



## 1. Project Data

Project ID  
P106956

Project Name  
CN - Ningbo New Countryside Development

Country  
China

Practice Area(Lead)  
Social, Urban, Rural and Resilience Global Practice

L/C/TF Number(s)  
IBRD-78490

Closing Date (Original)  
31-Mar-2016

Total Project Cost (USD)  
157,090,000.00

Bank Approval Date  
25-Feb-2010

Closing Date (Actual)  
31-Mar-2016

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	50,000,000.00	0.00
Revised Commitment	50,000,000.00	0.00
Actual	50,000,000.00	0.00

### Sector(s)

Other Water Supply, Sanitation and Waste Management(56%):Rural and Inter-Urban Roads(41%):Sub-National Government(2%):Public Administration - Water, Sanitation and Waste Management(1%)

### Theme(s)

City-wide Infrastructure and Service Delivery(52%):Rural services and infrastructure(40%):Water resource management(6%):Other public sector governance(1%):Municipal governance and institution building(1%)

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## 2. Project Objectives and Components

### a. Objectives

The Project Appraisal Document (PAD) (p 4) states that the objective of the project was “to improve rural waste water management in selected villages and enhance infrastructure and township management in a small town, in support of the New Countryside Development (NCD) Program in Ningbo Municipality.”

According to the Loan Agreement of April 19, 2010 (p.5) the objective of the project was “to support Ningbo Municipality in the implementation of its new Countryside Development Program by improving rural wastewater management in selected villages and enhancing infrastructure and township management in small towns.”



This validation will use the objective as stated in the Loan Agreement.

- b. Were the project objectives/key associated outcome targets revised during implementation?

No

- c. Components

The project consisted of three components:

**Component 1: Rural Wastewater Management (appraisal estimate US\$47.96 million, actual US\$60.8 million, 127% of appraisal estimate):** This component was to finance the implementation of sustainable rural wastewater management technology in about 150 selected villages in six counties/cities/districts in Ningbo Municipality. The targeting and prioritizing of villages would be based on their location near water surface, their ability and willingness to pay for wastewater services, and their overall poverty level.

**Component 2: Chunhu Town Infrastructure Development (appraisal estimate US\$78.49 million, actual US\$103.36 million, 132% of appraisal estimate):** This component was to finance the construction of a four lane, class I road between Chunhu Town and Fenghua City, transmission mains from Fenghua City to Chunhun town, including renovation of the Chunhu Town water distribution network, and construction of trunk and collection sewers and a wastewater treatment plant to service Chunhu Town.

**Component 3: Capacity Building and Implementation Support (appraisal estimate US\$1.96 million, actual US\$1.53 million, 78% of appraisal estimate):** This component was to finance capacity building and implementation support for rural wastewater management and to Fenghua City Investment Company, support for the preparation of the 12th five-year plan on NCD in Fenghua City, and support for capacity building and energy-efficiency demonstration in Chunhu Township.

- d. Comments on Project Cost, Financing, Borrower Contribution, and Dates

**Project Cost:** The project was estimated to cost US\$142.19 million, actual cost was US\$165.69million (129% of appraisal estimate).

**Financing:** The project was to be financed by a US\$50 million loan by the International Bank for Reconstruction and Development, which was completely disbursed.

**Borrower Contribution:** The borrower was to contribute US\$107.09 million. Actual contribution was US\$120.33 million (112% of appraisal estimate).

**Dates:** The project was not restructured.

### 3. Relevance of Objectives & Design

- a. Relevance of Objectives

**High:** At project appraisal in 2009, 55% of the Chinese population lived in rural areas. 50% of administrative villages had no access to tap water, and 60% of the rural population lacked access to sanitary toilets. Furthermore, there was no institutional and regulatory framework supporting the development of rural infrastructure. China's New Countryside Development Program (NCD), which was developed in 2003, was aiming to target several aspects of growth, including balancing the social and economic development of cities and the countryside, promoting modern agriculture and sustainable increases in rural incomes, improving the basic infrastructure in villages and raising the standards of living. Also, China's 11th Five Year Plan (2006 to 2010) identified the NCD program as one of the country's key development strategies. The New Countryside Development Project (NNCDP) supported the NCD plan and contributed to China's broader NCD program. Furthermore, the project was in line with the Bank's Country Partnership Strategy (2006-2010) which included a pillar on "reducing poverty, inequality and social exclusion." The project is also in line with two pillars of the Bank's current Country Partnership Strategy (2013-2016) "supporting greener growth" and "promoting more inclusive development".

