

## **An Analysis of IMC Estimated Reclamation Costs for the Proposed Ona Mine**

This report will evaluate the costs of phosphate mine reclamation estimated by IMC for the proposed Ona Mine. Providing successful compensation of lost or impaired wetland functional values is usually an expensive proposition. Expenses related to permitting, engineering and environmental consulting fees, materials, and heavy equipment costs typically range from \$5,000 to \$35,000/acre or more depending upon the type of project (Erwin 1991). In the case of phosphate mine reclamation in Florida habitats are being constructed, both upland and wetland, as required compensation for mining impacts. Differences exist between constructed wetlands on phosphate mined lands and wetlands constructed in other landscapes and land-uses. The mining process causes complete alterations of soils, ground and surface hydrology and regional landscapes that are not typical of other wetland construction projects (Erwin, et al 1997). The complete disturbance of the land represents a significant challenge for successful reclamation of mined lands where replacing the type, nature, and function of disturbed habitats is required by law. This challenge is much greater than attaining successful restoration or enhancement of habitats on unmined lands.

In my opinion IMC has not been able to demonstrate that the mitigation provided as a result of their reclamation is adequate under Section 373.414(6)(b) to offset the adverse impacts associated with mining. Their failure relates to substantial risk that the habitats restored by IMC in the future will not succeed and complicates any attempt to reasonably estimate costs associated with successful reclamation. Many of the problems associated with IMC's failed reclamation program are directly related to the mining process itself and would require substantial modification and evaluation. Even with those modifications we could not guarantee success (Erwin, In Press). In evaluation of approximately 50 IMC reclamation projects in 2003, I have observed no improvement in conditions I observed and reported in our study for Florida Institute of Phosphate Research (FIPR) in 1997 entitled Evaluation of Constructed Wetlands on Phosphate Mined Lands in Florida. This presents a risk that I believe is now associated with the goal of successful reclamation by IMC. Success cannot be assured and substantially effects the costs of reclamation. Furthermore, the very poor conditions I observed on most of IMC's reclamation projects means that their methods and budgets for management and monitoring are suspect and require significant review and modification.

The following evaluation of IMC's reclamation costs was developed by habitat type and covers the costs of earthmoving, planting, maintenance, and monitoring. These results are summarized in Figure 1. The cost of the land is not a consideration of this evaluation since IMC is assumed to own the lands being reclaimed. However, there would appear to be a substantial economic loss

as a result of failed reclamation including agricultural lands no longer productive as a result of mining and unsuccessful reclamation (Erwin, In Press).

### **Earthmoving**

Earthmoving costs provided by IMC is \$1.20 per cubic yard (\$4235/ac) for recontouring the upper two ft. of material. Their cost estimate is the same for each category of habitat reclamation and does not consider stream reclamation, construction of features such as berms or the segregation of materials such as overburden and topsoil. IMC does not attempt to reclaim the near surface physiology of reclaimed soils nor does the company restore the natural slopes contours and micro-topography of the unmined landscape. In addition the natural relationship between the soil and water table elevations does not exist in IMC reclamation sites. Our subcontractors would typically charge between \$2.50 and \$4.00 per cubic yard depending upon site specific conditions, handling requirements and haul distances. My estimate of \$3.00 per cubic yard (\$10,588/ac) is based upon IMC's need to strip, segregate, relocate, and protect/stockpile the native soils A, Band C horizons during mining and properly relocate/contour these soils after mining during reclamation.

### **Planting – Herbaceous**

In the IMC Phosphates Company Summary of Financial Information (February 2002) a cost of \$0.18 per plant is provided. I assume this is an installed price since installation costs are not specifically identified elsewhere by IMC. IMC consultants' average costs for bare root (nursery stock) including installation average \$0.59 per plant. Species such as sawgrass and St. John's wort are considerably more expensive, \$0.85 and \$2.65, respectively. Their average cost to harvest on-site and install bare root plants except for sawgrass and St. John's wort (\$0.65 and \$1.65, respectively) ranges from \$0.15 to \$0.20 per plant. Apparently IMC chose to provide an average cost of \$0.18 per plant \$314/ac for uplands and \$871/ac for wetlands assuming all native herbaceous plants, wetland and upland would be transplanted. This assumption is invalid since in many cases logistics or species specific problems with successful transplanting exist. IMC also assumes the same cost per plant per acre with no consideration for replanting. Replanting of tree seedlings and herbaceous plants is a common and necessary practice undertaken at IMC reclamation sites.

