

**Parkland County
(Range Road 11)
TRANSFER STATION UPGRADE**

OPERATION ASSESSMENT & OPTIONS ANALYSIS



Public County Park
Barnes, Vermont and Beyond
Cedar of Hope State Park

1. Open to the public	2. Open to the public	3. Open to the public	4. Open to the public	5. Open to the public	6. Open to the public	7. Open to the public	8. Open to the public	9. Open to the public	10. Open to the public
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Site Assessment

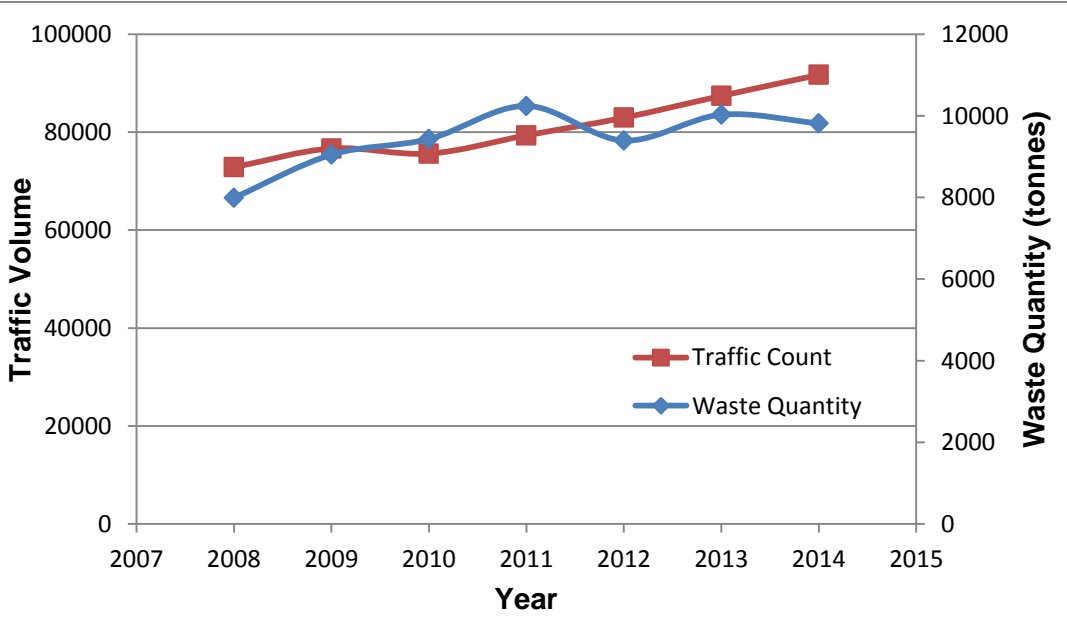
General Facility Operation and Layout

- Single lane entry and exit through a weigh scale
- A dual floor transfer station building (34 m x 26 m = 886 m²)
 - lower tipping floor with a transfer tunnel
 - upper floor - 4 parking bays for pick-up trucks and small vehicles
- Various designated areas for recyclables, 'leave it or take it' area etcetera

Vehicular Traffic Assessment

- Traffic Data collected during two peak traffic days- Saturday and Tuesday
- Major traffic backups observed - up to 30 vehicles in a row during peak times
- Vehicles line-ups at the Upper Bay 1 - limited parking bays and limited space for vehicle maneuvering inside the Bay
- Interviews with Drivers – concerns about wait times, traffic and vehicle maneuverability in the upper Bay

Waste and Traffic Volumes



Growth 2008-2014
 Waste Qty. 23%
 Traffic Volume 26%
 Average Growth rate – 5% per year

