

# Environmental Monitoring Report

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# 4 Semiannual Report  
January 2017

## People's Republic of China: Chongqing Urban–Rural Infrastructure Development Demonstration II Project

Prepared by Chongqing Project Management Office and Halcrow (Chongqing) Engineering Consulting Co. Ltd. for the People's Republic of China and the Asian Development Bank.

## **CURRENCY EQUIVALENTS**

(as of 30 December 2016)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1442
\$1.00	=	CNY6.9370

## **ABBREVIATIONS**

AADT	–	annual average daily traffic
ADB	–	Asian Development Bank
AP	–	affected person
ASL	–	above sea level
CCF	–	climate change fund
CEIA	–	consolidated environmental impact assessment
DFR	–	draft final report
DMF	–	design and monitoring framework
EHS	–	environmental health and safety
EIA	–	environmental impact assessment
EMO	–	external monitoring organization
EMP	–	environmental management plan
EPB	–	Environmental Protection Bureau
FSR	–	feasibility study report
FYP	–	five-year plan
GHG	–	greenhouse gas
GRM	–	grievance redress mechanism
HH	–	household
IA	–	implementing agency
IEE	–	initial environmental examination
IFC	–	International Finance Corporation
IPCC	–	Intergovernmental Panel on Climate Change
MEP	–	Ministry of Environmental Protection
NDRC	–	National Development and Reform Commission
NGO	–	nongovernmental organization
O&M	–	operation and maintenance

## **NOTE**

In this report, "\$" refers to US dollars.

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**External Environmental Monitoring Report**

**( July 2016.7- December 2016 )**

Halcrow (Chongqing) Engineering Consulting Co. Ltd.

January 2017

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## **1 PROJECT OBJECTIVES AND BASIC INFORMATION**

The environment monitoring report is prepared by Halcrow (Chongqing) Engineering Consulting Co. Ltd. for the ADB-financed Chongqing Urban-rural Infrastructure Development II Project (referred to as the Project). It is the fifth environment monitoring report (EMR) of this phase II project, covering the environment protection status of all subprojects from July to December 2016.

The report described the project implementation progress, establishment of organizations relevant to the environment management plan, supervision and monitoring, environment monitoring results, project readiness assessment, training and consulting activities, and assessment of the implementation situation of the environment impact mitigation measures conducted by the contractors in the project sites and their surrounding areas located in cities affected by the project.

## **2 PROJECT PROFILE**

In September 2013, the Chongqing Urban-rural Infrastructure Development Phase II Project, financed by the ADB with USD 150 million, was approved. *The Project Agreement* and *The Loan Agreement* were signed on November 20<sup>th</sup>, 2013. After effectiveness of the loan on January 10<sup>th</sup>, 2014, the project started to be implemented, so did the preparation of the preliminary designs and the detailed designs of the subprojects, the recruitment of the consultants to strengthen the project management and capacity building *and* conduct independent monitoring. It was agreed that the intended project completion date and the intended financial closing date were respectively June 30<sup>th</sup>, 2018 and December 31<sup>th</sup>, 2018.

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Loan Number	3022 –PRC
Project Name	Chongqing Urban-rural Infrastructure Development Project Phase II
Borrower	Chongqing Municipal Government
Executing Agencies	Rongchang District Government, Wulong County Government, Chengkou County Government, Fuling County Government, Shizhu County Government, Wanzhou District Government
Approval Date by the Board	2013 . 9 . 20
Signing Date of the Loan Agreement	2013 . 11 . 20
Loan Effectiveness	2014 . 1 . 10
Completion Date	2018 . 6 . 30
Closing Date	2018 . 12 . 31
Date of the Last ADB mission	2017 . 3 . 20
Project Implementation Units	Rongchang Hongyu Water Resources Development Co., Ltd., Chongqing Wulong County Urban and Rural Development (Group) Co., Ltd., Chengkou Transportation Development Co., Ltd., Fuling District Zhonglong Communications Construction Co., Ltd., Shizhu Communications Construction Corporation, Wanzhou Water Company
Project Investment and Funding Plan	The total investment was \$307.43 million, among which 51% is the counterpart funds from seven subproject county governments and 49% will be from the ADB.

Note : Youyang Subproject has left the project.

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This project is a demonstration project of ADB-financed Chongqing Urban-rural Infrastructure Development Projects, aiming to achieve social harmony and balanced economic growth through coordinating urban and rural development. Due to the social and economic development differences caused by the unbalanced development in urban and rural areas, this project will selectively enhance the development potentials of the small and medium-sized towns and counties: (1) urban water supply system; (2) the flood risk management of various scales of rivers; (3) improving the urban and rural road links.

The total estimate cost of the proposed project is \$307.43 million, among which \$150 million is funded from the ADB loan. The project includes three investment parts: (1) Investment in the flood management; (2) investment in the water supply; (3) investment in the road network improvement. There are six subprojects in these three investment areas, including two flood management subprojects, three road network improvement subprojects and one water supply subproject, which are: (i) Rongchang Rongfeng River Water Supply Subproject (constructions of a 6.7-kilometer-long levee, a bridge and 8.5 kilometers sewage conduits, greening facilities and rainfall and flood level monitoring facilities); (ii) Wulong Wujiang River Flood Management Subproject (constructions of a 2.6-kilometer-long levee and flood level monitoring facilities); (iii) Chengkou County Urban-rural Road Network Improvement Subproject (reconstructions of 10.2 kilometers roads and the relevant infrastructures, including 2 bridges, 1.5 kilometers tunnels, 20.4 kilometers drainage ditches and greening facilities); (iv) Fuling District Urban-rural Road Network Improvement Subproject (reconstructions of 16.2 kilometers roads and the relevant infrastructures, including 14 bridges and 32.4 kilometers drainage ditches and greening facilities); (v) Shizhu County Urban-rural Road Network Improvement Subproject reconstructions of 25.3 kilometers roads and the relevant infrastructures, including 8 bridges and 50.6 kilometers drainage ditches and greening facilities); (vi) Wanzhou District Yangliu Water Supply Subproject (This subproject includes two phases, of which the total designed water supply capacity is 35,000m<sup>3</sup>/d. In the 1st phase, a water treatment plant with 20,000m<sup>3</sup>/d water supply capacity will be built, including sewage treatment facilities, water quality monitoring facilities, power supply and distribution system,

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offices and other plant supporting facilities).

At present, every subprojects has been commenced and constructed (in which, the Youyang Subproject has left the project). The detailed progress status can be seen in the Table 3.

## **2 3 PROFILE OF THE SEMIANNUAL REPORT**

The main scope of this report includes the environment protection status of the constructing Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject and Wanzhou District Yangliu Water Supply Subproject, Fuling District Urban-rural Road Network Improvement Subproject and Shizhu County Urban-rural Road Network Improvement Subproject and Chengkou County Urban-Rural Road Network Improvement Subproject during their civil works construction period.

### **3.1 Project Profile**

The civil engineering of the constructing Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject, Wanzhou District Yangliu Water Supply Subproject, Fuling District Urban-rural Road Network Improvement Subproject and Shizhu County Urban-rural Road Network Improvement Subproject and Chengkou County Urban-Rural Road Network Improvement Subproject is shown in Table 1.



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**Table 1: The Civil Engineering Profile of the Subprojects under Construction**

Subproject Category	Subproject Name	Construction Site and Designed Scale	Main Civil Engineering	Civil Engineering Contract Investment	Commencement Date	Note
Flood Management Subproject	Rongchang Rongfeng River Flood Management Subproject	The construction site is from the Bingmatan Highway Bridge to the Donghu Reservoir in the upper stream. The engineering management covers 4,805m river way, of which the total length of the revetments on both sides is 7,382.8m (3,882.8m on the left and 3,500m on the right).	(i) 7.3 km dike (ii) 8.9 km sewage pipeline (iii) Landscaping (iv) Rainfall and flood water monitoring equipment (v) Special vehicle for flood control and maintenance trucks (vi) Inspection boat (vii) Office equipment	The designed estimate investment in the civil engineering works is CNY92.5561 million.	The formal commencement date of the 1st section civil engineering is May16th, 2015.	This subproject has 4 civil engineering contract packages. The Contractor: Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.; Sichuan Lixin Construction Co., Ltd Date of Contract:2015.4.21; Estimated Date of Completion: 2017.12.31 The Supervision Unit: Chongqing Hongyu Water Conservancy Consultative Co., Ltd.;Jingjia Construction CO.
	Wulong Wujiang Flood Management Subproject	The construction site locates in the Wulong county. It is the downstream of Wujiang, The construction site is from Wulong PFPC the 319 national road. It will build 2.6km dike, which will connect with WB project.	(i) 2.6 km dike (ii) Special vehicle for flood control and maintenance trucks (iii) Office equipment	The designed estimate investment in the civil engineering works is CNY 299.76 million.	The formal commencement date of the 1 <sup>st</sup> section civil engineering is June 30,2015.	The project is divided into 3 civil engineering contract packages. Contractor: Gezhouba Group Fifth Engineering Co., Ltd. Anhui Water Conservancy Development .Jiangsu Yancheng Water Conservancy Construction Co. Date of signing the contract: 2015.4.21 Estimated Date of completion: 2017.12.31; Supervision Agent: Chongqing Jianghe Engineering Construction Supervision Co.

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Water Supply Subproject	Wanzhou District Yangliu Water Supply Subproject	This subproject includes two phases, of which the total designed water supply capacity is 35,000m <sup>3</sup> /d. In the 1st phase, the designed water supply capacity is 20,000m <sup>3</sup> /d. The construction site of the water treatment plant is on the inner side of the Yangliu Bridge of Shuanghekou in Wanzhou District.	(i) 200,000 m <sup>3</sup> /day WTP (ii) Sludge treatment facility (iii) Electric systems and plant ancillary equipment (iv) Transportation and maintenance equipment (v) Office equipment	The designed estimate investment in the civil engineering works is CNY 34.125 million.	The formal commencement date of the 1st section civil engineering is May 10th, 2015.	This subproject has 7 civil engineering contract packages. The Contractor: Xin Jiang Water Conservancy and Hydropower Engineering Ltd. and Shanxi Metallurgical Geotechnical Engineering Survey General Co. Date of Contract:2015.4.21; Estimated Date of Completion: 2016.12.31. Supervision Agent: Hubei Changjiang Engineering Supervision Consulting Ltd. ;
Road network improvement subproject	Fuling District Urban-rural Road Network Improvement Subproject	The project Starts from from Jiaoshizhen town, along the Juandongchang site, and ended at Damuxiang county, with a total length of 14.4 kilometers (section A is funded by Fuling district financial department ). Section A starts from Jiaoshizhen town in Fuling district and ended at Juandongchang site, with a length of 5.592 kilometers. The road level is level II, with a width of 10 meters, the length of carriage way is 8.5 meters; section B starts from Jaundongchang and ended at Damuxiang, with a total length of 80809 meters, the road level is level III, the width of subgrade is 8.5 meters, with a carriageway width of 7 meters, the road is made of asphalt concrete.	(i) 8.8 km of upgraded roads (ii) 5 bridges (ii) Public transportation facilities (iv) 17.6 km storm water drainage ditch (v) Landscaping (vi) Road maintenance vehicles (vii) Office equipment	The estimated project investment is 273.775 million yuan ( the investment in A section is 37.77 million yuan)	The formal commencement date is December 25th, 2015	This engineering includes 2 construction Contracts. Contractor : Chongqing Qunzhou Entity(Group) Co., Ltd. Date of contract: Feb.25th, 2015 Estimated Date of Completion: Dec.31st, 2017 The Supervision Agent: Chongqing Road Road Engineering Supervising Co., Ltd. In Fuling district

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Shizhu District Urban-rural Road Network Improvement Subproject	Starting from Huangshui Township, ended at Yuelaizhen county, the route length is of 19.694 kilometers, t is designed as the level III highway, with the roadbed width of 7.5 meters.	(i) 19.7 km of upgraded roads (ii) 2 bridges (iii) Public transportation facilities (iv) 39.4 km storm water drainage ditch (v) Landscaping (vi) Road maintenance vehicles (vii)Office equipment	the first bidding section is 47.778 million yuan; The second bidding section is 39.108 million yuan	The first bidding section is at Dec. 9th, 2015	This engineering includes 2 construction contracts : Contractor of the first bidding section: Jiangxi Modern Road Bridge Engineering Group Co., Ltd. Date of contract: Oct. 8th, 2015 Estimated Date of Completion: Jul.,2017 Contractor of the second bidding section : Hunan Foreign Construction Group Co., Ltd. Date of contract: Jan. 29th, 2016 Estimated date of completion: Sept. 2017 Supervising Agent: Chongqing Traffic Engineering Consulting Co., Ltd.
Chengkou County Urban-Rural Road Network Improvement Subproject (Section A)	Section A Starts from Yanhe Township, ended at Yinghong Township, the route length is of 4.6 kilometers, it is designed as the level VI highway, with the roadbed width of 6.5 meters. The road is made of asphalt concrete	(i) 7.4 km of roads (ii) 3 bridges (iii) 1.8 km tunnel (iv) Public transportation facilities (v) 14.8 km storm water drainage ditch (vi) Landscaping (vii) Emergency machines and vehicles (viii)Office equipment	The estimated investment of Section A: 17.57million RMB	10 Nov, 2016	<b>Contractor</b> : Jiangxi Road Bridge and Tunnel Engineering Co, ltd. Date of contract: June 30th, 2016 Estimated date of completion: 18 months after commencement Supervising Agent: Chongqing Traffic Engineering Consulting Co., Ltd.

### **3.2 Environment Management Organization**

The Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject and Wanzhou District Yangliu Water Supply Subproject, Fuling District Urban-rural Road Network Improvement Subproject, Shizhu and Chengkou County Urban-rural Road Network Improvement Subproject have established complete environment management organizations, which are responsible for their own environment management during their civil engineering construction periods. The specific information of the relevant environment management organizations is available in Table 2.

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**Table 2: The Profile of the Environment Management Organizations and Staff of Construction**

Name of the Environment Management Organization	Name of Person in Charge	Main Duties	Title	Contact
CPMO	Zhou Feitong	Supervise and overall manage so as to ensure smooth implementation of project; supervise and manage local project management office’s work performance; ensure environmental consultants and external environment monitoring units to assist in monitoring and managing during implementation phase; pack up the prepared environmental monitoring reports of all subprojects and submit them to the ADB; establish a GRM with a specialized PCCU; set up LPMOs and supervise its activities.	CPMO’s officer	18725962416
consultant expert panel	Liao Li	Follow and make report according to EMP’s implementation of all sub-projects.	leader of expert panel	13882056616
	Wang Zhe		environmental expert	15620800703
external monitoring unit: Chongqing Hele Engineering Consultation Co., Ltd	Yin Jian	Supervise and manage conformity between external environmental effect monitoring and EMP.	project manager	13971437581
	Chen Qiuwen		Environmental expert	15365151717
Rongchang Rongfeng River Flood Management Subprojects, hereafter referred to as RCRF				
Rongchang County PMO	Huang Anxiang	Supervise implementation of environmental protection measures during construction and collect environmental materials submitted by owner unit.		

