ENVIRONMENTAL DIAGNOSTICS INC.

2011 SEWAGE TREATMENT PLANT ANNUAL REPORT

Prepared for:

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TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 BACKGROUND

The following annual report for the wastewater treatment plant at Fernie Alpine Resort (FAR) operated by Fernie Alpine Resort Utilities Corporation (FARUC) is compiled in accordance with the requirements of the Municipal Sewage Regulation (MSR). This report covers the calendar year 2011.

Due to the nature of the resort the plant is subjected to a large seasonal swing in utilization with the winter ski period imposing the highest demands. The critical time for sewage flows at the resort is from mid-December to the end of March during the peak ski season. Summer utilization of the treatment works is generally low.

FARUC treats its wastewater at a tertiary treatment plant designed to remove BOD_5, suspended solids, ammonia, and phosphorous. Wastewater is disinfected with ultraviolet (UV) lamps prior to discharge into the Elk River.

Plant effluent quality has been high during the year. There was, however, one sample out of twenty-one for Total Phosphorus which was slightly above the MSR discharge limits. FARUC began a monitoring and Clearpac dosing investigation in the winter of 2007 to reduce effluent phosphorous concentrations. The reduction program has shown significant improvement of phosphorus levels in plant effluent. This work will continue until all the total phosphorus concentrations are within discharge limits. Ortho-phosphorus total was within limits in all cases.

2.0 REGISTRATION REQUIREMENTS

This section describes operating requirements as specified in the Resorts of the Canadian Rockies Inc.'s (RCRI) Registration Letter RE 17139. The registration describes parameters that must be tested for operating conditions, sampling frequency, and sampling locations.

2.1 PARAMETERS

The following parameters are to be monitored:

pH	Field Sample
Temperature	Field Sample, measured in Celsius
Flow	Field Samples, measured as m^3 /d
BOD_5	Five day biochemical oxygen demand, measured in mg/l
TSS	Total suspended solids or non filterable residue, measured in mg/l
NH_3	Ammonia concentration, expressed as nitrogen in mg/l
NO_3	Nitrate concentration, expressed as nitrogen in mg/l
NO_2	Nitrite concentration, expressed as nitrogen in mg/l
Total-P	Total phosphorous concentration, measured in mg/l
Ortho-P	Orthophosphate concentration, measured in mg/l
Fecal coliform	Bacterial concentration, measured as colony forming units per 100ml
Toxicity Bioassay	96 hour toxicity test, recorded as pass or fail

2.2 REGISTRATION LETTER OPERATING CONDITIONS

The treatment plant is required to meet the effluent discharge conditions outlined in Table 1.

Table 1
Effluent Limits

Parameter	Limit	Unit
Flow	1280	m^3/d
BOD_5	45	mg/l
TSS	45	mg/l
Total-P	1.0	mg/l
Ortho-P	0.5	mg/l
Coliforms*	200	CFU/100ml
Toxicity Bioassay	pass	n/a

*Limit for recreational waters only, not included in RCRI registration letter

Primary screenings and dewatered sludge are to be disposed of at the Crowsnest Pass/Pincher Creek landfill. Disposal at other sites requires authorization under the Waste Management Act.

Operators at the plant are required to be certified in accordance with section 22 of the MSR.

2.3 REPORTING REQUIREMENTS

An annual report demonstrating the performance of the facility is to be publicly posted on the Internet within 120 days of the end of the calendar year. The report must include tabulated standards and results for all test samples, interpretation of the results, an indication of the state of compliance of the facility, and the total wastewater flow for the reported period.

In addition the report must also include the following:

- Notification of significant operating events including discharge variances outside given limits,
- Recommendations for operational or facility modifications,
- Notification of proposed or implemented plant modifications,
- Details of proposed or implemented water conservation measures,
- A plan indicating existing and proposed developments,
- A comparison of projected and actual wastewater flows,
- Projected wastewater flows resulting from proposed development compared to the remaining waste water treatment plant (WWTP) capacity, and
- A comparison of water supply and wastewater flows.

As with the 2005 to 2010 Annual Reports, this report includes additional information on wasted sludge volumes.

2.4 SAMPLING FREQUENCY

The MSR Registration requires RCRI and, as such, the contract operator FARUC, to undertake the environmental testing program outlined in Table 2 below.

Elk River testing requires that a minimum of 18 samples annually are taken from each of the upstream, initial dilution zone (IDZ) and downstream river locations, relative to the outfall diffuser. The sampling locations were identified in the April 2001 Environmental Impact Study.

A minimum of 12 influent samples are required for BOD_5 and TSS. Flow data is to be collected continuously.

The intent of the environmental testing procedure outlined in Table 2 is to collect influent and effluent samples during peak demand periods as indicated by resort bookings. To correspond with peak plant loading, river samples are to be collected on the same day as effluent samples.

In addition to the program and tests listed above, other in-plant testing is needed to permit operational control of the process.

Table 2
Sampling Location/Frequency/Type

Parameter	Location					
	Elk River	**QTY**	**Influent**	**QTY**	**Effluent**	**QTY**
pH	WS/G	18	/	/	M/G, WS/G	25
Temp	WS/G	18	/	/	/	/
Flow	/	/	D/C	n/a	D/C	n/a
BOD_5	/	/	M/G	12	M/G, WS/G	25
TSS	WS/G	18	M/G	12	M/G, WS/G, D/C	25
NH_3-N	WS/G	18	/	/	M/G, WS/G	25
NO_3-N	WS/G	18	/	/	M/G, WS/G	25
NO_2-N	WS/G	18	/	/	M/G, WS/G	25
Total-P	WS/G	18	/	/	M/G, WS/G	25
Ortho-P	WS/G	18	/	/	M/G, WS/G	25
Fecal Coliform	WS/G	18	/	/	M/G, WS/G	25
Toxicity Bioassay	/	/	/	/	3 Y/G	3

Where:

WS/G	Weekly seasonal grab sampling, required for three six-week periods during the winter peak, the spring after ice-out, and in the fall when river turbidity and flows are low.
D/C	Daily continuous sampling using an on-line instrument and data logger.
M/G	Monthly grab sample (not required when weekly seasonal testing is taking place).
3Y/G	Three samples per year to correspond with WS/G sampling periods.

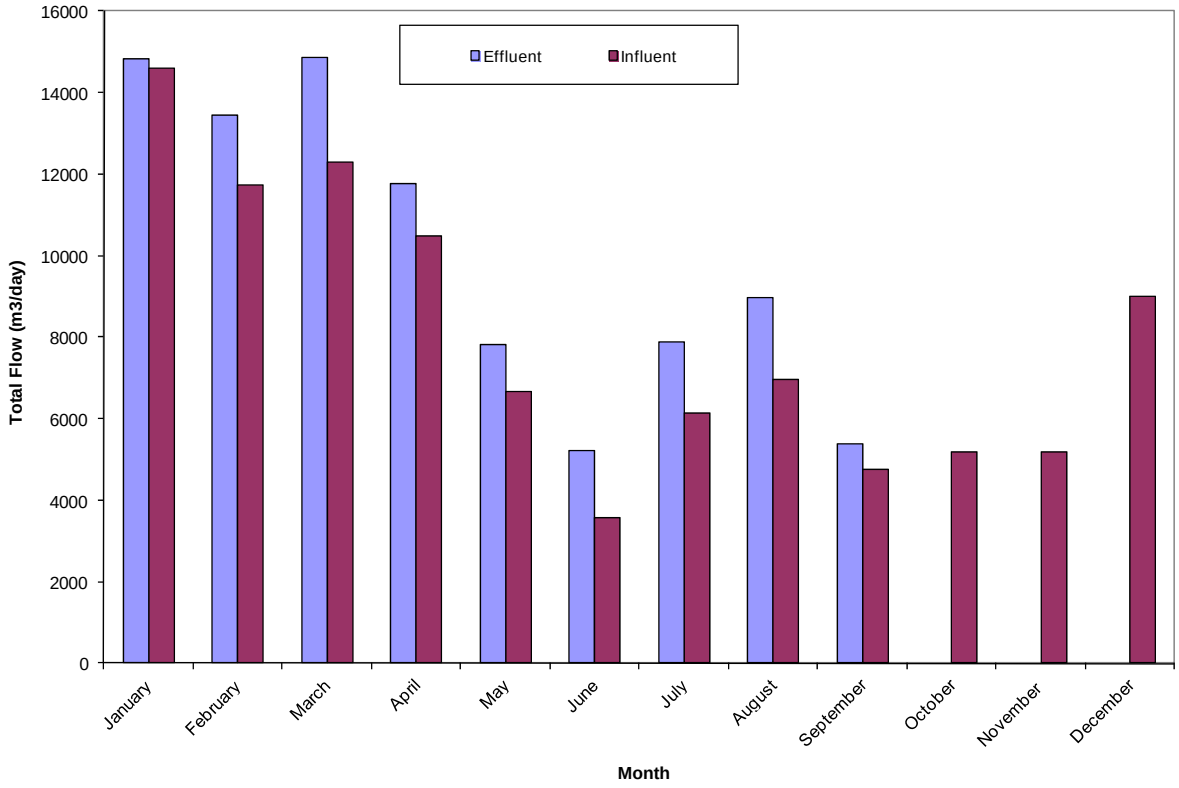
3.0 SEWAGE FLOW RECORDS

This section provides data and analysis regarding plant influent and effluent flows, and compares 2011 data to previous years.

