Bioassays of

Goldkist Poultry, Inc.

Live Oak, Suwannee County, Florida

NPDES #FL0001465

Sampled 7/31/89

October 26, 1989

Biology Section
Division of Administrative and Technical Services

Bioassays of

Goldkist Poultry, Inc.

Live Oak, Suwannee County, Florida

NPDES #FL0001465

Biology Section
Bureau of Laboratories
October 26, 1989

Introduction

Goldkist Poultry, Inc., Live Oak, Suwannee County, Florida, NPDES #FL0001465, on 1 to 3 August, 1989.

This facility is located on U.S. Highway 90, 11 miles west of Live Oak. It slaughters and packs approximately 137,000 birds per day totalling 650,750 pounds. By-products are processed into protein meal. Wastewater treatment for this operation includes both secondary and advanced systems, the latter primarily for nitrogenous waste removal. The final discharge of treated chlorinated reclaimed water, averaging 0.5 MGD, is through a pipe to the bottom of the Suwannee River.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

The chlorinated sample of discharge from this facility was toxic to the bioassay organisms, the water fleas, *Ceriodaphnia dubia* and *Daphnia pulex*, producing LC_{50}'s of < 100%. The chlorinated sample was not toxic to the bioassay test organism, the fish, *Notropis leedsi*.

A portion of the chlorinated sample from the Goldkist facility was dechlorinated in the laboratory by the sodium thiosulfate method and also tested.The bioassays performed on the dechlorinated sample indicated no toxicity to the bioassay test organisms, *C. dubia* and *N. leedsi*. There were six deaths in the tests on the dechlorinated sample using the bioassay organism, *D. pulex*. The cause of these six deaths was not determined.

The cause of death in the chlorinated sample tests was attributed to the total residual chlorine concentration of 0.25 mg/l (Hach). The total ammonia concentration in the sample was 9.18 mg/l. The calculated unionized ammonia was 0.48 mg/l. Due to a variation in pH and temperature between the *C. dubia* test and the *N. leedsi* test, the calculated unionized ammonia in the *N. leedsi* test was 0.13 mg/l. This is significant in that the fish are more sensitive to unionized ammonia than the water fleas, and a concentration of 0.20 mg/l unionized ammonia has produced LC_{50}'s in the test organism, *N. leedsi*. Further chemical analyses were not performed on this sample.

Conclusion

The sample of discharge from this facility was toxic on 31 July, 1989. The cause of toxicity was attributed to the total residual chlorine in the sample. This facility was not in compliance with state toxicity laws unless mitigating circumstances (e.g., a variance) exist.

Table 1. Concentration Series and Volumes Used for These Static Bioassays.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0 ml	15 ml
10.0%	13.5 ml	1.5 ml	15 ml
30.0%	10.5 ml	4.5 ml	15 ml
50.0%	7.5 ml	7.5 ml	15 ml
70.0%	4.5 ml	10.5 ml	15 ml
85.0%	2.25 ml	12.75 ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Daphnia pulex (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Notropis leedsi (bannerfin shiner)

Concentration	Dilution Water	Sample	Total Volume
Control	500 ml	0 ml	500 ml
10.0%	450 ml	50 ml	500 ml
30.0%	350 ml	150 ml	500 ml
50.0%	250 ml	250 ml	500 ml
70.0%	150 ml	350 ml	500 ml
85.0%	75 ml	425 ml	500 ml
100.0%	0 ml	500 ml	500 ml

Table 2. Data recorded during the 48 hour static bioassays of a sample of discharge from the Goldkist Poultry, Inc., Live Oak, Suwannee County, Florida, NPDES #FL0001465, on 1 to 3 August, 1989.

Facility: **Goldkist Poultry, Inc.**
Location: US Hwy. 90, Live Oak
County: Suwannee
Sample Collection Date: **7/31/89** Time: 1045
Test Beginning Date: **8/1/89** Time: 1430
Test Ending Date: **8/3/89** Time: 1500

NPDES # **FL0001465**
Contact/District: G. Marchman / NE
Test type: Static Screen
tests: 6
Chlorination Type: **chlorinated**

Facility Type: **Food Processing**
Receiving Water: Suwannee River
Page 1 of 1

Total Residual Cl2	mg/l	Method
Field:	0.5	-
Lab:	0.3	Hach
Lab:	0.4	Iodometric

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	9.19	0.48

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	120
Cond. Control Water (daphnids):	70	75
100% Sample:	215	230