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Rongchang County Hongyu Water Resource Development Co., Ltd	Yu Chilong	Be responsible for environmental protection management and supervision during construction; ensure environmental protection fund to be put in place; collect related environmental materials submitted by contractor and supervisor	General manager	13883556806
	Hu You		Senior engineer	13509474713
Sichuan Zhongcheng Coal Construction (Group) Co., Ltd	Xu Weijun	Being responsible for implementing the environment protection measures and accepting the monitoring and management of the owner unit and supervision unit.	Project Manager of the Constructor	13883706999
Chongqing Hongyu Water Conservancy Chongqing Hongyu Water Control Consultative Co., Ltd.	Zhang Zhiwei	Supervising the implementation situation of the environment protection measures and the conservation of water and soil of the implementation unit and compiling the supervision monthly report.	Project Supervisor	1868090032
<b>Wulong Wujiang Flood Management Subprojects, hereafter referred to as WLWJ</b>				
Wulong County PMO	Qin Hui	Supervise implementation of environmental protection measures during construction and collect environmental data submitted by owner unit.	Division Director	13896689358
Wulong Urban-Rural Development Group	Chen Bin	Be responsible for environmental protection management and supervision during construction; ensure environmental protection fund to be put in place; collect related environmental data submitted by contractor and supervisor	General Manager	15330557766
Gezhouba 5 Construction (Group) Co., Ltd.;	Yan Bing	Being responsible for implementing the environment protection measures and accepting the monitoring and management of the owner unit and supervision unit.	Project Manager of the Constructor	0717-6711042
Anhui Hydrological Development Co.,Ltd.;	Zheng Bishui			023-67735119
Jiangsu Yancheng Hydrological Construction Co., Ltd.	Zhang Hongyu			0515-88335420

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Chongqing Jianghe Engineering Construction Supervision Co., Ltd.;	Xiao Wei	Supervising the implementation situation of the environment protection measures and the conservation of water and soil of the implementation unit and compiling the supervision monthly report.	Project Manager of the Supervisor	13996939442
<b>Wanzhou Yangliu Water Supply Subproject, hereafter referred to as WZYL</b>				
Wanzhou District Project Management Office	Jing Li	Monitoring the implementation situation of each environment protection measure during the construction period and collecting relevant materials related to the environment submitted by the owner u	Section Chief	18996513299
Wanzhou Water Company (the owner unit)	Chen Guangming Li Chunming	Being responsible for the environment protection management and monitoring during the construction period, implementing the environment protection funds and collecting the relevant materials related to environment submitted by the contractor and the supervision unit.	Person in Charge at the Project Site of the Owner Unit	13709439712 13658217778
Xinjiang Corps Water Conservancy and Hydropower Engineering Co., Ltd and Shanxi Metallurgical geotechnical engineering corporation	Cao Furong	Be responsible for implementing environmental protection measures; accept supervision from owner unit and supervision unit	Project Manager of Construction Unit	13883738766
<b>Fuling District Urban-rural Road Network Improvement Subproject, in short FLLW</b>				
Fuling District Project Management Office	Shi Bo	Monitoring the implementation of environmental protection measures during the construction period, and collecting relevant information about the environment submitted by unit owners.	environment management officer in PMO	023-72288242

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Zhonglong Traffic Construction Co., Ltd. In Fuling district	Yin Fulin	Responsible for work related to environmental management and supervision of construction work, ensuring the environmental protection funds, collecting the relevant information on environment submitted by contractors and supervision units	environment management officer in PMO	13896729903 18183011997
Chongqing Group Asia Industrial (Group) Co., Ltd.	Wang Chonggang	Responsible for the implementation of environmental protection measures, and accepting the supervision and management of the owners and supervision units	construction and environmental management	13996729672
Chongqing Fuling District Road Engineering	Zhang Meng	Site supervision for the implementation of the engineering measures on construction unit environmental protection and water and soil conservation and responsible for monthly supervising report	Chief supervisory engineer	13996936733
<b>Shizhu county Urban-rural Road Network Improvement Subproject, in short SZLW</b>				
Shizhu County PMO	Liu Fuding	Monitoring the implementation of environmental protection measures during the construction period, and collecting relevant information about the environment submitted by unit owners.	Manager	13908279910
Shizhu Traffic Construction Co., Ltd.	Cui Jianfeng	Responsible for work related to environmental management and supervision of construction work, implementation of the environmental protection funds, collection of the relevant information on environment submitted by contractors and supervision units	site responsible person of the owner's unit	13452259101
Jiangxi modern Road and Bridge Engineering Group Co., Ltd.	Gongwen	Responsible for the implementation of environmental protection measures, and accepting the supervision and management of the owners and supervision units	Project manager in construction unit	13072838878
Human Foreign Construction Co.,	Yang Song			18225264345
Chong Qing Traffic Engineering Supervision Consulting Co., Ltd.	Li Xiaosong	Site supervision for the implementation of the engineering measures on construction unit environmental protection and water and soil conservation and responsible for preparing monthly supervising report	Project Supervisor of the Supervising Agent	17783809964
<b>Cheng Kou County Urban-Rural Road Network Improvement Sbuproject, in short CKLW</b>				



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Chengkou PMO	Tian Hao	Monitoring the implementation of environmental protection measures during the construction period, and collecting relevant information about the environment submitted by unit owners.	Section chief	15023852310
Urban Transportation Committee Road Construction First Project Department	Ran Zhao	Responsible for work related to environmental management and supervision of construction work, implementation of the environmental protection funds, collection of the relevant information on environment submitted by contractors and supervision units	site responsible person of IA	17749990988
Jiangxi Road and Bridge Tunnel Co, Ltd.	Zhao Qun	Responsible for the implementation of environmental protection measures, and accepting the supervision and management of the owners and supervision units	Project manager in construction unit	18052072351
Chongqing Traffic Engineering Consulting Co.,	Fu Jiping	Site supervision for the implementation of the engineering measures on construction unit environmental protection and water and soil conservation and responsible for monthly supervision	Supervisor	15310507892

### 3.3 Project Progress and Environmental Sensitive Sites and Environmental Standards

The civil engineering progress and environmental sensitive sites and environment standards of the started Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject and Wanzhou District Yangliu Water Supply Subproject, Fuling District Urban-rural Road Network Improvement Subproject, Shizhu County Urban-rural Road Network Improvement Subproject and Chengkou County Urban-rural Road Network Improvement Subproject are in Table 3.<sup>1</sup>

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<sup>1</sup> During the March 2017 ADB loan review mission, ADB required to monitor the dredging status of Rongchang Rongfeng river subproject. Since the IA has not submit the dredging report, the monitoring result will be reflected in the next EEMR.

**Table 3: The Profile of the Project Progress and Environmental Sensitive Sites and Environmental Standards of the Started Subprojects**

Project Name	The Profile of the Civil Engineering Construction Progress		Environmental Sensitive Sites and Environmental Standards	Notes
	Prior to The Reporting Period	During This Reporting Period		
Rongchang Rongfeng River Flood Management Subproject	1. The project was started on May 16th, 2015; 2. Section A has been completed as follows: 2832m of gabion retaining wall construction was completed; 2814m of sewage pipe was installed; 1260m of temporary road construction on the left bank was completed; 1000m of temporary road construction on the right bank was completed; 9256 m3 gabion retaining wall was filled; 69036m3 of retaining wall earth rock was excavated; 37804 m3 of slag material was backfilled; 2101m3 of rock block was rolled and filled.	Section B was started on 6 <sup>th</sup> November, 1. 780m of gabion retaining November, the completed civil works are as follows: 1457m of gabion retaining engineering on the left bank and 1923m on right were completed; 1385m of sewage pipe was installed; 5177m of temporary road c was completed; 14141.58 m3 of gabion retaining wall was filled; 126092.8m3 of retaining wall earth rock was excavated; 33680.88 m3 of slag material was backfilled; 6523.06m3 of rock block was rolled and filled, 6 Inverted Siphon Wells and 4 box culverts were completed.	Sensitive Sites: Donghu Reservoir segment in the Rongfeng River section upstream Dong lake reservoir section and downstream section; Domestic sewage implement III category water quality standards in (GB8978-1996) ; The surface water conforms to the III category water quality standards in GB3838-2002; The ambient atmosphere conforms to the second class ambient atmosphere standards in GB 3095-2012; The acoustic environment conforms to the 2 category standard of environmental noise in GB3096-2008 and the Emission Standard of Environment Noise for Boundary of Construction Site (GB 12523—2011).	Section A has been completed, covering 100% of the total investment. Section B has finished 8.9008 Million RMB 370000 covering 22.31% of the total investment.

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<p>Wulong Wujiang Flood Management Subproject</p>	<p>1. The project in A, B and C sections was officially started on July 28th, 2015; 2. 387700 m<sup>3</sup> of earth rock was excavated, which was 53.88% of the quantities of contract; 3. 81000 m<sup>3</sup> was completed, which was 19.6% of the quantities of contract; 4. 3000 m<sup>3</sup> of C30 concrete pouring was completed, which was 9.89% of the quantities of contract; 5. 2049t was completed, which was 44.84% of the quantities of contract; 6. 75800 m<sup>3</sup> Stone was backfilled, covering 15.82% of the contract quantities. . 7. 9493m is completed, covering 66.55% of the contract quantity. 8. 7164 m<sup>3</sup> of rock fill was exchanged and filled, which was 208.32 % of the quantities of contract.</p>	<p>1. 212300 m<sup>3</sup> of earth rock was excavated; has completed 600000 m<sup>3</sup> to present, covering 82% of total quantity . 2. 44000 m<sup>3</sup> of C15 buried stone concrete was poured; has poured 125000 m<sup>3</sup> to present, covering 30% of contract engineering quantity. 3. 15000 m<sup>3</sup> of C30 concrete pouring was completed, total completed 18000 m<sup>3</sup>, which was 60% of the quantities of contract; 4. 4239.9t steel is installed, total is 6288.9t, covering 137.6% of the contract. 5. 136200 m<sup>3</sup> stone was backfilled, accumulative stone is 212000 m<sup>3</sup>, covering 44.2%. 6. 14000m rotary bored pile is completed, total is 23800m, covering 166.8% of the contract. 7. Stone shift filling has finished 7164 m<sup>3</sup>, covering 208.32%; 8. M7.5 grouted rubble has completed 1234 m<sup>3</sup> 9. 2371 m<sup>3</sup> of stone spats is completed. 10. 3290m of anchor cable is installed.</p>	<p>Sensitive Sites: downstream of the construction site; Wulong 2nd primary school; domestic sewage implement III level water quality standards in (GB8978-1996) ; The surface water conforms to the III level water quality standards in GB3838-2002; The ambient atmosphere conforms to the second class ambient atmosphere standards in GB 3095-2012; The acoustic environment conforms to the 2 category standard of environmental noise in GB3096-2008 and the Emission Standard of Environment Noise for Boundary of Construction Site (GB 12523—2011)</p>	<p>Section A has been completed CNY 51210000 , covering 47.98% of project investment ; Section B has completed CNY 40370000, covering 48.53% of project investment; Section C has completed ) CNY13260000, covering 13.47% of project investment</p>
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Wanzhou District Yangliu Water Supply Subproject	<p>1.The project was officially started on May 10th, 2015;</p> <p>2.The p-pl and H-X of concrete wall were completed;</p> <p>3.The ribbed anchor wall was built.</p> <p>4.412m flood control channel has been built.</p> <p>5.The square is backfilled to the designed height, has completed 119576, was excavated 96199.01 m3, backfilled 319576.09 m3.</p> <p>6.The interception ditch is 387.7m, drainage ditch is 445m.</p> <p>7. The shot concrete has completed 7503.77 m2</p> <p>8. The laying of intercepting ditch in the section of R-P1 was completed;</p> <p>9. The pile-slab retaining wall was completed;</p> <p>10. The rubble stone concrete retaining wall was completed in the sections of N1-K1 and F1-F;</p> <p>11. The earthwork backfilling in the second tamper of packing course was in place;</p> <p>12. 3 drop wells were completed;</p> <p>13.Rock bolt retaining wall in the section of K-X was completed.</p>	<p>The base of pile and raft is completed.</p> <p>The main structure of the clean water reservoir is completed.</p> <p>The main structure of the sedimentation basin is completed.</p> <p>The main structure of the recycling pool is completed.</p> <p>The main structure of absorption pool and rain pool is completed.</p> <p>6. The main structure and brickwork of the comprehensive building is completed.</p> <p>7.The main structure, brickwork and plastering of the warehouse is completed.</p> <p>8.The main structure of chlorine and testing is completed.</p> <p>9.The main structure of the absorbing will has completed 30%.</p> <p>10. The main structure of the fluid reservoir has completed 40%.</p> <p>11. The main structure of the sand filter has been completed 70%.</p> <p>12.The main structure of the back flush pump house has been completed 20%.</p> <p>13.13. The main structure of the sludge thickener has been completed 60%.</p> <p>14.The main structure of the water supply pump house has been built 60%.</p> <p>15. The lower structure of the bridge has been constructed, the upper has been constructed 85%.</p>	<p>Sensitive Sites: Chongqing Economics and Business School and Chongqing Wanzhou Senior Technical School near to the construction site;</p> <p>Domestic sewage implement III level water quality standards in (GB8978-1996)</p> <p>The surface water conforms to the III category water quality standards in GB3838-2002;</p> <p>The ambient atmosphere conforms to the second class ambient atmosphere standards in GB 3095-2012;</p> <p>The acoustic environment conforms to the 2 category standard of environmental noise in GB3096-2008 and the Emission Standard of Environment Noise for Boundary of Construction Site ( GB 12523—2011)</p>	<p>59635400CNY of project investment was completed in this period of section A, and 524819000 CNY of project investment was completed of Section B in total, of which it was 34.02% of the total investment.</p>
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Fuling District Urban-rural Road Network Improvement Subproject	<p>1.The project was officially started on December 25th, 2015. Section A has been completed on 15th June, 2016 and put into use. The completion status is following:</p> <p>2.6200 m<sup>3</sup> of retaining wall was poured in total.</p> <p>3.There were 13 culverts with reinforced concrete cover plate in total.</p> <p>4. 59000 m<sup>3</sup> stone evacuation has been completed.</p>	Section B has been conducted bidding, but not commenced yet.	<p>Sensitive Sites: Maxi River, Shaniudong to Danu Section (locating in the experimental zone of the Damu natural protection zone)and the residential places along the road; domestic sewage implement III category water quality standards in (GB8978-1996)</p> <p>The surface water conforms to the III category water quality standards in GB3838-2002;</p> <p>The ambient atmosphere conforms to the second class ambient atmosphere standards in GB 3095-2012;</p> <p>The acoustic environment conforms to the 2 category standard of environmental noise in GB3096-2008 and the Emission Standard of Environment Noise for Boundary of Construction Site ( GB 12523—2011</p>	The construction was started in December 2015
Shizhu County Urban-rural Road Network Improvement Subproject	<p>1. The project was officially started on December 25th, 2015;</p> <p>2. 42 tunnels shall be completed, 28 of which has been completed.</p> <p>3.Road earth and stone has 832246 m<sup>3</sup>, 683540 m<sup>3</sup> has been completed, accounting for 82%.</p> <p>4.Side ditch is 10582m in all, has been completed 1083m, accounting for 10%.</p> <p>5. The water stable level is prepared to be constructed.</p>	<p>Section A</p> <p>1.42 tunnels shall be completed, 28 of which has been completed.</p> <p>2.Retaining wall is 50936 m<sup>3</sup>, 22350 m<sup>3</sup> has been completed.</p> <p>3.Road earth and stone has 832246 m<sup>3</sup>, 683540 m<sup>3</sup> has been completed.,</p> <p>4.Soft foundation is shift filled, has completed 500 m<sup>3</sup>.</p> <p>5. Side ditch is 10582m in all, has been completed 1083m.</p> <p>6. C20 stone and concrete road shoulder has been completed 50 m<sup>3</sup>.</p> <p>7. The water stable level is ready to be constructed.</p>	<p>Sensitive Sites: Yuelaihe river, residential places along the road;</p> <p>Domestic sewage implement III category water quality standards in (GB8978-1996) ;</p> <p>The surface water conforms to the III category water quality standards in GB3838-2002;</p> <p>The ambient atmosphere conforms to the second class ambient atmosphere standards in GB 3095-2012;</p> <p>The acoustic environment conforms to the 2 category standard of environmental noise in GB3096-2008 and the “Emission Standard of Environment Noise for Boundary of Construction Site” ( GB 12523—2011).</p>	<p>Section A: 5500000CNY of 10000000 RMB project investment was completed in this period, accounting for 20.93% of total investment;</p> <p>Section B: 9520000 investment completed, accounting for 24.34% of the total.</p>

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Cheng Kou County Urban- Rural Road Network Improvement Subproject	1.The station has been construct ed. 2.The sign for construction site has been set. 3.Clear the road foundation and resurvey the original ground.	1.The subproject was started to construct on 10 Nov, 2017. 2.Clear work has been completed. 3.5000 m3 of earth and stone of the road foundation has been excavated. 4.1800 m3 of the retaining wall has been built. 5.2000 m3 of the road foundation is filled.	Sensitive Sites: Zhongxi River, original plant along the road; Domestic sewage implement III category water quality standards in (GB8978- 1996) ; The surface water conforms to the III category water quality standards in GB3838-2002; The ambient atmosphere conforms to the second class ambient atmosphere standards in GB 3095-2012; The acoustic environment conforms to the 2 category standard of environmental noise in GB3096-2008.	The project was commenced in November 2016
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### 3.4 Implementation Situations of the Mitigation Measures

Due to the influence of vibration, dust and solid garbage caused by water and soil loss, noise and construction machinery during the construction period, and the health and safety risk caused to the construction personnel and public thereby in the construction region, influence should avoided and reduced on the local environment and public by establishing effective environmental risk plan and occupational health and safety plan for the subprojects.

(1) Fuling subproject: the ultimate person liable for environmental protection is clear by establishing environmental protection guarantee system. The study of environmental protection is carried out based on systematism to strengthen environmental awareness and prevention capacity in the construction process. Moreover, requirements are proposed to environmental protection from technical measures and scheme guarantee. The measures of environmental protection are put into effect by checking from time to time.

(2) Wanzhou subproject: the proprietor takes the lead to establish the pollution control regulations in the process of project construction to define the precautionary measures of dust pollution and regulation measures of site construction noise. Moreover, the influence of wastewater discharge on environment is effectively controlled by means of establishing wastewater collection pool and sedimentation basin according to the discharge requirements of domestic wastewater and construction wastewater. The vehicles inside and outside the construction region should be washed every time to control influence on the environment outside the construction area.

(3) Shizhu subproject: the environmental protection measures and safety measures are announced by establishing public notice board. The corresponding environmental protection requirements should be made for the spoil ground, material transport line, waste disposal ground and concrete mixing plant which are approved to avoid destruction and influence of water and soil loss, and dust pollution on the local environment. With the efforts of proprietor and construction organization, the subproject still has no any complaint caused by environmental influence.

(4) Wulong subproject: environmental protection boards are set in the sections by construction side to ensure the establishment and publicity of strengthening environmental protection awareness. The environmental pollution which might be caused by the site mixing operation is controlled from technical measures. Moreover, strict rules are made to reduce flowing dust pollution. The proprietor will casual inspections and introduce this requirement to construction contract to control environmental pollution by economic means.

In the process of the construction, environmental protection team appointed by IUs **shall** strengthen site supervision, management and assessment, therefore find the problems and solve problems. Environmental training, especially those related with environmental management is included in EMP. Contractors **shall** take rational measures and mitigate environmental impact caused by construction .