Total effluent flow from the WWTP for all of 2011 could not be determined as the flow meter was not working for part of September and all of October, November and December 2011. The effluent for the remainder of the year was recorded from the effluent weir type flow meter as 90,213 m^3 for an average of 335 m^3 per day. This report relies on effluent flow meter records as they are complete for the entire calendar year; subsequent annual reports will utilize records from both influent and effluent flow meters.

Available monthly total effluent flow meter records for 2011 are provided in Figure 1.

Figure 1
Effluent and Influent Flow Meter Monthly Flow Totals



The ski resort operates with higher winter and late spring sewage flows than during any other period. The average daily plant flow through January, February and March of 2011 was 479 m^3 per day, compared to 412 m^3 per day over the same period in 2010. Peak flow for the year reached 989 m^3/day on January 17, 2011, which is 23% below the allowable limit of 1,280 m^3/day limit. The peak flow is slightly higher than that of 2010 (823 m^3/day) and lower than that of 2009 (1,178 m^3/day). The peak flow day occurred during the heavy ski season, which is to be expected.

Each month showed larger flow effluent than influent. This can be explained by using the potable water to spray the clarifiers to avoid foaming.

A summary of sewage flow for years 2003 through 2011 is provided in Table 3 and figures 2 and 3:

Table 3
2003 – 2011 Flow Comparisons

Year	Sewage Flow (m^3/day)			Days Over Limit
	Total	Average	Peak	
2003	137,035	375	1,244	0
2004	151,815	414	1,307	1
2005	125,699	344	1,293	1
2006	127,202	348	1,058	0
2007	144,480	396	1,177	0
2008	135,767	372	873	0
2009	113,336	311	1,178	0
2010	104,815	287	823	0
2011	90,213*	335	989	0

*not including part of Sept and all of Oct, Nov, and Dec 2011

Higher flows in 2004 were caused by severe infiltration through the collection system.

Lower flows in 2005 and 2006 can be also attributed to the fact that a lot of sludge together with water was trucked away from the WWTP itself due to the volumes of sewage the existing plant would not handle without an equalization tank.

Through 2008 total and average flow decreased somewhat from 2007, there were no instances where flow exceeded the 1,280m^3/day registration limit, compared to one day in each of 2004 and 2005. Peak flow dropped due to full operation of the equalizing tank and collection system improvements to eliminate storm water infiltration.

The average flow for 2009 further decreased from 2008 (372 m^3/day down to 311 m^3/day) and there were no instances where the flow exceeded the 1,280 m^3/day. The peak flow increased from 2008 but is comparable to the other years.

The average flow for 2010 further decreased from 2009 (311 m^3/day down to 287 m^3/day) and there were no instances where the flow exceeded the 1,280 m^3/day. The peak flow decreased from 2009 and is comparable to 2008.

The average flow for 2011 has increased slightly from 2010 (287 m^3/day) and 2009 (311 m^3/day) and there are no instances where the flow exceeded the 1,280 m^3/day. The peak flow has increased slightly from 2010; however it is still lower than 2008 and prior. Please note, the average flow was calculated for the data available and may not be representative of the whole year as October, November and December are usually lower flow months.

Daily wastewater flows are strongly correlated to weather and the number of day-users at the resort with the peak ski season having the highest flows. Summer flow results from non-skiing related recreational activities, generally hiking or mountain biking events. The lowest plant flow is experienced in the shoulder season periods (April to June and September to November).

The approximately 70 permanent residents in addition to several year-round restaurants providing services to casual visitors ensure that the sewage flows never drop to zero. Figure 2 provides monthly average and peak day sewage flows for 2011.

Figure 2
Average and Peak Sewage Flow Comparison Graph

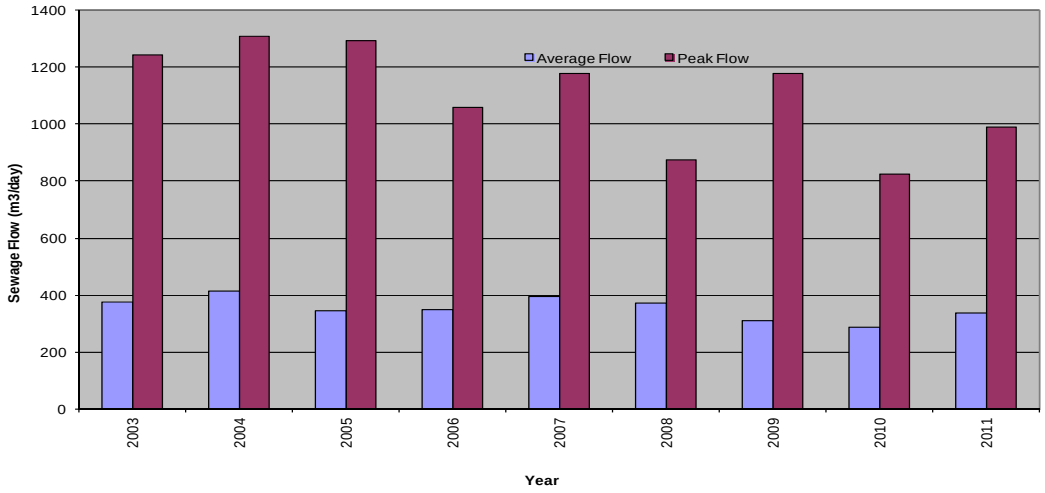


Figure 3
Total Sewage Flow Graph:

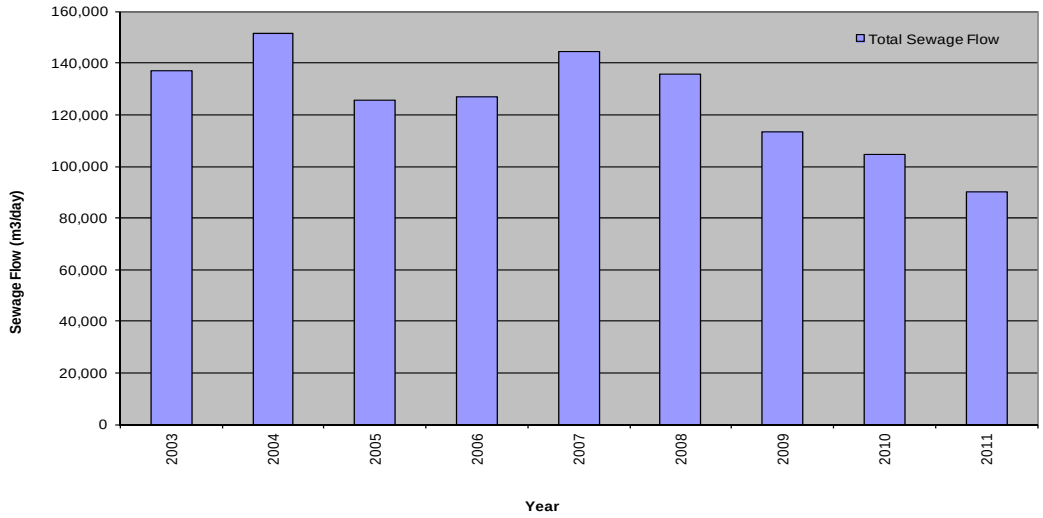
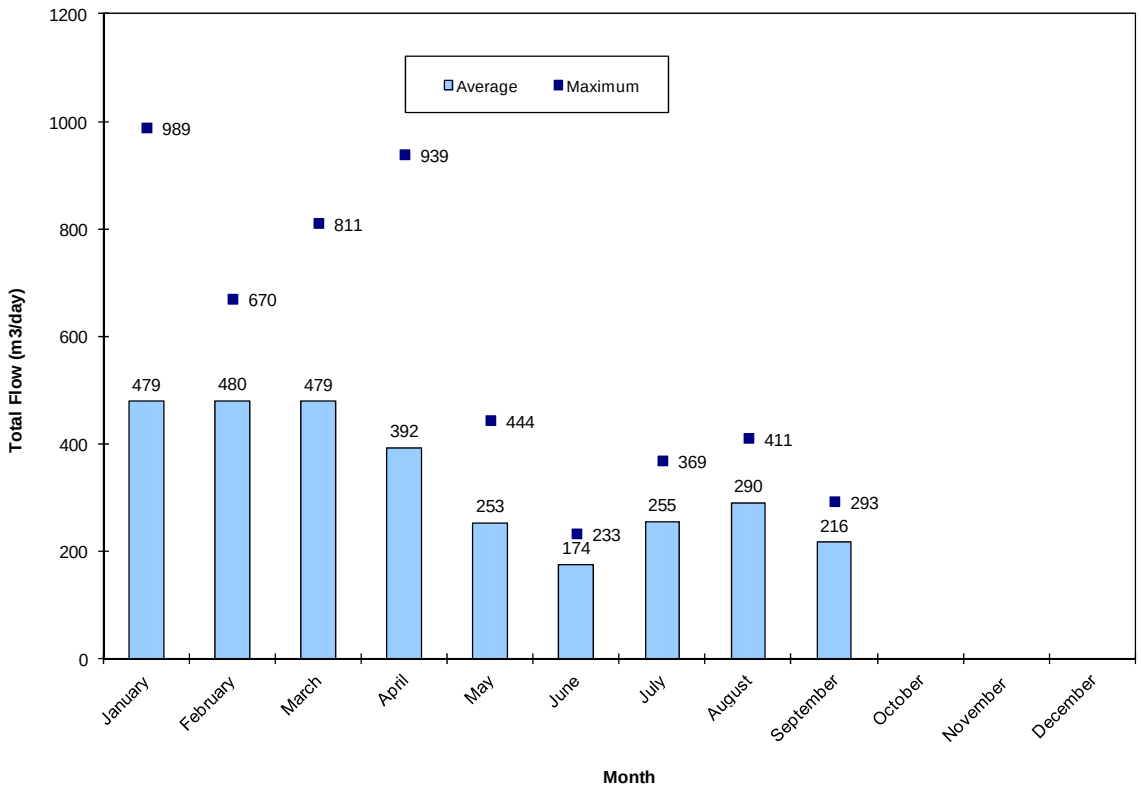


