The World Bank Financed

Shangli Water Environment Management Project

Environmental Assessment Report

CERI eco Technology Co., Ltd.

August, 2016 Nanchang

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1. Overview

1.1 Brief Introduction to the Project

Name	The World Bank-financed Shangli Water Environment Management Project				
Construction Unit	Leading Group Office of the World Bank-financed Shangli Water Environment Management Project				
Legal Representative	/		Contact	Huang Xianhai	
Telephone	13607991389	Fax Number:	/	Postcode	332600
Construction Site	Yangqi Township, Changping Township, Futian Town, Penggao Town, Dongyuan Township and Chishan Town of Shangli County				
Approval Departments	/		Approval Document Number	/	
Construction Type	New Construction■ Reconstruction and Expansion□ Technical Reconstruction□		Industry Type and Code	N7820 Environmental Hygienic Management	
Floor Space (m^2)	/		Green Area (m^2)	/	
Total Investment (RMB)	191,474,500	environmental investment (RMB)	2,198,000	Proportion of Environmental Investment in total investment	1.1%
EIA Cost	/	Expected Commissioning Date	December, 2022		

1.2 Project Background

The southern towns and townships of Shangli County near the tributaries of Ganjiang River belong to Poyang Lake Basin. To decrease pollutants of key waters flowing into Poyang Lake and improve water quality management, Shangli County intends to carry out World Bank-financed Shangli water environment management project. According to survey, there is a sewage treatment plants with a designed scale of 15,000 tons and the supporting sewage pipe network which operate well in the County. The environmental sanitation is supervised by Municipal Administrative Bureau of Shangli County and run by Dongguan Jiabao City Landscaping Co.,Ltd.

Garbage is transported to the Pingxiang City Mashan Landfill. Due to the complete garbage collection and transfer system, and high innocuous treatment rate, the project will not involve sewage and garbage collection and transfer project of the urban area.

Shangli County has jurisdictions over ten townships and towns, namely Changping Township, Futian Town, Penggao Town, Dongyuan Township, Chishan Town, Shangli Town, Yangqi Township, Jiguanshan Township, Jinshan Town and Tongmu Town among which sewage treatment plants have been constructed in Chishan Town, Penggao Town, Shangli Town, Jinshan Town and Futian Town and a sewage treatment plant is under construction in Changping Township and Tongmu Town. Besides, by the end of 2018, there will be sewage treatment plants and supporting sewage pipe network in each township and town. And Shangli County has applied special funds for rural sewage treatment. However, due to the incomplete rural garbage collection and transfer system, low innocuous treatment rate and serious environmental pollution in Shangli County, the project plans to carry out the rural garbage collection and transfer project.

The domestic garbage in each township of Shangli County is directly stacked without undergoing recycling, reduction and pollution-free treatment, causing serious pollution on urban air, surface water and groundwater, and the propagation of mice, flies and mosquitoes. These threaten local residents' health, leading to increasing social conflicts and serious restrictions on the sustainable development of social economy.

In order to resolve the above problems of garbage treatment, Shangli Town, Jinshan Town, Jiguanshan Township and Tongmu Town in the northern Shangli County have applied for domestic special funds for the development of garbage collection and transfer system. The World Bank-financed Shangli garbage collection and transportation system covers six towns and townships of southern Shangli County near the tributaries of Ganjiang River namely Changping Township, Futian Town, Penggao Town, Dongyuan Township, Chishan Town and Yangqi Township. To maintain the wholeness of Shangli County domestic garbage collection and transfer system, Shangli County needs adopt a unified platform for environmental sanitation. Thus, the project plans to build a unified smart cloud-based platform of environmental

sanitation for ten townships and towns.

The implementation of the project will establish a relatively complete garbage collection and transfer system which will realize sustainable urbanization by solving problems of daily domestic garbage treatment in an effective and stable way, reducing pollution to water body of Poyang Lake Basin at the source and improving water environment and solid waste management.

In accordance with the regulations in *Environmental Impact Assessment Law of the People's Republic of China*, *Regulations for Management of Environmental Protection under Development Projects* and *Circular on Strengthening Administration of Environmental Impact Assessment for Development Projects Financed by International Financial Organizations*, and the requirements of World Bank's Safeguard Policies, World Bank-financed Shangli Water Environment Management Project needs an EIA. The construction unit entrusted the preparation of EIA to CERI eco Technology Co., Ltd. The company, after accepting it, immediately organized a technical team to inspect and survey the site of the project and collected relevant materials. Then, based on the relevant technical guidelines and regulations, it drew up the EIA report and submitted it to the construction unit for the approval of World Bank and the environmental protection authorities as the basis of pollution prevention and control.

1.3 Objectives of EIA

The objectives of EIA are to assess the positive environmental impacts and identify, screen and predict and analyze the potential adverse environmental impacts, and provide pertinent and effective mitigation measures and environment management plan (EMP) for the inevitable main adverse environmental impacts. EIA also provides basis for independent review of environmental safeguards by the World Bank and approval decision-making on and administration of environmental impact assessment by relevant authorities of China.

1.4 Basis for EIA Preparation

1.4.1 State Laws and Regulations and Rules on Environmental Protection

(1) *Environmental Protection Law of the People's Republic of China (April, 2014)*;

(2) *Environmental Impact Assessment Law of the People's Republic of China (September, 2003)*;

(3) *Law of the People's Republic of China on Water Pollution Prevention and Control (June, 2008)*;

(4) *Law of the People's Republic of China on Atmospheric Pollution Prevention and Control (August, 2015)*;

(5) *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Noise (March, 1997)*;

(6) *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste (June, 2013)*;

(7) *Law of the People's Republic of China on Land Administration (August, 2004)*;

(8) *Law of the People's Republic of China on the Protection of Wildlife (August, 2004)*;

(9) *Law of the People's Republic of China on Protection of Cultural Relics (Revised Version) (June, 2015)*;

(10) *Water Law of the People's Republic of China (August, 2002)*;

(11) *Flood Control of the People's Republic of China (Revised Version) (April, 2015)*;

(12) *Law of the People's Republic of China on Soil and Water Conservation (December, 2010)*;

(13) *Law of the People's Republic of China on Urban and Rural Planning (October, 2007)*;

(14) *Regulations on the Implementation of the Water and Soil Conservation Law of the People's Republic of China (August, 1993)*;

(15) *Regulations of the People's Republic of China on Nature Reserves (October 9th, 1994)*;

(16) *National Scenic Area Ordinance (State Council Decree No. 474, September 9th, 2006)*;

(17) *Measures on Administration of National Wetland Parks (on Trial) (Lin Shi Fa [2010] No. 1, February 21st, 2010)*;

(18) *Provisions on Administration of Wetland Protection(the State Forestry Administration Decree No.32, March 28th, 2013)*;

(19) *Regulations on Basic Farmland Protection (State Council Decree No. 257, December, 1998)*;

(20) *Regulations of the People's Republic of China on River Course Administration (State Council Decree No. 3, March, 1988)*;

(21) *National Ecological Environment Protection Program (Guo Fa [2000] No.38, November, 2000)*;

(22) *Regulations on Administration of Environmental Protection in Construction (State Council Decree No. 253, November, 1998)*;

(23) *Classification Management Directory of Environmental Impact Assessment for Construction Projects (April, 2015)*;

(24) *The Interim Measures to Public Participation in Environmental Impact Assessment (State Environmental Protection Administration, Huan Fa[2006] No.28, March 18th, 2006)*;

(25) *Decision on Implementing the Scientific Outlook on Development and Strengthening Environmental Protection (Guo Fa[2005] No.39*);

(26) *Opinions on Enhancing Supervisions of Resource Development and Ecological Environmental Protection (State Environmental Protection Administration Huan Fa [2004] No. 24)*;

(27) *Regulations on Prevention, Control and Management of Pollution in Drinking Water Source Protection Areas (Revised Version) (October, 2010)*;

(28) *Guiding Catalogue for Industrial Restructuring (2011 version)(2013 Amendment)*;

(29) *Circular on Strengthening Administration of Environmental Impact Assessment for Development Projects Financed by International Financial Organizations (June, 1993)*;

1.4.2 Local Regulations on Environmental Protection

(1) *Regulations of Jiangxi Province on Environmental Protection in Development Projects (Revised Version) (September 17th, 2010)*;

(2) *Regulations of Jiangxi Province on Environmental Pollution Prevention and Control (January 1st, 2009)*;

(3) *Methods of Jiangxi Province for Prevention and Control of Pollution to Domestic Drinking Water Sources (August 1st, 2006)*;

(4) *Jiangxi Province Surface Water(Environment) Function Zoning(the approved) (the People's Government of Jiangxi Province Gan Fu Zi[2007] No.35, June 29th, 2007)*;

(5) *Regulations on Environmental Protection of Poyang Lake Ecological Economic Zone (May 1st, 2012)*;

(6) *Methods of Jiangxi Province for Land Acquisition Administration (December 22th, 2001)*;

1.4.3 EIA Technical Guidelines and Specifications

(1) *Technical Guidelines on EIA: General Principles (HJ2.1-2011)*;

(2) *Technical Guidelines on EIA: Atmospheric Environment (HJ2.2-2008)*;

(3) *Technical Guidelines on EIA: Surface Water Environment (HJ/T2.3-93)*;

(4) *Technical Guidelines on EIA: Groundwater Environment (HJ610-2016)*;

(5) *Technical Guidelines on EIA: Acoustic Environment (HJ2.4-2009)*;

(6) Technical Guidelines on EIA: Ecological Impacts (HJ19-2011);

(7) *Technical Guidelines on Assessment of Environmental Risks of Development Projects (HJ/T 169-2004)*;

(8) *Technical Standard for Ecological Environment Assessment (HJ/T 192-2006)*;

(9) *Technical Specifications for Regionalizing Environmental Noise Function (GB/T15190-2014).*

1.4.4 World Bank Safeguard Policies

The EIA makes analysis of the relevance between the project and World Bank Safeguard Policies and Procedures (see Table 1-1).

Table 1-1 World Bank Safeguard Policies

World Bank Operational Policies and Procedures	Relevance	Reason for the relevance of World Bank Operational Policies

Environmental Assessment (OP/BP 4.01)	√	The policy is relevant. The water environment management sub-project will bring environmental benefits by decreasing the pollutants flowing into surface water body and improving local environment but at the same time it may also cause some adverse impacts like (1) the common impacts during construction period; (2) the impacts such as equipment noise and exhaust gas in garbage transfer stations during operation period.
Natural Habitats (OP/BP 4.04)	×	The policy is not relevant, since the construction site does not involve natural habitats.
Forests (OP/BP 4.36)	×	The policy is not relevant, since the project has no impact on health and quality of forests, interests of the forest ownership holders and interdependence between the holders and forests.
Pest Management (OP/BP 4.09)	×	The policy is not relevant, since the project construction involves neither procurement of pesticides nor increase of pesticide use.
Physical Cultural Resources (OP/BP 4.11)	×	The policy is not relevant, since the site does not involve physical cultural resources according to on-site visits and investigations.
Indigenous Peoples (OP/BP 4.10)	×	The policy is not relevant, since the project area involves neither indigenous people nor ethnic minority area.
Involuntary Resettlement (OP/BP 4.12)	√	The policy is relevant, since the project construction occupies some lands temporarily and permanently.
Safety of Dams (OP/BP 4.37)	×	The policy is not relevant, since the project construction neither involves dam engineering nor relies on dams available or under construction.
International Waters (OP/BP 7.50)	×	The planned project construction site belongs to Shangli County of Jiangxi Province, China, without involving international waters.
Disputed Areas (OP/BP 7.60)	×	The construction site is situated in Jiangxi Province without disputed areas.
Information Disclosure (BP 17.50)	√	The project's EIA document involves public consultation and information disclosure
International Financial Corporation Environmental, Health and Safety	√	*International Financial Corporation Environmental, Health and Safety Guidelines* applies to the project activities.

Guidelines		
International Financial Corporation Environmental, Health and Safety Guidelines for Water and Sanitation	√	*International Financial Corporation Environmental, Health and Safety Guidelines for Water and Sanitation* applies to the project activities.
International Financial Corporation Environmental, Health, and Safety Guidelines for Waste Management	√	*International Financial Corporation Environmental, Health, and Safety Guidelines for Waste Management* applies to the project activities.

1.4.5 Relevant Documents of the Project

(1) *The Feasibility Study Report of the Project;*

(2) *The Resettlement Action Plan of the Project;*

(3) *The Social Impact Assessment of the Project.*

1.5 EIA Contents and Key Points

In accordance with the requirements of the domestic technical guidelines on EIA and World Bank's Safeguard Policies, the EIA report of the project focuses on the following issues:

(1) The engineering characteristics and main potential environmental problems;

(2) The site selection feasibility and the main environmental protection targets (sensitive spots);

(3) The construction-induced potential positive environmental benefits and adverse environmental impacts;

(4) The mitigation measures for the potential negative impact;

(5) The alternatives analysis;

(6) Environment Management Plan (EMP)

1.6 Evaluation Standards

International Financial Corporation Environmental, Health and Safety Guidelines (EHS) includes the standards and requirements of atmospheric emissions, noise quality and acoustic environment quality, sewage, waste management, occupational health and safety, etc.

The evaluation standards applied in the project is determine by comparing relevant domestic standards and the standards in *World Bank Environmental, Health and Safety Guidelines* (EHS). Specific comparison, analysis and results are listed below.

1.6.1 Environmental Quality Standards

1.6.1.1 Ambient air

According to EHS, the standards prescribed in national legislation should be applied for ambient air quality. If there is no such standard, the latest WHO Air quality guidelines (AQG) and other internationally recognized bases of reference shall be applied for ambient air quality. It is shown in Table 1-2. As Ambient Air Quality Standards (GB3095-2012) has been promulgated and the project belongs to Category II functional zone of Chinese ambient air, Category II Standard in *Ambient Air Quality Standards (GB3095-2012)* shall be applied for the project. It is shown in Table 1-3. Meanwhile, the relevant standards in *Hygienic Standards for the Design of Industrial Enterprises (TJ36-79)* shall be applied for NH_3 and H_2S in garbage transfer stations.

Table 1-2 Ambient Air Quality Standards in EHS (μg/m^3)

Item	Median Period	Guidance Value	Standard
SO_2	24h	125 (Target value in the first phase) 50 (Target value in the second phase)	The WHO *Global Air Quality Guide*
	10min	20 (Guidance value) 500 (Guidance value)	
NO_2	1a	40 (Guidance value)	
	1h	200 (Guidance value)	
PM_{10}	1a	70 (Target value in the first phase) 50 (Target value in the second	

	24h	phase) 30 (Target value in the third phase) 20 (Guidance value) 150 (Target value in the first phase) 100 (Target value in the second phase) 75 (Target value in the third phase) 50 (Guidance value)	
$PM_{2.5}$	1a 24h	35 (Target value in the first phase) 25 (Target value in the second phase) 15 (Target value in the third phase) 10 (Guidance value) 75 (Target value in the first phase) 50 (Target value in the second phase) 37.5 (Target value in the third phase) 25 (Guidance value)	

Table 1-3 *Ambient Air Quality Standards*

Pollutant Factor	Environmental Quality Standards ($\mu g/m^3$)			Basis
	Hourly Average Value	Daily Average Value	Annual Average Value	
SO_2	500	150	60	Category II Standard in *Ambient Air Quality Standards (GB3095-2012)*
NO_2	200	80	40	
TSP	--	300	200	
PM_{10}	--	150	70	
H_2S	--	--	10	*Hygienic Standards for the Design of Industrial Enterprises (TJ36-79)*
NH_3	--	--	200	

Through comparison and analysis, the Chinese GB hourly average values and

annual average values of NO_2 and PM_{10} are in accordance with the EHS guidance value and EHS target value in the first phase, respectively; the Chinese GB daily average value and annual average value of $PM_{2.5}$ is the same with the EHS target value in the first phase; the Chinese GB daily average value and annual average value of SO_2 is lower than the EHS target value in the first phase.

According to EHS, the standards prescribed in national legislation should be applied for ambient air quality. Thus, the project adopts the relevant standards in Table 1-3.

1.6.1.2 Water Environment

Lishui River involved in the project is water for landscape and recreation, and should follow Category III Water Quality Standard in *Surface Water Environment Quality Standards (GB3838-2002)*. The specific indicators are provided in Table 1-4.

Table 1-4 *Surface Water Environment Quality Standards* (except mg/L，pH)

Standard Category	pH (dimensionless)	COD	BOD_5	Ammonia Nitrogen	DO	Petroleum
Category III	6～9	≤20	≤4	≤1.0	≤5.0	≤0.05

1.6.1.3 Acoustic Environment

Chinese state-level standard limit values of the relevant indicators in acoustic environment quality and noise guidance values in EHS are listed in Table 1-5.

Table 1-5 Acoustic Environment Quality Standards (dB (A))

Acoustic Environment Quality Standards (GB3096-2008)				Noise Guidance Values in EHS		
Involved Areas	Category of Functional Zone	Daytime 6:00~22:00	Nighttime 10:00 PM~6:00 AM	Receptors	Daytime 7:00 AM~10:00 PM	Nighttime 10:00 PM~7:00 AM
Residential areas, health care area, cultural education area, scientific research design area and office	Category I	55	45	Residential areas; office area; cultural education area	55	45

area						

The areas involved in the project are rural areas. Through comparison and analysis, the project follows Category I Standard in *Acoustic Environment Quality Standard (GB3096-2008)*. The specific standard limits are provided in Table 1-6.

Table 1-6 Acoustic Environment Quality Standards (dB (A))

Item	Type	*Acoustic Environment Quality Standards (GB3096-2008)*	
		Daytime	Nighttime
Acoustic Environment	Category I	55	45

1.6.2 Pollutant Discharge Standards

1.6.2.1 Atmospheric Pollutant

The construction dust is the main atmospheric pollutant during construction period, for which *Comprehensive Atmospheric Pollutant Emission Standards (GB16297-1996)* is applied. The fugitive emission monitoring concentration limits are shown in Table 1-7.

Odor generated from the garbage transfer stations is the main atmospheric pollutant during operation period, for which Category II Standard of fugitive emission in *Odorous Pollutant Emission Standards (GB14554-93)* is applied (see Table 1-8 for specific limits).

Table 1-7 Comprehensive Atmospheric Pollutant Emission Standards (excerpt)

Name	Fugitive Emission Monitoring Concentration Limit	
Particulates	Monitory Point	Concentration ($mg/m^{3)}$
	Highest Concentration outside the Perimeter	1.0

Table 1-8 Odorous Pollutant Emission Standards (excerpt)

Pollutant	Standard Limits at Boundaries
NH_3	1.5
H_2S	0.06

1.6.2.2 Noise

Standards for Ambient Noise Emission at Construction Site Boundary

(GB12523-2011) is applied for noise generated from the project construction. Category II Standard in *Emission Standards for Industrial Enterprises Noise at Boundary (GB12348-2008)* is applied for noise generated from equipment during operation period of garbage transfer stations (see Table 1-9 for specific limits).

Table 1-9 Implementation Standards for Noise Emission [Unit: dB (A)]

Item	*Emission Standards for Industrial Enterprises Noise at Boundary (GB12348-2008)*	*Standards for Ambient Noise Emission at Construction Site Boundary (GB12523-2011)*
	Category I	Emission Standards for Noise at Construction Site
Daytime	55	70
Nighttime	45	55

1.6.2.3 Solid Waste

Control Standards for Pollution at Storage and Treatment Sites of General Industrial Solid Wastes (GB18599-2001) is applied for the treatment of solid waste. The hazardous waste in the laboratories of monitoring room should follow *Standard for Pollution Control on Hazardous Waste Storage (GB18597-2001)* and requirements of EHS and the relevant World Bank safeguard policies.

1.7 Environmental Impact Factors and Assessment Factors

The EIA firstly identifies main environmental problems through matrix method (see Table1-10).

Table 1-10 Matrix Table of Environmental Impact Identification

Environmental Medium	Pollutant Factor	Construction Period	Operation Period
Air	Particulates	△	△
	Odor	—	△
Water	COD	△	●
	BOD_5	△	●
	SS	△	●

	Ammonia Nitrogen	△	●
Noise	Noise	△	△
Solid Waste	Solid Waste	△	●
Social Impact	Municipal Facilities	△	●

Note: ▲ represents significant adverse impacts and △ represents general adverse impacts; ● represents significant positive impacts, ○ significant general positive impacts and — no impact.

From the above table, the main environmental impact problems are as follows:

(1) The construction period: general impacts such as construction dust, sewage, noise, and solid waste.

(2) The operation period: mainly including the positive environmental and social impacts and the adverse impacts odor generated from the garbage transfer stations and the adverse impacts leachate generated from the garbage transfer engineering.

Based on environmental impact identification, the EIA factors are shown in Table 1-11.

Table 1-11 EIA Factors

Medium	Status Quo Assessment Factor	Impact Prediction and Assessment Factor
Air	SO_2, NO_2, PM_{10}	NH_3, H_2S, Dust
Surface Water	pH, COD, BOD_5, NH_3-N, SS	COD, BOD_5, SS, NH_3-N
Noise	Leq (A)	Leq (A)
Ecological Environment	Animal and Plant Resources	—
Solid Waste	—	Transferred Volume of Earth and Stone and Domestic Garbage

1.8 Targets of Environmental Protection

1.8.1 Targets of Acoustic and Atmospheric Environmental Protection

Based on the on-site survey of the project, the villages involved in the garbage transfer stations are listed in Table 1-12.

Table 1-12 Villages Involved in the Garbage Transfer Stations

Engineering Content	Name of Villages Involved	Location	Distance (m)	No. of household
Garbage Transfer Stations	Muchong Village	at the western side of Garbage Transfer Station in Chishan Town	2,000	10
	Mingshan Village	at the western side of Garbage Transfer Station in Futian Town	1,000	3
	Taitang Village	at the northern side of Garbage Transfer Station in Changping Township	400	12
	Guanshang Village	at the northern side of Garbage Transfer Station in Yangqi Township	200	5
	Penggao Village	at the northern side of Garbage Transfer Station in Penggao Town	1,000	8

	Dongyuan Village	at the western side of Garbage Transfer Station in Dongyuan Township	1,000	3

The above table indicates, each garbage transfer station is far from the residential areas. There are not sensitive spots such as residential areas, hospitals or schools within 200m. Thus, the garbage transfer stations do not involve targets of ambient air protection.

1.8.2 Targets of Water Environmental Protection

The targets of water environmental protection of the project are listed in Table 1-13.

Table 1-13 Targets of Water Environmental Protection

No.	Protection Target	Water Quality Target	Water Function
1	Lishui River	Category III	Water for Landscape and Recreation

1.8.3 Targets of Ecological Environmental Protection

The targets of ecological environmental protection are listed in Table 1-14.

Table 1-14 Targets of Ecological Environmental Protection

No.	Environmental Medium	Protection Target	Overview of Protection Target
1	Ecological Environment	Terrestrial Plant	Plants damaged by the permanent and temporary land occupation of the project
		Wildlife	the wildlife under the project impact

1.8.4 Targets of Social Environmental Protection

The targets of social environmental protection are listed in Table 1-15.

Table 1-15 Targets of Social Environmental Protection

No.	Type for Protection	Protection Target
1	Social Environment	Regional Economy

2. Project Description

2.1 Project Overview

2.1.1 Project Components

(1) Project name: The World Bank-financed Shangli Water Environment Management Project

(2) Construction unit: Leading Group Office of the World Bank-financed Shangli Water Environment Management Project

(3) Construction site: Shangli County in Jiangxi Province (see Map I)

(4) Project Components: including garbage collection and transfer engineering and non-engineering measures in the six townships and towns, namely Changping Township, Futian Town, Penggao Town, Dongyuan Township, Chishan Town and Yangqi Township. A garbage collection station will be set up in each village of each town and a garbage transfer station in each township. The process of garbage treatment: garbage collection station → garbage transfer station → Pingxiang City Domestic Garbage Incineration Power Plant. The project covers 87 garbage collection stations and six garbage transfer stations in total. Project Components and Construction Contents is shown in Table 2-1.

Table 2-1 Project Components and Construction Contents

Engineering Name	Item	Construction Contents	Construction Type	Construction Site	Service Coverage
Pivotal Works	Garbage Transfer Stations	Constructing Six Garbage Transfer Stations	New Construction	There is a garbage transfer station in each of Yangqi Township, Changping Township, Futian Town, Penggao Town, Dongyuan Township and Chishan Town.	The treated object is domestic garbage in Yangqi Township, Changping Township, Futian Town, Penggao Town, Dongyuan Township and Chishan Town.
	Garbage Collection Station	Constructing 87 Garbage Collection Stations	New Construction	A garbage collection station will be set up in each village of	

				each town.	
Other Works	Room for Water Environmental Monitoring and System	Water environmental monitoring and dispatching system is set up in the existing houses of Shangli County environmental protection bureau.			
Investment	The total investment is estimated to be around RMB 191,474,500 which includes a proposed World Bank loan of 20 million dollars (RMB132 million, calculated at 1 dollar=RMB6.6) and counterpart funds of RMB 59,474,500 from the superior support and local governments' self-funding.				

(5) Operation units, administrative units and maintenance units

Village-level garbage collection and transfer system: Village Committee serves as responsibility subject. There is a dustbin in each household. Then, designated cleaners collect and transfer garbage to the garbage collection station and then to the garbage transfer station in each village.

Garbage transfer system in townships and towns: town-level cleaning office serves as dominant administrative unit. To implement the cleaning system, a garbage transfer station is set up in each town and township where the designated cleaners who have signed cleaning contract collect garbage in each garbage transfer station. The garbage shall be transported to transit stations for subsequent compression and to Pingxiang City Garbage Incineration Power Plant for treatment. The county adopts technologies such as Internet, Cloud Computing and Internet of Things to ensure that GPS and Induction (Original Mix) are installed on vehicles, E-Tags are installed on dustbins and employers are provided with smart environmental sanitation phones. All-round and real-time monitoring management are targeted at persons, vehicles, objects and things involved in environmental sanitation management.