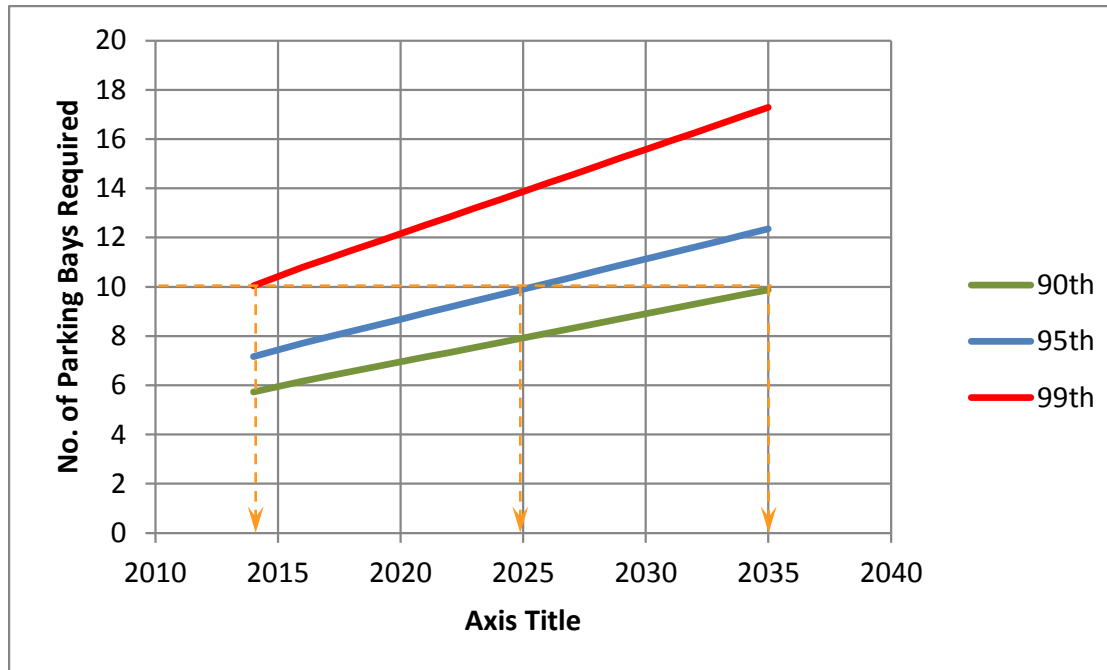
Projections	2014	2020	2025	2035
Waste Quantity	9815	11800	13121	15764
Annual Traffic Count	91701	108369	123614	154104
Peak Hourly Traffic	86	104	119	148

Traffic Data Analysis and Required Parking Bays

	Upper Floor (Bay # 1)					
	Waiting (min)		Unloading (min)		Total Time (min)	
	Tuesday 20-Oct	Saturday 24-Oct	Tuesday 20-Oct	Saturday 24-Oct	Tuesday 20-Oct	Saturday 24-Oct
Max	2	7	9	11	11	18
Min	1	1	1	1	2	2

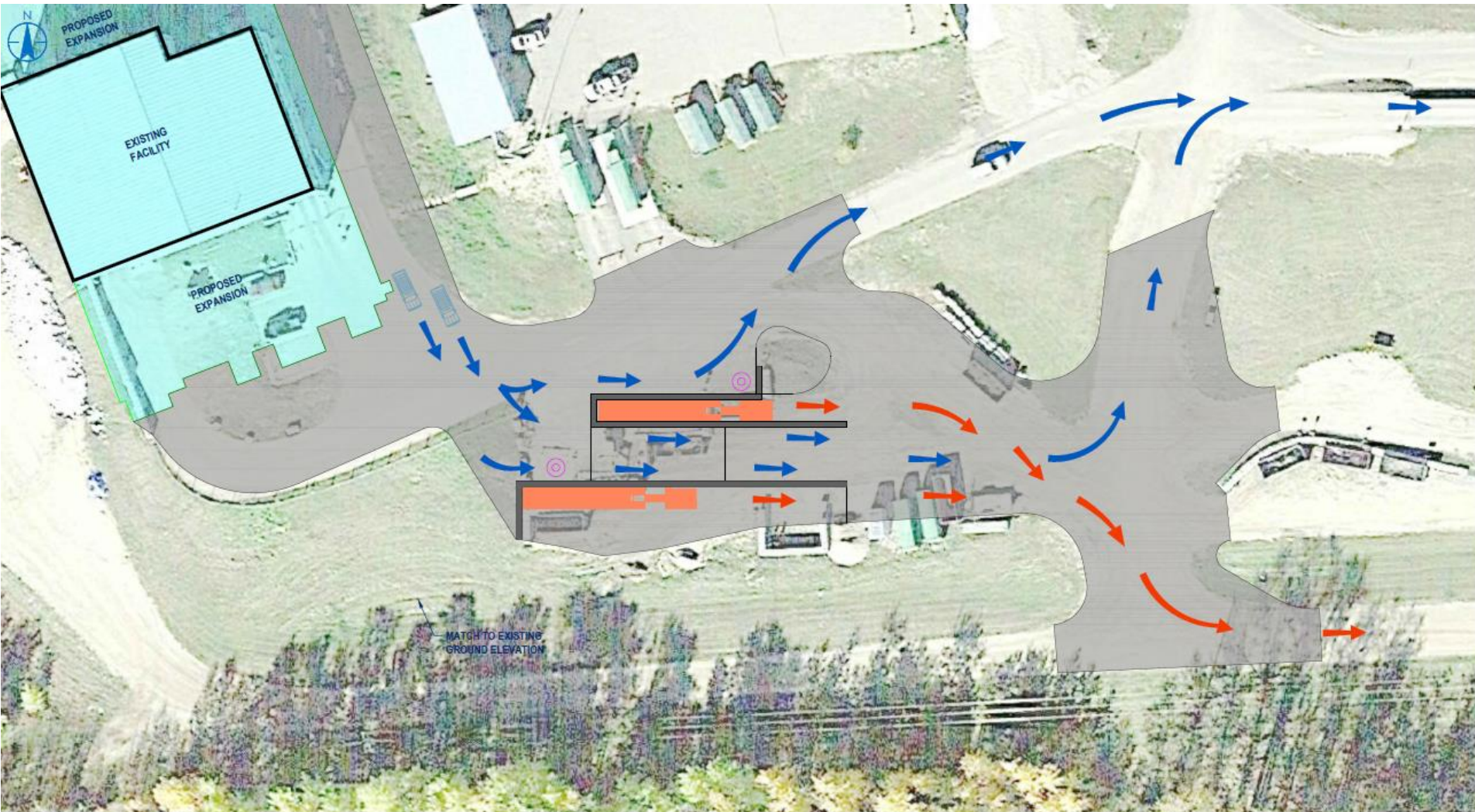
Waiting time - Time in minutes vehicles spent waiting at the entrance to the Bay