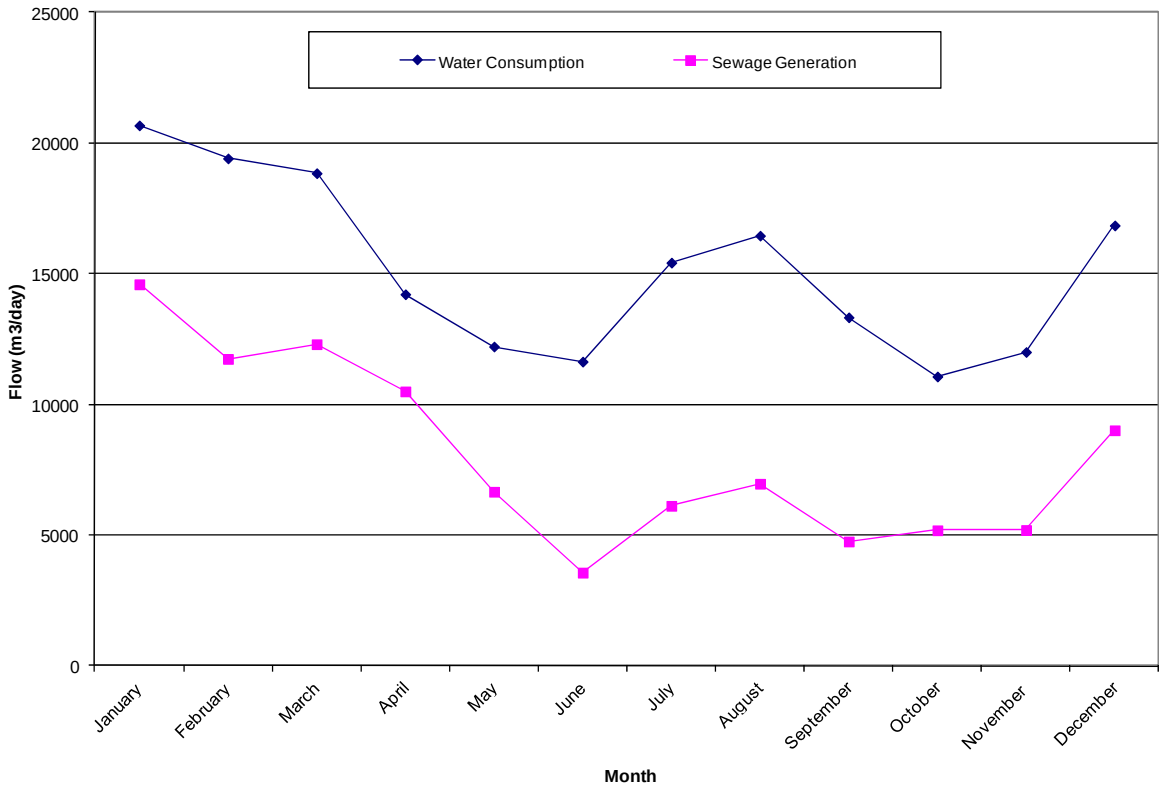
Figure 4

2011 Sewage Effluent Average and Peak Flows by Month



The Resort's ongoing program to reduce sewer infiltration is demonstrated by the reduction in return flow to the plant vs. total water usage. In 2007 the total sewage flow was equal to 92% of the total water production; in 2008 this figure decreased to 51% and in 2009, this figure decreased even further to 45%. This year, the total sewage flow was equal to 53% of the total water production, and is consistent with 2010. This again is slightly higher than in 2009 but similar to 2008. Water use at the hill is compared to the amount of sewage received at the WWTP in Figure 5.

Figure 5
2011 Water Consumption and Sewage Generation



The impact of rainfall and snowmelt on sewage flow has decreased each year since 2004 as a result of system improvements, the use of water restrictive fixtures and the infiltration reduction program.

4.0 SEWAGE FLOW PROJECTION

This section shows projected wastewater flow for 2007 through 2012 based on current development plans and provides an estimate of remaining plant capacity as calculated and tabulated in the 2006 yearly report.

Based on unit generation rates provided in the BC Health Act for various lodging types, the estimated highest day wastewater generation for 2011 would have been 1302.3 m^3/day. Using the actual peak flow of 989 m^3/day, a correction factor of 0.76 was calculated. Averaged correction factor for the last five years (2007, 2008, 2009, 2010 and 2011) was calculated and multiplied by the future estimated flows to more accurately reflect potential resort sewage generation rates.

In 2007, 2008, 2009, and 2011, respectively, the correction factors were 1.20, 0.89, 1.14, 0.65 and 0.76, and continue to show that the resort has reduced the impact of both stormwater infiltration and reduced peak flows.

Projected daily peak wastewater flows until 2010 by year were provided in table 4 for the Resort's planned expansions. The highest water generation for 2011 and 2012 was calculated based on the BC Health Act (refer to Table 11 enclosed at the end of this report). The future flows will be re-evaluated if further expansion occurs. We would recommend continuing the initiative on introducing a stormwater infiltration program, flow restrictive devices, and other water consumption measures.

Flow restrictive devices are intended to be utilized in all new construction and the infiltration/ rehabilitation program is expected to be ongoing. The intent is to reduce the amount of per unit sewage generation and to reduce the amount of ground and surface water infiltration into the sewer system. FARUC will monitor sewage flows to determine the efficacy of the program.

Even with additional expansion, FARUC may not require an increase to permit discharge above the current limit of 1280 m^3/day if the flow restriction measures prove sustainable. Sewage discharge rates will be monitored and an application will be submitted to increase the maximum daily discharge when warranted.

Based on 2011 flow data, the plant has an unused capacity of 291 m^3/day due to the flow saving measures. This still needs to be closely monitored during 2012 and further considered when adding additional development.

Table 4
Projected Peak Flows: 2007-2012

	2007	**2008**	**2009**	**2010**	**2011**	**2012**
Estimated Wastewater Flow (m^3/day)	979.2	979.9	1032.4	1261.4	1302.3	1302.3
Actual and Corrected (m^3/day)	1177 (a)	873 (a)	1178(a)	823 (a)	989 (a)	1211.1 (b)

(a) actual peak flow
(b) corrected daily peak flows by the averaged correction faction for 2007, 2008, 2009, 2010 and 2011 correction factor

2007	correction factor of	1177/979.2	= 1.20
2008	"	873/979.9	= 0.89
2009	"	1178/1032.4	= 1.14
2010	"	823/1261.4	= 0.65
2011	"	989/1302.3	= 0.76
	AVERAGE		**= 0.93**

5.0 OVERVIEW OF ELK RIVER SAMPLE RESULTS

This section provides data and analysis for the Elk River samples taken during 2011.