Rating



High

b. Relevance of Design

**Substantial:** The project's design was relevant and built on previous Bank-financed projects. The planned activities to support Ningbo Municipality in the implementation of its new Countryside Development Program by improving rural wastewater management in selected villages and enhancing infrastructure and township management in small towns were logically and plausibly linked to the achievement of the project objective. However, the project design included a number of small technical assistance sub-components, which was overly ambitious. The project design did not take into account the exogenous risk of China's economy slowing down. Less development in the economic zone close to Chunhu Town had a negative impact on wastewater output.

Rating  
Substantial

## 4. Achievement of Objectives (Efficacy)

### Objective 1

#### Objective

Improving rural wastewater management in selected villages:

#### Rationale

##### Outputs:

- The Chunhu wastewater treatment plant with a treatment capacity of 10,000 m<sup>3</sup>/day was constructed, achieving the target
- A 19km long Chunhu wastewater collection main and branch pipeline was constructed, achieving the target. 10km of the 19km long network was financed by the project. The remaining 9km was financed by domestic counterpart funds.
- 144 villages have completed wastewater treatment infrastructure, not achieving the target of 150 villages. This indicator lacked a baseline.
- 10 km of Chunhu Town sewage network was constructed, achieving the target. This indicator lacked a baseline.
- Technical assistance was provided to educate and raise awareness in project villages regarding the importance of wastewater treatment, different technology choices, benefits and responsibilities of asset ownership, operations and maintenance, revenue mobilization, and hygiene education. These outputs were not linked to an indicator and therefore did not have any target or baseline.
- Two domestic study trips were organized to learn about applied treatment technologies and advanced methods in rural wastewater treatment.

##### Outcomes:

- 45,500 households in the project area received the planned rural wastewater management services, surpassing the target of 41,000 households. This indicator lacked a baseline.
- The wastewater treatment rate in Chunhu Town was 84%, surpassing the target of 70%. This indicator lacked a baseline.
- Environmental monitoring reports show that the pollution reduction rates were significant. In Jiangbei County the average pollution reduction rate across five main pollutant types was between 90 and 99%. These outcomes were not linked to an indicator and therefore did not have any target or baseline.
- The standards for rural wastewater treatment, which were devised under the project, were adopted in Ningbo Municipality and across the province it is located in.

Rating  
Substantial



## Objective 2

### Objective

Support Ningbo Municipality in the implementation of its new Countryside Development Program by enhancing infrastructure:

### Rationale

#### Outputs:

- 15 km of water supply transmission mains were built, achieving the target. This indicator lacked a baseline.
- 14.5 km of newly built and rehabilitated water distribution networks were built, surpassing the target of 13 km. This indicator lacked a baseline.
- A booster pump station with a capacity of 20,000m<sup>3</sup> was constructed, achieving the target.
- A 6.2km access road between Fenghua City and Chunhu Town was built. This outcome was not linked to an indicator and therefore did not have a target or baseline.

#### Outcomes:

- 76,500 people in 25,500 households in Chunhu received water meeting national quality standards, achieving the target of 76,000 people.
- 166,000 people were provided with access to "improved sanitation facilities" under the project, surpassing the target of 164,000 people.
- 13,933 cars have used the newly constructed Fenghua-Chunhu access road, surpassing the target of 13,000 cars. This indicator lacked a rate of time.
- The Chunhu-Fenghua access road reduced the distance from Chunhu Town to the center of Fenghua City from 24 km to 14.2 km with traveling time shortening from 40 to 15 minutes. This outcome was not linked to an indicator and therefore did not have a target or baseline.

