Stansbury Park Improvement Dist.

From: "WALTER HOLMES" <wholmes11@msn.com>
To: "Kim Marshall" <agency1@aros.net>; "Jeff Terry" <jterry@stansburypark.org>; "Randy Jones" <rjones@stansburypark.org>; "wholmes11" <wholmes11@msn.com>; "John Odonnell" <johnjodonnell@aol.com>; "Debbie Record" <debbierecord@comcast.net>; "Scott Totman" <scott.totman@unisys.com>; "Christy Achziger" <christy@achziger.org>
Cc: "Kenyon Eastin" <kenyon@wirelessbeehive.com>; "Brett Palmer" <spid@trilobyte.net>; "Gary Ziser" <gziser@stansburypark.org>
Sent: Saturday, September 23, 2006 7:09 PM
Attach: ATT00068.htm; Nutrient loading to Stansbury lake in 2006.xls; Discharge and water quality-Stansbury Lake.xls; Data collection sites on Stansbury Lake 9-5-2005.JPG; Lake data 9-5-2005.xls
Subject: Nutrient loading to Stansbury Lake

Attached is the final table of the water quality sampling results on inflows to Stansbury Lake carried out over the last year, a copy of the data collected on Stansbury Lake last September along with a map of the sampling sites, a calculation of the sources of nutrients to Stansbury Lake, and some suggestions on how to mitigate the inflow of the nutrients. The data set is less than perfect, especially the measurements of phosphorus, but I guess you get what you pay for. I think the conclusions are valid even if better data on phosphorus were obtained. I don't believe additional quarterly data is needed but we might consider annual sampling to check to see if our mitigation measures are working. I would like to present the results to trustees and the public at the next board meeting. We could pass out copies of the attachment entitled "Nutrient loading to Stansbury Lake in 2006.xls" to the public. Some of the measures to reduce nutrient loads could effect our water rights. The effect on our water rights should probably be saved for a closed meeting. A point of discussion should be how long will it take to see the results of nutrient reduction in Stansbury Lake. I refer you to the EPA document at http://www.epa.gov/waterscience/criteria/nutrient/guidance/lakes<http://www.epa.gov/waterscience/crite chapter 5, page 9. Macrophytes , which is the plant life growing in our lake, probably receive their nutrients from the sediments. Thus, it make take years or decades to see any decrease in macrophytes (Sago Pondweed or Chara) after nutrient inflows to Stansbury Lake have decreased.

Kim- Please include an agenda item titled "Nutrient loading to Stansbury Lake in 2006 and measures that could significantly reduce nutrient loads".

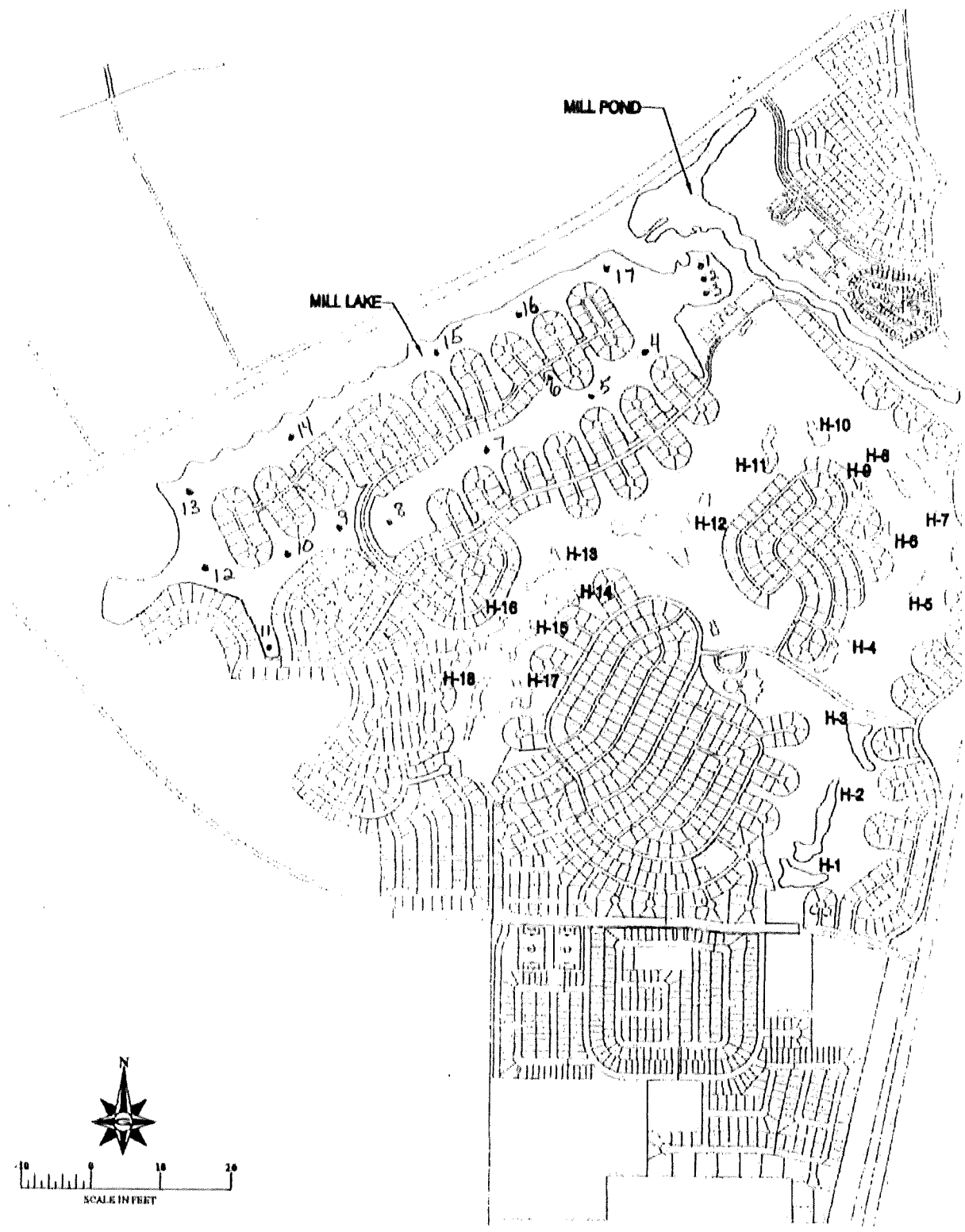
Thanks
Walt

Stansbury Lake Field Data Collected September 5, 2005 @ 1700 by Walt Holmes and Mike Enright

Site Number	Depth (meters)	Temp (Celcius)	Specific Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	pH	Remarks
1	0.1	23.2	2290	8.52	118	8.9	Numerous aquatic weeds
1	1	21.9	2320	10.5	-	9.08	
1	1.5	21.4	2220	9.73	135	9.04	
1	1.8	21.4	2230	8.33	105	8.4	Bottom
2	0.1	23.2	2310	8.4	116	8.9	Numerous aquatic weeds
2	1	22.4	2300	12.2	171	9.28	
2	1.4	21.4	2300	12.1	153	9.1	Bottom
3	0.1	23.2	2300	9.3	126	8.9	Numerous aquatic weeds
3	1	23	2310	11.2	140	9.13	
3	1.5	21.1	2320	9.97	140	9.09	Bottom
4	0.1	23.2	2230	8.5	118	8.94	Numerous aquatic weeds
4	1	22.6	2220	10.1	135	8.95	
4	1.5	20.9	2230	6.05	76	8.6	Bottom
5	0.1	23.4	2050	9.5	131	8.78	Numerous aquatic weeds
5	1	22.1	2040	12.2	168	8.97	
5	1.5	21.6	2030	12.2	157	8.81	Bottom
6	0.1	23.7	2230	9.1	127	9.01	Numerous aquatic weeds
6	1	22.4	2230	10.2	137	9.17	
6	1.7	21.2	2220	6.5	83	8.86	Bottom
7	0.1	23.5	2240	8.1	110	8.92	Numerous aquatic weeds
7	1	21.8	2320	7.5	93.1	8.9	
7	1.5	20.9	2340	4.8	60	8.69	Bottom
8	0.1	23.4	2390	8.06	111	8.97	Numerous aquatic weeds
8	1	20.9	2510	8.91	113	9.16	
8	1.4	20.3	2470	5.6	69	8.84	Bottom
9	0.1	24.7	2740	8.2	116	9.32	Numerous aquatic weeds
9	1	20.4	2830	6.11	80	9.33	
9	1.2	19.9	2830	3.35	44	9.04	Bottom
10	0.1	24	2830	8.77	123	9.49	Numerous aquatic weeds
10	1	19.8	2830	4.7	50	9.3	
10	1.3	19.7	2840	4.71	59	9.16	Bottom
11	0.1	23.3	2840	8.36	115	9.36	Numerous aquatic weeds
11	1	20.5	2830	9.62	129	9.53	
11	1.5	19.8	2830	11	142	9.56	Bottom

Site Number	Depth (meters)	Temp (Celcius)	Specific Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	pH	Remarks
12	0.1	22.6	2770	7.7	104	9.37	Weeds Thinning
12	1	20.9	2770	9.6	129	9.71	
12	1.5	20.3	2770	8.15	109	9.61	Bottom
13	0.1	22.5	2750	7.65	103	9.34	No aquatic weeds on surface
13	1	22.5	2740	7.52	102	9.34	
13	2.3	20.1	2770	8.32	108	9.46	Bottom
14	0.1	22.4	2740	7.66	104	9.33	No aquatic weeds on surface
14	1	22.3	2740	7.69	103	9.33	
14	2	20.5	2760	7.61	101	9.41	
14	3.1	20.3	2760	7.13	92	9.31	Bottom
15	0.1	22.3	2690	8.07	109	9.23	No aquatic weeds on surface
15	1	22.3	2710	7.9	106	9.34	
15	2	20.6	2760	7.8	101	9.37	
15	3.4	20.6	2760	7.53	97	9.31	Bottom
16	0.1	22.8	2490	9.18	118	9.18	More aquatic weeds
16	1	21.7	2530	10.1	135	9.44	
16	1.5	21.4	2500	8.5	113	9.29	Bottom
17	0.1	22.4	2270	10.2	140	9.15	Numerous aquatic weeds
17	1	21.6	2300	10.2	135	9.18	
17	1.5	21.9	2300	6.6	87	8.92	Bottom

9/5/2005- Measured flow at #16 Lakeview at about 250 gpm. Pumping 1050 gpm from Gordon Well or a loss of 76% or 800 gpm from the golf coarse ponds and piping. Only a small amount can be from evaporation. A loss of 76% was also reported by ATC Associates in a study in 2002. The bottom of ponds have accumulated about a foot of fine sediment over the years which probably limits leakage. Therefore, it is assumed that most of the losses are from the piping between the ponds or to the discharge point.



