

Key Metric		Value	
Break-even Revenue		\$22.5M	
Target EBITDA Margin		40%+	
Avg Processing Margin		60%+	
IRR (5-Year)			42%
NPV (8%)		\$170M	

Component	Provider
LACE Unit	INL
Aqua Regia Reactor	Sunny Corp
Fume Hood & Scrubber System	Super Leach
Filtration/Centrifuge Unit	Super Leach
Acid Neutralization Unit	Super Leach
Holding Tank (Pre-leach)	Public
Holding Tank (Post-leach)	Public
Peristaltic Pumps (x4)	Sovanna
Water Recycling System	Sovanna
Power Supply & Backup Generator	Local Source
Control Panel & Instrumentation	Sunny/OSI
Material Feed Hopper	Local Source
Drying Oven	Sunny/SL
Safety PPE Kit (10 units)	Uline
Emergency Wash Station	Uline
Ventilation Ducting & Stack	Local HVAC Company
Structural Frame & Foundation	Local Contractor/OSI
Shipping & Installation	Vendors/OSI/SUB

Estimated Cost (USD)		Notes
\$	1,200,000.00	Electrophoretic REE separation
\$	850,000.00	Chemical leaching unit
\$	150,000.00	Handles acid vapor
\$	300,000.00	Solids/liquids separation
\$	250,000.00	Neutralizes waste acids
\$	90,000.00	Feeds LACE/Aqua process
\$	90,000.00	Receives processed solution
\$	40,000.00	Circulation and dosage control
\$	120,000.00	Water reclamation loop
\$	180,000.00	For off-grid operation
\$	95,000.00	Automated process control
\$	45,000.00	Bulk ore loading
\$	60,000.00	Post-process drying
\$	12,000.00	Respirator, suit, boots
\$	15,000.00	For acid spills
\$	70,000.00	Air safety compliance
\$	110,000.00	Structural integrity
\$	150,000.00	Transport & setup included
Total=		\$ 3,723,000

Annual O&M Cost (USD)		O&M Notes	Year 1 O&M (USD)	
\$	180,000.00	Specialized reagents, ligands	\$	180,000.00
\$	120,000.00	Acid consumption, lining replac	\$	120,000.00
\$	25,000.00	Scrubber refill, filter cleaning	\$	25,000.00
\$	50,000.00	Filter media replacement	\$	50,000.00
\$	45,000.00	Neutralizing agents, pH sensors	\$	45,000.00
\$	10,000.00	Periodic flushing	\$	10,000.00
\$	10,000.00	Residual cleaning	\$	10,000.00
\$	8,000.00	Pump servicing, tube replacem	\$	8,000.00
\$	20,000.00	Filter and pump upkeep	\$	20,000.00
\$	30,000.00	Fuel, service, battery replacem	\$	30,000.00
\$	15,000.00	Sensor recalibration	\$	15,000.00
\$	7,500.00	Feed mechanism lubrication	\$	7,500.00
\$	9,000.00	Heating element replacement	\$	9,000.00
\$	2,500.00	Gear and filter replacement	\$	2,500.00
\$	3,000.00	Inspection and refill	\$	3,000.00
\$	8,000.00	Corrosion prevention	\$	8,000.00
\$	16,000.00	Anchor integrity checks	\$	16,000.00
\$	20,000.00	Service contracts	\$	20,000.00

Year 2 O&M (USD)		Year 3 O&M (USD)		Year 4 O&M (USD)	
\$	185,400.00	\$	190,962.00	\$	196,690.86
\$	123,600.00	\$	127,308.00	\$	131,127.24
\$	25,750.00	\$	26,522.50	\$	27,318.18
\$	51,500.00	\$	53,045.00	\$	54,636.35
\$	46,350.00	\$	47,740.50	\$	49,172.72
\$	10,300.00	\$	10,609.00	\$	10,927.27
\$	10,300.00	\$	10,609.00	\$	10,927.27
\$	8,240.00	\$	8,487.20	\$	8,741.82
\$	20,600.00	\$	21,218.00	\$	21,854.54
\$	30,900.00	\$	31,827.00	\$	32,781.81
\$	15,450.00	\$	15,913.50	\$	16,390.90
\$	7,725.00	\$	7,956.75	\$	8,195.45
\$	9,270.00	\$	9,548.10	\$	9,834.54
\$	2,575.00	\$	2,652.25	\$	2,731.82
\$	3,090.00	\$	3,182.70	\$	3,278.18
\$	8,240.00	\$	8,487.20	\$	8,741.82
\$	16,480.00	\$	16,974.40	\$	17,483.63
\$	20,600.00	\$	21,218.00	\$	21,854.54

