

**Unincorporated City of Live Oak Urban Watch Storm Drain Monitoring Program
Date Results June 28 - October 27, 2005**

Appendices

Appendix 1

Table 1	2005 Parameter Average-Minimum-Maximum	Quantitative and measured data
Table 2	2005 Parameter Maximum	Quantitative data
Table 3	2005 Parameter Frequency	Quantitative and measured data
Table 4	2005 Parameter Frequency	Qualitative data
Table 5	2005 Parameter Bacteria counts	Quantitative data

Appendix 2

Table 6	2005 Field Data	Represents all data collected on all field visits.
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Urban Watch Positive Results Average-Min-Max Table

Summary Table 1

	Detergent Avg ppm	Min	Max	Ammonia Nitrogen Avg ppm	Min	Max	Chlorine Avg ppm	Min	Max
WQO:	0.00			0.025			N/A		
Minimal Detection Limit:	>0.1			>0.0			>0.2		
Lincoln Beach 13th									
Lincoln Beach 14th									
Blackpoint Lane	n.d.	n.d	n.d	0.6	0.25	1.0	n.d.	n.d	n.d
Shearwater									
30th Ave	n.d.	n.d	n.d	0.22	0.0	0.7	n.d.	n.d	n.d
Privates									
Simpkins	0.2	0.1	1.2	0.35	0.0	2.17	n.d.	n.d	n.d

	pH Avg.	Min	Max	Air Temp Avg. °C	Min	Max	Water Temp °C Avg.	Min	Max
WQO:	N/A			N/A			N/A		
Minimal Detection Limit:	<6.5, >8.0			-5			-5		
Lincoln Beach 13th				16.0	11.0	22.0			
Lincoln Beach 14th				16.0	11.0	22.0			
Blackpoint Lane	7.0	7.0	7.0	16.0	11.0	22.0	16.0	15.0	17.0
Shearwater				15.5	11.5	21.0			
30th Ave	7.0	7.0	7.5	16.0	13.0	19.0	15.0	13.0	17.0
Privates				16.5	12.0	25.0			
Simpkins	7.0	7.0	7.5	15.5	12.0	20.5	16.0	12.0	19.0

	Conductivity Avg. (µS)	Min	Max	Flow Width Avg	Flow Depth Avg	Min	Copper Avg.	Min	Max
WQO:	N/A			N/A			0.03		
Minimal Detection Limit:	0			N/A			>0.0		
Lincoln Beach 13th									
Lincoln Beach 14th									
Blackpoint Lane	600	470	740				n.d.	n.d	n.d
Shearwater									
30th Ave	660	510	820				n.d.	n.d	n.d
Privates									
Simpkins	660	540	990				n.d.	n.d	n.d

	Orthophosphate	Min	Max	Nitrate Nitrogen Avg. ppm	Min	Max	Phenols Avg.	Min	Max
WQO:	0.10			2.25			N/A		
Minimal Detection Limit:	>0.0			>0.0			>0.5		
Lincoln Beach 13th									
Lincoln Beach 14th									
Blackpoint Lane	0.3	0.3	0.3	n.d.	n.d	n.d	n.d.	n.d	n.d
Shearwater									
30th Ave	0.3	0.0	0.9	0.2	0.0	1.5	n.d.	n.d	n.d
Privates									
Simpkins	0.33	0.3	0.5	0.79	0.0	2.4	n.d.	n.d	n.d