2.1.2 Project Scale

2.1.2.1 Predicted Amount of Garbage

1. Predicted population in the service area

Population in six towns and townships is seen in the following table.

Table 2-2 Predicted Population Data in the six Towns and Townships

Township	Household Registered Population in 2015	Permanent Residents in 2015	Percentage of Permanent Residents	Predicted Permanent Residents
Changping Township	48,060	41,032	85.4%	41,032
Futian Town	25,834	24,002	92.9%	24,002
Penggao Town	22,347	20,562	92.0%	20,562
Dongyuan Township	50,514	40,025	79.2%	40,025
Chishan Town	53,014	45,028	84.9%	45,028
Yangqi Township	32,798	27,549	84.0%	27,549
Total Population	232,567	198,198	85.2%	198,198

2. Predicted amount of domestic garbage

The formula for domestic garbage collection amount in the service area:

$$Qc=nq/1000$$

where: Qc-- daily transferred amount of domestic garbage in transfer stations (t/d);

n-- the number of residents in the service area calculated according to the number of rural permanent residents in the project;

q-- the per capita daily domestic garbage generation (kg/person/day) in the service area calculated at 0.7 kg/person/day in the project;

Table 2-3 Predicted Garbage Amount Generated by Permanent Residents in the Six Towns and Townships

No.	Township	Daily Average Treatment Capacity Qc (t/d)
1	Changping Township	28.7
2	Futian Town	16.8
3	Penggao Town	14.4
4	Dongyuan Township	28.0

5	Chishan Town	31.5
6	Yangqi Township	19.3
7	Total Amount	138.7

3. Treatment Capacity in Garbage Transfer Stations

The unrecyclable domestic garbage of six towns and townships is mainly compressed and then transferred during the process of garbage transfer stations in the project. Design scale in transfer stations calculated at the following formula:

$$Q_D = Ks \cdot Qc$$

Qc--daily transferred amount of unrecyclable domestic garbage in transfer stations (t/d);

Ks-- seasonal fluctuation coefficient of garbage discharge calculated at 1.5 in the project.

The calculated treatment capacity in each garbage transfer station is provided in the following Table 2-4.

Table 2-4 Treatment Capacity in Each Garbage Transfer Station

No.	Township	Daily Average Unrecyclable Garbage Generation (t/d)	Treatment Capacity in Garbage Transfer Stations Q_D (t/d)
1	Changping Township	28.7	43.5
2	Futian Town	16.8	25.2
3	Penggao Town	14.4	21.6
4	Dongyuan Township	28.0	42
5	Chishan Town	31.5	47.3
6	Yangqi Township	19.3	29.0
7	Total Amount	138.7	208.6

2.1.2.2 Construction Scale of Garbage Collection Station

87 garbage collection stations will be built in this collection and transfer system

covering an area of 21,750m^2. The specific layout of collection stations is listed in the following table.

Table 2-5 Layout of Garbage Collection Stations

No.	Township Name	No. Of Garbage Collection Stations	Relevant Villages
1	Changping Township	19	Fushou Village, Changping Village, Pingji Village, Xinghui Village, Shanmu Village, Lingjiao Village, Mingxing Village, Dantang Village, Shixi Village, Huangnitang Village, Taitang Village, Jiaoyuan Village, Luoxing Village, Shixing Village, Liujiang Village, Foxi Village, Tangshang Village, Shitang Village and Maliang Village
2	Futian Town	10	Shuangyuan Village, Lianpo Village, Futian Village, Chang'an Village, Mingshan Village, Biantang Village, Changtang Village, Zhanshan Village, Yuexing Village and Dayu Village.
3	Penggao Town	9	Zaxia Village, Penggao Village, Dongshanxia Village, Huayuan Village, Quanxi Village, Shaopo Village, Gutang Village, Tanhua Village and Mapeng Village
4	Dongyuan Township	15	Xinyi Village, Jiangling Village, Dongyuan Village, Zhutang Village, Qiaotou Village, Fengyuan Village, Jingshan Village, Yangzi Village, Shangbu Village, Louxia Village, Gongjiang Village, Taoyuan Village, Xiaojian Village,

			Minzhu Village and Tianxin Village
5	Chishan Town	18	Lantian Village, Chishan Village, Dayuan Village, Gengtang Village, Yuanbei Village, Fengquan Village, Huangtian Village, Matian Village, Muchong Village, Wanli Village, Fengqiao Village, Louxia Village, Quanpo Village, Gaolan Village, Huanghua Village, Xindian Village, Guanquan Village and Louqian Village
6	Yangqi Township	16	Taiping Village, Shuijing Village, Huangchong Village, Maotian Village, Jinji Village, Baohu Village, Nanyuan Village, Xinba Village, Guanshang Village, Guanxia Village, Yangqi Village, Shiyuan Village, Shiling Village, Taowen Village, Qingxi Village and An'ziquan Community
7	Total Amount	87	87

2.1.2.3 Construction Scale of Garbage Transfer Station

Table 2-6 Construction Scale of Garbage Transfer Station

No.	Name of Township	Location	Daily Average Amount of Transferred Garbage (t/d)	Construction Scale of Garbage Transfer Station (t/d)	Building Area (m^2)	Floor Space (m^2)
1	Changping Township	Muchong Village	28.7	43.5	207.5	999
2	Futian	Mingshan	16.8	25.2	207.5	999

	Town	Village				
3	Penggao Town	Taitang Village	14.4	21.6	207.5	999
4	Dongyuan Township	Guanshang Village	28.0	42	207.5	999
5	Chishan Town	Penggao Village	31.5	47.3	207.5	999
6	Yangqi Township	Dongyuan Village	19.3	29.0	207.5	999
7	Total Amount		125.8	138.7	1,245	5,994

2.1.2.4 Main Engineering Quantity and Equipment

Table 2-7 Main Engineering Quantity

Name	Quantity							Unit
	Changping Township	Futian Town	Penggao Town	Dongyuan Township	Chishan Town	Yangqi Township	Total Amount	
Small Compression-type Garbage Truck	14	7	6	8	11	14	60	Truck
Large Compression-type Garbage Truck	6	4	4	8	8	3	33	Truck
Garbage Collection Station	19	10	9	15	18	16	87	Station
Garbage Transfer Station	1	1	1	1	1	1	6	Station
Garbage Transfer Truck	1	1	1	1	1	1	6	Truck
Suction Sewage Truck	1	1	1	1	1	1	6	Truck
Street-cleaning	1	1	1		1	1	6	Truck

Lorry								
Cleaning Lorry	1	1	1	1	1	1	6	Truck
Newly Constructed Pavement	20,000	10,000	8,000	18,000	20,000	10,000	86,000	m2
Restored Pavement	8,500	4,200	4,000	8,000	9,000	4,300	38,000	m2
Display Platform for Environmental Sanitation System	1	1	1	1	1	1	6	Set
Smart Cloud Platform for Treatment System of Garbage Collection and Transfer	1set (covering 10 townships and towns)							Set

Table 2-8 Equipment of Single-Box Garbage Transfer Station

No.	Name of Equipment	Quantity
1	Compression Equipment	2 sets
2	Video Surveillance System	1 set
3	High-energy reactive oxygen ion deodorant System	1 set
4	High-pressure Airblast Cleaner	1 set
5	Central Control System	1

2.1.3 Implementation Plan

The five-year project is scheduled to initiate in January, 2018 and compete at the end of December, 2022 with a construction period of 5 years.

2.1.4 Project Investment

1. Total Investment in the Project

The project is estimated to cost RMB 202,699,100, including RMB 16,645,700 of investment in strengthening Poyang Lake basin's management, RMB 182,203,400 of solid garbage collection and transfer systems, and RMB 3,850,000 of the project implementation facilitation.

2. Financing

The project is estimated to cost RMB 202,699,100, consisting of a proposed World Bank loan of 20 million dollars (RMB 130 million, calculated at 1dollar=RMB 6.5) and counterpart funds of RMB 72,699,100 from the superior support and local governments' self-funding.

2.2 Project Analysis

2.2.1 Analysis of Pollution Sources during Construction Period

(1) Sewage during construction period

Sewage during construction period mainly consists of domestic sewage and construction wastewater produced by constructors.

① Domestic sewage

The average number of constructors is 60 in the construction peak in each construction line and garbage transfer station. The water use being calculated at 50L/person/d and wastewater discharge coefficient at 0.8, the domestic sewage amount generated by constructors is 2.4m^3/d. The concentration of COD, BOD_5, SS and ammoniacal nitrogen in sewage being calculated at 250mg/L, 150mg/L, 200mg/L and 35mg/L respectively, their generation is 0.6kg/d, 0.36kg/d, 0.48 kg/d and 0.09kg/d respectively.

The domestic sewage generated during construction period is collected and treated by the local existing collection and treatment facilities without outward discharge.

② Construction Wastewater

Construction wastewater mainly comes from sand and gravel flushing, and

concrete mixing and casting in the construction process, which consists of SS, petroleum and other main pollutants. The precipitated construction wastewater is used for dust control.

(2) Exhaust gas during construction period

During construction period, construction dust pollution is the main exhaust gas polluting source, including dust from the construction transportation and dust in the construction site (such as dust from pipe culvert excavation, earthwork stacking and building-material loading/unloading).

According to relevant materials, during construction, the dust from the vehicles accounts for 60% of the total and is relevant with the pavement and vehicle speed. Generally, the dust in the construction road can reach an area as far as 100m under natural wind. If the pavement is sprayed water for 4-5 times per day during construction period, it can reduce dust in the air by about 70% and narrow TSP pollution distance within 20-50m. Test Results of Dust Control by the use of Spraying Car is shown in Table 2-9.

Table 2-9 Test Results of Dust Control by the use of Spraying Car during construction period

Distance to Roadside (m)		5	20	50	100
TSP Concentration (mg/m^3)	Without Spraying Water	10.14	2.810	1.15	0.86
	Spraying Water	2.01	1.40	0.68	0.60

The other main source of dust during construction period is wind-blown dust from open-air storage ground and bare ground, influenced by storage-area humidity and wind speed. Thus, it is an effective method to spray water on the pavement and storage areas, ban the relevant works on a windy day and reduce open-air stacking so as to control the dust.

Besides, exhaust gas discharged by motor vehicle and construction machines, which contains a few main pollutants, such as HC, CO and NOx, is also a source of exhaust gas during construction.

(3) Noise during construction period

Noise during construction period is mainly generated from material transportation, pipe and channel excavation, tubing loading and unloading, construction machine during the backfill process such as loaders, bulldozers, diggers and lorries in an intermittent manner. The level of noise from mechanical equipment can reach about 75 dB (A)-90dB (A). Thus, noise without control would have impacts on the neighboring environment during construction.

Table 2-10 Noise Source Intensity of Major Construction Machinery (dB(A))

No.	Type	Distance of Monitoring Points from Machinery (m)	Maxim Sound Level
1	Loader	5	90
2	Road Roller	5	81
3	Bulldozer	5	86
4	Digger	5	84
5	Large Lorry		86
6	Light Lorry		75

(4) Solid waste

Solid waste generated during construction period is mainly domestic garbage generated by constructors and spoil during construction.

①Domestic Garbage

The total domestic garbage from 60 constructors is about 30kg/day calculated at 0.5-kilogram domestic garbage/person/day. Garbage collection boxes and environmental billboards are suggested to be set up in the construction site and all domestic garbage should be collected, and then transported by the sanitation department.

②Construction garbage and spoil

The project includes t 1,000 m^3 of excavated earth, 600 m^3 of filled earth and 400 m^3 of discarded earth, and does not produce construction garbage.

(5) Ecological Impacts and Water Loss and Soil Erosion

Six new garbage transfer stations are proposed to be built in the project, calling for more land. The selected sites are currently wasteland based on on-site investigation and visits.

The construction of the project may destruct certain vegetation, having impacts on ecological environment. The necessary engineering and vegetation measures should be adopted to make exposed areas and slopes green, reducing impacts on environment and prevent and control water loss and soil erosion.

2.2.2 Analysis of Pollution during operation period

During operation period, pollution from garbage transfer stations mainly includes exhaust gas (fugitive emission of odor), sewage (leachate, equipment flushing sewage and domestic sewage), solid waste (domestic garbage) and noise.

① Exhaust gas

Exhaust gas during operation period mainly comes from dust and odor generated from garbage transfer stations and garbage transportation vehicles. The domestic garbage contains various fermentable organic matters, which emit odor in the stacking, compaction, loading and transportation process especially in high-temperature summer. The odorous matters which mainly include ammonia and hydrogen sulfide and other odorous gases, have impacts on the environment mainly with its bad smell. According to the surveys, NH_3 is 68 kg/d and source intensity of H_2S is 9.2kg/d discharged from daily transferred 2,000-ton domestic garbage and odorous matters account for 60% generated from the process of garbage dumping and compaction(including garbage leachate). In accordance with *Determination of Odorous Matters of Ammonia and Hydrogen Sulfide in Garbage Transfer Stations of Guangzhou City* (Environmental Sanitation Institute of Guangzhou City, October, 2009), the concentration of NH3 and H2S is 0.038 mg/m^3~0.094 mg/m^3 and 0.010 mg/m^3~0.025 mg/m^3 respectively without deodorant equipment. Garbage collection vehicles during the process of dumping in transfer stations produce not only odorous

exhaust gas but also dust. The amount of dust generated from dry garbage dumping accounts for 1.5% of the transferred garbage with concentration of 0.5mg/ m^3.

The project proposes to build a garbage transfer station in each town of Yangqi Township, Changping Township, Futian Town, Penggao Town, Dongyuan Township and Chishan Town. BENTAX high-energy reactive oxygen ion deodorization and dust remover spray method will be adopted to treat exhaust gas with 90% deodorant equipment and dust-treatment efficiency, calculated at eight-hour operation per day in 365 working days are shown in Table 2-11.

Table 2-11 Exhaust Gas Generation and Emission from Each Garbage Transfer Station during operation period

Name	Daily Average Transferred Garbage Amount	Pollutant	Generation		Concentration of Generation	Emission		Concentration of Emission	Measure to be Adopted
	(t/d)		kg/h	t/a	mg/m^3	kg/h	t/a	mg/m^3	
the Garbage Transfer Station in Changping Township	28.7	NH_3	0.073	0.214	0.038~0.094	0.007	0.021	0.0038~0.0094	BENTAX high-energy reactive oxygen ion deodorization and dust remover spray method will be adopted to treat exhaust gas with over 90% deodorant equipment and
		H_2S	0.010	0.029	0.010~0.025	0.001	0.003	0.0010~0.0025	
		Dust	0.054	0.157	0.5	0.005	0.016	0.05	
the Garbage Transfer Station in Futian Town	16.8	NH_3	0.043	0.125	0.038~0.094	0.004	0.013	0.0038~0.0094	
		H_2S	0.006	0.017	0.010~0.025	0.001	0.002	0.0010~0.0025	
		Dust	0.032	0.092	0.5	0.003	0.009	0.05	
the Garbage Transfer Station in Penggao Town	14.4	NH_3	0.037	0.107	0.038~0.094	0.004	0.011	0.0038~0.0094	
		H_2S	0.005	0.015	0.010~0.025	0.0005	0.001	0.0010~0.0025	
		Dust	0.027	0.079	0.5	0.003	0.008	0.05	
the Garbage Transfer Station in Dongyuan Township	28	NH_3	0.071	0.208	0.038~0.094	0.007	0.021	0.0038~0.0094	
		H_2S	0.010	0.028	0.010~0.025	0.001	0.003	0.0010~0.0025	
		Dust	0.053	0.153	0.5	0.005	0.015	0.05	
the Garbage Transfer Station in Chishan	31.5	NH_3	0.080		0.23	0.038~0.094	0.008	0.023	0.0038~0.0094	

Town				5					dust-treatment efficiency
		H_2S	0.011	0.032	0.010~0.025	0.001	0.003	0.0010~0.0025	
		Dust	0.059	0.172	0.5	0.006	0.017	0.05	
the Garbage Transfer Station in Yangqi Township	19.3	NH_3	0.049	0.144	0.038~0.094	0.005	0.014	0.0038~0.0094	
		H_2S	0.007	0.019	0.010~0.025	0.001	0.002	0.0010~0.0025	
		Dust	0.036	0.106	0.5	0.004	0.011	0.05	

From the above table, NH_3 and H_2S in each transfer station follow Category II Standard of fugitive emission of *Odorous Pollutant Emission Standards (GB14554-93)* in which the concentration of NH_3 and H_2S is 1.5 mg/m^3 and 0.06 mg/m^3.Dust meets the fugitive emission monitoring concentration limits (1.0mg/m^3)in *Comprehensive Atmospheric Pollutant Emission Standards (GB16297-1996).*

② Wastewater

During operation period, sewage in the garbage transfer stations is mainly domestic sewage from workers, landfill leachate and flushing sewage.

1) Landfill leachate and flushing wastewater

Landfill leachate comes from water discharged in the garbage's decomposition and fermentation. The content of kitchen waste and fruit waste is the main factor determining the quality and quantity of leachate. In the project, the garbage is kept in

the garbage transfer stations for relatively short time during which water contained in garbage and that generated in the garbage's decomposition and fermentation process seep together in compaction. More water is compacted from garbage than from decomposition and fermentation. Landfill leachate features high concentration of ammonia nitrogen and organic pollutants. The sites and containers need to be cleaned after daily work. Flushing wastewater mainly comes from flushing pavement, equipment and vehicles.

Based on the previous research, the landfill leachate generated from compaction in the garbage transfer station and flushing wastewater respectively account for 1% and 10% of treated garbage on average. In leachate, the pH value is 4-5, COD 2,500 mg/L, BOD_5 1,000mg/L, SS 1000mg/L and ammoniacal nitrogen 180mg/L; In flushing wastewater, pH is 6-8, COD 280mg/L, BOD_5 250mg/L, SS, 300mg/L, and ammoniacal nitrogen, 30mg/L.

The total transferred garbage amount of these six garbage transfer stations in the project is 125.8t/d with a leachate amount of 1.258/d (459.17t/a) and flushing wastewater amount of 12.58t/d (4591.7t/a).

2) Domestic sewage

The domestic sewage in the garbage transfer stations mainly covers water used for office and domestic water from managerial staff in each garbage transfer station. Calculated at two managerial staff per transfer station, domestic water of 50L/person/d and 80% discharge rate, the domestic sewage generation is 0.08m^3/d, 29.2t/a.

In accordance with *Construction Standard for Domestic Garbage Transfer Stations (Jian Biao 117-2009),* the garbage leachate treatment system shall not be built in the medium and small domestic transfer stations in line with the principles of pollution centralized control and economy of scale. Besides, there is no municipal sewage pipe network in the project area. Thus, landfill leachate, flushing wastewater and domestic sewage are collected and transported to the leachate treatment station of the garbage incinerator without outward discharge.

The sewage source intensity and treatment methods are shown in Table 2-11.

Table 2-12 The Sewage Source Intensity and Treatment Methods in the Garbage Transfer Stations (mg/L, pH is dimensionless)

Location	Source of Pollutants	Generation (t/a)	Concentration of Water Pollutants (mg/L)					The treatment measures to be adopted
			pH	COD	BOD_5	SS	NH_3	
The Garbage Transfer Station in Changping Township	Leachate	104.755	4~5	2500	1000	1000	180	Collected and transported to the leachate treatment station of Pingxiang City Domestic Garbage Incineration Power Plant. /
	Flushing Wastewater	1047.55	6~8	280	250	300	30	
	Domestic Sewage	29.2	7~8	250	220	200	25	
	Subtotal	1181.51	/	476.09	315.76	359.59	43.18	
The Garbage Transfer Station in Futian Town	Leachate	61.32	4~5	2500	1000	1000	180	
	Flushing Wastewater	613.2	6~8	280	250	300	30	
	Domestic Sewage	29.2	7~8	250	220	200	25	
	Subtotal	703.72	/	463.04	314.11	356.85	43.04	
The Garbage Transfer Station in Penggao Town	Leachate	52.56	4~5	2500	1000	1000	180	
	Flushing Wastewater	525.6	6~8	280	250	300	30	
	Domestic Sewage	29.2	7~8	250	220	200	25	
	Subtotal	607.36	/	470.67	313.46	355.77	42.74	
The Garbage Transfer Station in Dongyuan Township	Leachate	102.2	4~5	2500	1000	1000	180	
	Flushing Wastewater	1022	6~8	280	250	300	30	
	Domestic Sewage	29.2	7~8	250	220	200	25	
	Subtotal	1153.4	/	475.95	315.70	359.49	43.16	
The Garbage Transfer Station in Chishan Town	Leachate	114.975	4~5	2500	1000	1000	180	
	Flushing Wastewater	1149.75	6~8	280	250	300	30	
	Domestic Sewage	29.2	7~8	250	220	200	25	
	Subtotal	1293.9	/	476.59	315.97	359.94	43.22	
The Garbage Transfer	Leachate	70.445	4~5	2500	1000	1000	180	
	Flushing Wastewater	704.45	6~8	280	250	300	30	

Station in Yangqi Township	Domestic Sewage	29.2	7~8	250	220	200	25	
	Subtotal	804.095	/	473.40	314.62	357.69	42.96	
Total Amount		5,226.07	5744.005	/	/	/	/	

③ Solid Waste

Solid Waste during operation period mainly includes domestic garbage from the managerial staff in the garbage transfer stations. Calculated at the domestic garbage generation of 0.5kg/person/d, the total generation in each garbage transfer station is 1kg/d, 0.365t/a and the total generation in all garbage transfer station is 6kg/d, 2.19t/a. The domestic garbage generated in the project is compacted in the garbage compactor and then transported the landfill without direct outward discharge.

④ Noise

Noise during operation period mainly comes from garbage compactors and carrier vehicles with source intensity of about 60 dB (A)-85 dB (A). Main noise sources and corresponding measures management measures are shown in Table 2-12.

Table 2-13 Main Noise Sources and Corresponding Measures Management Measures

(Unit: dB (A))

No.	Noise Source	Quantity	Sound-pressure- level Source Intensity dB(A)	Noise Reduction Measures and Effects
1	Compression Equipment	2 Sets	85	The compression system is placed in the sealed workshop installed with sound-proof doors and windows. The equipment is installed with shock pads. Besides, the vehicles are banned from honking. With these efforts, noise would be reduced by over 30-40 dB (A).
2	Garbage Transfer Truck	1 (one in each station)	80	
3	High-pressure Cleaner	1 set (one in each station)	85	
4	Garbage Collection Truck	Several	80	
5	Deodorant and Dust-treatment Equipment	1 set (one in each station)	60	
6	Cleaning Lorry	1 (one in each station)	80	

2.3 Generation of Main Pollutants and Estimated Discharge Volume

Table2-14 Generation of main pollutants and estimated discharge Volume

Item \ Content		Source of Discharge (No.)	Pollutant Name	Concentration and Quantity of Generation	Concentration and Quantity of Emission
Water Pollutant	Construction Period	Domestic Sewage	Quantity of Sewage COD BOD_5 SS Ammonia Nitrogen	2.4m^3/d 0.6kg/d，250mg/L 0.36 kg/d，150mg/L 0.48kg/d，200mg/L 0.09 kg/d，35mg/L	Treated by the local domestic sewage treatment facilities without outward discharge
		Construction WasteWater	SS	A small quantity of and fugitive emission	A small quantity of and fugitive emission
	Operation Period	Leachate Flushing Sewage Domestic Sewage	Quantity of Sewage	5,744.005t/a	Collected and then transported to the leachate treatment station of the garbage incinerator
Air Pollutant	Construction Period	Construction Dust	TSP	A small quantity of and fugitive emission	A small quantity of and fugitive emission
		Fuel and exhaust gas from construction vehicles	HC, CO, NOx	A small quantity of and fugitive emission	A small quantity of and fugitive emission
	Operation Period	Fugitive exhaust gas in garbage transfer stations	NH_3 H_2S Dust	1.033t/a, 0.019~0.119 mg/m^3; 0. 14t/a, 0.015~0.075mg/m^3; 0.759t/a, 0.113~0.204mg/m^3	0.103t/a, 0.002~0.012 mg/m^3; 0.014t/a, 0.002~0.008mg/m^3; 0.076t/a, 0.011~0.020mg/m^3
Noise	Construction Period	Construction vehicles	Sound Pressure Level	About 75dB (A)~90dB(A)	
	Operation Period	Noise from equipment in transfer stations and	Sound Pressure Level	About 60dB（A）~85dB（A）	

		transportation vehicles			
Solid Waste	Construction Period	Engineering Construction	Discarded Earth	400 m^3	400 m^3
		Daily Life	Domestic Garbage	60kg/d	**T**reated and transported by environmental sanitation department
	Operation Period	Routine Office Work	Domestic Garbage	2.19t/a	Garbage in transfer stations is directly dumped into the compactor room.