Unloading time - Time in minutes vehicles took between entry and exit from the Bay

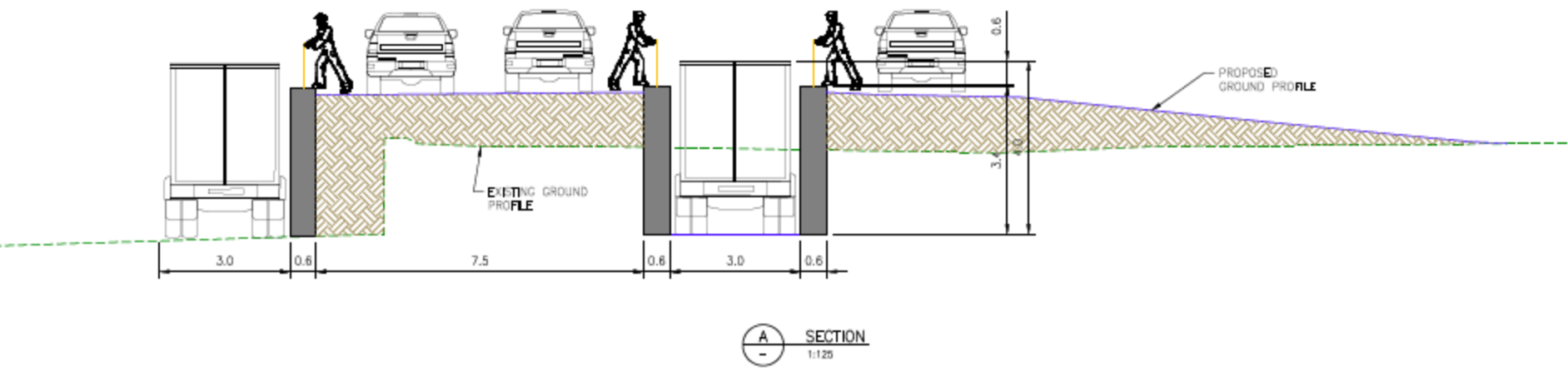


Statistical Analysis	Wait times
99 th Percentile	7 minute
95 th Percentile	5 minute
90 th Percentile	4 minute

