-14	0	6.4	3.4	5	15	1.80	99%	1.80	99%	0	No change	No change
MW-15	0	0	0	0	0	0.73	99%	0.73	99%	0	No change	No additional data to evaluate
MW-22	0	1.7	1.7	4.1	16	1.38	99%	0.96	99%	-0.4	No change	From increasing to less steeply increasing
MW-38	0	2.4	2	0.7	15	0.95	99%	0.97	99%	0.03	No change	Essentially no change in increasing trend
MW-39	-3.3	0	-2.3	-2.9	15	1.80	99%	-0.11	41%	-1.91	Decrease	From increasing to SI decreasing
MW-40	-6.7	10.4	3.3	1.5	16	1.37	99%	1.70	99%	0.33	No change	From increasing to steeper increasing trend
MW-51	0	2.8	0.7	0	15	1.68	99%	0.71	99%	-0.96	No change	From increasing to less steeply increasing
MW-52	0	3.0	1.0	-0.2	16	2.25	95%	0.41	50%	-1.84	Decrease	From increasing to SI less steeply increasing trend
MW-53	0	0	-5.7	-5.2	16	0.95	< 80%	-2.07	99%	-3.02	Increase	From SI increasing trend to decreasing trend
MW-54	0	3.2	1.2	0.6	16	1.04	99%	0.62	99%	-0.42	No change	From increasing to less steeply increasing

**Summary of Differences (except MW-15 which has not been sampled since February 1998)**

**Minimum and Maximum**

22% of stations (2 wells) exhibited a new minimum (3.3 to 6.7 ppm lower).  
 78% of stations (7 wells) exhibited new maximums (1.7 to 10.4 ppm higher).

**Mean**

22% of stations (2 wells) exhibited lower means (2.3 to 5.7 ppm lower)  
 78% of stations (7 wells) exhibited higher mean values (0.7 to 3.4 ppm higher).

**Median**

33% of stations (3 wells) exhibited lower median values (0.2 to 5.2 ppm lower).  
 11% of stations (1 well) exhibited no change in median value  
 56% of stations (5 wells) exhibited higher median values (0.6 to 5 ppm higher).

**Trend Slope**

67% of stations (6 wells) exhibited improving trends  
 11% of stations (1 well) exhibited a worsening trend  
 22% of stations (2 wells) exhibited essentially no change (less than 0.03 ppm/yr)

**Trend Confidence Level**

67% of stations (6 wells) exhibited the same confidence level  
 11% of stations (1 well) exhibited a higher confidence level  
 22% of stations (2 wells) exhibited a lower confidence level