GILSON ENGINEERING, INC.
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5440 South 1900 West
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Fax: (801) 773-4691

STORAG

STANSBURY

Z:\PROJECTS (misc)\STA-010.03\CADD\EX-BASE\EX-BASE.dwg, 2/10/2004 9:30:38 AM, gilsonarchive

Stansbury Park Improvement Dist.

From: "WALTER HOLMES" <wholmes11@msn.com>
To: "Brett Palmer" <spid@trilobyte.net>
Cc: "Kim Marshall" <agency1@aros.net>; "Jeff Terry" <jterry@stansburypark.org>; "Randy Jones" <rjones@stansburypark.org>; "wholmes11" <wholmes11@msn.com>; "John Odonnell" <johnjodonnell@aol.com>; "Debbie Record" <debbierecord@comcast.net>; "Scott Totman" <scott.totman@unisys.com>; "Christy Achziger" <christy@achziger.org>
Sent: Monday, September 18, 2006 5:36 PM
Attach: ATT00014.htm; gordon.xls
Subject: Fw: Gordon Well results

Brett- Here is the results of the water quality analyses on the Gordon well taken during the pump test in May. As you can see, the water quality improved with time as we pumped the well. These results need to be looked at by a soil scientist to make sure the water is suitable for irrigating the golf course and to determine if an acid generator would be beneficial.

Thanks
Walt

contact: Bob Hill @ Utah State for soil/water study.

----- Original Message -----
From: Bernard J Stolp<mailto:bjstolp@usgs.gov>
To: wholmes11@msn.com<mailto:wholmes11@msn.com>
Sent: Monday, September 18, 2006 1:43 PM
Subject: Gordon Well results

Ion balances look good

Field SpC/Lab SpC are comparable

Residual-sum/residual-180C are comparable

Ratio of residual-180C/lab SpC are 0.64 and 0.66

From standpoint of the lab work, the analyzes look good to me

LOCAL Local identifier		DATES Date as yyyymmdd	TIMES Sample start time	P00027 Agency collecting sample, code	P00028 Agency analyzing sample, code
LOCAL		DATES	TIMES	P00027	P00028
(C- 2- 4)21add- 1	Start of test	May 22 2006	1330	1028	80020
(C- 2- 4)21add- 1	End of test	May 23 2006	1215	1028	80020

P00059 Flow rate, instantaneous, gallons per minute	P00300 Dissolved oxygen, water, unfiltered, milligrams per liter	P00400 pH, water, unfiltered, field, standard units	P00403 pH, water, unfiltered, laboratory, standard units	P90095 Specific conductance, water, unfiltered, laboratory, microsiemens per centimeter at 25 degrees Celsius	P00095 Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius	P00010 Temperature, water, degrees Celsius	P00900 Hardness, water, milligrams per liter as calcium carbonate	P00915 Calcium, water, filtered, milligrams per liter
P00059	P00300	P00400	P00403	P90095	P00095	P00010	P00900	P00915
			7.6	1660	1720		510	126
2000	6.7	7.2	7.5	1430	1430	14.8	470	112

P00925 Magnesium, water, filtered, milligrams per liter	P00935 Potassium, water, filtered, milligrams per liter	P00931 Sodium adsorption ratio, water, number	P00932 Sodium fraction of cations, water, percent in equivalents of major cations	P00930 Sodium, water, filtered, milligrams per liter	P29801 Alkalinity, water, filtered, fixed endpoint (pH 4.5) titration, laboratory, milligrams per liter as calcium carbonate	P00940 Chloride, water, filtered, milligrams per liter	P00950 Fluoride, water, filtered, milligrams per liter	P00955 Silica, water, filtered, milligrams per liter
P00925	P00935	P00931	P00932	P00930	P29801	P00940	P00950	P00955
48.3	7.75	3	39	152	246	201	.2	19.7
45.4	5.75	2	36	123	230	177	.2	17.9

P00945 Sulfate, water, filtered, milligrams per liter	P70301 Residue, water, filtered, sum of constituents, milligrams per liter	P70300 Residue on evaporation, dried at 180 degrees Celsius, water, filtered, milligrams per liter	P00608 Ammonia, water, filtered, milligrams per liter as nitrogen	P00631 Nitrite plus nitrate, water, filtered, milligrams per liter as nitrogen	P00613 Nitrite, water, filtered, milligrams per liter as nitrogen	P00671 Orthophosphate, water, filtered, milligrams per liter as phosphorus	P01000 Arsenic, water, filtered, micrograms per liter	P01020 Boron, water, filtered, micrograms per liter
P00945	P70301	P70300	P00608	P00631	P00613	P00671	P01000	P01020
311	1020	1090	<.04	2.38	<.008	.03	3.2	176
235	865	912	<.04	2.54	<.008	.03	3.0	122

P01046 Iron, water, filtered, micrograms per liter	P01056 Manganese, water, filtered, micrograms per liter	P82082 Deuterium/Protium ratio, water, unfiltered, per mil	P82085 Oxygen-18/Oxygen-16 ratio, water, unfiltered, per mil
P01046	P01056	P82082	P82085
<6	E.6		
E6	<.6	-120	-15.70

Stansbury Park Improvement Dist.

From: "WALTER HOLMES" <wholmes11@msn.com>
To: "Stephenson, Scott W" <scott.stephenson@eds.com>
Cc: "Brett Palmer" <spid@trilobyte.net>; "Kim Marshall" <agency1@qwestoffice.net>; "Jeff Terry" <jterry@stansburypark.org>; "Randy Jones" <rjones@stansburypark.org>; "wholmes11" <wholmes11@msn.com>; "John Odonnell" <johnjodonnell@aol.com>; "Debbie Record" <debbierecord@comcast.net>; "Scott Totman" <scott.totman@unisys.com>; "Christy Achziger" <christy@achziger.org>; "Glenn Oscarson" <ggo@wirelessbeehive.com>
Sent: Tuesday, September 18, 2007 12:52 PM
Attach: ATT00008.htm
Subject: Re: Water flow to ponds

102 AFX 325,900 = 33241,800 Gallons

----- Original Message -----
From: Stephenson, Scott W<mailto:scott.stephenson@eds.com>
To: WALTER HOLMES<mailto:wholmes11@msn.com>
Cc: Kim Marshall<mailto:agency1@qwestoffice.net> ; Jeff Terry<mailto:jterry@stansburypark.org> ; Randy Jones<mailto:rjones@stansburypark.org> ; John Odonnell<mailto:johnjodonnell@aol.com> ; Debbie Record<mailto:debbierecord@comcast.net> ; Scott Totman<mailto:scott.totman@unisys.com> ; Christy Achziger<mailto:christy@achziger.org> ; Glenn Oscarson<mailto:ggo@wirelessbeehive.com>
Sent: Tuesday, September 18, 2007 10:50 AM
Subject: RE: Water flow to ponds

Walter,

Thank you for your detailed response. I have a couple of thoughts and questions if you will allow. I am curious as to what has changed with the water rights allowing a flow only between April 1 and October 31st? This was not the case when I moved here in 1998 and what can be done to change it back to the way it once was or at least a compromise to change it to March 1 and November 31st, thus allowing the colder temperatures in the fall to mitigate what rots in the ponds after they drain? I see the pond adjacent to my home and the 10th fairway/green started yesterday to drain and its only September 18th.

Furthermore, I have been told by members of the agency and others that "the biggest problem we are facing on the golf course ponds is aging infrastructure, leaking pipes and ponds" ever since I have moved her back in 1998. I am somewhat surprised that this is still the response during my 9 years of living in Stansbury Park and why a satisfactory long term solution has not been made. Even it it means budget dollars dedicated to the complete overhaul of one to two ponds a year at least one or two ponds a year should be receiving a complete makeover (infrastructure, lining and all) rather than what appears to be the band-aid solution of temporary fixes along the way.

It was suggested a year or two ago that it may require a bond measure asking for tax dollars to bring the Stansbury Park Golf Course back to what some residents hope and expect it to be... Has any consideration been given to that?

Finally, your comment below on "Most of the discretionary money for water projects has been spent by the Stansbury Service Agency on aquatic weed control in Stansbury Lake. Budget priorities haven't allowed for major updating of infrastructure on the golf coarse ponds" continues to be a huge concern for me. It seems as if the few meetings I have attended they are typically dominated by Stansbury Lake discussion. I left these meetings feeling like that the lake is where the budget dollars are going.

Realizing of course that the real issue was the contract language in which Agency members believed maintenance of the ponds fell under Barbara's ownership and of course Barbara and Red believing it was not under their jurisdiction. Has or will these issues be resolved with the new contract of who has ownership and budget for the maintenance of the ponds?

In summary if you could answer the questions I have pulled out from above placed under the line below for your convenience I would appreciate it I would also be happy to participate on a committee that addresses maintenance of the ponds and golf course. As always thanks for addressing these questions and for the service provided by the Agency members.

P.S. Next time you enter and exit Stansbury Park by the Maverick, take a good look at the Stansbury Park Park pillar.... Would you agree that its time to improve this sign with either paint where there once was or maybe just a whole new entrance and improvement look.... any thoughts????
I agree

I am curious as to what has changed with the water rights allowing a flow only between April 1 and October 31st? The water rights have not changed. The Service Agency does not have the legal right to divert water from October 31 to April 1. A change application could be filed with Water Rights and if not protested and approved by the State, we could pump all year at a reduced rate. The problem with doing that is there would not be enough water at the reduced rate to fill the ponds due to aging infrastructure. The ponds on the golf course should require about 30 acre-feet per year to keep them full and meet evaporation losses. We currently pump more than 10 times that much water to keep them full.

What can be done to change it back to the way it once was with year round pond flow or a least a compromise to change it from March 1 and November 31st, thus allowing the colder temperatures in the fall to mitigate what rots in the ponds after they drain? If we could repair the leaking pipes between the ponds we would have more than enough water to keep them full year around.

Has any consideration been given to a bond measure for the course? Yes, some discussions have taken place. Randy Jones believes a bond to fix the infrastructure of the ponds would cost residents as much as several hundred dollars a year. He's not sure the residents would vote for such a large tax increase.

Has or will this issues be resolved with the new contract of who has ownership and budget for the maintenance of the ponds? The new contract requires the operator (Jeff Green) to clean debris from the ponds and control shoreline vegetation. An attempt to control algae and aquatic weeds will be a shared responsibility between the golf course operator and the Service Agency. The delivery of water to the ponds is the Service Agency responsibility. The Stansbury Park Improvement District (SPID) has done some work, and has agreed to take responsibility for the piping infrastructure between the ponds as they use the ponds for storm water retention and treatment. I would like to form a golf course committee to meet with SPID and develop a strategy for replacing the aging infrastructure. Unfortunately, I will not be available for the next 3 Agency meetings which will be the beginning of the budget cycle. If you would like to attend and propose a golf course committee, I will volunteer to work with that committee. I have copies of the proposed budgets for the golf course for the last 2 years. I could fax them to you or run them by. Kim also has copies of the proposed budgets. Most of the items in the proposed budgets for the golf course did not get funding. It is time to invest in the golf course infrastructure.