Our recent planting costs (including installation) for similar materials have averaged \$0.35 per plant installed. This price does not include the cost of watering in which is usually necessary in upland habitats and will significantly increase costs due to the frequency and labor involved.

## **Planting – Forested**

IMC reported costs associated with planting seedling tree (canopy layer) species are \$1.78 each for uplands and wetlands. Again I assume for the same reason that this is an installed price and that the materials are containerized. This is a cost of \$2,670.00 per acre for reclaimed wetlands. Our tree planting costs for forested wetlands average approximately \$1.25 each or \$1,875.00 per acre (1500/ac). However, our average costs for upland plantings (600/ac) and hydric pine flatwoods range from \$984.00 to \$2,028.00 per acre. These plantings typically must be watered in to insure the greatest chance for survival, which will increase the cost to approximately \$2.00 to \$5.00 per tree seedling. Higher costs will typically be associated with scrub plantings which are often much more difficult to produce and maintain.

## **Direct Seeding**

Direct seeding of reclaimed upland habitats is a method of revegetation commonly used in restoration of herbaceous species in upland habitats. IMC has attempted using this methodology but did not provide any costs associated with this activity. Our experience with native upland habitat direct seeding costs has been approximately \$2500/ac, which includes some minor amount of soil preparation (disking) prior to seeding, donor site costs, machine and hand harvesting and transportation. This methodology is more risky on xeric sites where conditions are considerably more harsh.

## **Maintenance**

IMC cost estimates for maintenance of its reclamation sites vary according to habitat type. The major form of maintenance performed by IMC is the herbicide management of exotic and problematic nuisance species of vegetation with contractors using backpacks, airboats, and helicopters. IMC's reported costs for upland habitat maintenance range from \$120 per acre of improved pasture (6 treatments in two years) to \$200 per acre for forested uplands (10 treatments over three years). IMC's costs for wetland habitat maintenance are \$200/acre and \$320/acre for herbaceous and forested wetlands, respectively. Given the very poor condition of many of IMC's reclamation projects related to high coverage of exotic and nuisance species it is doubtful that the aforementioned maintenance schedules are followed. Furthermore, the amount of disturbance and prevalence of exotic and nuisance species now existing in the landscapes adjacent to most reclamation sites significantly increase the opportunities for infestations to occur.

Reclaimed and unmined landscapes adjacent to IMC reclamation projects must be managed simultaneously. Regular aggressive maintenance for the first three to five project years is necessary followed by annual maintenance for 5 to 15 years to treat hot spots before they become significant problems. Our estimated

cost of \$78.00 per treatment per acre is an average of recent upland and wetland projects that were successful and competitively bid.

### **Monitoring**

Monitoring is an important aspect of the habitat reclamation and restoration process that is often poorly understood, misused and as a result under budgeted. The reasons for instituting a comprehensive monitoring program are many but may be classified into three general categories; assessing the effectiveness of policy or legislation, regulatory performance or audit functions and detecting change (Erwin, 1991). Monitoring wetland systems should be required at four different levels; baseline monitoring, construction monitoring, time zero monitoring and post construction monitoring (Erwin, 1991). The current lack of appropriate attention given to providing adequate monitoring of IMC's reclamation projects has resulted in a very serious compliance problem. The 1997 FIPR study did not evaluate reclamation projects compliance, however, it did thoroughly discuss the shortcoming of wetland reclamation project monitoring. These findings still hold true today. Typically, reclamation project monitoring is only conducted for two of the four levels discussed above (baseline and post construction). Post construction monitoring is performed by IMC in response to specific permit conditions related to success criteria in each permit where reclamation is required. The overwhelming focus of these conditions is on vegetation. There is typically no monitoring of groundwater hydrology, surface water hydrology, water quality, soils, aquatic fauna, wildlife, and ecosystem heterogeneity. One cannot fully comprehend the full extent of the conditions and problems associated with most of IMC's reclamation projects by reviewing their monitoring reports.