Salinity (ppt)	
Control Water:	0
100% Sample:	0

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: <100%

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
100%	5	0	0	7.3	-	9.4	7.5	-	8.2	22.0	-	22.8	-	-
100%	5	0	0	7.3	-	9.4	7.5	-	8.2	-	-	-	-	-
100%	5	0	0	7.3	-	9.4	7.5	-	8.2	-	-	-	-	-
100%	5	0	0	7.3	-	9.4	7.5	-	8.2	-	-	-	690	660

* dechlor control used

Organism: ***Daphnia pulex*** Life stage: neonate
LC50: <100%

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
Control	5	*	*	-	-	-	-	-	-	-	-	-	-	-
100%	5	0	0	7.4	-	9.2	7.5	-	8.1	21.7	-	22.2	-	-
100%	5	0	0	7.4	-	9.2	7.5	-	8.1	-	-	-	-	-
100%	5	0	0	7.4	-	9.2	7.5	-	8.1	-	-	-	-	-
100%	5	0	0	7.4	-	9.2	7.5	-	8.1	-	-	-	710	675

* dechlor control used

Organism: ***Notropis leedsi*** Age: 21 days
LC50: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	8.5	7.9	7.2	7.8	7.9	7.9	22.3	21.0	21.4	-	-
Control	5	5	5	8.5	8.0	7.3	7.8	7.9	7.9	-	-	-	235	235
100%	5	5	5	6.0	7.9	7.3	7.4	7.8	7.9	22.0	21.2	21.2	-	-
100%	5	5	5	6.0	7.9	7.3	7.4	7.8	7.9	-	-	-	740	700

Table 3. Data recorded during the 48 hour static bioassays of a sample of discharge from the Goldkist Poultry, Inc., Live Oak, Suwannee County, Florida, NPDES #FL0001465, on 1 to 3 August, 1989.

Facility: **Goldkist Poultry, Inc.**
Location: US Hwy. 90, Live Oak
County: Suwannee
Sample Collection Date: **7/31/89** Time: 1045
Test Beginning Date: 8/1/89 Time: 1430
Test Ending Date: 8/3/89 Time: 1500

NPDES # **FL0001465**
Contact/District: G. Marchman / NE
Test type: static definitive
tests: 6
Chlorination Type: **dechlorinated**
Dechlor Method: lab, sodium thiosulfate

Facility Type: **Food Processing**
Receiving Water: Suwannee River
Page 1 of 2

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

Concentrations	SURVIVAL # at 0 hr	Live at 24 hr	Live at 48 hr	Dissolved Oxygen 0 hour	24 hour	48 hour	pH 0 hour	24 hour	48 hour	Temperature 0 hour	24 hour	48 hour	Conductivity 0 hour	48 hour
Control	5	5	5	9.2	-	9.2	9.0	-	8.0	21.8	-	21.3	-	-
Control	5	4	4	9.2	-	9.2	9.0	-	8.0	-	-	-	-	-
Control	5	5	5	9.2	-	9.2	9.0	-	8.0	-	-	-	-	-
Control	5	5	5	9.2	-	9.2	9.0	-	8.0	-	-	-	140	155
10%	5	5	4	9.2	-	9.4	8.5	-	8.1	21.9	-	21.1	-	-
10%	5	5	5	9.2	-	9.4	8.5	-	8.1	-	-	-	-	-
10%	5	5	5	9.2	-	9.4	8.5	-	8.1	-	-	-	-	-
10%	5	5	5	9.2	-	9.4	8.5	-	8.1	-	-	-	230	250
30%	5	5	5	9.1	-	9.3	8.3	-	8.1	21.9	-	21.0	-	-
30%	5	5	5	9.1	-	9.3	8.3	-	8.1	-	-	-	-	-
30%	5	5	5	9.1	-	9.3	8.3	-	8.1	-	-	-	-	-
30%	5	5	5	9.1	-	9.3	8.3	-	8.1	-	-	-	310	330
50%	5	5	5	9.0	-	9.3	8.1	-	8.2	21.9	-	21.0	-	-
50%	5	5	5	9.0	-	9.3	8.1	-	8.2	-	-	-	-	-
50%	5	5	5	9.0	-	9.3	8.1	-	8.2	-	-	-	-	-
50%	5	5	5	9.0	-	9.3	8.1	-	8.2	-	-	-	430	440
70%	5	5	5	8.9	-	9.2	8.1	-	8.2	21.8	-	21.1	-	-
70%	5	5	5	8.9	-	9.2	8.1	-	8.2	-	-	-	-	-
70%	5	5	5	8.9	-	9.2	8.1	-	8.2	-	-	-	-	-
70%	5	5	5	8.9	-	9.2	8.1	-	8.2	-	-	-	530	535
85%	5	5	4	8.7	-	9.2	8.0	-	8.3	21.8	-	21.3	-	-
85%	5	5	5	8.7	-	9.2	8.0	-	8.3	-	-	-	-	-
85%	5	5	5	8.7	-	9.2	8.0	-	8.3	-	-	-	-	-
85%	5	5	5	8.7	-	9.2	8.0	-	8.3	-	-	-	600	605
100%	5	5	4	8.8	-	9.1	8.0	-	8.2	21.8	-	21.2	-	-
100%	5	5	5	8.8	-	9.1	8.0	-	8.2	-	-	-	-	-
100%	5	5	5	8.8	-	9.1	8.0	-	8.2	-	-	-	-	-
100%	5	5	5	8.8	-	9.1	8.0	-	8.2	-	-	-	630	645

