



Case Study

WATER CATCHMENT SYSTEM

Kona
Hawaii

HYDROLIX RESEARCH, California undertook research from 1-30 January 2006 to evaluate the effectiveness of the Plocher Water Kat on a 10,000 gallon water catchment system and the degree to which it corrects undesirable water parameters.

The catchment tank is steel with PVC lining and a polymash cover.

Treatment

A Plocher Water Kat was fitted to the system.

On day 22, well water was added due to low water levels. Rain was recorded on days 26, 27 and 28.

Daily measurements were taken for nitrate, nitrite, free chlorine, total chlorine, pH, hardness, alkalinity, total dissolved solids and dissolved oxygen. In addition microbial analyses were undertaken fortnightly during the trial period.

Result

Laboratory analyses demonstrated a significant reduction in the number of pathogenic bacteria present in the water over the period of the trial.

	Control	Day 1	Day 15	Day 30
Total Coliform	65	45	32	23
Faecal E-coli	30	2	2	0

Analyses also produced a consistent result of zero for nitrite, free chlorine, total chlorine, and alkalinity over the whole trial period.

Chemical analyses for the remaining water parameters during the trial follow:

	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nitrate	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Nitrite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pH	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
Hardness	0	3	1.5	0	0	0	0	0	0	1.5	1.5	1.5	1.5	1.5	1.5
Total Dissolved Solids	0.02	0.01	0.01	0	0	0	0	0	0	0.01	0.01	0	0	0.01	0.01
Dissolved Oxygen	4.51	4.43	4.57	4	4.34	4.41	4.57	4.6	4.67	7.5	7.48	7.56	7.53	7.5	7.54

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Nitrate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
pH	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	7.2	7.2	7.2	7.2
Hardness	1.5	1.5	1.5	1.5	1.5	1.5	3	3	3	7	7	7	7	7	7
Total Dissolved Solids	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.06	0.01	0.01
Dissolved Oxygen	7.55	6.81	6.77	6.76	8.94	8.94	8.42	8.96	9.1	10.2	10.24	10.24	10.45	11.4	11.81

Conclusion

On day 1, dissolved oxygen was 4.43. Over the next week it reduced slightly and rose to 4.67. On day 8, dissolved oxygen levels rose sharply to 7.5. It remained between 6.76 and 7.54 until day 19 when it rose to 8.94. Despite adding well water on day 22, dissolved oxygen remained at 8.96 rising over the last week of the trial to 11.81 on day 29. The trial demonstrates a marked improvement, by 167% in dissolved oxygen levels within the water.

pH remained static at 6.2 until day 26 when it rose from 7.2 and was maintained at this more neutral level for the rest of the trial period.

Total dissolved solids remained very low, almost consistently at 0.01 apart from during precipitation on day 26 and 27, when it went up to 0.06.

Total coliforms reduced from 65 to 23 over the trial, and faecal e-coli was reduced from 30 to 2 on day 1, 2 on day 15 and 0 on day 30, clearly demonstrating the ability of the Plocher Water Kat to reduce harmful pathogenic bacterial contamination of water.