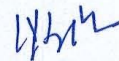


RHO HYDRO ELECTRIC PROJECT (93MW)

VOL II: FINAL EMP REPORT

MUCK DISPOSAL PLAN

SEW Rho Power Corporation Ltd.



Jayaprakash N.,
Business Associate



16.10 Muck Disposal Areas

The spoil from various construction sites would be disposed off at designated areas in a controlled manner to protect the environment. About 40% of the muck generated is proposed to be carried to the aggregate processing plants for production of coarse and fine aggregates. The balance quantity and material found unsuitable for processing would be directed to the designated disposal sites.

No disposal would be made in rivers or Nallas or upstream of Barrage below FRL. The toes of the disposal piles would be retained and protected by providing suitably designed gabion walls erected over concrete bases or by conventional masonry or concrete toe walls. Gabion walls are easy to build with locally available stones/boulders from the muck itself. They do not require any setting/strengthening time as in the case of concrete/masonry walls. Not much technical skill is required for making gabion walls. Prefabricated gabion boxes of different dimensions can be used for obtaining better quality and durability.

The component wise muck quantity has been calculated and tabulated below as **Table 16-6**.

Table 16-6: Component wise Muck Generation

S. No.	Location of Muck Generation	Open Excavation		Rock Excavation		Total Excavated Qty.	Qty. used for Aggregate	Balance Excavated Qty.	Compacted Disposal Qty.
		Bank Qty.	Loose Qty.	Bank Qty.	Loose Qty.				
		cum	cum	cum	cum				
	Swell Factor		0.83		0.63				(Assuming 80% compaction)
	% Utilisation of Muck as Construction Material						40.00%		
	Compaction Factor								
									0.80
1	River Diversion	960	1157	110	175	1332		1332	1066
2	Barrage and Intake	167600	201928	8850	14048	215976		215976	172781
3	Feeder and Link Tunnels			19340	30698	30698	12279.2	18418.8	14735
4	Desanding Chambers		0	99400	157778	157778	63111.2	94666.8	75733
5	Flushing Tunnel, Operation chamber and Outfall	900	1084	12050	19127	20211	8084.4	12126.6	9701
6	Adits of size 5m x 6m	8200	9880	55540	88159	98039	39215.6	58823.4	47059
7	Headrace Tunnel			67200	106667	106667	42666.8	64000.2	51200
8	Surge Shaft			13050	20714	20714	8285.6	12428.4	9943
9	Pressure shaft			15100	23968	23968	9587.2	14380.8	11505

S. No.	Location of Muck Generation	Open Excavation		Rock Excavation		Total Excavated Qty.	Qty. used for Aggregate	Balance Excavated Qty.	Compacted Disposal Qty.
		Bank Qty.	Loose Qty.	Bank Qty.	Loose Qty.				
		cum	cum	cum	cum				
10	Adits of size 7m x 8m	3800	4578	59320	94159	98737	39494.8	59242.2	47394
11	Powerhouse Cavern			74260	117874	117874	47149.6	70724.4	56580
12	Transformer Hall Cavern			19700	31270	31270	12508	18762	15010
13	Collection Gallery			25305	40167	40167	16066.8	24100.2	19280
14	Tailrace Tunnel and Unit TRTs	5028	6058	18295	29040	35098	14039.2	21058.8	16847
15	Switch yard	3503.5	4221	1501.5	2383	6604		6604	5283
	Total					1005133	312488	692645	554116

