

VICEROY MINERALS CORPORATION



Brewery Creek Mine

Heap Leach Pad Cover and Facilities Monitoring Program

Date:

September 13, 2004

TABLE OF CONTENTS

1	Background	1
2	Purpose.....	1
3	Monitoring Points	1
4	Heap Water Quality	2
5	Physical Monitoring.....	3
6	Surface Water.....	3
7	Terrestrial Monitoring.....	4
8	Climate Monitoring.....	4
9	Contingency Measures.....	4
9.1	Land Application	5
9.1.1	Biological Treatment Cell.....	5
9.1.2	Heap Cell Solution Segregation.....	5
10	Heap Assessment	5
11	Reporting.....	5

LIST OF TABLES

Table 1	Heap Leach Pad Cover and Facilities Monitoring Program
Table 2	Water Sample Analysis Parameters

LIST OF FIGURES

Figure 1	Brewery Creek Mine Heap Leach Pad Cover & Facilities Monitoring Program Station Locations
----------	---

1 Background

Viceroy Minerals Corporation's (Viceroy) Brewery Creek Mine was issued an amendment to the company's Quartz Mining Licence (QML) in April 2004. Amendment 04-001 to QML A99-001 outlines terms and conditions associated with the Brewery Creek Mine Decommissioning and Reclamation Plan (DRP). Section 17.7.2 states:

“A detailed program designed to monitor and report on the geochemical and physical stability of the heap leach cover and pad, and associated facilities, must be submitted to the Chief for review and approval within 120 days of the effective date, and be implemented within 30 days of the Licensee receiving notice of its approval by the Chief, unless otherwise agreed, in writing, by the Chief...”

2 Purpose

This detailed monitoring program fulfills the requirements of Section 17.7.2 of QML A99-001 Amendment 04-001. The purpose of the monitoring program is to assess the performance of the heap cover, heap effluent water quality and associated heap contingency measures. A heap detoxification adaptive management plan (AMP) for the heap leach pad has been previously prepared and submitted to the Government of Yukon (DRP Executive Summary, November 2003, Appendix G). The heap AMP outlines the contingency measures and responses that will be implemented if the effluent water quality or receiving waters is not achieving the performance standards and objectives. As such, triggers and response actions associated with the monitoring program are not provided in this document as they have already been addressed. These details are left to the heap AMP and will be implemented if necessary.

Pertinent data from the monitoring will be assessed to determine if adverse water quality trends are developing in the heap that may adversely impact downstream surface waters. This assessment will review the effectiveness of the closure remedial measures undertaken by the company. Results of the monitoring program will be routinely reported to the Government of Yukon.

3 Monitoring Points

The monitoring points associated with the heap are primarily water quality related. The following summarizes the various monitoring points included in this monitoring program:

1. Heap Water Quality:
 - a. Heap Effluent (BC-28a);
 - b. BC-28.
2. Physical monitoring:

- a. Heap Stability;
 - b. Cover Erosion;
 - c. Cover Infiltration.
3. Surface water:
 - a. WQ at BC-01;
 - b. WQ at BC-02;
 - c. WQ at BC-03;
 - d. WQ at BC-06;
 - e. WQ at BC-38;
 - f. WQ at BC-39;
 - g. Sediments at BC-01, BC-02, BC-03, BC-06, BC-38 and BC-39;
 - h. Benthos at BC-01, BC-06 and BC-38.
 4. Terrestrial monitoring:
 - a. Revegetation success;
 - b. Metals uptake.
 5. Climatic monitoring:
 - a. Precipitation;
 - b. Snowpack;
 - c. Evaporation.
 6. Contingency measures:
 - a. Land Application (Stations BC-65 and BC-66);
 - b. Biological Treatment Cell;
 - c. Solution Segregation Heap Cells.

Each of these monitoring categories is further discussed and a schedule and frequency for monitoring various stations within these categories is provided. Table 1 summarizes the frequency of the monitoring stations. Table 2 contains the parameters of analysis for the various stations, and Figure 1 shows the location of each of these stations.