### Rating

Substantial

## Objective 3

### Objective

Support Ningbo Municipality in the implementation of its new Countryside Development Program by enhancing township management in small towns:

### Rationale

#### Outputs:

- Energy efficiency and construction guidelines for rural housing projects were developed and implemented in Silian and Xixie villages in Chunhu, achieving the target. Two residential buildings were constructed. However, due to budgetary constraints the solar panels could not be installed.
- The Chunhu Middle School developed an assessment plan and guidelines for a green campus and implemented recommendations that were feasible within the budget.
- Research reports on the status of energy efficiency of rural housing in Silian village were drafted.
- The Chunhu Town sustainable energy action plan was developed.
- A proposal for Ningbo Countryside Development Plan for the upcoming 12th Five Year Plan (2011-2015) and Chunhu Town master plan was completed, achieving the target. Also, village construction plans for two demonstration towns were developed and capacity was built for Fenghua planning institutes in urban planning concepts, design concepts and village construction plans.
- Learning activities were conducted to build capacity in business investment promotion and business development among Chunhu township management.
- An e-government system was developed in order for agencies to share information, documents and administrative services.
- A study trip and a seminar focusing on the fishery industry were conducted.

#### Outcomes:

No outcomes were reported under this component.



Rating  
Modest

## 5. Efficiency

**Substantial:** Both, the PAD and the ICR conducted an Economic analysis.

The PAD identified the project's benefits as improvement of quality of soil and water bodies, increases in productivity and livelihood, increases in land and property values, improvements to health and living standards, reduced cost of water treatment in poorer communities, improved long-term security of drinking water sources, improved access to better public services, energy savings and pollution reduction.

The PAD included a cost-benefit analysis to assess the economic viability of the access road component. An increase in land value was included into the analysis since it was believed that the access road would increase the value of the undeveloped land along the new road.

- Including an increase in land value: The Economic Internal Rate of Return (EIRR) of the road investment was 16.96% and the Net Present Value (NPV) was RMB 450.89 million. The benefit-cost ratio was 2.4.
- Excluding an increase in land value: The EIRR was 14.18% and the NVP was RMB 331.04 million. The benefit-cost ratio was 3.3 respectively.

A sensitivity analysis (20% increase in in capital costs and 20% decrease in economic benefits) showed an EIRR of 12.25%.

- Including increased land value: The ICR estimated an EIRR of 16.7% and a NPV of RMB 443 million for the road investment, The benefit-cost ratio was 2.3.,
- Excluding increased land value: The ICR estimated an EIRR of 13.7% and NPV of RMB 319 million excluding an increased land value. The benefit-cost ratio was 3.2.

Both benefit-cost ratios were marginally lower than the estimates stated in the PAD. A sensitivity analysis showed (assuming a 20% increase in capital costs and 20% decrease in economic benefits) an EIRR of 12.1% with an increase in land value and an EIRR of 10.2% without an increase in land value. The ICR states that the lower EIRR, NPV and cost-benefit ratio at the completion state were due to exchange rate fluctuations and higher resettlement costs.

The ICR analyzed the administrative efficiency of the project and provided a comparison with similar projects. The analysis showed that the project took the average length of time for project preparation (14 months). However, the preparation cost was approximately 14% higher than the average. Also, actual investment costs exceeded the estimates as stated in the PAD across all components by a total of 17% due to exchange rate fluctuations and higher resettlement costs.

Taking everything together efficiency is rated Substantial.

Efficiency Rating  
Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

Rate Available?

Point value (%)

\*Coverage/Scope (%)



Appraisal	✓	16.96	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	16.70	0 <input type="checkbox"/> Not Applicable

\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

Relevance of objective was High given that 50% of administrative villages had no access to tap water, and 60% of the rural population lacked access to sanitary toilets. Relevance of design was Substantial and the planned activities were logically and plausibly linked to the achievement of the project objectives. Achievement of the objective to improve rural wastewater management in selected villages was Substantial. Achievement of the objective to support Ningbo Municipality in the implementation of its new Countryside Development Program by enhancing infrastructure was Substantial. Achievement of the objective to support Ningbo Municipality in the implementation of its new Countryside Development Program by enhancing township management in small towns was Modest. Efficiency was rated Substantial. Taking everything together the outcome rating is Moderately Satisfactory.

