
APPENDIX F-2

SONIR Existing Condition- Proposed Sewer District and Central Pine Barrens Area (2015 DEIS)

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

Riverside - Total Study Area

Existing Use Analysis

DATA INPUT FIELD

Average Turfgrass Leaching Rate

A Site Recharge Parameters			B Nitrogen Budget Parameters				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	Area of Site	467.56	acres	1	Persons per Dwelling	2.40	persons
2	Precipitation Rate	49.90	inches	2	Nitrogen per Person per Year	10.0	lbs
3	Area of Fertilized Landscape	83.66	acres	3	a. Sanitary Nitrogen Leaching Rate	50%	percent
4	Fraction of Land in Fertilized Landscape	0.179	fraction	3	b. Sanitary Nitrogen Leaching Rate	90%	percent
5	Evapotranspiration from Fert/Land	23.00	inches	4	Fertilized Land-1	83.66	acres
6	Runoff from Fert/Land	0.35	inches	5	Fertilizer Application Rate-1	2.30	lbs/1000 sq ft
7	Area of Non-Fertilized Landscape	83.66	acres	6	Fertilizer Nitrogen Leaching Rate-1	10%	percent
8	Fraction of Non-Fertilized Landscape	0.179	fraction	7	Fertilized Land-2	83.66	acres
9	Evaporation from Non-Fertilized	23.90	inches	8	Fertilizer Application Rate-2	0.00	lbs/1000 sq ft
10	Runoff from Non-Fertilized Land	0.35	inches	9	Fertilizer Nitrogen Leaching Rate-2	10%	percent
11	Acreeage of Unvegetated/Dirt Roads	22.67	acres	10	Pet Waste Application Rate	3.19	lbs/pet
12	Fraction of Land Unvegetated	0.048	fraction	11	Pet Waste Nitrogen Leaching Rate	50%	percent
13	Evapotrans. from Unvegetated	21.20	inches	12	Area of Land Irrigated	83.66	acres
14	Runoff from Unvegetated	0.3493	inches	13	Irrigation Rate	24.00	inches
15	Acreeage of Water/Wetlands	19.60	acres	14	Irrigation Nitrogen Leaching Rate	10%	percent
16	Fraction of Site in Water	0.042	fraction	15	Nitrogen in Precipitation	1.00	mg/l
17	Evaporation from Water	30.00	inches	16	Precipitation Nitrogen Leaching Rate	10%	percent
18	Makeup Water (if applicable)	0.00	inches	17	Nitrogen in Water Supply	1.00	mg/l
19	Acreeage of Natural/Natural Reveg	141.85	acres	18	Nitrogen in Sanitary Flow -1	50.00	mg/l
20	Fraction of Land Natural	0.303	fraction	19	Nitrogen in Sanitary Flow -2	10.00	mg/l
21	Evapotrans. from Natural Area	23.00	inches				
22	Runoff from Natural Area	0.35	inches				
23	Acreeage of Impervious/Paved/Bldgs	116.13	acres				
24	Fraction of Land in Impervious	0.248	fraction				
25	Evapotrans. from Impervious	4.99	inches				
26	Runoff from Impervious	0.00	inches				
27	Acreeage of Other (Rain Gardens)	0.00	acres				
28	Fraction of Land Other Area	0.000	fraction				
29	Evapotrans. from Other Area	30.00	inches				
30	Runoff from Other Area	0.50	inches				
31	Acreeage of Land Irrigated	83.66	acres				
32	Fraction of Land Irrigated	0.179	fraction				
33	Irrigation Rate	24.00	inches				
34	Number of Dwellings	844	units				
	Water Use per Dwelling	0	gal/day				
	Wastewater Design Flow (units)	0	gal/day				
	Wastewater Design Flow (untreated)-1	216,146	gal/day				
	Wastewater Design Flow (treated)	0	gal/day				

C Comments	
1)	Please refer to user manual for data input instructions.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