Thanks for your concern and input
Walt

Regards,
Scott W. Stephenson
E - PPM Capability ASFO ART
(435-843-9001 Utah Office
+ mailto:scott.stephenson@eds.com<mailto:scott.stephenson@eds.com>

From: WALTER HOLMES [mailto:wholmes11@msn.com]
Sent: Friday, August 31, 2007 11:02 AM
To: Stephenson, Scott W
Cc: Kim Marshall; Jeff Terry; Randy Jones; wholmes11; John Odonnell; Debbie Record; Scott Totman; Christy Achziger; Glenn Oscarson
Subject: Water flow to ponds

Hi Scott- The operation of the golf course ponds is generally dictated by our water rights which only allow us to pump into the ponds between April 1 and October 31. On an infrequent basis we are required to shut down our water supply to make repairs to infrastructure. This year, we have been successful in keeping water in the ponds on holes 1 through 12 throughout the summer. The ponds on holes 13 thru 16 are supplied by flowing wells in Erda. The supply from these wells has been below normal because of drought conditions and reduced flow of our wells. We are supplementing water to ponds on holes 13 thru 16 by pumping out of Stansbury Lake into the pond on the left of hole 14. Stansbury Lake is extremely low this year so we are trying not to pump as much water from the lake. This has created low water levels in ponds on holes 13 through 16. We are leasing additional water from Kennecott to try and fill Stansbury Lake and we have applied through the Division of Water Rights to add another point of diversion on the left of the 17th fairway to increase our water supply to Stansbury Lake.

All of the steps we are taking should help in the future but the biggest problem we are facing on the golf course ponds is aging infrastructure, leaking pipes and ponds, bank erosion, and control of aquatic weeds and algae. Most of the discretionary money for water projects has been spent by the Stansbury Service Agency on aquatic weed control in Stansbury Lake. Budget priorities haven't allowed for major updating of infrastructure on the golf coarse ponds. Your input is important to the board and I would suggest you take your concerns to the Board meeting as the budget cycle is about to start. I have also expressed my concerns about the golf coarse ponds to the Board and will continue to do so. We have also enlisted the help of the Stansbury Park Improvement District since the golf coarse ponds receive storm drain water creating nutrients for aquatic growth and filling the golf coarse ponds with sediment. A Stansbury Lake committee has been formed to provide suggestions to the Board on Lake issues. I believe it may be time to form a golf-coarse committee to address and advise the Board on golf coarse issues. I believe both Stansbury Lake and the Golf Coarse are equally important to this community.

Thanks for your comments
Walt Holmes- Unofficial Board advisor

Stansbury Park Improvement Dist.

From: "Don A. Barnett" <dbarnett@barnettwater.com>)
To: <spid@trilobyte.net>
Sent: Friday, October 19, 2007 2:33 PM
Subject: WR Status

Brett:

I just left you an e-mail. I am going to be mostly in town for a long time and anxious to move ahead on several items. Therefore, give me a call and update me on status with:

1) Anything back from Ward on our summary of the bankruptcy water right analysis?
2) Finish up the review by moving into the post bankruptcy water rights
3) Well drilling status
a. Gordon #2
b. Well #4
4) Tooele County water right need
5) State Engineer meeting
6) On the billing I have reviewed time sheets since January. I have about 28 hours in the following categories
a. General
b. WR Applications
i. Warr
ii. Lassley
iii. Chevron
c. WR Review and Report
i. Bankruptcy water rights
ii. Post Bankruptcy water rights
d. Well Drilling
i. Non-production well filing (Gordon #2)

Does that fit the detail and the categories you desire? Any additions to should we combine some?

Give me a call and will chase these issue down. Thanks.

Don A. Barnett, P.E., P.G.
Barnett Intermountain Water Consulting
106 W. 500 S., Suite 101
Bountiful, Utah 84010
(801) 292-4662 (phone)
(801) 524-6320 (fax)

dbarnett@barnettwater.com

USU ANALYTICAL LABORATORIES

Soil Test Report and Fertilizer Recommendations

USU Analytical Labs
Utah State University
Logan, Utah 84322-4830
(435) 797-2217
(435) 797-2117 (FAX)
www.usual.usu.edu

Date Received: 7/12/2010
Date Completed: 7/19/2010

Name: WALTER HOLMES
Address: 238 COUNTRY CLUB DRIVE
STANSBURY PARK UT 84074

Phone: 435 882 7905
County: TOOELE

Lab Number: 1001-1618
Identification: S4
Crop to be Grown: Lawn

Grower's Comments:

Acres in Field:

Soil Test Results				Interpretations	Recommendations
Texture		Loam	2004		
pH		7.18	7.6	Normal	
Salinity - ECe	dS/m	5.69	3.1	Very High	
Phosphorus - P	mg/kg	32	32	High	0 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	680	>400	High	0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg				2-4 lbs N/1000 sq ft*
Zinc - Zn	mg/kg				
Iron - Fe	mg/kg				
Copper - Cu	mg/kg				
Manganese - Mn	mg/kg				
Sulfate-Sulfur - S	mg/kg				
Organic Matter	%				
SAR					

Notes
*SEE LAWN GUIDE.
SALT LEVEL HIGH - LEACH OUT SALTS WITH LOTS OF EXTRA IRRIGATION WATER
SEE - http://extension.usu.edu/files/publications/publication/AG_Soils_2003-01.pdf

For further assistance, please see your County Agent -- Linden Greenhalgh - 435-277-2407
For further information and publications of interest, see the
USU Analytical Lab webpage or Utah State University Extension

Methods Used by USUAL: pH + EC (salinity) + SAR by saturated paste; P + K by Olsen sodium bicarbonate extract – K by AA, P by ascorbic acid/molybdate blue colorimetric; NO3-N by CaO extract + cadmium reduction; Zn, Fe, Cu, Mn by DTPA + ICP; SO4-S by CaHPO4 + ICP; OM by Walkley-Black
Results only reflect the sample received and may not be indicative of actual field conditions.

USU ANALYTICAL LABORATORIES

Soil Test Report and Fertilizer Recommendations

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Date Received: 7/12/2010
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Name: WALTER HOLMES
Address: 238 COUNTRY CLUB DRIVE

STANSBURY PARK UT 84074

Phone: 435 882 7905
County: TOOELE

Lab Number: 1001-1617
Identification: S3
Crop to be Grown: Lawn

Grower's Comments:

Acres in Field:

Soil Test Results				Interpretations	Recommendations
Texture		Silt Loam	2004		
pH		7.63	7.8	Normal	
Salinity - ECe	dS/m	2.85	2.4	High	
Phosphorus - P	mg/kg	25	38	Adequate	0 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	711	>400	High	0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg				2-4 lbs N/1000 sq ft*
Zinc - Zn	mg/kg				
Iron - Fe	mg/kg				
Copper - Cu	mg/kg				
Manganese - Mn	mg/kg				
Sulfate-Sulfur - S	mg/kg				
Organic Matter	%				
SAR					

Notes
*SEE LAWN GUIDE.
SALT LEVEL HIGH - LEACH OUT SALTS WITH LOTS OF EXTRA IRRIGATION WATER
SEE - http://extension.usu.edu/files/publications/publication/AG_Soils_2003-01.pdf

For further assistance, please see your County Agent -- Linden Greenhalgh - 435-277-2407
For further information and publications of interest, see the
USU Analytical Lab webpage or Utah State University Extension

Methods Used by USUAL: pH + EC (salinity) + SAR by saturated paste; P + K by Olsen sodium bicarbonate extract – K by AA, P by ascorbic acid/molybdate blue colorimetric; NO3-N by CaO extract + cadmium reduction; Zn, Fe, Cu, Mn by DTPA + ICP; SO4-S by CaHPO4 + ICP; OM by Walkley-Black
Results only reflect the sample received and may not be indicative of actual field conditions.

USU ANALYTICAL LABORATORIES

Soil Test Report and Fertilizer Recommendations

USU Analytical Labs
Utah State University
Logan, Utah 84322-4830
(435) 797-2217
(435) 797-2117 (FAX)
www.usual.usu.edu

Date Received: 7/12/2010
Date Completed: 7/19/2010

Name: WALTER HOLMES
Address: 238 COUNTRY CLUB DRIVE

STANSBURY PARK UT 84074

Phone: 435 882 7905
County: TOOELE

Lab Number: 1001-1616
Identification: S2
Crop to be Grown: Lawn

Grower's Comments:

Acres in Field:

Soil Test Results				Interpretations	Recommendations
Texture		Silty Clay Loam	2004		
pH		7.53	7.4	Normal	
Salinity - ECe	dS/m	2.57	3.0	High	
Phosphorus - P	mg/kg	7.5	15	Low	1 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	520	131	High	0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg				2-4 lbs N/1000 sq ft*
Zinc - Zn	mg/kg				
Iron - Fe	mg/kg				
Copper - Cu	mg/kg				
Manganese - Mn	mg/kg				
Sulfate-Sulfur - S	mg/kg				
Organic Matter	%				
SAR					

Notes
*SEE LAWN GUIDE.
SALT LEVEL HIGH - LEACH OUT SALTS WITH LOTS OF EXTRA IRRIGATION WATER
SEE - http://extension.usu.edu/files/publications/publication/AG_Soils_2003-01.pdf

For further assistance, please see your County Agent -- Linden Greenhalgh - 435-277-2407
For further information and publications of interest, see the
USU Analytical Lab webpage or Utah State University Extension

Methods Used by USUAL: pH + EC (salinity) + SAR by saturated paste; P + K by Olsen sodium bicarbonate extract – K by AA, P by ascorbic acid/molybdate blue colorimetric; NO3-N by CaO extract + cadmium reduction; Zn, Fe, Cu, Mn by DTPA + ICP; SO4-S by CaHPO4 + ICP; OM by Walkley-Black
Results only reflect the sample received and may not be indicative of actual field conditions.