4 Heap Water Quality

The primary monitoring locations associated with demonstrating heap detoxification performance are the heap effluent itself and the discharge water either from the heap directly or contained in the solution ponds. The heap solution collection system allows heap drainage to be either discharged directly or collected in the process ponds and discharged on a “batch” basis. The heap effluent is a voluntary station with an internal station designated as BC-28a. These two locations will be monitored as follows:

1. The heap effluent (BC-28a) will be monitored on a quarterly basis;
2. BC-28 will be monitored on a quarterly basis during active discharge in 2005 and beyond;
3. LC50 toxicity sampling will be completed on BC-28 solution during each sampling event;

4. In the event the BC-28 solution is from the process ponds and no other solution is entering these ponds, a single sample demonstrating compliance with the “batch” will be taken; and
5. Results from the heap effluent water quality will be reviewed to ensure the geochemical stability of the heap.

Analytical parameters for the heap water quality stations are summarized in Table 2.

The water quality data will be reported in the company’s monthly report to the Yukon Water Board and part of the QML annual report.

5 Physical Monitoring

A 0.25 meter storage and release cover was constructed over the heap in 2003. The purpose of the cover is to reduce the infiltration rate of precipitation through the heap and ultimately minimize the amount of solution requiring release. With respect to physical monitoring, the following programs will be conducted:

1. Annual geotechnical inspections of the heap for Years 1-5, commencing in 2004. Further geotechnical inspections conducted in years 10 and 15. A qualified professional will assess the stability of the heap and containment dike;
2. Inspection of the heap cover by a qualified professional for signs of erosion and general instability. The inspections will be conducted on an annual basis for Years 1-5 and on a biannual basis for Years 6-10;
3. Flow from the heap will be logged. The cover infiltration rate will be reviewed and assessed to ensure cover effectiveness; and
4. A report on the findings of the geotechnical report will be included in the company’s annual report.

6 Surface Water

There are six surface water stations of significance below the heap. These stations include BC-01, BC-02, BC-03, BC-06, BC-38 and BC-39. These stations will be monitored as follows:

1. Quarterly for water quality during Years 1-5;
2. Annually for sediments during Years 1-5;
3. Bi-Annual benthos monitoring at BC-01 (B3 benthos), BC-06 (B5 benthos), and BC-38 (B4 benthos), during Years 1-5;
4. Semi-annual for water quality during Years 6-10; and
5. Annual for water quality during Years 11-15.

Analytical parameters for the surface water quality stations are summarized in Table 2. The surface water quality data will be reported in the company's monthly report to the Yukon Water Board and part of the QML annual report.

Results from the surface water quality will be reviewed and compared with the existing downstream receiving water Canadian Council of Ministers of the Environment (CCME) Guidelines to ensure the effectiveness of closure remedial measures and environmental effects assessment.

7 Terrestrial Monitoring

Terrestrial monitoring related to the heap includes revegetation success and stability and metals uptake. These areas will be assessed by the following measures:

1. Annual inspections by a qualified revegetation specialist during Years 1-5;
2. Annual inspections by a qualified revegetation specialist during Years 6-11. A report specific to the revegetation in the heap will be included in the company's annual report;
3. Metals uptake assessment will be conducted during Years 1-5; and
4. Metals uptake will be assessed on an annual basis with results reported in the annual report.

8 Climate Monitoring

Monitoring of climate data is necessary to determine overall infiltration rates through the heap cover. A manual station will be established in close proximity to the heap and will be monitored for precipitation and evaporation. In addition, snowpack surveys will be conducted prior to the onset of the spring freshet (end of March).

The climate data will be compiled and used to assist with the assessment of the cover effectiveness. Results will be reported in the annual report.

9 Contingency Measures

Contingency measures have been incorporated into the heap detoxification plan in the event the heap effluent water quality does not remain stable. Complete details are presented in the heap AMP. The primary heap contingency measures requiring monitoring consist of the following:

1. Land Application;
2. Biological Treatment Cell (BTC); and
3. Solution Segregation Heap Cells.

9.1 Land Application

Monitoring of the land application area will be consistent with the requirements in the company's Water Use License QZ96-007.

9.1.1 Biological Treatment Cell

A biological treatment cell (BTC) is a passive contingency measure. In the event the BTC is constructed, the company's QML requires the submission of an operating, monitoring and maintenance plan. As such, details of monitoring of the BTC will be provided as a condition of Clause 17.12.2, within 120 days of the completion of construction of the BTC.

9.1.2 Heap Cell Solution Segregation

Segregation and collection of individual solution cells has been proposed as a contingency measure. This measure is included in the heap AMP, previously provided in the company's DRP Executive Summary, 2003 (Appendix G). With respect to this monitoring program, individual heap cells will not be monitored on a set basis for water quality unless the heap AMP is triggered and implemented. In this event, the heap cell monitoring program will be consistent with the schedule and frequency contained in the heap AMP.