IMC's reported monitoring costs are \$100 per acre per year for non-forested uplands and wetlands and \$265 per acre for forested uplands and wetlands. Our average costs for monitoring unmined, native non-forested uplands and wetlands, focusing primarily on vegetation is \$310 per acre per year and \$375 per acre per year for forested uplands and wetlands. These average costs would increase to between \$500 and \$800 per acre per year on mined lands using more appropriate monitoring methodologies, which would include in addition to vegetation, soils, hydrology, water quality, aquatic fauna, wildlife, and ecosystem heterogeneity.

### **Conclusions**

I estimated the costs of reclamation and restoration by using a process and methodology determined to provide the greatest potential for reclamation success as defined in The DEP Phosphate Mine Reclamation Rule, Chapter 62C-16. The costs were estimated based on a third party performing the work and supplying the materials at the fair market value of the services and materials. Reclamation is defined as the reshaping of lands in a manner, which meets the

reclamation standards, including revegetation. Restoration is defined in this chapter as the recontouring and revegetation of lands in a manner, consistent with the criteria and standards established pursuant to this chapter, which will return the type, nature, and function of the ecosystem to the condition in existence immediately prior to mining operations. The Department's ERP rule states that mitigation shall be deemed successful when all applicable water quality standards are met, the mitigation area has achieved viable and sustainable ecological and hydrological functions and the specific success criteria contained in the permit are met. The Department requires that any applicant, including IMC, provide proof of financial responsibility for mitigation to conduct, mitigation activities, any necessary management of the mitigation site, monitoring of the mitigation and necessary corrective action indicated by the monitoring.

It is apparent that IMC has significantly underestimated the cost of reclamation for those habitat types found on the proposed Ona Mine site. IMC's proposed reclamation plan for the Ona Mine includes the restoration of approximately 1,676.2 acres of forested uplands, 2,456.7 acres of herbaceous uplands, 1,248.6 acres of forested wetlands, 472.9 acres of shrub wetlands, 3,816.9 acres of improved pastures, and 3,765.6 acres of woodland pastures. Applying IMC's cost estimates for each habitat type the total cost of reclamation for the Ona Mine is approximately \$86,803,972.00 compared to our estimate of \$642,384,643.00 (Figure 2). The estimated cost of reclaiming 5882 acres of habitat in Phase I of the proposed Ona mine is \$33,993,528.00 (IMC) compared to \$249,235,736 (KLE). The ultimate cost of reclamation will actually be higher when the cost of reclaiming clay settling areas is added to this total. It should also be noted that IMC plans to reclaim 0.8 acres of streams. The proposed IMC Ona Mine plan will destroy thousands of feet of streams for which they have no plans to reclaim or estimated costs. When we complete the stream impact analysis for the proposed Ona Mine the estimated reclamation costs will increase.

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## LITERATURE CITED

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- Erwin, K.L. 1991. An Evaluation of Wetland Mitigation in the South Florida Water Management District, South Florida Water Management District Contract #C89-0082-AI. Volumes I, II, and III.
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**Figure 1. Comparison of IMC and KLE Estimated Habitat Reclamation Costs for the Proposed Ona Mine**

**Herbaceous Wetlands**

<b>IMC Cost/Acre</b>		<b>KLE Cost/Acre</b>	
Earthmoving (contouring)	\$4235.00	Earthmoving (contouring)	\$10,588.00
Herbaceous Plants (3' center)	\$871.00	Herbaceous Plants (3' center)	\$1,694.00
Hydration (one year)	\$360.00	Hydration (one year)	\$360.00
Maintenance (herbiciding) 1x/yr. for five years (5 events)	\$200.00	Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for one year; 1x/yr. for 12 years (22 events)	\$1,716.00
Monitoring (post construction) 1x/yr. for five years (5 events)	<u>\$500.00</u>	Monitoring (post construction and time zero) 1x/yr. for five years (5 events)	<u>\$2,500.00</u>
<b>SUBTOTAL</b>	<b><u>\$6,166.00</u></b>	<b>SUBTOTAL</b>	<b><u>\$16,858.00</u></b>
<b>Unreported Costs</b>			
Construction Design/Survey	\$0.00	Construction Design/Survey	\$391.00
Pumping Tailings into Reclamation Unit	\$0.00	Pumping Tailings into Reclamation Unit	\$2,500.00
Boundary/Elevation/Grade Surveys	\$0.00	Boundary/Elevation/Grade Surveys	\$391.00
Shaping of Reclamation Unit	\$0.00	Shaping of Reclamation Unit	\$25,000.00
As-built Survey	\$0.00	As-built Survey	\$234.00
Environmental Construction Monitoring	\$0.00	Environmental Construction Monitoring	\$703.00
Environmental Review and Specs for Habitat Management	<u>\$0.00</u>	Environmental Review and Specs for Habitat Management	\$260.00
<b>TOTAL</b>	<b><u>\$6,166.00</u></b>	<b>TOTAL</b>	<b><u>\$46,337.00</u></b>