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Date Received: 7/12/2010
Date Completed: 7/19/2010

Name: WALTER HOLMES
Address: 238 COUNTRY CLUB DRIVE
STANSBURY PARK UT 84074

Phone: 435 882 7905
County: TOOELE

Lab Number: 1001-1615
Identification: S1
Crop to be Grown: Lawn

Grower's Comments: Acres in Field:
Austrian pine trees are dying at sample sites 1 and 3 on golf course

Soil Test Results			2009	Interpretations	Recommendations
Texture		Silt Loam			
pH		7.46	7.8	Normal	
Salinity - ECe	dS/m	7.01	2.8	Very High	
Phosphorus - P	mg/kg	31	27	High	0 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	736	>400	High	0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg				2-4 lbs N/1000 sq ft*
Zinc - Zn	mg/kg				
Iron - Fe	mg/kg				
Copper - Cu	mg/kg				
Manganese - Mn	mg/kg				
Sulfate-Sulfur - S	mg/kg				
Organic Matter	%				
SAR					

Notes
*SEE LAWN GUIDE.
SALT LEVEL HIGH - LEACH OUT SALTS WITH LOTS OF EXTRA IRRIGATION WATER
SEE - http://extension.usu.edu/files/publications/publication/AG_Soils_2003-01.pdf

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For further information and publications of interest, see the
USU Analytical Lab webpage or Utah State University Extension

Methods Used by USUAL: pH + EC (salinity) + SAR by saturated paste; P + K by Olsen sodium bicarbonate extract – K by AA, P by ascorbic acid/molybdate blue colorimetric; NO3-N by CaO extract + cadmium reduction; Zn, Fe, Cu, Mn by DTPA + ICP; SO4-S by CaHPO4 + ICP; OM by Walkley-Black
Results only reflect the sample received and may not be indicative of actual field conditions.

Interpretation of soil data from Stansbury Golf Course

Soil samples have been collected at the Stansbury Park Golf Course and analyzed by the Utah State University Analytical Laboratories in 2004 (6-samples) and in July 2010 (4-samples). The results of the soil analyses, a map showing where the samples were collected, a description of where and how the samples were taken, a table showing general guidelines for plant response to soil salinity, and a table showing salinity tolerance of common turfgrasses grown in Utah are attached with this document.

The primary purpose of the soil sampling in July 2010 was to determine if soil conditions were causing mature Austrian Pines to die. A secondary objective was to resample 2 sites that had been sampled in 2004 to see if salts are increasing in our soils. The number of samples is limited but some general trends might be showing up in the data.

The results of the soil analyses at site S-1-2010, collected in the area where Austrian Pines are under severe stress (see map and description of sampling sites), show the highest measured salinity of any of the 10 soil samples. Checking in the table of general guidelines for plant response to soil salinity, the value of 7.0 dS/m shows the growth of many plants is restricted. An attached table shows salinity tolerance of common turfgrasses grown in Utah. Grass on the Stansbury Park Golf Course (SPGC) is a mixture of Kentucky Bluegrass, Fescue, and Ryegrass. A salinity-Ece of 7.0 dS/m is higher than these grasses can tolerate. The recommendation of the USU lab for this soil containing high salt levels is to leach out salts with lots of extra irrigation water.

The results of the soil analyses at site S-2-2010, collected where Austrian Pines appear to be in good health (see map and description of sampling sites), show a salinity-Ece of 2.6 dS/m. Checking in the table of general guidelines for plant response to soil salinity, the value of 2.6 dS/m shows that growth of sensitive plants is restricted. Austrian Pines are not sensitive to salinity and they appear to be doing fine at this location. The salinity of the soil at this site is within the tolerance of the grasses grown at the SPGC. The recommendation of the USU lab for this soil containing high salt levels is to leach out salts with lots of extra irrigation water.

The results of the soil analyses at site S-3-2010, collected where Austrian Pines are severely under stress (see map and description of sampling sites); show a salinity-Ece of 2.8 dS/m. Checking in the table of general guidelines for plant response to soil salinity, the value of 2.8 dS/m shows that growth of sensitive plants is restricted. Salinity is probably not the cause of the stress on the pines because the salinity levels are close to the levels observed at site S-2-2010 where the pines were healthy. The Austrian Pines at this location may be suffering from the lack of irrigation water. The salinity of the soil at this site is within the tolerance of the grasses grown at the SPGC. When collecting samples at this site it was noted that the soil conditions were very dry. The recommendation of the USU lab for this soil containing high salt levels is to leach out salts with lots of extra irrigation water.

The results of the soil analyses at site S-4-2010, collected at the approximate location as site S-4 in 2004 (see map and description of sampling sites); show a salinity-Ece of 5.7 dS/m. Checking in the table of general guidelines for plant response to soil salinity, the value of 2.6 dS/m shows that growth of many plants is restricted. A salinity-Ece of 5.7 dS/m is also higher than Kentucky Bluegrass can tolerate. The recommendation of the USU lab for this soil containing high salt levels is to leach out salts with lots of extra irrigation water.

Comparing the salinity-Ece of 2.6 from soil sample S-2-2010, collected in July, with the salinity-Ece of 3.0 from soil sample S-2 collected in 2004 does not indicate that the salinity of the soil is increasing at this site. Comparing the analyses from soil sample S-4-2010, collected in July, with soil sample S-4 collected in 2004 shoes an increase of soil salinity-Ece from 3.1 to 5.7 dS/m. This comparison does indicate that the salinity of the soil is increasing with time. Two of the 4 samples collected and analyzed in July of 2010 had salinity-Ece results that were higher than any of the 6 samples collected and analyzed in 2004.

Conclusions

Based on the observations and data collected near Austrian Pines, it is probable that both high soil salinity (S-1-2010) and low soil moisture (S-3-2010) may be the cause of the mortality among the Austrian Pines.

Based on the comparison of analyses of the 2 soil samples collected at the same locations in 2004 and 2010 and on the higher values of soil salinity seen in the 2010 samples, it is probable that soil salinity is increasing with time in some parts of the golf course.

Based on the recommendations of the Utah State University Analytical Labs and on the salinity tolerance of the grasses and plants, leaching out of salts with lots of extra water is required.

Soil Sampling of the Stansbury Park Golf Course

Linden Greenhalgh, County Director of the Utah State University Extension Service and Mike Kuhns, Forestry Specialist at Utah State University visited the Stansbury Park Golf Course in June 2010. They had been contacted by members of the Stansbury Park Service Agency because the Austrian Pines on the golf course have been dying at an accelerated rate for the last 2 years. Their initial inspection of the trees did not yield a definitive answer as to the cause of the problem but they suspected soil conditions as the cause. They suggested that soil samples be collected and sent to the Soil Testing Laboratory at Utah State University.

Soil samples from the Stansbury Park Golf Course were collected by Walt Holmes on the afternoon of July 5, 2010. The samples were collected using a soil core sampler borrowed from the Utah State University Cooperative Extension. Ten soil cores were collected at each of 4 sample sites on the golf course. The 10 core samples were mixed together to provide a representative soil sample of the area at each sampling site.

Samples S1 and S3 were collected where Austrian Pine trees were under obvious stress. Sample S2 was collected where healthy Austrian Pine trees were observed and where a sample had been collected and analyzed in 2004. Sample S4 was collected at the same location as another sample collected and analyzed in 2004. The results of the samples collected in 2004 are reported in an "Irrigation System Feasibility Study" carried out by Gilson Engineering, Inc. and paid for by the Stansbury Park Improvement District. The following text describes the sampling locations and provides qualitative observations of soil conditions at the sites sampled on July 5, 2010.

S1- Sampling site S1 is located about 30 yards south of the #2 green. There are several mature Austrian Pine Trees that are in various stages of stress. These trees were in stressed condition last year. It is my understanding that most diseases or conditions such as sphaeropsis tip blight, pine wilt nematode, Zimmerman Pine moth, or diplodia kill trees in a few months. These trees have struggled for over a year with the same problem. Most of the sample cores show organic matter with some moisture in the first inch or two but below 2 inches, conditions are dry and the soils are hard packed, clay or silt. A topographically low spot in the sampling area has 3 or 4 inches of organic matter and has more moisture.

S2- Sampling site S2 is located on the south end of the pond on the right side of the #3 fairway. Three healthy looking Austrian Pine trees are located on the site. This site was sampled in 2004 and the soil had a Salinity-Ece (dS/m) of 3.0. Sample cores were up to 6-inches in length and up to 3-inces of moist organic matter. A comparison of the sample analysis with the sample collected in 2004 will be made to see if the salinity of the soil has increased.

S3- Sampling site S3 is located about 75 yards SSW of the #11 tee box. Several Austrian Pines at this location are severely under stress. Cores could only be collected to a depth of about 3-inches. The soil at the site is dry.

S4- Sampling site S4 is located about 50 yards west of the #11 green and at the approximate location as a sample that was collected in 2004. The coring device could not be advanced below about 3-inches. The soil is dry and the grass at the site is brown. An irrigation head is near the site but is evidently not operating properly. The sample from 2004 had a Salinity-Ece (dS/m) of 3.1.

The soil samples were dried, boxed up, and sent to the Soil Testing Laboratory at Utah State University. They are being analyzed for pH, salinity, texture, phosphorus, and potassium. The cost per sample is $14. Scott Totman, representing the Stansbury Park Service Agency, was contacted and agreed to pay for shipping and analyses of the 4 samples.

Other aspects of the golf course irrigation system were discussed with the Utah State University Extension people. The irrigation water for the golf course from SPID's new well contains about 1000 mg/L of dissolved solids or about twice as much as the previous irrigation water, about 140 mg/L of sodium or almost three times as much as the previous irrigation water, and about 130 mg/L of chloride or almost twice as much as the previous irrigation water.

Dr. Frank Williams of Brigham Young University reports in an Irrigation System Feasibility Study of the Stansbury Golf Course that as the salinity of irrigation water increases, the water needs of the irrigated plant increases to offset the higher salt content. A review of water use for the golf course during the last 2 years (2008-2009) shows a decrease of 20-percent in applied water compared to the 2000-2007 average water use. It will probably be necessary to increase water applications above previous rates to offset the increase in the salinity of the new irrigation water. If a salt balance is not maintained, problems with salinity toxicity to grass and trees may occur in the future. I would recommend that the Service Agency purchase a Fieldscout Direct Soil EC probe from Spectrum Technologies Inc., (1-800-248-8873) to measure salinity in the soil. The cost of the meter is $365 and a conductivity standard for calibrating the meter is $14.

I would also recommend that the Service Agency purchase a Soil Moisture Tester from Spectrum Technologies. The cost of the tester is $94. This would allow for rapid testing of soil moisture conditions at sites where trees or grass appear to be stressed. Irrigation practices could then be modified in those areas that require it. The ability to measure soil moisture in the root zone is a much better way of evaluating the amount of water needed. Soil conditions, slope of the ground, or other factors may cause more or less water to reach the root zone.