Total Residual Cl2	mg/l	Method
Field:	0.5	-
Lab:	0.3	Hach
Lab:	0.4	Iodometric

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	9.19	0.48

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	120
Cond. Control Water (daphnids):	70	75
100% Sample:	215	230

Salinity (ppt)	
Control Water:	0
100% Sample:	0

Table 3. Continued.

Facility: **Goldkist Poultry, Inc.**
Location: US Hwy. 90, Live Oak
County: Suwannee
Sample Collection Date: **7/31/89** Time: 1045
Test Beginning Date: 8/1/89 Time: 1430
Test Ending Date: 8/3/89 Time: 1500

NPDES # **FL0001465**
Contact/District: G. Marchman / NE
Test type: static definitive
tests: 6
Chlorination Type: **dechlorinated**
Dechlor Method: lab, sodium thiosulfate

Facility Type: **Food Processing**
Receiving Water: Suwannee River
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Total Residual Cl2	mg/l	Method
Field:	0.5	-
Lab:	0.3	Hach
Lab:	0.4	Iodometric

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	9.19	0.48

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	120
Cond. Control Water (daphnids):	70	75
100% Sample:	215	230

Salinity (ppt)	
Control Water:	0
100% Sample:	0

Organism: ***Daphnia pulex*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	9.2	-	9.3	8.8	-	8.1	21.5	-	21.2	-	-
Control	5	5	5	9.2	-	9.4	8.8	-	8.1	-	-	-	-	-
Control	5	5	5	9.2	-	9.4	8.8	-	8.1	-	-	-	-	-
Control	5	5	5	9.2	-	9.4	8.8	-	8.1	-	-	-	140	150
100.0%	5	5	5	8.2	-	9.3	7.8	-	8.2	21.5	-	21.3	-	-
100.0%	5	5	4	8.2	-	9.3	7.7	-	8.2	-	-	-	-	-
100.0%	5	4	1	8.2	-	9.3	7.7	-	8.2	-	-	-	-	-
100.0%	5	4	4	8.2	-	9.3	7.7	-	8.2	-	-	-	620	630

Organism: ***Notropis leedsi*** Age: 21 days
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	8.8	8.3	7.6	7.9	8.0	7.7	22.9	20.9	21.1	-	-
Control	5	5	5	8.8	8.4	7.6	7.9	8.0	7.7	-	-	-	240	230
10%	5	5	5	8.8	8.2	7.7	7.8	8.0	7.8	22.8	20.5	20.9	-	-
10%	5	5	5	8.8	7.9	7.5	7.8	8.0	7.8	-	-	-	290	280
30%	5	5	5	8.6	7.9	7.4	7.7	8.0	7.8	22.6	20.6	20.8	-	-
30%	5	5	5	8.6	7.9	7.2	7.7	8.0	7.8	-	-	-	395	380
50%	5	5	5	8.1	7.6	7.0	7.5	7.9	7.8	22.3	21.0	20.8	-	-
50%	5	5	5	8.1	7.6	7.0	7.5	7.9	7.8	-	-	-	500	475
70%	5	5	5	7.6	7.6	7.0	7.5	7.9	7.9	22.1	20.8	20.8	-	-
70%	5	5	5	7.6	7.7	7.0	7.5	8.0	7.9	-	-	-	600	570
85%	5	5	5	7.5	7.6	6.8	7.4	7.9	7.9	22.0	20.5	20.8	-	-
85%	5	5	5	7.5	7.6	6.7	7.4	7.9	7.9	-	-	-	680	640
100%	5	5	5	7.3	7.6	6.7	7.4	7.9	7.9	22.0	20.7	21.0	-	-
100%	5	5	5	7.3	7.6	6.7	7.4	7.9	7.9	-	-	-	740	720