Table 5 provides a summary record of the Elk River test results for the time period from January 19, 2011 to December 29, 2011.

No significant changes were observed in pH, TSS, coliform counts, phosphorous or nitrogen concentrations during any of the river sample periods.

Overall, the analyzed concentrations remain constant between the upstream (US) sampling zone and the downstream (DS) sampling zone. The data indicates that the plant's effluent appears not to have any adverse effect on background nutrient concentrations in the Elk River.

Table 5
2011 Elk River Sample Results

Sample Date	pH			TSS			Coliform			Ortho-P			Total P mg/L			NH_3			$N\text{-}NO_3$			$N\text{-}NO_2$		
	UP	IDZ	DN	UP	IDZ	DN	UP	IDZ	DN	UP	IDZ	DN	UP	IDZ	DN	UP	IDZ	DN	UP	IDZ	DN	UP	IDZ	DN
2011-01-19	8.16	8.22	8.18	5.0	9.0	5.0	68	185	120	0.0215	0.0083	0.0083	0.0280	0.0132	0.0137	0.05	0.05	0.05	0.261	0.939	0.942	0.05	0.05	0.05
2011-01-26	8.29	8.32	8.32	3.0	3.9	5.7	45	57	83	0.0050	0.0050	0.0050	0.0114	0.0101	0.0108	0.05	0.05	0.05	1.290	1.460	1.410	0.05	0.05	0.05
2011-04-26	8.34	8.35	8.38	7.0	6.0	5.0	12	24	20	0.0126	0.0118	0.0109	0.0149	0.0135	0.0118	0.05	0.05	0.05	1.070	1.030	1.100	0.05	0.05	0.05
2011-05-04	8.58	8.68	8.71	109.0	5.0	5.0	6	18	22	0.0050	0.0050	0.0050	0.0249	0.0173	0.0156	0.05	0.05	0.05	0.366	0.912	0.984	0.05	0.05	0.05
2011-05-11	8.67	8.73	8.72	19.0	28.0	26.0	26	38	52	0.0050	0.0126	0.0605	0.0478	0.0452	0.0514	0.05	0.05	0.05	0.896	0.889	0.965	0.05	0.05	0.05
2011-05-18	8.46	8.46	8.45	15.0	13.0	14.0	4	3	6	0.0050	0.0050	0.0050	0.03	0.02	0.02	0.05	0.05	0.05	0.23	0.84	0.92	0.05	0.05	0.05
2011-05-24	8.21	8.24	8.23	55.0	57.0	86.0	16	22	38	0.0050	0.0076	0.0064	0.06	0.06	0.10	0.05	0.05	0.05	0.63	0.67	0.74	0.05	0.05	0.05
2011-06-02	8.23	8.24	8.25	14.0	13.0	22.0	4	6	6	0.01	0.01	<0.005	0.15	0.02	0.03	0.05	0.05	0.05	0.99	1.02	1.07	0.05	0.05	0.05
2011-09-29	8.33	8.37	8.37	3.00	3.00	3.00	1	2	2	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.05	0.05	0.05	1.29	1.32	1.43	0.05	0.05	0.05
2011-10-06	8.41	8.41	8.42	5.6	3.00	3.00	43	21	13	0.0050	0.0050	0.0050	0.0089	0.0059	0.0079	0.05	0.05	0.05	1.400	1.350	1.300	0.05	0.05	0.05
2011-10-13	8.21	8.23	8.24	3.00	3.00	3.00	4	2	2	0.0050	0.0050	0.0050	0.0280	0.0130	0.0100	0.05	0.05	0.05	1.070	1.140	1.190	0.05	0.05	0.05
2011-10-20	8.20	8.25	8.27	3.00	3.00	3.00	102	88	97	0.0050	0.0050	0.0050	0.0300	0.0300	0.0300	0.05	0.05	0.05	1.330	1.460	1.480	0.05	0.05	0.05
2011-10-26	8.31	8.33	8.32	3.0	3.00	3.00	3	3	1	0.0050	0.0050	0.0050	0.0300	0.0300	0.0300	0.05	0.05	0.05	1.370	1.440	1.470	0.05	0.05	0.05
2011-11-01	8.21	8.24	8.24	9.0	4.0	36.0	2	2	2	0.0050	0.0050	0.0050	0.0200	0.0200	0.0200	0.05	0.05	0.05	1.470	1.530	1.460	0.05	0.05	0.05
2011-12-29	8.33	8.44	8.41	6.7	5.6	4.0	22	38	32	0.0050	0.0050	0.0050	0.0200	0.0200	0.0200	0.05	0.05	0.05	1.260	1.230	1.240	0.05	0.05	0.05
# Samples	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Average	8.33	8.37	8.37	17.4	10.6	14.9	24	34	33	0.01	0.01	0.01	0.03	0.02	0.02	0.050	0.050	0.050	1.00	1.15	1.18	0.05	0.05	0.05
Maximum	8.67	8.73	8.72	109.0	57.0	86.0	102	185	120	0.02	0.01	0.06	0.15	0.06	0.10	0.050	0.050	0.050	1.47	1.53	1.48	0.05	0.05	0.05
Minimum	8.16	8.22	8.18	3.0	3.0	3.0	1.0	2.0	1.0	0.01	0.01	0.01	0.01	0.01	0.01	0.050	0.050	0.050	0.23	0.67	0.74	0.05	0.05	0.05

Note: Shaded squares show tests reported at less than the stated value, for calculations these are listed as to equal to the value stated, eg. <0.05 is now 0.05

UP – Upstream
IDZ – Initial Dilution Zone
DN – Downstream

6.0 OVERVIEW OF INFLUENT TEST RESULTS

This section provides data and analysis for the plant influent (raw sewage) samples taken during 2011.

Table 6 provides a summary record of the influent test results for the period January 6, 2011 to December 29, 2011.

Table 6
2011 Influent Results

Date	2011 Influent Results Summary					
	Flow	Temp	pH	TSS	BOD	COD
	m^3/d	C		mg/L	mg/L	mg/L
2011-01-06	402	0.0	7.56	417	685	532
2011-01-13	214	-3.0	7.78	210	152	413
2011-01-19	386	-13.0	7.80	266	423	428
2011-01-26	210	3.0	7.69	517	273	344
2011-02-03	226	-16.0	7.64	258	145	344
2011-03-29	465	1.0	7.91	394	278	313
2011-04-26	290	5.0	7.83	62	45.8	90
2011-05-04	432	3.0	8.30	76	42.5	71
2011-05-11	214	1.0	8.41	31	23.9	73
2011-05-18	198	-1.0	8.21	56	11	75
2011-05-24	162	10.0	7.81	256	143	318
2011-06-02	138	6.0	7.88	33	25.5	69
2011-07-14	245	20.0	8.61	22	20	69
2011-08-25	250	13.0	7.79	96.1	92.6	85
2011-09-29	172	20.0	7.92	38.3	195	354
2011-10-06	194	5.0	8.15	33.3	27.5	<10
2011-10-13	516	10.0	7.99	13	9.5	<10
2011-10-20	121	8.0	7.73	61.3	29.7	64
2011-10-26	143	-5.0	7.94	24	14.3	44
2011-11-01	148	-5.0	8.00	30	12.2	43
2011-12-29	781	2.0	7.41	154	233	518
# Samples	21	21	21	21	21	21
Average	278	3.5	7.95	127	108	194
High	781	20.0	8.61	517	423	518
Low	121	-16.0	7.41	13	10	43

A total of 21 BOD and TSS samples were analyzed. The influent flow rate was assumed to be the same as that recorded by the effluent flow meter. A daily effluent discharge is given in Table 7 for the sample dates.

Inlet BOD ranged from 24 mg/l to 685 mg/L with an average of 108mg/L. The average influent sewage strength is lower than that of 142 mg/L in 2010 and that of 143 mg/L in 2009 which was higher than the average (99 mg/L) in 2009 and lower than the average of 488 mg/l in 2007. Since a typical waste water BOD is in the range of 250 mg/l, it is assumed that the average BOD is well below the expected level. This can be caused by infiltration, leaking flow fixtures and so on. For that reason the flow saving measures effort should continue.

7.0 OVERVIEW OF EFFLUENT RESULTS

This section provides data and analysis for the effluent (treated) samples and plant flows for 2011.

A total of 365 effluent samples were collected and analyzed. Effluent samples were collected on the same dates as influent samples to permit an evaluation of plant performance. Table 7 summarizes effluent test results for 2011.