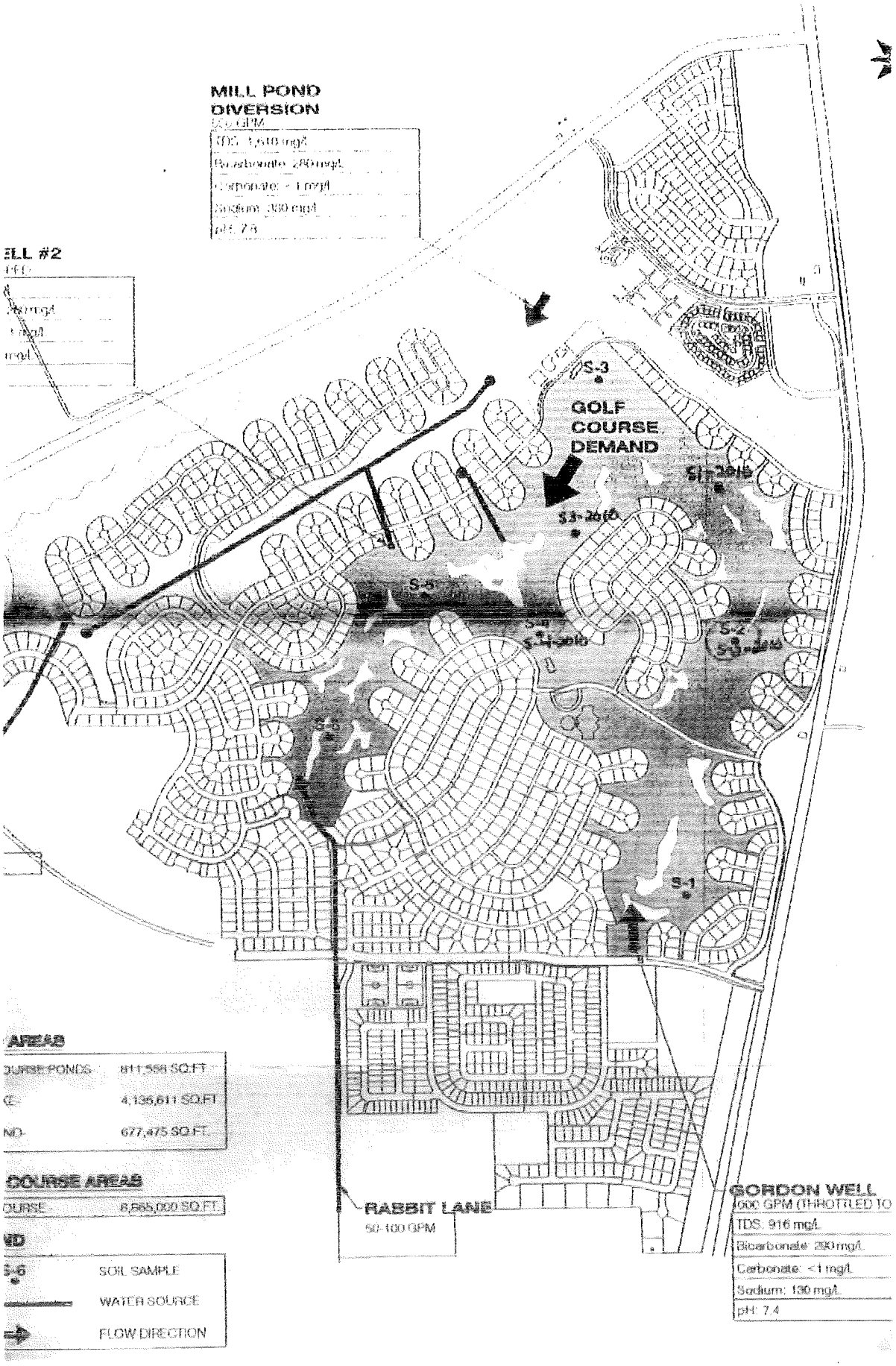
Linden Greenhalgh, the County Director for the Utah State University Cooperative Extension, suggested that the Service Agency install soil moisture monitoring equipment at a number of sites on the golf course. Soil moisture sensors buried in the ground are checked periodically by attaching a meter to a cable coming from the sensor. Mr.Greenhalgh stated that if the Service Agency purchased the sensors and meter, his agency would help in the installation. The cost of the meter is $280 and the cost of each sensor is $36.50. Assuming that 20 sensors were installed, the cost of the project would be about $1,000. A reading from the sensors could be taken on a routine basis. More information will be required to make sure the installations with their cables don't interfere with mowing, aerating, or golfing.

Table 2-8 Salinity Tolerance of Common Turfgrasses Grown in Utah

Low tolerance	Moderate tolerance	High tolerance
EC_e less than 3.0 dS/m*	EC_e = 3.0 to 6.0 dS/m*	EC_e = 6.0 to 9.0 dS/m*
Kentucky Bluegrass Annual Bluegrass	Tall Fescue Creeping Red Fescue Chewings Fescue Hard Fescue Perennial Ryegrass Creeping Bentgrass Blue Grama Buffalograss Zoysiagrass	Bermudagrass Alkaligrass Fairway Crested Wheatgrass

Table 2-9 Fertilizer Recommendations

Site	1	2	3	4	5	6
Fertilizer						
Phosphourous P (lbs P_2O_3)	0	1	0	0	0	0
Potassium K (lbs K_2O)	0	1	0	0	0	1
Nitrate-Nitrogen N (lbs N)	6-10	6-10	6-10	6-10	6-10	6-10


MILL POND
DIVERSION
TDS: 1,048 mg/L
Bicarbonate: 280 mg/L
Carbonate: < 1 mg/L
Sodium: 330 mg/L
pH: 7.8
ELL #2
S-3
GOLF
COURSE
DEMAND
S-5
S-4
S-2
S-1
RABBIT LANE
50-100 GPM
GORDON WELL
600 GPM (THROTTLED TO
TDS: 916 mg/L
Bicarbonate: 280 mg/L
Carbonate: < 1 mg/L
Sodium: 190 mg/L
pH: 7.4
AREAS
COURSE PONDS 811,558 SQ.FT.
4,136,611 SQ.FT.
677,475 SQ.FT.
COURSE AREAS
COURSE 8,665,000 SQ.FT.
SOIL SAMPLE
WATER SOURCE
FLOW DIRECTION

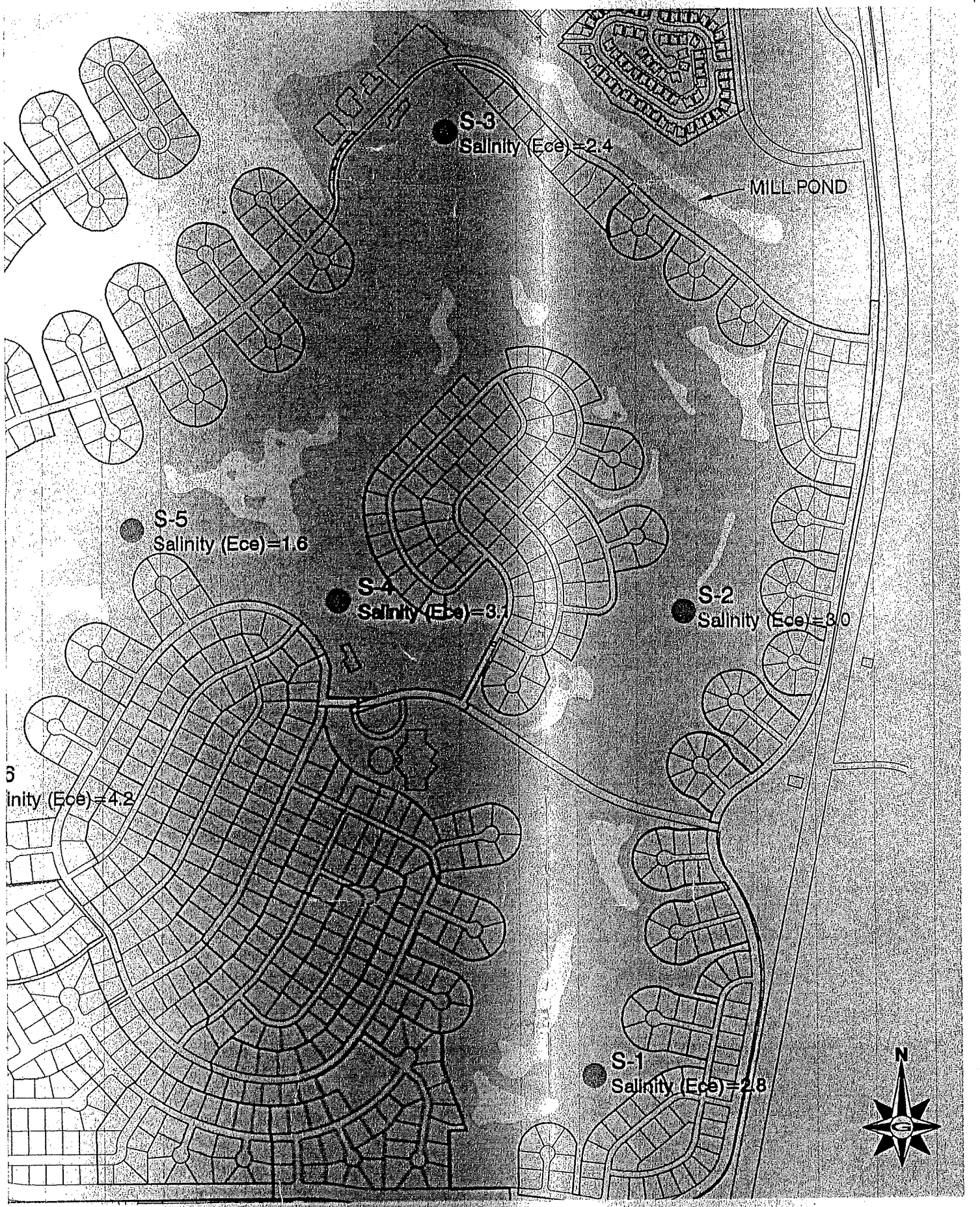

S-3
Salinity (Ece)=2.4
MILL POND
S-5
Salinity (Ece)=1.6
S-4
Salinity (Ece)=3.1
S-2
Salinity (Ece)=3.0
inity (Ece)=4.2
S-1
Salinity (Ece)=2.8
N

FIGURE 2-1

Table 2-9 Seasonal (April To October) Mixing In Mill Lake

Source	Source Flow (gpd)	Source TDS (mg/L)	% Of Seasonal Flow	Contributing TDS (mg/L)
Mill Pond	360,000	1,610	14%	221
Gordon Well	720,000	916	28%	260
Well A	1,44,000	748	58%	439
Total	2,664,000			
			TDS After Mixing:	**920**

Soil Analysis

The quality of the soil and water source both contribute to vegetation quality. A soil analysis was performed in order to determine soil characteristics. Soil samples were collected and sent to the Utah State University analytical laboratory for analysis and fertilization recommendations. Soil samples were taken from six different areas across the Golf Course as shown on Figure 2-1 (page 2-15). The salinity-Ece is >2 for four out of the six sites sampled and >4 at one site indicating that the growth of sensitive plants may be limited. A list of common turfgrasses grown in Utah and their corresponding tolerances is shown on Table 2-13. Fertilizer recommendations are shown on Table 4-3 (page 4-30).