Existing Use Analysis
Average Turfgrass Leaching Rate

SITE RECHARGE COMPUTATIONS

A Fertilized Landscaped			B Non-fertilized Landscaped				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.179	fraction	1	A = Fraction of Land in Cover Type	0.179	fraction
2	P = Precipitation Rate	49.90	inches	2	P = Precipitation Rate	49.90	inches
3	E = Evapotranspiration Rate	23.00	inches	3	E = Evapotranspiration Rate	23.90	inches
4	Q = Runoff Rate	0.35	inches	4	Q = Runoff Rate	0.35	inches
5	R(a) = P - (E + Q)	26.55	inches	5	R(b) = P - (E + Q)	25.65	inches
6	R(A) = R(a) x A	4.75	inches	6	R(B) = R(b) x A	4.59	inches

C Unvegetated/Dirt Roads			D Water/Wetlands				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.048	fraction	1	A = Fraction of Site in Water	0.042	fraction
2	P = Precipitation Rate	49.90	inches	2	P = Precipitation Rate	49.90	inches
3	E = Evapotranspiration Rate	21.20	inches	3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.35	inches	4	Q = Runoff Rate	0.00	inches
5	R(c) = P - (E + Q)	28.35	inches	5	M = Makeup Water	0.00	inches
6	R(C) = R(c) x A	1.37	inches	6	R(d) = {P - (E+Q)} - M	19.90	inches
				7	R(D) = R(d) x A	0.83	inches

E Natural/Natural Revegetation			F Impervious/Paved/Roads				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.303	fraction	1	A = Fraction of Land in Cover Type	0.248	fraction
2	P = Precipitation Rate	49.90	inches	2	P = Precipitation Rate	49.90	inches
3	E = Evapotranspiration Rate	23.00	inches	3	E = Evapotranspiration Rate	4.99	inches
4	Q = Runoff Rate	0.35	inches	4	Q = Runoff Rate	0.00	inches
5	R(e) = P - (E + Q)	26.55	inches	5	R(f) = P - (E + Q)	44.91	inches
6	R(E) = R(e) x A	8.06	inches	6	R(F) = R(f) x A	11.15	inches

G Rain Gardens/Wetlands			H Irrigation Recharge				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.000	fraction	1	A = Fraction of Land Irrigated	0.179	fraction
2	P = Precipitation Rate	49.90	inches	2	I = Irrigation Rate	24.00	inches
3	E = Evapotranspiration Rate	30.00	inches	3	E = Evaptranspiration Rate	23.00	inches
4	Q = Runoff Rate	0.50	inches	4	Q = Runoff Rate	0.35	inches
5	R(g) = P - (E + Q)	19.40	inches	5	R(h) = I - (E + Q)	0.65	inches
6	R(G) = R(g) x A	0.00	inches	6	R(H) = R(H) x A	0.12	inches

I Wastewater Recharge			J Runoff Recharge				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	WDF = Wastewater Design Flow	216,146	gal/day	1	Q(A) = Runoff from Landscaped	0.062	inches
2	WDF = Wastewater Design Flow	10,548,033	cu ft/yr	2	Q(B) = Runoff from Non-fertilized Landscape	0.002	inches
3	A = Area of Site	20,366,914	sq ft	3	Q(C) = Runoff from Unvegetated	0.017	inches
4	R(j) = WDF/A	0.52	feet	4	Q(E) = Runoff from Natural	0.106	inches
5	R(I) = Wastewater Recharge	6.21	inches	5	Q(H) = Runoff from Rain Gardens	0.000	inches
				6	Q(I) = Runoff from Irrigation	0.06	inches
				7	Q(tot) = Q(A)+Q(B)+Q(C)+Q(E)+Q(H)+Q(I)	0.25	inches

Total Site Recharge		
R(T) =	R(A)+R(B)+R(C)+R(D)+R(E)+R(F)+R(G)+R(H)+R(I)+R(J)+Q(tot)	
R(T) =	37.34	inches
R(T)(adj) =	37.34	inches

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

Existing Use Analysis

Average Turfgrass Leaching Rate

SITE NITROGEN BUDGET

A Sanitary Nitrogen (Wastewater Flow)(untreated)		
1	CF = Wastewater Flow	216,146 gal/day
2	CF = Wastewater Flow	298,611,103 liters/yr
3	N = Nitrogen (untreated)	50.00 mg/l
4	N = Nitrogen (untreated)	32921.87 lbs
7	LR = Leaching Rate	50% percent
8	N(S) = CF x N x LR	7,465,277,566 milligrams
9	N(S) = Sanitary Nitrogen	16460.94 lbs
10	N = loss/removed	16460.94 lbs