Gray cell = No water detected during any station visit

n.d. = non-detect; at or below the minimum detection limit of the equipment

Live Oak Program Summary:			Date	AirTemp C	WaterTemp C	Chlorine	Conductivity	Copper	Detergent	NH3-N	NO3-N	pH	Phenols	PO4
UW05	Shearwater	304-LOSD-04	8/23/05	15.5										
UW05	Shearwater	304-LOSD-04	8/26/05	17.5										
UW05	Shearwater	304-LOSD-04	8/29/05	15.5										
UW05	Shearwater	304-LOSD-04	9/3/05	15.0										
UW05	Shearwater	304-LOSD-04	9/4/05	16.0										
UW05	Shearwater	304-LOSD-04	9/6/05	14.0										
UW05	Shearwater	304-LOSD-04	9/9/05	16.5										
UW05	Shearwater	304-LOSD-04	9/12/05	14.0										
UW05	Shearwater	304-LOSD-04	9/16/05	15.0										
UW05	Shearwater	304-LOSD-04	9/19/05	19.0										
UW05	Shearwater	304-LOSD-04	9/23/05	21.0										
UW05	Shearwater	304-LOSD-04	9/29/05	16.5										
UW05	Shearwater	304-LOSD-04	10/1/05	14.0										
UW05	Shearwater	304-LOSD-04	10/2/05	15.5										
UW05	Shearwater	304-LOSD-04	10/4/05	15.0										
UW05	Shearwater	304-LOSD-04	10/11/05	11.5										
UW05	Shearwater	304-LOSD-04	10/21/05	18.0										
UW05	Shearwater	304-LOSD-04	10/26/05	11.5										
UW05	Shearwater	304-LOSD-04	10/27/05	17.0										
UW05	30th Avenue	304-LOSD-05	6/28/05	17.5	16.5	0.2	520	0	0.1			7.5	0.5	
UW05	30th Avenue	304-LOSD-05	6/30/05	15.0	16.0	0.2	610	0	0.1			7.0	0.5	
UW05	30th Avenue	304-LOSD-05	7/9/05	19.0	16.5	0.2	590	0	0.1			7.5	0.5	
UW05	30th Avenue	304-LOSD-05	7/10/05	17.5	16.0	0.2	640	0	0.1			7.0	0.5	
UW05	30th Avenue	304-LOSD-05	7/13/05	15.0	15.5	0.2	690	0	0.1			7.5	0.5	
UW05	30th Avenue	304-LOSD-05	7/14/05	18.0	17.0	0.2	680	0	0.1			7.5	0.5	
UW05	30th Avenue	304-LOSD-05	7/19/05	18.5	16.5	0.2	640	0	0.1			7.0	0.5	
UW05	30th Avenue	304-LOSD-05	7/22/05	17.5	16.0	0.2	650	0	0.1			7.0	0.5	
UW05	30th Avenue	304-LOSD-05	7/27/05	14.5	16.0	0.2	630	0	0.1			7.5	0.5	
UW05	30th Avenue	304-LOSD-05	7/29/05	16.0	16.0	0.2	640	0	0.1	0.12	0.40	7.5	0.5	
UW05	30th Avenue	304-LOSD-05	8/6/05	17.0	15.0	0.2	660	0	0.1	0.31	0.00	7.0	0.5	
UW05	30th Avenue	304-LOSD-05	8/7/05	15.5	16.0	0.2	580	0	0.1	0.65	0.20	7.0	0.5	
UW05	30th Avenue	304-LOSD-05	8/8/05	15.0	16.0	0.2	670	0	0.1	0.34	0.50	7.5	0.5	
UW05	30th Avenue	304-LOSD-05	8/10/05	15.0	16.0	0.2	670	0	0.1	0.28	0.00	7.0	0.5	

Live Oak Program Summary:			Date	AirTemp C	WaterTemp C	Chlorine	Conductivity	Copper	Detergent	NH3-N	NO3-N	pH	Phenols	PO4
UW05	Privates	304-LOSD-06	8/8/05	15.5										
UW05	Privates	304-LOSD-06	8/10/05	14.0										
UW05	Privates	304-LOSD-06	8/15/05	16.0										
UW05	Privates	304-LOSD-06	8/16/05	18.0										
UW05	Privates	304-LOSD-06	8/23/05	16.5										
UW05	Privates	304-LOSD-06	8/26/05	20.0										
UW05	Privates	304-LOSD-06	8/29/05	18.0										
UW05	Privates	304-LOSD-06	9/3/05	13.5										
UW05	Privates	304-LOSD-06	9/4/05	16.0										
UW05	Privates	304-LOSD-06	9/6/05	14.0										
UW05	Privates	304-LOSD-06	9/9/05	16.5										
UW05	Privates	304-LOSD-06	9/12/05	15.0										
UW05	Privates	304-LOSD-06	9/16/05	15.0										
UW05	Privates	304-LOSD-06	9/19/05	18.0										
UW05	Privates	304-LOSD-06	9/23/05	18.5										
UW05	Privates	304-LOSD-06	9/29/05	18.0										
UW05	Privates	304-LOSD-06	10/1/05	14.0										
UW05	Privates	304-LOSD-06	10/2/05	17.5										
UW05	Privates	304-LOSD-06	10/4/05	17.0										
UW05	Privates	304-LOSD-06	10/11/05	14.5										
UW05	Privates	304-LOSD-06	10/26/05	12.0										
UW05	Privates	304-LOSD-06	10/27/05	13.5										
UW05	Simpkins	304-LOSD-07	7/9/05	19.5	17.0	0.2	610	0	0.1			7.5	0.5	
UW05	Simpkins	304-LOSD-07	7/10/05	18.0	19.0	0.2	990	0	1.2			7.5	0.5	
UW05	Simpkins	304-LOSD-07	7/13/05	15.0										
UW05	Simpkins	304-LOSD-07	7/14/05	18.0	17.0	0.2	610	0	0.8			7.5	0.5	
UW05	Simpkins	304-LOSD-07	7/19/05	16.0	17.0	0.2	680	0	0.1			7.0	0.5	
UW05	Simpkins	304-LOSD-07	7/22/05	17.5	17.0	0.2	590	0	0.1			7.5	0.5	
UW05	Simpkins	304-LOSD-07	7/27/05	15.0	16.0	0.2	670	0	0.1			7.0	0.5	
UW05	Simpkins	304-LOSD-07	7/29/05	16.0	17.0	0.2	630	0	0.1	2.17	2.40	7.0	0.5	
UW05	Simpkins	304-LOSD-07	8/6/05	15.0	16.5	0.2	670	0	0.1	0.29	0.60	7.0	0.5	
UW05	Simpkins	304-LOSD-07	8/7/05	15.5	16.5	0.2	700	0	0.1	0.28	0.80	7.0	0.5	
UW05	Simpkins	304-LOSD-07	8/8/05	15.0	17.0	0.2	620	0	0.1	0.09	0.80	7.5	0.5	