**Site-Wide Average Trend Slope**

Decreased from 1.39 ppm/yr to 0.57 ppm/yr

**Table 4-5**  
**Summary of Nitrate Trend Analyses - Simplot Expansion Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-23	May-90	Nov-05	4.8	13.2	9.2	9.0	60	0%	0.15	99%	Increasing	Increase then slight decrease
MW-24	May-90	Aug-05	3.8	12.3	7.7	7.5	53	0%	0.20	98%	Increasing	Increase then slight decrease
MW-25	May-90	Aug-05	3.5	13.8	7.7	7.5	56	0%	0.25	99%	Increasing	Increase then slight decrease
MW-26	May-90	Aug-05	2.4	17.8	9.6	9.6	48	0%	0.51	99%	Increasing	Increase then slight decrease
MW-27	May-90	Aug-05	2.6	13.4	7.3	7.3	48	0%	0.41	99%	Increasing	Increase then start to level off
MW-28	May-90	Aug-05	2.1	22.1	11.5	11.5	59	0%	0.56	99%	Increasing	Increase then decrease
MW-29	May-90	Nov-05	1.7	11.7	6.8	6.9	62	0%	0.30	99%	Increasing	Increase then slight decrease
MW-30	May-90	Aug-05	0.1	26.5	8.3	8.4	57	2%	0.55	99%	Increasing	Increasing with some fluctuation
MW-31	May-91	Nov-05	<1.0	20.0	9.8	9.7	59	2%	0.10	80%	Increasing	Increase then decrease
MW-32	May-91	Nov-05	4.2	11.8	7.8	7.8	59	0%	0.15	99%	Increasing	Increase then slight decrease
MW-33	May-91	Nov-05	3.6	13.1	8.0	8.4	58	0%	0.30	99%	Increasing	Increase then slight decrease
MW-34	May-91	Aug-05	4.0	24.5	7.9	6.9	58	0%	0.05	58%	No Significant Trend	Slight increase then slight decrease
MW-35	May-91	Nov-05	2.0	20.7	7.7	7.5	59	0%	0.05	54%	No Significant Trend	Increase then decrease
MW-36	May-91	Nov-05	2.7	8.8	6.0	6.7	59	0%	0.29	99%	Increasing	Increase then decrease
MW-37	May-91	Aug-05	<2.0	37.2	9.3	7.3	56	2%	0.66	99%	Increasing	Increase then decrease
MW-41	May-92	Nov-05	1.5	24.8	10.0	9.0	55	0%	1.04	99%	Increasing	Increase then decrease
MW-42	May-92	Nov-05	<2.0	15.3	9.9	9.5	52	2%	0.44	99%	Increasing	Level then increasing
MW-43	May-92	Nov-05	2.1	11.4	6.2	6.6	54	0%	0.54	99%	Increasing	Increasing with some fluctuation
MW-44	May-92	Nov-05	1.6	26.6	6.6	6.1	55	0%	0.24	99%	Increasing	Increase then start to level off
MW-55	Feb-96	Nov-05	<1.0	19.8	17.2	17.7	39	3%	0.22	93%	Increasing	Increase, decrease, then increase
# of Increasing Trends ==>									18			
# of Decreasing Trends ==>									0			
# of Flat Trends ==>									0			
# of Statistically Insignificant Trends ==>									2			
Average slope of significant trends (ppm/yr) ==>									0.38			
Average slope of all trends (ppm/yr) ==>									0.35			

Notes:

Min = minimum, Max = maximum, n = number of samples

BDL = below detection limit, C.L. = confidence level

For these calculations, values reported as BDL and those reported as equal to or less than one-half the highest detection limit were counted as BDL.

**Table 4-6**  
**Comparison of Nitrate Data and Trends Between Analyses - Simplot Expansion Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min *	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-23	0	0	0	0.1	15	0.25	99%	0.15	99%	-0.10	Same	From increasing to less steeply increasing trend
MW-24	0	0	0	0.1	10	0.40	99%	0.20	98%	-0.20	Decrease	From increasing to less steeply increasing trend
MW-25	0	0	0.1	0.1	12	0.43	99%	0.25	99%	-0.18	Same	From increasing to less steeply increasing trend
MW-26	0	0	0	0.2	9	0.94	99%	0.51	99%	-0.43	Same	From increasing to less steeply increasing trend
MW-27	0	0	0	0.3	10	0.48	99%	0.41	99%	-0.07	Same	From increasing to less steeply increasing trend
MW-28	0	0	0	0	14	1.16	99%	0.56	99%	-0.60	Same	From increasing to less steeply increasing trend
MW-29	0	0.7	0	0.4	16	0.47	99%	0.30	99%	-0.17	Same	From increasing to less steeply increasing trend
MW-30	-0.9	0	0.7	1.1	14	0.67	99%	0.55	99%	-0.12	Same	From increasing to less steeply increasing trend
MW-31	>-3.2	0	0	-0.6	16	0.58	99%	0.10	80%	-0.48	Decrease	From increasing to less steeply increasing trend
MW-32	0	0	0	0.2	16	0.35	99%	0.15	99%	-0.20	Same	From increasing to less steeply increasing trend
MW-33	0	0.3	0	0.4	16	0.53	99%	0.30	99%	-0.23	Same	From increasing to less steeply increasing trend
MW-34	0	0	0	-0.3	15	0.25	99%	0.05	58%	-0.20	Decrease	From increasing to SI less steeply increasing trend
MW-35	0	0	-0.3	-0.3	16	0.46	99%	0.05	54%	-0.41	Decrease	From increasing to less steeply increasing trend
MW-36	0	0	0.2	-0.2	16	0.56	99%	0.29	99%	-0.27	Same	From increasing to less steeply increasing trend
MW-37	*	0	0.9	1.6	15	1.08	99%	0.66	99%	-0.42	Same	From increasing to less steeply increasing trend
MW-41	0	0	1.3	5.1	16	2.02	99%	1.04	99%	-0.98	Same	From increasing to less steeply increasing trend
MW-42	*	4.0	1.3	1.2	16	0.07	< 80%	0.44	99%	0.38	Increase	From SI increasing to steeper increasing trend
MW-43	0	2.0	0.8	0.9	16	0.75	99%	0.54	99%	-0.21	Same	From increasing to less steeply increasing trend
MW-44	0	9.5	0.6	0.4	16	0.40	99%	0.24	99%	-0.16	Same	From increasing to less steeply increasing trend
MW-55	>-11.1	0	0.2	0.3	16	0.80	95%	0.22	93%	-0.58	Decrease	From increasing to less steeply increasing trend

