

DEWATERING OF ACID MINE DRAINAGE SLUDGE

DEWATERING OF ACID MINE DRAINAGE SLUDGE

ERNEST MINE COMPLEX

TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE NO.</u>
I.	Conclusions	I - 1
II.	Recommendations	II - 1
III.	Introduction	
	A. General	III - 1
	B. Literature Review	III - 1
	C. Research and Pilot Plant Efforts	III - 2
IV.	Existing Plant Operations	
	A. Plant Description	IV - 1
	B. Design Operating Parameters	IV - 5
	C. Raw Water Characteristics	IV - 15
	1. Raw Water Physical Analysis	IV - 15
	2. Raw Water Biological Analysis	IV - 16
	3. Raw Water Chemical Analysis	IV - 16
	D. Sludge Characteristics	IV - 19
	1. Sludge Physical Analysis	IV - 19
	2. Sludge Chemical Analysis	IV - 24
	E. Experimental Pilot Operations	IV - 24
V.	Sludge Dewatering "Pilot Plant" Tests	
	A. General	V - 1
	B. Ancatec-Barefoot Corporation-Vacuum Leg	V - 2
	C. Liquid Removal Service, Inc.-Black Box	V - 7
	D. Euramca Ecosystems, Inc.-Filter Press	V - 9
	E. "Yellowboy" - Centrifuge	V - 14
VI.	Review of Sludge Dewatering Techniques	
	A. Rotary Vacuum Filtration	VI - 1
	1. Conventional	VI - 1
	2. Precoat	VI - 3
	3. Vacuum Filter Operation	VI - 7
	B. Continuous Belt Filter Presses (CBFP)	VI - 9

TABLE OF CONTENTS (con't)

<u>SECTION</u>		<u>PAGE NO.</u>
	1. First Generation CBFP	VI – 9
	2. Second Generation CBFP	VI – 9
	3. Third Generation CBFP	VI – 9
	C. Pressure Filtration	VI – 15
	D. Centrifugation	VI – 21
	1. Continuous Solid Bond Centrifuge	VI – 21
	2. Basket Centrifuge	VI – 24
	3. Disc Centrifuge	VI – 25
	4. Centrifuge Operation	VI – 26
VII.	Economic Evaluation of Sludge Dewatering Techniques	
	A. General	VII – 1
	B. Equipment Vendor Cost Data	VII – 2
	C. Cost Data Evaluation	VII – 18
VIII.	References	
IX.	Glossary	
X.	Economic Summary	
	A. General	X – 1
	B. Sludge Dewatering Equipment	X – 1
	C. Sludge Transportation Costs	X – 2
	D. Sludge Disposal Costs	X – 2
	E. Cost Summarization	X – 3
XI.	Appendix	
	A. Pilot Plant Photographs	
	B. Selected Vendor Data	
	C. Tabulation of Total Sludge Dewatering and Disposal Costs	
	D. Letter to Vendors	
	E. Sludge Dewatering Cost Summation Sheet	