Year 5 O&M (USD)	Total Lifecycle Cost (USD)	Year 6 O&M (USD)
\$ 202,591.59	\$ 2,155,644.45	\$ 208,669.33
\$ 135,061.06	\$ 1,487,096.30	\$ 139,112.89
\$ 28,137.72	\$ 282,728.40	\$ 28,981.85
\$ 56,275.44	\$ 565,456.79	\$ 57,963.70
\$ 50,647.90	\$ 488,911.12	\$ 52,167.33
\$ 11,255.09	\$ 143,091.36	\$ 11,592.74
\$ 11,255.09	\$ 143,091.36	\$ 11,592.74
\$ 9,004.07	\$ 82,473.09	\$ 9,274.19
\$ 22,510.18	\$ 226,182.72	\$ 23,185.48
\$ 33,765.26	\$ 339,274.07	\$ 34,778.22
\$ 16,882.63	\$ 174,637.03	\$ 17,389.11
\$ 8,441.32	\$ 84,818.52	\$ 8,694.56
\$ 10,129.58	\$ 107,782.22	\$ 10,433.47
\$ 2,813.77	\$ 25,272.84	\$ 2,898.19
\$ 3,376.53	\$ 30,927.41	\$ 3,477.82
\$ 9,004.07	\$ 112,473.09	\$ 9,274.19
\$ 18,008.14	\$ 194,946.17	\$ 18,548.39
\$ 22,510.18	\$ 256,182.72	\$ 23,185.48

Year 7 O&M (USD)	Year 8 O&M (USD)	Year 9 O&M (USD)	Year 10 O&M (USD)
\$ 214,929.41	\$ 221,377.30	\$ 228,018.61	\$ 234,859.17
\$ 143,286.28	\$ 147,584.86	\$ 152,012.41	\$ 156,572.78
\$ 29,851.31	\$ 30,746.85	\$ 31,669.25	\$ 32,619.33
\$ 59,702.61	\$ 61,493.69	\$ 63,338.50	\$ 65,238.66
\$ 53,732.35	\$ 55,344.32	\$ 57,004.65	\$ 58,714.79
\$ 11,940.52	\$ 12,298.74	\$ 12,667.70	\$ 13,047.73
\$ 11,940.52	\$ 12,298.74	\$ 12,667.70	\$ 13,047.73
\$ 9,552.42	\$ 9,838.99	\$ 10,134.16	\$ 10,438.19
\$ 23,881.05	\$ 24,597.48	\$ 25,335.40	\$ 26,095.46
\$ 35,821.57	\$ 36,896.22	\$ 38,003.10	\$ 39,143.20
\$ 17,910.78	\$ 18,448.11	\$ 19,001.55	\$ 19,571.60
\$ 8,955.39	\$ 9,224.05	\$ 9,500.78	\$ 9,785.80
\$ 10,746.47	\$ 11,068.86	\$ 11,400.93	\$ 11,742.96
\$ 2,985.13	\$ 3,074.68	\$ 3,166.93	\$ 3,261.93
\$ 3,582.16	\$ 3,689.62	\$ 3,800.31	\$ 3,914.32
\$ 9,552.42	\$ 9,838.99	\$ 10,134.16	\$ 10,438.19
\$ 19,104.84	\$ 19,677.98	\$ 20,268.32	\$ 20,876.37
\$ 23,881.05	\$ 24,597.48	\$ 25,335.40	\$ 26,095.46

Total 10-Year O&M (USD)		Total 10-Year Lifecycle Cost (USD)		10-Year Cost per Ton (USD)	
\$	2,063,498.27	\$	3,263,498.27	\$	2,719.58
\$	1,375,665.52	\$	2,225,665.52	\$	1,854.72
\$	286,596.99	\$	436,596.99	\$	363.83
\$	573,193.95	\$	873,193.95	\$	727.66
\$	515,874.56	\$	765,874.56	\$	638.23
\$	114,638.79	\$	204,638.79	\$	170.53
\$	114,638.79	\$	204,638.79	\$	170.53
\$	91,711.04	\$	131,711.04	\$	109.76
\$	229,277.59	\$	349,277.59	\$	291.06
\$	343,916.38	\$	523,916.38	\$	436.60
\$	171,958.18	\$	266,958.18	\$	222.47
\$	85,979.10	\$	130,979.10	\$	109.15
\$	103,174.91	\$	163,174.91	\$	135.98
\$	28,659.70	\$	40,659.70	\$	33.88
\$	34,391.64	\$	49,391.64	\$	41.16
\$	91,711.04	\$	161,711.04	\$	134.76
\$	183,422.07	\$	293,422.07	\$	244.52
\$	229,277.59	\$	379,277.59	\$	316.06