**1. Road subprojects :** the following potential impact and mitigation measures represents the prevailing construction impact of all road subprojects. Earthwork, soil stable, dust and noise controlling, machinery operation, building material transportation and national labor requirement impact management in the process of road construction. Most of the projects will purchase premixed asphalt to pave the road,



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which will cause remit smoke when heat and mixed. The density of smoke remitted from Chinese modern asphalt mix machine is 22.7mg/m<sup>3</sup>, which meet the emission standard of asphalt (80-150 mg/m<sup>3</sup>) of air pollutants (GB16297-1996) and ambient air quality standard (GB3095-2012) with the benzopyrene emission density is 0.01 μg/m. EMP has additional restriction for the use of the machine. In addition, the asphalt mixture station shall be built beyond 500m from the residential area.

**2. Spoil disposal:** Road subprojects will make maximum use of spoil from construction earthworks through balancing cut and fill, the construction of berms for noise and wind protection of plants and facilities and earthworks for landscaping. The area's most vulnerable to erosion include borrow pits, spoil sites, temporary construction sites, and other areas where surface soil will be disturbed. The most effective erosion control will be interception drainage to protect disturbed surfaces from surface flows. Construction plans will include erosion control prescriptions for construction work areas, including (i) constructing intercepting ditches and drains to prevent runoff entering construction sites, and diverting runoff from sites to existing drainage; (ii) limiting construction and material handling during periods of rains and high winds; and (iii) stabilizing all cut slopes, embankments, and other erosion-prone working areas while works are going on. All earthwork disturbance areas shall be stabilized within 30 days after earthworks have ceased at the sites.

**3. Construction wastewater:** Construction wastewater is produced from the maintenance and cleaning of mechanical equipment and vehicles, maintenance water for mixing and curing concrete, cooling water, and lost water and soil during the construction period which is discharged as pollutants. The effluent, comprised mainly of inorganic wastewater, commonly contains no poisonous and harmful substance, except suspended solid, but, if discharged in an improper manner, still has the potential to impact existing water bodies. Some oil-containing wastewater can arise from machinery repairs. Construction wastewater will not be discharged unto the surrounding soil or into surface water systems.

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Sedimentation tanks will be built, and after settling out of solids the upper clear liquid will be recycled for spraying the construction site (dust control), and the waste residue in the tank will be cleared and transported to designated landfills. Oil-containing wastewater will require the installation of oil-water separators before the sedimentation tank.

**4. Gaseous air pollution:** Construction machinery on all sites will consume petrol and diesel, releasing gaseous SO<sub>2</sub>, CO, and NO<sub>x</sub>. Equipment will be maintained to a high standard to ensure efficient running and fuel-burning. High-horsepower equipment will be provided with tail gas purifiers. Atmospheric monitoring will be carried out during the construction period. All vehicle emissions will be in compliance with relevant PRC emission standards.

**5. Dust:** Road construction sites will potentially produce fugitive dust from material storage areas, dump sites, concrete mixing, excavation and general site usage – especially under windy conditions. Material stockpiles and concrete mixing equipment will be equipped with dust shrouds. The operators will regularly maintain the shrouds to ensure their effective operation. For both construction sites and construction roads, water spraying for the suppression of dust and maintenance of driving surfaces will be standard site management practice. Vehicles carrying soil, sand, or other fine materials to and from the construction sites will be covered.

**6. Noise:** Noise can be expected during construction due to construction machinery operation and transport activities. Construction activities will involve bulldozers, graders, excavators, concrete-mixing plants, rollers, and other heavy machinery. Noise intensity from these large machines operating is typically in the range of 80–98 decibels at the site (5m from operating machinery). The transport of material, aggregate, concrete and waste material to and from sites will also cause noise impacts along the haulage routes. Activities with intensive noise levels will not only have an impact on the residents, but may also cause injury to construction workers operating the equipment.

**7. Cultural relics:** additionally, construction activities have the potential to disturb unknown underground cultural relics. Special attention should be paid and strict procedures should be established so that underground cultural sites can be identified and protected if they are

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discovered during construction. The mitigation measures will include immediate suspension of construction activities if any archaeological or other cultural relics are encountered. The municipal cultural relic protection authorities, as well as the LPMOs, will be promptly notified, and construction will resume only after thorough investigation and with the permission of the appropriate authority.

Among the projects, Rongchang Rongfeng River Flood Management Subproject (hereafter referred to as RCRF), Wulog Wujiang Flood Management Subproject (hereafter referred to as WLWJ) Wanzhou Yangliu Water Supply Subproject (hereafter referred to as WZYL), Fuling Urban-Rural Road Network Improvement Subproject (hereafter referred to as FLLW), Shizhu County Urban-Rural Road Network Improvement Subproject (hereafter referred to as SZLW) Chenkou County Urban-Rural Road Network Improvement Subproject (hereafter referred to as CKLW) have nearly come into operation and the adverse impacts during the construction period and corresponding implementation situations of mitigation measures are summarized in the table 4.

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**Table 4: Summary of the Potential Environment Impacts and the Implementation Situations of the Mitigation Measures**

during the Construction Period (2016.1-2016.06)					
Item/ Media	Flood management, road network improvement and water supply subprojects				Rongchang Rongfeng River Flood Management Subproject (hereafter referred to as RCRF), Wanzhou Yangliu Water Supply Subproject (hereafter referred to as WZYL), Wulong Wujiang Flood Management Subproject (WLWJ), Fuling District Urban-rural Road Network Improvement Subproject (FLLW) , Shizhu county Urban-rural Road Network Improvement Subproject (SZLW)
	Potential Impacts and/or Issues	Mitigation Measures defined in the EMP	Who Implements	Who Supervises	Implementation Status and compliance with EMP
water	Wastewater from construction camps	Latrines and seepage pits will be installed in any camps. After project completion, the sites will be vacated only after waste has been effectively treated or removed.	<b>WZYL:</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical Rock-Soil Engineering Reconnaissance General Company; <b>RCRFH:</b> Sichuan Zhongcheng Coal Construction(Group) Co., Ltd.; <b>WLWJ:</b> Gezhouba 5Construction (Group) Co., Ltd.; Anhui Hydrological Development Co.,Ltd.; <b>SZLW:</b> Anhui Water	<b>WZYL:</b> Wanzhou Water Company; Wanzhou District EnvironmentalProtection Bureau; <b>RCRFH:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang Environmental Protection Bureau. <b>WLWJ:</b> Wulong Urban-Rural Development group Co.,Ltd. ;Wulong County Environmental Protection Bureau; <b>SZLW:</b> Shizhu Transportation Construction Corporation,Shi Zhu County Environmental Protection Bureau. <b>FLLW:</b> Fuling Zhonglong Transportation Construction	<b>WZYL:</b> The wastewater is stored in the grit chamber, impounding reservoir and the filter tank; after getting rid of the mud, the water can be used for washing the car and remove the dust; the public toilet and drainage system have been equipped in the construction shed and the sanitary wastewater will not have impact on the environment; the vehicles and related equipment will be parked in the required area. <b>RCRFH:</b> Season instead of the rainy season; The sedimentation tanks were built along the river to prevent the sediment generated by earthwork construction from flowing into the river; Temporary storerooms were built and no construction camp was built in this section of the project and the construction personnel rented houses nearby. The original breeding pig farm has been relocated elsewhere, but the piggery manure water in the biogas digester is not cleaned up. So the
	Construction wastewater from washing aggregates, pouring and curing concrete, machinery repairs	Settling ponds, oil-water separators. Recycled water will be used to spray for dust control. . Residue will be removed from site and disposed in municipal landfills.			
	Groundwater leakage caused by tunneling	A detailed geological investigation shall be conducted before the start of the construction. A detailed plan must be made in advance for the prevention and control of water leakage and grouting method will be used to deal with water seepage.			

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	Wastewater in the earth caused by tunneling	The wastewater will be stored in the grit chamber, impounding reservoir and the filter tank in order to get rid of the mud and oil, and reuse when evacuating the tunnel.	Conservancy Development Co., Ltd.;Jiangsu Yancheng Water Construction Co.,Ltd. <b>FLLW:</b> Chongqing Qunzhou Industry Group Co., Ltd. <b>CKLW:</b> Jiangxi Road and Bridge Tunnel Engineering Co., Ltd.	Co, ltd; Chongqing Fuling transportation supervisor construction Co.,Ltd., <b>CKLW:</b> Cheng Kou County Transportation Committee, Cheng Kou County Environmental Protection Bureau	construction unit has to pump the wastewater and carried to the sewage treatment plant in the county for disposing to prevent it from polluting the surrounding water environment. Field has been moved, but the digesters in pig farm manure is not cleaned, since it is within the scope of the construction site, in order to prevent the construction process and the surrounding environment from the pig farm manure digester waste water pollution, the construction unit discharged the digesters in the pig farm and moves them to county remote sewage treatment plant for processing. <b>WLWJ:</b> Construction waste generated during the construction is collected firstly by waste water settling ponds, reservoirs and filter tank, removed sediment and then used as a dust and washing water; install public toilets and sewage systems in the shed, no domestic wastewater discharge to the environment and therefore there is no effect; the construction vehicles and equipment used during the construction process are parked in the designated area; culvert and bridge pier are planned this winter (dry season) construction to reduce the amount of cofferdam. Usually no rain during this period, which reduces the risk of water pollution and soil erosion. <b>SZLW:</b> The wastewater will be stored in the grit chamber, impounding reservoir and the filter tank; after getting rid of the mud, the water can be used for washing the car and remove the dust; the public toilet and drainage system have been equipped in the construction shed and the sanitary wastewater will not have impact on the environment; the vehicles and related equipment will be parked in the required area.
	Silt-rich wastewater from tunneling	Wastewater from tunneling will be collected in sediment tanks, retention ponds, and filter tanks to remove silts and oil, and then be reused for the tunnel operations.			
	Handling of hazardous and harmful materials	<p>i. A construction materials handling and disposal protocol that includes spill responses will be a part of the Site Environmental Management Supervision Manual and will be applied to prevent soil and surface/ground water pollution.</p> <p>ii. Construction of storage facilities (including fuel and oil storage), with bund and clean-up equipment. Fuel supplier is properly licensed and follows the proper protocol for transferring of fuel and in compliance with JT 3145-88 (Transportation, Loading and Unloading of Dangerous or Harmful Goods).</p> <p>iv. Vehicles and equipment are properly parked in designated areas to prevent contamination of soil and surface water.</p> <p>v. Vehicle, machinery, and equipment maintenance and refueling will be carried out so that spilled materials do not seep into the soil or into water bodies.</p> <p>vi. Fuel storage and refilling areas will be located at least 300 m from</p>			

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		<p>drainage structures and important water bodies.</p> <p>vii. Oil traps will be provided for service areas and parking areas.</p>			<p>The construction near the river is implemented in the dry season. The setting basin has been constructed in order to avoiding the construction mud. The culvert has started to construct in 2016 in order to reduce the cofferdam. The risk of water pollution and soil erosion is little during this period.</p> <p><b>FLLW:</b> The wastewater will be stored in the grit chamber, impounding reservoir and the filter tank; after getting rid of the mud, the water can be used for washing the car and remove the dust; the public toilet and drainage system have been equipped in the construction shed and the sanitary wastewater will not have impact on the environment; the vehicles and related equipment will be parked in the required area.(Section A of the subproject has been completed.)</p> <p><b>CKLW:</b> The wastewater will be stored in the grit chamber, impounding reservoir and the filter tank; after getting rid of the mud, the water</p>
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	Hydrological impacts and flooding at bridge/culvert construction sites	Culvert and bridge pier constructions will be conducted during the dry season (from October to next May), and construction during the rainy season shall be prohibited.			can be used for washing the car and remove the dust.
	Water Bodies Affected by Embankment and Soil Removal Operations	In-water operations are all designed for dry seasons, and all in-water work areas will be segregated with cofferdams.			

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air	Generation of dust by construction activities	<p>Vehicles carrying soil, sand or other fine materials to and from the sites must be covered. Materials storage sites must be 300 m from residential areas and covered or sprayed with water.</p> <p>. Water will be regularly sprayed on construction sites and access roads.</p> <p>. All roads and tracks used by vehicles of the contractors or any subcontractors or supplier will be kept clean and clear of all dust, mud, or extraneous materials dropped by their construction vehicles.</p>	<p><b>WZYL:</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical Rock-Soil Engineering Reconnaissance General Company;</p> <p><b>RCRFH:</b> Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.;</p> <p><b>WLWJ:</b> Gezhouba 5 Construction (Group) Co., Ltd.; Anhui Hydrological Development Co., Ltd.; Jiangsu Yancheng Water Construction CO., Ltd.</p> <p><b>SZLW:</b> Hunan Foreign Construction Group Co., Ltd.</p> <p><b>FLLW:</b> Fuling Qunzhou Group Co, Ltd.,</p> <p><b>CKLW:</b> Jiangxi Road, Bridge and Tunnel Engineering Co., Ltd.</p>	<p><b>WZYL:</b> Wanzhou Water Company (the owner unit) Wanzhou District Environmental Protection Bureau</p> <p><b>WLWJ:</b> Wulong Urban-rural Development Group; Environmental Protection Bureau;</p> <p><b>RCRF:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang Environmental Protection Bureau;</p> <p><b>SZLW:</b> Shizhu Transportation Construction Corporation, the Environmental Protection Bureau</p> <p><b>FLLW:</b> Fuling Zhonglong Transportation Construction Co, Ltd; Chongqing Fuling transportation supervisor construction Co, Ltd,</p> <p><b>CKLW:</b> Chengkou County Transportation Committee; Chengkou County Environmental Protection Bureau</p>	<p><b>WZYL, WLWJ, SZLW, CKLW:</b> There were staff sprinkling water on the roads and construction site; The earth or construction materials were covered before the trucks left; The earth-moving trucks proceeded along the route specified by the construction supervision unit and the local environment protection bureau; The dust disposal around sensitive sites like schools, hospitals or residential areas was paid special attention; The construction materials were placed and covered properly; Vehicles and construction machinery were maintained timely and the exhaust emissions conformed to the standards. With on-site investigation and monitoring, construction site and the surrounding area are fine and clean—the air is good, odorless and tasteless. So far, the masses are quite satisfied with project construction based on the follow-up visits to the public on the surroundings of the construction site.</p> <p><b>RCRFH:</b> The earth, sand or other fine materials on the trucks entering or leaving the construction site were covered and cleaned timely; The materials storage site was 300m away from the residential areas and was covered or sprinkled with water; There were staff sprinkling water on the entrances and exits of the construction site and roads; Cars or trucks of the contractor and sub-contractors is always keeping clear, dust, dirt and additional abandoned materials brought by</p>
	Air emission from vehicles and equipment	<p>i. Vehicle emissions must be in compliance with PRC-GB18352-2005, GB17691-2005, GB 11340-2005, GB3847-2005, and GB182852005. ii. Equipment and machinery will be maintained to a high standard to ensure efficient running and fuel-burning. High-horsepower equipment will be installed with tail gas purifier to ensure emissions be in compliance with PRC-GB16297-1996.</p> <p>iii. A regular inspection and certification system must be initiated.</p>			



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	Generation of asphalt flue gas	i. Use modern equipment which complies with the asphalt flue gas standard of GB16297-1996 Locate asphalt mixing stations at least 500m from residences.			<p>the construction vehicles were removed timely.</p> <p><b>FLLW:</b> There were staff sprinkling water on the roads and construction site; The earth or construction materials were covered before the trucks left; The earth-moving trucks proceeded along the route specified by the construction supervision unit and the local environment protection bureau; The dust disposal around sensitive sites like schools, hospitals or residential areas was paid special attention; The construction materials were placed and covered properly; Vehicles and construction machinery were maintained timely and the exhaust emissions conformed to the standards. With on-site investigation and monitoring, construction site and the surrounding area are fine and clean—the air is good, odorless and tasteless. So far, the masses are quite satisfied with project construction based on the follow-up visits to the public on the surroundings of the construction site. The earth, sand or other fine materials on the trucks entering or leaving the construction site were covered and cleaned timely; The materials storage site was 300m away from the residential areas and was covered or sprinkled with water; There were staff sprinkling water on the entrances and exits of the construction site and roads; Cars or trucks of the contractor and sub-contractors were maintained clean and dust, dirt and additional abandoned materials brought by the construction vehicles were removed timely.</p>
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Noise and Vibration	Noise from Vehicles and construction machinery	<p>i. Noise levels from equipment and machinery to conform to PRCGB12523-90.</p> <p>ii. Install portable noise shields near sensitive receptors such as schools and residential areas.</p> <p>iii. At construction sites, noise-generating construction work will be stopped between 2000 and 0600</p>	<p><b>WZYL:</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical Rock-Soil Engineering Reconnaissance General Company;</p> <p><b>RCRFH:</b> Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.;</p> <p><b>WLWJ:</b> Gezhouba 5 Construction (Group) Co., Ltd.; Anhui Hydrological Development Co., Ltd.; Jiangsu Yancheng Water Construction Co., Ltd.</p> <p><b>SZLW:</b> Hunan Foreign Construction Group Co., Ltd.</p> <p><b>FLLW:</b> Chong Qing Qun Zhou Industry Group Co., Ltd.</p> <p><b>CKLW:</b> Jiangxi Road Bridge and Tunnel Co., Ltd.</p>	<p><b>WZYL:</b> Wanzhou Water Company (the owner unit), Wanzhou District Environmental Protection Bureau</p> <p><b>WLWJ:</b> Wulong Urban-rural Development Group; Environmental Protection Bureau;</p> <p><b>RCRFH:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang Environmental Protection Bureau;</p> <p><b>SZLW:</b> Shizhu Transportation Construction Corporation, the Environmental Protection</p> <p><b>FLLW:</b> Chongqing Fuling District Zhong Long Transportation Construction Co., Ltd.</p> <p><b>CKLW:</b> Chengkou County Transportation Committee; Chengkou County Environmental Protection</p>	<p><b>WZYL, WLWJ, SZLW, CKLW:</b> The construction time were strictly controlled and there was no construction on noise sensitive areas like schools, hospitals and residential areas between 20:00-6:00 at night; Low noise machinery was used to the greatest extent; Temporary fence or noise baffle was built to block the noise source during the construction period.</p> <p><b>RCRFH:</b> Noise-proof devices were installed around the sensitive receivers, such as schools and residential areas; The construction time were strictly controlled and construction compensations, if necessary.</p> <p><b>WLWJ:</b> Under earlier stage of the construction, no blasting project. The construction contract has some regulations on the cultural relic protection and report mechanism. The project has not found cultural relics yet.</p> <p><b>FLLW:</b> The construction time were strictly controlled and there was no construction on noise sensitive areas like schools, hospitals and residential areas between 20:00-6:00 at night; Low noise machinery was used to the greatest extent; Temporary fence or noise baffle was built to block the noise source during the construction period. The surrounded pipe line will be protected by the machinery chisel, which will decrease the impact on the house nearby.</p>
	Tunnel blasting and road cutting blasting impacts	<p>1. The construction unit must consider the safe distance from the shot point to people, inhabited buildings and other sensitive receivers in need of protection and exercise strict control over explosive load and type to avoid accidental impacts.</p> <p>2. Prohibit blasting in road sections near cultural relics</p>			