Service Area for Residents during Construction



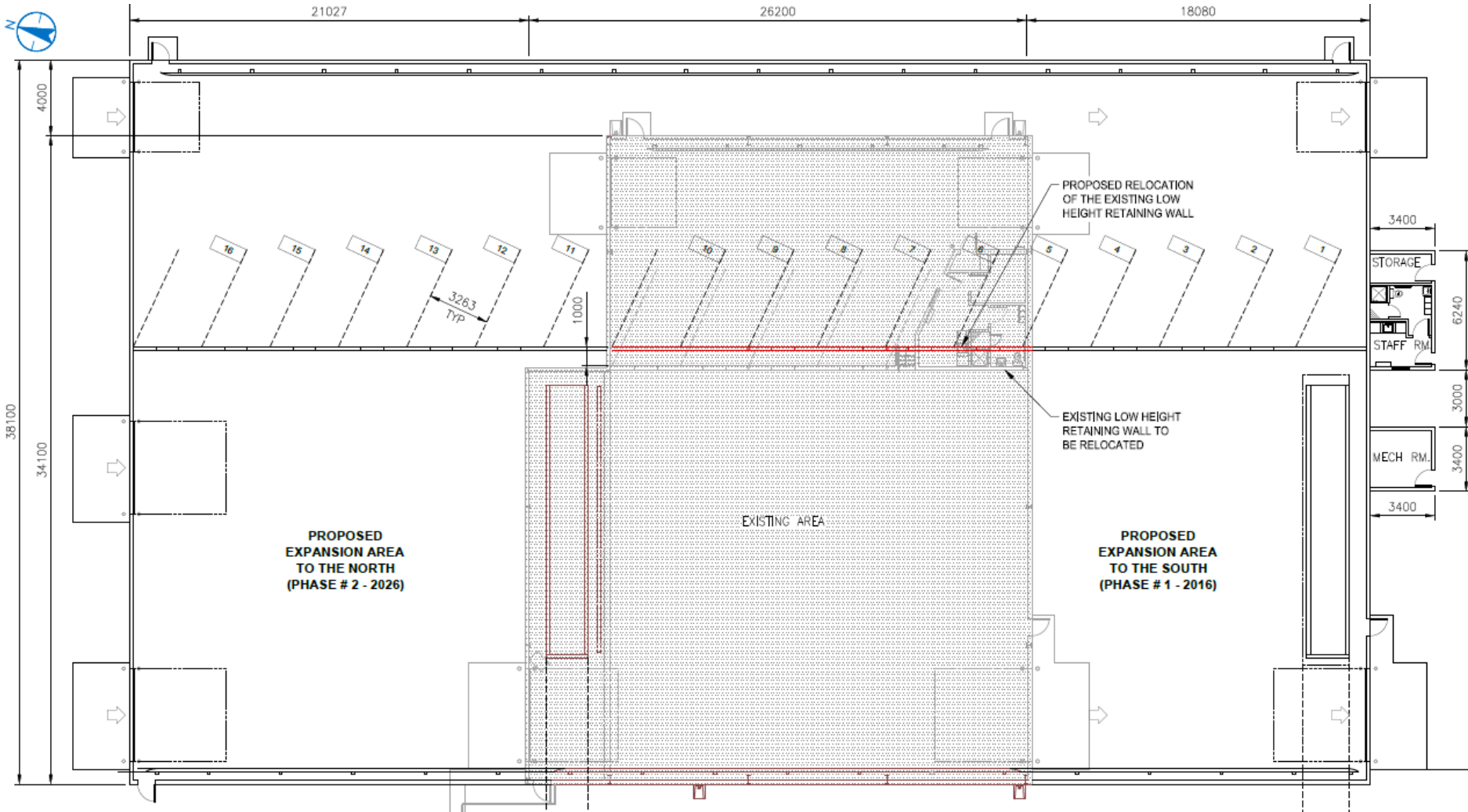
Service Area for Residents during Construction