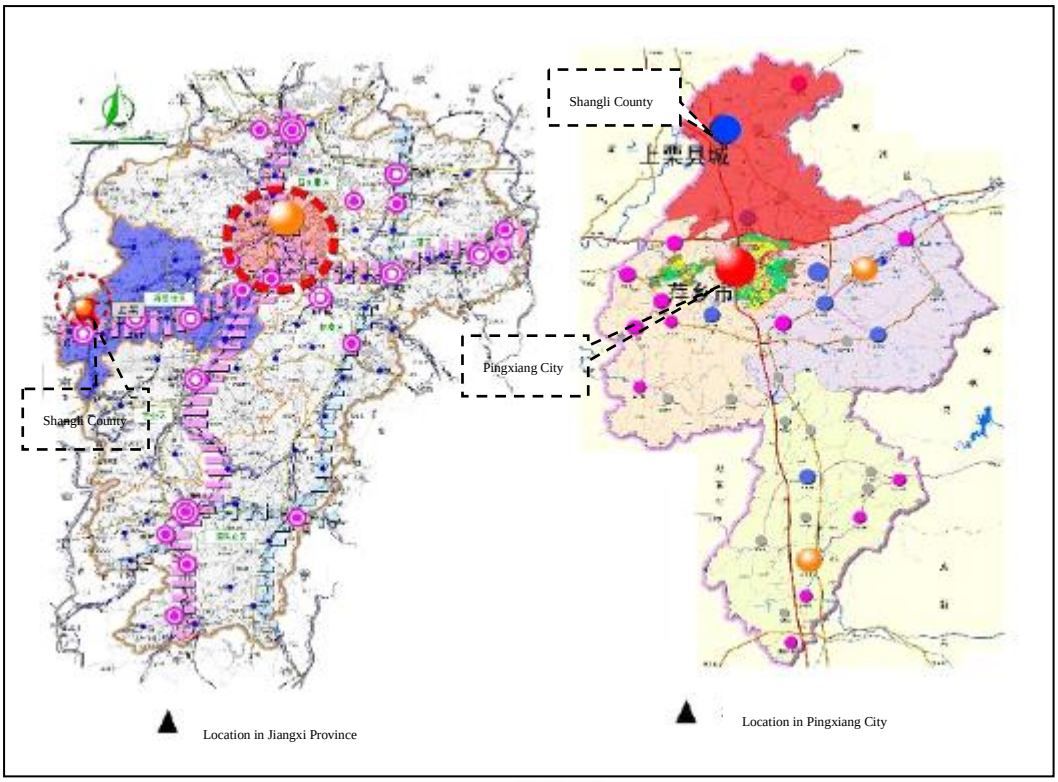
Major ecological impacts: the project site belongs to relatively typical urban ecological environment, and its construction and operation have little impacts on ecological environment. The activities like surface excavation during construction period destroy the original surface and may cause water and soil erosion as bare loose soil is exposed to surface runoff.

3. Environmental Status Quo

3.1 Natural Environment

3.1.1 Geographical Location

Shangli County is situated in the west of Jiangxi Province and in the north of Pingxiang City, with 260 kilometers from the provincial capital of Nanchang, 25 kilometers from Pingxiang City, 35 kilometers from Liuyang City of Hunan Province, and 124 kilometers from Changsha City of Hunan Province. It is bordered by Yichun City and Luxi County of Pingxiang City of Jiangxi Province to the east, Anyuan Economic Development Zone and Xiangdong District of Pingxiang City to the south, Liling City of Hunan Province to the west and Liuyang City of Hunan Province to the north. Shangli County is 45 km long from south to north, and 25 km wide from east to west, with a total area of 721.11square kilometers. Its territory lies between 27°38′～28°01′N and 113°47′～114°01′E.



Map 3-1 Geographical Location of Shangli County

3.1.2 Landforms

Shangli County is located in Jiangnan region dominated by hills. Its landscape varies significantly with mountains, hills and basins. Mountains mainly sit in the northeastern and central regions while hills mainly in the southern, northern and western regions. Thus, the eastern and central regions are higher than the southern, northern and western regions.

3.1.3 Geology and Earthquakes

Shangli County has ordinary stratigraphic development with the exposed strata from Algonkian and Quaternary System(except Ordovician System, Silurian System, the lower Devonian System, the middle Triassic System, Jurassic System, the Tertiary System and the Sinian System), covering the total thickness of around 16,000 meters,

The basic geological structure in Shangli County is dominated by the northeastern part. The extremely complex structure covers many rifts and folds, accompanied with magmatic activities.

It is divided into five relatively large structural units from south to north, namely Zhuting-Santian, Dongyuan-Fushou, Liantai-Qiujiang-Hemu, and Chengpiaojiang-Dongfengjie. The frequent magmatic activities are mainly divided into two periods: ①most magmatic rocks in the Xuefeng period are small dike products. The middle gneissic adinole, syeniteand granitic mylonite are found in Baoyuanchong of Chengchong Village of Tongmu Town;②the magmatic rocks in the Yanshan period: Topaz granodiorite porphyry found in Qibao Mountain in the Permian stratigraphy features grayish green porphyritic structure. Its rock mass is related to the mineralization of metalslike scheelite in Qibao Mountain.

Limestones are widely found in the north of Changping, Futian, Penggao and Dongyuan and parts of Tongmu, Jinshan and Jiguanshan where there is well-developed karst landform. Many depressions and funnels tend to develop in watersheds while clints and karrens tend to develop in the countertendency slope.

In Shangli County, the seismic fortification intensity is six degrees and designed basic seismic acceleration value is 0.05g.

3.1.4 Weather and Climate Conditions

1) Climate

Located in the subtropical monsoon climate zone, Shangli County features distinctive seasons, moderate climate, sufficient rainfall and sunshine, and a long frost-free period. The climate is characterized by small horizontal differences and significant vertical differences. The annual average temperature is 17.2℃. The average temperature in January, the coldest month, is 4.8℃ and the average temperature in July, the hottest month, is 29℃. The extremely high temperature is 40.1℃, and the extremely low temperature is -9.3℃. The multi-year average frost-free period is 279 days. The average date of first frost is November 27th and the average date of latest frost is February 20th.

2) Sunshine

Shangli County features sufficient sunshine. The multi-year average sunshine

duration is between 1,500～1,600 hours and the sunshine percentage is 36% annually. The longest sunshine duration is 1,906 hours with a sunshine percentage of 43% in 1963 and the shortest sunshine duration is 1,300 hours with only 29% sunshine in 1975. During the annual period of active crop growth when temperature is stabilized in 10℃, the multi-year average sunshine duration is 1,225 hours accounting for 77% of annual sunshine. Sunshine duration in July and August are the longest, with a monthly sunshine duration of over 220 hours and a daily average sunshine duration of nearly 8 hours. Due to the occurrence of dew, sunshine duration from February to April is relatively less, accounting for only 10%～30%.

3) Amount of precipitation

Shangli County features sufficient rainfall with the annual mean precipitation of 1,596.2mm which varies greatly. The multi-year first-half-year average precipitation is 1,077mm, accounting for 66% of annual rainfall and the second-half-year average precipitation is 550mm, accounting for 34%. According to time distribution, inter-monthly rainfall variation obviously embodies seasonal differences. The monthly average rainfall in April-June is the highest in the whole year as the annual average rainfall in these three months is 700mm, accounting for 44%. The monthly average rainfall in September-January of the next year is 350mm, accounting for only 21% of the year.

4) Wind Direction

As Shangli County is located in mid-level hilly zone encircled by mountains, the large surface friction causes relatively small wind power and stable wind speed in four seasons, with a multi-year average wind speed of about 1.6m/s. Northeasterly wind dominates the county for most of the year, followed by southwesterly wind. The topography of this county is closely associated with the unapparent seasonal changes of wind directions.

3.1.5 Water System and Hydrology

1) Surface water

The multi-year average rainfall in Shangli County is 1,596.2mm. The highest and

the lowest annual rainfalls are 2,286 mm in 19531 and 1086.4mm in 1971 respectively; the multi-year average amount of evaporation is 1,069mm. The largest annual evaporation is 1,191 mm in 1971 and the least annual evaporation is 846.8mm in 1982. The multi-year average amount of evaporation in July-September is 477.8mm. The total existing available water resources in the county is 600 million cubic meters.

There are two main rivers in Shangli County, namely Pingshui River (27.2 kilometers) and Lishui River (42 kilometers). As of 2006 there have been two medium-sized reservoirs, 48 small reservoirs (including 10 type I reservoirs and 38 type II reservoirs) and over 7,000 ponds.

2) Groundwater

Shangli County, situated in the watershed, features little groundwater with an annual supplement of 132 million cubic meters. Since most parts of the county belongs to limestone area with many frictions, the groundwater, which is used mainly for drinking and little for production, flows out of the ground mostly in the form of spring water as a complement to the surface water. The amount of groundwater exploitation and consumption in the county is 29 million cubic meters, accounting for 22% of the supplement.

3.2 Social Environment

1. Administrative division

Shangli County is one of three counties of Pingxiang City under the jurisdiction of the people's government of Shangli County. In March 1971, the county-level district in Shangli was set up with the approval of the Revolutionary Committee of Jiangxi Province. On December 15th, 1997, approved by the State Council, Shangli district was transformed into a county, becoming one of the youngest counties in China. The county government is located in Pingan Dadao Beilu, 39 kilometers from Pingxiang City. Shangli County has jurisdiction over six towns, four townships, 154 administrative villages and nine community residential committees. At the end of 2006, the county had144,605 households and a total population of 516,682 including

agricultural population of 453,013, or 87.7% of the total and non-agricultural population of63,669, or 12.3% of the total. It is one of the high population density counties with a population density of 713 persons per sq km.

The project involves Yangqi Township, Changping Township, Futian Town, Penggao Town, Dongyuan Township and Chishan Town with a current household registered population of 233,000.

2. Economic situation

In 2014, the regional GDP of the county reached RMB16.095 billion with a year-on-year growth of 10.5% calculated at comparable price. The added value of the primary, second and the tertiary industry were respectively RMB 1,504 million, RMB 10,025 million and RMB 4,566 million with a year-on-year increase of 5.1%, 11.9% and 8.1%.The industrial added value exceeded RMB 9,095 million with an increase of 12.2% compared with that of the previous year. Calculated at permanent residents, per capita regional GDP was RMB 36,079, up by 5.24% compared with that of the previous year. The structure of these three industries was transformed from 9.7:62.0:28.3 of the previous year into 9.3:62.3:28.4.

3.3 Ecological Environment

The project is located in six townships and towns of Shangli County, namely Yangqi Township, Changping Township, Futian Town, Penggao Town, Dongyuan Township and Chishan Town. Because of enduring impacts of human activities on the environment, there is no protophyte in these towns. Plants that dominate the area are secondary plants and vegetation such as grass brushes, firs, metasequoia, masson pines, bamboos, elms, camphor trees, Ligustrum lucidum, privets, castanopsis sclerophylla, willows, pterocarya stenoptera, fraxinus chinensis roxb, liquidambar and chestnuts as well as man-made economic forests such as bamboo forests, tea gardens and oranges and tangerines. People also cultivate rapes, nursery stocks and some vegetables in the neighboring farmlands. Based on on-site surveys and materials from the Forestry Department, there are no rare wild plants in the project area. Due to

frequent human activities, rare animals are hardly seen in the area. Currently, no animal population under state protection has been found in the assessed area, except common animals such as finches, rats, rabbits and snakes.

3.4 Status Quo of Land Use

The project areas are wasteland according to the status quo survey.

3.5 Status Quo and Existing Problems of Solid Waste Treatment

3.5.1 Status Quo of Environmental Sanitation

There has been certain scale of domestic garbage collection and transfer in six towns and townships with a 50L dustbin per household and a given number of cleaners per village. However, there are great differences between methods of garbage collection and treatment and the harmless treatment rate is low. For example, in each village of Penggao Town there is a given number of garbage pools where the garbage is collected and transported to the nearby garbage pools by cleaners and then to the Pingxiang City Mashan Landfill by the cleaning company; the domestic garbage in Dayuan Village of Chishan Town is collected and directly incinerated by cleaners on the site; the domestic garbage in the Zhenjie District is transported to the Pingxiang City Mashan Landfill and the domestic garbage in the rest villages is transported to the simple garbage incinerators in Muchong Village or Xindian Village. The simple garbage incinerators and Mashan Landfill will be closed by the local government when Pingxiang City Domestic Garbage Incineration Power Plant is put into operation.

3.5.2 Existing Problems of Environmental Sanitation

(1)The environmental sanitation vehicles are badly equipped as most vehicles are human-powered vehicles for short distance. This not only limits the garbage collection and transfer, but also causes great labor intensity. Meanwhile, odor generated from garbage affects sanitation workers' physical and mental health, as most collection vehicles are open types.

(2) There are no garbage transfer stations in townships and towns. And the

simple garbage collection stations fail to reach the environmental sanitary standard and damages the environment.

(3) The simple garbage treatment fails to ensure reduction and pollution-free garbage treatment. Besides, the landfills are currently too small to meet the needs of domestic garbage treatment in the towns of Shangli County and the neighboring residents are greatly dissatisfied with the odor and water pollution generated from the garbage.

The domestic garbage in each township is directly stacked without undergoing recycle, reduction and pollution-free treatment, causing serious pollution to the urban air, surface water and groundwater. Besides, because untreated garbage propagates mice, flies and mosquitoes, it also threatens local residents' health, leads to increasing social conflicts and restricts the sustainable development of social economy.

3.5.3 Components and Physicochemical Properties of Garbage

Based on the materials provided by environmental protection department, the analysis of components and heating value of partial domestic garbage in December, 2013 in the project site is listed in Table 3-1.

Table 3-1 The Analysis of As-received Components of Domestic Garbage in the Project Site (%)

Location	Sandy Soil	Glass	Metal	Paper	Plastic	Rubber	Cloth	Vegetation	Kitchen Waste	White Plastic
Dayou Road	11.62	0.28	0.73	13.43	18.05	0	3.06	10.35	41.3	1.18
Zhanqian Road	9.45	2.26	0.49	15.73	15.08	0	6.45	7.26	41.65	1.64
Changxing Square	12.54	1.09	0.78	13.29	12.54	0	1.06	13.47	43.69	1.54

Table 3-2 The Analysis of Components and Heating Value of Domestic Garbage in the Project Site

Location	Car(%)	Har(%)	Nar(%)	Sar(%)	Oar(%)	Clar(%)	Aar(%)	War(%)	Low Heating Value

									(kJ/kg)
Dayou Road	15.08	2.08	0.66	0.17	12.87	0.04	13.01	56.09	6,030
Zhanqian Road	14.33	1.94	0.38	0.08	12.59	0.04	16.06	54.58	4,780
Changxing Square	14.65	2.18	0.38	0.06	12.54	0.04	13.65	56.50	4,620
Average	14.69	2.07	0.47	0.1	12.67	0.04	14.24	55.72	5,143

From the Table 3-2, the average heating value of domestic garbage in the three sites reaches 5,143kJ/kg (1,228kcal/kg), meeting the requirement of "heating value of burning garbage larger than 5,000kJ/kg" in *Construction Standards for Municipal Domestic Garbage Incineration Project.*

3.5.4 Overview of Pingxiang City Domestic Garbage Incineration Power Plant

The collected and transferred domestic garbage will be transported to Pingxiang City Domestic Garbage Incineration Power Plant and collected wastewater in garbage transfer stations will be pumped to the leachate treatment station of the plant by anti-seepage suction sewage trucks. The due diligence of the plant in the EIA is shown in Chapter 5.

3.6 Status Quo of Environmental Quality Standards

3.6.1 Assessment of the Status Quo of Atmospheric Environment

The EIA adopts monitoring data in Regular Air Monitoring Statements of Shangli in the Fourth Quarter of 2015 disclosed by Shangli County Environmental Protection Bureau (EPB) of Pingxiang City in order to understand the atmospheric environment status quo in the project area.

(1) Monitoring factors

Air quality monitoring factors are SO_2, NO_2, and $PM_{10.}$

(2) Monitoring sites

Table 3-3 Air Monitoring Sites

No.	Sites
A1	County Industrial and Commercial Bureau
A2	County Environmental Protection Bureau

(3) Assessment methods

The monomial normal index method is adopted in the assessment of air quality status quo:

$$II_j = C_{ij} / C_{si}$$

In which: IIj-- the index of Type i pollutant in Monitoring Site j;

Cij-- the average monitoring value of Type i pollutant in Monitoring Site j (mg/m^3);

Csi--Standard assessment value of Type i pollutant.

(4) Standard applied

Category II in *Ambient Air Quality Standards (GB3095-2012)* is applied for the project area.

5) Monitoring statistics and assessment results

Table 3-4 Statistical Table of Environmental Monitoring Results (Unit: ug/m^3)

Monitoring Sites	Item	Daily Average Value of Monitoring Result	Category II Standard Value	Exceeding standard Rate (%)	Normal Index	Whether it is up to Standard
County Industrial and Commercial Bureau	SO_2	37	150	0	0.25	Yes
	NO_2	43	80	0	0.54	Yes
	PM_{10}	127	150	0	0.85	Yes
County Environmental Protection Bureau	SO_2	22	150	0	0.15	Yes
	NO_2	24	80	0	0.30	Yes
	PM_{10}	120	150	0	0.80	Yes

(6) Analysis of results

According to Table 3-2, the standard indexes of SO2, NO2 and PM10 in the two monitoring sites of the county industrial and commercial bureau and environmental

protection bureau are less than 1, meeting Category Ⅱ Standard in *Ambient Air Quality Standards (GB3095-1996)* and indicating good air quality in the area.

3.6.2 Assessment of the Status Quo of Surface Water Environment

1. Analysis of pollution sources

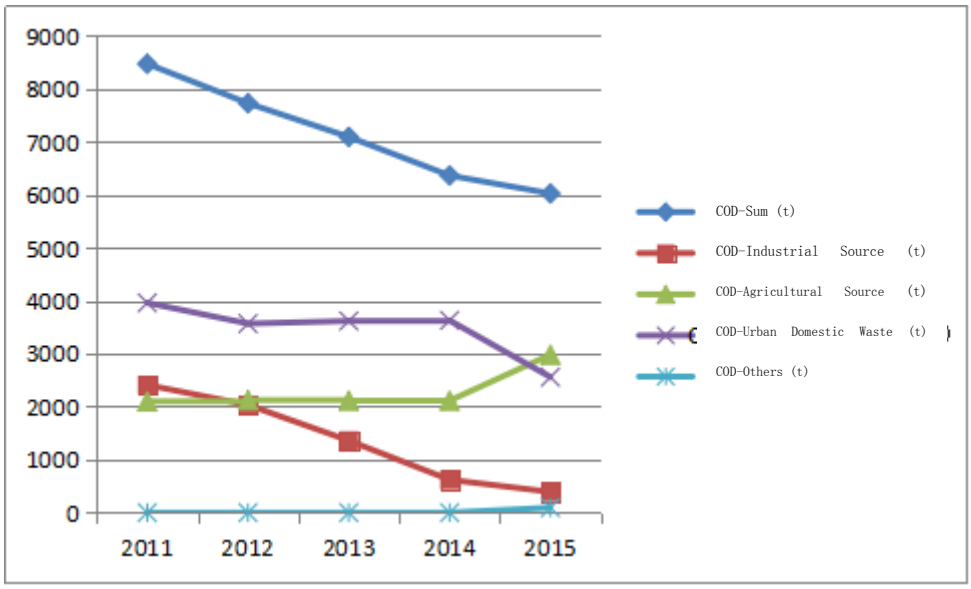
According to the materials of Provincial Department of Environmental Protection, wastewater pollutants in Shangli County (2011~2015) are shown as follows.

Table 3-5 Emission of Wastewater COD in Shangli County (2011~2015) (t)

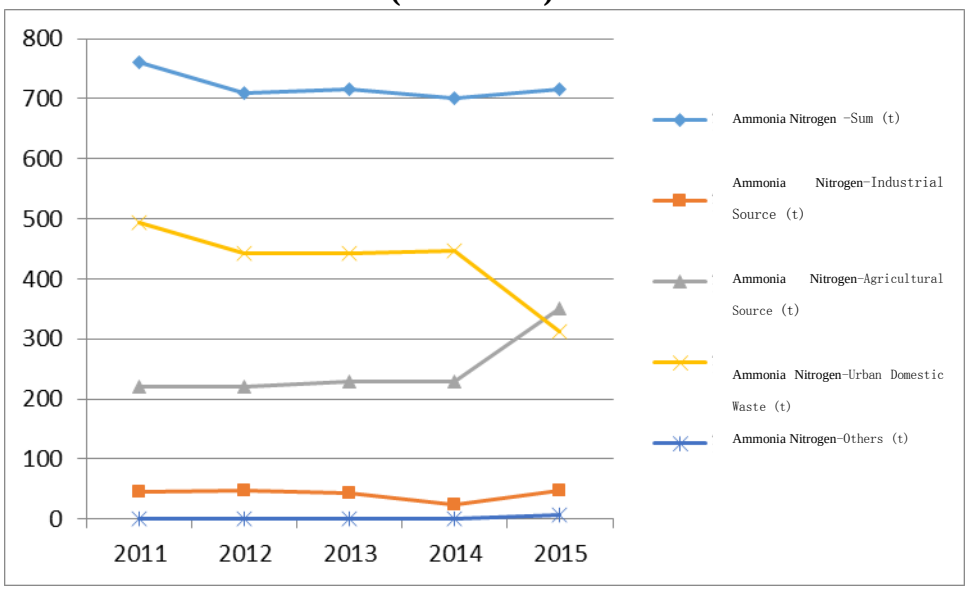
Year	Industrial Source	Agricultural Source	Urban Domestic Source	Other Sources	Total Amount
2011	2,408.08	2,099.08	3,957.405	0	8,464.565
2012	2,031.722	2,123.1933	3,565.61	0	7,720.5253
2013	1,358.908	2,112.2517	3,615.326	0	7,086.4857
2014	620.4736	2,112.2518	3,626.23	0.002	6,358.9574
2015	391.0662	2,978.9948	2,556	94	6,020.061

Table 3-6 Emission of Wastewater Ammonia Nitrogen in Shangli County (2011~2015) (t)

Year	Industrial Source	Agricultural Source	Urban Domestic Source	Other Sources	Total Amount
2011	46.226	221.5	493.546	0	761.272
2012	46.863	220.1859	441.75	0	708.7989
2013	44.235	228.7809	443.564	0	716.5799
2014	24.994	228.7809	446.23	0.0001	700.005
2015	46.7038	351.3619	312	6.6	716.6657



Map 3-2 Emission Trending of Wastewater COD in Shangli County (2011~2015)



Map 3-3 Emission Trending of Wastewater Ammonia Nitrogen in Shangli County (2011~2015)

Shangli County near the source of tributaries of Poyang Lake and Ganjiang River consists of ten townships and tows. From the above, the main wastewater pollution sources in Shangli County are from urban domestic and agricultural pollution. Pollutants of agricultural source discharge scatterly and agriculture is mostly dominated by organic agriculture. Meanwhile, the whole county generalizes soil testing and formulated fertilization and use of organic fetilizer. Thus, the teatment of pollutants of agricultural source shall not be covered in the subproject. Currently, sewage collection and treatment systems have been built in five townships and towns

and are under construction in two townships and towns in Shangli County, which are to be completed in all townships and towns by the end of 2018. But compared with sewage systems, garbage systems in the townships and towns are poor with the result that most garbage fails to receive rational and environmentally friendly collection treatment and there exist safety risks that garbage flows to rivers and lakes and pollutes ground water. To this end, Shangli County applied special fund for construction of garbage collection and transfer systems in four townships and towns. Thus, the project intends to build garbage collection and transfer systems in other six townships and towns.

2.Water Quality Status Quo

The EIA has collected relevant regular monitoring materials of Shangli County in 2015 in order to survey the water quality status quo of Lishui River (see Table 3-7)

Table 3-7 Assessment of the Status Quo of Water Quality

Time	River	Cross Section	Standard	Water Quality Grades	Whether it is up to Standard
January, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
February, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
March, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
April, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
May, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
June, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
July, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
August, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
September 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
October, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
November, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes
December, 2015	Lishui River	Foling	Ⅲ	Ⅱ	Yes

From the above table, the water quality in Lishui River is currently good. The water quality in Foling section reaches Category Ⅲ in *Surface Water Environment Quality Standards (GB3838-2002)*. Currently, garbage systems in the townships and towns are poor with the result that most garbage fails to receive rational and environmentally friendly collection treatment and there exist safety risks that garbage

flows to rivers and lakes and pollutes ground water. Implementation of the project will decrease pollutants of key waters flowing into Poyang Lake and then improve water quality status quo.

3.6.3 Assessment of the Status Quo of Acoustic Environment

The EIA monitors the current neighboring acoustic environment for comprehensive understanding and analysis of the current project acoustic environment quality.

Sound-level meter type: Type HS5618A integral sound-level meter;

Monitoring Time: May 8th, 2016

Outdoor meteorological conditions for monitoring: there is no rain, snow, thunder or lightning and the wind speed is less than Category IV (5m/s);

There are 24 noise monitoring sites (see Table 3-6 for monitoring results).

Table 3-8 Monitoring Results of Acoustic Environment Status Quo (Unit: dB(A))

No. of Monitoring Sites	Locations of Monitoring Sites	Daytime Monitoring Value	Standard	Whether it is up to Standard 1
N1	1m outside the eastern boundary of garbage transfer station in Changping Township	47.6	Category I in *Acoustic Environment Quality Standards (GB3096-2008)*: Daytime: 55	Yes
N2	1m outside the southern boundary of garbage transfer station in Changping Township	47.1		Yes
N3	1m outside the western boundary of garbage transfer station	47.5		Yes

	in Changping Township n			
N4	1m outside the northern boundary of garbage transfer station in Changping Township	47.2		Yes
N5	1m outside the eastern boundary of garbage transfer station in Futian Town	49.2		Yes
N6	1m outside the southern boundary of garbage transfer station in Futian Town	49.3		Yes
N7	1m outside the western boundary of garbage transfer station in Futian Town	49.3		Yes
N8	1m outside the northern boundary of garbage transfer station in Futian Town	49.1		Yes
N9	1m outside the eastern boundary of garbage transfer station in PenggaoTown	48.3		Yes

N10	1m outside the southern boundary of garbage transfer station in Penggao Town	48.5		Yes
N11	1m outside the western boundary of garbage transfer station in Penggao Town	48.5		Yes
N12	1m outside the northern boundary of garbage transfer station in Penggao Town	48.4		Yes
N13	1m outside the eastern boundary of garbage transfer station in Dongyuan Township	49.7		Yes
N14	1m outside the southern boundary of garbage transfer station in Dongyuan Township	49.6		Yes
N15	1m outside the western boundary of garbage transfer station in Dongyuan Township	49.6		Yes
N16	1m outside the northern	49.7		Yes

	boundary of garbage transfer station in Dongyuan Township			
N17	1m outside the eastern boundary of garbage transfer station in Chishan Town	50.2		Yes
N18	1m outside the southern boundary of garbage transfer station in Chishan Town	50.3		Yes
N19	1m outside the western boundary of garbage transfer station in Chishan Town	50.3		Yes
N20	1m outside the northern boundary of garbage transfer station in Chishan Town	50.1		Yes
N21	1m outside the eastern boundary of garbage transfer station in Yangqi Township	50.6		Yes
N22	1m outside the soutern boundary of garbage	50.5		Yes

	transfer station in Yangqi Township			
N23	1m outside the western boundary of garbage transfer station in Yangqi Township	50.6		Yes
N24	1m outside the northern boundary of garbage transfer station in Yangqi Township	50.5		Yes

The on-site monitoring results indicate that the current neighboring acoustic environment quality is in line with Category I limit in *Acoustic Environment Quality Standards (GB3096-2008)*.