Table 2-10 Soil Analysis Results

Soil Sample	pH	Salinity-Ece (dS/m)	Phosphorus (mg/kg)	Potassium (mg/kg)
S1	7.8	2.8	27	> 400
S2	7.4	3.0	15	131
S3	7.8	2.4	38	> 400
S4	7.6	3.1	32	> 400
S5	7.6	1.6	32	> 400
S6	7.2	4.2	33	175

The Utah State University Analytical Laboratory report (Salinity and Plant Tolerance, Kotuby-Amacher, Koenig, Kitchen, July 1997) gives general salinity tolerance and salinity tolerance of typical grasses. This data is shown in Table 2-11 and Table 2-13.

Table 2-11 General guidelines for plant response to soil salinity

Salinity (EC_e, dS/m)	Plant response
0 to 2	mostly negligible
2 to 4	growth of sensitive plants may be restricted
4 to 8	growth of many plants is restricted
8 to 16	only tolerant plants grow satisfactorily
above 16	only a few, very tolerant plants grow satisfactorily

Table 2-13 Salinity Tolerance of Common Turfgrasses Grown in Utah

Low tolerance	Moderate tolerance	High tolerance
EC_e less than 3.0 dS/m*	**EC_e = 3.0 to 6.0 dS/m***	**EC_e = 6.0 to 9.0 dS/m***
Kentucky Bluegrass	Tall Fescue	Bermudagrass
Annual Bluegrass	Creeping Red Fescue	Alkaligrass
	Chewings Fescue	Fairway Crested
	Hard Fescue	Wheatgrass
	Perennial Ryegrass	
	Creeping Bentgrass	
	Blue Grama	
	Buffalograss	
	Zoysiagrass	

Soil Test Report
and
Fertilizer Recommendations

USU Analytical Labs
Utah State University
Logan, Utah 84322-4830
(435) 797-2217
(435) 797-2117 (FAX)

Date Received: 9/17/2003
Date Completed: 10/1/2003

Name: GILSON ENGINEERING
Address: 12401 S 450 E
BLDG C UNIT 2
SALT LAKE CITY UT 84020

Phone: 801-571-9414
County: SALT LAKE

Lab Number: 3011562
Identification: 1
Crop to be Grown: Turf (sports)

Grower's Comments: WATER SOURCE HAS HIGH TDS- FOR GOLF COURSE TURF APPLICATION.

Acres in Field:

Soil Test Results			Interpretations	Recommendations
Texture		Clay Loam		
pH		7.8	Normal	
Salinity - ECe	dS/m	2.8		
Phosphorus - P	mg/kg	27		0 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	> 400		0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg			6-10 lbs N/1000sq ft/season
Zinc - Zn	mg/kg			
Iron - Fe	mg/kg			
Copper - Cu	mg/kg			
Manganese - Mn	mg/kg			
Sulfate-Sulfur - S	mg/kg			
Organic Matter	%			
SAR				

Notes

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SALT LAKE CITY UT 84020

Phone: 801-571-9414
County: SALT LAKE

Lab Number: 3011563
Identification: 2
Crop to be Grown: Turf (sports)

Grower's Comments: Acres in Field:
WATER SOURCE HAS HIGH TDS- FOR GOLF COURSE TURF APPLICATION.

Soil Test Results			Interpretations	Recommendations
Texture		and+Organic Matt		
pH		7.4	Normal	
Salinity - ECe	dS/m	3.0		
Phosphorus - P	mg/kg	15.0		1 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	131		1 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg			6-10 lbs N/1000sq ft/season
Zinc - Zn	mg/kg			
Iron - Fe	mg/kg			
Copper - Cu	mg/kg			
Manganese - Mn	mg/kg			
Sulfate-Sulfur - S	mg/kg			
Organic Matter	%			
SAR				

Notes

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Date Received: 9/17/2003
Date Completed: 10/1/2003

Name: GILSON ENGINEERING
Address: 12401 S 450 E
BLDG C UNIT 2
SALT LAKE CITY UT 84020

Phone: 801-571-9414
County: SALT LAKE

Lab Number: 3011564
Identification: 3
Crop to be Grown: Turf (sports)

Grower's Comments: Acres in Field:
WATER SOURCE HAS HIGH TDS- FOR GOLF COURSE TURF APPLICATION.

Soil Test Results			Interpretations	Recommendations
Texture		Clay Loam		
pH		7.8	Normal	
Salinity - ECe	dS/m	2.4		
Phosphorus - P	mg/kg	38		0 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	> 400		0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg			6-10 lbs N/1000sq ft/season
Zinc - Zn	mg/kg			
Iron - Fe	mg/kg			
Copper - Cu	mg/kg			
Manganese - Mn	mg/kg			
Sulfate-Sulfur - S	mg/kg			
Organic Matter	%			
SAR				

Notes

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Date Completed:

Name: GILSON ENGINEERING
Address: 12401 S 450 E
BLDG C UNIT 2
SALT LAKE CITY UT 84020

Phone: 801-571-9414
County: SALT LAKE

Lab Number: 3011565
Identification: 4
Crop to be Grown: Turf (sports)

Grower's Comments: WATER SOURCE HAS HIGH TDS- FOR GOLF COURSE TURF APPLICATION.

Acres In Field:

Soil Test Results			Interpretations	Recommendations
Texture		Clay Loam		
pH		7.6	Normal	
Salinity - ECe	dS/m	3.1		
Phosphorus - P	mg/kg	32		0 lbs P2O5/1000 sq ft
Potassium - K	mg/kg	> 400		0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	mg/kg			6-10 lbs N/1000sq ft/season
Zinc - Zn	mg/kg			
Iron - Fe	mg/kg			
Copper - Cu	mg/kg			
Manganese - Mn	mg/kg			
Sulfate-Sulfur - S	mg/kg			
Organic Matter	%			
SAR				

Notes

For further assistance, please see your County Agent --

2006 STANSBURY LAKE SPECIAL STUDY MONITORING RESULTS

DATE	TIME	LOG#	SITE	pH_field	NO3+NO2 mg/L	NO2 mg/L	NH3 mg/L	TIN mg/L	TP mg/L	OP mg/L	TSS mg/L	TDS mg/L	Alk_Bicarb mg/L	Alk_Carb mg/L	Alk_Hydrox mg/L	Chl
07/08/06	12:45	20060849	Garden Well	7.75	2.72	0.003	0.037	2.76	0.030	0.030	<1	902	130	<1	<1	
07/08/06	12:45	20060850	HN-17	8.35	0.190	0.011	0.037	0.227	0.011	<0.002	6	1430	260	<1	<1	
07/08/06	12:45	20060851	Rabbit Ditch	8.23	0.589	0.024	0.115	0.704	**0.084**	0.008	53	656	260	<1	<1	
07/08/06	12:45	20060852	Well A	8.17	0.696	0.003	0.040	0.736	**0.013**	0.013	<1	776	260	<1	<1	
07/08/06	12:45	20060853	Western Portion, Parcel 9 GW	7.66	0.540	0.014	0.115	0.655	**0.173**	**0.148**	4	5760	440	<1	<1	
07/08/06	2:15	20060854	Stormwater Lift Station GW	8.46	0.108	0.006	0.040	0.149	**0.070**	0.018	7	2320	470	12	<1	
07/08/06	2:30	20060855	Stansbury Lake Distribution Box	**9.21**	0.231	0.009	0.039	0.270	0.009	<0.002	8	1560	63	8	<1	
07/08/06	2:45	20060856	Phase I Starside GW	8.27	1.56	0.019	0.377	1.94	**0.113**	**0.092**	30	1090	440	<1	<1	
07/08/06	2:30	20060857	Parcel 9 Wetland Inflow	7.87	1.77	0.008	0.107	1.88	0.043	0.037	2	4800	340	<1	<1	
07/08/06	12:45	20060858	LS #1	7.84	0.083	0.026	15.4	15.5	4.90	2.31	166	804	420	<1	<1	
07/08/06	1:30	20060859	LS #2	7.54	0.032	0.009	14.4	14.4	5.10	2.08	294	661	430	<1	<1	
07/08/06	1:45	20060860	Total Sewer Inflow	7.5	0.018	0.008	16.5	16.6	4.43	2.47	142	1600	410	<1	<1	
07/08/06	1:15	20060861	Manhole #47	7.86	0.445	0.041	5.79	6.23	4.54	1.14	93	2070	350	<1	<1	
			Primary DW Standards:		**10**											
			Secondary DW Standards:	**6.5-8.5**						**0.05**	**0.05**	**500**				

Red-bold indicates violation

DATE	TIME	LOG#	SITE	Total Metals (ICP Scan) Aluminum mg/L	Arsenic mg/L	Barium mg/L	Beryllium mg/L	Cadmium mg/L	Calcium mg/L	Chromium mg/L	Cobalt mg/L	Copper mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Man mg/l
07/08/06	12:45	20060849	Garden Well	<0.1	<0.1	0.044	<0.001	<0.005	107	<0.005	<0.02	<0.01	<0.02	<0.07	44.2	
07/08/06	12:45	20060850	HN-17	<0.1	<0.1	0.05	<0.001	<0.005	87.7	<0.005	<0.02	<0.01	0.07	<0.07	78.6	
07/08/06	12:45	20060851	Rabbit Ditch	**0.6**	<0.1	0.066	<0.001	<0.005	97.4	<0.005	<0.02	<0.01	**0.67**	<0.07	37.6	
07/08/06	12:45	20060852	Well A	<0.1	<0.1	0.107	<0.001	<0.005	42.9	<0.005	<0.02	<0.01	0.03	<0.07	22.8	
07/08/06	12:45	20060853	Western Portion, Parcel 9 GW	<0.1	0.1	0.02	<0.001	<0.005	199	<0.005	<0.02	<0.01	<0.02	<0.07	227	
07/08/06	2:15	20060854	Stormwater Lift Station GW	<0.1	**0.2**	0.031	<0.001	<0.005	41	<0.005	<0.02	<0.01	0.05	<0.07	57.5	
07/08/06	2:30	20060855	Stansbury Lake Distribution Box	<0.1	<0.1	0.057	<0.001	<0.005	60.9	<0.005	<0.02	<0.01	0.07	<0.07	84	
07/08/06	2:45	20060856	Phase I Starside GW	**0.3**	<0.1	0.065	<0.001	<0.005	70.4	<0.005	<0.02	0.01	0.27	<0.07	36.4	
07/08/06	2:30	20060857	Parcel 9 Wetland Inflow	<0.1	<0.1	0.022	<0.001	<0.005	238	<0.005	<0.02	<0.01	<0.02	<0.07	220	
07/08/06	12:45	20060858	LS #1	**1.7**	<0.1	0.084	<0.001	<0.005	<0.2	<0.005	<0.02	0.05	0.18	<0.07	26.9	
07/08/06	1:30	20060859	LS #2	**3.2**	<0.1	0.132	<0.001	<0.005	74	<0.005	<0.02	0.05	**0.31**	<0.07	32.4	
07/08/06	1:45	20060860	Total Sewer Inflow	**1**	<0.1	0.093	<0.001	<0.005	121	<0.005	<0.02	0.03	0.17	<0.07	60.7	
07/08/06	1:15	20060861	Manhole #47	**0.5**	<0.1	0.071	<0.001	<0.005	116	<0.005	<0.02	0.02	0.29	<0.07	82.4	
			Primary DW Standards:		**0.01 mg/L**	**2 mg/L**	**0.04 mg/L**	**0.005 mg/L**		**0.1 mg/L**		**1.3 mg/L**	**none**	**0.015 mg/L**		**non**
			Secondary DW Standards:	**0.05-0.2**	**none**			**none**				**1.0 mg/L**	**0.3 mg/L**	**none**		**0.05**