10 Heap Assessment

On an annual basis as part of the annual report, an assessment will be undertaken of the monitoring program data. This assessment will review the performance and effectiveness of the heap remedial measures and need for maintenance activities or additional monitoring. The assessment will also review effects to the downstream receiving environment to ensure that performance receiving water criteria are being adhered to.

11 Reporting

Results of the heap monitoring program will be reported in the company's monthly and annual reports. Discussion of trends will be provided.

Viceroy Minerals Corporation
Brewery Creek Mine

Table 1
Heap Leach Pad Cover and Facilities Monitoring Program

Frequency	Description
Q	Quarterly
SA	Semi-annual
A	Annual
QWA	Quarterly when active
AWA	Annual when active
BA	Bi annual
NLA	No longer active

SITE	DESCRIPTION	UTM LOCATION (m) ZONE 7		TYPE/STATION ID					YEAR 1-5 FREQUENCY					
		Northing	Easting	Surface Water	Groundwater	Effluent	Sediment	Benthos	Surface Water	Groundwater	Effluent	Sediment	Benthos	Other
BC-01	Laura Ck., 50 m u/s from Ditch Road	7,099,870	634,405	BC-01			W5	B3	Q			A	BA	
BC-02	Carolyn Ck. u/s from Laura Ck.	7,102,410	632,240	BC-02			W15		Q			A		
BC-03	Laura Ck. above Carolyn Ck.	7,102,500	632,295	BC-03			W4B		Q			A		
BC-06	South Klondike d/s from confl. with Lee Ck.	7,097,200	627,345	BC-06			W9	B5	Q			A	BA	
BC-28	Effluent solution to LAA or Laura Ck.	7,103,850	632,540			BC-28					QWA			
BC-28a	Heap Effluent	7,104,180	632,410			BC-28a					Q			
BC-38	South Klondike u/s from confl. with Golden Ck.	7,102,600	642,200	BC-38			W8	B4	Q			A	BA	
BC-39	Laura Ck., u/s South Klondike River	7,098,290	631,425	BC-39			BC-39		Q			A		
BC-65	Land Application Piezometer	7,104,020	632,840								A			
BC-66	Land Application Piezometer	7,103,570	632,655								A			
	Heap Leach Pad Geotechnical Inspections													A
	Heap Leach Pad Revegetation Monitoring													A
	Heap Cover Inspection													A

Viceroy Minerals Corporation
Brewery Creek Mine

Table 1
Heap Leach Pad Cover and Facilities Monitoring Program

Frequency	Description
Q	Quarterly
SA	Semi-annual
A	Annual
QWA	Quarterly when active
AWA	Annual when active
BA	Bi annual
NLA	No longer active

SITE	DESCRIPTION	YEAR 6-10 FREQUENCY						YEAR 11-15 FREQUENCY					
		Surface Water	Groundwater	Effluent	Sediment	Benthos	Other	Surface Water	Groundwater	Effluent	Sediment	Benthos	Other
BC-01	Laura Ck., 50 m u/s from Ditch Road	SA						A					
BC-02	Carolyn Ck. u/s from Laura Ck.	SA						A					
BC-03	Laura Ck. above Carolyn Ck.	SA						A					
BC-06	South Klondike d/s from confl. with Lee Ck.	SA						A					
BC-28	Effluent solution to LAA or Laura Ck.			QWA						QWA			
BC-28a	Heap Effluent			Q						Q			
BC-38	South Klondike u/s from confl. with Golden Ck.	SA						A					
BC-39	Laura Ck., u/s South Klondike River	SA						A					
BC-65	Land Application Piezometer		A										
BC-66	Land Application Piezometer		A										
	Heap Leach Pad Geotechnical Inspections						year 10						year 15
	Heap Leach Pad Revegetation Monitoring						A						
	Heap Cover Inspection						BA						