4. Alternatives Analysis

The comparison and selection of alternatives of the project mainly includes two parts: (1) the comparison and selection of zero alternative; (2) the comparison and selection of garbage transfer technology.

The alternatives are compared and selected based on the following principles:

(1) The quantitative principle: the project implementation's impacts on environment should be quantified as much as possible in each alternative.

(2) The comprehensive principle: the comprehensive comparison analysis should be made from the aspects of environment, technology, economy and society.

(3) The correspondence principle: the selected alternative should conform to the relevant development planning and standard requirements as well as the local conditions.

4.1 Comparison and Selection of Zero Alternative

The project EIA makes analysis of the comparison and selection of the alternative and zero alternative from the aspects of environmental profit and loss and social economy (the results are listed in Table 4-1).

Table 4-1 Comparison and Selection of Zero Alternative

Item	Project Implementation Alternative	Project non-implementation Alternative (Zero Alternative)
Main Advantages	(1) The project implementation alternative meets Poyang Lake Ecological Economic Zone Plan; (2) Decreases 5.06t garbage flowing into Poyang Lake Basin annually; (3)Further improves urban infrastructure.	(1) Maintains existing environmental conditions like no vegetation damage; (2) Will not change land utilization value(will not occupy land); (3) Will not cause environmental impacts during construction period such as destroyed vegetation and dust.
Main Disadvantages	(1)Occupies land and makes a requisition of land; (2) Damages vegetation and generates dust and construction noise during construction; (3) Odor, equipment noise and sewage generated during operation period may have impacts on environment.	(1) Poor domestic garbage collection and partial disorderly stacking of waste damage city appearance and residential environments as well as water environment and ecological environment. (2) Domestic garbage treatment is not in place and partial collected garbage is directly incinerated, damaging atmospheric and surface water ecological environment.
Overall Analysis	From the social and environmental perspectives, the implementation alternative is superior to the zero alternative.	

From Table 4-1, the project non-implementation alternative has no environmental impact on the environment from the project construction and operation, but the existing garbage is directly discharged into the environment, undoubtedly causing serious pollution; implementation of the project will bring certain environmental impacts, but those impacts can be avoided and mitigated by adopting corresponding environmental protection measures. Besides, the environmental impacts generated during construction period are temporary, but the project implementation and operation can bring long-term social and environmental benefits and in particular have positive impacts on protecting and improving the water quality of Poyang Lake Basin and ensure better urban infrastructure. Therefore, from the perspectives of improving economic development and environmental protection, the implementation alternative is superior to the zero alternative and the project construction is necessary.

4.2 Comparison and Selection of Technology

4.2.1 Standards for Selection of Technology

The standards for selection of technology conform to the following principles:

(1) Small land occupancy: Maxim land conservation should be reached for valuable land resources.

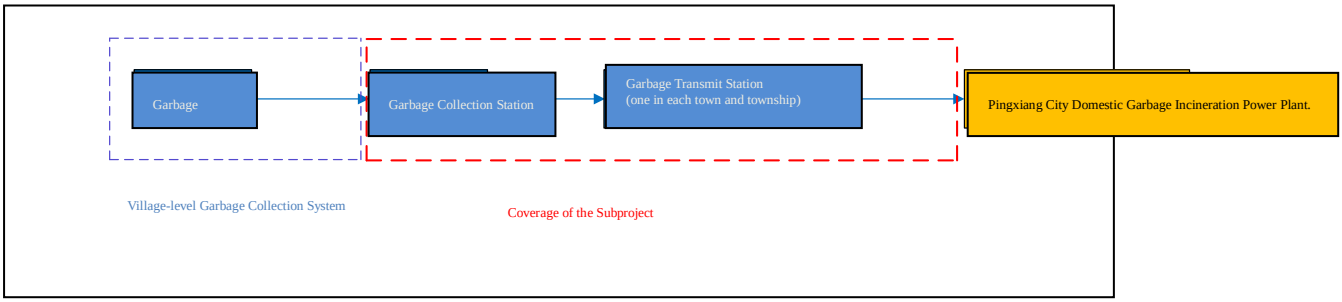
(2) Few adverse environmental impacts should be preferred.

(3) Convenient management and low running cost should be preferred. It is necessary to consider local management level and perennial running cost after project operation and choose techniques with convenient management and low running cost.

4.2.2 Assessment of Technology

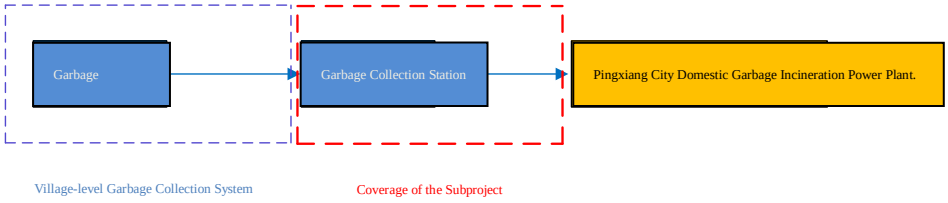
The project design takes three alternatives into consideration based on scientific, rational and operational principles and closely related to Shangli County land-use planning and layout.

Alternative 1: one garbage collection station is built in each village and one

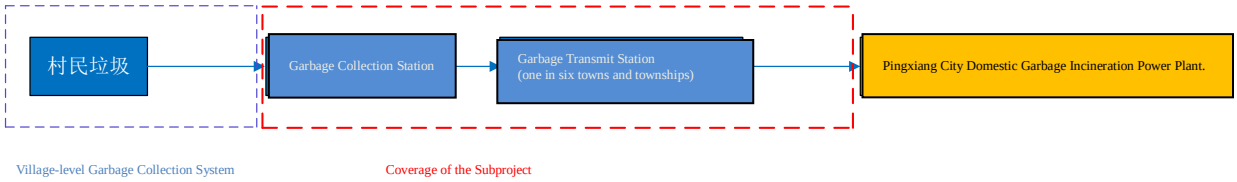


garbage transfer station in each town and township.

Alternative 2: the garbage from the villages' garbage collection stations is directly transported to Pingxiang City Domestic Garbage Incineration Power Plant.



Alternative 3: Six townships and towns focus on building one garbage transfer station.



4.2.3 Comparison and Selection of Technology

Comparison and selection of technology are listed in Table 4-2.

Table 4-2 Comparison and Selection of Garbage Collection and Transfer Systems

Item	Alternative 1 (recommended)	Alternative 2	Alternative 3
Construction Cost (RMB)	52,800,000	27,050,0000	39,800,000
Running Cost (RMB)	6,946,000/a	9,465,000/a	7,868,000 /a
Garbage Collection Efficiency	80%	80%	80%
Transportation	Shorter transportation distance has fewer impacts on transportation.	Longer transportation distance has more impacts on transportation.	Longer transportation distance has more impacts on transportation.
Energy Conservation	Proper garbage transportation distance and shorter collection distance decrease the investment in garbage collection trucks and save the garbage collection and transportation cost.	Longer collection distance requires more garbage collection trucks and increases transportation cost.	Longer collection distance requires more garbage collection trucks and increases transportation cost.
Environmental Impacts	The site of transfer station is over 200m from the neighboring residential areas and deodorant equipment and dust-treatment equipment are installed in the compression workshop, having fewer impacts on the neighboring environment.	The site of collection station is over 10m from the neighboring residential areas with deodorant equipment and dust-treatment equipment installed, having fewer impacts on the neighboring environment.	The site of transfer station is over 200m from the neighboring residential areas and deodorant equipment and dust-treatment equipment are installed in the compression workshop, having fewer impacts on the neighboring environment.
Advantages	Proper layout of transfer stations can shorten garbage collection distance, save manpower and material resources and lower the labor intensity during the garbage cleaning and transportation thus saving cleaning and transportation cost. Meanwhile, it helps to improve urban environmental sanitation management level and urban sustainable development meeting the requirement of at least	It saves the cost of station construction and decreases occupied land.	It saves the cost of station construction and decreases occupied land.

	one garbage transfer station in each town and township of Jiangxi Province Special Administrative Work Plan for Rural Domestic Garbage.		
Disadvantages	More construction cost	Longer garbage cleaning transportation distance obviously leads to greater labor intensity for drivers and cleaners, wasting manpower and material resources. The alternative fails to meet the requirement of at least one garbage transfer station in each town and township of Jiangxi Province Special Administrative Work Plan for Rural Domestic Garbage.	Longer garbage cleaning transportation distance obviously leads to greater labor intensity for drivers and cleaners, wasting manpower and material resources. The alternative fails to meet the requirement of at least one garbage transfer station in each town and township of Jiangxi Province Special Administrative Work Plan for Rural Domestic Garbage.

From the above table, the construction cost of alternative 1 is RMB 25,750,000 more than that of alternative 2 and RMB 13,000,000 more than that of alternative 3; but the annual running cost of alternative 1 is RMB 2,519,000 less than that of alternative 2 and RMB 922,000 less than that of alternative 3. Calculated at 20-year operation period of garbage collection and transfer system, the total cost of alternative 1 is RMB 191,720,000 the alternative 2 total cost is RMB 216,350,000 and the alternative 3 total cost is RMB 197,160,000. Economically, alternative 1 is obviously better than alternative 2. Meanwhile, alternative 1 is more advantageous than alternative 2 in terms of convenient garbage collection and transportation, energy conservation and transportation. The garbage transfer stations installed with deodorant equipment and dust-treatment equipment have fewer environmental impacts, meeting the requirement of at least one garbage transfer station in each town and township of Jiangxi Province Special Administrative Work Plan for Rural Domestic Garbage. Therefore, alternative 1 is recommended in this project, i.e. one garbage collection station is built in each village (87 stations in total) and one garbage transfer station in each town and township (six stations in total).

4.3 Comparison and Selection of Techniques

4.3.1 Comparison and Selection of Compression Techniques

4.3.1.1 Standards for Selection of Techniques

Compression techniques are compared and selected based on scientific, operational and economic principles and closely related to the existing situation of urban garbage treatment in Shangli County.

4.3.1.2 Compression Techniques

The currently domestic widely-used garbage compression techniques include mobile garbage compression technique, horizontal garbage compression technique, container-type garbage compression technique, vertical garbage compression technique and prepressing direct-push-style garbage compression technique among which vertical garbage compression technique belongs to the early product and is gradually phased out for its deep bottom, difficult flushing operation and poor sanitation, thus not recommended in the project; prepressing direct-push-style garbage compression technique generally adopted in large garbage transfer stations is not suitable for the project for its high cost. Thus, the EIA only compares mobile garbage compactor, horizontal garbage compactor and container-type garbage compactor.

4.3.1.3 Comparison and Selection of Compression Techniques

Comparison and selection of mobile garbage compactor, horizontal garbage compactor and container-type garbage compactor are listed in the following table.

Table 4-3 Comparison and Selection of Garbage Compression Equipment

Type	Alternative 1: Mobile garbage Compactor	Alternative 2: Horizontal garbage Compactor	Alternative 1: Container-type garbage Compactor
Equipment Appearance			

Supporting Truck	 Hook Arm Type Garbage Transportation Truck	 Sealed Garbage Transportation Truck	 Hook Arm Type Garbage Transportation Truck
Maxim Productivity of Single Compactor	50t/d	100t/d	120t/d
Garbage Weight of Single Truck	8~14t	8~10t	8~16t
Number of Supporting Equipment in Single Station	Two Compactors and One Truck	Two Compactors and One Truck	Two Compactors, One Truck and Three Containers
Single Compactor Power	5.5 kW	22 kW	22kW
Floor Space of Compactor	$20m^2$	$42m^2$	$35m^2$
Supporting Building Area	$160m^2$	$220m^2$	$325\ m^2$
Investment in Single Station (RMB)	1,500,000	2,800,000	3,500,000
Advantages	1. Simple foundation of equipment ensures convenient cleaning and better sanitary conditions and no need for pits. 2. Garbage transfer adopts sealed structure, avoids secondary garbage pollution and	1. The speed of garbage transportation is fast and the compactor can be put into consistent operation.	1. Compactors are separated from containers, which reduces oil energy consumption.

	solves problems like garbage throwing, dripping and leaking. 3. It saves energy.		
Disadvantages	1. Compactors are also carried to the garbage treatment plant, leading to a slight increase of oil energy consumption.	1. Complicated foundation of equipment needs pits in the equipment room and causes inconvenient cleaning and poor sanitary conditions. 2. Garbage lump may be scattered and garbage leachate may be leaked during transportation, causing pollution. 3. Great compactor power increases energy consumption.	1. Higher investment; 2. Great compactor power increases energy consumption.

From the above table, horizontal garbage compactor is not consistent with the actual situation in Shangli County for its need for pits in the equipment room, inconvenient cleaning, poor sanitary conditions and the secondary pollution caused during the long-distance garbage transportation. Container-type garbage compactor is more suitable for the middle-sized garbage transfer station with complicated foundation of equipment, higher investment in compression equipment and higher running cost as well as large energy consumption. Mobile garbage compactor has few impacts on environment with less occupied land and easy operation as well as easy running and cleaning after operation. Therefore, alternative 1, i.e. mobile garbage compression technique, is recommended for the project garbage transfer station compression equipment.

4.3.2 **Comparison and Selection of Deodorization Techniques**

The project plans to set up deodorization system in garbage transfer stations. Currently, the deodorization techniques which are applied more frequently include high-energy reactive oxygen ion deodorization technique and botanical saps spraying deodorization system. The comparison and selection of these two deodorization

techniques is made in the EIA.

Table 4-4 Comparison and Selection of Deodorization Techniques

Item	BENTAX high-energy reactive oxygen ion method	Botanical saps spraying method
Purification Process	Adopting advanced positive and negative oxygen ion to purify air	Adopting absorption and oxidizing reaction of botanical saps with odorous gas in the air
Purification Mechanism	Combining Physics and Chemistry	Mainly absorption and oxidizing reaction
Purification Agent	Outdoor fresh air	Plan extract
Maintenance Method	After long running period (2-3 years), ionic tube shall be replaced, considering real running situation.	Nozzle shall be frequently cleane to avoid obstruction.
Maintenance Form	Easy cleaning, unattended and non maintenance form	Attended duty, maintenance and replacement form
Purification Effect	effective and stable running in the long term without fluctuation	Low
Energy Consumption	Low, energy consumption from exhaust fan and ionizer	Low
Operation	Ready to use and unattended operation	Complicated operation. Replace and supplement botanic saps regularly
Impact Resistance Loading Capacity	Good	Low
Equipment	Small equipment, with unattended basic treatment	small equipment, with unattended basic treatment
Equipment Transportation Installation and Debugging	Simple and easy	Simple
Scope of Application	Having good treatment effects on different spaces, suitable for garbage transit stations and garbage landfills	Suitable for open space which IIs difficult to collect and treat like garbage landfills and chemical plants
Selection of Objects	Having good treatment effects on organic and inorganic exhaust gas in garbage grounds without special selection	Non special requirements
Investment Cost (RMB)	Investment in single equipment: 265,000	Investment in single equipment: 125,000
Running Cost (RMB)	Annual running cost: 33,000	Annual running cost: 64,000

From the above table, botanical saps spraying method is complicated in terms of operation and subsequent maintenance. The deodorization effect is not obvious. Although former investment cost in single equipment is very low, the subsequent running cost is very high. However, BENTAX high-energy reactive oxygen ion deodorization method is very easy in terms of operation and subsequent maintenance. The deodorization effect is obvious. Although its former investment cost in single equipment is once higher than that of botanical saps spraying method, its subsequent running cost is half of that of botanical saps spraying method. In the long term, BENTAX high-energy reactive oxygen ion deodorization method is more advantageous and is recommended in the project.

5. Analysis of Environmental Impacts and Mitigation Measures

5.1 Analysis of Environmental Impacts and Mitigation Measures during construction period

5.1.1 Impacts on Water Environment and Mitigation Measures during construction period

5.1.1.1 Impacts on water environment during construction period

Wastewater generated during construction period mainly includes domestic wastewater generated by constructors and construction wastewater. Domestic wastewater consists of main pollutants, namely COD, BOD_5, SS and ammonia nitrogen with generation of 2.4m^3/d; construction wastewater consisting of main pollutants like SS and petroleum is mainly generated from construction processes like flushing and mixing sandstone as well as pouring concrete in the construction area.

The above construction and domestic sewage if discharged randomly will pollute the neighboring water body. In this project, domestic sewage generated by constructors is treated through the existing domestic sewage treatment system in the residential buildings around the construction site instead of being discharged outward; construction wastewater is planned to be deposited and sprayed for dust control. After adopting the above measures, wastewater during construction period has no adverse impact on the neighboring water environment.

5.1.1.2 Mitigation measures

Wastewater during construction period mainly consists of domestic sewage produced by constructors and Construction wastewater. The following protection measures on water environment are mainly adopted during construction period:

1. Construction wastewater

Wastewater in sandstone processing system treated in sedimentation tank is sprayed for concrete mixing and construction dust control without being discharged into the water body around the project; mud generated during construction period is pumped to the sedimentation tank by mud pump and solidified through water discharge and evaporation without being discharged into the water body around the

project; mechanical equipment flushing wastewater treated in precipitation and oil separation tank is sprayed for dust control in the construction area without being discharged into the water body around the project

The layout of construction site should take discharged water into consideration and keep away from rivers as much as possible. Construction area, warehouses, rooms where diesel oil and asphalt are stored and the equipment for manufacturing asphalt shall not be within the range of 500m from rivers and pollutants shall be prohibited from flowing into rivers, especially from leaking through land and surface water during the rainy season.

If oil materials are stored in the site, the seepage prevention must be adopted in warehouses and the measures in the storage and use of oil materials must be adopted to prevent them from rising, dripping and leaking and polluting water bodies.

The foundation construction should be carried out during the non-flood season as much as possible so as to decrease the impacts of shallow groundwater on project construction.

2. Domestic sewage

In this project, domestic sewage generated by constructors is treated through the existing domestic sewage treatment system in the residential areas around the construction area instead of being discharged outward. Seepage prevention and loss prevention should be adopted in the domestic garbage storage based on relevant requirements.

5.1.2 Impacts on Ambient Air and Mitigation Measures during construction period

5.1.2.1 Impacts on water environment during construction period

(1) Dust generated by vehicles passing by

According to relevant materials, during construction, the dust from vehicles' transportation accounts for over 60% of the total volume. In the completely dry case, dust generated from vehicles' transportation can be calculated at the following empirical formula:

$$Q = 0.123(V/5)(W/6.8)^{0.85}(P/0.5)^{0.75}$$

Where: Q--dust generated from vehicles' transportation, kg/km · vehicle;

V--vehicle speed, km/h;

W--loading capacity, t;

P--wind-blown dust on the pavement, kg/m^2

The dust of a 10-ton truck driving across 1-km pavements of different cleaning situations in different speeds is listed in the table 5-1. It can be seen that the faster the truck drives, the more the dust is generated on the same pavement; the dirtier the pavement is, the more the dust is generated with the same vehicle speed. Thus, it is most effective to limit vehicle speed and keep pavement clean to diminish dust generated by vehicles passing by.

Table 5-1 Dust Generated by Vehicles Driving across 1-km Pavements of Different Cleaning Situations in Different Speeds (Unit: kg/vehicle·km)

Amount of Dust / Vehicle Speed	0.1 kg/m^2	0.2 kg/m^2	0.3 kg/m^2	0.4 kg/m^2	0.5 kg/m^2	1.0 kg/m^2
5 (km/m^2)	0.0511	0.0859	0.1164	0.1444	0.1707	0.2871
10 (km/m^2)	0.1021	0.1717	0.2328	0.2888	0.3414	0.5742
15 (km/m^2)	0.1532	0.2576	0.3491	0.4332	0.5121	0.8613
25 (km/m^2)	0.2553	0.4293	0.5819	0.7220	0.8536	1.4355

Meanwhile, if the pavement is watered regularly (4~5 times/day) during construction period, dust can decrease by about 70%, greatly reducing dust pollution.

(2) Dust in the construction site

The other main source of dust during construction period is wind-blown dust from open-air storage grounds and bare grounds. Because of construction needs, construction materials are stored in the open air. Manually excavated and stored temporarily topsoil in partial construction points can turn into dust in dry and windy days. The amount of dust is calculated at the empirical formula for wind-blown dust in the storage ground.

$$Q = 2.1(V_{50} - V_0)^3 e^{-1.023W}$$

Where: Q--wind-blown dust, kg/t·y;

V_{50}--wind speed at 50m from the ground, m/s;

V_0--dust-blown wind speed, m/s;

W--moisture content of dust particle, %

Wind speed is related to moisture content. Thus, an effective way to decrease wind-blown dust is to diminish open-air storage and bare grounds as well as to maintain certain moisture content. The diffusion and dilution of dust in the air is related to dust settling speed and meteorological conditions like wind speed. Settling speeds of dust in different sizes are provided in table 5-2. From the table, dust settling speed increases rapidly with the rise of dust size. Dust settling speed is 1.005m/s with the dust size of 250μm. Thus, dust particles larger than 250μm mainly fall within the near downwind distance from source of dust and it is micro-size dust that has real impacts on the external environment.

Table 5-2 Dust Settling Speeds of Dust in Different Sizes

Dust Size (μm)	10	20	30	40	50	60	70
Settling Speed (m/s)	0.003	0.012	0.027	0.048	0.075	0.108	0.147
Dust Size (μm)	80	90	100	150	200	250	350
Settling Speed (m/s)	0.158	0.170	0.182	0.239	0.840	1.005	1.829
Dust Size (μm)	450	550	650	750	850	950	1,050
Settling Speed (m/s)	2.211	2.614	3.016	3.418	3.820	4.222	4.624

(3) Exhaust gas generated by construction machine and transportation vehicles

Certain exhaust gas which contains pollutants like HC, CO and NOx is generated by construction machine like bulldozers, diggers and transportation trucks during construction period and causes certain impacts on ambient air. Generally, discharge amount of exhaust gas and emission concentration of pollutants are relatively small when the vehicle decelerates. Thus, in order to reduce impacts of exhaust gas, transportation vehicles, bulldozers and diggers should slow down when passing through villages and construction area; meanwhile, maintenance of construction

machine should be done to keep normal operation and reduce exhaust gas emission.

5.1.2.2 Mitigation measures

Exhaust gas is mainly generated from construction dust, construction machine and vehicles. The following protection measures on ambient air are mainly adopted during construction period:

1. The advanced construction techniques are adopted like wet crushing adopted in sandstone and concrete systems and dust collection equipment. Vehicle speed, vehicle exhaust gas and coal-burning exhaust gas should be controlled. Water is sprayed in the construction area in accordance with needs. Construction team adopts clean energies like liquid gas and electricity and strengthens afforestation in the construction area and labor protection of constructors. These measures will reduce impacts on ambient air.

2. Vehicle washing platforms are installed inside passageways for material and waste soil transportation vehicles and should meet the following requirements: overflow-proof stations are placed around truck washing platforms to prevent vehicle washing wastewater from flowing out of the construction site. Before vehicles drive out of the construction site, the tires and body should be flushed on the vehicle washing platform and mud shall not be attached to the surface. The height of materials and waste soil on the transportation vehicles shall not surpass vehicle ledge and car hopper be covered with tarpaulin or sealed.

3. Concrete mixing station and asphalt mixing station shall not be installed in the construction site and commercial concrete and asphalt are adopted.

4. Transportation vehicles, bulldozers and diggers should slow down when passing through villages and construction area; meanwhile, maintenance of construction machine should be reached to keep normal operation and reduce exhaust gas emission.

5. Dust-proof screens shall be placed around the construction area, especially those places near the residential areas, hospitals and schools.

6. Dust and particulates shall be reduced as much as possible to avoid affecting

the neighboring residents' life and commercial activities. The vulnerable populations shall be given key protection like kids and old people.

5.1.3 Impacts on Acoustic Environment and Mitigation Measures during construction period

5.1.3.1 Impacts on acoustic environment during construction period

Noise during construction period dies away with the completion of construction, but strong noise will have serious impacts on the neighboring acoustics environment such as hospitals, schools and other important sensitive spots. Thus, noise during construction period must be given key control. Pipeline construction enables constant change of equipment location and the amount of running equipment fluctuates during different periods in the same construction stage, so it is hard to exactly predict noise levels in each construction site. According to attenuation mode of point sound source, noise levels of construction equipment at different distances can be calculated. Attenuation mode of point sound source is shown as follows:

$LP = LPO - 20Lg(r/ro) - \Delta L$

Where: LP—sound pressure level at r(m) away from sound source, dB(A);

LPO—sound pressure level at ro (m) away from sound source, dB(A);

ΔL—each attenuation (except divergence attenuation), dB(A). ΔL of outdoor noise source is zero.

Without considering noise attenuation of woods and buildings, predicted noise levels of each construction machine at different distances (without sum of status quo value) are shown in the following table.