- a. Outcome Rating  
Moderately Satisfactory

## 7. Rationale for Risk to Development Outcome Rating

The overall risk to development outcome rating is Substantial. The government continues to be committed to the NCD program. However, there are several challenges that could have a negative impact on the sustainability of the project's achievements. First, there is a risk that given the villages and third-party providers' limited capacity, it will be challenging to properly maintain the wastewater treatment systems potentially resulting in environmental degradation. To ensure the compliance with Operations & Maintenance procedures will require close supervision. Second, there is a risk that the infrastructure could get damaged by natural hazards as a result of typhoons and flooding. In order to mitigate this risk, Operations & Maintenance budgeting included damage repair costs. Third, there is a risk of continued slow economic growth, which could have an impact on the demand for water and wastewater treatment, resulting in low operating capacity of the infrastructure and inefficacy. Even though mitigation measures are adequate, the risk to development outcome rating is Substantial.

- a. Risk to Development Outcome Rating  
Substantial

## 8. Assessment of Bank Performance

- a. Quality-at-Entry

The Bank team consisted of specialists from relevant areas. The project took lessons learned from other infrastructure projects in China and around the world into account.

The Bank identified relevant risks such as the failure to improve wastewater management in rural areas, insufficient sewer connections in rural wastewater sub-projects in villages, and Project Implementation Units not having enough experience in financial management and disbursement in Bank-financed projects. However, several risks that were not identified or not mitigated adequately materialized. For example in the rural wastewater component, the lack of implementation experience of a community participation approach and lack of capacity in various Project Implementation Units to perform project and financial management were not identified and led to initial implementation delays. Also, weak interest among local design institutes, as well as the poor quality of schemes submitted by design institutes were not identified as risks. Given these moderate shortcomings, Quality at Entry is rated Moderately Satisfactory.



Quality-at-Entry Rating  
Moderately Satisfactory

b. Quality of supervision

The Bank conducted a total of 12 supervision missions. These missions also included site visits to monitor the status and operation of the infrastructure funded by the project. When the project experienced implementation delays in early 2013, the Bank management increased the supervision budget by US\$20,000 to conduct extensive training on project management, procurement, financial management, social and environmental safeguards and contract management.

The Bank team addressed issues proactively. When the Chunhu wastewater treatment plant's was used at a low capacity after its completion in April 2012 since the necessary secondary and tertiary networks had not been built, the Bank stressed the urgency of the network's construction and provided close supervision.

Overall, the Bank team focused more on the implementation of the infrastructure components than the technical assistance sub-components, which led to implementation shortcomings such as lack of monitoring progress and capacity building.

Quality of Supervision Rating  
Moderately Satisfactory

Overall Bank Performance Rating  
Moderately Satisfactory

## 9. Assessment of Borrower Performance

a. Government Performance

The Ningbo Municipal Government was committed to the implementation of the project and cooperated with the implementing agencies and the Bank to ensure a successful project preparation and implementation. The government provided sufficient counterpart funds and processed reimbursements in a timely manner. Also, the government supported various projects under the components financially. In particular, the government fully covered the costs of indoor household connections, some costs of Operations & Maintenance in the rural waste water component and Operations & Maintenance for the Chunhu-Fenghua access road and the Chunhu Town wastewater treatment components.

The Ningbo Municipal Government also supported the promotion of Operations & Maintenance guidelines for the rural wastewater component, which helped the municipality to set standards for all its villages.

Government Performance Rating  
Satisfactory

b. Implementing Agency Performance

The project was implemented by several implementing agencies:

**The Ningbo Municipal Project Management Office (NMPMO): Satisfactory:** The NMPMO was responsible for the overall coordination of the project. The NMPMO benefited from its experience in implementing Bank projects and was able to support sub-Project Management Offices and Project Implementing Units. Initially the project experienced some implementation delays due to lacking coordination and training among other implementing agencies. Therefore, in 2012 a new Deputy Director was put in place to strengthen the NMPMO's coordination role.