B Pet Waste Nitrogen		Value	Units
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	2026	capita
3	Pets = 17 percent of capita	344	pets
4	N(p) = AR x pets	1098.48	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	549.24	lbs
7	N = (loss/removed)	549.24	lbs

C Sanitary Nitrogen (Wastewater Flow)(treated)		
1	CF = Wastewater Flow	0 gal/day
2	CF = Wastewater Flow	0 liters/yr
3	N = Nitrogen (untreated)	50.00 mg/l
4	N = Nitrogen (untreated)	0.00 lbs
5	N = Nitrogen (treated)	10.00 mg/l
7	LR = Leaching Rate	90% percent
8	N(S) = CF x N x LR	0 milligrams
9	N(S) = Sanitary Nitrogen	0.00 lbs
10	N = loss/removed	0.00 lbs

D Water Supply Nitrogen (other than wastewater, if applicable)		
1	WDF = Wastewater Design Flow	0 gal/day
2	WDF = Wastewater Design Flow	0 liters/yr
3	N = Nitrogen in Water Supply	1.00 mg/l
4	N(WW) = WDF x N	0 milligrams
5	N(WW) = Wastewater Nitrogen	0.00 lbs

E Fertilized Land		
1	A = Area of Land Fertilized	3,644,012 sq ft
2	AR = Application Rate	2.30 lbs/1000 sf
3	N(T) = Nitrogen (total applied)	8381.23 lbs
4	LR = Leaching Rate	10% percent
5	N(F1) = A x AR x LR	838.12 lbs
6	N = loss/removed	7543.10 lbs

F Non-Fertilized Land		
1	A = Area of Land Non-Fertilized	3,644,012 sq ft
2	AR = Application Rate	0.00 lbs/1000 sf
3	N(T) = Nitrogen (total applied)	0.00 lbs
4	LR = Leaching Rate	10% percent
5	N(F2) = A x AR x LR	0.00 lbs
6	N = loss/removed	0.00 lbs

G Precipitation Nitrogen (existing condition)		
1	R(n) = Natural Recharge (feet)	2.05 feet
2	A = Area of Site (sq ft)	20,366,914 sq ft
3	R(N) = R(n) x A	41,667,831 cu ft
4	R(N) = Natural Recharge (liters)	1,180,032,964 liters
5	N = Nitrogen in Precipitation	1.00 mg/l
6	N(T) = Nitrogen (total)	2,602 lbs
7	LR = Leaching Rate	10% percent
8	N(ppt) = R(N) x N x LR	118,003,296.37 milligrams
10	N(irr) = Irrigation Nitrogen	260.20 lbs
9	N = loss/removed	2341.78 lbs

H Irrigation Nitrogen		
1	R = Irrigation Recharge (inches)	0.12 inches
2	R = Irrigation Rate (feet)	0.01 feet
3	A = Area of Land Irrigated	3,644,012 sq ft
4	R(I) = R(irr) x A	35,354 cu ft
5	R(I) = Site Precipitation (liters)	1,001,215 liters
6	N = Nitrogen in Water Supply	2.00 mg/l
7	N(T) = Nitrogen (total applied)	4.42 lbs
8	LR = Leaching Rate	10% percent
9	N(irr) = R(I) x N x LR	200,243 milligrams
10	N(irr) = Irrigation Nitrogen	0.44 lbs
11	N = loss/removed	3.97 lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	18,108.94 lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