**Summary of Differences**

**Minimum and Maximum**

15% of stations (3 wells) exhibited a new minimum (0.9 to >11.1 ppm lower).  
 25% of stations (5 wells) exhibited new maximums (0.3 to 9.5 ppm higher).

**Mean**

5% of stations (1 well) exhibited a lower mean (0.3 ppm lower)  
 45% of stations (9 wells) exhibited higher mean values (0.1 to 1.3 ppm higher).

**Median**

20% of stations (4 wells) exhibited lower median values (0.2 to 0.6 ppm lower).  
 75% of stations (15 wells) exhibited an increase in median values (0.1 to 5.1 ppm higher).

**Trend Slope**

95% of stations (19 wells) exhibited improving trends  
 5% of stations (1 well) exhibited a worsening trend

**Trend Confidence Level**

70% of stations (14 wells) exhibited the same confidence level  
 5% of stations (1 well) exhibited a higher confidence level  
 25% of stations (5 wells) exhibited a lower confidence level

**Site-Wide Average Trend Slope**

Decreased from 0.63 ppm/yr to 0.35 ppm/yr

E:\LUB\LandApp\2006 Trend Analysis\All Trends.xls\Simplot Expansion Comparison

Notes:  
 \* = A more robust method of dealing with censored values when estimating summary statistics and calculating trends was used in the second trend analysis.  
 Values marked with an asterisk (\*) reflect differences in the statistical methods rather than an actual changes in nitrate concentrations.

**Table 4-7**  
**Summary of Nitrate Trend Analyses - Simplot Levy Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
HL-3	May-02	Nov-05	7.8	25.6	12.4	9.3	15	0%	0.40	54%	No Significant Trend	Increase then decrease
HL-4	May-02	Nov-05	4.1	11.1	6.4	4.1	15	0%	1.13	99%	Increasing	Increasing
HL-5	Nov-02	Nov-05	6.6	47.7	36.7	36.1	15	0%	4.90	99%	Increasing	Level then increasing
L-6	Nov-02	Nov-05	1.1	2.8	2.0	1.9	15	0%	-0.35	0%	No Significant Trend	Decrease, increase, decrease
L-8	Aug-02	Nov-05	<1.0	1.3	0.9	0.9	15	64%	-0.20	70%	No Significant Trend	Basically flat
L-9	Aug-02	Nov-05	14.0	40.1	24.8	20.5	15	0%	2.07	73%	No Significant Trend	Increase then decrease
L-10	May-02	Nov-05	8.1	36.3	10.9	9.0	15	0%	0.33	86%	Increasing	Slight increase then decrease
L-11	May-02	Nov-05	12.8	21.9	18.1	17.8	15	0%	1.50	93%	Increasing	Decrease then increase
SP-1	Feb-03	Nov-05	7.5	33.8	17.7	17.4	11	0%	-0.25	50%	No Significant Trend	Decrease then level
# of Increasing Trends ==>									4			
# of Decreasing Trends ==>									0			
# of Flat Trends ==>									0			
# of Statistically Insignificant Trends ==>									5			
Average slope of significant trends (ppm/yr) ==>									1.97			
Average slope of all trends (ppm/yr) ==>									1.06			

Notes:

Min = minimum, Max = maximum, n = number of samples

BDL = below detection limit, C.L. = confidence level

For these calculations, values reported as BDL and those reported as equal to or less than one-half the highest detection limit were counted as BDL.