Table 4. LC_{50} Data for bioassay of Goldkist Poultry, Inc., NPDES# FL0001465, on 1 to 3 August, 1989.

Organism	Method of Data Analysis	48 Hour LC_{50} (95% Confidence Intervals)
Chlorinated discharge		
Ceriodaphnia dubia	noncalculable	<100% [a]
Daphnia pulex	noncalculable	<100% [a]
Notropis leedsi		not toxic
Dechlorinated discharge		
Ceriodaphnia dubia		not toxic
Daphnia pulex	Binomial	[b]
	Moving Average	[b]
	Probit	[b]
Notropis leedsi		not toxic

a The LC_{50} is < 100% since all the organisms died in the lowest test concentration (100%).

b Due to an insufficient number of dead organisms, or to the irregular distribution of mortality, an LC_{50} value cannot be calculated using this method of statistical analysis.

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Goldkist Poultry, Inc
Address/City: Live Oak
County: 64 Suwannee
Contact/District: Grady Marchman / NE
NPDES Permit #: FL0001465 Outfall #: 001

Sample Collection: Date 7/31/89 Time 1045
Test Beginning: Date 8/1 Time 1430
Test Ending: Date 8/3 Time 1500
Test Organism: Ceriodaphnia dubia
Life Stage/Age: neonate

Test Number: 1 of 6 Test Type: Screening (Definitive)
(Static) Static Renewal | Flow-through

Remarks: Dechlor
Note dilutions sequence

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7@7; 9@9	8.6@23.5	1340@23.5°C	22.5@22.5°C
24 hr	7@7; 9@9	8.5@24°C		23.9@23.9
48 hr	7@7, 9@9	8.6@23.5	1365@23.2°C	23.3@23.3

	Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
1	CONTROL	1	5	5	5	9.2		9.2	9.0		8.0	21.3	—	21.3			
	"	2	5	4	4	9.2		9.2	9.0		8.0						
	"	3	5	5	5	9.2		9.2	9.0		8.0						
	"	4	5	5	5	9.2		9.2	9.0		8.0				140	—	155
6	90%	5	5	5	4	8.7		9.2	8.0		8.3	21.8	—	21.3			
	"	6	5	5	5	8.7		9.2	8.0		8.3						
	"	7	5	5	5	8.7		9.2	8.0		8.3						
	"	8	5	5	5	8.7		9.2	8.0		8.3				600	—	605
5	70%	9	5	5	5	8.9		9.2	8.1		8.2	21.8	—	21.1			
	"	10	5	5	5	8.9		9.2	8.1		8.2						
	"	11	5	5	5	8.9		9.2	8.1		8.2						
	"	12	5	5	5	8.9		9.2	8.1		8.2	JMF			530	—	535
4	50%	13	5	5	5	9.0		9.3	8.1		8.2	21.9	—	21.0			
	"	14	5	5	5	9.0		9.3	8.1		8.2						
	"	15	5	5	5	9.0		9.3	8.1		8.2						
	"	16	5	5	5	9.0		9.3	8.1		8.2	JHF			430	—	440
3	30%	17	5	5	5	9.1		9.3	8.3		8.1	21.9	—	21.0			
	"	18	5	5	5	9.1		9.3	8.3		8.1						
	"	19	5	5	5	9.1		9.3	8.3		8.1						
	"	20	5	5	5	9.1		9.3	8.3		8.1				310	—	330
2	15%	21	5	5	5	9.2		9.4	8.5		8.1	21.9	—	21.1			
	"	22	5	5	5	9.2		9.4	8.5		8.1						
	"	23	5	5	5	9.2		9.4	8.5		8.1						
	"	24	5	5	5	9.2		9.4	8.5		8.1				230	—	250
7	100%	25	5	5	4	8.8		9.1	9.0		8.2	21.8	—	21.2			
	"	26	5	5	5	8.8		9.1	9.0		8.2						
	"	27	5	5	5	8.8		9.1	8.0		8.2						
	"	28	5	5	5	8.8		9.1	8.0		8.2				630	—	645
	Measured by:		JHF	SHW	SHW	JMF		JHF	JHF		JMF	MF		JMF	JHF		SMF
	Recorded by:		SHW	SHW	SHW	SHW		SHW	SHW		SHW	MF		SHW	SHW		SHW

