Spreadsheet for the calculation o

Input the data below:		
Parameter	**Value**	
Total Solids:	2000	ppm as total solids
Temperature:	40	oC
Calcium Hardness:	30	ppm as CaCO3
Methyl Alkalinity:	220	ppm as CaCO3
pH	7.9	

+ bnh9g-

pHs	Saturation pH:		7.7
L	Langellier Index:		0.2
R	Ryznar Index:		**7.5**

Calculation Details:

Langelier Index (L) = pH - pHs

where:

9.3 + A + B - C - D

						Value
A	Function of TOTAL SOLIDS					2000
B	Function of TEMPERATURE					40
C	Function of CALCIUM HARDNESS					30
D	Function of ALKALINITY TO METHYL ORANGE					220
	pH					7.9
pHs	Saturation pH:					

			S Denton Method			
L	**Langellier Index:**					
R	**Ryznar Index:**					
TDS Total Solids ppm	Factor A		Water Temperature °C	Factor B		Calcium Hardness ppm CaCO3
100	0.1		0	2.6		10
4000	0.2		2	2.5		12
			7	2.4		14
			10	2.3		18
			14	2.2		23
			18	2.1		29
			22	2.0		35
			28	1.9		44
			32	1.8		56
			38	1.7		70
			44	1.6		88
			51	1.5		111
			57	1.4		139
			64	1.3		175
			72	1.2		230
						280
						350
						440
						560
						700

			S Denton Method			
						880

f Ryznar & Langellier Indexes.

Less than 5.5 = scaling,

Greater than 6.5 = corrosive

7.5

Function			
0.1			
1.7			
1.1			
2.3			
7.7		**Negative = corrosive**	

		S Denton Method	
0.2		**Positive = scaling**	
7.5			
Factor C		Methyl Orange Alkalinity ppm CaCO3	Factor D
0.6		10	1.0
0.7		12	1.1
0.8		14	1.2
0.9		18	1.3
1		22	1.4
1.1		29	1.5
1.2		36	1.6
1.3		45	1.8
1.4		56	1.8
1.5		70	1.9
1.6		88	2.0
1.7		111	2.1
1.8		140	2.2
1.9		177	2.3
2.0		230	2.4
2.1		280	2.5
2.2		360	2.6
2.3		450	2.7
2.4		560	2.8
2.5		700	2.9

| 2.6 | | S Denton Method 880 | 3.0 |

				as				R
	Enter System Parameters Here			CaCO3				
RYZNAR	Lang Sat Ind	pH	Alk	Ca	°C	Cond	TDS	pHs
7.3	0.3	7.9	520	30	28	1135	860	7.6032651

equired pH and alk	ion, and should not be changed!							
to give Zero LSI								
ReqpH	Req ALK	I	sqrt I	A	E	T	pKw	pK2
7.7516325531	368.7490515016	0.01816	0.134759	0.5136336	77.165589	301.2	13.89493	10.303202

pKs	pfm	gmolCa	pCa	gmolALK	pALK	New pHs	Req pALK	
8.4976803	0.0581986	0.0003	3.5228787	0.0104	1.9838716	0.0103989	2.132239092	1.0019758