

**Poyang Lake Basin Water Environment  
Management Project**

**Consolidated Environmental Assessment Report**

**Consignor: Jiangxi Province Office of Urban Construction &  
Foreign Capital Utilization**

**Consignee: CERI eco Technology Co., Ltd. Beijing**

2016.8

## Table of Contents

### 目录

<b>1 GENERAL INTRODUCTION.....</b>	<b>7</b>
1.1 BACKGROUND AND SIGNIFICANCE .....	7
1.1.1 Project Origin .....	7
1.1.2 Project Significance.....	11
1.1.3 Project Objectives .....	12
1.2 OVERVIEW OF EIA REPORT.....	12
1.2.1 Purposes .....	12
1.2.2 EIA Category .....	12
1.2.3 Preparation of EIA Report.....	13
1.2.4 EIA Focuses .....	13
1.3 POLICIES AND LAWS .....	14
1.3.1 State environmental protection laws and regulations.....	14
1.3.2 Local environmental regulations .....	16
1.3.3 Technical guidelines and specifications for environmental impact assessment .....	16
1.3.4 Safeguard Policies of WB .....	17
Not Involved. Does not involve Indigenous People, nor ethnic minority regions . .....	17
Not Involved. Project is in Jiangxi Province, China, does not involve any Disputed Areas. ....	17
1.3.5 Related documents .....	18
1.4 ASSESSMENT STANDARD.....	18
1.4.1 Environmental quality standards.....	18
1.4.2 Standard for discharge of pollutants .....	24
1.5 GRADE, SCOPE AND PERIOD .....	26
1.5.1 EIA category.....	26
1.5.2 EIA Scope .....	27
1.5.3 EIA Periods .....	28
1.6 ENVIRONMENTAL IMPACT FACTORS AND ASSESSMENT FACTORS .....	29
1.7 ENVIRONMENTAL PROTECTION OBJECTIVES .....	31
1.7.1 Noise and air protection objectives(targets) .....	31
1.7.2 Water environment protection targets.....	48
1.7.3 Ecological environment protection targets.....	53
1.7.4 Social environment protection targets .....	53
<b>2 PROJECT DESCRIPTION .....</b>	<b>56</b>
2.1 PROJECT OVERVIEW .....	56
2.2 PROJECT INVESTMENT.....	56

2.3 IMPLEMENTATION PLAN .....	56
<b>3 STATE OF ENVIRONMENT.....</b>	<b>65</b>
3.1 NATURAL ENVIRONMENT .....	65
3.1.1 Poyang Lake basin .....	65
3.1.2 Sub project Counties .....	71
3.2 SOCIAL ENVIRONMENT.....	78
3.2.1 Poyang Lake Basin .....	78
3.2.2 Sub project counties.....	81
3.3 ECOLOGICAL ENVIRONMENT.....	85
3.3.1 Poyang Lake basin .....	85
3.3.2 Project county .....	91
3.4 ENVIRONMENT SETTINGS .....	96
3.4.1 Surface water environment settings .....	96
3.4.2 Present Environment Quality Assessment for Ambient Air Quality .....	130
3.4.3 Present Environment Quality Assessment for Noise .....	132
3.4.4 Sediments .....	139
3.5 LAND USE.....	147
<b>4 COMPARISON OF ALTERNATIVES .....</b>	<b>149</b>
4.1 ZERO OPTION COMPARISON ANALYSIS .....	149
4.2 TECHNICAL SOLUTION COMPARISON .....	150
4.2.1 Technical solution comparison for Duchang domestic wastewater management system enhancement .....	150
4.2.2 Methods comparison for Poyang county township domestic wastewater treatment .....	151
4.2.3 Comparison and Selection among Treatment Schemes for Diffused Pollution in Poyang County .....	153
4.2.4 Technical solution comparison for Jing'an waste collection and transportation .....	154
4.2.5 Comparison for ways of dredging.....	156
4.3 PROCESS COMPARISON .....	157
4.3.1 Process comparison for Poyang wastewater treatment station .....	157
4.3.2 Process comparison for Poyang county Constructed wetland .....	158
4.3.3 Process comparison for waste transport station compression .....	165
4.3.4 Process comparison for waste transport station deodorization .....	167
4.4 SITE SELECTION COMPARISON.....	168
4.4.1 Site selection comparison for Duchang county waste transport station .....	168
4.4.2 Site selection comparison for Poyang county sub project.....	170
<b>5 ENVIRONMENTAL IMPACT ANALYSIS AND MITIGATION MEASURES .....</b>	<b>172</b>
5.1 ENVIRONMENT IMPACT AND MITIGATION MEASURES IN CONSTRUCTION PERIOD .....	172
5.1.1 Water environment impact and Mitigation Measures In Construction period .....	172
5.1.2 Ambient air impact and mitigation measures in construction period .....	184
5.1.3 Environment impact of noise and mitigation measures in construction period .....	188
5.1.4 Construction period solid waste impact and mitigation measures.....	191

5.1.5	<i>Construction period social environment impact and mitigation measures</i>	215
5.1.6	<i>Health and safety in Construction period</i>	220
5.2	OPERATION PERIOD ENVIRONMENT IMPACT AND MITIGATION MEASURES	221
5.2.1	<i>Positive impacts</i>	221
5.2.2	<i>Impacts on water environment and mitigation measures in operation period</i>	222
5.2.3	<i>Impacts on ambient air and mitigation measures in operation period</i>	236
5.2.4	<i>Impacts on noise and mitigation measures in operation period</i>	245
5.2.5	<i>Impacts on solid waste and mitigation measures in operation period</i>	253
5.2.6	<i>Impacts on ecological environment and mitigation measures in operation period</i>	255
5.2.7	<i>Impacts on social environment and mitigation measures in operation period</i>	258
5.2.8	<i>Impacts on occupational health and safety in operation period and mitigation measures</i>	261
5.3	TECHNICAL ASSISTANCE IMPACT ANALYSIS	262
5.4	DUE DILIGENCE	264
5.4.1	<i>Duchang county</i>	264
5.4.2	<i>Yugan county</i>	275
5.4.3	<i>Fengxin county</i>	278
5.4.4	<i>Jing'an county</i>	281
5.4.5	<i>Jishui county</i>	287
5.4.6	<i>Shangli county</i>	289
5.5	CUMULATIVE IMPACT ASSESSMENT	292
5.5.1	<i>Recognition and importance evaluation of cumulative impact factors</i>	292
5.5.2	<i>Related project assessment</i>	293
5.5.3	<i>Cumulative impact assessment</i>	294
5.5.4	<i>Suggestions and measures for the cumulative impacts</i>	294
<b>6</b>	<b>ENVIRONMENTAL RISK ANALYSIS AND MITIGATION MEASURES</b>	<b>295</b>
6.1	ENVIRONMENTAL RISK IDENTIFICATION	295
6.2	ANALYSIS ON IMPACT OF ENVIRONMENTAL RISK ACCIDENTS	295
6.2.1	<i>Domestic sewage management system enhancement project</i>	295
6.2.2	<i>Solid waste collection and transfer system project</i>	296
6.3	MITIGATION MEASURES ON RISK ACCIDENTS	296
6.3.1	<i>Domestic sewage management system enhancement project</i>	296
6.3.2	<i>Solid waste collection and transfer system project</i>	298
6.4	EMERGENCY ORGANIZATION AND CONTINGENCY PLAN	300
<b>7</b>	<b>RESETTLEMENT AND SOCIAL ASSESSMENT</b>	<b>303</b>
7.1	RESETTLEMENT PLAN	303
7.1.1	<i>Impact of Land Occupation</i>	303
7.1.2	<i>Resettlement Cost</i>	303
7.1.3	<i>Measures to Mitigate Impact</i>	303
7.2	SOCIAL ASSESSMENT	307
7.2.2	<i>Suggestions</i>	308
<b>8</b>	<b>PUBLIC CONSULTATION AND INFORMATION DISCLOSURE</b>	<b>311</b>

8.1 PURPOSE AND METHODOLOGY.....	311
8.2 PUBLIC CONSULTATION.....	312
8.2.1 1st round of public consultation .....	312
8.2.2 2nd round of public consultation .....	315
8.3 INFORMATION DISCLOSURE .....	319
8.3.1 1st round.....	319
8.3.2 2nd round of information disclosure.....	319
<b>9 ENVIRONMENT MANAGEMENT PLAN .....</b>	<b>325</b>
<b>10 CONCLUSION .....</b>	<b>326</b>
<b>ANNEX 1 DUCHANG COUNTY SLUDGE ACCEPTANCE LETTER.....</b>	<b>1</b>
<b>ANNEX 2 YUGAN COUNTY SLUDGE ACCEPTANCE LETTER .....</b>	<b>2</b>
<b>ANNEX 3 FENGXIN COUNTY SLUDGE ACCEPTANCE LETTER .....</b>	<b>3</b>
<b>ANNEX 4 DUCHANG WASTEWATER TREATMENT PLANT EIA APPROVAL .....</b>	<b>4</b>
<b>ANNEX 5 DUCHANG COUNTY WASTEWATER TREATMENT PLANT PHASE I (STEP 1) ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL.....</b>	<b>9</b>
<b>ANNEX 6 DUCHANG COUNTY WASTEWATER TREATMENT PLANT PHASE I (STEP 2) ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL.....</b>	<b>13</b>
<b>ANNEX 7 DUCHANG COUNTY DOMESTIC WASTE COMPREHENSIVE TREATMENT PLANT EIA APPROVAL ....</b>	<b>16</b>
	17
<b>ANNEX 8 SOLID WASTE RECEIVING AGREEMENT BETWEEN DUCHANG COUNTY DOMESTIC WASTE COMPREHENSIVE TREATMENT PLANT AND 3 TOWNSHIPS OF THE PROJECT .....</b>	<b>25</b>
<b>ANNEX 9 JIUJIANG SECOND DOMESTIC WASTE TREATMENT PLANT PHASE I EIA APPROVAL .....</b>	<b>26</b>
<b>ANNEX 10 YUGAN COUNTY WASTEWATER TREATMENT PLANT EIA APPROVAL .....</b>	<b>31</b>
<b>ANNEX 11 YUGAN COUNTY WASTEWATER TREATMENT PLANT ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL.....</b>	<b>35</b>
<b>ANNEX 12 YUGAN COUNTY DOMESTIC WASTE LANDFILL PLANT EIA APPROVAL .....</b>	<b>1</b>
<b>ANNEX 13 FENGXIN COUNTY WASTEWATER TREATMENT PLANT EIA APPROVAL.....</b>	<b>3</b>
<b>ANNEX 14 FENGXIN COUNTY WASTEWATER TREATMENT PLANT PHASE I ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL .....</b>	<b>9</b>
<b>ANNEX 15 FENGXIN COUNTY WASTEWATER TREATMENT PLANT PHASE II EIA APPROVAL .....</b>	<b>12</b>
<b>ANNEX 16 FENGXIN COUNTY WASTEWATER TREATMENT PLANT PHASE II ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL .....</b>	<b>16</b>
<b>ANNEX 17 ANNUAL REPORT OF LABORATORY OF FENGXIN BRANCH, JIANGXI HONGCHENG WATER INDUSTRY ENVIRONMENTAL PROTECTION CO., LTD .....</b>	<b>20</b>
<b>ANNEX 18 JING'AN COUNTY WASTEWATER TREATMENT PLANT (PHASE I ) EIA APPROVAL.....</b>	<b>21</b>

<b>ANNEX 19 JING'AN COUNTY WASTEWATER TREATMENT PLANT (PHASE I STEP1) ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL.....</b>	<b>27</b>
<b>ANNEX 20 JING'AN COUNTY WASTEWATER TREATMENT PLANT (PHASE I STEP2) ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL.....</b>	<b>31</b>
<b>ANNEX 21 JING'AN COUNTY MUNICIPAL SOLID WASTE SANITARY LANDFILL EIA APPROVAL.....</b>	<b>35</b>
<b>ANNEX 22 JISHUI COUNTY WASTEWATER TREATMENT PLANT EIA APPROVAL.....</b>	<b>37</b>
<b>ANNEX 23 JISHUI COUNTY WASTEWATER TREATMENT PLANT (PHASE I ) ENVIRONMENTAL PROTECTION ACCEPTANCE APPROVAL.....</b>	<b>41</b>
<b>ANNEX 24 MONTHLY REPORT OF LABORATORY OF JISHUI WASTEWATER TREATMENT PLANT, JIANGXI HONGCHENG WATER INDUSTRY ENVIRONMENTAL PROTECTION CO., LTD .....</b>	<b>44</b>
<b>ANNEX 25 STATEMENT OF PRODUCTION TIME, PINGXIANG CITY MUNICIPAL SOLID WASTE INCINERATION POWER PLANT.....</b>	<b>45</b>
<b>ANNEX 26 PINGXIANG CITY MUNICIPAL SOLID WASTE INCINERATION POWER PLANT EIA APPROVAL.....</b>	<b>46</b>
<b>ANNEX 27 PUBLIC PARTICIPATION DOCUMENTS .....</b>	<b>54</b>
<b>FIGURE :</b> .....	<b>1</b>
<b>FIGURE 1 DUCHANG COUNTY SUB PROJECT -- WASTEWATER PIPELINE LAYOUT .....</b>	<b>1</b>
<b>FIGURE 2 DUCHANG COUNTY SUB PROJECT --LAYOUT OF ECOLOGICAL RESTORATION AND PROTECTION OF ZOU JIAZUI LAKE WATER SYSTEM .....</b>	<b>2</b>
<b>FIGURE 3 DUCHANG COUNTY SUB PROJECT --LAYOUT OF WASTE TRANSFER SYSTEM .....</b>	<b>3</b>
<b>FIGURE 4 DUCHANG COUNTY SUB PROJECT --LOCATION OF SENSITIVE POINTS.....</b>	<b>4</b>
<b>FIGURE 5 POYANG COUNTY SUB PROJECT -- LAYOUT AND SENSITIVE POINT LOCATION .....</b>	<b>5</b>
<b>FIGURE 6 YUGAN COUNTY SUB PROJECT -- WASTEWATER PIPELINE LAYOUT .....</b>	<b>6</b>
<b>FIGURE 7 YUGAN COUNTY SUB PROJECT -- WASTE COLLECTION AND TRANSPORT ROUTE MAP .....</b>	<b>7</b>
<b>FIGURE 8 YUGAN COUNTY SUB PROJECT -- CONSTRUCTION OF ECOLOGICAL SYSTEM IN PIPA LAKE.....</b>	<b>8</b>
<b>FIGURE 9 FENGXIN COUNTY SUB PROJECT -- WASTEWATER PIPELINE LAYOUT .....</b>	<b>9</b>
<b>FIGURE 10 FENGXIN COUNTY SUB PROJECT -- RAIN PIPELINE LAYOUT .....</b>	<b>10</b>
<b>FIGURE11 FENGXIN COUNTY SUB PROJECT -- SENSITIVE POINTS LOCATION .....</b>	<b>11</b>
<b>FIGURE 12 JING'AN COUNTY SUB PROJECT -- WASTEWATER PIPELINE LAYOUT .....</b>	<b>12</b>
<b>FIGURE 13 JING'AN COUNTY SUB PROJECT -- RAIN PIPELINE LAYOUT .....</b>	<b>13</b>
<b>FIGURE 14 JING'AN COUNTY SUB PROJECT -- SENSITIVE POINTS LOCATION.....</b>	<b>14</b>
<b>FIGURE 15 JISHUI COUNTY SUB PROJECT -- SOUTH TOWN DRAINAGE PIPELINE LAYOUT .....</b>	<b>15</b>
<b>FIGURE 16 JISHUI COUNTY SUB PROJECT -- OLD TOWN AREA DRAINAGE PIPELINE LAYOUT .....</b>	<b>16</b>
<b>FIGURE 17 JISHUI COUNTY SUB PROJECT -- SOUTH TOWN SENSITIVE POINTS LOCATION .....</b>	<b>17</b>

**FIGURE 18 JISHUI COUNTY SUB PROJECT -- SENSITIVE POINT LOCATION IN THE OLD TOWN ..... 18**

**FIGURE 19 SHANGLI COUNTY WASTE COLLECTION AND TRANSPORT ROUTE MAP ..... 19**

**FIGURE 20 SHANGLI COUNTY LAYOUT OF WASTE COLLECTION AND TRANSPORT STATION..... 20**

## 1 General Introduction

### 1.1 Background and Significance

#### 1.1.1 Project Origin

In order to protect the good ecological environment, guard the "Green mountains and rivers " of Jiangxi, further strengthen ecological civilization construction, consolidate the ecological advantages, and effectively improve the ecological environment while the social economy development is accelerated, Jiangxi province intends to use the world bank loan to implement the Poyang Lake basin water environment management project in Jiangxi province.

Poyang Lake is the largest fresh water lake in China, located in the South Bank of the middle and lower reaches of the Yangtze River in the north of Jiangxi province. It takes the water of the Ganjiang River, Fuhe River, Xin River, Raohe, Xiu River from the upstream, and connected to the Yangtze river downstream, with the lake basin area of 162 thousand Km<sup>2</sup>, accounting for 9% of the area of the Yangtze River basin, among of which, 157 thousand Km<sup>2</sup> is within the territory of Jiangxi province, accounting for 96.8% of the Poyang Lake river basin area.

Poyang Lake river system is a complete water system, rivers of all sizes are flowing into Poyang Lake, after the regulation, flowing into the Yangtze river at Hukou, become an important part of the Yangtze River system. Poyang Lake is also an important wetland in the world, and an important reservoir lake along the Yangtze River, with relatively independent ecosystems and biological diversity, habitat for five hundred thousand migratory birds. The abundant water resources in Poyang Lake basin plays a great important role for the normal ecological flow stability, protection of biodiversity, flood regulation, shipping, prevention of seawater intrusion in the Yangtze River Estuary. To protect the Poyang Lake water quality plays a very important role for ecological environment safety and the social economy development in the middle and lower reaches of the Yangtze River.

With the acceleration of population growth, industrialization and urbanization, as well as the excessive use of fertilizers, reckless discharge, indiscriminate dumping of Garbage, all of



which seriously affected the water quality of Poyang Lake and damaged the ecological environment of Poyang Lake.

Currently the major pollutants of Poyang Lake Basin are respectively from urban domestic sewage, agricultural non-point source pollution and industrial sewage. In terms of the industrial sewage treatment, an overall action plan has been formulated within the whole Jiangxi Province. Since 2012, the sewage treatment in all industrial parks of Jiangxi Province has taken the mode of "unified investment, unified construction, unified operation, and unified capital flowing". The equipment construction project of the sewage treatment within all industrial parks has been packaged to China Energy Conservation and Environmental Protection Group (which is called CECEP for short below). The investment funding, construction and operation of the project are conducted by CECEP in BOT mode, with a contract demanding 30-year operation. Therefore the practical measures contained in this project do not include industrial sewage treatment, but mainly consider the treatment of pollutants like urban domestic sewage and industrial sewage. Besides, areas nearby Poyang Lake Basin do not have garbage collection and transfer system or the system is faulty, garbage and percolate have flowed into rivers and lakes of Jiangxi Province, polluting the groundwater. Considering this, solid garbage collection and transfer system is also one of the significant content of this project. In terms of the already polluted rivers and lakes within the key waters, measures such as controlling and intercepting pollution sources as well as ecological rehabilitation shall be taken to improve their water environment. Apart from engineering measures, non-engineering measures such as improving institutional capabilities, enhancing water environment policies and plans, promoting substantial water environment management as well as supporting the project can help achieve the development goal of the project and enable it to be conducted substantially.

Based on the following 4 aspects: 1. pollutants flowed into Poyang Lake Basin can be reduced effectively, if the pollution of key waters can be controlled; 2. conditions of the project practices are feasible; 3. the project is conducted with a voluntary principle of all counties; 4. counties in Jiangxi Province are able to offer respective capital, the project is proposed to be implemented in Duchang County, Jiujiang, Poyang and Yugan County, Shangrao, Fengxin and

Jing'an County, Yichun, Jishui County, Ji'an, and Shangli County, Pingxiang. Among them, 3 counties (Duchang, Poyang, Yugan) located in central area, 1 county (Jishui) located in the middle reaches of the main river flowing into Poyang Lake, 2 counties (Fengxin, Jing'an) near the tributaries of the main river flowing into Poyang Lake, 1 county (Shangli) close to the source of Poyang Lake tributaries. Integrated pollution control and ecological safety improvements in these 7 counties can reduce the pollutants flows into key water area and then flows into Poyang Lake Basin, and improve the water quality, provide a guarantee for the Poyang Lake water ecological security

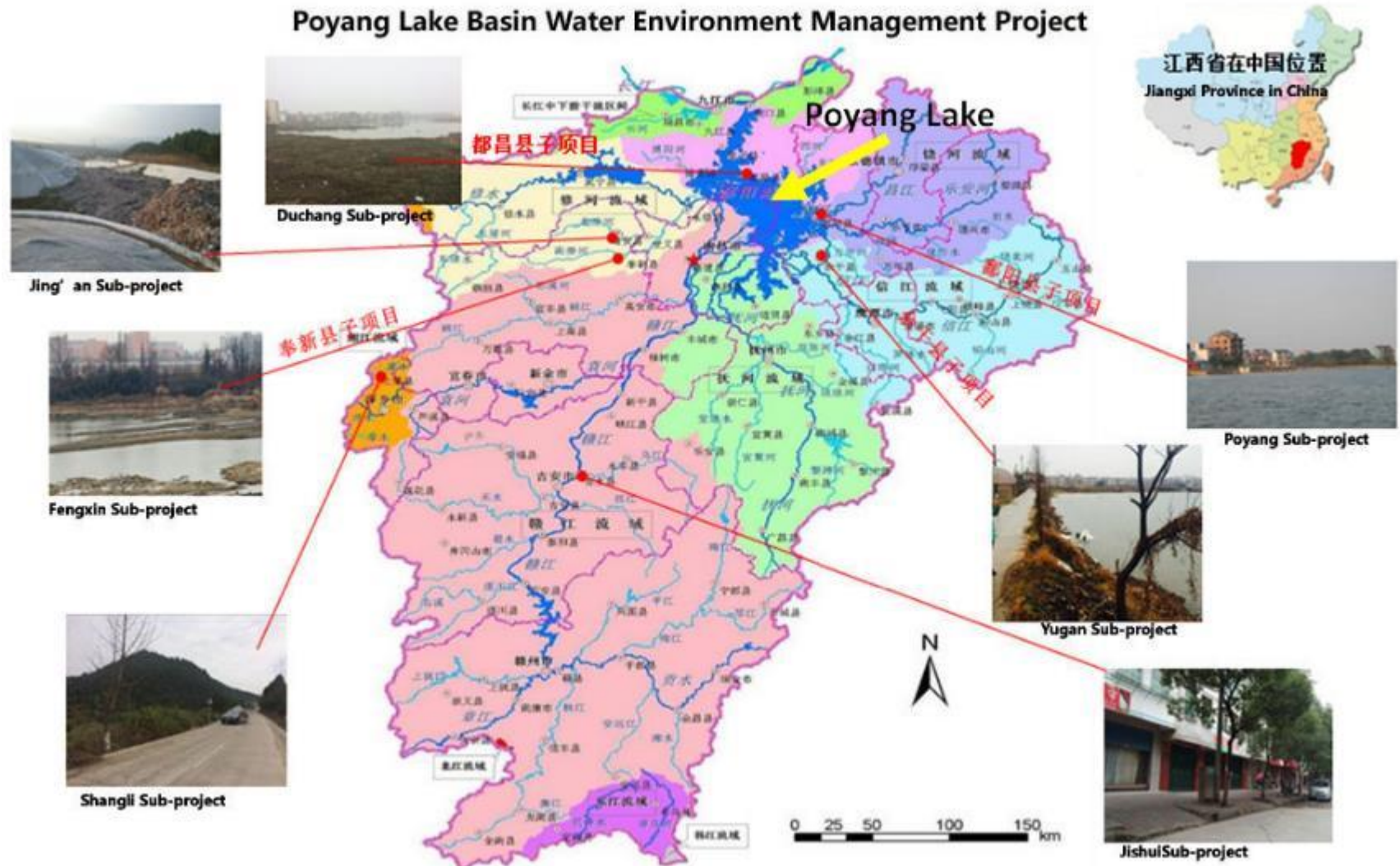


Figure 1-1 Project location

### 1.1.2 Project Significance

Significance of the project construction and implementation:

(1)Implementation of the project is good to reduce and control the amount of sewage discharged into the "five rivers and one lake", protect the "pure lake water", and is necessary to implement the "Poyang Lake Eco-economic Zone Planning".

In recent years, with the continuous advance of industrialization and urbanization, the industrial and domestic pollution has increased, the Poyang Lake River Basin has been threatened, and in the urgent need to be protected. The implementation of the project is an inevitable requirement for the construction of ecological civilization and environment friendly society; it is conducive to promoting the transformation of economic development mode, and improve the environmental carrying capacity; it is conducive to the protection of natural resources and biological diversity, and promote harmony between man and nature; it is conducive to purify the water, improve the water quality, ensure the water quantity, and guarantee the ecological security of Poyang Lake water.

(2)Implementation of the project will play a role of guiding model for the comprehensive management of pollution in the key urban rural integration areas during the process of urbanization, is an important measure to protect the "Green Mountains and Rivers" of Jiangxi.

The implementation of this project is the needs of the introduction of international experience, enhance the pollution prevention and management level of our province. To protect the the good ecological environment, the "Green Mountains and Rivers" of Jiangxi, and improve the pollution prevention and management level of our province, we need not only to learn from the successful domestic experiences and methods, but also introduce the successful international ones, set up a leading role model.

(3)Through the non engineering measures of the "public participation and sustainable development", the project try to drive the national environmental awareness, promote public participations in the initiative pollution reductions, exploring the establishment of long-term mechanism of water environment protection in Poyang Lake, and create a new society for

people to get along with the environment.

### 1.1.3 Project Objectives

The Objectives of this project is to reduce the pollution flowing into the key water system and then into Poyang Lake River Basinand, and improve the water quality management of the Poyang Lake River Basin.

## 1.2 Overview of EIA Report

### 1.2.1 Purposes

According to the “Law of the People's Republic of China on Environmental Impact Assessment”, " Regulations on Administration of Construction Project Environmental Protection", “Notice on strengthening the environmental impact assessment and management of the loan projects of international financial organizations”, World Bank safeguard Policies, as well as the domestic and the world bank's environmental impact assessment procedures, the purposes of this assessment is to review the positive environmental impact caused by the project implementation, identify, screen, predict and analysis the possible negative environmental impacts, provide targeted and effective mitigation measures and environmental management plan for the inevitable negative environmental impacts, provide the reference for the world bank's independent evaluation of the project, and also provide the reference for decision-making and management for the government's comprehensive and environmental management departments.

### 1.2.2 EIA Category

According to the “Notice on strengthening the environmental impact assessment and management of the loan projects of international financial organizations”(环监[1993]324) issued by State Environmental Protection Agency and other ministries, and the World Bank Safeguard Policies Environmental Assessment (OP4.01), combined with environmental assessment factor identification and screening results, the environmental assessment category of this project was determined as category A, “likely to cause significant adverse effects on the environment”. A full comprehensive environmental impact assessment is required. “A proposed project is classified as Category A if it is likely to have significant

adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. (OP4.01)”

According to this, this project environment impact assessment (EIA) report was prepared according to the content and scope of Category A.

### 1.2.3 Preparation of EIA Report

According to the “Law of the People's Republic of China on Environmental Impact Assessment”, “Regulations on Administration of Construction Project Environmental Protection”, “Notice on strengthening the environmental impact assessment and management of the loan projects of international financial organizations”, Project execution organization Jiangxi province Urban Construction and Utilization of Foreign Investment Office Commission the Beijing Jingcheng Jiayu Environmental Technology Co. Ltd. To carry out environmental impact assessment of the project.

Based on the field investigation, public participation, environmental quality survey and data collection, Beijing Jingcheng Jiayu Environmental Technology Co. Ltd. Finished the preparation of the Environmental Impact Report on world bank financing Jiangxi Poyang Lake Basin water environment management project " according to the relevant laws and regulations, technical guidelines for EIA and the world bank operational manual-environmental assessment,

### 1.2.4 EIA Focuses

In accordance with the domestic environmental impact assessment technical guidelines and the world bank safeguard policy requirements, this EA report focuses on the following questions:

(1) Sub project in Duchang, Yugan and Fengxin involves water body dredging, assessments on impacts of dredging and sediment on the environment should be done and mitigation measures should be proposed ;

(2) Sub project in Poyang County involves natural habitat, assessments of its ecological impact should be done and avoiding or mitigation measures should be proposed ;

(3) The positive environment, social benefits might be brought by the implementation of the project

(4) Measures to mitigate the impact of the possible negative effects of the project

(5) Alternatives analysis

### 1.3 Policies and Laws

#### 1.3.1 State environmental protection laws and regulations

(1) Law of the PRC on Environmental Protection(2014.4);

(2) Law of the PRC on Environmental Impact Assessment”,(Amendment)(2016.7);

(3) Law of the PRC on Water Pollution Prevention and Control (2008.6);

(4) Law of the PRC on Atmospheric Pollution Prevention and Control (2015.8);

(5) Law of the PRC on Environmental Noise Pollution Prevention and Control (1997.3);

(6) Law of the PRC on Environmental Pollution by Solid Wastes Prevention and Control (2013.6);

(7) Law of the PRC on Land Administration(2004.8);

(8) Law of the PRC on the Protection of Wild Life(2004.8);

(9) Law of the PRC on the protection of Cultural Relics(Amendment)(2015.6);

(10) Law of the PRC on Water(2002.8);

(11) Law of the PRC on Flood Control (Amendment) (2015.4);

(12) Law of the PRC on Soil and Water Conservation(2010.12);

(13) Law of the PRC on Urban and Rural Planning(2007.10);

(14) Regulation on the Implementation of the Water and Soil Conservation Law of the PRC(1993.8);

(15) Regulations of the PRC on natural reserves(1994.10.9);

(16) Regulations on Scenic and Historic Areas(State Council No.474th, 2006.9.19);

(17) Measures for the Administration of the National Wetland Park(Trial Implementation)(2010.2.21);

(18) Provisions on Administration of Wetland Protection(State Forestry

Administration, No.32, 2013.3.28);

(19) Regulation on the Protection of Basic Farmlands(State Council No.257, 1998.12);

(20) Regulation of the People's Republic of China on the Administration of River Courses(State Council No.3 号, 1988.3);

(21) Outline of the national ecological environment protection(NDRC [2000] 38 号, 2000.11);

(22) Regulations on the Administration of Construction Project Environmental Protection(State Council No.253, 1998.11);

(23) Catalogue for the Classified Administration of Environmental Impact Assessments for Construction Projects(2015.4);

(24) Interim Measures for Public Participation in Environmental Impact Assessment(State Environmental Protection Administration 2006[28], 2006.3.18);

(25) State Council decision on the implementation of Scientific Outlook on Development's and strengthen environmental protection(NDRC [2005] NO.39);

(26) Opinions on strengthening the supervision work of ecological environmental protection and resources development(State Environmental Protection Administration [2004] No.24);

(27) Provisions on the prevention and control of pollution in drinking water source protection areas(Amendment)(2010.10);

(28) Catalogue for Guiding Industry Restructuring (2011Version) (2013 Amendment)

(29) Notice on strengthening the EIA management of the construction project loaned from international financial organizations(1993. 6);

(30) Notice on strengthening the prevention and control of sewage sludge pollution in urban wastewater treatment plant, 2010.11.26;

(31) Technology policy for sludge treatment and disposal and pollution control in municipal wastewater treatment plant "(Trial Implementation), (2009.2)



### 1.3.2 Local environmental regulations

- (1) Regulations on environmental protection of construction projects in Jiangxi Province(Amendment)(2010.9.17);
- (2) Regulations of Jiangxi Province on the prevention and control of environmental pollution(2009.1.1);
- (3) Measures for prevention and control of water pollution in drinking water source in Jiangxi Province(2006.8.1);
- (4) Function zoning of surface water (environment) in Jiangxi Province(Jiangxi Provincial People's Government [2007]No.35, 2007.6.29);
- (5) Regulation on environmental protection of Poyang Lake Eco-economic Zone(2012.5.1);
- (6) Measures for the administration of land expropriation in Jiangxi Province(2001.12.22).

### 1.3.3 Technical guidelines and specifications for environmental impact assessment

- (1) Technical guidelines for environmental impact assessment— General programme(HJ2.1-2011);
- (2) Technical guidelines for environmental impact assessment—Atmospheric Environment(HJ2.2-2008);
- (3) Technical guidelines for environmental impact assessment— surfacewater Environment(HJ/T2.3-93);
- (4) Technical guidelines for environmental impact assessment—Ground water Environment(HJ610-2016);
- (5) Technical Guidelines for Noise Impact Assessment(HJ2.4-2009);
- (6) Technical guidelines for environmental impact assessment—Ecological Impact(HJ19-2011);
- (7) Technical Guidelines for Environmental Risk Assessment on Projects(HJ/T 169-2004);
- (8) Technical Criterion for Ecosystem Status Evaluation(HJ/T 192-2006);

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

### 1.3.4 Safeguard Policies of WB

The relationship of the project and the bank's safeguard policy / procedures were analyzed, the results are listed in table 1-1.

**Table 1-1 Safeguard Policies of WB**

WB's operational policies /business policy	Involved or not	Reason for involveing the World Bank operational policies /business policy
OP/BP4.01 Environmental Assessment	√	Involved. Certain environment impact during construction period, ambient air, and Noise impact during operation period, EIA need to be done. After environmental screening, WB determined the project as category B.
OP/BP4.04 Natural habitat	√	Involved. Poyang Lake is an important natural habitat, This project will reduce the pollution of the lake into the lake, It will not cause a significant degradation or change in Poyang Lake.
OP/BP 4.36 Forests	×	Not Involved. No impacts on forest health and quality, no impacts on the interests of ownership people and their Dependencies on the forests.
OP/BP 4.09 Environmental assessment of pest management	×	Not Involved. The project does not involve the purchase of pesticides, it will not lead to the increase in the use of pesticides.
OP/BP 4.11 Physical Cultural Resources	×	Not Involved. according to field investigation, does not involve any Physical Cultural Resources .
OP/BP 4.10 Indigenous Peoples	×	Not Involved. Does not involve Indigenous People, nor ethnic minority regions .
OP/BP 4.12 Involuntary Resettlement	√	Involved. Temporary or Permanent occupation of some land.
OP/BP 4.37 Safety of Dams	×	Not Involved. Does not involve any dam, nor rely on any existing dam or a dam in construction
OP/BP 7.50 International Waterways	×	Not Involved. Project is in Jiangxi Province, China, does not involve any International Waterways .
OP/BP 7.60 Disputed Areas	×	Not Involved. Project is in Jiangxi Province, China, does not involve any Disputed Areas.
BP17.50 Disclosure of Information	√	Involved. EIA goes through public consultation and information disclosure .
International finance Corporation, Environmental, Health and safety guidelines	√	Environmental, Health, and Safety Guidelines of International finance Corporation is suitable for the project.
International finance Corporation, Environmental, Health, and Safety Guidelines for Water and Sanitation	√	Environmental, Health, and Safety Guidelines for Water and Sanitation is suitable for the project.

International finance Corporation, Environmental, Health, and Safety Guidelines for Waste Management Facilities	√	Environmental, Health, and Safety Guidelines for Waste Management of International finance Corporation is suitable for the project.
---	---	---

### 1.3.5 Related documents

- (1) The feasibility study report of each sub project;
- (2) The domestic environmental assessment report and the administrative examination and approval documents of each sub project
- (3) The resettlement plan for the project
- (4) The social impact assessment of the project.

## 1.4 Assessment standard

The Environmental, Health, and Safety Guidelines(EHS)of International finance Corporation include the standard and requirement of Air Emissions, environmental Noise, wastewater, waste Management, Occupational Health and Safety, etc..

The standards applied to the project is identified through the comparison and analysis of the National standards of China and the WB's Environmental, Health, and Safety Guidelines. And the details are as follows.

### 1.4.1 Environmental quality standards

#### 1.4.1.1 Atmospheric environment

According to EHS, ambient air quality should compliance with the national standard. If there is no standard set by the state legislation, the project should implement the latest WHO Air quality guidelines or other internationally recognized reference standards, see table 1-2. China has promulgated the "Ambient Air Quality Standards" (GB3095-2012), the project is located in the environmental air categories two area of in china, this project should comply with the Grade 2 standard of ambient air quality standards (GB3095-2012), and the projects involveing waste transport station should be in compliance with the relevant NH<sub>3</sub>, H<sub>2</sub>S standards in Hygienic Standards for the Design of Industrial Enterprises (TJ36-79). The specific standard values are listed in Table1-3.

**Table 1-2 EHS Ambient Air Quality Standards (μg/m<sup>3</sup>)**

Item	Average cycle	Guideline value	Standard
SO <sub>2</sub>	24h	125 (Phase I target value) 50 (Phase II target) 20 (Guideline value)	WHO Air quality guidelines
	10min	500 (Guideline value)	
NO <sub>2</sub>	1a	40 (Guideline value)	
	1h	200 (Guideline value)	
PM <sub>10</sub>	1a	70 (Phase I target value) 50 (Phase II target value) 30 (Phase III target value) 20 (Guideline value)	
	24h	150 (Phase I target value) 100 (Phase II target value) 75 (Phase III target value) 50 (Guideline value)	
PM <sub>2.5</sub>	1a	35 (Phase I target value) 25 (Phase II target value) 15 (Phase III target value) 10 (Guideline value)	
	24h	75 (Phase I target value) 50 (Phase II target value) 37.5 (Phase III target value) 25 (Guideline value)	

**Table 1-3 Ambient air quality standards(μg/m<sup>3</sup>)**

Index	Average value of 1h	Average value of 24h	Annual value	Standard	Sub project
SO <sub>2</sub>	500	150	60	Ambient air quality standards (GB3095-2012) Grade 2 standard	All Sub projects
NO <sub>2</sub>	200	80	40		
TSP	-	300	200		
PM <sub>10</sub>	-	150	70		
PM <sub>2.5</sub>	-	75	35		
NH <sub>3</sub>	200( one time value )	-	-	Hygienic Standards for the Design of Industrial Enterprises (TJ36-79)	Duchang county, Shangli county
H <sub>2</sub> S	10( one time value )	-	-		

After comparison, the NO<sub>2</sub> 1h average value and annual value of National Standard are

consistent with the EHS Guideline value; The PM<sub>10</sub>1h average value and annual value of National Standard are consistent with the EHS Guideline value; The PM<sub>2.5</sub> 24h average value and annual value of National Standard are consistent with the EHS Phase I target value; and the SO<sub>2</sub> 24h average value is lower than EHS Phase I target value. According to EHS, ambient air quality should compliance with the national standard. Therefore, the project will comply with the standard in Table 1-3.

#### 1.4.1.2 Water environment

According to the Jiangxi Province surfacewater(environment) Function zoning , the environmental quality standards for surface water of each sub project should be in compliance with the Environmental quality standards for surface water (GB3838-2002) (Table1-4).

**Table 1-4 Environmental quality standards for surfacewater(mg/L, ph not included)**

Index \ Standard	Environmental quality standards for surface water (GB3838-2002) standard value		
	Class III	Class IV	Class V
Ph	6~9	6~9	6-9
DO	≥5	≥3	≥2
Permanganate index	≤6	≤10	≤15
COD	≤20	≤30	≤40
BOD <sub>5</sub>	≤4	≤6	≤10
TN	≤1.0	≤1.5	≤2.0
NH <sub>3</sub> -N	≤1.0	≤1.5	≤2.0
TP	≤0.2( lake, Reservoir 0.05)	≤0.3( lake, Reservoir 0.1)	≤0.4 ( lake, Reservoir 0.2)
Petroleum oil	≤0.05	≤0.5	≤1.0
Sulfide	≤0.2	≤0.5	≤1.0
Fecal coliform	≤10000	≤20000	≤40000
Applicable water body	Pearl Lake , Huhui River , South Liao River , South channel, Dazhai channel, North Zhizhen channel , South tributary of North Liao River(Xiangtian section), Ganjiang river(Jishui section), Enjiang River , Lishui River	South tributary of North Liao River(Shuangxi section), North tributary of North Liao River (Renshou section), Pipa Lake	Zoujiazui lake
Applicable sub project	Poyang county, Fengxin county, Jing'an county, Jishui county, Shangli county	Jing'an county, Yugan county	Duchang county

1.4.1.3 Noise

The environment quality for noise should be in compliance with the standard limit of China’s National Standard for Noise, and the WB’s EHS guideline (Table1-5).

**Table 1-5 Comparison of Environmental quality standard for noise (db(A))**

Environmental quality standard for noise (GB3096-2008)				EHS Noise guideline		
Zone	Function zone	Daytime 6:00~22:00	Nighttime 22:00~6:00	Receptor	Daytime 7:00~22:00	Nighttime 22:00~7:00
Areas for residential, medical and health, cultural education, scientific research design and office	Class 1	55	45	Residential office; culture and education;	55	45
Mixed area of residential, commercial and industrial	Class 2	60	50	Industrial ; commercial facilities	70	70
Both side of the main transportation road	Class 4 A	70	55			

As the Environmental quality standard for noise (GB3096-2008) is more strict than EHS guideline for Noise through the comparison analysis the guideline value and the time scope, the EHS standard, the project will be in compliance with the Environmental quality standard for noise (GB3096-2008).

The environment quality standard for noise applicable for each sub project are listed in Table1-6.

**Table 1-6 Environmental quality standard for noise(db(A))**

Standard Class	Environmental quality standard for noise (GB3096-2008)		
	Class 1	Class 2	Class 4A
Daytime	55	60	70
Nighttime	45	50	55
Applicable sub project and scope	Duchang( Beishanxiang, Dashuxiang , Wangdunxiang ), Poyang county, Shangli county	Duchang(County town), Jishui county(project area outside the Class 4A area), Jing’an county, Yugan county, Fengxin county	Jishui county( Enjiang Bridge Head wastewater pumping station, Wenshan Avenue wastewater pumping station, Enjiangbei Road wastewater pumping station ), Jing’an county, both side of the main transportation roads , Fengxin

			county, both side of the main transportation roads
--	--	--	--

1.4.1.4 Sediment

There are 3 sub projects involve sediment dredging. They are Duchang, Yugan and Fengxin. There is no current standard system of dredging sediments in China. The mostly used standards for sediments are Environmental Quality Standard for Soils (GB/15618-1995), Control standards for pollutants in sludges from agricultural use (GB4284-84), Interim Standard of Soil Quality Assessment for Exhibition Sites” (HJ350-2007)及 Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland(CJ/T362-2011), etc.. In United States sludge standard is Standard Sludge Treatment and Utilization "(Part 40CFR 503), issued by EPA; in EU, it is Principles of Sludge Used for Agricultural Purposes (Directive) (86/278/EEC) (EU) issued by European Standardization Committee;

The EIA did a comparative analysis of the domestic and overseas sludge standards.

**Table 1-7 Domestic and overseas sludge standards comparision (mg/kg)**

Standard	item	Grade	pH	Cd	Cu	Pb	Cr	Zn	Ni
Environmental Quality Standard for Soils (GB/15618-1995)	1	1	Natural Background	0.20	35 (farmland, etc.) ; — (orchard)	35	90 (paddy field, dry land)	100	40
			<6.5	0.30	50 (farmland, etc.) ; 150 (orchard)	250	250 (paddy field) ; 150 (dry land)	200	40
	2	2	6.5~7.5	0.30	100 (farmland, etc.) ; 200 (orchard)	300	300 (paddy field) ; 200 (dry land)	250	50
			>7.5	0.60	100 (farmland, etc.) ; 200 (orchard)	350	350 (paddy field) ; 250 (dry land)	300	60
	3	3	>6.5	1.0	400 (farmland, etc.) ; 400 (orchard)	500	400 (paddy field) ; 300 (dry land)	500	200
Control standards for pollutants in sludges from agricultural use (GB4284-84)	1	1	<6.5	5	250	300	600	500	100
			≥6.5	20	500	1000	1000	1000	200
Interim Standard of Soil	A	A	—	1	63	140	190	200	50

Standard \ item	Grade	pH	Cd	Cu	Pb	Cr	Zn	Ni
Quality Assessment for Exhibition Sites” (HJ350-2007)	B	—	22	600	600	610	1500	2400
Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland(CJ/T362-2011)	1	5.5~8.5	20	1500	1000	1000	3000	200
Standard of Sludge Treatment and Utilization” (40CFR Part 503) (US)	1	—	85	4300	840	—	7500	420
Principles of Sludge Used for Agricultural Purposes” (Directive 86/278/EEC) (EU)	1	—	20~40	1000~1750	750~1200	—	2500~4000	300~400

Note: 1. According to "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84), if dried sludge reaching the standard is to be used, generally the amount is less than 2000kg per acre each year;

2. According to "Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland" (CJ/T362-2011), if sludge reaching this standard is to be used, the total annual amount of sludge used in forestland shall not surpass 30t/hm<sup>2</sup>. The water content rate of the sludge shall be ≤60%.

Above standards are all controlling standards of pollutants that claim a majority of heavy metals. Therefore, this report mainly makes a contrast of heavy metals. Take the example of Zn. Comparing its maximum permissible limit value of all standards, the lowest shall be 500 mg/kg (pH>6.5) of the III class of the "Environmental Quality Standard for Soils" (GB/15618-1995). In an increasing sequence of the value, it is respectively the 1000 mg/kg of "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84), the 1500 mg/kg of the B class of "Interim Standard of Soil Quality Assessment for Exhibition Sites" (HJ350-2007), the 3000 mg/kg of "Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland" (CJ/T362-2011), the 2500 mg/kg ~4000 mg/kg of EU principles, and the highest 7500 mg/kg of the American standard.

In brief, in terms of the maximum permissible limit of density, the "Environmental Quality Standard for Soils" (GB/15618-1995) claims the lowest amount, followed by that of "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84), the II



class of "Interim Standard of Soil Quality Assessment for Exhibition Sites" (HJ350-2007), and "Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland" (CJ/T362-2011), as well as the European Union standard and American standard. From this, the "Environmental Quality Standard for Soils" (GB/15618-1995) and "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84) in our country are the strictest among all the standards. The evaluation of the generality and hazard of the sludge can refer to other national standards or the American and EU standards.

If the heavy metal indexes of the sediments do not reach the class III of the "Environmental Quality Standard for Soils" (GB/15618-1995), while reach the American standard and other sludge standards, this report concludes that the sludge does not belong to hazardous waste, and can be treated as general sludge.

#### 1.4.2 Standard for discharge of pollutants

##### 1.4.2.1 Air pollutants

Dust should be in compliance with the Fugitive Emission Monitoring concentration value of the Integrated emission standard of air pollutants(GB16297-1996) (Table1-7). The Main air pollutants in Operation period is the odor from the waste transport station , which should be in compliance with the Fugitive Emission grade 2 standard of Emission standards for odor pollutants(GB14554-93)(Table1-8).

**Table 1-8 Atmospheric pollutant emission standard(mg/m3)**

Standard Pollutants	Integrated emission standard of air pollutants (GB16297-1996) Fugitive Emission Monitoring concentration value	
	Monitoring points	Concentration
Particulate	Maxium concentration point in vicinity	1.0
	All Sub project	
Applicable sub project	All Sub project	

**Table 1-9 Emission standards for odor pollutants (mg/m3)**

Standard Pollutants Name	Emission standards for odor pollutants (GB14554-93) Fugitive emission boundary standard value ( for new construction, reconstruction and extension )
NH <sub>3</sub>	1.5

H <sub>2</sub> S	0.06
Applicable sub project	Duchang county, Yugan county, Jing'an county, Shangli county

### 1.4.2.2 Water pollutants

**Table 1-10 Wastewater discharge standard (mg/L, ph not included )**

Index	Standard	Discharge standard of pollutants for municipal wastewater treatment plant (GB18918-2002)	Discharge standard of pollutants for Poyang Lake Eco-economic Zone (DB36/852-2015)	Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010)
		Grade 1B	Pollutants discharge value for wastewater treatment system in Lakeside Control Development Zone	Grade B
COD		60	50	500
BOD <sub>5</sub>		20	/	350
SS		20	10	400
Animal and vegetable oils		3	1	100
Petroleum oil		3	1	20
Anionic surfactant		1	/	20
TN(in N)		20	15	70
NH <sub>3</sub> -N		8(15)	8	45
TP(in P)		1.5	0.5	8
Colourity ( Dilution ratio )		30	/	70
Ph		6~9	/	6.5~9.5
Count of faecal coliforms (Count/L)		10 <sup>4</sup>	/	/
Sub project and scope		Wastewater treatment plants of Duchang, Jing'an, Fengxin, Yugan and Jishui county	Wastewater treatment station of Poyang county sub project	Zoujiazui Public Toilet and wastewater of Industrial Park

Note: numbers outside bracket is the control standards for Water temperature >12°C, numbers inside bracket is the control standards for Water temperature ≤12°C

### 1.4.2.3 Noise

The construction noise control standard for each sub project should be in compliance

with the Emission standard of environment noise for boundary of construction site(GB12523-2011); the operation Noise for waste transport station and wastewater treatment station should be in compliance with the Class 1 and Class 2 standard of Emission standard for industrial enterprises noise at boundary(GB12348-2008)(Table1-11).

**Table 1-11 Emission Standards for Noise(db(A))**

Item	Emission standard for industrial enterprises noise at boundary (GB12348-2008)			Emission standard of environment noise for boundary of construction site (GB12523-2011)
	Class 1	Class 2	Class 4	Construction site noise discharge standard
Daytime	55	60	70	70
Nighttime	45	50	55	55
Sub project and scope	Duchang county, Poyang county, Rural area of Shangli county	Other project area in Yugan county, Fengxin county, Jing'an county, Urban area of Jishui county	Fengxin county: Jiutiange electric pumping station for irrigation, Huangshanggang electric pumping station for drainage, Jishui county: Enjiang Bridge head wastewater pumping station, Wenshan Avenue wastewater pumping station, Enjiangbei Road wastewater pumping station	All Sub project

#### 1.4.2.4 Solid waste

Solid waste disposal should be in compliance with the Standard for pollution control on the storage and disposal site for general industrial solid wastes(GB18599-2001). The disposal of hazardous waste from the project monitoring Laboratory should be in compliance with the Standard for pollution control on hazardous waste storage(GB18597-2001), and meet the requirements of EHS and the WB's related safeguard policy.

### 1.5 Grade, Scope and Period

#### 1.5.1 EIA category

According to the environmental function requirement of the project area, features,

nature, and extent of the project potential eis, the EIA category of the project are determined in compliance with the requirement of the Notice on strengthening the environmental impact assessment and management of the loan projects of international financial organizations(环监[1993]324 号文) and the WB's safeguard policy Environment Assessment (OP4.01) (Table1-11).

**Table 1-12 Environment impact assessment category**

EIA category	Environment impact	EIA contents
Category A	Likely to have significant adverse environmental impacts	Full scope of environment impact assessment
Category B	Likely to have environment adverse impact but less adverse than Category A projects. In most cases mitigatory measures can be designed more readily than for Category A projects.	A full environment impact assessment is not required, but special environment impact assessment or analysis according to the features of the project and environmental elements needs to be done.
Category C	Likely to have minimal or no adverse Environmental impacts.	No need for an environment impact assessment or analysis, while environment protection Management Filing formalities needs to be done.

According to the nature, scale, magnitude of the impact and environment features of the project area, the proposal project is likely to have adverse environmental impacts, a full environment impact assessment needs to be done, the project is calssified as Category A(EIA-A).

### 1.5.2 EIA Scope

**Table 1-13 EIA Scope**

Environmental elements	EIA Scope
Ecological environment	Project area, and 300m outwards extention area from Temporary land occupation boundary
Noise	200m outwards the boundary of project area
Air	300m outwards the boundary of project area
Water	All the water body involed
Social environment	Project area of influence

### 1.5.3 EIA Periods

EIA is carried out mainly based on 2 periods- construction period and operation period.

### 1.6 Environmental impact factors and assessment factors

The matrix form is used to identify the Significant Environmental Issues (seis) of the project (Table 1-13).

**Table 1-14 Seis identification matrix**

Environment Elements	Pollution Factor	Construction Period				Operation Period			
		Pipeline Works	Waste Collection And Transportation	Water System Remediation	Water Environment Monitoring System	Pipeline Works	Waste Collection And Transportation	Water System Remediation	Water Environment Monitoring System
Air	Particulate	△	△	△	△	—	△	—	—
	Odor	—	—	△	—	—	△	—	—
Water	COD	—	—	—	—	●	●	●	—
	BOD <sub>5</sub>	—	—	—	—	●	●	●	—
	SS	—	—	△	—	●	●	●	—
	NH <sub>3</sub> -N	—	—	—	—	●	●	●	—
	TN	—	—	—	—	●	●	●	—
	TP	—	—	—	—	●	●	●	—
Noise	Noise	△	△	△	△	△	△	—	—
Solid Waste	Solid Waste	△	△	△	△	—	●	—	△
Ecological Environment	Soil	—	—	△	—	—	—	—	—
	Animal	△	—	△	—	—	—	●	—
	Vegetation	△	—	△	—	—	—	●	—
	Land Use	△	△	△	△	—	—	●	—
Social Impact	Resettlement Land Expropriation	△	△	△	—	—	—	—	—

Environment Elements	Pollution Factor	Construction Period				Operation Period			
		Pipeline Works	Waste Collection And Transportation	Water System Remediation	Water Environment Monitoring System	Pipeline Works	Waste Collection And Transportation	Water System Remediation	Water Environment Monitoring System
	Transportation And Municipal Facilities	▲	—	—	—	●	●	●	—
	Quality Of Life	▲	—	△	—	●	●	●	—
	Business And Economy	▲	—	—	—	●	●	●	—
	Occupational Health And Safety	△	△	△	—	—	△	—	—
	Landscape Environment	△	△	△	△	●	●	●	—

Notes: ▲ Significant Adverse Impact, △Some Adverse Impact; ● Significant Positive Impact, ○ Some Positive Impact ; — No Impact .

From the table above, the key environment issues are:

(1)Construction period : the construction period impact mainly include the environmental impact of construction dust, wastewater, noise, solid waste; the social impact of the disruption of transportation, Municipal facilities and business activities caused by the pipeline works construction; and the sediment dredging impact.

(2)Operation period: mainly are the positive environment impacts; the adverse impacts mainly are Odor and leachate pollutants from the waste collection and transportation works, and the laboratory waste liquid from the water environment monitoring system.

According to environmental screening, the EIA factors of the project are listed in Table1-14.

**Table 1-15 Assessment factors**

Elements	Factors Of Present Status	Factors For Prediction
Air	SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> , TSP	NH <sub>3</sub> , H <sub>2</sub> S
Surfacewater	Ph, DO, COD, BOD <sub>5</sub> , Permanganate Index, NH <sub>3</sub> -N, TN, TP, Petroleum Oil	COD, BOD <sub>5</sub> , NH <sub>3</sub> -N, TN, TP
Noise	Leq(A)	Leq(A)
Ecological Environment	Animal And Plant Resources, Biodiversity	—
Solid Waste	Quantity of the Domestic Waste Treatment and Disposal, Sediment	Quantity of the Domestic Waste Treatment and Disposal, Sediment, Earthworks

## 1.7 Environmental protection objectives

### 1.7.1 Noise and air protection objectives(targets)

According to EIA team's field investigation, the noise, ambient air protection targets of each sub project are listed in Table1-15.



**Table 1-16 Noise, ambient air protection targets**

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
<b>1) normal environmental sensitive point of reception</b>							
Duchang County	Wastewater Pipeline Improvement Project	Construction Period	Construction Dust, Construction Machinery Noise, Etc.	Zhanghe Villiage	Upstream area of Zoujiazui lake basin, West side of wastewater pipeline	10	20 Households
				Chengbeichuntian	Midstream area of Zoujiazui lake basin , Both east and south side of the wastewater pipeline	70	200 Households
				Dawanlv Villiage	Midstream area of Zoujiazui lake basin Both east and south side of the wastewater pipeline , North side of Wanli Avenue	10	180 Households
				Xuzongshi Villiage	Midstream area of Zoujiazui lake basin , Both South and East side of the wastewater pipeline	10	180 Households
				Zhaoshengmian Villiage	Downstream area of Zoujiazui lake basin , West side of the wastewater pipeline	10	30 Households
				Yangjianggang	Downstream area of Zoujiazui lake basin , West side of the wastewater pipeline	10	50 Households
				Zoujiazui	Downstream area of Zoujiazui lake basin , West side of the wastewater pipeline	10	220 Households
				Xiawanlvjia	Both the south and East side of Wanli	20	200

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
					Avenue		Households
				Ruanlonggao Villiage	North side of Wanli Avenue	15	200 Households
				Changlingzhou Villiage	South side of Wanli Avenue	20	100
				Huimin Neighbourhood	South side of Wanli Avenue	15	200 Households
				Tongshu Villiage	Both the south and East side of Wanli Avenue	15	220 Households
				Caojia Villiage	North side of Wanli Avenue	15	50 Households
				Yangguan Neighbourhood	South side of Yingbin Avenue	20	200 Households
				Xianghuo Villiage	Northeast side of the Donghu Avenue, west side of the wastewater pipeline	15	150 Households
				Shiqiaoshao Villiage	Northeast side of the Donghu Avenue, west side of the wastewater pipeline	15	100 Households
				Shijihuating	Northeast side of the Donghu Avenue, north side of the wastewater pipeline	20	200 Households
				Yingzuibanchen Villiage	Northeast side of the Donghu Avenue, east side of the wastewater pipeline	80	100 Households
				Shenjia	Northeast side of the Donghu Avenue, north side of the wastewater pipeline	15	50 Households
				Defujiayuan	Northwest side of the Donghu Avenue,	40	180

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
					north side of the wastewater pipeline		Households
				Xiangyangsan Villiage	Northwest side of the Donghu Avenue, east side of the wastewater pipeline	15	80 Households
				Zhoujiazui	North side of Donghu Avenue	15	30 Households
				Zhaojiazui	South side of Donghu Avenue	40	20 Households
				Tupuchen Villiage	South side of Donghu Avenue	20	15 Households
				Dayanhuang Villiage	South side of Donghu Avenue	15	100 Households
				Chenjialong Villiage	South side of Donghu Avenue	15	50 Households
				Huapu Internatisnal Mansion	South side of Donghu Avenue	20	200 Households
				Luojiangling Villiage	North side of Donghu Avenue	15	120 Households
				Liufang Villiage	South side of Donghu Avenue	40	80 Households
				Water System Ecological Remediation And Protection	Construction Period	Construction Dust, Construction Machinery	Zhaoshengmian
Yyangjiagang	West side of Zoujiazui water system	30	50 Households				

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
	Project		Noise 等	Zoujiazui	West side of Zoujiazui water system	15	220 Households
				Shaojiazhe	East side of Zoujiazui water system	180	50 Households
				Shao Villiage	East side of Zoujiazui water system	100	120 Households
				Bajiazui	Northeast side of Zoujiazui water system	30	120 Households
				Siguayan	East side of Zoujiazui water system	20	120 Households
<b>2) key environmental sensitive point of reception</b>							
	Wastewater Pipeline Improvement Project	Construction Period	Construction Dust, Construction Machinery Noise Etc.	Duchang County Central Kindergarten	Downstream area of Zoujiazui lake basin	10	In Construction
				Duchang Experimental Primary School	Downstream area of Zoujiazui lake basin south side of wastewater pipeline	80	5500 People
				Duchang 3rd Primary School	North side of Wanli Avenue	15	4000 People
				Maternal And Child Health Care Hospital Of Duchang County	North side of Wanli Avenue	15	262 People
				Qinjiafan Primary School	South side of Wanli Avenue	40	1500 People
				Union Hospital	South side of Donghu Avenue	15	300 People
Domestic	Operation	Odor of	Bachuantang	Beishanxiang waste transport station east	200	10	

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
	Waste Collection And Transportation Project	Period	Operation Period		side of		Households
				Yanggang Villiage	North side of Wangdunxiang waste transport station	70	3 Households
				Matang Villiage	South side of Dashuxiang waste transport station	20	10 Households
Poyang County	Wastewater Treatment Station, Pipeline And Ecological Sewage Interception Chann 土工工程	Construction Period	Construction Dust, Construction Machinery Noise Etc.	<b>1) normal environmental sensitive point of reception</b>			
				Zhongnao	East side of the villiage's wastewater treatment station	100	400 People
				Tangli	East side of the villiage's wastewater treatment station	120	700 People
				Yaoli Villiage	East side of the villiage's wastewater treatment station	100	450 People
				Miaozui Villiage	East side of the villiage's wastewater treatment station	100	460 People
				Caojiazui	East side of the villiage's wastewater treatment station	130	1200 People
				Ligongnao Villiage	South side of the villiage's wastewater treatment station	100	650 People
				Dating	East side of the villiage's wastewater treatment station	110	400 People
				Hujia Villiage	South side of the villiage's wastewater treatment station	120	1300 People
				Zhaojia	East side of the villiage's wastewater	100	500 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
					treatment station		
				Caojia	East side of the villiage's wastewater treatment station	120	1500 People
				Zhoujai	East side of the villiage's wastewater treatment station	130	1300 People
				Dukou	West side of the villiage's wastewater treatment station	100	600 People
				Luyitang (Tongxing)	East side of the villiage's wastewater treatment station	120	900 People
				Hengtouzui	East side of the villiage's wastewater treatment station	100	600 People
				Zhuyundun	East side of the villiage's wastewater treatment station	130	1000 People
				Luye Villiage	East side of the villiage's wastewater treatment station	100	450 People
				Dazong	East side of the villiage's wastewater treatment station	110	300 People
				Huangbiquan	East side of the villiage's wastewater treatment station	130	1000 People
				Hupen Villiage	East side of the villiage's wastewater treatment station	150	800 People
				Pantaozui	South side of the villiage's wastewater treatment station	150	800 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Chenli Villiage	South side of the villiage's wastewater treatment station	150	1200 People
				Wangjia	East side of the villiage's wastewater treatment station	130	400 People
				Zhanjia	East side of the villiage's wastewater treatment station	120	900 People
				Shengshan	East side of the villiage's wastewater treatment station	100	1300 People
				Hushan	West side of the villiage's wastewater treatment station	120	300 People
				Bantangxu	West side of the villiage's wastewater treatment station	120	1300 People
				Meihu	South side of the villiage's wastewater treatment station	100	300 People
				Shizishan	East side of the villiage's wastewater treatment station	120	200 People
				Gaohu	East side of the villiage's wastewater treatment station	100	200 People
				Jiangjia Villiage	East side of the villiage's wastewater treatment station	100	3155 People
				Tangjia	West side of the villiage's wastewater treatment station	100	1300 People
				Houfan	South side of the villiage's wastewater	100	500 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
					treatment station		
				Jingtang Villiage /Qiangfan	East side of the villiage's wastewater treatment station	120	700 People
				Yujia	South side of the villiage's wastewater treatment station	100	700 People
				Maojia Villiage	South side of the villiage's wastewater treatment station	120	200 People
Yugan County	<b>1) normal environmental sensitive point of reception</b>						
	Pollution Interception	Construction Period	Construction Dust, Construction Machinery Noise Etc.	Pipazhou Neighbourhood	Northwest side of the old Municipal Administration bureau waste transport station	100	100 People
				Guankou Villiage	Pipeline works	20	250 People
Wastewater Pumping Station	Operation Period	Noise	Pipazhou Neighbourhood	East side of the Pumping Station	100	100	
Fengxin County	<b>1) normal environmental sensitive point of reception</b>						
	Pipeline Works	Construction Period	Construction Period Dust, Construction Period Mechanical Noise	Zhonghe Jiayuan	West side of Yingxing Avenue	30	130 Households
				Bishui Jiayuan	West side of Yingxing Avenue	56	120 Households
Victoria Huating				North side of Tonghua Avenue	28	110 Households	



Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Yage Chuntian	South side of Xisha Road	33	280 Households
				Weixing Binjiang Huacheng	West side of Jiutiange Road	113	220 Households
				Qingtian Residential Area	North side of Fengchuan Road	31	65 Households
				Xinyuancheng	East side of Guangshi Road	82	50 Households
				Longshan Neighbourhood	West side of Guangshi Road	14	90 Households
				Zhongxian Heanlidu	East side of Longshan South Avenue	70	130 Households
				Jinqiaomingju	East side of Nongmin Street	30	90 Households
				Biyunhuayuan	North side of Shuyuan Road	47	135 Households
				Wenxinjiayuan	North side of Shuyuan Road	40	190 Households
				Xingguang Modern City	South side of Shuyuan Road	35	360 Households
				Chi'an Town	Fuyun street	15	60 Households
		Operation	Pumping	Weixing Binjiahuacheng	North side of Jiutiange electric pumping	80	220

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People	
		Period	Station Noise		station for irrigation		Households	
				Hengchang Huayuan	South side of Huangshagong pumping station for drainage	70	80 Households	
	<b>2) key environmental sensitive point of reception</b>							
	Pipeline Works	Construction Period	Construction Period Dust, Construction Period Mechanical Noise	Fengchuan 2 <sup>nd</sup> Primary School	Fengchuan Road South side of	90	1800 People	
Fengxin County 3rd Middle School				North side of Longshan East Avenue	120	3300 People		
Jing'an County	Pipeline Works	Construction Period	Construction Dust, Construction Machinery Noise	<b>1) normal environmental sensitive point of reception</b>				
				Liaohe Huayuan	North side of Hougang Road	50	100 Households	
				Minsheng Fuyuan	North side of Huancheng south Road	100	300 Households	
				Meilu Huayuan	West side of Shi Road	10	80 Households	
				Luoja Xincun	West side of Shi Road	100	100 Households	
				Financial Bureau Dormitory	East side of Shi Road	10	200 Households	
				Phoenix Garden	East side of Nangang Road	50	80 Households	

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Nanhong Neighbourhood	South side of Linongxiaoxiang2	20	80 Households
				Weilan Jiayuan	South side of Linongxiaoxiang2	10	325 Households
				Xinyuan Huayuan	Southeast side of Denggao Road	10	60 Households
				Jinlingguoji	Southeast side of Denggao Road	10	200 Households
				Qinghuayuan	South side of Baofen Avenue	10	10 Households
				Rijing Huayuan	South side of Baofen Avenue	10	80 Households
				Guiduxuan	South side of Baofen Avenue	50	20 Households
				Haili Huating	South side of Baofen Avenue	200	50 Households
				Meilu Huating	South side of Baofen Avenue	10	135 Households
				Shuianyuyuan	South side of Baofen Avenue	30	245 Households
				Dianlixincun	East side of Shuangxi Avenue	20	300 Households
				Fund Raising Room Of	West side of Xuefu Avenue	20	20

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People	
				National Tax Bureau			Households	
				Fengxi Huayuan	West side of Zian Road	20	20 Households	
				Shuanglong Huayuan	West side of Zian Road	20	20 Households	
				Public Rental Housing	West side of Zian Road	20	/	
				Nong1, Nong2 Resettlement Housing	West side of Zian Road	20	/	
	<b>2) key environmental sensitive point of reception</b>							
	Pipeline Works	Construction Period	Construction Dust, Construction Machinery Noise	Jing'an Vocational School	South side of Hougang Road	20	1500 People	
				Jing'an Hospital Of Traditional Chinese Medicine	South side of Hougang Road	10	200 People	
				Jing'an County 1st Primary School	East side of Shi Road	10	700 People	
				Jing'an 3rd Middle School	East side of Yabei Road	10	400 People	
				Jing'an Middle School	North side of Xuefu Avenue	15	1000 People	
Jing'an 2nd Primary School				West side of the Intersection of Xuefu Avenue and Chengbei Avenue	20	1000 People		
<b>1) normal environmental sensitive point of reception</b>								
Jishui County	Pipeline Works	Construction Period	Construction Period Dust, Construction Machinery	Shanshui Haocheng	West side of Wanli Avenue	18	1000 Households	
				Yulongwang	West side of Wanli Avenue	155	1800 Households	

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
			Noise	Xinchengyihao	East side of Wanli Avenue	10	250 Households
				Jiyang Neighbourhood	South side of Tongshi Road	20	550 Households
				Hanwenyuan Neighbourhood	East side of Yongji Road	18	500 Households
				Chengshi Huayuan Neighbourhood	West side of Huayuan Road	13	420 Households
				Shidaishangmao Neighbourhood	East side of Wenmingbei Road	117	150 Households
				Wenshui Neighbourhood	East side of Wenmingbei Road	17	170 Households
				Hanlinyuan Neighbourhood	West side of Longhua Middle Avenue	23	40 Households
				Tianchengyipin Neighbourhood	East side of Longhua Middel Avenue	99	500 Households
				Shiyang Neighbourhood	West side of Longhua Middle Avenue	13	85 Households
				Qinzhang Huayuan	East side of Longhua Middel Avenue	72	170 Households
				Yangmingyuan Neighbourhood	South side of Wenhudong Road	13	80 Households
				Longfu Yuan Neighbourhood	North side of Wenjiao Road	9	120

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
							Households
				Xinlongyuan Neighbourhood	South side of Wenfengdong Avenue	58	70 Households
				Binjiang International City	East side of Wenfengdong Avenue	17	800 Households
				Boshi Yuan	North side of Shuinan Road	18	130 Households
	Pumping Station	Operation Period	Equipments Noise	Shuinanbei Villiage	West side of Enjiang Bridge wastewater Pumping Station	30	20 Households
				Wenshui Villiage	Northeast side of Xiaojiangkou wastewater pumping station	20	30 Households
				Enjiangbeiroad North Neighbourhoods	North side of Enjiangbei Road wastewater Pumping Station	130	35 Households
<b>2) key environmental sensitive point of reception</b>							
	Pipeline Works	Construction Period	Construction Period Dust, Construction Machinery Noise	Jishui County People's Hospital	East side of Wanli Avenue	186	500 People
				Jishui County Siyuan Experimental School	East side of Wanli Avenue	107	4775 People
				Jishui Jinshi School	North side of Tongshi Road	10	4157 People
				Jishui Aimin Hospital	North side of Wenshui Avenue	14	200 People
				Jishui County Central Kindergarten	East side of Wenming South Road	17	200 People
				Jishui County Maternal And	South side of Renwen Road	17	400 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Child Health Care Hospital			
				Jishui 3rd Middle School	West side of Longhua Middle Avenue	14	3650 People
				Jinggangshan Economic And Trade School	East side of Longhua Middel Avenue	12	1700 People
				Jishui Hospital Of Traditional Chinese Medicine	North side of Wenhua East Road	29	300 People
				Chengdong Primary School	South side of Wenhua East Road	124	300 People
				Jishui County 2nd Middle School	North side of Wenhua East Road	99	3300 People
				Jishui 3rd Middle School	South side of Wenhua East Road	170	3650 People
				Wenfeng Primary School	West side of the Wenfeng middle Avenue	10	1500 People
				Jishui County Experimental Primary School	South side of Wenjiao Road	20	3000 People
				Jishui 4 <sup>th</sup> Middle School	Southwest side of Shuinan Road	48	1555 People
				Jishui Middle School	East side of Wenshan Avenue	32	4300 People
				Wenfeng Health Center	West side of Wenshan Avenue	10	20 People
Shangli County	Waste Transport Project	Construction Period And Operation Period	Construction Period: Exhaust Gases Construction Noise;	Muchong Villiage	West side of the Chishan town waste transport station	220	10 Households
				Mingshan Villiage	West side of the Futian town waste transport station	110	3 Households
				Taitang Villiage	North side of the Changing xiang waste transport station	50	12 Households

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
			Operation Period: Noise, Odor	Guanshang	North side of the Yangqixiang waste transport station	50	5 Households
				Penggao Villiage	North side of the Penggao town waste transport station	120	8 Households
				Dongyuan Villiage	West side of the Dongyuanxiang waste transport station	50	3 Households



1.7.2 Water environment protection targets

The water environment protection targets of each sub project are listed in Table1-16. The protection targets of drinking water sources are listed in Table1-17. The locations of water environment protection targets are shown in annex figure 1-6.

**Table 1-17 Water environment protection targets**

Sub project	Name of protection targets	Water quality Class	Function of water body	Engineering works Involved
Duchang county	Zoujiazui lake	Class V	General landscape water	Zoujiazui lake water environment improvement by source control and pollution interception, lake dredging, low impact development facility and Wetland construction etc. ,
Yugan county	Huhui River , Pipa Lake	Class III	Landscape Entertainment water	Pipa Lake water environment improvement by measures like source control and pollution interception of Pipa Lake, Huhui River Water Diversion Project and Ecological remediation,
Fengxin county	South side of Liao River	Class III	Landscape Entertainment water and irrigation water area	Water quality Management improvement by engineering or non-engineering measures, to reduce pollutant influent of South Liao River
	South channel	Class III	Plan to be the Landscape water, currently is wastewater discharge channel	Dredging and covering of 3 Open drainage channel- North zhizhen Channel, South Channel and Dazhai Channel in the north county
	Dazhai channel	Class III	Plan to be the Landscape water, currently is wastewater discharge	

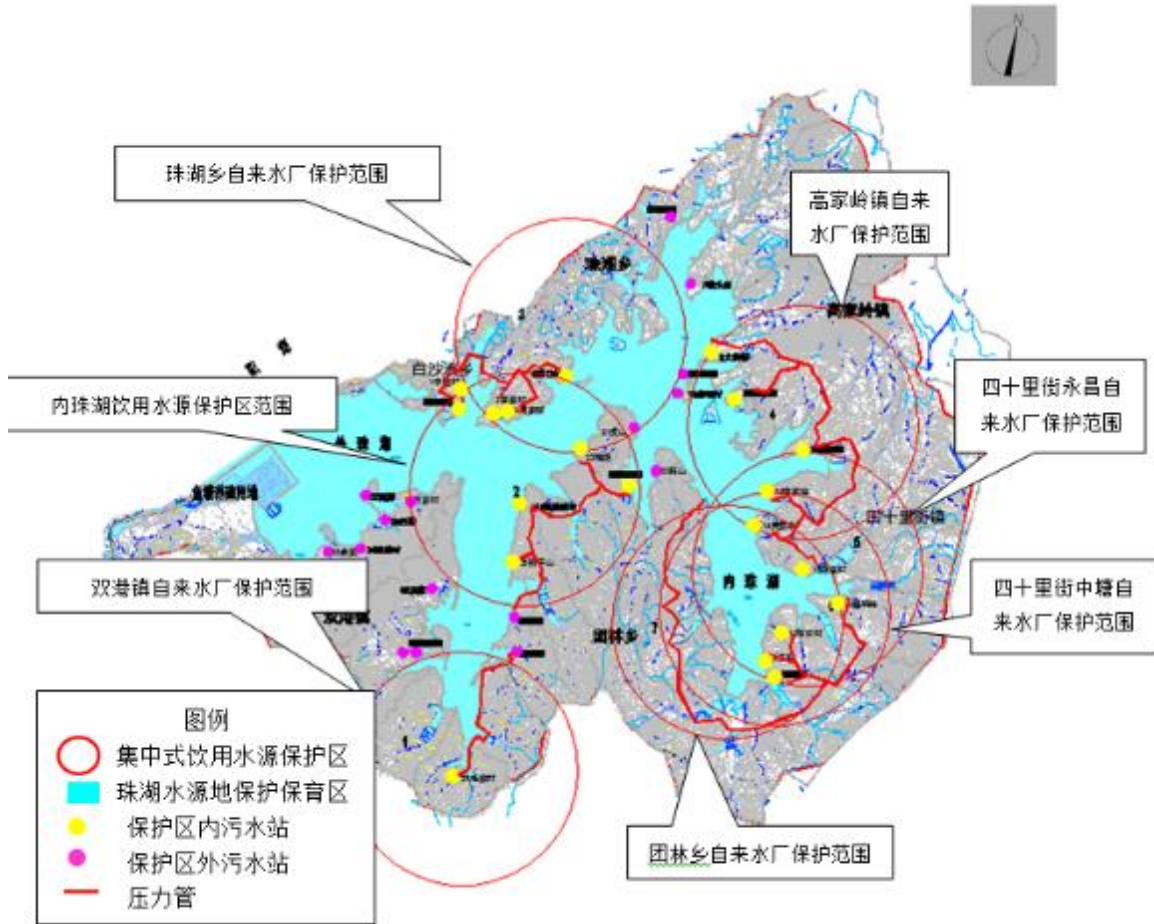
Sub project	Name of protection targets	Water quality Class	Function of water body	Engineering works Involved
			channel and irrigation water	
	Beizhizhen channel	Class III	Plan to be the Landscape water, currently is wastewater discharge channel and irrigation water	
Jing'an county	South tributary of North Liao River (Shuangxi Section )	Class IV	Industrial water area	Water quality Management improvement by engineering or non-engineering measures, to reduce influent pollutants of East Liao River
	South tributary of North Liao River (Xiangtian Section )	Class III	Landscape Entertainment water area	
	East tributary of North Liao River (Renshou Section )	Class IV	Industrial water area	
Jishui county	Ganjiang river(Jishui Section ), Enjiang River	Class III	Landscape Entertainment water	Water quality Management improvement by engineering or non-engineering measures, to reduce influent pollutants of Ganjiang river and Enjiang River
Shangli County	Lishui River	Class III	Landscape Entertainment water	Water quality Management improvement by engineering or non-engineering measures, to reduce influent pollutants of Lishui River

**Table 1-18 Drinking Water sources protection targets**

No.	Protection targets Name	Water area Involved	Scope of the Protection area	Water consumption scale (10,000m <sup>3</sup> )	Project contents inside the protection area		Distance of wastewater treatment station outlet to the boundary of protection area (m)	Water quality Target	Water body function	Relations between Wastewater treatment station effluent and protection targets
1	Water sources protection conservation area of Pearl Lake, Poyang Lake wetland park	Pearl Lake	Pearl Lake water area	/	None		/	Class III	Drinking Water sources	Effluent treated up to standards at each station to discharge into the Pearl Lake, to avoid the direct discharge into the Pearl Lake and reduce the water pollution
2	drinking Water sources protection area Pearl Lake, Poyang county	Pearl Lake	Grade 1 protection area: water or land within a radius of 500m	211.72	Wastewater treatment station	8, Shizishan, Ligongnao, Potangxu, Meihu, Caojia Villiage, ZhongNao Viliage, Tanli Villiage Bantangxu	100	Class III	Drinking Water sources	16 wastewater treatment stations within the , protection area. Effluent outlets of wastewater treatment stations
					Constructed wetland	6, With No. Of 46, 47, 48, 49, 81, 82	/			

3	Water sources protection area of Zhongtang Tap Water plant Sishilijie Town	Pearl Lake	centered as the water intake point; grade 2 protection area: grade 1	3	Wastewater treatment station	7, Caojiazui, Hupen Villiage, Wangjia, Ahanjai, Pantaozui , Huangbiquan , Chenli Villiage	100	Class III	Drinking Water sources	located 100m outside the grade 2 protection area of Drinking Water sources; No outlet should be set up inside the grade 1 and grade 2 water sources protection area of water plant.
					Constructed wetland	4, with the No. Of 24, 29, 31, 90	/			
4	Water sources protection area of Yongchang Tap Water plant Sishilijie Town	Pearl Lake	protection area: water or land area within the scope of 2500m outwards	20	Wastewater treatment station	8, Luye Villiage, Caojiazui, Pantaozui, Hupen Villiage, Huangbiquan, Chenli Villiage, Wangjia, Zhanjia,	100	Class III	Drinking Water sources	
					Constructed wetland	5,With No. of 25, 26, 27, 28, 91	/			
5	Water sources protection area of Pozhong Tap Water plant Gaojialing Town	Pearl Lake	the first grade protection area boundary	5.4	Wastewater treatment station	6, Pantaozui, Hupen Villiage, Huangbiquan, Chenli Villiage, Zhuyedun , Luye Villiage , Caojiazui	100	Class III	Drinking Water sources	
					Constructed wetland	7, With No. Of 18, 19, 20, 21, 22, 23, 88	/			
6	Water sources protection area of Tuanlinxiang Tap Water plant	Pearl Lake		3.8	Wastewater treatment station	6 , Pantaozui, Hupen Villiage, Huangbiquan, Chenli Villiage, Wangjia Villiage , Zhanjia	100	Class III	Drinking Water sources	

					Village ,			
				Constructed wetland	21, With No. Of 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 38, 39, 40, 41, 42, 43, 44, 95, 96, 97	/		
7	Water sources protection area of Shuanggang town Tap Water plant	Pearl Lake	30	Wastewater treatment station	1, Maojia Village ,	100	Class III	Drinking Water sources
				Constructed wetland	14, With No. Of 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 99	/		
8	Water sources protection area of Zhuhuxiang Tap Water plant	Pearl Lake	6	Wastewater treatment station	3, Dukou Village , Zhoujia Village , Caojia Village	100	Class III	Drinking Water sources
				Constructed wetland	10, With No. Of 1, 2, 3, 4, 5, 6, 83, 84, 85, 86 wetland,	/		



**Figure 1-2** Poyang County Sub project and the location of drinking water source target  
 1.7.3 Ecological environment protection targets

Ecological environment protection targets of each sub project are listed in Table1-18. Location relationship of Poyang county sub project and Poyang Lake National Wetland Park are shown in the following Figure.

**Table 1-19 Ecological environment protection targets**

No.	Project Name	Protection Targets	Description Of Protection Targets
1	All Sub Project	Terrestrial Plant	Plant loss caused by permanent and temporary land occupation of the project
		Aquatic life	Fishes in the project occupied water area and other aquatic organisms
		Wild Animal	Wild Animals within the Project Impact Scope
2	Poyang County sub Project	Poyang Lake National Wetland Park	Plants and animals, landscape diversity and ecosystem diversity within the Project Impact Scope

1.7.4 Social environment protection targets

Social environment protection targets of the project are listed in Table1-19.

**Table 1-20 Social environment protection targets**

No.	Impact factor	Protection targets
1	Pipeline network excavation	Project construction has impacts on the travel and safety of Residents, schools, hospitals, commercial activities along the existing road, water supply, power supply and other municipal service facilities.
2	Project land occupation	Local economy, residents affected by the land expropriation
Sub project		All Sub project

## Protection Planning

### Poyang Lake National Wetland Park, Jiangxi Province

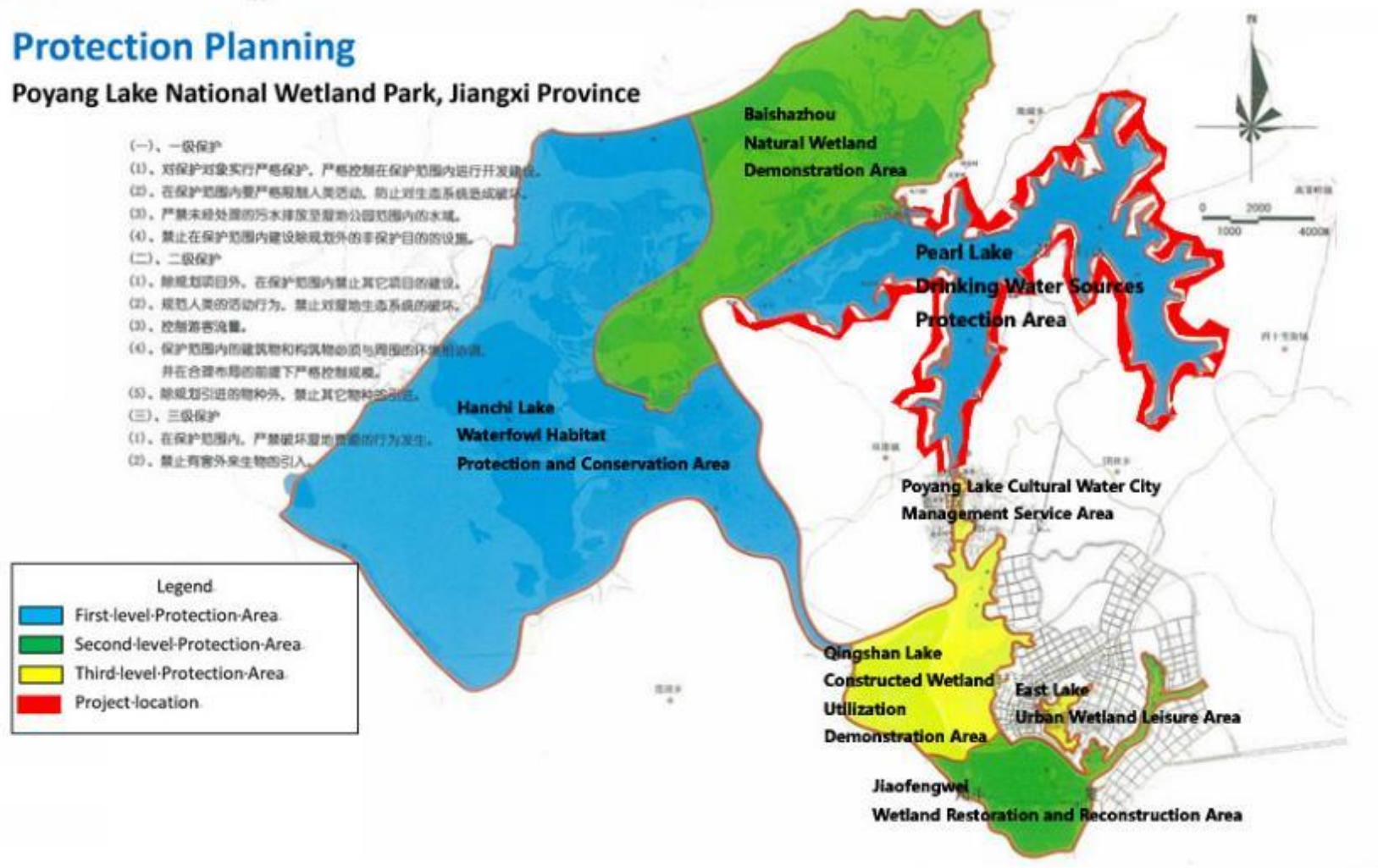


Figure 1-3 Sketch of Poyang county sub project and Poyang Lake National Wetland Park



## 2 Project Description

### 2.1 Project Overview

Project scope covers 7 counties, including Duchang County, Poyang County, Yugan County, Jing'an county, Fengxin County and jishuicounty, Shangli County. 4 sub projects are:1) Poyang Lake Basin Management Reinforcement; 2) River And Lake Water Environment Remediation and The Domestic Wastewater Management System Enhancement; 3) Solid Waste collection and transport system;4) Project Implementation Support.The details of each sub project are listed in Table2-1.

### 2.2 Project investment

The total investment is 1.443571 billion yuan, in which the sub project of strengthen the management of the Poyang Lake river basin needs to invest 153 million 820 thousand yuan, the sub project of repair river water environment and improve the management system of domestic sewage needs to invest 928 million 500 thousand yuan, the sub project of solid waste collection and transportation system needs to invest 174 million 976 thousand yuan, and the project implementation supports needs to invest 37 million 220 thousand yuan. The project proposed to apply for the world bank loans of \$150 million (exchange rate \$1 = 6.6 yuan, equals to 990 million yuan), matching funds of 453.571 million yuan, Financed by the up level government support and local government. The capital using and financing plan plan of the total investment included in each countie's report.

### 2.3 Implementation plan

The project will implement in accordance with the principle of unified planning, phased implementation, crossing construction and phased delivery.The project construction period is 5 years, start from January 2018 and finish at the end of December 2022 with the acceptance.

**Table 2-1 Project components**

County	Sub project Name	Component	Construction work	Scale
Duchang county	Duchang county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water Environmental Monitoring System Establishment, Staff Training; System Perfection, Supporting Facilities Perfection, Facilities Maintenance, Information Interaction, Public Participation And Incentive Mechanism	New construction of: <ul style="list-style-type: none"> <li>● 1 house for county water environment monitoring system, 3levels, 1250m<sup>2</sup>;</li> <li>● 2 water environment automatic monitoring stations at river boundary monitoring section;</li> <li>● 7 water environment automatic measuring and reporting points.</li> </ul>
		River and lake water environment remediation	Zoujiazui lake water system ecological environment improvement by source control and pollution interception, lake dredging, Low impact development facility and Wetland construction etc. ,	<ul style="list-style-type: none"> <li>● About 8000m<sup>3</sup> of Zoujiazui lake dredging with depth about 0.3m;</li> <li>● New construction of 4.0km sewage interception pipeline line for Zoujiazui lake with DN600~DN800</li> <li>● About 0.8km wetland revetment,</li> <li>● 26.82ha of total wetland protection area;</li> <li>● The pilot transformation of sponge city : 1.7km rain water pipeline for Furongshan Avenue with d1000~d1800;</li> <li>● New construction of 5000m<sup>2</sup> sunken green space in Furongshan industrial area</li> <li>● New construction of 10000m<sup>2</sup> pedestrian permeable pavements</li> <li>● Reconstruction of about 2000m<sup>2</sup> permeable pavements of public parking spaces</li> </ul>
		Domestic	Drainage pipe network systems	New construction of:

County	Sub project Name	Component	Construction work	Scale
		wastewater management system enhancement	improvement, and the wastewater collection rate enhancement	<ul style="list-style-type: none"> <li>● 20.10 km wastewater pipeline with DN400~DN1200,</li> <li>● 8.74km rain water pipeline with d800~d1500,</li> <li>● Short term wastewater collection of 30 thousand m<sup>3</sup>/d, and long term wastewater collection of 52 thousand m<sup>3</sup>/d.</li> </ul>
		Solid waste collection and transport system	Construction of 3 township solid waste collection and transport system, Construction of 1 intelligent cloud platform for domestic waste collection, transport and treatment system	New construction of 3 waste transport station: <ul style="list-style-type: none"> <li>● Beishanxiang waste transport station with the transport scale of 22 t/d,</li> <li>● Wangdunxiang waste transport station with the transport scale of 29.0 t/d,</li> <li>● Dashuxiang waste transport station with the transport scale of 25 t/d.</li> </ul>
		Project implementation support	Equipment configuration, capacity building etc.	
Poyang county	Poyang county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water Environmental Monitoring System Establishment, Staff Training; System Perfection, Supporting Facilities Perfection, Facilities Maintenance, Information Interaction, Public Participation And Incentive Mechanism Promotion of Soil Testing And Formula Fertilizer technology in plantation; Prohibition of scale culture in Livestock Farming; Promotion of traditional culture	Conversion of existing houses of Poyang Lake National Wetland Park into water environment monitoring system: <ul style="list-style-type: none"> <li>● 1 new water quality automatic monitoring station,</li> <li>● 8 automatic measuring and reporting points</li> </ul>

County	Sub project Name	Component	Construction work	Scale
			mode “graze by man and raised by nature 人放天养” in aquaculture, Prohibition of “3nets”,No permission to Feed, Promotion of "oil to gas" in the existing motor vessels to prevent the oil pollution in tourism.	
		River and lake water environment remediation	Pearl Lake water system ecological environment improvement by pollution control measures like Ecological Sewage Interception Channel and Constructed wetlands	New construction of <ul style="list-style-type: none"> <li>● 101 Constructed wetlands, total area of 154765.02m<sup>2</sup>;</li> <li>● 95.85km ecological Sewage Interception Channel</li> </ul>
		Domestic wastewater management system enhancement	Underground integrated treatment facilities and Supporting Pipe Network construction for each of the 35 Villiage Around Pearl Lake water body.	New construction of <ul style="list-style-type: none"> <li>● 35underground integrated treatment facilities: using Facultative-aerobic MBR (FMBR) process; total wastewater treatment scale of 2600t/d, namely, 22 of 50t/d and 11of 100t/d, 1 of 150t/d, 1 of 250 t/d;</li> <li>● 101.22 km DN300~DN400 wastewater pipeline, including 42.1km pressure pipeline.</li> </ul>
		Project implementation support	Equipment configuration, capacity building etc.	
Yugan county	Yugan county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and	<ul style="list-style-type: none"> <li>● Conversion of existing houses of Yugan county EPA into water environment monitoring system:</li> <li>● New construction of 7 automatic measuring and reporting points ;</li> <li>● Abolition of 22 ha of fish ponds, with the subsidy</li> </ul>

County	Sub project Name	Component	Construction work	Scale
			incentive mechanism	of 1 million 200 thousand yuan
		River and lake water environment remediation, domestic wastewater management system enhancement	Pipa Lake water environment improvement by measures like source control and pollution interception, water diversion project and ecological remediation.	<p>New construction of</p> <ul style="list-style-type: none"> <li>● 5562.8m DN300-DN400 wastewater pipeline around the Pipa Lake, with the short term wastewater collection of 1.6 thousand m<sup>3</sup>/d, and long term of 1.9 thousand m<sup>3</sup>/d;</li> <li>● 1 integrated prefabricated pumping station at the diversion channel port c, with the scale of Q=7200m<sup>3</sup>/d in Biwa Ko; 1 new outlet sluice, the replacement of the 3 current bad operated sluices;</li> <li>● 2100m ecological concrete slope protection,</li> <li>● 1816m ecological engineering materials slope protection,</li> <li>● 1297m natural slope plants slope protection,</li> </ul> <p>Reconstruction of</p> <ul style="list-style-type: none"> <li>● 2165m existing slope protection;</li> <li>● 40000m<sup>2</sup> virescence project</li> </ul> <p>30000m<sup>3</sup> dredging of Pipa Lake drainage channel; 3000m<sup>3</sup> of intensive purification of river channel.</p>
		Solid waste collection and transport system	Improvement of the solid waste collection and transport system around the Pipa lake.	<ul style="list-style-type: none"> <li>● Cancelling of the waste transport stations at huanhudongroad and 2nd Middle School gate;</li> <li>● Converting the waste transport station at Municipal Administration Bureau into a waste collection point;</li> <li>● New construction of a waste collection point;</li> </ul>

County	Sub project Name	Component	Construction work	Scale
		Project implementation support	Equipment configuration, capacity building etc.	
Fengxin county	Fengxin county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and incentive mechanism	<ul style="list-style-type: none"> <li>● Using existing EPA houses for water environment monitoring system,</li> <li>● 2 container type river and lake Water quality automatic monitoring stations .</li> </ul>
		Domestic wastewater management system enhancement	Perfection of Wastewater interception pipeline and supporting pumping station in North county and South county	New construction of <ul style="list-style-type: none"> <li>● 22.27km DN400-DN1000 wastewater pipeline,</li> <li>● 13.15km d600-d1800 rainwater pipeline</li> <li>● 3 integrated prefabrication pumping stations, short term wastewater collection of 15 thousand m<sup>3</sup>/d, and longterm of 20 thousand m<sup>3</sup>/d;</li> </ul> Dredging and covering of 3 Open drainage channel- in the north county with the dredging quantity of : <ul style="list-style-type: none"> <li>● 2400 m<sup>3</sup> for Dazhai channel;</li> <li>● 3480 m<sup>3</sup> for northzhizhen channel;</li> <li>● 7600m<sup>3</sup> for South channel.</li> </ul>
		Project implementation support	Equipment configuration, capacity building etc.	
Jing'an county	Jing'an county Water environmental	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; 开展“the Poyang Lake basin water environment	New construction of <ul style="list-style-type: none"> <li>● 1 house for county water environment monitoring system, 3levels, 1250m<sup>2</sup>;</li> </ul>

County	Sub project Name	Component	Construction work	Scale
	management		vulnerability research ”, “ Poyang Lake water environment management financing mechanism research”2 个课题研究; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and incentive mechanism	<ul style="list-style-type: none"> <li>● 2 water environment automatic monitoring</li> <li>● 7 automatic measuring and reporting points machine box</li> </ul>
		Domestic wastewater management system enhancement	Perfection of drainage pipe network systems in the new north county and old South county area	New construction of <ul style="list-style-type: none"> <li>● 29.24km DN200-DN600 wastewater pipeline;</li> <li>● 17.59km d200-d1800 rainwater pipeline,</li> </ul> With the shorterterm wastewater collection of 9.8thousand m <sup>3</sup> /d, and long term of 16.6 thousand m <sup>3</sup> /d;
		Solid waste collection and transport system	Solid waste collection and transport system improvement and intelligent cloud platform building for Waste collection and transportation.	Reconstruction of 2 waste point: <ul style="list-style-type: none"> <li>● Nangang Road waste pit,</li> <li>● Qinghu Road waste point,</li> </ul> Equipped with the garbage box of better sealing performance; 1620 waste bins; 2 compression waste vehicles; 4 hanging barrel type tricycles; 2 waste recycling vehicles; 1 back hanging barrel waste collection vehicles, etc..
		Project implementation support	Equipment configuration, capacity building etc.	
Jishui county	Jishui county Water	The Poyang Lake basinmanagement	Water environmental monitoring system establishment, staff training; System	New construction of <ul style="list-style-type: none"> <li>● 1 house for water environment monitoring system,</li> </ul>

County	Sub project Name	Component	Construction work	Scale
	environmental management	reinforcement	Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and incentive mechanism	3levels, 1250m <sup>2</sup> ; ● 2 water environment automatic monitoring stations at river boundary monitoring sections, 2 levels, 153.5m <sup>2</sup> each; ● 4 water environment Automatic measuring and reporting points
		Domestic wastewater management system enhancement	Drainage pipe network systems and supporting pumping station perfection of South county area and old township area.	New construction of ● 27400m DN200-DN600 wastewater pipeline along the road; ● 15200m d600-d2000 rainwater pipeline (channel ), with the shorterm wastewater collection of 13thousand m <sup>3</sup> /d, and long term of 20 thousand m <sup>3</sup> /d; ● 3 integrated prefabrication wastewater Pumping Station with the scale of 1500m <sup>3</sup> /d, 2500m <sup>3</sup> /d, 5000m <sup>3</sup> /d respetively  Expansion the treatment scale of: 1 existing Pumping Station from 10 thousand m <sup>3</sup> /d to 1thousandm <sup>3</sup> /d.
		Project implementation support	Equipment configuration, capacity building etc.	
Shangli county	Shangli county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information	Using existing houses of Shangli county epafor water environmentmonitoring and dispatching system



County	Sub project Name	Component	Construction work	Scale
			interaction, Public participation and incentive mechanism	
		Solid waste collection and transport system	Construction of 6 township solid waste collection and transport systems, Construction of 10 township intelligentcloud platforms for Waste collection and transportation.	New construction of 6 waste transport station: <ul style="list-style-type: none"> <li>● Yangqi Xiang waste transport station (29.0t/d)</li> <li>● Changping Xiang waste transport station (43.5t/d)</li> <li>● Futian Town waste transport station (25.2t/d)</li> <li>● Penggao Town waste transport station (21.6t/d)</li> <li>● Dongyuan Xiang waste transport station (42t/d)</li> <li>● Chishan Town waste transport station (47.3t/d)</li> <li>● 87 waste collect points, one for each villiage.</li> </ul>
		Project implementation support	Equipment configuration, capacity building etc.	

### 3 State of Environment

#### 3.1 Natural Environment

##### 3.1.1 Poyang Lake basin

###### 1, Geographic location

Jiangxi Province, briefly named as “Gan”, locates on the south bank of the junction of the middle and lower reaches of the Yangtze River, covering an area from  $24^{\circ} 29'$  north latitude to  $30^{\circ} 4'$  north latitude, and from  $113^{\circ} 34'$  east longitude to  $118^{\circ} 28'$  east longitude. Located in the north of Jiangxi Province, Poyang Lake is the largest freshwater lake in China. Its geographical coordinates are from  $28^{\circ} 24'$  north latitude to  $29^{\circ} 46'$  north latitude, and from  $115^{\circ} 49'$  east longitude to  $116^{\circ} 46'$  east longitude. Poyang Lake Basin is located in the south bank of the middle and lower reaches of the Yangtze River. Its upstream connects with five river systems (also named “five rivers”), namely, Ganjiang River, Fuhe River, Xinjiang River, Raohe River and Xiuhe River. Its downstream connects with the Yangtze River. The area of Poyang Lake Basin is 162,200 square kilometers, taking up nearly 97% of the river area in Jiangxi Province, and nearly 9% of the Yangtze River’s area. The area of Poyang Lake Basin in Jiangxi Province is about 157,000 square kilometers, nearly 96.8% of the total area of the basin. The other 3.2% of Poyang Lake Basin, about 5,139 square kilometers, distributes in other provinces including Fujian (Min), Zhejiang (Zhe), Anhui (Wan) and Hunan (Xiang). Poyang Lake Basin is highly consistent with the administrative division of Jiangxi Province.

###### 2, Topography and Geomorphology

Poyang Lake Basin is surrounded by mountains on three sides, namely, the east, the south and the west. The terrain of the basin is high in the south and low in the north, sloping gradually from the south to the north. Therefore, a plain of which the northern part centers on Poyang Lake is shaped, with many hills in the middle. Poyang Lake Region is the area of the lowest terrain in the basin. The regional center is lower than the surroundings. And it is high in the south and low in the north. The landforms are mainly plains and low hills, with few mountains including Lushan Mountain, Yunju Mountain and West Mountain. The area of plains is the largest. The plains in Poyang Lake Basin include Lakeside Plain, the plain in the middle and lower reaches of Raohe River, the plain in the middle and lower reaches of Xinjiang River, Ganfu Plain, the plain in the middle and lower reaches of Xiuhe River and the plain in the south bank of the Yangtze River. The plains in the middle and lower reaches of five rivers respectively distribute along the banks of these rivers, with the widths ranging

from 0.1 kilometers to 10 kilometers. The plains in the south bank of the Yangtze River distributes along the south bank of the Yangtze River, and it is formed through the alluviation of the Yangtze River, with lots of shoals making up the narrow plain from east to west along the river. In the plain area, people are mainly engaged in agricultural production, so there are many farmlands, artificial vegetation and lakeside grass beaches, etc.

### 3. Geology and Physiognomy

Poyang Lake Basin spans two geotectonic elements, with its northern part situated in the southeast margin of Yangtze Paraplatform and the south-central part being the northeast region of the fold system. The geological structure is quite complicated and the development of the stratum is complete. Many low-grade metamorphic gravels, slates and phyllites of Banxi Group of Pre-Sinian system have emerged in Poyang Lake Region, Ganjiang River, Fuhe River, the lower reach of Xiuhe River and Raohe River. In the hollow zone of Xinjiang River, there is mainly the red bed of cretaceous system. In the middle reach of Xiuhe River, there have emerged middle Paleozoic, Mesozoic and Cenozoic stratum, and in the upper reach of the river, there is mainly Banxi Group. In the upper and middle reaches of Fuhe River, there are mainly volcanic of Upper Jurassic and red bed of cretaceous system. In the upper and middle reaches of Ganjiang River, there is mainly the red bed. And there are many sandstones and slates of Cambrian system and Sinian system as well as magma rocks of various eras widely emerging in the other medium to high mountainous areas.