## Shrub Wetlands

<b>IMC Cost/Acre</b>		<b>KLE Cost/Acre</b>	
Earthmoving (contouring)	\$4235.00	Earthmoving (contouring)	\$10,588.00
Herbaceous Plants (5' center)	\$314.00	Herbaceous Plants (3' center)	\$610.00
Shrubs (50/ac)	\$89.00	Shrubs (50/ac)	\$63.00
Direct Seeding of Native Groundcover	\$0.00	Direct Seeding of Native Groundcover	\$2,500.00
Hydration (one year)	\$360.00	Hydration (one year)	\$700.00
Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for 1 year (10 events)	\$200.00	Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for three years; 1x/yr. for 10 years (24 events)	\$1,872.00
Monitoring (post construction) 1x/yr. for 5 years (5 events)	<u>\$1,325.00</u>	Monitoring (post construction and time zero) 1x/yr. for 10 years (10 events)	<u>\$5,000.00</u>
<b>SUBTOTAL</b>	<b><u>\$6,523.00</u></b>	<b>SUBTOTAL</b>	<b><u>\$21,333.00</u></b>
<b>Unreported Costs</b>			
Construction design/survey	\$0.00	Construction design/survey	\$391.00
Pumping Tailings into Reclamation Unit	\$0.00	Pumping Tailings into Reclamation Unit	\$2,500.00
Boundary/Elevation/Grade Surveys	\$0.00	Boundary/Elevation/Grade Surveys	\$391.00
Shaping of Reclamation Unit	\$0.00	Shaping of Reclamation Unit	\$25,000.00
As-built Survey	\$0.00	As-built Survey	\$234.00
Environmental Construction Monitoring	\$0.00	Environmental Construction Monitoring	\$703.00
Environmental Review and Specs for Habitat Management	<u>\$0.00</u>	Environmental Review and Specs for Habitat Management	\$260.00
<b>TOTAL</b>	<b><u>\$6,523.00</u></b>	<b>TOTAL</b>	<b><u>\$50,812.00</u></b>



## Forested Wetlands

<b>IMC Cost/Acre</b>		<b>KLE Cost/Acre</b>	
Earthmoving (contouring)	\$4235.00	Earthmoving (contouring)	\$10,588.00
Herbaceous Plants (5' center)	\$314.00	Herbaceous Plants (3' center)	\$610.00
Trees Seedlings (1500/ac)	\$2,670.00	Trees Seedlings	\$1,875.00
Direct Seeding of Native Groundcover	\$0.00	Direct Seeding of Native Groundcover	\$2,500.00
Hydration (one year)	\$360.00	Hydration (one year)	\$1,200.00
Maintenance (herbiciding) 4x/yr. for three years; 2x/yr. for 2 years (16 events)	\$320.00	Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for three years; 1x/yr. for 10 years (24 events)	\$1,872.00
Monitoring (post construction) 1x/yr. for 12 years (12 events)	<u>\$3,180.00</u>	Monitoring (post construction and time zero) 1x/yr. for 15 years (15 events)	<u>\$9,000.00</u>
<b>SUBTOTAL</b>	<b><u>\$11,079.00</u></b>	<b>SUBTOTAL</b>	<b><u>\$27,645.00</u></b>
<b>Unreported Costs</b>			
Construction design/survey	\$0.00	Construction design/survey	\$391.00
Pumping Tailings into Reclamation Unit	\$0.00	Pumping Tailings into Reclamation Unit	\$2,500.00
Boundary/Elevation/Grade Surveys	\$0.00	Boundary/Elevation/Grade Surveys	\$391.00
Shaping of Reclamation Unit	\$0.00	Shaping of Reclamation Unit	\$25,000.00
As-built Survey	\$0.00	As-built Survey	\$234.00
Environmental Construction Monitoring	\$0.00	Environmental Construction Monitoring	\$703.00
Environmental Review and Specs for Habitat Management	<u>\$0.00</u>	Environmental Review and Specs for Habitat Management	\$260.00
<b>TOTAL</b>	<b><u>\$11,079.00</u></b>	<b>TOTAL</b>	<b><u>\$57,124.00</u></b>