Table 7
2011 Effluent Results

Date	2011 Effluent Results Summary											
	Flow	Temp	pH	TSS	COD	BOD	Coliforms	P-OP04	Total P	NH_3-N	NO_3-N	NO_2-N
	m^3/d	C		mg/L	mg/L	mg/L	cfu/100ml	mg/L	mg/L	mg/L	mg/L	mg/L
2011-01-06	507	0.0	7.73	3	31	2	1	0.0816	0.106	0.05	31.5	0.05
2011-01-13	284	-3.0	7.92	4.0	17	2	1	0.150	0.201	0.05	29.5	0.05
2011-01-19	324	-13.0	7.93	4.0	10.0	2	1	0.0439	0.06	0.05	9.3	0.05
2011-01-26	306	3.0	7.90	3.0	15.0	2	1	0.297	0.35	0.05	34.5	0.05
2011-02-03	336	-16.0	7.80	8.0	11.0	2	1	0.207	0.27	0.05	31.1	0.05
2011-03-29	575	1.0	7.81	4.0	10.0	2	4	0.0523	0.15	0.05	28.6	0.05
2011-04-26	391	5.0	8.04	3.0	10.0	2	1	0.0795	0.10	0.05	7.8	0.05
2011-05-04	419	3.0	8.41	3.0	10.0	2	1	0.0587	0.06	0.05	4.9	0.05
2011-05-11	232	1.0	8.56	4.0	10.0	2	1	0.0588	0.18	0.050	8.2	0.05
2011-05-18	225	-1.0	8.38	3.0	10.0	2	1	0.0925	0.12	0.05	9.0	0.05
2011-05-24	211	10.0	8.10	3.0	19.0	2	1	0.254	0.27	0.05	20.5	0.05
2011-06-02	149	6.0	8.04	3.0	10.0	2	1	0.0578	0.06	0.05	8.8	0.05
2011-07-14	212	20.0	8.67	3.0	11.0	2	1	**0.524**	**1.15**	0.05	21.3	0.05
2011-08-25	271	13.0	8.00	3.0	10.0	2	1	0.223	0.37	0.05	16.3	0.05
2011-09-29	n/a	20.0	7.97	3.0	10.0	2	1	0.335	0.34	0.05	25.8	0.05
2011-10-06	n/a	5.0	8.00	3.0	10.0	2	1	0.274	0.28	0.05	30.0	0.05
2011-10-13	n/a	10.0	8.03	3.0	10.0	2	2	0.289	0.37	0.05	11.4	0.05
2011-10-20	n/a	8.0	7.78	3.0	11.0	2	1	0.03	0.05	0.05	12.8	0.05
2011-10-26	n/a	-5.0	8.02	3.0	10.0	2	1	0.0544	0.06	0.05	11.7	0.05
2011-11-01	n/a	-5.0	7.99	3.0	10.0	2	2	0.042	0.06	0.05	11.5	0.05
2011-12-29	n/a	2.0	7.93	3.0	21.0	2	2	0.291	0.37	0.05	34.1	0.825
# Samples	14	21	21	21	21	21	21	21	21	21	21	21
Average	304	4.5	8.07	3.4	11.5	2.0	1	0.17	0.24	0.050	17.8	0.09
High	575	20.0	8.67	8.0	21.0	2	4	0.524	1.15	0.050	34.5	0.83
Low	149	-16.0	7.78	3.0	10.0	2	1	0.0308	0.05	0.050	4.9	0.05
Limit	1280	N/A	N/A	45	N/A	45	200	0.5	1	N/A	N/A	N/A
# Over Limit	0	N/A	N/A	0	0	0	0	0	1	N/A	N/A	N/A

Notes: 1. Shaded squares show tests reported at less than the stated value, for calculations these are listed as equal to the value stated, ie. <0.05 is assumed to be 0.05
2. Geometric mean is used for coliform results

7.1 RESULTS ANALYSIS

The average BOD in the effluent was <2.0 mg/L. This is the same as for 2010, 2009 and 2008. TSS samples averaged 3.4 mg/L with a maximum concentration of 8.0 mg/L occurring in January and October. The plant provides excellent BOD_5 and TSS treatment with average removals of 100% and 97.3%, respectively.

Due to the relatively low levels of TSS, UV disinfection was able to effectively control the amount of coliform concentration found in the effluent. UV disinfection was able to keep the coliform levels well below the acceptable limits for recreational waters. A new UV unit was installed in 2011. Although the Elk River samples show coliforms in the downstream samples higher than those of the upstream samples, the results are low and indicated no measurable impact of the effluent discharge on the river.

Effluent ammonia concentrations are consistently low. Effluent data shows the plant is effectively oxidizing ammonia nitrogen and that there is no evidence of elevated ammonia levels in the Elk River as a result of discharge from the treatment plant.

As was the case in previous years the bioassay toxicity tests show that plant effluent is non-toxic. The results of these tests are shown below in table 8.

Table 8
Toxicity Test Results

Sample Date	Result
2011/01/06	Pass
2011/09/12	Pass
2011/11/01	Pass

Only one sample out of twenty-one for total phosphorus and one for othro-phosphorus were above MSR discharge limits.

A phosphorus reduction strategy, as outlined in Section 11, was started in the winter of 2007 to address the removal of soluble phosphorus from the effluent stream. The plant has sufficient infrastructure to remove precipitated nutrients and no additional treatment processes are required.

Phosphorus in the plant effluent has no discernable impact on background nutrient levels in the Elk River, with upstream and downstream concentrations being virtually identical. A 2001 report by Highwood Environmental indicated that phosphorus releases would have a negligible impact on aquatic life in the Elk River.

FARUC completed plant modifications for phosphorous removal.

7.2 COMPLIANCE SUMMARY

Table 9 summarizes the number of days that samples exceeded MSR effluent requirements.

Table 9
2011 MSR Parameter Compliance

Parameter	Unit	MSR Limit	No. of Samples	Average Value	Max. Value	Samples Over Limit
Flow	m^3/day	1280	365	335	989	0
BOD_5	mg/l	45	21	<2	<2	0
TSS	mg/l	45	386	1.8	8.0	0
Total Phosphorous	mg/l	1	21	0.24	1.15	1
Ortho Phosphate	mg/l	0.5	21	0.17	0.524	1
Fecal Coliforms*	cfu/100ml	200	21	1	4	0
96 hr LC_{50} Bioassay	/	Non-toxic	3	/	/	0

* Limit for recreational waters only, not included in FAR registration letter

8.0 SLUDGE PRODUCTION AND DISPOSAL

This section provides data regarding the disposal of bio-solids (sludge) from the treatment facility in 2011.

Operation of the 200m^3 aerated sludge digester allowed the plant to bag and landfill all of its bio-solids without resorting to vacuum truck services. All solids were transported to the Crowsnest/Pincher Creek landfill site.

Hauling data for bagged solids are in Table 10.

Table 10
2011 Bagged Solids Data

Month	Vol. Bagged (m^3)
January	280.1
February	220.3
March	274.0
April	116.9
May	85.0
June	56.2
July	58.4
August	93.1
September	142.1
October	80.2
November	50.8
December	198.3
Total	1655.4

The aerated sludge digester has allowed the operators to store liquid sludge during peak winter weekend periods and bag at the less active midweek times, avoiding the need for emergency vacuum truck services. Sludge bag data indicates the winter season is most active for the plant.

9.0 BYPASS EVENTS

This section provides information about bypass events in 2011.

Bypass events result in elevated effluent suspended solids concentrations which decrease the effectiveness of the UV disinfection system; an increase in TSS results in a simultaneous increase in coliform counts. While soluble BOD is removed though the aeration basins, the overflow of TSS also results in an increase in BOD readings due to the presence of biological floc.

There were no bypass events in 2011.

10.0 PLANT IMPROVEMENTS

In 2009 upgrades to the phosphorous injections points and mixing tanks began. In 2011 the final stage of this improvement were completed with the installation of a rapid mixer and flocculation system and the relocation of the UV system. This improvement was implemented to better use the tertiary filtration and accomplish longer runs, less backwash water, better phosphorus removal and better effluent quality.

The continuous strive for the improvements of the Waste Water Treatment System by RCR will continue along with minimization of the potable water use ie clear well water will be used to spray down the clarifiers instead of potable water.

11.0 PHOSPHORUS REMOVAL

This section describes the phosphorus monitoring and removal strategy being implemented to bring the plant into compliance with effluent limits.

In the winter of 2007, the plant increased chemical dosing with Clearpac to reduce effluent phosphorus concentrations. By late January 2008 sample results showed marked improvement with both ortho and total phosphorus concentrations falling below discharge requirements.

The increased application of Clearpac in 2008, while effective, has been operationally costly; the relationship between chemical dose and nutrient removal will be adjusted for best efficiency.

The monitoring and removal program continued in the summer of 2008 with the plant evaluating additional removal strategies, including:

- Implementation of sampling procedures to measure total phosphorus concentrations at the following locations; auger monster (raw sewage), clarifier supernatant, RBC overflow, mix tank liquor, sand filter filtrate, filter backwash, sludge digester supernatant, and effluent,
- Evaluation of precipitant dose on effluent phosphorous levels at the current chemical addition point (clarifier overflow),
- Evaluation of changing the precipitant dose location, and
- Evaluation of alternative chemicals.