**The Ningbo Rural Wastewater Treatment Project Management Office (NRWTPMO): Satisfactory.** The NRWTPMO was established to oversee the implementation of the rural wastewater management component. The NRWTPMO was responsible for ensuring that the counties/cities/districts would conform to the Framework for Implementation of Rural Wastewater Management and allocate funds. Initially the NRWTPMO lacked capacity and staff was not familiar with project management and Bank procedures, which led to initial implementation delays. However, the Bank and the NMPMO addressed these issues by providing training. The NRWTPMO played a significant role in ensuring a better understanding of the community participation approach and obtaining the approval of the project's



proposed standard for rural wastewater discharge, which became the basis for a new province-wide standard.

**The Fenghua City Investment Company Ltd (FCIC): Moderately Satisfactory.** The FCIC was responsible for the implementation of the Chunhu Town infrastructure development component including the design and construction of the infrastructure and servicing the debt by using asset management fees paid by Fenghua City. FCIC ensured that the implementation and required M&E reporting were on time. Also, FCIC worked with local design institutes to encourage them to bid for advertised projects. Furthermore, FCIC successfully identified an alternative demonstration site for the energy efficiency component. However, the FCIC did not coordinate Bank-funded infrastructure with other connecting infrastructure closely. The Chunhu wastewater treatment plant was completed on time but was not being used for a year since it was not planned that the secondary and tertiary collection networks would be completed at the same time.

Implementing Agency Performance Rating  
Satisfactory

Overall Borrower Performance Rating  
Satisfactory

## 10. M&E Design, Implementation, & Utilization

### a. M&E Design

The objective of the project was clearly specified and reflected in the selected indicators. The Results Framework included six PDO indicators and 11 Intermediate Outcome Indicators. The selected indicators were measurable in terms of numbers, timing and location. However, most indicators measure outputs rather than outcomes. Also, PDO Indicator 2 (Fenghua-Chunhu traffic using new access road) lacked a rate of time. The M&E included a specific monitoring and evaluation program for the rural wastewater component to evaluate nine different performance areas after the first villages had been implemented. The aim was to provide inputs for project design[J1] [KF2], if necessary, and to ensure the program's replicability and sustainability. A shortcoming of the M&E design was that it did not include any indicators measuring the improvement of the management of small towns. This made assessing the contribution of several sub-components to the overall objective challenging. Also, the indicators measuring the progress of the wastewater treatment plant could have been more closely linked to each other. This would have allowed identification of the mismatch in construction timing between the wastewater treatment plant and its accompanying collection network, which led to the wastewater treatment plant not being used for over one year. Furthermore, since the project was not a pollution reduction project, pollutant discharge testing results were not captured in the Results Framework. However, including such indicators could have been useful to measure the impacts of the project on the environment.

### b. M&E Implementation

The Ningbo Municipal Project Management Office was responsible for collecting and presenting the monitoring data which it received from various implementing agencies. It performed this function effectively. The data was presented in a semi-annual progress report. The M&E system was effectively used to identify implementation progress and address shortcomings of the rural wastewater management component. For example, the Monitoring & Evaluation Program identified that contractors were monitoring the performance of the wastewater infrastructure irregularly and inconsistently. Furthermore, it was found that a lack of training for local villagers had led to an inadequate monitoring by the community. In order to address these shortcomings, a set of Operations & Maintenance management rules was issued by the Ningbo Municipal Government.

### c. M&E Utilization

M&E Results were used to inform decision making and several implementation modifications were made based on M&E results, as stated above.

M&E Quality Rating





Substantial

## 11. Other Issues

### a. Safeguards

The project was classified as category B and triggered three safeguard policies, OP/BP 4.01 (Environmental Assessment), OP/BP 4.37 (Safety of Dams) and OP/BP 4.12 (Involuntary Resettlement).

The Environmental safeguard policy was triggered due to the construction of infrastructure. An Environmental Management Plan was developed and an Environmental Impact Assessment was implemented for each project component. Furthermore, an Environmental Management Framework was prepared to support the implementing agencies in safeguard related matters. The project complied with the Bank's environmental safeguard policy and mitigation efforts were implemented satisfactorily.

The Ningbo Water Conservation Bureau conducted necessary strengthening and renovation works for the Hengshan Reservoir dam in accordance with the Bank's safeguard policy.