### 4. Climate

Jiangxi Province and Poyang Lake Basin locate in the mid-subtropical area with a moist monsoon climate. The region enjoys a moderate climate, plentiful rainfall, abundant sunshine as well as a relatively long frost-free period. It also has four distinct seasons. In winter, it is cold and has little rainfall. Yet in spring, there are lots of plum rains. In summer and autumn, it is under the control of subtropical anticyclone, and thereby it is always sunny and hot with little rainfall and occasional typhoons. The thermal resources in Poyang Lake Basin are quite abundant, where the average temperatures over the years range from 16.3°C to 19.7°C, decreasing progressively from the north to the south. The extreme high temperatures range from 41.2°C to 44.9°C, and the extreme low from -15.2°C to 11.2°C. The highest temperatures occur in July and August, and the lowest in January and February. The average temperatures over many years range from 16.5°C to 17.8°C. The temperatures in July are the highest, with the daily average temperature reaching 30°C and the extreme

high temperature reaching 40.5°C. The temperatures in January are the lowest, with the daily average temperature being 4.4°C and the extreme low temperature as low as -11.9°C. The average wind velocity over many years is 3.01 m/s, with the highest wind velocity over the years reaching 34 m/s. In summer, there are mainly south winds or southerly winds, and in winter, spring and autumn, there are mainly north winds or northerly winds. Over the whole year, the frequency of north winds is the highest.

Jiangxi Province and Poyang Lake Basin is one of the rain areas throughout the country. Its average precipitation over the years is 1,638.4 mm. The rainfall in the eastern Zixi County has reached the maximum 1,978 mm, and the south-central Taihe County the minimum 1,413.2 mm. The annual precipitation in different regions of Jiangxi Province varies with the geographical positions, and in various seasons of the year, the rainfall is also different. From March to June, the rainfall is particularly intensive, accounting for 55.9% of the annual precipitation. Particularly, the rainfall even reaches 752.5 mm from April to June, accounting for 45.3% of the annual precipitation. Since 1961, the year with largest rainfall has been 1975, when the rainfall reached 2165.5mm, and the year with smallest rainfall has been 1963, when the rainfall lowered to 1121.4mm.

## 5. Soil

In Jiangxi Province and Poyang Lake River, there are various types of soils, including 12 types (i.e., red soil, yellow soil, yellow-brown soil, purple soil, limestone soil, mountain meadow soil, moisture soil, paddy soil, alluvial soil, volcanic ash soil, rocky soil and skeleton soil), 24 subtypes, 93 soil families and 251 soil species. The area of red soil reaches 1.5313 million square hectometers, accounting for 70.69% of the total area of soils in the province. Jiangxi Province is one of the provinces having red soils throughout the country, and the red soil is the most important soil resource in Poyang Lake Basin. Next is paddy soil, which is widely distributed in mountains, hills, valleys, rivers, plains and terraces. It is the major soil for cultivation, accounting for 20.36% of the total area of soils. There also exist yellow soil, mountain yellow-brown soil, mountain meadow soil, purple soil, moisture soil and limestone soil, accounting for 0.15% to 2.77% of the total area of soils.

The Lakeside Plain of Poyang Lake has mainly alluvial soils, with meadow soil and boggy soil in the beaches around the lake. Beside the lake and along the banks of the river are alluvial soils, of which the material is mainly alluvial deposits. Thus, it possesses features including good fertility and fine cultivability, and it is also suitable for cultivation of

many crops. In plains and terraces are mainly paddy soils, and there are also red soils. In low hills, there are red soils of large areas. And in the marginal mountains, there are red soils, red-yellow soils, yellow soils, yellow-brown soils and some limestone soils.

## 5, Hydrology

Poyang Lake is a seasonal lake with characteristics of water carrying, swallowing and spitting. During the flood periods and drought periods, the water area and capacity will change a lot. In the flood periods, the water level of Poyang Lake will upsurge, and thereby the lake surface is wide with no end in sight. In the drought periods, the water level of Poyang Lake will decline significantly, with the bottomland exposed and the lake water returning to the river way, wandering like a line. It is the physical geographical features of Poyang Lake Region that “the high-level water forms the lake and the low-level the river; it is a wide lake during the flood periods and a line during the drought periods”. The lake looks like a calabash, which is divided into two parts by Songmenshan, the largest island in the lake. The northern part is the water channel, and the southern main lake region. The length of the lake from south to north is 173 kilometers and the width from east to west is 16.9 kilometers. The widest part is 74 kilometers and the narrowest 3 kilometers. The lake basin slants from southeast to northwest, with the lake shoreline reaching about 1,200 kilometers.

Poyang Lake Basin consists of the five rivers (i.e., Ganjiang River, Fuhe River, Xinjiang River, Raohe River and Xiuhe River), various tributaries, small rivers joining the lake (e.g., Qingfengshan Stream, Boyang River, Zhangtian River and Tongjin River) and other seasonal rivers, streams as well as Poyang Lake. As a result, there has formed a radiant river system which takes Poyang Lake as the convergence center. Poyang Lake Basin is a complete river system, with the water of various rivers converging into the lake. After regulation and storage, the water flows into the Yangtze River in Hukou County. Therefore, it plays an important role in the Yangtze River system. Next comes the important introduction of the river systems of the five rivers.

### 1) Ganjiang River

As the largest river in Poyang Lake Basin, Ganjiang River is also one of the main tributaries in the middle reach of the Yangtze River. It is 751 kilometers long, and covers an area of 82,809 square kilometers (above Waizhou Hygrometric Station), accounting for 51.1% of the total area of Poyang Lake Basin. Ganjiang River Basin is embraced by mountains, with mountains, hills and plains respectively accounting for 50%, 30% and 20% of the area of this basin. And the altitudes decrease gradually from the south to the north. Ganjiang River runs through Jiangxi Province from the south to the north. It takes the region above

Ganzhou as the upper reach, with Zhang River and Gong River as the water sources, of which Gong River is the major source. It also takes the region below Xingan as the lower reach, with main tributaries including Yuan River and Jinjiang River. Below the Bayi Bridge in Nanchang, Ganjiang enters the river through four tributaries from the south, the north, the middle and the west, of which the west tributary is the main tributary and the main channels for Ganjiang River to enter the lake. And the outlet of the west tributary locates in Wucheng Town, Yongxiu County.

Located in the mid-subtropical area with a moist monsoon climate, Ganjiang River enjoys a moderate climate and four distinct seasons, with abundant rainfall in spring as well as plentiful plum rains. The average temperatures over many years of the basin is 17.8°C. The temperature is high in the south and low in the north. The average annual precipitation over many years is about 1,600mm in unbalanced distribution. The rainfall in the middle reach is relatively little, which is less than the average precipitation by 240mm. April to June is a period with intensive rainfall accounting for 30% of the annual precipitation. The forest covered area of Ganjiang River Basin is 5.414 square hectometers, accounting for 57.0% of the total forest area of the whole province.

## 2) Fuhe River

The length of Fuhe River is 312 kilometers, with an area above Lijiadu control station being 16,493 square kilometers, accounting for 10.2% of the area of Poyang Lake Basin. Originating from the Yiqian Town, Guangchang County at the west foot of Wuyishan Mountain, Fuhe River Basin locates in the mid-east region of Poyang Lake Basin. There are mountains and hills in the southern part of the river basin, mountains in the middle and valleys, plains as well as low hills in the northern part. The proportions of low hills, mountains, hills and plains are respectively 49.6%, 25%, 19.5% and 5.8%.

Fuhe River Basin enjoys abundant rainfall, small evaporation capacity as well as warm and moist climate. Its major flood period is from April to June, and the annual peak discharge always occurs in June. It stays in a drought period from December to February of the next year. The average temperatures over many years is about 18°C and the average annual precipitations range from 1,500mm to 2,000mm. The region of Wuyishan Mountain in the east is one of the regions having large rainfall along the Yangtze River Basin. The rainfall decreases gradually from the east to the west and the northwest. The annual average evaporation from water surface is between 1,000mm to 1,100mm, increasing gradually from the mountainous area in the upper reach to the plain area in the lower reach. The area of

forest is 870,000 square hectometers, accounting for 9.2% of the forest area in Poyang Lake Basin.

### 3) Xinjiang River

The main stream of Xinjiang River is 312 kilometers long. The area of Xinjiang River Basin (to Meigang Hydrometric Station) is 17,599 square kilometers, accounting for 10.9% of the area of Poyang Lake Basin. Located in the northwest of Jiangxi Province, Xinjiang River originates from the west side of Xianxia Ling at the border between Zhe and Gan. The south stream is called Jinsha Stream. The boundaries of the upper, middle and lower reaches are respectively Shangrao and Yingtan. The basin is mainly featured with mountains and hills, which account for 60% of the area of the basin. Low hills and plains only play subsidiary roles, accounting for 40%.

Xinjiang River Basin enjoys abundant rainfall, relatively small evaporation capacity as well as warm and moist climate. Its average annual precipitation over many years is between 1,500mm to 2,000mm, and thereby it is a rainy area in Poyang Lake Basin. Generally, December to February next year is the drought period of the river basin. The forest area of Xinjiang River Basin is 937,000 square hectometers, accounting for 9.9% of the forest area of Poyang Lake Basin.

### 4) Xiuhe River

Xiuhe River is 389 kilometers long, and Liaohe River, the largest tributary, is 148 kilometers. The river basin covers an area of 14,797 square kilometers (to Zhelin Hydrometric Station in Xiuhe River, Wanjiabu Hydrometric Station in Liaohe River), accounting for 9.1% of Poyang Lake Basin. Located in the northwest of Poyang Lake Basin, Xiuhe River Basin originates from the northwest foot of Zicha Ping, Mount Shanyangjian in the southwest of Tonggu County. The region above the Xiushui County is the upper reach through mountain areas. The region below Zhelin Reservoir is the lower reach, with gentle terrain and complicated river systems causing disasters of floods. Along the banks are mainly hills, tablelands and plains. Xiuhe River locates in the zone of subtropical monsoon climate, with the average annual precipitation over many years between 1,400mm and 1,900mm. The rainfall of the upper reach of Liaohe River can reach above 2,000mm, and its major flood period is from April to June.

### 5) Raohe River

Raohe River consists of Le'an River and Changjiang River, the lengths of which are respectively 279 kilometers and 267 kilometers. The main stream of Raohe River is about 40 kilometers long, and the area of the river basin is 15,300 square kilometers (to Hushan

Hydrometric Station in Le'an River, and Dufengkeng Hydrometric Station in Changjiang River), accounting for 9.4% of Poyang Lake Basin, and being the smallest area of the five river basins. Located in the northwest of Poyang Lake Basin, Raohe River Basin is mainly featured with mountains and hills accounting for 56.6% of the area of this basin. The low hills accounts for 39.6% of the area, and plains about 3.8%. The terrain slants from the southeast and the northwest to the west, connecting with Poyang Lake Region.

Raohe River Basin enjoys abundant sunshine and rainfall, but the distribution of rainfall varies with the change of seasons. It is cold in winter and hot in summer. In the west of the lower reach of the river basin, the average annual precipitation over many years is about 1,500mm, and 1,800mm in the east. The annual precipitation of Changjiang River is about 1,764mm, and Le'an Jiang River between 1,770mm to 1,820mm. In this river basin, the period from April to June is the rainy season, and the period from December to February in the next year is generally the dry season. The forest area of Raohe River Basin is 885,000 square hectometers, accounting for 9.3% of the forest area of Poyang Lake Basin.

### 3.1.2 Sub project Counties

General situations of natural environment of the seven counties are shown in Table 3-1.



**Table 3-1 General Situations of the Natural Environment of the Counties with Subprojects**

<b>1, Geographical Location</b>						
Duchang	Poyang	Yugan	Fengxin	Jing'an	Jishui	Shangli
<p>Located in the north of Jiangxi Province, Duchang County belongs to Jiujiang City. It connects with Wushan Mountain in the north and with Poyang Lake in the south. The geographical coordinates of the county are from 116°1 minute, 34 seconds east longitude to 116° 38' , 27 seconds east longitude, and from 28° 50' , 28 seconds north latitude to 29° 38' north latitude. Beishan Village locates in the north of Duchang County, Wangdun Village the northeast and Dashu Village the southeast.</p>	<p>The geographical coordinates of Poyang County are from 116° 23' east longitude to 117° 6' east longitude, and from 28° 46' north latitude to 29° 42' north latitude. Pearl Lake Basin locates in the west of Poyang County, and beside the east margin of Poyang Lake. The region of Pearl Lake Basin belongs to the national wetland park of Poyang Lake.</p>	<p>Yugan County locates in the northeast of Jiangxi Province, on the southeast bank of Poyang Lake and in the lower reach of Xinjiang River. Its geographical coordinates are from 116° 13' and 45 seconds east longitude to 116° 54' and 24 seconds east longitude, and from 28° 21' and 36 seconds north latitude to 29° 3' , 24 seconds north latitude.</p>	<p>Fengxin County locates in the northwest of Jiangxi Province, belonging to the upper reach of South Liaohe River, the tributary of Xiuhe River, Ganjiang River. Its geographical coordinates are from 114° 45' east longitude to 115° 33' east longitude, and from 28° 34' north latitude to 28° 52' north latitude.</p>	<p>Jing' an County locates in the northeast of Yichun City. Its geographical coordinates are from 114° 55' east longitude to 115° 32' east longitude, and from 28° 46' north latitude to 29° 3' north latitude.</p>	<p>Jishui County locates in the middle of Jiangxi Province and in the middle reach of Ganjiang River. Its geographical coordinates are from 114° 38' east longitude to 115° 36' east longitude, and from 26° 52' north latitude to 27° 33' north latitude.</p>	<p>Shangli County locates in the west of Jiangxi Province and the north of Pingxiang City. Its geographical coordinates are from 27° 38' north latitude to 28°1 minute north latitude, and from 113° 47' east longitude to 114°1 minute east longitude.</p>
<b>2, Geology and Physiognomy</b>						
Duchang	Poyang	Yugan	Fengxin	Jing'an	Jishui	Shangli
<p>Duchang County is mainly featured with hills and lakeside plains. The water area there is quite wide. In some areas, there are low hills. The terrain is high in the north and low in the south. It locates in the depression area of Poyang</p>	<p>Poyang County, where Pearl Lake Basin locate, belongs to the area of lakeside low hills. The terrain is high in the northwest, and low in the southeast, presenting an obvious ladder</p>	<p>This county is mainly featured with low hills and lakeside plains. The terrain is high in the southeast and low in the northwest, gradually slanting from the southeast hills to the northwest and transiting</p>	<p>Fengxin County is surrounded by mountains on three sides. The terrain is high in the west and low in the east, gradually slanting to the middle and east parts. The landform of the county</p>	<p>This county is surrounded by high mountains on three sides, with two rivers in the middle. There are hills among mountain areas. The southeast</p>	<p>Jishui County has three major types of landforms, namely, mountains, hills and plains. There are mainly hills. The terrain is slightly higher in the east, north and south. It</p>	<p>Located in the hill area of Jiangnan Region, Shangli County is mainly featured with hills. The terrain is high in the east and middle, and low in the south, north and west.</p>

<p>Lake, and is a part of Yangtze Paraplatform. Its thickness of the earth's crust is about 31 kilometers. It is in the seismic belt in the lower reach of the Yangtze River.</p>	<p>pattern.</p>	<p>to lakeside plains.</p>	<p>is mainly low hills created by denudation and erosion as well as stacking hillocks created by denudation. The ground elevation ranges from 37 meters to 70 meters. The terrain is relatively flat, with unknown ridges. The peaks are like steamed buns, with thin sediments and sparse vegetation.</p>	<p>part is featured with hillocks and plains of small areas.</p>	<p>is wide in the southeast and northwest, and narrow in the middle. The highest point is the Big East Mountain in the northeast of the county, with an altitude of 891.3 meters, and the lowest the north new marina, only 38.0 meters.</p>	
---	-----------------	----------------------------	--	--	--	--

**3, Climate**

Duchang	Poyang	Yugan	Fengxin	Jing'an	Jishui	Shangli
<p>Duchang County locates in the zone of subtropical monsoon climate. The temperatures vary greatly in the four seasons. The annual average temperature is 17.8°C, and the annual average precipitation is 1,490mm. The predominant wind direction in summer is southerly wind, and in winter northerly wind. The average wind velocity over many years is 2.9m/s.</p>	<p>Pearl Lake locates in the northern subtropical area with a monsoon climate. It is cold in winter and hot in summer. The seasons there are distinct. It enjoys abundant rainfall and a long frost-free period, and thereby it is suitable for the growth of crops. But there are disastrous weathers from time to time. The annual average temperature is 17.6°C. The frost-free period is about 265 days. The precipitation is about</p>	<p>Located in the subtropical zone, Yugan enjoys a moderate and moist climate, abundant sunshine, plentiful rainfall, long frost-free period and obvious monsoon. The four seasons there are distinct. It is beneficial for the growth of crops. The average temperature over many years is 17.8°C. The annual average sunshine hours is 1,872 hours. The annual average precipitation is 1,586.4mm. The predominant wind direction over the year in</p>	<p>Fengxin County locates in the mid-subtropical zone with a moist climate. It enjoys four distinct seasons, warm climate, plentiful rainfall, abundant sunshine and long frost-free period. The annual average temperature is 17.3°C. The annual average precipitation is 1,612mm. And the annual sunshine duration is 1,803 hours.</p>	<p>Jing'an County locates in the mid-subtropical zone with a moist climate. It enjoys a moderate climate, four distinct seasons, plentiful rainfall, abundant sunshine and relatively short frost-free period. The growing season for plants is long. The daily average of temperature over the county is 17°C, and the</p>	<p>Jishui County enjoys a mild climate, plentiful rainfall, abundant sunshine and four distinct seasons. It locates in the mid-subtropical zone with a moist climate which is featured with East Asia monsoon. The average temperature over many years is 18.2°C.</p>	<p>Shangli County locates in the zone of subtropical monsoon climate. It enjoys four distinct seasons, mild climate, plentiful rainfall, abundant sunshine and long frost-free period. The annual average temperature is 17.2°C, and the annual average precipitation is about 1,596.2mm. The most frequent wind over the whole year is northeast wind, and next is southwest wind. The average</p>

<p>1,570.7mm. The predominant wind direction over the whole year is north wind, and in summer south wind. The average wind velocity is 3.5 m/s.</p>	<p>the county is north wind, and the major wind direction in summer is southerly wind. The annual average wind velocity is 3.5m/s.</p>		<p>annual average precipitation is 1,731.1mm. The predominant wind direction over the year is northwest wind. In Zhongyuan Village, there are mainly southwest winds in August. The wind velocity does not vary a lot in the four seasons, and the annual average wind velocity is about 1.8m/s.</p>		<p>wind velocity is about 1.6 m/s.</p>
---	--	--	--	--	--

**4, Hydrology**

Duchang	Poyang	Yugan	Fengxin	Jing'an	Jishui	Shangli
<p>Duchang County has abundant water resources, with 39 river ports of different scales, the total length of which is 359.6 kilometers. The rivers enter Poyang Lake along the direction of mountains. Zoujiaju Lake Basin (from Lotus Hill to Outlet Sluice of Zoujiaju Lake) is about 6.5 kilometers long, and its water-collecting area about 7.92 square kilometers. It can be divided into three</p>	<p>Pearl Lake Basin belongs to Raohe River Basin. It is a relatively large lake reservoir in Poyang County. It was previously a big branch of lake in the east of Poyang Lake, and has been transformed into a lake reservoir under artificial control from a natural lake branch. The water area of</p>	<p>Yugan locates in Xinjiang River Basin. Huhui River is a tributary of Xinjiang River and is in the northeast of Yugan County. In 1950, the closure of the east branch of Xinjiang River made Huhui River have the capacity of flood storage and drainage. It is from Jingtuo Zhoujia in the south to Shikou Town in the north, and finally enters Poyang Lake. It is</p>	<p>The major river in Fengxin County is South Liao River, a tributary of Xiuhe River. Located in the southwest of the county, Huangsha Port is a tributary of South Liao River, and originates from Hualin Mountain. It flows from the west to the northeast. It is 36.5 kilometers long. The general width of the riverbed is 20 meters</p>	<p>Jing'an County is located in the North Liao River Basin of Xiuhe River System. It has two main streams from the south and the north. The south tributary is the main river of North Liao River, flowing from the water source to the east Jing'an</p>	<p>Jishui County has many rivers with rich water power. The total water area over the whole county is 141.7 square kilometers, among which the area of rivers is 74.4 square kilometers. It has great potential of water conservancy. Besides the 53.754 billion cubic meters</p>	<p>There are two main rivers in Shangli County, namely, Pingshui River and Lishui River. The part of Pingshui River in Shangli County is 27.2 kilometers long. And the part of Lishui River in Shangli County is 42 kilometers long. There have been two middle-sized</p>

<p>parts according to the current situations. The region above the west side of the Avenue of Lotus Hill is the upper reach of nearly 3.5 kilometers. The region from the west side of the Avenue of Lotus Hill to the crossing of Wanli Avenue and Chengxi Avenue is the middle reach of about 1.5 kilometers. The region from the crossing of Wanli Avenue and Chengxi Avenue to Outlet Sluice of Zoujiaju Lake is the lower reach of about 1.5 kilometers.</p>	<p>Pearl Lake is about 61.7 square kilometers. Its average depth is 5.72 meters and the maximum depth is 7.1 meters. Its water storage is 462 million cubic meters.</p>	<p>about 54 kilometers long, and 90 meters to 120 meters wide. Its area is 168 square kilometers. It is not open to navigation. Pipa Lake is located in the center of Yugan County. Previously, it was a branch of Xinjiang River. It was named Yue Stream or Yue Water as it was in Ganyue. During the Zhiyuan Period of Yuan Dynasty, in order to prevent the floods, people dredged another river to Xijin. Thereafter it began to form a lake. It was named Shi Lake as it was close to cities and towns. Later, it was named Pipa Lake as it looks like a Chinese lute. After development of many years, currently, Pipa Lake has turned into the central lake of Yugan County and it is also the only lake in the county.</p>	<p>and the maximum width is 60 meters. The controlled catchment of Huangsha Port is 135 square kilometers, and the average slope of river way is 3.5‰. Located in the southwest of the county, Zhongbao Port is a tributary of South Liao River. It originates from Dahuo Ling, Red Bank. The main channel is 14 kilometers long. Its controlled catchment is 41.6 square kilometers. The average slope of the river channel is 7.5‰. The construction of the irrigation ditch of South Liao River was started in the 1950s. The main channel meanders from the south of the county, passing through Fengxin County from the west to the east. The designed discharge is 11m<sup>3</sup>/s. The slope of the channel is 1/2000. The part of the main canal in the county is 7 kilometers long. It has systems of irrigation and drainage, having no great influence on the</p>	<p>County. The distance it flows is about 1,000 meters. It converges into North Liao River in Maobu Village, Renshou Town and then flows into Anyi County. The river in the county is 130 kilometers long.</p>	<p>of transiting water capacity, there is also surface water of 2.256 billion cubic meters.</p>	<p>reservoirs, 48 small reservoirs in the county by 2006.其中 And among these reservoirs, there are 10 small reservoirs of the first type and 38 of the second type. There are also more than 7,000 hilly ponds.</p>
---	---	---	--	--	---	--

			urban flood control.			
--	--	--	----------------------	--	--	--

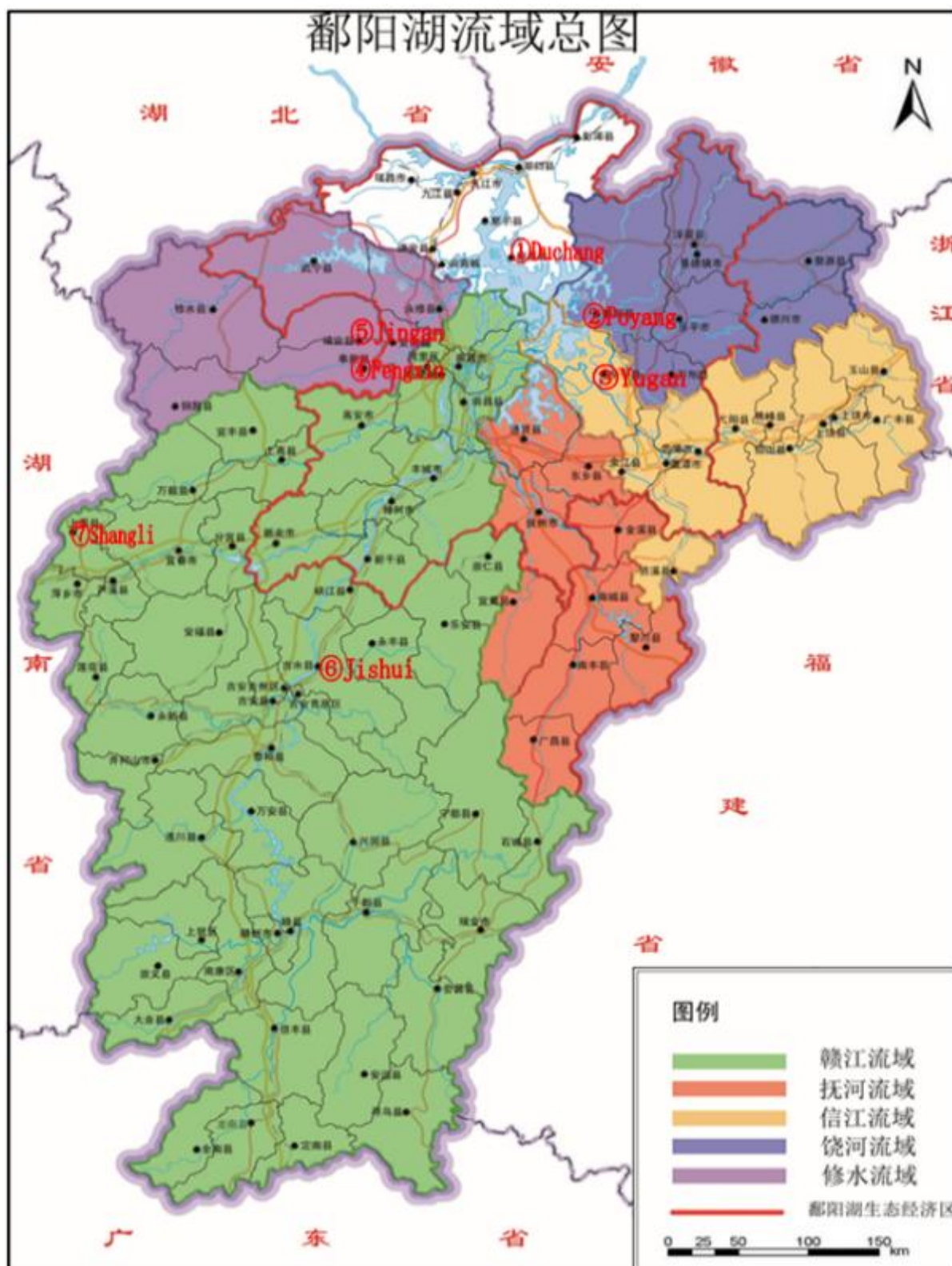


Figure 3-1 The Poyang Lake basin

## 3.2 Social environment

### 3.2.1 Poyang Lake Basin

#### 1. Administrative Division

Covering an area of 166,900 square kilometers, Jiangxi Province administers 11 cities with districts and 100 counties (cities, districts). Nanchang is the capital of Jiangxi Province.

#### 2. Population

According to Jiangxi's Bulletin about the Main Data of 1% of National Population in 2015 issued by Jiangxi Statistical Bureau's Statistics Department of Population and Employment, by November 1st, 2015, there have been 45.6172 million inhabitants in the 11 cities with districts throughout the province. Compared with the results of the sixth nationwide census in 2010, there have increased 1.0494 million people in the five years. The rate of population increase is 2.35% and average annual rate of population increase is 0.47%. Among the permanent residents of the whole province, 23.5476 million live in cities and town, accounting for 51.62%. Residents in rural areas account for 48.38%.

The statistical results of Jiangxi's population from 2011 to 2015 are shown in the following figure. The number of permanent residents at the end of each year increases year by year. Compared with the population in 2011, the rate of population increase declines greatly in 2012. During 2012 to 2015, the rate of population increase rises slightly.

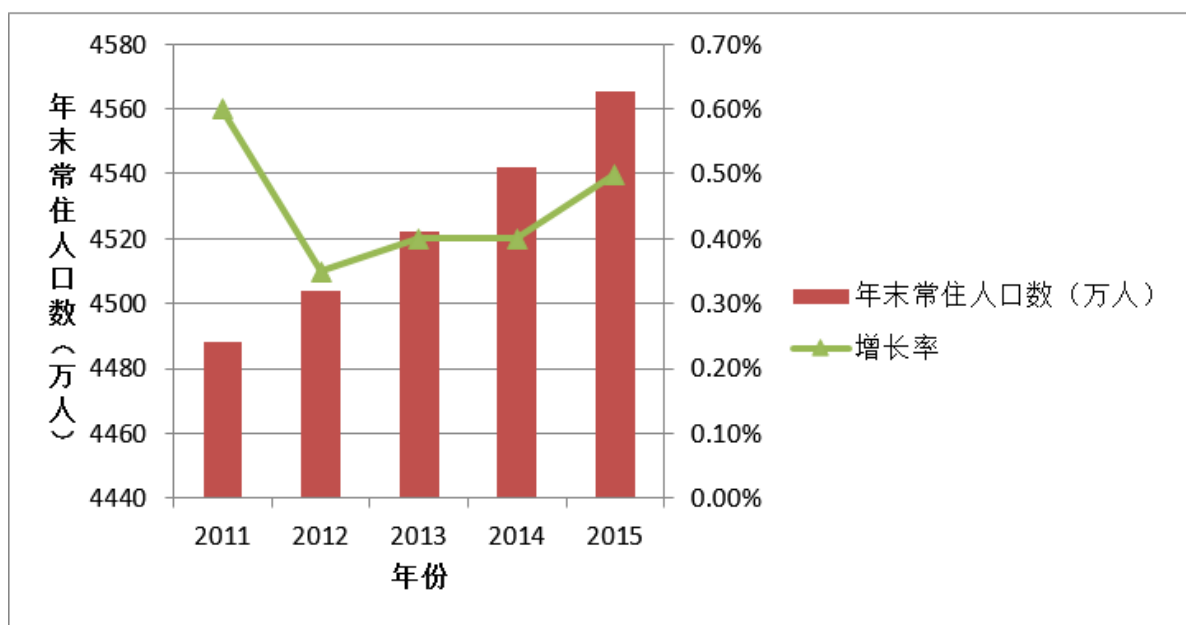


Figure 3-2 Population and Rate of Population Increase in Jiangxi Province from 2011 to 2015

#### 3. Economy

In 2014, the GDP of Jiangxi Province is 1.54146 trillion yuan, with a growth rate of

9.7%. The value added of primary industry is 168.37 billion yuan, with a growth rate of 4.7%. The value added of secondary industry is 824.70 billion yuan, with a growth rate of 10.9%. The value added of tertiary industry is 578.30 billion yuan, with a growth rate of 9.1%. The three times industrial structure has been adjusted from 11.0:53.5:35.5 of the past year to 10.7:52.5:36.8.

According to Jiangxi’s Statistical Bulletin about the National Economic and Social Development in 2015 issued by Jiangxi Statistical Bureau’s integrated statistics department of national economy in 2015, Jiangxi Province has reached a regional GDP of 1.67238 trillion yuan. Compared with the regional GDP of the previous year, it has increased by 9.1%. The general financial revenue reaches 302.15 billion yuan. Compared with the general financial revenue of the previous year, it has increased by 12.7%. The per capita disposable income reaches 18,437 yuan, with a growth rate of 10.2% in the comparison with that of the previous year.

It can be seen from Figure 3-3 that from 2011 to 2014, the regional GDP of Jiangxi Province increases steadily year by year, with the growth rate declining meanwhile. According to Table 3.2-1, from 2011 to 2015, GDP per capita in Jiangxi Province increases year by year, with the growth rate decreasing meanwhile.

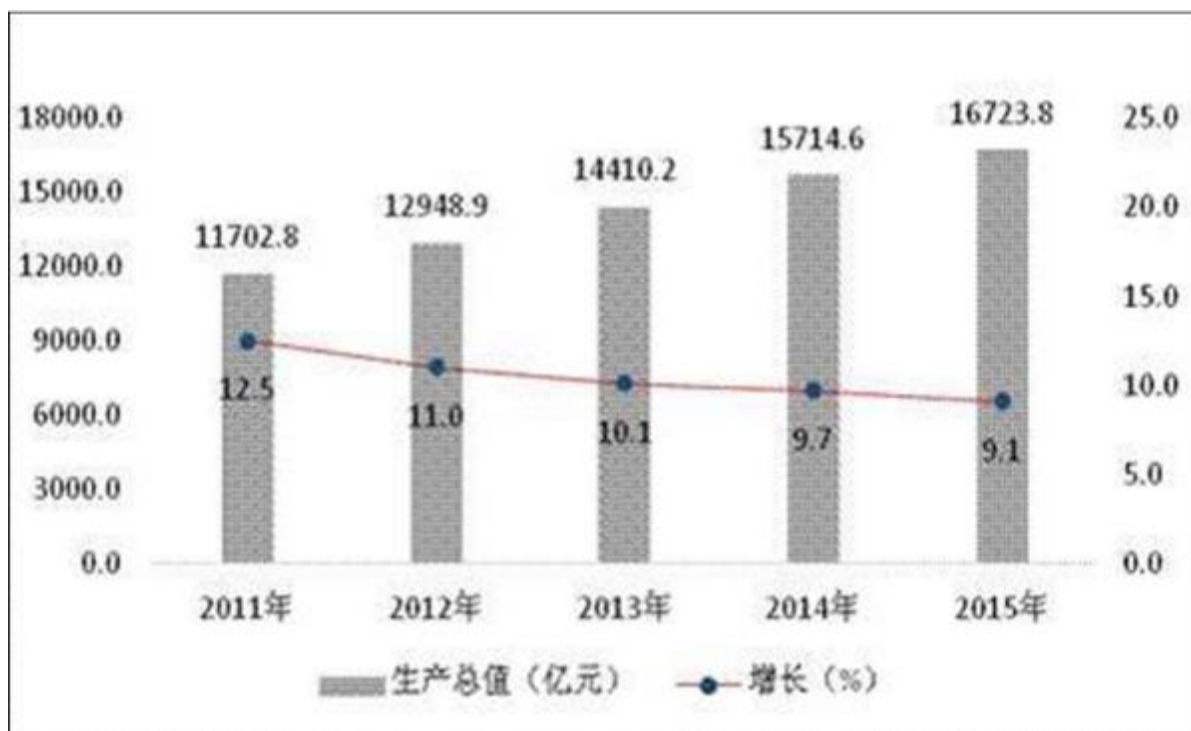


Figure 3-3 Regional GDP and Growth Rate of Jiangxi Province from 2011 to 2015

Table 3-2 Statistical Table of GDP per capita in Jiangxi Province from 2011 to 2015

Year	2011	2012	2013	2014	2015
------	------	------	------	------	------



GDP per capita (Yuan)	25884	28799	31771	34661	36724
Growth Rate	11.80%	10.50%	9.70%	9.20%	8.50%

#### 4. Poyang Lake Eco-economic Zone

On December 12th, 2009, the State Council officially approved the project of Poyang Lake Eco-economic Zone, which has been the first regional development plan classified as a national strategy in Jiangxi since the establishment of People's Republic of China. It marks that the construction of Poyang Lake Eco-economic Zone has risen to a national strategy, which is also a significant milestone in Jiangxi's development history. Different from administrative regions, Poyang Lake Eco-economic Zone belongs to the scope of economic cooperation. The eco-economic zone takes Poyang Lake as the center, and takes the city circle around Poyang Lake as the support. The fundamental goal of the eco-economic zone is to protect the good environment of Poyang Lake Region. It aims to promote the high unity between ecological and economic civilizations, and realize the overall coordination and sustainable development of economic society through the rapid development of ecological agriculture, new industrialization and urbanization. Poyang Lake Eco-economic Zone includes three cities (i.e., Nanchang, Jindezhen and Yingtan) and some counties (cities, districts) of Jiujiang, Xinyu, Fuzhou, Yichun, Shangrao, Ji'an, totaling 38 counties (cities, districts), with 50% of Jiangxi's total population and 60% of Jiangxi's economic aggregate.

3.2.2 Sub project counties

The general situations of the social environment of the seven counties with subprojects are listed in Table3-2.

**Table 3-3 General Situations of the Counties with Subprojects in 2014**

Project Location	Administrative Division	Area (km <sup>2</sup> )	Population	GDP (hundred million yuan)	Situations of Three Industries	Resident Income and GDP per capita
Duchang	Over the county: 12 designated towns, 12 villages, 259 village committees, 39 neighborhood committees, and 4352 groups of villagers	2,669.5	810,500	85.09	Primary Industry: 1.74 billion yuan Secondary Industry: 4.104 billion yuan Tertiary Industry: 2.665 billion yuan	Per Capita Income of Urban Residents (Disposable Income): 18,974 Yuan Per Capita Income of Rural Residents: 5,461 yuan
	1) Central urban area: includes Duchang Town's neighborhood committees of the East Street, the West Street, West Lake, Xingfu, East Lake, Baiyanglong, Changling, Chengdong, Furong, Xinghuo and Huimin. It also includes Nanshan Village, Xihe Village and Xuzhongshi Village, Xiajiashan Village of Beishan Village, Watang Community of Dashu Village and some villages of Beishan Village and Dashu Village.	14.28	153,000			
	2) Beishan Village: 13 administrative villages, 2 neighborhood committees, 154 natural villages	67.2	Total Households: 7,936 Total Population: 26,000			
	3) Wangdun Village: 23 village committees, 1 neighborhood committee, 286 natural villages	171.9	Total Households: 11,232 Total Population: 48,043			
	4) Dashu Village: 13 administrative	55.1	Total Households:			

Project Location	Administrative Division	Area (km <sup>2</sup> )	Population	GDP (hundred million yuan)	Situations of Three Industries	Resident Income and GDP per capita
	villages, 1 neighborhood committee, 102 natural villages		6,464 Total Population: 29,484			
Poyang	It includes part of the administrative regions of six villages and towns (i.e., Tuanlin, Baishazhou, Forty Miles Street, Pearl Lake, Gaojialing and Shuang Ports).	373.81	94,700	16.61	Primary Industry: 598 million yuan Secondary Industry: 515 million yuan Tertiary Industry: 548 million yuan  The ratio of the three industries: 36:31:33	/
Yugan	Yugan County administrates 5 towns and 11 villages.	2,331	1.0655 million	112.7	Primary industry realizes a value added of 3.44 billion yuan, with a growth rate of 2.6%. Secondary industry realizes a value added of 4.12 billion yuan, with a growth rate of 10.9%. Tertiary industry realizes a value added of 3.71 billion yuan, with a growth rate of 13.7%.	/
Fengxin	10 towns, 3 villages, 3 farms, 1 office, 1 precinct	1,642	334,179	105.6841	Value Added of Primary Industry: 1,617.23 million yuan, with a growth rate of 4.6%. Value Added of Secondary Industry: 5,974.58 million yuan, with a growth rate of 12.6%. The industrial added value is 5,496.54 million yuan, with a growth rate of 12.5%. Value Added of Tertiary Industry:	GDP per capita: 33,286 yuan (calculated according to the permanent population)

Project Location	Administrative Division	Area (km <sup>2</sup> )	Population	GDP (hundred million yuan)	Situations of Three Industries	Resident Income and GDP per capita
					2,976.60 million yuan, with a growth rate of 8.6%. The ratio of the three industries: 15.3:56.5:28.2	
Jing'an	The county administers 5 towns, 6 villages and 75 administrative villages.	1,377	151,500	33.938	Primary Industry:588.34 million yuan Secondary Industry: 1,727.85 million yuan Tertiary Industry: 1,077.61million yuan The ratio of the three industries:17.3:50.9:31.8	GDP per capita reaches 23,093 yuan.
Jishui	Jishui County administers 15 towns, 3 villages, 249 village committees and 28 neighborhood committees.		There are about 20,000 people in the district with project in the south of the county at present, and about 50,000 people in the old town.	123	The ratio of three industries has been adjusted from 23.7:47:29.3 in 2010 tp 11.8:53.9:34.3 in 2014.	Disposable income per capita of urban residents is 22,935 yuan, with a growth rate of 10%. Disposable income per capita of rural residents is 12,760 yuan, with a growth rate of 13%.

Project Location	Administrative Division	Area (km <sup>2</sup> )	Population	GDP (hundred million yuan)	Situations of Three Industries	Resident Income and GDP per capita
Shangli	Shangli County administers 6 town, 4 villages, 154 administrative villages and 9 neighborhood committees.	721.11	The project involves Yangqi Village, Changping Village, Futian Town, Penggao Town, Dongyuan Village, Chishan Town. The registered population of these villages and towns is 241,000 at present.	160.95	Compared with the situation of the previous year: Value Added of Primary Industry: 1.504 billion yuan, with a growth rate of 5.1% Value Added of Secondary Industry: 10.025 billion yuan, with a growth rate of 11.9%. Industrial added value is 9.096 billion yuan, with a growth rate of 12.2% Value Added of Tertiary Industry: 4.566 billion yuan, with a growth rate of 8.1%	Regional GDP per capita: 36,079 yuan

### 3.3 Ecological environment

#### 3.3.1 Poyang Lake basin

##### 1. Ecological Status

The unique hydrological characteristics, large-area lakeshores and grass beaches as well as abundant biological resources of Poyang Lake have made it an important habitat for overwintering migratory birds. Thus, it occupies an outstanding status in biodiversity protection. As an important habitat for overwintering migratory birds around the world, Poyang Lake provides endangered species (e.g., *Grus leucogeranus*, *Ciconia boyciana*, *Grus vipio* and *Anser cygnoides*) with places for overwintering. In 1992, China joined “Convention on Wetlands of International Importance Especially as Waterfowl Habitat”, and listed National Reserve of Poyang Lake into the directory of national important wetlands. This reserve has been designated as a region enjoying conservation priority by international organizations including World Wildlife Fund (WWF) and International Union for Conservation of Nature and Natural Resources (IUCN), attracting high attention internationally. Poyang Lake is also the most important refuge for *Neophocaena phocaenoides asiaeorientalis*, the amount of which accounts for 1/4 to 1/3 of the species’ total amount.

Poyang Lake also plays an important role in protecting migratory fishes and the biodiversity of the Yangtze River Basin. It is also important for stabilizing the normal ecologic flow of the middle and lower reaches of the Yangtze River, reserving floods, preventing saltwater intrusion at the Yangtze Estuary, maintaining the security of ecological environment of the middle and lower reaches of the Yangtze River and supporting the sustainable development of the regional economic society.

##### 2. National Nature Reserve in Poyang Lake

Nanji Wetland National Nature Reserve in Poyang Lake, Jiangxi Province, is located in the south of the main lake region of Poyang Lake. It is the transitional zone of water and land between the estuary of the three tributaries of Ganjiang River and the large water body of Poyang Lake. It is administered by Nanji Village, Xinjian County, Nanchang City and is

about 60 kilometers distant from the urban area of Nanchang. In the nature reserve, there are two islands named Nanshan and Jishan, collectively named Nanjishan. In 1997, the government of Jiangxi Province approved the establishment of “Nanjishan Provincial Nature Reserve in Jiangxi Province”. On January 14th, 2008, the State Council official approved Nanjishan to be a national nature reserve, and thereafter Nanjishan Nature Reserve was renamed “Nanji Wetland National Nature Reserve in Poyang Lake”. The major protection object of the nature reserve is the typical wetland ecosystems in the water-land transiting zone between the estuary of Ganjiang River and the open water of Poyang Lake, the rare waterfowls including *Grus leucogeranus* and *Ciconia boyciana* and their habitat.

The total area of the nature reserve reaches 33,000 hectares. The animal and plant resources in the reserve are quite abundant. As for plant resources, there are 115 families, 304 genera and 443 species. As for animal resources, there are zooplankters belonging to 62 genera and 111 species, benthonic animals belonging to 8 families and 62 species, aquatic insects belonging to 11 orders, 40 families and 168 species, fishes belonging to 6 orders, 14 families, 43 genera and 58 species (among which migratory fishes in rivers and lakes account for 40%), amphibians belonging to 1 order, 5 families and 11 species, reptiles belonging to 3 orders, 10 families and 23 species, as well as mammals belonging to 7 orders, 12 families and 22 species.

Located in the migratory route of waterfowls of East Asia and Australia, the reserve is an important overwintering place and relay station for waterfowls, having international significance in the protection of migratory birds. From 2003 to 2004, according to statistics, there are 205 bird species in the reserve, among which there are 4 species enjoying first-grade state protection including *Grus leucogeranus* and *Grus monacha*, 24 species enjoying second-grade state protection and 15 raptorial birds. There are 89 species of waterfowls. During the peak season of inhabitation, the amount of waterfowls is about 200,000. The amounts of 16 waterfowl species there are above the standards for international important wetlands.

As an important wetland reserve in Poyang Lake, Nanjishan Wetland has been

designated as an object enjoying conservation priority by “Asia-Pacific Protection Strategy for Migratory Waterfowls”, “China-Japan Protection Agreement for Migratory Birds”, “China-Australia Protection Agreement for Migratory Birds”, “China’s Action Plan for Protection of Biodiversity”, “China's Agenda 21” and “China’s Action Plan for Protection of Wetlands”.

### 3. Plant Resources

#### (1) Floras

Poyang Lake Basin enjoys abundant plant resource of complicated floras and various types, which present an obvious transitional quality of the convergence of the plants in the south and in the north. Although wetland plants feature regional brands, they also present obvious intrazonal qualities. According to statistics, in the reserve, there are vascular plants belonging to 115 families, 304 genera and 443 species, among which are ferns belonging to 11 families, 11 genera and 12 species, gymnosperms belonging to 5 families, 10 genera and 11 species as well as angiosperms belonging to 99 families, 283 genera and 420 species. Six families of plants (i.e., Polygonaceae belonging to 16 species, Rosaceae belonging to 17 species, Leghminosae belonging to 23 species, Compositae belonging to 31 species, Graminae belonging to 24 species and Cyperaceae belonging to 22 species) occupy predominant position in the reserve with obvious advantages, and play important roles in the constitution and dynamic conditions of vegetation as well as the composition of floras in the reserve. The worldly widespread species including *Cares* species community, *Phragmites australis* Comm., *Potamogeton* species community, *Polygonum* species community and *Eleocharis* species community are the main constructive species in the research area. There are only 3 cultivated plants of Chinese endemic genera in the reserve, namely, *Metasequoia*, *Poncirus* and *Nandina*. There are no Chinese endemic genera among the naturally distributed plants, which is due to the typical intrazonal quality of the wetland vegetation.

#### (2) Vegetation Forms

According to the ecological environment and characteristics of plant communities, the vegetation in Poyang Lake Basin is divided into six major vegetation forms and 52



ecological associations, and therein aquatic vegetation can be divided into submerged plant community, floating plant community and emergent aquatic plant community, with 22 ecological associations. Hygrophilous vegetation includes 18 associations such as *Carex cinerascens* association and *Phalaris arundinacea* association. Meadow vegetation in the lakeside higher beaches includes 7 associations, among which *Arundinella hirta* association covers the relatively large area. The vegetation in the hills and hillocks includes 4 associations such as *Phyllostachys nidularia* association and *Salix matsudana* association. The vegetation on the shoal has only *Cynanchum glaucescens* associations. There is a kind of artificial vegetation including commercial forest, economic forest and cropland vegetation.

#### 4. Waterfowls and Migratory Birds

Poyang Lake Wetland has recorded birds belonging to 17 orders, 55 families and 310 species, among which there are 108 species of migratory birds, and 125 species of waterfowls, belonging to 6 orders, 19 families and 60 genera. Poyang Lake is an overwintering place and relay station for winter birds.

It involves 10 bird species enjoying the first-grade state protection, including *Ciconia boyciana*, *Ciconia nigra*, *Grus monacha* and *Grus leucogeranus*. In the reserve, there are 44 bird species enjoying the second-grade state protection, including *Platalea leucorodia*, *Platalea minor*, *Anser albifrons*, *Cygnus columbianus*, *Elanus caeruleus*, *Accipiter gentilis*, *Buteo buteo*, *Circus cyaneus*, *Circus aeruginosus*, *Circus spilonotus*, *Circus melanoleucos*, *Falco peregrinus*, *Falco vespertinus*, *Falco tinnunculus*, *Grus grus*, *Grus vipio*, *Coturnicops noveboracensis*, *Centropus toulou*, *Centropus sinensis*, *Asio otus*, *Asio flammeus*, *Otus bakkamoena*, *Glaucidium cuculoides* and *Tyto capensis*.

In different wintering periods, the maximum amounts of overwintering waterfowls in the Poyang Lake Reserve differ greatly. The amounts of birds reached highest during the overwintering periods in the years from 1999 to 2000 and from 2005 to 2006, up to 316,200. Secondly is the overwintering period in the years from 2009 to 2010, reaching 306,200. And the overwintering period with minimum amount of birds is in the years from 2007 to 2008, only 178,600. The gap between the maximum amount and the minimum is 137,600.

## 5. Fish Resources

Poyang Lake enjoys abundant fish and aquatic animal resources. It has recorded 132 fish species, belonging to 25 families and 78 genera, among which there are resident lake-type fishes as well as migratory and semi-migratory fishes. The major commercial fishes include carp, crucian carp, grass carp, chub and bighead carp.

There are also precious fishes such as sturgeon (*Acipenser sinensis* and *Psephurus gladius* enjoying the first-grade state protection), *Tenuulosa reevesii* which has been listed into fishes in need of protection in China's Redbook of Endangered Animals, and *Neophocaena asiaeorientalis asiaeorientalis* enjoying the second-grade state protection.

## 6. Plankton

### (1) Phytoplankton

There are 1,554 species of phytoplankton in Poyang Lake, belonging to 8 phyla and 54 families. Therein chlorophyta takes up 78 species, accounting for 51% and ranking first; bacillariophyta 31 species, 20%, second and cyanophyta 25 species, 16%, third. The other phytoplankton account for only 13%. Diatoms, Cyanobacteria and green alga are dominant species in Poyang Lake.

### (2) Zooplankton

There are 46 species of zooplankton in Poyang Lake, which can be classified into four major categories, namely, protist, rotifer, cladoceran and copepod. Therein protists have 14 species, belonging to 9 families and 10 genera; rotifers 18 species, to 10 families and 14 genera; cladocerans 8 species, to 6 families and 7 genera; and copepods 5 species, to 4 families and 5 genera.

## 7. Benthos

In Poyang Lake, there are abundant benthos, which belongs to 8 phyla and 13 categories. There are 87 species of mollusks; 5 orders, 8 families and 17 species of aquatic insects; 12 species of oligochaeta. Mollusks there occupies a position of absolute predominance, with the density and biomass accounting for more than 80%. Dominant species mainly include *Limnoperna lacustris*, *Hyriopsis cumingii*, *Unio douglasiae*,

*Lanceolaria gladiola* and *Corbicula fluminea*.

#### 8. Other Animals

In addition to the important biological groups above, Poyang Lake Wetland also enjoys relatively abundant resources of shrimps and crabs. In the lakeside area of Poyang Lake, *Eriocheir sinensis* and freshwater shrimps are two kinds of special aquatic products. In Poyang Lake, there are 8 species of shrimps, accounting for 10% of the 10 shrimp species known in Jiangxi Province; 4 species of crabs, 28.57% of the 14 crab species known in Jiangxi Province. Additionally, Poyang Lake are also abundant in other groups of invertebrates, including *Spongilla* of Porifera, and hydra of Coelenterate.

There also exist mammals, amphibians and reptiles in Poyang Lake. There are 52 species of mammals, belonging to 8 orders and 19 families; 48 species of reptiles, to 3 orders and 11 families; and nearly 19 species of amphibians. *Lepus sinensis*, *apodemus draco*, *rattus norvegicus*, etc. are the species having relatively large quantities there.

3.3.2 Project county

General situations of the ecological environment of each county with subprojects are listed in the following table.

**Table 3-4 Basic ecological environment conditions of each county**

<b>1. Terrestrial Ecological Environment</b>						
Duchang	Poyang	Yugan	Fengxin	Jing'an	Jishui	Shangli
<p>(1) Terrestrial Plants: Currently, native plants in the project area have almost disappeared. There are mainly secondary plants and vegetation at present, such as grass bush, cedars, pines, bamboos, elms and camphor trees, as well as artificially cultivated economic forest including tea trees and citrus. In winter and spring, the crops there mainly include oilseed rapeseeds, and on dry lands, there are mainly peanuts, soybeans, sweet potatoes and vegetables.</p> <p>(2) Terrestrial Animals: ①Beasts: mainly include rhizomys sinensis, rattus norvegicus, rattus flavipectus, Chinese white-bellied rat and lepus sinensis. ②Birds: Resident birds include Passer montanus, Turdus merula and</p>	<p>(1) Terrestrial Plants: mainly include masson pines, pines in artificial wetlands and bushes. Arbor species include masson pines, camphor trees, Schima superbas and Castanopsis sclerophylla. Shrub-grasses under canopy mainly include Loropetalum chinense, Gardenia jasminoides Ellis, and gurgeon stopper. Herbages include dicranopteris pedata and Miscanthus floridulus. Artificial forests mainly include spruce forest and slash pine plantation. Agricultural vegetation mainly include paddy.</p> <p>(2) Terrestrial Animals: ①Beasts: mainly include rhizomys sinensis, rattus norvegicus, rattus flavipectus, Chinese white-bellied rat and lepus sinensis.</p>	<p>(1) Terrestrial Plants: Currently, native plants in the project area have almost disappeared. There are mainly secondary plants and vegetation at present, such as grass bush, cedars, pines, bamboos, elms and camphor trees, as well as artificially cultivated economic forest including tea trees and citrus. In winter and spring, the crops there mainly include oilseed rapeseeds, and on dry lands, there are mainly peanuts, soybeans, sweet potatoes and vegetables.</p> <p>(2) Terrestrial Animals: ①Beasts: mainly include rhizomys sinensis, rattus norvegicus, rattus flavipectus, Chinese white-bellied rat and lepus sinensis. ②Birds: Resident birds include Passer montanus, Turdus merula and Lonchura striata; summer birds include</p>	<p>The plants in Fengxi County mainly include phyllostachys pubescens, Chinese gooseberries, buxus sinica, camphor trees and cypress. In addition to the common species such as sparrows, mice, rabbits and snakes, there haven't been any animal groups enjoying state protection so far.</p>	<p>Currently, native plants in the project area have almost disappeared. There are mainly secondary plants and vegetation at present, such as grass bush, cedars, pines, bamboos, elms and camphor trees, as well as artificially cultivated economic forest including tea trees and citrus. In winter and spring, the crops there mainly include oilseed rapeseeds, and on dry lands, there are mainly peanuts, soybeans, sweet potatoes and vegetables. In</p>	<p>The plants in Jishui County mainly include rosins, little mangosteen. Lonicera japonica, azalea, camellia japonica, nanmu, podocarpus macrophyllus, chamaecyparis pisifera, cedar, buxus sinica, camphor tree, cypress, sassafras, maples and lotus. In addition to the common species such as sparrows, mice, rabbits and snakes, there haven't been any animal groups enjoying state protection so far.</p>	<p>Currently, native plants in the project area have almost disappeared. There are mainly secondary plants and vegetation at present, such as grass bush, cedars, masson pines, bamboos, camphor trees, ligustrum lucidum aits, water plant, willows, pterocarya stenoptera and Fraxinus chinensis Roxb. The farmland nearby mainly grows oilseed rapeseeds, garden plants and a few vegetables. In addition to the common species such as sparrows, mice, rabbits and</p>

<p>Lonchura striata; summer birds include Hirundo rustica and Nycticorax nycticorax; winter birds include Turdus naumanni, brambling and Emberiza spodocephala.</p> <p>③Amphibians: Frequent species include Bufo gargarizans, Rana limnocharis and Hylarana guentheri, inhabiting in waterside or wet bushes, river valleys and cottages.</p> <p>④Reptiles: mainly include Takydromus septentrionalis, Ptyas korros, Elaphe carinata and Enhydris chinensis.</p>	<p>②Birds: The project is close to Poyang Lake National Wetland Park. As a habitat for a great many migratory birds, an important station and wintering area for Northeast Asian migratory birds to migrate, rest and having food, it enjoys abundant bird resources, including various species of precious wintering migratory birds. These birds mainly inhabit in Hanchi Lake of the wetland park. There are no fixed bird habitat or birds-intensive districts in the area around Pearl Lake. Among the common birds in the evaluated area, resident birds include Passer montanus, Turdus merula and Lonchura striata; summer birds Hirundo rustica, Egretta garzetta, Ardeola bacchus and Nycticorax nycticorax; winter birds Phoenicurus auroreus, Turdus naumanni, Emberiza spodocephala. Among these birds, Egretta garzetta and Ardeola bacchus are two species of wild animals enjoying</p>	<p>Hirundo rustica and Nycticorax nycticorax; winter birds include Turdus naumanni, brambling and Emberiza spodocephala.</p> <p>③Amphibians: Frequent species include Bufo gargarizans, Rana limnocharis and Hylarana guentheri, inhabiting in waterside or wet bushes, river valleys and cottages.</p> <p>④Reptiles: mainly include Takydromus septentrionalis, Ptyas korros, Elaphe carinata and Enhydris chinensis.</p>		<p>addition to the common species such as sparrows, mice, rabbits and snakes, there haven't been any animal groups enjoying state protection so far.</p>		<p>snakes, there haven't been any animal groups enjoying state protection so far.</p>
---	--	--	--	--	--	---

	<p>provincial key protection in Jiangxi Province.</p> <p>③Amphibians: Frequent species include Bufo gargarizans, Rana limnocharis and Hylarana guentheri.</p> <p>④Reptiles: mainly include Takydromus septentrionalis, Ptyas korros, Elaphe carinata and Enhydris chinensis.</p>					
--	--	--	--	--	--	--

**2. Aquatic Ecological Environment**

Duchang	Poyang	Yugan	Fengxin	Jing'an	Jishui	Shangli
<p>The project involves Zoujiaju Lake dredging. Water in Zoujiazui Lake currently has been assessed as inferior class V. Its aquatic plants are mainly green alga and fish features the common categories, such as grass carps and carassius auratus pengzesis. The benthic animals in the lake are general species, like Cipangopaludina cahayensis and Hyriopsis cumingii. As Zoujiaju Lake does not have rare aquatic species, it shall not be regarded as an important natural habitat.</p>	<p>The project involves Pearl Lake. (1) Aquatic Plants: There are 6 species of Phytoplankton, respectively belonging to 4 phyla. The green alga occupies predominant status, and next is blue-green algae. The dominant species are Chlorogonium and Scenedesmus of Chlorophyta. In the second place are Microcystis, Merismopedia glauca and Oscillatoria of Cyanophyta. (2) Aquatic Animals: ①Zooplankton: Common protozoa include Tintinnid, Arcella vulgaris and Tintinnidium. Common rotifers include Asplanchna</p>	<p>The project involves Pipa Lake and Huhui River. (1) Pipa Lake locates at the center area of Yugan County, and is surrounded by wasteland, crop lands and residential quarter. As the lake is impacted by the direct discharge of rural domestic sewage, garbage pollution, agricultural irrigation and aquaculture industry, its water quality currently is assessed as the inferior class V. Aquatic plants of Pipa Lake are mainly green alga and blue-green alga; fish in it are common categories like grass carps and crucian carps, etc.; the benthic animals are general species. Areas around Pipa Lake have</p>	<p>The project involves Beizhizhen Canal, South Canal and Dazhai Canal, all located in the urban areas and featuring frequent human activities. Their main problems are serious domestic sewage pollution, which has impacted their discharge and irrigation water consumption functions. The water quality is bad. The pipe network of those</p>	<p>The creatures in North Liao River are not special. The species in the river are all common. As for fishes, there are mainly common species including carps, crucian carps, grass carps, opsariichthys bidens, abbotina rivularis, Rhodeus sinensis, ricefield eels, loaches, yellow catfish and four major Chinese carps.</p>	<p>The water bodies of the part of GanjiangRiver in Jishui County and of Jishui River are not special. The species in the rivers are all quite common. As for fishes, there are mainly common species including carps, crucian carps, grass carps, ricefield eels, loaches, yellow catfish and four major Chinese carps.</p>	<p>The water body of Lishui River is not special. The species in the river are all quite common. As for fishes, there are mainly common species including carps, crucian carps, grass carps, snakeheads, siniperca chuatsi, yellow catfish and four major Chinese carps.</p>

<p>priononala and Polyarthra sp. Common cladocerans include Chydorus and Bosmina. Copepods mainly include Calanoid.</p> <p>②Benthic Invertebrates: Escargots, Limnoperna lacustris, Hyriopsis cumingii, Unio douglasiae, Lanceolaria gladiola and Corbicula fluminea.</p> <p>③Fishes: In the wetland ecological environment of evaluated area, there are no special fishes. There are common cultivated fishes, including grass carps, black carps, silver carps, bighead carps, megalobrama amblycephala, carps and whitebaits.</p>	<p>no fish spawning ground, feeding ground or wintering ground. As Pipa Lake does not have rare aquatic species, it shall not be regarded as an important natural habitat.</p> <p>(2) Aquatic species in the urban section of Huhui River feature common ones: its fish are mainly herrings, silver carps and bigheads; the benthic animals are common categories like clams, mussels and crabs. There are no fish spawning ground, feeding ground or wintering ground around. Huhui River has no rare aquatic species, therefore it cannot be regarded as an important natural habitat.</p>	<p>canals have serious silting-up problems. Most of the aquatic plants are green alga. Fish are common categories and benthic animals are general ones. The related canal sections involved in this project have no fish spawning ground, feeding ground or wintering ground around. What's more, as the canal sections have no rare aquatic animals, they are not important natural habitats.</p>			
--	--	--	--	--	--

**3. Survey Conclusions of the Ecological Status**

Duchang	Poyang	Yugan	Fengxin	Jing'an	Jishui	Shangli
<p>The project mainly locates in the urban area of Duchang County and the area with frequent human activities. The water quality is now inferior Class V due to the industrial wastewater. After consultation with the forestry department and spot survey, in the project</p>	<p>The project mainly locates in the area of Pearl River Basin. After consultation with the forestry department and spot survey, in the project area, precious wildlife as well as famous and ancient trees have not been found yet. The project does not</p>	<p>The project locates in the urban area of Yugan County. After consultation with the forestry department and spot survey, in the project area, precious wildlife as well as famous and ancient trees have not been found yet. Animals enjoying state or local protection are not</p>	<p>The project locates in the urban area of Fengxin County. After consultation with the forestry department and spot survey, in the project area, precious wildlife as well as famous and</p>	<p>The project locates in the urban area of Jing'an County. After consultation with the forestry department and spot survey, in the project area, precious wildlife as well as famous and</p>	<p>The project locates in the urban area of Jishui County. After consultation with the forestry department and spot survey, in the project area,</p>	<p>The project locates in six villages and towns in Shangli County. After consultation with the forestry department and spot survey, in the project area, precious wildlife</p>

<p>area, precious wildlife as well as famous and ancient trees have not been found yet. Animals enjoying state or local protection are not found, either. The project does not involve bird. habitat or bird-intensive areas. It does not involve the three sites of fishes (i.e., spawning site, feeding site and overwintering site), either. Zou Jia Ju lake is not an important natural habitat</p>	<p>involve bird habitat or bird-intensive areas. The birds in need of protection are mainly Egretta garzetta and Ardeola bacchus, two species of wild animals enjoying provincial key protection in Jiangxi. It does not involve the three sites of fishes (i.e., spawning site, feeding site and overwintering site), either. Pipa Lake and Huhui River are not important natural habitats.</p>	<p>found, either. The project does not involve bird habitat or bird-intensive areas. It does not involve the three sites of fishes (i.e., spawning site, feeding site and overwintering site), either.</p>	<p>ancient trees have not been found yet. Animals enjoying state or local protection are not found, either. The project does not involve bird habitat or bird-intensive areas. It does not involve the three sites of fishes (i.e., spawning site, feeding site and overwintering site), either.</p> <p>There are no rare aquatic organisms in Beizhizhen cannal , South cannal and Dazhai Canal, they are not important natural habitats.</p>	<p>ancient trees have not been found yet. Animals enjoying state or local protection are not found, either. The project does not involve bird habitat or bird-intensive areas. It does not involve the three sites of fishes (i.e., spawning site, feeding site and overwintering site), either.</p>	<p>precious wildlife as well as famous and ancient trees have not been found yet. Animals enjoying state or local protection are not found, either. The project does not involve bird habitat or bird-intensive areas. It does not involve the three sites of fishes (i.e., spawning site, feeding site and overwintering site), either.</p>	<p>as well as famous and ancient trees have not been found yet. Animals enjoying state or local protection are not found, either. The project does not involve bird habitat or bird-intensive areas. It does not involve the three sites of fishes (i.e., spawning site, feeding site and overwintering site), either.</p>
---	--	--	--	--	--	--



### 3.4 Environment Settings

#### 3.4.1 Surface water environment settings

##### 3.4.1.1 The Water Environment Status Quo of Poyang Lake Basin

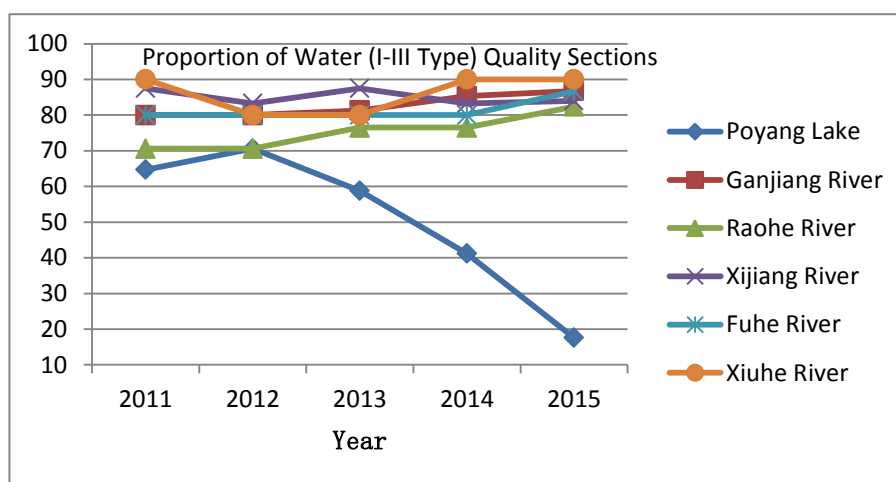
As introduced above, Poyang Lake Basin manifests a highly overlapping and consistent feature with the administrative division scope of Jiangxi Province. This assessment report takes the data of Jiangxi Province as that of Poyang Lake Basin.

#### 1、The Water Quality of Poyang Lake Basin

According to the data from “2011 to 2015 Report on Jiangxi Province Environmental Situation” released by the provincial Environmental Protection Agency, the cross-section monitoring ratio of Poyang Lake and its five main branches -- Ganjiang River, Raohe River, Xinjiang River, Xiuhe River and Fuhe River (Their water qualities are within the range from class I to class III.) is listed below.

**Table 3-5** Proportion of Water (I-III Types) Quality Monitoring Sections of Poyang Lake and Its Five Major Tributaries (%)

Year Lake Name	2011	2012	2013	2014	2015
Lake Region of Poyang Lake	64.7	70.6	58.8	41.2	17.6
Ganjiang River	80	80	81.3	85.3	86.8
Raohe River	70.6	70.6	76.5	76.5	82.4
Xinjiang River	87.5	83.3	87.5	83.3	84
Xiuhe River	90	80	80	90	90
Fuhe River	80	80	80	80	86.7



**Figure 3-4 Changes of Cross-section Monitoring Ratios of Poyang Lake and its Five Main Branches with Class I to III Water Qualities from 2011~2015**

From the figure above, from 2011 to 2015 cross-section monitoring ratios of the five main branches of Poyang L

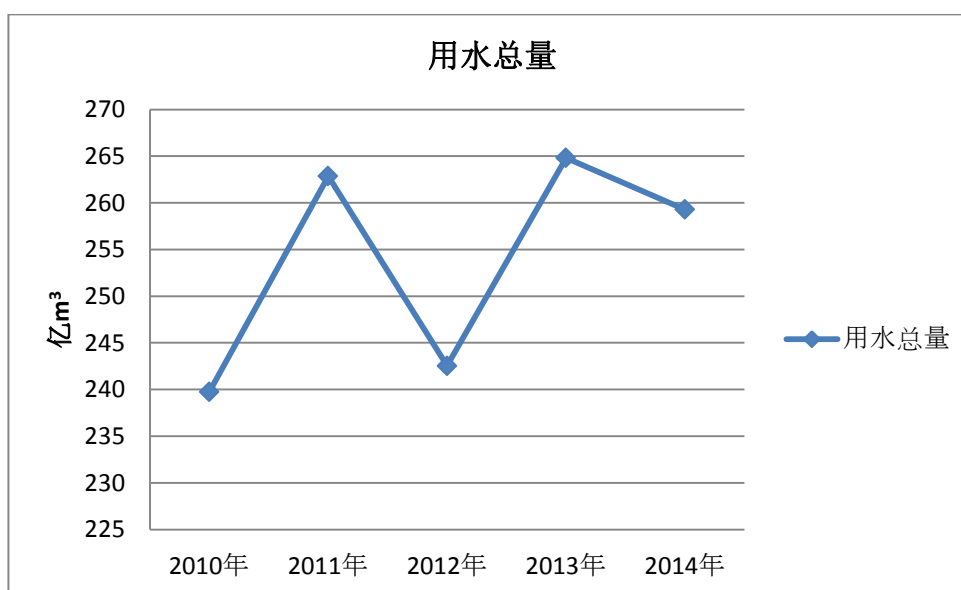
ake (all their water qualities are within the range from class I to class III.) slightly increase or basically stay at the same level. However, the ratio of Poyang Lake shows a reducing tendency, which means the water quality of Poyang Lake goes down year by year. In 2015, Poyang Lake was slightly polluted, with a middle degree of water eutrophication. Currently TP has become its major pollutant.

## 2、 The Water Consumption in Poyang Lake Basin

According to the “2010-2014 Report on Water Resources of Jiangxi Province” released by the Water Resources Department in Jiangxi Province, the provincial water consumption is listed below.

**Table 3-6 Water Consumption in Jiangxi Province (hundred million m<sup>3</sup>)**

Category Year	Farm Irrigation	Forestry, Herding, Fishery and Husbandry	Industry	Public Work	Resident Life	Ecological Environment	Total
2010	147.00	7.51	57.35	4.07	19.93	3.89	239.75
2011	166.73	8.59	60.64	4.58	20.26	2.06	262.86
2012	146.06	9.6	58.72	5.2	20.91	2.05	242.54
2013	165.7	9.98	60.13	5.63	21.25	2.12	264.81
2014	159.01	9.6	61.25	5.86	21.5	2.08	259.30

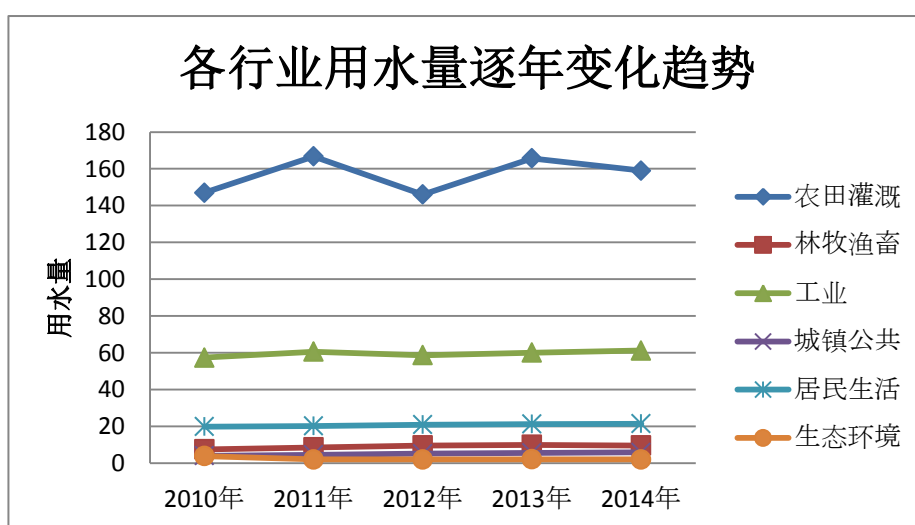


**Figure 3-5** Water Consumption of Jiangxi Province from 2010-2014

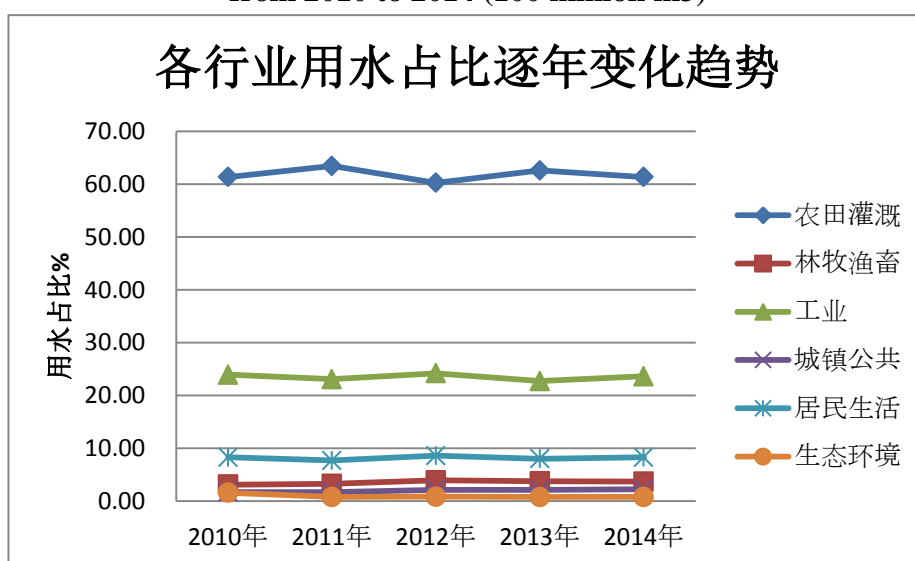
Statistics about water consumption volume take those six main categories of users into consideration: agricultural irrigation, forestry, animal husbandry, fishery and livestock breeding, industry, urban public life, domestic life and ecological environment. The water consumption of domestic life includes that of urban domestic and rural domestic life. Urban public water consumption includes water consumed in the tertiary industry and construction industry. Industrial water consumption means the water used in the manufacturing, processing, conditioning, purification and washing of industrial and mining enterprises, and is measured by the volume of fresh water consumption. The repeatedly used water consumption within enterprises is not counted. Agricultural irrigation includes water consumed in paddy fields, irrigable fields and vegetable fields. Water used for forestry, animal husbandry, fishery and livestock breeding includes forest, garden, grassland irrigation, fishpond replenishing and water used for livestock. Ecological environmental replenishing only includes urban ecological water provided by artificial measures and the replenishment of some rivers, lakes and wetlands, which do not encompass the water volume of rainfall and runoff from the nature.

**Table 3-7 Water Consumption Proportion of All sectors in Jiangxi Province (%)**

Category Year	Farm Irrigation	Forestry, Herding, Fishery and Husbandry	Industry	Public Work	Residen t Life	Ecological Environment
2010	61.31	3.13	23.92	1.70	8.31	1.62
2011	63.43	3.27	23.07	1.74	7.71	0.78
2012	60.22	3.96	24.21	2.14	8.62	0.85
2013	62.57	3.77	22.71	2.13	8.02	0.80
2014	61.32	3.70	23.62	2.26	8.29	0.80



**Figure 3-6 The Variation Tendency of Water Consumption in All sectors of Jiangxi Province from 2010 to 2014 (100 million m3)**



**Figure 3-7 Water Consumption Proportion of All sectors in Jiangxi Province from 2010-2014 (%)**

From above data, 2013 has witnessed the most volume of water consumption in Jiangxi Province from 2010 to 2014, claiming the annual consumption of 26481 million m<sup>3</sup>. 2010 is the year when water consumption has been the lowest among the five years -- the annual water consumption is 23975 million m<sup>3</sup>. Water consumption in 2013 and 2014 show a decreasing tendency. In 2014, the consumption reduced 551 million m<sup>3</sup>, with the decreasing ratio of 2.12%.

Of all industries, agricultural irrigation consumes the highest proportion of water and generally accounts for 60.22% to 63.43% of the total annual water consumption. It is followed by industrial water consumption (22.71% to 24.21%), urban public water consumption (1.70% to 2.26%), water consumption of forestry, animal husbandry, fishery and livestock breeding (3.13% to 3.96%), ecological environment water consumption (1.70% to 2.26%), and ecological environment (0.78% to 1.62%). In the past five years, water consumption of all industries and respective ratio change little.

### 3、 Wastewater Discharge amount analysis

According to the data of the environmental situation report of Jiangxi Province and statistical yearbooks from 2011 to 2015 released by the Environmental Protection Agency, the sewage discharge volume of the whole province from 2011 to 2015 is listed below.

**Table 3-8 The Sewage Discharge Situation in Jiangxi Province from 2011 to 2015 (100 million m<sup>3</sup>, %)**

Category Year	Agricultural sewage		Industrial sewage		Urban domestic sewage		Sewage from other sources		Total sewage discharge volume
	Discharge volume	%	Discharge volume	%	Discharge volume	%	Discharge volume	%	
2011	84.73	81.45	7.07	6.80	12.21	11.74	0.02	0.02	104.03
2012	76.24	79.11	6.79	7.05	13.31	13.81	0.03	0.03	96.37
2013	85.94	80.58	6.82	6.39	13.86	13.00	0.03	0.03	106.65
2014	81.14	79.57	6.49	6.36	14.31	14.03	0.03	0.03	101.97

2015	/	—	7.64	—	14.65	—	0.03	—	/
------	---	---	------	---	-------	---	------	---	---

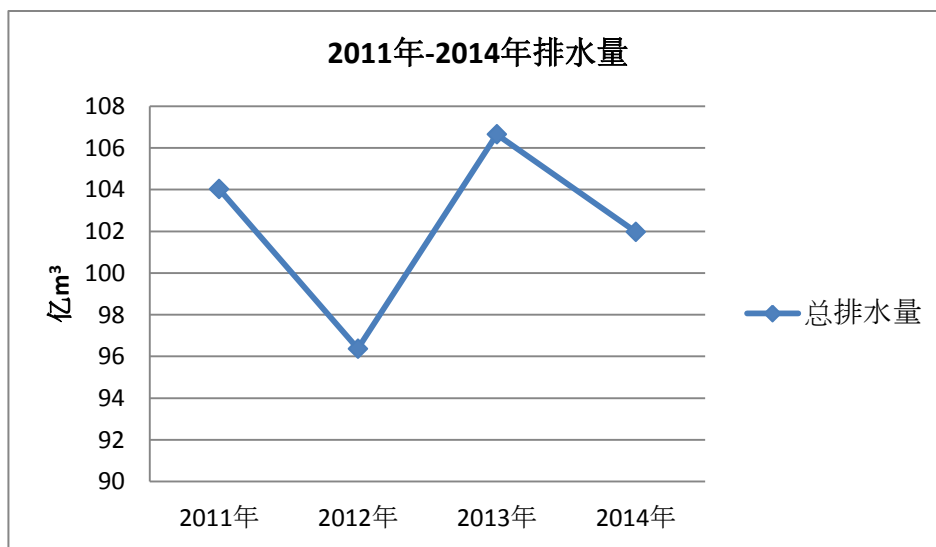


Figure 3-8 Water Discharge in Jiangxi Province from 2011-2014

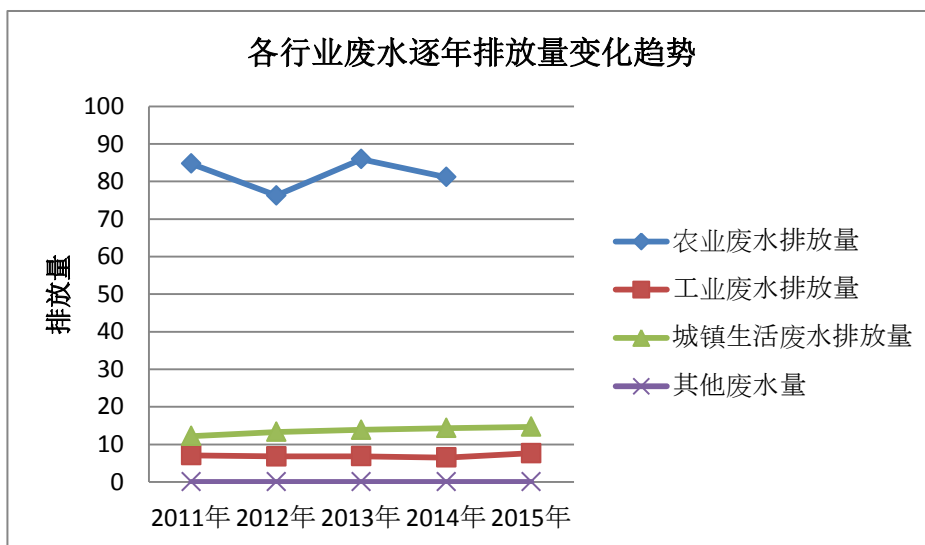
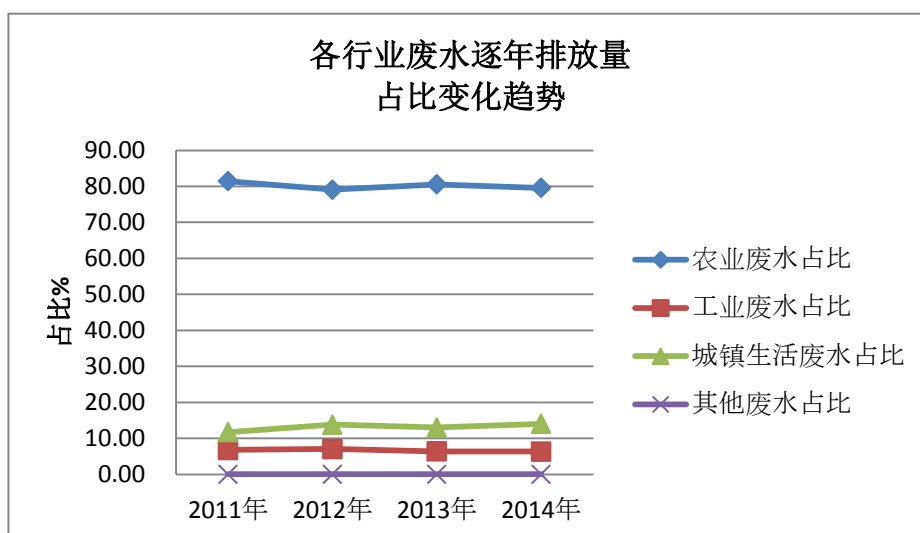


Figure 3-9 The Variation Tendency of Sewage discharge Volume of All Sectors in Jiangxi Province from 2011-2014 (100 million m3)



**Figure 3-10 The proportion of Sewage discharge Volume of All Sectors in Jiangxi Province from 2011-2014 (100 million m<sup>3</sup>)**

From above data, it is easy to find that the sewage discharge volume in Jiangxi Province from 2011 to 2014 has shown an overall decreasing tendency. In 2014, the discharge volume reduced 468 million m<sup>3</sup> compared to last year, decreasing by 4.59%.

The major sewage source is from agriculture, accounting for 79.57% to 81.45%. Then follows the urban domestic sewage discharge (12.21% to 14.56%), which shows a slowly increasing tendency from year to year. The third discharge source is industrial sewage. Although its discharge volume all these years has increased slightly, its ratio manifests a decreasing tendency. All in all, agricultural sewage is the major sewage source of Jiangxi Province.

#### 4、 Analysis of Pollution Loads

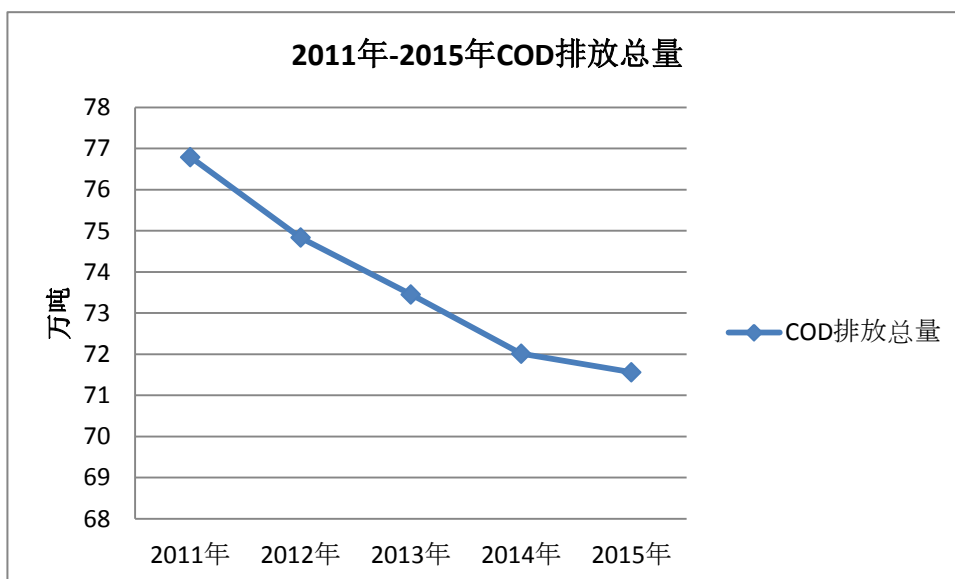
According to the Report on the Environment Conditions in Jiangxi Province from 2011 to 2015, the discharge situation of pollutants in wastewater of the whole province from 2011 to 2015 is listed as follows.

##### 1) COD Pollution Load

From 2011 to 2015, the discharge situation of COD in the pollutants of wastewater in Jiangxi Province is listed in the following table.

**Table 3-9 The Discharge Situation of COD in the Pollutants of Wastewater in Jiangxi Province from 2011 to 2015 (ten thousand tons, %)**

Year	Agriculture		Industrial Wastewater		Urban Life		Others		Total Discharge Amount of COD
	Discharge Amount	%	Discharge Amount	%	Discharge Amount	%	Discharge Amount	%	
2011	24.99	32.54	11.71	15.25	38.97	50.75	1.11	1.45	76.79
2012	23.9	31.94	10.07	13.46	39.82	53.21	1.04	1.39	74.83
2013	23.25	31.65	9.33	12.70	39.9	54.32	0.97	1.32	73.45
2014	22.77	31.62	7.97	11.07	40.4	56.10	0.87	1.21	72.01
2015	21.95	30.67	9.2	12.86	39.65	55.41	0.76	1.06	71.56



**Figure 3-11 Total Discharge Amount of COD and Its Variation Tendency in Jiangxi Province from 2011 to 2015**



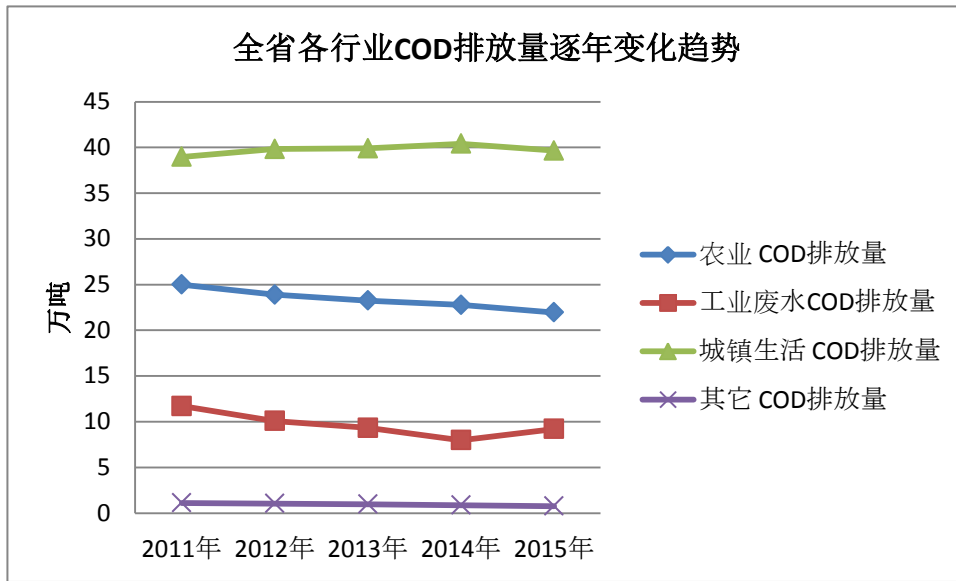


Figure 3-12 COD Discharge Amount of Each Sector and Its Variation Tendency in Jiangxi Province from 2011 to 2015

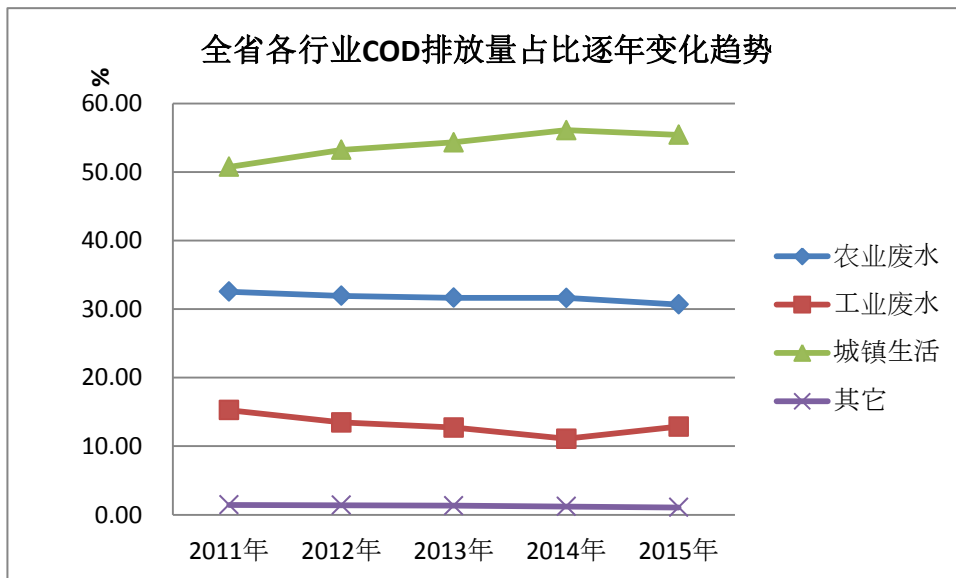


Figure 3-13 COD Discharge Amount Proportion of Each Sector's and Its Variation Tendency in Jiangxi Province from 2011 to 2015

We can see that, 2011-2015, COD discharge in Jiangxi Province show a decreasing trend every year, 4.5 thousand tons has been decreased in 2015 over 2014, which is 0.63% in percentage.

During 2011-2015, urban domestic COD discharge is the biggest among all the COD discharges in Jiangxi Province, which is 50.75%~56.10% of the total COD discharge amount; it decreased by 7.5 thousand tons in 2015 compared to 2014, while on percentage, it show a positive slight increasing trend,; Agriculture COD discharge is the second largest, which is

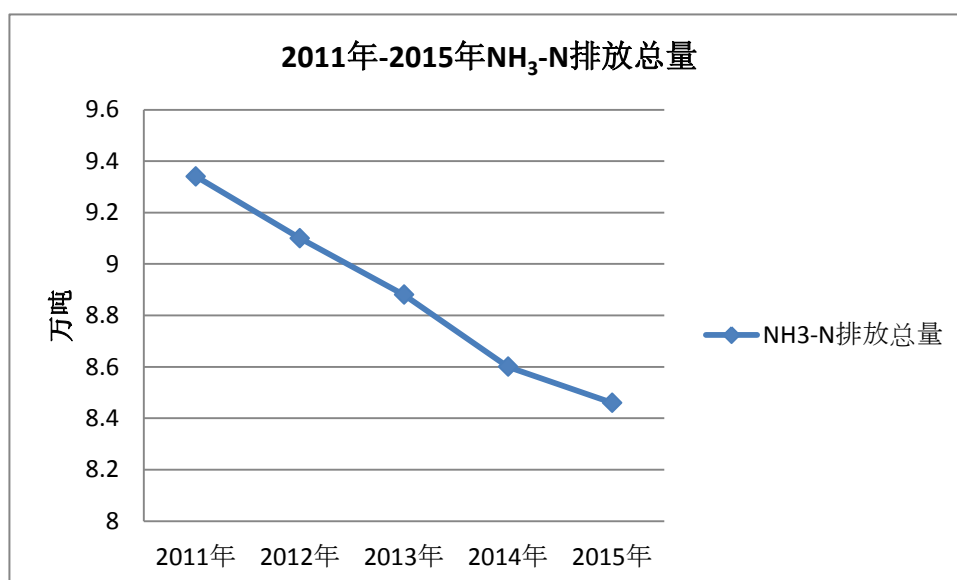
30.67%~32.54%, it decreased by 8.2 thousand tons in 2015 compared to 2014, it show a slight decreasing trend on percentage; industrial COD discharge is the third, with the Percentage of 11.07%~15.25%, and increased by 12.3 thousand tons in 2015 compared to 2014, showed a slight decreasing trend in 2011~2014, and a slight increasing trend in 2014年~2015.

2)NH<sub>3</sub>-N pollution load

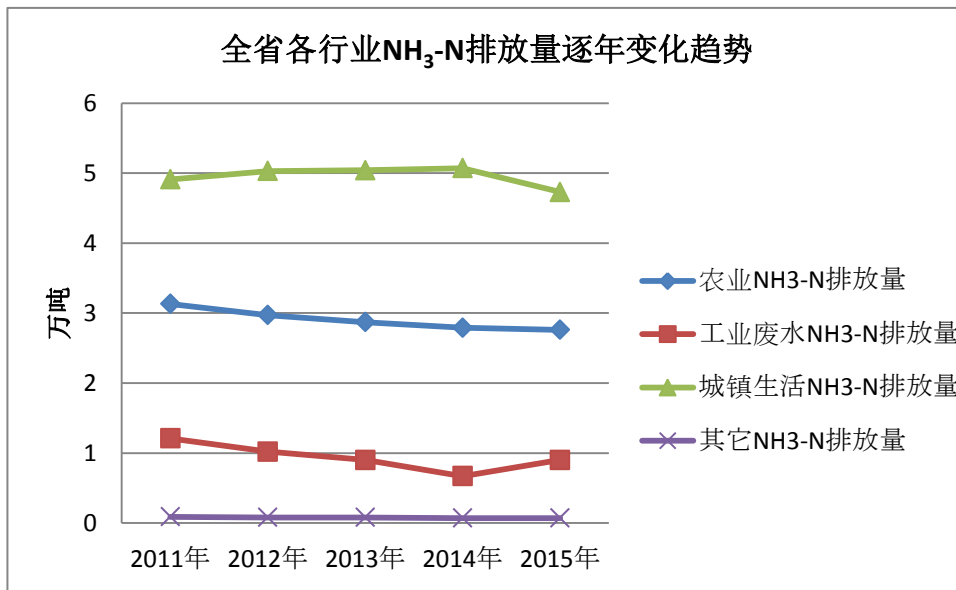
From 2011 to 2015, the discharge situation of NH<sub>3</sub>-N in the pollutants of wastewater in Jiangxi Province is listed in the following table.

**Table 3-10 Discharge Situation of NH<sub>3</sub>-N in the Pollutants of Wastewater in Jiangxi Province (ten thousand tons)**

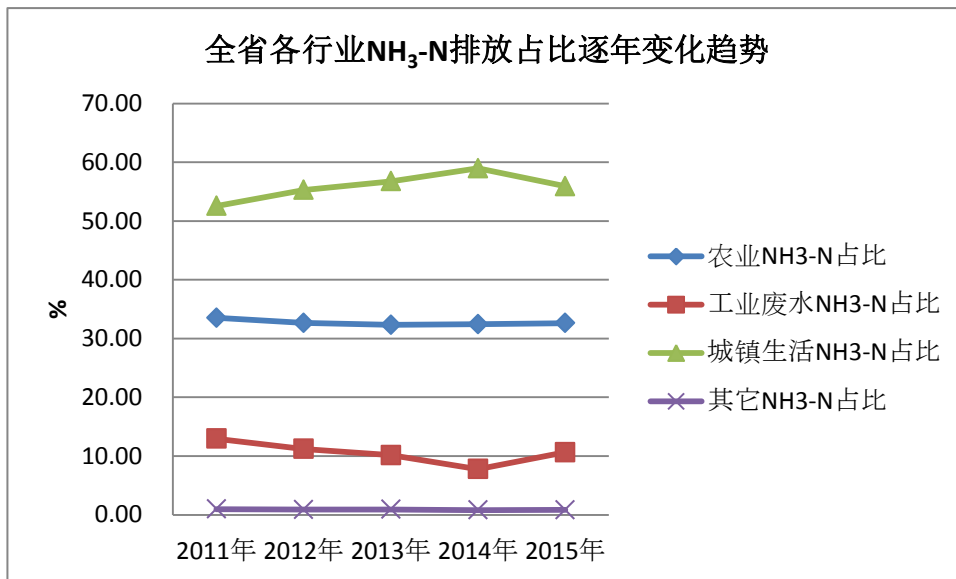
Year	Agriculture		Industrial Wastewater		Urban Life		Others		Total Discharge Amount of NH <sub>3</sub> -N
	Discharge Amount	%	Discharge Amount	%	Discharge Amount	%	Discharge Amount	%	
2011	3.13	33.51	1.21	12.96	4.91	52.57	0.09	0.96	9.34
2012	2.97	32.64	1.02	11.21	5.03	55.27	0.08	0.88	9.1
2013	2.87	32.32	0.9	10.14	5.04	56.76	0.08	0.90	8.88
2014	2.79	32.44	0.67	7.79	5.07	58.95	0.07	0.81	8.6
2015	2.76	32.62	0.9	10.64	4.73	55.91	0.07	0.83	8.46



**Figure 3-14 Total Discharge Amount of NH<sub>3</sub>-N and Its Variation Tendency in Jiangxi Province from 2011 to 2015**



**Figure 3-15 Each Sector’s NH<sub>3</sub>-N Discharge Amount and Variation Tendency in Jiangxi Province from 2011 to 2015**



**Figure 3-16 Variation Tendency of Each Sector’s NH<sub>3</sub>-N Discharge Amount in Jiangxi Province from 2011 to 2015**

From the table and figures above, it can be seen that from 2011 to 2015, the NH<sub>3</sub>-N discharge amount decreases year by year. The NH<sub>3</sub>-N discharge amount in 2015 has decreased by 1,400 tons, 1.65% in comparison with that in 2014.

From 2011 to 2015, in Jiangxi Province, urban life has discharged the largest amount of NH<sub>3</sub>-N, accounting for 52.57% to 58.95%. The NH<sub>3</sub>-N discharge amount of urban life in 2015 has decreased by 3,400 tons in comparison with that in 2014, with the proportion going

up slightly. Agriculture has discharged the second largest amount of NH<sub>3</sub>-N, accounting for 32.32% to 33.51%. The NH<sub>3</sub>-N discharge amount of agriculture in 2015 has decreased by 300 tons in comparison with that in 2014, with the proportion declining slightly. Industrial wastewater has discharged the third largest amount of NH<sub>3</sub>-N, accounting for 7.79% to 12.96%. The NH<sub>3</sub>-N discharge amount of industrial wastewater has increased by 2,300 tons in 2015. From 2011 to 2014, the proportion of industrial wastewater's NH<sub>3</sub>-N discharge amount presents a decreasing tendency and a slight increasing tendency from 2014 to 2015.

### 3) Total Nitrogen (TN), Total Phosphorus (TP)

According to the results of the first national survey of pollution sources, the TN and TP discharged by agricultural sources respectively account for 57% and 67% of the total discharge amounts. The core problem of the pollution of lake water in our country is water eutrophication. The TN and TP discharged by industrial wastewater only contribute 10% to 16% in the water pollution in our country. The primary cause of water eutrophication lies in the domestic sewage and the losses of N and P in agriculture.

On the basis of Ecological Security of Poyang Lake (Wang Shengrui, 2014), at present, the TN and TP in Jiangxi Province mainly come from urban life and agricultural diffused pollution. The TN and TP from urban life respectively account for 38.91% and 24.2% of the total amounts throughout the province. The TN and TP from agricultural diffused pollution respectively account for 61.09% and 24.2% of the total amounts throughout the province.

According to Water Environment of Poyang Lake (Wang Shengrui, 2014), the major types of diffused pollution in the villages of Poyang Lake include rural domestic pollution, livestock breeding, planting industry and aquiculture. The rural domestic pollution can be classified into pollution caused by rural domestic sewage and by rural household garbage. In the TN discharge amount of rural diffused pollution in Poyang Lake Basin, rural domestic sewage and household garbage respectively account for 6.8% and 1.2%. In the TP discharge amount of rural diffused pollution, rural domestic sewage and household garbage respectively account for 4.0% and 1.8%. Livestock breeding, planting industry and aquiculture account for larger proportions in the discharge of TN and TP.

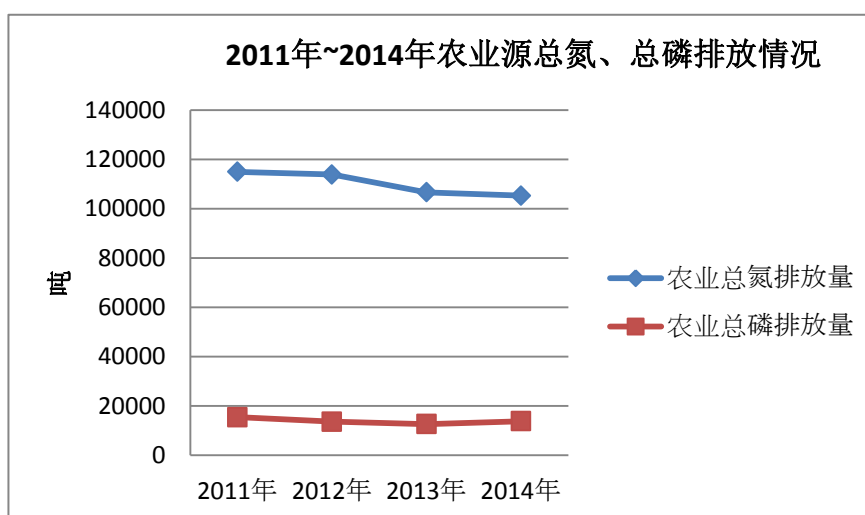
On the basis of Jiangxi's Annual Reports of Environmental Statistics from 2011 to 2014, TN and TP discharge situations of livestock breeding, planting industry and aquiculture in Jiangxi's agriculture are listed in the following tables.