Riverside - Pine Barrens Area

Existing Use Analysis

DATA INPUT FIELD

Average Turfgrass Leaching Rate

A Site Recharge Parameters			B Nitrogen Budget Parameters				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	Area of Site	385.06	acres	1	Persons per Dwelling	2.40	persons
2	Precipitation Rate	49.90	inches	2	Nitrogen per Person per Year	10.0	lbs
3	Area of Fertilized Landscape	78.00	acres	3	a. Sanitary Nitrogen Leaching Rate	50%	percent
4	Fraction of Land in Fertilized Landscape	0.203	fraction	3	b. Sanitary Nitrogen Leaching Rate	90%	percent
5	Evapotranspiration from Fert/Land	23.00	inches	4	Fertilized Land-1	78.00	acres
6	Runoff from Fert/Land	0.35	inches	5	Fertilizer Application Rate-1	2.30	lbs/1000 sq ft
7	Area of Non-Fertilized Landscape	78.00	acres	6	Fertilizer Nitrogen Leaching Rate-1	10%	percent
8	Fraction of Non-Fertilized Landscape	0.203	fraction	7	Fertilized Land-2	78.00	acres
9	Evaporation from Non-Fertilized	23.90	inches	8	Fertilizer Application Rate-2	0.00	lbs/1000 sq ft
10	Runoff from Non-Fertilized Land	0.35	inches	9	Fertilizer Nitrogen Leaching Rate-2	10%	percent
11	Acreeage of Unvegetated/Dirt Roads	18.26	acres	10	Pet Waste Application Rate	3.19	lbs/pet
12	Fraction of Land Unvegetated	0.047	fraction	11	Pet Waste Nitrogen Leaching Rate	50%	percent
13	Evapotrans. from Unvegetated	21.20	inches	12	Area of Land Irrigated	78.00	acres
14	Runoff from Unvegetated	0.3493	inches	13	Irrigation Rate	24.00	inches
15	Acreeage of Water/Wetlands	4.43	acres	14	Irrigation Nitrogen Leaching Rate	10%	percent
16	Fraction of Site in Water	0.012	fraction	15	Nitrogen in Precipitation	1.00	mg/l
17	Evaporation from Water	30.00	inches	16	Precipitation Nitrogen Leaching Rate	10%	percent
18	Makeup Water (if applicable)	0.00	inches	17	Nitrogen in Water Supply	1.00	mg/l
19	Acreeage of Natural/Natural Reveg	107.26	acres	18	Nitrogen in Sanitary Flow -1	50.00	mg/l
20	Fraction of Land Natural	0.279	fraction	19	Nitrogen in Sanitary Flow -2	6.00	mg/l
21	Evapotrans. from Natural Area	23.00	inches	C Comments 1) Please refer to user manual for data input instructions. Developed Area 273.37 71% Natural/Unvegetated/Revegetated Area 107.26 28% Total Acreeage Check 385.06 100%			
22	Runoff from Natural Area	0.35	inches				
23	Acreeage of Impervious/Paved/Bldgs	99.11	acres				
24	Fraction of Land in Impervious	0.257	fraction				
25	Evapotrans. from Impervious	4.99	inches				
26	Runoff from Impervious	0.00	inches				
27	Acreeage of Other (Rain Gardens)	0.00	acres				
28	Fraction of Land Other Area	0.000	fraction				
29	Evapotrans. from Other Area	30.00	inches				
30	Runoff from Other Area	0.50	inches				
31	Acreeage of Land Irrigated	78.00	acres				
32	Fraction of Land Irrigated	0.203	fraction				
33	Irrigation Rate	24.00	inches				
34	Number of Dwellings	695	units				
35	Water Use per Dwelling	0	gal/day				
36	Wastewater Design Flow (units)	0	gal/day				
37	Wastewater Design Flow (untreated)-1	192,286	gal/day				
38	Wastewater Design Flow (treated)	0	gal/day				

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

Existing Use Analysis
Average Turfgrass Leaching Rate

SITE RECHARGE COMPUTATIONS

A Fertilized Landscaped			B Non-fertilized Landscaped				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.203	fraction	1	A = Fraction of Land in Cover Type	0.203	fraction
2	P = Precipitation Rate	49.90	inches	2	P = Precipitation Rate	49.90	inches
3	E = Evapotranspiration Rate	23.00	inches	3	E = Evapotranspiration Rate	23.90	inches
4	Q = Runoff Rate	0.35	inches	4	Q = Runoff Rate	0.35	inches
5	R(a) = P - (E + Q)	26.55	inches	5	R(b) = P - (E + Q)	25.65	inches
6	R(A) = R(a) x A	5.38	inches	6	R(B) = R(b) x A	5.20	inches

C Unvegetated/Dirt Roads			D Water/Wetlands				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.047	fraction	1	A = Fraction of Site in Water	0.012	fraction
2	P = Precipitation Rate	49.90	inches	2	P = Precipitation Rate	49.90	inches
3	E = Evapotranspiration Rate	21.20	inches	3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.35	inches	4	Q = Runoff Rate	0.00	inches
5	R(c) = P - (E + Q)	28.35	inches	5	M = Makeup Water	0.00	inches
6	R(C) = R(c) x A	1.34	inches	6	R(d) = {P - (E+Q)} - M	19.90	inches
				7	R(D) = R(d) x A	0.23	inches