The plant will continually monitor and optimize coagulant dosages for improved phosphorus removal.

In 2009 upgrades to the phosphorus injections points and mixing tanks began. In the spring of 2011 the final stage of this improvement will be completed with the installation of a rapid mixer and flocculation system and the relocation of the UV system. This will result in the better usage of tertiary filtration. Longer runs, less backwash water, better phosphorus removal and better effluent quality will be accomplished.

2010 data show further improvement in phosphorus concentrations with only three exceedances for ortho-phosphorus (all results for total phosphorus were below the limits) with only a 15% exceedance compared to 2008 results with 50% exceedance and to 2009 with only a 18% exceedance.

2011 data showed further improvement in phosphorus concentrations with only one exceedances for each total phosphorus and ortho-phosphorus, both on July 14, 2011. The exceedances for ortho-phosphorus was only 4% and for total phosphorus was only 13% above the limit with is less than those of previous years. It is anticipated that the program will continue to show improvement to plan effluent quality in 2012. Below are some graphs showing the general decrease in phosphorus levels since 2007.

Figure 6
Total Phosphorus Levels 2007-2011

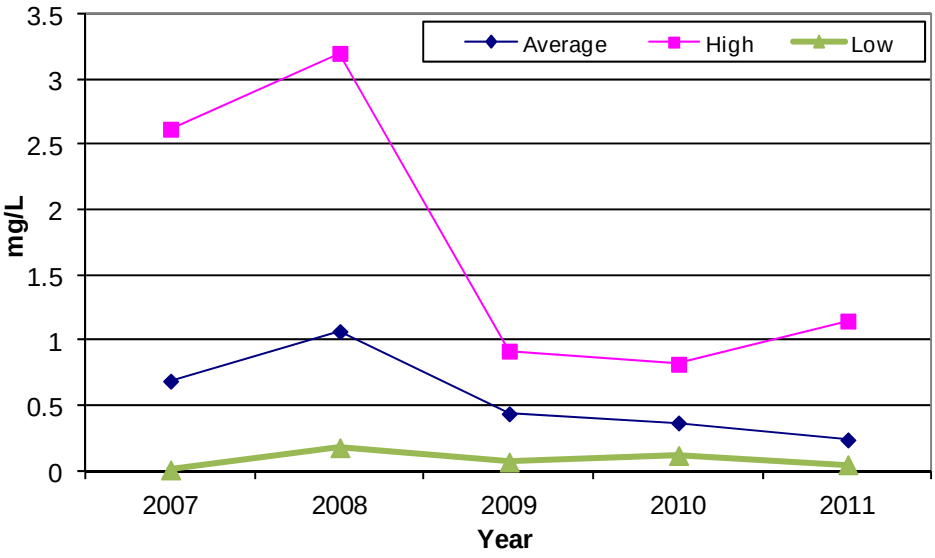


Figure 7
Ortho Phosphorus Levels 2007-2011

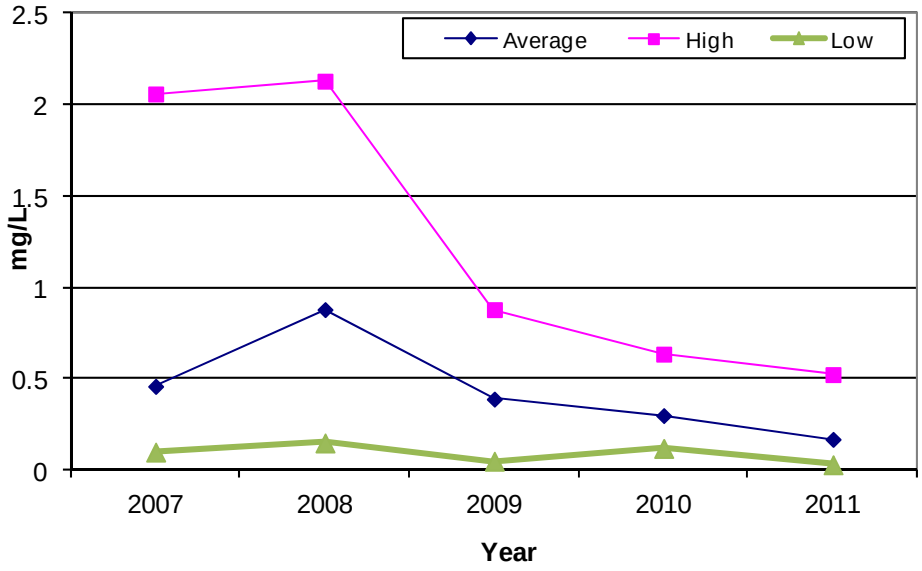
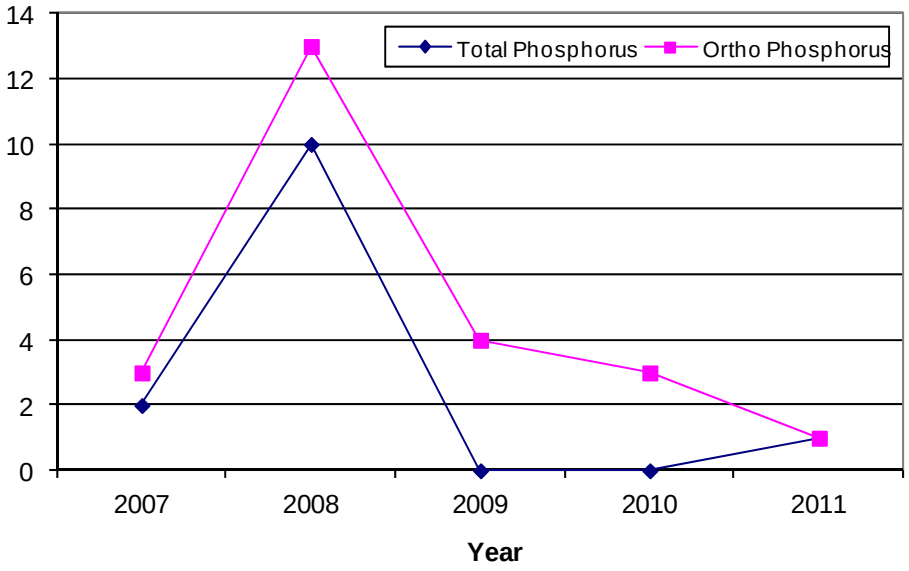


Figure 8
Days over Limit 2007-2011



12.0 ASSESSMENT SUMMARY

The plant has produced high quality effluent with BOD_5 normally below the regulated limit of 45 mg/l and for all instances, less than 2 mg/l. TSS averaged approximately 1.8 mg/l with no instances of violating MSR limits.

Coliform and ammonia results indicate that the plant functioned well again in 2011.

Phosphorus reduction appears to have improved again since about 4% of samples for total phosphorus and 13% for ortho-phosphorus only are over the limit compared to 50% for 2008 and 18% for 2009, and 15% in 2010. The phosphorous removal plan outlined in section 11 should be implemented and monitored. Other operating measures will be investigated through the summer of 2012 to prepare for the upcoming winter ski season. There has been no measurable impact of phosphorous releases from the plant on Elk River background nutrient concentrations.

Operation of the sludge digester has eliminated the need for emergency liquid sludge hauling. All sludge was bagged and disposed of at the approved landfill site.

Major new residential or hotel developments are not anticipated until 2013 at the earliest, though the resort is expected to see moderate growth over the next year with a projected peak flow that may reach the rated capacity of the plant in a near future. The discharge flow limit may need to be raised to account for the proposed growth though the effect of the infiltration reduction program has reduced peak flows and may continue to reduce average flows. FARUC will continue to monitor flow and assess the need for any registration amendment.

In summary, the activated sludge treatment process functioned well in 2011 with only, although significantly improved, phosphorus concerns outstanding. A program was installed in the summer of 2007 to address effluent phosphorous concentrations and will continue until positive results are consistently achieved.

13.0 AUTHORITIZATION AND CLOSING

This report, titled *2011 Sewage Treatment Plant Annual Report,* was prepared for FARUC by Environmental Diagnostics Inc. The material in this report reflects the best judgement of Environmental Diagnostics Inc. based on the information available at the time of preparation. Any use that a third party makes of this report, or reliance on or decisions based on it, is the responsibility of the third party. Environmental Diagnostics Inc. accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions taken based on this report.

ENVIRONMENTAL DIAGNOSTICS INC.