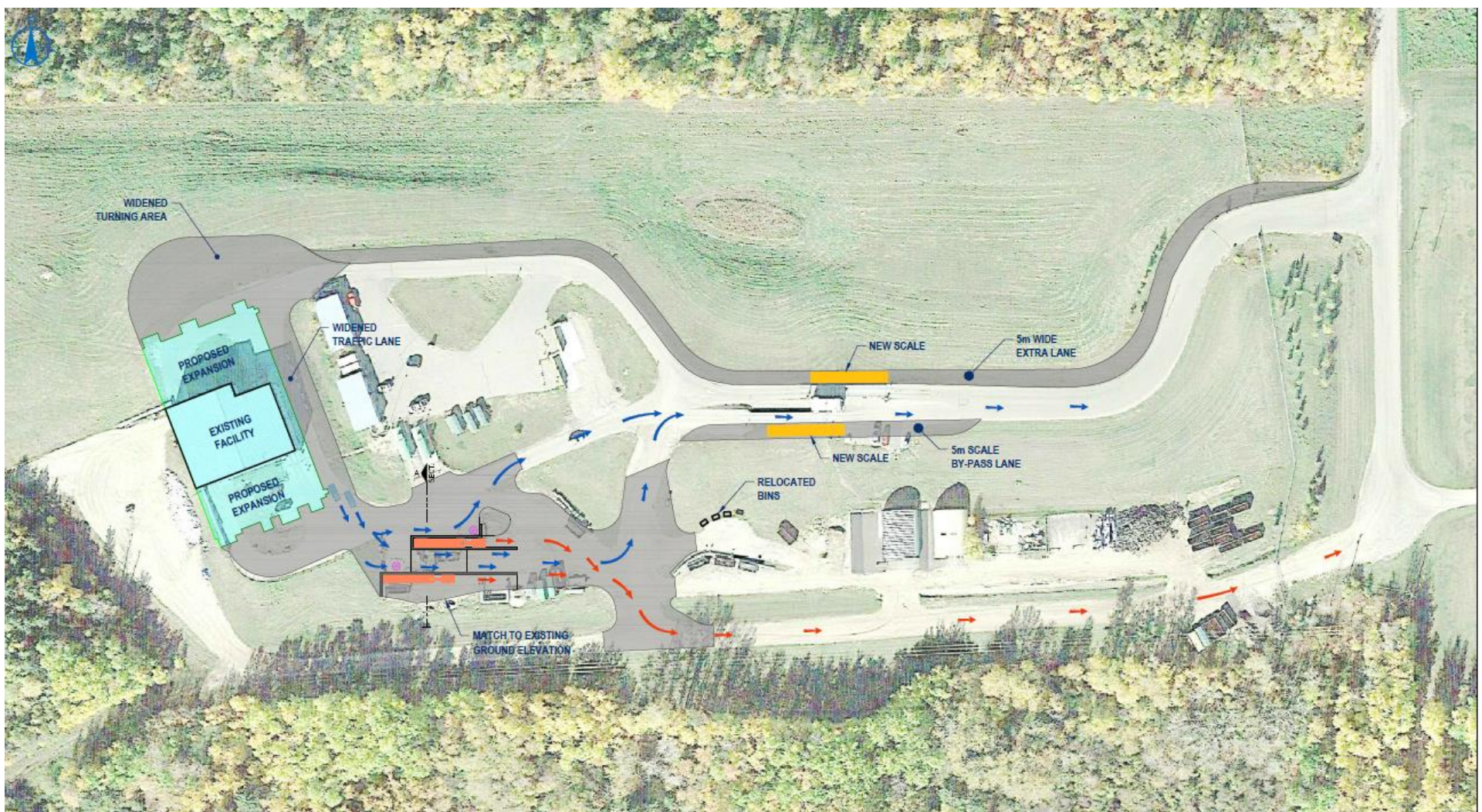
Cost Estimate for Interim arrangement during Construction

Item		Description	Quantity	Unit	Unit Cost	Total
A	A1	General Mobilization/Demobilization	1	L.S.	\$ 5,000.00	\$ 5,000
B		Civil Site Works				
	B1	Lock-Block (supply and install)	300	ea.	\$ 450.00	\$ 135,000
	B2	Imported Clay Fill (Compacted to 98% SPD)	2200	m3	\$ 36.00	\$ 79,200
		Common Excavation	1000	m3	\$ 12.75	\$ 12,750
	B3	Access Road Structure				\$ -
		B3.1 300mm Granular Sub-base	2000	m2	\$ 38.50	\$ 77,000
		B3.2 150mm Granular Base	2000	m2	\$ 19.25	\$ 38,500
C		Guard rail	100	m	\$100	\$ 10,000
D		Engineering Consulting fee (design only)	10%			\$ 35,245
Total:						\$ 392,695
E		Transfer Trailer	1	ea.	\$ 115,000	\$ 115,000
F		Lease for shunt truck	12	month	\$ 3,750	\$ 45,000
Total						\$ 160,000
G		Shunt truck operation @3 hrs/day-5days a week for 52 weeks	780	hours	\$ 3.95	\$ 3,081
Total						\$ 3,081

OPTION A: Phased Expansion South (2016) & North (2026)



OPTION A: Phased Expansion South (2016) & North (2026)