Live Oak Program Summary:			Date	AirTemp C	WaterTemp C	Chlorine	Conductivity	Copper	Detergent	NH3-N	NO3-N	pH	Phenols	PO4
UW05	Simpkins	304-LOSD-07	8/10/05	14.0	17.0	0.2	670	0	0.1	0.00	0.90	7.0	0.5	
UW05	Simpkins	304-LOSD-07	8/15/05	15.5	17.0	0.2	540	0	0.1	0.16	1.30	7.5	0.5	
UW05	Simpkins	304-LOSD-07	8/16/05	15.0	17.0	0.2	730	0	0.1	0.00	1.30	7.5	0.5	
UW05	Simpkins	304-LOSD-07	8/23/05	16.5	17.0	0.2	720	0	0.2	0.84	0.70	7.5	0.5	
UW05	Simpkins	304-LOSD-07	8/26/05	17.5	16.0	0.2	670	0	0.1	0.44	0.30	7.5	0.5	
UW05	Simpkins	304-LOSD-07	8/29/05	16.5	16.0		630				2.20	7.0		
UW05	Simpkins	304-LOSD-07	9/3/05	13.0	15.5	0.2	670	0	0.1	0.13	0.00	7.5	0.5	0.27
UW05	Simpkins	304-LOSD-07	9/4/05	14.0	15.5	0.2	700	0	0.1	0.21	0.40	7.0	0.5	0.27
UW05	Simpkins	304-LOSD-07	9/6/05	13.0	15.0	0.2	670	0	0.2	0.23	0.20	7.0		0.39
UW05	Simpkins	304-LOSD-07	9/9/05	15.0	17.0	0.2	630	0	0.1		1.60	7.0	0.5	0.30
UW05	Simpkins	304-LOSD-07	9/12/05	14.0	14.5	0.2	640	0	0.1		0.60	7.0	0.5	0.28
UW05	Simpkins	304-LOSD-07	9/16/05	15.0	15.5	0.2	610	0	0.1	0.26	0.00	7.0	0.5	0.34
UW05	Simpkins	304-LOSD-07	9/19/05	18.5	16.5	0.2	670	0	0.2		1.40	7.0	0.5	0.38
UW05	Simpkins	304-LOSD-07	9/23/05	20.5	18.0	0.2	660	0	0.7		0.00	7.5	0.5	0.28
UW05	Simpkins	304-LOSD-07	9/29/05	15.0										
UW05	Simpkins	304-LOSD-07	10/1/05	13.5										
UW05	Simpkins	304-LOSD-07	10/2/05	16.0										
UW05	Simpkins	304-LOSD-07	10/4/05	15.0										
UW05	Simpkins	304-LOSD-07	10/11/05	12.5										
UW05	Simpkins	304-LOSD-07	10/13/05		13.0	0.2	740	0	0.4	0.05	0.00	7.0	0.5	0.51
UW05	Simpkins	304-LOSD-07	10/21/05		12.0	0.2	680	0	0.1			7.0	0.5	
UW05	Simpkins	304-LOSD-07	10/26/05	12.0	13.5		540			0.25	1.10	7.0		
UW05	Simpkins	304-LOSD-07	10/27/05	15.5	15.0	0.2	630	0	0.1	0.25	0.00	7.5	0.5	0.25