Table 5-3 Predicted Noise Levels of Each Construction Machine at Different Distances Unit: dB (A)

No.	Type	Predicted Noise Levels								
		5m	10m	20m	40m	50m	80m	100m	150m	200m
1	Loader	90	84.0	78.0	72.0	70.0	66.0	64.0	60.5	58.0
2	Road Roller	81	75.0	69.0	63.0	61.0	57.0	55.0	51.5	49.0
3	Bulldozer	86	80.0	74.0	68.0	66.0	62.0	60	56.5	54.0
4	Digger	84	78.0	72.0	66.0	64.0	60.0	58.0	54.5	52.0
5	Large Lorry	86	80.0	74.0	68.0	66.0	62.0	60	56.5	54.0

6	Light Lorry	75	69.0	63.0	57.0	55.0	51.0	49.0	45.5	43.0

Through comparison of the above table, the daytime levels 50m away from construction machine follow *Ambient Noise Emission at Construction Site Boundary (GB12523-2011)* (daytime: 70 dB(A), nighttime: 55 dB(A)), but nighttime levels within 200m cannot reach standard limits. So, daytime construction noise has large impacts on acoustic environment within 50m around the construction site and nighttime construction noise has more serious impact which has short-term, temporary and local features and subsides with the completion of the project.

Based on the on-site visits and surveys, there is no important sensitive spots such as schools, kindergartens, hospitals and nursing homes within the range of 200m from the garbage transfer stations. In short, noise from construction machinery has few impacts on the environment.

5.1.3.2 Mitigation measures

Noise mainly comes from material transportation, pipe and channel excavation, tubing loading and unloading, construction machine during the backfill process such as bulldozers, diggers, sandstone mixing plants and lorries. The following protection measures on acoustic environment are mainly adopted during construction period:

1. Horn prohibition warning boards are placed in the construction area. Low-noise equipment is used to control noise point sources, modes of transmission and traffic noise. Noise-proof earplugs are provided and the rational construction schedule is arranged for constructors.

2. According to the requirements of *Standards for Ambient Noise Emission at Construction Site Boundary (GB12523-2011)*, the construction schedule shall be arranged reasonably, in order to avoid simultaneous operation of multiple large-scale and high-noise machines at a same construction site and avoid the period when the neighboring environment is sensitive to noise. High-noise equipment shall operate at the day time as much as possible. Nighttime transportation shall be avoided and construction at the night time (22:00~6:00) is prohibited. For construction activities that must go on into the night time, the constructor must gain approved of the local

relevant environmental protection department and communicate with residents prior to the operation. Meanwhile, noise reduction measures like noise barriers shall be used to reach minimum construction impacts on residents.

3. The speed of all construction vehicles shall not exceed 25km/hour outside construction site.

4. The speed of vehicles shall not exceed 15km/hour in the construction site.

5. Noise of machine and equipment shall be kept below 90 decibels as much as possible.

6. Right measures shall be adopted to reduce construction noise and vibration on the neighboring environment.

5.1.4 Impacts of Solid Waste and Mitigation Measures during construction period

5.1.4.1 Impacts of solid waste and mitigation measures during construction period

Solid waste generated during construction period is mainly domestic garbage generated by constructors and spoil during construction.

(1) Impacts of domestic garbage generated by constructors

The generation of domestic garbage during construction period is 30kg/d, mainly consisting of organic garbage. The domestic garbage thrown away randomly becomes easily decomposed and fermented. It not only pollutes water environment, but also propagates flies and mosquitoes due to fermentation and produces odorous exhaust gas. Thus, EIA suggests that garbage collection boxes be placed in the construction site during construction period and domestic garbage be collected, cleaned and transported by environmental sanitation departments.

(2) Impacts of construction wastes

The earth work of the project mainly comes from the construction of garbage transfer stations including about 1,000 m^3 of excavated earth work, 600 m^3 of filled earth work and 400 m^3 of spoil work. The spoil of the project is allocated for other civil works by the Office of Environment and Sanitation in each town and township.

If grounds for spoil and stone are irrationally arranged or waste slag generated

from the construction unit is placed randomly, waste earth and slag easily form unplanned distribution along the construction area and occupies significant urban land. This will lead to uncontrollable water and soil erosion in the slag ground, make it difficult to restore and utilize temporary land of slag points and have great adverse impacts on the ecological system and landscape environment around the slag points.

5.1.4.2 Mitigation measures

Solid waste generated during construction period is mainly domestic garbage generated by constructors and spoil during construction. The following mitigation measures on solid waste are mainly adopted during construction period:

1. Spoil

If spoil in the construction site needs stacking temporarily, it shall be placed in the permanent foundation of garbage transfer stations rather than temporary dump sites. And spoil should be transported to the designated site and allocated for other civil works in Shangli County by the local Environment and Sanitation Bureau. County-level Environment and Sanitation Bureau shall adopt following measures on temporary dump sites:

① Temporary dump sites of earth and stone shall be laid out rationally away from sensitive spots such as residential area and schools as much as possible and from water bodies. It is suitable to lay out them on downwind and crosswind directions of summer prevailing wind direction of urban and residential areas;

② Less land shall be occupied as much as possible and temporary occupied area shall be restored based on the original land use types after completion of construction;

③ Earth and stone stacked temporarily shall be rammed, rolled and covered with tarpaulin with water-proof and wind-proof measures well adopted;

④ Mud drains shall be built around the temporary waste soil dump sites and mud detritus pits shall be built at the drains' outlet to slow down collected water and deposit silts;

⑤ Spoil shall be sealed during transportation to avoid scatter;

⑥ The operation of spoil work shall be conducted by specially-assigned

persons in each section. Non-operating personnel shall be prohibited from entering into the operation area and operating personnel, vehicles and machine in the operation area follow managerial personnel's directions. The vehicles shall discard earth in accordance with the routes and areas designated by managerial personnel and not discard earth randomly, affecting normal earth discarding operation in the spoil grounds and outside the construction site;

⑦ Water- proof and drainage treatment shall be made to ensure smooth drainage and avoid inundation around the spoil grounds and the operation site as well as water and soil erosion and environmental pollution;

⑧ Safety standards on protection and construction in the temporary dump sites shall be made based on the relevant construction standard requirements;

⑨ Specially-assigned persons shall patrol the spoil grounds after work and handle and report potential safety hazards in time. Warning signs shall be set up; and the spoil on one day shall be handled on the same day as much as possible;

⑩ After completion of the project, the temporary facilities in the construction site shall be dismantled, waste soil be cleaned up and the sites be leveled in time to restore the neighboring environment; During the construction and shut-down period the sanitation in the construction site and the neighboring environment shall be maintained.

11 During the process of dumping earth, the operation shall be carried out through strictly paving and rolling, and the soil layer shall be rolled before being paved with the new one. During the paving of soil layer, the slope shall be high inside and low outside according to the construction progress. A certain number of runoff gathering pits shall be placed in the runoff ditches to deposit mud in water. Weather and local flood situation shall be mastered in time. Dredging work in drains and runoff gathering pits shall be ready and drains be improved ahead of time;

12 After completion of earth work, equipment, surplus material, garbage and temporary facilities shall be cleared up in time.

2. Domestic garbage

Domestic garbage collecting pails shall be placed in the construction area.

Garbage shall be cleaned, collected and classified and then transported by environmental sanitation departments.

5.1.5 Ecological Impacts and Mitigation Measures during construction period

5.1.5.1 Ecological impacts during construction period

Ecological impacts on ecology during construction period mainly include the following three parts:

(1) Impacts on plants in the construction area

Most land occupied by garbage transfer stations and monitoring stations is vacant land. No old or famous trees have been found in the construction area. Besides, temporary occupied area will be restored based on the original land use types after the construction is completed, almost having no impact on plants in the construction area.

(2) Impacts on animals in the construction area

Poultry are main animals. Wild animals under priority protection and their concentrated habitats have not been found in the project area. Thus, the project construction almost has no impact on animals in the construction area.

(3) Aggravate water and soil erosion

During construction, the building of construction site will damage surface vegetation, increasing soil erosion modulus. Not only will Temporary dump sites bury surface vegetation, but also stacked waste slag will become new water and soil erosion area, resulting in water and soil erosion in the rainy season.

Damages on ecology and landscape during construction period are limited and temporary. On the condition that constructors do a good job in the management and the restoration in the temporary site after construction, the impacts on ecology and landscape during the project construction period are acceptable.

5.1.5.2 Mitigation Measures

1. Construction site shall be laid out scientifically, occupying less land as much as possible. Besides, temporary occupied areas will be restored based on the original land use types after the construction is completed.

2. Publicity and education shall be intensified. During construction, if rare and endangered wild plants, ancient or famous trees and local endemic plants are found, relevant departments should be reported and in-situ protection measures be adopted. Control should be taken on construction noise, reducing its interference on animals.

3. During construction topsoil shall be excavated and stacked in different layers. After the construction is completed, temporary facilities shall be dismantled, hardened and impervious soil be loosed, topsoil be backfilled in different layers and vegetation be restored. Proper vegetation type shall be selected based on the local climatic features, slope rate and geological conditions.

4. Preventive measures on water and soil erosion

(1) Rationally choose the construction period and try to avoid rainy season or construction in raining days. Set up construction enclosure surrounding the work site to prevent construction materials and wastes from leaking into the surface water.

(2) Set up earthen drainage ditch around the construction site on the basis of its terrain conditions. And set up an earthen grit chamber at the outlet of the ditch, slowing down the water and settling sand.

(3) Combine key control with surface protection, and engineering measures with phtyto measures. Emphasize in engineering measures to realize its quick effect and guarantee function. Phtyto measures are auxiliary ones for soil and water conservation, conserving soil and water in a long term and stable manner, meanwhile afforesting and beatifying ambient environment.

(4) Protect leaf layer and organic matters of the land surface and backfill them to the damaged areas to promote the growth of native plants.

(5) Cover the eroded barren areas with native grasses and trees, or harden the soil surface of such areas.

(6) Proper erosion control measures shall be conducted before the rainy season, in order to better carry out the next works. Corresponding erosion measures shall be prepared at each construction point upon the completion of their subprojects.

(7) In all construction sites, there shall be sedimentation control facilities to slow down the water, change the flow direction and settle silts before the vegetation is restored. Such facilities include material piles, stone pathways, settling pits, straw bales, hedgerows and sludge piles, etc.

(8) Use ditches, berms, grass fences and stone piles and other measures to prevent the water from rushing into the construction site or affect on-site work.

(9) Maintain and continue to adopt erosion control measures till the vegetation is fully restored.

(10) Spray water on earthen roads, excavation areas, filling areas and earthwork areas if necessary to reduce wind erosion.

5.1.6 Impacts on Social Environment and Mitigation Measures during construction period

5.1.6.1 Impacts on social environment during construction period

1. Impacts of project occupied land

The temporary occupied land is less during construction and the original land use types are restored after the construction is completed, almost having no impact on the land.

2. Impacts on transportation

during construction period, the transportation volume of raw materials (such as sandstone and cement) and spoil will increase traffic flow in a short time. Thus, construction transportation vehicles shall avoid local rush hours, especially the time when people are traveling to or from work.

5.1.6.2 Mitigation Measures

1. Construction site shall be laid out scientifically, occupying less land as much as possible. Besides, temporary occupied areas will be restored based on the original land use types after the construction is completed. Temporary earth and stone dump

sites shall be laid out properly away from environmental sensitive spots such as residential areas and schools.

5.1.7 Health and Safety during construction period

There is a small quantity of works and constructors in the project, but living conditions and sanitary conditions are relatively poor and workers' labor intensity is huge, easily causing prevalence of diseases. The constructors in the construction site shall be given comprehensive physical examination to ensure safe construction. Those who have contracted severe infectious diseases shall be banned from entering into the construction site; canteen staff shall be given regular physical examination and those who are found to have contracted epidemic diseases shall be treated in time and transferred from the canteen to avoid prevalence of infectious diseases. In the construction site, centralized water supplying facilities shall be built or municipal water supply be utilized; sanitary facilities and medical personnel shall be provided. Constructors' labor protection shall be ensured to protect their health and safety and ensure smooth implementation of the project.

5.2 Analysis of Environmental Impacts and Mitigation Measures during Operation Period

5.2.1 Positive Impacts

Implementation of this project can gradually solve problems like incomplete garbage collection and transportation system, disorderly stacking of garbage, exhaust gas and water pollution generated from simple incineration in Shangli County. Garbage collection rate will reach and exceed 80%, and reduced and pollution-free garbage treatment will be achieved in the six towns and townships namely Changping Township, Futian Town, Penggao Town, Dongyuan Township, Chishan Town and Yangqi Township. After the project is completed, the volume of garbage flowing into Poyang Lake will reduce by 50,600t, with direct beneficiaries of 232,600 and women of 111,900.

5.2.2 Analysis of Impacts on Atmospheric Environment and Mitigation Measures during Operation Period

5.2.2.1 Impacts on atmospheric environment during operation period

Partial perishable organic garbage will emit peculiar smell due to decomposing whose impact on environment is manifested in the form of odor. Odorous pollutants mainly refer to gases which arouse aversion by stimulating olfactory organs and damage living environment. The project mainly includes ammonia, hydrogen sulfide and other odorous pollutants. Besides, dust will be generated during garbage collection and transportation.

Exhaust gas in the project mainly comes from garbage transportation vehicles, collection stations and transfer stations.

1. Garbage collection vehicles

Garbage collection and transfer vehicles adopt sealed type and structure with covering design. They will avoid secondary garbage pollution like problems of garbage throwing, dripping and leaking as well as dust generated from garbage loading and transportation. Each Vehicle shall be flushed regularly in a sealed manner, having few odorous impacts.

2. Exhaust gas in garbage collection stations

There are 87 newly constructed garbage collection stations in the project. Collection stations will be provided with good sealing dustbins rather than compression equipment. Besides, deodorants will be given and sprayed regularly to remove odor. After the above measures are adopted, odorous pollutants generated from garbage collection stations are fewer, having few impacts on environment.

3. Garbage transfer stations

Atmospheric pollution in the project results from odorous gases and dust during the domestic garbage stacking, compression, loading and transportation process in garbage transfer stations, mainly including ammonia, hydrogen sulfide and particulates, having certain impacts on neighboring residents and staff in the transfer stations. There are not sensitive spots within 200m of the transfer stations. Considering protecting environment for staff in the transfer stations and combining

local residents' opinions, deodorization and dust removal equipment shall be installed in the transfer stations according to requirements of *Technical Code for Transfer Station of Municipal Solid Waste (GJJ47-2006)*. Through comparison and selection of the previous alternatives, BENTAX high-energy reactive oxygen ion deodorization method will be adopted. High-energy reactive oxygen ion deodorization technique which originates from Europe on the theoretical basis of the study of the atmospheric properties of ionosphere at an altitude of about 60km simulates natural regulating system of "oxygen community" in the troposphere. It achieves quantitative balance of small-particle-size air ions (including positive ions and negative ions) in the local space in a manual manner and accelerating atmospheric metabolism within the controllable range in natural air and electric field to purify and improve air in a safe, natural and rapid manner. The technique is characterized with the advantages such as low energy consumption, small land occupancy, no secondary pollution, long service life and convenient maintenance. It also has an odor removal efficiency of over 90% and a dust removal efficiency of spraying of 90%.

In accordance with *Technical Methods for Making Local Emission Standards of Air Pollutants (GB/T13201-91)*, "if the concentration of fugitively discharged hazardous gases released into the breathing zone atmosphere exceeds the permissible concentration limits in residential areas stipulated in GB3096 and TJ36, sanitary protection distance shall be set between production units (producing area, workshop or work sections) in which the source of fugitive emission lie and residential areas". Based on the analysis of the project, after the odorous pollutants in each transfer station are treated by deodorizing system, emission concentrations of NH_3andH_2S are 0.002mg/m^3~0.012mg/m^3 and 0.002mg/m^3~0.008 mg/m^3 respectively, less than the standard limits in *Hygienic Standards for the Design of Industrial Enterprises (TJ36-79)* (where the standard limit of NH_3 is 0.2 mg/m^3 and H_2S is 0.01mg/m^3). Thus, the project only takes atmospheric protection distance into consideration.

The atmospheric protection distances of the subproject are calculated in accordance with the environmental protection distance in *Technical Guidelines on EIA: Atmospheric Environment* (HJ2.2-2008) in which the atmospheric protection

distance of fugitive sources are the control distance starting from the central point of pollution sources. The atmospheric protection area that is calculated through the recommended model is determined by the control distances outside boundaries based on the subproject floor plan. Permanent residents shall not live within atmospheric protection distance. When fugitive sources discharge different kinds of pollutants, pollutants of different kinds shall be calculated respectively and the maximum value of the calculated results shall be the atmospheric protection distance.

Table 5-4 Fugitive Emission and Atmospheric Protection Distances of Atmospheric Pollutants

Item	Pollutant	Effective Height of Non-point Source (m)	Width of Non-point Source (m)	Length of Non-point Source (m)	Emission Rate (kg/h)	Emission Concentration (mg/m^3)	Emission Amount（t/a）	Emission Standard（mg/m^3）	Predicted Results
Garbage Transfer Station in Changping Township	NH_3	6	9.6	17.3	0.007	0.0038~0.0094	0.021	1.5	No standard-exceeding point
	H_2S	6	9.6	17.3	0.001	0.0010~0.0025	0.003	0.06	No standard-exceeding point
	Dust	6	9.6	17.3	0.005	0.05	0.016	1.0	No standard-exceeding point
Garbage Transfer Station in Futian Town	NH_3	6	9.6	17.3	0.004	0.0038~0.0094	0.013	1.5	Predicted Results
	H_2S	6	9.6	17.3	0.001	0.0010~0.0025	0.002	0.06	No standard-exceeding point
	Dust	6	9.6	17.3	0.003	0.05	0.009	1.0	No standard-exceeding point
Garb	NH_3	6	9.6	17.3	0.004	0.0038~0.009	0.011	1.5	No

age Transfer Station in Penggao Town						4			standard-exceeding point
	H_2S	6	9.6	17.3	0.0005	0.0010~0.0025	0.001	0.06	Predicted Results
	Dust	6	9.6	17.3	0.003	0.05	0.008	1.0	No standard-exceeding point
Garbage Transfer Station in Dongyuan Township	NH_3	6	9.6	17.3	0.007	0.0038~0.0094	0.021	1.5	No standard-exceeding point
	H_2S	6	9.6	17.3	0.001	0.0010~0.0025	0.003	0.06	No standard-exceeding point
	Dust	6	9.6	17.3	0.005	0.05	0.015	1.0	Predicted Results
Garbage Transfer Station in Chishan Town	NH_3	6	9.6	17.3	0.008	0.0038~0.0094	0.023	1.5	No standard-exceeding point
	H_2S	6	9.6	17.3	0.001	0.0010~0.0025	0.003	0.06	No standard-exceeding point
	Dust	6	9.6	17.3	0.006	0.05	0.017	1.0	No standard-exceeding point
Garbage Transfer Station in Yangqi Tow	NH_3	6	9.6	17.3	0.005	0.0038~0.0094	0.014	1.5	Predicted Results
	H_2S	6	9.6	17.3	0.001	0.0010~0.0025	0.002	0.06	No standard-exceeding point
	Dust	6	9.6	17.3	0.004	0.05	0.011	1.0	No

nship									standard-exceeding point

From the above table, concentration of $NH_3$and H_2S in each garbage transfer station of the project meets Category II Standard in *Odorous Pollutant Emission Standards (GB14554-93)* (NH_3≤1.5 mg/m^3 and H_2S≤0.06 mg/m^3); Concentration of dust meets the fugitive emission monitoring concentration limits in *Comprehensive Atmospheric Pollutant Emission Standards (GB16297-1996)*. Based on calculated results of atmospheric protection distance, each pollutant has no standard-exceeding point, having fewer impacts on the neighboring air. Thus, there is no need to set atmospheric protection distance.

5.2.2.2 Mitigation measures

1. BENTAX high-energy reactive oxygen ion deodorization and dust remover spray method shall be adopted in the garbage transfer stations (over 90% treatment efficiency).

2. Vehicles and contains capable of minimizing air emission during the process of waste reception, unloading, treatment and storage shall be selected.

3. Garbage collection stations and nearby roads shall be frequently cleaned, and sprinkled with water to control dust when necessary.

4. All of biological waste shall be rapidly cleaned and disposed on a daily basis.

5. Deodorants shall be placed in garbage collection stations and be sprayed to remove odor regularly.

6. Deodorant and bactericidal plants are raised around garbage collection and transfer stations..

7. Garbage transportation trucks shall be sealed to prevent garbage from leaking and spilling.

8. Garbage transportation routes shall be drawn up and optimized to prevent exhaust gas from affecting sensitive spots along the routes like residential areas and schools.

5.2.3 Analysis of Impacts on Water Environment and Mitigation Measures during operation period

5.2.3.1 Impacts on water environment during operation period

Concentration of organic pollutants and ammonia nitrogen is high in garbage leachate and flushing wastewater in garbage transfer stations. If handled improperly in the garbage collection, storage and transportation, leachate and flushing wastewater will filtrate into and pollute groundwater. Sealed anti-seepage trucks shall be applied to all garbage transportation trucks of the project to decrease water pollution and avoid spilling garbage and leachate during transportation.

Leachate, flushing wastewater and domestic sewage will be collected in anti-seepage wastewater collecting pits in each garbage transfer station with the total generation of 5,744.005t/a. After being collected, they will be pumped to the leachate treatment station of Pingxiang City Domestic Garbage Incineration Power Plant by anti-seepage suction sewage trucks, having few environmental impacts.

After the implementation of the garbage transfer project, domestic garbage will be collected separately in each township and town and old sanitation facilities and transfer system and equipment will be greatly improved. As a result, garbage spill and random sewage flow in the garbage stations will be decreased in rainy days. The project involves both public and environmental protection facilities. Key countermeasures on water pollution prevention and control and water environment of Poyang Lake Basin include strict control on the total quantity of pollutants, better water environmental protection of the sources of Five Rivers (namely the Gan River, Fu River, Xin River, Rao River and Xiu River), and coordination of the sewage and garbage treatment in the rural and urban areas. Implementation of the project ensures proper treatment of domestic garbage, which greatly decreases the pollutants flowing

into water bodies and helps to improve surface water quality and ecological environment.

Based on the overall analysis, the completion of the project will help to remove pollution pathways of water environment and protect water environment.

5.2.3.2 Mitigation measures

Sealed anti-seepage trucks shall be applied to all garbage transportation trucks; domestic sewage, flushing wastewater and leachate shall be collected in anti-seepage wastewater collecting pits in garbage transfer stations. After being collected, they will be transported to the leachate treatment station of Pingxiang City Domestic Garbage Incineration Power Plant.

5.2.4 Analysis of Impacts on Acoustic Environment and Mitigation Measures during operation period

5.2.4.1 Impacts on acoustic environment during operation period

Noise mainly comes from equipment in the compression room of garbage transfer stations and garbage transportation vehicles.

1. Noise in the garbage transfer stations

(1) Noise characteristics

Noise during operation period mainly comes from compression equipment and high-pressure cleaning equipment in garbage transit stations in the form of aerodynamic noise and machinery noise. Noise sources lie in the buildings. Main noise intensity and noise reduction measures in the project are provided in the following table.

Table 5-5 Main Noise Intensity and Noise Reduction Measures

County	Location	Type	Quantity	Sound-pressure level	Noise reduction measures and effects
Shangli	Garbage transfer station in Chishan	Compression equipment	2 sets (one for use and the other for standby)	85	The compression system is
		High-pressure	1set (one in each	85	

	Town	cleaner	station)		placed in the sealed workshop installed with sound-proof doors and windows. The equipment is installed with shock pads. Besides, the vehicles are banned from honking. With these efforts, noise would be reduced by over 30 dB (A).
		Deodorization and dust removal equipment	Each set	60	
	Garbage transfer station in FutianTown	Compression equipment	2 sets (one for use and the other for standby)	85	
		High-pressure cleaner	1set (one in each station)	85	
		Deodorization and dust removal equipment	Each set	60	
	Garbage transfer station in Changping Township	Compression equipment	2 sets (one for use and the other for standby)	85	
		High-pressure cleaner	1set (one in each station)	85	
		Deodorization and dust removal equipment	Each set	60	
	Garbage transfer station in Yangqi Township	Compression equipment	2 sets (one for use and the other for standby)	85	
		High-pressure cleaner	1set (one in each station)	85	
		Deodorization and dust removal equipment	Each set	60	
	Garbage transfer station in Penggao Town	Compression equipment	2 sets (one for use and the other for standby)	85	
		High-pressure cleaner	1set (one in each station)	85	
		Deodorization and dust removal equipment	Each set	60	
	Garbage transfer station in Dongyuan Township	Compression equipment	2 sets (one for use and the other for standby)	85	
		High-pressure cleaner	1set (one in each station)	85	
		Deodorization and dust removal equipment	Each set	60	

(2) Predicted noise impacts

Noise prediction model in *Technical Guidelines on EIA: Acoustic Environment (HJ2.4-2009)* will be selected. According to the requirements of the guidelines, the prediction model is selected. Each noise source is treated by point sound sources, whose basic prediction formula is:

$L_A(r)=L_A(r_0)—A_{div}$

Where: $L_A(r)$—equivalent sound level generated by sound source r, dB (A);

$L_A(r_0)$—equivalent sound level generated by reference bit r_0, dB (A);

A_{div}—attenuation of sound level generated by sonic geometrical spreading, dB (A), i.e. attenuation generated by distance. Geometrical spreading attenuation formula of non-directional point sound source: Adiv=20lg(r/r0);

Formula for total equivalent continuous noise level A under simultaneous operation of several machines:

$Leq_{总}=10\lg（10^{0.1leqi}）$

Where: Leq_i — equivalent sound level generated by the sound source i at certain predicted site

When predicting noise level at the certain position, calculate total equivalent continuous noise level A by using the above formula and add background values. The specific formula is shown as follows:

$L_{eq}=10\lg(10^{0.1Leqg}+10^{0.1Leqb})$

Where:L_{eq}— predicted equivalent sound level at the predicted site, dB (A);

L_{eqg}—the contribution value of equivalent sound level generated by sound source during at the predicted position, dB (A);

L_{eqb}—Background noise value at the predicted site, dB (A).

In terms of equipment selection, the project chose low-noise equipment, reducing sound-pressure level of noise source; the equipment adopts basic shock absorption (rubber and spring shock absorption) and sealed setup; compactor rooms are installed with sound-proof doors and windows to reduce outward noise transmission. Noise and predicted results of the project are shown in the following table.