**Table 3-11 TN Discharge Situation of Agriculture in Jiangxi Province from 2011 to 2014 (t, %)**

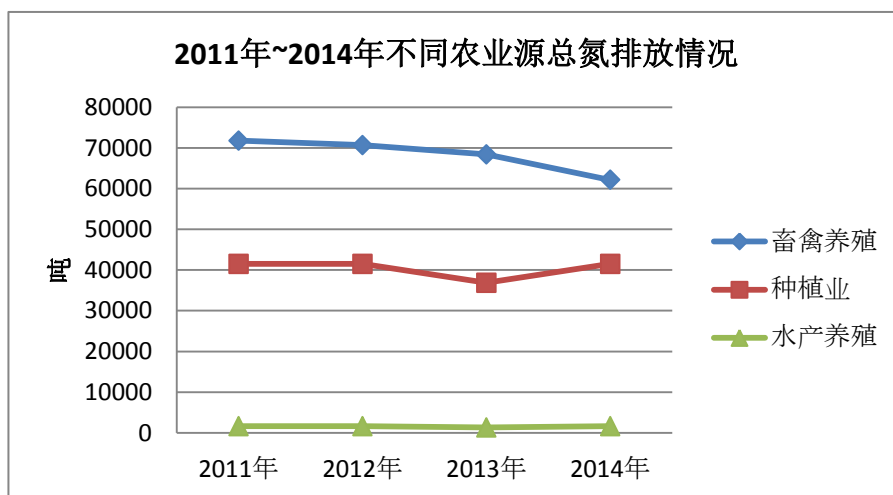
Year	Livestock Breeding		Planting Industry		Aquiculture		Total
	Discharge Amount	%	Discharge Amount	%	Discharge Amount	%	
2011	71763	62.44	41510	36.12	1650	1.44	114923
2012	70657	62.08	41510	36.47	1650	1.45	113817
2013	68402	64.17	36867	34.59	1329	1.25	106598
2014	62122	59.01	41510	39.43	1650	1.57	105282

**Table 3-12 TP Discharge Situation of Agriculture in Jiangxi Province from 2011 to 2014 (t, %)**

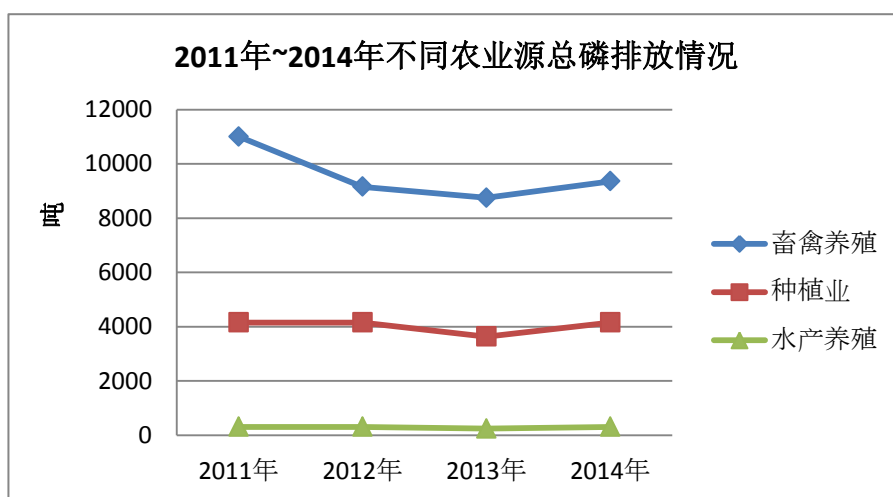
Year	Livestock Breeding		Planting Industry		Aquiculture		Total
	Discharge Amount	%	Discharge Amount	%	Discharge Amount	%	
2011	11004	71.14	4157	26.87	308	1.99	15469
2012	9155	67.22	4157	30.52	308	2.26	13620
2013	8751	69.27	3637	28.79	245	1.94	12633
2014	9354	67.69	4157	30.08	308	2.23	13819



**Figure 3-17 TN and TP Discharge Situations from Agricultural Sources and the Variation Tendencies in Jiangxi Province from 2011 to 2014**



**Figure 3-18** TN Discharge Amounts from Different Agricultural Sources and the Variation Tendency in Jiangxi Province from 2011 to 2014



**Figure 3-19** TP Discharge Amounts from Different Agricultural Sources and the Variation Tendency in Jiangxi Province from 2011 to 2014

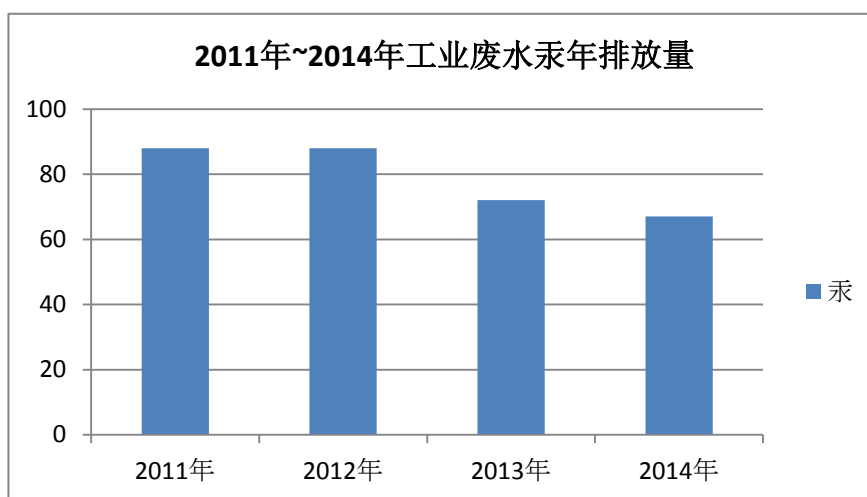
From the tables and figures above, Jiangxi’s TN and TP discharge mainly comes from agricultural sources. From 2011 to 2014, the TN and TP discharge amounts of livestock breeding, planting industry and aquaculture present a decreasing tendency. Therein the TN and TP discharge amounts of livestock breeding respectively account for large proportions (TN: 59.01% to 64.17%; TP: 67.22% to 71.14%). In the second place are planting industry and aquaculture.

#### 4) Heavy Metal Contamination

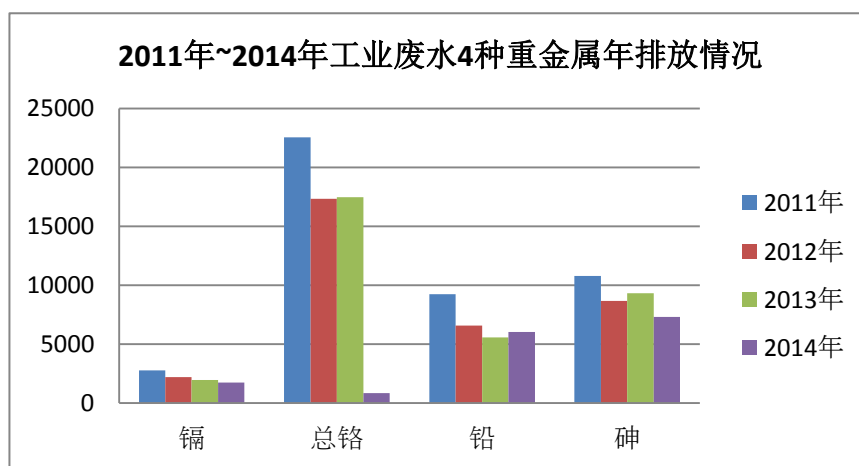
The annual emission amount of five heavy metals in the industrial effluent of Jiangxi Province from 2011 to 2014 is listed below.

**Table 3-13 The Heavy Metal Emission Amount of Industrial Effluent in Jingdezhen from 2011 to 2014 (kg)**

Year	Hg	Cd	Total Cr	Pb	As
2011	88	2759	22541	9245	10778
2012	88	2187	17325	6571	8651
2013	72	1952	17453	5568	9303
2014	67	1741	827	6037	7306



**Figure 3-20 The Annual Emission and Variation Tendency of Hg Contained in the Industrial Effluent of Jiangxi Province from 2011 to 2014 (kg)**



**Figure 3-21 The Annual Emission and Variation Tendency of the Rest Four Heavy Metals in the Industrial Effluent of Jiangxi Province from 2011 to 2014 (kg)**

From the data above, the Pb emission of the industrial effluent 2014 is 6037 kg, increasing by 8.4% than last year. Other four heavy metals (Hg, Cd, total Cr, and As) claim respective emission: 67 kg, 1741 kg, 827 kg and 7306 kg, decreasing by 6.9%, 10.8%,

95.3%, and 21.5% than last year.

#### 5. Respective Proportion of Contaminants in Each District

According to Water Environment in Poyang Lake (Wang Shengrui 2014), the majority of contaminants poured into Poyang Lake is from the Five Rivers, which accounts for about 80% of the total pollution load. The pollutants are mainly from Binhu district and Ganjiang River. Areas around Fuhe River and Xinjiang River also contribute some to the pollution. CO, NH<sub>3</sub>-N, TN and TP, by and large, show the same tendency. In terms of pollution sources, Ganjiang River contributes 44% to 52%, Lakeside contributes 25% to 34%, Fuhe River 7% to 9%, Xinjiang River 7% to 8% and other rivers contribute 7% to 8%.

#### 6. Overall Assessment of Current Water Environment of Poyang Lake

The water quality of Poyang Lake has shown a decreasing tendency these year. In 2015, Poyang Lake was slightly polluted and had a middle degree of water eutrophication. TP is the major pollutant. The water quality of Poyang Lake's five main branches (Ganjiang River, Raohe River, Xinjiang River, Xiuhe River and Fuhe River) has increased slightly or almost stayed at the same level.

In 2014, agricultural irrigation cost 15.901 billion m<sup>3</sup> water, the highest water consumption in Poyang Lake area. This was followed by the amount of water used for industrial purposes – 6125 million m<sup>3</sup> (61.32%). Water used for household demands accounts for 8.29% of the total, 2150 million m<sup>3</sup>.

In terms of the sewage emission at the same year, agricultural sewage accounted for the highest proportion 79.57% (8114 million m<sup>3</sup>). Urban domestic sewage claimed to be secondary, 14.03% (1431 million m<sup>3</sup>). Industrial effluent was listed as the last, 8.36% (6490 million m<sup>3</sup>).

The COD and NH<sub>3</sub>-N pollution load in Poyang Lake are respectively 720100 ton and 86000 ton, both showing a decreasing tendency. COD mainly comes from the 404000 tons of urban domestic sewage, 227700 tons of agricultural sewage and 79700 tons of industrial waste, respectively accounting for 56.10%, 31.67% and 11.07%. NH<sub>3</sub>-N mainly comes from the 50700 tons of urban domestic sewage, 27900 tons of agricultural sewage, 6700 tons of



industrial effluent, accounting respectively for 58.95%, 32.44% and 7.79%.

TN and TP are mainly emitted from urban domestic and agricultural non-point source pollution, with TN emission respectively accounting for 38.91% and 61.09% of the provincial total amount, TP respectively accounting for 24.2% and 75.7%. Livestock breeding claims the highest proportion of TN and TP emission.

Heavy metal pollution is mainly caused by industrial effluent. The Pb emission in the industrial waste in 2014 was 6037 kg, increasing by 8.4% than last year and decreased by 53.1% than 2011. Other heavy metals (Hg, Cd, total Cr, and As) respectively claim the emission of 67 kg, 1741 kg, 827 kg and 7306 kg, decreasing by 6.9%, 10.8%, 95.3%, and 21.5% than last year. Which shows that the overall industrial wastewater treatment is better in Jiangxi Province.

The pollution load of Poyang Lake is mainly from “Five Rivers”, which claims about 80% of the total load. In terms of pollution sources, Ganjiang River contributes 44% to 52% of the total pollution, Binhu District 25% to 34%, Fuhe River 7% to 9%, Xinjiang River 7% to 8% and other river areas 7% to 8%.

## 3.4.1.2 Water environment of project county

## 1、 Pollution source investigation of the project counties

According to the Jiangxi provincial Environmental Protection Bureau and the County Environmental Protection Bureau, the water pollutants information of each County in 2011~2015 are listed in the table below.

**Table 3-14** COD Discharge of each county in 2011-2015 (t)

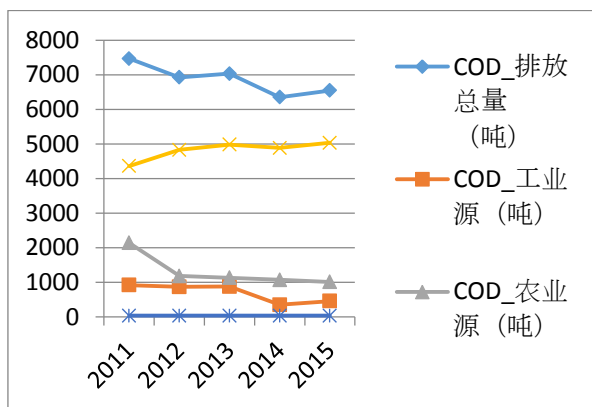
County	Year	Industrial sources	Agricultural source	Urban domestic source	Other	Total
Duchang	2011	921.062	2144.3	4362.251	38.8	7466.413
	2012	869.327	1186.2701	4829	38.8	6923.3971
	2013	879.72	1131.97	4981	38.8	7031.49
	2014	352.64	1074.97	4886.477	38.8	6352.887
	2015	460.3764	1014.3836	5033.57	38.8	6547.13
Poyang	2011	1622.008	3051.743	10209.905	0	14883.656
	2012	1489.77	2833.0551	10760.83	0	15083.6551
	2013	1360.768	2749.203	10599.34	0	14709.311
	2014	821.62	2607.6799	10842.43	0	14271.7299
	2015	933.89	2108.7099	10549.05	167.9	13759.5499
Yugan	2011	337.25	3541.745	6809.119	0	10688.114
	2012	422.21	3444.8413	6747.93	0	10614.9813
	2013	150.21	3346.335	6847.209	0	10343.754
	2014	80.33	3321.6047	6917.29	0	10319.2247
	2015	383.53	3133.9225	6791.97	10.8	10320.2225
Fengxin	2011	1254.868	994.995	1922	177.9	4349.763
	2012	1064.224	922.4295	2031.04	177.9	4195.5935
	2013	1308.0577	944.8787	2870	177.9	5300.8364
	2014	1035.4785	1052.29	3020.247	177.9	5285.9155
	2015	1125.42	717.19	2845.315	177.9	4865.825
Jing'an	2011	272.15	223.46	1328.00	19.30	1842.91
	2012	215.00	197.44	1445.36	19.30	1877.10
	2013	190.69	101.10	760.00	19.30	1071.10
	2014	178.74	103.31	735.88	19.30	1037.22
	2015	180.90	83.88	734.53	19.30	1018.60
Jishui	2011	397.7	2076.573	4297.839	0	6772.112
	2012	397.70	1602.0430	4866.0430	0	6866.677
	2013	267.69	1558.263	5010.294	0	6836.2470
	2014	237.79	1558.263	5010.294	0	6806.347

	2015	406.72	1495.72	4796.98	0	6699.423
Shangli	2011	2408.08	2099.08	3957.405	0	8464.565
	2012	2031.722	2123.1933	3565.61	0	7720.5253
	2013	1358.908	2112.2517	3615.326	0	7086.4857
	2014	620.4736	2112.2518	3626.23	0.002	6358.9574
	2015	391.0662	2978.9948	2556	94	6020.061

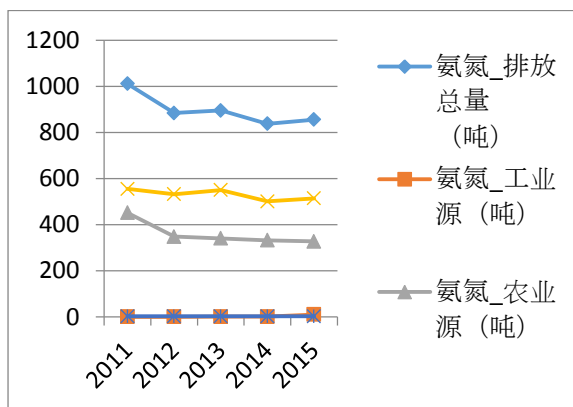
**Table 3-15 NH3-N Discharge of each county in 2011-2015 (t)**

County	Year	Industrial sources	Agricultural source	Urban domestic source	Other	Total
Duchang	2011	0.9749	451.605	555.405	3	1010.9849
	2012	1.0299	348.0798	532	3	884.1097
	2013	1.4343	340.8698	550	3	895.3041
	2014	1.4706	332.36	500.975	3	837.8056
	2015	10.55	327.47	514.486	3	855.506
Poyang	2011	49.137	501.94	1229.237	0	1780.314
	2012	41.217	464.2825	1294.07	0	1799.5695
	2013	42.82	454.34	1284.62	0	1781.78
	2014	37.22	426.8618	1307.3	0	1771.3818
	2015	40.33	351.3018	1233.5	16.79	1641.9218
Yugan	2011	10.23	333.148	803.712	0	1147.09
	2012	37.14	310.6891	797.7	0	1145.5291
	2013	20.56	294.69	809.38	0	1124.63
	2014	11.511	282.4057	830.91	0	1124.8267
	2015	39.74	272.3156	759.69	1.26	1073.0056
Fengxin	2011	92.09	203.048	252	13.69	560.828
	2012	82.521	169.461	271.9	13.69	537.572
	2013	126.6507	174.1236	370	13.69	684.4643
	2014	85.9365	180.44	392.994	13.69	673.0605
	2015	127.9274	128.73	400.251	13.69	670.5984
Jing'an	2011	9.30	53.98	174.00	0.50	237.78
	2012	7.94	52.55	187.94	0.50	248.93
	2013	9.25	41.55	91.00	0.50	142.27
	2014	4.72	40.45	91.00	0.50	136.67
	2015	7.26	35.90	89.58	0.50	133.24
Jishui	2011	8.93	265.048	475.823	0	749.801
	2012	6.61	253.1251	543.16	0	802.8961
	2013	6.01	246.685	560.089	0	812.784
	2014	4.03	246.415	560.089	0	810.534

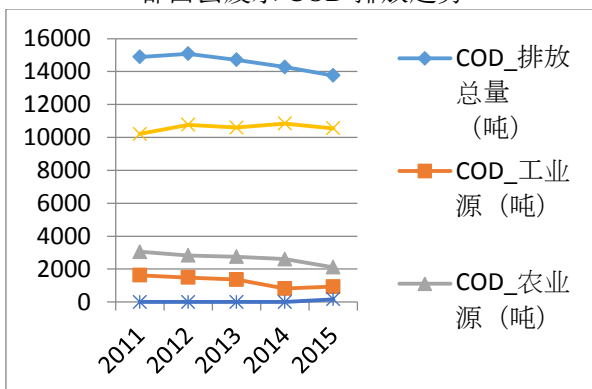
	2015	10.49	278.017	498.221	0	786.728
Shangli	2011	46.226	221.5	493.546	0	761.272
	2012	46.863	220.1859	441.75	0	708.7989
	2013	44.235	228.7809	443.564	0	716.5799
	2014	24.994	228.7809	446.23	0.0001	700.005
	2015	46.7038	351.3619	312	6.6	716.6657



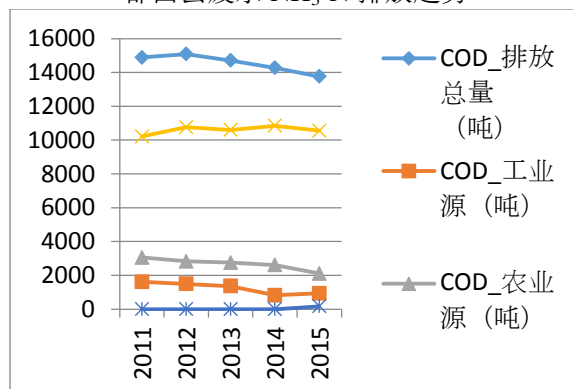
都昌县废水 COD 排放趋势



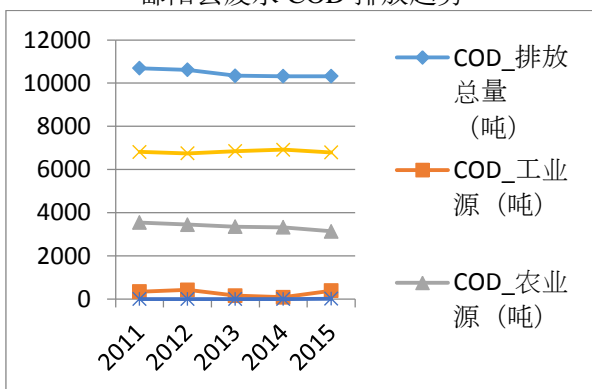
都昌县废水 NH<sub>3</sub>-N 排放趋势



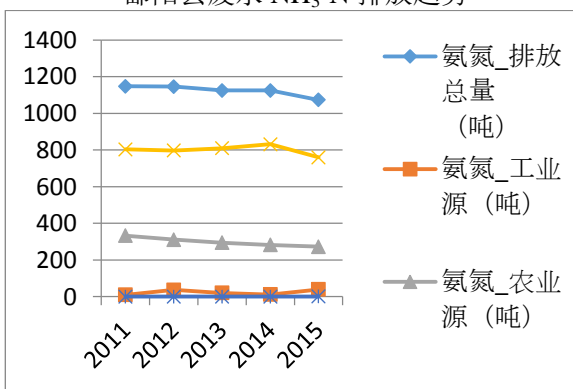
鄱阳县废水 COD 排放趋势



鄱阳县废水 NH<sub>3</sub>-N 排放趋势



余干县废水 COD 排放趋势



余干县废水 NH<sub>3</sub>-N 排放趋势

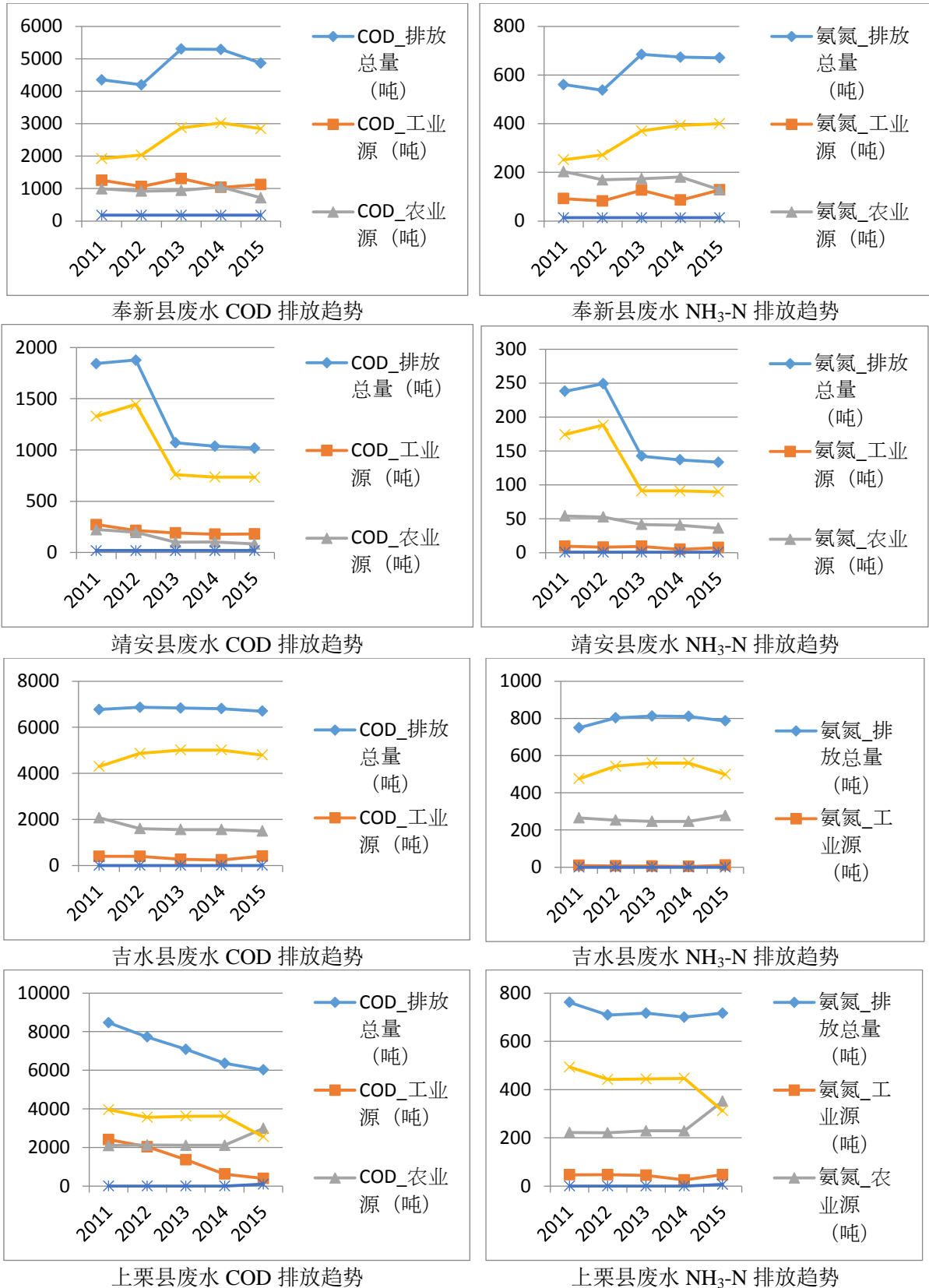


Figure 3-22 Wastewater COD and NH<sub>3</sub>-N emission trends of each county in 2011-2015

The analysis of the pollution sources of each county according to the data shown above is in the table below.

**Table 3-16 Analysis of the pollution sources of each county**

Sub Project	Analysis of the pollution sources of each county
Duchang County	<p>From above data in the table, urban domestic sewage in Duchang County is the major pollution source, followed by agricultural and industrial pollution sources. Meanwhile the industrial areas in the Lotus Hill is the major industrial pollution discharge source of that county. Therefore, this project mainly focus on solving the problems of urban sewage collection and treatment in Duchang County. However, Duchang County is large in size, populated. It also features scattered agricultural pollution discharge, and little pollution discharge in the urban area. While the promotion of soil testing and formulated fertilization within the whole Duchang County, the application of organic fertilizer is also promoted. Therefore, agricultural pollutant governance is not included in this project.</p> <p>In recent years, Duchang County has begun to construct urban environment sanitation facilities and made efforts to improve them. However, in Beishan Village of the suburb area, Dashu Village and Wangdun Village, it is frequent to see domestic garbage dumped everywhere, directly burned, or piled up and buried alongside the lake bank, or randomly filled in a wasteland. All these treatment measures would pollute the ecological environment of Poyang Lake and its banks. Moreover, the county on the whole develops towards the west, the natural water in the western urban area, Zoujiaju Lake and related ecological environment are to face a serious pollution threat.</p>
Poyang County	<p>From above data in the table, urban domestic pollution is the major sewage pollutant source of Poyang County, followed by agricultural and industrial pollution sources. Poyang County plans to improve the sewage discharge system, making the coverage rate of urban sewage pipe network facilities reach 90%. The industrial park of Poyang County has built up industrial sewage treatment plants, so urban pollution of the county can get effective collection and treatment. Zhuhu Lake is regarded as key waters flowing into Poyang Lake, as well as the important water source of drinking water in Poyang County. As Zhuhu Lake is located within the range of Binhu Control Development Zone of the Poyang Lake Ecological Economic Zone, its conflicts among resources, environment and development are obvious. With the increasing pressure of ecological environment protection, the city within Zhuhu Lake Basin does not give as the same support as Poyang County to construct relative facilities. Therefore the comprehensive governance of Zhuhu Lake Basin has more direct meaning to the pollutant reduction of Poyang Lake.</p>
Yugan County	<p>From above data in the table, urban domestic pollution is the major sewage pollutant source of Yugan County, followed by agricultural and industrial pollution sources. Although Yugan County has built the sewage collection and treatment system, no sewage pipe network is set up around Pipa Lake, so that the domestic sewage has flowed into Pipa Lake, and non-point source pollution is serious. In this case, this project is to protect the water environment of Pipa Lake and rehabilitate its ecological environment. This project will build up sewage pipe network around Pipa Lake and take effective measures to rehabilitate its water ecological environment. Besides, as the garbage collection and transfer</p>

	<p>system around Pipa Lake remains to be perfected, this project will also improve that system to reduce garbage pollution of the lake.</p>
Fengxin County	<p>From above data in the table, urban domestic pollution is the major sewage pollutant source of Fengxin County. The domestic sewage is the major pollution source of South Liaohe River, followed by agricultural and industrial pollution sources. The agricultural pollutant discharge is scattered, and agriculture in the urban area is very few. While the promotion of soil testing and formulated fertilization within the whole county, the application of organic fertilizer is also promoted. Therefore agricultural pollutant governance is not included in this project. Industries of Fengxin County is mainly centralized in Fengxin Industrial Park of the southeastern urban area, where sewage treatment plants have been built up. The eastern area is newly built, featuring good pipe network as well as rainwater and sewage diversion. However, in the southern and northern urban area, the construction of sewage discharge pipe network lags behind. Most of the collected sewage before getting effective treatment is discharged into the water and join the Liaohe River. The domestic garbage collection and transfer system is relatively good. Therefore, this project focuses on solving the sewage discharge problems in the southern and northern urban area.</p>
Jing'an County	<p>From the data of above table, urban domestic pollution is currently the major pollution source of Jing'an County. The agricultural pollutant discharge is scattered, and agriculture mainly refers to organic farming. The aquaculture industry of Jing'an County follows the laissez-faire principle. While the promotion of soil testing and formulated fertilization within the whole county, the application of organic fertilizer is also promoted. Therefore agricultural pollutant governance is not included in this project. Environmental problems in the populated urban area are obviously unneglectable. The Industrial and Commerce New City (an industrial park located in the southern urban area) has built up a sewage treatment plant. Therefore this project mainly focuses on the sewage collection and treatment problems in the northern urban new area, old town area in the south, and Leigongjian Industrial Park (an industrial district in the western urban area). Meanwhile, the urban garbage collection and transfer system of Jing'an County shall be improved, so as to reduce the garbage volume of Poyang Lake Basin.</p>
Jishui County	<p>From the data of above table, urban domestic pollution is the major pollution source of Jishui County, and its industrial pollutant discharge is mainly from the industrial park located at the northwest of the county center. The industrial park in Jishui County is planning to set up sewage treatment plants and pipe network facilities. The western area has just under development, and Biyue Lake area has not been developed yet. Therefore, this project is mainly to solve the sewage collection and treatment problems in the urban southern area and old town area. Jishui County is large in size and populated. It also features scattered agricultural pollution discharge, and little pollution discharge in the urban area. Within the whole county, soil testing and formulated fertilization is promoted. So is the application of organic fertilizer. Therefore this project does not consider the governance of agricultural pollution sources.</p>
Shangli County	<p>From above data in the table, urban domestic and agricultural pollution are the major pollution source of the sewage in Shangli County. Its agricultural pollutant discharge is scattered and the agriculture mainly refers to organic farming. Within the whole county, soil testing and formulated fertilization is promoted. So is the application of organic fertilizer. Therefore this project does</p>

not consider the governance of agricultural pollution sources. Currently Shangli County has had the sewage collection and treatment system built in 5 villages and towns, and 2 towns are building that system. According to the plan, until the end of 2018, all villages and towns in Shangli County would build up the system. The garbage system of Shangli County is relatively less strong than its sewage system. As most garbage cannot get reasonable and environmentally friendly collection treatment, rivers, lakes and groundwater may be threatened by the garbage pollution. To solve these problems, Shangli County has applied for the special fund to construct a garbage collection and transfer system in the four villages and towns. Therefore, this project is to build a garbage collection and transfer system of the other 6 villages and towns.

---



2、 Water Environment Quality Status

Surface water quality in project counties are listed below.

**Table 3-17 Present Environment Quality Assessment for Surface Water**

Subproject	Surface Water	Status Evaluation on Environmental Quality of Surface Water	Existing Problems	Photos Showing the Exact Situation
Duchang County	Zoujiaju Lake	According to the monitoring results, the water quality of upper, lower reaches and areas around Zoujiaju Lake does not reach the III class of Environmental Quality Standard of Surface Water (GB3838-2002). In other words, Zoujiaju Lake has been assessed as the Inferior V class.	<ul style="list-style-type: none"> <li>① As the industrial area of lotus hill does not have rain and sewage diversion, the collected waste together with rain are transported to the western lowland. Later they are scattered and flow into Zoujiaju Lake;</li> <li>② The water of Zoujiaju Lake has been directly polluted by the rural domestic sewage of surrounding areas of the lake;</li> <li>③ Domestic garbage and construction waste are piled up and almost directly dumped toward surface water. Some have even crossed the shoreline of Poyang Lake, seriously polluting the lake;</li> <li>④ The shoreline of Zoujiaju Lake has received various degrees of damage due to activities of nearby residents such as field development and house construction;</li> <li>⑤ The urban area would easily suffer floods and floods are hard to drain out because runoff and rainwater always flow along roads in the industrial</li> </ul>	Dumped garbage in Zoujiaju Lake district

Subproject	Surface Water	Status Evaluation on Environmental Quality of Surface Water	Existing Problems	Photos Showing the Exact Situation
			area of lotus hill.	
Poyang County	Pearl Lake	According to the monitoring results, the water quality of Pearl Lake mainly reaches the III class of <i>Environmental Quality Standard of Surface Water</i> (GB3838-2002) and its total phosphorus (TP) has surpassed the average.	<ul style="list-style-type: none"> <li>① Directly polluted by rural domestic sewage of Binhu district;</li> <li>② Non-point source pollution brought by rural cropland planting, aquaculture and livestock breeding.</li> </ul>	Farmlands around nearby Pearl Lake
Yugan County	Huhui River	Water quality of Huhui River does not meet the class III standard of <i>Environmental Quality Standard of Surface Water</i> (GB3838-2002), which is Class V or inferior Class V.	<ul style="list-style-type: none"> <li>① The main pollution of Pipa Lake district comes from domestic sewage. The major reason why the amount of COD, BOD<sub>5</sub>, TP, TN surpass the standard is that most areas directly pour the domestic sewage into the lake, making the water polluted.</li> <li>② The non-point source pollution of aquaculture industry and plantation industry in the Pipa Lake district has influenced the water quality.</li> <li>③ Some residents nearby Pipa Lake piled up garbage at the riverbank, streambank and grounds near the banks. Not only the garbage stinks, but also the water in Pipa Lake is polluted.</li> </ul>	Direct discharge of domestic sewage
	Pipa Lake	The monitoring water quality indexes of Pipa Lake (COD, BOD <sub>5</sub> , TP, TN) have failed to reach the III and IV class of <i>Environmental Quality Standard of Surface</i>		

Subproject	Surface Water	Status Evaluation on Environmental Quality of Surface Water	Existing Problems	Photos Showing the Exact Situation
		<p><i>Water</i> (GB3838-2002). Its water quality has been assessed as the Inferior V class.</p>		
Fengxin County	South Liao River	<p>The upper South Liao River basically reaches the II class of <i>Environmental Quality Standard of Surface Water</i> (GB3838-2002). After the river goes through urban areas, the water quality becomes more deteriorated as the water runs much closer to lower reaches. On the other hand, in urban areas, branches of Liao River are seriously polluted, claiming an IV class or even worse water quality. The pollution of Liao River is mainly caused by direct discharge of urban sewage and combined sewage overflow.</p>	<ul style="list-style-type: none"> <li>① A large amount of stream in the mountain and water used for irrigation have not be diverted effectively, therefore the sewage density of sewage treatment plants is always at a low level, which wastes water resources.</li> <li>② Most urban areas have combined sewage and rainwater drainage pipe network. As the sewage stinks, sanitary condition is relatively bad.</li> <li>③ Zhongbao Harbour in southern area and Longshan Harbour directly emit sewage into Liao River, seriously polluting its water quality.</li> <li>④ South Canal, Beizhizhen Canal and Dazhai Canal all have serious silting-up and blocking problems. Urban civilians' life have been heavily influenced.</li> </ul>	Water of Liao River
Jing'an County	North Liao River	<p>The monitoring water quality indexes of south</p>	<p>The water quality of Liao River and water within</p>	<p>Open-air garbage collection points</p>

Subproject	Surface Water	Status Evaluation on Environmental Quality of Surface Water	Existing Problems	Photos Showing the Exact Situation
		<p>tributary North Liao River Jing'an section, can all meet the class III standard of Environmental Quality Standard of Surface Water (GB3838-2002), while the BOD5, TN, TP of the middle reach surpass it, fail to meet Class III Standard</p>	<p>urban areas is bad, partly because the faulty urban drainage pipe network claims a low sewage and rainwater diversion rate and partly because some industrial companies do not connect the municipal pipe network. The waste are directly emitted into North Liao River. Floods are hard to drain out, because the pipe network is in a bad state of disrepair. The small-diameter and gentle-slope pipe has heavy leakage and serious silting-up. Residents' normal life are influenced. With the acceleration of urbanization, population aggregate from the township to the county, solid waste and water pollutant emissions from daily life continues to increase, if not to take measures and strengthen environmental management, the water pollution of North Liao River in Jingan County will be intensified, the ecological water will be further deterioration.</p>	
<p>Jishui County</p>	<p>Ganjiang River (Jishui section), the river of Enjiang</p>	<p>The water quality of Ganjiang River (the Jishui section) and the river of Enjiang in 2015 was good. Water qualities of other points reach the III class of <i>Environmental Quality Standard of Surface</i></p>	<p>Sewage in most southern areas fail to be delivered to sewage treatment plants. Without effective treatment, sewage would combine with rainwater. They would flow into the surface water and join Enjiang and Ganjiang River or directly be emitted into the water. Most old town areas have used the combined rainwater and sewage pipe network or drainage ditch. As the</p>	<p>Domestic sewage directly emitted into the water</p>

Subproject	Surface Water	Status Evaluation on Environmental Quality of Surface Water	Existing Problems	Photos Showing the Exact Situation
		<p><i>Water</i> (GB3838-2002). In other words, it has a good water quality now.</p>	<p>reinforced concrete pipe is fallen into disrepair and worn, it claims a low drainage capacity. Most of the combined sewage would directly flow into Ganjiang River.</p> <p>Although the water quality of Ganjiang River Jishui section and Enjiang river is in line with the requirement of the main surface water function zone of Jishui County, with the rapid development of Jishui county, the industrial wastewater, domestic sewage treatment work should be done well, especially the improvement of the south area and the old city drainage situation, can effectively improve the water quality of Ganjiang river, alleviate the pressure on Poyang Lake's pollution.</p>	
Shangli County	Lishui River	<p>Lishui River now is in good water quality condition. Water quality of Foling cross section has reached the III class of <i>Environmental Quality Standard of Surface Water</i> (GB3838-2002).</p>	<p>Shangli County has applied for a special fund to improve the construction of rural sewage treatment. However, current system of collecting and delivering rural garbage remains much to be desired, as the low decontamination rate of urban refuse causes serious pollution to water environment. Shangli town, Jinshan town and Jiguanshan village and Tongmu town have applied for national special funds to construct the garbage collection and delivery system, but the system in Changping village, Futian town, Penggao town,</p>	Piled garbage in the open air

Subproject	Surface Water	Status Evaluation on Environmental Quality of Surface Water	Existing Problems	Photos Showing the Exact Situation
			<p>Dongyuan village, Chishan town and Yangqi village still remain much to be improved.</p> <p>Although the water quality of Lishui River is in line with the requirement of the main surface water function zone of Shangli County, with the rapid development of Jishui county, solving the waste collection of the townships is meaningful to alleviate the pressure on Poyang Lake's pollution.</p>	

As the major towns located in the Poyang Lake Basin, the seven counties in the project scatter at the upper, middle and lower reaches of Poyang Lake. Their special geographical locations have made them significant to the economic development and environmental protection of the area. In recent years, due to the unscientific development mode, leaky pollution governance measures, Poyang Lake, under the backdrop of economic development, has shown increasingly worsening ecological and environmental problems. According to researches and surveys, those counties face all sorts of problems when dealing with sewage, floods and garbage, and therefore the overall development of areas around Poyang Lake has been hindered.

### 3.4.1.3 Efforts Made by Jiangxi Government to Improve Water Environment Governance of the Basin

#### 1. Formulate schemes to prevent pollution of rivers and lakes in the province and cities

In order to practically enhance water pollution prevention and safeguard the security of water environment, Jiangxi Provincial People's Government has referred to Notice of the State Council on Issuing the "Action Plan for Water Pollution Prevention and Control", considered the actual situation and formulated the "Jiangxi Provincial Action Plan for Water Pollution Prevention and Control". Then cities with the specific counties in the project have made relative action plans, such as "Shangrao Municipal Action Plan for Water Pollution Prevention and Control", "Yichun Municipal Action Plan for Water Pollution Prevention and Control", "Jing'an Municipal Action Plan for Water Pollution Prevention and Control" and "Pingxiang Municipal Action Plan for Water Pollution Prevention and Control".

The overall goals of the work plan for Jiangxi's (cities and counties) water pollution control are listed as follows: by 2020, the water environment quality over the whole province will be steady and positive generally; the security level of drinking water will be continuously improved; the aquatic ecological environment in the basins of five rivers and Poyang Lake will be improved steadily; the water ecosystem over the province will be in a virtuous cycle. The goals of this project are to reduce the pollutant which tends to flow into key water areas and further into Poyang Lake, and to improve the management of water quality. The implementation of the project satisfies the requirement in the above work plan for water pollution control.

In the work plan for water pollution control, the main tasks related to this project are listed as follows: realize an overall control of industrial pollution, urban domestic pollution and rural diffused pollution; try best to guarantee the security of the source of drinking water; enhance the protection of water ecological safety of rivers and lakes; treat the malodorous black water bodies in cities; guarantee the security of water ecological environment. Concrete measures include:

(1) Complete central treatment facilities of sewage (including assorted pipe network) in industrial agglomeration areas such as export processing zones, economic development zones of provincial level or higher levels, and development zones of advanced technologies. Put these facilities into operation.

(2) All industrial zones should complete the installation of automatic online monitoring devices for central treatment facilities of sewage. Put these devices into operation.

(3) Complete the first-class A standard upgrading reconstruction of the treatment facilities for urban sewage flowing into Poyang Lake and other sensitive water areas.

(4) Reinforce the construction and improvement of the assorted pipe network for sewage in the old urban areas. Reconstruct the existing combined drainage systems.

(5) Promote pollution control in rural areas. Prevent and treat the pollution caused by livestock and poultry breeding. Extend the application of testing soil for formulated fertilization and strictly control the total usage amount of chemical fertilizers. Promote demonstration pilot projects of comprehensive treatment for sensitive areas including Poyang Lake Region and typical rural diffused pollution.

(6) Coordinate to promote environment renovation and law enforcement in Poyang Lake. Conduct comprehensive law enforcement on illegal discharge of sewage, garbage disposal in other areas, and sewage discharge from breeding industry.

(7) Adopt the method which combines engineering treatment and natural recovery; enhance the restoration and treatment of wetlands; implement restoration project of wetland vegetation in Poyang Lake's key areas of reclaimed land to lake and in desertification areas.

(8) Protect water resources in scientific ways; enhance water dispatching management of rivers, lakes and reservoirs; promote the implementation of "river-administrator system". Accomplish the establishment of the organizing structure of "river-administrator system" in three levels including counties, cities and districts in 2015. Complete the construction of pilot units above county level in 2016. Implement "river administrator system" over the province in 2017.

## 2. Actively explore a new mode of water environment governance

(1) Set up the Office for Poyang Lake Ecological Economic Zone Construction, in charge of comprehensive coordination, guided the construction of ecological economic zone, and issued the "Regulation on Environmental Protection of Poyang Lake Ecological Economic Zone".

(2) Implemented the River Minister post in an all-round way for rivers and lakes in Jiangxi Province, appointed the principal person in charge at all levels within the Party or government institutions as the River Minister, and established an improved river minister management system for counties (cities and districts) in Jiangxi Province.

(3) Issued the "Discharge Standard of Water Pollutants in Poyang Lake Ecological Economic Zone" (DB36/852-2015); exerted varied pollutant discharge total amount control and environment standard according to functional areas in core protection zone of the lake,



Binhu control and development belt, and efficient intensive development zone.

(4) Issued a batch of significant documents on improving the water environment governance of Poyang Lake and other river areas, including the “Notice on Further Enhancing the Discharge Reduction Work of Major Pollutants’ Total Amount in Jiangxi Province”, and the “Implementation Opinions of Promoting the Pollution Governance of Livestock Breeding”.

(5) Explored the pilot scheme of ecological compensation in river and lake source areas; issued the “Implementing Measures for Ecological Compensation in the Basin of Jiangxi Province”. In 2016, 2091 million yuan will be funded as the ecological compensation in the whole province, making Jiangxi a province that most supports the national collection of ecological compensation.

(6) Set up green assessment system. According to the “Planning of Main Functional Area in Jiangxi Province”, a differentiated classification assessment system has been constructed, so as to build up an improved assessment mechanism manifesting the scientific outlook on development, in the hope that Jiangxi Province will take the lead in creating green city and county assessment system.

### 3. Comprehensively improve capabilities of industrial pollution prevention

(1) Established a negotiation and guarantee system for the environmental gross indexes of major industrial projects, which controls pollution discharge from its source and claims a 100% implementation rate of the lake district environmental assessment.

(2) Further adjusted and optimized the industrial structure

(3) Paid attention to key areas of rivers and lakes, so as to prevent the construction project of newly-built (reconstructed and expanded) significant heavy metal pollutant discharge around the Five Rivers and Poyang Lake, protection zone of the eastern side of Poyang Lake, key ecological functional area, zones surpassing the heavy metal environmental quality standard and areas where heavy metal pollution happened. The project area does not belong to the area with heavy metals exceeding the environmental quality standards, or the area with heavy metal pollution accidents occurred within

### 4. Continuously improve the monitoring network of water environment

(1) Enhanced the construction of monitoring points. Cross section monitoring controlled by Jiangxi province of the surface water has increased in numbers from 114 to 198, including 173 river cross sections, 25 lake reservoirs. The auto monitoring station of

surface water has increased to 46, including 18 drinking water sources, 9 cross points of Five Rivers and Poyang Lake, 3 lake reservoirs and 16 cross sections over the boundaries of two provinces.

(2) Improved water environment monitoring system of drinking water, to monthly monitor the water quality of the drinking water in each district and city, annually conduct an overall monitoring of all the indicators and regularly release to the public water quality condition.

(3) Improved emergency system of urban drinking water.

(4) Built an auto monitoring system of the key pollution sources controlled by the state.

#### 5. Continuously enhance the environmental law enforcement

(1) Organized special activities to improve the water quality of Poyang Lake, conducted an overall inspection towards the pollutant discharge units within the range of 1 kilometer beside the banks of Poyang Lake. Altogether 204 sewage discharge companies have been inspected, including 42 ordered to rectify themselves within a limited period, 2 forced to stop operation and 1 closed up.

(2) Organized special inspections on the environmental law enforcement of livestock breeding industry in Jiangxi Province; focused on the 662 livestock farms and 16 hog-breeding counties that claim a large number of livestock breeding projects and fail to reach the standard of total discharge reduction; ordered 169 farms to rectify themselves; closed up and demolished 8 farms.

(3) Implemented Special rectification activities to prevent water pollution caused by seriously polluting industries in key river and lake areas.

#### 6. Strengthen the environment infrastructure construction of rivers and lakes

(1) Promoted the construction of urban sewage treatment pipe network in an all-round way and worked hard to speed up equipment construction to treat sewage in the provincial industrial park.

(2) Issued “Interim Measures for Operational Management and Assessment of Urban Sewage Treatment Plants in Jiangxi Province” and “Implementing Standards of Operational Management and Assessment of Urban Sewage Treatment Plants in Jiangxi Province”, and enhanced the evaluation on regular operating situations of the sewage treatment plants.

(3) Promoted the facilities construction and improvement of sewage pipe network in the old urban area, reconstructed the existing confluence of the drainage system, and focused on solving urban sewage pipe network facilities problems, such as the low COD concentration of the flow-in water and low efficiency in treating sewage.

7. Increased capital investment and implemented the idea of substituting subsidies with rewards

(1) Delivered special funds for urban sewage treatment equipment and facilities pipe network

(2) Organized ecological monitoring of Five Rivers and the water quality of eastern river' s cross section, and made the monitoring become the distribution reason of rewards; Annually providing the substitution reward of 173 million yuan, which has promoted the public initiative of ecological protection in source area

(3) Gradually improved the charging system of sewage garbage, with most of the cities in Jiangxi Province having charged the treatment fee of domestic garbage. Besides, the sewage treatment fee has already charged in the whole Jiangxi Province.

#### 8, Control of rural non-point source pollution

According to the rural non-point source pollution, in addition to the environmental law enforcement special inspection of livestock and poultry breeding industry in the whole province, Jiangxi provincial government issued a a series of documents on agricultural non-point source pollution control, including the “Notice on the funding and implementation plan of Jiangxi Province in 2015 to soil testing fertilizer subsidy program” (赣财农指[2015]33号), and “Summary letter of Jiangxi Provincial Department of agriculture on 2015 soil testing fertilizer subsidy program, farmland protection and quality promotion subsidy program, farmland quality protection project, soil moisture and farmland quality monitoring projects”.

#### 3.4.2 Present Environment Quality Assessment for Ambient Air Quality

The ambient air quality of the project counties are shown below. Present Environment Quality of Air in the project area is shown in table3-18.

**Table 3-18 Present Environment Quality Assessment for Ambient Air Quality**

Counties with subproject	Evaluation of Current Ambient Air Quality
Duchang	From the data revealed in the “2014 Report on the Environmental

Counties with subproject	Evaluation of Current Ambient Air Quality
County	Quality” of Jiujiang City, the annual average of standard indexes (SO <sub>2</sub> and NO <sub>2</sub> ) in Duchang County is less than 1. The monitoring results of PM <sub>10</sub> and PM <sub>2.5</sub> fail to reach the II class of the “Ambient Air Quality Standard” (GB3095-1996), which means the air quality of Duchang is at a general level.
Poyang County	According to the data revealed in the “2014 Report on the Environmental Quality”of Shangrao City, the annual average of standard indexes (SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> and PM <sub>2.5</sub> ) in Poyang County is smaller than 1, reaching the II class of the “Ambient Air Quality Standard” (GB3095-1996). In other words, Poyang’s air quality is good.
Yugan County	According to the first-quarter monitoring results of Yugan County’s ambient air quality in 2016 released by Shangrao City Environmental Protection Agency, standard indexes (SO <sub>2</sub> , NO <sub>2</sub> and PM <sub>10</sub> ) in the county are all less than 1, reaching the II class of the “Ambient Air Quality Standard” (GB3095-1996). That means air quality in Yugan County is good.
Fengxin County	According to the “2015 Report on Fengxin County’s Ambient Air Quality” released by local environmental monitor station, the annual average of standard indexes (SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> and PM <sub>2.5</sub> ) is smaller than 1, reaching the II class of the “Ambient Air Quality Standard” (GB3095-1996). Therefore Fengxin county has a good air quality.
Jing’an County	According to the monitoring results of “Ambient Air Quality of Jing’an County’s Provincial Key Ecological Functional Zones” released by local environmental monitor station in October, 2015, standard indexes (SO <sub>2</sub> , NO <sub>2</sub> and PM <sub>10</sub> ) in the county are all less than 1, reaching the II class of the “Ambient Air Quality Standard” (GB3095-1996). That means air quality in Jing’an County is good.
Jishui County	According to the “2015 Monitoring Report on Jishui County’s Ambient Air Quality” released by local environmental monitor station, standard indexes (SO <sub>2</sub> , NO <sub>2</sub> and PM <sub>10</sub> ) in the county are all less than 1, reaching the II class of the “Ambient Air Quality Standard” (GB3095-1996). That means air quality in Jishui County is good.
Shangli County	According to the “fourth-quarter Routine Monitoring Report on Air Quality in Shangli County of Pengxiang City in 2015”, standard indexes (SO <sub>2</sub> , NO <sub>2</sub> and PM <sub>10</sub> ) in the county are all less than 1, reaching the II class of the “Ambient Air Quality Standard” (GB3095-1996). That means air quality in Shangli County is good.

### 3.4.3 Present Environment Quality Assessment for Noise

According to the monitoring results of current acoustic environment, all monitoring stations at the project areas have reached their respective standard of the functional zones. More details of the monitoring results are listed below.

**Table 3-19 Present Environment Quality Assessment for Noise (db(A))**

County with Subproject	Number	Name	Daytime	Nighttime	Assessment	Environmental quality standard for noise (GB3096-2008)	Monitoring Date
Duchang County	N1	Duchang Experimental Primary School	56.7	/	Reach the standard	2 category During the day: 60 During the night: 55	May 9, 2016
	N2	Duchang No.3 Primary School	54.1	/	Reach the standard		
	N3	Maternal and Child Care Service Center of the County	55.8	/	Reach the standard		
	N4	Qinjiafan Primary School	53.6	/	Reach the standard		
	N5	1 meter from the east boundary of garbage transfer station in Beishan Village	50.1	/	Reach the standard	1 category During the day: 55 During the night: 45	
	N6	1 meter from the south boundary of garbage transfer station in Beishan Village	50.3	/	Reach the standard		
	N7	1 meter from the west boundary of garbage	50.4	/	Reach the standard		

		transfer station in Beishan Village				
N8		1 meter from the north boundary of garbage transfer station in Beishan Village	50.1	/	Reach the standard	
N9		1 meter from the east boundary of garbage transfer station in Wangdun Village	51.2	/	Reach the standard	
N10		1 meter from the south boundary of garbage transfer station in Wangdun Village	51.5	/	Reach the standard	
N11		1 meter from the west boundary of garbage transfer station in Wangdun Village	51.1	/	Reach the standard	
N12		1 meter from the north boundary of garbage transfer station in Wangdun Village	51.2	/	Reach the standard	
N13		1 meter from the east boundary of garbage transfer station in Dashu Village	52.6	/	Reach the standard	
N14		1 meter from the south boundary of garbage transfer station in Dashu Village	52.5	/	Reach the standard	

	N15	1 meter from the west boundary of garbage transfer station in Dashu Village	52.4	/	Reach the standard		
	N16	1 meter from the north boundary of garbage transfer station in Dashu Village	52.5	/	Reach the standard		
Yugan County	N1	Pipazhou Community	55.5	48.9	Reach the standard	2 category During the day: 60 During the night: 55	May 10, 2016
	N2	Location of sewage pumping station	56.8	49.5	Reach the standard		
	N3	Location of water pumping station	53.6	46.3	Reach the standard		
Jing'an County	N1	Dianli New Village	53.9	43.7	Reach the standard	2 category During the day: 60 During the night: 55	May 5, 2016
	N2	Meilu Huating	53.7	43.6	Reach the standard		
	N3	Jing'an Middle School	54.1	44.5	Reach the standard		
	N4	Luoja New Village	54.6	43.5	Reach the standard		
Jishui County	N1	Location of sewage pumping station in Enjiang Bridge	53.6	48.4	Reach the standard	4a category During the day:70 During the night: 55	June 13, 2016
	N2	Shuinanbei Village	52.3	46.4	Reach the standard	2 category During the day:60 During the night:55	
	N3	Location of sewage lifting pump station in small estuary	54.1	47.3	Reach the standard	2 category During the day:60 During the night:55	

	N4	Wenshui Village	52.6	46.6	Reach the standard	2 category During the day:60 During the night:55	
	N5	Location of sewage pumping station at North Enjiang Road	53.7	46.3	Reach the standard	4a category During the day:70 During the night: 55	
	N6	North neighborhood at North Enjiang Road	53.4	46.8	Reach the standard	2 category During the day:60 During the night:55	
	N7	Location of sewage pumping station at Wenshan Avenue	54.6	48.5	Reach the standard	4a category During the day:70 During the night: 55	
Shangli County	N1	1 meter from the east boundary of garbage transfer station in Changping Village	47.6	/	Reach the standard	1 category During the day: 55 During the night: 45	May 8, 2016
	N2	1 meter from the south boundary of garbage transfer station in Changping Village	47.1	/	Reach the standard		
	N3	1 meter from the west boundary of garbage transfer station in Changping Village	47.5	/	Reach the standard		
	N4	1 meter from the north boundary of garbage transfer station in Changping Village	47.2	/	Reach the standard		
	N5	1 meter from the east boundary of garbage transfer station in	49.2	/	Reach the standard		



		Futian Town				
N6	1 meter from the south boundary of garbage transfer station in Futian Town	49.3	/	Reach the standard		
N7	1 meter from the west boundary of garbage transfer station in Futian Town	49.3	/	Reach the standard		
N8	1 meter from the north boundary of garbage transfer station in Futian Town	49.1	/	Reach the standard		
N9	1 meter from the east boundary of garbage transfer station in Penggao Town	48.3	/	Reach the standard		
N10	1 meter from the south boundary of garbage transfer station in Penggao Town	48.5	/	Reach the standard		
N11	1 meter from the west boundary of garbage transfer station in Penggao Town	48.5	/	Reach the standard		
N12	1 meter from the north boundary of garbage transfer station in Penggao Town	48.4	/	Reach the standard		
N13	1 meter from the east boundary of garbage	49.7	/	Reach the standard		

		transfer station in Dongyuan Village					
N14		1 meter from the south boundary of garbage transfer station in Dongyuan Village	49.6	/	Reach the standard		
N15		1 meter from the west boundary of garbage transfer station in Dongyuan Village	49.6	/	Reach the standard		
N16		1 meter from the north boundary of garbage transfer station in Dongyuan Village	49.7	/	Reach the standard		
N17		1 meter from the east boundary of garbage transfer station in Chishan Town	50.2	/	Reach the standard		
N18		1 meter from the south boundary of garbage transfer station in Chishan Town	50.3	/	Reach the standard		
N19		1 meter from the west boundary of garbage transfer station in Chishan Town	50.3	/	Reach the standard		
N20		1 meter from the north boundary of garbage transfer station in Chishan Town	50.1	/	Reach the standard		
N21		1 meter from the east	50.6	/	Reach the		

		boundary of garbage transfer station in Yangqi Village			standard		
	N22	1 meter from the south boundary of garbage transfer station in Yangqi Village	50.5	/	Reach the standard		
	N23	1 meter from the west boundary of garbage transfer station in Yangqi Village	50.6	/	Reach the standard		
	N24	1 meter from the north boundary of garbage transfer station in Yangqi Village	50.5	/	Reach the standard		

### 3.4.4 Sediments

The project in Duchang, Yugan and Fengxin County involves dredging. In order to investigate the dredging situation, this project monitors the progress of the dredging work.

#### 1. Principle of Monitoring Points Distribution

**Table 3-20 The principle of Sediment Monitoring Points and Monitoring Programme**

Subproject	Dredging plan	Monitoring Programme and principle	Index tested
Duchang	Eastern side of Zoujiaju Lake nearby Chengxi Street: depth 0.3m or so, dredged sand volume around 8000m <sup>3</sup> .	As there is no industrial pollution sources in the eastern side of Zoujiaju lake, two monitoring stations are set up -- one located at the western side and one at northern side of the lake	pH, Cu, Zn, Pb, Cd and Cr
Yugan	Dredge the outlet canal of Pipa Lake: around 30000m <sup>3</sup> dredged sand volume, with the upper reaches dredged depth to be 2.0m, length around 300m and lower reaches dredged depth 0.8m, length around 2km	Both sides of the sludge-cleaning section currently have no industrial pollution source. Therefore altogether 2 monitoring stations are set up, respectively located at the eastern and western side.	pH, Cu, Zn, Pb, Cd, Cr and Ni
Fengxin	①Beizhizhen Canal: 3480 m <sup>3</sup> dredged sand volume, depth 0.5m, and length around 2900m; ② South Canal: 7600 m <sup>3</sup> dredged sand volume, depth 0.5m, and length around 1900m; ③Dazhai Canal: 2400m <sup>3</sup> dredged sand volume, depth 0.3m, and length around 1200m.	Both sides of the sludge-cleaning section currently have no industrial pollution source. Therefore each of these three canal is equipped with one monitoring station -- the total amount is 3.	pH, Cu, Zn, Pb, Cd, Cr and Ni



Figure 3-23 Sediments Monitoring points Map of Zoujiaju Lake in Duchang County



Figure 3-24 Sediments Monitoring Points Map of the Outlet Canal of Pipa Lake in Yugan County



Figure 3-25 Sediments Monitoring points Map of South Canal, Dazhai Canal and Beizhizhen Canal in Fengxin County

## 2. Sample Collection and Monitoring Measures

The collected sample meets the standard of sediment written in the “Regulation for Water Environmental Monitoring” (SL219-2013). Treatment and monitoring measures are conducted according to the requirements of “Technical Specification for Soil Environmental Monitoring” (HJ/T166-2004).

### ① Sampling

Sediment tube samplers are applied. The sample shall be kept away from light, under the temperature of 4°C, and put in a sealed glass container. Its name and number are listed upon the container.

### ② Sample Pretreatment

Air drying: the sample is naturally air dried. Divide the sludge sample (generally not less than 500g) into 100g by quartering, and put it upon the air-dry plate. Make the air-dried sample into a layer, with a thickness of 2 to 3cm, and properly smash and flip it. Stones and remains of animals and plants shall be removed.

Screening: Grind and smash the sample with a wooden bar until it can go through the 2mm nylon mesh, then put the remaining sample into an agate mortar, grind it until it can easily go through the 0.49mm nylon mesh.

### ③ Analytic Approaches of the Monitoring

The analytic approaches of Sediments Monitoring Factors are shown below.

**Table 3-21 Analytic Approaches of Sediments Monitoring Factors**

Monitoring Factors	Monitoring Equipment	Monitoring Measures	Approach Sources
Cu	Atomic absorption spectrophotometer	Flame atomic absorption spectrophotometry	GB/T17138-1997
Zn	Atomic absorption spectrophotometer	Flame atomic absorption spectrophotometry	GB/T17138-1997
Pb	Graphite furnace atomic absorption spectrophotometer	Graphite furnace atomic absorption spectrophotometry	GB/T17141-1997
Cd	Graphite furnace atomic absorption spectrophotometer	Graphite furnace atomic absorption spectrophotometry	GB/T17141-1997
Cr	Atomic absorption spectrophotometer	Flame atomic absorption spectrophotometry	GB/T17137-1997
Ni	Atomic absorption spectrophotometer	Flame atomic absorption spectrophotometry	GB/T17139-1997

### 3. Test results

**Table 3-22 Sediment Contents Test Results (mg/kg) (mg/kg)**

Project	Water Body	Project Sample (sampling time)	pH	Cu	Zn	Pb	Cd	Cr	Ni	Moisture Content
Duchang	Zoujiaju Lake	Sediments from northern part of the lake (2015.11.3)	6.52	26.05	53.86	17.03	Not detected	29.20	/	90%
		Sediments from the southern side of the	6.56	33.45	97.15	19.85	Not detected	28.38	/	90%

		lake (2015.11.3)									
		Sediments from the northern side of the lake (2016.3.18)	6.54	36.83	93.20	16.06	Not detected	28.69	/	90%	
Yugan	Pipa Lake	Sediments Monitoring Point A (2016.06.06)	7.21	26.4	928.9	16.25	Not detected	170.4	8.9	90%	
		Sediments Monitoring Point B (2016.06.06)	7.45	16.75	1216.9	Not detected	Not detected	151.9	10.6	90%	
Fengxin	South Canal (2016.06.06)		6.45	39.1	2118.4	Not detected	Not detected	245.1	26.4	90%	
	Dazhai Canal (2016.06.06)		6.82	3.75	1163.5	1.5	Not detected	129.6	Not detected	90%	
	Beizhizhen Canal (2016.06.06)		6.99	64.25	2774.6	3.0	Not detected	209.1	23.4	90%	
Standard	“Environmental Quality Standard for Soils” (GB/15618-1995) II class		< 6.5	50	200	250	0.3	50 <sup>1</sup>	40	/	
			6.5~7.5	100	250	300	0.3	200	50	/	
	“Control Standards for Pollutants in Sludge from Agricultural Use” (GB4284-84)		< 6.5	250	500	300	5	600	200	/	
			≥ 6.5	500	1000	1000	20	1000	200	/	
	“Interim Standard of Soil Quality Assessment for Exhibition Sites” (HJ350-2007)		A	/	63	200	140	1	190	50	/
			B	/	600	1500	600	22	610	2400	/



)									
“Sludge Treatment in Urban Sewage Treatment Plants and Clay Used for Woodland” (CJ/T 362-2011)	5.5~8.5	1500	3000	1000	20	1000	200	60%	
“Standard of Sludge Treatment and Utilization” (40CFR Part 503) (American)	/	4300	7500	840	85	/	420	/	
“Principles of Sludge Used for Agricultural Purposes” (Directive 86/278/EEC) (European)	/	1000~1750	2500~4000	750~1200	20~40	/	300~400	/	

From the above test results, we can know:

(1) The Subproject in Duchang County

The amount of heavy metal contained in the Sludge of Zoujiaju Lake reaches the II class of “Environmental Quality Standard for Soils” (pH is within the range from 6.5 to 7.5), as well as the “Control Standards for Pollutants in Sludge from Agricultural Use” (pH is no less than 6.5). The dredged Sludge through natural air-drying can be used in farmlands and gardens.

(2) The Subproject in Yugan County

According to the testing results, among the monitoring factors of sediments at point A and point B in the discharge channel of Pipa Lake, the monitoring values of Cu, Pb, Cd, Cr and Ni have all satisfied the secondary standard (pH: 6.5~7.5) in “Environmental Quality Standard for Soils” (GB/15618-1995) and the standard (pH ≥ 6.5) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84).

The monitoring result of Zn at point A is 928.9mg/kg, exceeding the secondary standard (pH: 6.5~7.5; 250 mg/kg) in “Environmental Quality Standard for Soils” (GB/15618-1995), but satisfying the standard (1000 mg/kg) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84). The monitoring result of Zn at point B is 1216.9 mg/kg, exceeding the secondary standard (pH: 6.5~7.5) in “Environmental Quality Standard

for Soils” (GB/15618-1995) and “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84), but satisfying the B-level standard (1500 mg/kg) in “Interim Standard of Soil Quality Assessment for Exhibition Sites” (HJ350-2007), the standard (3000 mg/kg) in “Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland”(CJ/T362-2011), the standard (2500 mg/kg ~4000 mg/kg) in “Principles of Sludge Used for Agricultural Purposes” (Directive 86/278/EEC) (EU) and the standard (7500 mg/kg) in “Standard of Sludge Treatment and Utilization”(40CFR Part 503) (US). According to the above comparison with the standard and analysis, the sediments in Pipa Lake in this project do not belong to hazardous wastes, but are common solid waste, and therefore they are planned as sludge used in forestland.

Analyze the reason why the monitoring result of Zn in the dredging sediments does not satisfy the secondary standard (pH: 6.5~7.5) in “Environmental Quality Standard for Soils” (GB/15618-1995). It is mainly caused by the sewage disposal of small electroplate factories in urban areas in the 1980s and 1990s. Nowadays, there is no electroplate industry in urban areas.

### (3) The Subproject in Fengxin County

1) The monitoring result of Zn in the sediments of Dazhai Canal is 1163.5mg/kg (pH = 6.82), exceeding the secondary standard (250 mg/kg) in “Environmental Quality Standard for Soils” (GB/15618-1995) and the standard (pH $\geq$ 6.5; 1000 mg/kg) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84), but satisfying the B-level standard (1500 mg/kg) in “Interim Standard of Soil Quality Assessment for Exhibition Sites” (HJ350-2007), the standard (3000 mg/kg) in “Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland”(CJ/T362-2011), the standard (2500 mg/kg ~4000 mg/kg) in “Principles of Sludge Used for Agricultural Purposes” (Directive 86/278/EEC) (EU) and the standard (7500 mg/kg) in “Standard of Sludge Treatment and Utilization”(40CFR Part 503) (US). The other monitoring factors of Dazhai Canal have all satisfied the secondary standard in “Environmental Quality Standard for Soils” (GB/15618-1995).

2) The monitoring results of Zn and Cr in the sediments of South Canal are respectively 2118.4mg/kg and 245.1 mg/kg (pH = 6.45), exceeding the secondary standard (200 mg/kg, 150 mg/kg) in “Environmental Quality Standard for Soils” (GB/15618-1995). The monitoring result of Zn exceeds the standard (pH<6.5; 500 mg/kg) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84) while the monitoring result of

Cr satisfies the standard (600 mg/kg) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84). However, the monitoring result of Zn satisfies the B-level standard (1500 mg/kg) in “Interim Standard of Soil Quality Assessment for Exhibition Sites” (HJ350-2007), the standard (3000 mg/kg) in “Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland”(CJ/T362-2011), the standard (2500 mg/kg ~4000 mg/kg) in “Principles of Sludge Used for Agricultural Purposes” (Directive 86/278/EEC) (EU) and the standard (7500 mg/kg) in “Standard of Sludge Treatment and Utilization”(40CFR Part 503) (US). The other monitoring factors of South Canal have all satisfied the secondary standard in “Environmental Quality Standard for Soils” (GB/15618-1995).

3) The monitoring results of Zn and Cr in the sediments of Beizhizhen Canal are respectively 2774.6mg/kg and 209.1 mg/kg (pH = 6.99), exceeding the secondary standard (250 mg/kg, 200 mg/kg) in “Environmental Quality Standard for Soils” (GB/15618-1995). The monitoring result of Zn exceeds the standard (pH $\geq$ 6.5; 1000 mg/kg) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84) while the monitoring result of Cr satisfies the standard (1000 mg/kg) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84). However, the monitoring result of Zn satisfies the B-level standard (1500 mg/kg) in “Interim Standard of Soil Quality Assessment for Exhibition Sites” (HJ350-2007), the standard (3000 mg/kg) in “Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland”(CJ/T362-2011), the standard (2500 mg/kg ~4000 mg/kg) in “Principles of Sludge Used for Agricultural Purposes” (Directive 86/278/EEC) (EU) and the standard (7500 mg/kg) in “Standard of Sludge Treatment and Utilization”(40CFR Part 503) (US). The other monitoring factors of Beizhizhen Canal have all satisfied the secondary standard in “Environmental Quality Standard for Soils” (GB/15618-1995).

4) Analyze the reason why the dredging sediments do not satisfy the secondary standard (pH: 6.5~7.5) in “Environmental Quality Standard for Soils” (GB/15618-1995). It is mainly caused by the sewage disposal of small electroplate factories in urban areas in the 1980s and 1990s. Nowadays, there is no electroplate industry in urban areas.

5) According to the above comparison with the standard and analysis, the sediments in South Canal, Dazhai Canal and Beizhizhen Canal in this project do not belong to hazardous wastes, but are common solid waste, and therefore they are planned as sludge used in forestland.

### 3.5 Land use

According to the status quo survey, the current situation of land use in the project areas is listed below.

**Table 3-23 Land use Status quo of project area**

Subproject	Project Category	Location	Land Type
Duchang	pipe network engineering	urban areas	construction land
	garbage transfer station	Dashu Village	wasteland
		Beishan Village	wasteland
		Wangdun Village	wasteland
	water environment monitoring system	Nanshan Street nearby areas around the lake	wasteland
	auto monitoring station of water environment at the boundary cross sections	boundaries of Laowucaao at Shishan Village and Tieluxia Village in Sanchagang Town	wasteland
Xiaojiang Port nearby Wangjia at Zhongbei Village		wasteland	
Poyang	ecological flood intercepting trench, constructed wetlands and sewage treatment plants	/	wasteland, unoccupied land and basin
Yugan	sewage pipe network engineering	urban areas	construction land
	waste collection point	Southwest of the lake area	wasteland
	Auto Monitoring Station	Pipa Lake, the mouth and outlet of the lake	wasteland
Fengxin	pipe network engineering	northern and southern urban areas	construction land
	auto water quality monitoring station of rivers and lakes	intakes of the running water in Fengxin County	wasteland
		boundaries of Liaohe River and Anyi County in Fengxin County	wasteland
Jing'an	pipe network engineering	urban areas	construction land
	Water quality monitoring center	northern urban areas	wasteland
	auto monitoring station	northern branches of North Liaohe River at the boundaries of Jing'an and Anyi County	wasteland
		southern branches of North Liaohe River at the boundaries	wasteland

		of Jing'an and Fengxin County	
	pipe network engineering	old town and southern urban areas	construction land
Jishui	water environment monitoring system	western side of the sewage pumping station beside Enjiang Bridge	wasteland
	water environment auto monitoring station at the river boundary cross section	near the water quality monitoring cross section at river boundaries in Zhuanmen Village of Wenfeng Town in Jishui County	wasteland
		near the water quality monitoring cross section at boundaries of Dajiang Mountain in Tangbian Village of Dingjiang Town in Jishui County	wasteland
Shangli	garbage transfer station	Futian Town, Changping Xiang Chishan Town, Dongyuan Xiang PenggaoTown, and Yangqi Xiang	wasteland

## 4 Comparison of Alternatives

Alternatives comparison analysis of the project are mainly carried out from 4 aspects: 1.comparison analysis of zero option; 2. Comparison of technical solution; 3. Comparison of processes; 4. Comparison analysis of site selection.

General principles of alternatives comparison analysis are:

(1) Quantitative comparison principle: To quantify the environment impacts caused by the implement of each alternative as much as possible.

(2) comprehensive comparison principle: To carry out comprehensive comparison analysis from environmental, Technical, economical, and social aspects.

(3)Compliance comparison principle of compatible: Selected solution should be in compliance with the requirements of relevant development plannings and standards, and compatible with the local conditions.

### 4.1 Zero option comparison analysis

The project environment impact assessment carried out zero option comparison analysis from the start point of environmental profit and loss and social economy. The results are listed in Table4-1.

**Table 4-1 Project zero option comparison analysis**

Item	This project	Zero optionzero option)
Advantages	(1) In compliance with the technology policy for municiple domestic wastewater treatment and pollution prevention and control; (2) In compliance with Poyang Lake Eco-economic Zone Planning ; (3) Good for protection the Poyang Lake basinwater quality; By 2023, it is expected to reduce the annual discharge of pollutants in the waters of Poyang Lake: TN,561.37t; TP,44.15t; COD, 2709.72 t, and reduce 7.27638 million T. of rubbish into the lake (4) Improve people's life quality, improve the living environment. (5)Further improve the urban infrastructure, the level of urbanization, and realize the sustainable development of the city	(1) Maintaining the status quo, like the undisturbance of the vegetation; (2) No change of Land use Value (No land occupation); (3) No environment impact issues like vegetation destruction and dust in construction period.
Disadvantages	(1) Land occupation: land expropriation ; (2) construction waste, wastewater, dust and noise in construction period; social and eco impacts. (3) equipments Noise, exhause gas and wastewater in the operation period might have adverse environment impacts.	(1) Wastewater is direct dischargeed into surface water body without treatment, which serious polltuted the surfacewater; (2) No solution of existing outdated drainage system

comprehensive analysis	From the view point of social and environment, the implement of the project is better than zero option
------------------------	--

As can be seen from above table, zero option doesn't have environment impact , nevertheless the existing direct discharge of wastewater, waste into environment, will definitely pollute the environment; the project may bring some environment impacts, while it canbe avoided and reduced by certain environmental protection measures. And the environment impact in construction period is temporary, while the social and environment benefit from the implementation of the project is a long run.Specially, it has positive effects on the protection and improvement of the Poyang Lake basin water quality, urban infrastructure improvement. Therefore, from the view point of social Economic development and environment protection, the implement of the project is better than zero option. It is necessary to launch the project. The project will directly benefit from the population of 1 million 285 thousand and 310 people, including 626 thousand and 56 females.

## 4.2 Technical solution comparison

### 4.2.1 Technical solution comparison for Duchang domestic wastewater management system enhancement

Technical proposal comparison for Duchang domestic wastewater management system enhancement comparison is listed in table4-2.

**Table 4-2 Summary of comparison for wastewater pipeline solutions**

Items	Solution 1	Solution 2
General Introduction	<ul style="list-style-type: none"> <li>● Abolition of the 2# wastewater pumping station,</li> <li>● New construction of 1925m gravity flow wastewater pipeline connected into the wastewater treatment plant, as well as the wastewater discharge outlets around zoujiazui lake, Chengxi Avenue wastewater pipeline, and sewage interception pipeline line at the west side of zoujiazui lake.</li> </ul>	<ul style="list-style-type: none"> <li>● Connection of the Chengxi Avenue wastewater pipeline and wastewater discharge outlets around zoujiazui lake into the 2# wastewater pumping station,</li> <li>● Reconstruction of the pumping station scale to 12 thousand m<sup>3</sup>/d</li> </ul>
Construction Cost	5.641million Yuan present value of the cost of 834.6612million yuan	3.686 million Yuan present value of the cost of 96.5225million yuan
Operation Cost	About 100 thousandyuan /a	About 690 thousandyuan/a
Feasibility	Compliance of the gravity flow elevation differences between the 2# wastewater pumping station influent pipeline and the wastewater treatment plant's influent point, no housing demolition required along the route, proposal is feasible.	Extention of 2# wastewater pumping station scale, connection of wastewater discharge outlets around into the pumping station , proposal is feasible

Items	Solution 1	Solution 2
Environment Impact	Reduction of the environment impact from the Pumping Station	Extention of Pumping Station scale, adding new Pumps , which will increase the Noise impacts
Advantage	<ul style="list-style-type: none"> <li>● Saving of Pumping Station operation Management cost ;</li> <li>● Reduction of the Investment and operation Management cost of the Pumping Station at the end point of sewage interception pipeline in the west side of Zoujiazui lake</li> <li>● Connection of the wastewater discharge outlets around Zoujiazui lake into the wastewater treatment plants</li> </ul>	<ul style="list-style-type: none"> <li>● Short term savings of Investment;</li> <li>● Connection of the wastewater discharge outlets around Zoujiazui</li> </ul>
Disadvantage	<ul style="list-style-type: none"> <li>● New construction of wastewater treatment plants influent main pipeline ,</li> <li>● Increase of initial stages Investment cost</li> </ul>	<ul style="list-style-type: none"> <li>● Increase of the annual operation Management cost of Pumping Station;</li> <li>● New Pumping Station required at the end point of the Sewage interception pipeline in the West side of Zoujiazui lake</li> </ul>
Conclusion	Recommended	

As can be seen from the above table, solution 2 has more environment adverse impact, which will increase the Pumping Station Noise impact ;

Solution 1 's present value of the cost is 83 million 461 thousand and 200 yuan, which is less than the present value of the Solution2, which is 96 million 522 thousand and 500, and in short of 2 lifting pump station. The reduction of the pumping stations number is conducive to the maintenance and management of the county drainage system. Thus, solution 1 is the recommended solution for the project. Namely is Abolition of the 2# wastewater pumping station; New construction of 1925m gravity flow wastewater pipeline connected into the wastewater treatment plant, as well as the wastewater discharge outlets around zoujiazui lake, Chengxi Avenue wastewater pipeline, and sewage interception pipeline line at the west side of zoujiazui lake.

#### 4.2.2 Methods comparison for Poyang county township domestic wastewater treatment

According to the township wastewater treatment scale and distribution characteristics of China, 2 kinds of the flexible treatment "act according to circumstances" can be considered.

Solution 1: "Centralized " wastewater treatment of township or union-villages;

Solution 2: "Decentralized " wastewater treatment of single villiage.

**Table 4-3 Township domestic wastewater Treatment method comparison**

Items	Solution 1	Solution 2
-------	------------	------------



Items	Solution 1	Solution 2
Treatment type	Relative centralized wastewater treatment	Decentralized wastewater treatment
Description (in the case of Shuanggang town)	Collection of the wastewater effluent of 8 Villiages by the pressure pipeline to the centralized wastewater treatment facility in Jiangjia Villiage	Set up 8 decentralized wastewater treatment facility for 8 Villiages, and direct discharge into Pearl Lake after treatment and meet the standard requirement.
Implementation difficulty	Project area has complex terrain, construction is difficult.	Discharge into nearby lake, Less implementation difficulty
Environment benefit	Destruction of farmland, low environment benefit	Less land occupation, high environment benefit of decentralized treatment facility
Social benefit	Farmland, dry land and river channel along the pipeline, involving large scope of residents, higher construction risk	1) Site selection within the villiages towns 2) Lower construction risk
Main engineering quantity (in the case of Shuanggang town)	1) 20km pressure pipeline; 2) 7 wastewater pumping stations; 3) 1 centralized wastewater treatment station(700t/d);	8 decentralized wastewater treatment stations (50t/d~250t/d)
project investment (in the case of Shuanggang town)	8.50million Yuan	5.15 million Yuan
Operation cost (in the case of Shuanggang town)	3.0 Yuan/t	1.2 Yuan/t
Advantage	1) Suitable for area with high population density, and centralized wastewater generation; 2) Reliable and efficient management and control of wastewater treatment operation; 3) Unified collection, unified transport, unified treatment.	1) Suitable for multiple occasions and scale, flexible construction and treatment type, and short construction period; 2) Samll area occupation and lower construction and operation cost; 3) flexible use of processing technology, good for nitrogen and phosphorus removal; 4) in place collection, in place treatment, in place discharge and in place recycling.
Disadvantage	1) High investment on Wastewater pipeline, and high operation and maintenance cost; 2) Middle and long time transport of wastewater in the Pipeline will cause wastewater leakage, and the wastewater leakage will cause soil and ground water pollution , and difficulty of reclaimed water use; 3) The sludge with potential of pollution not suitable for Agriculture reuse and continued harmless treatment.	1) Multiple sites, involving site selection for Multiple sites; 2) Less treatment quantity of wastewater for single site.
Conclusion		Recommended

According to the on-site survey of villiages in the Pearl Lake basin, villiages along the

lake side are not within the municipal pipe network coverage scope due to the dispersed layout of population, wastewater quality and quantity fluctuate greatly. Decentralized wastewater treatment has the feature of in place treatment and discharge and the advantages like lower construction and operation cost, less land occupation, less implementation difficulty, less environment impacts. Therefore the decentralized wastewater treatment is more suitable for the project.

#### 4.2.3 Comparison and Selection among Treatment Schemes for Diffused Pollution in Poyang County

The subproject of ecological remediation and protection for river systems in Pearl River Basin mainly treats the diffused pollution in this basin. Common technical treatment schemes mainly include artificial wetland, artificial floating island and ecological slope protection. This project conducts a comparison and selection among these three technologies as follows.

**Table 4-4 Table of Comparison and Selection among Treatment Schemes for Diffused Pollution**

Category	Technology of Constructed wetland	Technology of Artificial Floating Island	Technology of Ecological Slope Protection
Overview	Through the optimization of physical, chemical and biological actions in the ecological system of artificial wetland, utilize synergistic effect of the physical, chemical and biochemical reactions in the eco-system to dispose the sewage	A special treatment technology for wetland sewage through forming a floating wetland by simulating the process of river and lake paludification in nature	Realize the function of ecological service mainly through the actions (interception, transpiration, permeation, etc.) of the canopy, dry layer, earth's surface, litter layer and underground root system of the vegetation
Scope of Application	Applicable to all kinds of land parcels	Mostly applicable to river banks, lakeshores, swamps, etc.	Mostly applicable to lakeshores, etc.
Purification Mechanism	Optimization of physical, chemical and biological actions	Physical action	Physical action
Advantages	Extensive application scope, strong impact resistance	Excellent visual effect	Double functions of ecological service and engineering protection

Disadvantages		Difficult to Maintain	Limited construction sites
Project Cost	Normal	Low	High
Cost for Project Maintenance	Normal	Normal	Normal
Recommended Scheme	Recommended Scheme		

Constructed wetland has an extensive application scope and strong impact resistance, and thereby it is better than the other two technical schemes (i.e., artificial floating island and ecological slope protection). Meanwhile, the project cost and maintenance cost of constructed wetland are relatively low. Combining with the terrain of Pearl Lake Basin, this ecological remediation project for the river systems recommends constructed wetland technology as the major treatment scheme. As the spot cannot converge the overland runoffs into the areas with existing streams, an ecological sewage interception gutter should be constructed along the lake so as to intercept and reduce the pollutants.

#### 4.2.4 Technical solution comparison for Jing'an waste collection and transportation

According to the present situation of Jing'an county solid waste collection and transport system, 4 design solutions were taken into consideration:

Design 1: New construction of 2 waste transport stations in East county and South county; Compression waste vehicles collection in South county industrial park;

Design 2: New construction of 1 waste transport station in south county, part of the domestic waste in East county is collected and transported by small motor vehicles collection to the south county waste transport station, the other part is collected and transported by compression waste vehicles to waste landfill; Compression waste vehicles collection in South county industrial park;

Design 3: No new construction of waste transport station; Extension of the existing waste transport station, equipped with waste collection vehicles appropriately;

Design 4: Maintain the status of existing waste transport station, equipped with more waste collection vehicles in the urban area appropriately, most of the urban waste is collected by waste compression vehicle and directly transport to waste landfill.

The comparison of 4 designs are summarized as Table 4-4.

**Table 4-5 Jing'an county waste transfer plan comparison**

Items	Design 1	Design 2	Design 3	Design 4(Recommended)
Investment	14.632 million Yuan	12.067 million Yuan	10.005 million Yuan	8.293 million Yuan
Annual operation cost	5.927million Yuan /a	5.862million Yuan /a	5.976million Yuan /a	5.753million Yuan /a
Net present value of Total Construction Investment + Operation Cost	73.886million Yuan	70.693million Yuan	69.787million Yuan	65.850million Yuan
Transportation	<ul style="list-style-type: none"> <li>● 3km of average distance for Waste collection &amp; transport</li> <li>● Reasonable arrangement of Waste collection and transportation route ,</li> <li>● Less impact on transportation</li> </ul>	<ul style="list-style-type: none"> <li>● Reasonable arrangement of Waste collection and transportation route</li> <li>● Less impact on transportation</li> </ul>	<ul style="list-style-type: none"> <li>● Waste transport station located in the suburb area, less impact on transportation</li> </ul>	<ul style="list-style-type: none"> <li>● Waste collection by Compression waste vehicles, some impacts on transportation</li> </ul>
Energy Savings	<ul style="list-style-type: none"> <li>● Proper distance of waste collection &amp; transport, lower Investment on collection vehicles</li> <li>● Saving of collection and transport cost</li> </ul>	<ul style="list-style-type: none"> <li>● Proper distance of waste collection &amp; transport, lower Investment on collection vehicles</li> <li>● Saving of collection and transport cost</li> </ul>	<ul style="list-style-type: none"> <li>● Longer distance of Waste collection, need more waste collection vehicles ,</li> <li>● Increase of collection and transport cost</li> </ul>	<ul style="list-style-type: none"> <li>● Heavy waste compression vehicles, longer transport distance cause more fuel consumption</li> </ul>
Environment impact	Some impacts on the around environment	Some impacts on the around environment	Extension of existing transport station , less environment impacts	No fixed transport station , does not involve transport station exhaust gases impact, minimal environment impact
Advantage	<ul style="list-style-type: none"> <li>● Short waste collection &amp; transport distance, Saving of transport cost</li> </ul>	<ul style="list-style-type: none"> <li>● Short waste collection &amp; transport distance, Saving of transport cost</li> </ul>	<ul style="list-style-type: none"> <li>● Saving of construction investment,</li> <li>● Reduction of land land occupation</li> </ul>	<ul style="list-style-type: none"> <li>● Saving of construction investment,</li> <li>● Reduction of land land occupation</li> </ul>
Disadvantage	<ul style="list-style-type: none"> <li>● Multiple Transport station s, difficult for land expropriation,</li> <li>● Higher Construction cost, more people needed for Management</li> </ul>	<ul style="list-style-type: none"> <li>● Multiple Transport station s, difficult for land expropriation,</li> <li>● Higher Construction cost, more people needed for Management</li> </ul>	<ul style="list-style-type: none"> <li>● Longer waste collection &amp; transport distance, cause more fuel consumption</li> </ul>	<ul style="list-style-type: none"> <li>● Longer waste collection &amp; transport distance, cause more fuel consumption</li> </ul>
Conclusion				Recommended 方案

As can be clearly seen from the above table, Design 4 has clear advantages over the other 3 designs from the viewpoint of economy, management and environment impact. Jing'an county has small population scale, and the urban land use is in short. There is no land expropriation for the Station in Design 4, which can avoid public disputes on site selections, and the Odor impacts in operation period. At the same time it is in compliance of

the transport need. Therefore Design 4 is recommended, namely, to remain the existing waste transport station , equipped with more waste compression vehicles , main waste collection job will be done by waste compression vehicles.

#### 4.2.5 Comparison for ways of dredging

##### 1, Quantity of dredging

Duchang, Yugan and Fengxin county sub projects involve water body dredging, the quantities of dredging are listed in Table 4-5.

**Table 4-6 Quantities of dredging**

Sub project	Dredging water body	Dredging location	Dredging length or scale	Dredging depth (m)	Dredging quantity(m <sup>3</sup> )
Duchang	Zoujiazui lake	Lake body in the east side of Chengxi Avenue	25610m <sup>2</sup> of lake body area	0.3	8000
Yugan	Pipa Lake	Effluent channel	300m in Upstream area, 2000m in Downstream area	2 in upstream area, 0.8 in downstream area	30000
Fengxin	Beizhizhen channel	The entire length	2900m	0.6	3480
	South channel	The entire length	1900m	1	7600
	Dazhai channel	The entire length	1200m	0.4	2400

##### 2, Comparison for way of dredging

The main way of lake dredging are dry cleaning and wet suction.

Dry cleaning is mechanical clearing of sediment after cutting off the water flow, drainage of the lake, and airdry the sediment. Wet suction mainly use dredger construction. Dredger construction can be divided into grab dredgers, cutter suction dredger, bucket dredge etc.,according to the structure and properties of dredgers.

**Table 4-7 Comparison for Way of dredging**

Items	Dry cleaning	Wet suction
Methods	In dry season , cutting off the water flow, drainage of the lake, airdry the sediment , then mechanical clearing.	Keep the water flow, using dredgers to excavated the sediment under water, and transport to the designated area by sealed pipeline.
Applicable scope	Applicable for narrower river channels, small lake body or water body with less dredging quantity due to the drainage of water, sediment airdry.	Applicable for larger Environmental dredging project of large, middle lake and reservoir, in most cases, river channels.
Construction land occupation	No or less temporary land occupation	More temporary land occupation
Construction operation and progress	Construction in dry season, strong operability and easy for construction	construction in wet season, higher requirements on construction management

Environment impact	Construction in dry season, less impacts on water quality and aquatic ecological environment.	less impacts on water quality
Cost	lower	higher
Characteristic	<ul style="list-style-type: none"> <li>① Dredging completely, easy to ensure the quality and lower technology and equipment requirements;</li> <li>② lower moisture content of generated sludge, easy for post-treatment;</li> <li>③ Lower cost of construction;</li> <li>④ Should be carried out in the dry season, which is time limits for a project, and the construction process susceptible to weather as well</li> </ul>	<ul style="list-style-type: none"> <li>① Dredging equipments should have higher positioning and excavation accuracy, to prevent missing and over excavation, no disturbance of primary soil, can lower the water body environment impact as much as possible during the dredging process.</li> <li>② During the dredging process, the water body turbidity will not be reduced;</li> <li>③ Management requirements are higher because the environmental cutter suction dredger is big and difficult to enter the site, as well as large temporary land occupation, and high construction cost.</li> </ul>

### 3, Selection of ways of dredging

After comparison, Dredging plan is listed in Table 4-7.

**Table 4-8 Project dredging plan**

Project	Way of dredging	Specific scheme	Conditions for scheme selection
Duchang	Dry cleaning	Cutting off the water flow, dry dredging with excavator in dry season	Small lake body area; Small dredging quantity; construction process with compliance of the project requirements; construction in dry season
Yugan	Wet suction	Underwater excavation with environmental cutter suction dredger	Large dredging quantity; Temporary land occupation with compliance of the project requirements;
Fengxin	Dry cleaning	Mechanical and artificial dredging method in dry season	narrower river channel for Dredging, basically no water in dry season, with compliance of the dry cleaning condition, Local terrain is not convenient for large equipments like dredger approaching construction site, not with compliance of other way of dredging condition

According to the features of dredging schemes and practical situation of project dredging, after taking corresponding environmental protection measures, The EIA team believe the dredging schemes of each sub project is reasonable.

## 4.3 Process comparison

### 4.3.1 Process comparison for Poyang wastewater treatment station

The Facultative-aerobic MBR (FMBR), Biological contact oxidation and Rotating Biological Contactor are 3 common process for wastewater treatment statio. The comparison of these 3 process is listed in Table 4-8

**Table 4-9 3 Wastewater treatment processes comparison for wastewater treatment**

**station**

Item	FMBR	Biological contact oxidation	Rotating Biological Contactor
Introducton	Wastewater → Grid → FMBR → effluent	Wastewater → Grid → biofilm + sand filtration → effluent	Wastewater → regulating tank → A <sup>2</sup> /O+rotating contactor → effluent
Feasible scale	Appropriate size, Suitable for Centralized or decentralized setup	Appropriate size; Suitable for Centralized or decentralized setup	Appropriate size; Suitable for Centralized or decentralized setup
Organic excess sludge	No	Yes	Yes
Resistance to shock loads	Strong	Strong	Strong
Effluentwater quality	Grade 1A	Grade 1A	Grade 1A
Need for professional personnel	No need	No need	No need
Investment of treatment station (Yuan/t Water)	3500~4500	5000~6500	6000~7500
Occupied area ratio (m <sup>2</sup> /m <sup>3</sup> )	0.3~0.4	0.3~0.4	0.3~0.4
Direct operation cost ( Yuan/twater)	1.0~1.2	1.0~1.2	1.0~1.2
Conclusion	Recommended		

As known from the above table, all of the 3 processes can reach a stable effluent of Grade 1A, with almost the equivalent operation cost. The FMBR has less engineering cost, and no organic excess sludge due to self digestion, which reduces the sludge treatment fee. The FMBR process is recommended.

#### 4.3.2 Process comparison for Poyang county Constructed wetland

##### 1, Constructed wetland type comparison

Common wetland types mainly include surface flow constructed wetland, horizontal subsurface flow constructed wetland, upward vertical flow constructed wetland and downward vertical flow Constructed wetland, the processes and effects of different wetland type are different, advantages and disadvantages are relatively prominent. The applicable wetland type for the project is selected through the following specific analysis of each wetland, combined with the project site, investment, feasibility and other comprehensive indicators.

##### (1) Surface flow constructed wetland

Surface flow Constructed wetland (SFW) or (Free Water Surface, FWS) is the wetland

closest to the natural type of all the constructed wetland types. As the matrix is not required for sand and gravel, a little bit of reconstruction of existing river channel, depressions will be enough for a surface flow constructed wetland, without any side effects on the flood control and discharge function of the river network and the land function of the lowerlands.. Wastewater flow on the Surface of the SFW matrix, with air exposure, oxygen can diffuse through the water. A partition wall is arranged between the constructed wetland pool body or the channel, and the bottom of the constructed wetland is also provided with waterproof materials to prevent the sewage infiltration and protect the groundwater. The pool is generally filled with soil, sand, cinder or other matrix materials for aquatic plant to fix the roots.

Surface flow Constructed wetland the water level has shallow water level and slow water flow, water usually flows through each processing unit in horizontal flow. Most of the organic matter removals are acquired by the biofilm living on the underwater part of plant stems.

Water surface of Surface flow constructed wetland is located above the substrate of constructed wetland, and the water depth is generally 0.20~0.40 m. In this type of constructed wetlands, water flows from the inlet through the surface of the constructed wetland at a certain depth, and out flow through the overflow weir, with some of the waste water evaporated or infiltrated into the constructed wetland.

#### (2) Horizontal subsurface flow Constructed wetland

Water level of Horizontal subsurface flow constructed wetland (HF) is below the surface of the matrix layer.

It is the most widely studied and applied constructed wetland wastewater treatment system in the world, in the main form of plant systems like reed beds with a variety of fillings.

Horizontal subsurface flow constructed wetland is composed of upper and lower two layers. The upper layer is soil, the lower layer is a root system composed of a medium like the larger particle size of gravel, slag or sand etc., that is easy to flow through. Reed, calamus, Typha, Scirpus Tabernaemontani and other aquatic and marsh and wetland plants are planted in the upper soil. The permeable layer or impermeable membrane is paved under constructed wetlands to prevent leakage of the sewage treatment system from surface or ground water environment pollution. Constructed wetland substrate has a certain slope. the water slowly flow through the root layer and the substrate layer along the horizontal direction from the inlet point to the outlet side. a water level regulating device and a water collecting device are



set up at the outlet side to to keep the contact between the sewage and the plant root layer of the constructed wetland as far as possible. The surrounding environment presents three states of aerobic, anoxic and anaerobic, due to the release of oxygen from plant roots, which is one of the important mechanisms for the pollutants removal, especially nitrogen removal.

(3)Vertical flow Constructed wetland

The direction of water flow and the root system of Vertical flow Constructed wetland(VF) are perpendicular to each other. The water flow in the packed bed is basically a vertical flow from the top to bottom, The outlet device is generally arranged at the bottom of the constructed wetland. The main function of this constructed wetland is to improve the transfer efficiency of oxygen to sewage and substrate, its surface is usually a layer with with good performance of permeability, intermittent water intake. The sewage was distributed into the sand and gravel bed, submergeing the whole surface, then gradually vertically seeping to the bottom, and collected by the drainage pipe network laid at the bottom of the water outlet, and finally discharge out of the constructed wetland sewage treatment system. In gap before the next water intake, the air is allowed to fill the packed bed, so the sewage distributed next time and air have good contact conditions, and oxygen transfer efficiency is improved. Atmospheric oxygen can enter the constructed wetland sewage treatment system by drainage through irrigation time, ventilation during shutdown time, and transmission of plants, thus, the BOD removal and nitrification of ammonia nitrogen was improved. Wetland plants also transfer some of the oxygen from the root to the root zone.

The vertical subsurface flow wetland is divided into two modes of upward and downward. Upward mode has the prominent denitrification capacity of TN, and downward mode mode has the outstanding nitrification capacity.

Based on the analysis and comparison of the main types and characteristics of constructed wetlands, combined with the actual characteristics of the project, the main technical indexes of 3 kinds of constructed wetlands are compared in Table4-9.

**Table 4-10 Comparison of 3 constructed wetland types**

Parameter	Surface flow Constructed wetland	Horizontal subsurface flow Constructed wetland	Upwardvertical flow Constructed wetland	Downwardverticall flow Constructed wetland
Flow type	Surface flow	Horizontal subsurface flow	Upwardvertical flow	Downwardverticall flow
Load	low	higher	High	High
Area occupied	Large	Normal	Small	Small
Structure	Simple	Normal	Complicated	Complicated

Management				
Engineering construction cost	low	Higher	High	High
Seasonal climate impact	Big	Normal	Normal	Normal
Sanitary conditions	Bad	Good	Normal	Normal
Landscape effect	Good	Good	Excellent	Excellent
Organic removal	Normal	Strong	Strong	Strong
Nitrification	Stronger	Stronger	Normal	Strong
Denitrification	Weak	Strong	Stronger	Some
Phosphorus removal	Weak	Stronger	Stronger	Stronger

As known from the above table, Surface flow wetland has lower hydraulic load, the treatment capacity of pollutants is relatively weak, and need more land occupation, but it has simple structure, lower construction, operation and maintenance cost, as well as a certain landscape effect, is applicable for the project area with larger water pond, where an existing pond or beach can be reconstructed into a surface flow constructed wetland.

Compared to surface flow Constructed wetlands, horizontal subsurface flow wetlands have a larger hydraulic load and higher pollution treatment efficiency, normal land occupation area, and better removal ability of organic matter, TN and TP, but its construction, operation and maintenance cost is higher than the surface flow constructed wetland.

The vertical subsurface flow wetland is divided into two modes of upward and downward. Upward mode has the prominent denitrification capacity of TN, and downward mode mode has the outstanding nitrification capacity.

Vertical flow constructed wetland is the best wetland type in the three with the highest hydraulic load and pollutant treatment effects, as well as the small land occupation, but the construction, operation and maintenance cost is higher, and the construction is more complex.

## 2, Determination of constructed wetland type

According to the field topography survey,

The Characteristics of the surrounding land lots in the designed constructed wetlands are Collated and summarized in Table 4-10. Those characteristics include farmland, idle land, wet pond, depression, of which farmland + idle land is the typical land lot's Characteristic, with Mainly farmland, and smaller idle land area. The wet pond and depression within the area should have a higher elevation than submerged water level elevation, a certain area and capacity of water storage and be expropriated.

**Table 4-11 Land lot Features in project area**

Wetland position No.	Land lot type	Wetland position No.	Land lot type
1	Farmland + idle land	52	Farmland + idle land+depression land
2	Farmland + idle land	53	Farmland + idle land
3	Farmland + idle land	54	Farmland + idle land
4	Farmland + idle land	55	Farmland + idle land
5	Farmland + idle land+Wet pond	56	Farmland + idle land
6	Farmland + idle land+Wet pond	57	Farmland + idle land
7	Farmland + idle land+Wet pond	58	Farmland + idle land
8	Farmland + idle land+Wet pond	59	Farmland + idle land
9	Farmland + idle land	60	Farmland + idle land
10	Farmland + idle land	61	Farmland + idle land
11	Farmland + idle land	62	Farmland + idle land
12	Farmland + idle land	63	Farmland + idle land
13	Farmland + idle land	64	Farmland + idle land
14	Farmland + idle land	65	Farmland + idle land
15	Farmland + idle land	66	Farmland + idle land
16	Farmland + idle land	67	Farmland + idle land
17	Farmland + idle land	68	Farmland + idle land
18	Farmland + idle land	69	Farmland + idle land
19	Farmland + idle land	70	Farmland + idle land
20	Farmland + idle land	71	Farmland + idle land
21	Farmland + idle land	72	Farmland + idle land
22	Farmland + idle land	73	Farmland + idle land
23	Farmland + idle land	74	Farmland + idle land
24	Farmland + idle land	75	Farmland + idle land
25	Farmland + idle land	76	Farmland + idle land
26	Farmland + idle land	77	Farmland + idle land+depression land
27	Farmland + idle land	78	Farmland + idle land
28	Farmland + idle land	79	Farmland + idle land
29	Farmland + idle land	80	Farmland + idle land
30	Farmland + idle land	81	Farmland + idle land
31	Farmland + idle land	82	Farmland + idle land
32	Farmland + idle land	83	Farmland + idle land
33	Farmland + idle land	84	Farmland + idle land

34	Farmland + idle land+Wet pond	85	Farmland + idle land
35	Farmland + idle land	86	Farmland + idle land
36	Farmland + idle land	87	Farmland + idle land
37	Farmland + idle land	88	Farmland + idle land
38	Farmland + idle land+depression land	89	Farmland + idle land
39	Farmland + idle land	90	Farmland + idle land
40	Farmland + idle land	91	Farmland + idle land
41	Farmland + idle land	92	Farmland + idle land
42	Farmland + idle land	93	Farmland + idle land
43	Farmland + idle land	94	Farmland + idle land
44	Farmland + idle land	95	Farmland + idle land
45	Farmland + idle land	96	Farmland + idle land
46	Farmland + idle land	97	Farmland + idle land
47	Farmland + idle land	98	Farmland + idle land
48	Farmland + idle land	99	Farmland + idle land
49	Farmland + idle land+depression land	100	Farmland + idle land
50	Farmland + idle land+Wet pond	101	Farmland + idle land
51	Farmland + idle land		

According to above land lot the characteristics, 101 constructed wetlands are proposed in this project. Based on the above mentioned 3 wetland types, the pollutant removal capacity as a quantitative, the land occupation, investment estimation, operation and maintenance cost of 3 constructed wetland types are analysed as Table 4-11.