Urban Watch Bacteria/Nutrient Monitoring Results

Summary Table 5

Monitoring Date: 7/27/2005

Parameter	WQO	Lincoln 13th	Lincoln 14th	Blackpoint Ln	Shearwater	30th	Privates
E.coli (MPN/100ml)	≤ 400					5794	
Total Coliform (MPN/100ml)	≤ 10,000					14136	
Nitrate (mg/L)	< 2.25					0.30	
Ortho-Phosphates (mg/L)	≤ 0.10					0	
Ammonia Nitrogen (mg/L)	< 0.025					0.344	

Monitoring Date: 8/29/2005

Parameter	WQO	Lincoln 13th	Lincoln 14th	Blackpoint Ln	Shearwater	30th	Privates
E.coli (MPN/100ml)	≤ 400					86	
Total Coliform (MPN/100ml)	≤ 10,000					6867	
Nitrates (mg/L)	< 2.25					1.46	
Ortho-Phosphates (mg/L)	≤ 0.10					0.05	
Ammonia Nitrogen (mg/L)	< 0.025					N/A	

Monitoring Date: 9/29/2005

Parameter	WQO	Lincoln 13th	Lincoln 14th	Blackpoint Ln	Shearwater	30th	Privates
E.coli (MPN/100ml)	≤ 400					110	
Total Coliform (MPN/100ml)	≤ 10,000					1860	
Nitrates (mg/L)	< 2.25					0.26	
Ortho-Phosphates (mg/L)	≤ 0.10					0.15	
Ammonia Nitrogen (mg/L)	< 0.025					0.01	

Monitoring Date: 10/26/2005

Parameter	WQO	Lincoln 13th	Lincoln 14th	Blackpoint Ln	Shearwater	30th	Privates
E.coli (MPN/100ml)	≤ 400			3076		161	
Total Coliform (MPN/100ml)	≤ 10,000			24192		1918	
Nitrates (mg/L)	< 2.25			0.179		0.37	
Ortho-Phosphates (mg/L)	≤ 0.10			0.28		0.016	
Ammonia Nitrogen (mg/L)	<0.025			0.821		N.D.	

Gray cell = No water detected during station visit

WQO = water quality objective

N.D. = non-detect

N/A = was not measured

Boxed 'red' values = over WQO

Simpkins
5172
24192
1.52
0.301
0

Simpkins
3873
24192
1.84
0.06
N/A

Simpkins

Simpkins
108
24192
0.47
0.015
0.055

Urban Watch Monitoring Frequency Values**Summary Table 4**

	trash	sewage
Lincoln Beach 13th	0 of 37	0 of 37
Lincoln Beach 14th	3 of 37	1 of 37
Blackpoint Lane	4 of 37	1 of 37
Shearwater	8 of 37	3 of 37
30th Ave	9 of 37	5 of 37
Privates	0 of 37	0 of 37
Simpkins	18 of 35	4 of 35

	oil sheen	surface scum
Lincoln Beach 13th	0 of 37	0 of 37
Lincoln Beach 14th	0 of 37	0 of 37
Blackpoint Lane	0 of 37	0 of 37
Shearwater	1 of 37	2 of 37
30th Ave	1 of 37	24 of 37
Privates	0 of 37	0 of 37
Simpkins	2 of 35	25 of 35

	odor	color
Lincoln Beach 13th		
Lincoln Beach 14th		
Blackpoint Lane	0 of 37	0 of 37
Shearwater		
30th Ave	0 of 37	3 of 37
Privates		
Simpkins	0 of 37	2 of 35

Gray cell = No water detected during any station visit

Example of how to read these values: "7 of 8" detergents were detected 7 times of the 8 times measured at Site

Urban Watch Monitoring Frequency Values

Summary Table 3

	Detergents (ppm)	Phenols (ppm)	Ammonia Nitrogen (ppm)
Lincoln Beach 13th			
Lincoln Beach 14th			
Blackpoint Lane	0 of 1	0 of 1	2 of 2
Shearwater			
30th Ave	0 of 34	0 of 34	14 of 21
Privates			
Simpkins	7 of 26	0 of 26	14 of 16