Table 5-6 Noise and Predicted Results at the Project Boundaries Unit: dB (A)

Item	Predicted spots and period	Distance (m)	Contribution Vlue	Background Value	Predicted Value	Standard Value	Predicted Results

Shangli	Garbage transfer station in Chishan Town	1m outside the eastern boundary	8	39.96	47.6	48.29	55	Up to Standard
		1m outside the southern boundary	8	39.96	47.1	47.87	55	Up to Standard
		1m outside the western boundary	23	30.79	47.5	47.59	55	Up to Standard
		1m outside the northern boundary	17	33.41	47.2	47.38	55	Up to Standard
	Garbage transfer station in Futian Town	1m outside the eastern boundary	8	39.96	49.2	49.69	55	Up to Standard
		1m outside the southern boundary	8	39.96	49.3	49.78	55	Up to Standard
		1m outside the western boundary	23	30.79	49.3	49.36	55	Up to Standard
		1m outside the northern boundary	17	33.41	49.1	49.22	55	Up to Standard
	Garbage transfer station in Changping Township	1m outside the eastern boundary	8	39.96	48.3	48.89	55	Up to Standard
		1m outside the southern boundary	8	39.96	48.5	49.07	55	Up to Standard
		1m outside the western boundary	23	30.79	48.5	48.57	55	Up to Standard
		1m outside the northern boundary	17	33.41	48.4	48.54	55	Up to Standard
	Garbage transfer station in Yangqi Towns	1m outside the eastern boundary	8	39.96	49.7	50.14	55	Up to Standard
		1m outside the southern boundary	8	39.96	49.6	50.05	55	Up to Standard
		1m outside the	23	30.79	49.6	49.66	55	Up to

	hip	western boundary						Standard
		1m outside the northern boundary	17	33.41	49.7	49.80	55	Up to Standard
	Garbage transfer station in Penggao Town	1m outside the eastern boundary	8	39.96	50.2	50.59	55	Up to Standard
		1m outside the southern boundary	8	39.96	50.3	50.68	55	Up to Standard
		1m outside the western boundary	23	30.79	50.3	50.35	55	Up to Standard
		1m outside the northern boundary	17	33.41	50.1	50.19	55	Up to Standard
	Garbage transfer station in Dongyuan Township	1m outside the eastern boundary	8	39.96	50.6	50.96	55	Up to Standard
		1m outside the southern boundary	8	39.96	50.5	50.87	55	Up to Standard
		1m outside the western boundary	23	30.79	50.6	50.65	55	Up to Standard
		1m outside the northern boundary	17	33.41	50.5	50.58	55	Up to Standard

From the predicted results of superposition values in Table 5-6, after the project operation, the six garbage transfer stations will meet Category I in *Acoustic Environment Quality Standards (GB3096-2008)*. Through rational layout, low-noise equipment, better equipment maintenance, and vibration reduction and sound insulation of buildings, noise emission will meet standard limit, having few impacts on the neighboring environment.

2. Noise of garbage transportation trucks

Noise of garbage transportation trucks is 80 dB (A). The level of noise is calculated at wire sound source by prediction without any prevention measures

adopted (see Table 5-7).

Table 5-7 Level of Noise along the Artery of Traffic

Distance (m)	5	10	15	20	25	30	35	40
Level of Noise (dB(A))	58	55	53	52	51	50.7	50	49

4a Standard in *Acoustic Environment Quality Standard (GB3096-2008)* is adopted within 50m of the artery of traffic with daytime level of 70dB (A) and nighttime level of 55dB (A); Category I is adopted in other areas with daytime level of 60dB(A) and nighttime level of 50dB(A).

It is calculated that without any barriers and background noise, the equivalent continuous sound pressure level is 58 dB (A) in the distance over 5m away from the two sides of the road or the transportation route. And the transportation noise meets the requirement that the daytime equivalent continuous sound pressure level should be below 70dB (A) alongside the artery of traffic but exceeds the standard nighttime noise level of 55dB (A); the equivalent continuous sound pressure level is 55dB (A) at 10m away from roads. It can be seen that the transportation noise at 10m away from the sides of the road meets the standard value that the daytime equivalent continuous sound pressure level should be below 60dB (A) alongside the artery of traffic and meet requirements of acoustic environment function zoning.

5.2.4.2 Mitigation measures

1. Management and maintenance of garbage transportation trucks shall be strengthened to reduce vehicle accident rate.

2. Personnel who transport garbage shall receive professional training and work with certificates.

3. Garbage transportation routes shall be drawn up and optimized to prevent transportation noise from affecting sensitive spots along the routes like residential areas and schools.

4. Vibration reduction and sound insulation of buildings shall be adopted through rational layout, adoption of low-noise equipment, and strengthening of equipment maintenance.

5.2.5 Analysis of Impacts of Solid Waste and Mitigation Measures during operation period

Solid waste during operation period mainly includes domestic garbage from the managerial staff in the garbage transfer stations and the total domestic garbage is 2.19t/a. The domestic garbage generated in the garbage transfer station is collected, directly compacted in the garbage compression room and then transported to incineration power plant, having minor impacts on environment.

Operation of the project will greatly improve rural domestic garbage collection and transportation treatment system, cope with disorderly littering and random treatment of domestic garbage and optimize domestic garbage collection and transportation routes in the villages and towns. The process of the collection and transportation shall be guaranteed to conform to both economic factors and environmental factors and be rationalized in the villages and towns; and capacities of domestic garbage collection, transfer and treatment in the urban and rural areas shall be effectively improved. Based on the objective of over 80% pollution-free treatment rate of urban and rural domestic garbage, reduced, recycle and pollution-free treatment of domestic garbage that adapts to local conditions will be adopted so as to minimize the impacts of urban garbage on living environment and water environment, safeguard people's physical health and promote economic development.

5.2.6 Analysis of Impacts on Social Environment and Mitigation Measures during Operation Period

5.2.6.1 Impacts on social environment during operation period

After the garbage transit stations are built in the project, the capabilities of garbage collection, cleaning and transportation will be improved and the volume of transportation and cleaning will increase. As it will effectively solve the problem of garbage cleaning and transportation, improve the county appearance and provide a better living environment for residents in Shangli County, the project is a beneficial project which can bring obvious social environmental benefits to people.

Meanwhile, environmental sanitation in garbage transfer stations shall be given attention. The common problems that residents around garbage transfer stations

frequently complain include deteriorated sanitary conditions and the propagation of mosquitoes, flies, insects and mice. In particular, fruits and vegetables in summer attract a large number of flies, which decrease significantly after using pesticide but come back a few days later. In order to prevent the propagation of mosquitoes, flies and pathogens in the construction area, the collection stations shall be kept clean and collecting containers shall be cleaned regularly; biological bacteria, biological methods and light and liquid disinfection and sterilization systems shall be adopted to kill pathogens, mosquitoes and flies; Mechanical equipment and sites shall be cleaned and sterilized regularly to maintain cleaning surface without attached dirt and leachate. Pesticide shall be used regularly to kill mosquitoes and insects inside and outside the garbage transfer stations.

5.2.6.2 Mitigation measures

1. Garbage transfer stations shall make safe operation procedures for operation and maintenance, and operate according to the operation procedures;

2. Garbage transfer stations shall keep a clean look, regularly clean collection containers; biological bacteria, biological methods and light and liquid disinfection and sterilization systems shall be adopted to kill pathogens, mosquitoes and flies; Mechanical equipment and sites shall be cleaned and sterilized regularly to maintain cleaning surface without attached dirt and leachate. Pesticide shall be used regularly to kill mosquitoes and insects inside and outside the garbage transfer stations;

3. Administrative staff and operators of garbage collection stations shall receive the pre-job training to grasp technical process and technical requirements of Garbage Collection Stations as well as major technical indicators and operation and management requirements of relevant facilities and equipment;

4. Garbage transfer stations shall be opened in strict accordance with the schedule time;

5. Operators shall randomly inspect waste content, and any hazardous waste and forbidden object are prohibited from entering the stations;

6. Collected materials and organic waste is classified for the purpose of easy

collection and compost;

7. Messes are strictly prohibited from being piled up in garbage transfer stations;

8. Full-time or part-time occupational health management staff shall draw up relevant rules for occupational health management and operation which should be carried out seriously; A complete emergency rescue scheme shall be made when equipment maintenance workers enter into garbage compression equipment. Meanwhile, pre-job and regular occupational sanitation knowledge training, especially knowledge on emergency rescue, shall be carried out well. In accordance with the regulations of the state, workers who are in contact with hazardous factors of occupational health shall be given pre-job, on-the-job and off-the-job occupational health examination and be informed of the true examination results. Workers who are not given pre-job occupational health shall not be arranged to be engaged in work of occupational hazards. And workers who have occupational contraindications shall not be arranged to undertake operations that they shall avoid.

5.2.7 Impacts of Occupational Health and Safety during operation period

The domestic garbage emits odorous gases in the stacking, compaction, loading and transportation process in garbage transfer stations mainly including ammonia and hydrogen and other odorous pollutants. BENTAX high-energy reactive oxygen ion deodorization and dust remover spray method will be adopted to treat exhaust gas in the project. After treated by deodorant equipment and dust removal equipment, concentrations of ammonia and hydrogen sulfide shall meet Category Ⅱ Standard in *Odorous Pollutant Emission Standards (GB14554-93)*; Concentration of dust shall meet the fugitive emission monitoring concentration limits in *Comprehensive Atmospheric Pollutant Emission Standards (GB16297-1996)*. However, workers in transfer stations who work in the ammonia and hydrogen sulfide environment for a long time shall be given occupational health and safety prevention measures against hazardous gases.

5.3 Due Diligence

The collected and transferred domestic garbage of the project will be transported

to Pingxiang City Domestic Garbage Incineration Power Plant. Wastewater in garbage transfer stations will be pumped to the leachate treatment station of the plant by suction sewage trucks after collection. The due diligence of the plant is shown as follows.

1. The Site of incineration power plant

Pingxiang City Domestic Garbage Incineration Power Plant (113°41'28.31"E, 27°36'36.18"N) is located in Yanzhitang, Qimu Village of Xiangdong Industrial Park of Pingxiang City. It is 2.5km from G320 National Highway in the north, 2.5km from S232 Provincial Highway in the south and 9km from the Pingxiang City Mashan Landfill in the east.

2. Construction

The Pingxiang City Domestic Garbage Incineration Power Plant, initially constructed in October, 2015, is expected to be completed and put into trial operation in May, 2017. The project is expected to be commenced in 2018 and completed by the end of December, 2022 when the incineration power plant is put into completion, meeting the requirements of the project. The description of the production time is listed in Annex Ⅰ.

3. Scale

The construction scale covers two 350t/d domestic garbage incineration lines and a rated 12MW condensing steam turbine generating set with daily domestic garbage treatment of 700t and annual domestic garbage treatment of over 233,000t; a site for a 350t/d domestic garbage incineration line and a 6MW condensing steam turbine generating set with a total treatment of 1,050t/d is planned to be built in the second phase.

4. Service coverage

The garbage incineration plant serves Xiangdong District, Anyuan District, Luxi County and Shangli County of Pingxiang City covering the garbage collection and transfer area of the project.

5. Treatment techniques and feasibility

The garbage incineration technique involves processes such as waste-receiving

feeding system, garbage incineration, waste heat recovery, flue gas cleaning, garbage leachate treatment and oil supply. After being incinerated by the technique, domestic garbage meets the requirements of *Domestic Garbage Incineration Pollution Control Standard (GB/T18485-2014)* and is approved by EIA (Gan Huan Ping Zi [2015] No.122). The techniques meet environmental protection requirements.

6. EIA approval

On September 9th, Jiangxi Province Environmental Protection Agency(EPA) approved EIA on Pingxiang City Domestic Garbage and Sludge Drying Incineration Power Project (Gan Huan Ping Zi [2015] No.122, see Annex II).

7. Matching attribute of garbage treatment volume

The Pingxiang City Domestic Garbage Incineration Power Plant deals with the domestic garbage in Xiangdong District, Anyuan District, Luxi County and Shangli County of Pingxiang City. The garbage collection and transfer area of the project falls within the coverage of the plant. The current population in Xiangdong District, Anyuan District, Luxi County and Shangli County of Pingxiang City is 410,000, 430,000, 300,000 and 520,000 respectively. The population in Shangli County accounts for 31.3% of the service population. The involved population in the six towns and townships reaches 233,000, accounting for 44.8% of the population of Shangli County and 14% of the current service population of the incineration power plant.

The designed daily transfer volume is 125.8t/d in the six towns and townships. The daily domestic garbage treatment amount of Pingxiang City Domestic Garbage Incineration Power Plant shall be 700t/d in the first phase and 1,050t/d in the long term. The project transfer volume accounts for 18% of the amount in the first phase and 12% of the long-term amount. Thus, the treatment volume in the incineration power plant meets the requirements of the project.

8. The leachate treatment station

The designed treatment volume in the leachate treatment station is 250m^3/d with the designed impact load size of 300m^3/d with "pretreatment system+ regulating reservoir+ UBF anaerobic bioreactor system+ MBR (Category II AO+ Ultra filtration)

+ NF (nanofiltration) + RO (reverse osmosis)" adopted. Garbage leachate generated from the Pingxiang City Domestic Garbage Incineration Power Plant and flushing wastewater generated from garbage dumping platforms and garbage vehicles are treated by this treatment station. The wastewater mentioned above accounts for 173m^3 with 77 m^3/d left in the treatment station. The wastewater of the project is 13.918m^3/d. Thus, the leachate treatment station is capable to deal with wastewater of this project. After being treated by the treatment station, the wastewater of the project shall reach standard in *Pollution Control Codes for Domestic Landfill Sites (GB16889-2008)* (see Table 2).

9. Fly ash and furnace slag and management measures

Fly ash in the domestic garbage incineration project is mainly collected by bag-type dust collectors in the flue gas treatment system with generation of about 21t/d which belongs to residues of incinerating treatment (HW18) in *National Catalogue of Hazardous Wastes (2008 version)*. Treated through the organic chelating agent stabilization technique in the garbage incineration power plant in the project design, fly ash meeting the requirements in *Pollution Control Codes for Domestic Landfill Sites (GB16889-2008)* is land filled safely in the fly ash treatment site which covers 28,000 m^2 (42 acres) with designed capacity of 90,000 m^3. The burnt furnace slag is transported outward by vehicles and put into comprehensive use. The management measures on fly ash and furnace slag are rational and feasible.

In short, according to due diligence of Pingxiang City Domestic Garbage Incineration Power Plant, the treatment ability, techniques and capacity meet the project requirements and it operates well, ensuring effective treatment of collected and transferred domestic garbage in the Shangli County project.

6. Analysis of Environment Risks and Mitigation Measures

6.1 Identification of Environmental Risks

(1) Wrong operation, problematic quality or improper maintenance of facilities lead to leakage of garbage compost stations or failure of deodorant equipment.

(2) Emergencies such as power failure and equipment failure stop the running of garbage treatment facilities, leading to the stack of a large amount of garbage.

(3) Leakage of leachate and flushing wastewater may occur during collection and transportation or roll-over leakage may occur during transportation.

6.2 Analysis of Impacts of Environmental Risk Accidents

1. Abnormal operating conditions

Wrong operation, problematic quality or improper maintenance of facilities lead to failure of equipment and facilities. Or some irresistible external reasons like power failure and emergency natural disasters stop the running of treatment facilities, which fails to ensure timely compression, cleaning and transportation of garbage in transfer stations. And then urban domestic garbage stacked in transfer stations will emit repulsively odorous gases like ammonia and hydrogen sulfide. In this case, the odorous gases not only stop workers from working normally but also affect living environment around the residential and bring great impacts to physical and mental health of neighboring residents.

2. Leakage of wastewater

If there is leakage of leachate and flushing wastewater during collection and transportation without timely treatment, underground water environment will be polluted and odor generated from leachate and flushing wastewater will bring adverse impacts to ambient air and social sanitation.

6.3 Mitigation Measures on Risk Accidents

1. Prevention measures on risks under abnormal operating conditions

(1) Multiple sets of standbys shall be adopted for vulnerable equipment, with

enough spare parts for repair and replacement. One electromechanical device for use and another for standby shall be adopted for the treatment system at minimum;

(2) Quality equipment shall be selected. Such equipment as machines, electrical appliances and instruments that feature good quality and low failure rate, meet the design requirements and are applicable for long-term operation and easy for repair and maintenance shall be selected for treatment facilities;

(3) During operation, operating personnel on duty shall strictly observe the rules and regulations for treatment facilities, conduct frequent patrol inspections for equipment and timely repair and maintenance, in order to reduce the failure rate of equipment;

(4) Electrical equipment shall company with the requirements of the grounding protection specifications and installed with automatic tripping circuits; main equipment shall be installed with accident warning devices for timely warning and rush repair. The installation and protection of all electrical equipment shall comply with relevant safety regulations for electrical equipment;

(5) Two-circuit power supply is adopted to ensure normal operation of power supply facilities and circuits;

(6) Deodorants and bacterial biosorbents are prepared in transfer stations. Without any production and power consumption, deodorants shall be temporarily sprayed on stacked garbage to remove odor and bacterial biosorbents be used to absorb odorous gases in the air to reduce their concentration.

2. Prevention measures on leakage of wastewater

(1) Physical strength of sealable plastic barrels must reach certain requirement degree with good air-tightness;

(2) Regular repair and maintenance on garbage transportation vehicles to ensure normal operation;

(3) Once there is leakage in garbage transportation vehicles, the leakage shall be blocked and warning signs be hung immediately;

(4) The drivers are required to work with certificates, keep speed limit and be banned from drowsy driving.

3. Operational and technological management measures

(1) Operational management and operational responsibility systems shall be established in garbage transfer stations;

(2) Management and operating personnel shall be given training. Technology assessment archive shall be established and the unqualified personnel shall be banned from working;

(3) Experienced professional technological personnel shall be hired to be responsible for technological management work;

(4) Professional technological personnel shall be selected to be given technological training;

(5) Maintenance and management on equipment and facilities shall be strengthened. Spare machine shall be prepared for key equipment and two-circuit power supply be ensured;

(6) Afforestation shall be conducted around the boundary with high-effective deodorant plants;

(7) Regular visit neighboring residents and listen to their opinions;

(8) Management in power stations shall be strengthened and normal operation of power facilities and circuits be ensured;

4. Personal safety protection measures for workers

(1) Operating and management personnel shall be given safety education and safety operation regulations and management systems shall be drawn up before operation of garbage transfer treatment station which shall be strictly carried out and checked frequently.

(2) Articles for labor protection like masks and gloves shall be provided in the construction area.

(3) The installation and protection of all electrical equipment shall comply with relevant safety regulations for electrical equipment and good grounding protection for high-pressure equipment shall be ensured.

(4) The dangerous parts of mechanical equipment shall be installed with protective equipment.

(6) Management on safety shall be strengthened and system of post responsibility be established.

(6) The workers who directly contact leachate and domestic garbage shall be given regular physical inspection and be injected relevant vaccines like hepatitis A and hepatitis B.

6.4 Contingency Plans for Accident Risks

In this project, the emergency treatment for unexpected environmental risk accidents is related to many units and departments including environmental protection departments, public security departments, health administrations and fire departments. If risk accidents take place, the contingency plans shall be launched immediately in accordance with Jiangxi Provincial Contingency Plans for Environmental Emergencies.

Contingency organizations in the project mainly consist of offices under leading group and various contingency groups which include first-aid group, liaison unit, logistics unit and automobile unit. Division of responsibilities is provided below and the responsible organizations are seen in Map 6-1.

(1) Leading group shall draw up and implement contingency treatment pans based on environmental risks. It also shall be responsible for overall field command and coordinate work with external units.

(2) Offices shall be responsible for dividing, supervising, urging and inspecting work to assist leading group.

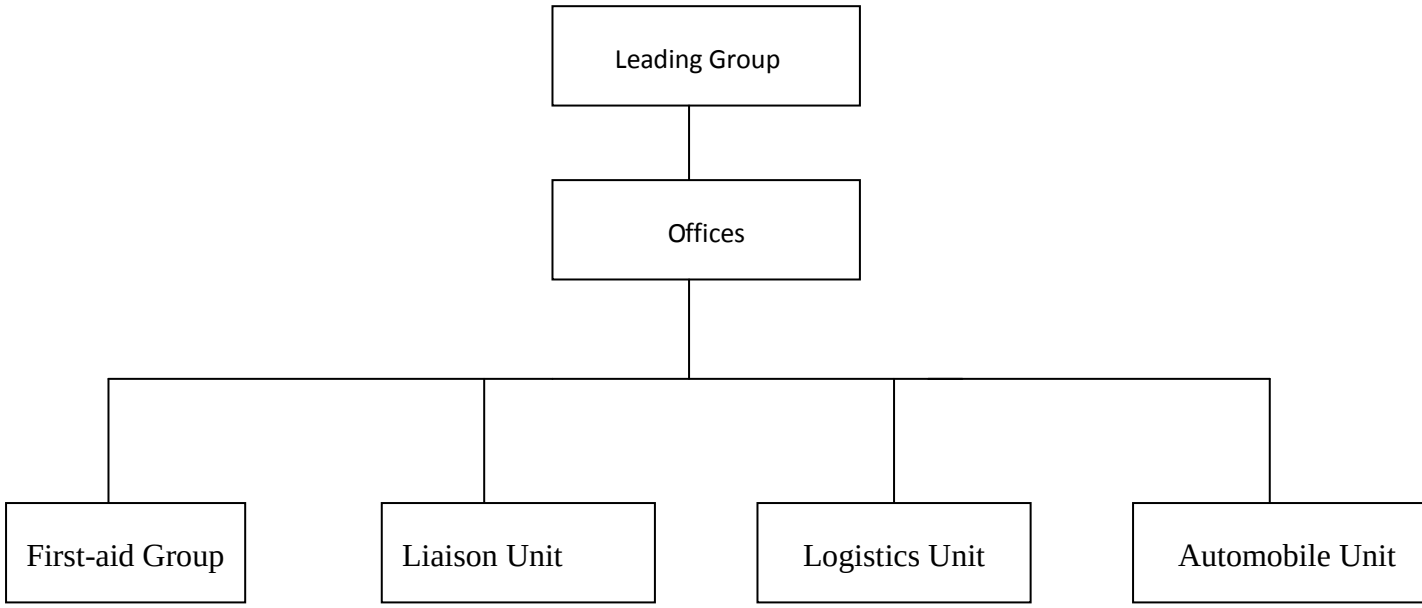
(3) First-aid group shall be responsible for work such as specific implementation of risk accidents treatment and maintenance of relevant equipment under the uniform command of leading group.

(4) Liaison unit shall be responsible for the coordination among first-aid group, logistics unit and automobile unit.

(5) Logistics unit is responsible for assist in rescuing poisoned personnel, adopting corresponding rescue measures, going through the procedures for observation and treatment in hospital and attending to poisoned personnel as well as

assembling relevant rescue items.

(6) Automobile unit shall be responsible for mobilization and use of automobile such as delivering poisoned personnel to be admitted to the hospital for treatment and transporting rescue items.



Map 6-1Contingency Organizations in the Project

7. Analysis of Industrial Policies

7.1 Conformity analysis of industrial policies

In accordance with *Guiding Catalogue for Industrial Restructuring (2011 Version) (2013 Amendment)*, the project belongs to XXXVIII in encouragement category (XXXVIII. Environmental Protection and Energy-Saving Comprehensive Utilization: 20. Reduction, recycling, harmless treatment, and comprehensive utilization projects for urban garbage and other solid waste) and meets the relevant state industrial policies.

7.2 Conformity Analysis of Urban Planning

The project serves as the one dealing with reduction of domestic wastes in Shangli County, meeting *Master Plan of Shangli County (2007-2020)*, *Thirteenth Five-Year Plan of Shangli County* and S*pecial Planning on Environmental Sanitation of Shangli County*.

7.3 Conformity Analysis of Technical Standards for Domestic Garbage Transfer Stations

In accordance with *Technical Code for Transfer Station of Municipal Solid Waste (GJJ47-2006)*, the garbage transfer stations (≤50t/d)) (belong to small Category Ⅴ stations. Conformity analysis is provided in Table 7-1.

Table 7-1 Conformity analysis of the Project and *Technical Code for Transfer Station of Municipal Solid Waste (GJJ47-2006)*

No.	*Technical Code for Transfer Station of Municipal Solid Waste (GJJ47-2006)*	Actual conditions of the project	Conformity analysis
1	Meet requirements of urban master plan and special planning on environmental sanitation.	The construction of the project meets regional requirements.	Conformity
2	Take service area, transfer capacity, transportation distance, pollution	The area is characterized with proper landforms, engineering	Conformity

	control and supporting conditions into comprehensive consideration.	geology, power supply, water supply, water discharge and communications; there are superior transportation conditions in the project area easy for entrance and exit of garbage vehicles and tank trucks; exhaust gas is discharged through treatment of deodorizing system and garbage filtrated water and flushing water is discharged into municipal sewage pipe network; good supporting conditions in the area make it proper to carry out the project in the selected site.	
3	Built in the place with convenient traffic and easily arranged cleaning and transportation routes.	In the project, convenient traffic enables the compressed garbage to be directly transported to the garbage incineration ground with average transportation distance of ≤30km.	Conformity
4	Meet requirements of water supply, power supply and sewage discharge.	The water and power supply of the project is offered by municipal administration and sewage is treated in Pingxiang City Domestic Garbage Incineration Power Plant.	Conformity
5	Transfer stations shall not be built in the following areas: 1. overpass or grade crossing. 2. flourishing regions like the entrance and exit of shopping malls and cinemas If they must be built in these regions, the structure and form of the entrance and exit of transfer stations should be optimized and improved. 3. Gathering places for daily life such as neighboring schools and restaurants.	The transfer stations of the project are not built beside overpass and grade crossing. And there are not shopping malls and cinemas around the construction site which are away from gathering places for daily life such as neighboring schools and restaurants.	Conformity
6	The garbage transfer stations of small Ⅴ Category feature designed	All garbage transfer stations belong to small Category Ⅴ	Conformity

	transfer volume of ≤50t/d, land area of ≤1000m^2,distance between adjacent buildings of ≥8m and greenbelt width≥3m;	stations with a designed capacity of ≤50t/d. Covering 999m^2, the project is 8m away from adjacent buildings with a greenbelt of 3m wide in between.	