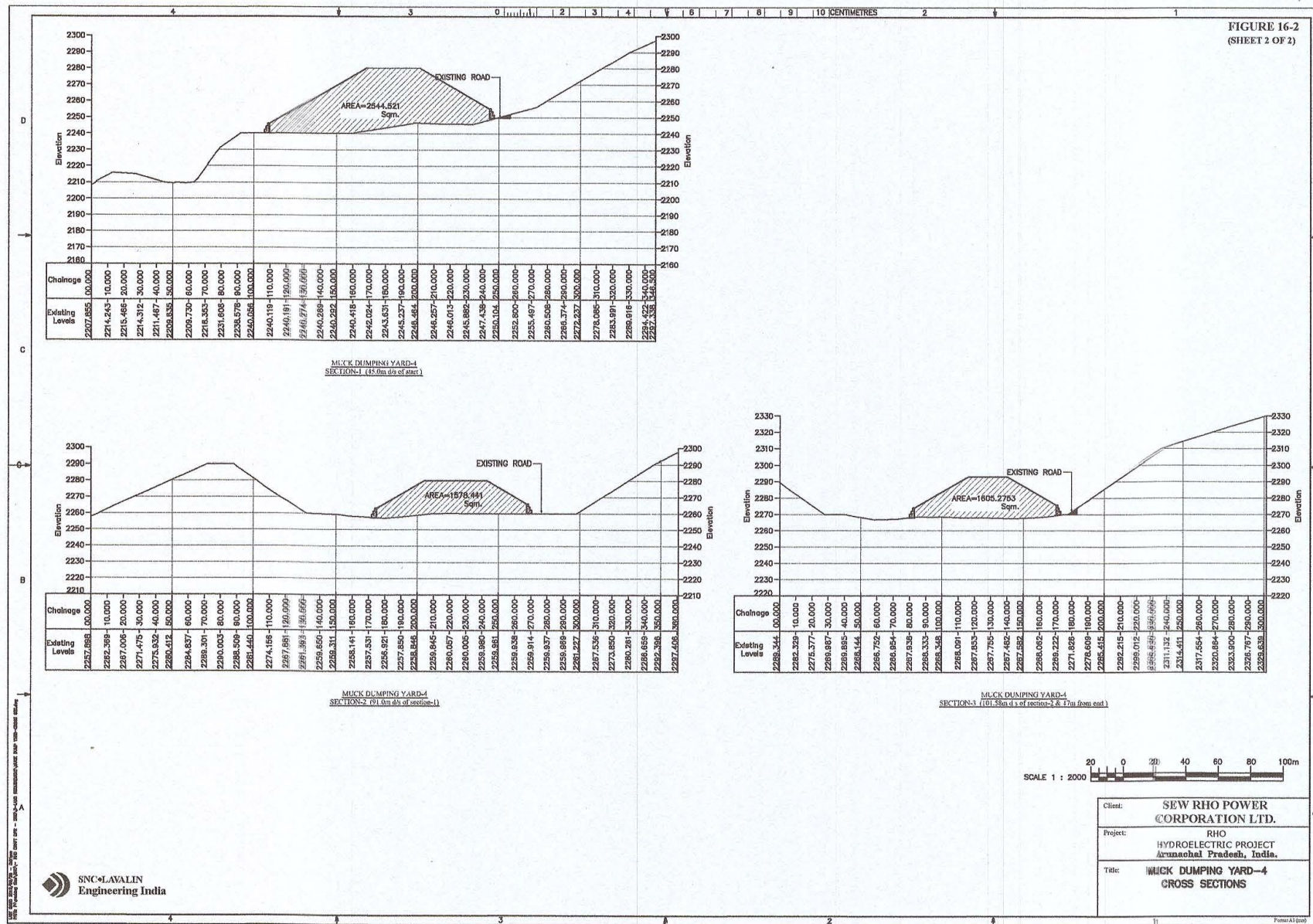
The different disposal areas are depicted in **Figure 16.1**. Cross sectional areas of different Dumping areas is shown in **Figure 16.2**. The plan area and capacities of the disposal sites have been worked out and are enumerated in table below.