10-Year Revenue (USD)		10-Year Net Profit (USD)	10-Year Net Profit per Ton (USD)	
\$	4,248,000.00	\$ 984,501.73	\$	820.42
\$	4,248,000.00	\$ 2,022,334.48	\$	1,685.28
\$	4,248,000.00	\$ 3,811,403.01	\$	3,176.17
\$	4,248,000.00	\$ 3,374,806.05	\$	2,812.34
\$	4,248,000.00	\$ 3,482,125.44	\$	2,901.77
\$	4,248,000.00	\$ 4,043,361.21	\$	3,369.47
\$	4,248,000.00	\$ 4,043,361.21	\$	3,369.47
\$	4,248,000.00	\$ 4,116,288.96	\$	3,430.24
\$	4,248,000.00	\$ 3,898,722.41	\$	3,248.94
\$	4,248,000.00	\$ 3,724,083.62	\$	3,103.40
\$	4,248,000.00	\$ 3,981,041.82	\$	3,317.53
\$	4,248,000.00	\$ 4,117,020.90	\$	3,430.85
\$	4,248,000.00	\$ 4,084,825.09	\$	3,404.02
\$	4,248,000.00	\$ 4,207,340.30	\$	3,506.12
\$	4,248,000.00	\$ 4,198,608.36	\$	3,498.84
\$	4,248,000.00	\$ 4,086,288.96	\$	3,405.24
\$	4,248,000.00	\$ 3,954,577.93	\$	3,295.48
\$	4,248,000.00	\$ 3,868,722.41	\$	3,223.94



Design Feature	LACE
Batch Size	25 tons
Modularity	High
Energy Efficiency	High
Automation Level	Semi-auto
Process Type	Electrophoretic

Aqua Regia

25 - 50 tons

Medium

Medium

Manual

Chemical Wet

Mine Site	Location	Resource Focus
L&L Mine	Arizona	PGMs, Gold
Coming Soon		
Big horn/Humming bird Mine		
SPBE Mine		
Idaho Mine		
Mexico Mine		
Peru Mine		
Austrila Mine		

Permit Status	Operator
Pre-Application	OSI Mining & Resources

Metal	Price/oz	Typical Yield/Batch (oz)
Gold	\$ 3,306.00	27
Platinum	\$ 1,050.00	10
Palladium	\$ 893.64	12
Rhodium	\$ 5,500.00	3
Silver	\$ 36.00	50

Value/Batch (\$)	
\$	89,262.00
\$	10,500.00
\$	10,723.68
\$	16,500.00
\$	1,800.00
Total	\$128,785.00

Feature	LACE	Aqua Regia
Reagent Usage	Ligands + Solvents	Nitric + Hydrochloric
Waste Output	Low	Moderate
Safety Controls	Automated + Manual	PPE Manual
Cycle Time	72 hours	96 hours

Year		Revenue (\$M)	
	2025	\$	42,480,000.00
	2026		50,98,000.00
	2027	\$	66,270,000.00
	2028	\$	79,580,000.00
	2029	\$	95,420,000.00

COGS (\$M)	EBITDA (\$M)	Net Income (\$M)
\$ 25,490,000.00	\$ 16,990,000.00	\$ 10,740,000.00
\$ 30,590,000.00	\$ 20,390,000.00	\$ 12,890,000.00
\$ 39,760,000.00	\$ 26,510,000.00	\$ 16,750,000.00
\$ 47,710,000.00	\$ 31,810,000.00	\$ 20,100,000.00
\$ 57,250,000.00	\$ 38,170,000.00	\$ 24,060,000.00

CapEx (\$M)	
\$	3,000,000.00
\$	1,500,000.00
\$	1,000,000.00
\$	1,000,000.00
\$	1,000,000.00

