Table S2

Explained information of costs and benefit values (1 USD - 6.72 RMB)

|  |  |
| --- | --- |
| **Content of cost** | **Explanatory information** |
| Survey and design consulting fees | Cost of exploration, investigation, and design of the landfill rehabilitation project, cost of engineering computation |
| Daily operation and maintenance | Daily maintenance of greening turf, technical equipment (tractors, excavators) and diesel costs, fresh water, electricity, staff costs, etc.  |
| Rental or purchase of equipment  | Purchase of 1diesel tank, 10 excavator, 33 garbage transfer truck, 3 set of dust removing and deodorizing system, autoloader, 2 sprinkler, 2 sweeper, 1 set of laboratory equipment |
| Final waste disposal cost | According to the landfill 75,000 t were re-landfilled |
| Rainwater and sewage diversion system | Cost of the design systems: the plastic body repairing slope, the sealing field cover and the rainwater drainage, mobile sewage treatment system |
| Collection and treatment of landfill gas | Design of vertical gas collection, pipes, filter material, gas analyzer including daily maintenance, temperature and humidity sensor |
| Leachate collection and treatment | Purchase of two-stage disc tube reverse osmosis (DTRO) for leachate treatment vehicle, 1 set, mechanical vapor recompression (MVR) evaporation technology, 1 set, including daily maintenance |
| Closure repair engineering costs | Construction of protective netting and fencing, flood-cutting ditch, stack shaping (landfill area), closing cover (nutrient soil, closing gravel, composite geotechnical network, high density polyethylene (HDPE) geo-membrane, filament geotextile) |
| Landscape renovation costs | The annual engineering maintenance and monitoring costs, design |
| In situ screening costs | Purchase of a comprehensive facility for the drum sifter, air classifier, magnetic separator. The cost of leasing or purchasing screening sorting equipment is 0.2 USD/t |
| Excavation cost | Total landfill volume is: 4 016 800 m3, total waste is 4 830 500 tons. The unit cost of leasing or purchasing excavation and hauling equipment is 1.6 USD/t |
| Material transportation cost  | The average transportation cost is 0.5 USD/t/km, and the average transportation distance is 5 km  |
| Material processing cost  | According to the landfill the unit cost of processing is 1.4 USD/t |
| Recycling materials and incineration | The recycling of soil-types, 1.5 USD/t; the metal, 45 USD/t; aggregate and construction waste provides 1.2 USD/t. The amount of on-grid electricity per ton is 280 kWh, and the electricity price is 0.097 USD/kWh |
| **Content of benefit** | **Explanatory information** |
| Land value of reclamation  | Land price in the landfill was 122.2 USD/m2 and 331,350 m2 (497mu) of land was reclaimed |
| Regaining revenue from landfill space  | In total, 4 016 800 m3 of landfill space was recovered, which can be reused as a new landfill to avoid the cost of building ancillary facilities. According to national standards the space area was calculated as 1.6 USD/m3. |
| Recycling soil-type materials  | The humus soil has been tested to meet the standards of “Urban Waste Agricultural Control Standard” (GB8172-1987) and “Green Planting Soil” (CJ/T340-2011) as landscaping construction and damaged mountain restoration soil. The amount of soil-type materials recovered is 2 651 000 t covering the soil, and the benefit of nutrient soil or organic fertilizer is 1.5 USD/t |
| Recycling metals  | Recycling 5,000 t of metal provided raw material benefit of 225000 USD/t |
| Recycling inorganic waste aggregate  | Recycling 966,100 t of aggregate and construction waste provided raw material benefit of 7,728,800 USD/t  |
| Generating heat or electricity by incinerating waste plastics or other combustibles  | Plastics and other combustible material from 1,284,913 t of waste was used for produce as fuel-derived fuels and for heat generation and electricity |
| Avoidance of leachate collection and treatment  | The daily leachate output is 1500 m3, the average treatment cost is 0.6 USD/m3. The time required for construction is 25 months. The official closure was 2013 (the partial closure of the landfill began in 1998 and 2004) |