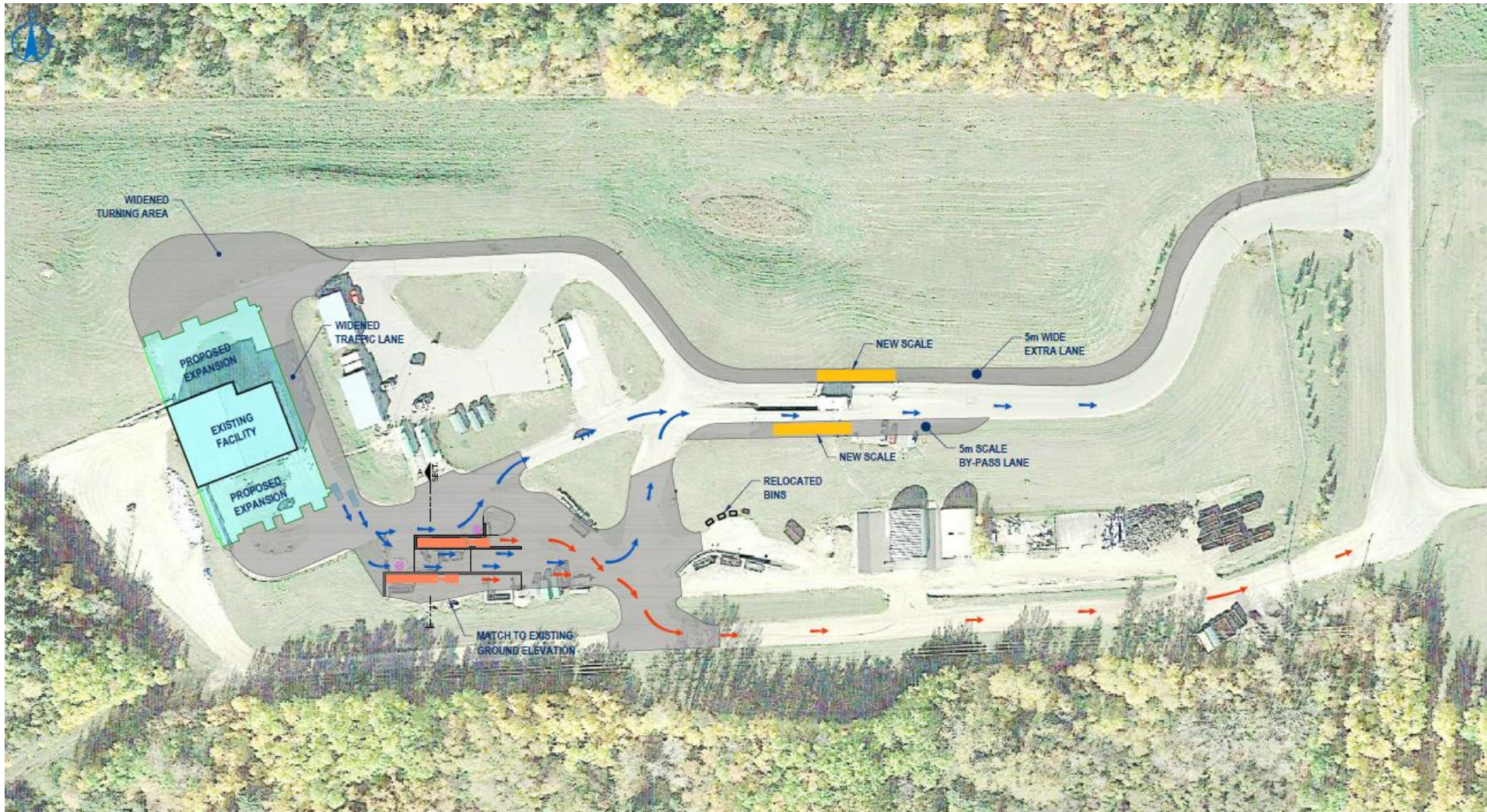
OPTION A: Phased Expansion South (2016) & North (2026)

Salient Features:

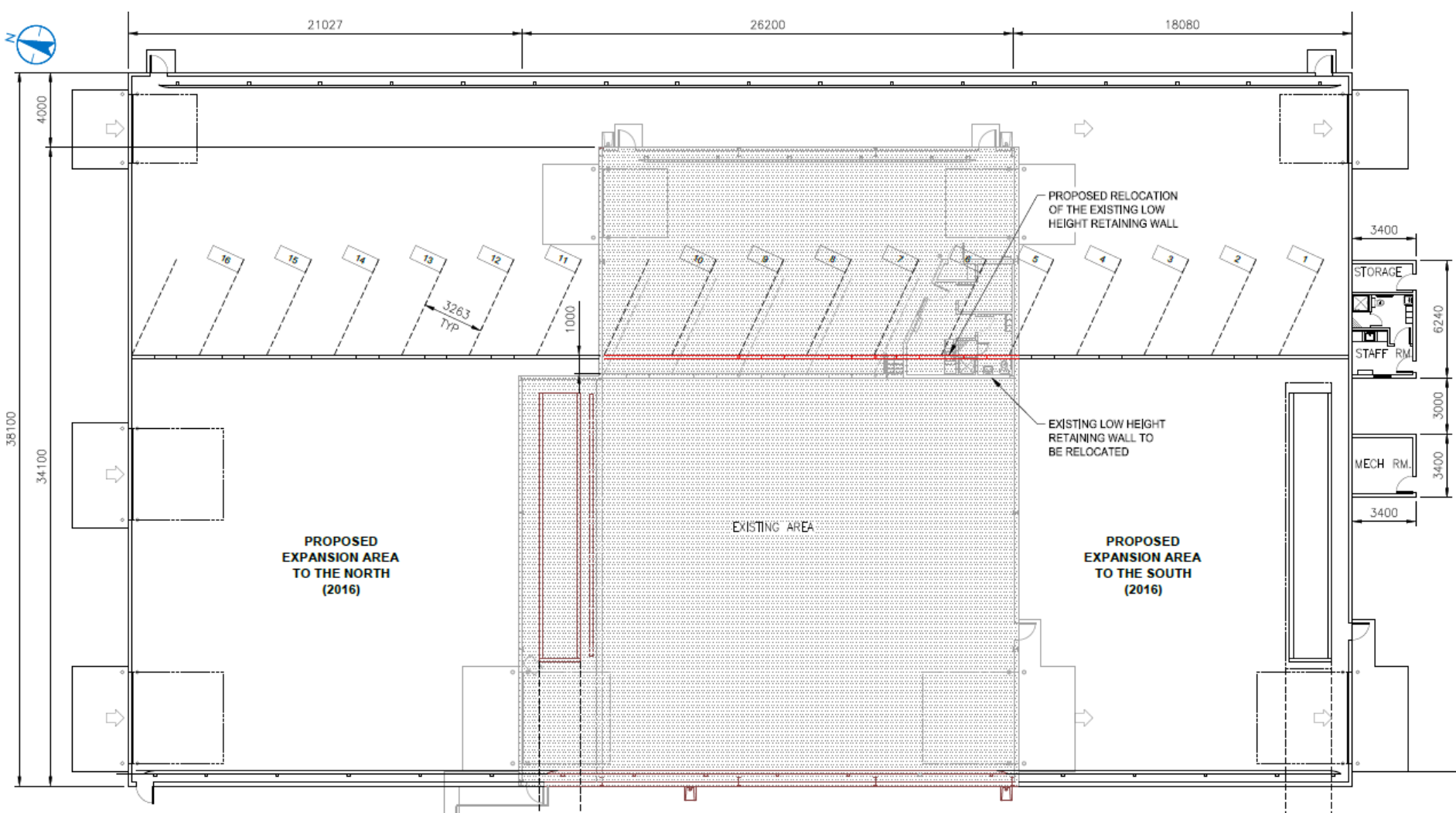
1. Addition of 1600 m2 floor area
2. Upgraded building dimensions 65 m x 38 m (previously 34 x 26 m)
3. Upper Bay widened by 3.0 m
4. Lower tipping floor widened by 1.0 m
5. 16 parking Bays
6. One additional tunnel
7. Projected to handle waste disposal needs for another 10 years when further expansion would be needed in 2025/26
8. Construction phased out
 1. South Expansion 2016
 2. North Expansion 2026
9. Estimated cost \$6.17M