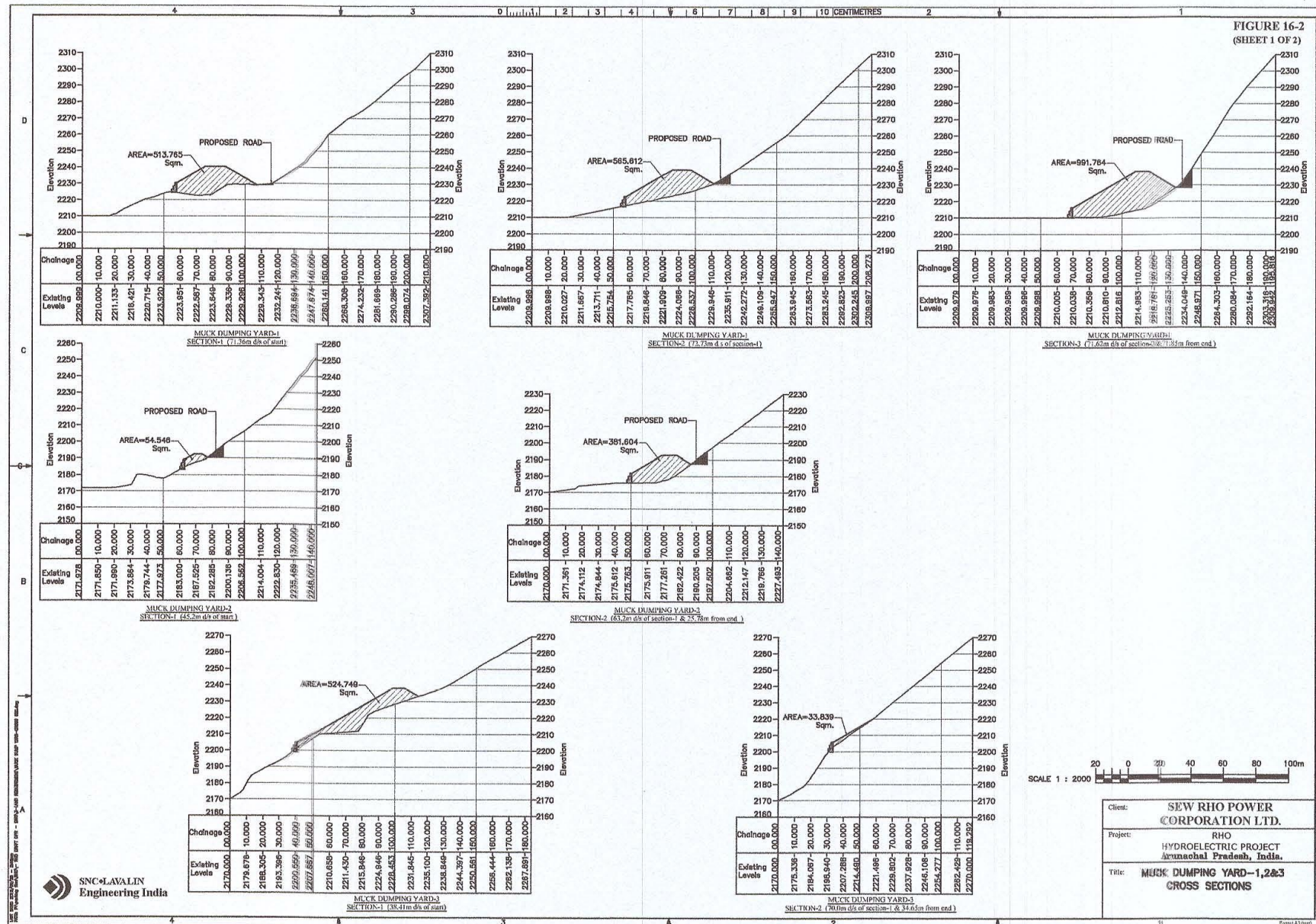
Table 16-7: Details of Disposal Areas

S. No.	Dumping Yard	Plan Area	Capacity	Structure	Excavation quantity with swell
		Ha	cum		cum
1	MDY-1	1.35	170,663	Barrage and Intake (Part)	170,663
2	MDY-2	0.31	22,395	Barrage and Intake (Part)	22,395
3	MDY-3	0.94	34,480	Barrage and Intake (Part)	34,480
4	MDY-4	3.00	555,819	FT, LT, DSB, HRT, SS, PH Complex	316,635
	Total	5.60	783,357		544,173

16.10.1 Development of Disposal Areas

The general topography of the area is steep due to which flat or gently sloping areas are generally not available for muck disposal. The muck disposal sites would be developed by constructing boulder filled gabion walls or stone masonry wall over concrete bases, as toe support to the muck. As the muck for disposal would be progressively received at the disposal sites, it would be dozed and leveled in a manner as to gradually cover the designated area. Measures to protect/retain the toe of the muck fill would be adopted before hand so that no loss or injury is caused to the public/ property and no muck rolls into the river or other water bodies. When the capacity of any disposed site is exhausted; the top surface would be leveled and graded to make the surface area fit for some alternative use.