**Table 4-12 Constructed wetland type comparison**

Wetland type	Area occupied(ha)	Investment estimat(10000 Yuan)	Operation Cost(10000Yuan/a)
All 78 of Surface flow Constructed wetland	32	3200	32
All 78 of Horizontal subsurface flow Constructed wetland	16	4800	400
All 78 of Vertical subsurface flow constructed wetland	11	6400	320

Most of the project area are mainly of farmland which are not easy for expropriation, and available idle plots are not much, the land occupation of constructed wetlands is taken as a priority factor in the project. Vertical subsurface flow constructed wetlands with less land occupation are mainly used, with the tandem layout of downward-upward to reach the maximum removal efficiency of organic matter,TN and TP. Although the vertical flow

wetland has high investment and operating costs, it saves land occupation and avoids land acquisition and the adverse terrain to the maximum extent, which makes project construction easier to operate.

At the same time, it can be converted into surface flow constructed wetland by utilizing the advantages of the existing wet pool and water storage depressions, sharing a part or all of the pollution load, which can reduce the wetland area and the construction costs.

There are available fish ponds or depressions around the perimeter of the wetland 5, 6, 7, 8, 34, 38, 49, 50, 52, 77, It can be transformed into surface flow constructed wetland using the terrain features. Although it has a certain scale and purification capacity for wetland 38,49, through the calculation, it can not meet the demand of sewage treatment. In 38, 49 ,a vertical flow - surface flow wetland in series is proposed to to meet the processing capacity requirements.

Based on the above comparison, the final design 3 types of wetlands or combination of wetlands is proposed:

Wetland type A: downward- Upward vertical flow Constructed wetland;

Wetland type B: Surface flow Constructed wetland;

Wetland type C: downward- Upward vertical flow - Surface flow Constructed wetland, Constructed wetland type of different area are listed in table 4-12.

**Table 4-13 Constructed wetland types**

Wetland No.	Wetland type	Wetland No.	Wetland type	Wetland No.	Wetland type
1	A	35	A	69	A
2	A	36	A	70	A
3	A	37	A	71	A
4	A	38	C	72	A
5	B	39	A	73	A
6	B	40	A	74	A
7	B	41	A	75	A
8	B	42	A	76	A
9	A	43	A	77	B
10	A	44	A	78	A
11	A	45	A	79	B
12	A	46	A	80	B
13	A	47	A	80	B
14	A	48	A	81	B
15	A	49	C	82	B
16	A	50	B	83	B

17	A	51	A	84	B
18	A	52	B	85	B
19	A	53	A	86	B
20	A	54	A	87	B
21	A	55	A	88	B
22	A	56	A	89	B
23	A	57	A	90	B
24	A	58	A	91	B
25	A	59	A	92	B
26	A	60	A	93	B
27	A	61	A	94	B
28	A	62	A	95	B
29	A	63	A	96	B
30	A	64	A	97	B
31	A	65	A	98	B
32	A	66	A	99	B
33	A	67	A	100	B
34	B	68	A	101	B







#### 4.3.3 Process comparison for waste transport station compression

The project propose to build a total of 9 small size waste transport stations, 3 for Duchang sub project and 6 for Shangli sub project.

The domestic widely used waste compression processes are mobile type waste compression process, Horizontal type waste compression process, and Container type waste compression process, vertical type waste compression process, precompression and pushing type waste compression process. The vertical type waste compression process is an early product, with disadvantages like Deep foundation, flushing difficult, poor sanitation, etc., has been gradually eliminated, and is not recommended. precompression and pushing type waste compression process is normally used for large scal waste transport station with high investment, and it is not suitable for the project . The comparison is carried out among mobile type waste compression process, Horizontal type waste compression process, and Container type waste compression process(Table 4-13).

**Table 4-14 Comparison of Waste compression equipments**

Type	Solution 1: Mobile type	Solution 2: Horizontal type	Solution 3: Container type
------	-------------------------	-----------------------------	----------------------------

Type	Solution 1: Mobile type	Solution 2: Horizontal type	Solution 3: Container type
Equipments Appearance			
Supporting transport vehicles	 Hook arm type waste transport vehicle	 Closed type waste transport vehicle	 Hook arm type waste transport vehicle
Maximum production capacity of single machine	50t/d	100t/d	120t/d
Waste weight of single vehicle	8~14t	8~10t	8~16t
Supporting equipments For single station	2 equipments 1 vehicle	2 equipments 1 vehicle	2 equipments 1 vehicle 3 Container
Single equipment power	5.5 kw	22 kw	22kw
Equipments area occupied	20m <sup>2</sup>	42m <sup>2</sup>	35m <sup>2</sup>
Supporting construction area	160m <sup>2</sup>	220m <sup>2</sup>	325 m <sup>2</sup>
Investment of Single station	1.50 million Yuan	2.80 million Yuan	3.50 million Yuan
Advantage	<ol style="list-style-type: none"> <li>1. Simple equipment foundation, No need for pit, Easy to clean, Better Sanitary condition</li> <li>2. waste transport in fully sealed structure elimination of the secondary pollution, solve the problem of dripping, leakage and so on.</li> <li>3. Energy savings</li> </ol>	<ol style="list-style-type: none"> <li>1. fast waste transport and , continuous compression operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Separation design of the compressor from the container, the fuel saving of the compressor.</li> </ol>
Disadvantage	<ol style="list-style-type: none"> <li>1. The compressor will be towed to the waste treatment plant, a slight increase in fuel</li> </ol>	<ol style="list-style-type: none"> <li>1. Pit required in Equipment room, Complex foundation, Inconvenient</li> </ol>	<ol style="list-style-type: none"> <li>1. High investment</li> <li>2. Large compressor power, increase of power consumption</li> </ol>

Type	Solution 1: Mobile type	Solution 2: Horizontal type	Solution 3: Container type
	consumption.	cleaning, Poor sanitary conditions 2. Garbage block in transit is likely to be scattered, waste leachate may leak along the way, causing pollution to the environment. 3. Large compressor power, increase of power consumption	
Conclusion	Recommended		

As can be seen from the above table, in solution 2, the pit is required in equipment room,, cleaning is not convenient, sanitary conditions is poor, may cause secondary pollution in long distance transit; Solution 3 has the disadvantages like high investment on equipments, complex foundation and increase of power consumption, which is more applicable for middle sized waste transport station . Therefore, solution 1 is recommended for Duchang and Shangli new construction of waste transport station in this project, namely, the Mobile type waste compression process .

#### 4.3.4 Process comparison for waste transport station deodorization

The waste transport stations are proposed to take deodorant measures. There are 2 mostly used types of deodorant technology, which are High energy reactive oxygen ion method and Plant liquid spraying method. Comparison of these two kinds of odor removal process is carried out in Table 4-14.

**Table 4-15 Deodorization Process comparison**

Items	High energy reactive oxygen ion method	Plant liquid spraying method
Purification process	Air purification using advanced positive and negative oxygen ions	Plant liquid chemicals adsorption and oxidation of odor in the air
Purification mechanism	Combination of physics and chemistry	adsorption and oxidation
Purifying medium	Outdoor fresh air	Plant extract liquid
Maintenance method	Ion tube replacement after Long term of operation (2-3 years) based on the the actual status	Nozzle must be cleaned regularly to avoid clogging.
Maintenance form	simply clean, without person on duty to watch, maintenance	Person responsible for the maintenance of replacement
Purification effect	Long term efficient and stable operation, no fluctuation	lower
Energy consumption	Low power consumption of the exhaust fan and the the ion generator	lower
Operation	Ready to use, without person on duty	Tedious, need to supplement the



		regular replacement of liquid plant
Anti impac load capacity	High	Low
Equipment body	Small, no need of special foundation treatment	Small, no need of special foundation treatment
Equipments Transportation Installation and commissioning	Simple and convenient	Simple
Applicable scope	very good treatment effects on different treatment space, applicable for waste transport station, waste landfill etc..	applicable for open spaces difficult to collect and deal with, such as landfill, chemical plants, etc.
Selection of treatment objects	No special Selection , good treatment effect on the organic and inorganic waste gas in the garbage field	No special requirements
Investment cost	Single unit equipments Investment cost of 265 thousand Yuan	Single unit equipments Investment cost of 125 thousand Yuan
Operation cost	Annual operation cost of 33thousand Yuan	annual operation cost of 64thousand Yuan
Results	Recommended	

As can be seen from above table, , Plant liquid spraying method is too complex in the operation and maintenance later, plus the deodorant effect is not obvious. Although the early investment costs of a single set of equipment are very low, but the late operating costs are high;

High energy reactive oxygen ion deodorant method is very simple in operation and maintenance, with obvious Deodorant effect. The early investment cost of of a single set of equipment is the double of the plant's liquid spraying equipment, while the annual operation cost is only the half of the former. In the long term, the high energy reactive oxygen ion deodorant method has more advantages. High energy reactive oxygen ion removal process is recommended in this project.

#### 4.4 Site selection comparison

##### 4.4.1 Site selection comparison for Duchang county waste transport station

###### 1, Site selection comparison for Beishanxiang waste transport station

**Table 4-16 Site selection comparison for Beishanxiang waste transport station**

Site name Comparison Contents	Solution 1: Bachuantang	Solution 2: Xingfu Road
Geography location	Forest land, west of the Bachuantang Village	Road intersection of Xingfu Road and Keji Road.
Topography and geomorphology	Currently is a undulating terrain of forest land, adjacent to an existing country road, with the biggest elevation difference of 5m.	Currently is a vegetable field, 110m away from the existing Xingfu Road, adjacent to the planning Xingfu Road's northbound extention section, with flat

		terrain.
Transportation	Bad transportation, 3km country road	Better. Transportation 1.1km country road
Peripheral environment status	<ol style="list-style-type: none"> <li>Distance between the site and the residential house &gt;10m;</li> <li>Lower population density around the site, not convenient for waste collection ;</li> </ol>	<ol style="list-style-type: none"> <li>Downtown area of Beishanxian, with larger population density, convenient for waste collection ;</li> <li>Distance between the site and the residential house &gt;10m;</li> <li>Complete electric power and other infrastructure, will start the water and wastewater pipeline works.</li> </ol>
Earthwork	10 thousand m <sup>3</sup>	—
Transport distance to Duchang waste treatment plant	6km	4km
Environment impact	After deodorizing and dedusting, has less impact on ambient air ; after appropriate disposal, the leachate has less impact on water environment	After deodorizing and dedusting, has less impact on ambient air ; after appropriate disposal, the leachate has less impact on water environment.
Advantage	<ol style="list-style-type: none"> <li>Less land expropriation cost;</li> <li>Less impact on the Residential area due to the long distance</li> <li>The township government has communicated with the the residents, all the residents agreed on the waste transport station site selection.</li> <li>Less social impact</li> </ol>	<ol style="list-style-type: none"> <li>Less Transport distance;</li> <li>Junction point of 2 main line for rural waste, more convenient for waste collection;</li> </ol>
Disadvantage	<ol style="list-style-type: none"> <li>Long transport distance, bad transportation conditions;</li> <li>Detour of waste collection, negative impact on road transportation ;</li> <li>Large quantity of engineering for land leveling;</li> </ol>	<ol style="list-style-type: none"> <li>More houses near the site, nearby residents have more serious psychological resistance</li> <li>High land expropriation cost ;</li> </ol>
Conclusion	Recommended	

As known from the above table, solution 2 Xingfu Road Site has complete municipal facilities, short transport distance, while involves land expropriation and more public resistance. Solution 1 has the equivalent environment impact, while no impact caused by land expropriation, hence the solution 1, Bachuantang Site is recommended.

## 2, Wangdunxiang waste transport station site selection comparison

**Table 4-17 Site selection comparison for Wangdunxiang waste transport station**

Site Name Comparison contents	Solution 1: Xinqiao site	Solution 2: brick plant site
Geography location	South side of Ducai Road, Yanggang Villiage	North side of Wangdunxiang Gas station
Topography and geomorphology	Currently is a simple dumping site, adjacent to Ducai Road with flat terrain .	Currently is wasteland, 175m away from the existing Zhezuo road, with flat terrain .
Transportation	Adjacent to Ducai Road, good transportation condition.	Near the Ducai Road, good transportation condition excellent .
Peripheral environment status	1、 Distance between the site and the residential house >70m; 2、 Less population density around the site, not convenient for waste collection;	1、 Located in the downtown area of Wangdunxiang, with larger population density, convenient for waste collection ; 2、 Distance between the site and the residential house >10m; 3、 Complete electric power and other infrastructure around the site
Transport distance to Duchang waste treatment plant	15km	12km
Environment impact	After deodorizing and dedusting, has less impact on ambient air ; Leachate after appropriate disposal,, Leachate has less impact on water environment.	After deodorizing and dedusting, has less impact on ambient air ; Leachate after appropriate disposal,, Leachate has less impact on water environment.
Advantage	1、 No land expropriation cost ; 2、 Long distance to the Residential area, less impact; 3、 The township government has communicated with the the residents, all the residents agreed on the waste transport station site selection. 4、 Less social impact	1、 In compliance with the township master plan, convenient for land use Management ; 2、 Short transport distance; 3、 Junction point of 2 main line for rural waste, more convenient for waste collection;
Disadvantage	1、 Long transport distance, bad transportation conditions; 2、 2, large quantity of earthwork;	1、 More resident household, more relief work needs to be done.
Conclusion	Recommended	

As known from the above table, solution 2 of brick plant site has the complete municipal facilities, short transport distance, whereas more resident housing nearby, might cause more social impacts. Solution 1 has the equivalent environment impacts, while acknowledged by the residents , so the solution 1 of Xinqiao site is recommended.

#### 4.4.2 Site selection comparison for Poyang county sub project

There is no industrial point source within Pearl Lake basin. Around Pearl Lake are 6 townships of tuanlinxiang, baishaxiang, zhuhuxiang, Shuanggang Town, gaojialingtown. The direct discharge of rural domestic wastewater is very common, and agricultural non-point source pollution within the basin are massive. This water area is conservation area of Pearl Lake water sources protection wetland, and the water area involves 7 centralized Drinking

water sources, water quality deterioration and drinking water sources pollution will be inevitable if no protection measures were taken.

To protect the water quality of Pearl Lake water sources, Poyang county sub project propose to control the rural point and non-point source pollution by engineering and non-engineering measures: Construction of 35 rural wastewater treatment station with the treatment scale of 50 t/d~250 t/d;Construction of 101 constructed wetlands; Construction of 95.85km. Ecological sewage interception channel. And to strengthen the water environment Management of water sources, the project propose to construct 1 new water quality automatic monitoring station and 8 automatic measuring and reporting points at places like the intake point of Town water plant. So the project's site selection is the reasonable.

## 5 Environmental impact analysis and Mitigation Measures

### 5.1 Environment impact and Mitigation Measures in Construction period

#### 5.1.1 Water environment impact and Mitigation Measures In Construction period

##### 5.1.1.1 Water environment impact in Construction period

###### 1. Impacts analysis of construction wastewater

Wastewater generated in construction period mainly are the domestic wastewater of construction personnel and construction wastewater. Main pollutants in domestic wastewater are COD, BOD<sub>5</sub>, SS, NH<sub>3</sub>-N; The construction wastewater mainly include the mud water of pipeline excavation and the rinse water for the machinery and vehicles, also some small amount of the construction wastewater from the sands and stone rinse\mixing and concrete casting, etc.. Main pollutants are SS, oil, etc.. Construction domestic wastewater of each sub project are listed in Table 5-1.

**Table 5-1 Construction domestic wastewater of each sub project**

No.	Sub project	Numbers of construction people	Pollutants	Quantity and concentration	Treatment and Whereabouts
1	Duchang	120	Quantity COD BOD <sub>5</sub> SS NH <sub>3</sub> -N	4.8m <sup>3</sup> /d 1.2kg/d, 250mg/L 0.72 kg/d, 150mg/L 0.96kg/d, 200mg/L 0.18 kg/d, 35mg/L	Local domestic wastewater treatment facility; No discharge
2	Poyang	120	Quantity COD BOD <sub>5</sub> SS NH <sub>3</sub> -N	4.8m <sup>3</sup> /d 1.2kg/d, 250mg/L 0.72 kg/d, 150mg/L 0.96kg/d, 200mg/L 0.18 kg/d, 35mg/L	Local domestic wastewater treatment facility; No discharge
3	Yugan	100	Quantity COD BOD <sub>5</sub> SS NH <sub>3</sub> -N	4m <sup>3</sup> /d 1kg/d, 250mg/L 0.6 kg/d, 150mg/L 0.8kg/d, 200mg/L 0.14 kg/d, 35mg/L	Local domestic wastewater treatment facility; No discharge
4	Fengxin	100	Quantity COD BOD <sub>5</sub> SS NH <sub>3</sub> -N	4m <sup>3</sup> /d 1kg/d, 250mg/L 0.6 kg/d, 150mg/L 0.8kg/d, 200mg/L 0.14 kg/d, 35mg/L	Local domestic wastewater treatment facility; No discharge
5	Jing'an	120	Quantity COD BOD <sub>5</sub> SS NH <sub>3</sub> -N	4.8m <sup>3</sup> /d 1.2kg/d, 250mg/L 0.72 kg/d, 150mg/L 0.96kg/d, 200mg/L 0.18 kg/d, 35mg/L	Local domestic wastewater treatment facility; No discharge
6	Jishui	120	Quantity COD BOD <sub>5</sub> SS NH <sub>3</sub> -N	4.8m <sup>3</sup> /d 1.2kg/d, 250mg/L 0.72 kg/d, 150mg/L 0.96kg/d, 200mg/L 0.18 kg/d, 35mg/L	Local domestic wastewater treatment facility, No discharge

No.	Sub project	Numbers of construction people	Pollutants	Quantity and concentration	Treatment and Whereabouts
7	Shangli	60 人	Quantity COD BOD <sub>5</sub> SS NH <sub>3</sub> -N	2.4m <sup>3</sup> /d 0.6kg/d, 250mg/L 0.36kg/d, 150mg/L 0.48kg/d, 200mg/L 0.09 kg/d, 35mg/L	Local domestic wastewater treatment facility; No discharge
Total		740 人	Quantity	29.6m <sup>3</sup> /d	

If the construction wastewater and domestic sewage are discharged at random, it will cause pollution to the surrounding water bodies. The project construction camp will rent local houses, the existing sewage treatment system of the surrounding residential buildings will be used for living sewage treatment, no discharge; The construction waste water is to be used in the spray dust suppression, which has little influence on the water environment

## 2, Impacts of Dredging on Water Environment

The subjects in Duchang County, Yugan County and Fengxin County involve dredging.

(1) Duchang County: This subproject plans to dredge the part of Zoujiaju Lake on the east side of Chengxi Avenue, with the dredging amount being about 8000 m<sup>3</sup>, the dredging depth about 0.3 m and the area of this part about 25160 m<sup>2</sup>. The dredging process is planned to conduct during the drought period. It will take the method of cofferdam and conduct dredging in a dry condition after intercepting and removing the water. Therefore, the dredging process will have no influence on the water quality. As the volume of sludge is not large, there will be no temporary dump sites. The sludge will be aired on the spot in the lake, be dredged and be loaded into vans. Then, it will be covered by tarpaulins and transported to the wasteland in Guling Mountain of Wangdun Village for application. The sludge will be used for earth sheltered plantation after its further drying. The project will utilize the spot in the lake as the dump site for airing the sludge, and adopt the drainage method of gradual ditching to dewater the sediments at the dump site. On the basis of natural subsiding at the dump site, the residual water will be discharged into the west part of the lake through the existing channels, having little influence on the water quality.

(2) Yugan County: This subproject plans to dredge the discharge channel of Pipa Lake, with the dredging amount being 30,000 m<sup>3</sup>. It will adopt an environmental dredging method. The environmental cutter-suction dredger will be equipped with specialized environmental reamer head which will be utilized to implement closed and low-disturbing dredging during the dredging process. After the beginning of dredging, the sludge will be sucked by the

high-power dredge pump on the dredger and then it will enter the mud pipe. The sludge will be transported to the designated dump site through the totally closed pipe, and therefore, the dredging process will have little negative influence on the water quality.

According to the above analysis, the dredging sediments do not belong to hazardous wastes, but are common solid wastes. The sludge will be dried in the dump site with centrifugal dewatering system. This system is a complete, effective and highly-automatic dewatering technology in a continuous manner. It consists of dewatering drier, screw pump, conveyor, etc. The mud after purification and concentration will be transported to the separating unit through screw pump, and thereby the mud particles will be separated from water gradually. The residual water will be discharged after dosing and flocculation, having little negative influence on the water quality.

The sludge after dewatering should be timely cleaned and transported. It should be covered by tarpaulins when it is temporarily piled so as to prevent the sludge from being washed back by rain and polluting the water.

(3) Fengxin County: This subproject plans to dredge Dazhai Canal, Bezhizhen Canal and South Canal, with the dredging amount being 134800 m<sup>3</sup>. It will conduct the dredging process through mechanical and manual ways during the drought period. There is almost no water entering the upper reach of the dredging river way during the drought period. Thus, there will be no separation measures. It will mainly adopt manual way when the dredging channel is narrow. And when the dredging channel is wide, it will utilize small excavator on the basis of manual work to dredge. Therefore, it will have little influence on the water quality.

According to the above analysis, the dredging sediments do not belong to hazardous wastes, but are common solid wastes. The sludge will be dried in the dump site with centrifugal dewatering system. This system is a complete, effective and highly-automatic dewatering technology in a continuous manner. It consists of dewatering drier, screw pump, conveyor, etc. The mud after purification and concentration will be transported to the separating unit through screw pump, and thereby the mud particles will be separated from water gradually. The residual water will be discharged after dosing and flocculation, having little negative influence on the water quality.

The sludge after dewatering should be timely cleaned and transported. It should be covered by tarpaulins when it is temporarily piled so as to prevent the sludge from being washed back by rain and polluting the water.

### 3, Impact on Drinking Water sources

#### (1) Location relationship between the project and Drinking water sources

Poyang county Sub project involves Drinking water sources. The purpose of this Sub project is to improve the Water quality Management by reducing the pollutants flowing into Pearl Lake and then reducing the pollutants flowing into Poyang Lake basin.

Pearl Lake water area is within the Poyang Lake National Wetland Park scope, is the grade 1 protection area of this wetland park and Pearl Lake water sources protection conservation area ; there are 7 centralized Drinking Water sources within the water area, which are Pearl Lake drinking Water sources protection area (Yangmeiqiao Water plant ) in Poyang county, water intake point of Zhongtang Tap Water plant of Sishilijie Town , water intake point of Yongchang Tap Water plant of Sishilijie Town, water intake point of Pozhong Tap Water plant of Poyang county ( gaojialingtown ), water intake point of tuanlinxiang Tap Water plant, water intake point of Shuanggang town Tap Water plant , water intake point of zhuhuxiang Tap Water plant. Drinking water sources involved in the project are listed in Table 5-2. The project relationship with the Drinking Water sources is shown in Figure?

**Table 5-2 Project location relationship with Drinking water sources**

No.	Protection targets	Protection area scope	Water usage (10,000m <sup>3</sup> )	Protection Contents	Distance of wastewater treatment station outlet to the protection area boundary (m)	Effluent of wastewater treatment station and protection targets
1	Poyang Lake wetland park Pearl Lake water sources protection conservation area	Pearl Lake water area	/	None	/	Treated effluent of each wastewater station meet the standard and discharged into the Pearl Lake , Improve the existing direct discharge of domestic wastewater



							into Pearl Lake water area, and reduce water pollutants
2	Poyang county Pearl Lake drinking Water sources protection area	Grade 1 protection area: water or land within a radius of 500m centered as the water intake point; grade 2 protection area: grade 1 protection area: water or land area within the scope of 2500m outwards the first grade protection area boundary.	211.72	Wastewater treatment station	8, Shizishan, Ligongnao, Potangxu, Meihu, Caojia Villiage, ZhongNao Viliage, Tanli Villiage Bantangxu	100	16 wastewater treatment stations within the , protection area. Effluent outlets of wastewater treatment stations located 100m outside the grade 2 protection area of Drinking Water sources; No outlet should be set up inside the grade 1 and grade 2 water sources protection area of water plant.
				Constructed wetland	6, With No. Of 46, 47, 48, 49, 81, 82	/	
3	Sishilijie Town Zhongtan g Tap Water plant Water sources protection area		3	Wastewater treatment station	7, Caojiazui, Hupen Villiage, Wangjia, Ahanjai, Pantaozui , Huangbiquan , Chenli Villiage	100	
				Constructed wetland	4, with the No. Of 24, 29, 31, 90	/	
4	Sishilijie Town Yongchan g Tap Water plant Water sources protection area		20	Wastewater treatment station	8, Luye Villiage, Caojiazui, Pantaozui, Hupen Villiage, Huangbiquan, Chenli Villiage, Wangjia, Zhanjia,	100	
				Constructed wetland	5, With No. of 25, 26, 27, 28, 91	/	
5	Pozhong Tap Water plant ( Gaojialingtown ) Water sources protection area	5.4	Wastewater treatment station	6, Pantaozui, Hupen Villiage, Huangbiquan, Chenli Villiage, Zhuyedun , Luye Villiage , Caojiazui	100		
			Constructed wetland	7, With No. Of 18, 19, 20, 21, 22, 23, 88	/		
6	Tuanlinxi ang Tap Water plant Water	3.8	Wastewater treatment station	6 , Pantaozui, Hupen Villiage, Huangbiquan, Chenli Villiage, Wangjia Villiage ,	100		

	sources protection area				Zhanjia Villiage ,	
				Constructed wetland	21, With No. Of 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 38, 39, 40, 41, 42, 43, 44, 95, 96, 97	/
7	Shuanggan town Tap Water plant Water sources protection area		30	Wastewater treatment station	1, Maojia Villiage ,	100
				Constructed wetland	14, With No. Of 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 99	/
8	Zhuhuxiang Tap Water plant Water sources protection area		6	Wastewater treatment station	3, Dukou Villiage , Zhoujia Villiage , Caojia Villiage	100
				Constructed wetland	10, With No. Of 1, 2, 3, 4, 5, 6, 83, 84, 85, 86 wetland,	/

② Project compliance analysis of drinking water sources laws and regulations

Through the implement of the project, Pearl Lake basin rural domestic wastewater can get better collection, the source control and pollution interception for rural Non-point source pollution can be effectively done. Effluent water quality of wastewater treatment station can stably reach the water pollutants discharge standard for Poyang Lake Eco-economic Zone, and then discharge into Pearl Lake water body. Sewage outlets should not set up within the scope of the centralized Drinking Water sources protection area. The project is in compliance with the requirements of the Law of the PRC on Water Pollution Prevention and Control (2008.6), the Provisions on the prevention and control of pollution in drinking water source protection areas(2010.10, Amendment), Measures for prevention and control of water pollution in drinking water source in Jiangxi Province (2012.11, Amendment) are listed in Table 5-3).

**Table 5-3 Relation analysis with relevant laws and regulations**

No	Relevant laws	Relevant regulations	Proposal project design solution and current situation	Compliance
----	---------------	----------------------	--	------------

No.	Relevant laws	Relevant regulations	Proposal project design solution and current situation	Compliance
1	Law of the PRC on Water Pollution Prevention and Control	<ul style="list-style-type: none"> <li>● Article 57 No outfall may be set up in drinking water source reserves.</li> <li>● Article 58 It is prohibited to build, renovate or enlarge in a Grade I drinking water source reserve any construction projects irrelevant to water supply facilities and the work of water source protection; for those already accomplished, the people's government at or above the county level shall order their demolition or closure.</li> <li>● It is prohibited to breed in cages, travel, swim, go angling or conduct any other activities that may pollute drinking waters in any Grade I drinking water source reserves.</li> <li>● Article 59 It is prohibited to build, renovate or enlarge in a Grade II drinking water source reserve any construction projects discharging pollutants; for those already accomplished, the people's government at or above the county level shall order their demolition or closure.</li> <li>● When conducting cage breeding, traveling or other activities in a Grade II drinking water source reserve, corresponding measures must be taken in accordance with the relevant provisions to keep drinking waters from being polluted.</li> </ul>	<p>To protect the water quality of Pearl Lake water sources,, the project propose to control the rural point and non-point source pollution by engineering and non- engineering measures.</p> <ul style="list-style-type: none"> <li>● Construction of 35 rural wastewater treatment station with the treatment scale of 50 t/d~250 t/d;</li> <li>● Construction of 101 constructed wetlands,</li> <li>● Construction of 95.85km. Ecological sewage interception channel</li> <li>● Construction of 1 new water quality automatic monitoring station, 8 automatic measuring and reporting points</li> </ul>	Compliance
2	Provisions on the prevention and control of pollution in drinking water source protection areas	<ul style="list-style-type: none"> <li>● Article 11 Drinking surface Water sources protection area of all grades and quasi quasi protection zone must comply with the following provisions:  1, It is prohibited of all kinds of activities to destroy the ecological balance of water environment, and the destruction of waterhead forests, protective forests, and vegetation related to water conservations.  2, It is prohibited to dump industrial waste residues, urban refuse, feces and other wastes into the waters.  3, Ships and vehicles transporting of toxic and hazardous substances, oils, feces are generally not allowed to enter the protected area, if it must enter, the related party shall apply in advance and approved by the relevant departments, with registration and taking the measures of overflow proof and leak proof.  4, It is prohibited to use highly toxic and residues of pesticides, chemical</li> </ul>	<p>Discharge outlets of wastewater treatment station located outside the grade 2 protection area of Water sources protection area.</p>	Compliance

No.	Relevant laws	Relevant regulations	Proposal project design solution and current situation	Compliance
		<p>fertilizers, and use explosives, drugs to kill fish.</p> <ul style="list-style-type: none"> <li>Article 12 Drinking surface Water sources protection area of all grades and quasi quasi protection zone must comply with the following provisions: No new, expansion of the construction project to discharge pollutants into the water body of Grade 2 protection area. Reconstruction projects must reduce pollutant emissions. The original sewage outfall must reduce the discharge of sewage, to ensure that the water quality in the protected area meets the prescribed standards for water quality; It is prohibited to establish terminals loading and unloading of garbage, feces, oil and toxic substances</li> </ul>		
3	Measures for prevention and control of water pollution in drinking water source in Jiangxi Province	<ul style="list-style-type: none"> <li>Article 17 It is prohibited to engage in the following activities in the grade 2 surface drinking Water sources protection area: To set up the sewage outfall; discharge of waste oil, acid, alkali, toxic waste and other pollution to the water body; To clean the vehicles and containers that have been filled with oil or toxic pollutants; To Discharge industrial waste residues, urban garbage and other wastes into the water body; To pile up, deposit solid wastes and other pollutants at the beach and bank slope below the highest water level; Other activities prohibited by laws, regulations and rules.</li> <li>Article 18 in addition to prohibited activities listed in the preceding article, the following activities are prohibited in the grade 1 surface drinking water sources protection area: Discharge of sewage into water bodies; Travel, swimming and other activities that may contaminate drinking water; New and expansion construction projects unrelated to the water supply facilities and the protection of drinking water sources Other activities prohibited by laws, regulations and rules.</li> </ul>		Compliance

(3) Drinking Water sources impact analysis in construction period

Main wastewater of Poyang sub project generated in construction period are domestic

wastewater of construction people and construction wastewater. The main pollutants in the domestic wastewater are COD, BOD<sub>5</sub>, SS, NH<sub>3</sub>-N, amount is about 4.8m<sup>3</sup>/d; the construction wastewater mainly include the slurry water discharged from pipeline excavation and mud water produced by mechanical vehicle washing, in small quantity, Secondly, the construction waste water from the sand washing, mixing, pouring concrete and other construction work, with the pollutants of SS, Petroleum oil etc..

In the construction period, if the production wastewater and domestic sewage are discharged at will, they will cause pollution to the water body of the Pearl Lake . Especially if the construction site is in the vicinity of water intake, Construction waste water, if not properly handled, will have a more serious impact on drinking water quality.

#### 5.1.1.2 Mitigation measures

##### 1, Prevention and control measures of construction wastewater

The wastewater of Sand and gravel processing system is used for concrete mixing, water sprinkling for construction dust etc., shall not be discharged into the water body; Slurry produced in the construction process is pumped to the settling tank by slurry pump, solidified by drainage and evaporation, shall not be discharged into the water body. Wastewater of mechanical equipments washing is treated by the oil separating tank, then used for water sprinkling for construction dust, and shall not be discharged into the water body.

The construction site layout should take full account of drainage needs; be as far as possible from river water; ensure that the construction site, warehouse, storage of diesel oil and asphalt, and equipment for the production of asphalt are not set within the 500m range of the river; avoid pollutants to flow into the river during the operation time, especially the leak by land or surface water during the rainy season.

In the course of construction, the work area should be clean, sewage and pollutants should not enter into the excavation trench, leading to sewage infiltration.

If the oil needs to be stored on site, impervious treatment must be done to the warehouse. Measures should be taken for oil storage and use to prevent water pollution from oil escape, emit, drop and leakage. Foundation construction should be done in the non flood season as far as possible to reduce the influence of shallow groundwater depth on construction; Dredging should be done in the dry season, and shorten the construction time as far as possible to reduce the disturbance to water body.

##### 2, Prevention and control measures of domestic wastewater

Existing domestic wastewater treatment systems nearby the construction area are proposed to treat the domestic wastewater of project construction people, No discharge into the water body. Seepage prevention measures should be taken for the domestic waste storage room according to the relevant requirements.

### 3, Protection measures of Drinking Water sources from construction wastewater:

(1) To inform the construction personnel of Poyang County the Pearl Lake water body function for drinking water, Centralized drinking water source protection area and water source protection and conservation area of Wetland Park; Strengthen the awareness of water conservation for construction personnel; Strengthen environmental protection education for construction personnel; Strict restrict personal hygiene behavior of construction personnel; Prohibit the construction personnel to swim.

(2) Prohibition of the establishment of the material field, waste dumps, construction camps, etc. in the centralized drinking water source protection area; Try to avoid the concentrated distribution area of the agricultural irrigation ditch as far as possible.

(3) Set up necessary temporary drainage ditch, dredging the construction wastewater, using the sedimentation tank to reuse the wastewater in the construction.

(4) when excavation at the rain and road surface runoff, temporary sedimentation tank should be set up, to settle down the sands. A geotechnical cloth fence is arranged at the water outlet side to intercept the sands once again. Sedimentation tank should be flattened when the construction complete.

(5) The construction of temporary road must be with smooth drainage to prevent the massive sandy mud from flowing into the Pearl Lake by the storm.

(6) Prohibition of dumping of waste water, waste, waste, waste rock and other solid waste into Pearl Lake.

(7) Slurry produced in the construction process is pumped to the settling tank by slurry pump, solidified by drainage and evaporation, shall not be discharged into the water body.

(8) Wastewater of mechanical equipments washing is treated by the oil separating tank, then used for water sprinkling for construction dust, and shall not be discharged into the water body.

(9) In the course of construction, the work area should be clean, sewage and pollutants should not enter into the excavation trench, leading to sewage infiltration.

(10) Construction should be done in the non flood season as far as possible to reduce

the influence of shallow groundwater depth on construction;

(11) Regular inspection and maintenance of construction machinery to prevent oil leakage.

(12) Local residents houses are rented as the construction camp. Existing domestic wastewater treatment systems nearby the construction area are proposed to treat the domestic wastewater of project construction people, No discharge into the water body. Seepage prevention measures should be taken for the domestic waste storage room according to the relevant requirements.

#### 4. Mitigation Measures for Dredging Wastewater

##### (1) Duchang County:

When the sludge takes the spot in the lake as the dump site, the closed bottomland shaped during the drought period of the lake region can be utilized to set up dams of which the section form is usually sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials.

Inside the dump site, there should be outlet of water, which should be located from the outlet of sludge as far as possible. It is better for the water outlet to set up at the dead angle of the dump site so as to take full advantage of the space to store the sludge. Meanwhile, factors including the storage capacity, area, geometrical shape of the dump site and the discharge channel outside the dump site should be taken into comprehensive consideration. The water outlet should also satisfy the requirement of the monitoring of residual water and emergency treatment of the residual water which does not meet the discharge standard.

Emergency treatment facilities should be set up for residual water, including emergency tank and emergency dosing facility. If the site conditions permit, the emergency tank should be set up near the dump site. According to the actual site conditions, the capacity of the tank can be designed to store residual water for 2 to 4 hours. The tank should also be equipped with impermeable materials. Thus it can be utilized as an emergency storage and treatment place for the residual water which does not reach the standard in accidents or emergency circumstances. If the site conditions do not permit, flocculating agent and dosing facilities should be prepared for emergency treatment of the residual water so as to satisfy the need of increasing dosing amount in emergency circumstances.

In the dump site, it can adopt the drainage method of gradual ditching to dewater the

sediments and discharge the water into the west part of the lake through the existing channels. According to the monitoring results of the sediments, the dredging sludge in this project satisfies the secondary standard (pH: 6.5~7.5) in “Environmental Quality Standard for Soils” (GB/15618-1995) and the standard (pH $\geq$ 6.5) in “Control Standards for Pollutants in Sludges from Agricultural Use” (GB4284-84). It is free from heavy metal pollution. On the basis of the natural subsiding in the dump site, the residual water can reach the standard and be discharged into the west part of the lake.

During rain seasons, the top of the dump site should be covered with tarpaulins to prevent rain wash.

## (2) Yugan County

Takes an environmental method to dredge the discharge channel of Pipa Lake and tries best to shorten the construction time so as to reduce the disturbance to the water. The residual water after sludge's dewatering will be treated through dosing and flocculating. After reaching the standard, it will be discharged into Pipa Lake nearby.

The wasteland in the south of the lower reach of the discharge channel will be utilized as the dump site for sludge. There will also set up dams of which the section form is sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials.

Inside the dump site, there should be outlet of water, which should be located from the outlet of sludge as far as possible. It is better for the water outlet to set up at the dead angle of the dump site so as to take full advantage of the space to store the sludge. Meanwhile, factors including the storage capacity, area, geometrical shape of the dump site and the discharge channel outside the dump site should be taken into comprehensive consideration. The water outlet should also satisfy the requirement of the monitoring of residual water and emergency treatment of the residual water which does not meet the discharge standard.

There should set up emergency treatment facilities for residual water, including emergency tank and emergency dosing facility. If the site conditions permit, the emergency tank should be set up near the dump site. According to the actual site conditions, the capacity of the tank can be designed to store residual water for 2 to 4 hours. The tank should also be equipped with impermeable materials. Thus it can be utilized as an emergency storage and treatment place for the residual water which does not reach the standard in accidents or emergency circumstances.

The sediments after dewatering should be timely cleaned and transported. It should be



covered by tarpaulins when it is in dewatering process or is temporarily piled so as to prevent the sludge from being washed back into Pipa Lake by rain and polluting the water.

### (3) Fengxi County

It will adopt mechanical and manual ways to dredge during the drought period and try best to shorten the construction time so as to reduce the disturbance to the water. The residual water after sludge's dewatering will be treated through dosing and flocculating. After reaching the standard, it will be discharged into the water nearby.

It will take the wasteland nearby as the dump site of sludge. There will also set up dams of which the section form is sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials.

Inside the dump site, there should be outlet of water, which should be located from the outlet of sludge as far as possible. It is better for the water outlet to set up at the dead angle of the dump site so as to take full advantage of the space to store the sludge. Meanwhile, factors including the storage capacity, area, geometrical shape of the dump site and the discharge channel outside the dump site should be taken into comprehensive consideration. The water outlet should also satisfy the requirement of the monitoring of residual water and emergency treatment of the residual water which does not meet the discharge standard.

There should set up emergency treatment facilities for residual water, including emergency tank and emergency dosing facility. If the site conditions permit, the emergency tank should be set up near the dump site. According to the actual site conditions, the capacity of the tank can be designed to store residual water for 2 to 4 hours. The tank should also be equipped with impermeable materials. Thus it can be utilized as an emergency storage and treatment place for the residual water which does not reach the standard in accidents or emergency circumstances.

The sediments after dewatering should be timely cleaned and transported. It should be covered by tarpaulins when it is in dewatering process or is temporarily piled so as to prevent the sludge from being washed back by rain and polluting the water.

## 5.1.2 Ambient air impact and mitigation measures in construction period

### 5.1.2.1 Ambient air impact in construction period

#### (1) Transport dust of construction vehicles

According to the relevant literature information, during the construction process, dust generated by vehicle running accounted for more than 60% of total dust. In the case of

completely dry, dust generated by vehicle running can be calculated according to the following empirical formula:

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

In the formula:

Q——Quantity of dust generated by vehicle running , kg/km·vehicle;

V——Velocity of the vehicle, km/h;

W——Weight of vehicle, t;

P——Dust amount of the road surface, kg/m<sup>2</sup>.

Table 5-4 shows the amount of dust generated by a 10 ton truck, driving through 1KM length of the road, with the different road cleanliness, and different driving speed.

As can be seen that in the same degree of cleanliness of the road conditions, the faster the speed, the greater the amount of dust; while in the same speed, the more dirty the road, the greater the amount of dust. Therefore, it is the most effective way to reduce the dust of construction vehicles to limit the running speed of the vehicle and keep the road clean.

**Table 5-4 Dust amount vs different road cleanliness, & driving speed (kg/vehicle·km)**

Dust amount speed	0.1	0.2	0.3	0.4	0.5	1.0
	Kg/m <sup>2</sup>	Kg/m <sup>2</sup>	Kg/m <sup>2</sup>	Kg/m <sup>2</sup>	Kg/m <sup>2</sup>	Kg/m <sup>2</sup>
5(km/m <sup>2</sup> )	0.0511	0.0859	0.1164	0.1444	0.1707	0.2871
10(km/m <sup>2</sup> )	0.1021	0.1717	0.2328	0.2888	0.3414	0.5742
15(km/m <sup>2</sup> )	0.1532	0.2576	0.3491	0.4332	0.5121	0.8613
25(km/m <sup>2</sup> )	0.2553	0.4293	0.5819	0.7220	0.8536	1.4355

At the same time, during the construction phase, sprinkling the vehicle road (4~5 times a day) can reduce dust amount in the air about 70%, which is a good results of dust reduction.

(2) Dust of construction area

Another major source of dust in construction stage is wind dust in open pit and exposed area. Due to the construction needs, building materials need to be piled up in the open-air. The surface layer of soil in part of the construction points need excavation and temporary storage. In the case of dry and windy weather, dust will be produced, which can be calculated according to the following empirical formula:

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

In the formula:

Q——Quantity of dust, kg/t·y;

$V_{50}$ —Wind velocity of 50m from above the ground, m/s;

$V_0$ —wind speed for starting to produce the dust, m/s;

$W$ —Water content of dust particles, %.

The  $V_0$  is related to the particle size and water content. Reducing open stack, keeping a certain water content and reducing bare ground is the effective means of to reducing wind dust. The diffusion dilution of dust in air is related to the weather conditions such as wind speed and so on. And it is also related to the settling velocity of dust itself. The settling velocity of dust with different particle sizes are in Table5-5. As known from the table, the settling velocity of dust increases rapidly with the increase of particle size. When the particle size is 250  $\mu\text{m}$ , the settling velocity is 1.005m/s. It can be considered that when the dust particle is more than 250  $\mu\text{m}$ , the main influence range is in the wind direction near the dust point, and the external environment is actually affected by some small particle size.

**Table 5-5 Settling velocity of dust with different particle sizes**

Particle size ( $\mu\text{m}$ )	10	20	30	40	50	60	70
Settling velocity (m/s)	0.003	0.012	0.027	0.048	0.075	0.108	0.147
Particle size ( $\mu\text{m}$ )	80	90	100	150	200	250	350
Settling velocity (m/s)	0.158	0.170	0.182	0.239	0.840	1.005	1.829
Particle size ( $\mu\text{m}$ )	450	550	650	750	850	950	1050
Settling velocity (m/s)	2.211	2.614	3.016	3.418	3.820	4.222	4.624

### (3) Exhaust gas of construction machinery and transport vehicles

Construction machinery like bulldozers, excavator, transport trucks will generate exhaust gases containing pollutants like HC, CO, nox, etc. During the operation, which will cause some ambient air impacts. There is less exhaust gases emission and lower pollutants concentration when vehicles are driven in low speed. To reduce the exhaust gases impacts of transport vehicles, when passing by the villiage and entering the construction area, bulldozers, excavator should be driven in low speed ; meanwhile the construction machinery should be kept in good maintenance and normal workingto reduce the emissions exhaust gases.

### (4) Dredging Odor

The sediment of the sludge dumping sites of Duchang County, Yugan county and Fengxin County silt will produce a small amount of odor pollutants, which will have some impact on environment and the construction workers. Natural drying is used for the lake

dredging sludge, in Duchang and Fengxin county. Normally the dry season is November to following January, which is winter, has less odor emission than Summer. Dredging water are located in the city, no schools, hospitals, nursing homes and other important sensitive point around the site, mainly are residential, the corresponding measures should be taken to reduce the impact of odor pollutants.

#### 5.1.2.2 Mitigation measures

Main exhaust gases in construction period are construction dust, exhaust gases from construction machinery and dredging odor. Ambient air protection measures taken in construction period are as follows:

1, Using advanced construction process, using of wet crushing process for sand system and concrete system; dust cleaning equipment; speed control of vehicles; exhaust gas control of vehicles and boats; water spraying on construction area (4~5 times/d); clean energy like LPG, electricity for construction people; strengthen of the construction area vegetation and labor protection for construction people; all of above will reduce the ambient air impact .

2, Vehicle wash platforms are set up at the inner side of the entrances and exits for material and waste transport vehicles, Set up the following requirements: Anti overflow Block around the platform to prevent the overflow of the Vehicle wash wastewater. Vehicles should wash the tires and vehicle body before leaving the construction area,. The height of Material and waste loaded on the transport vehicles, should not exceed over the edge of the vehicle. Truck body should be covered with tarpaulin or use the sealed hopper.

3, Use of commercial concrete and asphalt, no onsite concrete mixing station and asphalt Mixing Station.

4, Transport vehicles, bulldozers, excavators should be driven in low speed when passing by the village and entering the construction area; meanwhile the construction machinery should be kept in good maintenance and normal working to reduce the emissions exhaust gases.

5, Set up the Dust screen around the construction area, especially for those close to residential areas, hospitals and schools.

6, Try to reduce the dust and particulate generation, to avoid the impact on the living and commercial activities of the residents living around, Focusing on protection of sensible people (such as children, the elderly and so on).

7, Spray deodorant regularly to the air-drying sediment to reduce the ambient air impact .

8, Timely excavation and removal of airdrying sediment.

5.1.3 Environment impact of noise and mitigation measures in construction period

5.1.3.1 Environment impact of noise in construction period

The construction noise will disappear with the end of construction, while the noise is so strong, that it will cause serious impact on key environmental sensitive point of reception of surrounding environment, like Hospitals, and Schools. So the control of construction period Noise needs more attention. Due to the changing of pipeline construction. The equipments location keep changing as well, the Quantity of operational machinery also keeps changing in different time. It is difficult to predict accurately the Noise value at each boundary of the construction area. While according to point noise attenuation model, the Noise value at different distance of construction equipments can be calculated as follows:

$$L_p = L_{p0} - 20Lg(r/r_0) - \Delta L$$

$L_p$ —sound pressure level, db(A) at the distance of r(m) from the sound source;

$L_{p0}$ —sound pressure level, db(A) at the distance of  $r_0$  (m) from the sound source;

$\Delta L$ —Various attenuation (except of Divergence attenuation ), db(A).  $\Delta L=0$  for outdoor noise source.

The noise value at different distance of the construction machineries (not overlaid with the present value) are listed in Table 5-6. (Noise attenuations of trees and buildings are not taken into considerations.)

**Table 5-6 The predicted noise value at different distance of the construction machineries db(A)**

No.	Mechanical type	Noise prediction value								
		5m	10m	20m	40m	50m	80m	100m	150m	200m
1	Loaders	90	84.0	78.0	72.0	70.0	66.0	64.0	60.5	58.0
2	Rollers	81	75.0	69.0	63.0	61.0	57.0	55.0	51.5	49.0
3	Bulldozers	86	80.0	74.0	68.0	66.0	62.0	60	56.5	54.0
4	Excavator	84	78.0	72.0	66.0	64.0	60.0	58.0	54.5	52.0
5	Heavy trucks	86	80.0	74.0	68.0	66.0	62.0	60	56.5	54.0
6	Light trucks	75	69.0	63.0	57.0	55.0	51.0	49.0	45.5	43.0

As known from the above table, All the points beyond 50m away from the construction machinery can meet the the daytime value of the Emission standard of environment noise for boundary of construction site(GB12523-2011) ( daytime 70 db(A), nighttime 55 db(A)), while all the points within 200m failed to meet the nighttime standard value.

Thus, the construction noise has significant impact on the 50m outside the construction area in daytime. The night time construction has more serious impact on the scope of 200m outside the construction site.

The Noise impact has the feature of short-term, temporariness, once the construction is over, the construction Noise end as well. The project has no construction at nighttime, key environmental sensitive point of reception within the affected scope in daytime are listed in table5-7.

**Table 5-7 Key environmental sensitive point of reception affected by construction Noise**

Sub project	Sensitive point of reception	Location	Distance(m)	Affected population
Duchang	Central kindergarten of Duchang county	Lower reach of Zoujiazui lake basin	10	/
	3rd primary school of Duchang	North side of Wanli Avenue	15	4000
	Maternal and child health care hospital of Duchang county	North side of Wanli Avenue	15	262
	Qinjiafan primary school	South side of Wanli Avenue	40	1500
	Union Hospital	South side of Donghu Avenue	15	300
Jing'an	Jing'an vocational high school	South side of Hougang Road	20	1500
	Jing'an Hospital of traditional Chinese Medicine	South side of Hougang Road	10	200
	Jing'an county 1st primary school	East side of Shi Road	10	700
	Jing'an 3rd middle school	East side of Yabei Road	10	400
	Jing'an middle school	North side of Xuefu Avenue	15	1000
	Jing'an 2 <sup>nd</sup> primary school	West side of the Intersection of Xuefu Avenue and Chengbei Avenue	20	1000
Jishui	Wenfeng primary school	West side of the middle Wenfeng Avenue	10	1500
	Jishui county experimental primary school	South side of Wenjiao Road	20	3000
	Jishui 4 <sup>th</sup> middle school	Southwest side of Shuinan Road	48	1555
	Jishui middle school	East side of Wenshan Avenue	32	4300
	Jishui Hospital of traditional Chinese Medicine	North side of Wenhua East Road	29	300
	Jishui Aimin hospital	North side of Wenshui Avenue	14	200
	Jishui county Central kindergarten	East side of Wenming South Road	17	200

Jishui county Maternal and child health care hospital	South side of Renwen Road	17	400
Jishui 3 <sup>rd</sup> middle school	West side of Longhua Middle Avenue	14	3650
Jishui Jinshi school	North side of Tongshi Road	10	4157
Jingangshan Economic and trade school	East side of Longhua Middle Avenue	12	1700
Wenfeng Health center	West side of Wenshan Avenue	10	20

Measures has to be taken to reduce the construction Noise impact on environment sensitive point of reception.

#### 5.1.3.2 Mitigation measures

During the construction period the following noise protective measures are taken to protect acoustic environment:

1, Setting up warning sign on the noise sensitive road section, such as hospitals, schools, kindergartens and nursing homes; Using low noise devices; Control of noise point source, transmission route, traffic noise and so on; Equipped with anti noise ear plug for construction personnel; Reasonable arrangement of construction time.

2, Reasonable arrangement of construction time according to Emission standard of environment noise for boundary of construction site(GB12523-2011); Avoiding multiple high noise equipments working at the same time; Avoiding the noise sensitive time to the surrounding environment; Arrangement of the high noise equipment working in the daytime as possible; Reducing nighttime transportation, strict prohibition of construction at nighttime (22: 00~6: 00); The construction which has to be in the nighttime, must obtain the approval of the local environmental protection department, and have prior communication with the residents, and take noise reduction measures (such as setting noise barrier) at the same time, to reduced he influence of construction noise on the residents to a minimum.

3, All construction vehicles' speed should not exceed 25 km / h on the the road outside the construction site.

4, All construction vehicles' speed should not exceed 15 km / h in the construction site.

5, Try to maintain the noise of machinery and equipment below 90 dB as much as possible

6, Setting up temporary noise barriers at the side of the sensitive point of reception(including schools, hospitals, nursing homes, etc.) when high noise equipments construction.

7, Using correct measures to reduce the noise and vibration impacts caused by the construction.

8, Consultation with schools and units in the vicinity of the construction section, adjusting the construction time or taking other measures to minimize the interference of construction noise to teaching work.

9, Construction unit must use Construction machinery and transport vehicles in compliance with national standards.

10, The investor shall instruct the construction units to indicate the construction notice and complaints phone number at the construction site, the investor shall timely contact with the local environmental protection department after receiving the report, so as to timely handle environmental disputes and ensure the smooth progress of the construction.

#### 5.1.4 Construction period solid waste impact and mitigation measures

##### 5.1.4.1 Construction period solid waste impact

The main solid waste generated during the construction period are domestic waste of construction people, abandoned earthwork in the process of construction and dredging sludge and waste of 3 sub projects in Duchang, Yugan and Fengxin County.

##### (1) domestic waste of construction people

domestic waste of construction people in construction period consists of mainly organic waste, is prone to decay, fermentation if abandoned at will, which will not only pollute the water body environment, but also breed mosquitoes as fermentation and generate odor exhaust gases. EIA suggest to set up waste collection bins on site to collect the domestic waste and commissioned by the sanitation department to transport during the construction period.

The domestic waste production of construction personnel is calculated as 0.5kg/day·person. The domestic waste production are listed in Table 5-8.

**Table 5-8 Construction domestic waste of each sub project**

No.	Project Name	Construction people	Domestic waste amount	Domestic waste disposal and fate
1	Duchang	120	60kg/d	Classified collection; Transported to Duchang county waste comprehensive treatment plant by the sanitation department
2	Poyang	120	60kg/d	Classified collection; Transported to Poyang county domestic waste landfill by the sanitation



No.	Project Name	Construction people	Domestic waste amount	Domestic waste disposal and fate
				department
3	Yugan	100	50kg/d	Classified collection; Transported to Yugan county domestic waste landfill by the sanitation department
4	Fengxin	100	50kg/d	Classified collection; Transported to Fengxin county domestic waste landfill by the sanitation department
5	Jing'an	120	60kg/d	Classified collection; Transported to Jing'an county domestic waste landfill by the sanitation department
6	Jishui	120	60kg/d	Classified collection; Transported to Jishui county domestic waste landfill by the sanitation department
7	Shangli	60	30kg/d	Classified collection; Transported to Pingxiang City waste incineration plant by the sanitation department
Total		740	330 kg/d	

## (2) Construction waste impacts

If no proper site arranged for, or dump the waste at random by the construction unit, the waste earthworks from the excavation of Civil Engineering is easy to cause the waste random distribution along the both sides of the construction area, which will occupy a considerable number of city land, be difficult to control the soil erosion, have greater adverse impacts on the surrounding ecological system, bring greater difficulties to the recovery and utilization of temporary land for waste dump point, and will also bring a greater negative impact on the landscape along the construction area.

At the same time, the construction will generate a certain amount of construction waste, including cement concrete, bricks, sand and stone etc.. Some of the construction waste can be recycled, and others that can not be recycled will be transported to the local construction waste landfills.

The construction waste and abandoned earthworks of each sub project are listed in Tabel 5-9.

**Table 5-9 Construction waste and abandoned earthworks of each sub project (m3)**

No	Sub Project	Digging Earthwork	Filling Earthwork	Abandoned Earthwork	construction waste	Abandoned earthworks disposal and fate	Construction waste disposal and fate
1	Duchang	164499	138442	26057	1810	Unified deployment by the Duchang County sanitation department for other civil engineering projects in Duchang County	Jiujiang City construction waste landfill
2	Poyang	159237	19110	140127	2110	Unified deployment by each township sanitation department for other civil engineering projects of the township	Shangrao City construction waste landfill
3	Yugan	55335	55335	0	1120	/	Shangrao City construction waste landfill
4	Fengxin	28547	11966	16581	2120	Unified deployment by the Fengxin County sanitation department for other civil engineering projects in Fengxin County	Yichun City construction waste landfill
5	Jing'an	132789	104836	27953	1490	Unified deployment by the Jing'an County sanitation department for other civil engineering projects in Jing'an County	Yichun City construction waste landfill
6	Jishui	36125	14548	16288	3100	Unified deployment by the Jishui County sanitation department for other civil engineering projects in Jishui County	Ji'an City construction waste landfill
7	Shangli	1000	600	400	0	Unified deployment by each township sanitation department for other civil engineering projects of the township	/
Total		577532	344837	227406	10750		

(3) Dredging sediment

Duchang, Yugan and Fengxin county sub project involves water body dredging, dredging Quantity is in Tabel 5-10.

**Table 5-10 Project dredging**

Sub project	Dredging water body	Dredging location	Dredging length or scale	Dredging depth (m)	Dredging quantity (m <sup>3</sup> )	Way of dredging	Drying Measures	Fate
Duchang	Zoujiazui lake	Chengxi Avenue east side of lake body	Lake body area 25610m <sup>2</sup>	0.3	8000	Cutting off Water flow, dredging, and excavator work in dry season	Natural drying	Gulingshan'a o wasteland virescence Wangdunxian g
Yugan	Pipa Lake	Effluent	Upstream		30000	Underwater	centrifuge	Yuting Town

		channel	area of 300m, Downstream area of 2000m	Upstream area of 2, Downstream area of 0.8		excavation by environmental cutter suction dredger	dehydration and drying	Changgangling woodland Xiaoganghe woodland
Fengxin	Beizhizhen channel	All the length	2900m	0.6	3480	In dry season mechanical plus artificial excavation	centrifuge dehydration and drying	Ganzhou Town Huangxi Villiage YuantouZu Woodland
	South channel	All the length	1900m	1	7600			
	Dazhai channel	All the length	1200m	0.4	2400			

### 1) Dredging sediment in Duchang county

Considering the conditions like small lake body area, less dredging quantity, and sediment composition, etc., cutting off water flow for dredging, and excavation by excavator in dry way is adopted for dredging. In dry season, after cofferdam building, water drainage and sediment air dry up, use long arm excavator to excavate the sediment.

The detection and analysis in the previous text show that sediment of Zoujiazui lake are in compliance with the Soil environmental quality standard (GB15618-1995) grade 2 standard (ph 6.5~7.5), and the Control standards for pollutants in sludges from agricultural use(GB4284-84)(ph≥6.5), the dredging sludge can be used for 后 farmlands, landscapes and virescences after natural drying up.

The sludge amount in this project is not large, and there is no temporary storage. After the in situ draining, drying, and excavation, the sludge will be loaded to the van, covered by tarpaulin and transported to the wasteland in Guling shan'ao Wangdun Xiang for use after further drying up. The transport distance is 3KM. The project uses in situ dumping site, the dam, drainage measures should be taken, and residual water treatment and odor control should be done. The dredging quantity is 8000 m<sup>3</sup>, and the water content is 90%, the decsity can be calculated as 1.0kg/L, the sludge dry weight will be 800t. According to control standards for pollutants in sludges from agricultural use(GB4284-84), To use the sludge meet this standard, no more than 2000kg(in dry weight ) of sludge shall be used in 1Mu every year. The wasteland area occupied 300 ha, which is 4500Mu, need 900t dry sludge. Therefore, the plan of transport the project sludge to Gulingshan'ao wasteland Wangdunxiang for use is feasible. The measures of soil and water conservation should be done when apply the sludge. See section on Soil and water conservation measures. The land is Wang Dun Xiang Qijiao Village's collective land, and the sludge Acceptance Letter see Annex 1.

According to the design manual of land application of municipal sludge (EPA), the land application of municipal sludge can be divided into surface application and injection application, for the project sludge, it requires surface application, while after mixed with soil,

Closure blocks and warning signs should be set to prevent the public from entering. For the project, Because the application area is very small, it is recommended not to stir, after surface application, the land should be covered with soil, green to prevent sediment loss.

## 2)Yugan county dredging

### ① Sediment composition

The monitoring and analysis of the previous text show that Pipa Lake sediment does not belong to hazardous waste , it is general solid waste, can be used for forestry.

### ② Dredging process

The under water excavation of environmental cutter suction dredger is recommended for Pipa Lake effluent channel sediment dredging project. The sludge is directly transported to the sludge dumping site by sludge discharge pipe. The sludge discharge pipe is on the water surface using floating arrangements or under the water with hidden arrangements。

### ③ Temporary storage site

The water content of the sediment is 90%, dewatered in the dumping site. The dumping site located in the wasteland in the south side of downstream area of effluent channel,Figure( ), the temporary land occupation area is about 800m<sup>2</sup>.



**Figure 5-1 Dumping site for sludge dewatering Yugan county**

### ④ Sediment drying

Dredging sediment will be dried up in the field of dehydration, Centrifugal dewatering system is adopted. It The system is a complete effective set of high automatic dehydration

drying processing technology with continuous production, consist of dewatering machine, screw pump, conveyor and other equipment. Concentrated slurry is pumped to the separation unit through the screw pump after impurities removal. The Mud particles gradually separate with water. Dry soil will be transported to the temporary storage yard by conveyor, excess water is discharged after flocculation treatment and meet the standard. The dehydration rate can reach 50%.

### ⑤ Sludge disposal

The dredging quantity of the project is about 30000m<sup>3</sup> by estimation, water content is 90%, the decsity can be calculated as 1.0kg/L, the sludge dry weight will be 3000t. The dewatered sludge will be transported to the Changgangling woodland and Xiaoganghe woodland., in which , Changgangling woodland is 10Km from PipaLake, occupuying 46 ha, and Xiaoganghe woodland is 5Km away from Pipa Lake, ccupuying 80 ha. Both are the collective land. According to Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland(CJ/T 362-2011), no more than 30t/hm<sup>2</sup> of sludge shall be used for woodland a year. Changgangling and Xiaoganghe woodland occupies an area about 126ha, needs 3780t/y sludge, Therefore,the plan of transport the project sludge to Changgangling and Xiaoganghe woodland for use is feasible. The acceptance Letter see annex 2. Same as Duchang County, the sludge in Yugan will also be used for surface application in woodland, after surface application, the land should be covered with soil, green to prevent sediment loss. Closure blocks and warning signs should be set to prevent the public from entering.

### 3)Fengxin county dredging

#### ① Sediment composition

The monitoring and analysis of the previous text show that South channel, Dazhai channel and Beizhizhen channel sediment does not belong to hazardous waste , are general solid waste, can be used for forestry..

#### ② Dredging process

3 wastewater discharge channel of South channel, Beizhizhen channel , Dazhai channel have different widths, mechanical and artificial dredging method is adopted in dry season.

In dry season, there is almost no water in the upstream area, there is no need to block, artificial dredging is mainly adopted where the dredging channel is narrow, and a small artificial dredging machine is used where the channel is wide.

③ Temporary storage site

Project propose to set up a temporary storage site for sludge dewatering.. temporary storage site location is as follows. Temporary land occupation area is about 600m<sup>2</sup>.

**Table 5-11 Temporary land occupation Fengxin dredging project**

Sub project	Dredging water body	Temporary storage site location	area (m <sup>2</sup> )	land occupation type
Fengxin	Beizhizhen channel	200m east side of Huilan Road	160	Wasteland
	South channel	50m east side of Zong6 Road	300	Wasteland
	Dazhai channel	300m west side of Yingxing Avenue	140	Wasteland



**Figure 5-2 Fengxin county sludge dewater temporary storage site**

④ Sediment drying

Dredging sediment will be dried up in the field of dehydration, Centrifugal dewatering system is adopted. It The system is a complete effective set of high automatic dehydration drying processing technology with continuous production, consist of dewatering machine, screw pump, conveyor and other equipment. Concentrated slurry is pumped to the separation unit through the screw pump after impurities removal. The Mud particles gradually separate with water. Dry soil will be transported to the temporary storage yard by conveyor, excess water is discharged after flocculation treatment and meet the standard.The dehydration rate

can reach 50%.

#### ⑤ sludge disposal

The dredging quantity of the project is about 13480m<sup>3</sup> by estimation, water content is 90%, the density can be calculated as 1.0kg/L, the sludge dry weight will be 1348t. The dewatered sludge will be transported to the Yuantou Zu Woodland, Ganzhou Town, Fengxin county., Transport distance is about 7km.

According to Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland(CJ/T 362-2011), no more than 30t/hm<sup>2</sup> of sludge shall be used for woodland a year. Yuantou Zu Woodland area occupies about 200hm<sup>2</sup>, needs 6000t/y sludge, Therefore, the plan of transport the project sludge to Yuantou Zu Woodland for use is feasible. Sludge Acceptance Letter see Annex 3. Same as Duchang County, the sludge in Yugan will also be used for surface application in woodland, after surface application, the land should be covered with soil, green to prevent sediment loss. Closure blocks and warning signs should be set to prevent the public from entering.

#### (4) Waste in the Dredging Area

In the dredging area of this project, there are solid pollutants including garbage and biological remains in the water body. These solid pollutants will be cleaned as well during the dredging process. The garbage quantity of this part is relatively small. Environmental assessment suggests setting up garbage collecting boxes in the construction spot so as to collect this kind of garbage, which will be cleaned and transported to refuse processing plant of each county by sanitation departments. The generation situation of dredging garbage is shown in the following table.

**Table 5-12 Waste in the dredging area**

No.	Sub project	Water body involved	Waste quantity in the dredging area (t)	Fate
1	Duchang	lake body of the east side of Huxi Avenue , Zoujiazui	0.1	Shipped to Duchang solid waste treatment plan by Sanitation department
2	Yugan	Effluent channel of Pipa Lake	0.2	Shipped to Yugan solid waste treatment plan by Sanitation department
3	Fengxin	Beizhizhen cannal , South cannal and Dazhai Canal	0.25	Shipped to Fengxin solid waste treatment plan by Sanitation department

#### 5.1.4.2 Mitigation measures

##### 1, Construction waste and abandoned earthworks

Construction abandoned earthworks should temporarily stored along the both side of pipe excavation, construction unit should collect and transport the abandoned earthworks to designated whereabouts in time, hand over to the sanitation department to Unified deploy for other civil engineering projects in the local area.

##### (1) Temporary storage site

① Temporary storage site for earthworks should be reasonably arranged, away from the environment sensitive points of reception like residents, schools, should be located in downwind or lateral wind direction of of the urban and residential area's summer dominant wind;

② The land occupation should be as little as possible; Temporary occupied area should be recovered according to the original land use type after construction.

③ Temporary stacking of earthwork should be rolled and covered by felt cloth and other waterproof, windproof measures should be taken.

④ Soil drainage ditch should be set around the temporary storage site, and provided with the soil grit chamber at the outlet point to slow down the water flow and settle down the sands.

⑤ Transport vehicles Should be sealed in the transport process, to avoid falling

##### (2) Dumping site Management measures:

① Setting up Dumping site at Suitable area in the county town, approved by the people's Government of the county.

② Dumping site should be managed by the qualified professional team.

③ Dumping operation should be directed by specific people at specific zoning. Non operating personnel shall not be allowed to enter the operating area. The personnel, vehicles and machinery in the operating area must obey the command of the management personnel. Dumping vehicles must dump the soil in accordance with the routes, areas and order designated by the management personnel, shall not dump at will inside or outside the dumping site.

④ Management unit must stratify and make full compaction according to norms and contractual agreement, shall not start the next layer of construction until reach the standard; Prevent soil erosion and avoid environmental pollution.



⑤Water prevention and drainage treatment around the field and the operating surface should be done to ensure smooth drainage and no stagnant water.

⑥The protection and construction safety of the abandoned dumping site must be handled in accordance with the requirements of the relevant construction standards.

⑦Special inspection, should be done after work, security risks found out should be handled in a timely manner, a clear warning signs should be set. Dumping soil should be handled within the day as much as possible.

⑧When project is complete, the temporary facilities for construction site should be removed in time, and the waste should be cleared and the land should be flattened, the surrounding environment should be recovered. During the construction and shutdown period, management personnel should be responsible for the maintenance of the construction site and the surrounding environment sanitation.

⑨The process of dumping soil should be in strict accordance with the spreading, rolling program, The new soil layer is strictly prohibited without compaction. The process of soil spreading should be in accordance with the construction progress of the formation of slope potential with higher inner side and lower outside. a certain number of collecting groove on the ditch should be set up to deposit the soil in the water. the weather changes and local flood information should be known in time, The dredging work of the drain ditch and collecting groove should be done in advance. Perfect the drainage ditch and other facilities.

⑩After the site is filled up, the equipment, surplus materials, garbage and temporary facilities should be removed in a timely manner, after acceptance by the relevant departments,

### (3)Construction waste

Comprehensive classification and recovery of recyclable waste should be carried out (scrap metal, scrap materials, packaging bags should be sold to scrap yards, waste brick should be used as road base material). Waste that can not be recovered should be timely transported to local construction waste landfill site. Transport vehicles Should be sealed in the transport process, to avoid falling. Temporary dumping site should take the waterproof, windproof measures.

### 2, Domestic waste

Domestic waste bin should be set up in construction area, and daily cleaned Collected, and classified by specific people, then collected and transported by the local sanitation department.

### 3, Dredging sediment

#### (1) Duchang county sediment

Dredging should be done in dry season.

The plan is using long arm excavator to excavate the sediment after cofferdam building, water drainage and sediment air dry up.

When the sludge takes the spot in the lake as the dump site, the closed bottomland shaped during the drought period of the lake region can be utilized to set up dams of which the section form is usually sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials.

There should be water outlet, treatment and emergency tanks for residual water in the dump site. Meanwhile, seepage-proofing work should be well done. The drainage method of gradual ditching can be adopted to dewater the sediments in the dump site. On the basis of natural subsiding, the residual water can reach the standard and be discharged into the west part of the lake through the existing channels.

During rain seasons, the top of the dump site should be covered by tarpaulins so as to prevent rain wash.

Regularly spray deodorants towards the aired sludge so as to reduce its influence on the ambient air.

Try to reduce the temporary land occupation and make timely removal.

Sediment is directly transported to wasteland in Gulingshan'ao Wangdunxiang in closed vehicles for surface application.

Block is set around the Wangdunxiang Gulingshan'ao wasteland dumping site, and warning signs as well to prevent the public from entering.

Sediment will be covered by soil and virescence after natural drying in Wangdunxiang Gulingshan'ao wasteland dumping site to reduce water and soil loss, see water and soil conservation measures.

#### (2) Yugan county sediment

Dredging should be done in dry season;

Environmental cutter suction dredger, under water excavation is adopted;

Dredging sediment is used for woodland surface application in Changgangling and Xiaoganghe after centrifuge dehydration and drying treatment, water content of below 60%. The woodland area with sludge surface applications can not be used for cultivation of

vegetables, grain and other crops. Block is set to reduce water and soil loss.

Use the wasteland in south side of the effluent channel as the dump site, set up dams of which the section form is usually sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials.

There should be water outlet, treatment and emergency tanks for residual water in the dump site. Meanwhile, seepage-proofing work should be well done. The residual water after sludge's dewatering will be treated through dosing and flocculating. After reaching the standard, it will be discharged into Pipa Lake nearby.

During rain seasons, the top of the dump site should be covered by tarpaulins so as to prevent rain wash.

Regularly spray deodorants towards the aired sludge so as to reduce its influence on the ambient air.

Try to reduce the temporary land occupation and make timely removal. The temporary land should be rehabilitated after the construction.

The dewatered sludge will be transported to the Changgangling woodland and Xiaoganghe woodland for surface application. Set the enclosure to reduce soil erosion, and warning signs as well to prevent the public from entering, see the measures for soil and water conservation.

### (3) Fengxin county sediment

Mechanical plus artificial dredging method is adopted.

Use the wasteland as the dump site, set up dams of which the section form is usually sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials.

There should be water outlet, treatment and emergency tanks for residual water in the dump site. Meanwhile, seepage-proofing work should be well done.

The residual water after sludge's dewatering will be treated through dosing and flocculating. After reaching the standard, it will be discharged into nearby waterbody.

During rain seasons, the top of the dump site should be covered by tarpaulins so as to prevent rain wash.

Regularly spray deodorants towards the aired sludge so as to reduce its influence on the ambient air.

Try to reduce the temporary land occupation and make timely removal.

The dewatered Dredging sediment is used for woodland surface application, with soil covered afforestation to reduce the water soil loss in Yuantou Zu Huangxi Villiage, Ganzhou Town. Set the enclosure and warning signs as well to prevent the public from entering, see the measures for soil and water conservation..

Try to reduce the temporary land occupation and make timely removal. The temporary land should be rehabilitated after the construction.

The woodland area using sediment with sludge surface applications can not be used for cultivation of vegetables, grain and other crops.

#### 4、Waste of dredging area

waste collecting bins should be set on the construction site, collecting waste from the dredging area, collected by the sanitation department to the county waste treatment plant. Ecological environment impact and mitigation measures for construction period

#### 5.1.4.3 Ecological environment impact in construction period

##### 1, Impacts on Poyang Lake National Wetland Park

##### (1) Location relationship of project and wetland park

In order to improve the water quality of the Pearl lake, Poyang County sub project proposes to use engineering and non engineering measures to improve the management of rural point and non-point source pollution in the Pearl Lake basin, with construction of 35 rural sewage treatment station of treatment scale around 50 t/d ~250 t/d; 101 constructed wetlands, and 95.85km ecological interception channele.

Pearl Lake water area is within the scope of Poyang Lake National Wetland Park. Poyang Lake National Wetland Park has a total area of 36285 hm<sup>2</sup>, the wetland area is 35116.1 hm<sup>2</sup>, accounting for 96.8% of the total land area.

The park was approved by the State Forestry Administration in November 2008 as a national wetland park. The park has many rivers, winding streams, the spread of farmland, and the wetland landscape is the main body, such as natural lakes, rivers, grass island, mudflats, islands, flood pond, etc. It is rich in wetland resources, and very representative.

As a habitat of a large number of migratory birds, especially as an important stop, feeding and the winter rest place, for the Northeast Asian migratory birds It's bird resources are very rich.

According to the Master Plan for Poyang Lake National Wetland Park, this wetland park is planning into 7 function areas of Hanchi Lake waterfowl habitat protection and conservation area, Jiaofengwei wetland restoration and reconstruction area, Pearl Lake water

source wetland conservation area, Baishazhou Natural Wetland Demonstration area, Qingshan Lake constructed wetland utilization demonstration area, East Lake urban wetland leisure area and management service area.

Poyang county sub project does not involve the land area of wetland park, is nrarby Pearl Lake water area. Project area is around the Pearl Lake water sources protection conservation area , 500m east of Baishazhou natural wetland demonstration area and about 1000m north side of Poyang Lake cultural water city.

Pearl Lake water conservation area is an important part of the park, mainly including the Pearl Lake waters. The main function of this area is to strictly protect the drinking water source of Poyang County, and on this basis to carry out a certain degree of restoration and remediation. It is the Grade 1 protection area of the park.

Baishazhou Natural wetland Demonstration area is the main area for public demonstration of typical wetland landscape of Poyang Lake and wetland eco-tourism development. It lays a good foundation for displaying the typical natural wetland landscape in Poyang Lake, and developing the wetland ecological tourism. It is the grade2 protection area of the park.

Poyang Lake cultural Shuicheng is a theme park with landmark building. The city is built on the basis of the existing artificial wetland, an artificial waterway as the axis, to display the characteristics of Poyang Lake wetland culture and historical custom. It is grade 3 protection area of the park.

Wetland park location is in Figure 5-3, the location relationship of the project and the wetland parkis in Figure5-3.



**Figure 5-3 Poyang Lake National Wetland Park Geography location**

(2) Ecological impacts on wetland park

① Compliance analysis of laws and regulations

Project is in compliance with the requirements of the Measures for the administration of National Wetland Parks (for Trial Implementation) and the regulations of Jiangxi Province wetland protection. The Detail of the Compliance analysis are listed in Table 5-12.

**Table 5-13 Compliance analysis for project and relevant laws and regulations**

No.	Laws	Regulations	Proposal project design and present status	Compliance
1	Measures for the administration of National Wetland Parks (for Trial Implementation)	Wetland conservation areas shall not engage in any other activities unrelated to the conservation and management of the wetland ecosystem, except for the protection, monitoring and other necessary protection management activities.	To protect the water quality of Pearl Lake water sources, the project propose to control the rural point and non-point source pollution by engineering and non- engineering measures. <ul style="list-style-type: none"> <li>● Construction of 35 rural wastewater treatment station with the treatment scale of 50 t/d~250 t/d;</li> </ul>	Compliance
2	Regulations of Jiangxi Province wetland protection	Article 27: if engaged in production and business activities in the wetland, it should be in compliance with the planning of wetland conservation; maintain the sustainable utilization of wetland resources; Shall not affect the basic functions of wetland ecosystem and exceed the regeneration capacity of wetland resources or damage wild animal and plant species.	<ul style="list-style-type: none"> <li>● Construction of 101 constructed wetlands,</li> <li>● Construction of 95.85km. Ecological sewage interception channel</li> <li>● Construction of 1 new water quality automatic monitoring station</li> <li>● Construction of 8 automatic measuring and reporting points</li> </ul> Rural point source wastewater will be treated up to the standard by the wastewater treatment station, then discharged into Pearl Lake water area .	Compliance

② Compliance analysis for the project and wetland park plan

Project is in compliance with the requirements of Master Plan for Poyang Lake National Wetland Park. The detail analysis is in Table 5-13.

**Table 5-14 Compliance analysis for project and wetland park plan**

Plannings	Regulations	Proposal project design and present status	Compliance
Master plan for Poyang Lake National Wetland Park	<p>Regulations for Grade 1 protection area:</p> <p>1, Strict protection of the object, strictly control the development and construction within the scope of protection.</p> <p>2, human activities in the protection area should be strictly limited to prevent damage to the ecological system.</p> <p>3, It is strictly prohibited of sewage discharged without treatment into the waters within the scope of the wetland park.</p> <p>4, It is prohibited of the construction the facilities of non protection purposes and against the planning in the protection area.</p>	<p>To protect the water quality of Pearl Lake water sources,, the project propose to control the rural point and non-point source pollution by engineering and non- engineering measures.</p> <ul style="list-style-type: none"> <li>● Construction of 35 rural wastewater treatment station with the treatment scale of 50 t/d~250 t/d;</li> <li>● Construction of 101 constructed wetlands,</li> <li>● Construction of 95.85km. Ecological sewage interception channel</li> <li>● Construction of 1 new water quality automatic monitoring station</li> <li>● Construction of 8 automatic measuring and reporting points</li> </ul> <p>Rural point source wastewater will be treated up to the standard by the wastewater treatment station, then discharged into Pearl Lake water area .</p>	Compliance
	<p>Regulations for Grade 2 protection area:</p> <p>1, It is prohibited of the construction of other projects within the scope of protection, except for planning projects.</p> <p>2, Regulate the behavior of human activities, prohibit the destruction of wetland ecosystem.</p>	no construction	Compliance
	<p>Regulations for Grade 3 protection area:</p> <p>1, The behavior of destruction of wetland resources is strictly prohibited.</p> <p>2, the introduction of harmful exotic organisms is strictly prohibited.</p>	no construction	Compliance



### ③ Sole rationality analysis of project site selection

There is no industrial point source in the Pearl River Basin.

There are 6 towns of Tuanlin, Baisha, Pearl Lake, Shuanggang, Gaojialing surrounding the Pearl Lake. The phenomenon of direct discharge of rural domestic sewage is very common, and the agricultural non-point source pollution in the watershed is relatively large. The water area is the water source protection area of the Wetland Park, 7 centralized drinking water sources are involved in the water area, if no measures are taken, the water quality will gradually deteriorate and cause the pollution of drinking water sources.

In order to improve the water quality of the Pearl lake, Poyang County sub project proposes to use engineering and non engineering measures to improve the management of rural point and non-point source pollution in the Pearl Lake basin, with construction of 35 rural sewage treatment station of treatment scale around 50 t/d ~250 t/d; 101 constructed wetlands, and 95.85km ecological interception channele. To build 1 new water quality automatic monitoring station at drinking water sources, and 8 automatic measuring and reporting points at township Tap Water plant water intake points area, to strengthen the water environment Management at water sources. Therefore the project site selection has the sole rationality.

### ④Impacts on vegetation

This project area is located on the east side of the Wetland Park, and the project mainly in the land around Lake project, does not involve other areas of wetland park, and there is no impacts on the vegetation of the wetland park.

### ⑤Impacts on birds

The there are a lot number and kinds of rare overwintering birds in the Wetland Park. The main habitat and concentrated distribution area is located in the southwest of HanChi Lake waterfowl habitat protection and conservation area of the Wetland Park

Project construction site is in the periphery of the Wetland Park, human activities and residential areas. Population is more dense, human activities are frequent. The birds flew occasionally for a short stay, there are no fixed birds habitat and concentrated distribution areas.

Common birds within the EIA scope like little egret (*Egretta garzetta*), pond heron (*ARDEOLA Bacchus*) are the key protection wild animal of Jiangxi province.

During the construction period, the project may have adverse effects on the birds in a

short time:

A, Impacts on birds foraging

a, Noise jamming. noise generated by the Construction transport vehicles, construction machinery is the main source of noise pollution in construction period, may have impacts on the birds foraging and habitat. This project mainly are small civil engineerings, with small equipment, the construction cycle is short, the noise has little impact on the birds.

b, Lighting disturbance. The use of strong light, transport vehicle lights in night construction will have negative impacts on bird habitat, foraging and flight positioning. The project has no night constructions, so there is no light disturbances to the birds.

c, Human disturbance. Personnel activities during construction, such as improper construction personnel management, will have a greater disturbance to birds, reducing the birds habitat, foraging space in protection area. Need to strengthen the construction personnel environmental awareness, civilization construction in order to reduce human disturbance.

B, Impacts on the migration of birds

Main protected objects in the park are the winter migratory birds in the protection area.

Winter migratory birds generally start to fly from the breeding place to the protected area in late October, by the end of December, the number tends to be stable.

The following year in early March to early April, Migratory birds fly back to the north by strong upward air flow in clear and warm weather. The stay time of different species of birds in the protected area is not the same, ranging from 3 to 5 months. Within the migratory period, The use of strong light, transport vehicle lights in night construction will have negative impacts on flying birds to get lost, especially in bad weather conditions

The main habitat of the park is in the Hanchilake, the west part of the Wetland Park, and the Poyang County sub project mainly distributed in the east side of the Wetland Park, has little impacts on the habitat of migratory birds. The project consists of 35 underground treatment stations, 101 constructed wetlands, and 95.85km ecological flood interception ditch, This project mainly are small civil engineerings, with short construction cycle, involving less machinery and equipments, and no night constructions, has little impact on the birds.

⑥ Impacts on amphibians, reptiles and mammals animal

During the construction, the project affects the amphibians, reptiles and mammals

animal within the EIA mainly in two aspects:

On the one hand, the land occupation, excavation, construction personnel activities, Increase of interference factors, Will reduce the animal's habitat. The destruction of vegetation reduced the area suitable for animals habitat, and affect some of the animals' active regions, migration pathways, foraging range, etc., and then have some impacts on the survival of animals.

On the other hand, construction personnel and construction machinery noise, night lighting in construction area, will cause animals forced migration, making the animal species, numbers reduced, and the animal distribution in the project scope changed.

During the construction, the project has certain impacts on the activities of amphibians and reptiles mammals, being frightened by the construction noise, there will also be some species were forced to leave their original habitat. The protection of animal habitats in the project area is not homogeneous, and food sources are diverse, animals have the ability to migrate, most types can return to its original place after the completion of the construction.

#### ⑦ Impacts on aquatic life

The project is basicly around the lake, If attention paid to the domestic wastewater, construction wastewater and solid waste from the construction site, thers will be little impacts on the water environment along the line, and the survival of fish and other aquatic organisms in the lake.

So the project has little impacts on aquatic organisms. And the influence time is short, at the same time, with the end of construction, its impact will also ease, or even disappear.

#### ⑧ Impacts on structure and function of Wetland Park

The project is located outside the Pearl Lake Wetland park, does not involve the wetland park, will not affect the structure and function of wetland park.

#### ⑨ Summary

In summary, the project construction period will not have a huge adverse impacts on the Poyang Lake National Wetland Park.

#### 2, Impacts on the plants in the construction area

The project drainage pipe network is laid mainly along the city road, has minimal impacts on regional vegetation. No Ancient and famous trees were found in the construction area, and the temporary occupied areas will be recovered in accordance with the original land use type after construction. So there is little impacts on the regional vegetation.

#### 3, Impacts on the animals in the construction area

Animals in the project area are mainly of poultry and common aquatic organisms, no key protected wild animals and their habitats were found in sub project sites of Duchang, Yugan, Fengxin, Jishui, Shangli, Jingan County. As a result, the project construction has minimal impacts on regional animal and aquatic life.

#### 4、Impacts of Dredging on Aquatic Ecosystems

(1) Duchang County: Located in the urban area of Duchang County, Zoujiaju Lake belongs to an area with frequent human activities. Along the river system are mainly wastelands, vegetable fields and villages. The lake region is influenced by the sewage discharge from the villages nearby and the industrial area of Lotus Hill. The water there at present belongs to V-category water of poor quality. Particularly, the water in the east part of the lower reach is of relatively poorer quality. Thus, it plans to dredge the east part of the lake. According to the survey, aquatic organisms in Zoujiaju Lake are mainly common species. There are no fish spawning site, feeding site or wintering site. No precious species of aquatic organisms inhabit there and it is not an important natural habitat. The dredging area of the lake is about 25610 m<sup>2</sup>; the dredging amount about 8000 m<sup>3</sup>; the dredging depth 0.3 m. The dredging area of the lake and dredging amount are not large. The dredging process are planned to be conducted during the drought period. Only the dredging area will be drained. There will set up cofferdam for the implementation of dredging. Part of the benthos will disappear but they will gradually appear again with the ending of dredging work. Therefore, the dredging subproject in Duchang County will have little influence on the aquatic organisms in Zoujiaju Lake. It will not seriously worsen or change the ecosystems in Zoujiaju Lake.

(2) Yugan County: Located in the urban area of Yugan County, Pipa Lake belongs to an area with frequent human activities. Along the river system are mainly wastelands, vegetable fields and villages. Influenced by the direct domestic sewage discharge from the villages nearby, the garbage pollution, farm irrigation and aquaculture industry, the water there at present belongs to inferior Class V. According to the survey, aquatic organisms in Pipa Lake are mainly common species. There are no fish spawning site, feeding site or wintering site. No precious species of aquatic organisms inhabit there and it is not an important natural habitat.

The project plans to dredge the discharge channel of Pipa Lake, with the dredging amount being 30000 m<sup>3</sup>. It does not involve dredging of the lake body. The dredging process will utilize environmentally friendly cutter-suction dredger to carry out underwater

excavation. During the dredging process, the benthos in the dredging part of the discharge channel will disappear, but the benthos in Pipa Lake Region will not be influenced. With the ending of dredging process, the aquatic ecosystems in the discharge channel will gradually recover. Thus, the project will not seriously worsen or change the ecosystems in Pipa Lake.

(3) Fengxin County: This project plans to dredge Dazhi Canal, Beizhizhen Canal and South Canal, with the dredging amount being 134800 m<sup>3</sup>. The dredging canals are all located in the urban area with frequent human activities. The main functions of these canals are drainage and irrigation. Influenced by domestic sewage seriously, the water quality is bad. The silting phenomena are quite serious inside the channels. Aquatic plants mainly include green alga. Fishes and benthos there are mainly common species. The parts of canals involved in the project have no fish spawning site, feeding site or wintering site. No precious aquatic organisms inhabit in the canals and they are not important natural habitats.

The total dredging amount of this project is 134800 m<sup>3</sup>. As the widths of canals are not consistent, the project adopt mechanical and manual ways to dredge during the drought period. During the drought period, there is almost no water entering the upper reach of the dredging river way. Thus, there will be no separation measures. As it is in a water-break state, there are almost no benthos. Hence the dredging of the project has little influence on the water ecosystems. It will not seriously worsen or change the ecosystems in Pipa Lake.

#### 5, Impacts on soil and water loss

In the course of construction the surface vegetation on the construction site will be destroyed, leading to the increase of soil erosion modulus. Temporary storage site will not only bury the surface vegetation, at the same time, the waste residue and the Sludge applied woodland and wasteland will form a new water and soil loss area, and will cause soil and water loss in the rainy seasons.

The destruction of ecology and landscape is limited and temporary during the construction period. As long as the construction personnel do a good job of management, and restoration work of the temporary site after the construction. The impacts of this project on the ecological and landscape environment is acceptable.

#### 5.1.4.4 Mitigation measures

##### 1, Mitigation measures of Ecological impacts on Poyang Lake National Wetland Park

##### (1) Prevention and control measures of impacts on mammals and amphibians

① The project area should be divided into several sections in the construction periods, and keep enough distance between sections, to provide enough space for mammals and

amphibians to escape.

② Discharge of construction period wastewater should be toward away from the protected area side as far as possible to reduce the impact of sewage on mammals and amphibians.

③ Mechanical stirring system, sand system should be installed with silencer pad, equipped with sound insulation room or cover, and periodic inspection and maintenance should be done in strict accordance with the operation requirements of the mechanical equipment to reduce noise caused by improper lubrication of equipment; and to reduce the impacts of noise on mammals and amphibians.

④ Publicity and education should be done to the construction personnel, enhancing the awareness of wildlife conservation, to prevent the occurrence of hunting phenomenon, and reduce the impact of personnel on mammals and amphibians.

(2) Prevention and control measures of impacts on birds

According to the analysis of the impact of the project construction on birds in Wetland Park, the main measures are:

① In the construction period, construction tasks should be arranged as little as possible during the time period of more birds in the area (from October to next March), while the construction intensity should be increased in order to finish the work on time during the time that the birds is away from the area.;

② avoid the construction of the night .

③ Mechanical stirring system, sand system should be installed with silencer pad, equipped with sound insulation room or cover, and periodic inspection and maintenance should be done in strict accordance with the operation requirements of the mechanical equipment to reduce noise caused by improper lubrication of equipment; and to reduce the impacts of noise on on birds.

④ Construction and living areas should be far away from the protected areas, and install the curtain to block the light to reduce the impact of night light on birds.

⑤ Strengthen the management of construction activities and personnel during the construction period; Strengthen the publicity of environmental laws and regulations; Compilation of bird knowledge manual, make knowledge popularization in the area, improve the birds protection consciousness of the construction personnel. Reduce the impact of personnel disturbance on birds.

## 2, Prevention and control measures of soil and water loss

(1) Reasonable selection of construction period; To avoid the rainy season, rainy days. As far as possible; Setting enclosure blocks around construction area to prevent construction materials, construction waste into surface water.

(2) Soil drainage ditch should be set around the construction site according to the topography and geomorphology condition, and provided with the soil grit chamber at the outlet point to slow down the water flow and settle down the sands.

(3) In Combination of the key and general soil and water conservation work, the engineering measures and plant measures. Taking engineering measures as the guide, and exerting the quick acting effect of engineering measures and water and soil conservation supporting of plant measures. Plant measures play a long-term and stable role of soil and water conservation, greening and landscaping project area surrounding environment.

(4) Protection of the litter leaf layer and organic matter in the surface soil, Backfill to damaged area, to promote the growth of native plants.

(5) Using the local grass and vegetation to cover the erosion or barren areas, or hardening the soil surface in this region.

(6) Erosion control measures should be taken before the advent of the rainy season in order to carry out the next. Construction work. Corresponding erosion measures should be completed for each complete construction point.

(7) In all construction sites, before vegetation restoration, deposition control facilities should be set to slow down the runoff rate, change the direction of flow, settle the sands and so on. These deposition control facilities include material heap, stone road, grit tank, straw bag, hedgerows and mud slag heap etc..

(8) By laying ditch, berm, grass fence and stone piles and other measures to prevent water rushed into the construction site or interfering with site.

(9) Maintain and continue to use erosion control until the vegetation is fully recovered

(10) When necessary, Sprinkle water on the soil road, excavation area, filler and soil storage area to reduce wind erosion.

## 3, Other mitigation measures of Ecological impact

(1) Scientific layout arrangement of construction site; minimal land occupation; and restoration of the temporary occupied areas in accordance with the original land use type after the construction.

(2) To Strengthen publicity and education, prohibit to cut down the forest, hunt wild

animals; During construction, if rare and endangered plants, ancient and local famous trees and plants is found, it should be reported to the relevant departments and take protection measures locally; To control construction noise, to reduce the interference of construction noise to animals.

(3) When stripping topsoil in the construction process, layered excavation, layered stacking, should be employed, with timely removal of temporary facilities, loose of the soil compaction Layered backfill of the soil and Restoration of vegetation should be done after completion of construction. The appropriate type of vegetation in the region should be selected according to the local climate characteristics, slope rate and geological condition.

(4) Fire monitoring of the construction area involving the forest; Strengthen the investigation of key protected plants, ancient and famous trees with the regional distribution. Strict management of construction work may cause fire. During the period of forest fire prevention, it is forbidden to use fire in the mountain area.

#### 5.1.5 Construction period social environment impact and mitigation measures

##### 5.1.5.1 Construction period social environment impact

###### 1, Impacts on the service of municipal facilities

The project pipeline laying mainly in curbs, sidewalks, non motor vehicle lanes or original covered canal, in the construction process, may cause temporary interruption to the drainage, electricity, gas and bus lines, have some impacts on the lives of the residents.

###### 3, Impacts on street commercials

During the pipe network construction process, traffic obstacles caused by road excavation will have certain impacts on the normal operation of the shops along the streets. For example, inconvenience to the customer access to shops

###### 4, Impacts on the traffic safety

The impacts of pipe network construction on road traffic is obvious. Although the stage construction method can be adopted, there is always some part of the earthwork need temporary piled up in the engineering construction process, which will impact on the road traffic along the pipeline construction.

When the pipeline crossing the road, the open excavation is easy to make the cars on the road blocked, which has a larger the impact on traffic. Therefore, the pipe jacking will reduce the impacts of excavation construction on road if the geological and soil conditions permit. While the road bearing pressure (weight) will drop, a ban on truck traffic must be done for short periods of time. In addition to the construction material handling, these will



all affect the urban traffic and safety.

It is estimated that more than 20 days is needed for the pipeline crossing each road , so the impact on the traffic in this road will continue for about 20 days. Pipeline construction in main road and in road sections of schools, hospitals, have especially pronounced impacts on traffic and safety. The main road and the sensitive points on both sides that the project involves are listed in the table below.

**Table 5-15 Urban main roads the project pipeline works involves**

Project	Road Name	Road Level	Red line width	Project contents	Pipeline location	Key environmental sensitive point of reception
Duchang	Wanli Avenue	main road	60m	Wastewater, rainwater pipeline	Both sides	Duchang 3rd primary school, County Maternal and child health care hospital, Qinjiawan primary school
	Donghu Avenue	main road	36m	Wastewater pipeline	Single side	Union Hospital
Fengxin	Longshan Avenue	main road	40	Rain water main pipelin(Culvert) and wastewater main pipeline	Single side	Fengxin county 3rd middle school
	Fengchuan Road	Secondary road	20m	Rain water pipeline (Culvert) and wastewater main pipeline	Single side	Fengchuan 2nd primary school
Jing'an	Shima Road	main road	35	rain , wastewater pipeline	non motorized vehicle lane on Both sides	Jing'an county 1 <sup>st</sup> primary school
	Hougang Road	main road	40	rain , wastewater pipeline	Along the south side curb	Jing'an Vocational school , Jing'an Hospital of traditional Chinese Medicine
Jishui	Wenfeng Avenue	main road	40m	Rain water main pipelin(Culvert) and wastewater main pipeline	Single side	Wenfeng primary school, Jishui county people's hospital
	Wenshui Avenue	main road	40m	Wastewater pipeline and Rain water pipeline	Both sides	Jishui Aimin hospital
	Wenshan Avenue	main road	48m	Wastewater 干管 and Rain water main pipeline	Both sides	Jishui middle school, wenfeng Health center

As a result, the civil contractor should plan carefully, take time to construction, use pipe jacking construction as far as possible, and at the same time should make the traffic management planning in negotiation with the local traffic administration before construction, inform the residents in advance of the construction influence, set up signs on the construction site, lead the traffic by designated personnel. In addition, further measures should be taken to prevent traffic congestion during the construction, such as strengthen of the management, shorten of the construction period.

#### 5.1.5.2 Mitigation measures

1, Mitigation measures for the impacts of the pipeline construction on municipal services

(1) Public should be noticed about the public facilities failures, such as water, electricity, gas and bus routes disruptions, at least five days in advance by way of notice announcement in construction point, bus station and affected regions.

(2) Based on the well construction organization, ensure the construction progress, shorten the construction period as far as possible, keep safety construction, complete as soon as possible and restore the municipal services.

2, Mitigation measures for impacts on commercials along the street

Set block in the side facing the commercial shop, Reserve pedestrian aisle and Ensure the street shops not affected by the construction.

3, Mitigation measures for impacts on traffic and safety

(1) The civil contractor should make the traffic management planning in negotiation with the local traffic administration before construction. The construction unit should provide the information like construction time table, transportation detour route, temporary bus lines and housing demolition on the construction sign board.

(2) Set warning sign in front of entrance of each construction section, road intersection, road corner, road lane change point and traffic channel etc., noted relevant traffic restrictions, such as entering the construction area, speed limit, height limit, etc..

(3) In principle, construction at nighttime (22: 00~6: 00) is strictly prohibited. The construction which has to be in the nighttime, must obtain the approval of the local environmental protection department, and have prior communication with the residents, and take noise reduction measures (such as setting noise barrier) at the same time, to reduced he influence of construction noise on the residents to a minimum.

(4) Except for special circumstances, to reduce the traffic pressure on the surrounding

roads, Earthwork vehicles should try to avoid traffic rush hour of the city, and appropriately arrange the night time transport. The working hours of their construction vehicles going in and out of the construction site need reasonable adjustments according to the factors affecting traffic flow, such as seasons, weather, holidays and emergent events.

(5) For project of construction period  $> 30$  days, the construction site boundary should be blocked in a closed way according to the local conditions; The enclosure block should use color steel plate material. The enclosure height should be  $\geq 2.5$  m for construction site in the general area, and  $\geq 3$  m for construction site in the sensitive area.

(6) Enclosure blocks should be straight, uniform, clean and no damage, the appearance should be coordinated with the surrounding environment;

(7) For the road occupation construction site, the straight rigid metal screen enclosure blocks should be set up within the 5 meters sight distance of road intersection, without blocking the vision of vehicle driver and the pedestrians, and ensure the traffic safety. All kinds of items are Prohibited to be piled up within the 5 meters sight distance range.

(8) When the enclosure is less than 5m away from residential or the construction point is less than 15 meters away from the sensitive buildings like residential, hospitals, schools, etc., noise reduction measures like the increase of enclosure height should be taken, and the enclosure height of the sensitive area should reach 3 meters; and the 5 meters areas outside the construction site should be kept clean.

(9) Within 1 meters of the inner side of the enclosure, no material like tools, earthwork etc., should be piled up.

(10) It is prohibited to use enclosure as the support for retaining walls or other facilities and equipments;

(11) When construction along the road and passing through the entrance and exit of the residents, try to minimize the impact on nearby residents and vehicles, by half width construction, finishing as early as possible. Soil should be timely covered after half width construction, if not, steel plates should be covered on the trench at the end of the day to ensure normal traffic and safety.

(12) Establish full-time "traffic picket post", and full time traffic safety, civilized construction team, responsible for ensuring the implementation of traffic safeguard measures, management and maintenance of the traffic safeguard measures during the construction period, maintaining the traffic order of construction section, and helping to solve traffic

problems during construction.

(13) During construction, vehicles and personnel in and out of the construction site should strictly comply with traffic regulations, obey the directions of traffic management department; Accept supervision and inspection of traffic management department and investor, if problems impact traffic were found, the rectification should be immediately carried out

(14) During construction, Pay attention to safety and civilization construction and the implementation of anti-disturbing measures, especially measures of prevention and control of dust, Noise control, and mud and earth management. Contact the units and neighborhoods along the project in advance to gain their understanding and support, ensure the smooth construction.

(15) In the preparation of construction organization design, take the coordination of traffic measures as one of the construction organization design. Before the implementation of the work, Contact with the traffic department, introduce and report the general situation of the project, construction scheme, general layout, and engineering materials and earthwork transportation plan. Ask the traffic department for support and guidance to improve and perfect the traffic plan, formulate the implementation details.

(16) On the road with live traffic, when it is required to open or lift the the cover of Blind shaft, the foldable Construction road bar should be set up at the boundary of working area

(17) Prohibit the use of red and white flags, safety isolation rope or other material instead of the construction road blocks.

(18) The construction bar should be set as the long side section of the channel steel base toward the construction work area; Need to set the construction channel; If a channel is required between the construction bars and construction area, the channel width should be  $\geq 0.6\text{m}$ ;

(19) For the Building (structure) surface painting, refreshing, or cleaning construction, construction road bar should be use for the full enclosure. All kinds of mechanical equipment, tools, materials should be placed within the scope of the enclosure.

(20) For road construction without temporary traffic measures or unfinished project, it is strictly prohibited to remove construction road bar;

(21) For pipeline construction in focus area, the section construction of "Excavation, Laying and Fixing" should be used, the full length excavation at the same time is strictly

prohibited.

(22) For construction occupying urban road, the relevant provisions of traffic departments and road management departments should be abide by. Complete the relevant formalities for examination and approval, and set the temporary access roads according to specifications;

(23) Construction period should strictly comply with the licensing requirements, No unauthorized account of the road, or beyond the licensing required construction period

(24) For construction occupying urban road, having impacts on vehicle and pedestrian access, temporary access road shall be set up in accordance with the regulations, in particular, for the temporary access to the hospital, it should be convenient for hospital ambulance safely access; Construction in kindergarten, school sections, after setting up temporary access road, the construction site should be strictly enclosed. Children or babies are prohibited from entering the construction area;

(25) For construction occupying pedestrian sidewalks , the strong, smooth and continuous sidewalk with pro side security envelope at the side near the entrance or exit of commercials, enterprises, office buildings, hospitals, schools, kindergartens, nursing homes, or residentials, etc., to guarantee safe passage for pedestrians;

(26) Excavation of ditch or Pipeline trench on urban roads, cannot be completed on the same day and need to be used as a road, the construction unit shall implement the steel plate covering construction;

(27) Support reinforcement scheme should be after security argument, and approved by investor; the thickness of covered steel plates should be  $\geq 0.03\text{m}$ . the edges of the Steel plates and metal slope frame should be polished to ensure that no angle or burr, and ensure the safety of personnel and vehicles;

(28) When trench (PIT) excavation width  $\geq 0.8\text{ m}$ , the covered steel plate should be supported by the metal profile bar underneath.