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	Protection of physical cultural relics from vibration and other construction impacts	To avoid any false claims, contractors will document cultural relics in the project area of influence prior to start of construction to ensure that a true record of their pre-construction condition is kept; Install vibration monitoring equipment at cultural relic sites along Shizhu road subproject; Local cultural relic protection staff to inspect all phases of work in Shizhu road and Youyang flood management subprojects and advise on on-site impact mitigation measures; Establish chance-finds	<p><b>WZYL:</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical, Rock-Soil Engineering Reconnaissance General Company; Cultural Heritage Protection Bureau of Wanzhou District</p> <p><b>RCRFH:</b> Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.; Cultural Heritage Protection Bureau of Rongchang County</p> <p><b>WLWJ:</b> Gezhouba 5 Construction (Group) Co., Ltd.; Anhui Hydrological Development Co., Ltd.; Jiangsu Yancheng Water Construction Co., Ltd. Wu Long County Cultural Heritage Protection Bureau</p> <p><b>SZLW:</b> Hunan Foreign Construction Group Co., Ltd.</p> <p><b>FLLW:</b> Fuling Qunzhou Group Co Ltd.,.</p> <p><b>CKLW:</b> Jiang xi Road, Bridge and Tunnel Engineering Co., Ltd.</p>	<p><b>WZYL:</b> Wanzhou Water Company (the owner unit), Wanzhou PMO</p> <p><b>WLWJ:</b> Wulong Urban-rural Development Group; Wulong PMO;</p> <p><b>RCRF:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang PMO;</p> <p><b>SZLW:</b> Shizhu Transportation Construction Corporation, Shizhu PMO;</p> <p><b>FLLW:</b> Fuling Zhonglong Transportation Construction Co, ltd; Chongqing; Fuling PMO</p> <p><b>CKLW:</b> Chengkou County Transportation Committee, Cheng Kou PMO</p>	
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Solid waste s	Domestic waste from construction camps	<p>The contractors will provide appropriate waste storage containers;</p> <p>Trash collection bins will be regularly sprayed with pesticides to reduce flies;</p> <p>i Wastes will be stored away from water bodies and will be regularly hauled to a suitable landfill or designated dumping site;</p> <p>iv. Agreements will be signed with local authorities for waste disposal, where appropriate, through local facilities and to approved disposal sites.</p>	<p>WZYL: Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. Shanxi Metallurgical Rock-Soil Engineering Reconnaissance General Company;</p> <p>RCRFH: Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.; Anhui Hydrological Development Co., Ltd.; Jiangsu Yancheng Water Construction Co., Ltd.</p> <p>SZLW: Hunan Foreign Construction Group Co., Ltd.</p> <p>FLLW: Chong Qing Qun Zhou Industry Group Co., Ltd.</p> <p>CKLW: Jiangxi Road Bridge and Tunnel Co., Ltd.</p>	<p>WZYL: Wanzhou Water Company (the owner unit) Wanzhou District Environmental Protection Bureau;</p> <p>RCRFH: Rongchang Hongyu Water Resources Development Co., Ltd.;</p> <p>WLWJ: Wulong Urban-rural Development Group; Environmental Protection Bureau;</p> <p>SZLW: Shizhu Transportation Construction Corporation, Shi zhu Environmental Protection, FLLW: Chongqing Fuling District Zhong Long Transportation Construction Co., Ltd., Fu Ling Road Supervising Engineering Co., Ltd., Fu Ling Environmental Bureau;</p> <p>CKLW: Chengkou County Transportation Committee; Chengkou County Environmental Protection Bureau</p>	<p>WZYL、SZLW、CKLW: The domestic garbage was timely collected and transported to the places specified by the local sanitation departments; The contractor reached an agreement with the pollutant leakage emergency handling agency and trained the relevant personnel; The hazardous materials and waste were placed in a safe and protective place properly.</p> <p>WLWJ、RCRFH: The contractor provided proper waste storage container facilities; There was a proper landfill and a specified dumping place; As for earthwork digging, the first step is to give the construction site fill on the spot. The needless earthwork can be disposed as spoil in an appropriate field by signing an agreement with local management offices and get the consent of local facility management offices.</p> <p>FLLW: Store the household garbage in time and transport to the area required by the government; to put the dangerous material in the safe and protected place; drop the litter in the appointed spoiled ground.</p>
	Construction wastes could have adverse impacts on surrounding environments.	<p>Construction wastes that cannot be reused will be regularly transported off-site for disposal, and not allowed to accumulate on site over long periods.</p>			

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Soil erosion and stability	Erosion from construction sites	The following safeguards will be implemented for all construction related earthworks: Construct interception ditches and drains to prevent runoff entering construction sites, and divert runoff from sites to existing drainage; Limit construction and material handling during periods of rains and high winds; Stabilize all cut slopes, embankments, and other erosion-prone working areas while works are going on; All earthwork disturbance areas shall be stabilized within 30 days after earthworks have ceased at the sites; v. Preserve existing vegetation where no construction activity is planned.	<b>WZYL:</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical Rock-Soil Engineering Reconnaissance <b>RCRFH:</b> Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.; <b>WLWJ:</b> Gezhouba 5 Construction (Group) Co., Ltd.; Anhui Hydrological Development Co., Ltd.; An Hui Water Development Co., Ltd., Jiangsu Yancheng Water Construction Co., Ltd. <b>SZLW:</b> Hunan Foreign Construction Group Co., Ltd. <b>FLLW:</b> Fuling Qunzhou Group, Co, ltd. <b>CKLW:</b> Jiangxi Road Bridge and Tunnel Engineering Co., Ltd	<b>WZYL:</b> Wanzhou Water Company (the owner unit); Wanzhou District Environmental Protection Bureau;Forest Bureau of Wanzhou District; <b>RCRFH:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang Environmental Protection Bureau; Forest Bureau of Rongchang; <b>WLWJ:</b> Wulong Urban-rural Development Group;Wulong EPB, Forest Bureau of Wulong District; <b>SZLW:</b> Shizhu Transportation Construction Corporation, the Environmental Protection Bureau, Forest Bureau; <b>FLLW:</b> Chongqing Fuling District Zhong Long Transportation Construction Co., Ltd. Fu Ling EPB; Fu Ling Forestry Bureau <b>CKLW:</b> Chengkou County Transportation Committee; Chengkou County Environmental Protection Bureau; Cheng Kou Forest Bureau	<b>WZYL、WLWJ、RCRFH、SZLW、CKLW:</b> PMOs have prepared Water and Soil Erosion Protection Plan and get approved before construction. As for places easy to collapse ,revetments ,slope protections and drainage ditches were built and the backfill should be tamped timely to prevent the water and soil loss; it is restricted to construct or transport in rainy day or heavy wind day to prevent water and soil loss. <b>WZYL、WLWJ、RCRFH:</b> The construction unit and the supervision unit attached great importance to the farmland protection. They had investigated the construction site with the design department and the technicians from the owner unit before the construction started. The construction did not start until the land occupation of the construction was verified by the land department and the town administrative department. Meanwhile, the construction unit regarded strictly controlling land occupation area as a rule and an important indicator for assessment and rewards and punishments so as to prevent social dispute. In line with the purpose of occupying farmland as less as possible, this project built revetments to reduce the farmland occupation area. In addition, we chose waste disposal place on non-farmland area to the greatest extent. For example, <b>RCRF:</b> the left bank lies in a nearby clearing (Chainage L.K0+800 ~ L.K1+140) away from the construction site; and the right bank locates in a nearby clearing (Chainage R.K0 +500 ~ L.K0+800). The two sections are both temporary clearings
	Erosion from spoil disposal sites and operation of borrow pits	i. Strip and stockpile topsoil from new sites; ii. Provide temporary detention ponds or containment to control silt runoff; iii. Construct intercepting ditches and drains to prevent outside runoff entering disposal sites, and divert runoff from sites; iv. Rehabilitate terrain contours and vegetate borrow pits at completion of use.			

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	Erosion of banks and sedimentation of watercourses during bridge construction	i. Embankment and pier constructions during the dry season only; ii. Slopes on both sides of bridges and culverts will be protected through the iii. Planting of grass and stabilizing vegetation; iv. Slurry from pile drilling will be pumped to shore and properly disposed of; Pier construction in the water bodies will be planned and laid out to ensure adequate opening for water flow.			<p>taken by urban construction and are used for backfill once needed to be backfilled.</p> <p><b>WZYL:</b> the project has no spoil so no spoil ground is planned.</p> <p><b>WLWJ:</b> the waste land is located about 1.5 kilometers away from the Damugou bridge, 3 kilometers away from the A bidding section; 2 kilometers away from B bidding section; and 1 kilometers away from C bidding section</p> <p><b>WZYL, WLWJ:</b> While constructing the project, avoid the rainy season; The waste soil was cleaned and transported timely and the earth-rock backfill was rolled and compacted by layer; The ditches excavation was conducted by segment: excavating one segment, backfilling and cleaning it; As for places easy to collapse, revetments, slope protections and drainage ditches were built and the backfill should be tamped timely to prevent the water and soil loss; During the ditches excavation process, the soil should be stacked and backfilled by layer to prevent the structure of the surface soil from being damaged and losing its water and fertilizer retention ability; Regional ecological environment should be protected during the pavement to prevent the water and soil loss; Due to the project is not completed yet, the vegetation recovery of the construction site and the greening will be implemented in the later construction period of the project.</p> <p><b>WLWJ:</b> there is no mud settling in construction sites, the waste mud is settled and then discharged in clean water.</p> <p><b>RCRFH:</b> Rongchang Subproject has updated and changed the design, canceled river piling in the construction.</p> <p><b>FLLW:</b> the project has no excavation and keeps</p>
	Spoil from tunnel construction	i. Spoil disposal sites near tunnel portals will be identified and approved before tunneling commences; Sites will be operated according to EMP spoil disposal site prescriptions and on completion will be re-contoured and vegetated.			
	Handling and disposal of dredge spoil	Confirm quality of sludge against GB4284-84 and GB15618-95 to ensure safe disposal.			
	Pollution from sediment-rich slurry from pile driving in river beds	Slurry will be detained in settlement ponds. Water will be recycled and silt tested for quality for reuse or disposal.			

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					balance. The main desert soil is the surface soil caused by the red line clearing, which will transported to appointed site and it will built wall to ensure the stability of the desert site.
Social and Cultural	Resettlement of affected persons	All affected persons will be resettled in a timely and adequate manner, in accordance with the Resettlement Plan.	<b>WZYL:</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical Rock-Soil Engineering Reconnaissance General Company; <b>RCRFH:</b> Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.; <b>WLWJ:</b> Gezhouba 5 Construction (Group) Co., Ltd.; Anhui Hydrological Development Co., Ltd.; Jiangsu Yancheng Water Construction Co., Ltd. <b>SZLW:</b> Hunan Foreign Construction Group Co., Ltd.	<b>WZYL:</b> Wanzhou PMO <b>RCRFH:</b> Rongchang PMO <b>WLWJ:</b> Wulong county pmo <b>SZLW:</b> Shizhu County PMO <b>CKLW:</b> Chengkou PMO	<b>WZYL, WLWJ, RCRFH, SZLW, FLLW:</b> The specific information is available in the external resettlement monitoring report.
	Compensation of lost assets	All affected persons will be compensated in a timely and adequate manner, in accordance with the Resettlement Plan.			
	Traffic management – all projects	Selecting haulage routes to reduce		<b>WZYL:</b> Wanzhou Water Company , Wanzhou District Traffic authorities; <b>RCRFH:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang County Traffic authorities <b>WLWJ:</b> Wulong Urban-rural Development Group; <b>SZLW:</b> Shizhu Transportation Construction Corporation, Shizhu County Transportation Bureau	<b>WZYL、WLWJ、RCRFH、SZLW、FLLW、CKLW:</b> A traffic control and organization plan (how to divert or dispatch the traffic to avoid the rush hours in the mornings and in the afternoons, how to adjust the traffic at intersections, how to build temporary roads, how to choose transport routes to avoid disturbing the normal traffic and how to restore the traffic immediately after the completion of the project) was made and approved by the local traffic management department before the construction starts to make sure that the construction and social vehicles can go through.
	Traffic management – road subprojects				

