

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 replacement	\$ 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 replacement	\$ 8,000.00
\$ 20,000.00	Filter and pump upkeep	\$ 20,000.00
\$ 30,000.00	Fuel, service, battery replacement	\$ 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		
Australia 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)
\$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 (%)	
0	0	
10	12	
-10	-12	
0	-15	
0	10	





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		





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





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				





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





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