**Table 5-1**  
**Summary of Nitrate Trend Analyses - Hermiston Foods Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-1	Apr-91	Nov-05	7.3	13.0	10.2	10.0	53	0%	-0.12	98%	Decreasing	Decreasing, then decreasing less steeply
MW-2	Apr-91	Nov-05	0.8	16.6	7.9	7.6	50	0%	0.08	99%	Increasing	Increasing then decreasing
MW-3	Apr-91	Nov-05	2.4	9.2	3.9	3.9	53	0%	-0.09	99%	Decreasing	Slight increase, then decreasing
MW-4	Apr-91	Nov-05	0.6	8.1	6.1	6.2	53	0%	0.17	99%	Increasing	Increasing then increasing less steeply
MW-5	May-97	Nov-05	4.5	13.0	7.1	6.8	35	0%	-0.16	99%	Decreasing	Flat, then decreasing, then increasing
MW-6	May-97	Nov-05	7.5	14.5	10.5	9.9	35	0%	-0.38	99%	Decreasing	Flat, then decreasing, then leveling off
MW-7	Aug-04	Nov-05	4.9	5.5	5.3	5.4	6	0%	not enough data to calculate a trend		Increasing	

# of Increasing Trends ==>	2
# of Decreasing Trends ==>	4
# of Flat Trends ==>	0
# of Statistically Insignificant Trends ==>	0
Average slope of significant trends (ppm/yr) ==>	-0.08
Average slope of all trends (ppm/yr) ==>	-0.08

Notes:

Min = minimum, Max = maximum, n = number of samples

BDL = below detection limit, C.L. = confidence level

E:\LUB\LandApp\2006 Trend Analysis\All Trends.xls\HF thru 2005

**Table 5-2**

**Comparison of Nitrate Data and Trends Between Analyses - Hermiston Foods Site  
Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-1	0	0	-0.2	-0.3	17	-0.12	< 80%	-0.12	98%	0	Higher	No change
MW-2	0	0	0	0	16	0.29	99%	0.08	99%	-0.20	Same	From increasing to less steeply increasing
MW-3	0	0	-0.4	-0.2	17	-0.01	< 80%	-0.09	99%	-0.08	Higher	From SI decreasing to steeper decreasing
MW-4	0	0	0.3	0.3	17	0.29	99%	0.17	99%	-0.12	Same	From increasing to less steeply increasing
MW-5	0	0	-0.5	-0.5	17	-0.01	< 80%	-0.16	99%	-0.15	Higher	From SI decreasing to steeper decreasing
MW-6	0	0	-0.8	-1.7	17	0.12	< 80%	-0.38	99%	-0.50	Higher	From SI increasing to decreasing
MW-7	This well was not installed at the time of the first trend analysis											

**Summary of Differences**

**Minimum and Maximum**

No stations exhibited a new minimum or maximum concentration.

**Mean**

67% of stations (4 wells) exhibited lower means (0.2 to 0.8 ppm lower).  
17% of stations (1 well) exhibited a higher mean value (0.3 ppm higher).  
17% of stations (1 well) exhibited a no change in mean value.

**Median**

67% of stations (4 wells) exhibited lower median values (0.2 to 1.7 ppm lower).  
17% of stations (1 well) exhibited no change in median value.  
17% of stations (1 well) exhibited an increase in median value (0.3 ppm higher).