7.4 Rationality Analysis of Site Selection

The project complies with the relevant requirements of *Master Plan of Shangli County (2007-2020), Thirteenth Five-Year Plan of Shangli County, Special Planning on Environmental Sanitation of Shangli County* and *Technical Code for Transfer Station of Municipal Solid Waste (GJJ47-2006)* and has few environmental impacts on neighboring environment by adopting corresponding management measures after its completion. Thus, the site selection of the project is rational.

8. Public Consultation and Information Disclosure

8.1 Purposes and Approaches

During its construction and operation period, World Bank-financed Shangli water environment management project has environmental impacts on the neighboring areas and directly involves the vital interests of the neighboring people. Thus, in accordance with the *Interim Measures to Public Participation in Environmental Impact Assessment (Huan Fa [2006] No.28), Circular of the Department of Environmental Protection of Jiangxi Province on Further Strengthening Public Participation and Monitoring Management in Environmental Impact Assessment (Gan Huan Ping Zi [2014] No.145)* and World Bank's Safeguard Policy on Environmental Assessment (OP4.01), two rounds of public consultation and information disclosure were carried out in the EIA process. The first round mainly provided the affected residents with project overview and potential environmental impacts and collected public comments over the project before completion of the outline of EIA report. The second round disclosed the whole report after completion of the draft EIA and offered the main contents and conclusions for public consultation so as to gain public understanding and support for the project construction and the adopted mitigation measures.

Public consultation and information disclosure are a type of two-way information sharing between the project party and the public and an important component of environmental impact assessment the construction project carries out, vital for the decision improvement. The purposes are to disclose the relevant information about the project to the public in the project area and those who pay close attention to the project construction, enabling the public to know about the main conditions, construction and operation characteristics and significant environmental problems of the project; to help assessment staff identify problems and confirm all significant environmental problems triggered by the project have been analyzed and assessed in the EIA; to confirm the feasibility of environmental protection measures and implementation of optimal measures. Public consultation emphasizes the importance

of contact and communication between the parties of the project and the public. It directly reflects public comments so that the decision-making department can find potential problems and revise and improve design plan in a timely manner, and the issues the public reflect can be solved fundamentally to complete and rationalize project planning and design as well as environmental monitoring and management. The project construction can reach optimized balance among environmental benefits, social benefits and economic benefits.

8.2 Public Consultation

The project carries out two rounds of public consultation in the form of site visit, questionnaire survey and discussion meeting. The relevant documents are provided in Annex Ⅲ.

8.2.1 First-round Public Consultation

8.2.1.1 First-round public consultation

The first-round public consultation is listed in the following table.

Table 8-1 Time, Participants and Approaches of the First Round

Stage	Consultation Approach	Time	Sites	Consultation Participants	Consultation Contents
First Round	①Site visit; ② Questionnaire survey	December, 2015 and January, 2016	The six towns and townships in Shangli County	Site visit and questionnaire survey: residents in Muchong Village, Mingshan Village, Taitang Village, Guanshang Village, Penggao Village and Dongyuan Village and representatives in the governments	Provided the affected residents with project overview and potential environmental impacts and collected public comments or suggestions over the project.

				of the six towns and townships, county environmental protection bureau and Pingxiang City Domestic Garbage Incineration Power Plant;	

8.2.1.2 Public feedback

Public comments and feedback in the first-round public consultation are shown in the following table.

Table 8-2 Public Comments and Feedback

Stage	Consultation Approach	Public Issues and Comments	Construction Unit's Feedback on Public Comments
First Round	①Site Visit; ② Questionnaire Survey	1. The public supported the project construction without objection. 2. Since odor generated from disorderly garbage affect residents' life, the public hoped to initiate and complete the project construction as early as possible and good daily management of garbage transfer stations could be ensured to avoid garbage odor affecting residents' life.	Construction unit and EIA unit expressed thanks for public understanding and support. They would further improve project design and preliminary work, strive for initiating and completing the project, add daily management requirements in garbage transfer stations to environment management plan (EMP) and adopt corresponding odor pollution prevention measures.

8.2.2 Second-round Public Consultation

8.2.1.1 Second-round public consultation

The second-round public consultation is listed in the following table.

Table 8-3 Time, Participants and Approaches of the Second Round

Stage	Consultation Approach	Time	Sites	Consultation Participants	Consultation Contents
Second Round	①Site visit; ②Distributing questionnaires; ③ Discussion meeting	May, 2016	The six towns and townships in Shangli County	① Site visit and questionnaire survey: residents in Muchong Village, Mingshan Village, Taitang Village, Guanshang Village, Penggao Village and Dongyuan Village; ② Discussion meeting: affected resident representatives and unit representatives.	Public consultation was made on main contents and conclusions of EIA draft to gain public understanding and support for the project construction and the adopted mitigation measures.

8.2.1.2 Public comments and feedback

Public comments and feedback in the second-round public consultation are shown in the following table.

Table 8-4 Public Comments and Feedback

Stage	Consultation Approach	Public Issues and Comments	Construction Unit's Feedback on Public Comments
Second Round	①Site visit; ②Distributing questionnaires; ③Discussion meeting	The public supported the project construction and accepted environmental protection measures to be adopted.	Construction unit and EIA unit expressed thanks for public understanding and support and strictly implement various environmental protection measures of environment management plan (EMP) in the project.

8.3 Information Disclosure

8.3.1 First-round Information Disclosure

Time, sites and approaches of the first-round information disclosure are shown in the following table.

Table 8-5 Time, Sites and Approaches of the First-round Information Disclosure

Stage	Notice Forms	Time	Sites	Notice Contents
First Round	On-site Notice	January, 2016	Government bulletin boards in Changping Township, Futian Town, Penggao Town, Dongyuan Township, Chishan Town and Yangqi Township	Mainly including project content and potential environmental impact

Map 8-1 Pictures of First On-site Notice

8.3.2 The Second-round Information Disclosure

Time, sites and approaches of the second-round information disclosure are shown in the following table.

Table 8-6 Time, Sites and Approaches of Information Disclosure

Stage	Notice Forms	Time	Sites	Notice Contents
Second	Full EIA	May,	Libraries in	Full EIA draft

Round	disclosure	2016	Changping Township and Chishan Town, activity rooms in Futian Town and Penggao Town, reading rooms in Dongyuan Township and Yangqi Township	
	On-site Notice	May, 2016	Government bulletin boards in Changping Township, Futian Town, Penggao Town, Dongyuan Township, Chishan Town and Yangqi Township	(1) Project overview; (2) environmental protection measures to be adopted; (3) conclusion of EIA draft; (4) Sites and methods for accessing the full EIA

Library in Changping Township

Reading room in Dongyuan Township

Activity room in Yangqi Township

Activity room in Chishan Town

Activity room in Penggao Town

Activity room in Futian Town

Map 8-3 Pictures of Full Disclosure

9. Resettlement and Social Assessment

The content below is a part of "Resettlement Plan for the World-Bank-Financed Jiangxi Poyang Lake Basin Water Environment Management Project" and "Social Assessment Report for World-Bank-Financed Jiangxi Poyang Lake Basin Water Environment Management Project" made by Hohai University.

9.1Resettlement Plan

9.1.1 Impacts of Land Occupation

Six towns and townships in Shangli County, Pingxiang City, are involved in land acquisition. This project involves permanent land acquisition and temporary land occupancy while no house demolition or minority communities are involved within the land to be acquired. The project impacts are illustrated in Table 9-1.

Table 9-1 Summary of the Project Impacts on Migrants

County	Project Name	Townships and To	Village (in number)	Acquired Collective Land (hectare)	Acquired State-owned	Temporary Land Occupation (hectare)	Directly Affected Population	Indirectly Affected Farmer and Shop

		wn (in number)		Total	Paddy Field/Arid Land Included	Land (hectare)	Collective Land	State-owned Land	Household (by household)	People(by number of person)	Number (by household)	People(by number of person)
Shangli County	Project of domestic garbage collection and transfer treatment systems	6	72	103.93					103	413		
	Water Environment Monitoring System					3						

9.1.2 Measures to Reduce Impacts

In the planning and design stage, in order to reduce the impact of project construction on the local socio-economic and people's life, the design agency and owner of the Project had adopted several effective measures:

(1) In the planning stage, when optimized selection for schemes was conducted, much consideration was put into the impact of project construction on the local socioeconomic , which was set as a key factor in the optimized selection for schemes;

(2) Design was optimized. To reduce the demolition immigrants, existing national and local roads were used to connect planned construction area.

(3) The design was optimized to occupy wasteland and state-owned land and reduce the occupancy of arable land.

In the Resettlement and the implementation stage, when the land acquisition and resettlement are unavoidable, in order to reduce the impact of construction projects, the following measures will be taken:

(1) The collection of basic material shall be strengthened and thorough analysis shall be conducted concerning the current situation of local socioeconomic and future development. Practical resettlement action plan shall be established according to local situation. The people affected by the project shall be prevented from suffering loss for project construction.

(2) The public participation shall be actively encouraged and information disclosure shall be strengthened and surveillance by the masses shall be accepted.

(3) Internal and external monitoring shall be reinforced and effective and unblocked feedback mechanism and channels shall be established. The information processing cycle shall be minimized to ensure the various problems in project implementing process be settled in time.

(4) Project sites are arranged in a scientific way by occupying as less land as possible. When construction is completed, temporarily occupied area will be recovered as provided by its original land use type.

(5) Temporary storage area of earthwork is properly arranged so that it is far from environmentally sensitive points such as residential quarters, schools and the like.

9.2 Social Assessment

9.2.1 Social Assessment

(1) Generally, the project is of high economic and social benefit, consistent with medium or long-term development plan for representative counties of each sub-project. Meanwhile, it will have positive impacts on improving regional environment and boosting regional economic and social development.

(2) Most farmers/residents of representative counties will benefit directly from the project, since the project has extensive covering rate and inclusive beneficiaries.

(3) Disadvantaged groups will be direct beneficiaries of the project. Generally, the project has little adverse impact on their livelihood, but create some jobs for them

to live a better life.

(4) Because the project is in line with the region's customs, culture and religion, there is no relevant risks.

(5) Project management system of high enforcement capability provides institutional guarantee for the project's smooth operation and implementation.

The project will alleviate pollution in Poyang Lake Basin and improve living, ecological and social environment for residents in the project area. Purposes of the project are in line with China's plan of utilizing foreign investment and pollution control. Local governments of various levels and beneficiary groups are all supportive to the project.

Sewage treatment and ecological restoration projects have been spreading in China's provinces for years. The technology is relatively mature. Moreover, the project areas have conducted similar pollution control projects and formed full-time technological teams, boasting a good working foundation. And staffs of project offices of all levels are experienced in project management. All of these are favorable for successfully completing the project .

Implementation of the project will bring favorable social benefits, including: improving people's living environment and their livelihood; creating more jobs for vulnerable groups and farmers; decreasing incidence of disease and improving people's health conditions, promoting rural urbanization and transforming farmers into urban residents, and facilitating industrial restructuring and green economic development.

Any project may encounter risks in the implementation. This project will face risks in the construction, difficult land acquisition and subsequent maintenance. Therefore, the project has to pay attention to the development of beneficiary groups and also attend to social equity. Undoubtedly, a more integral project design and high-quality project management will reduce potential social risks and prevent negative social impacts in the area.

9.2.2 Suggestions

Due to differences and complexity of project contents in various cities or towns and distinct economic and social development, we have to face potential risks brought by project construction. Those risks can be avoided through two methods. Firstly, optimize engineering design on the basis of no extra quantity. Secondly, owners should consult with stakeholders before, during and after the project construction to know their needs and desires, and communicate with different departments. To this end, the social assessment group proposes the following suggestions:

1. General Advice

(1) Optimize the design

Project owners and feasibility study agencies should minimize the scale of land acquisition and demolition in design, and adopt advanced measures of environmental protection to avoid secondary pollution brought by environmental projects;

(2) Conduct participatory activities

Major stakeholders should be involved in the design, implementation, management and supervision of the project. Project owners, the PMO/PPMO and social assessment group formulate outline for beneficiary participation and initiate monitoring and evaluation to ensure that major stakeholders join in the whole process of the project, including the preparation, design, implementation, monitoring and supervision, and equip them with the awareness of environmental protection;

(3) Carry out training on environmental knowledge and public health education

Relevant government departments should organize public training on national and regional laws and regulations on environmental protection as well as environment indicators under the assistance of the publicity department, Bureau of Education, Environmental Protection Bureau, Bureau of Radio and Television, newspaper offices, and sub-district/town/township/village level residents' committees; launch training on water conservation, treatment of sewage and waste, control of point pollution, prevention of water-mediated diseases and recycle of waste; and publicize life-styles that may affect surrounding environment and help residents in the project area to realize that their way of living may have impacts on surrounding environment;

(4) Formulate a reasonable resettlement action plan

On the basis of public consultation, the PMO/PPMO, resettlement plan group

and project owners should ensure that migrants' livelihood will not deteriorate due to the project construction;

(5) Create jobs opportunities

The PMO/PPMO, project owners, construction agency with the assistance of the Bureau of Civil Affairs and the Social Security Bureau will provide jobs opportunities for migrants, poverty-stricken families and women in cities and rural areas to involve them in the project construction;

(6) Formulate and implement preferential charging policy for impoverished groups

The PMO/PPMO, project owners and the Price Bureau should establish local charging policy for impoverished groups on the basis of public hearing;

(7) Safety and convenience maintenance during the construction

The project owners and construction agencies should schedule the construction progress by taking residents' need and habits into consideration;

(8) Institutional capacity building

The project managers and constructors should launch training on World Bank social and safeguard policies to better implement the project;

(9) Mechanism of follow-up project management

Residents should be involved in the follow-up management. It is proposed to establish a community team of follow-up project management based on the management group during the construction. Members of follow-up management team (women included) will be elected by villagers. Environmental institutions should strengthen the legislation and law enforcement on environmental protection and enhance environmental education for residents in the project area for sustainability of the project effects.

2. Suggestions on sub-projects

①It is proposed that residents' intention of "NIMBY" should be taken into consideration. The sites of waste collection, transfer, and treatment facilities shall not be either too near or too far from residential areas to avoid high cost of waste transportation. The core principle is to conduct more consultation and communication with residents to ensure their recognition of waste treatment project; ②Due to adopted tax distribution system, financial budget of village and town (township) is very tight. Thus, the project funds should prefer the rural regions to support waste

transfer system construction there. Meanwhile, the local government should not be responsible for too much project expenditure; ③Technology plays a crucial role in improving the efficiency of waste treatment. Scientific treatment of waste should be conducted in terms of technology either in simple garbage landfill sites or in new garbage treatment plants, to prevent leakage and pollution.

10. **Environment Management Plan**

See the independent document of World Bank-financed Shangli Water Environment Management Plan.

11 Analysis of Economic Cost-Benefit of Environmental Impacts

11.1 Estimated Cost in Environmental Protection

The project is estimated to cost RMB 191,474,500. Estimated cost in environmental protection is seen in Table 11-1, mainly including measure cost, monitoring cost and training cost of environmental protection with RMB 2,198,000 in total. Investment in environmental protection accounts for 1.41% of total engineering investment.

Table 11-1 Estimated Cost in Environmental Protection

Environmental Management Cost (RMB)	Environmental Monitoring Cost (RMB)		Cost for Training (RMB)	Total Cost of EMP Implementation (RMB)
	Construction Period	Operation Period		
1,800,000	102,000	216,000	80,000	2,198,000

11.2 Analysis of Economic Cost-Benefit of Environmental Impacts

Environmental benefits, which include benefits of pollutant load shedding, water quality improvement and environmental management capacity improvement, play a vital part in this garbage transfer project.

(1) Pollutant load shedding

After completion of the project, innocuous treatment rate of urban domestic garbage will reach over 80%; domestic garbage shall not be disorderly littered and dumped; classified collection shall be gradually pushed ahead; and the annual volume of garbage flowing into Poyang Lake will reduce by 50,600t.

(2) Water quality improvement

Domestic garbage transfer stations will connect garbage and end treatment facilities and work as a hub of modern urban garbage treatment, realizing the centralization, compaction and obturation of garbage collection and transportation.

The current established projects in operation in recent years enjoy advantages such as garbage volume and weight reduction, totally enclosed and high-capacity transportation and automatic operation. As they greatly improve backward facilities of garbage collection and transportation and solve problems like serious pollution, complicated operation, difficult management and low efficiency, these projects are basically recognized as an advanced tool to reduce domestic garbage pollution, lower operational and management cost, improve environment and enhance environmental sanitary work.

Implementation of the project will greatly reduce pollutants flowing into surface water, significantly improving environment in Shangli County.

(3) Benefits of environmental management capacity improvement

Implementation of the construction project of environmental monitoring and management capacity will provide strong technological and monitoring measures for local environmental protection, promote healthy development of local environmental protection work, effectively prevent accidents on environmental pollution and reduce environmental risks. Measures in many aspects such as management and technology can be adopted to maximally reduce pollution on surface water and improve regional environment.

(4) Provide good environmental conditions for regional social economy

Implementation of the project will step up the construction of municipal infrastructure in the project site, establish and improve network system for environmental infrastructure to further ease conflicts between urban development and environmental restraints in the Basin and regions. It will improve environmental quality in the project Basin, enhance water environmental functions and urban functions, and create compatible environmental conditions for rapid and sound development of local and provincial economy and society.

11.3 Social Benefits

(1) Improve residents' health and living quality in the Basin

Implementation of the project effectively will improve backward environmental infrastructure. It not only purifies water, but also removes the environment for the propagation of disease transmission media like mosquitoes and flies, thus protecting and improving residents' living environment, reducing incidence of diseases, and improving residents' physical health and living standard.

(2) Increase residents' employment opportunities

The gradual expansion of the project will offer employment opportunities. Firstly, the project construction will offer some temporary and scattered employment opportunities; secondly, the project operation will offer some long-term and stable employment opportunities including technical and management personnel who are directly engaged in the project; thirdly, implementation of the project will greatly improve investment environment, attract capital and speed up the development of industry and agriculture. Meanwhile, it can also promote prosperity of tertiary industry and provide more employment opportunities.

(3) Improve residents' environmental protection awareness

The construction and implementation of the project is a profound and vivid process of environmental protection publicity. The detailed environmental protection initiatives can make people have a deep understanding about the importance of environmental protection and serious results including economic loss, health damage and resource loss that are brought by the damage of environment. The pure publicity of the initiatives is more effective and acceptable. Meanwhile, the project can serve as a demonstrative base for environmental science education and a place to provide long-term education on environmental protection for the public, which is good for the improvement of national awareness of environment protection.

(4) Provide essential data for the regional pollution treatment

Implementation of the environmental monitoring and management capacity building project can meet increasing environmental monitoring needs in society and better serve the regional economic development. Meanwhile, providing essential data for further explanation of the pollution sources, offering a scientific basis for comprehensive treatment and decision making of regional pollution, and acting as a

basis for the accurate assessment of the effects of regional pollution treatment project, it is an effective method for the environmental authority to supervise the operation of pollution treatment facilities according to law and improve the environmental management of regional basins.

11.4 Economic Benefits

The project is a public welfare project of water environment management. It has no significant direct investment returns but mainly brings in indirect economic benefits which include the following aspects:

(1) Economic benefits of pollution control

The benefits mainly manifest in reduced social economic loss caused by pollutants in sewage, which are shown as follows:

Industrial enterprises: each industrial enterprise can reduce the increased investment and running management cost brought by the disperse sewage treatment and lessen the burden of the enterprise.

Farming, animal husbandry and fishery industries: since water pollution may drop off output and quality of food crop, livestock products and aquatic products, the completion of the project can reduce economic loss caused by water pollution.

Physical health: since water pollution can increase incidence of diseases and health care cost and decrease labor productivity, the completion of the project can improve human living environment reduce relevant health care costs.

(2) Benefits of increased income

Improvement of urban infrastructure and environment will increase the value of urban land.

11.5 Summary

The project serves as one part of the phase schemes to improve the environment in Shangli County and water environment management in Poyang Lake Basin. The construction of garbage transfer stations will have significant impacts on urban

infrastructure and ecological environmental protection in the project area as well as national economy and social development.

Implementation of the project①will help to consolidate results of environmental governance in the project area;②help to improve local residents' production and living conditions as well as living standard and health; ③ help to promote marketization of infrastructure development and management in Shangli County and realize positive development of urban infrastructure through introducing and drawing on domestic and foreign advanced technology and management;④help to promote development of water environment safety in Poyang Lake Basin and create beneficial conditions for sustainable development strategy and ecological civilization in Poyang Lake Basin in the way sustainable development of environment ensures that of economy and society, featuring sound environmental, social and economic benefits.

12. Conclusion

It can be concluded from the EIA that:

(1) Implementation of the project will ensure proper handling of domestic garbage in Shangli County which can greatly improve the environmental sanitation and residents' living conditions in Shangli County, protect the neighboring surface water, beautify the neighboring environment, build a more comfortable and beautiful living environment and improve the environmental quality.

(2) The construction of the project complies with the state laws and regulations as well as urban master plan and planning on environmental sanitation in the project area, which ensure the legal basis of project implementation.

(3) The implementation of the project may involve some targets of environmental protection (sensitive spots) such as residential areas. In the EIA, by adopting methods and means such as mitigation measures, formulation and implementation of environment management plan and public participation, it can further reduce and get rid of adverse impacts of the implementation of the project on the targets of environmental protection (sensitive spots) and make potential impacts conform to the requirements of laws and regulations and standards of the state environmental protection.

(4) The implementation of the project may bring some adverse impacts on the neighboring environment, including the impacts during construction period and the operation period.

1) The adverse impacts during construction period mainly include: the impacts of construction dust on ambient air quality, the impacts of noise of construction vehicles and machine on the neighboring environment, the impacts of construction domestic sewage, water and soil erosion and damage on vegetation.

2) The adverse impacts during operation period mainly include: impacts of odor of garbage transfer stations on ambient air and equipment noise on the neighboring environment.

(5) The degree and coverage of potential adverse impacts of the project can be under control within the laws and regulations and standards of the state environmental protection by adopting methods and means such as mitigation measures, implementation of environment management plan and public participation and consultation.

To sum up, after adopting the countermeasures proposed in the project such as mitigation measures, implementation of environment management plan and public participation and consultation, the implementation of the project is feasible in terms of environment.