OPTION A - Phased Expansion		
	Phase I	Phase II
	(South Expansion)	(North Expansion)
Proposed Year of Construction	2016	2026
Task Description	Estimated Cost	Estimated Cost
		@ 2%inflation rate
Civil Work		
A.1 Improvement to entrance/exit to/from the building	\$145,651	\$208,830
Structural Work		
B.1 Demolition/modification/Restoration	\$134,879	\$180,933
B.2 Main Building (Structural, architectural, mechanical and electrical)	\$805,871	\$977,017
B.3 Tunnel Construction	\$125,000	
Existing Building Improvement		
C.1 Shifting 4 steel columns towards east by 1.0 m for widening the tipping floor area	\$150,000	
C.2 Expanding upper floor (Bay 1) towards East by 4 m (18.5 m x 4.0 m) @\$1500/m2	\$111,000	
Interim Arrangement During Construction		
D.1 Interim arrangement during construction	\$392,695	
D.2 Transfer Trailer (1 No.)	\$115,000	
D.3 Shunt Truck Lease 12 months@\$3750/month	\$45,000	
D.4 Shunt Truck operation cost @3hrs/day-5-days a week for 52 weeks	\$3,081	
Weigh Scale Addition and Road Widening		
E.1 Widening of inbound and outbound road for weigh scale addition		\$392,864
E.2 2 Additional weigh scales for inbound and outbound traffic		\$175,000
E.3 Additional annual operation cost on account of scale addition: Equivalent Annual Annuity		\$16,836
Sub-Total	\$2,028,177	\$1,951,480
Add 30% Contingencies	\$608,453	\$585,444
Sub-Total	\$2,636,630	\$2,536,924
Add 10% for Construction Supervision	\$263,663	\$253,692
Total (based on 2015 rates)	\$2,900,293	\$2,790,616
Phase II Cost considering an average inflation rate of 2%		\$3,266,291
Estimate of Total Cost of Phase I and Phase II Construction		\$6,166,584

OPTION B: Expansion to South & North as one single Project



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OPTION B: Expansion to South & North as one single Project

Salient Features:

1. Addition of 1600 m2 floor area
2. Upgraded building dimensions 65 m x 38 m (previously 34 x 26 m)
3. Upper Bay widened by 3.0 m
4. Lower tipping floor widened by 1.0 m
5. 16 parking Bays
6. One additional tunnel
7. Projected to handle waste disposal needs for 2035
8. Construction 2016
9. Estimated cost \$5.69M

OPTION B - Expansion towards both North and South side		
Proposed Year of Construction		2016
Task Description		Estimated Cost
Civil Work		
A.1	Improvement to entrance/exit to/from the building	\$ 354,480
Structural Work		
B.1	Demolition/ modification/ Restoration	\$ 315,812
B.2	Main Building (Structural, architectural, mechanical and electrical)	\$ 1,782,888
B.3	Tunnel Construction	\$ 125,000
Existing Building Improvement		
C.1	Shifting 4 steel columns towards east by 1.0m for widening the tipping floor area	\$ 150,000
C.2	Expanding upper floor (Bay 1) towards East by 4 m (18.5 m x 4.0 m) @\$1500/m2	\$ 111,000
Interim Arrangement During Construction		
D.1	Interim arrangement during construction	\$ 392,695
D.2	Transfer Trailer (1 No.)	\$ 115,000
D.3	Shunt Truck Lease 12 months @\$3750/month	\$ 45,000
D.4	Shunt truck operation cost @3hrs/day-5-days a week for 52 weeks	\$ 3,081
Weigh Scale Addition and Road Widening		
E.1	Widening of inbound and outbound road for weigh scale addition	\$ 392,864
E.2	2 Additional weigh scales for inbound and outbound traffic	\$ 175,000
E.3	Additional annual operation cost on account of scale addition: Equivalent Annual Annuity	\$ 16,836
	Sub-Total	\$ 3,979,656
	Add 30% Contingencies	\$ 1,193,897
	Sub-Total	\$ 5,173,553
	Add 10% for Construction Supervision	\$ 517,355
	Total Estimated (based on 2015 rates)	\$ 5,690,909

Summary of Costs

Option	Description	Transfer station building (I)	Interim Arrangement cost (II)	Additional cost for inbound & outbound traffic lanes with weigh scales (III)	Total Estimate of cost (I) + (II) + (III)
Option A	Phased Expansion South Expansion in 2016	\$2.10 M	\$0.79 M	-	\$6.17M
	North Expansion in 2026 (assuming average 2% inflation rate)	\$2.44 M	-	\$0.84 M	
Option B	South and North Expansion as ONE single Project	\$4.06M	\$0.79 M	\$0.84 M	\$5.69 M

Thank You

Questions?