#### 5.1.6 Health and safety in Construction period

The project quantity is small, construction personnel number is not much, but the living and health conditions on site is relatively poor, with high intensity of labor worke, it is easy to cause disease. In order to ensure the construction safety, to approach the construction personnel should have a comprehensive physical examination, personnels having infectious diseases are strictly prohibited to enter the construction site; Dining room staff should have regular physical examination, if anybody was found out having disease, he must be treated in

time and transferd out of the dining room to prevent infectious diseases. Site shall establish a centralized water supply or use of municipal water supply, Medical workers, medical and health care facilities should be on site. The construction workers labor protection should be well done to protect the construction personnel health, safety, and make the project smoothly.

## 5.2 Operation period environment impact and mitigation measures

After the project implementation, the water environment quality of the project area will be protected and the infrastructure of the project area will be improved, which are positive impacts. Waste water, solid waste and noise from the project will cause a certain impact on the ecological, sound, water and air environment of the project area.. the detail of impact analysis is as follows:

### 5.2.1 Positive impacts

After the completion of the project, the pollutants flowing into the Poyang Lake River Basin through the the key water areas will be reduced, the water quality management will be improved. As welas the the sewage collection rate of each project. Thus the overall water pollutants load and solid waste discharged into the Poyang Lake River basin will be reduced. The living environment of the county will be improved, the waterlogging area and probability the rainy season will be reduced

The project will also strengthen the basin management of water environment, establish an effective water quality monitoring system and public participation, which is conducive to the sustainable development of urban economy and society.

**Table 5-16 Pollutants reduction**

Project Name	Reduction of COD into river and lake (t/a)	Reduction of TN into river and lake (t/a)	Reduction of TP into river and lake (t/a)	Waste reduction(10,000t/a)	Directly benefited population (10,000 person)	Female population (10,000 person)
Duchang county sub project	239.4	17.5	4.4	1.7	25.7	12.2
Poyang county sub project	1886	484.70	33.43		33.157	16.5785
Yugan county sub project	132.3	17.89	1.3	0.2675	13.2	6.6
Fengxin county sub project	215.5	15	2.4		12	6
Jing'an county sub project	52.56	5.84	0.58	0.2448	4.1719	2.0851
Jishui county sub project	183.96	20.44	2.04		17.0454	7.9556

Shangli county sub project	/	/	/	5.064	23.2567	11.1864
Total	2709.72	561.37	44.15	7.2738	128.531	62.6056

## 5.2.2 Impacts on water environment and mitigation measures in operation period

### 5.2.2.1 Impacts on water environment in operation period

#### 1, Sub project of river and lake water environment remediation

Sub projects in Duchang county, Poyang county and Yugan county involve the river and lake water environment remediation.

In Duchang county , the project will improve the Zoujiazui lake water system ecological environment by source control and pollution interception, lake dredging, low impact development facility and Wetland constructions. The main project contents are about 8000m<sup>3</sup> of Zoujiazui lake dredging with depth about 0.3m; about 0.8km wetland revetment, and 26.82ha of total wetland protection area; In Poyang county the project will improve the ecological environment of Pearl Lake water system by pollution control measures like Ecological Sewage Interception Chann and Constructed wetland. The project will construct 101 construction Constructed wetland with total area of 154765.02m<sup>2</sup>, and 95.85km of Ecological Sewage Interception Channel; In Yugan county, the project will improve the environment of Pipa Lake water by measures like source control, pollution interception, Water Diversion Project and Ecological remediations. The project will construct 5562.8m DN300-DN400 wastewater pipeline, 2100m ecological protection slope, 1816m ecological engineering materials protection slope, and 1297m natural slope plants protection slope along the Pipa lake bank, reconstruct 2165m old protection slope, as well as 40000m<sup>2</sup> virescence project, 3000m<sup>3</sup> dredging and 3000 m<sup>3</sup> intensified purification of river channel.

#### (1) Sub project of Duchang county

Ecological remediation and protection of Zoujiazui lake water system propose to build 4 Public Toilets along the bank of Zoujiazui lake, total area of 224m<sup>2</sup> and each 56 m<sup>2</sup>.

According to Jiangxi Province urban domestic water quota (DB36/T419-2011), water quota for Public Toilet is 1.5L/m<sup>2</sup>·d, the total water use is 0.336 m<sup>3</sup>/d, the wastewater is 0.27m<sup>3</sup>/d, 98.55 t/a(drainage rate by 80%), discharged into Duchang county wastewater treatment plants through municipal sewage pipeline, no adverse effects on the water environment.

#### (2) Poyang County

This project combines engineering and non-engineering measures to reduce the water pollution in Pearl Lake Basin through the treatment of non-point pollution and point source

pollution in the key polluted areas along Pearl Lake. Therefore, it can guarantee the water quality security of the drinking water source and can further reduce the amount of pollutants following into Poyang Lake. It can improve the water quality of Pearl Lake Basin and guarantee the security of drinking water.

### (3) Yugan County

This subproject plans to draw water from Huhui River to Pipa Lake. It aims to realize the daily water change of Pipa Lake through drawing water from the south and discharging the water to the north. The water in Huhui River belongs to Class V water to inferior Class V water. The water in the upper reach of Pipa Lake belongs to Class V water while the water in the lower reach of the lake belongs to inferior Class V water. At present, there is mainly inferior Class V water in Pipa Lake. The aquatic organisms there are mainly common species. Three sites of fish do not exist there. No precious species of aquatic organisms inhabit there and it is not an important natural habitat. Huhui River is influenced by the urban domestic life and the dredging work of sand dredgers to a relatively large extent. Pipa Lake is influenced by urban life, rural diffused pollution, etc.

#### 1) Impacts on the Water Quality of Pipa Lake

This subproject accelerates the exchange velocity of water body through water replenishment and flowing water circulation. Meanwhile, it dredges the sediments in the discharge channel of Pipa Lake and thereby reduces the pollution caused by the inner source in Pipa Lake. Thus, the water quality of Pipa Lake is improved. After a period of water-drawing engineering, the concentrations of COD, TN and TP have reduced greatly in comparison with those in the circumstances without water-drawing engineering. Hence, it is helpful to improve the water quality of Pipa Lake.

#### 2) Impacts on the Water Quality of Huhui River

**Wet Season:** In the wet season from April to June, it will raise the water level elevation of Huhui River through the down-interception and up-drawing by the existing sluice. It will take advantage of gravity flow to draw water into the water channel of Pipa Lake. The sluice of the discharge channel will be opened and the water discharged through the channel connects with Huhui River. According to the hydraulic analysis, the actual water demand is quite small. The water-drawing during the wet season mainly aims to activate the functions of the water body of Pipa Lake. The water in Pipa Lake is activated after water exchange. Meanwhile, in the water body of the lake, the aquatic vegetation especially the submerged vegetation is planted and recovered through ecological restoration technology, and thereby



the water quality is improved and the water body is clean. The water in the discharge channel and Huhui River is connected with each other, without any negative influence on the water quality of Huhui River.

**Drought Period:** During the drought period, the maximum level of Pipa Lake declines by 0.70 m. The project plans to set up pump station in the headrace channel of Pipa Lake and draw water from Huhui River, and thereby it can make Pipa Lake reach the designed level of 16.6 m and the maximum daily average added water amount of 3464.5 m<sup>3</sup> during the drought period. After guaranteeing the designed level of Pipa Lake through water replenishment, this project will also improve the water quality of Pipa Lake through water ecological restoration engineering. During the drought period, the newly established sluice in the discharge channel will be closed. Pipa Lake will only draw water without discharging water, and thereby it can reduce the water replenishment and power consumption. The project will have no negative influence on the water quality of Huhui River.

The Remediation of river water environment sub project can reduce the inflow of pollutants into the waters of the Poyang Lake River basin, improve the water quality, has a positive impacts on the water environment in operation period.

## 2, Sub project of domestic wastewater management system enhancement

Sub projects involving domestic wastewater Management system are 6 counties of Duchang county, Poyang county, Yugan county, Fengxin county, Jing'an county and Jishui county, total construction of 158.282km pipeline, 35 wastewater treatment station(Poyang county), Duchang, Jing'an, Jishui county sub projects also collect the wastewater from Furongshan Industrial Park, Leigongjian industrial Park and south county Industrial Park.

### (1)Normal working conditions

After the project is completed, the sewage is collected through the pipeline, which eliminate sewage overflow, infiltration. After the operation of pipe network, urban sewage is collected into the existing sewage treatment plant, which greatly reduce the amount of sewage leakage to the ground water, ground and surface water environment will be gradually improved.

After the completion of the project, the wastewater collection by pipeline and pollutants reduction of the project are listed in table 5-16.

**Table 5-17 Wastewater collection by pipeline and pollutants reduction of the project**

Project Name	Collection Quantity(万 m <sup>3</sup> /d)	COD 入 river and lake	TN 入 river and lake	TP 入 river and lake	Fate
--------------	--	----------------------	---------------------	---------------------	------

	Short term	Long term	reduction (t/a)	reduction (t/a)	reduction (t/a)	
Duchang county	3	5.2	239.4	17.5	4.4	Duchang county wastewater treatment plants
Poyang county	/	/	1886	484.7	33.43	wastewater treatment station of the project
Yugan county	0.16	0.19	132.3	17.89	1.3	Yugan county wastewater treatment plants
Fengxin county	1.57	2.0	215.5	15	2.4	Fengxin county wastewater treatment plants
Jing'an county	0.98	1.66	52.56	5.84	0.58	Jing'an county wastewater treatment plants
Jishui county	1.3	2.0	183.96	20.44	2.04	Jishui county wastewater treatment plants
Total	7.01	11.05	2709.72	561.37	44.15	

## (2) Impacts of Industrial Park wastewater on wastewater treatment plants

According to Some opinions on the construction of urban sewage treatment plant and Industrial Park sewage treatment plant of Jiangxi Province Environmental Protection Agency, to make full use of the existing urban sewage treatment plant processing capacity, and avoid duplication, the Industrial Park sewage can be discharged into the urban sewage treatment plant, except for specialized industrial park like chemical, electroplating.

According to present processing ability and technology of urban sewage treatment plant in Jiangxi Province, the proportion of industrial wastewater discharged into the urban sewage treatment plant shall not be higher than 30%.

The project collect the wastewater from Furongshan industrial Park, Leigongjian industrial park and south county industrial park of Duchang county.

### ① Brief introduction of Industrial Park and Predicted water quantity

According to the survey and prediction, the predicted water quantity of each industrial park is less than 30% of the total project collection, the details are in Table 5-17.

**Table 5-18 Industrial Park and predicted water quantity**

Project	Industrial park Name	Industrial park brief introduction	industrial wastewater pretreatment	Total project collection (10,000m <sup>3</sup> /d)	proportion in project total collection (%)
Duchang	Furongshan industrial park	More than 130 enterprises; Mainly for aquatic products, agricultural and sideline products processing, garment, auto parts, etc.; No heavy metal enterprises	Most Enterprises with domestic wastewater do not have pretreatment facility, some of Enterprises with part of industrial wastewater, and large water use	Short term 0.3, Long term 0.8	Short term 10%, Long term 15%

			have pretreatment facility .		
Jing'an	Leigongjian industrial park	About 20 small and medium-sized enterprises, mainly in the processing industry, including metal processing, lighting appliances, wood products, bamboo products, lithium batteries, food and so on, no heavy metal enterprises	Most Enterprises with domestic wastewater do not have pretreatment facility, some of Enterprises with part of industrial wastewater, and large water use have pretreatment facility .	Short term 0.12, Long term 0.25	Short term 12, Long term 14
Jishui	south county Industrial park	More than 50 small and medium sized enterprises, mainly for wineries, spices and wood boards	Most Enterprises with domestic wastewater do not have pretreatment facility, some of Enterprises with part of industrial wastewater, and large water use have pretreatment facility .	Short term 0.08, Long term 0.14	Short term 6.2, Long term 7

② Water quality of industrial park

The water quality of each industrial park's wastewater are summarised in table5-18.

**Table 5-19 Monitoring results of Water quality at Industrial Park sewage outlets (1)**  
(mg/L)

Project	Location of sewage outlets	COD	BOD <sub>5</sub>	TN	NH <sub>3</sub> -N	TP	Notes
Duchang	West side of Jinchang Road Furongshan industrial park	--	3.65	4.3	4.04	0.31	Sample time 2015.11.3 16:00, sunny
	West side of Jinchang Road Furongshan industrial park	14.5	4.2	1.7	1.6	1.51	Sample time 2016.3.18 13:00, Sunny
	West side of Furongshan Avenue Furongshan industrial park	35.6	12.9	10.9	9.5	2.88	
Jing'an	sewage outlets Leigongjian industrial park	<b>834.8</b>	298.7	11.4	15.0	0.16	Sample time 2015.11.9, Sunny
		<b>1715.0</b>	190.5	19.0	<b>123.8</b>	2.45	Sample time 2016.3.11, Sunny
Jishui	Longhuanan Avenue Gas station	217.4	75.8	30.3	28.5	4.57	Sample time 2016.3.4, Sunny
	1#sewage outlets Nearby Xinghua Spices	98.9	35.5	1.75	1.4	0.69	
	2#sewage outlets Nearby Xinghua Spices	0.3	/	8.3	7.3	0.13	
	3#sewage outlets Nearby Xinghua Spices	185.1	59.9	5.4	4.3	0.27	
	West side of Honggaoliang Bar	213.4	60.0	4.6	3.7	0.56	
Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010)Grade B		500	350	70	45	8	/

**Table 5-20 Monitoring results of Water quality at Industrial Park sewage outlets (2)**

## —Heavy Metals (mg/L)

Sub project	Sampling point	Total Cd	Total Pb	Total Cr	Total Ni	Total Zn	Total Cu	Total Mn	Total Fe	Total As
Duchang	West side of Jinchang Road Furongshan industrial park	Not detected	Not detected	0.001	0.011	0.002	0.067	0.316	0.030	0.027
	West side of Furongshan Avenue Furongshan industrial park	Not detected	0.004	Not detected	0.011	0.012	0.050	0.082	0.013	0.017
Jing'an	sewage outlets Leigongjian industrial park	0.004	0.0215	0.002	0.0115	0.167	0.079	0.903	2.878	0.0555
Jishui	Longhuanan Avenue Gas station	Not detected	0.010	0.004	0.007	0.089	0.058	0.0477	0.323	0.043
	1#sewage outlets Nearby Xinghua Spices	Not detected	0.003	0.001	0.008	0.019	0.038	0.434	0.042	0.045
	2#sewage outlets Nearby Xinghua Spices	Not detected	0.010	Not detected	0.008	0.114	0.036	0.181	0.042	0.036
	3#sewage outlets Nearby Xinghua Spices	Not detected	Not detected	Not detected	0.006	0.029	0.048	0.326	0.059	0.027
	West side of Honggaoliang Bar	Not detected	0.002	0.002	0.005	0.021	0.047	0.329	0.054	Not detected
Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010) Grade B		0.1	1	1.5	1	5	2	5	10	0.5

Note: Duchang: Sample time 2016.07.29, Sunny; Jing'an: Sample time 2016.07.22, Sunny; Sample time 2016.07.26, Sunny.

As known from the above table, wastewater from Furongshan industrial park, Duchang county and South county Industrial Park, Jishui county are with compliance of the GRADE B standard of Wastewater Quality Standards for Discharge to Municipal Sewers

(GJ343-2010), and comply with the Water quality requirements for wastewater treatment plants. While the wastewater COD and NH<sub>3</sub>-N Emission concentration from Leigongjian industrial park, Jing'an county exceeds the GRADE B value of Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010).

To prevent excessive discharge of industrial wastewater, the environmental authorities should conduct regular sampling and monitoring of the drainage outlet of the industrial park. If there is any abnormal phenomenon of water quality, the main pollution source of the catchment system should be checked. And the relevant enterprises should take emergency measures, and the emission of poisonous substances to microorganisms should be controlled at the same time.

Industrial wastewater must be pretreated to meet the national and industry standards for emission standards, and the urban drainage permit certificate must be applied for according to the provisions, the county environmental protection bureau is responsible for the implementation.

When the industrial wastewater proportion of total sewage treatment is less than 30%, and in compliance with the water quality requirements of the wastewater, the wastewater can enter the county sewage treatment plant.



Figure 5-4 Monitoring points of Furongshan industrial park sewage outlets, Duchang county

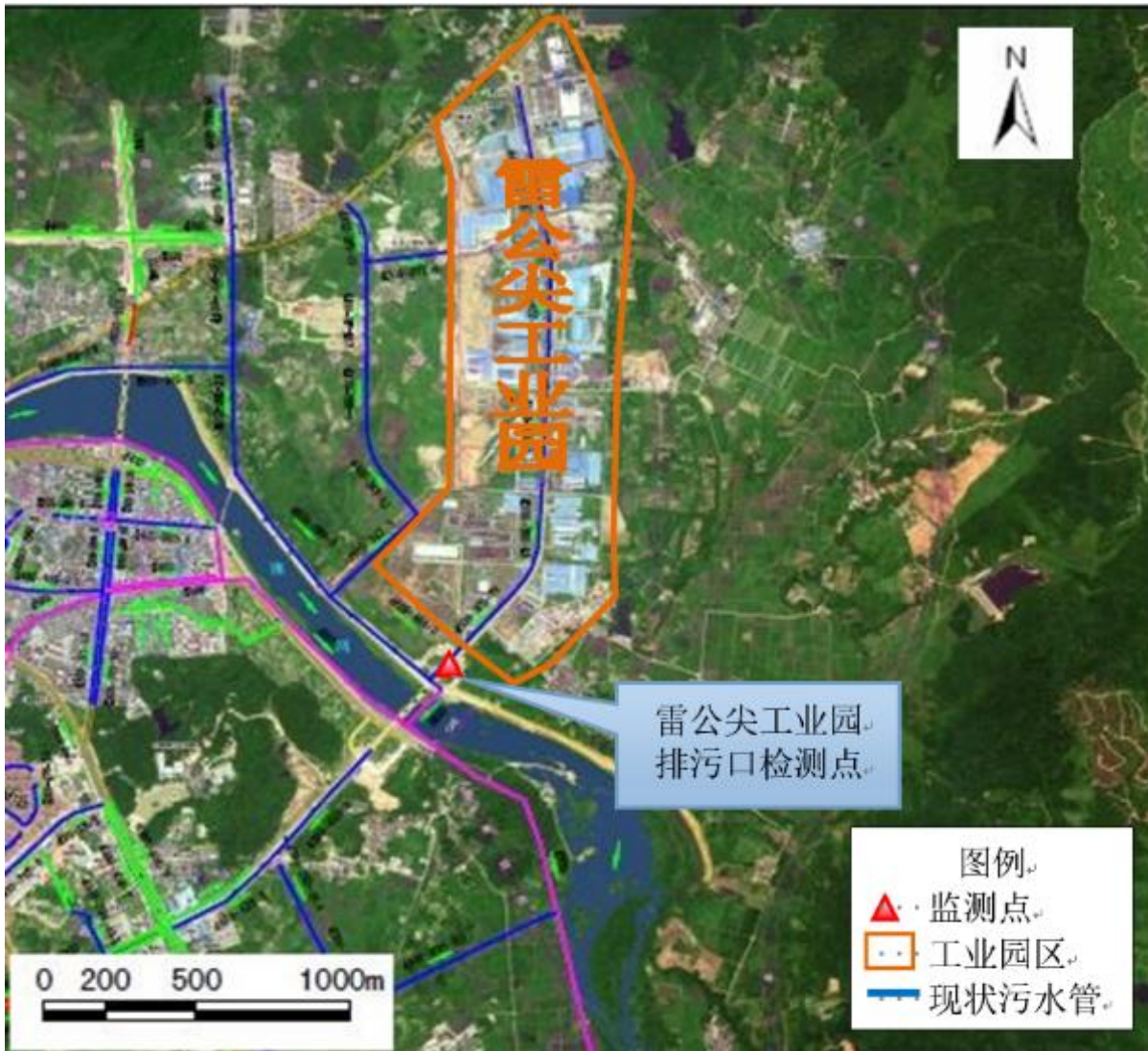


Figure 5-5 Monitoring points of Leigongjian industrial park sewage outlets, Jing'an county



Figure 5-6 Monitoring points of south county Industrial park sewage outlets Jishui county

### 3, Sub project of solid waste collection and transport system

The sub project of Solid waste collection and transport system involves Duchang county, Yugan county, Jing'an county and Shangli county, with new construction of 9 waste transport stations, reconstruction of 3 waste collection point and new construction of 88

waste collection point.

Duchang county will construct 3 small size waste transport station at Dashuxiang, Beishanxiang and Wangdunxiang respectively. The wastewater mainly are leachate, rinse wastewater and domestic wastewater of working staff;

Yugan county will abolish the waste transport stations around the Pipa Lake at Huanhudong Road and 2nd Middle School gate; convert the waste transport station at Municipal Administration Bureau into a waste collection point, and construct a new waste collection point in the southwest side of the lake. The wastewater mainly are the leachate of from the waste compression vehicles and rinse wastewater of waste collection point and transport vehicles;

Jing'an county will reconstruct the waste pit of Nangang Road , the waste tank of Qinghu Road. The wastewater mainly are rinse wastewater of waste collection point and transport vehicles, and the waste Leachate of waste compression vehicles;

Shangli county will construct 6 waste transport stations in Yangqi Xiang , Changping Xiang , Futian Town , Penggao Town , Dongyuan Xiang and Chishan Town; and 87 waste collection point for every villiage. The wastewater mainly are waste Leachate, rinse wastewater and domestic wastewater of working staff.

Wastewater generation and discharge are summarized in Table 5-19.

**Table 5-21 Wastewater generation and discharge of sub project of Solid waste collection and transport system**

Sub project	Location	pollution source		Quantity (t/a)	Water pollutants concentration (mg/L)					Measures to be taken
					Ph	COD	BOD <sub>5</sub>	SS	NH <sub>3</sub> -N	
Duchang	Beishanxiang transport station	Quantity	Leachate	37.60	4~5	2500	1000	1000	180	Collected, then transported by the sewage suction truck periodically to Duchang county sewage treatment plant
			Rinse wastewater	375.95	6~8	280	250	300	30	
			Domestic wastewater	29.20	7~8	250	220	200	25	
		After Mixed		442.75	/	466.53	311.71	352.84	42.41	
	Wangdunxiang transport station	Quantity	Leachate	50.37	4~5	2500	1000	1000	180	
			Rinse wastewater	503.70	6~8	280	250	300	30	
			Domestic wastewater	29.20	7~8	250	220	200	25	
		After Mixed		583.27	/	470.21	313.27	355.44	42.70	
	Dashuxiang transport	Quantity	Leachate	43.80	4~5	2500	1000	1000	180	
			Rinse wastewater	438.00	6~8	280	250	300	30	
			Domestic	29.20	7~8	250	220	200	25	



	station		wastewater							
			After Mixed	511.00						
Yugan	waste compression vehicles		Leachate	266	4~5	2500	1000	1000	200	Transported to Yugan County Landfill leachate treatment station in the leachate tank of the waste transport vehicles
	collection point and waste transport vehicles		Rinse wastewater	2664.5	6~8	280	250	300	30	Collected by municipal wastewater pipe network, treated by Yugan county wastewater treatment plant
Jing'an	Waste 转运 vehicles and collection point	Quantity	Leachate	137.605	4~5	2500	1000	1000	180	Collected by municipal wastewater pipe network, treated by Jing'an county wastewater treatment plant
			Rinse wastewater	1376.05	6~8	280	250	300	30	
		After Mixed	1513.6610	/	481.82	318.18	363.64	43.64		
Shangli	Changping Xiang transport station		Leachate	104.755	4~5	2500	1000	1000	180	Collected and transferred by Sewage suction truck to Pingxiang domestic waste incineration Power Plant, treated by Leachate treatment station
			Rinse wastewater	1047.55	6~8	280	250	300	30	
			Domestic wastewater	29.2	7~8	250	220	200	25	
			Subtotal	1181.51	/	476.09	315.76	359.59	43.18	
	Futian Town transport station		Leachate	61.32	4~5	2500	1000	1000	180	
			Rinse wastewater	613.2	6~8	280	250	300	30	
			Domestic wastewater	29.2	7~8	250	220	200	25	
			Subtotal	703.72	/	463.04	314.11	356.85	43.04	
	Penggao Town transport station		Leachate	52.56	4~5	2500	1000	1000	180	
			Rinse wastewater	525.6	6~8	280	250	300	30	
			Domestic wastewater	29.2	7~8	250	220	200	25	
			Subtotal	607.36	/	470.67	313.46	355.77	42.74	
	Dongyuan Xiang transport station		Leachate	102.2	4~5	2500	1000	1000	180	
			Rinse wastewater	1022	6~8	280	250	300	30	
			Domestic wastewater	29.2	7~8	250	220	200	25	
			Subtotal	1153.4	/	475.95	315.70	359.49	43.16	
Chishan Town transport station		Leachate	114.975	4~5	2500	1000	1000	180		
		Rinse wastewater	1149.75	6~8	280	250	300	30		
		Domestic wastewater	29.2	7~8	250	220	200	25		
		Subtotal	1293.9	/	476.5	315.9	359.9	43.22		

				9	7	4		
Yangqi Xiang transport station	Leachate	70.445	4~5	2500	1000	1000	180	
	Rinse wastewater	704.45	6~8	280	250	300	30	
	Domestic wastewater	29.2	7~8	250	220	200	25	
	Subtotal	804.095	/	473.40	314.62	357.69	42.96	
Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010) GRADE B			6.5~9.5	500	350	400	45	/

As known from the above table,

In Duchang county, wastewater of each waste transport station will be with compliance of the Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010) GRADE B standard, will be Collected, then transported by the sewage suction truck periodically to Duchang county sewage treatment plant. There is minimal impacts on the environment.

In Yugan county, wastewater of waste transport station will be with compliance of the Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010) GRADE B standard, and collected by the municipal sewage pipe network, and treated by the Yugan county sewage treatment plant. The leachate will be transported to Yugan County Landfill leachate treatment station in the leachate tank of the waste transport vehicles, There is minimal impacts on the environment.

In Jing'an county, the wastewater of waste collection and transportation will be with compliance of the Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010) GRADE B standard, will be collected and discharged into Municipal wastewater pipeline, and treated by Jing'an county wastewater treatment plants. There is minimal impacts on the environment.

In Shangli county, wastewater of waste collection and transportation will be collected and then transported by the sewage suction truck periodically to domestic waste incineration Power Plant Leachate treatment station of Pingxiang City, There is minimal impacts on the environment.

In summary, the waste water of Solid waste collection and transport system will be collected and treated by the municipal wastewater treatment plant or leachate treatment station of domestic waste treatment plant. The adverse impact on the environment is small after proper treatment.

#### 4, Housing for water environment monitoring system

Sub project of strengthening the Basin management of the Poyang Lake propose to build environmental monitoring system in each sub project counties, new house will be build in Duchang County, Jing'an County, Jishui county; Other counties will be using existing houses. The sub project will bring a total of 40 new staff. The domestic wastewater generation and discharge in the operating period are shown in table 5-20.

**Table 5-22 Domestic wastewater of Water environment monitoring system**

Project	Construction feature	New Staff (person)	Daily Quantity (t/d)	Annual Quantity (t/a)	Fate
Duchang	New construction	10	0.4	102	Discharge into Duchang county wastewater treatment plants through wastewater pipeline
Poyang	Existing houses of Poyang Lake National Wetland Park Management Committee	5	0.2	51	Treated by the existing integrated wastewater treatment equipments +Constructed wetland system of wetland park Management Committee, then discharge into Pearl Lake
Yugan	Existing houses of Yugan county EPA	5	0.2	51	Discharge into Yugan county wastewater treatment plants through municipal wastewater pipeline 处理
Fengxin	Existing houses of Fengxin county EPA	0	/	/	/
Jing'an	New construction	10	0.4	102	Discharge into Jing'an county wastewater treatment plants through municipal wastewater pipeline
Jishui	New construction	10	0.4	102	Discharge into Jishui county wastewater treatment plants through municipal wastewater pipeline
Shangli	Existing houses of Shangli county EPA	0	/	/	/
Total		40	1.6	408	

#### 5.2.2.2 Mitigation measures

##### 1, Sub project of domestic wastewater management system enhancement

(1) With timely pipeline dredging and replacement of damaged pipe network, avoid the sewage escaping, emitting, dropping and leakage, which will pollute the surface and ground water around.

(2) Set up monitoring wells in the drainage outlet of industrial park, monitor the water quality of industrial park in long term. If any abnormal water quality phenomena happen, find reasons from the primary pollution sources of catchment system; related enterprises should take emergency measures to control the discharge of microorganism and poisonous

substances.

(3) Maintenance and clearing out should pay attention to the following:

- ① Before clearing the well, warning signs should be set up, surface obstacles be removed to ensure the traffic flow; Non-operating personnel should be evacuated before uncover the well.
- ② It is prohibited to use steel, iron drill etc. to pry the manhole cover in hard way, in case of causing combustion or explosion
- ③ Use of motor pumping sewage, the electric leakage of the motor, power lines, knife switch etc. should be checked to avoid electric shock accident
- ④ Before the operation personnel go down into the well dredging, natural ventilation should be used in advance, to eliminate harmful gases like carbon monoxide, carbon dioxide, hydrogen sulfide, methane, the operation personnel should use the instrument to check and make sure it is harmless, safe, then start the downhole operation;
- ⑤ Downhole operation personnel should wear anti-static clothing, keys and other hard metal material is prohibited under the pool;
- ⑥ The operator on the ground should hold a safety belt and keep in touch with the downhole personnel at any time;
- ⑦ After clearing, promptly put back the manhole cover and repair it; If it cannot be completed in the same day, set up warning signs or set protection around.

(4) Maintenance and and Management should pay attention to the following:

- ① Inspection well should be Regularly cleaned and slag removed; And regular inspection and timely maintenance, is required to ensure that the sewage interception pipeline and Inspection well is smooth and sound.
- ② Garbage, dirt, debris shall not be dumped into the inspection wells; Do not pile up the debris or build house on the inspection well, and unauthorized alterations to the sewage pipeline is prohibited.
- ③ Inspection well should usually be covered by cover plate to prevent odor and accident.
- ④ Fire operation should be prohibited near the inspection well.
- ⑤ Manhole sludge must be transported to the professional treatment plan designated by the Department of environmental sanitation for treatment, being well recorded to avoid cross contamination. .

### (5) operation Management inside wastewater treatment station

To ensure the Poyang county wastewater treatment station effluent water quality to be up to the standard , wastewater treatment station to be in high effective operation, and to reduce operation cost, improve the energy efficiency, the internal operation management of the wastewater treatment station should be strengthened.

- ① Professional training of operating personnel and certificates required for posts;
- ② Clear define the responsibilities and regulations of each position; The operation and maintenance of the main equipment;
- ③ Strengthen routine laboratory analysis, Operators must be able to understand the changes in water quality based on water quality analysis to change the operating conditions, achieving the best operating conditions and reducing operating costs;
- ④ Establish a complete management organization and a complete set of management measures;
- ⑤ Establish a more advanced automatic control system;
- ⑥ System maintenance, maintenance system, regular or fixed time maintenance and repair work, in order to improve the integrity of the equipment.

### 2, Sub project of solid waste collection and transport system

- ① Waste transport vehicle using closed vehicle, with installation of waste leachate collection device;
- ② Set seepage collecting tank to collect sewage and leachate of waste transfer station,
- ③ Wastewater is discharged into the municipal sewage treatment plants by pipeline after precipitated, or on a regular basis transported to the waste treatment plant leachate treatment station for processing through the sanitation closed tanker.

### 3, water environment monitoring system housing

Domestic wastewater is collected by the pipeline and discharged into Duchang county wastewater treatment station fro treatment.

## 5.2.3 Impacts on ambient air and mitigation measures in operation period

### 5.2.3.1 Impacts on ambient air in operation period

#### 1, Sub project of river and lake water environment remediation

The sub project has no exhaust gas generation, and basically no adverse effects on ambient air.

#### 2, Sub project of domestic wastewater management system enhancement

The pipe network of the sub project has no waste gas generation during operation

period and no adverse effect on the ambient air. The main exhaust gases are odor gases from Poyang county wastewater treatment station in operation period, with main pollutants of  $\text{NH}_3$  and  $\text{H}_2\text{S}$ . The wastewater treatment station are small rural domestic wastewater treatment station of 50t/d-250t/d, using Facultative-aerobic MBR (FMBR) process; Grid, regulating tank, and integrated equipments are buried underground, each process unit will be covered, all the wastewater will be inside the pipeline or enclosed tank, no open water surface, there is less odor pollutants, and lower concentration, the distances of each wastewater treatment station to the nearby residents are >100m. Therefore, the odor of wastewater treatment station has less impacts on ambient air and sensitive point of reception.

### 3, Sub project of solid waste collection and transport system

Perishable organic waste decomposition will emit odor pollutants. Odor pollutants mainly refers to all the gas material stimulating the olfactory organ, causing unpleasant and damage to the living environment.

This project is mainly ammonia, hydrogen sulfide, etc..In addition, the solid waste collection and transport will generate dust.

In the sub project of solid waste collection and transport system, exhaust gases mainly come from waste transport vehicles, collection point and waste transport station .

#### (1) waste transport vehicles

The waste collection and transport vehicles are using a closed model, with hood design, fully sealed structure, which can eliminate the secondary pollution of garbage, solve the problem of waste escape, emit, drop and leakage, and avoid the dust while loading and transporting the waste; Regular washing of the various models, closed treatment, less odor impact

#### (2) exhaust gases of waste collection point

The project will construct 88 new waste collection points and reconstruct 3 old waste collection points, sealed waste tank will be provided for the point, and no compression equipments, with regularly spraying deodorant, deodorant, regular flushing.

After taking the above measures, the odor pollution produced by the waste collection point is small, which has little impacts on the environment.

#### (3) Waste transport station

The project will construct 9 new waste transport stations, 3 in Duchang county, 6 in Shangli county, exhaust gases will have certain impacts on the surrounding residents and transport station staff.

According to the survey, the daily transport of 2000t domestic waste has the emissions of NH<sub>3</sub> 68 kg/d and H<sub>2</sub>S 9.2kg/d. The emissions of odor in unloading, pressure loading process (including landfill leachate) is about 60% of total output. According to *Content Determination of Ammonia and Hydrogen Sulfide in Waste Transport stations of Guangzhou City* (Guangzhou city environmental sanitation Research Institute, 2009.10), In the absence of deodorant facility, the concentration of H<sub>2</sub>S and NH<sub>3</sub> were 0.038 mg/m<sup>3</sup>~0.094 mg/m<sup>3</sup>, 0.010 mg/m<sup>3</sup>~0.025 mg/m<sup>3</sup>. Waste collection vehicles in the process of unloading in the transport station will generate in addition to odor gases

When the waste is relatively dry, the amount of dust generated is about 1.5% of the amount of waste transported with the concentration of 0.5mg/m<sup>3</sup>.

In order to protect the environment of the transport station staff and to combine the views of local residents, according to the requirements of the Technical specification for domestic waste transfer station (GJJ47-2006), the project proposes to install deodorant system to the transfer station. After comparison and selection, the project proposes to use BENTAX high energy reactive oxygen ion deodorant process. The high energy reactive oxygen ion deodorant process originated in Europe, the theoretical basis is the study on the atmospheric characteristics of 60km high altitude ionosphere, it simulates the natural regulation system of "oxygen community" in the troposphere, keeps the small size air ions (including positive and negative ions) quantity in balance in the limited space by artificial means, to realize the acceleration of Atmospheric metabolism in the controlled range of natural air and electric field, So that the air is purified and improved in a safe, natural and fast way.

The process has the advantages of low energy consumption, small occupation, no secondary pollution, long service life, convenient maintenance and so on. The deodorant efficiency is 90%. Dust removal equipment will use spray dust control devices, with the efficiency of up to 90%.

According to the 8 hour work of a day, the waste gas emissions of transfer station are listed in Table 5-23.

**Table 5-23 Exhaust gases Pollutants of waste transport station ( Generation and emissions)**

Project	Name	Quantity of daily transport	Pollutants	Quantity of Generation		Concentration of generation	Quantity of emission		Concentration of emission	Measures to be taken
		t/d		kg/h	t/a	mg/m <sup>3</sup>	kg/h	t/a	mg/m <sup>3</sup>	
Duchang	Beishanxiang waste transport station	10.3	NH <sub>3</sub>	0.026	0.077	0.038~0.094	0.003	0.008	0.0038~0.0094	BENTA X high energy reactive oxygen ion deodorant process and spray dust control, with removal rate of more than 90%
			H <sub>2</sub> S	0.004	0.010	0.010~0.025	0.0004	0.001	0.0010~0.0025	
			Dust	0.019	0.056	0.5	0.002	0.006	0.05	
	Wangdunxiang waste transport station	13.8	NH <sub>3</sub>	0.035	0.103	0.038~0.094	0.004	0.0103	0.0038~0.0094	
			H <sub>2</sub> S	0.005	0.014	0.010~0.025	0.0005	0.0014	0.0010~0.0025	
			Dust	0.026	0.076	0.5	0.003	0.008	0.05	
	Dashuixiang waste transport station	12	NH <sub>3</sub>	0.031	0.089	0.038~0.094	0.0031	0.009	0.0038~0.0094	
			H <sub>2</sub> S	0.004	0.012	0.010~0.025	0.0004	0.0012	0.0010~0.0025	
			Dust	0.023	0.066	0.5	0.0023	0.007	0.05	
Shangli	Chishan Town waste transport station	28.7	NH <sub>3</sub>	0.073	0.214	0.038~0.094	0.007	0.021	0.0038~0.0094	BENTA X high energy reactive oxygen ion deodorant process and spray dust control, with removal rate of more than 90%
			H <sub>2</sub> S	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	
	Futian Town waste transport station	16.8	NH <sub>3</sub>	0.043	0.125	0.038~0.094	0.004	0.013	0.0038~0.0094	
			H <sub>2</sub> S	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	
	Chang	14.4	NH <sub>3</sub>	0.037	0.107	0.038~0.094	0.004	0.011	0.0038~0.0094	



ping Xiang waste transport station		H <sub>2</sub> S	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
Yang qi Xiang waste transport station	28	NH <sub>3</sub>	0.071	0.208	0.038~0.094	0.007	0.021	0.0038~0.0094
		H <sub>2</sub> S	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
Pengao Town waste transport station	31.5	NH <sub>3</sub>	0.080	0.235	0.038~0.094	0.008	0.023	0.0038~0.0094
		H <sub>2</sub> S	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
Dongyuan Xiang waste transport station	19.3	NH <sub>3</sub>	0.049	0.144	0.038~0.094	0.005	0.014	0.0038~0.0094
		H <sub>2</sub> S	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

Project	Name	Pollutants	Exhaust gases Pollutants			Standard value Mg/m <sup>3</sup>	Sensitive point of reception			
			Amount kg/h	Amount t/a	Concentration mg/m <sup>3</sup>		Name	Location	Distance	People affected
Duchang	Beishanxiang waste transport station	NH <sub>3</sub>	0.028	0.080	0.038~0.094	1.5	Bachuantang	East side of Transport station	200m	10 households
		H <sub>2</sub> S	0.004	0.011	0.010~0.025	0.06				
		dust	0.020	0.059	0.5	1.0				
	Wangdunxiang waste transport station	NH <sub>3</sub>	0.045	0.131	0.038~0.094	1.5	Xinqiao	North side of Transport station	70m	3 households
		H <sub>2</sub> S	0.006	0.018	0.010~0.025	0.06				
		dust	0.033	0.096	0.5	1.0				
Dashu	NH <sub>3</sub>	0.035	0.102	0.038~0.094	1.5	Dashuxian	South side of	20m	10 households	

	xiang waste transport station	H <sub>2</sub> S	0.005	0.014	0.010 ~0.025	0.06	g	Transport station		lds
		dust	0.026	0.075	0.5	1.0				
Shangli	Chishan Town waste transport station	NH <sub>3</sub>	0.080	0.235	0.038~0.09 4	1.5	Muchong Villiage	West side of Transport station	220 m	10 households
		H <sub>2</sub> S	0.011	0.032	0.010 ~0.025	0.06				
		dust	0.059	0.172	0.5	1.0				
	Futian Town waste transport station	NH <sub>3</sub>	0.043	0.125	0.038~0.09 4	1.5	Mingshan Villiage	West side of Transport station	110m	3 households
		H <sub>2</sub> S	0.006	0.017	0.010 ~0.025	0.06				
		dust	0.032	0.092	0.5	1.0				
	Changping Xiang waste transport station	NH <sub>3</sub>	0.073	0.214	0.038~0.09 4	1.5	Taitang Villiage	North side of Transport station	50m	12 households
		H <sub>2</sub> S	0.010	0.029	0.010 ~0.025	0.06				
		dust	0.054	0.157	0.5	1.0				
	Yangqi Xiang waste transport station	NH <sub>3</sub>	0.049	0.144	0.038~0.09 4	1.5	Guanshang	North side of Transport station	50m	5 households
		H <sub>2</sub> S	0.007	0.019	0.010 ~0.025	0.06				
		dust	0.036	0.106	0.5	1.0				
	Pengga Town waste transport station	NH <sub>3</sub>	0.037	0.107	0.038~0.09 4	1.5	Pengga Villiage	North side of Transport station	120 m	8 households
		H <sub>2</sub> S	0.005	0.015	0.010 ~0.025	0.06				
		dust	0.027	0.079	0.5	1.0				
Dongyuan Xiang waste transport station	NH <sub>3</sub>	0.071	0.208	0.038~0.09 4	1.5	Dongyuan Villiage	West side of Transport station	50m	3 households	
	H <sub>2</sub> S	0.010	0.028	0.010 ~0.025	0.06					
	dust	0.053	0.153	0.5	1.0					

According to Technical methods for making local emission standards of air pollutants (GB/T13201-91), and above analysis, after treated by the deodorant system, the

concentration of odor pollutants from all the transport stations is lower than the Hygienic standard for design of industrial enterprises (TJ36-79) ( $\text{NH}_3$  0.2  $\text{mg}/\text{m}^3$ ,  $\text{H}_2\text{S}$  0.01 $\text{mg}/\text{m}^3$ ), So all the waste transport stations only need to considerate the Atmospheric protection distances.

Atmospheric protection distance calculation of the project adopts the recommended model of atmospheric environment protection distance in the technical guideline of environmental impact assessment - atmospheric environment(HJ/T2.2-2008), to calculate the atmospheric environment protection distance of the fugitive source.

The distance calculated by the recommended mode is the control distance from the center of the pollution source, combined with the project area plan, the control range can be determined, of which beyond the scope of the plant is the project atmospheric protection zone.

People should not live within the atmospheric protection distances, when the fugitive source emit multiple Pollutants, the atmospheric protection distances should be calculated accordingly, and determine the atmospheric protection distances according to the maximum value of the calculated results.

**Table 5-24 Air Pollutants of Fugitive Emission and atmospheric protection distances**

Project	Location	Pollutants	Effective height of Non-point source (m)	Effective width of Non-point source (m)	Effective length of Non-point source (m)	Emission rate (kg/h)	Emission concentration ( $\text{mg}/\text{m}^3$ )	Emission amount (t/a)	Emission standard ( $\text{mg}/\text{m}^3$ )	prediction results
Duchang	Beishanxiang waste transport station	$\text{NH}_3$	6	12	12	0.003	0.038~0.094	0.008	1.5	No exceeding points
		$\text{H}_2\text{S}$	6	12	12	0.0004	0.010~0.025	0.001	0.06	No exceeding points
		dust	6	12	12	0.002	0.05	0.006	1.0	No exceeding points
	Wangdunxiang waste transport station	$\text{NH}_3$	6	12	12	0.004	0.0038~0.0094	0.0103	1.5	No exceeding points
		$\text{H}_2\text{S}$	6	12	12	0.0005	0.0010~0.0025	0.0014	0.06	No exceeding points

										points
		dust	6	12	12	0.003	0.05	0.008	1.0	No exceeding points
	Dashuxiang waste transport station	NH <sub>3</sub>	6	12	12	0.0031	0.0038~0.0094	0.009	1.5	No exceeding points
		H <sub>2</sub> S	6	12	12	0.0004	0.0010~0.0025	0.0012	0.06	No exceeding points
		dust	6	12	12	0.0023	0.05	0.007	1.0	No exceeding points
Shangli	Chishan Town waste transport station	NH <sub>3</sub>	6	9.6	17.3	0.007	0.0038~0.0094	0.021	1.5	No exceeding points
		H <sub>2</sub> S	6	9.6	17.3	0.001	0.0010~0.0025	0.003	0.06	No exceeding points
		dust	6	9.6	17.3	0.005	0.05	0.016	1.0	No exceeding points
	Futian Town waste transport station	NH <sub>3</sub>	6	9.6	17.3	0.004	0.0038~0.0094	0.013	1.5	No exceeding points
		H <sub>2</sub> S	6	9.6	17.3	0.001	0.0010~0.0025	0.002	0.06	No exceeding points
		dust	6	9.6	17.3	0.003	0.05	0.009	1.0	No exceeding points
	Changping Xiang waste transport station	NH <sub>3</sub>	6	9.6	17.3	0.004	0.0038~0.0094	0.011	1.5	No exceeding points
		H <sub>2</sub> S	6	9.6	17.3	0.0005	0.0010~0.0025	0.001	0.06	No exceeding points
		dust	6	9.6	17.3	0.003	0.05	0.008	1.0	No exceeding points
	Yangqi	NH <sub>3</sub>	6	9.6	17.3	0.007	0.0038~0.0094	0.021	1.5	No exceeding points

Xiang waste transport station									ng points
	H <sub>2</sub> S	6	9.6	17.3	0.001	0.0010~0.0025	0.003	0.06	No exceeding points
	dust	6	9.6	17.3	0.005	0.05	0.015	1.0	No exceeding points
Pengga Town waste transport station	NH <sub>3</sub>	6	9.6	17.3	0.008	0.0038~0.0094	0.023	1.5	No exceeding points
	H <sub>2</sub> S	6	9.6	17.3	0.001	0.0010~0.0025	0.003	0.06	No exceeding points
	dust	6	9.6	17.3	0.006	0.05	0.017	1.0	No exceeding points
Dongyu and Xiang waste transport station	NH <sub>3</sub>	6	9.6	17.3	0.005	0.0038~0.0094	0.014	1.5	No exceeding points
	H <sub>2</sub> S	6	9.6	17.3	0.001	0.0010~0.0025	0.002	0.06	No exceeding points
	dust	6	9.6	17.3	0.004	0.05	0.011	1.0	No exceeding points

As known from the above table, the NH<sub>3</sub> and H<sub>2</sub>S can meet the Fugitive Emission grade 2 standard of Emission standards for odor pollutants(GB14554-93) (NH<sub>3</sub>, 1.5 mg/m<sup>3</sup>, H<sub>2</sub>S, 0.06 mg/m<sup>3</sup>), and the dust can meet the the Fugitive Emission Monitoring concentration value of the Integrated emission standard of air pollutants(GB16297-1996) (1.0 mg/m<sup>3</sup>). According to the calculation results, there is no exceeding point, the project has minimal impacts on air. There is no need to set a atmospheric protection distance.

### 5.2.3.2 Mitigation measures

#### 1, Sub project of domestic wastewater management system enhancement

Ambient air impact mitigation measures for Poyang county wastewater treatment station are as follows:

(1) Strengthen wastewater treatment station operation Management, regular inspection and in time maintenance;

(2) Strengthen virescence around wastewater treatment station, plants like canna with deodorant and sterilizing efficacy are planted around the perimeter.

2, Sub project of solid waste collection and transport system

- ① All the waste transfer stations use high energy reactive oxygen ion removal method and spray dust removal treatment for waste gas;
- ② Wash the equipment and the ground of the transfer station regularly to reduce the odor;
- ③ Choose the vehicle and container with the Minimum emission during the waste receiving, unloading, processing and storage.
- ④ Clean up waste transfer stations and nearby roads regularly, and spray water to control the dust if necessary;
- ⑤ All biological waste should be cleaned up quickly, make sure the waste of the day be treated at the same day.
- ⑥ Use deodorant spray if necessary;
- ⑦ Plants with deodorant and sterilizing efficacy are planted around the perimeter.
- ⑧ Waste transfer vehicles should be closed to prevent leakage or waste;
- ⑨ Make and optimize the waste transportation routes, try to avoid the impact of exhaust gas on the sensitive points like school hospital and along both sides of the road.

5.2.4 Impacts on noise and mitigation measures in operation period

5.2.4.1 Impact on noise in operation period

Project Noise in the Operation period mainly are operating noise from Water pumps , waste transport station equipments, and transportation Noise of Waste collection and transport vehicles.

1, Equipments Noise

(1) equipments and Noise

The equipments of the project are listed in Table 5-25.

**Table 5-25 Main noise sources and control measures (db(A))**

Project	Location	Noise source	Quantity	Noise Level	Noise reduction measures
Duchang	Beishanxiang waste	compression equipments	2set(one for work and one for	85	Selection of low Noise level

	transport station		standby)		equipments; compression system in the closed workshop; Shock pad for equipments; Sound insulation door and window in workshop
		High pressure cleaning machine	1 set (one set for one station)	85	
		Deodorant, equipment Dust removal equipment	1 for each	60	
	Wangdunxiang waste transport station	compression equipments	2 set (one for work and one for standby)	85	
		High pressure cleaning machine	1 set (one set for one station)	85	
		Deodorant, dust removal equipment	one for each	60	
	Dashuxiang waste transport station	compression equipments	2 set (one for work and one for standby)	85	
		High pressure cleaning machine	1 set (one set for one station)	85	
		Deodorant, dust removal equipment	One for each	60	
Yugan	Wastewater Pumping Station	Submersible pumps	2(one for work and one for standby)	60~70	Selection of low Noise level equipments; Using of shock pad, soft connection to damp vibrations and reduce noise; Regular maintenance
		Crushing grid	1 set	75~85	
	Diversion pumping station	Water pumps	2	60~70	
		Crushing grid	1 set	70~85	
Fengxin	Wastewater pumping station in the west side of Jingyi Road Huangshanggan pumping station for drainage, Jiutiange electric pumping station for irrigation	Submersible pumps	2(Single Pumping Station )	60~70	Selection of low Noise level equipments; Using of shock pad, soft connection to damp vibrations and reduce noise; Regular maintenance
		Crushing grid	1 set (Single Pumping Station )	75~85	
Jishui	Enjiang Bridge head wastewater pumping station, Wenshan Avenue	Submersible pumps	2(Single Pumping Station )	60~70	Selection of low Noise level equipments; Using of shock pad, soft connection to damp vibrations and reduce noise;
		Crushing grid	1 set (Single Pumping Station )	75~85	

	wastewater pumping station, Enjiangbei Road wastewater pumping station, Xiaojiangkou wastewater pumping station				Regular maintenance
Shangli	Chishan Town waste transport station	compression equipments	2 set (one for work and one for standby)	85	Selection of low Noise level equipments; compression system in the closed workshop; Shock pad for equipments; Sound insulation door and window in workshop
		High pressure cleaning machine	1 set (one set for one station)	85	
		Deodorant, equipment Dust removal equipment	1 for each	60	
	Futian Town waste transport station	compression equipments	2 set (one for work and one for standby)	85	
		High pressure cleaning machine	1 set (one set for one station)	85	
		Deodorant, equipment Dust removal equipment	1 for each	60	
	Changping Xiang waste transport station	compression equipments	2 set (one for work and one for standby)	85	
		High pressure cleaning machine	1 set (one set for one station)	85	
		Deodorant, dust removal equipment	one for each	60	
	Yangqi Xiang waste transport station	compression equipments	2 set (one for work and one for standby)	85	
		High pressure cleaning machine	1 set (one set for one station)	85	
		Deodorant, dust removal equipment	one for each	60	
	Penggao Town waste transport station	compression equipments	2 set (one for work and one for standby)	85	
		High pressure cleaning machine	1 set (one set for one station)	85	



		Deodorant, equipment Dust removal equipment	1 for each	60	
	Dongyuan Xiang waste transport station	compression equipments	2 set (one for work and one for standby)	85	
		High pressure cleaning machine	1 set (one for work and one for standby)	85	
		Deodorant, dust removal equipment	one for each	60	

(2) Prediction mode

Using the noise prediction model of " technique guideline for environmental impact assessment - noise" (HJ2.4 - 2009).

According to the guideline , the prediction model is selected. Each noise source is treated as point source. The basic formula of the prediction calculation is:

$$L_A(r)=L_A(r_0)-A_{div}$$

In the formula:

$L_A(r)$ —Equivalent sound level at R, db(A) ;

$L_A(r_0)$ — Reference equivalent sound level at  $r_0$ , db(A) ;

$A_{div}$ —Sound wave attenuation caused by geometric divergence, db(A). i.e. The attenuation caused by Distance, Basic formula for geometric divergence attenuation of non directional point sound source:  $A_{div}=20lg(r/r_0)$ ;

The total equivalent continuous sound level A of several machine operation is calculated as:

$$Leq_{\text{总}} = 10lg(10^{0.1Leq_i})$$

In the formula,

$Leq_i$  — equivalent sound level of prediction point from sound source i.

In predicting the value of a noise somewhere, the total equivalent continuous sound level A of the sound source should be calculated first, and then overlap the background value, the Specific formula is as follows:

$$L_{eq} = 10lg(10^{0.1Leq_g} + 10^{0.1Leq_b})$$

In the formula,

$L_{eq}$ —equivalent continuous sound level A at the prediction point; db(A)

$Leq_g$ —Leq value of project noise source at prediction point, db(A) ;

$L_{eqb}$ — $L_{eq}$  value of background noise at prediction point, db(A) .

The project will select low noise equipments, reduce the sound level of Noise source; the equipments adopts the base damping (rubber or spring), enclosed setting; The compressor room is provided with sound insulation door and window, so as to reduce the noise outward.

The project Noise prediction are in Table5-26.

**Table 5-26 Project boundary Noise prediction db(A)**

Project	prediction point and time		Contribution value	Background value	prediction value	Standard value	Evaluation result	
Duchang	Beishanxiang waste transport station ( daytime )	1m East outside the boundary	38.95	50.1	51.73	55	up to the standard	
		1m South outside the boundary	30.43	50.3	51.24	55	up to the standard	
		1m West outside the boundary	31.59	50.4	51.25	55	up to the standard	
		1m east outside the boundary	38.95	50.1	51.73	55	up to the standard	
	Wangdunxiang waste transport station ( daytime )	1m east outside the boundary	30.43	51.2	51.24	55	up to the standard	
		1m south outside the boundary	38.95	51.5	51.73	55	up to the standard	
		1m west outside the boundary	38.95	51.1	51.36	55	up to the standard	
		1m east outside the boundary	31.59	51.2	51.25	55	up to the standard	
	Dashuxiang waste transport station ( daytime )	1m east outside the boundary	38.95	52.6	52.78	55	up to the standard	
		1m south outside the boundary	38.95	52.5	52.69	55	up to the standard	
		1m west outside the boundary	30.43	52.4	52.43	55	up to the standard	
		1m east outside the boundary	31.59	52.5	52.54	55	up to the standard	
	Yugan	Wastewater Pumping Station	Daytime	44.5	56.8	57.05	60	up to the standard
			Nighttime	44.5	49.5	50.69	55	up to the standard

							standard	
	Diversion pumping station	Daytime	46.4	53.6	54.36	60	up to the standard	
		Nighttime	46.4	46.3	49.36	55	up to the standard	
Fengxin	West side ofJingyi Road wastewater pumping station boundary	Daytime	51.3	50.3	53.8	70	up to the standard	
		Nighttime	51.3	45.4	52.2	55	up to the standard	
	Huangshanggan g pumping station for drainageboundary	Daytime	51.3	54.7	56.3	60	up to the standard	
		Nighttime	51.3	46.5	52.5	50	up to the standard	
	Jiutiange electric pumping station for irrigation boundary	Daytime	51.3	53.8	55.7	70	up to the standard	
		Nighttime	51.3	46.3	52.4	55	up to the standard	
Jishui	Enjiang Bridge wastewater Pumping Station boundary	Daytime	51.3	53.6	55.6	70	up to the standard	
		Nighttime	51.3	48.4	53.1	55	up to the standard	
	Xiaojiangkou wastewater pumping station boundary	Daytime	51.3	54.2	56	60	up to the standard	
		Nighttime	51.3	47.3	52.7	50	up to the standard	
	Enjiangbei Road wastewater pumping station boundary	Daytime	51.3	53.7	55.6	70	up to the standard	
		Nighttime	51.3	46.3	52.4	55	up to the standard	
	Wenshan Avenue wastewater pumping station boundary	Daytime	51.3	54.6	56.2	70	up to the standard	
		Nighttime	51.3	48.5	53.1	55	up to the standard	
	Shangli	Chishan Town waste transport station	1m east outside the boundary	39.96	47.6	48.29	55	up to the standard
			1m south outside the boundary	39.96	47.1	47.87	55	up to the standard
1m west outside the boundary			30.79	47.5	47.59	55	up to the standard	
1m east outside the boundary			33.41	47.2	47.38	55	up to the standard	
Futian Town waste transport station		1m east outside the boundary	39.96	49.2	49.69	55	up to the standard	
		1m south outside the	39.96	49.3	49.78	55	up to the standard	

	boundary					
	1m west outside the boundary	30.79	49.3	49.36	55	up to the standard
	1m east outside the boundary	33.41	49.1	49.22	55	up to the standard
Changping Xiang waste transport station	1m east outside the boundary	39.96	48.3	48.89	55	up to the standard
	1m south outside the boundary	39.96	48.5	49.07	55	up to the standard
	1m west outside the boundary	30.79	48.5	48.57	55	up to the standard
	1m east outside the boundary	33.41	48.4	48.54	55	up to the standard
Yangqi Xiang waste transport station	1m east outside the boundary	39.96	49.7	50.14	55	up to the standard
	1m south outside the boundary	39.96	49.6	50.05	55	up to the standard
	1m west outside the boundary	30.79	49.6	49.66	55	up to the standard
	1m east outside the boundary	33.41	49.7	49.80	55	up to the standard
Penggao Town waste transport station	1m east outside the boundary	39.96	50.2	50.59	55	up to the standard
	1m south outside the boundary	39.96	50.3	50.68	55	up to the standard
	1m west outside the boundary	30.79	50.3	50.35	55	up to the standard
	1m east outside the boundary	33.41	50.1	50.19	55	up to the standard
Dongyuan Xiang waste transport station	1m east outside the boundary	39.96	50.6	50.96	55	up to the standard
	1m south outside the boundary	39.96	50.5	50.87	55	up to the standard
	1m west outside the boundary	30.79	50.6	50.65	55	up to the standard
	1m east outside the boundary	33.41	50.5	50.58	55	up to the standard

As known from the above table, noise at all the plant boundary can meet the requirements of the corresponding sound function zoning, has minimal impacts on the surrounding sensitive points.

## 2, Noise of waste transport vehicles

The sound level of Waste transport vehicles Noise source is 80db(A). In the absence of any protection facilities, the prediction is calculated as line sound source, the results are in Table 5-27.

**Table 5-27 Noise value of Main Traffic line**

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

Without any obstacles on both sides of the road, without considering the background noise, the equivalent continuous sound level at 5m off both sides of the road is 58dB (A), which is in compliance with the 4a standard (70db(A) of the environment quality standard for noise (GB3096-2008) in daytime. At the points 10m away from the road, the equivalent continuous sound level is 55dB (A), the daytime traffic noise can meet 1st standard (60dB (A); there is no transportation at nighttime.

Therefore the traffic noise has minimal impacts on the environment.

### 5.2.4.2 Mitigation measures

- ① Reasonable layout, selection of low noise type equipment.
- ④ Using rubber damping pad at the bottom of the equipment, using soft connection to damp vibrations and reduce noise;
- ⑤ Regular maintenance to reduce the vibration, eliminate noise, and keeping regular maintenance
- ① Strengthen the management and maintenance of waste transport vehicles, reduce vehicle accident rate;
- ② Waste transfer vehicles should be closed to prevent leakage or waste;
- ③ Make and optimize the waste transportation routes, try to avoid the impact of exhaust gas on the sensitive points like school hospital and along both sides of the road.

## 5.2.5 Impacts on solid waste and mitigation measures in operation period

### 5.2.5.1 Solid waste impact in operation period

The solid waste of the project in operation period mainly are domestic waste from the staff of domestic waste transport station and water environment monitoring system, and laboratory waste liquid from the water environment monitoring system laboratory. Poyang county sub project wastewater treatment station use Facultative-aerobic MBR (FMBR) process, Sludge is selfdigested, no discharge.

#### 1, Domestic waste

Project domestic waste is listed in Table 5-28.

**Table 5-28 Domestic waste generation**

Project	Source	People (person)	working(d)	Average amount (kg/person·d)	daily amount (kg/d)	Annual amount (t/a)	Fate
Duchang	Waste transport station	6(2for each station)	365	0.5	3(1 for each)	1.1	Compression in transport station, then transported to Duchang county waste treatment plant
	Water environment monitoring system houseing	10	255	0.5	5	1.28	
Poyang	Water environment monitoring system houseing	5	255	0.5	2.5	0.64	Classified collection, transported by sanitation department to Poyang county domestic waste landfill
Yugan	Water environment monitoring system houseing	5	255	0.5	2.5	0.64	Classified collection, transported by sanitation department to Yugan county domestic waste landfill
Jing'an	Water environment monitoring system houseing	10	255	0.5	5	1.28	Classified collection, transported by sanitation department to Jing'an county domestic waste landfill
Jishui	Water environment monitoring system houseing	10	255	0.5	5	1.28	Classified collection, transported by sanitation department to Jishui county domestic waste landfill
Shangli	Waste transport station	12(2for each)	365	0.5	6(1for each)	2.19	Compression in transport station, then transported Pingxiang

							city waste incineration plant
Total		78	/	0.5	29	8.41	

## 2, Waste liquid from laboratory

During the operation period Water environment monitoring system laboratory will generate Waste acid (HW34), waste alkali(HW35), Waste organic solvent (HW42), which are hazardous wastes. The details of the waste liquid are in Table 5-29.

**Table 5-29 Waste liquid form laboratory**

Project	Source	Amount (kg/a)	Fate
Duchang	Water environment monitoring system Laboratory	300	Handled by qualified units
Poyang	Water environment monitoring system Laboratory	500	Handled by qualified units
Fengxin	Water environment monitoring system Laboratory	300	Handled by qualified units
Yugan	Water environment monitoring system Laboratory	300	Handled by qualified units
Jing'an	Water environment monitoring system Laboratory	300	Handled by qualified units
Jishui	Water environment monitoring system Laboratory	300	Handled by qualified units
Shangli	Water environment monitoring system Laboratory	300	Handled by qualified units
Total		2300	

### 5.2.5.2 Mitigation measures

#### 1, Domestic waste

The domestic waste of waste transfer station staff will be directly sent into the transfer station compression, and ultimately into the waste treatment plant of the project location.

The domestic waste of each county water environment monitoring system will be classified and collected, then transported to the waste treatment plant for processing by the local sanitation department.

#### 2, Waste liquid from laboratory

During the operation period Water environment monitoring system laboratory will generate Waste acid (HW34), waste alkali(HW35), Waste organic solvent (HW42), which are hazardous wastes. The prevention and control measures should be taken as follows:

(1) Hazardous waste should be collected with classification, putted in the anti-seepage, leakproof seal container, with a clear sign of color;

(2) Set up anti-seepage, anti-leakage room for hazardous waste storage, open storage is prohibited;

(3) Hazardous waste should be collected transported and disposed by the Units with license of the operation of hazardous waste.

(4) Implemente the Hazardous waste transfer licensing system and duplicate forms for transfer of hazardous waste;

(5) It is prohibited to discard, lose waste on the way of transportation. It is prohibited to dump hazardous waste on non storage sites or mix the hazardous waste into the domestic waste water or waste; It is prohibited to engage in hazardous waste collection, storage, transportation and disposal activities without or not in accordance with the license.

## 5.2.6 Impacts on ecological environment and mitigation measures in operation period

### 5.2.6.1 Impact on Ecological environment in operation period

The sub project of domestic wastewater management system enhancement, and the sub project of solid waste collection and transport system operation period have minimal impacts on ecological environment. The sub project of River and lake water environment remediation has impacts on ecological environment impact, which involves Duchang county, Poyang county and Yugan county, the water bodies involved are Zoujiazui lake of Duchang county, Pearl Lake of Poyang county and Pipa Lake of Yugan county . The impacts on ecological environment in operation period are as follows:

#### 1, Impacts on amphibians, reptiles and mammals

After the completion of the project, some of the original ecological environment in the project area will be restored, including Zoujiazui Lake of Duchang, Pipa Lake of Yugan and Pearl Lake of Poyang. And amphibians, reptiles and mammals animal will gradually move back. There is minor adverse effects.

#### 2, Impacts on birds

After the completion of the project, along with the improvement of water quality and the remediation of ecological environment in Zoujiazui Lake of Duchang, Pipa Lake of Yugan and Pearl Lake of Poyang, a good living environment for birds will gradually form. At the same time, the wet land has abundant water resources, richful food, it can be expected that after the project is completed, the number of bird populations will gradually increase.

#### 3, Impacts on Aquatic plants

After the completion of the project, part of the water area will be increased fwhich is good for the aquatic plants due to expansion of the survival of the space to expand.

#### 4, Impacts on aquatic animals

After the completion of the project, with the improvement of water quality, there will be



more suitable habitat for aquatic animal feeding, roosting. In the long run, the construction of the project is beneficial to the survival of aquatic animals in Zoujiazui Lake of Duchang, Pipa Lake of Yugan and Pearl Lake of Poyang.

#### 5、Impacts on the Water Ecosystems of Huhui River

At present, the water in Huhui River mainly belongs to Class V to inferior Class V water. The aquatic organisms there are mainly common species. Three sites of fish do not exist there. There are no precious species of aquatic organisms and it is not an important natural habitat. It is impacted by the urban domestic life and the sand dredgers' dredging work to a relatively large extent.

This subproject plans to draw water from Huhui River to Pipa Lake. It aims to realize the daily water change of Pipa Lake through drawing water from the south and discharging the water to the north. In the wet season from March to June, the water level elevation of Huhui River will rise due to the upstream diversion and downstream interception by sluices

It will take advantage of gravity flow to draw water into Pipa Lake. According to the hydraulic analysis, the actual water demand is quite small. It is intended to activate the functions of the water body of Pipa Lake. Meanwhile, both inflow channel and discharge channel connect with Huhui River, with little impact on the water ecosystems of Huhui River. During the drought period, the maximum level of Pipa Lake declines by 0.70 m. The project plans to set up pump station in the headrace channel of Pipa Lake and draw water from Huhui River, and thereby it can make Pipa Lake reach the designed level of 16.6 m, total annual added water amount of 502,200 m<sup>3</sup>, maximum monthly demanded added water amount of 107,400 m<sup>3</sup> and maximum daily average added water amount of 3464.5 m<sup>3</sup>. As the added water of Huhui River mainly comes from Xinjiang River, during the drought period, currently, this county draws water into Huhui River through the existing water pump. After the implementation of this project, the water transfer of Pipa Lake during the drought period will have little impact (0.14%) on the flow of Huhui River. Neither will it intercept the water flow of Huhui River, nor will it change the hydrological regime of Huhui River. Therefore, it will not have large impact on the ecosystems of Huhui River.

#### 6, Impact analysis of alien species invasion

For the project, there are two cases of impact of biological invasion species:

First, the implementation of the project is likely to create conditions for the biological invasion, resulting in a new biological invasion; Second, whether the implementation of the project will result in the further spread of the existing alien invasive species.

Combined with engineering characteristics, EIA analysis the above two issues from the pathways of alien invasive species, the factors affecting the alien species invasion, the biological characteristics of the project area, the transmission mechanism and so on.

① Whether the project will lead to a new biological invasion

Criteria for an invasive species: A non indigenous region is introduced by means of intentional or unintentional human activity; Natural regeneration is formed in the local natural or artificial ecosystem; Cause significant damage or impact to the local ecosystem or geographical structure. The alien species invasion in our country are mainly by two ways: One is the introduction with the purposes of agriculture, forestry, animal husbandry and fishery production, ecological environment construction, ecological protection, and then the alien species evolved into an invasive species (intentional introduction); The other is the introduction of trade, transport, tourism and other activities (unintentional introduction). The implementation of the project is mainly on urban waters; The project does not involve international trade, no unintentional introduction by international trade; The scale of the project is small, and will not cause large change of the environment and the land use pattern; There is no human intentional introduction. Based on the above analysis, the implementation of this project will not create a new biological invasive species.

② Whether the implementation of the project will result in the further spread and diffusion of the existing alien species

According to the list of alien invasive species in China (the first, the second and the three batch), combined with field survey, it is determined that there is no alien species in the shore of Zoujiazui Lake, Pearl Lake, Pipa Lake. Therefore, the implementation of the project does not have the possibility of further spread and diffusion of existing alien species.

#### 5.2.6.2 Mitigation measures

1, Plant design should mainly consider the aquatic and terrestrial plants, in consideration of the diversity of plant species and the local conditions at the same time; Try to use native plants and prohibit the introduction of alien species.

2, After the completion of the project, regular survey and monitoring of biological species and composition should be done for the project area, once found the number of some species increased obviously, it should be timely identified of exotic species or not, if the species has potential invasion or has already invaded, the scavenging, inhibition or control measures should be taken as soon as possible to reduce the adverse impact.

3, Management strengthen. Owners should designate someone to do greening and management, formulate corresponding regulations to protect the ecological environment of Zoujiazui lake, Pearl Lake and Pipa Lake.

#### 5.2.7 Impacts on social environment and mitigation measures in operation period

##### 5.2.7.1 Operation period social environment impact

###### 1, Social benefit of the project

(1) The project consist of restoration of river water environment and strengthening the water quality management, which will have demonstration effect of comprehensive control of pollution in key areas

This project will reduce the flow of pollutants into the Poyang Lake River Basin by key water ares, and improve water quality management. Implementation of the project is good to reduce and control the amount of sewage discharged into the "five rivers and one lake", protect the "pure lake water", is conducive to purify water sources, improve water quality, and provide more ecological safety for the Poyang LakeBasin

Through the introduction of international experience, the project will enhance the level of pollution prevention and management, play a role of demonstration and leading.

(2) Domestic wastewater management system enhancement, and living environment improvement

Once the urban drainage pipe network project is put into operation, it will effectively solve the status quo of regional sewage directly discharged into the nearby surface waters due to the absence of the sewage pipe network system, as well as the waterlogging in part of the urban area. It is Beneficial to the county's appearance management of the sub project location, and create a good living environment for the residents.

(3) Waste collection and transport capacity improvement and city appearance improvement

Once the domestic waste collection and transport system is established, the waste collection, removal capacity will be greatly increased, which will greatly improve the municipal solid waste collection and transportation facilities, which is outdated with serious pollution and low efficiency. It will also enhance the level of sanitation operations, reduce the running cost, effectively solve the situation of garbage around town, benefit the county appearance.

(4) Provide good environment for regional social and economic development

The implementation of the project, will speed up the construction of municipal

infrastructure projects, establish and improve the environmental infrastructure network system, further ease the contradiction between basin and regional urban development and environmental constraints, improve the basin environmental quality of the project locations, improve the water environment function, enhance urban functions, and create a suitable environment conditions for the local and the province's economy and society to develop fast and good. With the improvement of urban infrastructure and environment, the value of urban land will be increased.

(5) Increase employment opportunities for residents

With the gradual expansion, the project will provide employment opportunities. First of all, during the project construction, the project will provide some short, fragmented employment opportunities; Secondly, in the operational phase, the project will provide some long-term stable employment opportunities, including the technology and management personnel directly participate in the project; Thirdly, the implementation of the project will greatly improve the investment environment, attract funds and accelerate the development of industrial and agricultural. At the same time it will lead to the prosperity of the third industry, to provide more employment opportunities.

(6) Raise environmental protection awareness of the residents

The project implementation is a profound and vivid environmental protection propaganda process, through participation in social advocacy, skills training, evaluation and supervision, and guided public participation, it raises public awareness of environmental protection, promotes public initiative to reduce pollution and environmental protection, explores the establishment of long-term mechanism of water environment protection in Poyang Lake. In the process of public participation, attention should be paid to the role of local knowledge, local culture should be respected, use more of the township regulations that community is easy to accept to carry out project implementation and management activities..

(7) Provide basic data for regional pollution control

The implementation of environmental monitoring and management capacity building project, the growing needs of the community environmental monitoring, can meet the growing needs of the environmental monitoring, provide better service for local economic construction.

At the same time, it will provide basic data for further analysis of pollution sources; provide scientific basis for the comprehensive management of regional pollution; will provide a basis for accurate evaluation the regional pollution control project effect; will

provide effective means for the government to supervise the operation of pollution control facilities according to law; It helps to strengthen regional basin environmental management.

## 2, Potential social risk

### (1) Environmental sanitation of waste transport station and collection point

The deterioration of environmental sanitation condition of waste transfer station and collection point and the increase of mosquitoes, flies, worms and mice, are the common problems reflected by the residents nearby waste transfer stations. Especially in summer, with the increase of fruits and vegetables, flies will show up. Drug spray will significantly reduce the number of them, while it will be as usual a few days later. In order to prevent the waste transport station and collection point breeding mosquitoes and bacteria, the station should be kept clean and tidy. Collection containers should be cleaned regularly, and pesticide should be used regularly both inside and outside the station to eliminate mosquitos.

### (2) Impacts of waste transport station on nearby residents

Site selections should meet the needs of land, construction and environmental hygiene, and the opinions of residents nearby should be valued to avoid conflicts with the local people. During operation period, strengthen environmental health management, implement the environmental protection measures in accordance with the implementation plan of environmental protection, keep regular maintenance of environmental protection equipment to ensure its normal operation, and avoid causing environmental complaints.

### (3) Secondary pollution problems in the process of waste collection and transport

During the waste collection and transportation, if collection vehicles are not sealed, some waste may drop or the odors will emit, this will produce secondary pollution problems.

## 5.2.7.2 Mitigation measures

(1) Waste transport station , collection point should have operation, maintenance and safety operation procedures, and operate according to the operation procedures; Establish a sound emergency rescue plan;

(2) Transfer stations should be kept clean and tidy, collecting containers should be cleaned regularly; Bacteria, mosquitoes and flies should be killed by spraying biological control bacteria, use light, liquid disinfection and sterilization system; Machinery, equipment, and site cleaning should be on a regular basis, to ensure that the surface is clean, no dirt and leachate are attached. Both inside and outside of the transfer station should be regular drugged to eliminate mosquitoes.

- (3) The operation management personnel and operators of transfer station must have pre job training to master the process flow of the transfer station, technical requirements, and main technical specifications and operational management requirements for facilities, equipment;
- (4) Site strictly open in accordance with the provisions of the time;
- (5) Operating personnel should randomly check the garbage composition, prohibit the hazardous waste, and prohibited substances.
- (6) Classification of recycled materials and organic wastes for recycling and compost;
- (7) Collection of debris in the station is prohibited;
- (8) Using the closed models or closed measures to prevent leachate overflow.

## 5.2.8 Impacts on occupational health and safety in operation period and mitigation measures

### 5.2.8.1 Analysis of impacts on occupational health and safety in operation period

During the process of Stacking and compressing and transport of the domestic waste, there will be odor gases emission, including ammonia and hydrogen sulfide. The ammonia and hydrogen sulfide emission concentration can meet the Fugitive Emission grade 2 standard of Emission standards for odor pollutants(GB14554-93), and the dust can meet the the Fugitive Emission Monitoring concentration value of the Integrated emission standard of air pollutants(GB16297-1996). However, due to the long-term work of the transfer station staff in the work environment containing ammonia and hydrogen sulfide, occupational health and safety protection of harmful gases should be taken.

### 5.2.8.2 Mitigation Measures

- (1) Waste transport station , collection point should have operation, maintenance and safety operation procedures, and operate according to the operation procedures; Establish a sound emergency rescue plan;
- (2) The operation management personnel and operators of transfer station must have pre job training to master the process flow of the transfer station, technical requirements, and main technical specifications and operational management requirements for facilities, equipment;
- (3) Pre job and regular occupation health knowledge training should be well done, especially knowledge training related with the emergency rescue;
- (4) In accordance with the relevant provisions of the state, the workers engaged in post exposed to occupation hazards should have occupation health examination before, during and after posts, and be truthfully informed with the results. It is not allowed

to arrange workers who do not have occupational health examination to engage in operations exposed to occupational hazards.

- (5) Transfer stations should be kept clean and tidy, collecting containers should be cleaned regularly; Bacteria, mosquitoes and flies should be killed by spraying biological control bacteria, use light, liquid disinfection and sterilization system; Machinery, equipment, and site cleaning should be on a regular basis, to ensure that the surface is clean, no dirt and leachate are attached. Both inside and outside of the transfer station should be regular drugged to eliminate mosquitoes.
- (6) Operating personnel should randomly check the garbage composition, prohibit the hazardous waste, and prohibited substances.

### 5.3 Technical assistance impact analysis

The Provincial Foreign Capital Office and Jingan County government will carry out the 2 research projects, which are the "Study on the financing mechanism of Poyang Lake water environment management", and the "Study on the vulnerability of water environment in Poyang Lake". Use "River administrator" as an opportunity to implement, to improve the water environment management system.

Project technical assistance to the current stage can be set as B or C class, will not lead to a significant negative impact on the environment

**Table 5-30 Technical assistance activities**

Project	Contents	Potential environment impact	EA Category	Safeguard Policy might involve	Documents might be made during preparation
Study on the financing mechanism of Poyang Lake water environment management	Through the analysis of the current situation, forecast of the capital supply and demand, typical case summary, the framework design and key link of Poyang Lake water environment management financing mechanism in the future will be put forward. Specific, practical and valuable suggestions on how to establish a "government guidance, market operation, efficient and diversified" financing mechanism will be put forward.	Projects or measures of water quality, water quantity, water use and ecological management of Poyang Lake basin may be put forward, May also involve natural habitat and its protection, management and so on, as well as involuntary immigrants. There will not be any significant, irreversible adverse impacts on the natural habitat, and the impacts mainly are positive.	C, B	OP4.01, OP4.04, OP4.09, OP4.12, BP17.15	Terms of References (TOR) includes analysis of potential environmental and social issues and how they will be addressed;

<p>Study on the vulnerability of water environment in Poyang Lake</p>	<p>Analyze the water environment vulnerability of Poyang Lake river basin, assess the impact of vulnerability, identify risk sources, propose corresponding policies and engineering measures, and conduct economic and technical assessment</p>	<p>Projects or measures of water quality, water quantity, water use and ecological management of Poyang Lake basin may be put forward, May also involve natural habitat and its protection, management and so on, as well as involuntary immigrants. There will not be any significant, irreversible adverse impacts on the natural habitat, and the impacts mainly are positive.</p>	<p>C, B</p>	<p>OP4.01, OP4.04, OP4.09, OP4.12, BP17.15</p>	<p>Terms of References (TOR) includes analysis of potential environmental and social issues and how they will be addressed;</p>
<p>System Improvement</p>	<p>Combine the basin and regional management for pollution control according to the characteristics of different urban water systems; Use “river administer” system, to improve water environment management system, and promote the process of water environmental governance</p>	<p>These activities usually have no potential adverse environmental and social impact or risk.</p>	<p>C</p>	<p>Does not involve</p>	<p>Does not involve</p>



## 5.4 Due diligence

The project collects wastewater to the county wastewater treatment plant for processing, and collect domestic waste to the county domestic waste treatment plant for treatment.

EIA team carried out due diligence of the involved wastewater treatment plants and waste treatment plants. This project involves a total of 10 enterprises to conduct due diligence, including 5 wastewater treatment plants and 5 waste treatment plants, as detailed in Table 5-30.

**Table 5-31 Project related projects**

No.	Project Name	Involves project contents	Related projects Name
1	Duchang county sub project	Wastewater	Duchang county municiple wastewater treatment plants
2		Domestic waste	Duchang county domestic waste comprehensive treatment plant
3			Jiujiang City 2 <sup>nd</sup> domestic waste treatment plant (Veolia)
4	Yugan county sub project	Wastewater	Yugan wastewater treatment plants
5		Domestic waste	Yugan county municiple domestic wastesanitation landfill
6	Fengxin county sub project	Wastewater	Fengxin county municiple wastewater treatment plant
7	Jing'an county sub project	Wastewater	Jing'an county wastewater treatment plants
8		Domestic waste	Jing'an county domestic waste landfill
9	Jishui county sub project	Wastewater	Jishui county wastewater treatment plant
10	Shangli county sub project	Domestic waste	Pingxiang City domestic waste incineration plant

### 5.4.1 Duchang county

#### 5.4.1.1 Duchang county wastewater treatment plants

Wastewater of the project will be discharged into the Duchang county wastewater treatment plant. The due diligence of the plant is as follows.

##### 1, Location

Jishan Lake, nearby the original Water Science Research Institute.

##### 2, Construction and treatment scale

The plant started construction in 2008, the first phase (phase I) completed and started operation in July 2010 with the scale of 10000 m<sup>3</sup> / D, the second phase (phase II) completed and started operation 2014with the scale of 10000 m<sup>3</sup> / D. The wastewater treatment plant now has a scale of 20000 m<sup>3</sup> / D, covers an area of 2.94ha. With a planning total area of 4.45ha, the plant plans to increase the scale to 40000 m<sup>3</sup>/d in 2020, and reach

80000m<sup>3</sup>/d in the 2030.

### 3, EIA and environmental protection acceptance

The original Jiangxi Provincial Environmental Protection Bureau approved the EIA (2.0 million m<sup>3</sup> / D) of Duchang County wastewater treatment plant in July 2008, the approval document number is 赣环督字[2008]326 号(Annex 4). This wastewater treatment plant has passed environmental acceptance.

The Jiangxi Provincial Environmental Protection Bureau approved the environmental protection acceptance of the first phase (phase I) in November 2011, the approval document number is 赣环评函[2011]57 号 (Annex 5).

The Jiangxi Provincial Environmental Protection Bureau approved the environmental protection acceptance of the first phase (phase II) in Jan 2015, the approval document number is 赣环评函[2015]8 号 (Annex 6).

### 4, Treatment Process

The wastewater plant uses oxidation ditch process, the process is as follows:

Influent → Coarse Grid and Pumping house → fine Grid and vortex Grit chamber → modified oxidation ditch → secondary sedimentation tank → UV sterilizing tank → effluent pumping → Discharge

The monthly report of the wastewater plant provided by Duchang branch of Jiangxi Hongcheng water industry environmental protection Co., Ltd. is shown in Table 5-32.

**Table 5-32 Monthly operation report of Duchang wastewater treatment plants (Flow)**

Date	Average influent flow(m <sup>3</sup> /h)	Date	Average influent flow(m <sup>3</sup> /h)
2015/8/1	723.40	2015/9/1	697.06
2015/8/2	683.11	2015/9/2	346.44
2015/8/3	689.17	2015/9/3	712.80
2015/8/4	700.62	2015/9/4	682.10
2015/8/5	685.88	2015/9/5	726.05
2015/8/6	713.44	2015/9/6	720.28
2015/8/7	664.20	2015/9/7	695.30
2015/8/8	732.01	2015/9/8	707.19
2015/8/9	727.49	2015/9/9	718.92
2015/8/10	671.03	2015/9/10	711.65
2015/8/11	691.10	2015/9/11	727.53

2015/8/12	564.18	2015/9/12	698.90
2015/8/13	736.97	2015/9/13	700.64
2015/8/14	700.50	2015/9/14	720.34
2015/8/15	675.61	2015/9/15	679.06
2015/8/16	694.23	2015/9/16	733.70
2015/8/17	701.66	2015/9/17	719.46
2015/8/18	672.77	2015/9/18	723.03
2015/8/19	702.45	2015/9/19	729.36
2015/8/20	700.08	2015/9/20	734.48
2015/8/21	683.67	2015/9/21	725.68
2015/8/22	687.89	2015/9/22	708.32
2015/8/23	696.67	2015/9/23	732.54
2015/8/24	576.86	2015/9/24	729.25
2015/8/25	684.80	2015/9/25	727.33
2015/8/26	676.85	2015/9/26	741.27
2015/8/27	713.53	2015/9/27	728.67
2015/8/28	717.15	2015/9/28	726.75
2015/8/29	702.08	2015/9/29	706.50
2015/8/30	640.31	2015/9/30	727.16
2015/8/31	727.33		
Average value (m <sup>3</sup> /h)	688.29		704.59
Average value (10000m <sup>3</sup> /d)	1.65		1.69

According to the flow data of Monthly operation report, the recent influent flow of the wastewater treatment plant is about 16.7 thousand m<sup>3</sup>/d.

In August and September 2015, the sludge production of the wastewater treatment plant was 143 m<sup>3</sup> and 155 m<sup>3</sup>, respectively, average daily sludge production was about 4.9m<sup>3</sup>/d, with water content about 75%. The sludge disposal is mainly for landfill, greening and agricultural, etc..Duchang municipal solid waste disposal plant has been completed and in trial operation. The sludge of the wastewater treatment plant shall be transported to the Duchang municipal solid waste disposal plant.

**Table 5-33 Duchang wastewater treatment plants operation data mg/L**

Item	COD	BOD <sub>5</sub>	SS	TN	NH <sub>3</sub> -N	TP
------	-----	------------------	----	----	--------------------	----

Date	Influ ent	Efflu ent	Influ ent	Efflu ent	Influ ent	Efflu ent	Influ ent	Efflu ent	Influ ent	Efflu ent	Influ ent	Efflu ent
2014/3	119	28	55	15	54	12	16.5	8.9	12.4	6.1	1.54	0.78
2014/4	116	23	52	16	48	6	20.4	6.5	16.7	4.3	1.59	0.75
2014/5	99	18	55	15	30	7	15	6.2	11.7	4.54	1.66	0.82
2014/6	99	28	57	14.8	32	9.6	20.6	10.6	17.9	5.33	1.85	0.62
2014/7	106	33	57	14.6	41.2	11.4	20.3	8.7	16.4	5.1	1.65	0.57
2014/8	101.7	27.7	51.3	12.9	40.7	10.6	25.2	13	19.2	5.22	2.29	0.48
2014/9	111	31	51.2	12.8	39.1	11.3	19.2	10.6	16.8	5.07	2.3	0.79
2014/10	124	28	58	10.7	41	11	20.6	10.1	17.4	5.11	2.38	0.74
2014/11	119	32.5	58	12.8	32	11.7	19.6	9.74	16.8	5.46	2.34	0.72
2014/12	121	38.5	62.5	13.5	43	13	23.8	17.7	19.9	5.06	2.26	0.63
2015/2	130	33.2	76	13.5	39	10	25.8	18	23.5	5.3	2.21	0.78
2015/3	123	31	56.3	13.9	37.4	11.4	23.9	11.8	21	4.9	2.4	0.5
Average	114.1	29.3	57.4	13.8	39.8	10.4	20.9	11.0	17.5	5.1	2.0	0.7

**Table 5-34 Duchang wastewater treatment plants influent and effluent water quality mg/L**

Project	COD	BOD <sub>5</sub>	SS	TN	NH <sub>3</sub> -N	TP
Actual average influent	114.1	57.4	39.8	20.9	17.5	2.0
Actual average effluent	29.3	13.8	10.4	11.0	5.1	0.7
GB18918-2002 Grade 1 B standard	60	20	20	20	8(15)	1

From the above data, sewage after treatment is up to the Discharge standard of pollutants for municipal wastewater treatment plant GB18918-2002 grade B standard, tail water is discharged into the Poyang Lake by the pump.

5, Matching analysis of water quantity

The wastewater quantity of collection in Duchang county sub project is listed in Table5-35.

**Table 5-35 Duchang county sub project wastewater collection quantity (10000m<sup>3</sup>/d)**

Project	2023 年(Short term )	2027 年(中期)	2030 年(Long term )
Average daily water quantity of New industrial wastewater from Furongshan	0.3	0.59	0.8
Average daily water quantity of New domestic wastewater from county	0.5	0.56	0.6
Total quantity of New wastewater	0.8	1.15	1.4
Total wastewater quantity	3.0	4.26	5.2

When Duchang County pipeline improvement project finished, the total amount of wastewater collected from the County town will be 30 thousand m<sup>3</sup>/d in 2023, and 52 thousand m<sup>3</sup>/d in long term. The scale of wastewater plant in middle term is 40 thousand m<sup>3</sup>/d, and 80 thousand m<sup>3</sup>/d in the long term.

Wastewater treatment plant planning could meet the needs of the various stages of the project, at the same time it is suggested that the treatment plant achieve the overall long term design of the total size of 80 thousand m<sup>3</sup>/d as early as possible.

In conclusion, according to the Duchang county wastewater treatment plant due diligence, the treatment capacity and process can meet the project needs, and in well operation. The wastewater collected by the project pipeline can be effectively treated.

#### 5.4.1.2 Duchang county waste comprehensive treatment plant

Duchang county sub project involves 3 townships, and the waste is proposed to be transported to Duchang county waste comprehensive treatment plant. The due diligence of the plant is as follows.

##### 1, Location

Located in the north side of the Shunfeng Road, western suburbs, west side of Duchang county wastewater treatment plant.

##### 2, Construction

The project construction started in May 2015. The civil construction is nearly done and Equipment installation works have been completed. Finished in May 2016, it has now entered the trial operation stage.



**Figure 5-7 Installation and commissioning of Duchang county waste treatment plant**

### 3, EIA and environmental protection acceptance

The Jiujiang City Environment Protection Bureau approved the EIA of Duchang county domestic waste comprehensive treatment plant project in Aug 2014, the approval document number is 九环评字[2014]48 号(Annex 7). The environmental protection acceptance is expected to be applied in this September.

### 3, Service scope

The service scope mainly covers domestic waste of Changzhencheng, Beishan Xiang, Wangdun Xiang, Sanchagang Town, and the sludge of Duchang county wastewater treatment plant, etc.

### 4, Plant scale

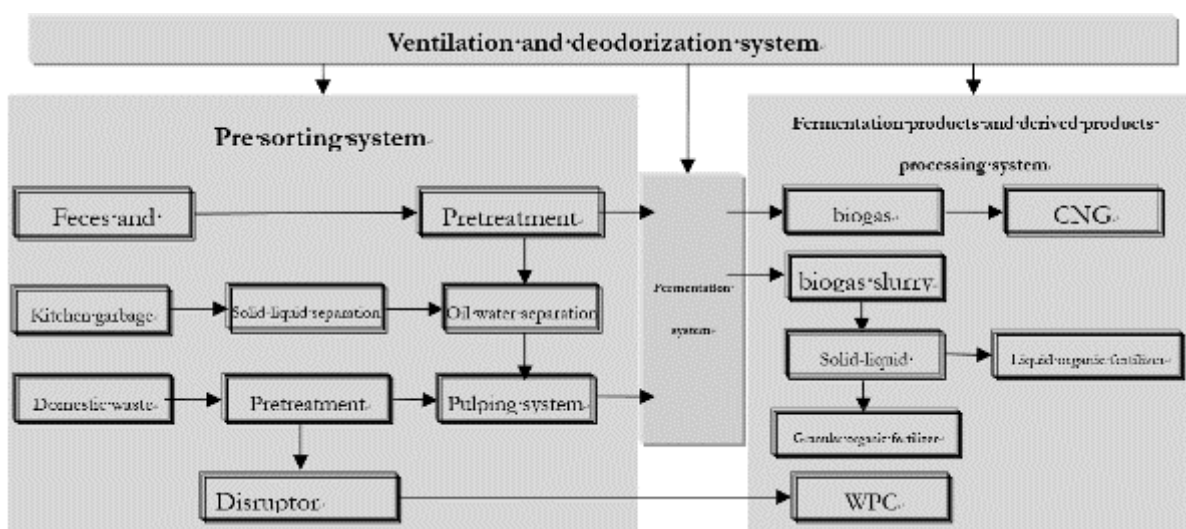
The total area of the plant is 26525m<sup>2</sup>. Buildings cover an area of 6506.2 m<sup>2</sup>. The total construction area is 8043.7 m<sup>2</sup>.

The designed treatment capacity of the plant is 380t/d, including 300t/d of domestic waste, 10t/d of sludge from the wastewater treatment plant, 30t/d of reserved capacity for livestock manure ((including straw, the biomass waste from vegetable markets, slaughter and other places) , 50t/d of kitchen garbage treatment scale.

### 5, Treatment process

After sorting, the waste is treated by the "Combined anaerobic fermentation process of municipal organic waste " The process flow chart is as follows.

After the integrated disposal, the large disruptors (sand, stone, ceramic etc.) is sorted out to brick plant; Wooden products, cloth, plastic bags, scrap metal, waste glass, etc. will be recycled and sold for comprehensive utilization; the treated biogas slurry, slag will be used for afforestation or forest nursery; the rest unusable waste will be shipped to Jiujiang Veolia municipal waste landfill plant for disposal.



**Figure 5-8 Duchang county domestic waste comprehensive treatment plant process flow chart**

This process is developed by Ordos solid waste institute, the Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences. Since 2008 the company has completed the construction of 4 waste treatment plants, which are Dongsheng living garbage disposal plant, Zhunge Qi waste treatment plant, Haibowan waste treatment plant phase II, Wuhai, and Wushen Qi waste treatment plant. The ongoing projects are Guilin municipal solid waste treatment project, waste comprehensive treatment project in Zhangwu County, Fuxin city, Huadian domestic solid waste comprehensive treatment project, and the "Shagedu Town domestic solid waste treatment plant" with the upgraded Combined anaerobic fermentation process.

The process operated well, and is suitable for the demand of the solid waste treatment in Duchang county.

#### 6, Main equipments

The main equipments are listed in Tabel 5-36, which can meet the project requirements.

**Table 5-36 Main equipments of Duchang county domestic waste comprehensive treatment plant**

No.	Equipments Name	Equipments Specifications	Quantity	Notes
I	Pretreatment system			
1	Feed distributing machine	JLJ/3-9M <sup>3</sup>	1	
2	Drum screen 1	GTS2990	1	
	Drum screen 2	GTS31100	1	
3	Magnetic separator	RCYD10	2	
4	Horizontal air separator	FXXT-4/M	2	

No.	Equipments Name	Equipments Specifications	Quantity	Notes
5	Screen of alternate tension and relaxation	ZCS7.56	1	
6	Rotating screen	CKZS13-50	1	
7	Manual sorting platform	RGFX-4/M/H	2	
8	Plastic packing machine	DBJ1410	2	
9	Solid-liquid separator	CLF	1	
10	Buffer bin	CKHC13-50	1	
11	Crusher	Φ1500*4500	1	
II	Anaerobic fermentation system			
1	Sand dredging machine	CKLS13-50	1	
2	Mixing tank	160m <sup>3</sup>	1	
3	Fermentation tank	1700m <sup>3</sup>	2	
4	Buffer tank	160m <sup>3</sup>	1	
5	Gas tank	2000m <sup>3</sup>	1	
6	Torch		1	
III	Fermentation products and derivatives utilization system			
1	The high pressure diaphragm filter	XMGZ160-1250	1	
2	Compulsory mixer	φ1500	1	
3	Granulation machine	KHL-600	1	
4	Dryer	GZQ15X7.5 3.7x2kw	1	
5	Drying furnace burner	WM-G20	1	
6	Fertilizer extruder	DZJ-15DZJ-22DZJ-30DZJ-45	1	
7	Fertilizer elevator	CKTS13-1000	1	
8	Press filter	B1000	1	
9	Biogas refining system	--	1	
10	Dust free sorting machine	--	1	
11	Wood and stone plastic modification machine	--	2	
12	Wood and stone plastic hot-melt molding unit	SJ-400RDF	1	
13	Wood crusher 1	DTS5840	1	



No.	Equipments Name	Equipments Specifications	Quantity	Notes
14	Wood crusher 2	TS5525	1	
15	Heat conducting oil boiler	--	1	Electric heating
IV	Odor control system			
1	Negative pressure ventilation system (including fan)		4	
2	Biological deodorant tower		4	
3	Deodorant duct	400*500*160	1	
V	Liquid fertilizer production system			
1	Acid compound fermentation tank	D2.8-H3.3	1	
2	Flocculation tank	D2.5-H2.8	1	
3	Super fine emulsion pump	W2L2-130	1	
4	Complexation tank	D1.2-H1.5	1	
5	Compound pot	D2.5-H2.8	1	
6	Liquid fertilizer storage system	8000m <sup>3</sup>	1	
六	Boiler Room			
1	biogas boiler	WNS2-1.0-Y(Q)	1	
2	water softening system		1	

### 7, Matching analysis of waste treatment quantity

The project started in May 2015, finished in May 2016, and started trial operation. It is expected to have environmental protection acceptance in September. The service scope mainly covers domestic waste of Changzhencheng, Beishan Xiang, Wangdun Xiang, Sanchagang Town, and the sludge of Duchang county wastewater treatment plant, etc. The designed treatment capacity of the plant is 380t/d, including 300t/d of domestic waste. In the trial operation period, the waste accepted by the plant is 120t/d, and there is 180 t/d of capacity lefted, the waste mainly are the all domestic waste of the county urban area, and part domestic waste of Wangdun Xiang, BeishanXiang. After the completion of the project, the long term average daily waste transport volume of the 3 villages and towns will be 36.1 t/d, which is 20% of that marginal capacity. Population of Sanchangang is roughly equal to that of Dashu Xiang, the predicted waste amount is 6% of the marginal capacity. Therefore, the treatment scale of the plant can meet the project needs. And the plant has agreed to

accept the waste that the project collected from Bei Shan Xiang, Wang Dun Xiang and DashuXiang(Annex 8).

## 8, Operation

The plant obtained the EIA approval in 2014, and started construction in 2015, currently is in the trial operation stage, and the environmental protection acceptance is undergoing.

The plant use the "Combined anaerobic fermentation process of municipal organic waste ". After the integrated disposal, the large disruptors (sand, stone, ceramic etc.) is sorted out to brick plant; Wooden products, cloth, plastic bags, scrap metal, waste glass, etc. will be recycled and sold for comprehensive utilization; The treated biogas slurry, slag will be used for afforestation or forest nursery; The rest unusable waste will be shipped to Jiujiang 2<sup>nd</sup> municipal waste landfill plant for disposal, which is 1262.9t/a .

In conclusion, according to the due diligence on the Duchang County waste comprehensive treatment plant, the plant's treatment capacity, processing technology can meet the project requirements, and the plant is in good operation. The plant can comprehensive treat and utilize the recyclable and and fermentable waste of Duchang sub project. The non-usable waste should be transported from this plant to the Jiujiang 2nd domestic waste treatment plant for disposal. EIA needs to do the due diligence investigation of Jiujiang 2nd domestic waste treatment plant.

### 5.4.1.3 Jiujiang 2nd domestic waste treatment plant

#### 1, Location

Located in Chenjialong, Shahe Town, Jiujiang City.

#### 2, Construction and treatment scale

The plant started construction in May 2010, completed and started operation in Jan 2011, with the designed capacity of 13.5 million m<sup>3</sup>. The present finished capacity is 1.2451 million m<sup>3</sup>, with daily treatment capacity of 922.7t/d. The plant can dispose the unusable waste from the Duchang county domestic wastecomprehensive treatment plant. Currently, the plant is planning to start the 2<sup>nd</sup> phase project in 2016, and put into use in 2017, with daily treatment capacity of 1000t/d.

#### 3, EIA and environmental protection acceptance

The Jiujiang City Environment Protection Bureau approved the EIA of the project in Sep 2008, the approval document number is 九环督字[2008]50. In 2009, the EPB approved the EIA supplementary report due to the plan adjustments (approval document number 九环督字[2009]144).The first phase of the project has been approved by environmental

protection acceptance in Mar 2016 (Annex 6).

#### 4, Service scope

The service scope mainly covers 14 counties(city, district, mountain) of Jiujiang city, which are Xunyang district, Lushan District, Developing Zone, Bali Lake New Area, Lushan Scenic Area, Jiujiang County, Xingzi County, De'an County, Gongqingcheng City, Hukou County, Ruichang county, Xiushui County, Wuning County and Pengze County.

#### 5, Treatment process

The plant uses the layered paving, round trip rolling, unit operation, and daily coverage process.

#### 6, Main equipments

The current equipments configuration can meet the requirements of the daily soil coverage operation. The Equipment capacity can meet the waste treatment requirement of the project.

Landfill equipments are in table below

**Table 5-37 Main equipments Jing'an county domestic waste landfill**

No.	Name	Specifications	Quantity
1	Crawler dozer	165HP	3
2	Excavator	1m <sup>3</sup>	3
3	Dump truck	5t	2
4	Loaders	1.0 m <sup>3</sup>	3
5	Chemical sprinkling vehicle	5t	1

#### 7, Matching analysis of waste treatment quantity

After the completion of the project, the domestic waste collected by the project will be transported to the Duchang county domestic wastecomprehensive treatment plant for treatment, where the waste will be treated by the "Combined anaerobic fermentation process of municipal organic waste ", after sorting , the waste will be comprehensive treated. The unusable waste like unfermentable waste or rocks will be transported to Jiujiang City 2nd domestic waste treatment plant for treatment. The amount of this part of waste is about 14.5t/d, which accounts for the 1.6% of the 1<sup>st</sup> pahse capacity of Jiujiang City 2nd domestic waste treatment plant. The 2<sup>nd</sup> phase project of Jiujiang City 2nd domestic waste treatment plant is planning to be finished in 2017, with the daily treatment scale of 1000t/d. Therefore, this treatment plant has the capacity of treat the unusable waste from the Duchang county domestic wastecomprehensive treatment plant.

In conclusion, according to the Due diligence on Jiujiang City 2nd domestic waste

treatment plant, the plant is in good operation, the finished phase I project has passed the environmental protection acceptance, it has the capacity to dispose the unusable waste of the project.

#### 5.4.2 Yugan county

##### 5.4.2.1 Yugan county wastewater treatment plants

The wastewater Yugan county sub project collected will be sent to Yugan county wastewater treatment plants. The due diligence of the plant is as follows.

###### 1, Location

Located in the east side of Changwan Road, adjacent to Huhui River , Xiaomaoxi, Yujia, Yuting Town, Yugan county.

###### 2, Service scope

The service scope covers the urban area of Yugan county, with the service area of 20km<sup>2</sup>.