**Trend Slope**

83% of stations (5 wells) exhibited improving trends  
17% of stations (1 well) no change in trend

**Trend Confidence Level**

33% of stations (2 wells) exhibited the same confidence level  
67% of stations (4 wells) exhibited a higher confidence level

**Site-Wide Average Trend Slope**

Decreased from 0.09 ppm/yr to -0.08 ppm/yr

**Table 6-1**  
**Summary of Nitrate Trend Analyses - MorStarch Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics									Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	Skewness	n	% BDL	Slope (ppm/yr)	C.L.		
MW-1S	Aug-89	Nov-05	<0.5	23.8	9.0	8.5	0.35	60	3%	0.62	99%	Increasing	Increasing then decreasing
MW-1D	Aug-89	May-98	<0.5	6.5	2.3	2.0	1.55	31	3%	0.28	99%	<i>Increasing</i>	<i>Increasing</i>
MW-2S	Aug-89	Nov-05	<0.048	4.5	0.9	0.6	2.52	61	8%	-0.01	66%	No Significant Trend	Increasing then decreasing
MW-3S	Aug-89	Nov-05	<0.2	5.5	1.3	1.1	2.69	61	2%	0.03	93%	Increasing	Increasing then decreasing
MW-3D	Aug-89	May-98	<0.5	5.5	1.2	1.0	3.08	31	10%	0.07	98%	<i>Increasing</i>	<i>Decreasing then increasing</i>
MW-4S	Aug-89	Nov-05	<0.5	10.0	3.6	3.5	0.95	61	3%	0.15	99%	Increasing	Increasing then increasing less steeply
MW-5S	Aug-89	Nov-05	<0.5	16.4	4.9	4.6	1.52	61	5%	0.21	99%	Increasing	Increasing then decreasing
MW-6S	Apr-94	Nov-05	2.11	6.8	3.9	3.8	0.76	47	0%	0.11	99%	Increasing	Increasing then decreasing
MW-E1S	Apr-94	Nov-05	2.20	12.8	5.5	5.6	1.01	47	0%	0.26	99%	Increasing	Increasing then leveling off
MW-E2S	Apr-94	Nov-05	0.30	8.4	4.3	3.6	0.41	47	0%	-0.12	92%	Decreasing	Increasing then decreasing
# of Increasing Trends ==>										8			
# of Decreasing Trends ==>										1			
# of Flat Trends ==>										0			
# of Statistically Insignificant Trends ==>										1			
Average slope of significant trends (ppm/yr) ==>										0.18			
Average slope of all trends (ppm/yr) ==>										0.16			

Notes:

Min = minimum, Max = maximum, n = number of samples

C.L. = confidence level

Sampling is no longer required at wells MW-1D and MW-3D

E:\LUB\LandApp\2006 Trend Analysis\All Trends.xls\Staley thru 2005

**Table 6-2  
Comparison of Nitrate Data and Trends Between Analyses - MorStarch Site  
Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-1S	0*	0	0.2	0.8	12	1.41	99%	0.62	99%	-0.79	same	From increasing to less steeply increasing
MW-1D	0*	0	0	-0.2***	-2***	0.28	99%	0.28	99%	0	same	no change
MW-2S	0*	0	-0.1	-0.1	14	0.06	99%	-0.01	66%	-0.07	decrease	From increasing to SI decreasing
MW-3S	0*	0	-0.1	-0.1	14	0.10	99%	0.03	93%	-0.08	decrease	From increasing to less steeply increasing
MW-3D	0*	0	0	0	2***	0.03	80%	0.07	98%	0.03	increase	<i>The apparent increase in slope is due to the addition of four previously unavailable samples to the data set.</i>
MW-4S	0*	0	0.1	0.3	18	0.28	99%	0.15	99%	-0.13	same	From increasing to less steeply increasing
MW-5S	0*	-3**	-0.3	0.2	13	0.56	99%	0.21	99%	-0.35	same	From increasing to less steeply increasing
MW-6S	0	0	0	0.2	14	0.39	99%	0.11	99%	-0.28	same	From increasing to less steeply increasing
MW-E1S	0	4.8	0.6	0.8	14	0.44	99%	0.26	99%	-0.19	same	From increasing to less steeply increasing
MW-E2S	0	0	-0.5	-1.4	14	0.25	99%	-0.12	92%	-0.37	decrease	From increasing to decreasing