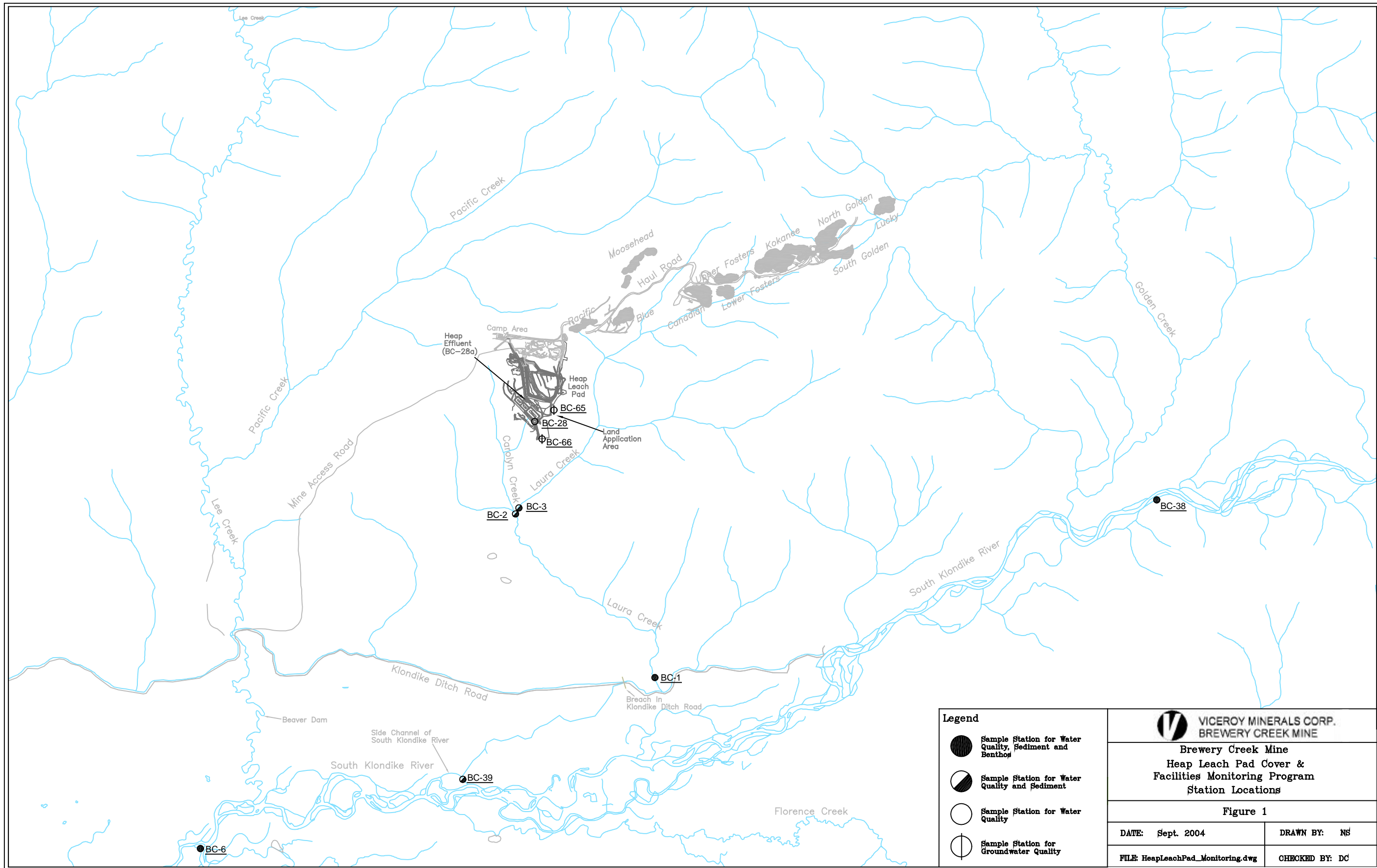
Viceroy Minerals Corporation
Brewery Creek Mine

Table 2
Water Sample Analysis Parameters

Monitoring Type	pH	Flow/Depth	TSS	SO4-	NH3	NO4	T CN	WAD CN	33-Element		LC ₅₀	TOC	LOI	Sieve Analysis
									ICP T Metals	ICP D Metals				
Heap Effluent	x	x	x	x	x	x	x	x	x		x			
Surface Water	x	x	x	x	x	x	x	x	x					
Groundwater	x	x ¹	x	x	x	x	x	x		x				
Sediments									x			x	x	x
Benthos									x					

Notes

1 - water elevation



Legend	
	Sample Station for Water Quality, Sediment and Benthos
	Sample Station for Water Quality and Sediment
	Sample Station for Water Quality
	Sample Station for Groundwater Quality

VICEROY MINERALS CORP. BREWERY CREEK MINE	
Brewery Creek Mine Heap Leach Pad Cover & Facilities Monitoring Program Station Locations	
Figure 1	
DATE: Sept. 2004	DRAWN BY: NS
FILE: HeapLeachPad_Monitoring.dwg	CHECKED BY: DC