A Resettlement Action Plan was developed for the Chuncu town infrastructure development component and a Resettlement Policy Framework was prepared for the rural wastewater component. Once a linkage issue came up in the Fenghua coastal water supply component, a retroactive resettlement review was developed and added to the Resettlement Action Plan. Furthermore, a transparent grievance address system was established, and no complaints were received during the duration of the implementation. A resettlement post-evaluation was conducted and found that the project complied with the Bank's involuntary resettlement safeguard policy satisfactorily.

### b. Fiduciary Compliance

#### Financial Management

The Ningbo Municipal Finance Bureau and the Ningbo Municipal Project Management Office were responsible for the financial management of the project. Both had extensive financial management experience and were able to build capacity in Project Implementation Units which were less experienced. Interim Financial Reports and audit reports complied with the Loan Agreement. All audits were conducted by independent auditors in a timely manner and had unqualified opinions. Overall, financial management was Satisfactory.

#### Procurement

The Bank's procurement guidelines were followed. However, at the beginning of project implementation, the wastewater component experienced some delays due to the Project Implementation Unit's limited knowledge of Bank procurement policies and procedures. When the project faced challenges in terms of identifying Design Institutes and had to address several changes between preparatory and detailed design stages, the Bank was flexible and allowed a reduction in the contract sales and combining survey and detailed design into one contract.

### c. Unintended impacts (Positive or Negative)

NA

### d. Other

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## 12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Moderately Satisfactory	Relevance of objective was High. Relevance of design was Substantial. Achievement of the objective to improve rural



			wastewater management in selected villages was Substantial. Achievement of the objective to support Ningbo Municipality in the implementation of its new Countryside Development Program by enhancing infrastructure was Substantial. Achievement of the objective to support Ningbo Municipality in the implementation of its new Countryside Development Program by enhancing township management in small towns was Modest. Efficiency was rated Substantial.
Risk to Development Outcome	Modest	Substantial	The outcomes of the project face several risks such as limited capacity among the villages and third-party providers', possible damage of infrastructure by natural hazards as a result of typhoons and flooding, continued slow economic growth, which could have an impact on the demand for water and wastewater treatment, resulting in low operating capacity of the infrastructure and inefficacy.
Bank Performance	Satisfactory	Moderately Satisfactory	Several risks materialized that were not identified or not mitigated adequately. The Bank team focused more on the implementation of the infrastructure components than the technical assistance sub-components.
Borrower Performance	Satisfactory	Satisfactory	---
Quality of ICR		Substantial	---

#### Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

## 13. Lessons

The ICR (p.27-28) includes several useful lessons learned, which have been somewhat reframed by IEG:

**1 Involving local communities in the project preparation phase can be beneficial in overcoming challenges related to the construction and Operations & Maintenance of rural wastewater facilities. However, sufficient time for this process needs to be planned for.** In this project villagers were involved in all stages such as the village selection, design, and Operations & Maintenance. However, the time required for these consultations was underestimated and led to implementation delays.

**2 A combination of one-time financial subsidies and awareness raising of wastewater treatment services among communities is critical to connect a high number of individual households to rural wastewater treatment infrastructure.** In this project the costs of indoor connections were covered by the project. In addition, raising awareness of the benefits of rural wastewater infrastructure led to a high rate of indoor household connections.

**3 Implementing wastewater tariffs to cover Operations & Maintenance costs is challenging.** In this project it was estimated that the Operations & Maintenance costs of the Chunhu Town wastewater management investments would be covered by wastewater tariffs by 2016. However, projections indicate that the time frame was unrealistic and it would take until 2022 to cover for the costs, assuming that the tariff is being increased at a steady rate every three years which seems unrealistic.

**4 Technical assistance components also need to be outcome oriented to measure their contribution towards the project's objective.** In



this project indicators measured the completion of certain technical assistance activities, however, they did not measure the extent to which these activities contributed to the improvement of township management.

#### **14. Assessment Recommended?**

No

#### **15. Comments on Quality of ICR**

The ICR provides a good overview of project preparation and implementation. The ICR is concise, candid and internally consistent and includes an Economic analysis. Also, the ICR provides several useful lessons learned.

- a. Quality of ICR Rating  
Substantial