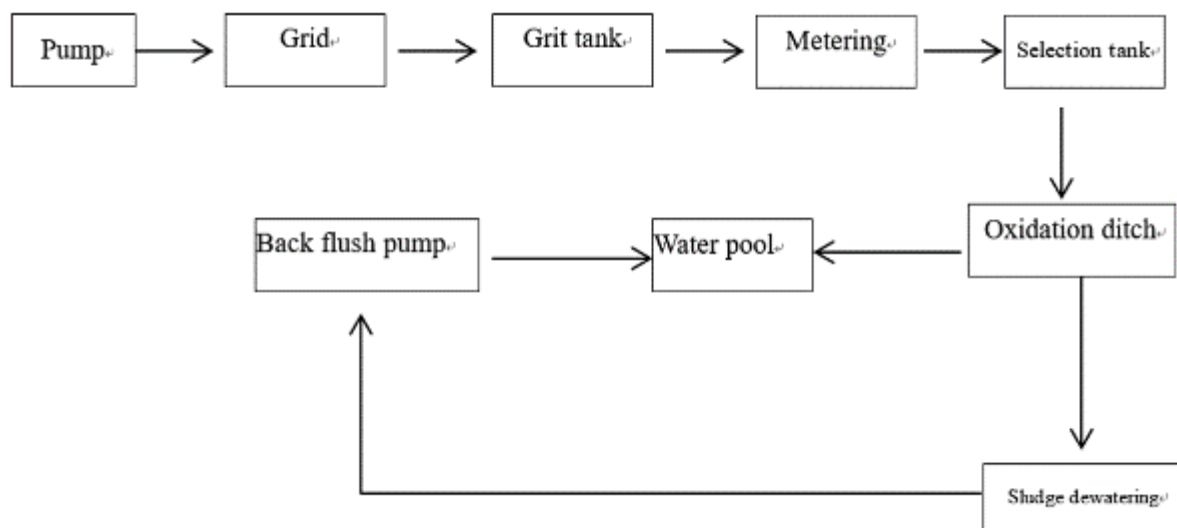
###### 3, Design scale and operation

The total design scale of the wastewater treatment plant is 40 thousand t/d, the EIA (40 thousand t/d) has been approved (赣环督字[2008]255号), the 1<sup>st</sup> phase project of 20 thousand t/d started in in 2008 and completed in 2009, has passed the environmental protection acceptance (赣环评函[2015]17号). Related documents see Annex10, 11.

The wastewater treatment plant has been put into operation, and in good operation. Presently, the actual water inflow is 15 thousand m<sup>3</sup>/d. The water quality of the effluent can meet the requirements of Grade 1B standard of Discharge standard of pollutants for municipal wastewater treatment plant (GB18918-2002). And it is planning to increase the capacity up to 40 thousand m<sup>3</sup>/d in 2020. Sludge annual yield is 1100t/a, the water content is 78%, meet the "urban sewage treatment plant pollutant discharge standard" (GB18918-2002) that the sludge water content should be less than 80% after dewatered. The sewage treatment plant will transport the sludge to the specified places designated by the county sanitation using closed truck for landscaping.

###### 4, Treatment process

The wastewater plant uses modified oxidation ditch process, with Rotating disc aerator, and UV disinfection for effluent. The water will discharge into Huhui River after reaching the standard. The specific process flow chart is as Figure 5-9.



**Figure 5-9 Wastewater treatment plants process flow chart**

### 5, Matching analysis of water quantity

Sub project of Yugan County proposes to set main pipe for wastewater interception along the shore Pipa Lake, to connect the current direct discharge outlet to the municipal pipeline system. After the completion of the pipeline reconstruction project, Project will complete in 2023, the pipeline collection will be 1600 m<sup>3</sup>/d, and 1900 m<sup>3</sup>/d in 2030. Presently, Yugan county wastewater treatment plant has the treatment capacity of 20000 m<sup>3</sup>/d, and plans to reach 40000m<sup>3</sup>/d in 2020. The actual water inflow now is 15000 m<sup>3</sup>/d. After the implementation of the project, the wastewater treatment plant can still meet the demands.

### 6, Impacts of influent water quality on wastewater treatment plants

Yugan county pipeline collects the domestic wastewater in Pipa Lake basin, not involving any industrial wastewater, the influent water quality can meet the requirement of domestic wastewater treatment plant in Yugan County. Therefore, the impact of the project wastewater on the influent water quality of the wastewater treatment plant is not much.

### 7, Effluent water quality

Yugan county wastewater treatment plant uses the process of modified oxidation ditch with the function of biological removal of nitrogen and phosphorus.

Presently, the process is running well, and the effluent quality meets the Grad 1B standard of Discharge standard of pollutants for municipal wastewater treatmentplant (GB18918-2002) .

The 2015 annual influent and effluent water quality of the plant is shown in the the table below.

**Table 5-38 Water quality of Yugan county wastewater treatment plant influent and**

**effluent (mg/L)**

Project	BOD <sub>5</sub>	COD	SS	NH <sub>3</sub> -N	TN	TP
Influent Water quality	27.36	69.00	49.49	14.62	18.05	1.21
Effluentwater quality	6.04	22.86	16.01	5.55	8.52	0.45
GB18918—2002 Grade 1 B standard	20	60	20	8(15)	20	1

Note: numbers outside bracket is the control standards for Water temperature >12°C, numbers inside bracket is the control standards for Water temperature ≤12°C

In conclusion, according to the Due diligence on Yugan county wastewater treatment plant, the plant's treatment capacity, processing technology can meet the project requirements, and the plant is in good operation. It can effectively treat the wastewater collected by Yugan county project pipeline.

#### 5.4.2.2 Brife introduction of Yugan county domestic waste landfill

The waste of Yugan county is proposed to transported to Yugan county domestic waste landfill. The due diligence of the lanfill is as follows..

##### 1, Location

Located in in Tangwu, Huangjinbu Town, Yugan county. about 30km to the county, and 3200m to the state Road 206.

##### 2, Construction

The landfill construction started in 2013, and completed in 2014, it has got the EIA approval (饶环督字[2014]51 号 Annex 12)so far, and expected to be completed in the second half of 2016 for the completion of acceptance.

The landfill has the total capacity of 950 thousand m<sup>3</sup>, designed average processing size of 237t/d within the service life, actual processing size of 163t/d, and total amount of waste disposal of 856 thousand tons.

##### 3, Service scope

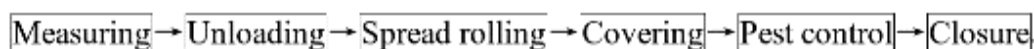
The service scope covers the domestic waste of urban area of Yugan county

##### 4, Treatment process

The landfill uses the layered paving, round trip rolling, unit operation, and daily coverage process. After weighed by loadometer, the domestic waste from the county will be entering the landfill operation unit to unload through the operating platform and temporary channels. Then the landfill machinery will do the layered paving, round trip rolling, coverage process.Process flow chart of landfill site is shown below.

The Leachate treatment station process is regulating tank pretreatment+MBR(membrane

bioreactor)+ RO(reverse osmosis).Currently it has been built at a scale of 100 m3/d, the actual water inflow is 70 m3/d.



**Figure 5-10 Landfill Process Flow Chart**

5, Equipments Capacity

The current equipments configuration can meet the requirements of the daily soil coverage operation. Detail can be seen in Table below.

**Table 5-39 Main equipments of Yugan county domestic waste landfill**

No.	Name	Specifications	Quantity
1	Crawler dozer	165HP	2
2	Excavator	0.8m <sup>3</sup>	1
3	Dump truck	4.5t	2
5	Front loading machinery	1.0 m <sup>3</sup>	1
6	Chemical sprinkling vehicle	5t	1

6, Matching analysis of waste and leachate treatment quantity

Yugan County sub project mainly deal with disordered discharge of the domestic waste along the Pipa Lake. After the completion, the waste transfer amount will be 73.3t/d. Yugan County landfill site services scope mainly covers the urban area of Yugan County, now it includes the Pipa Lake area as well. Presently, the landfill treatment scale is 164t/d, with a service life of 10.5 years, designed treatment scale of 237t/d within the service life, and total amount of waste treatment capacity of 856 thousand T. The construction of the project will not add much load to the landfill, the landfill can treat the waste collected and transportd by the project. The leachate from the waste compression vehicles will be treated by the landfill leachate treatment station. Presently, the leachate treatment station has been built at a scale of 100 m3/d, and the actual water inflow is 70 m3/d. The leachate of this project is 0.73 t/d, so the treatment station has the ability to deal with this project.

In conclusion, according to the Due diligence on Yugan county domestic waste landfill plant, the plant’s treatment capacity, processing technology and treatment amount can meet the project requirements, and the plant is in good operation. It can effectively treat the waste of Yugan county sub project.

5.4.3 Fengxin county

Fengxin county sub project wastewater pipeline collection scope covers south county

area and East county area. The wastewater will be transported to Fengxin county wastewater treatment plant for treatment. The due diligence on the Fengxin county wastewater treatment plant is as follows.

#### 1, Location

Located in East side of Zhengjiazhou Villiage, North Fengxin county.

#### 2, Construction and treatment scale

The plant was built in 2009 with the scale of 10 thousand tons / day, (Phase I, covers an area of 27Mu), and expanded to 20 thousand tons / day in 2014 (Phase II, covers an area of 9 acres), in long term, it can be extended to 30 thousand tons / day.

#### 3, EIA and environmental protection acceptance

The original Jiangxi Provincial Environmental Protection Bureau approved the EIA (15 thousand m<sup>3</sup>/d) of Fengxin county municipal wastewater treatment plant in Sep 15, 2008, the approval document number is 赣环督字[2008]426 号(Annex 10). Jiangxi Province Environmental Protection Agency approved the EIA (10 thousand m<sup>3</sup>/d) of the first phase project in Nov 24, 2010, the approval document number is 赣环评字[2010]642 号(Annex 14). Yichun City environment protection bureau approved the EIA (expansion of 10 thousand m<sup>3</sup>/d) of the second phase project in Dec 30, 2014, the approval document number is 赣环督字[2014]385 号(Annex 15). Yichun City environment protection bureau approved the environmental protection acceptance (expansion of 10 thousand m<sup>3</sup>/d) of the second phase project in May 26, 2016, the approval document number is 赣环评字[2016]35 号(Annex 16).

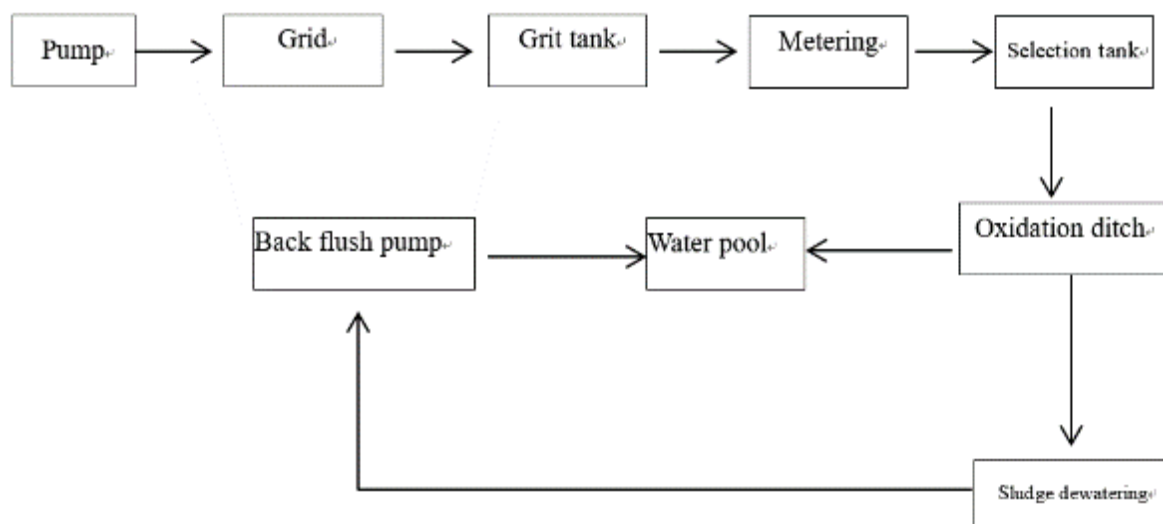
#### 4, Service scope

Service scope covers south county area and north county area.

#### 5, Treatment process

The wastewater plant uses modified oxidation ditch process, with UV disinfection for effluent. The water will discharge into South Liao River after reaching the standard. The process flow chart is as Figure 5-11.





**Figure 5-11 Wastewater treatment plant process flow chart**

### 6, Operation

According to the information provided by the wastewater treatment plant, Fengxin county wastewater treatment plant is running well, daily average water treatment amount of 7500t/d. It's sludge production is 8t/d with water content of 78.08%, which is shipped to Fengxin county sanitation institute by the enclosed vehicles for landscaping use. According to the Annual Report of Jan–Dec 2015 (Annex 17), provided by the Fengxin branch company of Jiangxi Hongcheng water industry environmental protection Co., Ltd.. The annual average value of the actual water quality of the Fengxin county wastewater treatment plant is listed in the table below.

**Table 5-40 Fengxin county municple wastewater treatment plants Actual influent and effluent water quality(mg/L)**

Type	Ph	COD	BOD <sub>5</sub>	SS	TN	NH <sub>3</sub> -N	TP
Actual influent Water quality	7.70	157.73	68.87	73.67	25.59	19.18	2.29
Actual effluentwater quality	7.04	18.24	8.38	8.51	5.18	1.46	0.66
Discharge standard	6~9	≤60	≤20	≤20	≤20	≤8(15)	≤1.0

Note: numbers outside bracket is the control standards for Water temperature >12°C, numbers inside bracket is the control standards for Water temperature ≤12°C

As known from the avove table,, wastewater treatment plants effluent with compliance of the Discharge standard of pollutants for municipal wastewater treatmentplant (GB18918-2002) grade 1 B standard .

### 7, Matching analysis of wastewater treatment quantity

Fengxin County sub project of drainage pipeline serves the North area and the south area of Fengxin County, which is consistent with the wastewater treatment plant service scope. The project will complete in 2023, and the, The total amount of wastewater transported to the treatment plant will be 15.7 thousand m<sup>3</sup>/d, accounts for 78.5% of the existing treatment plant scale (20 thousand m<sup>3</sup>/d); The long term scale is the same with the short term scale, which is 20 thousand m<sup>3</sup>/d. Therefore, the existing scale of the wastewater treatment plant can treat the wastewater collected in the short term and long-term, while it is suggested that the treatment plant to achieve an early realization of the long term scale of 30 thousand m<sup>3</sup>/d.

In conclusion, according to the due diligence on the Fengxin county wastewater treatment plant, the plant's treatment capacity, processing technology can meet the project requirements, and the plant is in good operation. It can effectively treat the wastewater collected by the pipeline of Fengxin county sub project

#### 5.4.4 Jing'an county

##### 5.4.4.1 Jing'an county wastewater treatment plant

Jingan County sub project of drainage pipeline renovation serves the new North area and the old south area of Jingan County. The domestic wastewater the project collected will eventually enter the county wastewater treatment plant, which is consistent with the wastewater treatment plant service scope. The due diligence on the County wastewater treatment plant plant is as follows.

##### 1, Location

Located in the County Horticulture Field, downstream area of South ZhichengSection, North Liao River, about 3km to the county.

##### 2, Construction

The plant started construction in Dec 2008, completed and put into operation in Dec 2009. It was transferred to Jiangxi Hongcheng water industry environmental protection Co., Ltd., Nanchang water Group for operation on June 1, 2010.

##### 3, Plant scale

Liaohe river is to the east of the plant. The first phase covers an area of 1.71ha, The east side of the plant is reserved for long-term development. The present built scale is 10000m<sup>3</sup>/d, the long term total design scale is 20 thousand m<sup>3</sup>/d. The current influent is 8 000 m<sup>3</sup>/d.

##### 4, EIA and environmental protection Acceptance

The original Jiangxi Provincial Environmental Protection Bureau approved the EIA

(Phase I) of Jing'an county wastewater treatment plant in Sep 2008, the approval document number is 赣环督字[2008]418 号(Annex 18).This wastewater treatment plant has passed environmental acceptance.

The Jiangxi Provincial Environmental Protection Agency approved the environmental protection acceptance of the first phase (phase I) in Aug 2011, the approval document number is 赣环评函[2011]111 号 (Annex 19).

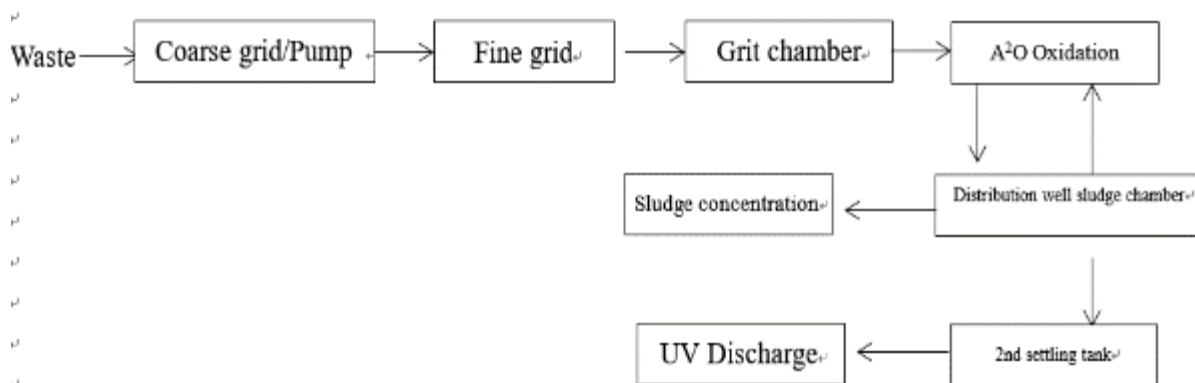
The Yichun City Environment Protection Bureau approved the environmental protection acceptance of the second phase (phase II) in Oct 2015, the approval document number is 宜环评验字[2015]113 号 (Annex 20).

### 5, Service scope

The service scope covers North county area, East county Industrial Park and south county area. An industrial Park wastewater treatment plants was built for south county Industrial Park in 2013. The county wastewater treatment plants does not cover south county industrial Park .

### 6, Treatment process

The plant uses the process of modified oxidation ditch with the function of biological removal of nitrogen and phosphorus. The process flow is as follows.



**Figure 5-12 Process flow chart of Jing'an county wastewater treatment plant**

In the design period, the problem of the interception type drainage system is considered. In the rainy season, after pretreatment of coarse grid, fine grid and grit chamber, the over flow of rain sewage water can overpass to the outlet. through sand pool.

### 7, Operation

According to the information provided by the wastewater treatment plant, Jing'an county wastewater treatment plant is running well, average daily water treatment quantity is about 8000t. The power consumption per ton of water is about 0.28KWH, Sludge production is about 70t/ month, which is disposed by the county sanitation department, mainly used for

landscaping.



**Figure 5-13 Jing'an county domestic wastewater treatment plant**

According to the "water quality monitoring survey report of Jiangxi Jing'an county s wastewater treatment plant " (monitoring date January 12, 2015) of Jingan County Environmental Monitoring Station, the water quality of the effluent can meet the requirements of Grade 1B standard of Discharge standard of pollutants for municipal wastewater treatment plant GB18918-2002) (Table 5-41), and discharge into the South tributary of North Liao River.

**Table 5-41 Jing'an county wastewater treatment plants influent and effluent quality (mg/L; colourity: degree; ph: Dimensionless )**

No.	Items	Design influent	Test results		GB18918—2002 Grade 1 B discharge standard	Discharge Water quality up to the standard
			Inlet	Outlet		
1	Colourity	/	25	15	30	up to the standard
2	Ph	/	6.98	7.05	6~9	up to the standard
3	SS	/	38	12	20	up to the standard
4	NH3-N(in N)	25	10.1	3.49	8	up to the standard
5	COD	220	80.4	14.1	60	up to the standard
6	BOD <sub>5</sub>	120	40.6	5.9	20	up to the standard
7	TN	35	18.1	12.1	20	up to the standard
8	TP	3	1.06	0.16	1	up to the standard

## 8, Matching analysis of waste treatment quantity

Jingan County sub network reconstruction project will complete in 2023, the county wastewater collection capacity will be 9.8 thousand m<sup>3</sup>/d. That is the the design scale, which will meet the demand of the project in the near future. The project's long term collection of waste water will be 16.6 thousand m<sup>3</sup>/d. It is suggested that the treatment plant to achieve the long term scale of 20 thousand m<sup>3</sup>/d as soon as possible.

In conclusion, according to the due diligence on the Jing'an county wastewater treatment plant, the plant's treatment capacity, processing technology can meet the project requirements, and the plant is in good operation. It can effectively treat the wastewater collected by the pipeline of Jing'an county sub project.

#### 5.4.4.2 Jing'an county domestic waste landfill

The domestic waste collected by Jing'an county sub project will eventually be transported to Jing'an county domestic waste landfill for treatment. The due diligence on the Jing'an county domestic waste landfill is as follows.

##### 1, Location

Located in Lijiawa, Huanglong Villiage, XiangtianXiang, with land occupation of 123Mu, straight distance of 7.5km to the County, driving distance of 12 km to the waste transport station. The landfill location. The schematic diagram is shown below.



Figure 5-14 Jing'an county domestic waste landfill location

## 2, Construction

The landfill site started construction in October 2012, and started trial operation in September 2014. The leachate treatment station started commissioning in July 2015. The total investment of the project is about 46 million and 220 thousand yuan.

## 3, EIA and environmental protection Acceptance

The Yichun City Environment Protection Bureau approved the EIA (Phase I) of Jing'an county municipal waste sanitation landfill in Jul 2009, the approval document number is 宜环督字[2009]128号 (Annex 21). This landfill is doing the environmental acceptance now.

## 3, Landfill scale

The landfill capacity is 730 thousand m<sup>3</sup>, including 2 landfill sites,

The No.1 landfill and No.2 landfill has the capacity of 317.5 thousand m<sup>3</sup> and 412.5 thousand m<sup>3</sup> respectively. The designed scope of the service is Jing'an County, with the service life of 20.2 years.

The landfill site is mainly built with main projects like waste dam, seepage control system, rainwater drainage system, leachate drainage system, regulation and treatment system, landfill gas export and processing systems, roads and the corresponding supporting facilities. The impervious system uses high density polyethylene HDPE geotechnical membrane as the main anti seepage layer, HDPE film thickness is 2.00mm.

#### 4, Service scope

The service scope covers the domestic waste of Jing'an county.

#### 5, Treatment process

Jing'an County landfill plant uses the improved anaerobic sanitary landfill process, using the unit layer operation of daily soil covering. And the leachate treatment uses anaerobic +FEO reactor +A/O Biofilm Oxidation Pond + coagulation air flotation + disinfection.

#### 6, Main equipments

The current equipments configuration can meet the requirements of the daily soil coverage operation. The Equipment capacity can meet the waste treatment requirement of the project. The landfill equipments are listed in the table below.

**Table 5-42 Main equipments of Jing'an county domestic waste landfill**

No.	Name	Specifications	Quantity
1	Crawler dozer	165HP	2
2	Excavator	0.8m <sup>3</sup>	1
3	Dump truck	4.5t	2
4	Mobile fence in Operating area	M	400
5	Loaders	1.0 m <sup>3</sup>	1
6	Chemical sprinkling vehicle	5t	1

#### 7, Matching analysis of waste quantity

The service scope of Jing'an county domestic waste landfill covers the domestic waste of Jing'an county.

The project's collection scope is East county new area, Leigongjian industrial park ( East county Industrial area ), south county old urban area and Gongmaoxincheng( South county Industrial area ), which is within the waste landfill's service scope.

The waste collection is 37.7 t/d. The landfill capacity is 730 thousand m<sup>3</sup>, including 2 landfill sites,

The No.1 landfill and No.2 landfill has the capacity of 317.5 thousand m<sup>3</sup> and 412.5 thousand m<sup>3</sup> respectively. The designed scope of the service is Jing'an County, with the service life of 20.2 years.

The landfill capacity can meet the demands of the project.

In conclusion, according to the due diligence on the Jing'an county waste landfill plant, the plant's treatment capacity, processing technology can meet the project requirements, and the plant is in good operation. It can effectively treat the domestic waste collected from Jing'an county.

#### 5.4.5 Jishui county

Jishui county sub project drainage pipe network systems service scope covers south county area and old urban area of Jishui county, the municipal wastewater project collected will eventually enter the Jishui county wastewater treatment plant. The due diligence on the county wastewater treatment plant is as follows.

##### 1, Location

Located in the 60m north side of Weinijiazhou, Zhushan Villiage, Wenfeng Town, Jishui county.

##### 2, Construction and treatment scale

Jishui County build a wastewater treatment plant in 2009, It's total design treatment scale is 40 thousand m<sup>3</sup>/d in 2020, in 2008 it has completed the preliminary design according to the size of 20 thousand m<sup>3</sup>/d. and in Dec 2008, it started the 1<sup>st</sup> phase (Step 1) (10000m<sup>3</sup>/d) of the project, completed and put into operation in April 2010. The first phase (Step 2) (10 thousand m<sup>3</sup>/d) project is under construction, and plans to be put into operation this year, to reach a total scale of 20000 m<sup>3</sup>/d. The land acquisition has been considered based on the scale of 40 thousand m<sup>3</sup>/d (total land area 2.43ha).

##### 3, EIA and environmental protection acceptance

Jiangxi Province Environment Protection Bureau approved the EIA (20000m<sup>3</sup>/d) of Jishui county wastewater treatment plant in Aug 12, 2008, the approval document number is 赣环督字[2008]343号 (Annex 22). This landfill is doing the environmental acceptance now.

Jiangxi Provincial Environmental Protection Agency approved the environmental protection acceptance of the first phase (phase I) in Oct 8, 2010, the approval document



number is 赣环评字[2010]573 号(Annex 23).

4, Service scope

The service scope covers south county area, old town area, and East county area.

5, Treatment process

The plant uses Carrousel Modified oxidation ditch process , and the process flow chart is in Figure below.

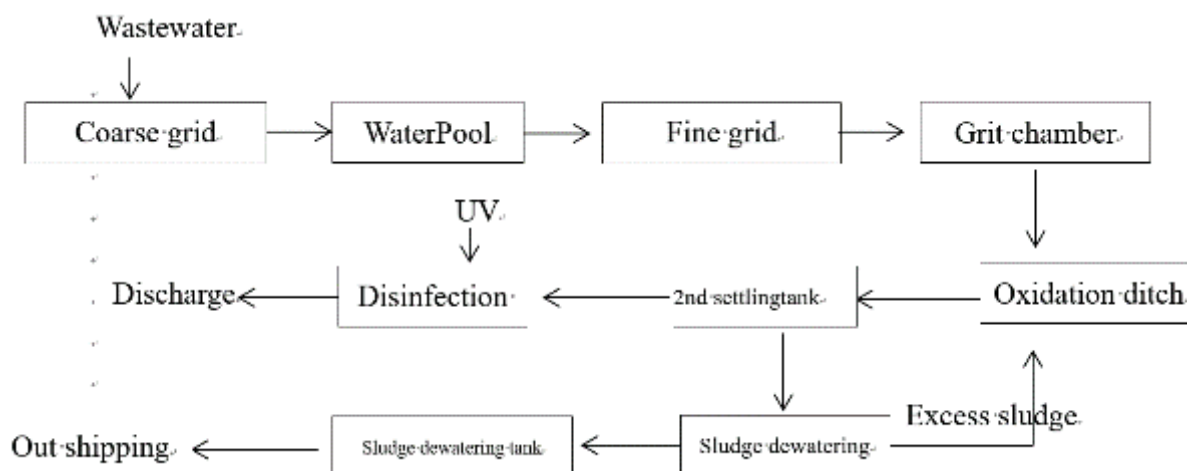


Figure 5-15 Wastewater treatment plants process flow chart

7, Operation

According to the information provided by the Jishui county wastewater treatment plant, the plant is running well, average daily water treatment quantity is about 8500t, the sludge amount is 1520t/a, with the water content of 78.3%, which is in compliance with the Discharge standard of pollutants for municipal wastewater treatmentplant (GB18918-2002), the water content of sludge should be less than 80% after dewatering. The sludge doesn't contain heavy meatal, and will be transported to designated plac for landscaping use by the wastewater treatment plant by closed truck.

According to the monthly report of Laboratory data Jan-Apr 2016 (Annex 24),Jishui wastewater treatment plant, Jiangxi Hongcheng water industry environmental protection Co., Ltd. , the influent and effluent water quality of Jishui county wastewater treatment plants Actual are listed in the table below.

Table 5-43 Jishui county wastewater treatment plants Actual influent and effluent water quality (mg/L)

Type	Ph	COD	BOD <sub>5</sub>	SS	TN	NH <sub>3</sub> -N	TP
Actual influent Water quality	7.1	120.58	60.63	107.75	28.63	21.48	2.22

Actual Water quality standard	6.9~7	19.98	8.65	7.77	10.93	1.60	0.72
Discharge standard	6~7	≤60	≤20	≤20	≤20	≤8(15)	≤1.0

As known from the above table, Jishui county wastewater treatment plants effluent with compliance of the Discharge standard of pollutants for municipal wastewater treatment plant (GB18918-2002) grade 1 B standard .

#### 8, Matching analysis of water quantity

The collection scope of Jishui sub project sewage pipeline covers the the south area and the old urban area.

In 2023, when the project completes, the total amount of wastewater transported to the wastewater treatment plant is 13 thousand m<sup>3</sup>/d, which 32.5% of the long-term (2020) treatment scale (40 thousand m<sup>3</sup>/d) of the wastewater treatment plant.

The project will increase the collection of 7 thousand m<sup>3</sup>/d from South county and the old urban area, which is 17.5% of the wastewater treatment plant scale. In long term the project will account for 50% of the wastewater treatment plant's scale.

Therefore, Jishui county wastewater treatment plant is capable of accepting the wastewater of the project.

In conclusion, according to the due diligence on the Jishui county wastewater treatment plant, the plant's treatment capacity, processing technology can meet the project requirements, and the plant is in good operation. It can effectively treat the wastewater collected by the pipeline of. Jishui county sub project.

#### 5.4.6 Shangli county

The domestic waste collected by Shangli County sub project will be transported to the Pingxiang city domestic waste incineration Power Plant , the wastewater of Waste transfer station will be collected and transported to The leachate treatment station of the power plant by the suction trucks. The due diligence on the Pingxiang city domestic waste incineration Power Plant is as follows.

##### 1, Location

Located in Yanzhitang, Qimu Villiage, Xiangdong Industrial Park, Pingxiang city. The geographical coordinates is east longitude of 113°41' 28.31", and north latitude of 27°36' 36.18". North to G320 State Road, about 2.5km, South to the provincial road S232 about 2.5km, East 9km to Pingxiang City Mashan waste landfill.

##### 2, Construction

The power plant started construction in October 2015. Is expected to be completed by

the beginning of the year 2017 and start trial operation. This project is expected to start in 2018, and complete by the end of December 2022, when the plant would've been running, and will meet the demands of the project. The production time of the project is described in Annex 25.

### 3, Treatment scale

The treatment scale of the plant is daily treatment of domestic waste 700t/d, and annual treatment scale not less than 233 thousand t/a. Construction of 2 waste incineration line of 350t/d, equipped with 1 set of 12MW condensing steam turbine generator; The 2<sup>nd</sup> phase project reserves 1 domestic waste incineration line of 350t/d and 1 set of 1 6MW condensing steam turbine generator sets. The total treatment scale can be up to 1050t/d.

### 4, Service scope

The service scope covers Pingxiang city Xiangdong District, Anyuan District, Luxi County, and Shangli County, the scope of the waste collection and transportation has been considered.

### 5, Treatment process and feasibility

The solid waste incineration process includes waste feeding, waste incineration, waste heat recovery, Flue gas purification, leachate treatment, and Oil supply etc.. The domestic waste can meet the the Standard for Pollution Control on domestic waste incineration (GB/T18485-2014) after incineration. The plant's EIA has been approved (赣环评字【2015】122号). The process can meet the environmental protection requirements.

### 6, EIA approvals

Jiangxi Province Environmental Protection Agency approved the EIA of Pingxiang city domestic waste, dry sludge incineration power plant project in Sep 9, 2015, the approval document number is 赣环评字[2015]122号(Annex 23).

### 7, Matching analysis of waste treatment quantity

The service scope of Pingxiang city domestic waste incineration Power Plant covers the domestic waste from Pingxiang city Xiangdong District, Anyuan District, Luxi County, and Shangli County. The project's collection scope is within the service scope of Pingxiang city domestic waste incineration Power Plant. Pingxiang City, Xiangdong district has population about 410 thousand, Anyuan District 430 thousand, Luxi County 300 thousand, Shangli County 520 thousand, Shangli county's population accounts for 31.3% of the service population. The 6 Towns(Xiang) of the project involve a population of 233 thousand, accounting for 44.8% of the Shangli county's population, and 14% of the current service

population of the incineration power plant.

The designed daily transfer amount of the 6 transfer station of the project is 138.7t/d. The daily processing scale of Pingxiang municipal solid waste incineration power plant phase I is 700t/d, the long term scale is 1050 t/d, The project's waste transfer amount accounts for 19.8% of the first phase of the incineration plant scale, and 13.2% of the long term scale. Therefore, the incineration plant can meet the demands of the project.

#### 8, Leachate treatment station

The designed treatment capacity of leachate treatment station in incineration plant is 250m<sup>3</sup>/d,(designed impact load scale 300m<sup>3</sup>/d), using the “pretreatment system + regulation pool + UBF anaerobic bioreaction system+ MBR (2 AOs+ ultrafiltration) + nanofiltration + reverse osmosis” process. The Pingxiang city incineration power plant's leachate and washing wastewater of waste dumping platform and waste vehicles enter the leachate treatment station for treatment. Above wastewater is a total of 173m<sup>3</sup>/d, the processing station still have 77 m<sup>3</sup>/d marginal treatment scale. The amount of wastewater of this project is 15.8m<sup>3</sup>/d, Therefore, the treatment scale of the leachate treatment station can accept the project wastewater.The project wastewatercan meet the table 2 standard in the Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB16889-2008).after treated by the treatment station.

#### 9, Control measures for fly ash, slag

Fly ash of municipal solid waste incineration project is mainly from fly ash collected by bag filter.in the flue gas treatment system. The fly ash produced by the project is about 21t/d. The waste incineration fly ash belongs to the Incineration disposal of hazardous waste (HW18) of "national hazardous waste list" (2008). The project is designed to treat the fly ash with the stabilization process of organic chelating agent in the plant, to make it conform to the requirements of the "Standard for Pollution Control on the Landfill Site of Municipal Solid Waste" (GB16889-2008), then safely disposed in plant's fly ash disposal site. The fly ash disposal site has an area of 28000 M<sup>2</sup> (about 42 acres), and the design capacity is 90 thousand m<sup>3</sup>. The furnace slag after the combustion is shipped out by transport vehicles for comprehensive utilization.The fly ash and slag treatment measures are reasonable and feasible.

In conclusion, according to the due diligence on the Pingxiang city domestic waste incineration Power Plant, the plant's treatment capacity, processing technology can meet the project requirements, and the plant is in good operation. It can effectively treat the domestic

waste collected by Shangli county sub project.

## 5.5 Cumulative impact assessment

According to IFC's "cumulative environmental impact Handbook", EIA team did an evaluation of the cumulative impact of the project. Cumulative effect refers to continuous, incremental and / or collaborative impacts caused by an action, program or activity, when superimposed together with other existing, planning and / or reasonably foreseeable future development activities.

### 5.5.1 Recognition and importance evaluation of cumulative impact factors

In the initial phase of the EIA, the contents which might be included in the environmental and social factors of cumulative impacts was discussed, such as pollutant emission reduction, water environmental quality, valuable ecological elements and so on.

In the construction period, construction waste water, construction noise, construction dust and other negative impacts are temporary, general impacts, The EIA team does not carry on the cumulative impact assessment on those impacts; During the operation period, the impacts are mainly positive impacts of sewage collection, waste collection and other measures on the improvement of water quality in Poyang Lake Basin. The adverse impacts were mainly the impact of the odor pollution and equipment noise of a some waste transfer station.

This project locates in urban and rural areas where the air quality is relatively good, without any constructed, constructing or planned key emission projects of air pollutants. The odor pollutants in this project will have little impact on the environment after the corresponding measures are taken. Therefore, the cumulative analysis of the impact on air pollution is of little importance. The acoustic environment in the project area is of good quality at present. As for this project, after taking measures such as utilizing equipment to insulate the sound and to alleviate the shock, there is not much noise of high decibels. Hence the cumulative analysis of noise is not of great importance, either. The subproject in Yugan County involves diversion works. It plans to draw water from Huhui River to Pipa Lake and realize the daily water change of Pipa Lake through drawing water from the south and discharging it to the north. According to the survey, there are no precious species of aquatic organisms in Huhui River and Pipa Lake. Therefore, the diversion works will have little negative impact on the water ecosystems of Huhui River and it will not generate large impact on Huhui River and Pipa Lake. It does not involve the cumulative impact on valuable ecological elements.

According to the IFC Cumulative environmental impact manual, combining with the characteristics of the project, the cumulative assessment of the report focused on the overlay analysis of the impacts of the projects of water pollutant emission reduction in Poyang Lake river basin on the water quality, including the completed, on-going and proposed projects. Consider of the availability of basic data, the cumulative environmental assessment of the report focused on the reduction of water pollutants, that is, analysis and evaluation of the impacts of COD, TN, TP.

#### 5.5.2 Related project assessment

For the protection of “a pure lake of water”, Jiangxi province has done a lot of effective work in environmental protection, just completed the implementation of the “12th Five-Year planning for environmental protection of Jiangxi Province” (2010-2015), COD, TN, TP and NH<sub>3</sub>-N reduction have reached or exceeded the planning index, of which, the water environment indicators COD, ammonia reductions were 7.92%, 10.47%, respectively compared to the “11th Five-Year plan”, exceeded the “12th Five-Year plan” indicators (expected COD, NH<sub>3</sub>-N emission reduction of 5.8%, 9.8%). To further strengthen the protection of water environment, Jiangxi province promulgated the overall goal of “Jiangxi water pollution prevention plan” in January 21, 2016. By 2020, the province's overall water environment quality should be steady and for the better; Drinking water safety protection level continues to improve; The aquatic ecological environment of the “5 rivers” basin and Poyang Lake is steadily improved. By 2030, the province's water environment quality remained stable; The aquatic ecosystem function continues to improve, the province's aquatic ecosystem achieve a virtuous cycle.

The project plans to put into operation in 2023, within the scope of “14th Five-Year planning for environmental protection of Jiangxi province” (2021-2025)

Right now, “13th Five-Year planning for environmental protection of Jiangxi Province” (2015-2020) and “14th Five-Year planning for environmental protection of Jiangxi province” (2021-2025) have not yet been promulgated, the EIA team use the 2012-2014 actual emission reductions in Jiangxi Province as temporary emission reductions targets of 2023-2025 for Poyang Lake River Basin.

**Table 5-44 Prediction of the Poyang Lake basin Pollutant reduction target, 2023-2025(t/a)**

Prediction Year	COD	TN	TP
2023	127945	9713	1248
2024	142797	8958	1437
2025	156807	9064	1527

Total	427549	27735	4212
-------	--------	-------	------

Note: 1, Data source: 2012-2014 environment Statistical annual report, Jiangxi Province Environmental Protection Agency.

### 5.5.3 Cumulative impact assessment

After completion, the emission reduction are listed in Tabel 5-45.

**Table 5-45 Water pollutants reduction of the project in 2023-2025 (t/a)**

Item	COD	TN	TP
Annual reduction (t/a)	2709.72	561.37	44.15
Reduction in 2023~2025 (t)	8129.16	1684.11	132.45

Proportion of project reduction over basin reduction during 2023-2025 are in Table 5-46.

**Table 5-46 Proportion of project reduction over basin reduction 2023-2025 (%)**

Type	COD	TN	TP
Proportion of basin emission reduction	1.90%	6.07%	3.14%

From the above table, after the project implementation, during the period of 2023-2025, COD, reduction of 8129.16t/a, TN reduction of 1684.11t/a, TP reduction of 132.45t/a, will be realized, which respectively account for 1.90%, 6.07%, and 3.14% of the total emission reduction targets, the project will play a certain role in emission reduction, and will make a lasting, indispensable and positive contribution.

### 5.5.4 Suggestions and measures for the cumulative impacts

1, Effectively promote the work process of each project specified by the Jiangxi Province water pollution prevention and control work plan and water pollution control program of each city, and gradually improve the Poyang Lake Basin water environmental quality.

2, Strictly implement the water pollutant emission reduction requirements, to ensure the the funds and programmes implementation of the project emission reduction, structural emission reduction, and management emission reduction measures, and to ensure the completion of the objectives of the water pollution prevention and control work scheme, and realize the Jiangxi Province Poyang Lake Basin water environmental quality improvement.

## 6 Environmental risk analysis and mitigation measures

### 6.1 Environmental risk identification

Based on the analysis on pollution effect of project engineering features, the main environmental risk identification results are:

#### 1. Domestic sewage management system improvement project

(1) Pipeline is buried underground, and in case of any improper anti-seepage measure at the pipe connection or pipe break, sewage may leak during sewage transmission in pipes;

(2) Collection range of sewage Pipeline in the project includes Leigongjian Industrial Park in Jing'an County, Chengnan Industrial Park in Jishui County and Furongshan Industrial Park in Duchang County, e.g. If a sudden accident happens in the industrial enterprise within the park, it may lead to industrial sewage accident discharge;

(3) Health and safety of maintenance personnel during pipe maintenance or repair.

#### 2. Solid waste collection and transfer system

(1) Sudden accidents such as power failure and equipment failure lead to that waste disposal facilities stop running and plenty of waste is accumulated;

(2) Percolate and washing waste water may leak during collection and transfer or transport vehicle may turn over during transport.

### 6.2 Analysis on impact of environmental risk accidents

#### 6.2.1 Domestic sewage management system enhancement project

##### 1. Pipe leakage

Pipe leaks and sewage seeps into underground, which not only pollutes the surrounding soil and healthy environment, but produces adverse effect on the quality of groundwater. Based on the running condition of rain sewage Pipeline, the probability of pipe break is not that big except for disrepair, aging, brutal construction and artificial destruction related to pipes.

##### 2. Industrial sewage accident discharge

If industrial equipment of an enterprise in the industrial park breaks down, its sewage may be discharged into the urban sewage pipe without disposal, and sewage accident discharge will cause abrupt change of influent quality and quantity in the wastewater treatment plant. If abnormal conditions occur, e.g. The impact load of influent sewage is too big, pH value exceeds the range of 6~9, and non-biodegradable organic poisons exceed the standard, it will cause decline of the biochemical microorganism activity in wastewater treatment plant, destruction of biological phase, sludge bulking, finally leading to



deterioration of effluent quality, exceeding the discharge standard requirement specified by the nation, and producing great adverse effect on water environment and ecosystem.

### 3. Health and safety of maintenance personnel

When sewage Pipeline is blocked or an accident happens in certain structure, it must be eliminated instantly; then the maintenance personnel will enter the sewage pipe, water-collecting well or sewage pool for operation, where high-concentration poisonous gases such as hydrogen sulfide, methane and carbon dioxide are easily produced and accumulated, so if no protective measures are adopted during maintenance, the maintenance personnel may breathe in poisonous gas and develop symptoms like dizziness and poor breath due to obstructed ventilation, that serious may result in death, or accident harming personal safety may occur if inflammable gas methane is produced in the pipe and explodes once contacting open fire.

## 6.2.2 Solid waste collection and transfer system project

### 1. Abnormal working condition

Quality problem or improper maintenance of treatment equipment and facilities in waste transfer station will lead to breakdown of equipment and facilities, or treatment facilities may stop running due to some irresistible external reasons such as power cut and sudden natural disaster, which causes that waste transported to the transfer station cannot be compressed and cleared timely, besides, municipal solid waste stacked in the collection and transfer station will give out odorous malodorous gas like ammonia and hydrogen sulfide. Under such accident conditions, its malodorous gas will influence the normal work of working personnel, and also impact the living environment of residential quarters around the plant boundary, thereby greatly affecting the physical and psychological health of residents nearby.

### 2. Sewage leakage

If leakage of percolate and washing waste water during collection and transfer is not timely disposed, it will pollute the groundwater environment, and stink produced by percolate and washing waste water will adversely impact the ambient air and social health environment.

## 6.3 Mitigation measures on risk accidents

### 6.3.1 Domestic sewage management system enhancement project

#### 1. Prevention and control measures on pipe leakage risk

(1) Pipes shall be designed based on the particular cases and features of the city

located, proper pipes shall be selected, besides, quality and service life of pipes shall be ensured. Foundation of pipe discharge engineering must meet the mechanical requirement designed, and that failing to meet the design requirement must be treated accordingly. Foundation shall be constructed in strict accordance with the width, thickness and strength required by the design drawing.

(2) Prior to laying pipes, complete related inspection work. On the one hand, carefully check pipes entering the construction site to avoid that pipes with crack, pinhole or leak are laid into the groove; on the other hand, carefully check whether center line and side line of pipe base, size and strength of well base meet relevant requirement by referring to the drawing; finally, check whether well position, well spacing, strength grade of concrete in various parts and impermeable mortar mixing at the interface reach the national standards.

(3) During installation of pipes, materials with specified mixing ratio shall be used to make cement mortar required by wipe belt. When installing the interface of 2 drain pipes, juncture will often bulge at the interface due to squeezing. In order to ensure unblocked water flow in drain pipes, bulged juncture at the interface of 2 pipes should be timely disposed for fear of reducing water flow section, influencing water velocity, and even causing sundries stacking and blocking of pipes.

(4) Groove should be backfilled after certain strength is formed between pipe base concrete and wipe belt mortar, besides, pipes can't be directly impacted by sand-gravel materials. No massive gravels, bricks and other hard matters are allowed in sand-gravel materials, both sides of pipes should be backfilled and tamped, that above pipe top should be backfilled and compacted in layers, so as to make the filling form a load-bearing entirety, thus exerting a role of diffusion and unloading force at vault to protect the safety of pipes.

(5) During the operation period of the project, the construction unit shall establish a set of complete Pipeline regulatory system, timely dredge Pipeline, replace damaged Pipeline, and avoid escaping, emitting and leaking of sewage to pollute surrounding water and groundwater.

In short, though pollutants such as sewage, noise and solid waste are produced during the construction process of this project, if relevant measures are adopted, it only slightly influences the surrounding air quality, water and acoustic environment, so this project construction is feasible.

## 2. Prevention and control measures on industrial sewage accident discharge risk

(1) Regularly conduct sampling and monitoring at the drainage outlet of industrial park.

(2) If any abnormal water quality phenomena happen, find reasons from the primary pollution sources of catchment system; related enterprises should take emergency measures to control the discharge of microorganism and poisonous substances.

### 3. Prevention and control measures on maintenance personnel health and safety risk

It is of great importance to take personal safety precautions for operating personnel to prevent personnel from being harmed by poisonous gas, and the most effective method to prevent poisoning is to take ventilation measures to thoroughly dissipate hazardous gases and make the working space filled with fresh air. If adequate ventilation can't be ensured, entering the dangerous space shall be avoided; if necessary, related personnel must wear effective protective equipment. Protective equipment includes gas mask, air supply mask, etc., and testing equipment includes gas detector and test paper.

## 6.3.2 Solid waste collection and transfer system project

### 1. Prevention measures on abnormal working condition risk

(1) Multi-set standby equipment shall be adopted for vulnerable equipment, besides, sufficient spare parts for maintenance and updating shall be ensured. The way of one application and one standby shall be at least adopted for electromechanical equipment in the treatment system;

(2) Select high-quality equipment. Products with good quality, low failure rate, Seminars design requirement, suitable for long-term running and convenient in maintenance and repair must be selected for various machines, electrical equipment, instruments and other equipment in the treatment facilities.

(3) During operation of equipment, operating personnel on duty must operate in strict accordance with rules and regulations of treatment facilities, conduct patrol inspection frequently, carry out maintenance and repair timely and reduce equipment failure rate;

(4) Electrical equipment shall be conducted based on the requirement of ground protection regulations, and installed with automatic tripping circuit; the operation of main equipment shall be monitored by computer data to give an alarm timely and record position of accident, character of accident and time of occurrence for the convenience of rush repair by organizers. Installation and protection of all electrical equipment must meet related safety regulation of electrical equipment;

(5) Take double circuit power supply to ensure the normal operation of power supply facilities and circuit;

(6) Reserve deodorant solution and place biosorption padding in the collection and transfer station; when there is no any production of electricity, temporarily spray deodorant

solution on stacked waste to deodorize temporarily, and absorb malodorous gas in air with biosorption padding, so as to reduce the concentration of accident malodorous gas.

## 2. Prevention measures on sewage leakage risk

(1) Physical strength of sealable plastic drum must reach certain requirement with excellent leakproofness;

(2) Regularly repair and maintain waste transport vehicles to ensure the normal running state of vehicles;

(3) In case of any leakage on waste transport vehicle, the leakage shall be blocked off, besides, warning mark shall be hung;

(4) The driver must take appointment with certificate, drive at the speed limit, and avoid fatigue driving.

## 3. Operation technical management measures of waste transfer station

(1) Establish the operation management and operating responsibility system for waste transfer station;

(2) Train the management and operation personnel, and establish technical assessment file; unqualified person should not be employed;

(3) Engage experienced professionals to take charge of the technical management work in the plant;

(4) Assign professionals for technical training;

(5) Enhance maintenance and management on equipment and facilities, prepare standby unit for key equipment, and ensure double circuit power supply;

(6) Afforest around the plant boundary, and select plants with high purification efficiency for malodorous substances;

(7) Regularly visit residents nearby, and listen to their opinions;

(8) Enhance the management on supply station and ensure the normal operation of power supply facilities and circuit.

## 4. Safety precautions on personal safety of working personnel

(1) Before operation of waste transfer station, conduct safety education for operating and management personnel, formulate safe operation rules and management system, strictly execute and inspect frequently after operation.

(2) Allocate masks, gloves and labor protective supplies in the plant.

(3) Installation and protection of all electrical equipment shall meet the safety regulations of electrical equipment, besides, ground protection work must be done for high voltage equipment.

(4) Dangerous parts of mechanical equipment must be installed with protective devices.

(5) Enhance management on safety work and set work post responsibility.

(6) Working personnel directly contacting percolate and household refuse shall be done with regular physical examination and regularly injected with related vaccines (such as hepatitis A and hepatitis B).

#### 6.4 Emergency organization and contingency plan

Emergency treatment to sudden environmental risk accidents in this engineering is related to multiple units and departments, including environmental protection bureau, public security department, health management department, fire department, etc.. In case of risk accidents, emergency plan shall be instantly started according to Emergency Plan on Emergent Environmental Incidents of Jiangxi Province.

Emergency organization of the project is mainly composed of offices subordinate to the leading group and each emergency group. Emergency groups include rescue group, liaison group, logistics group and automobile group. Assignment of responsibility of each group is as follows: see Figure 5-1 for responsible organizations.

(1) The leading group formulates and implements the emergency plan based on the environmental risk conditions, takes charge of the overall commanding work on site, and coordinates the cooperation work with the external units.

(2) Responsibilities of the office is to assist the leading group in dividing, supervising and inspecting work.

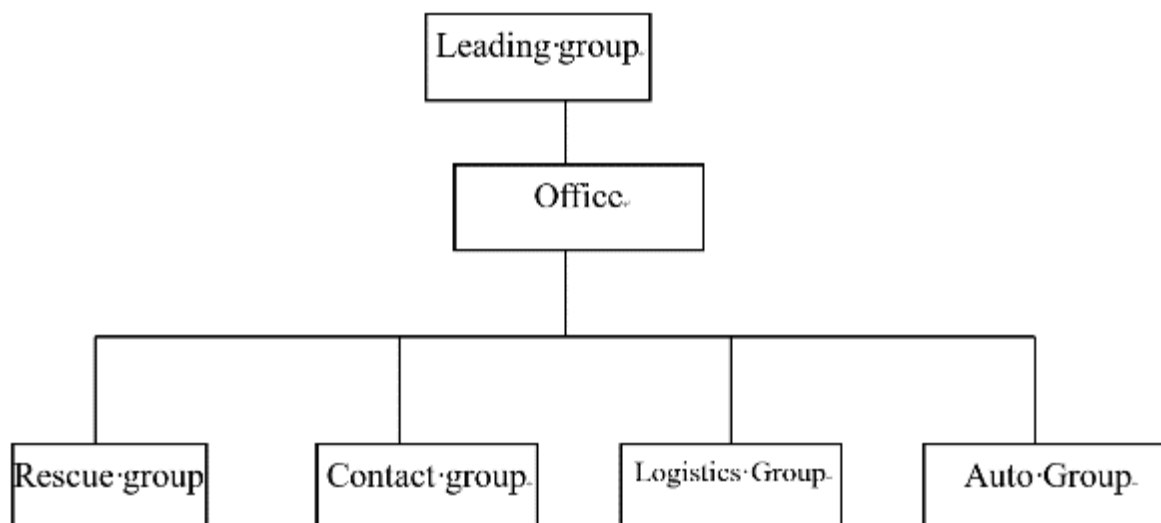
(3) The rescue group under the uniform command of the leading group takes charge of specific implementation of risk accident treatment, and maintenance and work of related equipment.

(4) The liaison group is in charge of the work coordination of rescue group, logistics group and automobile group.

(5) The logistics group is responsible for assisting in rescuing poisoning personnel, taking relevant emergency measures for poisoning personnel, handling admission observation and treatment procedures, nursing poisoning personnel and allocating emergency goods.

(6) The automobile group takes charge of deployment of automobiles, e.g. Transporting poisoning personnel for admission and treatment and transporting emergency goods.





**Figure 6-1 Project emergency response agencies**

## 7 Resettlement And Social Assessment

The following is an excerpt from *World Bank Jiangxi Poyang Lake basin Water environmental management project resettlement plan* prepared by Hohai University.

### 7.1 Resettlement Plan

#### 7.1.1 Impact of Land Occupation

The land requisition and demolishing in this project involve 20 towns/streets and 116 villages of 7 counties (cities, districts) in 5 cities including Pingxiang, Jiujiang, Ji'an, Yichun and Shangrao. It needs to requisition 288.60 mu of rural collective land, including 1.5 mu of paddy field/dry land which are wastelands, having impact on 814 people of 210 households. It will permanently occupy 428 mu of state owned land, without involving land requisition and demolishing; it will temporarily occupy 1 mu of collective land and 1121.47 mu of state owned land, having indirect impact on 7865 people of 534 peasant households and shops, without involving house demolition. The summary of the impact caused by the project's land requisition and occupation is seen in table 7-1.

#### 7.1.2 Resettlement Cost

The total cost for land requisition and demolishing as well as resettlement of inhabitants is 6.4325 million yuan, accounting for 0.45% of the total investment of this project. The capital sources are all domestic funds.

#### 7.1.3 Measures to Mitigate Impact

During the planning and designing stages of the project, in order to reduce the impact on local social economy caused by the project construction, the design organization and project owners took effective measures as follows: (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.

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.

**Table 7-1 Summary of Resettlement Impacts**

City	County	Project Name	Township number	Village number	Collective land expropriation (MU)		State-owned land expropriation (MU)	Temporary land occupation (MU)		Directly affected population		Indirect affected farmers, shops		
					Total	Of which: paddy / dry land		集体土地	国有土地	户数 (户)	人数 (人)	Shops	Person	
Pingxiang	Shan gli	Garbage collection and disposal system project	6	72	103.93					103	413			
		Water environment monitoring system					3							
Jiujiang	Duchang	County sewage pipe network improvement project	1						146.27			53	1178	
		Ecological remediation and protection of Zoujiazuiu lake water system	1				402.3	1				3	13	
		Suburban town domestic waste collection and transport project	3	3	4.5	1.5					13	50		
		Water environment monitoring system						3						
Ji'an	Jishi	City South county and the old urban drainage pipeline project	1				0.085		206.54			156	2948	
		Water environment monitoring system					3							
Yichun	Fengxin	North county area pipeline construction project	1				0.114		145.49			35	140	
		South county area pipeline construction project						96.54						
		Water environment monitoring system					3							
	Jing'an	Urban drainage pipeline reconstruction project	1						211.04			187	3211	
		Municipal waste collection and Transport project	1				3							
		Water environment monitoring					3							

City	County	Project Name	Township number	Village number	Collective land expropriation (MU)		State-owned land expropriation (MU)	Temporary land occupation (MU)		Directly affected population		Indirect affected farmers, shops		
					Total	Of which: paddy / dry land		集体土地	国有土地	户数 (户)	人数 (人)	Shops	Person	
		system												
Shangrao	Poyang	Wastewater treatment project	6	35	3.35				266.04	35	146			
			6	101	176.82					59	205			
			Water environment monitoring system				3							
	Yuguan		Sewage Interception Project along Pipa Lake coastal area	1	1				49.55				100	375
			Waste collection and Transportat project	1			4.5							
		Water environment monitoring system				3								
Total	7	12	20	212	288.6	1.5	428	1	1121.47	210	814	534	7865	

## 7.2 Social Assessment

### 7.2.1 Social Assessment

On the basis of observation and assessment for sewage collection pipe network construction, waste treatment subproject and lake treatment subproject, the social assessment are as follows:

(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 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 few adverse impact on their livelihood, and can 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. Therefor, 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.

### 7.2.2 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) Optimizing 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) Conducting 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) Carrying 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) Formulating 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) Creating 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) Formulating 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

### (1) Sewage pipelines sub-project

① Construction of sewage treatment engineering will affect residents rest, shop business and industry operation on the two sides of roads. Therefore, pipe laying should shorten construction duration as much as possible to reduce unfavorable impacts. If possible, offer certain compensation to affected residents and shop owners; ② since the drainage system in project region is mostly combined sewer and separate sewer, and the collection collection is not high. Therefore, the pipe network shall be connected with sewage of households within the construction and residential area from the source; ③ Since the project area enjoys developed water system and abundant water, drainage project should be in line with local conditions to ensure construction quality and life time.

### (2) Waste treatment subproject

① It is proposed that residents' intension 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.

② Due 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.

③ Technology 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.

### (3) Suggestion on lake pollution control

① Fall of surface water level results in the reclamation of vegetable fields or farmland from wetlands, blocking exchange of water in the lake. Meanwhile, fertilizer in farmland will contaminate water bodies. Therefore, consultation with residents occupying wetlands is advised as a way to turn field into lake and to improve ecological system of wetland; ② Carry out non-engineering measures to control lake pollution, and issue regulations on economic activities within lake area to strengthen lawmaking on lake pollution control and enhance green administrative ability to reduce emission; ③ Integrate technology to promote synchronized development of ecological protection and economic growth in the lake area.

## 8 Public Consultation and information disclosure

### 8.1 Purpose and Methodology

During the construction and operation period, the project will cause environmental impact to the peripheral area, directly affect the vital interests of the people near the project. According to the requirement of the Interim Measures for Public Participation in Environmental Impact Assessment (环发[2006]28号), the Notice of Jiangxi provincial environmental protection department on the further strengthening the supervision and management of the public participation in construction project environment impact Assessment(赣环评字[2014]145号)and WB's policy(OP4.01), 2 rounds of public consultation and information disclosure have been done.

The first round of public consultation and information disclosure was prior to the completion of the TOR of EIA report, to provide project status and the potential environmental impact of the project and to solicit public opinion. The second round was after the completion of the draft EIA report and the entire report will be disclosed for publicity, to report the main contents and conclusions for public consultation, in order to get the public understanding and support of the mitigation measures.

Public consultation and information disclosure is a two-way communication between the project and the public through the EIA work, is an important part of environmental impact assessment of construction project, it is crucial to the decision improvement. Its purpose is to release project information to the project area and public interested in the project, to let the public understand the main conditions of the project, the construction and operation features and the major environmental issues related to the project; It helps the EIA personnel to find the problem, confirms that all the major environmental problems caused by the project have been analyzed and evaluated in the environmental assessment report, confirms the feasibility of environmental protection measures, and the implementation of optimization measures.

Public consultation stresses the importance of the contact and communication between the project and the public.

It can directly reflect the public opinion, so that the decision-making departments can discover potential problems, timely modify and improve the design, and the public reflected problem can be fundamentally solved, and then make the project planning, design, environmental monitoring and management more perfect and reasonable, So the the project reaches the optimized unity in terms of environmental benefits, social benefits and economic



benefits.

## 8.2 Public consultation

The project conducted 2 round of public consultation. The main forms of consultation are On-site interview, questionnaires and Seminars, the relevant documents, see Annex 27.

### 8.2.1 1st round of public consultation

#### 8.2.1.1 1st round of public consultation

Details of 1st round of public consultation are listed in table 8-1.

**Table 8-1 1<sup>st</sup> round of public consultation --Time, objects and Way of consulting**

Project	Way of consulting	Time	Location	Consulting objects	Contents
Duchang county	① On-site interview ; ② Questionnaires ; ③ Seminars	Nov 2015 , Jan 2016	Duchang county	① On-site interview: Dawanlv Villiage , Zoujiazui Villiage , Beishanxiang Bachuantang Villiage , Wangdunxiang Yanggang Villiage , Dashuxiang Matang Villiage ; ② Questionnaires: Unit representatives of Duchang county Central kindergarten, Duchang experimental primary school, Duchang 3rd primary school, County Maternal and child health care hospital , Qinjiafan primary school, Beishanxiang government , Wangdunxiang government , Dashu township, County water bureau , County minuciple administration bureau , County EPA , County Traffic Bureau , County wastewater treatment plants, waste treatment plant; ③ Seminars: affected Resident representatives and Unit representatives .	To provide project status and the potential environmental impact of the project and to solicit public opinion
Poyang	① On-site interview ; ② Questionnaires	Dec 2015 , Jan 2016	6 town of Project area	On-site interview and Questionnaires: Shuanggang town, Sishilijie Town , gaojialingtown, Baishazhou Xiang , tuanlinxiang, zhuhuxiang representatives of 35 villiages around the lake	
Yugan	① On-site interview ; ② Questionnaires ; ③ Seminars	Dec 2015 , Jan 2016	Yugan county	① On-site interview and Questionnaires: Unit representatives of sensitive points, Guankou Villiage , Pipazhou, Yugan county government , County Traffic Bureau , County EPA , County wastewater treatment plants. ② Seminars: affected Resident representatives and Unit representatives .	

Fengxin	① On-site interview ; ② Questionnaires	Dec 2015 , Jan 2016	Fengxin county	On-site interview, Questionnaires:Unit representatives of sensitive points, Fengchuan 2nd primary school , Fengxin county 3rd middle school, Zhonghejiayuan etc..., Fengxin county government , County water bureau , County minuciple administration bureau , County EPA , County Traffic Bureau , County wastewater treatment plants .
Jing'an	① On-site interview ; ② Questionnaires	Dec 2015 , Jan 2016	Jing'an county	On-site interview, Questionnaires:Unit representatives of sensitive points, Jing'an Vocational school , Jing'an Hospital of traditional Chinese Medicine, Jing'an1st primary school, Jing'an 3rd Middle School , Jing'an middle school, Jing'an 2nd primary school , Qinghuameijun , Qinghuayuan , Dianlixincun , Shuangxi town government , County Traffic Bureau , County EPA , County wastewater treatment plants
Jishui	① On-site interview ; ② Questionnaires ; ③ Seminars	Dec 2015 , Jan 2016	Jishui county	① On-site interview, Questionnaires:Unit representatives of sensitive points, Jishui county people's hospital , Jishui countySiyuan experimental school , wenfeng Health center, Jishui Jinshi school, Jishui county Central kindergarten, Jishui county Maternal and child health care hospital, Jishui 3rd Middle School , Jिंगgangshan Economic and trade school, Jishui Hospital of traditional Chinese Medicine, Jishui Aimin hospital, East county primary school, Jishui county 2nd middle school, Jishui 3rd Middle School , Jishui county experimental primary school, Jishui 4th middle School , Jishui middle school, wenfeng primary school, Shanshuihaocheng neighbourhood etc. Jishui county government , County water bureau , County minuciple administration bureau , County EPA , County Traffic Bureau , County wastewater treatment plants . ② Seminars: affected Resident representatives and Unit representatives .

Shangli	① On-site interview ; ② Questionnaires	Dec 2015 , Jan 2016	Shangli county 6 township	① On-site interview: Unit representatives of Muchong Villiage , Mingshan Villiage , Taitang Villiage , Guanshang , Penggao Villiage , Dongyuan Villiage,etc., 6 township governments , County EPA , Pingxiang city domestic waste incineration treatment plant ; ② Questionnaires:Unit representatives of Muchong Villiage , Mingshan Villiage , Taitang Villiage , Guanshang , Penggao Villiage , Dongyuan Villiage etc., Pingxiang city domestic waste incineration treatment plant
---------	---	---------------------	---------------------------	--

### 8.2.1.2 Public opinions feedback

Public opinions and feedback of the 1<sup>st</sup> round of public consultation are listed in .

**Table 8-2 Public opinions and feed-backs Summary of**

Project	way of consulting	Public question or opinion	Feedbacks of construction unit to public opinions
Duchang	① On-site interview ; ② Questionnaires ; ③ Seminars	1, The public expressed the support for project construction , no objections. 2, Present road drainage is not smooth, Water flooding on rainy days; Hope for an early start, early end, one-time construction, no repetitive construction, 3,Waste transfer stations should have deodorant and dedusting measures to reduce odor pollutants impact .	Construction unit and eia unit : thanks to the public understanding and support, project will further perfect the design and the early stage work,Try for an early start, one-time construction, not to engage in repetitive construction, and complete as soon as possible; taking deodorant and dedusting measures for waste transport stations.
Poyang	① On-site interview ; ② Questionnaires	1, The public expressed the support for project construction , no objections. 2, Hope to start in the non-rainy season to keep water and soil loss, to take certain protection measures in the construction. 3, Ensure the implementation of Compensation for land acquisition and relocation .	1.Construction unit and EIA unit: thanks to the public understanding and support; 2.Project will further perfect the design and the early stage work, include the water soil conservation into EIA and environment management plan , 3.carry out the land expropriation housing demolition compensation work according to the national and local policy, and include the relavant requirements and measures into environment management plan.
Yugan	① On-site interview ; ② Questionnaires ; ③ Seminars	1, The public expressed the support for project construction , no objections. 2, The present water quality of Pipa Lake is poor, direct discharge of domestic sewage,	Construction unit and EIA unit : thanks to the public understanding and support, project will further perfect the design and the early stage work,will strive for an early start, completed as soon as possible. .

Project	way of consulting	Public question or opinion	Feedbacks of construction unit to public opinions
		lots of solid waste in the lake; , Hope for an early start, early end;	
Fengxin	① On-site interview ; ② Questionnaires	1, The public expressed the support for project construction , no objections. 2, Do a good job of traffic organization design in the construction period, to ensure smooth traffic and safety.	Construction unit and eia unit: thanks to the public understanding and support, project will further perfect the design and the early stage work, include the traffic organization design requirements in construction period into EIA and EMP to ensure smooth traffic and safety.
Jing'an	① On-site interview ; ② Questionnaires	1, The public expressed the support for project construction , no objections. 2, Present road drainage is not smooth, Water flooding on rainy days; Hope for an early start, early end, one-time construction, no repetitive construction,	construction unit and eia unit : :thanks to the public understanding and support, project will further perfect the design and the early stage work, Try for an early start, one-time construction, not to engage in repetitive construction, and complete as soon as possible.
Jishui county	① On-site interview ; ② Questionnaires ; ③ Seminars	1, The public expressed the support for project construction , no objections. 2, Hope for an early start, early end; 3, to reduce the construction noise in the construction period as far as possible, reasonable arrangement of construction time to ensure the safety and smooth traffic of the residents nearby the construction section	construction unit and eia unit : :thanks to the public understanding and support, project will further perfect the design and the early stage work, will strive for an early start, completed as soon as possible. .Include construction noise mitigation measures, environment management requirements in construction into EIA and EMP, and require the contractor to do the traffic organization design to ensure the safety and smooth traffic of the residents nearby the construction section.
Shangli	① On-site interview ; ② Questionnaires	1, The public expressed the support for project construction , no objections. 2, Waste disorder lead to the odor, it is recommended to improve the daily management of the waste transfer station to avoid the odor impact on the lives of residents.	Construction unit and eia unit: :thanks to the public understanding and support, include daily management requirements for the waste transport station into the EMP, take corresponding control measures for odor pollution prevention .

## 8.2.2 2nd round of public consultation

### 8.2.2.1 2nd round of public consultation

Details of 2nd round of public consultation are listed in Table 8-3.

**Table 8-3 2<sup>nd</sup> round of public consultation --Time, objects and Way of consulting**

Sub proect	Way of consulting	Time	Location	Consulting objects	Contents
Duchang	① On-site interview;	May 2016	Duchang county	① On-site interview: Beishanxiang Bachuantang Villiage , Wangdunxiang	To report the main contents

Sub proect	Way of consulting	Time	Location	Consulting objects	Contents
	② Questionnaire;			Yanggang Villiage , Dashuxiang Matang Villiage ; ② Questionnaires:Unit representatives of Duchang county Central kindergarten, Duchang experimental primary school, Duchang 3rd primary school, County Maternal and child health care hospital , Qinjiafan primary school, Beishanxiang government , Wangdunxiang government , Dashu township 府 .	and conclusions for public consultation, in order to get the public understanding and support of the mitigation measures.
Poyang	① On-site interview ; ② Questionnaire ; ③ Seminars	May 2016	Poyang county Shuanggang town, Sishilijie Town , gaojialin gtown, Baishazhou Xiang , tuanlinxiang, zhuhuxiang	① On-site interview and questionnaire: On-site interview and Questionnaires: Shuanggang town, Sishilijie Town , gaojialingtown, Baishazhou Xiang , tuanlinxiang, Zhuhuxiang representatives of 35 villiages around the lake ; Poyang county water conservancy Bureau , Poyang Lake National Wetland Park Management committee , Poyang county EPA Unit representatives ; ② Seminars: affected Resident representatives and Unit representatives .	
Yugan	① On-site interview ; ② Questionnaire	May 2016	Yugan county	On-site interview and Questionnaires:Unit representatives of Guankou Villiage Village committee , Pipazhou Village committee , County minuciple administration bureau , County water bureau , County Traffic Bureau , County EPA , County wastewater treatment plants .	
Fengxin	① On-site interview ; ② Questionnaire; ③ Seminars	May 2016	Fengxin county	① On-site interview and Questionnaires:Unit representatives of sensitive points, Fengchuan 2nd primary school , Fengxin county 3rd middle school, Zhonghejiayuan etc. Fengxin county government , County water bureau , County minuciple administration bureau , County EPA , County Traffic Bureau , County wastewater treatment plants ; ② Seminars: affected Resident representatives and Unit representatives .	
Jing'an	① On-site interview ; ② Questionnaire ; ③ Seminars	May 2016	Jing'an county	① On-site interview and Questionnaires:Unit representatives of sensitive points, Jing'an Vocational school , Jing'an Hospital of traditional Chinese Medicine, Jing'an 1st primary school, Jing'an 3rd Middle School ,	

Sub project	Way of consulting	Time	Location	Consulting objects	Contents
				Jing'an middle school, Jing'an 2nd primary school, Qinghuameijun, Qinghuayuan, Shuangxi town government, County minuciple administration bureau, County water bureau, County Traffic Bureau, County EPA, County wastewater treatment plants; ② Seminars: affected Resident representatives and Unit representatives.	
Jishui	① On-site interview; ② Questionnaire.	May 2016	Jishui county	On-site interview, Questionnaires: residents of sensitive points, Jishui county people's hospital, Jishui countySiyuan experimental school, wenfeng Health center, Jishui Jinshi school, Jishui county Central kindergarten, Jishui county Maternal and child health care hospital, Jishui 3rd Middle School, Jinggangshan Economic and trade school, Jishui Hospital of traditional Chinese Medicine, Jishui Aimin hospital, East county primary school, Jishui county 2nd middle school, Jishui 3rd Middle School, Jishui county experimental primary school, Jishui 4th middle School, Jishui middle school, wenfeng primary school, Shanshuihaocheng neighbourhood etc..	
Shangli	① On-site interview; ② Questionnaire; ③ Seminars	May 2016	Shangli county 6 township	① On-site interview and Questionnaires: Residents of Muchong Villiage, Mingshan Villiage, Taitang Villiage, Guanshang, Penggao Villiage, Dongyuan Villiage; ② Seminars: affected Resident representatives and Unit representatives.	

### 8.2.2.2 Public opinions feedback

Public opinions and feedbacks of 2nd public consultation are listed in Tab18-4.

**Table 8-4 Summary of public opinions and feedbacks**

Sub project	Way of consulting	Public question or opinion	Feedbacks of construction unit to public opinions
Duchang	① On-site interview; ② questionnaire;	Public support for project construction, and consider the proposed environmental protection measures acceptable.	The owner and EIA team show gratitude for public understanding and support, and will strictly implement the environmental protection measures in environment management plan.

Sub project	Way of consulting	Public question or opinion	Feedbacks of construction unit to public opinions
Poyang	① On-site interview ; ② Questionnaire ; ③ Seminars	① Public support for project construction, and consider the proposed environmental protection measures acceptable;	The owner and EIA team show gratitude for public understanding, and will strictly implement the environmental protection measures in environment management plan.
		② Do the publicity and advocate work before the start of the work; Inform the public of the construction plans and arrangements, to avoid the unnecessary conflicts when construction team entering the village;;	Include information disclosure work before the construction into EIA and environment management plan;
		③ Try to speed up the construction period, finish as soon as possible;	Try for an early start, and put into use as soon as possible;
		④ Carry out the land expropriation and housing demolition compensation work; Avoid the dispute caused by land expropriation and housing demolition.	According to the national and local policy carryo out the land expropriation and housing demolition compensation work, include relevant requirements and measures into EMP;
		⑤ Suggest the second half year for the construction, to avoid the rainy season and days.	Already included into EMP, will reasonable select construction period, try to avoid construction in rainy season or days, do a good job of the water soil conservation.
Yugan	① On-site interview ; ② questionnaire	Public support for project construction, and consider the proposed environmental protection measures acceptable.	The owner and EIA team show gratitude for public understanding and support, and will strictly implement the environmental protection measures in environment management plan.
Fengxin	① On-site interview ; ② questionnaire ; ③ Seminars	Public support for project construction, and consider the proposed environmental protection measures acceptable.	The owner and EIA team show gratitude for public understanding and support, and will strictly implement the environmental protection measures in environment management plan.
Jing'an	① On-site interview ; ② questionnaire ; ③ Seminars	Public support for project construction, and consider the proposed environmental protection measures acceptable.	The owner and EIA team show gratitude for public understanding and support, and will strictly implement the environmental protection measures in environment management plan.
Jishui	① On-site interview ; ② questionnaire .	Public support for project construction, and consider the proposed environmental protection measures acceptable.	The owner and EIA team show gratitude for public understanding and support, and will strictly implement the environmental protection measures in environment management plan.
Shangli	① On-site interview ; ② questionnaire ;	Public support for project construction, and consider the proposed environmental	The owner and EIA team show gratitude for public understanding and support, and will strictly implement

Sub project	Way of consulting	Public question or opinion	Feedbacks of construction unit to public opinions
	③ Seminars	protection measures acceptable.	the environmental protection measures in environment management plan.

### 8.3 Information disclosure

#### 8.3.1 1st round

**Table 8-5 Time location and way of Information disclosure**

Project	Way of disclosure	Time	Location	Contents of disclosure
Duchang county	On-site disclosure	2016.1	Beishanxiang, Dashuxiang , Wangdunxiang bulletin board , Furongshan industrial Park bulletin board	Mainly are the project contents and potential environment impacts
Poyang county	On-site disclosure	2016.1	Shuanggang town, Sishilijie Town , gaojialingtown, Baishazhou Xiang , tuanlinxiang, zhuhuxianggovernment bulletin board , each Village committee bulletin board	
Yugan county	On-site disclosure	2016.1	Yugan countygovernment bulletin board	
Fengxin county	On-site disclosure	2016.1	Fengchuan Town Government bulletin board	
Jing'an county	On-site disclosure	2016.1	Shuangxi Town Government bulletin board	
Jishui county	On-site disclosure	2016.1	Wenfeng Town Government bulletin board	
Shangli county	On-site disclosure	2016.1	Changping Xiang , Futian Town , Penggao Town , Dongyuan Xiang , Chishan Town and Yangqi Xiang Government bulletin board	

#### 8.3.2 2nd round of information disclosure

The project had 2 round of information disclosure. The time location and way of information disclosure are listed in Table 8-6.



**Table 8-6 Time location and way of Information disclosure**

Project	Type	时间	Location	公示内容
General project	Full EIA Report	2016.5	Jiangxi Province Library	1, On-site disclosure and On line disclosure : (1) project introduction ; (2)Environmental protection measures to be taken; (3) draft EIA report Conclusion ; (4) Location and method to access the whole EIA report
	On line disclosure	2016.7.25	Jiangxi Province Office of Urban Construction & Foreign Capital Utilization <a href="http://wzb.jxdpc.gov.cn/notice/201607/t20160725_193462.htm">Http://wzb.jxdpc.gov.cn/notice/201607/t20160725_193462.htm</a>	
	Newspaper	2016.7.30	Jiangnan city newspaper(A14)	
Duchang county	On-site disclosure	2016.5	Beishanxiang, Dashuxiang , Wangdunxiang bulletin board , Furongshan industrial Park bulletin board	
	Full EIA Report	2016.5	Duchang county Poyang Lake Eco-economic Zone construction office (3 <sup>rd</sup> floor,No. 2 Guangyuan Road, Duchang county)	
Poyang county	On-site disclosure	2016.5	Government bulletin board of Shuanggang town , Sishilijie Town, Gaojialing Town, Baishazhou Xiang,Tuanlinxiang, Zhuhu Xiang, and every villiage committee.	
	Full EIA Report	2016.5	Agricultural use of Foreign Investment Office (13 <sup>th</sup> Floor, Poyang Lake mansion) and (Town) Convenience service center of Shuanggang, Pearl Lake , Sishilijie Town, Tuanlin, Baishzhou, Gaojialing	
Yugan county	On-site disclosure	2016.4	Guankou Villiage , Pipazhou Community bulletin board	2, Full EIA Report : Whole EIA draft report
	Full EIA Report	2016.4	Yugan county Library	
Fengxin county	On-site disclosure	2016.5	Fengchuan 2nd primary school , Fengxin county 3rd middle school, Zhonghejiayuan bulletin board	
	Full EIA Report	2016.4	Fengxin county Library Reading Room	
Jing'an county	On-site disclosure	2016.4	Shuangxi Town government , Liao Riverhuayuan, Weilanjiyuan, Jing'an Vocational school bulletin board	3, Newspaper : (1) project introduction ; (2)Environmental protection measures to be taken; (3) draft EIA report Conclusion ; (4) Location and method to access the whole EIA report
	Full EIA Report	2016.4	Jing'an county Shuangxi town 青 lake Community Reading Room	
Jishui county	On-site disclosure	2016.5	Jishui county people's hospital , JishuiSiyuan experimental school , Jishui middle school, Shanshuihaocheng neighbourhood bulletin board	
	Full EIA Report	2016.5	2 <sup>nd</sup> floor, Reading Room of Residents committee, wenfeng Community wenfeng Town Jishui county; East building313, administrative center Jishui County	
Shangli county	On-site disclosure	2016.4	Government bulletin board of Changping Xiang,Futian Town, Penggao Town, Dongyuan Xiang, Chishan Town and YangqiXiang	
	Full EIA Report	2016.4	Changping Xiang Library, Futian Town Activity room, Penggao Town Activity room, Dongyuan Xiang Reading Room , Chishan Town Library, Yangqi Xiang Reading Room	



都昌县子项目公示



鄱阳县子项目公示



余干县子项目公示



奉新县子项目公示



Figure 8-1 Sub Project On-Site Publicity



鄱阳县全本公示



余干县全本公示



奉新县全本公示



靖安县全本公示



Figure 8-2 Sub project Full EIA Report Publicity



Figure 8-3 EIA Full Master Report Publicity



Figure 8-4 Newspaper



Figure 8-5 On line disclosure

## 9 Environment management plan

See the separate form of world bank Jiangxi Poyang Lake basin Water Environmental Mmanagement Project - Environment Management Plan(EMP).

## 10 Conclusion

The following conclusions can be obtained through the EIA:

(1) Construction of the project will Improve the water environment of Poyang Lake Basin, improve the infrastructure, etc., change the status of the sewage directly discharge into the nearby surface water body without treatment at the project locations; the waste will be treated, as is conducive to the protection of the water quality of Poyang Lake. It will improve the environmental health status of the project location, greatly improve the living conditions of the residents, and protect the nearby water sources, get the surrounding environment more beautiful, more comfortable and improve the quality of living environment.

(2) Construction of the project is in compliance with the state laws and regulations, as well as the urban master planning and environmental protection planning of the project location, the implementation of the project has the policy and regulation basis.

(3) The implementation of this project may involve some environmental protection objectives (sensitive points) like residential areas, schools, hospitals, etc.. In the feasibility study, the project could stay away from the target (sensitive point) by rational selection of sites. In EIA, by taking mitigation measures, formulation and implementation of environmental management plan, public participation and other ways and methods, the adverse impacts on environmental protection objectives (sensitive point) caused by the implementation of the project can be further reduced and eliminated, and the possible impacts can be in compliance with the provisions of the national environmental protection laws, regulations, standards and specifications.

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

1) The adverse impacts of the construction period mainly are: impacts of construction dust on ambient air quality, impacts of construction vehicles noise and construction machinery noise on the surrounding environment, impacts of construction and domestic wastewater, soil and water loss during the earthworks, including the soil taking, dumping, earthworks excavation, filling, and the temporary dump of earthworks, impacts of sewage pipe laying construction on road traffic, impacts of dredging etc..

2) The adverse impacts of the operation period mainly are: impacts of waste gas from waste transfer station on ambient air, impacts of sludge disposal, impacts of pump and machinery noise on the surrounding environment, etc..

(5) The project is likely to bring negative impacts, whose degree and scope can be controlled with the scope of the national laws, regulations, standards and specifications by means of taking mitigation measures, implementation of EMP, public participation and consultation.

In summary, after taking the measures like mitigation measures, environmental management plan, public consultation, etc., the implementation of this project is feasible in the environmental way.



## Annex 1 Duchang County Sludge Acceptance Letter

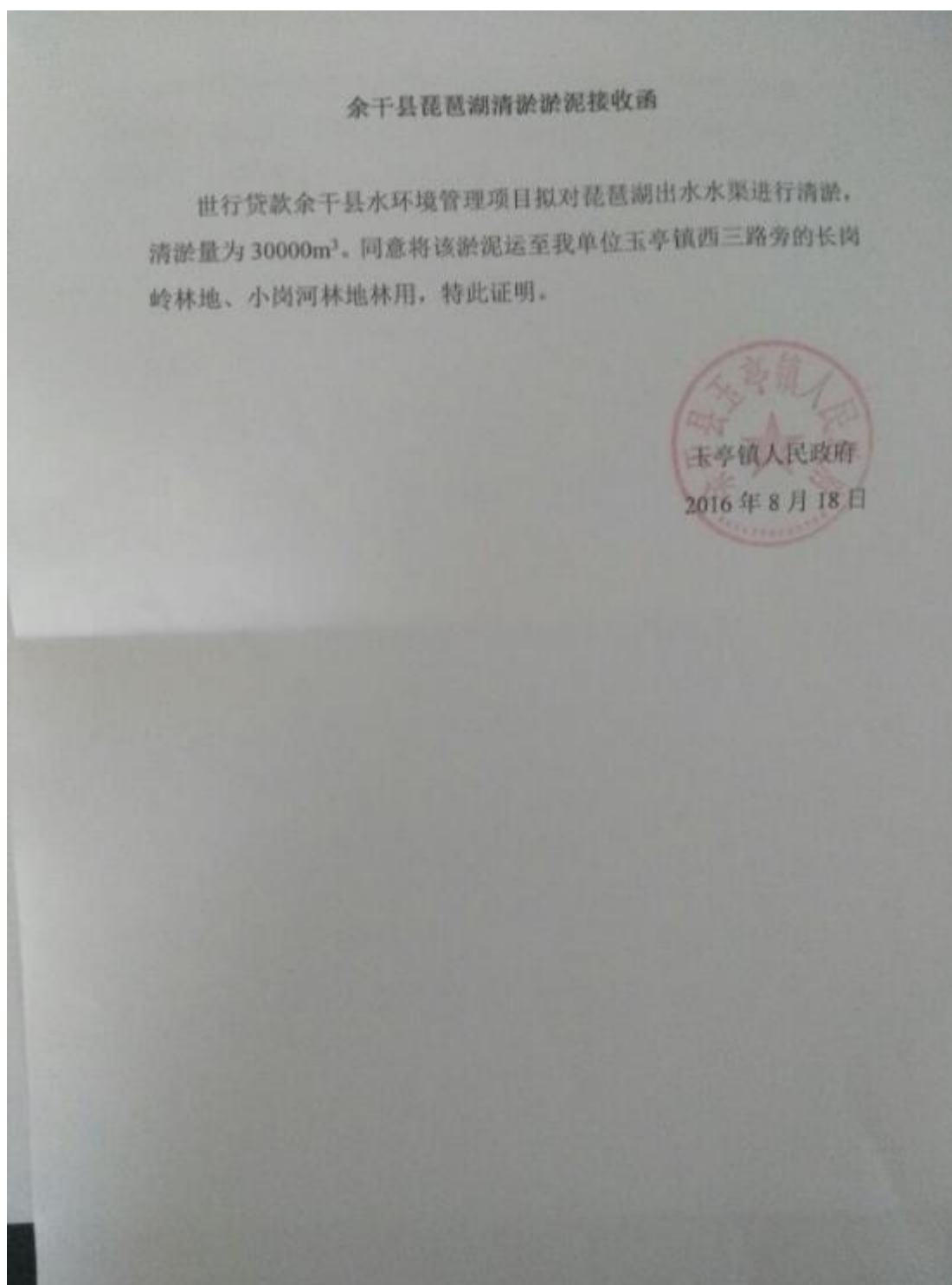
### 都昌邹家咀湖清淤淤泥接收函

世行贷款都昌县水环境管理项目拟对邹家咀湖进行清淤，清淤量为 8000m<sup>3</sup>。同意将该淤泥运至我单位汪墩乡山坳荒地施用，特此证明。



2016年8月18日

## Annex 2 Yugan County Sludge Acceptance Letter



### Annex 3 Fengxin County Sludge Acceptance Letter

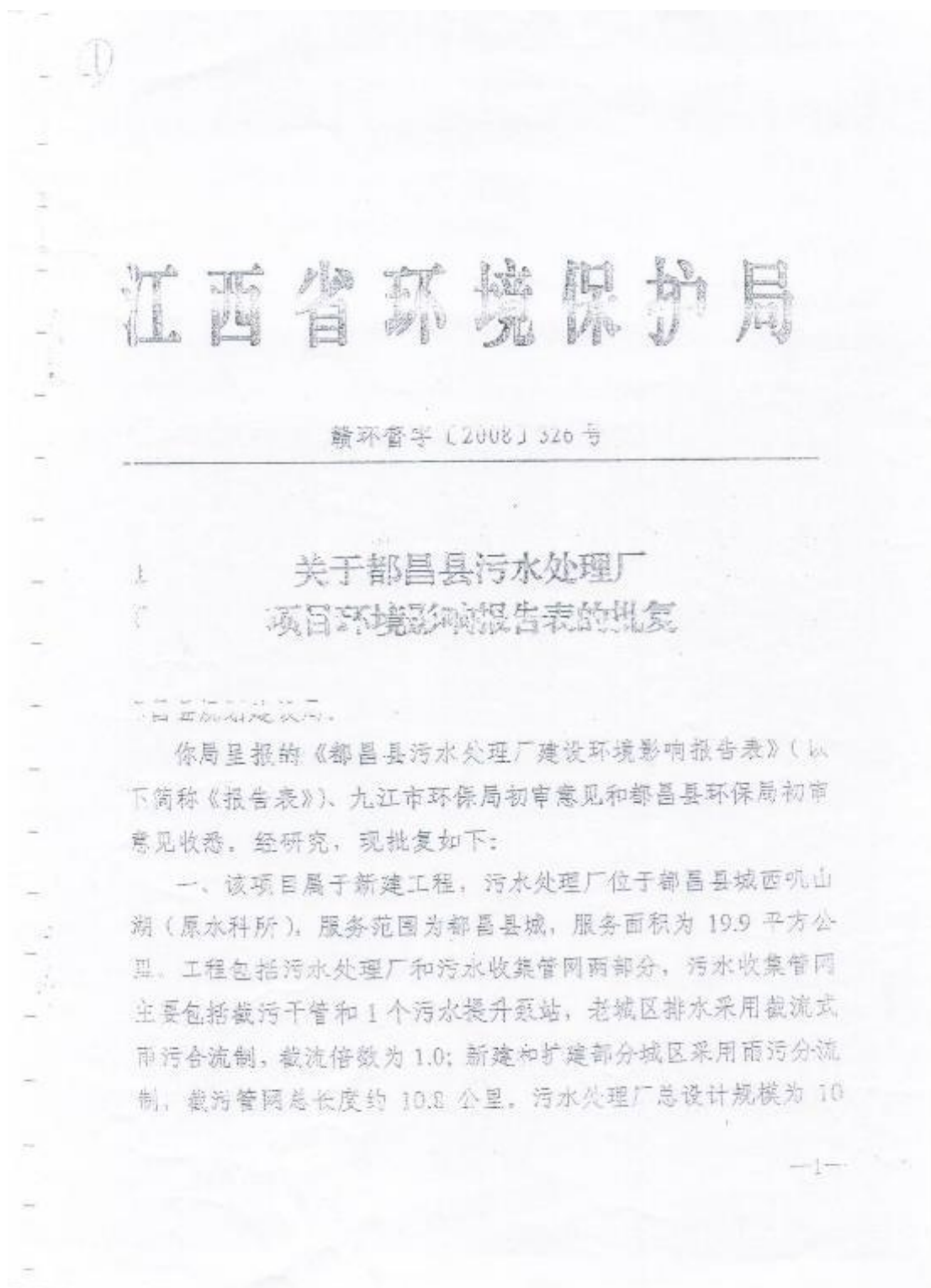
#### 奉新县南渠、大寨渠及北支圳渠 清淤淤泥接收函

世行贷款奉新县水环境管理项目拟对南渠、大寨渠及北支圳渠进行清淤，清淤量分别为 3480 m<sup>3</sup>、7600 m<sup>3</sup>、2400m<sup>3</sup>。同意将该淤泥运至我单位干洲镇黄溪村源头组林地林用，特此证明。

奉新县干洲镇人民政府  
2016年8月22日



## Annex 4 Duchang Wastewater Treatment Plant EIA Approval



万吨/日，分三期建设，本期规模2万吨/日，处理工艺为氧化沟，出水去向为鄱阳湖。

根据《报告表》结论以及九江市、都昌县环保局的初审意见，同意你局按《报告表》所列建设项目的性质、规模、地点 and 环境保护对策措施进行建设。

二、项目建设必须严格执行“防治污染的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，环保投资必须落实，并专款专用。项目建成试运行前须向九江市环保局书面报告(抄报我局)，并经市环保局现场检查同意。项目按照分期验收，竣工3个月内必须向我局申请办理竣工环境保护验收手续，验收合格后，项目方能投入正式生产。

三、项目建设和运行应重点做好以下工作：

(一)在设计 and 建设中落实环保有关要求。

1、优化厂区平面布置。产生恶臭污染物和高噪声设施应尽量远离周边环境敏感点，采取封闭系统、绿化等措施控制恶臭的产生和扩散；严格控制污水处理厂周边规划，污水处理厂卫生防护距离(200米)内不得新建医药等环境要求较高的企业和居民住宅等建筑物。

2、落实在线监测装置。与主体工程同步设计和建设污水处理厂入水水质自动在线监控系统及排放口污水水量自动计量装置、自动比例采样装置和主要水质指标在线监测装置。根据国家 and 省排污口规范化整治的要求规范设置各类排污口，污水在线监测装置应和环保部门联网，进行时时监控。

3、倘若污泥安全处置，污水处理厂污泥应进行稳定化和脱水处理，污泥稳定化应满足《城镇污水处理厂污染物排放标准》（GB18918-2002）“污泥稳定化控制指标”要求，脱水后的污泥含水率应小于80%，采用卫生填埋方式处置。污泥临时堆场和卫生填埋场的选址建设须满足《生活垃圾填埋污染控制标准》（GB16889-2007）要求，并与污水处理工程同步建设，同步投入使用，确保污泥得到妥善处理，防止产生二次污染。

4、实施施工期环境监理。按照《报告表》的要求，制定并实施施工期环境监理计划，施工招标文件、施工合同和工程监理文件中应明确环保条款和责任，落实施工期污染防治措施，并定期向我局和当地环保局报告。施工期间，场界噪声应满足《建筑施工场界噪声限值》（GB12523-90），废气排放应满足《大气污染物综合排放标准》（GB16297-2001）一级标准和无组织排放监控浓度限值，废水排放应满足《污水综合排放标准》（GB8978-1996）表4中一级标准。

#### （二）强化运行期间环境管理。

1、有条件接纳工业废水。为保证污水设施的正常运行，必须按照《报告表》中提出的接纳工业废水限制措施要求对工业废水进行有条件接纳，禁止含有《污水综合排放标准》（GB8978-1996）表1中第一类污染物的工业废水排入污水管网，严格限制排水量大于2000吨/日的工业废水排入污水管网，严格控制含有重金属、持久性有机污染物、病原体和有毒有害

物质的工业废水排入污水管网，各类工业废水预处理达到入水管网要求方能送污水处理厂进行集中处理。

2、坚决杜绝事故性排放。污水处理厂事故排放时，尾水排放口以下将出现较长的超标污染带，因此污水处理厂要加强运营管理，同时建立事故时的应急预案和措施，将环境影响降低至最低程度。

3、加强化学危险品环境风险防范。消毒剂液氯属有毒有害物质，事故泄漏时对环境会产生较严重的危害，氯库及加氯间应安装氯气检测仪、泄氯报警器，并制定风险防范措施和事故应急预案，防范使用中的环境风险。

(一) 运行期间，外排污染物必须达到以下要求：

1、外排废水必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)一级B标准(即CODCr≤120mg/L)。

2、外排废气必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)二级标准，污水处理厂周围应同期建设绿化带。

3、选用低噪声设备，并对设备采取隔声减震、密闭等措施，降低噪声的影响。工程建成后，污水处理厂和污水提升泵站厂界噪声必须达到《工业企业厂界噪声标准》(GB12523-90) II类标准。

四、以上批复仅限于《报告表》确定的建设内容，若建设地点、项目内容、规模、工艺、性质、拟采用的防治污染措施等发生变化或自批准之日起超过5年方开工建设必须重新向我局申请

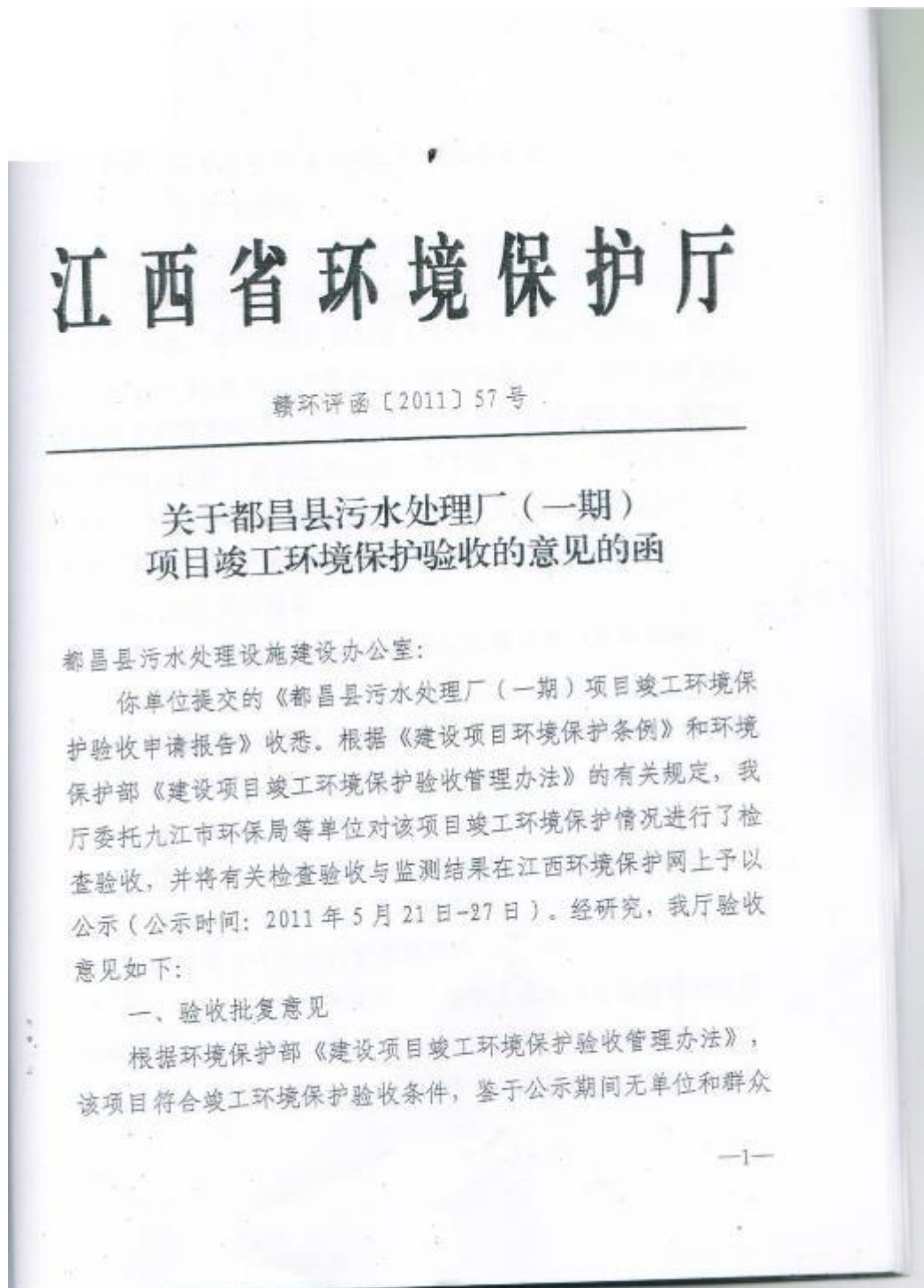
环境影响评价行政许可。

五、你局应在接到本批复后 20 个工作日内，将批准后的环境影响评价报告表分别送九江市环保局和都昌县环保局，并按规定接受各级环境保护行政主管部门的监督检查，请省环境监察局加强对项目实施过程中的环境监察。





## Annex 5 Duchang County Wastewater Treatment Plant Phase I (Step 1) Environmental Protection Acceptance Approval



提出异议，同意该项目通过竣工环境保护验收。

## 二、项目基本情况

都昌县污水处理厂位于都昌县矶山湖畔，设计规模为 2 万  $m^3/d$ ，一期建设规模  $1m^3/d$ ，处理工艺为氧化沟工艺。项目实际总投资 6500 万元，其中环境保护投资 6500 万元，占总投资的 100%。

项目于 2008 年 7 月委托由江西省环境保护科学研究院完成建设项目环境影响评价工作，同年 7 月原江西省环保局以赣环督字[2008]326 号文予以批复，项目于 2008 年 11 月开工建设，于 2010 年 7 月建成并申请试生产，2010 年 12 月省环境监测中心站提交了项目竣工环保验收监测报告。

## 三、验收监测结果

以下结果来源于省环境监测中心站提供的《监测报告》。

### 1、废水

项目外排废水满足《城镇污水处理厂污染物排放标准》(GB18918-2002)一级 B 标准要求。

### 2、噪声

厂界昼夜监测结果均满足《工业企业厂界环境噪声排放标准》(GB12348-2008)中 3 类标准要求。

## 四、对项目今后运行管理的要求

(一)加强环境保护管理。严格禁止含有《污染物综合排放标准》(GB8978-1996)表 1 中第一类污染物的工业废水排入污水管网，严格控制含有重金属、持久性有机污染物、病原体和有毒

有害物质的工业废水排入污水管网。

(二) 强化环境应急管理。进一步完善环境风险防范应急预案，避免发生环境污染事故。强化应急措施，做到达标排放，防止对环境造成影响。

(三) 加强废水在线监控设备及系统的建设和管理，今年7月底前必须与省、市环保部门在线监控系统联网运行。

(四) 都昌县人民政府应严格控制污水处理厂周边规划，卫生防护距离(200米)内不得规划和新建食品等环境要求较高的企业及居民住宅等建筑物。

#### 五、项目运行的排放标准要求

(一) 废水：外排废水必须满足《城镇污水处理厂污染物排放标准》(GB18918-2002)一级B标准要求。

(二) 废气：外排废气应满足《城镇污水处理厂污染物排放标准》(GB18918-2002)二级标准要求。

(三) 噪声：项目厂界噪声必须满足《工业企业厂界环境噪声排放标准》(GB12348-2008)中3类标准要求。

(四) 固废：污泥稳定化应满足《城镇污水处理厂污染物排放标准》(GB18918-2002)中“污泥稳定化控制指标”要求。

#### 六、环保监管要求

请省环监局加强项目日常运行中的环境监察，请九江市环保局监督企业认真落实上述要求，并加强对该项目的日常监督管理，督促企业正常运行环保治理设施，严禁偷排、直排，发现问题必

须及时依法处理，并向我厅报告。



二〇一一年六月二十四日

主题词：环保 公共设施 竣工验收 意见

抄送：省发改委，九江市环保局，都昌县政府及县环保局，厅  
有关处室，省环境监察局，省环境监测中心站。

江西省环境保护厅办公室                      2011年6月29日印发

## Annex 6 Duchang County Wastewater Treatment Plant Phase I (Step 2) Environmental Protection Acceptance Approval

# 江西省环境保护厅

赣环评函〔2015〕8号

## 江西省环境保护厅关于都昌县 污水处理厂一期（第二阶段）工程竣工 环境保护验收意见的函

江西洪城水业环保有限公司都昌分公司：

你单位《关于都昌县污水处理厂一期（第二步）工程项目申请竣工环境保护验收的请示》（洪环都文〔2014〕05号）收悉。根据《建设项目环境保护条例》和环境保护部《建设项目竣工环境保护验收管理办法》的有关规定，我厅委托九江市环保局对该项目竣工环境保护情况进行了现场检查，并将有关检查验收与监测结果在江西环境保护网上予以公示，公示以来无单位和群众提出反对意见。经研究，我厅验收意见如下：

### 一、项目基本情况

— 1 —

都昌县污水处理厂位于都昌县城矾山湖畔，设计规模为 2 万吨/天，为氧化沟处理工艺。

项目单位 2008 年 5 月委托江西省环境保护科学研究院完成建设项目环境影响评价工作，同年 7 月原江西省环保局以赣环督字[2008]326 号文予以批复。项目一期先期 1 万吨/天工程已于 2011 年 6 月通过江西省环保厅验收(赣环评函[2011]57 号)，本次验收内容为该项目一期(第二阶段)1 万吨/天。

## 二、验收监测结果

以下结果来源于省环境监测中心站提交的《监测报告表》和九江市环保局现场检查情况的汇报。

### (一) 废水

项目外排废水满足《城镇污水处理厂污染物排放标准》(GB18918-2002)一级 B 标准要求，总排口安装有在线监控系统(监控项目包括流量、pH 值、化学需氧量、氨氮)，并与省环保厅在线监控系统联网运行。