Investigators' Signatures

Steven H Wolfe

Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			0.5		
Lab Tot. Resid. Cl2:		0.4 laboratory	0.25	Hach	JMF
Alkalinity:	115	70	215	Hach	JMF
Hardness:	120	75	230	Hach	JMF
Total Ammonia:	0.0	0.0	9.19	Orion	SHW

Slope = -58.6

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Goldkist Poultry, Inc
Address/City: _____
County: _____
Contact/District: _____
NPDES Permit #: _____ Outfall #: _____

Sample Collection: Date 7/31/89 Time 1045
Test Beginning: Date 8/1 Time 1430
Test Ending: Date 8/3 Time 1500
Test Organism: Daphnia pulex
Life Stage/Age: neonate

Test Number: 2 of 6 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks: Dechlor

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	29	5	5	5	9.2		9.3	8.8		8.1	21.5	—	21.2			
"	30	5	5	5	9.2		9.4	8.8		8.1						
"	31	5	5	5	9.2		9.4	8.8		8.1						
"	32	5	5	5	9.2		9.4	8.8		8.1				140	—	150
100%	33	5	5	5	8.2		9.3	7.8		8.2	21.5	—	21.3			
"	34	5	5	4	8.2		9.3	7.8		8.2						
"	35	5	4	1	8.2		9.3	7.7		8.2						
"	36	5	4	4	8.2		9.3	7.7		8.2				140	—	630
Measured by:		JMF	SHW	SHW	JMF		JMF	JMF		JMF	JMF		JMF	JMF		JMF
Recorded by:		SHW	SHW	SHW	SHW		SHW	SHW		SHW	SHW		SHW	SHW		SHW

Investigators' Signatures

Steven H Wright

Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Clz:					
Lab Tot. Resid. Clz:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Goldkist Poultry
Address/City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Sample Collection: Date 7/31/89 Time 1045
Test Beginning: Date 8/1 Time ~~1445~~ 1400
Test Ending: Date 8/3 Time 1445
Test Organism: Ictalurus punctatus
Life Stage/Age: 21 days

Test Number: 3 of 6 Test Type: Screening (Definitive) (Static) Static Renewal | Flow-through

Remarks: Dechlor

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
CONTROL	130	5	5	5	8.3	8.3	7.6	7.9	8.0	7.8	22.9	20.9	21.1			
"	69	5	5	5	8.8	8.4	7.5	7.9	8.0	7.7				240	–	230
10%	174	5	5	5	8.8	8.2	7.7	7.8	8.0	7.8	22.3	20.5	20.9			
"	43	5	5	5	8.3	7.9	7.5	7.8	8.0	7.8				290	–	280
30%	14	5	5	5	8.6	7.9	7.4	7.7	8.0	7.8	22.6	20.6	20.8			
"	58	5	5	5	8.6	7.9	7.2	7.7	8.0	7.8				395	–	380
50%	9	5	5	5	8.1	7.6	7.0	7.5	7.9	7.8	22.3	21.0	20.8			
"	97	5	5	5	8.1	7.6	7.0	7.5	7.9	7.8				500	–	475
70%	99	5	5	5	7.6	7.6	7.0	7.5	7.9	7.9	22.1	20.9	20.8			
"	68	5	5	5	7.6	7.7	7.0	7.5	8.0	7.9				600	–	570
85%	31	5	5	5	7.5	7.6	6.8	7.4	7.9	7.9	22.0	20.5	20.5			
"	180	5	5	5	7.5	7.6	6.7	7.4	7.9	7.9				695	–	640
100%	228	5	5	5	7.3	7.6	6.7	7.4	7.9	7.9	22.0	20.7	21.0			
"	12	5	5	5	7.3	7.6	6.7	7.4	7.9	7.9				740	–	720
Measured by:		JMF	SHW	mf	JMF	SHW	JMF	JMF	SHW	JMF	JMF	SHW	JMF	JMF		JMF
Recorded by:		SHW	SHW	mf	SHW	KML	SHW	SHW	KML	SHW	SHW	KML	SHW	SHW		SHW