<b>Summary of Differences (excluding MW-1D and MW-3D because no additional samples were collected since the first analysis)</b>	
<b>Minimum and Maximum</b> No wells exhibited new minimum concentrations. 12% of stations (1 well) exhibited a new maximum (4.8 ppm higher).	<b>Trend Slope</b> 100% of stations (8 wells) exhibited improving trends
<b>Mean</b> 50% of stations (4 wells) exhibited lower means (0.1 to 0.5 ppm lower) 38% of stations (3 wells) exhibited higher mean values (0.1 to 0.6 ppm higher). 12% of stations (1 well) exhibited no change in mean concentration.	<b>Trend Confidence Level</b> 62% of stations (5 wells) exhibited the same confidence level 38% of stations (3 wells) exhibited lower confidence levels
<b>Median</b> 38% of stations (3 wells) exhibited lower median values (0.1 to 1.4 ppm lower). 62% of stations (5 wells) exhibited an increase in median values (0.2 to 0.8 ppm higher).	<b>Site-Wide Average Trend Slope</b> Decreased from 0.44 ppm/yr to 0.16 ppm/yr

E:\LUB\LandApp\2006 Trend Analysis\All Trends.xls\Staley Comparison

\* = A more robust method of dealing with censored values when estimating summary statistics and calculating trends was used in the second trend analysis.

The apparent difference in minimum values from MW-1s, MW-1d, MW2s, MW-3s, MW-3d, MW-4s, and MW-5s reflects the difference in the statistical methods rather than an actual change in nitrate concentrations

\*\* = The previous analysis indicated the maximum was 19.4 ppm which was a "resample" after the original 16.4 ppm result.  
Because the 16.4 ppm result is closer to the middle of the quarter, the 19.4 ppm result should have been trimmed from the data set during the previous analysis.

\*\*\* = Two data points from MW-1D and MW-3D used in the first analysis were trimmed from the dataset for the second analysis because they were multiple data points within the same quarter.  
For MW-3D, four data points that were not available during the first analysis are now available. The addition of four points and the elimination of 2 points results in a net gain of 2 points.  
For MW-1D, the elimination of two data points caused the median value to be slightly lower.

**Table 7-1**  
**Summary of Nitrate Trend Analyses - Snack Alliance Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Data Set Statistics								Trend Analysis Results		Trend Direction	LOWESS Pattern
	Starting Date	Ending Date	Min	Max	Mean	Median	n	% BDL	Slope (ppm/yr)	C.L.		
MW-1	Nov-94	Nov-05	0.7	11.1	4.1	3.8	45	0%	0.03	9%	No Significant Trend	Decrease, then increase, then level off
MW-2	Nov-94	Nov-05	1.3	16.3	10.0	10.0	45	0%	-0.16	85%	Decreasing	Increase then decrease
MW-3	Nov-94	Nov-05	4.2	20.0	9.7	9.8	45	0%	-0.42	99%	Decreasing	Increase then decrease
MW-4	Aug-99	Nov-05	6.0	128.2	17.8	11.1	26	0%	-1.14	97%	Decreasing	Decrease then decrease steeper
# of Increasing Trends ==>									0			
# of Decreasing Trends ==>									3			
# of Flat Trends ==>									0			
# of Statistically Insignificant Trends ==>									1			
Average slope of significant trends (ppm/yr) ==>									-0.57			
Average slope of all trends (ppm/yr) ==>									-0.42			

Notes:  
Min = minimum, Max = maximum, n = number of samples  
BDL = below detection limit, C.L. = confidence level  
For these calculations, values reported as BDL and those reported as equal to or less than one-half the highest detection limit were counted as BDL.