### (二) 噪声

厂界昼夜噪声值监测结果均满足《工业企业厂界环境噪声排放标准》(GB12348-2008)中 2 类标准要求。

### (三) 防护距离情况

根据省环境监测中心站现场踏勘及九江市环保局《关于对都昌县城污水处理厂二期 1 万 m<sup>3</sup>/d 项目竣工环境保护验收现场检查情况的汇报》(九环文[2014]76 号)结论，该项目卫生防护距离(200 米)范围内无居民区等环境敏感点。

### 三、验收批复意见

该项目基本符合竣工环境保护验收条件，公示期间无单位和群众提出异议，同意该项目通过竣工环境保护验收。

### 四、对项目今后运行管理的要求

(一) 加强环境保护管理。严格禁止含有《污染物综合排放标准》(GB8978-1996)表1中第一类污染物的工业废水排入污水管网，严格控制含有重金属、持久性有机污染物、病原体和有毒有害物质的工业废水排入污水管网。

(二) 强化环境应急管理。进一步完善环境风险防范应急预案，避免发生环境污染事故。强化应急措施，做到达标排放，防止对环境造成影响。

(三) 卫生防护距离控制要求。请都昌县环保局向都昌县人民政府专题报告，应严格控制污水处理厂周边规划，卫生防护距离(200米)内不得规划和新建食品等环境要求较高的企业及居民住宅等建筑物。

### 五、日常环境监管要求

请省环境监察局、九江市环保局、都昌县环保局加强该项目运行期日常环境监管。



(此件主动公开)

抄送：省发改委，省住建厅，九江市环保局，都昌县人民政府及县环保局，厅有关处室，省环境监察局，省环境监测中心站。

江西省环境保护厅办公室

2015年1月21日印发



Annex 7 Duchang County Domestic Waste Comprehensive Treatment Plant EIA Approval 16

# 九江市环境保护局文件

九环评字〔2014〕48号

## 九江市环保局关于都昌县源生环保科技有限公司都昌县生活垃圾综合处理厂建设项目环境影响报告书的批复

都昌县源生环保科技有限公司：

你公司报送的《都昌县源生环保科技有限公司都昌县生活垃圾综合处理厂建设项目环境影响报告书》（以下简称《报告书》）、九江市环境工程评估中心《都昌县源生环保科技有限公司都昌县生活垃圾综合处理厂建设项目环境影响报告书评估意见》（以下简称《评估意见》）、都昌县环保局《关于都昌县源生环保科技有限公司都昌县生活垃圾综合处理厂建设项目环境影响报告书初审意见》（都环评〔2014〕75号，以下简称《初审意见》）收悉。经研究，现批复如下：

- 1 -

## 一、项目基本情况及项目批复要求

### (一) 项目基本情况

项目建设地点位于都昌县西郊顺风路北侧，都昌县污水处理厂西侧（地理坐标为东经  $116^{\circ} 10' 03.63''$ ，北纬  $29^{\circ} 16' 12.76''$ ），属新建项目。项目总占地面积  $26525\text{m}^2$ ，建筑占地面积为  $6506.2\text{m}^2$ ，总建筑面积为  $8043.7\text{m}^2$ 。项目总投资为 7800 万元，环保投资 810 万元，占总投资的 10.4%。服务范围：都昌镇、北山乡、汪墩镇、三叉港镇的居民生活垃圾，都昌县污水处理厂产生的污泥，设计处理规模  $380\text{t}/\text{d}$ ，其中建设生活垃圾  $300\text{t}/\text{d}$ ，都昌县污水处理厂浓缩污泥  $10\text{t}/\text{d}$ ，预留畜禽粪便  $20\text{t}/\text{d}$  以及餐厨垃圾  $50\text{t}/\text{d}$ （包括秸秆、菜市场和屠宰场等地产生的生物质废物）处理规模，垃圾分选后采用“城市有机废弃物联合厌氧发酵”工艺，严禁工业废物及危险废物进入垃圾综合处理厂。

### (二) 工程建设内容

主体工程：集料间、前分选车间、沼液处理及造肥车间、木塑车间、污泥处理车间；公用辅助工程：罐区、SBR 池、废弃物堆场、供电、供汽、锅炉房、给排水、办公及生活设施等；环保工程：废气处理设施、事故应急池、危废暂存等。

### (三) 项目批复意见

都昌县发改委以（都发改字〔2013〕228 号）文同意项目开展前期工作，都昌县规划局以（选字第 360428201400072 号）出具了项目选址意见书，同意项目选址。根据各相关部门对项目建设

的批复、都昌县环保局《初审意见》、《报告书》结论、九江市环境工程评估中心“报告书编制较规范，专题设置合理，环保防治对策总体可行，基本符合环评技术导则规范要求”的《评估意见》结论，在认真落实《报告书》提出的各项污染防治措施，事故预防与应急措施达到本批复要求的前提下，我局原则同意你公司按照《报告书》中的建设项目内容、规模、地址及环境保护对策措施等进行建设。

## 二、项目试生产和竣工验收的环保要求

### （一）项目试生产要求

项目建设必须认真执行“配套的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，全面落实《报告书》中提出的各项污染防治措施，确保外排各类污染物全面稳定达标排放。

### （二）竣工验收要求

项目建成投入试生产前须书面向我局提出申请，经我局现场检查确认各项污染防治措施到位后方可进行试生产，试生产期内（3个月）必须按规定程序向我局申请办理项目竣工环保验收手续，未经验收或验收不合格不得投入生产。

## 三、项目施工期的污染防治

加强施工期环境保护管理。按报告书要求落实相应环保措施，防止施工扬尘和噪声污染。

## 四、项目建设的污染防治措施及要求

该《报告书》可作为本项目工程设计和环境管理的依据，项目在工程设计、建设和环境管理中，你公司必须认真予以落实，并注重做好以下各项工作：

#### （一）废水污染防治

严格按照“雨污分流、清污分流”的原则建设给排水系统。项目垃圾收集产生的渗滤液送至发酵罐、垃圾收集槽清洗废液回收至调节罐内，均不得外排；废气处理洗涤废水循环使用；生产设备外表及地面冲洗废水、纯水制备废水，与生活污水一并经预处理后达到都昌县污水处理厂进水水质标准，进入都昌县污水处理厂处理，排放标准执行《城镇污水处理厂污染物排放标准》（GB18918-2002）一级B标准，否则项目不得投入生产。

#### （二）废气污染防治

严格落实《报告书》提出的无组织废气及各废气排放源的污染防治措施，有效控制生产过程中产生的各类废气，确保无组织废气排放浓度满足《大气污染物综合排放标准》（GB16297-1996）要求。项目集料车间、前分选车间、污泥处理车间、制肥车间、木塑车间等工序应采用密闭措施，垃圾收集槽、分选平台、密封输送带上部设置集气罩，各车间均采用负压系统，恶臭气体经收集后均采用生物除臭系统进行除臭，其中，集料车间、前分选车间共用一套生物除臭装置，污泥处理车间、制肥车间、木塑车间各分设生物除臭装置，各排气筒高度均不得低于15米，基料造粒中产生的粉尘采用旋风除尘器除尘后由不低于15米高排气筒

排放，锅炉须以本项目产生的沼气为燃料，燃烧尾气由不低于 8 米高排气筒排放。项目恶臭污染物排放执行《恶臭污染物排放标准》（GB14554-93）中二级新扩改建标准，大气污染物排放执行《大气污染综合排放标准》（GB16297-1996）表 2 中二级标准，燃气锅炉烟气排放执行《锅炉大气污染物排放标准》（GB 13271-2001）二类区 II 时段标准。

上述废气排气筒高度应符合国家标准规定要求，并设置永久性采样、监测孔和采样监测用平台。

### （三）噪声污染防治

通过设备选型和合理布局，对均料机、滚筒筛、磁选机、风选机、除尘风机类等设备采取隔声、消音、减振等噪声治理措施，确保厂界噪声达标排放，排放标准执行《工业企业厂界环境噪声排放标准》（GB12348-2008）2 类区标准。

### （四）固体废物处置

加强固体废物管理，落实固体废物的处理、处置措施。垃圾分类的大件干扰物（砂、石、陶瓷类等）按合同要求进行利用；木制品、布、塑料袋、废金属、废玻璃等综合利用；经加工处理的沼液、沼渣按协议仅用于除绿化、林场苗圃以外的农业项目；废灯管、废电池等属于危险废物，在项目试生产前与有资质的危废处置单位签订处置协议；不可利用的废物送九江市威力亚城市垃圾填埋厂处理，不得随意乱扔，防止二次污染。

### （五）项目总量指标

项目总量控制指标在都昌县减排项目中调剂，并应满足九江市环保局核实确认的总量控制指标要求，即：项目总排放量  $SO_2 \leq 0.01t/a$ 、 $NO_x \leq 3.02t/a$ ，污水处理厂接管考核量  $COD_{Cr} \leq 0.19t/a$ 、 $NH_3-N \leq 0.026t/a$ 。

#### （六）运行管理要求

加强各生产环节管理，选择工艺成熟、效果稳定，经济技术可行的废气工艺，污染治理装置须与对应的生产工艺设备同步运转。

#### （七）风险防范

你公司应认真落实各项环保措施，科学组织生产，加强环境教育与管理，杜绝发生污染事故。加强非正常工况污染物排放和污染事故防范，设置足够容量的沼液处理池及事故应急池，按规范要求制定详实的环境事故应急预案，落实责任部门，降低环境污染风险水平。在垃圾处理系统发生故障且沼液得不到及时利用时，你公司应无条件停产。沼气储存区应设置安全警示标志，加强对输气系统日常管理，防范气体泄漏。

#### （八）规范整治排污口

按国家和我省排污口规范化整治要求设置各类排污口和标识，并建立档案，严禁生产废水混入清下水管网外排，厂区内不得设置废水排放口。

#### （九）环境监理

项目配套的环保设施必须委托有环保工程设计资质的单位设计，严禁无证设计或超范围设计。

#### (十) 工程设计

项目开工建设之前须委托具有环境保护监理资质的监理单位进行环境保护监理，有关监理计划报我局备案。工程结束后，环保监理报告将作为工程竣工环保验收的依据。

#### 五、地下水污染防治

建设单位应认真落实本报告书提出地下水的防护措施，对于厂区各污染防治区的防渗结构应根据环评报告要求进行设计和建设，确保各污染防治区的防渗能力满足要求，按《报告书》中提出的要求建设地下水监测井，同时确保产生的固体废物得到综合利用或妥善处理，防止废水下渗污染地下水。一旦发现地下水污染事故，立即启动应急预案、采取应急措施控制地下水污染。

#### 六、健全制度和加强管理

按规定设置专门的环保管理机构。健全环保规章制度，制定严格的环境保护岗位责任制，责任到人，措施到位，并加强环保设施的运行维护管理，严禁擅自闲置，停用环保治理设施。当污染防治措施发生故障时，应立即停产整改，严防污染物事故排放和超标排放。

#### 七、其他环保要求

##### (一) 厂界周边规划控制要求

项目卫生防护距离以集料间和前分车间边界至外 300 米，卫

生防护距离的渔民临时住宅和水科所办公楼在项目试生产前必须予以搬迁。在卫生防护距离（300米）范围内不得建设居民住宅、学校、医院、食品加工等环境敏感建筑。

#### （二）项目变更要求

本批复自下达之日起5年内有效，项目的性质、规模、地点、采用的生产工艺、使用的原辅材料或防治污染措施发生重大变动或超过5年开工建设，必须重新报我局办理环保审批手续。

#### （三）违法追究

对已批复的各项环境保护事项必须认真执行，如有违反将依法追究法律责任。

#### （四）日常环保监管

你公司应在接到本批复后10个工作日内，将批准后的《报告书》及批复送到都昌县环保局，都昌县环保局要配合我局认真做好项目建设的日常环境监督管理工作，市环境监察支队要加强对项目实施过程中的环境稽查。



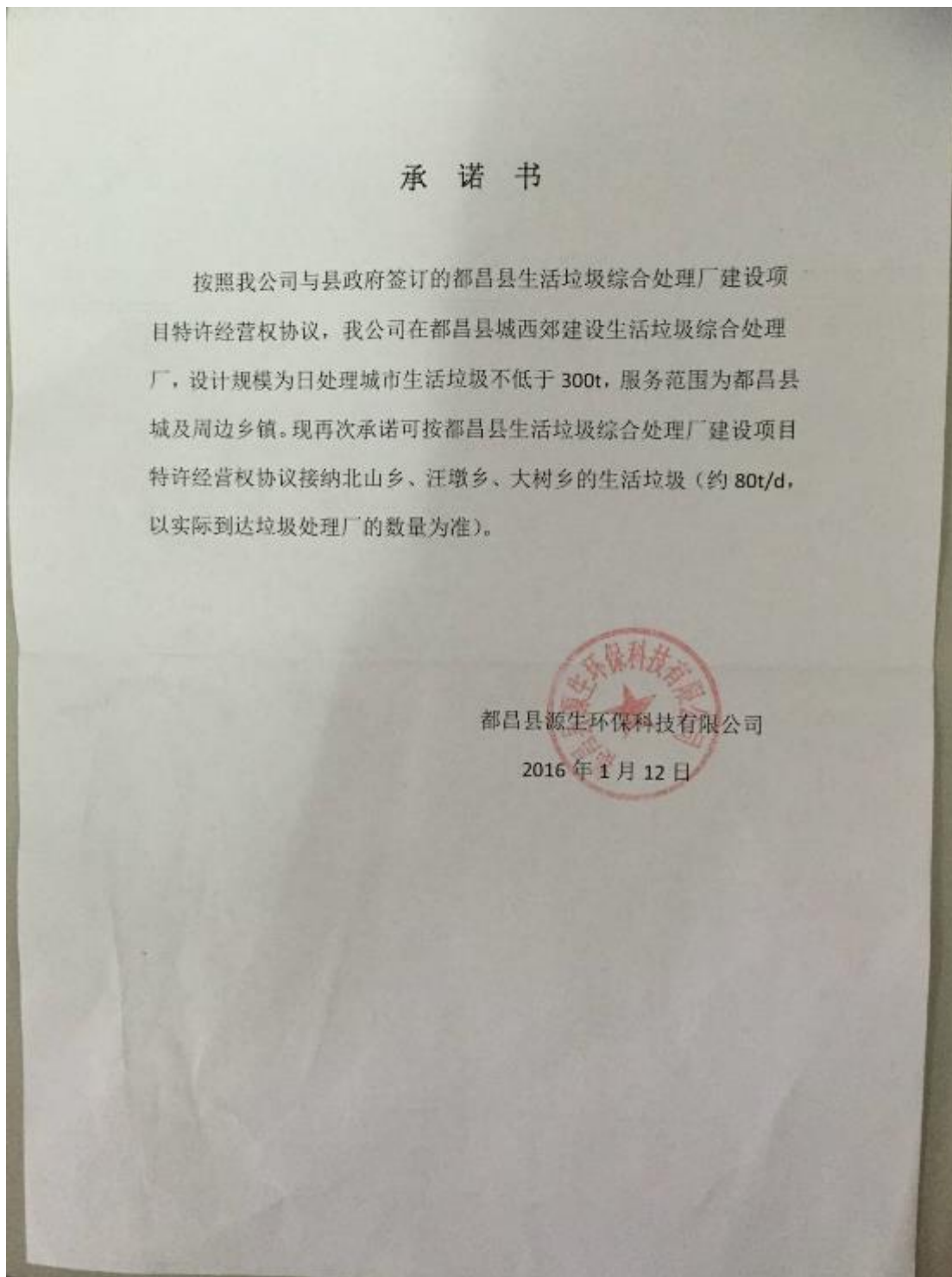
抄送：都昌县人民政府，都昌县发改委，市局污防科，市环境监察支队，都昌县规划局，都昌县环保局，都昌县城市管理局，九江市环境科学研究所。

九江市环境保护局办公室

2014年4月17日印发



## Annex 8 Solid waste receiving agreement between Duchang County Domestic Waste Comprehensive Treatment Plant and 3 Townships of the project



## Annex 9 Jiujiang second domestic waste Treatment Plant Phase I EIA Approval

### 关于九江市第二生活垃圾处理场 (原九江市生活垃圾处理工程) 一期工程 竣工环境保护验收的批复

九江威立雅环境服务有限公司：

你单位提交的《九江市第二生活垃圾处理场(原九江市生活垃圾处理工程)一期工程竣工环境保护验收申请报告》收悉。根据《建设项目环境保护条例》和环境保护部《建设项目竣工环境保护验收管理办法》的有关规定,我局组织市环境监察支队、九江县环保局等部门单位对该项目竣工环境保护情况进行了检查验收,并将有关检查验收与监测结果在九江市环境保护网上予以公示。经研究,我局验收意见如下:

#### 一、项目基本情况

九江市第二生活垃圾处理场(原九江市生活垃圾处理工程)建设地点位于九江县沙河镇陈家垅,项目设计总填埋库容  $1350 \times 10^4 \text{m}^3$ , 填埋库区占地  $49.7 \times 10^4 \text{m}^2$ , 起始处理规模 600 吨/天(每年 6% 递增), 服务年限 29 年。本次验收针对一期工程, 占地 350.593 亩, 总投资 17344.7 万元, 填埋库容量  $124.51 \times 10^4 \text{m}^3$ , 厌氧卫生填埋, 采用分层摊铺、往返碾压、分单元逐日覆盖的填埋工艺; 渗滤液处理站处理能力 300 吨/天。

按照环境影响评价制度规定, 建设单位于 2008 年 6 月委托萍乡市环境科学研究所编制完成《九江市城市垃圾处理工程建设项目

目环境影响报告书》，2008年6月20日，我局对该项目环评报告书进行了批复（九环督字[2008]50号）。因填埋库区的建设方案发生变化，填埋库区南缘扩展300m（将原有九江县简易垃圾填埋场包含在内），并将填埋方案调整为先南后北，按规定建设单位于2009年10月委托九江市环境科学研究所编制完成《九江市第二生活垃圾处理场（原九江市生活垃圾处理工程）环境影响评价补充报告》，2009年10月28日，我局对该项目环评补充报告书进行了批复（九环督字[2009]144号）。项目于2010年5月开工建设，2011年1月开始接收垃圾进场处理。

## 二、环保执行情况

九江市环境监测站编制的《九江市第二生活垃圾处理场（原九江市生活垃圾处理工程）一期工程竣工环境保护验收监测报告》表明：

（一）废水治理：项目废水主要是渗滤液废水和生活废水。渗滤液废水经场内污水处理站（处理工艺为“MBR（两级硝化+两级反硝化+超滤）+纳滤”，设计规模300吨/天）处理后，与经化粪池处理后的生活污水，一并通过市政管网排入九江县生活污水处理厂处理后排放。监测结果显示，渗滤液污水处理站出口化学需氧量、生化需氧量、氨氮、总磷、六价铬、悬浮物、汞、铅、锌、镉、色度、粪大肠菌群均满足《生活垃圾填埋污染控制标准》（GB16889-2008）表2中生活垃圾渗滤液排放标准。

（二）废气治理：项目垃圾填埋沼气收集后燃烧；无组织废气

通过落实卫生防护距离,开展场区绿化,减少对周围环境的影响。监测结果显示,厂界及周边环境敏感点的氨和硫化氢均满足《恶臭污染物排放标准》(GB14554-1993)表1中二级新扩改建标准,粉尘满足《大气污染物综合排放标准》(GB16297-1996)表2中无组织排放监控浓度限值。

(三) 噪声治理:采取优化总平面布置,合理布置高噪声设备,选用低噪声设备,对噪声源进行隔声、降噪等措施,确保厂界噪声满足相应标准要求。监测结果显示,项目厂界昼、夜噪声等效声级均满足《工业企业厂界环境噪声排放标准》(GB12348-2008)2类标准。

(四) 地下水污染防治:对垃圾填埋场进行了防渗处理,设置了地下水监测井。监测结果显示,地表水 pH、化学需氧量、生化需氧量、氨氮、总磷、六价铬、铜、汞、铅、锌、镉、粪大肠菌群均满足《地表水环境质量标准》(GB3838-2002)III类标准;地下水亚硝酸盐、铜、铅、锌、镉、粪大肠菌群均满足《地下水环境质量标准》(GB/T14848-93)III类标准。

(五) 总量控制指标:九江市环保局下达的项目总量控制指标为 COD 10.95t/a, NH<sub>3</sub>-N 2.74t/a, 经核算一期主要污染物年排放量在总量控制指标范围内。

(六) 排污口规范化:废水排放口安装了在线监测仪器,并与九江市环境监控平台联网。

(七) 卫生防护距离:根据测绘结果,项目卫生防护距离内无

居民住宅等环境敏感点。

(八) 环境风险防范：建设单位制定了环境风险应急预案。

(九) 公众意见调查：验收监测报告中公众意见调查结果表明，大部分被调查者对该项目的环保工作表示满意或较满意。

### 三、验收批复意见

根据环境保护部《建设项目竣工环境保护验收管理办法》和验收组验收意见，以及九江县环保局关于该项目初步验收意见，该项目基本符合竣工环境保护验收条件，公示以来无单位和群众提出异议，我局原则同意该项目通过竣工环境保护验收。

### 四、项目运行后应做好以下工作

(一) 加强环保设施的运行管理和维护，保证环保设施正常运转，做好日常运行台账记录，确保污染物稳定达标排放。

(二) 做好在线监测仪器仪表的运行维护，确保在线监测数据真实有效、稳定上传。

(三) 加强环境管理，防止跑、冒、滴、漏，禁止渗滤液不按规定处理处置；强化垃圾运输、填埋过程管理，减少废气对周边环境的影响。

(四) 按照《生活垃圾填埋场污染控制标准》(GB16889-2008)，制定环境监测计划，加强项目废水及周边地下水水质监测，做好环境信息公开。

(五) 提高企业应急事故处置能力，不断完善环境风险应急预案，按要求落实各项风险防范措施并配备足量的应急物资，定

期演练，确保环境安全。

#### 五、其它环保要求

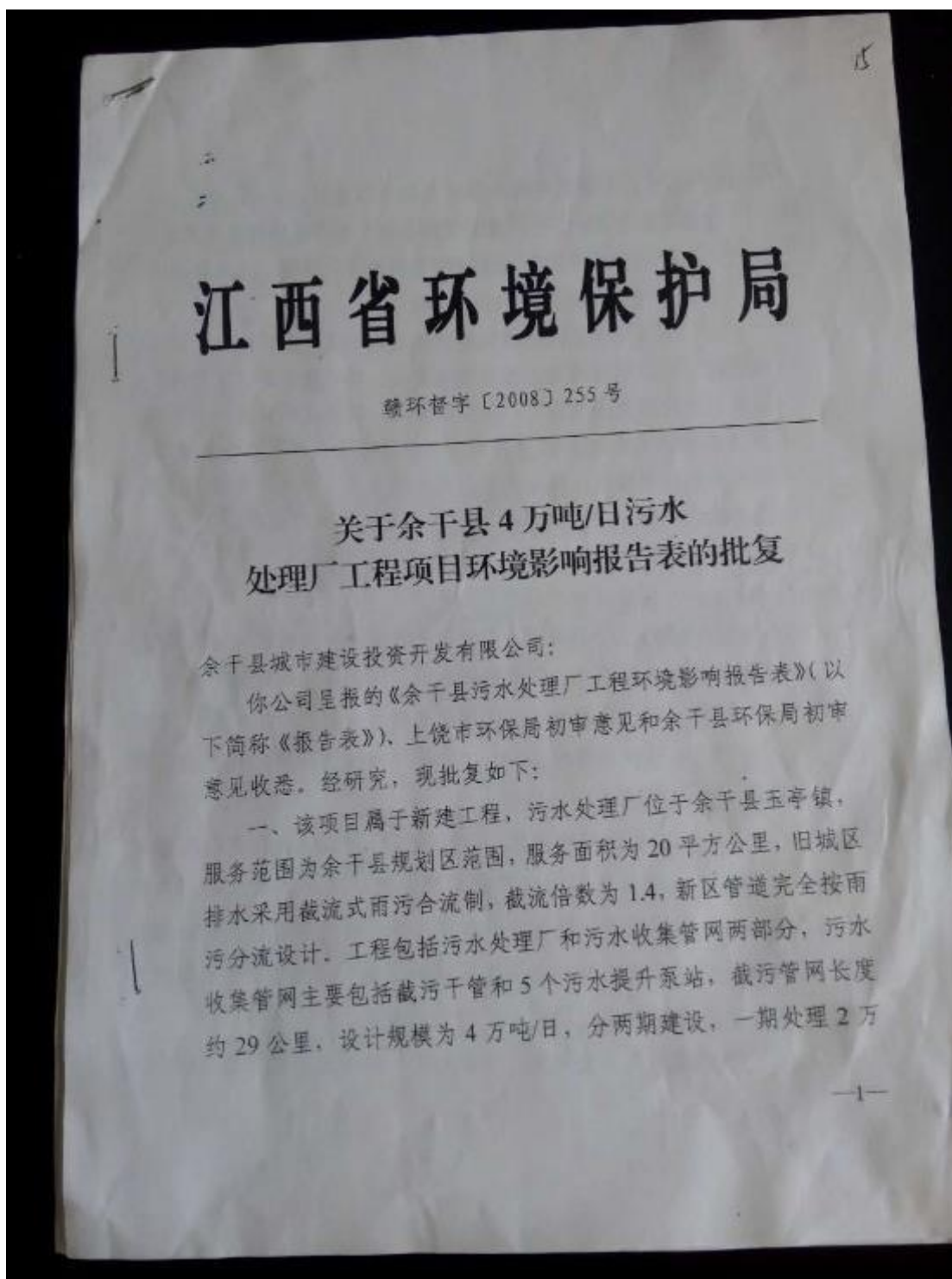
(一) 请九江市环境监察支队和九江县环保局监督该单位认真落实各项环境保护要求，并加强对该项目的日常监督管理，发现问题必须及时依法处理，并向我局报告。

(二) 若项目建设内容、地点、规模、工艺、采取的环境保护措施等发生重大变化，必须按照相关规定重新申请办理环保相关手续。

九江市环境保护局

2016年3月17日

## Annex 10 Yugan County Wastewater Treatment Plant EIA Approval



吨/日，处理工艺为氧化沟，排水去向为互惠河。

根据《报告表》结论以及上饶市、余干县环保局的初审意见，同意你局按《报告表》所列建设项目的性质、规模、地点 and 环境保护对策措施进行建设。

二、项目建设必须严格执行“配套的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，环保投资必须落实，并专款专用。项目建成试运行前须向上饶市环保局书面报告(抄报我局)，并经市环保局现场检查同意。项目按照分期验收，竣工3个月内必须向我局申请办理竣工环境保护验收手续，验收合格后，项目方能投入正式生产。

三、项目建设和运行应重点做好以下工作：

(一) 在设计和建设中落实环保有关要求。

1、优化厂区平面布置。产生恶臭污染物和高噪声设施应尽量远离周边环境敏感点，采取封闭系统、绿化等措施控制恶臭的产生和扩散，并向政府报告，严格控制污水处理厂周边规划，污水处理厂卫生防护距离内(200米)不得新建医药等环境要求较高的企业和居民住宅等建筑物。

2、落实在线监测装置。与主体工程同步设计和建设污水处理厂入水水质自动在线监控系统及排放口污水水量自动计量装置，自动比例采样装置和主要水质指标在线监测装置。根据国家和省排污口规范化整治的要求规范设置各类排污口，污水在线监测装置应和环保部门联网，进行时时监控。

3、完善污泥安全处置。污水处理厂的污泥应进行稳定化和脱



2. 物质的工业废水排入污水管网，各类工业废水预处理达到入水管网要求方能送污水处理厂进行集中处理。

2. 坚决杜绝事故性排放。污水处理厂事故排放时，尾水排放口以下将出现5公里的超标污染带，因此污水处理厂要加强运营管理，同时建立事故时的应急预案和措施，将环境影响降低至最低程度。

3. 加强化学危险品环境风险防范。消毒剂液氯属有毒有害物质，事故泄漏时对环境会产生较严重的危害，氯库及加氯间应安装漏氯检测仪、泄氯报警器，并制定风险防范措施和事故应急预案，防范使用中的环境风险。

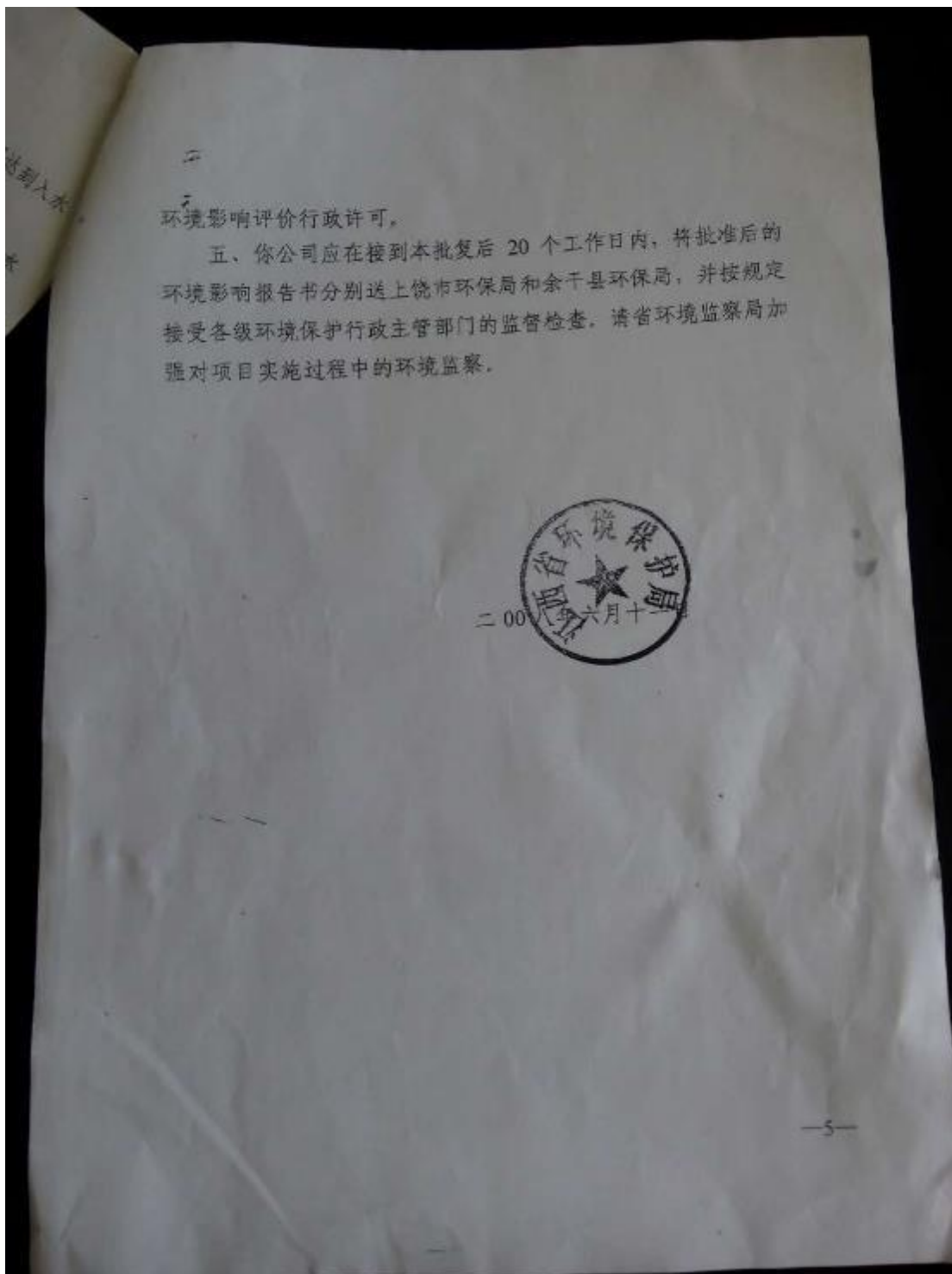
(三) 运行期间，外排污染物必须达到以下要求：

1. 外排废水必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)一级B标准后方可排入互惠河。

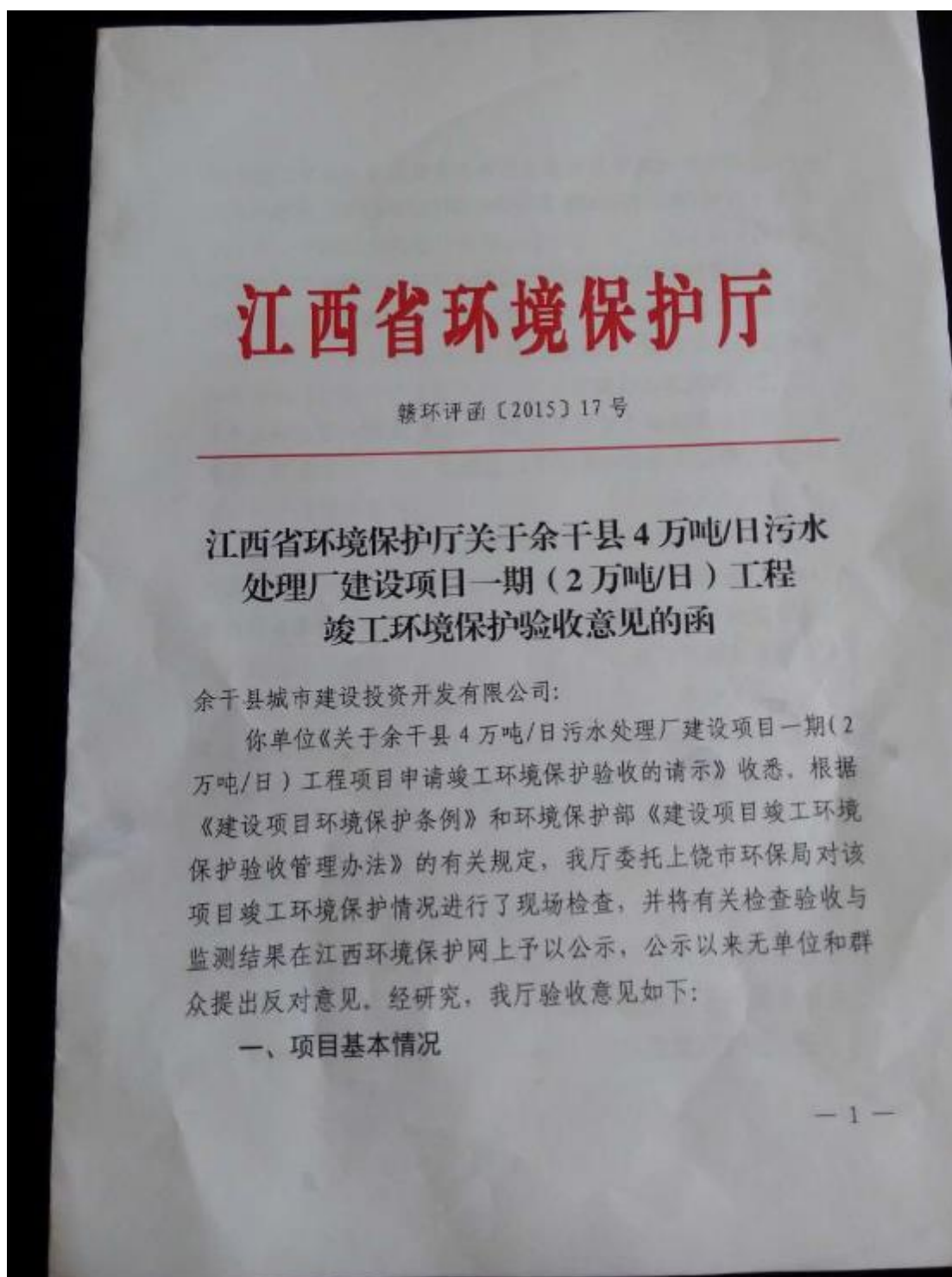
2. 外排废气必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)二级标准，污水处理厂周围应同期建设绿化带。

3. 选用低噪声设备，并对设备采取隔声减震、密闭等措施，降低噪声的影响。工程建成后，污水处理厂和污水提升泵站厂界噪声必须达到《工业企业厂界噪声标准》(GB12523-90) II类标准。

四、以上批复仅限于《报告表》确定的建设内容，若建设地点、项目内容、规模、工艺、性质、拟采用的防治污染措施等发生变化或自批准之日起超过5年方开工建设必须重新向我局申请



## Annex 11 Yugan County Wastewater Treatment Plant Environmental Protection Acceptance Approval



余干县污水处理厂位于余干县玉亭镇小毛溪余家，设计规模为 4 万吨/日，实际建设规模为一期 2 万吨/日，污水处理工艺为氧化沟工艺。

建设单位 2008 年 3 月委托江西省环境保护科学研究院完成建设项目环境影响评价工作，同年 6 月原江西省环保局以赣环督字[2008]255 号文予以批复。

## 二、验收监测结果

以下结果来源于省环境监测中心站提交的《监测报告表》和上饶市环保局现场检查情况的汇报。

### (一) 废水

项目外排废水满足《城镇污水处理厂污染物排放标准》(GB18918-2002)一级 B 标准要求，总排口安装有在线监控系统(监控项目包括流量、pH 值、COD、氨氮)，并与省环保厅在线监控系统联网运行。

### (二) 噪声

厂界昼夜噪声值监测结果均满足《工业企业厂界环境噪声排放标准》(GB12348-2008)中 2 类标准要求。

### (三) 防护距离情况

根据省环境监测中心站现场踏勘、上饶市环保局《关于余干县 4 万吨/日污水处理厂建设项目一期 2 万吨/日污水处理工程验收现场检查意见》结论，该项目卫生防护距离(200 米)范围内无居民区等环境敏感点。

## 三、验收批复意见

该项目基本符合竣工环境保护验收条件,公示期间无单位和群众提出异议,同意该项目通过竣工环境保护验收。

#### 四、对项目今后运行管理的要求

(一)加强环境保护管理。严格禁止含有《污染物综合排放标准》(GB8978-1996)表1中第一类污染物的工业废水排入污水管网,严格控制含有重金属、持久性有机污染物,病原体和有毒有害物质的工业废水排入污水管网。

(二)强化环境应急管理。进一步完善环境风险防范应急预案,避免发生环境污染事故。强化应急措施,做到达标排放,防止对环境造成影响。

(三)卫生防护距离控制要求。请余干县环保局向余干县人民政府专题报告,应严格控制污水处理厂周边规划,卫生防护距离(200米)内不得规划和新建食品等环境要求较高的企业及居民住宅等建筑物。

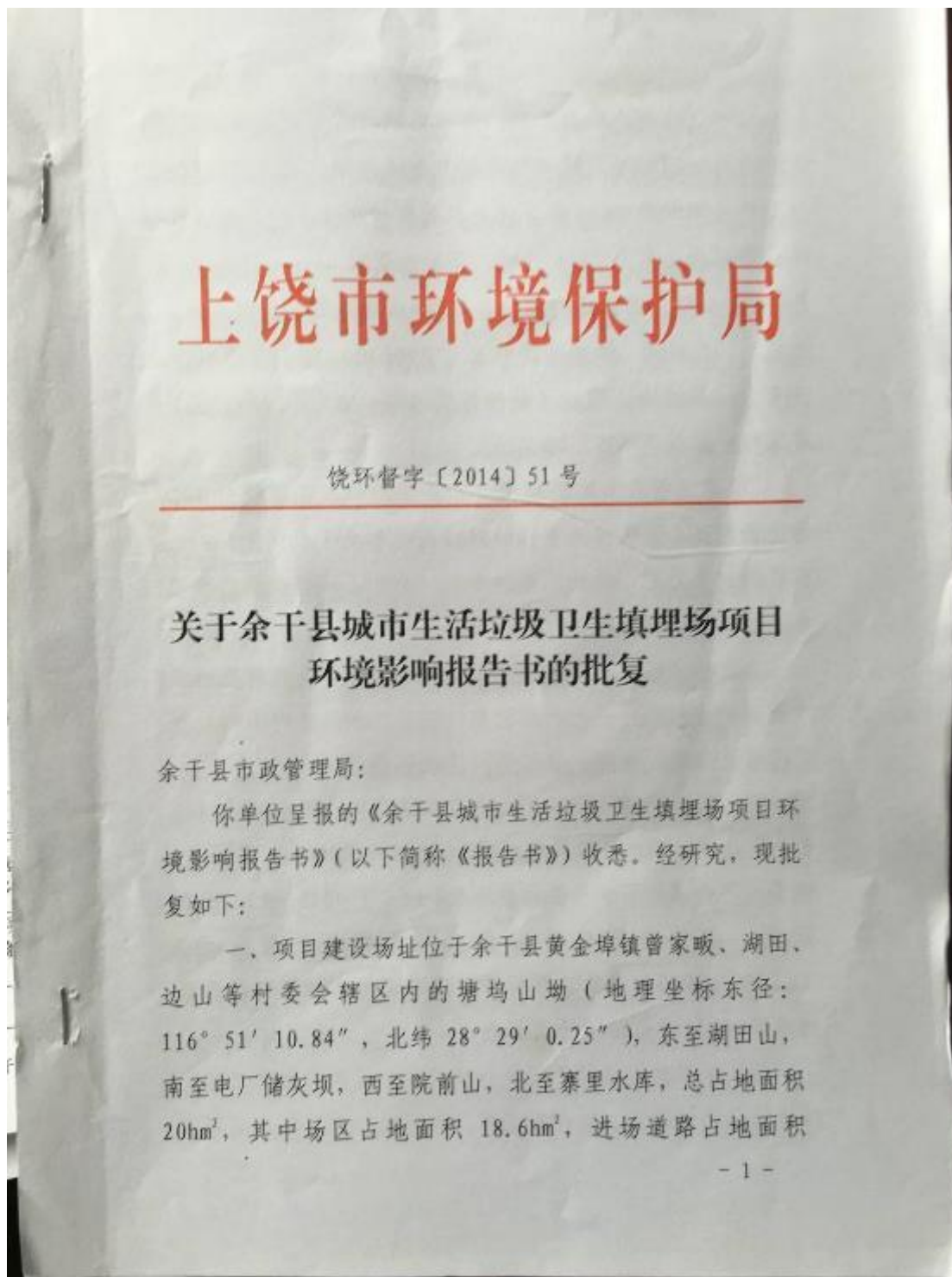
#### 五、日常环境监管要求

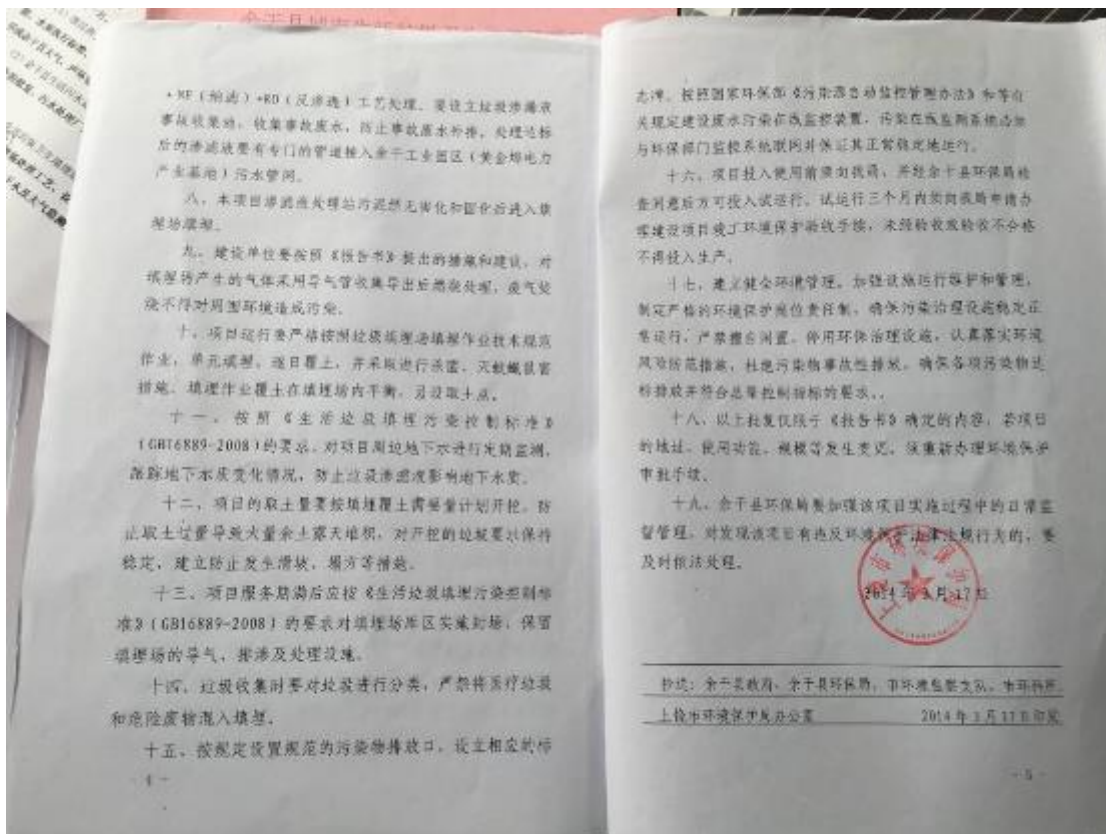
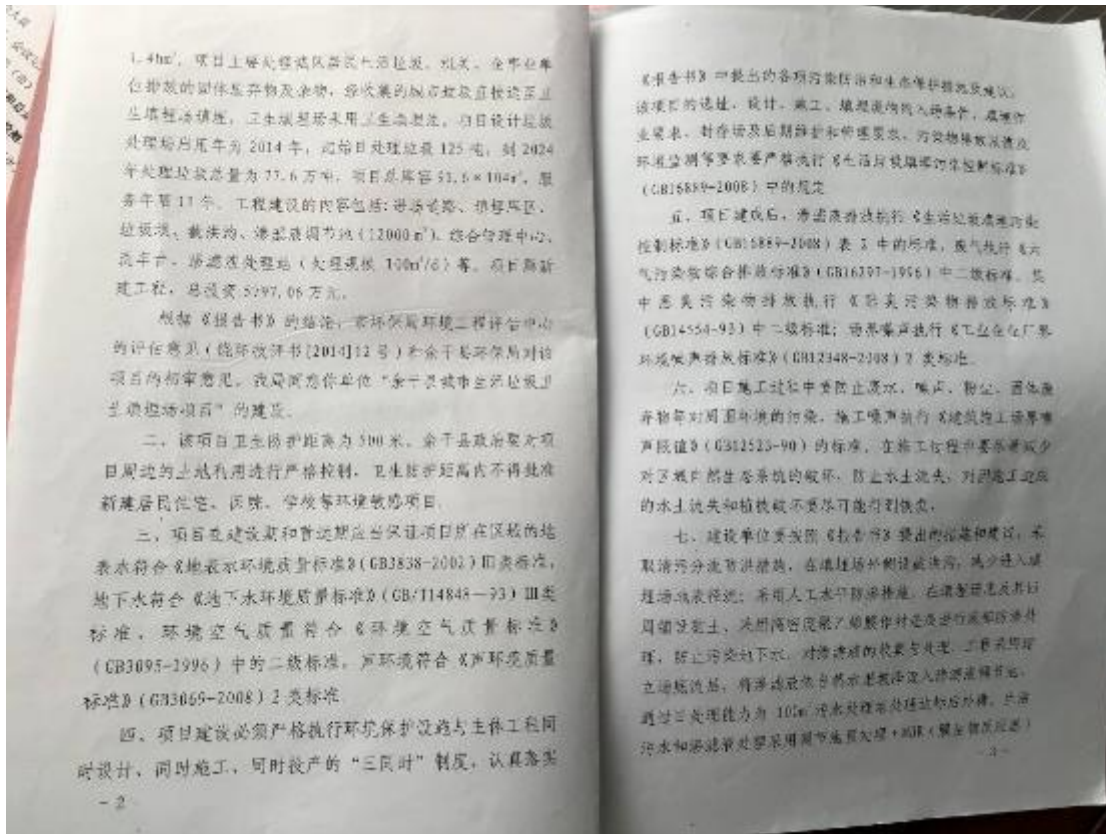
请省环境监察局、上饶市环保局、余干县环保局加强该项目运行期日常环境监管。



(此件主动公开)

## Annex 12 Yugan County Domestic Waste Landfill Plant EIA Approval





## Annex 13 Fengxin County Wastewater Treatment Plant EIA Approval

# 江西省环境保护局

赣环督字〔2008〕426号

## 关于奉新县污水处理厂 建设项目环境影响报告表的批复

奉新县环境保护局：

你局呈报、江西省环境保护科学研究院编制的《奉新县污水处理厂建设项目环境影响报告表》（以下简称《报告表》）、宜春市环保局初审意见均收悉。经研究，现批复如下：

一、该项目位于奉新县北部郑家洲村东侧，工程包括污水处理厂、配套截污管网和污水中途提升泵站建设三部分，预计总投资约4495.23万元，占地面积18000平方米，处理规模为1.5万吨/日，处理工艺为氧化沟，排水去向为南潦河；

污水收集管网主要包括截污干管和2座污水提升泵站，截污管网长度约20千米，截污倍数为2，工程服务范围为奉新县城北

—1—



片区、城南片区。已建成排水管网区域排水逐步改为雨污分流制，未开工排水管网区域排水采用雨污分流制。

根据《报告表》结论以及宜春市、奉新县环保局的初审意见，该建设项目选址符合奉新县城镇总体规划及土地利用规划，我局原则同意建设项目按《报告表》所列的性质、规模、地点和环境保护对策措施进行建设。

二、工程建设必须依法严格执行“配套的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，认真落实各项污染防治措施，环保投资必须专款专用。

三、你局在项目建设中要认真落实环评报告表提出的各项污染防治措施，严格执行宜春市环保局提出的有关环境质量和污染物排放标准，确保污染物达标排放。工程建设应重点做好以下不同阶段的环保工作：

（一）在设计和建设中落实环保有关要求。

1、优化项目选址选线及厂区平面布置。截污管网应与污水处理厂同步建设，合理选择截污管网线路，污水提升泵房应尽量远离周围环境敏感目标。厂区内产生恶臭污染物和高噪声设施应尽量远离周边环境敏感点，采取封闭系统、绿化等措施控制恶臭的产生和扩散；当地政府应严格控制污水处理厂周边规划，污水处理厂卫生防护距离（200米）内不得新建住宅、学校、医院、养老院等环境要求较高的建筑物。

2、落实在线监测装置。与主体工程同步设计和建设污水处

理厂进水水质自动在线监控系统及排放口污水水量自动计量装置、自动比例采样装置和主要水质指标在线监测装置。根据国家和省排污口规范化整治的要求规范合理设置各类排污口，污水在线监测装置应与环保部门联网，接受各级环保部门的实时监控。

3、完善污泥安全处置。妥善考虑污泥去向，严禁污水处理厂污泥随意处置。污泥临时堆场和卫生填埋场的选址建设须满足《生活垃圾填埋污染控制标准》(GB16889-1997)要求，并与污水处理工程同步建设，同步投入使用，确保污泥得到妥善处理，防止产生二次污染。

4、实施施工期环境监理。按照《报告表》的要求，制定并实施施工期环境监理计划，施工招标文件、施工合同和工程监理文件中应明确环保条款和责任，落实施工期污染防治措施，并定期向我局和当地环保局报告。

#### (二) 强化运行期间环境管理。

1、有条件接纳工业废水。为保证污水设施的正常运行，必须按照《报告表》中提出的接纳工业废水限制措施要求对工业废水进行有条件接纳，禁止含有《污水综合排放标准》(GB8978-1996)表1中第一类污染物的工业废水排入污水管网，严禁限制排水量大于2000吨/日的工业废水排入污水管网，严禁拦截含有重金属、持久性有机污染物、病原体和有毒有害物质的工业废水排入污水管网，各类工业废水预处理达到入水管网要求方能送污水处理厂进行集中处理。

2、防止事故性排放。在污水处理厂事故排放时，尾水排放口以下将出现较长的超标污染带，因此污水处理厂要加强运营管理，同时建立事故应急预案并报当地环保部门备案，并采取有效措施保证电力供应及处理设施正常运行，建设事故应急池，严禁事故废水排放。

3、强化环境管理，应设立专门环保管理机构，建立健全日常环保管理制度，落实岗位责任，建立污水处理厂运行台帐制度，并定期向当地环保部门汇报污水处理厂的运行情况。

4、加强化学危险品环境风险防范。消毒剂液氯属有毒有害物质，事故泄漏时对环境会产生较严重的危害，氯库及加氯间应安装漏氯检测仪、泄氯报警器，并制定风险防范措施和事故应急预案，防范使用中的环境风险。

5、污水处理厂的污泥应进行稳定化和脱水处理，污泥稳定化应满足《城镇污水处理厂污染物排放标准》(GB18918-2002)“污泥稳定化控制指标”要求，脱水后的污泥含水率应小于 80%，采用卫生填埋方式处置。

6、污水处理厂运行时自身产生的生活污水、构筑物放空或维修时的污水和排放的上清液等均回送至污水处理入口进行处理，不得直接外排。生活垃圾由环卫部门统一收集处理，严禁随意倾倒。

(三)运行期间，外排污染物必须达到以下要求：

1、外排废水必须达到《城镇污水处理厂污染物排放标准》

(GB18918-2002) 一级 B 标准后方可排入南潦河。

2、应采取封闭系统、绿化等措施控制恶臭的产生和扩散，外排废气必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002) 二级标准，污水处理厂周围应同期建设绿化隔离带。

3、选用低噪声设备，并对设备采取隔声减震、密闭等措施，降低噪声的影响。工程建成后，污水处理厂和污水提升泵站厂界噪声必须达到《工业企业厂界噪声标准》(GB12523-90) II 类标准。

四、项目建成试运行前必须向宜春市环保局书面报告(抄报我局)，并经市环保局现场检查并书面同意(抄报我局)后方可投入试运行。项目竣工 3 个月内必须向我局申请办理竣工环境保护验收手续，验收合格后，项目方能投入正式生产。

五、以上批复仅限于《报告表》确定的建设内容，若建设地点、项目内容、规模、工艺、性质、拟采用的防治污染措施等发生变化或自批准之日起超过 5 年方开工建设必须重新向我局申请环境影响评价行政许可。

六、你局应在接到本批复后 20 个工作日内，将批准后的环境影响报告表送宜春市环保局，并按规定接受各级环境保护行政主管部门的监督检查。请省环境监察局加强项目实施环境保护“三同时”过程中的环境监察。



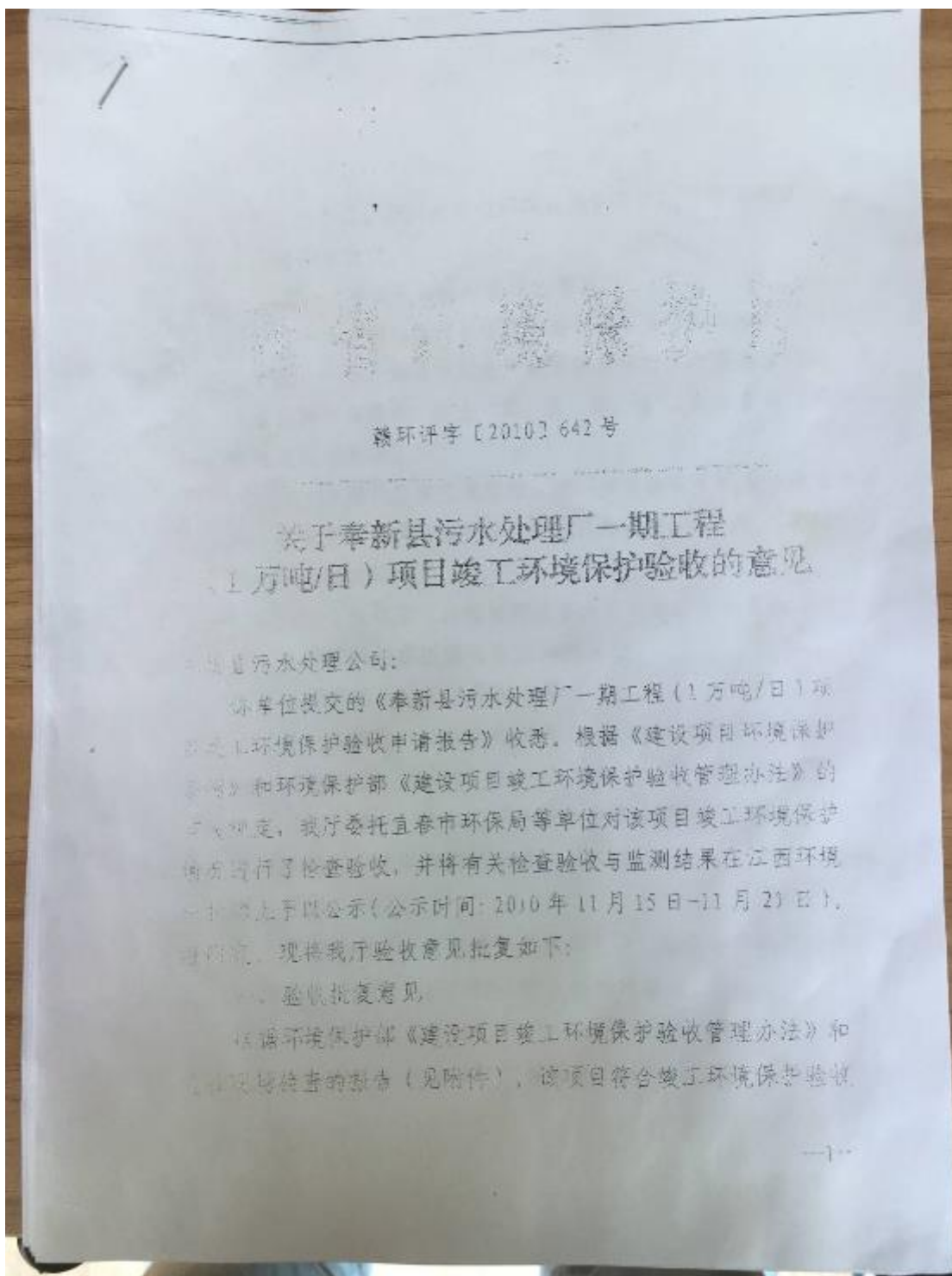
主题词：环评 污水处理厂 报告表 批复

抄送：省污水处理设施建设领导小组办公室，省发改委，省建设厅，宜春市环保局，奉新县政府，污染控制处，政策法规处，规划财务处，省环境监察局，省环境监测中心站，省固体废物管理中心。

江西省环境保护局办公室

2008年9月15日印发

## Annex 14 Fengxin County Wastewater Treatment Plant Phase I Environmental Protection Acceptance Approval



条件，鉴于公示期间无单位和个人群众提出异议，同意该项目通过竣工环境保护验收。

## 二、对项目今后运行管理的要求

(一) 加强环境保护管理。进一步加强环保设施的运行维护和管理，环保设施必须与生产设施同步运行，严禁擅自闲置、停用或拆除环保设施，防止“跑、冒、滴、漏”，确保各项污染物长期稳定达标排放。

(二) 强化环境应急管理。进一步完善环境风险防范应急预案，避免发生环境污染事故。强化应急措施，做到达标排放，防止对环境造成影响。

(三) 加强废水在线监控设备及系统的建设和管理。尽快与省、市环保部门在线监控系统联网运行。

## 三、项目运行的排放标准要求

(一) 废气：该项目外排废气必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)中的二级标准限值要求。

(二) 废水：本项目外排废水中各项污染因子必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)表1中一级A标准要求。

(三) 噪声：厂界噪声必须满足《工业企业厂界环境噪声排放标准》(GB12348-2008)中2类标准要求。

## 四、环保监管要求

请省环监局加强项目日常运行中的环境监察，请宜春市环保

局监督企业认真落实上述要求，并加强对该项目的日常监督管理，  
督促企业正常运行环保治理设施，严禁偷排、直排，发现问题必  
须及时依法处理，并向我厅报告。

附件：关于奉新县污水处理厂（一期）万（t/d）项目环境保  
护竣工验收现场检查的情况汇报

二〇一〇年十一月二十四日



## Annex 15 Fengxin County Wastewater Treatment Plant Phase II EIA Approval

# 宜春市环境保护局

宜环评字〔2014〕385号

## 关于奉新县城市污水处理有限公司奉新县城市污水处理厂二期工程环境影响报告表的批复

奉新县城市污水处理有限公司：

你公司报送的《奉新县城市污水处理有限公司奉新县城市污水处理厂二期工程环境影响报告表》（以下简称《报告表》）、宜春市环境保护局环境工程评估中心评估意见（宜环评估〔2014〕25号）（以下简称《评估意见》）和奉新县环境保护局（奉环评函字〔2014〕79号）的初审意见收悉，经研究，批复如下：

### 一、项目批复意见及基本情况

在认真落实《报告表》和《评估意见》提出的各项环保措施的前提下，同意该项目按《报告表》和《评估意见》所提供的建设地点、性质、内容、规模、生产工艺和污染防治对策进行建设。

本次批复项目基本情况：该项目属扩建工程，扩建工程污水处理能力1万m<sup>3</sup>/d，扩建后全厂污水处理规模为2万m<sup>3</sup>/d。奉新县冯川镇赤塆村郑家组，厂区地理位置坐标为东经115°24′8″、北纬28°42′33″，东面为空地，南、西面为居住小区，北面为奉新县污水处理厂一期工程。二期占地面积5280m<sup>2</sup>。

奉新县城市污水处理厂一期工程于2008年9月原江西省环保局以赣环督字〔2008〕426号文件批复，于2010年2月建成投入试运行，并于2010年11月原江西省环保厅以赣环评字〔2010〕642号文件通过竣工环保验收。一期工程采用“改良型氧化沟+紫外消毒”工艺处理奉新县主城区生活污水，设计处理能力1.0万m<sup>3</sup>/d，实际处理能力为1.01~1.02万m<sup>3</sup>/d。

扩建工程设计沿用一期工程污水处理工艺，设计处理能力为 $1.0 \text{万 m}^3/\text{d}$ ，设计进水水质为 $\text{COD}_{\text{Cr}} 280\text{mg/L}$ 、 $\text{NH}_3\text{-N} 25\text{mg/L}$ ，工程服务范围为首新县主城区，建成后全厂污水处理规模为 $2 \text{万 m}^3/\text{d}$ 。有条件接纳工业废水。为保证污水设施的正常运行，必须按照《报告表》中提出的接纳工业废水限值要求对工业废水有条件接纳，禁止含有《污水综合排放标准》（GB8978-1996）表1中第一类污染物的工业废水排入污水管网，严格限制排水量大于2000吨/日的工业废水排入污水管网，严格控制含有重金属、持久性有机污染物、病原体和有毒有害物质的工业废水排入污水管网，各类工业废水预处理达到入水管网要求方能送污水处理厂进行集中。

本项目建设内容：新建改良型氧化沟、二沉池、紫外消毒池、污泥浓缩脱水机房等主体工程；依托供水、供电等公用工程；依托综合办公楼、门卫值班室等辅助工程；新建废气收集处理装置、污水处理设施、设备减振降噪设施等环保工程。

项目总投资976.46万元，其中环保投资976.46万元，占总投资的100%。

## 二、项目建设的污染防治措施及要求

项目在工程设计、建设和生产过程中必须认真落实《报告表》、《评估意见》和《初审意见》提出的各项环保要求，并重点做好以下几项工作：

（一）施工期污染防治。必须合理安排施工时间和施工机械的使用，夜间禁止使用打桩机等高噪声设备，同时认真落实扬尘防治措施，减少扬尘对环境的影响。施工废水经沉淀处理后，回用于施工。

（二）废水污染防治：按“清污分流、雨污分流”原则建设厂区排水管网。本项目接纳污水量 $365 \text{万 m}^3/\text{a}$ ，采用“改良型氧化沟+紫外消毒”污水处理工艺处理后排入南潦河。

（三）废气污染防治：项目应采用先进的、密闭性能好的处理工艺与设备，采取有效措施加强无组织排放恶臭废气的治理。项目大气污染源主要为二沉池、氧化沟、沉砂池、污泥浓缩脱水机房产生的恶臭。

采用一体化浓缩脱水机对污泥进行浓缩、脱水，污泥在厂内停留时间短，脱水后泥饼及时外运填埋；厂内加强卫生防疫工作，定期进行消毒剂杀灭蚊、蝇；通过加强厂区绿化，建立有一定宽度的“乔木+灌木+乔木”三层结构的绿化带，使恶臭污染物无组织排放厂界监控点浓度达到国家相关标准。

（四）固废污染防治：应按“资源化、减量化、无害化”处置原则，认真落实固废分类收集、处置和综合利用措施。本项目

产生的格栅渣及沉砂，为一般固废，固废堆场应按照《一般工业固体废物贮存、处置场污染控制标准》(GB18599-2001)的要求设置和管理，定期清理，污泥用于作肥料或送垃圾填埋场处理；本项目生活垃圾定期外运，交由当地的环卫部门运至垃圾填埋场进行卫生填埋。

(五) 噪声污染防治：项目噪声源主要为曝气鼓风机、污泥浓缩脱水机、沉砂池砂水分离机、各类水泵等，应优化总平面布置，合理布置各项机械设备等高噪声设备，同时选用低噪声设备，对设备采取减振、隔振、隔声等综合措施，并加强厂区绿化，可有效降低生产噪声对厂界声环境的影响，确保噪声达标排放。

(六) 地下水污染防治。项目污水处理系统、污水管网铺设、固废仓库地面等应采取防渗硬化、防腐等措施，加强项目日常管理，防止废水下渗污染地下水。

(七) 卫生防护距离要求。经环评测算，确定项目卫生防护距离为 200m。在卫生防护距离内无《建设项目环境影响评价分类管理名录》中规定的环境敏感保护目标，符合卫生防护距离的要求。

奉新县人民政府应采取有效措施，今后，在项目环境防护距离内禁止建设居民楼、学校、幼儿园、医院等环境敏感建筑物。

(八) 排污口规范化。按国家有关规定设置规范的污染物排放口，安装在线监控，并设立标志牌。

三、项目污染物排放执行标准和排放总量控制要求

(一) 废水。废水排放执行《城镇污水处理厂污染物排放标准》(GB18918-2002)中一级B标准。

(二) 废气。施工期废气排放执行《大气污染物综合排放标准》(GB16297-1996)中二级标准；营运期恶臭废气执行《恶臭污染物排放标准》(GB14554-93)大气污染物排放标准中的二级标准。

(三) 噪声。施工期噪声必须达到《建筑施工场界环境噪声排放标准》(GB12523-2011)中规定要求。营运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 2 类标准。

(四) 污泥排放执行《城镇污水处理厂污染物排放标准》(GB18918-2002)中二级污水处理厂排放标准。

(五) 污染物总量控制要求。项目建成后，主要污染物排放总量必须满足奉新县环保局下达的总量控制要求，即：化学需氧量：219 t/a，氨氮：29.2t/a。

四、项目试运行和竣工验收的环保要求

(一) 试运行要求。项目建设必须确保环保资金的投入，污染防治设施应与主体工程同时设计、同时施工、同时投入运行。项目建成投产试运行须向奉新县环境保护局申请，并经奉新县环境保护局现场检查同意后，方可投入试运行。你厂不得擅息延长试运行期限，若需延期必须于试运营（三个月）结束前报我局批准。

(二) 运行管理要求。加强生产各环节的管理，最大限度地减少无组织排放。按规定设置环保管理机构，健全环保规章制度，制定严格的环境保护岗位责任制及风险防范预案和措施，并加强环保设施运行维护管理，严禁擅自闲置、停用或拆除环保治理设施。

(三) 环保竣工验收要求。项目试运行三个月内，必须按规定向我局申请办理竣工环境保护验收手续，验收合格后，方可投入正式运营。

#### 五、其他环保要求

(一) 项目变更环保要求。本批复仅限按报告表的建设内容，若项目建设性质、规模、地点、内容、采用的生产工艺或者防治污染的措施等发生重大变化必须重新报批。

(二) 日常环保监管。请奉新县环境保护局负责该项目建设监管，请宜春市环境监察支队负责企业环保“三同时”的检查。



抄送：奉新县环保局，局相关科室，局直属有关单位，福建高科环保研究院有限公司。

宜春市环境保护局秘书科

2014年12月30日印发

## Annex 16 Fengxin County Wastewater Treatment Plant Phase II Environmental Protection Acceptance Approval

# 宜春市环境保护局

宜环评验字〔2016〕35号

## 关于奉新县城市污水处理有限公司奉新县污水处理厂二期项目竣工环境保护验收意见的函

奉新县城市污水处理有限公司：

贵公司提交的《关于奉新县城市污水处理有限公司奉新县污水处理厂二期项目验收申请报告》收悉。根据《建设项目环境保护条例》和环保部《建设项目竣工环境保护验收管理办法》，我局组织奉新县环保局、宜春市环境监察支队等单位于2016年1月6日对该项目竣工环境保护情况进行了检查验收，并将检查验收与监测结果在宜春环境保护网上予以了公示，公示以来无单位和群众提出反对意见。经研究，我局验收意见如下：

### 一、项目基本情况

奉新县城市污水处理有限公司奉新县污水处理厂位于奉新县冯川镇郑家组，占地面积5280平方米，项目分两期建设，其中一期工程1万吨/天污水处理工程已经于2010年11月通过环保验收。目前二期工程1万吨/天污水处理工程经过试生产运行正常，本次验收针对该项目二期工程。

二期工程主要建设内容有：新建了氧化沟1套、二沉池1套

及配套机械设备，新建了进水分析室、配水排泥井更换三台回流泵和两台剩余污泥泵、格栅井、沉砂池更换两台旋流沉砂机，提升泵房、沉砂池、消毒池等依托一期工程。

项目实际总投资 1200 万元，全部为环保投资。

## 二、污染防治措施及风险防范措施落实情况

以下调查监测情况来源于宜春市环境监测站提供的《建设项目竣工环境保护验收监测报告》(2015)第 y145 号。

### (一) 废气

项目废气主要来自于污水处理厂的恶臭气体。恶臭的主要排放点为氧化沟、污泥贮存池、污泥处置构筑物内(污泥浓缩、脱水、泥棚)等，排放方式为无组织排放，主要通过厂区绿化和大气扩散来减少对周边环境的影响。

监测结果表明，项目无组织排放废气污染物排放达到《城镇污水处理厂污染物排放标准》(GB 18918-2002)表 4 中二级标准，达标排放。

### (二) 废水

项目主要接纳城市居民生活污水(包括居民排水、商业设施排水、公共设施排水)及厂内生活污水、食堂废水、脱泥废水。污水通过集水管网收集后进入粗格栅，由厂内污水管网收集流向厂内提升井，再由提升泵打入细格栅后进入旋流沉砂池，经过改良型氧化沟法处理后进入二沉池，最后通过紫外消毒池后由管道排入南潦河。

监测结果表明，项目尾水排放口污染因子 pH、SS、COD<sub>Cr</sub>、BOD<sub>5</sub>、氨氮、总磷、动植物油、石油类排放浓度均达到《城镇污水处理厂污染物排放标准》(GB 18918-2002)一级 B 标准限值要求，达标排放。

### (三) 噪声

项目主要噪声源为污水泵、鼓风机、污泥泵、提升泵站、脱水机、空压机等机械设备产生。通过选用低噪声设备，采取吸声、减震及加装隔声门窗、加强厂区绿化等综合治理措施，降低噪声对周边环境的影响。

监测结果表明，项目厂界噪声昼、夜间监测值均达到《工业企业厂界环境噪声排放标准》(GB12348—2008)中2类标准，达标排放。

### (四) 固体废物

项目产生的固体废物格栅渣、沉砂、污泥，属一般固体废物，污泥经脱水后与生活垃圾一起交当地环卫部门送垃圾填埋场填埋。

### (五) 环境风险防范

公司制定了《废水、固体废弃物管理制度》，设有专人负责环保档案管理工作。制定了环境突发事件应急处理预案，同时编制了作业指导文件，由公司总经理、副总经理成立指挥小组，应对废水等环境突发事件，在日常生产过程中严格按规范要求操作运行生产和环保设施，确保生产和环保设施正常稳定运行。

### (六) 卫生防护距离检查

项目卫生防护距离为200米，在此范围内没有《建设项目环境影响评价分类管理名录》规定的敏感点存在。

### (六) 总量控制情况

验收监测期间，项目化学需氧量排放总量为129t/a，氨氮排放总量为2.54t/a，达到奉新县环保局下达的总量控制指标要求(即：COD: 219 t/a、氨氮29.2t/a)

## 三、验收批复意见

该项目基本符合竣工环境保护验收条件，公示期间无单位和群众提出异议，同意该项目通过竣工环境保护验收。

#### 四、对项目今后运行管理的要求

进一步加强污水处理设备的日常管理和维护，防止“跑、冒、滴、漏”，确保项目废水中各污染物长期稳定达标排放，若出现超标排放现象，必须立即整改。

#### 五、日常环境监管要求

请奉新县环保局负责该项目的日常管理及以上措施落实情况监督管理，督促企业正常运行环保治理设施，严禁偷排、直排，发现问题必须及时依法处理，并向我局报告。请宜春市环境监察支队负责该项目日常运行中的环境监察。

宜春市环境保护局  
2016年5月26日

抄送：奉新县环保局，局相关科室，局直属有关单位。

宜春市环境保护局秘书科

2016年5月26日 印发



Annex 17 Annual report of Laboratory of Fengxin Branch, Jiangxi Hongcheng water industry environmental protection Co., Ltd



江西洪城水业环保有限公司

奉新县分公司化验年报表

2015年1月1日至12月31日

检测项目	检测次数	最大值	最小值	平均值	合格次数	合格率(%)	
进水	色度(倍)	364	128	32	72.88	364	100%
	PH值	364	7.99	7.01	7.70	364	100%
	COD(mg/l)	364	219.1	90.3	157.73	364	100%
	BOD <sub>2</sub> (mg/l)	364	108.3	38.1	68.87	364	100%
	SS(mg/l)	364	142	32	73.67	364	100%
	NH <sub>3</sub> -N(mg/l)	355	27.4	9.1	19.18	338	95.21%
	TN(mg/l)	355	38.6	14.3	25.59	349	98.31%
	TP(mg/l)	355	3.195	1.001	2.29	349	98.31%
	Cl(mg/l)	364	40.41	12.81	27.70	364	100%
	NO <sub>3</sub> -N(mg/l)	355	5.5	0.3	1.13	355	100%
粪大肠菌群(个/l)							
出水	色度(倍)	364	16	2	9.66	364	100%
	PH值	364	7.70	6.72	7.04	364	100%
	COD(mg/l)	364	41.2	7.2	18.24	364	100%
	BOD <sub>2</sub> (mg/l)	364	18.3	3.3	8.38	364	100%
	SS(mg/l)	364	18	3	8.51	364	100%
	NH <sub>3</sub> -N(mg/l)	355	4.9	0.3	1.46	355	100%
	TN(mg/l)	355	11.2	2.7	5.18	355	100%
	TP(mg/l)	355	0.971	0.200	0.66	355	100%
	Cl(mg/l)	364	57.16	15.18	28.63	364	100%
	NO <sub>3</sub> -N(mg/l)	355	2.7	0.03	0.49	355	100%
粪大肠菌群(个/l)							
污泥	含水率(处理后)	313	79.2	76.5	78.08	313	100%
	PH	313	7.11	6.12	6.74	313	100%
	有机质	313	39.30	35.53	38.02	313	100%
	粪大肠菌群(个/l)						
一组氧化沟	水温(℃)	364	27	13	19.68	364	100%
	SV <sub>30</sub> (%)	364	92	17	52.40	364	100%
	MLSS(mg/l)	364	8941	3008	5354.14	364	100%
	SVI(ml/g)	364	156.57	40.29	98.99	364	100%
	MLVSS(mg/l)	364	5047	1382	2643.22	364	100%
	好氧区DO(mg/l)	364	6.2	1.5	2.91	364	100%
	厌氧区DO(mg/l)						
镜检							
二组氧化沟	水温(℃)	364	27	13	19.68	364	100%
	SV <sub>30</sub> (%)	364	92	20	54.04	364	100%
	MLSS(mg/l)	364	8652	2952	5368.74	364	100%
	SVI(ml/g)	364	143.99	49.75	99.83	364	100%
	MLVSS(mg/l)	364	4617	1233	2701.18	364	100%
	好氧区DO(mg/l)	364	5.6	1.0	2.64	364	100%
	厌氧区DO(mg/l)						
镜检							

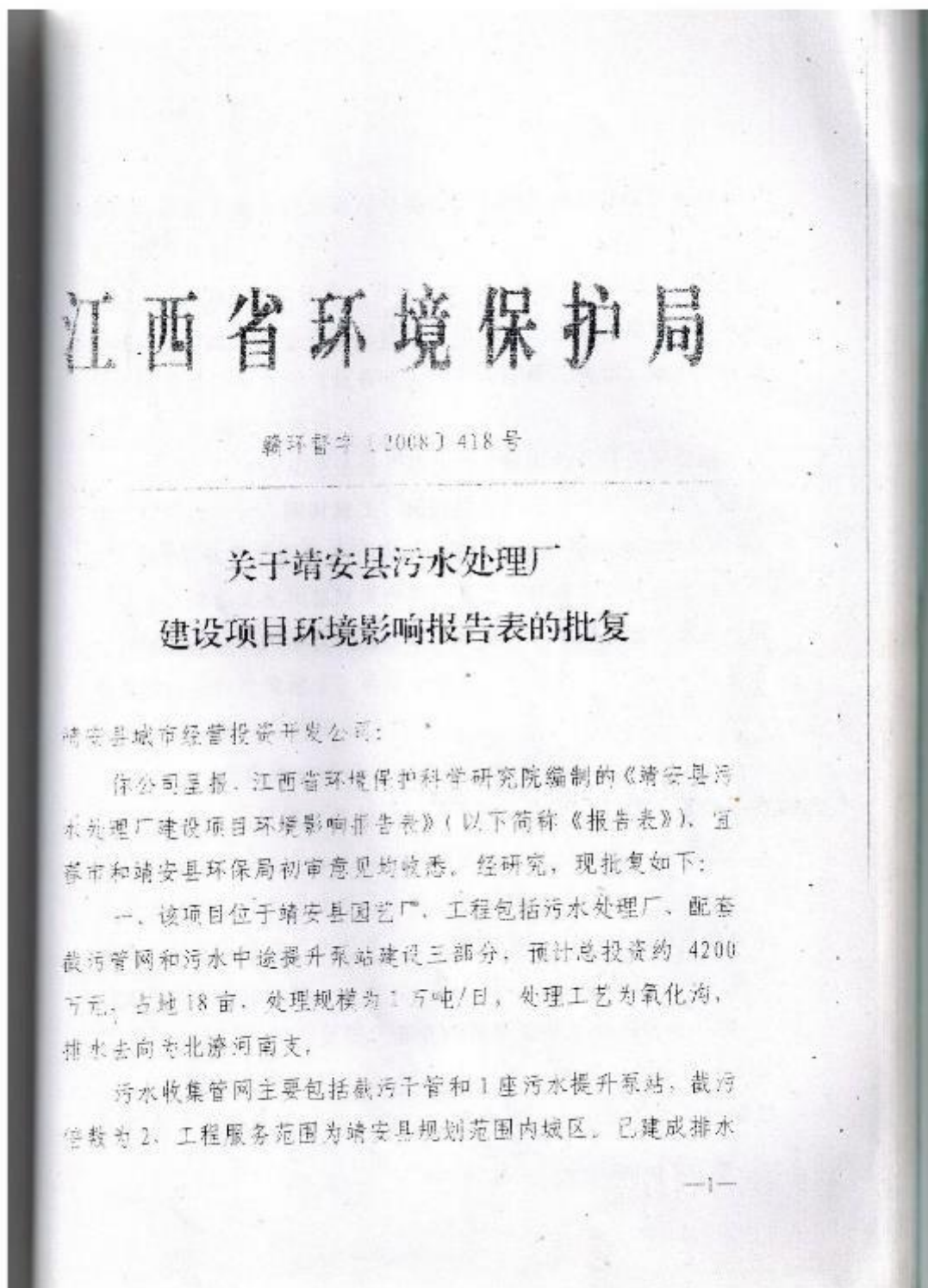
备注: 6月15日-6月23日紫外线分光光度计损坏, NH<sub>3</sub>-N、TP、TN、NO<sub>3</sub>-N无数据。11月9日停电。

填表人:余卉

审核:邓功勋

主管:

## Annex 18 Jing'an County Wastewater Treatment Plant (Phase I) EIA Approval



管网区域排水逐步改为雨污分流制，未开工排水管网区域排水采用雨污分流制。

根据《报告表》结论以及宜春市、靖安县环保局的初审意见，该建设项目选址符合靖安县城镇总体规划及土地利用规划，我局原则同意建设项目按《报告表》所列的性质、规模、地点 and 环境保护对策措施进行建设。

二、工程建设必须依法严格执行“配套的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，认真落实各项污染防治措施，环保投资必须专款专用。

三、你公司在项目建设中要认真落实环评报告表提出的各项污染防治措施，严格执行宜春市、靖安县环保局提出的有关环境质量和污染物排放标准，确保污染物达标排放。工程建设应重点做好以下不同阶段的环保工作：

（一）在设计和建设中落实环保有关要求。

1、优化项目选址选线及厂区平面布置。合理选择截污管网线路，污水提升泵房应尽量远离周围环境敏感目标，厂区内产生恶臭污染物和高噪声设施应尽量远离周边环境敏感点，采取封闭系统、绿化等措施控制恶臭的产生和扩散；当地政府应严格控制污水处理厂周边规划，污水处理厂卫生防护距离（200米）内不得新建住宅、学校、医院、养老院等环境要求较高的建筑物。

2、落实在线监测装置。与主体工程同步设计和建设污水处理厂进水水质自动在线监控系统及排放口污水水量自动计量装

置、自动比例采样装置和主要水质指标在线监测装置。根据国家  
和省排污口规范化整治的要求规范合理设置各类排污口,污水在  
线监测装置应与环保部门联网,接受各级环保部门的实时监控。

3、完善污泥安全处置。妥善考虑污泥去向,严禁污水处理  
厂污泥随意处置。污泥临时堆场和卫生填埋场的选址建设须满足  
《生活垃圾填埋污染控制标准》(GB16889-1997)要求,并与污水  
处理工程同步建设,同步投入使用,确保污泥得到妥善处理,防  
止产生二次污染。

4、实施施工期环境监理。按照《报告表》的要求,制定并  
实施施工期环境监理计划,施工招标文件、施工合同和工程监理  
文件中应明确环保条款和责任,落实施工期污染防治措施,并定  
期向我局和当地环保局报告。

#### (二) 强化运行期间环境管理。

1、有条件接纳工业废水。为保证污水设施的正常运行,必  
须按照《报告表》中提出的接纳工业废水限制措施要求对工业  
废水进行有条件接纳,禁止含有《污水综合排放标准》  
(GB8978-1996)表1中第一类污染物的工业废水排入污水管网,  
严格控制排水量大于2000吨/日的工业废水排入污水管网,严  
格控制含有重金属、持久性有机污染物、病原体和有毒有害物  
质的工业废水排入污水管网,各类工业废水预处理达到入水管  
网要求方能送污水处理厂进行集中处理。

2、防止事故性排放。在污水处理厂事故排放时,尾水排放

口以下将出现较长的超标污染带，因此污水处理厂要加强运营管理，同时建立事故应急预案并报当地环保部门备案，并采取有效措施保证电力供应及处理设施正常运行，建设事故应急池，严禁事故废水排放。

3、强化环境管理。应设立专门环保管理机构，建立健全日常环保管理制度，落实岗位责任，建立污水处理厂运行台账制度，并定期向当地环保部门汇报污水处理厂的运行情况。

4、加强化学危险品环境风险防范。消毒剂液氯属有毒有害物质，事故泄漏时对环境会产生较严重的危害，氯库及加氯间应安装氯泄漏检测仪、泄氯报警器等，并制定风险防范措施和事故应急预案，防范使用中的环境风险。

5、污水处理厂的污泥应进行稳定化和脱水处理，污泥稳定化应满足《城镇污水处理厂污染物排放标准》(GB18918-2002)“污泥稳定化控制指标”要求，脱水后的污泥含水率应小于 80%，采用卫生填埋方式处置。

6、污水处理厂运行时自身产生的生活污水，构筑物放空或维修时的污水和排放的上清液等均回送至污水处理入口进行处理，不得直接外排。生活垃圾由环卫部门统一收集处理，严禁随意倾倒。

(三) 运行期间，外排污染物必须达到以下要求：

1、外排废水必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)一级 B 标准后方可排入北潦河南支。

2、应采取封闭系统、绿化等措施控制恶臭的产生和扩散，  
厂界废气必须达到《城镇污水处理厂污染物排放标准》  
(GB18918-2002)二级标准，污水处理厂周围应同期建设绿化隔  
离带。

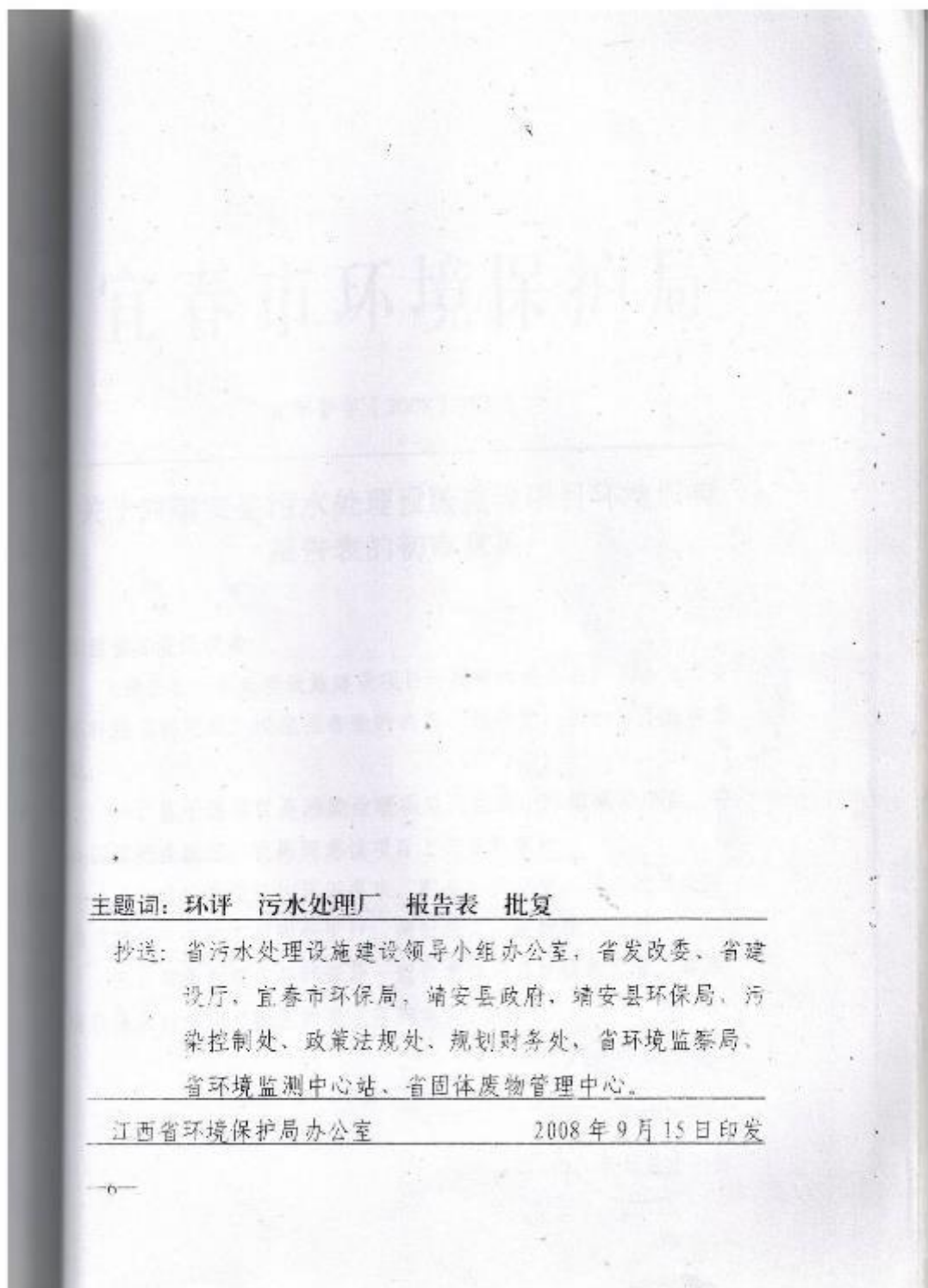
3、选用低噪声设备，并对设备采取隔声减震、密闭等措施，  
降低噪声的影响。工程建成后，污水处理厂和污水提升泵站厂界  
噪声必须达到《工业企业厂界噪声标准》(GB12523-90)II类标准。

四、项目建成试运行前必须向宜春市环保局书面报告(抄报  
我局)，并经市环保局现场检查并书面同意(抄报我局)后方可投  
入试运行。项目竣工3个月内必须向我局申请办理竣工环境保护  
验收手续，验收合格后，项目方能投入正式生产。

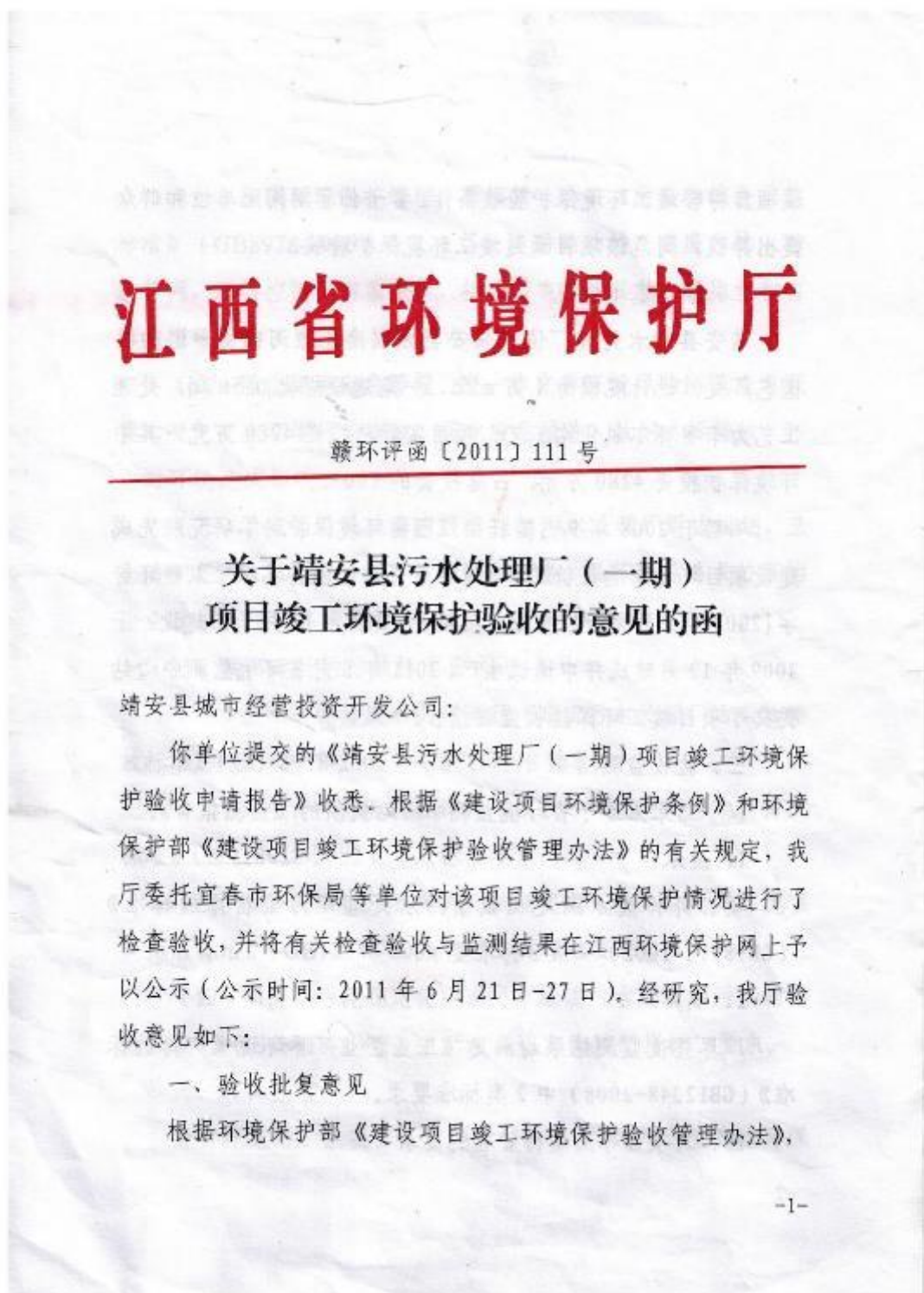
五、以上批复仅限于《报告表》确定的建设内容，若建设地  
点、项目内容、规模、工艺、性质、拟采用的防治污染措施等发  
生变化或自批准之日起超过5年方开工建设必须重新向我局申请  
环境影响评价行政许可。

六、你局应在接到本批复后20个工作日内，将批准后的环  
境影响报告表分别送宜春市环保局和靖安县环保局，并按规定接  
受各级环境保护行政主管部门的监督检查。请省环境监察局加强  
项目实施环境保护“三同时”过程中的环境监察。

二〇〇八年九月十五日



## Annex 19 Jing'an County Wastewater Treatment Plant (Phase I Step1) Environmental Protection Acceptance Approval





该项目符合竣工环境保护验收条件, 鉴于公示期间无单位和群众提出异议, 同意该项目通过竣工环境保护验收。

## 二、项目基本情况

靖安县污水处理厂位于靖安县城以南北潦河南支下游的县园艺厂处, 设计规模为 1 万  $\text{m}^3/\text{d}$ , 一期建设规模 0.5  $\text{m}^3/\text{d}$ , 处理工艺为卡鲁赛尔氧化沟工艺。项目实际总投资 4280 万元, 其中环境保护投资 4280 万元, 占总投资的 100%。

项目于 2008 年 9 月委托由江西省环境保护科学研究院完成建设项目环境影响评价工作, 同年 9 月原江西省环保局以赣环督字[2008]418 号文予以批复, 项目于 2008 年 12 月开工建设, 于 2009 年 12 月建成并申请试生产, 2011 年 8 月省环境监测中心站提交了项目竣工环保验收监测报告。

## 三、验收监测结果

以下结果来源于省环境监测中心站提供的《监测报告》。

### 1、废水

项目外排废水满足《城镇污水处理厂污染物排放标准》(GB18918-2002) 一级 B 标准要求。

### 2、噪声

厂界昼夜监测结果均满足《工业企业厂界环境噪声排放标准》(GB12348-2008) 中 2 类标准要求。

## 四、对项目今后运行管理的要求

(一) 加强环境保护管理。严格禁止含有《污染物综合排放标准》(GB8978-1996)表1中第一类污染物的工业废水排入污水管网,严格控制含有重金属、持久性有机污染物、病原体和有毒有害物质的工业废水排入污水管网。

(二) 强化环境应急管理。进一步完善环境风险防范应急预案,避免发生环境污染事故。强化应急措施,做到达标排放,防止对环境造成影响。

(三) 靖安县人民政府应严格控制污水处理厂周边规划,卫生防护距离(200米)内不得规划和新建食品等环境要求较高的企业及居民住宅等建筑物。

#### 五、项目运行的排放标准要求

(一) 废水:外排废水必须满足《城镇污水处理厂污染物排放标准》(GB18918-2002)一级B标准要求。

(二) 废气:外排废气应满足《城镇污水处理厂污染物排放标准》(GB18918-2002)二级标准要求。

(三) 噪声:项目厂界噪声必须满足《工业企业厂界环境噪声排放标准》(GB12348-2008)中2类标准要求。

(四) 固废:污泥稳定化应满足《城镇污水处理厂污染物排放标准》(GB18918-2002)中“污泥稳定化控制指标”要求。

#### 六、环保监管要求

请省环监局加强项目日常运行中的环境监察,请宜春市环保

局监督企业认真落实上述要求，并加强对该项目的日常监督管理，督促企业正常运行环保治理设施，严禁偷排、直排，发现问题必须及时依法处理，并向我厅报告。



二〇一一年九月八日

**主题词：环保 公共设施 竣工验收 意见**

抄送：省发改委，宜春市环保局，靖安县人民政府及县环保局，  
厅有关处室，省环境监察局，省环境监测中心站。

江西省环境保护厅办公室 2011年9月9日印发

## Annex 20 Jing'an County Wastewater Treatment Plant (Phase I Step2) Environmental Protection Acceptance Approval

# 宜春市环境保护局

宜环评验字〔2015〕113号

## 关于靖安县污水处理厂一期（第二步）工程 项目竣工环境保护验收意见的函

江西洪城水业环保有限公司靖安分公司：

你公司提交的《关于靖安县污水处理厂一期（第二步）工程项目验收申请报告》收悉。根据《建设项目环境保护条例》和环保部《建设项目竣工环境保护验收管理办法》，我局组织靖安县环保局、宜春市环境监察支队等单位于对该项目竣工环境保护情况进行了检查验收，并将检查验收与监测结果在宜春环境保护网上予以了公示，公示以来无单位和群众提出反对意见。经研究，我局验收意见如下：

### 一、项目基本情况

靖安县污水处理厂位于靖安县城以南北潦河南支下游的县园艺厂处。设计规模为1万吨/天，其中一期（第一步）项目（5000t/d）于2008年12月开工建设，2009年12月建成并投入试生产，通过了省环保厅竣工环保验收。靖安县污水处理厂一期（第二步）项目（5000t/d）于2014年7月开工建设，2014年12月建成，经过试生产运行正常。一期工程第一步、第二步

均采用卡鲁赛尔氧化沟工艺。

靖安县污水处理厂一期（第二步）工程项目总投资 788 万元，环保投资 788 万元，占总投资的 100%。已建工程包括氧化沟、二沉池、配水排泥井；利用改造一期（第一步）工程消毒池。其他粗格栅池、集水池、细格栅池、沉砂池、污泥浓缩池、污泥脱水池等设施均依托一期（第一步）工程。

2008 年 8 月，靖安县城投公司委托江西省环科院对靖安县污水处理厂一期 1 万吨/日工程编制了环境影响报告表，同年 9 月原江西省环保局以赣环督字【2008】418 号对该报告表予以批复；2011 年 9 月，经靖安县城投公司申请，江西省环保厅对靖安县污水处理厂一期（第一步）5000 吨/日工程进行了验收（赣环评函【2011】111 号）；2014 年 12 月，靖安县污水处理厂一期（第二步）5000 吨/日工程建成后，江西洪城水业环保有限公司向环保部门提出了试生产申请，宜春市环保局以宜环评函字【2014】146 号文同意其试生产。

## 二、验收监测结果

以下调查监测情况来源于宜春市环境监测站提供的《建设项目竣工环境保护验收监测报告》（2015）第 y063 号。

### （一）废气

项目废气主要来自于污水处理厂的恶臭气体。恶臭的主要排放点为格栅、产水池、CN 滤池、污泥贮存池、污泥浓缩池及泥仓等，排放方式是无组织排放，对氧化沟恶臭污染采取了设置卫生防护距离措施，增加恶臭污染源与厂界之间的距离与空间；厂区内和厂区外实行立体绿化，减轻恶臭污染。

监测结果表明，项目无组织排放废气氨、硫化氢监测结果均达

到《恶臭污染物排放标准》(GB14554-93)表1中二级标准,达标排放。

#### (二) 废水

项目废水采用集水池+隔油池+预曝池1+一沉池+氧化池+二沉池+调节预曝池2+A/O池+混凝沉淀池+D型滤池工艺处理。

公司外排尾水中pH值、化学需氧量(COD<sub>Cr</sub>)、五日生化需氧量(BOD<sub>5</sub>)、悬浮物(SS)、阴离子表面活性剂、石油类、动植物油、总氮、氨氮、总磷、色度、粪大肠菌群、总镉、总砷、总汞、总铬、总铅、六价铬达到《城镇污水处理厂污染物排放标准》(GB18918-2002)一级B标准要求,即达标排放。进水水质均符合设计指标要求,污水处理效率除SS外,COD<sub>Cr</sub>、总磷、BOD<sub>5</sub>、总氮、NH<sub>3</sub>-N均达到设计指标。

#### (三) 噪声

项目主要噪声源为污水泵、鼓风机、污泥泵、提升泵站、脱水机、空压机等机械设备产生。通过选用低噪声设备,采取吸声、减震措施,厂区绿化及围墙隔音等综合治理措施,降低噪声对周边环境的影响。

监测结果表明,项目厂界东、南、西、北的昼间和夜间噪声均达到《工业企业厂界噪声排放标准》(GB12348-2008)中2类标准要求。

#### (四) 固体废物

项目产生的固体污泥;产生的污泥经脱水处理后用于绿化或送垃圾填埋场填埋处置。生活垃圾集中收集,交当地环卫部门送垃圾填埋场填埋。

#### (五) 环境风险防范

公司制定了《环境风险应急预案》,在日常生产过程中严格按

规范要求操作运行生产和环保设施，确保生产和环保设施正常稳定运行。

#### (六) 防护距离情况

根据宜春市环境监测站现场检查，该项目卫生防护距离（200米）范围内无居民区等环境敏感点。

#### 三、验收批复意见

该项目基本符合竣工环境保护验收条件，公示期间无单位和个人提出异议，同意该项目通过竣工环境保护验收。

#### 四、对项目今后运行管理的要求

1、加强生产装置的日常运行维护、管理和台账记录，严格执行各项环境管理制度，确保各项污染物长期稳定达标排放。

2、加强对监测仪器及在线监控设施的维护管理，确保其正常运行，对监测数据严重失真的溶解氧监测仪应及时送生产厂家修理。

#### 五、日常环境监管要求

请靖安县环保局负责该项目的日常管理及以上措施落实情况的监督管理，督促企业正常运行环保治理设施，严禁偷排、直排，发现问题必须及时依法处理，并向我局报告。请宜春市环境监察支队负责该项目日常运行中的环境监察。

宜春市环境保护局  
2015年10月28日

抄送：靖安县环保局，局相关科室，局直属有关单位。

宜春市环境保护局秘书科

2015年10月28日印发

## Annex 21 Jing'an County Municipal Solid Waste Sanitary Landfill EIA Approval

# 宜春市环境保护局

宜环督字〔2009〕128号

## 关于对江西省靖安县城生活垃圾卫生填埋场环境影响报告书的批复

靖安县环境卫生管理所：

你单位申请对《江西省靖安县城生活垃圾卫生填埋场环境影响报告书》（以下简称“报告书”）进行批复的报告已收悉。根据市局环境工程评估中心（宜环评估〔2009〕94号）《江西省靖安县城生活垃圾卫生填埋场环境影响报告书评估意见》和靖安县环保局对该项目的初审意见，经研究，批复如下：

一、鉴于该项目既是城市基础设施建设项目，又属于污染治理项目，符合国家产业政策，且选址较合理，故原则同意该项目在拟选地址靖安县黄龙村容地（东经 115° 20' 23"，北纬 28° 48' 25"）建设。项目采用改良型厌氧卫生填埋工艺，处理靖安县城生活垃圾。项目占地 225 亩，总投资 2485.76 万元，其中环保投资 1049.4 万元。总库容 82 万立方米，服务年限为 20 年。主要建设内容有：填埋库区工程、渗滤液处理站、进场道路、场内道路、管理区等。