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			Ltd.; Jiangsu Yancheng Water Construction Co., Ltd. <b>SZLW:</b> Hunan Foreign Construction Group Co., Ltd. <b>FLLW:</b> Chong Qing Qun Zhou Group Co., Ltd. <b>CKLW:</b> Jiangxi Road Bridge and Tunnel Engineering Co., LTD.		
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	Community safety	Advance notice of construction will be published before the construction through radio and TV; Construction billboards, which include construction contents, schedule, responsible person and complaint phone number, will be erected at each construction site.			<p><b>WZYL、RCRFH、SZLW、FLLW、CKLW:</b> notice board was set on every construction camp, on which construction content, arrangement, officer and complaints tel is attached. The construction site enhanced the environmental sanitation supervision and management and the buckets were capped tightly to prevent dust and pollution generated by mosquitoes and flies; Work clothes, safety helmets, canvas gloves, masks and other basic labor hygiene and safety supplies were allocated to all workers; Up to now, there was no labor hygiene accident and safety accident; The construction unit launched AIDS prevention propaganda activities with the help of the municipal project management office and prevented and controlled AIDS based on the strategy of “putting prevention, publicity and education in the first place, mobilizing the whole society to participate in and implementing comprehensive management”.</p> <p><b>WLWJ:</b> erect bulletin boards in each construction site construction, including the construction content, construction schedule, officials and telephone complaints. Project is still in the pre-construction phase, and shall be attached great importance on production safety and environmental protection. It is necessary to strictly implement national and local laws and regulations, the construction unit. Therefore, all construction units have signed a safe and civilized production responsibility contract, and institutionally regulate the construction practices to ensure construction safety and sanitation.</p>
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	Work camp health and hygiene	<p>i. Contractors will be required to safeguard environmental hygiene in the construction camps, including the quality of water supplies;</p> <p>ii. All construction sites must provide the necessary personal protective equipment and other resources to create a safe working environment;</p> <p>iii. Construction site operations must comply with PRC's State Administration of Worker Safety Laws and Regulations.</p> <p>iv. An education program for HIV/AIDS</p>		<p><b>WZYL:</b> Wanzhou Water Company, Wanzhou District Traffic authorities;</p> <p><b>WLWJ:</b> Wulong Urban-rural Development Group; Wulong Traffic authorities;</p> <p><b>RCRF:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang County Traffic authorities</p> <p><b>SZLW:</b> Shizhu Transportation Construction Corporation, Shizhu County Transportation Bureau</p>	
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	Construction site safety	<p>Responsibility of the contractor:</p> <p>i. At all times during construction, the contractor will provide safe and convenient passages for vehicles, pedestrians, and livestock to and from side roads.</p> <p>ii. The Contractor's responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents;</p> <p>iii. Provide personal protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed boots) for construction workers and enforce their use;</p> <p>iv. During heavy rains or emergencies of any kind, suspend all work;</p> <p>v. Brace electrical and mechanical equipment to withstand seismic events during the construction.</p> <p>vi. Present details regarding maximum permissible vehicular speed on each section of road;</p> <p>vii. Establish safe sight distance in both construction areas and construction camp sites;</p> <p>viii. Place signs around the construction areas to facilitate traffic movement, provide directions to various components of</p>		<p><b>WZYL:</b> Wanzhou Water Company (the owner unit)  Wanzhou District Environmental Protection Bureau</p> <p><b>RCRFH:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang Environmental Protection Bureau; WLWJ: Wulong Urban-rural Development Group; Environmental Protection Bureau;</p> <p><b>SZLW:</b> Shizhu Transportation Construction Corporation, the Environmental Protection</p> <p><b>CKLW:</b> Chengkou County Transportation Committee; Chengkou County Environmental Protection Bureau</p>	
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		the works, and provide safety advice and warnings.			
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	protection for cultural heritage, material and natural heritage	<p>i. Protect cultural heritages of which the values has been established and no one is allowed to destroy, stain, hide or damage them in other ways according to the law of China;</p> <p>ii. If the excavation on important sites has started, the excavation must stop and the construction unit should report it to the district, county or city to seek for proper treatment approaches.</p>	<p><b>WZYL:</b> Wanzhou Water Company; Culural Relics Preservation Office of Wanzhou District</p> <p><b>RCRF:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Cultural Relics Preservation Office of Rongchang County</p> <p><b>WLWJ:</b> Wu long County urban-rural development Co., Ltd. Cultural Relics Preservation Office of Wulong County</p> <p><b>SZLW:</b> Shizhu Transportation Construction Corporation, Cultural Relics Preservation Office of Shizhu County</p> <p><b>FLLW:</b> Fuling Zhonglong Transportation, Construction Co., Cultural Relics Preservation Office of Fuling County</p> <p><b>CKLW:</b> Chengkou County Transportation Committee, Cultural Relics Preservation Office of Chengkou County</p>	<p><b>WZYL, WLWJ, RCRFH, SZLW, FLLW, CKLW:</b> Under the direction of CPMO and the project management office, the construction unit had made regulations on protection of the suspected cultural relic before the construction team entered the site. The regulations are: when there is an unidentified object found during earth-rock construction process, stop the construction immediately, protect the site and report to the construction project management office, which will organize the protection work immediately and report to the local cultural relics bureau; the construction can continue when the cultural relics bureau permit it after identifying the suspected cultural relic; during the protection period of the suspected cultural relic, the construction unit can arrange other work which will not affect the protection and identification of the suspected cultural relic. Up to now, there is no suspected cultural relic found in the construction site.</p>
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Ecology value	Protection of Nature Reserve values	<p>In the construction of the road section in Fuling District near the Damu Nature Reserve, the contractor must proceed in close consultation with the Nature Reserve Management Office to ensure that day-to-day activities do not impact on important flora and fauna values.</p> <p>i. Minimize construction area; Environmental training especially fire prevention training should be provided to construction workers; No tree is allowed to be cut out of ROW; No borrow and spoil is allowed within the NR area;</p>	<p><b>WZYL:</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical Rock-Soil Engineering Reconnaissance</p> <p><b>RCRF:</b> Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.;</p> <p><b>WLWJ:</b> Gezhouba 5 Construction (Group) Development Co., Ltd.; Anhui Water Development Co., Ltd. Jiangsu Yancheng Water Construction Co., Ltd. SZLW: Hunan Foreign Construction Group Co., Ltd.</p> <p><b>SZLW:</b> Hunan Foreign Construction Group Co., Ltd.</p> <p><b>FLLW:</b> Chongqing Qunzhou Industry Group Co. Ltd.</p> <p><b>CKLW:</b> Jiangxi Road Bridge and Tunnel Co. LTD.</p>	<p>In all the projects, only Fuling urban and rural road improvement subproject is located in the natural protection zone (Damu natural protection reserves management office, local project management office)</p>	<p><b>WZYL:</b> There is no natural protection zone around. The project has been completed, the vegetation recovery and green should has been finished; the related protected measures has been taken to the plant around the project site.</p> <p><b>WLWJ, RCRFH, SZLW, CKLW:</b> there is no natural protection zones around; the project is under construction, the vegetation recovery and green should be implemented in the later stage of the project; the measures taken should strengthen the protection of the surrounding vegetation</p> <p><b>WLWJ, RCRFH:</b> the construction of banks will result in the losses of the original vegetation around the rivers, but the dam design is for the protection of the vegetation in grids, after the completion of the project, the original vegetation can realize the basic recovery</p> <p><b>FLLW:</b> The National Forest Protection and Fire Prevention regulations and rules will be highly concerned during the construction. It is to strengthen fire prevention and forestry protection policy, and forbid to have no lighting in construction. It will not be allowed to cut tree and forest without indication from authority.</p>
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	Replacement of lost vegetation	<p>i. In compliance with the PRC Forestry Law, IU will undertake compensatory planting of an equivalent or larger area of affected forest trees.</p> <p>ii. The re-vegetation will comprise a selection of species that are suitable for this area and have the most appropriate attributes to survive and serve their designated functions.</p> <p>iii. New plantings will be maintained during the operation period.</p>		<p><b>WZYL:</b> Wanzhou Water Company (the owner unit)  Wanzhou EPB  <b>RCRF:</b> Rongchang Hongyu Water Resources Development Co., Ltd.; Rongchang EPB  <b>WLWJ:</b> Wulong Urban-rural Development Group; Wulong EPB;  <b>SZLW:</b> Shizhu Transportation Construction Corporation, Shizhu County; Shizhu EPB  <b>FLLW:</b> Fuling Zhonglong Transportation Construction Co, Ltd.; Fuling EPB;  <b>CKLW:</b> Chengkou Transportation Committee; Chengkou EPB</p>	
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It can be seen in Table 4 that the environment impacts mitigation measures in the construction sites of the Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject, Wanzhou Yangliu Water Supply Subproject, Shizhu urban and rural road network improvement Subproject, Chengkou urban and rural road network improvement Subproject are implemented effectively in environment impact mitigation measurement and the environment management in the construction site are in order .

The results of the field investigation and monitoring of the environment supervisors are : the downstream receiving water quality of the Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject and Wanzhou District Yangliu Water Supply Subproject, Fuling district urban and rural road network improvement subproject and Shizhu county urban and rural road network improvement subproject, Chengkou urban and rural road network improvement subproject conform to the III category water quality standards; the above subprojects have taken corresponding measures to minimize the noise generated during the construction and there is no complaint so far for that the noise generated has very little impact on the environment sensitive sites in the neighborhood and has not disturbed the residents; the waste earth and rocks excavated in the above subprojects have been backfilled nearby or reused so that the waste earth and rocks and pits are thoroughly used, meanwhile it has prevented the environment impacts and ecological damages caused by choosing another earth disposal site and reduced the load of the existing waste disposal areas in town or the district. Up to the report period, the Rongchang Subproject has no results on sludge detection data, and the clients is required to provide detection data as soon as possible.

During this report, the construction of Fuling subprojects was suspended (Since Section A was completed with the self-raised supporting funds of local government, it's in the trial operation period. However, Section-B bid inviting is still in the process). This time, it's only aimed at the atmospheric environment and noise of completed road to have monitoring.

Earth and rock balance situation is showed in the following table.



**Earth and Rock Balance**

<b>Item</b>	<b>Period</b>	<b>Cut ( m<sup>3</sup> )</b>	<b>Fill ( m<sup>3</sup> )</b>	<b>Spoil ( m<sup>3</sup> )</b>	<b>Earth work from outside</b>
Rongchang Rongfeng River Flood Management Subproject	2016. 7– 2016. 12	46092	2075	44017	0
Wanzhou District Yangliu Water Supply Subproject	2016. 7– 2016. 12	212300	136300	0	76000 ( waste stone backfill )
Wulong Wujiang Flood Management Subproject	2016. 7– 2016. 12	36900	0	36900	0
Fuling district urban and rural road network improvement subproject	2016. 7– 2016. 12	/	/	/	/
Shizhu county urban and rural road network improvement subproject	2016. 7– 2016. 12	393161	290379	102782	
Chengkou county urban and rural road network improvement subproject	2016. 7– 2016. 12	5000	2000	3000	

**The above projects all conform requirements of suitable for local conditions, comprehensive prevention and treatment, practical and beautiful in Developing and Construction Project Water and Soil Conservation Technical Regulation (GB50433-2008). Meanwhile, the above projects have taken proper measures and have no negative impact on the surrounding ecology environment and society.**

### **3.5 Monitoring Results**

#### **3.5.1 External Monitoring**

The environment external monitoring contract of the ADB-financed Chongqing Urban-rural Infrastructure Development Demonstration Project Phase was signed in February 2015. The independent EEM unit is Halcrow (Chongqing) Engineering Consulting Co. Ltd. The team composition of the company in the environment external monitoring is available in Table 5.

**Table 5 the Team Composition of the Company in the Environment External Monitoring**

Company Name	Staff	Duties
Halcrow (Chongqing) Engineering Consulting Co. Ltd.	Yin Jian	Team Leader
	Chen Qiuwen	Data monitoring and prepare report
	Wang Hong	Organizing and coordinating work
	Zhu Xinzhong	Coordinating the local monitoring
	Wang Xiaohua	Collect data and prepare report

Monitoring plan in EMP sees table 6,7.

**Table 6 Environmental Monitoring Plan ( Flood Management Project )**

Item		Parameters	Location	Implementation Agency	Supervise Agency	Monitoring frequency
Construction period	sewage	pH, SS, DO, NH <sub>3</sub> -N, TP, BOD <sub>5</sub> , COD <sub>Cr</sub> , Escherichia coli, oil	Environmental monitoring at designated construction site	Local Environmental monitoring station	Local EPB	Twice every year
	Surface water	SS, DO, NH <sub>3</sub> -N, TP, BOD <sub>5</sub> , COD	Upstream one point , downstream two point			Four times every year

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	Air	TSP, PM10, NOx	All construction sites ( at least one point at both upwind and downwind ) sensitive point nearby			Three consecutive days for monitoring, twice each day, four times each year during construction
	Noise	Daily average value	Boundaries at each construction sites, sensitive point nearby			Two consecutive days for monitoring, once each morning and evening, four times during construction
	Solid waste	Wastes in work shed and constructio n wastes at constructio n site	Visual inspection at each work shed and construction site			Twice each year
	Water and soil erosion and vegetation restoration	Water and soil erosion intensity and vegetation restoration	Visual inspection spoil ground and construction site			At least twice each year and once after construction completion

**Table 7 Environmental Monitoring Plan ( Road and Water Supply Project )**

Item	Parameter	Location	Implementation Agency	Supervise Agency	Monitor frequency	
Construction period	sewage	pH, SS, DO, NH <sub>3</sub> -N, TP, BOD <sub>5</sub> , COD <sub>Cr</sub> , escherichia coli, oil	Environmental monitoring at designated construction site	Local Environmental monitoring station	IU Local EPB	Twice each year
	air	TSP, PM10, NO <sub>x</sub>	All construction sites ( at least one point at both upwind and Downwind)sensitive point nearby			Three consecutive days for monitoring, twice each day, four times each year during construction
	noise	Daily mean value	Boundaries at each construction sites, sensitive point nearby			Two consecutive days for monitoring, once each morning and evening, four times during construction
	Solid waste	Wastes in work shed and construction wastes at construction site	Visual inspection spoil ground and construction site			Twice each year

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	Water and soil erosion and vegetation restoration	Water and soil erosion intensity and vegetation restoration	Visual inspection spoil ground and construction site		Local EPB and FB	At least twice each year and once after construction completion
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**Note: the above information refers to EMP, monitoring plan.**

The analysis methods of the monitoring parameters and the detection limits are available in Table 8

**Table 8 Monitoring Methods for Ambient Atmosphere, Noise and Water**

<b>Monitoring Item</b>	<b>Method (Standard Number)</b>	<b>Limit of Detection</b>
TSP (mg/m <sup>3</sup> )	Gravimetric Method (GB/T15432-1995)	0.009
PM10 (mg/m <sup>3</sup> )	Gravimetric Method (GB/T15432-1995)	0.008
NO <sub>2</sub> (mg/m <sup>3</sup> )	Saltzman Method (Spectrophotometric Method, GB/T15432-1995)	0.001
Considerable Continuous A Class Sound (Leq,dB)	Construction Site Boundary Noise Measuring Method (GB12348-2008)	/
pH value	Glass Electrode Method (GB6920-86)	0.01
SS (mg/L)	Gravimetric Method (GB11901-89)	4
DO (mg/L)	Iodometry (GB7489-89)	0.2
Total Phosphorus ( TP ) (mg/L)	Ammonium Molybdate Spectrophotometric Method ( GB11893-89 )	0.01

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COD <sub>Cr</sub> (mg/L)	Dichromate Method ( GB11914-89 )	5
NH <sub>3</sub> -N (mg/L)	Salicylic Acid Spectrophotometric Method ( 7481-87 )	0.01
BOD <sub>5</sub> (mg/L)	Dilution and Inoculation Method (GB7488-87)	2
Fecal Coliform( each/L )	Multi-tube Zymolytic Method, Filter Membrane Method (Water and Wastewater Monitoring Analysis Method (Third Edition))	/
Petroleum(mg/L)	Infrared Spectrophotometric Method (GB/T16488-1996)	0.01

Table 9~Table 28 are the external monitoring results and brief analyses of the environments around the construction sites of the Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject and Wanzhou District Yangliu Water Supply Subproject, Fuling district urban and rural road network improvement subproject, Shizhu county urban and rural road network improvement subproject and Chengkou county urban and rural road network improvement subproject.

**Table 9: The Domestic Sewage Environment External Monitoring Results of the Rongchang Rongfeng River Flood Management**

**Subproject during the Construction**

Project Item	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values ( mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget
	Monitoring Parameters	Monitoring Sampling Spot/Section	Monitoring Time and Frequency					
Rongchang Rongfeng River Flood Management Subproject	pH	domestic sewage discharge	Sampled once on Dec 12 <sup>th</sup> ,2016	/	7.65	6 - 9	Normal construction	It conforms to the III category water quality standards in <i>The Surface Water Environment Quality Standard</i> GB8978-1996), in which, D0 is fit the water quality standard of III category in <i>Surface Water Environment Quality Standard</i> (GB3838-2002)the water environment quality is relatively good.
	SS			/	285	≤400		
	DO			/	6.8	≥5		
	Total Phosphorus ( TP )			/	0.15	≤0.3		
	COD <sub>Cr</sub>			/	42.5	≤500		
	NH <sub>3</sub> -N			/	6.6	≤25		
	BOD <sub>5</sub>			/	22.3	≤300		
	Fecal Coliform			/	2820	≤10000( 个/L )		
	Petroleum			/	2.5	≤20		
Monitoring Unit: Rongchang Environmental Monitoring Station								

Note: The monitoring value of pH is dimensionless.



**Table 10: The Surface Water Environment External Monitoring Results of the Rongchang Rongfeng River Flood Management**

**Subproject during the Construction**

Project Item	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget
	Monitoring Parameters	Monitoring Sampling Spot/Section	Monitoring Time and Frequency					
Rongchang Rongfeng River Flood Management Subproject	pH	40m away from construction site at the Rongfeng River downstream section (under the bridge of Rongfeng River	Sampled once on Dec 12 <sup>th</sup> , 2016	8.86	7.64	6 - 9	Normal construction	It conforms to the III category water standards in “ <i>The Surface Water Environment Quality Standard</i> ” GB3838-2002 ) ; among SS meet the requirements of “ <i>Wastewater let-out Standard</i> ” GB8978-1996 ) and the water environment quality is relatively good.
	SS			/	282	≤400		
	DO			/	6.2	≥5		
	Total Phosphorus ( TP )			/	0.12	≤0.2		
	COD <sub>Cr</sub>			25.2	16.4	≤20		
	NH <sub>3</sub> -N			0.343	0.31	≤1.0		
	BOD <sub>5</sub>			3.5	3.0	≤4.0		
	pH	40m away	Sampled	8.86	7.77	6 - 9		

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	SS	from construction site at the Rongfeng River upstream section ( under the bridge of Rongfeng River	once on Dec 12 <sup>th</sup> ,2016	/	284	≤400		
	DO			/	6.4	≥5		
	( TP )			/	0.16	≤0.2		
	COD <sub>Cr</sub>			25.2	17.3	≤20		
	NH <sub>3</sub> -N			0.343	0.33	≤1.0		
	BOD <sub>5</sub>			3.5	3.2	≤4.0		
Monitoring Agency: Rongchang Environment Monitoring Station								

Note: The monitoring value of pH is dimensionless.