Scenario	Gold Price (\$/oz)
Base Case	\$3,306
High Metal Prices	\$3,967
Low Metal Prices	\$2,645
High Cost	\$2,300
Low Cost	\$2,300

Platinum Price (\$/oz)	Palladium (\$/oz)
\$1,050	\$893.54
\$1,150	\$1,067.54
\$950	\$719.54
\$1,050	\$893.00
\$1,050	\$893.00

Rhodium (\$/oz)	Scandium (\$/Per Oz)
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\$5,500

\$5,800

\$6,600

\$6,900.00

\$4,400.00

\$4,700

Yitrium (\$/Per Kilo)	Operating Cost Index
\$31,000	1
\$37,000	1
\$25,000	1
	1.15
	0.85

Revenue Impact (%)	EBITDA Impact (%)	
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0	0
10	12
-10	-12
0	-15
0	10

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Year		Revenue (\$M)
	2025	42.48
	2026	50.98
	2027	66.27
	2028	79.52
	2029	95.42
Total CAPEX	\$	3,827,000.00
Total 5-Year O&M	\$	3,073,989.66
Total Lifecycle Cost	\$	6,900,989.66
Total CAPEX	\$	3,827,000.00
Total 10-Year O&M	\$	6,637,586.11
Total 10-Year Lifecycle	\$	10,464,586.11

EBITDA (\$M)		Net Income (\$M)			
	16.99		10.74		
	20.39		12.89		
	26.51		16.75		
	31.81		20.1		
	38.17		24.06		

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Metric	Amount (USD)	
Total Revenue (10 Years)	\$	4,248,000.00
Total Lifecycle Cost	\$	10,464,586.11
Total Net Profit	\$	(6,216,586.11)

Year	Cash Flow (\$)
0	\$ (150,000,000.00)
1	\$ 12,500,000.00
2	\$ 15,000,000.00
3	\$ 17,500,000.00
4	\$ 20,000,000.00
5	\$ 22,500,000.00
6	\$ 25,000,000.00
7	\$ 27,500,000.00
8	\$ 30,000,000.00
9	\$ 32,500,000.00
10	\$ 35,000,000.00
11	\$ 37,500,000.00
12	\$ 40,000,000.00
13	\$ 42,500,000.00
14	\$ 45,000,000.00
15	\$ 47,500,000.00
16	\$ 50,000,000.00
17	\$ 52,500,000.00
18	\$ 55,000,000.00
19	\$ 57,500,000.00
20	\$ 60,000,000.00

||

IRR

16%

Capital Source	Amount (\$M)		Percentage
Equity	\$	75,000,000.00	50%
Debt (Senior)	\$	50,000,000.00	33.3%
Convertible Notes		15	10%
Grants/Subsidies		10	6.7%

Cost of Capital (%)							
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Target Return 25%

Interest 7%

Convertible 12%

N/A

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Years		IRR (%)				
	1	-91.67				
	2	-63.94				
	3	-41.08				
	4	-25.33				
	5	-14.53				
	6	-6.96				
	7	-1.51				
	8	2.51				
	9	5.53				
	10	7.85				
	11	9.66				
	12	11.09				
	13	12.22				
	14	13.14				
	15	13.89				
	16	14.5				
	17	15				
	18	15.42				
	19	15.77				
	20	16.06				

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Equity %	Debt %	Grants %
40.00	50.00	10.00
50.00	40.00	10.00
60.00	30.00	10.00
70.00	20.00	10.00

Blended Cost of Capital (%)					
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13.50

15.30

17.10

18.90

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Category	Low Estimate (USD)
Labor	\$150,000
Crushing & Milling	\$15,000
Chemicals	\$12,000
Filtration & Containment	\$6,000
Power & Utilities	\$5,000
Safety & Compliance	\$2,500
Melting & Assay Equipment	\$3,000
Waste Disposal / Neutralizing	\$4,000
Contingency (10–15%)	\$5,000
Total Cost	

High Estimate (USD)	Notes
\$200,000	5–7 personnel over 5–7 days
\$20,000	Includes diesel/power and wear
\$24,000	HCl, HNO ₃ , SMB, urea, etc.
\$12,000	Filter presses, acid tanks, PPE
\$10,000	Electricity and pump power
\$5,000	Environmental compliance + PPE
\$5,000	Crucibles, gas, and outsourced assay
\$8,000	Neutralization and water treatment
\$10,000	Misc. costs and repair buffer