E Natural/Natural Revegetation			F Impervious/Paved/Roads				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.279	fraction	1	A = Fraction of Land in Cover Type	0.257	fraction
2	P = Precipitation Rate	49.90	inches	2	P = Precipitation Rate	49.90	inches
3	E = Evapotranspiration Rate	23.00	inches	3	E = Evapotranspiration Rate	4.99	inches
4	Q = Runoff Rate	0.35	inches	4	Q = Runoff Rate	0.00	inches
5	R(e) = P - (E + Q)	26.55	inches	5	R(f) = P - (E + Q)	44.91	inches
6	R(E) = R(e) x A	7.40	inches	6	R(F) = R(f) x A	11.56	inches

G Rain Gardens/Wetlands			H Irrigation Recharge				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	A = Fraction of Land in Cover Type	0.000	fraction	1	A = Fraction of Land Irrigated	0.203	fraction
2	P = Precipitation Rate	49.90	inches	2	I = Irrigation Rate	24.00	inches
3	E = Evapotranspiration Rate	30.00	inches	3	E = Evaptranspiration Rate	23.00	inches
4	Q = Runoff Rate	0.50	inches	4	Q = Runoff Rate	0.35	inches
5	R(g) = P - (E + Q)	19.40	inches	5	R(h) = I - (E + Q)	0.65	inches
6	R(G) = R(g) x A	0.00	inches	6	R(H) = R(H) x A	0.13	inches

I Wastewater Recharge			J Runoff Recharge				
	<i>Value</i>	<i>Units</i>		<i>Value</i>	<i>Units</i>		
1	WDF = Wastewater Design Flow	192,286	gal/day	1	Q(A) = Runoff from Landscaped	0.071	inches
2	WDF = Wastewater Design Flow	9,383,653	cu ft/yr	2	Q(B) = Runoff from Non-fertilized Landscape	0.002	inches
3	A = Area of Site	16,773,214	sq ft	3	Q(C) = Runoff from Unvegetated	0.017	inches
4	R(j) = WDF/A	0.56	feet	4	Q(E) = Runoff from Natural	0.097	inches
5	R(I) = Wastewater Recharge	6.71	inches	5	Q(H) = Runoff from Rain Gardens	0.000	inches
				6	Q(I) = Runoff from Irrigation	0.07	inches
				7	Q(tot) = Q(A)+Q(B)+Q(C)+Q(E)+Q(H)+Q(I)	0.26	inches

Total Site Recharge		
R(T) =	R(A)+R(B)+R(C)+R(D)+R(E)+R(F)+R(G)+R(H)+R(I)+R(J)+Q(tot)	
R(T) =	38.21	inches
R(T)(adj) =	38.21	inches

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

Existing Use Analysis
Average Turfgrass Leaching Rate

SITE NITROGEN BUDGET

A Sanitary Nitrogen (Wastewater Flow)(untreated)		
1	CF = Wastewater Flow	192,286 gal/day
2	CF = Wastewater Flow	265,647,916 liters/yr
3	N = Nitrogen (untreated)	50.00 mg/l
4	N = Nitrogen (untreated)	29287.68 lbs
7	LR = Leaching Rate	50% percent
8	N(S) = CF x N x LR	6,641,197,904 milligrams
9	N(S) = Sanitary Nitrogen	14643.84 lbs
10	N = loss/removed	14643.84 lbs

B Pet Waste Nitrogen		Value	Units
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	1668	capita
3	Pets = 17 percent of capita	284	pets
4	N(p) = AR x pets	904.56	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	452.28	lbs
7	N = (loss/removed)	452.28	lbs

C Sanitary Nitrogen (Wastewater Flow)(treated)		
1	CF = Wastewater Flow	0 gal/day
2	CF = Wastewater Flow	0 liters/yr
3	N = Nitrogen (untreated)	50.00 mg/l
4	N = Nitrogen (untreated)	0.00 lbs
5	N = Nitrogen (treated)	6.00 mg/l
7	LR = Leaching Rate	90% percent
8	N(S) = CF x N x LR	0 milligrams
9	N(S) = Sanitary Nitrogen	0.00 lbs
10	N = loss/removed	0.00 lbs