**Table 7-2  
Comparison of Nitrate Data and Trends Between Analyses - Snack Alliance Site  
Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Sample Location	Change in Data Set Statistics					First Trend Analysis Results		Second Trend Analysis Results		Change in Trend		Change in Calculated Trend
	Min	Max	Mean	Median	n	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	Slope (ppm/yr)	C.L.	
MW-1	0	0	0.4	0.9	16	-0.28	<80%	0.03	<80%	0.31	same	From SI decreasing to SI increasing
MW-2	-5.45	0	-0.5	-0.7	16	0.01	<80%	-0.16	85%	-0.17	increase	From SI increasing to decreasing
MW-3	0	0	-0.6	-0.3	16	-0.64	95%	-0.42	99%	0.22	increase	From decreasing to less steeply decreasing
MW-4	-0.77	95	1.2	-6.3	16	-0.25	<80%	-1.14	97%	-0.89	increase	From SI decreasing to steeper decreasing

**Summary of Differences**

**Minimum and Maximum**

50% of stations (2 wells) exhibited new minimums (0.8 to 5.5 ppm lower).  
25% of stations (1 well) exhibited a new maximum (95 ppm higher).

**Mean**

50% of stations (2 wells) exhibited lower means (0.5 to 0.6 ppm lower)  
50% of stations (2 wells) exhibited higher mean values (0.4 to 1.2 ppm higher).

**Median**

75% of stations (3 wells) exhibited lower median values (0.3 to 6.3 ppm lower).  
25% of stations (1 wells) exhibited an increase in median values (0.9 ppm higher).

**Trend Slope**

50% of stations (2 wells) exhibited improving trends  
50% of stations (2 wells) exhibited worsening trends

**Trend Confidence Level**

75% of stations (3 wells) exhibited higher confidence levels  
25% of stations (1 wells) exhibited the same confidence level

**Site-Wide Average Trend Slope**

Decreased from -0.29 ppm/yr to -0.42 ppm/yr

**Table 8-1**  
**Summary of Trends and Average Concentrations by Site**  
**Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Site	# of Wells	Increasing Trends		Decreasing Trends		Flat Trends		Statistically Insignificant Trends		Average slope of trends (ppm/yr)		Average of Average Nitrate Concentrations at Each Well (ppm)	2002 to 2005 Site-Wide Average Concentration (ppm)
		#	%	#	%	#	%	#	%	Stat. Sig.	All		
Port of Morrow (Farm 1)	14	9	64%	3	21%	0	0%	2	14%	0.61	0.52	22.3	26.1
Port of Morrow (Farm 2)	9	7	78%	0	0%	0	0%	2	22%	1.40	1.10	34.5	36.1
Port of Morrow (Farm 3)	6	3	50%	2	33%	0	0%	1	17%	2.90	2.30	33.0	33.0
ConAgra (North Farm)	10	5	50%	2	20%	0	0%	3	30%	0.72	0.50	25.1	26.5
ConAgra (Madison Ranches)	10	7	70%	1	10%	0	0%	2	20%	0.28	0.21	5.4	5.4
Simplot (Plant Site)	19	4	21%	8	42%	0	0%	7	37%	-0.67	-0.40	8.7	6.0
Simplot (Expansion Site)	20	18	90%	0	0%	0	0%	2	10%	0.38	0.35	8.7	9.6
Simplot (Terrace Site)	10	7	70%	1	10%	0	0%	2	20%	0.68	0.57	22.9	26.7
Simplot (Levy Site)	9	4	44%	0	0%	0	0%	5	56%	1.97	1.06	14.4	14.4
Hermiston Foods	6	2	33%	4	67%	0	0%	0	0%	-0.08	-0.08	7.3	7.0
MorStarch Site	10	8	80%	1	10%	0	0%	1	10%	0.18	0.16	3.7	4.1
Snack Alliance	4	0	0%	3	75%	0	0%	1	25%	-0.57	-0.42	10.4	10.2
<b>Totals by Well</b>	<b>127</b>	<b>74</b>	<b>58%</b>	<b>25</b>	<b>20%</b>	<b>0</b>	<b>0%</b>	<b>28</b>	<b>22%</b>				

Steepest Decreasing Trend At A Well = -3.17 ppm/yr  
Steepest Increasing Trend At A Well = 7.51 ppm/yr

In addition to the 127 wells indicated above, four wells near the Simplot Plant site were also analyzed. Results indicated 1 increasing, 1 decreasing, and 2 statistically insignificant wells.