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Manager, Water & Wastewater

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. ZVERINA
30366

J:comm/water/2012/28001

Table 11. Fernie Alpine Resort Estimated Sewage Generation (m3/day)

Existing Development	Flow* (l/unid/day)	Units	2011 Generation (m3/day)	2012 Generation (m3/day)
Griz Inn	1136	45	51.1	51.1
Wolf's Den	318	42	13.4	13.4
Cornerstone	1136	26	29.5	29.5
Timberline Condos	1022	58	59.3	59.3
Polar Peaks (4-Plex Units)	1136	24	27.3	27.3
Timberline Single Family & B&B	1363	51	69.5	69.5
	Subtotal	**246**	**250.1**	**250.1**

Infill Units	Flow* (l/unid/day)	Units	2011 Generation (m3/day)	2012 Generation (m3/day)
Timberline Infills	1022	141	144.1	144.1
Timberline Single Family	1363	2	2.7	2.7
Timberline Infills	1022	106	108.3	108.3
Timberlanding Multifamily	1022	45	59.97	59.97
Timberlanding Single Family	1363	32.5	42.92	42.92
Highline Infill	1022	26	26.6	26.6
	Subtotal	**352.5**	**384.59**	**384.59**

Highline Subdivision	Flow* (l/unid/day)	Units	2011 Generation (m3/day)	2012 Generation (m3/day)
Single Family	1363	49	66.8	66.8
Duplexes	1363	10	13.6	13.6
Parcel 31-Condotel	318	61	19.4	19.4
Parcel 32-Duplex	1363	16	21.8	21.8
Parcel 36-Hotel	318	101	32.1	32.1
Parcel 37-Townhouses	1363	8	10.9	10.9
Parcel 38-Townhouses	1363	23	31.3	31.3
Parcel 3-Condominium	1363	12	16.4	16.4
Parcel 8-Condominium	1363	42	57.2	57.2
	Subtotal	**322**	**269.5**	**269.5**

Day Users	Flow* (l/unid/day)	Population (each)	2011 Generation (m3/day)	2012 Generation (m3/day)
Skiers	36	700	252	252
	Subtotal	**700**	**252**	**252**

Dining Facilites/Bars	Flow* (l/unid/day)	Area (m2)	2011 Generation (m3/day)	2012 Generation (m3/day)
Lizard Creek - Dining	97	54.7	5.3	5.3
Lizard Creek - Bar	145	40.4	5.9	5.9
Kelseys - Dining	97	204.4	19.8	19.8
Kelseys - Bar	145	65	9.4	9.4
Daylodge - Dining	97	358.6	34.8	34.8
Daylodge - Bar	145	260.7	37.8	37.8
Mean Bean	97	26.8	2.6	2.6
Gabrielles	97	133.8	13	13
Powder House Inn	97	232.2	22.5	22.5
Bears Den	97	62.4	6.1	6.1
	Subtotal	**1439**	**157.2**	**157.2**

Daily Wastewater Flow (m3/day)*	1302.3	1302.3
Corrected Daily Peak Flow Projections**	989 (actual)	1211.1 (projected)

*Estimated Wastewater flows from BC Health Act, Sewage Disposal Regulation

**Based on 2005 flow for peak day flows

BRITISH COLUMBIA

Date: September 30, 2002 Our File: RE 17139

REGISTERED MAIL

Resorts of the Canadian Rockies Inc.
PO Box 997
Victoria, BC V8W 2S8

Resorts of the Canadian Rockies Inc.
1507 – 17th Avenue, SW
Calgary Alberta T2T 0E2

Dear Sir:

Re: Registration under the *Municipal Sewage Regulation* of the discharge to the Elk River from the Fernie Alpine Resort sewage treatment plant located at District Lot 8980, Kootenay District (Plan 1687) near Fernie British Columbia

This is to acknowledge your registration form under the *Municipal Sewage Regulation* (the *Regulation*) dated August 30, 2001, and received at this office on October 31, 2001, for the registration of the wastewater treatment plant owned and operated by Resorts of the Canadian Rockies Inc. at the Fernie Alpine Resort ski hill located near Fernie, British Columbia. Pursuant to Part 2, section 3 of the *Regulation*, the effective date of registration of this discharge is the date of this letter. The ministry file number for this discharge is RE 17139. Please indicate this number on all future correspondence regarding this discharge.

The initial registration fee is $148.55. Please submit to the Regional Manager (the *Manager*) a cheque payable to the Minister of Finance and Corporate Relations, for this amount by September 25, 2002. An annual registration fee will be determined according to the *Waste Management Permit Fees Regulation* and you will be receiving an annual invoice from the ministry for payment of this fee. Payment of all fees due is necessary to comply with the *Regulation*. Fees will be calculated using a maximum effluent flow of 1280 m^3/day, a maximum BOD_5 of 45 mg/L and a maximum TSS of 45 mg/L.

We wish to remind you that the discharger is responsible for compliance with the requirements of the *Regulation*, the registration, the *Waste Management Act* (the *Act*) and this registration letter. Your attention is respectfully directed to the terms and conditions outlined in the *Regulation*, the registration, this registration letter and the *Ac* . Compliance with all the terms and conditions of the *Regulation*, the registration and this registration letter is required. Contravention of any of the conditions of the *Regulation*, the registration and this letter is a violation of the *Act* and may result in prosecution.

Ministry of Water, Land and Air Protection
Kootenay Region
Mailing/Location Address: 401 - 333 Victoria Street Nelson BC V1L 4K3
Telephone: 250 354-6333
Facsimile: 250 354-6332
PP Facsimile: 250 354-6367

We also wish to draw your attention to the Environmental Impact Study Guideline dated December 2000 or the latest version and the *Regulation* Compliance Guideline dated January 2001 or the latest version, these policy documents are used in conjunction with the *Regulation*, the registration and the *Act*.

The *Regulation* and policy documents are available at :

http://wlapwww.gov.bc.ca/epd/epdpa/mpp/msrhome.html

This letter does not replace the *Act*, regulations issued under the *Act* or the *Regulation*. It does not list all provisions relating to municipal sewage discharges. If there are differences or omissions in this document then the *Act*, the regulations issued under the *Act* and the *Regulation* apply except where expressly noted in this letter.

Registration under the *Regulation* should not be construed as a representation that the authorized works are adequately designed or will satisfy the *Regulation*. It is the responsibility of the discharger to ensure that the works are adequately designed, constructed and operated and that the discharge quality complies with the *Regulation* and this letter. Registration under the *Regulation* and this letter are without prejudice to any additional works that may be required or any additional requirements that may be specified by the *Manager*. The *Manager* may also issue Orders under the *Act*.

Registration under the *Regulation* does not authorise entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorised by the owner of such lands or works. The responsibility for obtaining such authority shall rest with the discharger. It is also the responsibility of the discharger to ensure that all activities conducted under this registration are carried out with regard to the rights of third parties and comply with other applicable legislation that may be in force. The discharger must also obtain any necessary approvals from other agencies.

Administration of the *Act*, the *Regulation*, the registration and this registration letter will be carried out by staff from our Sub-Regional Office located at #205 Industrial Road G, Cranbrook, British Columbia, V1C 7G5, (telephone: (250) 489-8570) or from our Regional Office located at #401 - 333 Victoria Street, Nelson, British Columbia, V1L 4K3. Plans, data and reports pertinent to the *Regulation*, registration and this letter are to be submitted to the *Manager* at the Sub-Regional office address at Cranbrook, British Columbia in the form required by the *Regulation* or in the form required by the *Manager*. The ministry uses a reference number to track monitoring data associated with discharges. The site reference number for this discharge is E102571.

Registration Reference Documents

This registration under the *Regulation* is based on the following documents:

1. The Fernie Alpine Resort Limited, Registration Form dated August 30, 2001 and received
   October 31, 2001.
2. Environmental Impact Study, Sewage Treatment Plant at Fernie Alpine Resort, prepared for Fernie Alpine Resort Ltd. by Highwood Environmental Management Limited dated April 2001.
3. Environmental Impact Study for Fernie Alpine Resort's Wastewater Discharge into the Elk River, Interim Report prepared by Conor Pacific Environmental Technologies Incorporated dated
   May 1, 2001.
4. Fernie Alpine Resort, Wastewater Treatment Plant, Guiding Document for Proposed Improvements 2001 prepared by Urban Systems dated May 2001.
5. Urban Systems drawings titled Fernie Alpine Resort Wastewater Treatment Plant Expansion dated August, 2001.

Treatment Plant Works

The treatment plant works are one influent macerator and screen, two aeration flow equalization tanks, a separate equalization tank, two clariflers, two three stage rotating biological contactors, two flocculation tanks with mixers and coagulant feed, two sand filters, a backwash water settling tank, UV disinfeotion units, one aerated biosolids (sludge) digestion tank, biosolids (sludge) dewatering equipment and a pipeline and outfall to the Elk River and related appurtenances approximately as shown on Urban Systems drawings titled Fernie Alpine Resort Wastewater Treatment Plant Expansion dated August, 2001 or on the attached Site Plan. The plant maximum daily flow and discharge to the environment is 1280 m^3/day. The effluent quality shall be BOD_5 of 45 mg/L, TSS of 45 mg/L, total phosphorus of 1.0 mg/L, ortho phosphate 0.5 mg/L and the effluent shall also pass a 96 hour LC50 bioassay test.