7.3.3 Disposal of Muck

The major impact on the water quality arises when the muck is disposed along the river bank. The unsorted waste going into the river channel will greatly contribute to the turbidity of water continuously for long time periods. The high turbidity is known to reduce the photosynthetic efficiency of primary producers in the river and as a result, the biological productivity will be greatly reduced. Therefore, the prolonged turbid conditions would have negative impact on the aquatic life. The muck generated from the project activities would be dumped in an ecologically sound manner at pre-identified muck disposal sites.

2	MUCK DISPOSAL AND MANAGEMENT PLAN				
Engineering Measures					
S. No.	Name of the work	Quantity	Unit	Rate	Amount (Rs.Lakhs)
A. Muck Disposal Site – 1					
1	Gabion Wall construction	650	m	5000	32.5
2	Filling of earth /Top Soil	1200	cum	20	0.24
3	Leveling	1.5	ha	2000	0.03
4	Fencing for protection of domestic animals	650	m	80	0.52
				Sub-Total	33.29
				Contingencies @ 10%	3.33
				Total (A)	36.62
B. Muck Disposal Site – 2					
Sr No.	Name of the work	Quantity	Unit	Rate	Amount (Rs.Lakhs)
1	Gabion Wall construction	330	m	5000	16.5
2	Filling of earth /Top Soil	6000	cum	20	1.20
3	Leveling	0.5	ha	2000	0.01
4	Fencing for protection of domestic animals	350	m	80	0.28
				Sub-Total	17.99
				Maintenance Cost @10%	1.799
				Total (B)	19.79

C. Muck Disposal Site – 3 (Near Road to Rho)					
Sr No.	Name of the work	Quantity	Unit	Rate	Amount (Rs.Lakhs)
1	Gabion Wall constructuotion	1300	m	5000	65
2	Filling of earth /Top Soil	25000	cum	20	5.00
3	Leveling	3.5	ha	2000	0.07
4	Fencing for protection of domestic animals	1300	m	80	1.04
Sub-Total					71.11
Maintenance Cost @10%					7.11
Total (C)					78.22
Grand Total T1 = (A + B+C)					134.63
Biological Measures					
Sr No.	Name of the work	Quantity	Unit	Rate	Amount (Rs)
Sr No.	Name of the work	Quantity	Unit	Rate	Amount (Rs)
D. Muck Disposal Site – 1					
1	Pitting (0.45x0.45x0.45 m)	7500	no.s	40	3.00
2	Manure and importing Soil in pits	7500	no.s	5	0.38
3	Raising Plants	9000	no.s	25	2.25
4	Grass Seeding	1.5	ha	2000	0.03
5	Watering and Maintenance for one year			lump sum	0.50
6	Watchman			lump sum	0.80
7	Miscellaneous			lump sum	1.50
Provision for maintenance for 3 years					3.54
Total (D)					12.00

E. Muck Disposal Site – 2					
Sr No.	Name of the work	Quantity	Unit	Rate	Amount (Rs)
1	Pitting (0.45x0.45x0.45 m)	3000	no.s	40	1.20
2	Manure and importing Soil in pits	3000	no.s	5	0.15
3	Raising Plants	5000	no.s	25	1.25
4	Grass Seeding	0.4	ha	2000	0.01
5	Watering and Maintenance for one year			lump sum	0.50
6	Watchman			lump sum	0.80
7	Miscellaneous			lump sum	1.50
	Provision for maintenance for 3 years				2.49
				Total (E)	7.90
F. Muck Disposal Site – 3 (Near Road to Rho)					
1	Pitting (0.45x0.45x0.45 m)	16000	no.s	40	6.40
2	Manure and importing Soil in pits	16000	no.s	5	0.80
3	Raising Plants	17500	no.s	25	4.38
4	Grass Seeding	3.5	ha	2000	0.07
5	Watering and Maintenance for a year			lump sum	0.50
6	Watchman			lump sum	0.80
7	Miscellaneous			lump sum	1.50
	Provision for maintenance for 3 years				8.55
				Total (F)	23.00
				Grand Total T2 = (D+E+F)	42.89
				Grand Total (T1+T2)	177.52



11/2/17

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