**Table 11: The Atmosphere Environment External Monitoring Results of the Rongchang Rongfeng River Flood Management Subproject during the Construction**

Project Name	Monitoring Details						Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
				Baseline Values of 2012	Monitoring Values ( mg/ m <sup>3</sup> )	Standard Values Performed		
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency	( mg/m <sup>3</sup> )		( mg/ m <sup>3</sup> )		
Rongchang Rongfeng River Flood Management Subproject	SO <sub>2</sub>	45m away from the construction site at the gate of the Heting Hotel on the right bank of Rongfeng River	Monitored 1 day on Dec12th ,2016	0.0554-0.1228	0.065	0.15	Normal construction	The atmosphere environment quality around the construction site conforms to the Class II standard in “The Ambient Atmosphere Quality Standard” (GB3095-2012) . The ambient atmosphere quality is relatively good.
	NO <sub>2</sub>			0.0247-0.0517	0.042	0.08		
	PM <sub>10</sub>			0.0363-0.1344	0.122	0.15		
	TSP			0.02	0.015	0.3		

Monitoring Unit: Rongchang Environmental Monitoring Station

Note: there is only one sensitive site near the construction site;

**Table 12: The Noise Environment External Monitoring Results of the Rongchang Rongfeng River Flood Management Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 (dB(A))	Monitoring Values (dB(A))	Standard Values Performed (db(A))	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					
Rongchang Rongfeng River Flood Management Subproject	day time	45m away from the construction site near the Heting Hotel on the right bank of Rongfeng River	once in the day time and once in the night time on Dec12th ,2016	/	52	≤60	Normal construction	The acoustic environment of the residential area around the construction site conforms to the 2 category standard in “Environmental Quality Standard for Noise” (GB3096-2008). The acoustic environment in the project location is good.
	night time			/	41	≤50		
	day time	boundary of the construction section (30m away from the construction site near the city pig breeding farm on the left bank of river	once in the day time and once in the night time on Dec12th ,2016	/	60	≤70		The acoustic environment of the residential area around the construction site conforms to the 2 category standard in “Environmental Quality Standard for Noise” (GB3096-2008). The acoustic environment in the project location is good.
	night time			/	43	≤55		

Table 13: The Domestic Sewage Environment External Monitoring Results of the Wulong Wujiang Flood Management

Subproject during the Construction								
Project Item	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values ( mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget
	Monitoring Parameters	Monitoring Sampling Spot/Section	Monitoring Time and Frequency					
Wulong Wujiang Flood Management Subproject	pH	Domestic sewage discharge	Sampled once on Dec 10th, 2016	/	7.5	6 - 9	Normal construction	It conforms to the III category water quality standards in <i>The Surface Water Environment Quality Standard</i> GB8978-1996), in which, D0 is fit the water quality standard of III category in <i>Surface Water Environment Quality Standard</i> (GB3838-2002)the water environment quality is relatively good.
	SS			/	290	≤400		
	DO			/	5.87	≥5		
	Total Phosphorus ( TP )			/	0.15	≤0.3		
	COD <sub>Cr</sub>			/	37.8	≤500		
	NH <sub>3</sub> -N			/	7.0	≤25		
	BOD <sub>5</sub>			/	21.4	≤300		
	Fecal Coliform			/	3020	≤10000 ( 个/L )		
	Petroleum			/	2.2	≤20		
Monitoring Unit: Wulong Environmental Monitoring Station								

**Table 14: The Surface Water Environment External Monitoring Results of the Wulong Wujiang Flood Management**

**Subproject during the Construction**

Project Item	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values( mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget
	Monitoring Parameters	Monitoring Sampling Spot/Section	Monitoring Time and Frequency					
<b>Wulong Wujiang Flood Management Subproject</b>	pH	50m away from the upstream of section B construction site	Sampled once on Dec 10th, 2016	7.55-8.30	7.59	6 - 9	Normal construction	It conforms to the III category water quality standards in “The Surface Water Environment Quality Standard” GB3838-2020 ) ; among SS meet the requirements of “Wastewater let-out Standard” GB8978-1996 ) and the water environment quality is relatively good.
	SS			/	278	≤400		
	DO			/	5.8	≥5		
	Total Phosphorus ( TP )			/	0.15	≤0.2		
	COD <sub>Cr</sub>			10	9.4	≤20		
	NH <sub>3</sub> -N			0.126-0.177	0.14	≤1.0		
	BOD <sub>5</sub>			2	1.73	≤4.0		
<b>Wulong Wujiang</b>	pH	50m away from the	Sampled once on	7.55-8.30	7.6	6 - 9	Normal construction	

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Flood Management Subproject	SS	downstream of section B construction site (under the bridge)	Dec 10th, 2017	/	287	≤400	
	DO			/	5.8	≥5	
	Total Phosphorus ( TP )			/	0.16	≤0.2	
	COD <sub>Cr</sub>			10	9.7	≤20	
	NH <sub>3</sub> -N			0.126-0.177	0.16	≤1.0	
	BOD <sub>5</sub>			2	1.75	≤4.0	
Monitoring Unit: Wulong Environmental Monitoring Station							

Note: The monitoring value of pH is dimensionless.

**Table 15: The Atmosphere Environment External Monitoring Results of the Wulong Flood Management Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 ( mg/m <sup>3</sup> )	Monitoring Values ( mg/m <sup>3</sup> )	Standard Values Performed ( mg/m <sup>3</sup> )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					

Wulong Wujiang Flood Management Subproject	SO <sub>2</sub>	400m away from the Section A construction site at the gate of Wulong No.2 primary school	Monitored 1 day on Dec 10th, 2016	0.006- 0.008	0.007	0.15	Normal construction	The atmosphere environment quality around the construction site conforms to the Class II standard in “ <i>The Ambient Atmosphere Quality Standard</i> ” ( GB3095-2012 ) . The ambient atmosphere quality is relatively good.
	NO <sub>2</sub>			0.021- 0.029	0.023	0.08		
	PM10			/	0.133	0.15		
	TSP			0.09- 0.18	0.16	0.30		
Monitoring Unit: Wulong Environmental Monitoring Station								

**Table 16: The Noise Environment External Monitoring Results of the Wulong Flood Management Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 ( dB(A) )	Monitoring Values ( dB(A) )	Standard Values Performed ( db(A) )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					
<b>Wulong Wujiang Flood</b>	day time	400m away from the Section A	Once in the day time and once in the	53.2- 67.8	55	≤60	Normal construction	The acoustic environment of the residential area around the construction site



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Management Subproject	night time	Construction site at the gate of Wulong No.2 primary school	night time on Dec 10th, 2016	48.3-54.8	44	≤50		conforms to the 2 category standard in “ <i>Environmental Quality Standard for Noise</i> ” (GB3096-2008). The acoustic environment in the project location is good.
	day time	Boundary of the construction section C (30m away from the ending of Wujiang 3 <sup>rd</sup> bridge)	once in the day time and once in the night time on Dec10th, 2016	/	62	≤70	Normal construction	The acoustic environment of the construction site conforms to emission limits in the “ <i>Emission Standard of Environment Noise for Boundary of Construction Site</i> ” ( GB 12523 - 2011). The acoustic environment in the project location is good.
	night time			/	47	≤55		
Monitoring Unit:Wulong Environmental Monitoring Station								

Table 17: The Domestic Sewage External Monitoring Results of the Wanzhou District Yangliu Water Supply Subproject

Project Name	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values ( mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot/Section	Monitoring Time and Frequency					
Wanzhou District Yangliu Water Supply Subproject	pH	150m away from the inlet construction camp site drainage ditch(150m from entrance)	sampled once on Dec 14, 2016	/	7.6	6 - 9	Normal construction	It conforms to the III category water quality standards in <i>The Surface Water Environment Quality Standard</i> GB8978-1996), in which, D0 is fit the water quality standard of III category in <i>Surface Water Environment Quality Standard</i> (GB3838-2002)the water environment quality is relatively good
	SS			/	290	≤400		
	DO			/	6.9	≥5		
	Total Phosphorus ( TP )			/	0.17	≤0.3		
	COD <sub>Cr</sub>			/	41.2	≤500		
	NH <sub>3</sub> -N			/	7.5	≤25		
	BOD <sub>5</sub>			/	23.9	≤300		
	Fecal Coliform			/	3002	≤10000 ( ↑ /L )		
	Petroleum			/	2.6	≤20		
	Monitoring Unit: Wanzhou District Environmental Monitoring Station							

Note: The monitoring value of pH is dimensionless.

**Table 18: The Atmosphere Environment External Monitoring Results of the Wanzhou District Yangliu Water Supply Subproject**

Project Name	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values ( mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					
Wanzhou District Yangliu Water Supply Subproject	SO <sub>2</sub>	300m away from the construction site at the gate of Chongqing Economics and Business School	Monitored all day on Dec 14, 2016	0.001-0.169	0.08	0.15	Normal construction	The atmosphere environment quality around the construction site conforms to the second standard in “The Ambient Atmosphere Quality Standard” ( GB3095-2012 ) . The ambient atmosphere quality is relatively good.
	NO <sub>2</sub>			0.002-0.089	0.066	0.08		
	PM10			0.016-0.332	0.125	0.15		
	TSP			/	0.21	0.30		
Monitoring Unit: Wanzhou District Environmental Monitoring Station								

**Table 19: The Noise Environment External Monitoring Results of Wanzhou Yangliu Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 ( dB(A) )	Monitoring Values ( dB(A) )	Standard Values Performed ( db(A) )	Activity Situation During the Monitoring Period	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					

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							Monitoring Parameters	
Wanzhou Yangliu Subproject	day time	350m away from the construction site at the gate of Chongqing Economics and Business School	Once in the day time and once in the night time on Dec14, 2016	41.1-53.3	53	≤60	Normal construction	The acoustic environment of the residential area around the construction site conforms to the 2 category standard in “Environmental Quality Standard for Noise” (GB3096-2008). The acoustic environment in the project location is good.
	night time			37.5-47.3	44	≤50		
	day time	Boundary of the construction site (20m away from the ending of Yangliu Bridge)	once in the day time and once in the night time on Dec 14, 2016	/	62	≤70	Normal construction	The acoustic environment of the construction site conforms to emission limits in the “Emission Standard of Environment Noise for Boundary of Construction Site” ( GB 12523 - 2011). The acoustic environment in the project location is good.
	night time			/	45	≤55		
Monitoring Unit: Wanzhou District Environmental Monitoring Station								

**Table 20: The Domestic Se**

**Table 20: External monitoring results of atmospheric environment of Fuling district urban and rural road network improvement subprojects (Section A) during trial operation period**

Project Name	Monitoring Details			Baseline Values of	Monitoring Values ( mg/	Standard Values	Activity Situation	Up to Standard Situation, Over
	Monitoring	Monitoring	Monitoring					

	Parameters	Sampling Spot	Time and Frequency	2012 ( mg/m³ )	m³ )	Performed ( mg/ m³ )	During the Monitoring Period Monitoring Parameters	Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
Fuling road Subproject	SO <sub>2</sub>	The residential area near the construction site	Monitored 1 day on Dec 29, 2016	0.010-0.024	0.017	0.15	Normal construction	The atmosphere environment quality around the construction site conforms to the Class II standard in “The Ambient Atmosphere Quality Standard” ( GB3095-2012 ) . The ambient atmosphere quality is relatively good.
	NO <sub>2</sub>			0.029-0.094	0.063	0.08		
	PM10			0.010-0.034	0.014	0.15		
	TSP			/	0.22	0.30		
Monitoring Unit: Fuling Environmental Monitoring Station								

**Table 21: External monitoring results of noise environment of Fuling district urban and rural road network improvement subprojects (Section A) during trial operation period**

Project Name	Monitoring Details			Baseline Values of 2012 ( dB(A) )	Monitoring Values ( dB(A) )	Standard Values Performed ( db(A) )	Activity Situation During the Monitoring Period Monitoring	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					

							Parameters	
Fuling Subproject	day time	The residential area near the construction site	Once in the day time and once in the night time on Dec 29, 2016	40.5-49.4	47	≤60	Normal construction	The acoustic environment of the residential area around the construction site conforms to the 2 category standard in “Environmental Quality Standard for Noise” (GB3096-2008). The acoustic environment in the project location is good.
	night time			36.4-40.7	38	≤50		
Monitoring Unit: Fuling Environmental Monitoring Station								

**Table 22: The Domestic Sewage Environment External Monitoring Results of the Shizhu road Subproject during the Construction**

Project Item	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values ( mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget
	Monitoring Parameters	Monitoring Sampling Spot/Section	Monitoring Time and Frequency					
<b>Shizhu road Subproject</b>	pH	200m away from the downstream discharge outlet of the Yuelai river	Sampled once on Dec 16 2016	/	7.6	6 - 9	Normal construction	It conforms to the III category water quality standards in <i>The Surface Water Environment Quality Standard</i> (GB8978-1996),
	SS			/	281	≤400		
	DO			/	6.8	≥5		
	Total			/	0.16	≤0.3		

	Phosphorus ( TP )						in which, D0 is fit the water quality standard of III category in <i>Surface Water Environment Quality Standard</i> (GB3838-2002)the and the water environment quality is relatively good.
	COD <sub>Cr</sub>			/	39.0	≤500	
	NH <sub>3</sub> -N			/	7.2	≤25	
	BOD <sub>5</sub>			/	23.1	≤300	
	Fecal Coliform			/	2812	≤10000 ( 个/L )	
	Petroleum			/	2.3	≤20	
Monitoring Unit: Shizhu Environmental Monitoring Station							

Note: The monitoring value of pH is dimensionless.

**Table 23: The Atmosphere Environment External Monitoring Results of Shizhu Road Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 ( mg/m <sup>3</sup> )	Monitoring Values( mg/ m <sup>3</sup> )	Standard Values Performed ( mg/ m <sup>3</sup> )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					
Shizhu road subproject	SO <sub>2</sub>	The residential	Monitored 1 day on	0.014-0.018	0.016	0.15	Normal construction	The atmosphere environment quality around the construction



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	NO <sub>2</sub>	area near the constriction site	Dec 16, 2016	0.014- 0.018	0.016	0.08		site conforms to the Class II standard in “The Ambient Atmosphere Quality Standard” ( GB3095-1996 ) . The ambient atmosphere quality is relatively good.
	PM10			0.040- 0.044	0.042	0.15		
	TSP			/	0.24	0.30		

Monitoring Unit: Shizhu Environmental Monitoring Station

Note : there is only one sensitive site near the construction site ; the monitoring value of NO<sub>2</sub>、PM<sub>10</sub>、TSP exceed the baseline value due to the construction work.

**Table 24: The Noise Environment External Monitoring Results of Shizhu Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 ( dB(A) )	Monitoring Values ( dB(A) )	Standard Values Performed ( db (A) )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					
<b>Wulong Wujiang Flood Management Subproject</b>	day time	The residential area near the construction site	Once in the day time and once in the night time on Dec16, 2016	44.7- 45.9	45	≤60	Normal construction	The acoustic environment of the residential area around the construction site conforms to the 2 category standard in “Environmental Quality Standard for Noise”
	night time			38.7- 39.5	39	≤50		

								(GB3096-2008). The acoustic environment in the project location is good.
Monitoring Unit: Shizhu Environmental Monitoring Station								

**Table 25: The Domestic Sewage Environment External Monitoring Results of the Chengkou road Subproject during the Construction**

Project Item	Monitoring Details			Baseline Values of 2012 ( mg/L )	Monitoring Values ( mg/L )	Standard Values Performed ( mg/L )	Activity Situation During the Monitoring Period	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget
	Monitoring Parameters	Monitoring Sampling Spot/Section	Monitoring Time and Frequency					
Cheng Kou road Subproject	pH	200m away from the downstream discharge outlet of the Yuelai river	Sampled once on Dec 21, 2016	/	7.5	6 - 9	Normal construction	It conforms to the III category water quality standards in <i>The Surface Water Environment Quality Standard</i> GB8978-1996),
	SS			/	279	≤400		
	DO			/	6.8	≥5		
	Total			/	0.17	≤0.3		

	Phosphorus ( TP )						in which, D0 is fit the water quality standard of III category in <i>Surface Water Environment Quality Standard</i> (GB3838-2002)the and the water environment quality is relatively good.
	COD <sub>Cr</sub>			/	38.5	≤500	
	NH <sub>3</sub> -N			/	7.1	≤25	
	BOD <sub>5</sub>			/	23.4	≤300	
	Fecal Coliform			/	2808	≤10000 ( 个/L )	
	Petroleum			/	2.7	≤20	
Monitoring Unit: Chengkou Environmental Monitoring Station							

Note: The monitoring value of pH is dimensionless.

**Table 26: The Atmosphere Environment External Monitoring Results of Chengkou Road Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 ( mg/m <sup>3</sup> )	Monitoring Values ( mg/m <sup>3</sup> )	Standard Values Performed ( mg/ m <sup>3</sup> )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					
Chengkou road subproject	SO <sub>2</sub>	The residential	Monitored 1 day on	0.024-0.076	0.036	0.15	Normal construction	The atmosphere environment quality around the construction

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	NO <sub>2</sub>	area near the constriction site	Dec 21, 2016	0.0029- 0.0085	0.0052	0.08		site conforms to the Class II standard in “The Ambient Atmosphere Quality Standard” ( GB3095-1996 ) . The ambient atmosphere quality is relatively good.
	PM10				0.045	0.15		
	TSP			0.17- 0.33	0.20	0.30		

Monitoring Unit: Chengkou Environmental Monitoring Station

**Table 27: The Noise Environment External Monitoring Results of Shizhu Subproject during the Construction**

Project Name	Monitoring Details			Baseline Values of 2012 ( dB(A) )	Monitoring Values ( dB(A) )	Standard Values Performed ( db(A) )	Activity Situation During the Monitoring Period Monitoring Parameters	Up to Standard Situation, Over Standard Rate, Further Mitigation Measures and Cost Budget Monitoring Sampling Spot
	Monitoring Parameters	Monitoring Sampling Spot	Monitoring Time and Frequency					
<b>Wulong Wujiang Flood Management Subproject</b>	day time	The residential area near the construction site	Once in the day time and once in the night time on May 21, 2017	51.1- 56.3	52	≤60	Normal construction	The acoustic environment of the residential area around the construction site conforms to the 2 category standard in “Environmental Quality Standard for Noise”
	night time			40.2- 48.2	42	≤50		

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								(GB3096-2008). The acoustic environment in the project location is good.
Monitoring Unit: Chengkou Environmental Monitoring Station								

Note: Baseline value of all projects included in table 9-27 is in line with that in 2012(source: environmental assessment report)

After three visits and visual inspection on construction site, investigation on contractor or supervisory company's daily record book and monitoring of all parameters of corresponding monitoring point locations at construction sites (table 9-28), the report finds out (1) construction sites of Rongchang Rongfeng River Flood Management subproject, Wulong Flood Management subproject, Yangliu Water Supply subproject in Wanzhou District, Fuling road subproject, Shizhu road subproject and Chengkou Road Improvement Subproject which have been under construction are near the environmental monitoring point locations whose domestic sewage, surface water, air and sound environment all meet environmental standard requirement of related functional zone and have slight difference with baseline value of all parameters; ( 2 ) After visual inspection on construction on site of subproject under construction , solid wastes such as work shed's wastes and construction wastes are all collected and disposed( regularly transport to local sewage disposal site). Thus it can be seen that implementation measures which are formulated by all subprojects EMP to alleviate pollution are well-done. All subprojects' constructions have little impact on environment.