	Copper (ppm)	Chlorine (ppm)	Nitrate Nitrogen (ppm)
Lincoln Beach 13th			
Lincoln Beach 14th			
Blackpoint Lane	0 of 1	0 of 1	0 of 2
Shearwater			
30th Ave	0 of 34	0 of 34	0 of 26
Privates			
Simpkins	0 of 26	0 of 26	1 of 21

	Orthophosphate (ppm)	Conductivity (uS)*	Turbidity (>Low) ^t	Presence of flow
Lincoln Beach 13th				0 of 37
Lincoln Beach 14th				0 of 37
Blackpoint Lane	1 of 1	0 of 2	0 of 2	2 of 37
Shearwater				0 of 37
30th Ave	11 of 14	0 of 36	0 of 36	36 of 37
Privates				0 of 37
Simpkins	10 of 10	0 of 28	0 of 0	28 of 35

Gray cell = No water detected during any station visit

Example of how to read these values: "7 of 8" detergents were detected 7 times of the 8 times measured at Site X.

* Conductivity "frequency" refers to the number of times over detectable range of 1999 microS.

^t Turbidity visual assessment based upon Low/Med/or High values

Urban Watch Monitoring Maximum Values (ppm)**Summary Table 2**

	Ammonia Nitrogen	Nitrate Nitrogen	Orthophosphate	Phenols	Chlorine	Copper	Detergents
WQO:	0.025	2.25	0.10	N/A	N/A	0.03	0.00
Minimal Detection Limit:	>0.0	>0.0	>0.0	>0.5	>0.2	>0.0	>0.1
Lincoln Beach 13th							
Lincoln Beach 14th							
Blackpoint Lane	1.0	n.d.	0.29	0.5	n.d.	n.d.	n.d.
Shearwater							
30th Ave	0.68	1.5	0.91	0.5	n.d.	n.d.	n.d.
Privates							
Simpkins	2.17	2.2	0.51	0.5	0.2	0.0	1.2
<i>Gray cell = No water detected during any station visit</i>							

n.d. = non-detect; at or below the minimum detection limit of the equipment

**Urban Watch Laboratory Analysis results for
Monthly Program Bacteria and Nutrient sample collection**

Summary Table 7
(by station)

Sampling Information		Nutrients				Bacteria	
Sample_ID	Date	NO ₃ mg/L	Op mg/L	NH ₃ mg/L	E.coli	T.coliform	
WQO:		2.25	0.1	0.025	400	10000	
LOSD-05	7/27/05	= 0.298	ND	0.344	5794	= 14136	
LOSD-05FD	7/27/05	= 0.296	ND	0.27	6867	= 14136	
LOSD-05FB	7/27/05	ND	ND	ND	ND	ND	
LOSD-05	8/29/05	= 1.46	< 0.05	NA	86	= 6867	
LOSD-05	9/29/05	= 0.262	= 0.147	0.014	110	= 1860	
LOSD-05FD	9/29/05	0.254	= 0.147	0.014	85	= 1723	
LOSD-05FB	9/29/05	< 0.01	< 0.01	0.012	ND	ND	
LOSD-05	10/26/05	= 0.368	= 0.016	ND	161	= 1918	
LOSD-05FD	10/26/05	= 0.365	0.01	ND	199	= 3654	
LOSD-05FB	10/26/05	ND	ND	ND	ND	ND	
LOSD-07	7/27/05	= 1.522	= 0.301	ND	5172	> 24192	
LOSD-07	8/29/05	= 1.84	= 0.06	NA	3873	> 24192	
LOSD-07FD	8/29/05	= 1.84	= 0.07	NA	3441	> 24192	
LOSD-07FB	8/29/05	ND	ND	NA	ND	ND	
LOSD-07	10/26/05	= 0.47	= 0.015	0.055	108	> 24192	
Lab QA	Date	NO₃	Op	NH₃	E.coli	T.coliform	
Blank	7/27/05	nd	nd	nd	nd	nd	
E.coli	7/27/05				pos	pos	
Klebsiella	7/27/05				neg	pos	
Blank	9/29/05	nd	nd	nd	nd	nd	
E.coli	9/29/05				pos	pos	
Klebsiella	9/29/05				neg	pos	
Blank	10/26/05	nd	nd	nd	nd	nd	
E.coli	10/26/05				pos	pos	
Klebsiella	10/26/05				neg	pos	

ND = Non Detect ; NA = Not Applicable (test not done).

FB= Field Blank; FD = Field Duplicate.