Primary Screenings and Dewatered Biosolids (Sludge) Disposal

Primary screenings and dewatered biosolids (sludge) from the treatment plant shall be disposed at the Crowsnest/Pincher Creek Landfill. The discharger shall submit confirmation of acceptance of the screenings and biosolids by the Crowsnest/Pincher Creek Landfill Authority on or before October 25, 2002. If primary screenings and dewatered biosolids (sludge) from the treatment plant are not disposed at the Crowsnest/Pincher Creek Landfill they must be disposed in accordance with an authorization issued under the *Act*, the Organic Matter Recycling Regulation or in a manner approved by the *Manager*.

Semi-solid Waste

The discharger shall not accept semi-solid wastes at the treatment plant. Semi-solid wastes means septic tank pumpage, holding tank solids or sludge from sewage facilities.

Plant Design

The treatment plant design must be in accordance with Schedule 7 of the *Regulation* and meet reliability Category I. The discharger shall provide written confirmation that the treatment plant works meet reliability Category I and confirm that multiple disinfection units have been installed. The confirmation shall be submitted on or before October 25, 2002.

Outfall Diffuser

The discharger shall install an outfall diffuser in accordance with Part 4, Section 5 and Schedule 7, Condition 4 of the *Regulation*. The diffuser shall be installed on or before August 31, 2003. The discharger must obtain all necessary approvals from other agencies prior to installing the diffuser.

Additional Works

The works are to be designed to allow for additional facilities in future to reduce effluent ammonia levels if ammonia levels in the Elk River exceed the current British Columbia Approved Water Quality Guidelines (Criteria) or if monitoring results indicate exceedance of the current Criteria for ammonia is imminent. Water quality Criteria apply at the edge of the initial dilution zone.

The works are also to be designed to allow for increased phosphorus removal if algae problems develop in the Elk River.

check with Hugh

Operator Qualifications and Certification

The discharger shall ensure that the treatment plant is classified and the treatment plant operators certified in accordance with Part 6, Section 22 of the *Regulation*. Proof of treatment plant classification (copy of classification) and operator certification (copy of certification) shall be submitted to the *Manager* on or before October 25, 2002.

Monitoring

The discharger shall undertake monitoring in accordance with Part 7 and applicable conditions of Schedule 6 of the *Regulation* subject to the requirements as follows:

Sampling and Analysis

Sampling and analysis shall be in accordance with Part 7, Section 25 of the *Regulation*. Minimum detection limits for nutrients shall be:

Ammonia	5µg/L (ppm)
Nitrate	5 µg/L
Nitrite	2 µg/L
Total Phosphorus	3 µg/L
Orthophosphate	3 µg/L

These detection limits shall only apply to the analysis of samples obtained from the Elk River. These detection limits will not apply to the analysis of samples obtained from the plant influent and effluent.

Please note the requirement to submit data in accordance with the *Environmental Data Quality Assurance Regulation* as per Section 25 (3) of the *Regulation*.

Discharge Monitoring and Receiving Environment Monitoring

In accordance with Part 7, Section 26 and 27 of the *Regulation* the discharger shall undertake the following monitoring program:

Sampling Location Frequency/Type

	Elk River[4] (At Sites UP, IDZ and DN)	Plant Influent[3]	Plant Effluent[3]
Parameter			
pH (field test)	WS/G		M/G and WS/G
temperature (field test)	WS/G		
flow		D/CON.	D/CON.
BOD_5 [1]		M/G	M/G and WS/G
TSS[2]	WS/G	M/G	M/G and WS/G and D/CON.
ammonia (as nitrogen)	WS/G		M/G and WS/G
nitrate (as nitrogen)	WS/G		M/G and WS/G
nitrite (as nitrogen)	WS/G		M/G and WS/G
total phosphorus	WS/G		M/G and WS/G
	Elk River[4] (At Sites UP, IDZ and DN)	**Plant Influent[3]**	**Plant Effluent[3]**
orthophosphate	WS/G		M/G and WS/G
fecal coliforms	WS/G		M/G and WS/G
Toxicity			3Y/G

1. BOD_5 - means the total 5-day biochemical oxygen demand.
2. TSS - means total suspended solids or non-filterable residue.
3. Plant influent and effluent samples must be obtained at peak times on peak flow days. The peak flow days shall be based on bookings at the resort. An influent flow meter shall be installed on or before December 31, 2003.
4. Sampling of the Elk River shall be done on the same day as plant influent and effluent sampling and also correspond with peak flow days at the resort in a manner similar to plant influent/effluent sampling.

Sampling Frequency:

D - means daily.

M - means monthly.

WS – weekly seasonal (This means obtaining samples weekly for a six week period in the spring, in the fall and during the Christmas season at peak flow times and days. Peak flow days will be predicted on the basis of resort bookings. The commencement of the spring and fall sampling sessions depends on weather and hydrologic conditions. The spring sampling should begin early in the spring after ice-out when river flows are low and the fall sampling should begin when river flows are low and turbidity is low. Professional judgment should be used regarding the start times of the weekly sampling programs in the spring and fall. The Christmas sampling should begin in mid December and extend into January. During the six week sampling period the monthly sampling is not necessary.)

3Y – means three times per year to correspond with the WS sampling.

Sample Type:

G - means grab sample (Note: when obtaining samples of the influent and effluent the grab samples will be taken on peak flow days at peak flow times during the day. Peak days shall be predicted on the basis of bookings at the resort.)

CON. - means continuous using a data logger. (Note: Flow meters and TSS monitors shall be calibrated. The flow meter and TSS meter calibration frequency and procedures shall be contained in the operating plan.)

Monitoring for Plant Operation Purposes

The discharger is expected to undertake additional monitoring for plant operation purposes. The monitoring program outlined in this letter is not considered adequate for plant operation purposes.

Environmental Monitoring System (EMS) Numbers

The following are the EMS site numbers assigned to the monitoring sites listed above. These numbers are to be used when entering data directly into the Ministry EMS database in accordance with Part 7, Section 28 (2) of the *Regulation*. Monitoring data shall be submitted to the Ministry data base quarterly within 30 days of the end of each quarter.

For information on the use of EMS and the electronic data transfer utility please refer to the following websites:

http://wlapwww.gov.bc.ca/epd/ems_edt.html,
http://wlapwww.gov.bc.ca/epd/labsys/index.htm#EMS

Fernie Alpine Resort Ltd. Name/Number	EMS Number	Description
Elk River UP	E248329	Upstream of the discharge approximately as shown on Figure 3.3 of the Environmental Impact Study (EIS) dated April 2001.
Elk River IDZ	E248330	Within the initial dilution zone see Figure 3.3 of the EIS.
Elk River DN	E248331	Downstream of the discharge see Figure 3.3 of the EIS.
Plant Influent	E243616	Sample at the treatment plant just after the primary screen.
Plant Effluent	E102571	Sample at the treatment plant after disinfection.

GPS Coordinates

The discharge shall submit to the *Manager* the GPS coordinates for all sampling sites listed above on or before October 25, 2002.

Reporting Requirements

The discharger shall report monitoring data in accordance with Part 7, Section 28 of the *Regulation* and in accordance with the following requirements:

In accordance with Part 7, Section 28(3) of the *Regulation* the discharger shall submit an annual report and do so in accordance with the annual report requirements of Section 28 of the *Regulation*. The annual report shall contain details on water conservation measures implemented by the discharger and shall clearly show on a site plan the existing development, development during the year and proposed development by year for the next five years. The annual report shall contain a comparison of actual wastewater flows and flows predicted using water conservation measures. Water supply data shall be provided and correlated to wastewater flows. The annual report shall contain documentation of historic and projected contributory population and historic and projected development and the remaining plant capacity. The annual report shall be made available to the public by posting it on the internet. The first annual report is due within 120 days of the end of 2002.

Monitoring Program Changes

The *Manager* may modify the monitoring program from time to time. The annual report shall contain recommendations regarding changes (additions/deletions/modifications) to the monitoring program.

Supervisory Control and Data Acquisition (SCADA)

The discharger is encouraged to install a SCADA system. SCADA systems may be a requirement in the future.

If you have any questions concerning this registration, please contact our Cranbrook Sub-Regional Office at (250) 489-8540.

Yours truly,

Carl Johnson

Carl Johnson, P.Eng.
Assistant Regional Waste Manager

/lp

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