Red-bold indicates violation

Alk_Bicarb mg/L	Alk_Carb mg/L	Alk_Hydrox mg/L	Chloride, IC mg/L
130	<1	<1	175
260	<1	<1	**334**
260	<1	<1	64
260	<1	<1	**325**
440	<1	<1	**1650**
470	12	<1	**800**
63	8	<1	**460**
440	<1	<1	**390**
340	<1	<1	**860**
420	<1	<1	124
430	<1	<1	113
410	<1	<1	**366**
350	<1	<1	437
			250

ron ng/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	Potassium mg/L	Selenium mg/L	Silver mg/L	Sodium mg/L	Thallium mg/L	Vanadium mg/L	Zinc mg/L
<0.02	<0.07	44.2	<0.01	<0.02	<0.01	5.2	<0.1	<0.005	122	<0.3	<0.01	<0.01
0.07	<0.07	78.6	<0.01	0.02	<0.01	23.1	<0.1	<0.005	266	<0.3	<0.01	<0.01
0.67	<0.07	37.6	0.03	<0.02	<0.01	2.1	<0.1	<0.005	63.2	<0.3	<0.01	0.01
0.03	<0.07	22.8	<0.01	<0.02	<0.01	4.6	<0.1	<0.005	208	<0.3	<0.01	<0.01
<0.02	<0.07	227	**0.08**	0.03	<0.01	85.9	<0.1	<0.005	1210	<0.3	0.01	<0.01
0.05	<0.07	57.5	<0.01	0.02	<0.01	62	<0.1	<0.005	604	<0.3	0.04	<0.01
0.07	<0.07	84	<0.01	<0.02	<0.01	21.4	<0.1	<0.005	313	<0.3	<0.01	<0.01
0.27	<0.07	36.4	0.02	<0.02	<0.01	16.7	<0.1	<0.005	260	<0.3	0.02	0.28
<0.02	<0.07	220	0.04	0.04	<0.01	84.3	<0.1	<0.005	779	<0.3	<0.01	<0.01
0.18	<0.07	26.9	0.01	<0.02	<0.01	12.2	<0.1	<0.005	168	<0.3	<0.01	0.17
0.31	<0.07	32.4	0.02	<0.02	<0.01	9.3	<0.1	<0.005	107	<0.3	<0.01	0.21
0.17	<0.07	60.7	0.03	<0.02	<0.01	26.5	<0.1	<0.005	297	<0.3	<0.01	0.1
0.29	<0.07	82.4	**0.08**	0.02	<0.01	33.4	<0.1	<0.005	399	<0.3	<0.01	0.07
one	**0.015 mg/L**		**none**				**0.05 mg/L**	**none**				**none**
.3 mg/L	**none**		**0.05 mg/L**				**none**	**0.10 mg/L**				**5 mg/L**

Table 1
Analytical Results - Water Samples
Stansbury Lake and Groundwater
Stansbury, Utah

Sample Id	Date	Max. Total Coliforms (No./100 ml)	Max. Fecal Coliforms (No./100 ml)	Minimum Dissolved Oxygen (mg/l) (1)	Total Dissolved Solids (mg/l)	pH [H3O+]	BOD (mg/l)	Total Suspended Solids (mg/l)	COD (mg/l)	Turbidity (NTU)	Ammonia-Nitrogen (mg/l)	Calcium (mg/l) (2)	Magnesium (mg/l) (2)	Iron (mg/l) (2)	Sodium (mg/l) (2)	Potassium (mg/l) (2)	Total Zinc (mg/l)
WATER QUALITY STANDARDS		***5,000***	***200***	***5.5***	***1,200***	***6.5-9.0***	***5***	*-*	*-*	***>10***	*-*	*-*	*-*	*-*	*-*	*-*	*-*
Stansbury Park Outfall	4/27/98	10	2	NA	9,130	7.38	2	NA	NA	NA	NA	867	562.7	1.14	1465	130.7	244
1A Lake Influent Well	7/30/96	NA	NA	8.03	2,850	7.60	90	44	150	NA	NA	NA	NA	NA	NA	NA	NA
Lake Influent Well (West)	7/30/96	NA	NA	1.00	2,520	7.40	61	49	125	NA	NA	NA	NA	NA	NA	NA	NA
Lake Color East - Clear	7/30/96	NA	NA	9.58	2,060	8.90	<1	NA	<5	4.21	<0.4	NA	NA	NA	NA	NA	NA
Lake Surface Discharge Out	7/30/96	<10	<2	8.59	1,820	8.30	<2	3	<5	NA	<0.4	NA	NA	NA	NA	NA	0.04
Lake Color West - Bad	7/30/96	NA	NA	8.98	2,510	9.90	<3	NA	10	8.63	<0.4	NA	NA	NA	NA	NA	NA

Table 1
Analytical Results - Water Samples
Stansbury Lake and Groundwater
Stansbury, Utah

Sample Id	Date	Chloride (mg/l) (3)	Bicarbonate (mg/l) (2)	Sulfate (mg/l) (2)	O-Phosphate (mg/l) (2)	Fluoride (mg/l) (2)	Bromide (mg/l) (2)	Nitrate Nitrogen (mg/l) (2)	Carbonate (mg/l) (2)	Hydroxide (mg/l) (2)	Total Alkalinity (mg/l) (2)	Total Iron (mg/l)	Total Lead (mg/l)	Total Mercury (mg/l)	Total Phosphorus (mg/l)	Total Chromium (mg/l)	Total Copper (mg/l)	Total Silver (mg/l)
WATER QUALITY STANDARDS		–	–	–	–	–	–	–	–	–	–	–	***0.1***	–	***0.05***	***0.10***	***0.2***	–
Stansbury Park Outfall	4/27/98	1570	372	5220	<3	<3	1.4	<10	<10	<10	372	<1.00	<0.250	244	244	244	244	244
1A Lake Influent Well	7/30/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lake Influent Well (West)	7/30/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lake Color East - Clear	7/30/96	NA	NA	NA	NA	NA	NA	<0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lake Surface Discharge Out	7/30/96	NA	NA	NA	NA	NA	NA	1.6	NA	NA	NA	NA	0.06	NA	0.04	0.010	0.01	0.015
Lake Color West - Bad	7/30/96	NA	NA	NA	NA	NA	NA	<0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

	DATE TAKEN	Alkalinity, CaCO3 mgl EPA310.2	Aluminum Al mg/1 EPA 200.7	Antimony Sb mg/1 EPA 204.2	Arsenic As mg/1 EPA 206.2	Barium Ba mg/1 EPA 200.7	Beryllium Be mg/1 EPA 200.7	Boron	Cadmium mg/1 EPA 200.7	Calculm Ca mg/1 EPA 200.7	Chlorlde Ca mg/1 EPA 200.7	Chromium Cr mg/1 EPA 218.1	Color pt-co unit EPA 110.3
WELL #1 Culinary	10/30/02	253	.18	.007	.005	.104	BRL		BRL	67.5	90	BRL	BRL
WELL #2 Culinary	10/30/02	238	.14	.03	.005	.165	BRL		.006	67.7	66.5	BRL	BRL
WELL #3 Culinary	05/20/05			<.0005	.0038	.098	<.001		<.0005			<.0005	
TEST WELL #1 (next to old pump station on GC)	04/09/04	230		<.0005	.0016	.099	<.001		<.0005	56	380	<.005	
GORDON WELL	07/11/03	230			.0005	.049		.13	<.0005	110	190	<.005	
MILLPOND	07/25/03	230			.0033	.45		.21	<.0005	110	560	<.005	
RABBIT LANE DITCH	08/30/05	200						.05		116	68		
MH BEHIND 16 LAKEVIEW (water from Gordon Well thru GC lakes)	08/30/05	170						.15		82.4	180		
SAILING LAKE (boat ramp)	08/30/05	85						.55		81.5	390		
SAILING LAKE WEST (R.A. Dev Ph 13)	08/30/05	62						.55		76	450		
WELL A	06/17/05	221		ND	ND	.11	ND		ND	41	312	ND	

	DATE TAKEN	Cond. Umhos/cm EPA 120.1	Copper Cu mg/1 EPA 220.1	Cyanide, Total mg/L	Flouride, F mg/1 EPA 320.2	Iron Fe mg/1 EPA 236.1	Lanlier Index	Lead Pb mg/1 EPA 239.2	Magnesium mg/1EPA 200.7	Manganese Mn mg/1 EPA 243.1	Mercury, mg/1 EPA 245.1	Nickel Ni mg/1 EPA 249.1	Nitrate NO3-N mg/1 EPA 300
WELL #1 Culinary	10/30/02	1670	BRL		.24	.05	.14	BRL	32.1	.003	BRL	.05	.8
WELL #2 Culinary	10/30/02	1390	BRL		.15	BRL	.04	BRL	32.1	.003	BRL	.04	1.32
WELL #3 Culinary	05/20/05			<.002	.1						<.0002	<.01	1.0
TEST WELL #1 (next to old pump station on GC)	04/09/04	1600	<.01	<.002	.2	2.1		.001	22	.07	<.0002	<.01	.5
GORDON WELL	07/11/03	1300	.02		.1	<.02		.001	47	<.01	<.0002	<.01	2.2
MILLPOND	07/25/03	2500	<.01		.3	.39		<.001	55	.02	<.0002		1.0
RABBIT LANE DITCH	08/30/05	1040							41.4				1.8
MH BEHIND 16 LAKEVIEW (water from Gordon Well thru GC lakes)	08/30/05	1370							50				.2
SAILING LAKE (boat ramp)	08/30/05	2510							95.1				ND
SAILING LAKE WEST (R.A. Dev Ph 13)	08/30/05	2670							96.6				ND
WELL A	06/17/05	1426	ND	ND	.2	.04		ND	22.4	ND	.0005		.502