D Water Supply Nitrogen (other than wastewater, if applicable)			
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	1.00	mg/l
4	N(WW) = WDF x N	0	milligrams
5	N(WW) = Wastewater Nitrogen	0.00	lbs

E Fertilized Land		
1	A = Area of Land Fertilized	3,397,680 sq ft
2	AR = Application Rate	2.30 lbs/1000 sf
3	N(T) = Nitrogen (total applied)	7814.66 lbs
4	LR = Leaching Rate	10% percent
5	N(F1) = A x AR x LR	781.47 lbs
6	N = loss/removed	7033.20 lbs

F Non-Fertilized Land			
1	A = Area of Land Non-Fertilized	3,397,680	sq ft
2	AR = Application Rate	0.00	lbs/1000 sf
3	N(T) = Nitrogen (total applied)	0.00	lbs
4	LR = Leaching Rate	10%	percent
5	N(F2) = A x AR x LR	0.00	lbs
6	N = loss/removed	0.00	lbs

G Precipitation Nitrogen (existing condition)		
1	R(n) = Natural Recharge (feet)	1.96 feet
2	A = Area of Site (sq ft)	16,773,214 sq ft
3	R(N) = R(n) x A	32,887,921 cu ft
4	R(N) = Natural Recharge (liters)	931,385,936 liters
5	N = Nitrogen in Precipitation	1.00 mg/l
6	N(T) = Nitrogen (total)	2,054 lbs
7	LR = Leaching Rate	10% percent
8	N(ppt) = R(N) x N x LR	93,138,593.64 milligrams
10	N(irr) = Irrigation Nitrogen	205.37 lbs
9	N = loss/removed	1848.34 lbs

H Irrigation Nitrogen			
1	R = Irrigation Recharge (inches)	0.13	inches
2	R = Irrigation Rate (feet)	0.01	feet
3	A = Area of Land Irrigated	3,397,680	sq ft
4	R(I) = R(irr) x A	37,321	cu ft
5	R(I) = Site Precipitation (liters)	1,056,918	liters
6	N = Nitrogen in Water Supply	2.00	mg/l
7	N(T) = Nitrogen (total applied)	4.66	lbs
8	LR = Leaching Rate	10%	percent
9	N(irr) = R(I) x N x LR	211,384	milligrams
10	N(irr) = Irrigation Nitrogen	0.47	lbs
11	N = loss/removed	4.19	lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	16,083.42 lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

Riverside - Pine Barrens Area

Existing Use Analysis

FINAL COMPUTATIONS

Average Turfgrass Leaching Rate

<i>A</i>	<i>Nitrogen in Recharge</i>	<i>Value</i>	<i>Units</i>
1	N = Total Nitrogen (lbs)	16,083.42	lbs
2	N = Total Nitrogen (milligrams)	7,301,873,896	milligrams
3	R(T) = Total Recharge (inches)	38.21	inches
4	R(T) = Total Recharge (feet)	3.18	feet
5	A = Area of Site	16,773,214	sq ft
6	R = R(T) x A	53,402,383	cu ft
7	R = Site Recharge Volume	1,512,355,491	liters
9	NR = N/R	4.83	mg/l

CONCENTRATION OF NITROGEN IN RECHARGE	4.83
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<i>B</i>	<i>Site Recharge Summary</i>	<i>Value</i>	<i>Units</i>
1	R(T) = Total Site Recharge	38.21	inches/yr
2	R = Site Recharge Volume	53,402,383	cu ft/yr
3	R = Site Recharge Volume	399,477,595	gal/yr
4	R = Site Recharge Volume	399.48	MG/yr

<i>Conversions used in SONIR</i>	
Acres	x 43,560 = Square Feet
Cubic Feet	x 7.48052 = Gallons
Cubic Feet	x 28.32 = Liters
Days	x 365 = Years
Feet	x 12 = Inches
Gallons	x 0.1337 = Cubic Feet
Gallons	x 3.785 = Liters
Grams	/ 1,000 = Milligrams
Grams	x 0.002205 = Pounds
Milligrams	/ 1,000 = Grams