### **3.5.2 Internal Monitoring**

Sort out contents according to contractor and supervisor's supervising monthly report submitted to owner .Brief description of Internal monitoring of project under construction sees table 29.

**Table 28: A Brief Description of the Internal Monitoring of project under construction**

Item	Monitor parameter	Monitor PT	Monitor frequency	Monitor result	Responsible entity
<b>Flood Management Project: Rongchang Rongfeng River Flood Management sub-project ( RCRF ) Wulong Flood Management subproject (WLWJ)</b>					
Construction period	sewage	pH, SS, DO, NH <sub>3</sub> -N, TP, BOD <sub>5</sub> , COD <sub>Cr</sub> , escherichia coli, oil	Drainage areas of all construction sites and domestic sewage	Spot check to drainage sites of domestic sewage at least once a month	<b>RCRFH: Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.;</b> Rongchang County Hongyu Water Resource Development CO., Ltd, <b>WLWJ:</b> Gezhouba 5 Construction (Group) Co., Ltd.; Anhui Hydrological Development Co., Ltd.; Jiangsu Yancheng Hydrological Construction Co., Ltd.(EA)
	Surface water	SS, DO, NH <sub>3</sub> -N, TP, BOD <sub>5</sub> , COD	Upstream one point, downstream two points	Once a month	
	air	Floating dust alleviation measures ( watering、 vehicle covering ) ;vehicle and device maintenance	Visual inspection on all construction sites	Once a week	
	noise	Daily mean value	All construction sites' boundaries ,nearby sensitive points	Two consecutive days for monitoring, once each morning and evening, four times during construction	
	Solid waste	Work shed waste and construction waste	Visual inspection at all construction sites and work sheds	Once a week	
	Water and soil	Water and soil erosion	Visual inspection	Internal monitor:	
				All parameters' monitoring result meet corresponding standard	

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	erosion and vegetation restoration	intensity and vegetation restoration	spoil ground and construction site	spot check after raining ( rainfall>50mm )		Chong Qing Wulong Urban-Rural Development(Group) Co., Ltd. (supervising unit)
	Occupational health and safety	Work shed sanitation and safety, clean water, contingency plan	Check at all construction sits and work sheds	Once each month		
Road and Water Supply Project ; Yangliu Water Supply Sub-project at Wanzhou District ( WZYL ) , Fuling district urban and rural road network improvement subproject (FLLW), Shizhu county urban and rural road network improvement subproject(SZLW), Chengkou County Urban-rural Road Network improvement (CKLW)						
Construction period	sewage	pH, SS, DO, NH <sub>3</sub> -N, TP, BOD <sub>5</sub> , COD <sub>Cr</sub> , escherichia coli, oil	Drainage areas of all construction sites and domestic sewage	Spot check to drainage sites of domestic sewage at least once a month	All parameters' monitoring result meet corresponding standard	<b>WZYL :</b> Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd., Shanxi Metallurgical Rock-Soil Engineering Reconnaissance General Company(EA); Wanzhou Tap Water Company(SU) LTD. <b>FLLW:</b> Chongqing Qunzhou Industry Group Co., Ltd (EA); Fuling Zhonglong
	air	Floating dust alleviation measures(watering,vehicle covering ) ;vehicle and device maintenance	Visual inspection on all construction sites	Once a week		
	noise	Daily mean value	All construction sites' boundaries, nearby sensitive points	Two consecutive days for monitoring, once each morning and evening, four times during construction		



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Solid waste	Work shed waste and construction waste	Visual inspection at all construction sites	Once a week	Transportation Co., Ltd.(SU)
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		and work sheds		<b>SZLW:</b> Jiangxi province modern road and bridge engineering group Co., LTD, Hunan foreign construction group co., LTD (EA), Shizhu traffic construction corporation (SU) <b>CKLW:</b> Jiangxi Road Bridge Tunnel Engineering Co., Ltd. (EA); Rural Transportation Committee Construction the First Project Department( SU)
Water and soil erosion and vegetation restoration	Water and soil erosion intensity and vegetation restoration	Visual inspection spoil ground and construction site	Internal monitor: spot check after raining ( rainfall>50mm )	
Occupational health and safety	Work shed sanitation and safety, clean water, contingency plan	Check at all construction sites and work sheds	Once each month	

According to table 29 and check the supervising monthly report submitted by contractor and supervisor to owner, Internal monitoring of project under construction meet EMP's internal monitoring requirement.

### 3.6 Training Records and Public Information Consultation

#### (1) Capacity Building and Training

Chongqing ADB office usually trains the staff of the construction units and the supervision units by explaining in the construction site and exchanging information so as to strengthen their environment protection awareness and practical work ability. The details are shown in Table 28.

**Table 29 Capacity Building and Training**

Capacity Building and Training requirement in Environmental Assessment Report			Actual training performance				
time	Participants	Training content	Time	Place	Organizer	Participants	Training content
Before construction	PMOs, Owner, operator, contractors	Environment law and regulation, environmental policy and plan( including ADB Safeguard Policy Statement );basic environmental management, Emergency preparedness and response	2015.8.20-8.21	Chongqing Banshan Huayuan Holiday Hotel	CPMO	Advisory Expert Group, Development and Reform Commission in each sub-county, the person in charge of each subproject (Contact)	Environmental project management training, construction contract management training, resettlement and social training

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	PMOs, Owner, operator, public complaint department contractors, connection site for GRM	Structure, responsibility and time of GRM, style and compliance reviewing, sex relation and reporting procedure					
	Owner, operator, contractor	Environmental event, crisis and alleviation measures; emergency response, team, procedure and action.	2015.10.16	Wulong WRB	Wulong WRB	Wulong IA, supervisor, responsible person of the construction unit and Professional security personnel of the construction	Safety, fire knowledge training

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Before construction							
Before construction	Owner and facility operator	Environmental health and safety of subproject development; protective practices and equipment; safe working environment; community safety.					
Before construction and during the construction	CPMO, PMOs, IA, IU	Responsibility of environment management during the construction	2016.5.19	Wulong Urban and Rural Development (Group) Co, ltd.	Wulong Urban and Rural Development (Group) Co, ltd.	Wulong IA, supervisor, IU, safety officer	Fire safety training
	IA and IU of road subprojects	selection of the transportation outing; conduct the construction arrangement based on the meet of local community	2016.5.19	Wulong Urban and Rural Development (Group) Co, ltd.	Wulong Urban and Rural Development (Group) Co, ltd.	Wulong IA, supervisor, IU, safety officer	Fire safety training

	COMO, PMOs, IA, IU	The environment healthy safety; community safety; safe environment surroundings; preventive measurement	2016.5.19	Wulong Urban and Rural Development (Group) Co, ltd.	Wulong Urban and Rural Development (Group) Co, ltd.	Wulong IA, supervisor, IU, safety officer	Fire safety training
	IA and the operation agency	The environment healthy safety; community safety; safe environment surroundings; preventive measurement	2016.5.19	Wu Long County Urban-Rural Development(Group) Co., Ltd.	Wu Long County Urban-Rural Development(Group) Co., Ltd.	Owner, manager of supervising unit, safety officer	Fire safety knowledge training
Participation of project	IA and IU of water supply subproject	safety operation rules; environment management; emergency preparation and procedure	2016.12.13	Wu Long County Urban-Rural Development(Group) Co., Ltd.	Wu Long County Urban-Rural Development(Group) Co., Ltd.	Owner, manager of supervising unit, safety officer	Fire safety knowledge training
	The leaders of county traffic committee, proprietor representatives, technical directors of contractors, safety principals, supervision company representatives	1. Organize the project contractors to implement safety prevention terms in the construction process; 2. Make solutions for the environmental impact in the construction process 3. Establishment of complaint mechanism;	From August 20 to 21, 2016	project department and construction site	County traffic committee	Related contacts of county traffic committee, development and reform commission, construction department principals, safety supervisors, contacts and project supervision representatives.	1. Measures for construction safety; 2. Emergency plans of fire safety; 3. Implementation of environmental management responsibilities

## ( 2 ) Public Information and Consultation

According to the ADB public information consultation requirement of pre-informing the public of major construction activities, the profile of the public consultation activities of the subprojects during the construction period in Table 31.

**Table 30 Public Consultation Brief Summary**

Project Name	Public Consultation Scope	Public Consultation Form	Public Consultation Effects
RCRF,WLW J and WZYL,F LLW, SZLW	The public affected by construction period and operation period of all sub-projects	Under the guidance of local EPA, have public notification on EPA website; have symposium regularly, have questionnaire survey; set up construction notification before construction starts.	Related EPB departments shall respond to the public's suggestion and advice & dealt with them without delay During the report period,Chengkou DRC and IA orgnized the related stakeholders such as IU, supervisor as well as the local people to conduct the consultation on safety implementation and environment protection establishment on 20 August 2016. In 12 December 2016, Wulong IA conducted the health and safety training to the stakeholders; meanwhile, the safety implementation and environment protection measures were a  All projects' constructions are in good order and make progress according to the plan. The public consultation effect is obvious. <b>Conclusion:</b> all subprojects' developments and operation are fully supported and are expected to be completed as soon as possible to benefit more areas and people  .

According to table 31, three forms listed above are mainly applied to carry out public consultation in all projects. It turns out that the public support the implementation of projects and they expect projects to be completed as soon as possible to benefit more areas and people.

### 3.7 Grievance Redress Mechanism

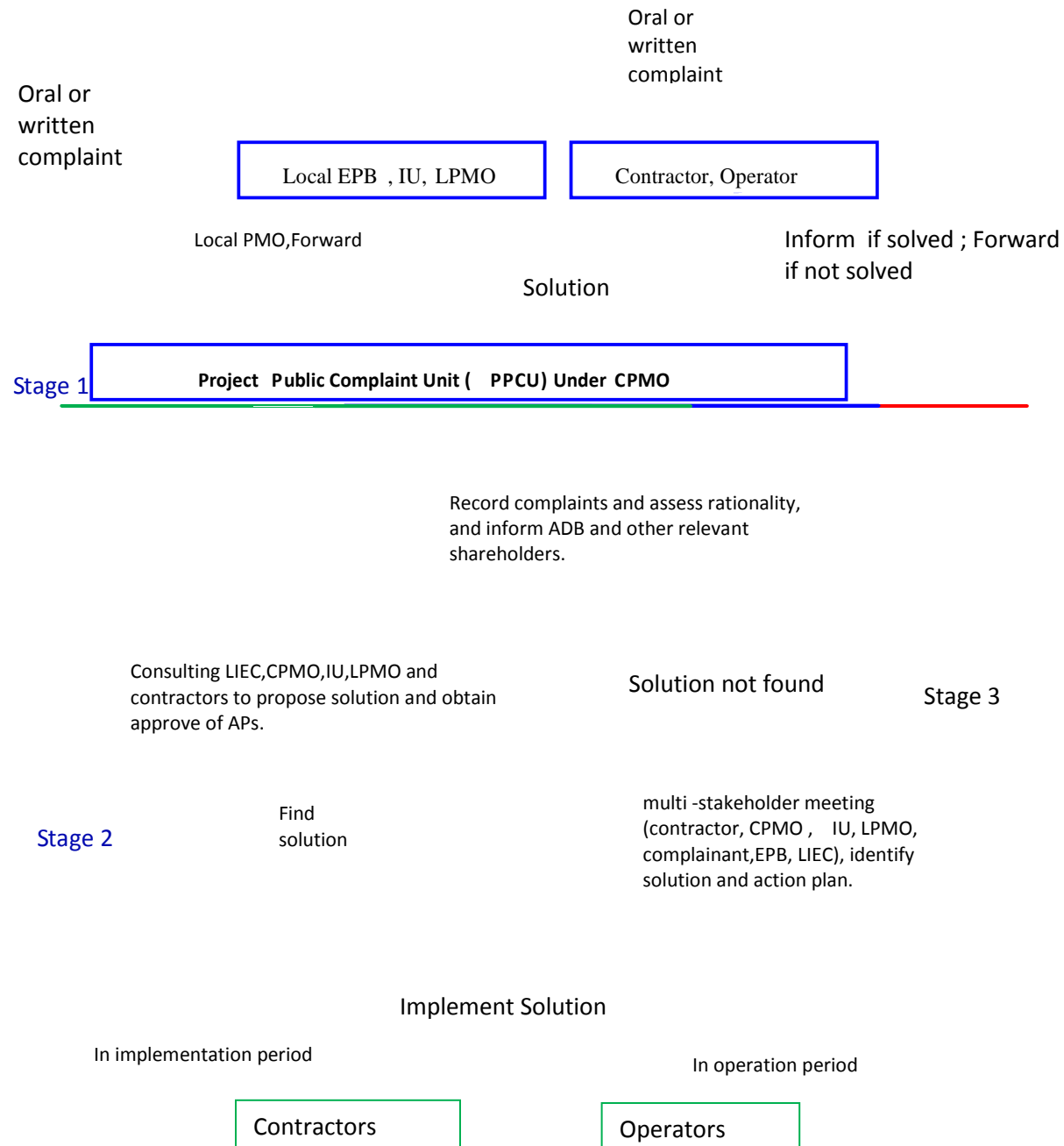
A grievance redress mechanism (GRM) was established in each project city/county in compliance with ADB's SPS (2009) requirement to prevent and address community concerns and assist the project to maximize environmental and social benefits. In addition to serving as a platform to resolve grievances, the GRM has been designed to help achieve the following objectives: (i) open channels for effective communication, including the identification of new environmental issues of concern arising from the project; (ii) prevent and mitigate any adverse environmental impacts on communities caused by project implementation and operations; (iii)

improve mutual trust and respect and promote productive relationships with local communities; and  
(iv) build community acceptance of the project.

The GRM will be accessible to diverse members of the community, including more vulnerable groups such as women and youth. Multiple points of entry, including face-to-face meetings, written complaints, telephone conversations, or e-mail, will be available. Opportunities for confidentiality and privacy for complainants will be honored where this is seen as important.

There are something related to GRM procedure and time frame in the following Matrix.





(i) **Stage 1:** If a concern arises during construction, the affected person or group will submit a written or oral complaint to the contractor (or the contractor's environment health and safety officer or any on site construction personnel). Whenever possible, the contractor will resolve the issue directly with the affected person. The contractor will give a clear reply within one week. If successful, the contractor will inform the concerned IU, LPMO and the PPCC accordingly.

(ii) **Stage 2:** If no appropriate solution can be found, the contractor has the obligation to forward the complaint to the PPCU within five (5) working days. The complainant may also decide to submit a written or oral complaint to the PPCU, either directly or via one of the GRM entry points (IU, LPMO, local EPB). For an oral complaint, proper written records must be made. The PPCU will assess the eligibility of the complaint, identify the solution and provide a clear reply for the complainant within five (5) working days. The environment consultants of the loan implementation consultancy service will assist the PPCU in replying to the affected person, if requested to do so. The PPCU will also inform the ADB project team and submit all relevant documents. Meanwhile, the PPCU will timely convey the complaint/grievance and suggested solution to the contractors or operators of facilities as well as the complainant. The contractors during construction and the operators during operation will implement the agreed upon redress solution and report the outcome to the PPCU within seven (7) working days.

(iii) **Stage 3:** In case no solution can be identified by the PPCU, or the complainant is not satisfied with the proposed solution, the PPCU will organize, within two weeks, a multi-stakeholder hearing (meeting) involving all relevant stakeholders (including the complainant, contractor, facility operator, local EPBs, CPMO, IU). The hearing shall identify a solution acceptable to all, and formulate an action plan. The contractors during construction and the operator during operation will implement the agreed-upon redress solution and report the outcome to the PPCU. The PPCU shall accept complaints free of charge. Any cost incurred should be covered by the contingency of the project. The grievance procedures will remain valid throughout the duration of project construction and until project closure. The started subprojects have within the agreed upon time frame established multilevel appeal and complaint mechanism (contractor – owner unit -LEPB-CPMO) and set up complaints hot lines. The specific information is in Table 32.