## Herbaceous Uplands

	<b>IMC Cost/Acre</b>		<b>KLE Cost/Acre</b>
Earthmoving (contouring)	\$4235.00	Earthmoving (contouring)	\$10,588.00
Herbaceous Plants (5' center)	\$314.00	Herbaceous Plants (3' center)	\$610.00
Trees (2/ac)	\$4.00	Trees (introduced with direct seeding)	N/A
Direct Seeding of Native Groundcover	\$0.00	Direct Seeding of Native Groundcover	\$2,500.00
Hydration (one year)	\$0.00	Hydration (one year)	\$1,500.00
Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for 1 year (10 events)	\$200.00	Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for three years; 1x/yr. for 10 years (24 events)	\$1,872.00
Monitoring (post construction) 1x/yr. for five years (5 events)	<u>\$500.00</u>	Monitoring (post construction and time zero) 1x/yr. for 15 years (15 events)	<u>\$7,500.00</u>
<b>SUBTOTAL</b>	<b><u>\$5,253.00</u></b>	<b>SUBTOTAL</b>	<b><u>\$24,570.00</u></b>
<b>Unreported Costs</b>			
Construction design/survey	\$0.00	Construction design/survey	\$391.00
Pumping Tailings into Reclamation Unit	\$0.00	Pumping Tailings into Reclamation Unit	\$2,500.00
Boundary/Elevation/Grade Surveys	\$0.00	Boundary/Elevation/Grade Surveys	\$391.00
Shaping of Reclamation Unit	\$0.00	Shaping of Reclamation Unit	\$25,000.00
As-built Survey	\$0.00	As-built Survey	\$234.00
Environmental Construction Monitoring	\$0.00	Environmental Construction Monitoring	\$703.00
Environmental Review and Specs for Habitat Management	<u>\$0.00</u>	Environmental Review and Specs for Habitat Management	\$260.00
<b>TOTAL</b>	<b><u>\$5,253.00</u></b>	<b>TOTAL</b>	<b><u>\$54,049.00</u></b>

## Forested Uplands

<b>IMC Cost/Acre</b>		<b>KLE Cost/Acre</b>	
Earthmoving (contouring)	\$4235.00	Earthmoving (contouring)	\$10,588.00
Herbaceous Plants (5' center)	\$314.00	Herbaceous Plants (3' center)	\$610.00
Trees Seedlings (200/ac)	\$356.00	Trees Seedlings (600/ac)	\$750.00
Direct Seeding of Native Groundcover	\$0.00	Direct Seeding of Native Groundcover	\$2,500.00
Grassing (direct seeding)	\$160.00	Grassing (direct seeding)	\$0.00
Hydration (one year)	\$0.00	Hydration (one year)	\$1,500.00
Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for 1 year (10 events)	\$200.00	Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for three years; 1x/yr. for 10 years (24 events)	\$1,872.00
Monitoring (post construction) 1x/yr. for five years (5 events)	\$500.00	Monitoring (post construction and time zero) 1x/yr. for 15 years (15 events)	\$7,500.00
<b>SUBTOTAL</b>	<b><u>\$5,765.00</u></b>	<b>SUBTOTAL</b>	<b><u>\$25,320.00</u></b>
<b>Unreported Costs</b>			
Construction design/survey	\$0.00	Construction design/survey	\$391.00
Pumping Tailings into Reclamation Unit	\$0.00	Pumping Tailings into Reclamation Unit	\$2,500.00
Boundary/Elevation/Grade Surveys	\$0.00	Boundary/Elevation/Grade Surveys	\$391.00
Shaping of Reclamation Unit	\$0.00	Shaping of Reclamation Unit	\$25,000.00
As-built Survey	\$0.00	As-built Survey	\$234.00
Environmental Construction Monitoring	\$0.00	Environmental Construction Monitoring	\$703.00
Environmental Review and Specs for Habitat Management	\$0.00	Environmental Review and Specs for Habitat Management	\$260.00
<b>TOTAL</b>	<b><u>\$5,765.00</u></b>	<b>TOTAL</b>	<b><u>\$31,354.00</u></b>