	DATE TAKEN	Nitrite NO2-N mg/1 EPA 354	Odor Units EPA 140.1	Potassium K mg/L	Selenium SE mg/1 EPA 270.2	Silver Ag mg/1 EPA 272.1	Sodium Na mg/1 EPA 200.7	Sulfate SO4 mg/1 EPA 300	Surfactants ppm EPA 425.1	Thullium Tl mg/1 EPA 200.7	Tot. Dis solids mg/1 EPA 160.1	Zinc Zn mg/1 EPA 289.1	Ph Units EPA 150.1
WELL #1 Culinary	10/30/02	BRL	BRL		.011	BRL	65.5	52.4	<.4	.24	424	.008	7.2
WELL #2 Culinary	10/30/02	.02	BRL		.007	BRL	48.5	58	<.4	.06	384	.008	7.4
WELL #3 Culinary	05/20/05				.0029		200	31		<.0005	1146		
TEST WELL #1 (next to old pump station on GC)	04/09/04			4.8	.0033	<.0005	250	29		<.0005	916	.04	7.2
GORDON WELL	07/11/03	<.01		5.1	.0098	<.0005	130	190			1610	.01	7.4
MILLPOND	07/25/03	<.01		11	.0066	<.0005	330	280			900	<.01	7.8
RABBIT LANE DITCH	08/30/05						69.8	240					
MH BEHIND 16 LAKEVIEW (water from Gordon Well thru GC lakes)	08/30/05						138	230					
SAILING LAKE (boat ramp)	08/30/05						311	600					
SAILING LAKE WEST (R.A. Dev Ph 13)	08/30/05						345	.630					
WELL A	06/17/05	ND		4.86	.0023	ND	200	30	ND	ND	868	ND	

	DATE TAKEN	Alkalinity, CaCO3 mg/l EPA310.2	Antimony Sb mg/1 EPA 204.2	Arsenic As mg/1 EPA 206.2	Barium Ba mg/1 EPA 200.7	Beryllium Be mg/1 EPA 200.7	Boron	Cadmium mg/1 EPA 200.7	Calcium Ca mg/1 EPA 200.7	Chloride Ca mg/1 EPA 200.7	Chromium Cr mg/1 EPA 218.1	Cond. Umhos/cm EPA 120.1	Copper Cu mg/1 EPA 220.1	Cyanide, Total mg/L	Flouride, F mg/1 EPA 320.2	Iron Fe mg/1 EPA 236.1	Lead Pb mg/1 EPA 239.2	Magnesium mg/1EPA 200.7	Manganese Mn mg/1 EPA 243.1	Mercury, mg/1 EPA 245.1	Nickel Ni mg/1 EPA 249.1	Nitrate NO3-N mg/1 EPA 300	Nitrite NO2-N mg/1 EPA 354	Potassium K mg/L	Selenium SE mg/1 EPA 270.2	Silver Ag mg/1 EPA 272.1	Sodium Na mg/1 EPA 200.7	Sulfate SO4 mg/1 EPA 300	Surfactants ppm EPA 425.1	Thullium Tl mg/1 EPA 200.7	Tot. Dis solids mg/1 EPA 160.1	Zinc Zn mg/1 EPA 289.1	Ph Units EPA 150.1
TEST WELL #1 (next to old pump station on GC)	04/09/04	230	<.0005	.0016	.099	<.001		<.0005	56	380	<.005	1600	<.01	<.002	.2	2.1	.001	22	.07	<.0002	<.01	.5		4.8	.0033	<.0005	250	29		<.0005	916	.04	7.2
GORDON WELL	07/11/03	230		.0005	.049		.13	<.0005	110	190	<.005	1300	.02		.1	<.02	.001	47	<.01	<.0002	<.01	2.2	<.01	5.1	.0098	<.0005	130	190			1610	.01	7.4
MILLPOND	07/25/03	230		.0033	.45		.21	<.0005	110	560	<.005	2500	<.01		.3	.39	<.001	55	.02	<.0002		1.0	<.01	11	.0066	<.0005	330	280			900	<.01	7.8
WELL A	06/17/05	221	ND	ND	.11	ND		ND	41	312	ND	1426	ND	ND	.2	.04	ND	22.4	ND	.0005		.502	ND	4.86	.0023	ND	200	30	ND	ND	868	ND	

BRL = Below Reporting Limit	DATE TAKEN	Alkalinity, CaCO3 mgl EPA310.2	Aluminum Al mg/1 EPA 200.7	Antimony Sb mg/1 EPA 204.2	Arsenic As mg/1 EPA 206.2	Barium Ba mg/1 EPA 200.7	Beryllium Be mg/1 EPA 200.7	Boron	Cadmium mg/1 EPA 200.7	Calcium Ca mg/1 EPA 200.7	Chloride Ca mg/1 EPA 200.7	Chromium Cr mg/1 EPA 218.1	Color pt-co unit EPA 110.3	Cond. Umhos/cm EPA 120.1	Copper Cu mg/1 EPA 220.1	Cyanide, Total mg/L	Flouride, F mg/1 EPA 320.2	Iron Fe mg/1 EPA 236.1	Lanlier Index	Lead Pb mg/1 EPA 239.2	Magnesium mg/1EPA 200.7	Manganese Mn mg/1 EPA 243.1	Mercury, mg/1 EPA 245.1	Nickel Ni mg/1 EPA 249.1	Nitrate NO3-N mg/1 EPA 300	Nitrite NO2-N mg/1 EPA 354	Odor Units EPA 140.1	Potassium K mg/L	Selenium SE mg/1 EPA 270.2	Silver Ag mg/1 EPA 272.1	Sodium Na mg/1 EPA 200.7	Sulfate SO4 mg/1 EPA 300	Surfactants ppm EPA 425.1	Thulluim Tl mg/1 EPA 200.7	Tot. Dis solids mg/1 EPA 160.1	Zinc Zn mg/1 EPA 289.1	Ph Units EPA 150.1
WELL #1 Culinary	10/30/02	253	.18	.007	.005	.104	BRL		BRL	67.5	90	BRL	BRL	1670	BRL		.24	.05	.14	BRL	32.1	.003	BRL	.05	.8	BRL	BRL		.011	BRL	65.5	52.4	<.4	.24	424	.008	7.2
WELL #2 Culinary	10/30/02	238	.14	.03	.005	.165	BRL		.006	67.7	66.5	BRL	BRL	1390	BRL		.15	BRL	.04	BRL	32.1	.003	BRL	.04	1.32	.02	BRL		.007	BRL	48.5	58	<.4	.06	384	.008	7.4
WELL #3 Culinary	4/25/05 05/20/05			<.0005	.0038	.098	BRL <.001		BRL <.0005			BRL <.0005				BRL <.002	.1						BRL <.0002	DRL <.01	1.0				.0029		200	31		BRL <.0005	750 1146		
TEST WELL #1 (next to old pump station on GC)	04/09/04	230		<.0005	.0016	.099	<.001		<.0005	56	380	<.005		1600	<.01	<.002	.2	2.1		.001	22	.07	<.0002	<.01	.5			4.8	.0033	.0005	250	29		<.0005	916	.04	7.2
GORDON WELL	07/11/03	230			.0005	.049		.13	<.0005	110	190	<.005		1300	.02		.1	<.02		.001	47	<.01	<.0002	<.01	2.2	<.01		5.1	.0098	.0005	130	190			1610	.01	7.4
MILLPOND	07/25/03	230			.0033	.45		.21	<.0005	110	560	<.005		2500	<.01		.3	.39		<.001	55	.02	<.0002		1.0	<.01		11	.0066	.0005	330	280			900	<.01	7.8
RABBIT LANE DITCH	08/30/05	200						.05		116	68			1040							41.4				1.8						69.8	240					
MH BEHIND 16 LAKEVIEW (water from Gordon Well thru GC lakes)	08/30/05	170						.15		82.4	180			1370							50				.2						138	230					
SAILING LAKE (boat ramp)	08/30/05	85						.55		81.5	390			2510							95.1				ND						311	600					
SAILING LAKE WEST (R.A. Dev Ph 13)	08/30/05	62						.55		76	450			2670							96.6				ND						345	630					
WELL A	06/17/05	221		ND	ND	.11	ND		ND	41	312	ND		1426	ND	ND	.2	.04		ND	22.4	ND	.0005		.502	ND		4.86	.0023	ND	200	30	ND	ND	868	ND	

	DATE TAKEN	Alkalinity, CaCO3 mgl EPA310.2	Antimony Sb mg/1 EPA 204.2	Arsenic As mg/1 EPA 206.2	Barium Ba mg/1 EPA 200.7	Beryllium Be mg/1 EPA 200.7	Boron	Cadmium mg/1 EPA 200.7	Calcuim Ca mg/1 EPA 200.7	Chloride Ca mg/1 EPA 200.7	Chromium Cr mg/1 EPA 218.1	Cond. Umhos/cm EPA 120.1	Copper Cu mg/1 EPA 220.1	Cyanide, Total mg/L	Flouride, F mg/1 EPA 320.2	Iron Fe mg/1 EPA 236.1	Lead Pb mg/1 EPA 239.2	Magnesium mg/1EPA 200.7	Manganese Mn mg/1 EPA 243.1	Mercury, mg/1 EPA 245.1	Nickel Ni mg/1 EPA 249.1	Nitrate NO3-N mg/1 EPA 300	Nitrite NO2-N mg/1 EPA 354	Potassium K mg/L	Selenium SE mg/1 EPA 270.2	Silver Ag mg/1 EPA 272.1	Sodium Na mg/1 EPA 200.7	Sulfate SO4 mg/1 EPA 300	Surfactants ppm EPA 425.1	Thullium Tl mg/1 EPA 200.7	Tot. Dis solids mg/1 EPA 160.1	Zinc Zn mg/1 EPA 289.1	Ph Units EPA 150.1
TEST WELL #1 (next to old pump station on GC)	04/09/04	230	<.0005	.0016	.099	<.001		<.0005	56	380	<.005	1600	<.01	<.002	.2	2.1	.001	22	.07	<.0002	<.01	.5		4.8	.0033	<.0005	250	29		<.0005	916	.04	7.2
GORDON WELL	07/11/03	230		.0005	.049		.13	<.0005	110	190	<.005	1300	.02		.1	<.02	.001	47	<.01	<.0002	<.01	2.2	<.01	5.1	.0098	<.0005	130	190			1610	.01	7.4
MILLPOND	07/25/03	230		.0033	.45		.21	<.0005	110	560	<.005	2500	<.01		.3	.39	<.001	55	.02	<.0002		1.0	<.01	11	.0066	<.0005	330	280			900	<.01	7.8
WELL A	06/17/05	221	ND	ND	.11	ND		ND	41	312	ND	1426	ND	ND	.2	.04	ND	22.4	ND	.0005		.502	ND	4.86	.0023	ND	200	30	ND	ND	868	ND	