In addition to the 127 wells indicated above, two former ConAgra Madison Ranch wells (now considered offsite) were also analyzed. Results indicated 2 decreasing trends.

In addition to the 127 wells indicated above, one well at the Hermiston Foods site does not yet have enough data to evaluate a trend.

**Table 8-2  
Comparison of Results Between Analyses  
Second Trend Analysis of Food Processor Land Application Sites in the LUBGWMA**

Site	# of Increasing Trends			# of Decreasing Trends			# of Flat Trends			# of Statistically Insignificant Trends			Average trend slope (ppm/yr)			Average of average Nitrate Concentration at Each Well (ppm)		
	thru 2001	thru 2005	Change	thru 2001	thru 2005	Change	thru 2001	thru 2005	Change	thru 2001	thru 2005	Change	thru 2001	thru 2005	Change	thru 2001	thru 2005	Change
Port of Morrow (Farm 1)	9	9	0	1	3	2	0	0	0	3	1	-2	1.33	0.61	-0.72	23.0	22.3	-0.7
Port of Morrow (Farm 2)	9	7	-2	0	0	0	0	0	0	0	2	2	2.51	1.40	-1.11	33.6	34.5	0.9
ConAgra (North Farm)	5	5	0	2	2	0	0	0	0	3	3	0	1.45	0.72	-0.73	24.2	25.1	0.9
ConAgra (Madison Ranches)	7	7	0	0	3	3	0	0	0	5	2	-3	0.47	0.14	-0.33	5.6	5.8	0.2
Simplot (Plant Site)	2	4	2	4	8	4	3	0	-3	10	7	-3	-0.60	-0.67	-0.07	9.5	8.7	-0.8
Simplot (Expansion Site)	19	18	-1	0	0	0	0	0	0	1	2	1	0.66	0.38	-0.28	8.4	8.7	0.3
Simplot (Terrace Site)	9	7	-2	0	1	1	0	0	0	1	2	1	1.44	0.68	-0.76	22.4	22.9	0.5
Hermiston Foods	2	2	0	0	4	4	0	0	0	4	0	-4	0.29	-0.08	-0.37	7.9	7.3	-0.6
MorStarch Site	10	8	-2	0	1	1	0	0	0	0	1	1	0.38	0.18	-0.20	3.7	3.7	0.0
Snack Alliance	0	0	0	1	3	2	0	0	0	3	1	-2	-0.64	-0.57	0.07	10.3	10.4	0.1
<b>Totals by Well</b>	<b>72</b>	<b>67</b>	<b>-5</b>	<b>8</b>	<b>25</b>	<b>17</b>	<b>3</b>	0	<b>-3</b>	<b>30</b>	<b>21</b>	<b>-9</b>						
<b>Percentages by Well</b>	<b>64%</b>	<b>59%</b>	<b>-4%</b>	<b>7%</b>	<b>22%</b>	<b>15%</b>	<b>3%</b>	0%	<b>-3%</b>	<b>27%</b>	<b>19%</b>	<b>-8%</b>						

Summary		
Item	Result of Analysis through 2005	Difference Between Analyses
Number of Increasing and Decreasing Trends	67 increasing trends; 25 decreasing trends	4% fewer increasing trends; 15% more decreasing trends
Average Trend Slope at 10 Sites	Increasing at 7 sites; decreasing at 3 sites	Improved at 9 sites; worsened at 1 site
Average of average nitrate concentration at each well	Exceeded 7 ppm GWMA trigger level at 8 of 10 sites	Improved at 3 sites; worsened at 6 sites

Note: This comparison uses information from the 113 wells and 10 sites analyzed during both analyses.

Two ConAgra Madison Ranch site wells are now considered offsite wells but are included in this table for comparison consistency.

The two former ConAgra Madison Ranch site wells exhibited statistically insignificant trends during the first analysis and decreasing trends during the second analysis.