Investigators' Signatures

Steven H Wolfe
Marshall Fairbott
KM Lurding

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Goldkist Poultry

Address/City:

County:

Contact/District:

NPDES Permit #: ______ Outfall #: ______

Sample Collection: Date 7/31/89 Time 1045

Test Beginning: Date 8/1 Time 1430

Test Ending: Date 8/3 Time 1500

Test Organism: Ceriodaphnia dubia

Life Stage/Age: Neonate

Test Number: 4 of 6

Test Type: (Screening) | Definitive

(Static) | Static Renewal | Flow-through

Remarks: Chlor

Controls same as dechlor

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	Number Live 24	Number Live 48	DO (mg/l) 0	DO (mg/l) 24	DO (mg/l) 48	pH 0	pH 24	pH 48	Temp. (°C) 0	Temp. (°C) 24	Temp. (°C) 48	Cond. (µmhos/cm) 0	Cond. (µmhos/cm) 24	Cond. (µmhos/cm) 48
~~Control~~	37															
~~"~~	38															
~~"~~	39															
~~"~~	40															
100%	41	5	0		7.3		9.4	7.5		8.2	22.0	—	22.8			
"	42	5	0		7.3		9.4	7.5		8.2						
"	43	5	0		7.3		9.4	7.5		8.2						
"	44	5	0		7.3		9.4	7.5		8.2				690	—	660
Measured by:		JHF	SHW		JMF		JMF	JMF		JMF	JMF		JMF	JMF		JMF
Recorded by:		SHS	SHW		SHW		SHW	SHW		SHW	SHW		SHW	SHW		SHW

Investigators' Signatures

Steven H. Wolfe

Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl_2:					
Lab Tot. Resid. Cl_2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Goldrust Poultry
Address/City: _____
County: _____
Contact/District: _____
NPDES Permit #: _____ Outfall #: _____

Sample Collection: Date 7/31/97 Time 1645
Test Beginning: Date 8/1 Time 1430
Test Ending: Date 8/3 Time 1500
Test Organism: Daphnia pulex
Life Stage/Age: neonate

Test Number: 5 of 6 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks: Chlor
Controls same as dechlor

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	45															
"	46															
"	47															
"	48															
100%	49	5	0		7.4		9.2	7.5		8.1	21.7	–	22.2			
"	50	5	0		7.4		9.2	7.5		8.1						
"	51	5	0		7.4		9.2	7.5		8.1						
"	52	5	0		7.4		9.2	7.5		8.1				710	–	675
Measured by:		JMF	SHW		JMF		JMF	JMF		JMF	JMF		JMF	JMF		JMF
Recorded by:		SHW	SHW		SHW		SHW	SHW		SHW	SHW		SHW	SHW		SHW

Investigators' Signatures

Steven H Wolfe

Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Goldkist Poultry
Address/City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Sample Collection: Date 7/31/89 Time 1045
Test Beginning: Date 8/1 Time 1400
Test Ending: Date 8/3 Time 1445
Test Organism: Notropis leedsi
Life Stage/Age: 21 days

Test Number: 6 of 6 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks: Chlor

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	6-2	5	5	5	8.5	7.9	7.2	7.8	7.9	7.9	22.3	21.0	21.4	235	—	235
"	271	5	5	5	8.5	8.0	7.3	7.8	7.9	7.9						
100%	6-6	5	5	5	6.0	7.9	7.3	7.4	7.8	7.9	22.0	21.2	21.2	740	—	700
"	16	5	5	5	6.0	7.9	7.3	7.4	7.8	7.9						
Measured by:		JMF	SHW	mt	JMF	SHW	JMF	JMF	SHW	JMF	JMF	SHW	JMF	JMF		JMF
Recorded by:		SHW	SHW	mt	SHW	KML	SHW	SHW	KML	SHW	SHW	KML	SHW	SHW		SHW

Investigators' Signatures

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[signature]
[signature]

[signature]
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl_2:					
Lab Tot. Resid. Cl_2:					
Alkalinity:					
Hardness:					
Total Ammonia:					