二、建设单位应按环评的要求，确保环保资金的投入，二次污染防治设施应与主体工程同时设计，同时施工，同时投入运行。



三、各污染物必须达标排放，并达到总量控制要求。渗滤液污水排放应达到《生活垃圾填埋场污染控制标准》(GB16889-2008)一级标准，其它废水排放应达到《污水综合排放标准》(GB8978-1996)表4中一级标准；恶臭气体排放应达到《恶臭污染物排放标准》(GB14554-93)新建二级标准；营运期厂界噪声应达到《工业企业厂界环境噪声排放标准》(GB12348-2008)1类标准。

四、污染物总量控制指标：CODcr: 8.87t/a。

五、建设单位应重视对渗滤液和垃圾填埋废气的收集处理，选用先进的工艺对渗滤液和垃圾填埋废气进行收集治理，减轻项目的建设营运对地表水、地下水及大气的污染。

六、本批复仅限按报告书的内容，在拟选地址建设生活垃圾填埋场项目。若要变更项目性质、地点和工艺需重新报批。

七、项目建成后，试运行须向我局和靖安县环保局申请，并经靖安县环保局现场检查同意后，方可投入试运行。试运行三个月之内应向我局申请环保设施竣工验收，逾期未申请将按有关环保法律法规予以处罚。

八、请靖安县环保局负责该项目建设的监管，请市环境监察支队负责项目环保“三同时”的检查。



主题词：环评 垃圾填埋场 报告书 批复  
抄送：靖安县环保局、市环境监察支队、局总量办、污控科、  
市环科所、市局环境工程评估中心  
宜春市环境保护局秘书科

2009年7月6日印发  
共印25份

## Annex 22 Jishui County Wastewater Treatment Plant EIA Approval

1102	2008	30	4
机构代码	年份	日期	页号
1102	2008		

# 江西省环境保护局

赣环督字〔2008〕343号

## 关于吉水县污水处理厂环境影响报告表的批复

吉水县自来水公司：

你公司呈报的《吉水县污水处理厂环境影响报告表》（以下简称《报告表》）、吉安市环保局的初审意见和吉水县环保局的初审意见（吉水县环督字〔2008〕14号）收悉。经研究，现批复如下：

一、根据《报告表》结论以及吉安市、吉水县环保局的初审意见，同意你公司按《报告表》所列建设项目的性质、规模、地点和环境保护对策措施进行建设。

吉水县污水处理设施包括污水处理厂和配套截污管网两部分。污水处理厂位于吉水县文峰镇朱山村委会泥家洲自然村，处理规模为2万吨/日，处理工艺为氧化沟，排水去向为赣江。

污水收集管网主要包括截污干管和2个污水提升泵站，截污管网长度约70km，服务范围为吉水县城南区、老城区和城北区，服务面积10.12平方公里。老城区排水采用截流式雨污合流制，

截污倍数为 1，新城区排水采用雨污分流制。

二、工程建设必须依法严格执行“配套的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，认真落实各项污染防治措施，环保投资必须专款专用。

三、工程建设应重点做好以下工作：

#### (一) 废水污染防治

1、为保证污水设施的正常运行，你公司要按照《报告表》中提出的接纳工业废水限制措施要求对工业废水进行有条件接纳，同时加强污水处理厂入水水质的自动在线监控，严格禁止含有《污水综合排放标准》(GB8978-1996)表 1 中第一类污染物的工业废水排入污水管网，严格限制排水量大于 2000 吨/天的工业废水排入污水管网，严格控制含有重金属、病原体和有毒有害物质的工业废水排入污水管网，各类工业废水预处理达到入水管网要求方能送污水处理厂进行集中处理。

2、污水处理厂事故排放时，赣江将出现较长的超标污染带，因此污水处理厂要加强运营管理，坚决杜绝事故性排放，同时建立事故时的应急预案和措施，将环境影响降低至最低程度。

3、工程建成后，外排废水必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)一级 B 标准后方可排入赣江。

4、污水处理厂应对排水的水质进行定期监测，排放口应设置污水水量自动计量装置、自动比例采样装置，并安装主要水质指标在线监测装置。

#### (二) 大气污染防治

1、为防止营运期污水处理产生的恶臭对周边的影响，你公司应采取封闭系统、绿化等措施控制恶臭的产生和扩散，并向政府报告，严格控制污水处理厂周边规划，污水处理厂 200 米防护距离内不得新建食品等环境要求较高的企业和居民住宅等建筑物。防护距离内的现有居民必须在项目建成前拆迁完毕。

2、工程建成后，外排废气必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)二级标准，污水处理厂周围应同期建设绿化带。

### (三) 噪声污染防治

工程应选用低噪声设备，并对设备采取隔声减震、密闭等措施，降低噪声的影响。工程建成后，污水处理厂厂界噪声必须达到《工业企业厂界噪声标准》(GB12523-90) II类标准。

### (四) 固体废物污染防治

1、污水处理厂的污泥应进行稳定化和脱水处理，污泥稳定化应满足《城镇污水处理厂污染物排放标准》(GB18918-2002)“污泥稳定化控制指标”要求，脱水后的污泥含水率应小于80%。

2、你公司应向政府汇报，加快垃圾填埋场的建设步伐，垃圾填埋场应和污水处理工程同步建设，同步投入使用，确保污泥得到妥善处理，防止产生二次污染。

### (五) 施工期污染防治

1、施工期间，应采取临时措施对管线、污水提升泵站和污水处理厂施工废水、废气(含施工扬尘)和噪声进行控制和治理，避免对附近居民产生不利影响。施工结束后应及时对施工场地进行绿化和硬化，防止水土流失。

2、施工期，场界噪声应满足《建筑施工场界噪声限值》(GB12523-90)，废气排放应满足《大气污染物综合排放标准》(GB13271-2001)二级标准和无组织排放监控浓度限值，废水排放应满足《污水综合排放标准》(GB8978-1996)表4中一级标准。

### (六) 环境监理

你公司应按照《报告表》的要求，制定并实施施工期环境监理计划，施工招标文件、施工合同和工程监理文件中应明确环保条款和责任，落实施工期污染防治措施，并定期向我局和当地环保局报告。

(七) 排污口规范化

你公司应根据国家和省排污口规范化整治的要求规范设置各类排污口，安装污水在线监测装置，并和环保部门联网，进行时时监控。

四、项目完成投入试运营前应向我局和吉安市环保局报告，并经吉安市环保局检查同意方可投入试运营。投入试运营3个月内必须按规定程序向我局申请竣工环境保护验收，未经验收或验收不合格不得投入正式运营。

五、以上批复仅限于《报告表》确定的建设内容，若建设地点、项目内容、规模、工艺、性质、拟采用的防治污染措施等发生重大变化或自批准之日起超过5年方开工建设必须重新向我局申请环境影响评价行政许可。

六、请吉安市环保局、吉水县环保局加强项目实施过程中的环境保护监督检查。请省环境监察局加强项目实施环境保护“三同时”过程中的环境监察。



二〇〇八年八月十二日

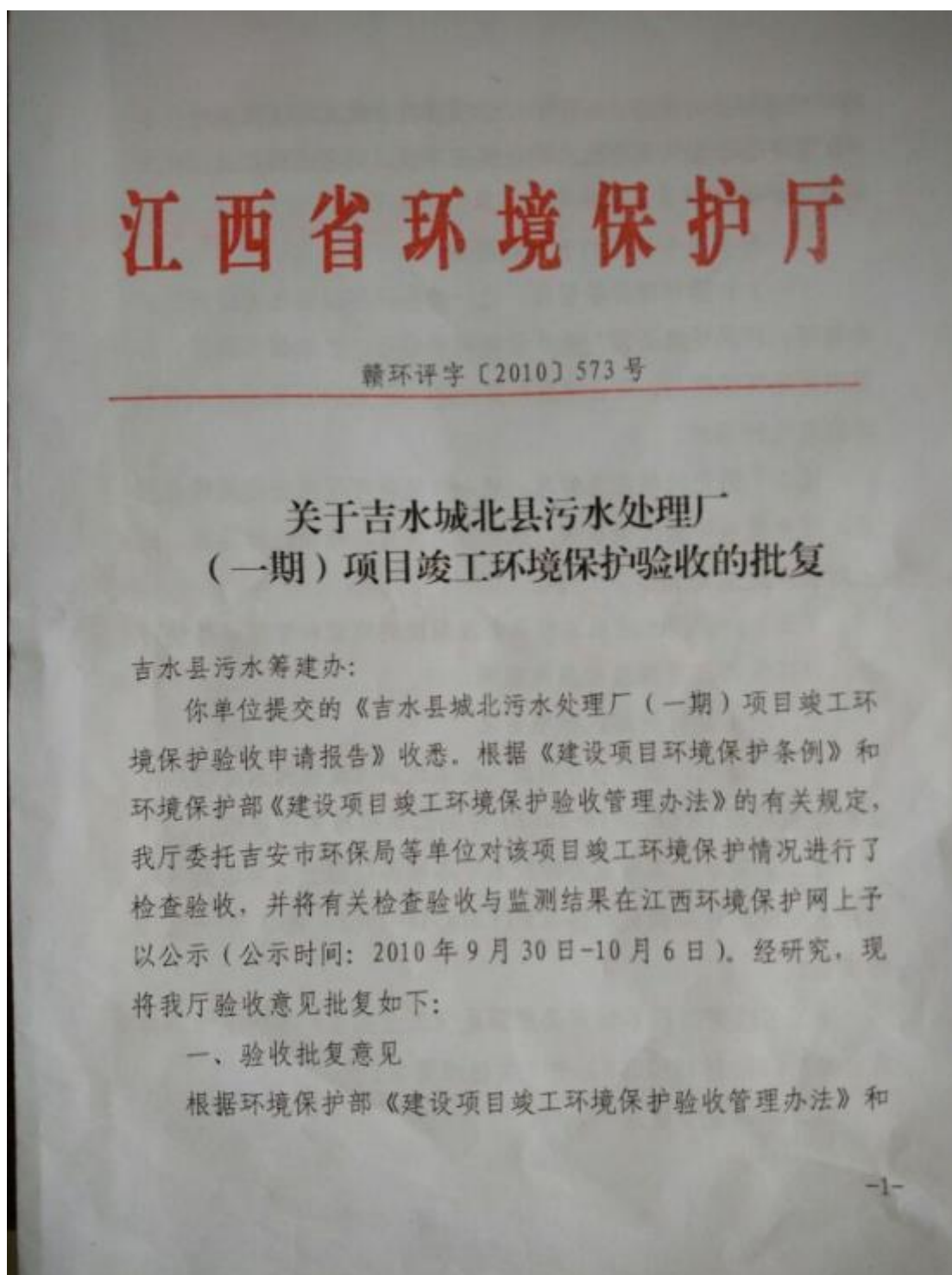
**主题词：环评 污水处理 报告表 批复**

抄送：省污水处理设施建设领导小组办公室，省发改委、省建设厅、省国土资源厅，吉安市环保局，吉水县政府，吉水县环保局，污染控制处、政策法规处、规划财务处，省环境监察局、省环境监测中心站、省固体废物管理中心、省环保局行政许可受理中心。

江西省环境保护局办公室

2008年8月12日印发

## Annex 23 Jishui County Wastewater Treatment Plant (Phase I ) Environmental Protection Acceptance Approval



验收现场检查的报告(见附件),该项目符合竣工环境保护验收条件,鉴于公示期间无单位和群众提出异议,同意该项目通过竣工环境保护验收。

## 二、对项目今后运行管理的要求

(一)加强环境保护管理。进一步加强环保设施的运行维护和管理,环保设施必须与生产设施同步运行,严禁擅自闲置、停用或拆除环保设施,防止“跑、冒、滴、漏”,确保各项污染物长期稳定达标排放。

(二)强化环境应急管理。进一步完善环境风险防范应急预案,避免发生环境污染事故,强化应急措施,做到达标排放,防止对环境造成影响。

(三)加强废水在线监控设备及系统的建设和管理,尽快与省、市环保部门在线监控系统联网运行。

## 三、项目运行的排放标准要求

(一)废气:该项目外排废气必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)中的二级标准限值要求。

(二)废水:本项目外排废水中各项污染因子必须达到《城镇污水处理厂污染物排放标准》(GB18918-2002)表1中一级B标准要求。

(三)噪声:厂界噪声必须满足《工业企业厂界环境噪声排放标准》(GB12348-2008)中2类标准要求。

## 四、环保监管要求

请省环监局加强项目日常运行中的环境监察，请吉安市环保局监督企业认真落实上述要求，并加强对该项目的日常监督管理，督促企业正常运行环保治理设施，严禁偷排、直排，发现问题必须及时依法处理，并向我厅报告。

附件：关于对吉水县城北污水处理厂（一期1万t/d）项目竣工环境保护验收现场检查情况的汇报

  
二〇一〇年十月八日



Annex 24 Monthly report of Laboratory of Jishui wastewater treatment plant, Jiangxi Hongcheng water industry environmental protection Co., Ltd

**江西洪城水业环保有限公司**  
**污水** 污水处理厂化验数据月报表

2012年4月1日 - 2012年4月30日

检测项目		检测次数	最大值	最小值	平均值	合格次数	合格率 (%)
进水	PH	30	7.4	6.9	7.1	30	100%
	COD(mg/L)	30	182	73.5	107	30	100%
	SS(mg/L)	30	164	62	95	30	100%
	NH3-N(mg/L)	30	26.2	15.2	19.5	26	267%
	BOD5(mg/L)	30	91.0	29.6	54.4	30	100%
	TN(mg/L)	30	33.5	21.3	27.9	28	93.3%
	TP(mg/L)	30	2.94	1.24	1.99	30	100%
出水	PH	30	7.0	6.7	6.9	30	100%
	COD(mg/L)	30	23.6	10.8	18.7	30	100%
	SS(mg/L)	30	10	5	7	30	100%
	NH3-N(mg/L)	30	4.24	0.373	1.09	30	100%
	BOD5(mg/L)	30	12.8	4.89	7.95	30	100%
	TN(mg/L)	30	15.2	7.89	9.90	30	100%
	TP(mg/L)	30	0.597	0.52	0.660	30	100%
处理前后	污泥含水(前)						
	污泥含水(后)	29	71.4	76.2	78.1		
二组氧化沟	水温(℃)	30	22	14	19		
	SV <sub>30</sub> (%)	30	28	28	33		
	MLSS(mg/L)	30	4520	2860	4213		
	MLVSS(mg/L)	30	2270	1010	1954		
	SVI (mL/g)	30	91.1	67.1	79.1		
	DO1(mg/L)	30	2.37	1.57	1.99		
	DO2(mg/L)						
	镜检	30					
二组氧化沟	水温(℃)	30	22	14	19		
	SV <sub>30</sub> (%)	30	26	26	31		
	MLSS(mg/L)	30	4280	2590	3953		
	MLVSS(mg/L)	30	2120	1040	1805		
	SVI (mL/g)	30	83.8	68.0	78.1		
	DO1(mg/L)	30	2.25	1.64	2.01		
	DO2(mg/L)	30					
	镜检	30					

备注:

## Annex 25 Statement of production time, Pingxiang City Municipal solid waste 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年初开工建设以来，总体进展平稳，初步计划在2017年6月底投产。

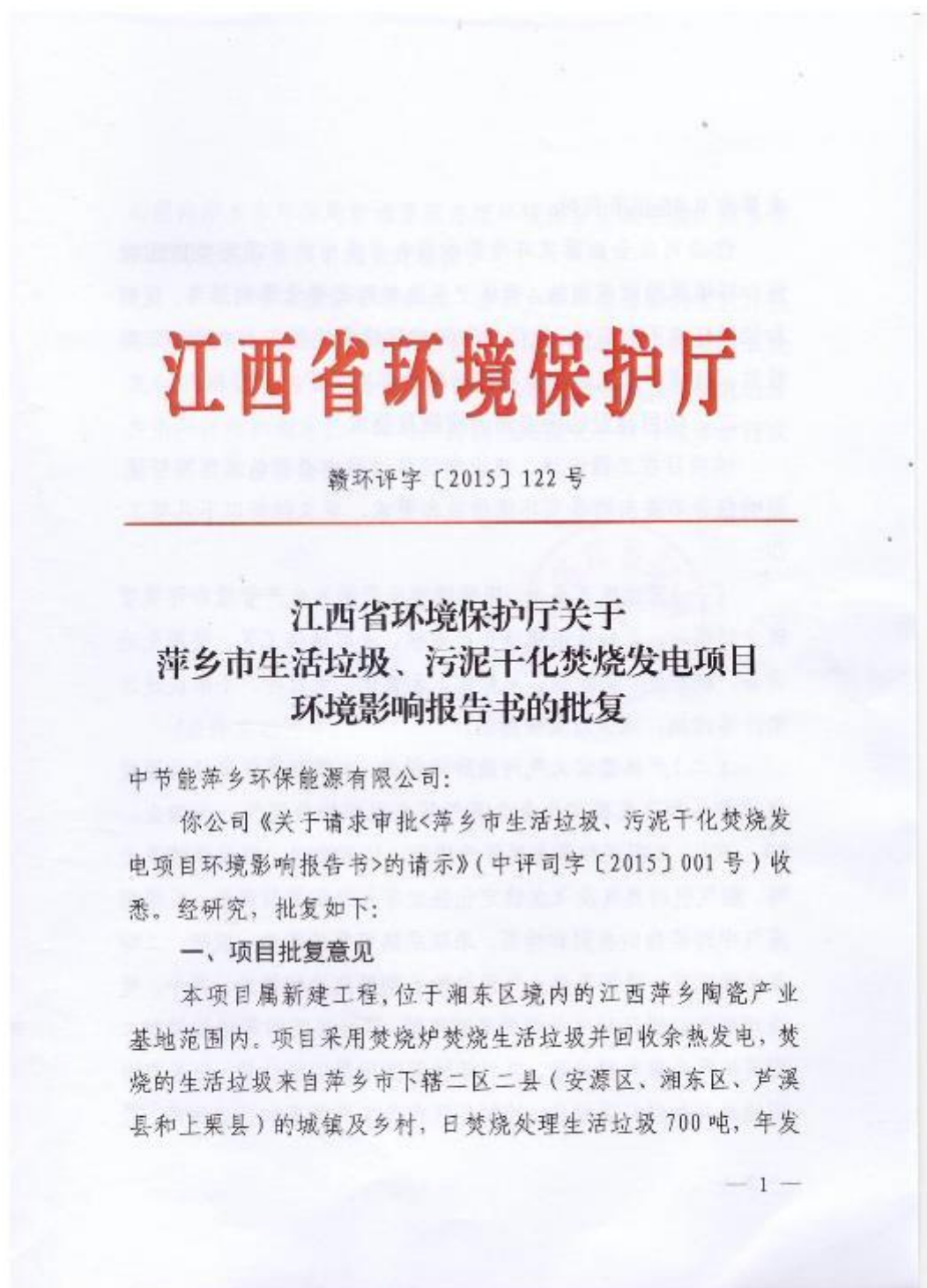
特此说明。

中节能萍乡环保能源有限公司

2016年7月7日



## Annex 26 Pingxiang City Municipal solid waste incineration power plant EIA Approval



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<sub>2</sub>、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<sub>2</sub>、NO<sub>x</sub>、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<sup>3</sup>。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

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

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

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 $\leq 1.67$ 吨/年，氨氮 $\leq 0.42$ 吨/年，二氧化硫 $\leq 55.9$ 吨/年，氮氧化物 $\leq 184.8$ 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 $\leq 38.1$ 千克/年，镉 $\leq 8.4$ 千克/年，汞 $\leq 12.7$ 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，



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。



(此件主动公开)

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。

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

## Annex 27 Public participation documents

### 1、都昌县座谈会会议纪要

(1) 会议时间：2015年11月9日上午9:30

(2) 会议地点：都昌县北山乡的邵家畈村村委会

(3) 会议内容：有关世界银行贷款都昌县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：都昌县项目办邱工、北山乡居民代表、设计单位杨工及环评编制单位赵凯、杨洋等12人。

(5) 主持人：邱工（都昌县世行项目办）

(6) 会议纪要

会议对都昌县水环境管理项目进行第一次公众协商，对项目概况及潜在的环境问题与受影响公众进行了协商，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在项目环境评价报告大纲编制完成之前，主要是向受项目影响的民众提供项目概况及潜在环境问题。第二轮在环境评价报告书初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。目的是向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点和与工程有关的重大环境问题；帮助评价人员发现问题，确认所有工程引起的重大环境问题已在环境评价报告中得到分析评价；确认环境保护措施的可行性以及优化措施方案的落实和实施等。本次为第一次公众协商。

③环评单位介绍项目基本情况及潜在环境问题：

拟建项目通过改造城区管网工程、垃圾转运工程、邹家咀湖水生态修复及其他非工程措施，减少对鄱阳湖流域排放的污染物。项目对环境的影响主要分为施工期和运营期。施工期主要为施工废水、扬尘、施工噪声等对环境及敏感点造成短暂影响，运营期主要为垃圾转运站恶臭及扬尘等影响。

④与会人员发言：公众均表示支持项目建设，无反对意见；由于目前道路排水不畅，雨天路面涝水，出行及生活非常不便，望早日开工，早日完工，一次性施工，避免重复建设；建议对汪墩乡及大树乡垃圾转运站设置除臭除尘措施，减少恶臭污染物影响。

⑤建设单位及环评单位发言：感谢公众的理解和支持，项目将进一步完善设计及项目前期工作，争取早日开工，一次性施工，不搞重复性建设，尽早完工；对汪墩乡及大树乡垃圾转运站设置除臭除尘措施。

⑥主持人总结会议，会议结束。



图1 都昌县座谈会现场照片

## 2、鄱阳县座谈会会议纪要

### 2.1 四十里街镇座谈会

(1) 会议时间：2016年5月13日上午9:30

(2) 会议地点：四十里街政府二楼会议室

(3) 会议内容：有关世界银行贷款鄱阳县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：四十里街镇洪书记、黄碧泉代表、暖水占家村代表、暖水汪家村代表、陈李村代表、蟠桃咀村代表、青龙村代表、新路村代表、湖盆村代表及环评编制单位相关成员等。

(5) 主持人：洪书记（四十里街镇政府）

(6) 会议纪要

会议对鄱阳县水环境管理项目的环评初稿完成阶段进行公众协商，并且对项目环境影响减缓措施进行了讨论，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在环境问题筛选后及环评工作大纲最终确定之前，主要是向受项目影响的民众提供项目概况及潜在环境问题；第二轮在环评报告初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。目的是向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点和与工程有关的重大环境问题；帮助评价人员发现问题，确认所有工程引起的重大环境问题已在环境评价报告中得到分析评价；确认环境保护措施的可行性以及优化措施方案的落实和实施等。本次为第二次公众协商。

③环评单位介绍项目基本情况、项目环境影响和防治措施及环评初稿结论：

拟建项目通过新建流域农村生活污水收集处理项目、流域水系生态修复与保护项目和水质监测系统以及其他非工程措施，减少对珠湖水体排放的污染物，项目建成将有控制污染物的排放。项目建设不仅关系到鄱阳县经济社会可持续发展，同时也关系到四十里街镇、团林乡、双港镇、高家岭乡、礼恭脑和珠湖乡等以珠湖水体为饮用水源的人民群众的饮用水安全。项目采用“源头减污、途中管控、终端处理，水体净化”的模式，从源头上控制和防范珠湖水环境的污染。在采取本评价提出的减缓措施、环境管理计划、公众协商等对策措施后，本项目的实施在环境上是可行的。

④公众代表发言：各位与会代表均表示支持项目建设，认可环评提出的各项环保措施。同时公众提出应做好施工前的公示和宣传工作，避免施工队伍进入村庄引起不必要的冲突；做好征地拆迁安置补偿工作，避免因征地拆迁引起纠纷；建议下半年施工，避开汛期和雨季。

⑤对公众意见的反馈：项目办及环评单位表示感谢公众的理解和支持，项目将严格落实项目环境管理计划中各项环保措施。将开工前的公示及宣传要求列入环境管理计划中，做好开工前的宣传工作；按照国家及地方政策做好征地拆迁补偿工作，并将相关要求及措施纳入环境管理计划中；项目施工合理选择施工工期，尽量避免在雨季、雨天施工，同时做好水土保持。

⑥主持人总结会议，会议结束。



图 1 鄱阳四十里街镇座谈会现场照片

### 会议签到表

项目名称: 鄱阳县水环境管控项目

会议时间: 2016. 5. 13 上午 9:30

会议地点: 鄱阳县四十里街镇政府会议室

序号	姓名	电话	职务	单位或住址
1	任其忠	13972038974	普通	黄碧泉 (女)
2	冯程行	15777935264		暖水冯家村
3	占金生	18270391437		暖水占家村
4	占如开	15079386092		暖水冯家村
5	陈楚来	13970358665		暖水陈家村
6	汪凤英			暖水冯家村 (女)
7	汪智保	15170399899		暖水汪家村
8	傅峰	0736713987		暖水傅家村
9	冯华	1577038277	干部	暖水冯家村
10	徐平	1557980781		暖水徐家村
11	胡东亮	13979366256	村干部	暖水村委会
12	徐志民	15576375370	村组	暖水村
13	陈国华	13870349027	村支书	暖水村支部
14	洪高弟	13970358990	镇人大代表	暖水村
15	冯江	13979365843	项目股	暖水村
16	胡爱娟	13755362462	村民	暖水村 (女)

图 2 鄱阳四十里街镇座谈会签到表

## 2.2 团林乡座谈会

(1) 会议时间：2016年5月13日下午1:30

(2) 会议地点：团林乡政府二楼会议室

(3) 会议内容：有关世界银行贷款鄱阳县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：团林乡李乡长、沙塘村代表、畈田村代表、畈塘村代表、江村桥代表、梅湖村代表、铜钱村代表、蛇山村代表及环评编制单位相关成员等。

(5) 主持人：李桂汉主任（团林乡乡政府）

(6) 会议纪要

会议对鄱阳县水环境管理项目的环评初稿完成阶段进行公众协商，并且对项目环境影响减缓措施进行了讨论，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在环境问题筛选后及环评工作大纲最终确定之前，主要是向受项目影响的民众提供项目概况及潜在环境问题；第二轮在环评报告初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。目的是向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点和与工程有关的重大环境问题；帮助评价人员发现问题，确认所有工程引起的重大环境问题已在环境评价报告中得到分析评价；确认环境保护措施的可行性以及优化措施方案的落实和实施等。本次为第二次公众协商。

③环评单位介绍项目基本情况、项目环境影响和防治措施及环评初稿结论：

拟建项目通过新建流域农村生活污水收集处理项目、流域水系生态修复与保护项目和水质监测系统以及其他非工程措施，减少对珠湖水体排放的污染物，项目建成将有控制污染物的排放。项目建设不仅关系到鄱阳县经济社会可持续发展，同时也关系到四十里街镇、团林乡、双港镇、高家岭乡、礼恭脑和珠湖乡等以珠湖水体为饮用水源的人民群众的饮用水安全。项目采用“源头减污、途中管控、终端处理，水体净化”的模式，从源头上控制和防范珠湖水环境的污染。在采取本评价提出的减缓措施、环境管理计划、公众协商等对策措施后，本项目的实施在环境上是可行的。

④公众代表发言：各位与会代表均表示支持项目建设，认可环评提出的各项环保措施。建议做好征地补偿工作。

⑤对公众意见的反馈：项目办及环评单位表示感谢公众的理解和支持，项目将严格落实项目环境管理计划中各项环保措施。项目将按照国家及地方政策做好征地拆迁补偿工作，并将相关要求及措施纳入环境管理计划中。

⑥主持人总结会议，会议结束。





图 3 鄱阳县团林乡座谈会现场照片

### 会议签到表

项目名称: 世行贷款鄱阳县水环境管项目环评

会议时间: 2016.5.13 下午 1:30

会议地点: 团林乡政府三楼会议室

序号	姓名	电话	职务	单位或住址
1	姜格月	13097392591	村干部	崇山村
2	李金田	13155916331	村主任	李庄村
3	胡金峰	1356311799	村主任	沙塘村
4	徐老亮	13767373090	自然村村长	梅河村
5	徐香英	15970363316	村主任	板塘村
6	陈彩云	15888519790	自然村村长	板塘村
7	江地华	15698035158	村干部	三塘村
8	程福朝	15932929259	村干部	三塘村
9	李桂汉	13755366617	乡干部	鄱阳县(团林乡)
10	周美来	15277372179	村民	梅湖村
11	周德和	15932927947	村民	梅湖村
12	曹付法	15970391568	村干部	铜钱村
13	曹物建	15932928120	村干部	铜钱村
14	周成贵	13537782254	村民	板塘村
15	张银娇	15180384502	村干部	蛇山
16				

图 4 鄱阳县团林乡座谈会签到表

### 2.3 双港镇座谈会

(1) 会议时间：2016年5月13日下午4:00

(2) 会议地点：双港镇政府二楼会议室

(3) 会议内容：有关世界银行贷款鄱阳县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：双港镇俞主任、双港镇干部代表、荆塘代表、新民村代表、竹山村代表、荆华村代表、小华村代表及环评编制单位相关成员等。

(5) 主持人：俞主任（双港镇政府）

(6) 会议纪要

会议对鄱阳县水环境管理项目的环评初稿完成阶段进行公众协商，并且对项目环境影响减缓措施进行了讨论，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在环境问题筛选后及环评工作大纲最终确定之前，主要是向受项目影响的民众提供项目概况及潜在环境问题；第二轮在环评报告初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。目的是向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点与工程有关的重大环境问题；帮助评价人员发现问题，确认所有工程引起的重大环境问题已在环境评价报告中得到分析评价；确认环境保护措施的可行性以及优化措施方案的落实和实施等。本次为第二次公众协商。

③环评单位介绍项目基本情况、项目环境影响和防治措施及环评初稿结论：

拟建项目通过新建流域农村生活污水收集处理项目、流域水系生态修复与保护项目和水质监测系统以及其他非工程措施，减少对珠湖水体排放的污染物，项目建成将有控制污染物的排放。项目建设不仅关系到鄱阳县经济社会可持续发展，同时也关系到四十里街镇、团林乡、双港镇、高家岭乡、礼恭脑和珠湖乡等以珠湖水体为饮用水源的人民群众的饮用水安全。项目采用“源头减污、途中管控、终端处理，水体净化”的模式，从源头上控制和防范珠湖水环境的污染。在采取本评价提出的减缓措施、环境管理计划、公众协商等对策措施后，本项目的实施在环境上是可行的。

④公众代表发言：各位与会代表均表示支持项目建设，认可环评提出的各项环保措施。公众均表示十分关注珠湖饮用水安全问题，希望项目早日开工，早日完工，保障饮用水安全。

⑤对公众意见的反馈：项目办及环评单位表示感谢公众的理解和支持，项目将严格落实项目环境管理计划中各项环保措施。争取项目早日开工，早日投入使用。

⑥主持人总结会议，会议结束。



图 5 鄱阳双港镇座谈会现场照片

### 会议签到表

项目名称: 世行贷款鄱阳县项目

会议地点: 双港镇政府会议室

会议时间: 2016.5.13 下午4时

序号	姓名	电话	职务	单位或住址
1	何树华	13755737866	干部	双港镇荆竹
2	方小琴	15579267133	镇人民代表	双港镇荆竹
3	李亚平	18779292182	群众代表	双港镇荆竹
4	詹神男	1517036039	群众代表	双港镇荆竹
5	谈成发	15702252588	支部书记	双港镇荆竹村
6	胡美华	1593812891	农民	荆竹
7	龙炳欢	13694850989	农民	荆竹村
8	王木香	13755723801	农民	荆竹村
9	熊梅	13770318730	支部书记	荆竹
10	陈连友	13155936998	支书	小华
11	朱光茂	13920309281	支书	新庄
12	王立贵	13634838888	村支书	荆竹村
13	王学村	15870912677	支书	竹园
14	王学村	15079392050	村支书	双港镇政府
15	荆竹村	15932938076	村计生员	荆竹村
16	胡美香	13970345332	计生员	小华村

胡五萍

图 6 鄱阳双港镇座谈会签到表

### 3、余干县座谈会会议纪要

(1) 会议时间：2015年12月9日上午9:30

(2) 会议地点：余干县发改委二楼会议室村委会

(3) 会议内容：有关世界银行贷款余干县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：省项目办万工、余干县项目办张主任、关口村及琵琶洲社区居民代表、市政局周工、规划局李工、水产局周工、国土局章工、环保局吴工、水利局胡工及环评编制成员等20人。

(5) 主持人：张主任（余干县世行项目办）

(6) 会议纪要

会议对余干县水环境管理项目进行第一次公众协商，对项目概况及潜在的环境问题与受影响公众进行了协商，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在项目环境评价报告大纲编制完成之前，主要是向受项目影响的民众提供项目概况及潜在环境问题。第二轮在环境评价报告书初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。目的是向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点和与工程有关的重大环境问题；帮助评价人员发现问题，确认所有工程引起的重大环境问题已在环境评价报告中得到分析评价；确认环境保护措施的可行性以及优化措施方案的落实和实施等。本次为第一轮公众咨询。

③环评单位介绍项目基本情况及潜在环境问题：

拟建项目通过对琵琶湖截污、垃圾转运、琵琶湖水生态修复及其他非工程措施，减少对鄱阳湖流域排放的污染物。项目对环境的影响主要分为施工期和运营期。施工期主要为施工废水、扬尘、施工噪声等对环境及敏感点造成短暂影响，运营期主要为垃圾收集点恶臭及扬尘等影响。

④与会人员发言：公众均表示支持项目建设，无反对意见；目前琵琶湖水质较差，生活污水直排，湖里垃圾较多，望早日开工，早日完工。

⑤建设单位及环评单位发言：感谢公众的理解和支持，项目将进一步完善设计及项目前期工作，争取早日开工，一次性施工。

⑥主持人总结会议，会议结束。



图1 余干县座谈会现场照片



#### 4、奉新县座谈会会议纪要

(1) 会议时间：2016年5月25日下午1:30

(2) 会议地点：奉新县发改委会议室

(3) 会议内容：有关世界银行贷款奉新县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：奉新县项目办邓工、奉新县污水处理厂毛厂长、奉新县环保局刘工、县交警大队章工、冯川二小、奉新县第三中学单位代表、受影响的居民代表及环评编制单位人员，共15人。

(5) 主持人：奉新县项目办邓工

(6) 会议纪要

会议对靖安县水环境管理项目的环评初稿完成阶段进行公众协商，并且对项目环境影响减缓措施进行了讨论，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在环境问题筛选后及环评工作大纲最终确定之前，主要是向受项目影响的民众提供项目概况及潜在环境问题；第二轮在环评报告初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。

通过向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点和与工程有关的重大环境问题；帮助评价人员发现问题，确认环境保护措施的可行性以及优化措施方案的落实和实施等。

③环评单位介绍项目基本情况、项目环境影响和防治措施及环评初稿结论：

拟建项目利用世行贷款，实施城南及城北的管网改造工程、河道整治，以及其他非工程措施，减少对潦河及鄱阳湖流域水体排放的污染物。通过该项目的实施，将构建较为完善的城市排水体系，保障城市水环境生态安全，促进城市雨污分流改造，提高污水收集处理率，从源头上减轻对鄱阳湖水体的污染，实现可持续发展的城镇化。

项目潜在的环境影响主要在施工期和运行期两个时段。施工期主要有施工机械噪声、扬尘、施工废水、生活污水与建筑垃圾等环境污染、清淤淤泥对环境的影响以及管网在城区道路两侧施工时，对交通阻隔、出行安全的影响，尤其是对医院、学校、幼儿园及养老院等重要敏感点；项目建成后，排水管网皆埋在地下密闭运行，营运期基本不会产生污染。在采取相应减缓措施后，从环境的角度考虑，本项目是可行。

④受影响的居民及单位代表发言：各位与会代表均表示支持项目建设，认为项目建设有利于民生、推进城镇发展，对环保措施表示认同。

⑤意见反馈

县项目办及环评单位表示感谢公众的理解和支持，项目将严格落实项目环境管理计划中各项环保措施。

⑥主持人总结会议，会议结束。





图 1 奉新县座谈会现场照片

### 环境影响评价公众参与座谈会签到表

项目名称: 世行贷款都市污水环境安全项目.

会议时间: 2016年 5月 25日 时

会议地点:

序号	姓名	电话	职务	单位或住址
1	毛正兵	18979520499	厂长	奉新县污水处理厂
2	刘自强	13576559101		奉新县环保局
3	周丁浩	15179599600		龙山社区
4	陈琴	13507053301		龙山社区
5	毛平	13879562020		奉新县茅寮镇中心小学
6	郭宝	13879513953		冯川二小
7	董品婧	13755829459		五小
8	兰荣英	13507953476		书院社区
9	刘松松	13507954037		三中
10	周昌东	13767588576		书院社区
11	廖建山	18179556918		交警大队
12				
13				
14				
15				
16				
17				

图2 奉新县座谈会签到表

## 5、靖安县座谈会会议纪要

(1) 会议时间：2016年5月9日上午9:30

(2) 会议地点：靖安县政府二楼会议室

(3) 会议内容：有关世界银行贷款靖安县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：省项目办李主任、靖安县世行项目办涂主任、靖安县污水处理厂涂厂长、县自来水厂凌工、县财政局黄局长、县水务局曹工、县城管局王局长、双溪镇副镇长、靖安县环保局赖站长、设计单位肖工及环评编制单位赵凯、杨洋等。

(5) 主持人：涂主任（靖安县世行项目办）

(6) 会议纪要

会议对靖安县水环境管理项目的环评初稿完成阶段进行公众协商，并且对项目环境影响减缓措施进行了讨论，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在环境问题筛选后及环评工作大纲最终确定之前，主要是向受项目影响的民众提供项目概况及潜在环境问题；第二轮在环评报告初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。

向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点和与工程有关的重大环境问题；帮助评价人员发现问题，确认所有工程引起的重大环境问题已在环境评价报告中得到分析评价；确认环境保护措施的可行性以及优化措施方案的落实和实施等。

③环评单位介绍项目基本情况、项目环境影响和防治措施及环评初稿结论：

拟建项目通过改造城区管网工程、垃圾转运工程以及其他非工程措施，减少对北潦河水体排放的污染物。项目建设不仅关系到靖安县经济社会可持续发展，同时也关系到人民群众的饮用水安全。项目采用“源头减污、途中管控、终端处理，水体净化”的模式，从源头上控制和防范北潦河水环境的污染。在采取本评价提出的减缓措施、环境管理计划、公众协商等对策措施后，本项目的实施在环境上是可行的。

④与会人员发言：各位与会代表均表示支持项目建设，认可环评提出的各项环保措施。

⑤主持人总结会议，会议结束。



图1 靖安县座谈会现场照片

### 会议签到表

项目名称: 靖安

会议时间: 2016.5.9.

会议地点: 靖安县政府二楼

序号	姓名	电话	职务	单位或住址
1	涂健	18720669618	主任	靖安县水利局
2	凌冰	13570563528	负责人	靖安自来水公司
3	曹小忠	13707953749	副局长	靖安县环保局
4	曹炳平	13576543775	副局长	靖安县水务局
5	王小平	13807953887	副局长	靖安岩城岩局
6	钟田田	13870521956	副局长	靖安气象局
7	魏维嘉	13767510029	副科长	靖安县环保局
8	肖建国	15180159530	工程师	江西省煤矿设计院
9	赵凯	13970975718	工程师	京城嘉宇
10	杨军	18870095969	工程师	京城嘉宇
11				
12				
13				
14				
15				
16				

图2 靖安县座谈会签到表

## 6、吉水县座谈会会议纪要

(1) 会议时间：2016年1月14日下午1:30

(2) 会议地点：吉水县发改委会议室

(3) 会议内容：有关世界银行贷款吉水县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：吉水县项目办李主任、刘主任、县环保局李主任、县污水处理厂赵厂长、文峰社区居民代表、文水社区居民代表、吉水县人民医院代表、吉水中学教师代表及环评编制单位人员，共15人。

(5) 主持人：吉水县项目办李主任

(6) 会议纪要

会议对世行贷款吉水县水环境管理项目环评大纲编制阶段工作进行公众协商，并且对项目潜在环境影响进行了讨论，现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在环境问题筛选后及环评工作大纲最终确定之前，主要是向受项目影响的民众提供项目概况及潜在环境问题；第二轮在环评报告初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。

通过向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点和与工程有关的重大环境问题；帮助评价人员发现问题，确认环境保护措施的可行性以及优化措施方案的落实和实施等。

③环评单位介绍项目基本情况、潜在的环境影响：

拟建项目利用世行贷款，实施城南及老城区的管网改造工程，以及其他非工程措施，减少对赣江水体排放的污染物。通过该项目的实施，将构建较为完善的城市排水体系，保障城市水环境生态安全，促进城市雨污分流改造，提高污水收集处理率，从源头上减轻对鄱阳湖水体的污染，实现可持续发展的城镇化。

项目潜在的环境影响主要在施工期和运行期两个时段。施工期主要有施工机械噪声、扬尘、施工废水、生活污水与建筑垃圾等环境污染，以及管网在城区道路两侧施工时，对交通阻隔、出行安全的影响，尤其是对医院、学校、幼儿园及养老院等重要敏感点；项目建成后，排水管网皆埋在地下密闭运行，营运期基本不会产生污染。

在采取本评价提出的减缓措施、环境管理计划、公众协商等对策措施后，本项目的实施在环境上是可行的。

④受影响的居民及单位代表发言：各位与会代表均表示支持项目建设，认为项目建设有利于民生、推进城镇发展，希望尽早开工，早日完工；同时建议施工期尽量减少施工噪声，合理安排施工时间，保障施工路段居民出行安全与畅通。

⑤意见反馈

县项目办及环评单位表示，在环评中提出施工噪声减缓措施及施工时间的环境管理要求，由项目办监督土建承包商开工前做好施工交通组织设计。环评单位将上述措施落实在环境管理计划中。

⑥主持人总结会议，会议结束。



图 1 吉水县座谈会现场照片

## 7、上栗县座谈会会议纪要

(1) 会议时间：2016年5月11日上午9:30

(2) 会议地点：上栗县福田镇明山村委会会议室

(3) 会议内容：有关世界银行贷款上栗县水环境管理项目环境影响评价公众咨询与信息公开座谈会

(4) 出席人：世行李万山、孙燕、上栗县福田镇政府彭主任、县农工部曾主任、明山村委会刘主任及村民代表、项目设计单位及环评单位代表，共计15人。

(5) 主持人：彭书记（福田镇政府）

(6) 会议纪要

会议对上栗县水环境管理项目的环评初稿完成阶段进行公众协商，并且对项目环境影响减缓措施进行了讨论，形成了共识，达成了一致意见。现将会议有关事项纪要如下：

①主持人介绍各位与会人员，并发放问卷调查表。

②环评单位介绍项目公众咨询的目的：

根据我国的环境保护法规和管理条例以及世行政策（OP4.01）的要求，对项目开展了两轮公众咨询与信息公开。第一轮在环境问题筛选后及环评工作大纲最终确定之前，主要是向受项目影响的民众提供项目概况及潜在环境问题；第二轮在环评报告初稿完成阶段，主要是就第一轮公众参与中公众关心的环境问题及其减缓措施进行交流，以期获得公众对本项目建设和所采取的减缓措施的理解。目的是向项目所在地区以及关注本工程建设的公众发布工程有关信息，让公众了解工程的主要情况、建设运行特点与工程有关的重大环境问题；帮助评价人员发现问题，确认所有工程引起的重大环境问题已在环境评价报告中得到分析评价；确认环境保护措施的可行性以及优化措施方案的落实和实施等。本次为第二次公众协商。

③环评单位介绍项目基本情况、项目环境影响和防治措施及环评初稿结论：

拟建项目通过建立农村垃圾收运系统项目，控制污染物的排放，加强鄱阳湖流域水质管理。在采取本评价提出的减缓措施、环境管理计划、公众协商等对策措施后，本项目的实施在环境上是可行的。

④公众代表发言：各位与会代表均表示支持项目建设，认可环评提出的各项环保措施。

⑤对公众意见的反馈：项目办及环评单位表示感谢公众的理解和支持，项目将严格落实项目环境管理计划中各项环保措施。

⑥主持人总结会议，会议结束。



图1 上栗县明山村座谈会现场照片

### 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	李万山	13817893827		世界银行
2	孙燕	18901585532		''
3	蒋晓峰	13621612305		上海城建设计研究院
4	黄明	15170049039		上海城市建设设计研究总院
5	彭亚	13901490178		上栗县福田镇人民政府
6				
7	曹兴林	13979952703	副镇长	县委组织部 县农办
8	刘海红	13635927206	村妇联主任	明山村委会
9	黄水华	15155533813	退休	明山村委会
10	张亚	13879966456	村监会委员	明山村委会
11	刘意	15879968222	村监会副主任	''
12	曹兴林	13907995472	村总支书记	''
13	胡运杰	13819952018	村农协主任	''
14	彭琴	13979972750		福田镇人民政府
15	刘树煊	18679115977		上海城建院
16	曹建国	15180159530		江西煤矿院

图2 上栗县福田镇明山村座谈会签到表



Figure :

Figure 1 Duchang County Sub Project -- Wastewater Pipeline layout

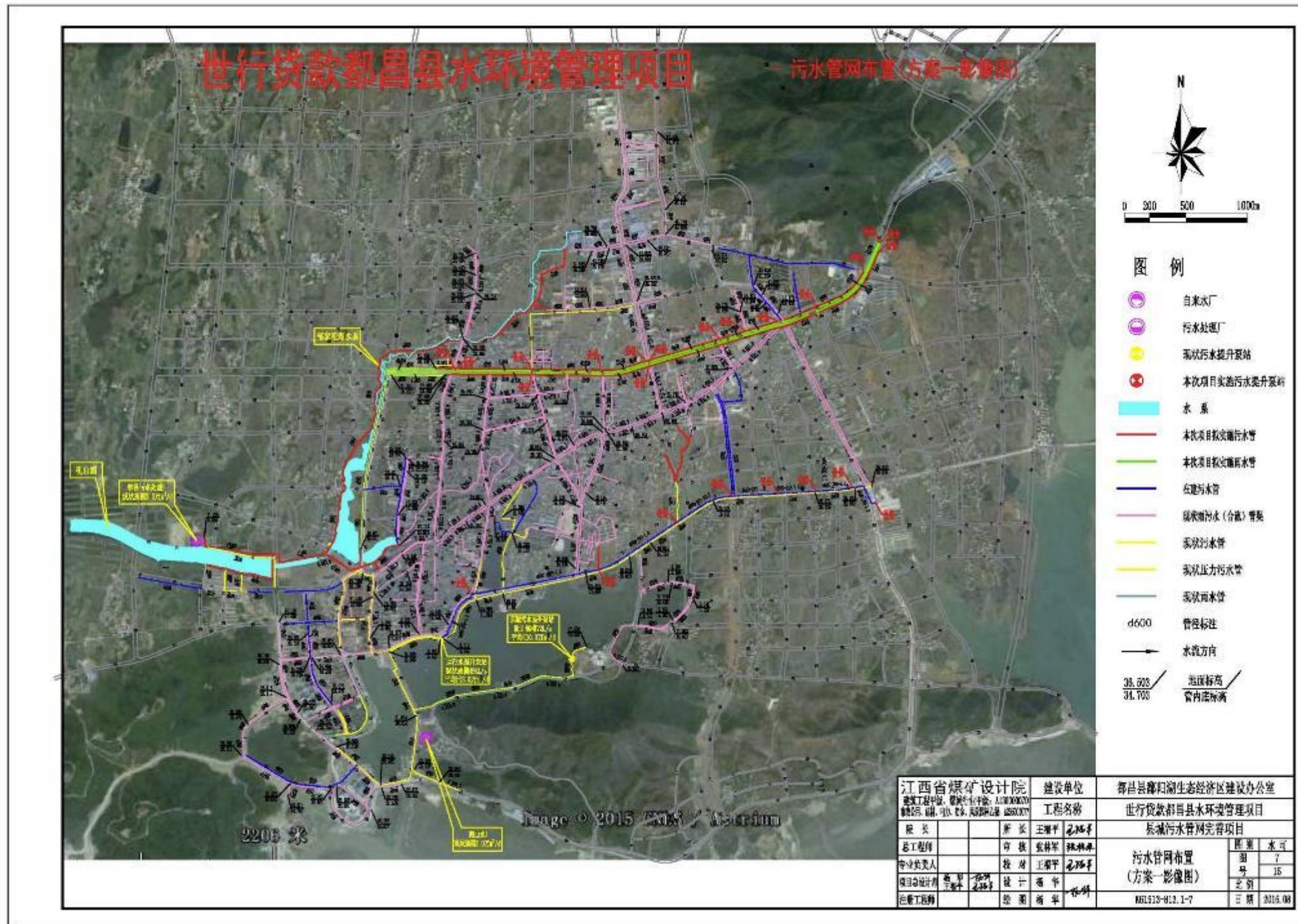


Figure 2 Duchang County Sub Project --Layout of ecological restoration and protection of Zou Jiazui lake water system



Figure 3 Duchang County Sub Project --Layout of Waste Transfer System

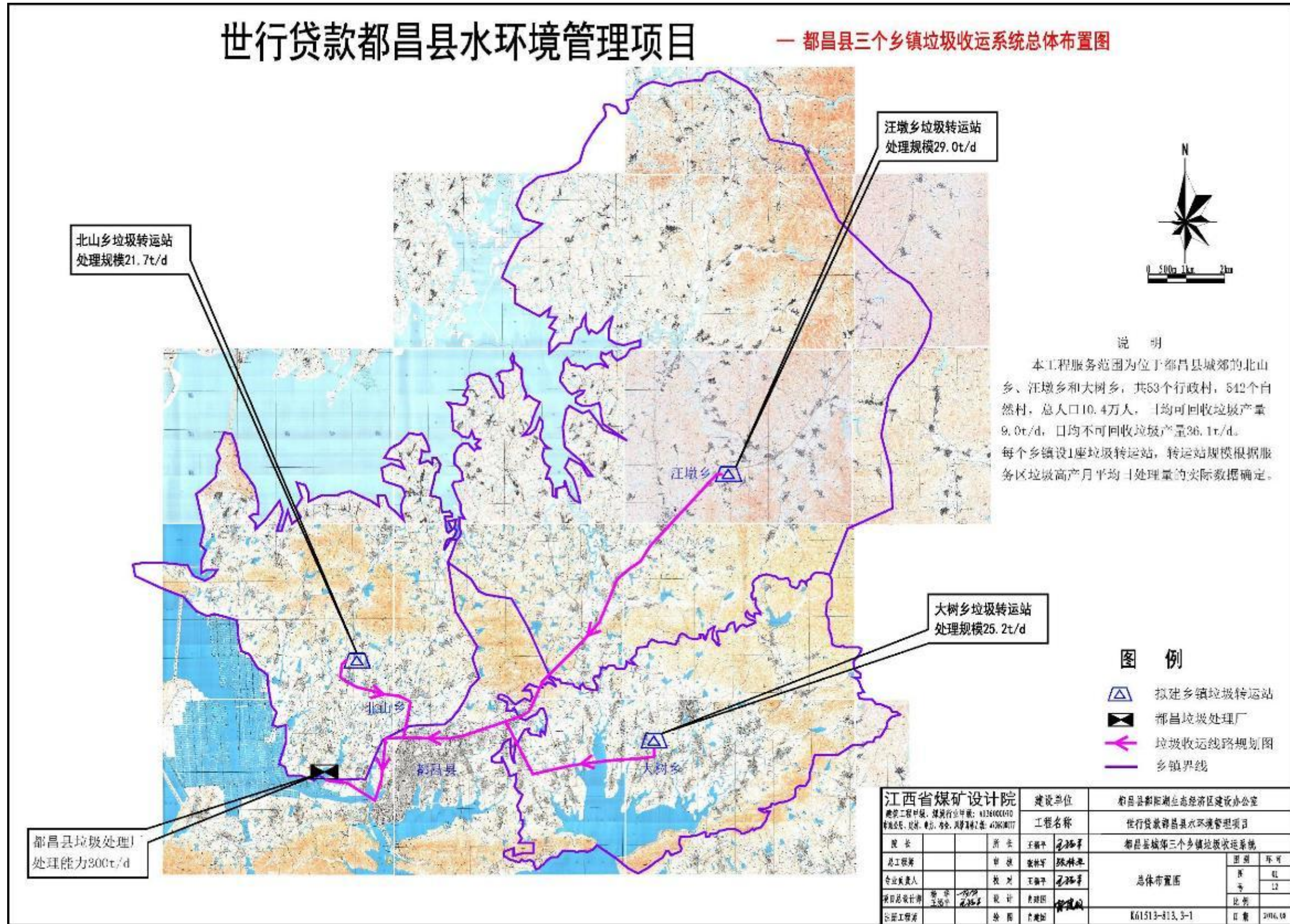




Figure 5 Poyang County Sub Project -- Layout and sensitive point location

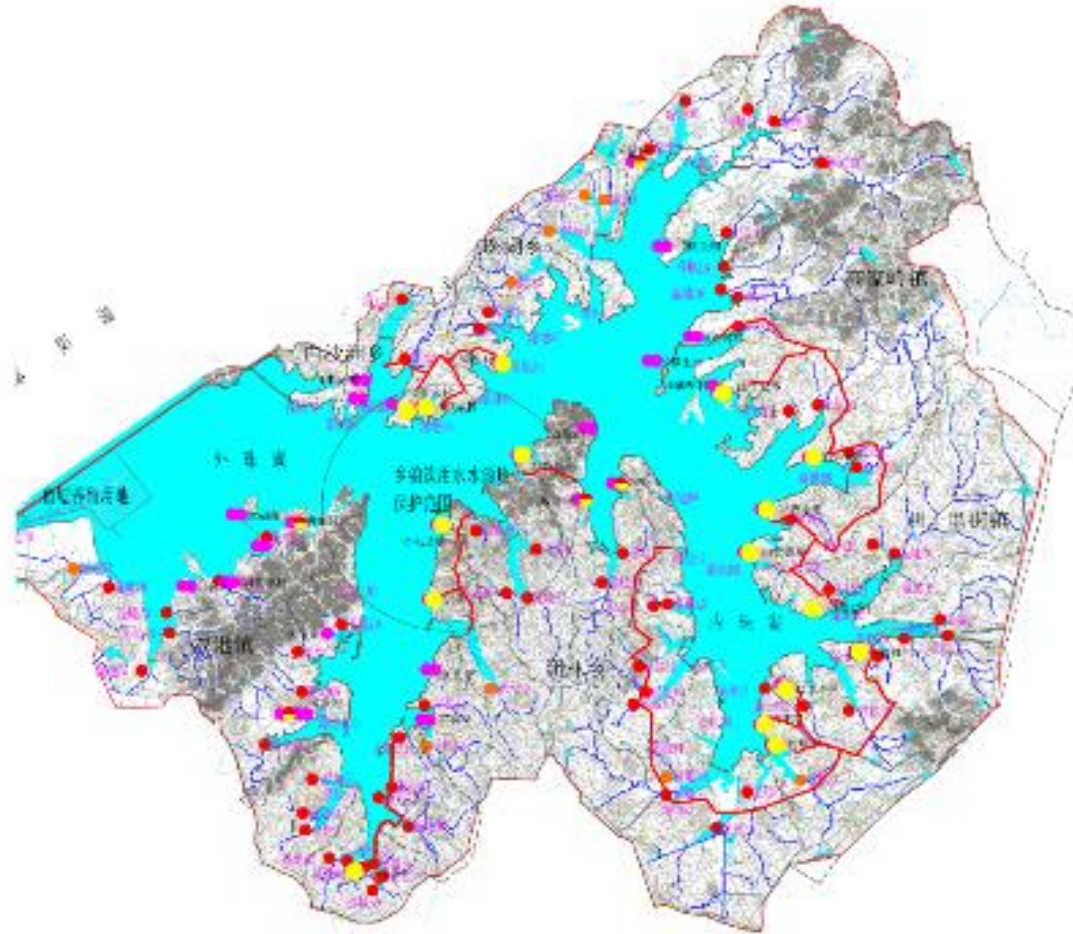


Figure 6 Yugan County Sub Project -- Wastewater Pipeline layout

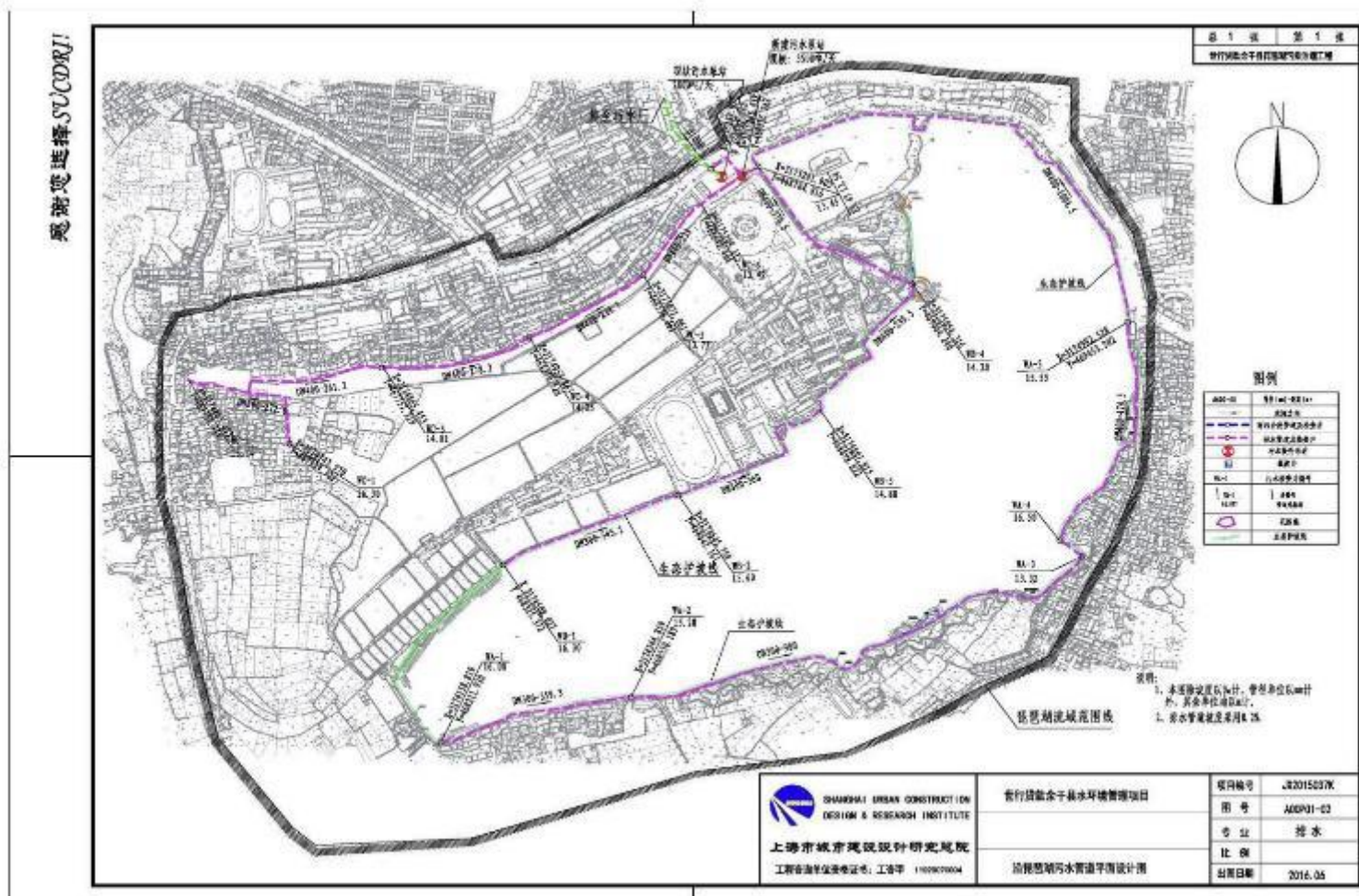


Figure 7 Yugan County Sub Project -- Waste collection and Transport Route Map

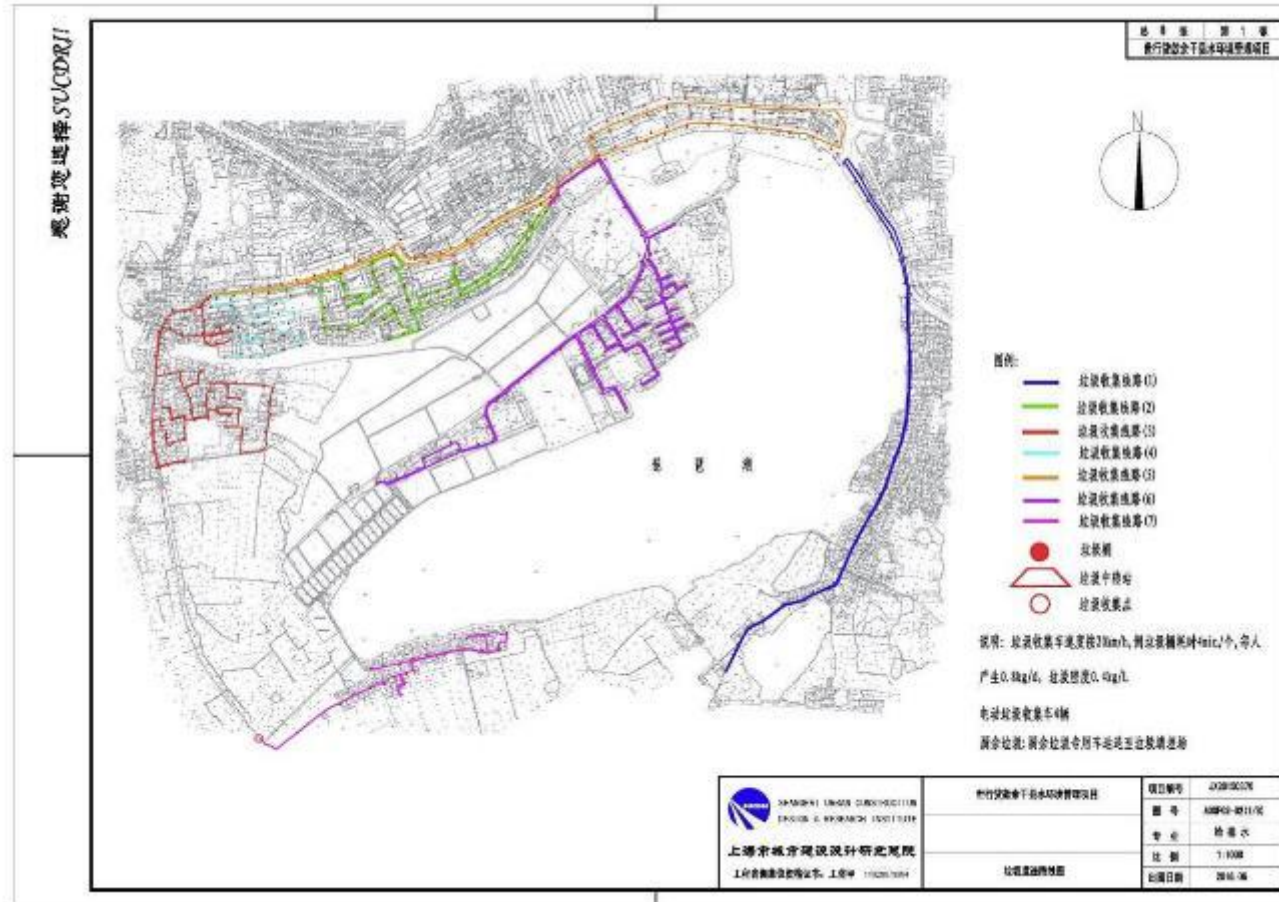


Figure 8 Yugan County Sub Project -- Construction of ecological system in Pipa Lake

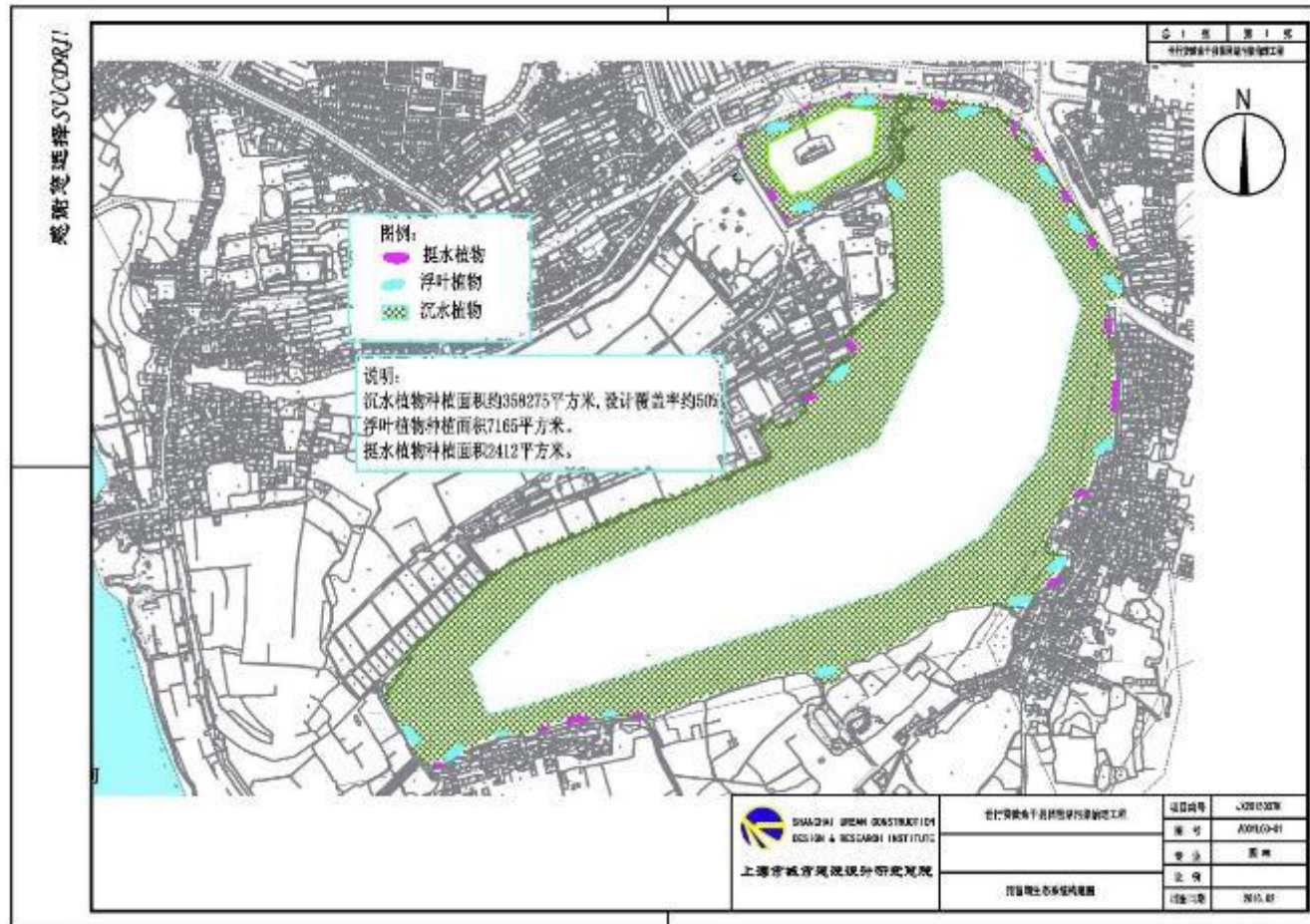






Figure 10 Fengxin County Sub Project -- Rain Pipeline layout

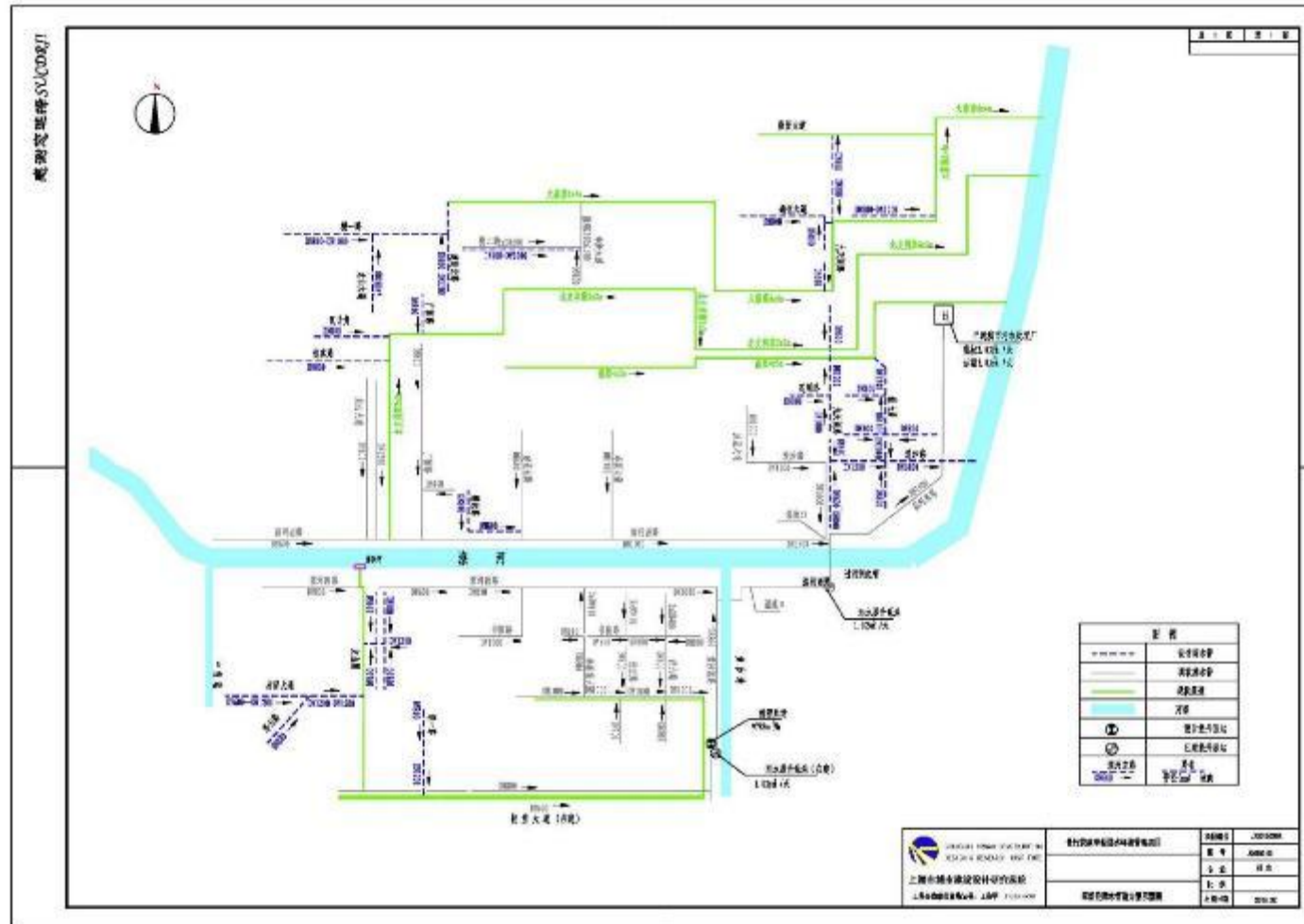


Figure11 Fengxin County Sub Project -- sensitive points location

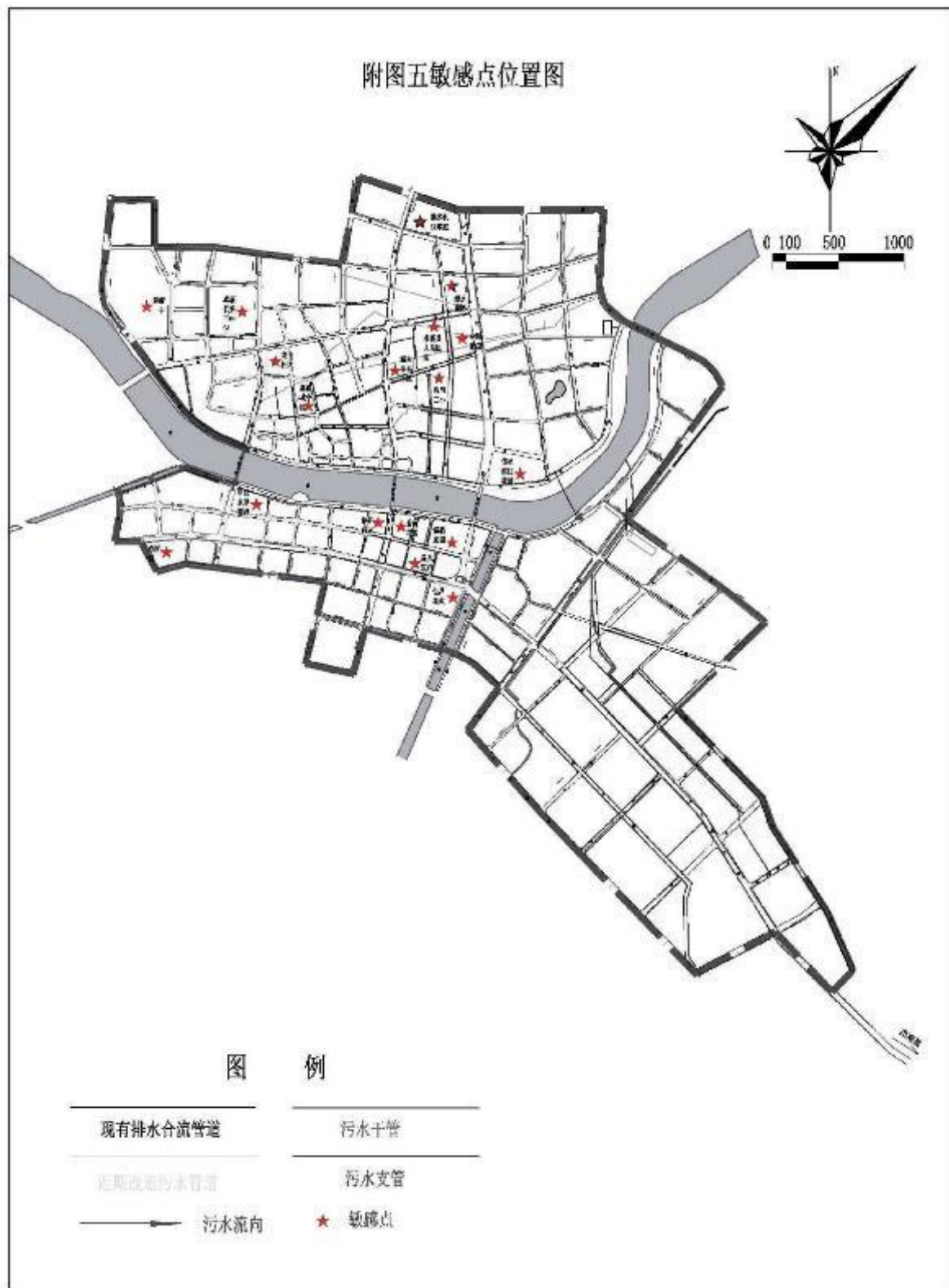






Figure 14 Jing'an County Sub Project -- sensitive points location

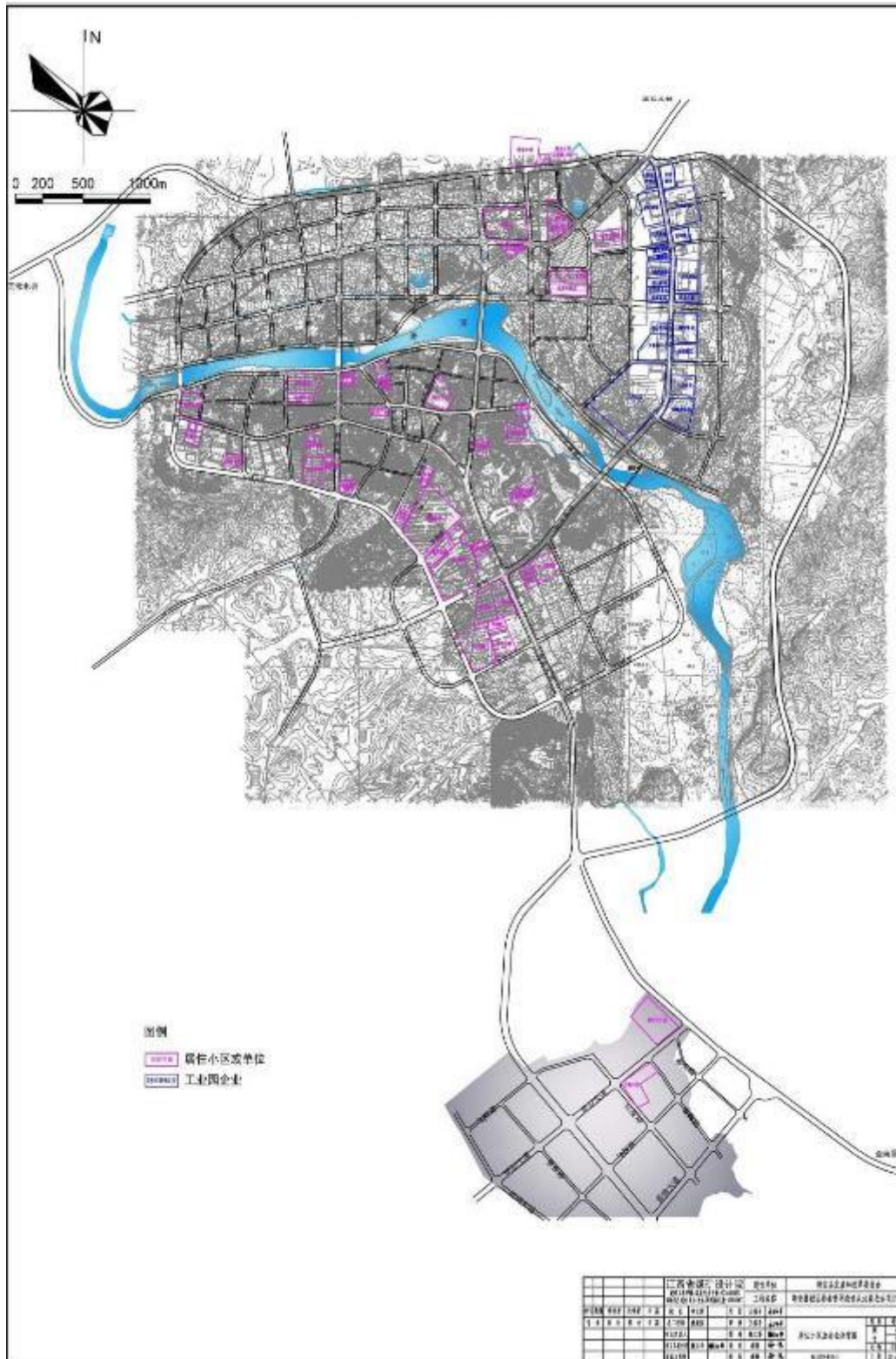


Figure 15 Jishui County Sub Project -- South Town Drainage Pipeline layout

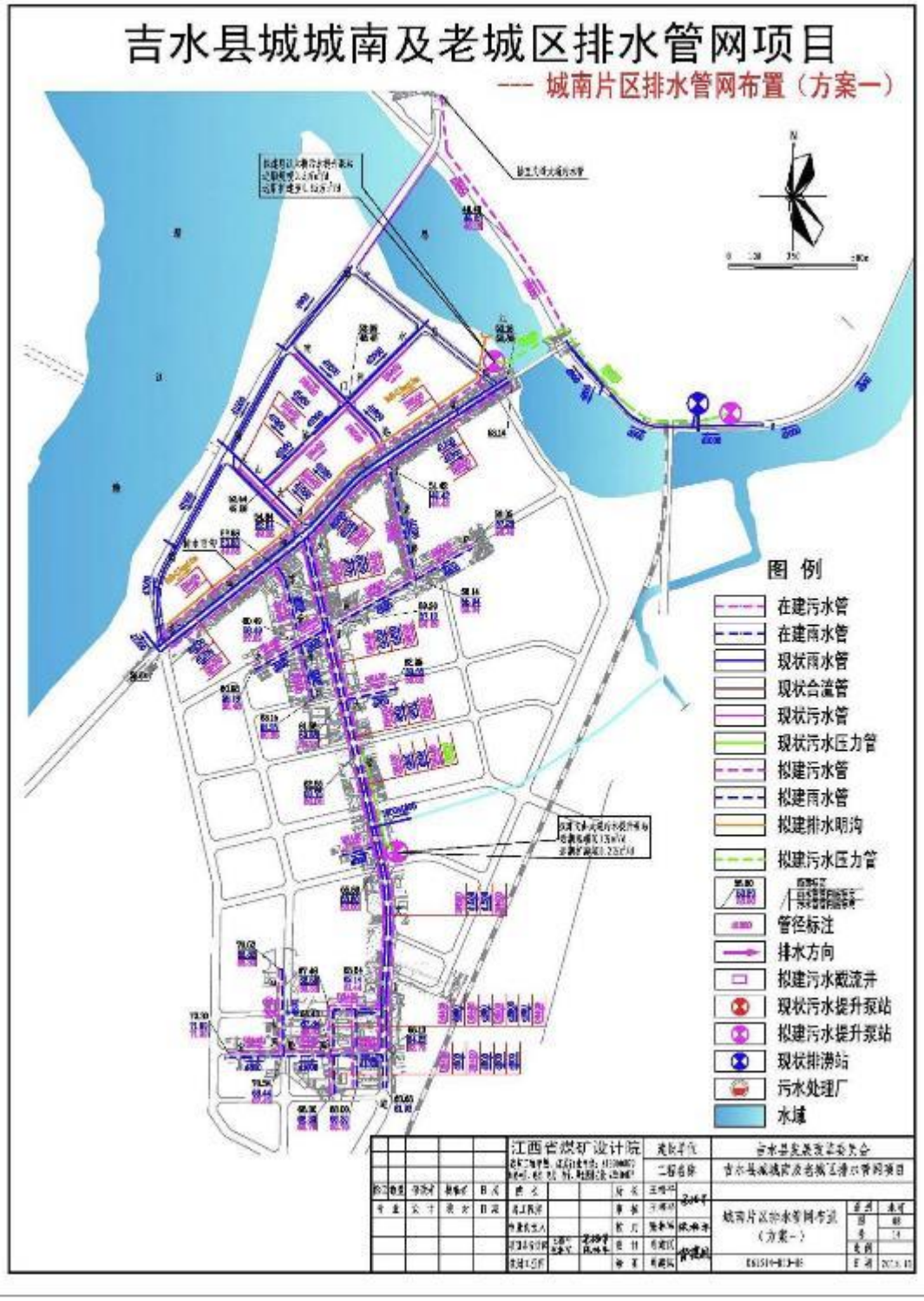


Figure 16 Jishui County Sub Project -- Old Town area Drainage Pipeline layout

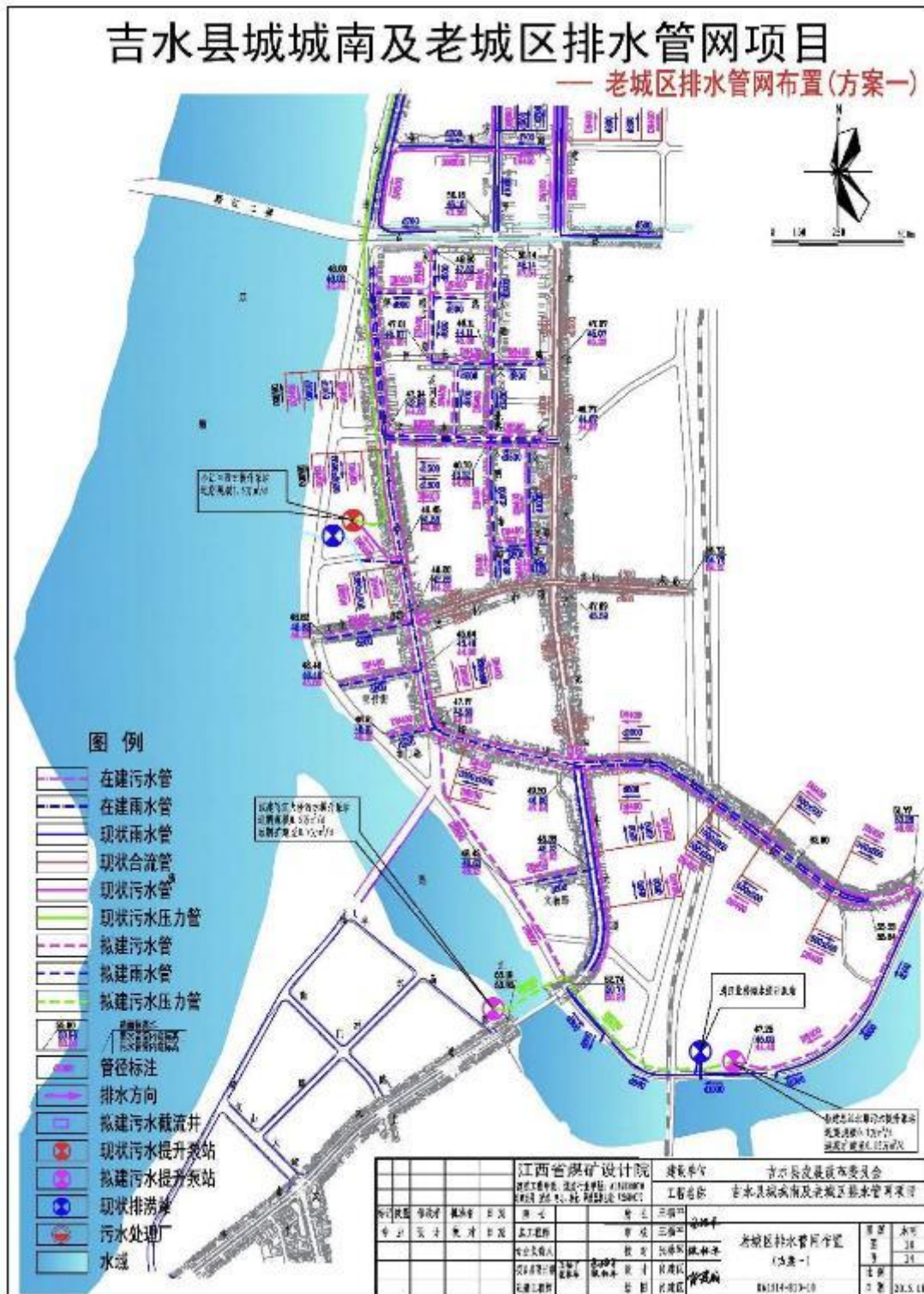




Figure 17 Jishui County Sub Project -- South Town sensitive points location

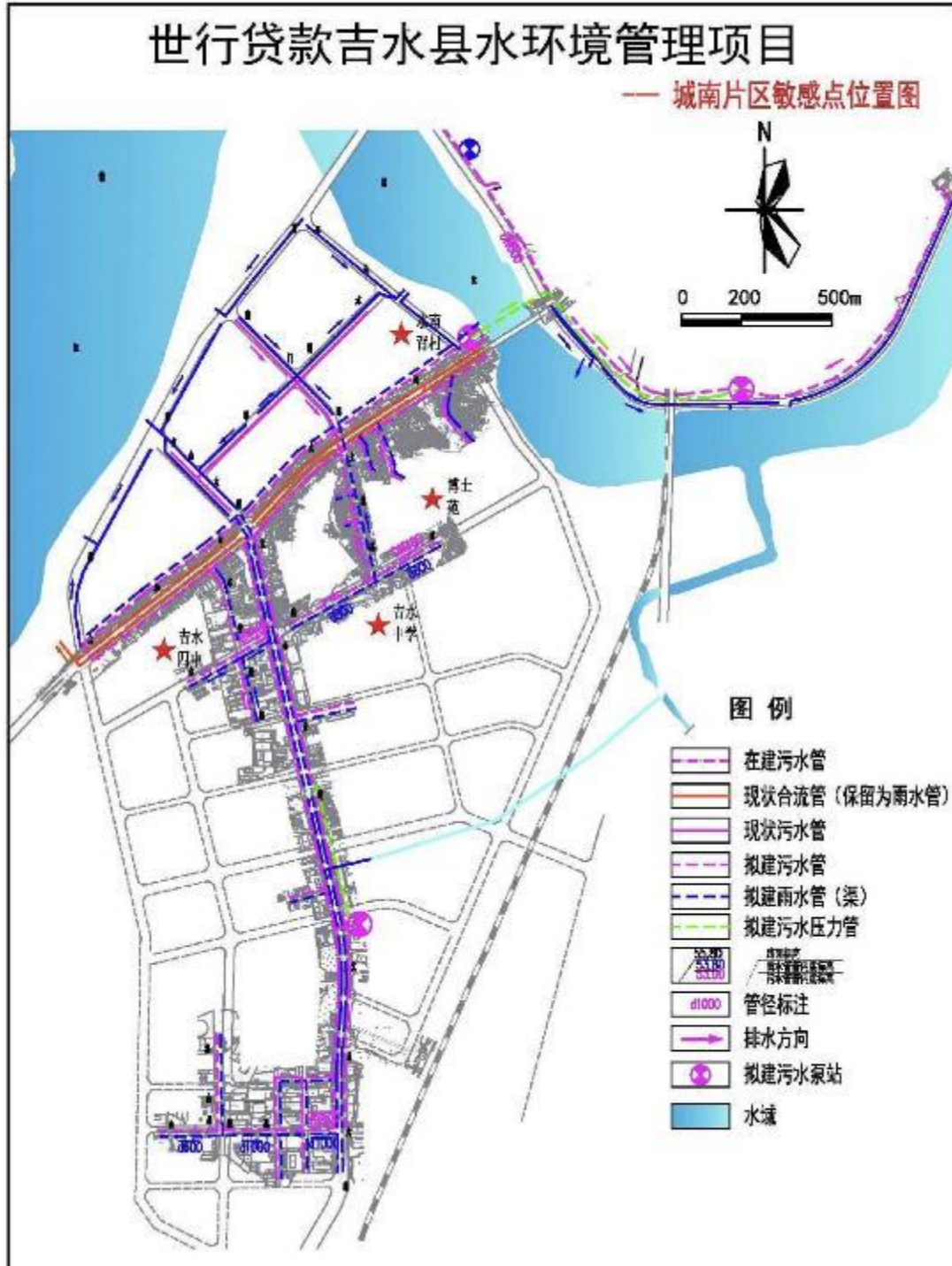


Figure 18 Jishui County Sub Project -- sensitive point location in the Old Town

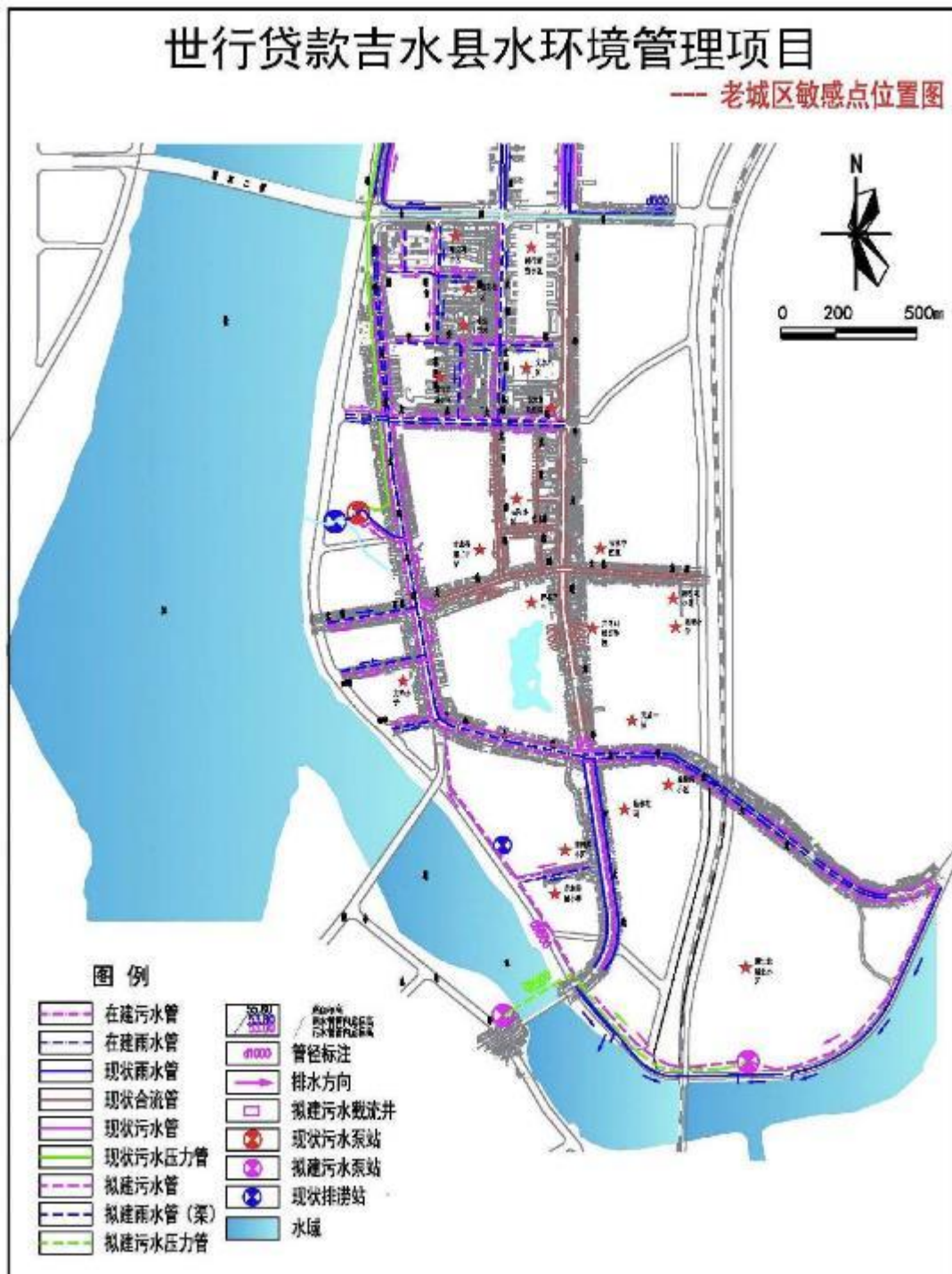


Figure 19 Shangli County Waste collection and transport Route Map

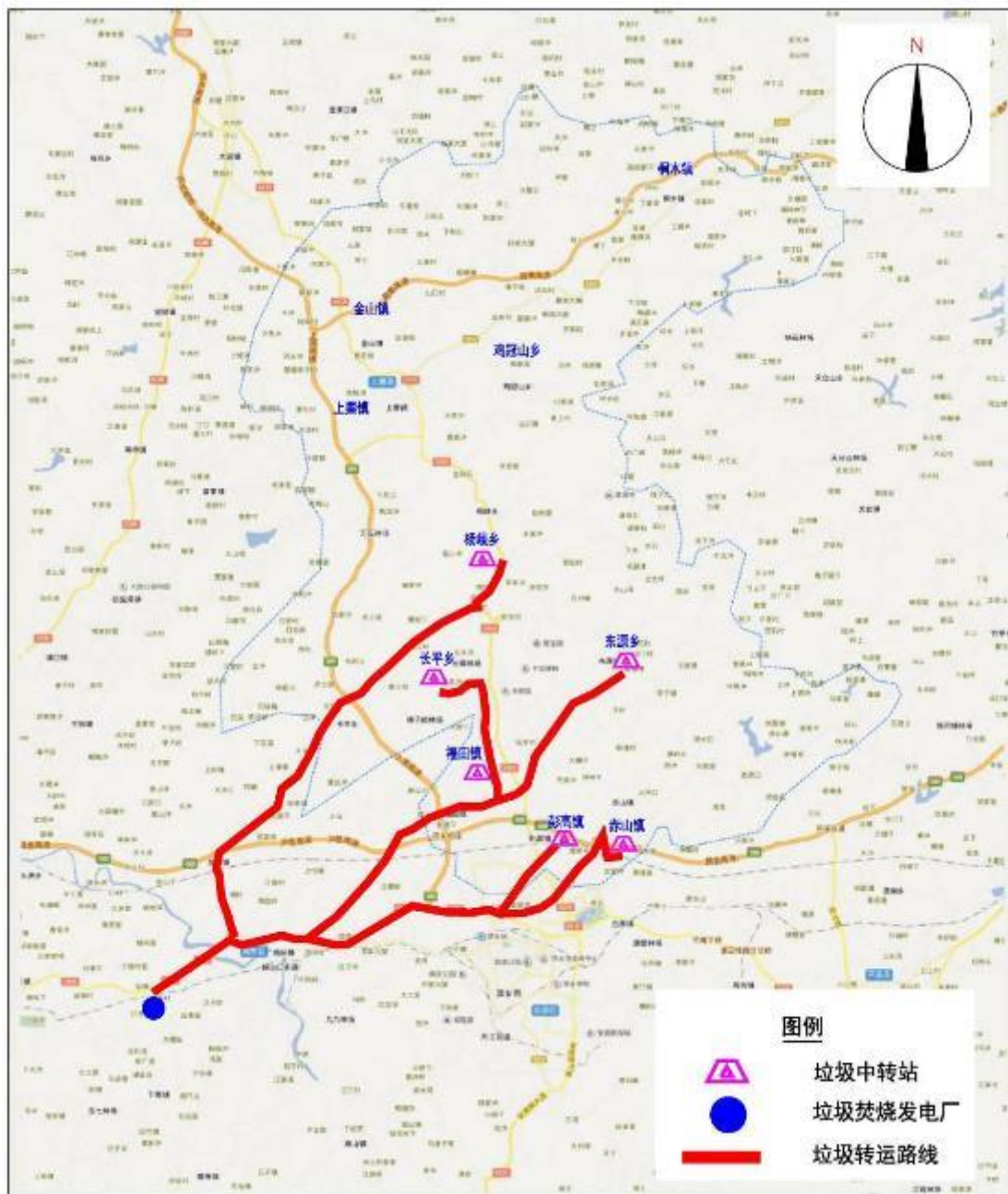
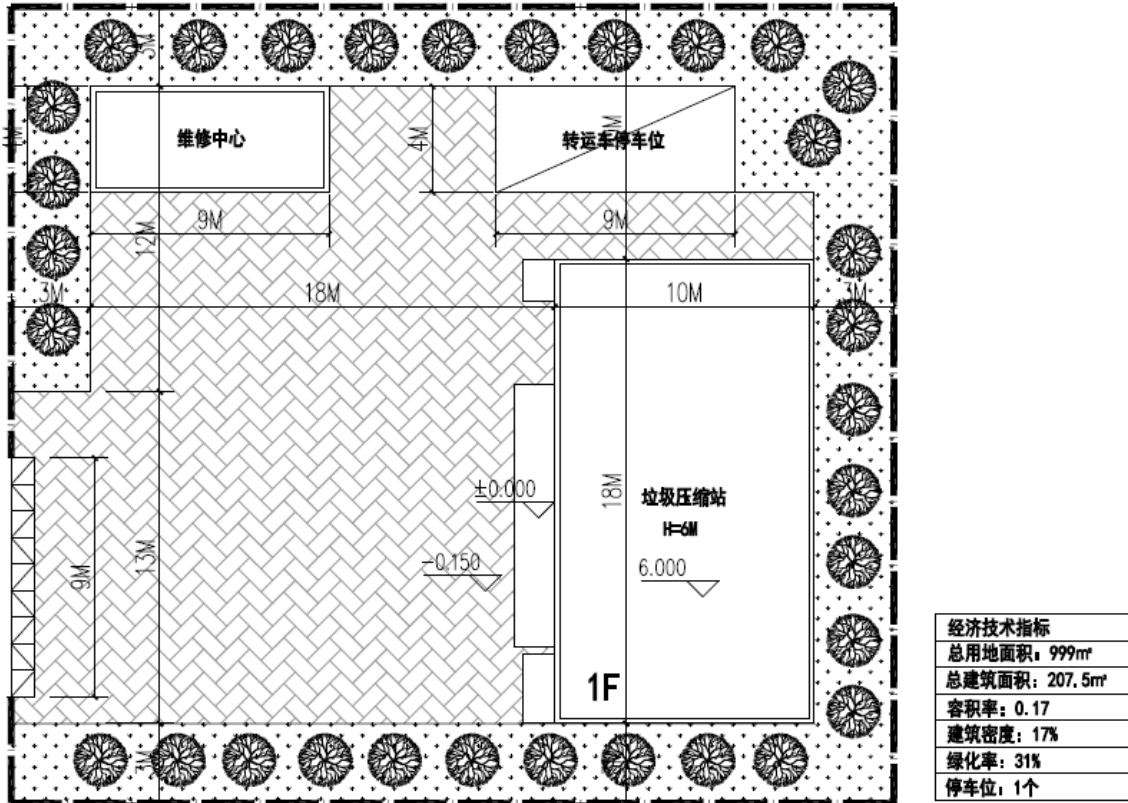
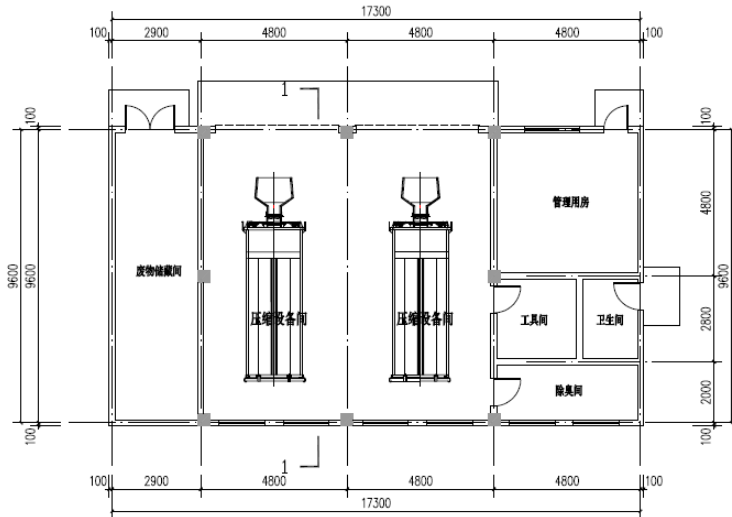


Figure 20 Shangli County Layout of Waste collection and transport Station



垃圾转运站总平面布置图



平面图 1:100

压缩间平面布置图

主要设备明细表

序号	名称	单位	数量
1	移动式垃圾压缩机 18m <sup>2</sup>	套	2
	单机处理能力 60t/d, 380V/5.5kW		
	压实密度 0.8kg/m <sup>3</sup>		
	液压系统额定压力 18kN		
2	钩臂式垃圾转运车	台	1
3	高压清洗机	台	1
4	视频监控系统	套	1
5	喷淋除臭系统	套	1