Annex Ⅰ Statement on the Production Start Time of Pingxiang City Domestic Garbage Incineration Power Plant

中节能萍乡环保能源有限公司

〔2016〕028 号

关于萍乡项目投产时间的说明

萍乡市生活垃圾焚烧发电项目自 2016 年初动工建设以来，总体进展平稳，初步计划在 2017 年 6 月底投产。

特此说明。

中节能萍乡环保能源有限公司

2016 年 7 月 7 日

Annex II Reply to the EIA of Pingxiang City Domestic Garbage Incineration Power Plant

江西省环境保护厅

赣环评字〔2015〕122号

江西省环境保护厅关于萍乡市生活垃圾、污泥干化焚烧发电项目环境影响报告书的批复

中节能萍乡环保能源有限公司:

你公司《关于请求审批<萍乡市生活垃圾、污泥干化焚烧发电项目环境影响报告书>的请示》(中评司字〔2015〕001号)收悉。经研究，批复如下:

一、项目批复意见

本项目属新建工程,位于湘东区境内的江西萍乡陶瓷产业基地范围内。项目采用焚烧炉焚烧生活垃圾并回收余热发电，焚烧的生活垃圾来自萍乡市下辖二区二县(安源区、湘东区、芦溪县和上栗县)的城镇及乡村，日焚烧处理生活垃圾700吨，年发

— 1 —

电量约 0.96 亿千瓦时。

你公司应全面落实环境影响报告书提出的各项污染防治措施和环境风险防范措施，确保卫生防护距离要求得到落实，缓解和控制环境不利影响。我厅原则同意环境影响报告书中所列工程性质、规模、工艺、地点和拟采取的环境保护对策措施。

二、项目建设的污染防治措施及要求

该项目在工程设计、建设和运营过程中必须认真落实环境影响报告书提出的各项环保措施和要求。重点做好以下几项工作：

（一）清洁生产要求。应将清洁生产纳入生产管理和环境管理全过程中，定期开展清洁生产审核，采取清洁工艺，使用先进设备，以三废“资源化、减量化、无害化”为目标，不断改进污染防治措施，减少污染物排放。

（二）严格落实大气污染防治措施。本项目废气包括垃圾焚烧炉烟气和飞灰稳定化含尘废气等有组织排放废气，含烟尘、SO_2、HCl、二噁英和重金属等污染物；垃圾贮存、垃圾渗滤液处理、烟气脱硝臭气及飞灰稳定化扬尘等无组织排放废气。应根据废气中污染物的类别和性质，采取成熟可靠的除尘、脱硫、二噁英去除工艺，确保各类大气污染物长期稳定达标排放。其中，焚烧炉烟气应进行脱硝处理并采取温控、活性炭吸附等措施控制二噁英的产生量和排放量。应对活性炭使用量实施计量。应采取密闭措施并加强厂区绿化，控制厂区内各工段恶臭和扬尘污染。焚

烧炉烟气外排应满足《生活垃圾焚烧污染控制标准》（GB18485-2014）表4中标准。应按要求在焚烧炉烟囱上安装烟气在线监测系统，在线监测因子为烟气量、烟温及颗粒物、SO_2、NO_x、HCl、CO等。烟气在线监测装置应与当地环保部门联网。

应在工程试运行前对项目周边环境空气及土壤中二噁英浓度进行一期背景值监测，并按环境影响报告书提出的环境监测计划，定期对污染源及周边环境敏感点进行环境监测，其中废气污染源及环境敏感点空气、土壤环境监测应包括二噁英因子。在国家尚未制定二噁英环境质量标准前，环境空气中二噁英环境质量标准参照执行年均浓度标准值 0.6pgTEQ/m^3。一旦发现区域环境污染情况，应立即停产并查找原因，采取有效措施防控区域环境污染。

（三）严格落实水污染防治措施。项目废水包括垃圾渗滤液、倾卸平台地面及垃圾车冲洗废水、化验室废水、主厂房地面冲洗水、厂内运输道路冲洗废水，化水站排水及锅炉排污水、初期雨水和生活污水；间接循环水系统排水和净水系统排水等。应按照“清污分流、雨污分流、分质处理、一水多用”原则，落实环境影响报告书提出的生产废水和生活污水处理方案。其中，垃圾渗滤液、垃圾倾卸平台地面及垃圾车冲洗废水一并进入渗滤液处理站进行深度处理，外排废水应满足《生活垃圾填埋场控制标准》（GB16889-2008）表2标准；生活污水、初期雨水、化验室废水、主厂房地面冲洗废水和厂内运输道路冲洗废

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水一并进入生活污水处理站，达到《污水综合排放标准》（GB8978-1996）表4中一级排放标准后外排。Pb等五类重金属污染物排放浓度应满足《地表水环境质量标准》（GB3838-2002）中Ⅲ类标准。

（四）严格落实固体废物分类处置和综合利用措施。本项目生产中产生的危险废物贮运过程中应认真落实相关环境保护要求，自身不能处置的应定期委托有资质的单位综合利用或处置，并严格执行危险废物转移联单制度。本项目产生的一般工业固体废物应合法处置。应在厂区内设置足够容积的一般工业固体废物暂存库和危险废物暂存库。一般工业固体废物暂存库设计、建设和运行必须满足《一般工业固体废物贮存、处置场污染控制标准》（GB18599-2001），危险废物暂存库设计、建设和运行必须满足《危险废物贮存污染控制标准》（GB18597-2001）要求。

（五）严格落实土壤和地下水污染防治措施。为防止建设项目废水、物料下渗对地下水和厂区土壤造成污染，收集的垃圾、辅助物料、固废应存放于库房和车间内，不得设置露天堆场；应按照分区防治的原则，对垃圾库、柴油罐区、药品间、飞灰稳定化间、固废暂存库等场所进行硬化并采取防腐、防渗处理；应对废水收集处理设施采取防腐、防渗处理措施；应在厂区固废暂存库及周边环境敏感点设置地下水监控井，一旦出现地下水污染问题，应立刻查找渗漏源，并采取有效补漏措施，避免污染地下水。

（六）严格落实环境噪声污染防治措施。应优化项目总平面

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布置，合理布置引风机、发电机等高噪声设备，尽量选用低噪声设备，采取有效措施控制环境噪声影响。运行期厂界噪声必须达到《工业企业厂界环境噪声排放标准》（GB12348-2008）中 3 类标准要求。

（七）严格落实环境风险防范措施。项目环境风险主要来自垃圾贮坑恶臭气体泄漏、焚烧炉或锅炉炉膛爆炸、烟气治理设施失效和渗滤液处理系统失效，及柴油储罐发生泄漏等引发的环境风险。应严格落实环境影响报告书中提出的环境风险防控措施，认真制定环境风险应急预案，配备环境风险应急设施和装备并定期开展应急演练。一旦发生环境风险事故，必须立即停产，启动应急预案，控制并削减对外环境的污染影响。

（八）排污口规范化。应按国家有关规定设置规范的污染物排放口，并设立标志牌。项目废气排气筒和烟囱必须按要求设置永久监测采样口。

（九）项目周围规划控制要求。根据环境影响报告书结论，本项目防护距离确定为厂界周边 300 米范围。湘东区环保局应专题报告区人民政府，严格控制好本项目周边规划，项目环境防护距离范围内不得规划或新建居民住宅、学校、医院等环境敏感建筑和食品、药品等环境敏感企业。湘东区人民政府应确保在本项目卫生防护距离范围内无环境敏感点，否则萍乡市环保局不得批复本项目进行试生产。

（十）信息公开和人群健康保护。你公司应依法实施信息

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公开，接受社会监督，项目投产后应每年向社会发布企业年度环境报告，公布污染物排放和环境管理情况，并定期开展项目周边区域人群健康调查（必须含血铅调查），确保环境安全。

（十一）项目建设环境监理要求。你公司应委托符合要求的单位开展施工期环境监理，及时编写环境监理报告，实时记录环保措施落实情况。

（十二）总量控制。本项目主要污染物排放总量必须满足以下总量控制指标要求：化学需氧量≤1.67 吨/年，氨氮≤0.42 吨/年，二氧化硫≤55.9 吨/年，氮氧化物≤184.8 吨/年。有组织排放废气中重点重金属污染物排放总量控制指标为：铅≤38.1 千克/年，镉≤8.4 千克/年，汞≤12.7 千克/年。

三、项目运行和竣工验收的环保要求

该项目建设必须严格执行环境保护设施与主体工程同时设计、同时施工、同时投入使用的环境保护“三同时”制度。工程竣工后，你公司必须向萍乡市环保局提交试生产书面申请，经批复后方可进行试生产。在工程试生产期间（三个月内），必须按规定程序申请竣工环境保护验收，经验收合格后方可正式投入生产。

四、其他环保要求

（一）重新办理环境影响评价要求。项目建设性质、规模、地点或者生态环保措施发生重大变动时，应按照法律法规要求，重新办理环境保护审批手续。若自批复之日起超过 5 年方动工，

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必须向萍乡市环保局申请重新办理环境保护审批手续，萍乡市环保局应将审批文件报我厅备案。

（二）项目监督管理要求。请萍乡市环保局和湘东区环保局开展本项目的日常环境保护监管工作。你公司应在收到本批复后20个工作日内，将批准后的环境影响报告书及其批复送萍乡市环保局和湘东区环保局，并按规定接受各级环境保护行政主管部门的监督检查。

江西省环境保护厅

2015年9月9日

（此件主动公开）

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抄送：萍乡市人民政府，萍乡市环保局，湘东区人民政府及区环保局，
厅有关处室，省环境监察局，厅环境工程评估中心，省环科院。

江西省环境保护厅办公室　　2015 年 9 月 10 日印发

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Annex Ⅲ Minutes of Discussion Meeting of Shangli County

(1) Time: 9:30am, May 11th, 2016

(2) Venue: Meeting Room of Villagers' Committee of Mingshan Village of Futian Town of Shangli County

(3) Content: Public consultation and information disclosure discussion meeting of Environmental Impact Assessment for World Bank-financed Shangli Water Environment Management Project

(4) Attendees: 15 in total including Li Wanshan and Sun Yan from World Bank, Director Peng from Government of Futian Town of Shangli County, Director Zeng from county department of agriculture and industry, Director Liu and village representatives from Villagers' Committee of Mingshan Village and representatives from project design unit and environmental assessment unit

(5) Host: Director Peng (Government of Futian Town)

(6) Minutes of Meeting

At the symposium, public consultation was conducted on the completed first draft of Environmental Impact Assessment Report of Shangli Water Environment Management Project. Consensus was reached on mitigation measures for the project environmental impacts after a discussion. Relevant agenda was recorded as follows:

①The host introduced those who presented at the symposium and handed out questionnaire.

②The environmental assessment unit introduced the purpose of public consultation.

According to national environmental protect laws and regulations as well as the World Bank policy (OP4.01), two rounds of public consultation and information disclosure were launched concerning the project. The first round, in the period between environmental question selection and the completion of the project's EIA outline, was mainly to provide the affected people with project overview and potential environmental impacts; The second round, during the completion of the first draft of EIA report, was to exchange ideas on environmental questions and their mitigation measures that the mass had shown concern for in the first round so as to gain the

public understanding of the project construction and mitigation measures adopted. It was to publicize information of the project for the public in the project area or concerned about the project in order to inform them of main conditions, operation features and major environmental problems of the project, to help evaluators spot problems and ensure that all the major environmental problems generated by the project are analyzed and evaluated in the EIA report, to confirm feasibility of environmental protection measures and implementation of optimization measures and plans.

③The environmental assessment unit presented general conditions, environmental impacts, prevention and treatment measures of the project and the first draft consultation of its environmental assessment:

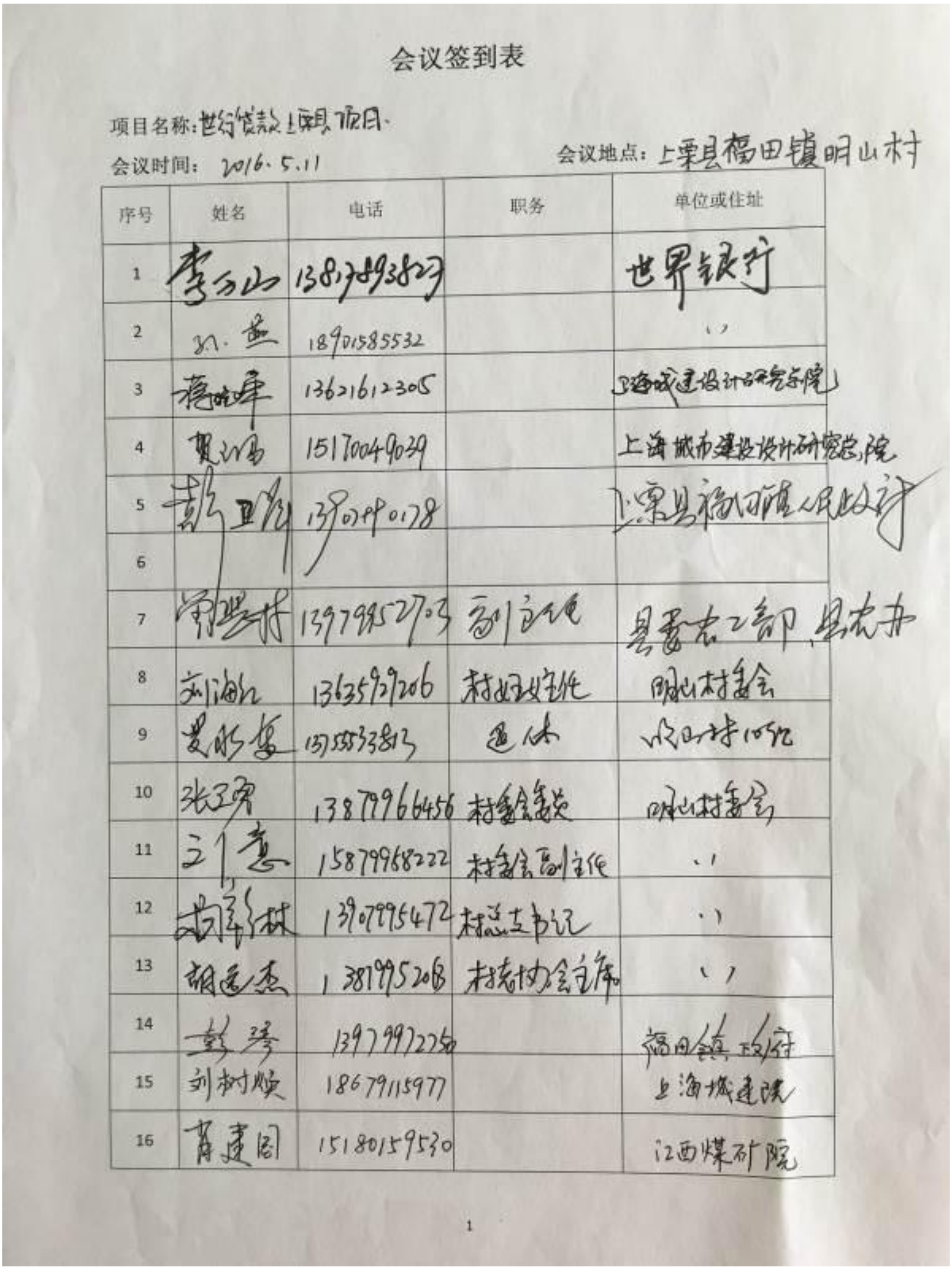
The proposed project will improve water body management of Poyang Lake Basin by setting up rural garbage collection and transfer systems and controlling discharge of pollutants. The project is feasible in terms of the environment with measures mentioned in this assessment report such as mitigation measures, environmental management plans and public participation.

④A speech made by representatives of the public: representatives at the symposium all supported the project construction and acknowledged all the environmental protection measures proposed by the assessment unit.

⑤Feedback on the public comments: the project offices and the assessment unit expressed thanks for the public understanding and support. Environmental protection measures of the project environment management plans will be taken strictly.

⑥The host concluded the symposium. That was the end of the symposium.

Figure 1 Photos of the Discussion Meeting in Mingshan Village of Shangli County



会议签到表

项目名称：世行贷款上栗县项目

会议时间：2016.5.11

会议地点：上栗县福田镇明山村

序号	姓名	电话	职务	单位或住址
1	[illegible]	13817893823		世界银行
2	[illegible]	18901585532		〃
3	[illegible]	13621612305		上海城建设计研究总院
4	[illegible]	15170049039		上海城市建设设计研究总院
5	[illegible]	13907990178		上栗县福田镇人民政府
6				
7	[illegible]	13979852703	副主任	县委农工部、县农办
8	[illegible]	13635929206	村妇女主任	明山村委会
9	[illegible]	13755373813	退休	[illegible]
10	[illegible]	13879966456	村委会委员	明山村委会
11	[illegible]	15879968222	村委会副主任	〃
12	[illegible]	13907995472	村总支书记	〃
13	[illegible]	1387995208	村老协会主席	〃
14	[illegible]	13979972756		福田镇政府
15	[illegible]	18679115977		上海城建院
16	[illegible]	15180159530		江西煤矿院

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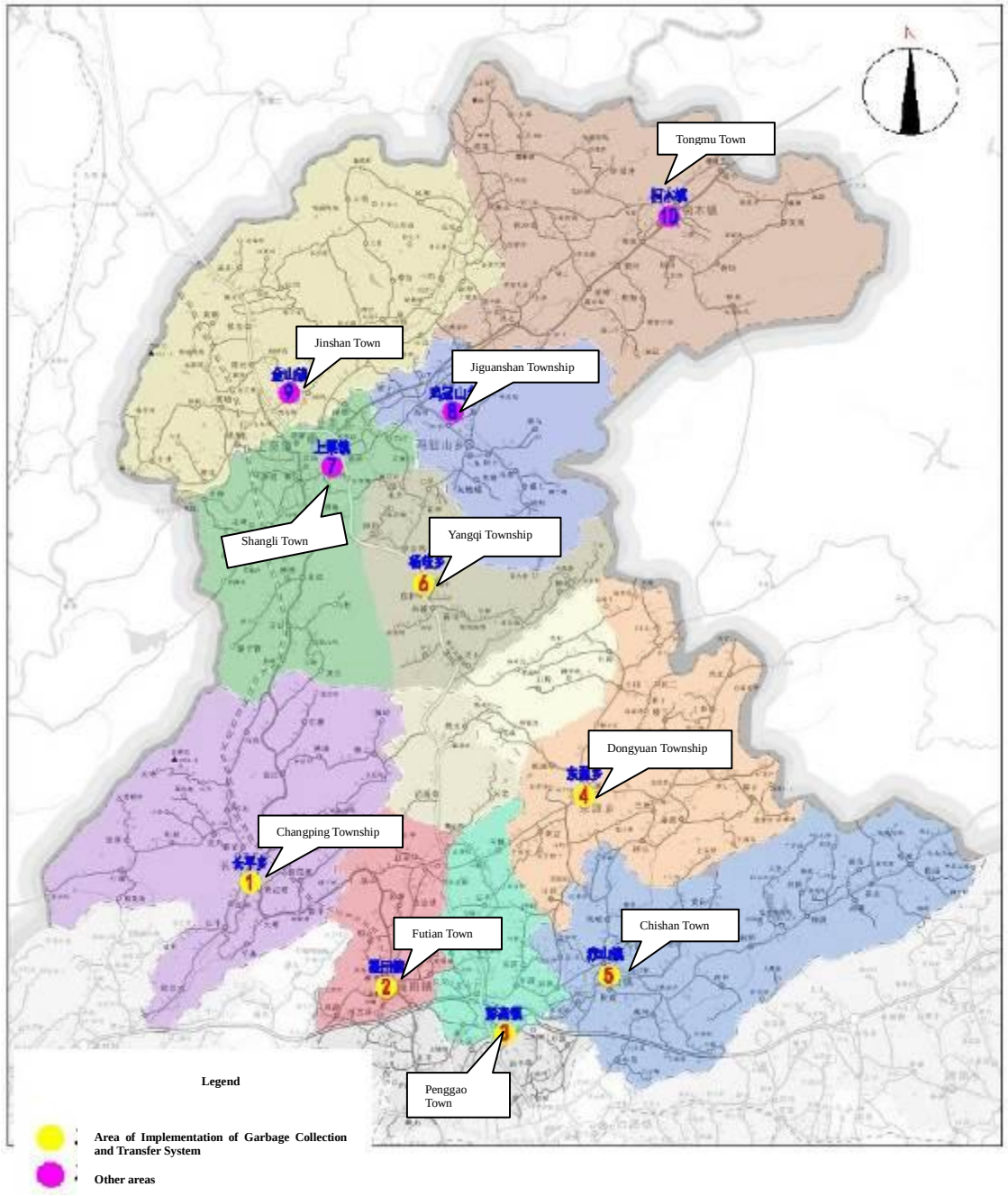
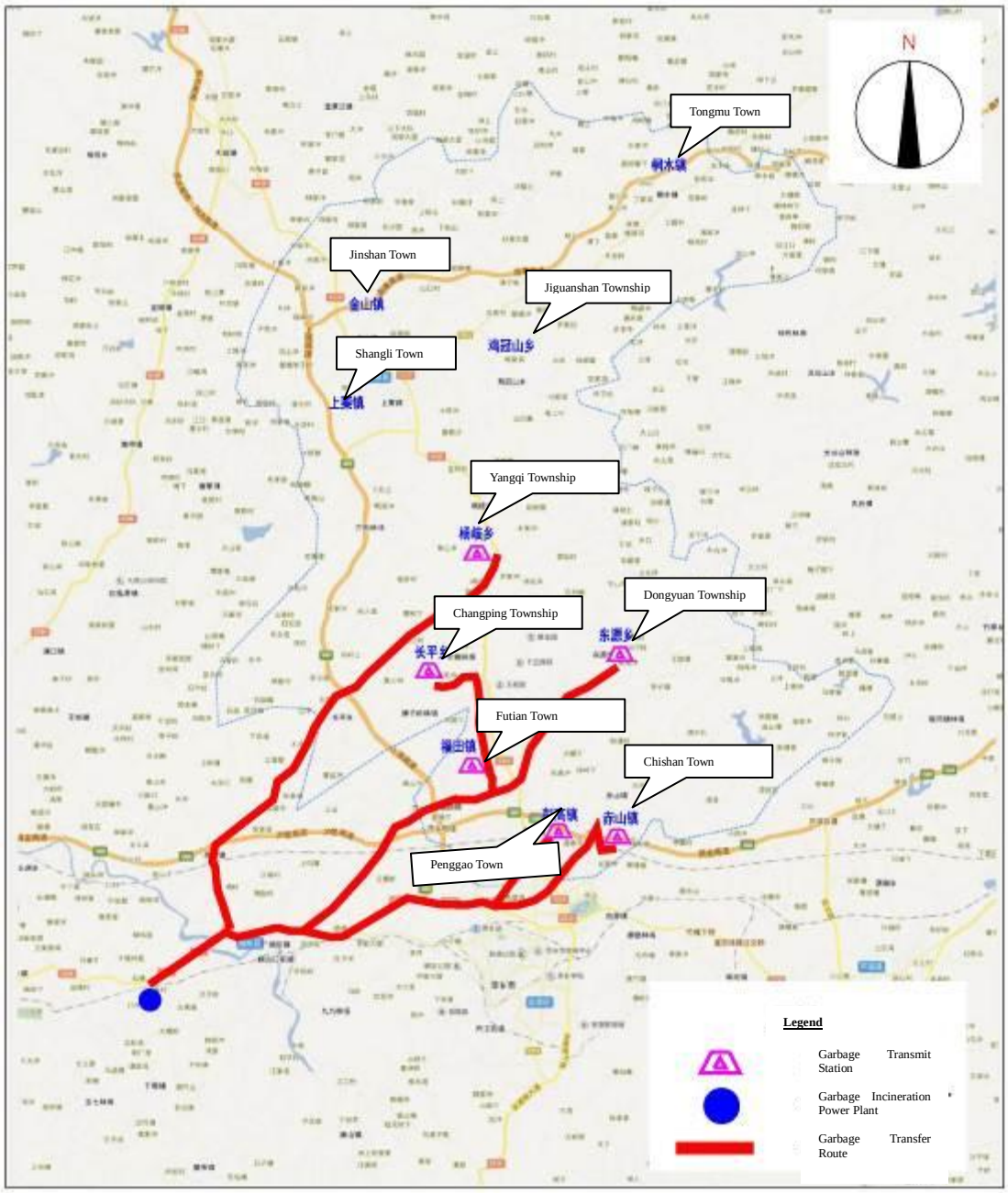
Figure 2 Attendance Table of the Discussion Meeting in Mingshan Village of Futian Town Shangli Count

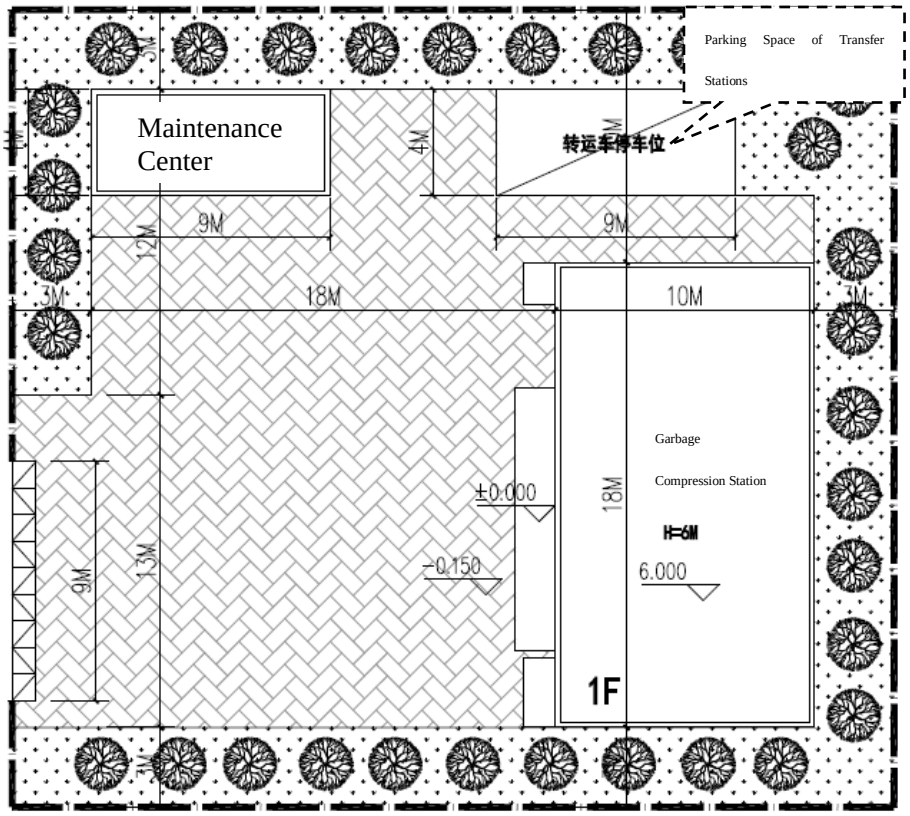
Map Ⅰ Geographical Location of the Subproject



Map Ⅱ Garbage Transfer Routes

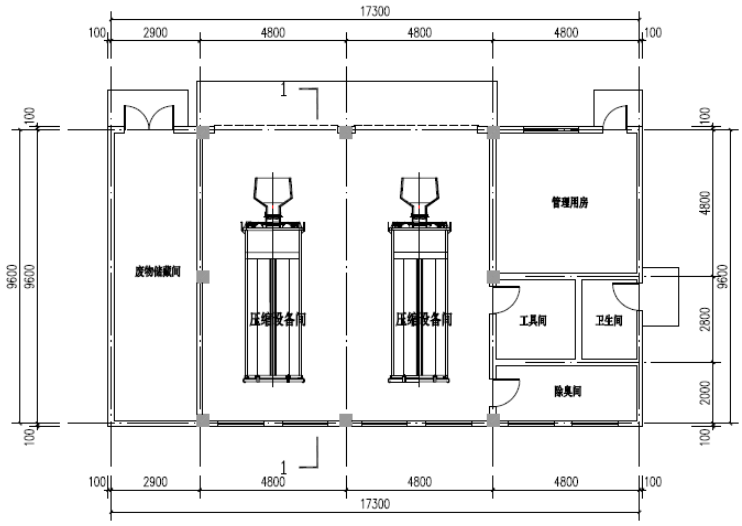


Map Ⅲ Plane Graph of Garbage Transfer Stations



General Layout of Garbage Transfer Stations

Econo-technical Norms
Total Land Use: 999㎡
Total Construction Area: 207.5㎡
Plot Ratio: 0.17
Building Density: 17%
Greening Rate: 31%
Parking Space: 1



List of Main Equipment

No.	Name	Unit	Amount
1	Mobile garbage compactor: 18m³	Set	2
	Treatment capacity of single equipment: 60t/d, 380V/5.5kW		
	Compression density: 0.8kg/m³		
	Nominal pressure hydraulic pressure system: 18kN		
2	Hook Arm Type Garbage Transportation Truck	Truck	1
3	High-pressure airblast cleaner	Truck	1
4	Video monitoring system	Set	1
5	Spraying deodorization system	Set	1

Layout of Compression Room