## Improved Pasture

<b>IMC Cost/Acre</b>		<b>KLE Cost/Acre</b>	
Earthmoving (contouring)	\$4235.00	Earthmoving (contouring)	\$10,588.00
Grassing	\$160.00	Grassing	\$160.00
Maintenance (herbiciding) 4x/yr. for one year; 2x/yr. for 1 year (6 events)	\$120.00	Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for two years; 1x/yr. for three years (15 events)	\$1,170.00
Monitoring (post construction) 1x/yr. for two years (2 events)	\$200.00	Monitoring (post construction and time zero) 1x/yr. for five years (5 events)	\$1,500.00
<b>SUBTOTAL</b>	<b><u>\$4,715.00</u></b>	<b>SUBTOTAL</b>	<b><u>\$13,418.00</u></b>
<b>Unreported Costs</b>			
Construction design/survey	\$0.00	Construction design/survey	\$275.00
Pumping Tailings into Reclamation Unit	\$0.00	Pumping Tailings into Reclamation Unit	\$2,500.00
Boundary/Elevation/Grade Surveys	\$0.00	Boundary/Elevation/Grade Surveys	\$200.00
Shaping of Reclamation Unit	\$0.00	Shaping of Reclamation Unit	\$22,000.00
As-built Survey	\$0.00	As-built Survey	\$150.00
Environmental Construction Monitoring	\$0.00	Environmental Construction Monitoring	\$250.00
Environmental Review and Specs for Habitat Management	\$0.00	Environmental Review and Specs for Habitat Management	\$75.00
<b>TOTAL</b>	<b><u>\$4,715.00</u></b>	<b>TOTAL</b>	<b><u>\$38,868.00</u></b>

## Woodland Pasture

<b>IMC Cost/Acre</b>		<b>KLE Cost/Acre</b>	
Earthmoving (contouring)	\$4235.00	Earthmoving (contouring)	\$10,588.00
Grassing	\$160.00	Grassing	\$160.00
Trees (200/ac)	\$358.00	Trees (200/ac)	\$250.00
Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for 1 year (10 events)	\$200.00	Maintenance (herbiciding) 4x/yr. for two years; 2x/yr. for two years; 1x/yr. for three years (15 events)	\$1,170.00
Monitoring (post construction) 1x/yr. for five years (5 events)	\$500.00	Monitoring (post construction and time zero) 1x/yr. for five years (5 events)	\$1,500.00
<b>SUBTOTAL</b>	<b>\$5,453.00</b>	<b>SUBTOTAL</b>	<b>\$13,688.00</b>
<b>Unreported Costs</b>			
Construction design/survey	\$0.00	Construction design/survey	\$275.00
Pumping Tailings into Reclamation Unit	\$0.00	Pumping Tailings into Reclamation Unit	\$2,500.00
Boundary/Elevation/Grade Surveys	\$0.00	Boundary/Elevation/Grade Surveys	\$200.00
Shaping of Reclamation Unit	\$0.00	Shaping of Reclamation Unit	\$22,000.00
As-built Survey	\$0.00	As-built Survey	\$150.00
Environmental Construction Monitoring	\$0.00	Environmental Construction Monitoring	\$250.00
Environmental Review and Specs for Habitat Management	\$0.00	Environmental Review and Specs for Habitat Management	\$75.00
<b>TOTAL</b>	<b>\$5,453.00</b>	<b>TOTAL</b>	<b>\$39,118.00</b>

**Figure 2. A Comparison of Total Estimated Cost of the Proposed Ona Mine Reclamation.**

<b>HABITAT TOTALS</b>	<b>ACREAGE</b>	<b>IMC COST</b>	<b>KLE COST</b>
Forested Upland	1676.2	\$9,663,293	\$52,555,575
Herbaceous Upland	2456.7	\$12,905,045	\$132,782,178
Forested Wetland	1248.6	\$13,833,239	\$71,325,026
Herbaceous Wetland	1425.1	\$8,787,167	\$66,034,859
Shrub Wetland	472.9	\$3,084,727	\$24,028,995
Improved Pasture	3816.9	\$17,996,684	\$148,355,269
Woodland Pastures	3765.6	\$20,533,817	\$147,302,741
<b>RESTORATION TOTAL</b>	<b>14,862</b>	<b>\$86,803,972</b>	<b>\$642,384,643</b>