**Table 31: The General Situation of the Grievance Redress Mechanism Established by the Started Subprojects**

<b>Institution Name</b>	<b>Staff Name</b>	<b>Title</b>	<b>Qualification or Had Environment Management (Supervision) Training or Not</b>	<b>Contact</b>
Chong Qing ADB PMO	Zhou Feidong	ADB Project Officer	Trained by the ADB expert of environment management	18725962416
<b>Rongchang Rongfeng River Flood Management Subproject, referred to as RCRF</b>				
Rongchang County Environmental Protection Bureau	Jiang Zhongcai	Senior Engineer	Environment Supervision and Management	18996100166
Rongchang County Project Management Office	Huang Anxiang	Section Chief	Trained by the ADB expert of environment management	15922989718
Rongchang Hongyu Water Resources Development Co., Ltd.	Hu You	Senior Engineer	Trained by the ADB expert of environment management	13509474713
Sichuan Zhongcheng Coal Construction (Group) Co., Ltd.	Xu Weijun	Project Manager	Construction and Environment Management	13883706999
Chongqing Hongyu Water Conservancy Consultative Co., Ltd.	Li Kai	Project Director	Supervising Engineer	13594536918
<b>Wulong Wujiang Flood Management Subproject, referred to as WLWJ</b>				
Wulong Environment Buruea	Zeng Fang	Section Chief	Environment Supervision and Management	13896509995

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<b>Institution Name</b>	<b>Staff Name</b>	<b>Title</b>	<b>Qualification or Had Environment Management (Supervision) Training or Not</b>	<b>Contact</b>
Wulong PMO	Qin Hui	Section Chief	Trained by the ADB expert of environment management	13896689358
Wulong Urban-Rural Development Group	Chen Bin	General Manager	Trained by the ADB expert of environment management	15330557766
Gezhouba 5 Construction (Group) Co., Ltd.;	Yan Bing	Project Manager of the Constructor	Construction and Environment Management	0717-6711042
Anhui Hydrological Development Co.,Ltd.;	Zheng Bishui	Project Manager of the Constructor	Construction and Environment Management	023-67735119
Jiangsu Yancheng Hydrological Construction Co.,Ltd.	Zhang Hongyu	Project Manager of the Constructor	Construction and Environment Management	0515-88335420
Chongqing Jianghe Engeneering Construction Supervision Co., Ltd.;	Xiao Wei	Project Supervisor	Supervising Engineer	13996939442
<b>Wanzhou District Yangliu Water Supply Subproject, referred to as WZYL</b>				
Wanzhou District Environmental Protection Bureau	Liu Feng	Section Chief	Environment Supervision and Management	13983506758
Wanzhou District	Jing Li	Section Chief	Trained by the ADB expert of environment	18996513299

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<b>Institution Name</b>	<b>Staff Name</b>	<b>Title</b>	<b>Qualification or Had Environment Management (Supervision) Training or Not</b>	<b>Contact</b>
Project Management Office			management	
Wanzhou Water Company	Chen Guangming	Person in Charge at the Project Site of the Owner Unit	Trained by the ADB expert of environment management	13709439712
Xinjiang Corps Water Resources and Hydropower Engineering Group Co., Ltd. and Shanxi Metallurgical Rock-Soil Engineering Reconnaissance General Company	Cao Furong	Project Manager of the Construction Unit	Construction and Environment Management	13883738766
Hubei Changjiang Project Supervision & Consultancy Co.,Ltd.	Peng Jianfeng	Project Supervisor of the Supervision Unit	Chief Supervising Engineer	13886100805
<b>Fuling Road Subproject, referred to as FLLW</b>				
Fuling EPB	Fu Xiaochi	Director	Environment Supervision and Management	023-72899936
Fuling Zhonglong Transportation Co.,Ltd	Shi Bo	Section director	Trained by the ADB expert of environment management	023-72288242
Chongqing Qunzhou Group Co.,Ltd	Yin Fulin	Deputy manager	Trained by the ADB expert of environment management	13896729903
Fuling Transportaion	Wang Chonggang	Project manger	Construction and Environment Management	13996729672

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<b>Institution Name</b>	<b>Staff Name</b>	<b>Title</b>	<b>Qualification or Had Environment Management (Supervision) Training or Not</b>	<b>Contact</b>
construction Supervisor Co.,Ltd	Zhang Meng	Supervising representative	Chief Supervising Engineer	13996936733
<b>Shizhu Road subproject, referred to as SZLW</b>				
Shizhu County EPB	Chen Xiaobo	Section director	Environment Supervision and Management	
Shizhu PMO	Liu Fudi	Section director	Trained by the ADB expert of environment	13908279910
Shizhu Transportation construction general Co. Ltd.,	Cui Jianfeng	Section director	Trained by the ADB expert of environment management	13452259101
Jiangxi Modern road bridge Engineering Group Co.,	Gong Wen	Project manager	Construction and Environment Management	12072020070
Hunan Foreign Construction Group Co. , Ltd.	Yang Song			18225264345
Chong Qing Transportation Supervising Consulting Co., Ltd.	Li Xiaosong	General supervisor	Chief Supervising Engineer	17783809964
<b>Cheng Kou County Road Network Improvement Subproject, referred to as CKLW</b>				
Chengkou County EPB	Li Xingzhong	Section director	Environment Supervision and Management	023-59221458
Chengkou PMO	Tian Hao	Section director	Trained by the ADB expert of environment	15023852310
Urban traffic road construction I project department	Ran Zhao	Representative	Trained by the ADB expert of environment management	17749990988
Jiangxi Road Bridge and Tunnel Engineering Co., LTD	Zhao Qun	Project manager	Construction and Environment Management	18052072351
Chong Qing traffic engineering supervising consulting Co., Ltd.	Fu Jiping	General supervisor	Chief Supervising Engineer	15310507892

## 4 CONCLUSION AND RECOMMENDATION

### Conclusion

According to the above content, it can be seen that the environment management plans of the Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject and Wanzhou District Yangliu Water Supply Subproject, Fuling and Shizhu road subproject and Chengkou County Urban-rural Road Network Improvement Subproject, during the civil engineering construction, have been basically implemented, which can be primarily presented by:

1. Institutional responsibility: all sub-projects have set up integrated environmental management institutions in accordance with EMP and clarified respective responsibilities and followed environmental management throughout the whole process;

2. Contractor's obligation and performance: contractor accepts proprietor unit's and supervising unit's management during the construction; contractor and supervisor carry out internal monitoring regularly in accordance with requirements and submit supervising monthly report to proprietor; at the same time, strictly implement environmental alleviation measures according to EMP and continually improve and develop corresponding environmental alleviation measures.

3. Implementation of alleviation measures: according to site inspection, among all sub-projects under construction, WZYL adopted corresponding environmental alleviation measures according to EMP and because RCRF just started, some environmental alleviation measures were not given enough time to be implemented and improved required by EMP. For example, for the section of the project, construction camps have not been set up at site and only temporary storehouse is established so construction workers have to rent houses nearby and bio-toilets and septic-tank disposal and discharge systems have not been installed at construction camps buildings. Wulong subproject is now at the commencement preparation stage, and the related mitigate measures have not been conducted, and it will be reflected in the next report.

4. Monitoring plan and result: for subprojects under construction, WZYL carried out monitoring of all parameters in accordance with plan listed in EMP and results all meet related standards. Only monitoring of air environment did not implement in accordance with plan (only undertook monitoring at nearby sensitive points around construction sites); RCRF undertook

monitoring of all parameters in accordance with plan listed in EMP to a large degree and its results all meet related standards while monitoring of air environment and surface water environment did not implement in accordance with the plan( air environment: only undertook monitoring at nearby sensitive points around construction sites; surface water: only select a monitoring point at downstream)

5. Training: during this reporting period, all subprojects have conducted a corresponding ability improvement and training;

6、Public consultation and complaint: after the notice of environmental impact assessment was conducted to the subprojects on the website of environmental protection agency during the early construction period, complaint organization and hotline were established in the primary department in the villages and towns of projects. Due to the restrictions, different forms of public consultations were conducted to the subprojects (such as Wanzhou, Wulong and Chengkou because subprojects were in the towns for construction where population was dense. Contractors would organize the neighbouring residents to have an informal discussion occasionally and have notice about the construction situation of at the construction site and department of project. However, the population of subprojects along Shizhu and Fuling was relatively less. Thus, notice was only conducted to the construction site and project department). Complaint hotline was established in the primary government of subprojects. It was strictly conducted according to the requirement to deal with the complaint. From the current feedback result, the public of subprojects had supportive attitude to the implementation of projects. It was expected to finish the project as soon as possible so as to enlarge the beneficiary range.

7、All in all, EMP and adverse environmental effects alleviation measures formulated at early stage have been implemented effectively and yielded good results. Most of the construction camps and construction sites are minimized from waste water, construction dust, smoke dust and noise disturbance and solid waste is discarded or discharged orderly. Construction sites and its surrounding environment are in good quality and complaints have not been received so far in terms of environmental pollution.

## Recommendations

Rongchang Rongfeng River Flood Management Subproject has not detected river mud, but the leader of EA has contacted the detection unit and wait to sign the contract. After signing the contract, the detecting unit can take sample in field, test and report. It is recommended Rongchang Rongfeng River Flood Management subproject to detect, take sample and prepare testing report .

2. It is recommended that the subproject IU, Supervising Unit and Ownership of each subproject implementation unit to implement the environment impacts mitigation measures as soon as possible; according to EMP, establish a corresponding follow-up system and



implementation plan of the mitigation measures that needs to be improved should be made by the construction unit, the supervision unit and the owner unit of each subproject (it shall although any idea about the follow-up system and implementation plan has not been made, once done, it will be carried out according to environmental mitigation measures in EMP to meet the demands of environmental assessment), so that the environment protection can be carried out smoothly and deeply in the next stage of each subproject.

## **5 PICTURES**

The following pictures are the pictures of pollution prevention and environment protection on the field of Rongchang Rongfeng River Flood Management Subproject, Wulong Wujiang Flood Management Subproject and Wanzhou District Yangliu Water Supply Subproject, Fuling and Shizhu road subproject and Chengkou County Urban-rural Road Network Improvement Subproject.

**Rongchang Rong Feng River Flood Management Project (Section A Engineering)**



Paved river banks and the improvement of river channel have been formed.

**Rongchang Rong Feng River Flood Management Project First Section Engineering**



cultural propaganda of the IA



truck wheel washing



Prevention measures for soil and water loss in deposit site



**Traffic wash pond in and out the construction site**



**Coverage of the material trunk in and out the construction site**



**Slope covering and preventing measures in construction area**



**construction safety prevention and protection measure and warning sign**





**road in construction and road after flatted**



**the base of gabion starts to be excavated**



**Gabion is in construction**



**precast concrete block**



**river channel dredging**





**Gabion has become river**



**river channel has been dredged**

Leader of the IA has contacted detection unit and waits to sign the contract, after the contract is signed, it can be take sample in field and detect.



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**Wan Zhou Yangliu Water Supply Subproject**



gate of construction site



office in field



brief introduction of the project



environmental protection signboard



**Automatic vehicle flushing facility**



**pavement for concrete construction**



Slope covering



Safety prevention



Construction progress

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Wulong Wujiang Flood Management subproject



environment management



major risk resource



Retaining wall for safety prevention





safety control in neighbor



slope covered by colored strip



meeting on safety production organized by Wulong water authority



2016 traing on fire safety knowledge



entrance of section A



traffic flushing in section A

重大危险源公示牌					
序号	危险源名称	危险源类别	危险源等级	危险源描述	危险源位置
1	危险化学品	危险化学品	重大危险源	危险化学品	危险化学品
2	特种设备	特种设备	重大危险源	特种设备	特种设备
3	建筑施工	建筑施工	重大危险源	建筑施工	建筑施工
4	火灾	火灾	重大危险源	火灾	火灾
5	爆炸	爆炸	重大危险源	爆炸	爆炸
6	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
7	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
8	物体打击	物体打击	重大危险源	物体打击	物体打击
9	坍塌	坍塌	重大危险源	坍塌	坍塌
10	触电	触电	重大危险源	触电	触电
11	淹溺	淹溺	重大危险源	淹溺	淹溺
12	火灾	火灾	重大危险源	火灾	火灾
13	爆炸	爆炸	重大危险源	爆炸	爆炸
14	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
15	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
16	物体打击	物体打击	重大危险源	物体打击	物体打击
17	坍塌	坍塌	重大危险源	坍塌	坍塌
18	触电	触电	重大危险源	触电	触电
19	淹溺	淹溺	重大危险源	淹溺	淹溺
20	火灾	火灾	重大危险源	火灾	火灾
21	爆炸	爆炸	重大危险源	爆炸	爆炸
22	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
23	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
24	物体打击	物体打击	重大危险源	物体打击	物体打击
25	坍塌	坍塌	重大危险源	坍塌	坍塌
26	触电	触电	重大危险源	触电	触电
27	淹溺	淹溺	重大危险源	淹溺	淹溺
28	火灾	火灾	重大危险源	火灾	火灾
29	爆炸	爆炸	重大危险源	爆炸	爆炸
30	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
31	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
32	物体打击	物体打击	重大危险源	物体打击	物体打击
33	坍塌	坍塌	重大危险源	坍塌	坍塌
34	触电	触电	重大危险源	触电	触电
35	淹溺	淹溺	重大危险源	淹溺	淹溺
36	火灾	火灾	重大危险源	火灾	火灾
37	爆炸	爆炸	重大危险源	爆炸	爆炸
38	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
39	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
40	物体打击	物体打击	重大危险源	物体打击	物体打击
41	坍塌	坍塌	重大危险源	坍塌	坍塌
42	触电	触电	重大危险源	触电	触电
43	淹溺	淹溺	重大危险源	淹溺	淹溺
44	火灾	火灾	重大危险源	火灾	火灾
45	爆炸	爆炸	重大危险源	爆炸	爆炸
46	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
47	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
48	物体打击	物体打击	重大危险源	物体打击	物体打击
49	坍塌	坍塌	重大危险源	坍塌	坍塌
50	触电	触电	重大危险源	触电	触电
51	淹溺	淹溺	重大危险源	淹溺	淹溺
52	火灾	火灾	重大危险源	火灾	火灾
53	爆炸	爆炸	重大危险源	爆炸	爆炸
54	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
55	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
56	物体打击	物体打击	重大危险源	物体打击	物体打击
57	坍塌	坍塌	重大危险源	坍塌	坍塌
58	触电	触电	重大危险源	触电	触电
59	淹溺	淹溺	重大危险源	淹溺	淹溺
60	火灾	火灾	重大危险源	火灾	火灾
61	爆炸	爆炸	重大危险源	爆炸	爆炸
62	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
63	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
64	物体打击	物体打击	重大危险源	物体打击	物体打击
65	坍塌	坍塌	重大危险源	坍塌	坍塌
66	触电	触电	重大危险源	触电	触电
67	淹溺	淹溺	重大危险源	淹溺	淹溺
68	火灾	火灾	重大危险源	火灾	火灾
69	爆炸	爆炸	重大危险源	爆炸	爆炸
70	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
71	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
72	物体打击	物体打击	重大危险源	物体打击	物体打击
73	坍塌	坍塌	重大危险源	坍塌	坍塌
74	触电	触电	重大危险源	触电	触电
75	淹溺	淹溺	重大危险源	淹溺	淹溺
76	火灾	火灾	重大危险源	火灾	火灾
77	爆炸	爆炸	重大危险源	爆炸	爆炸
78	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
79	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
80	物体打击	物体打击	重大危险源	物体打击	物体打击
81	坍塌	坍塌	重大危险源	坍塌	坍塌
82	触电	触电	重大危险源	触电	触电
83	淹溺	淹溺	重大危险源	淹溺	淹溺
84	火灾	火灾	重大危险源	火灾	火灾
85	爆炸	爆炸	重大危险源	爆炸	爆炸
86	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
87	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
88	物体打击	物体打击	重大危险源	物体打击	物体打击
89	坍塌	坍塌	重大危险源	坍塌	坍塌
90	触电	触电	重大危险源	触电	触电
91	淹溺	淹溺	重大危险源	淹溺	淹溺
92	火灾	火灾	重大危险源	火灾	火灾
93	爆炸	爆炸	重大危险源	爆炸	爆炸
94	中毒和窒息	中毒和窒息	重大危险源	中毒和窒息	中毒和窒息
95	高处坠落	高处坠落	重大危险源	高处坠落	高处坠落
96	物体打击	物体打击	重大危险源	物体打击	物体打击
97	坍塌	坍塌	重大危险源	坍塌	坍塌
98	触电	触电	重大危险源	触电	触电
99	淹溺	淹溺	重大危险源	淹溺	淹溺
100	火灾	火灾	重大危险源	火灾	火灾

Billboard for major danger resource in section A



entrance of section B



prevention facility nearby section B



spray water on temporary road of section B



safety prevention facility nearby section B



Entrance of section C (enclosed construction )



Safety prevention facility nearby section c





Retaining wall for construction pavement in section C



Slope covered in section C

**PRC:ADB-Financed Chongqing Urban-rural Infrastructure Development II Project External Environmental Monitoring Report**  
**Fuling Road Improvement section A (Jiaoshi-Damu, completed)**



**Safety prevention facility**



**End point of the project**



**Project profile and gate**



**Original road was broken mechanically**



**Section A has been completed and put into use**

**PRC:ADB-Financed Chongqing Urban-rural Infrastructure Development II Project External Environmental Monitoring Report**  
**Shizhu County Road Improvement Subproject (section A)**



**Leveling the roadbed**



**Roadbed is formed**



**Subgrade is rolled by road roller**



**ubgrade gravel layer**





**Retaining wall in construction**



**The vault was pouring concrete**



**Steel processing tent**



**Vibrating spear was being used**



**Retaining wall have been built**

**PRC:ADB-Financed Chongqing Urban-rural Infrastructure Development II Project External Environmental Monitoring Report**  
**Cheng Kou Urban-Rural Road Improvement Subproject (section A)**



**Chengkou Transportation Committee, Yanhe Village Government, owner, supervising unit, IA was discussing problems on section A**



**Auditors was surveying field and putting forward suggestion and advice**



County Transportation Committee was surveying field and putting forward suggestion and advice



Owner was checking safety and quality on IU