APPENDIX "D"

DATA OF TESTS CONDUCTED IN THE FIELD LABORATORY

CONTENTS FOR APPENDIX "D"

DATA OF TESTS CONDUCTED IN THE FIELD LABORATORY

LIST OF TABLES FOR APPENDIX "D"

LIST OF FIGURES FOR APPENDIX "D"

APPENDIX D

DATA OF TESTS CONDUCTED IN THE FIELD LABORATORY

1. Extraction Test by Shaking Method

(1) Purpose

This test aims at determining the extent of an elution of Cu, Zn and As which may take place when the tailings flow down a stream. Behind the test is an assumption that the mill tailings are discharged into tributaries of the Agno River as planned in the ELC's Feasibility Study.

(2) Method

Tested were 9 samples taken at 3 mill plants and 30 samples taken at the Philex and the Benguet tailing ponds. Apparatus used in the test are shown in Table D-1.

The procedures of the test are as follows. A sample is placed into one or two 2.0ℓ polyethylene containers. Distilled water is poured into the containers. The mouth of them are sealed tightly. The ratio of the weight of samples to distilled water is 400 g to 4ℓ, 800g to 1.7ℓ and 100g to 1ℓ in the first, second and the third stage surveys, respectively. The container is shaken for 30 minutes by the shaker. The shaking width is 4 cm and shaking speed 180 strokes/min. During this shaking process the elution of the ingredients in the sample into the water is supposed to occur. The solution is called eluate. The eluate is filtered by No. 3 filter (5μ). The filtrate is supplied for chemical analysis after water temperature, pH and EC are measured.

(3) Results and Considerations

The results are shown in Tables D-2 and D-3.

In the first stage survey, The elution ratios cannot be calculated accurately because the amount of Cu, Zn concentrations are much lower than those contained in the stick water of the original samples. The Cu and Zn concentrations in the eluate for the Benguet mill tailings are 1.24 mg/ℓ and 0.04 mg/ℓ respectively, whereas the respective concentrations in the original water (mill waste water) are 22 mg/ℓ and 10.7 mg/ℓ. The Cu concentration in the eluate for the Philex mill tailings is less than 0.02 mg/ℓ.

Taking the results of the first stage survey into account, efforts in the second stage survey are directed towards reducing the amount of the stick water by dehydration and drying as to minimize the error caused by dissolved Cu and Zn in the stick water. At the same time, the ratio of the sample to distilled water is raised.

In the third stage survey, the mill tailings over No. 3 filter are supplied in place of original mill tailings in order to reduce the amount of the stick water more than in the second stage survey.

In spite of these improvements in the second and the third stage surveys, the Cu and Zn concentrations in eluates are low as shown in the Table D-3.

The actual elution amount is calculated by subtrating the content in the stick water from the content in the eluate. Therefore, a small amount of stick water of high concentration would cause the significant error in elution ratio. The elution ratios in the second and the third stage survey may have large errors.

The test is conducted by using distilled water, which is neutral in terms of pH. After shaking, the eluate turns out to be weakly alkaline (pH≒8–9). Under this condition, the dissolved Cu and Zn concentrations are suppressed because the Cu and Zn ions would become hydroxides and precipitation would occur. After all it is considered that the elution ratios of Cu and Zn under the test condition cannot be much larger than those calculated in this test even if the error is included.

2. Extraction Test by Aeration Method

(1) Purpose

This test aims at determining the extent of elution of Cu, Zn and As from mill tailings when they are discharged into the Agno tributaries and flow down in contact with oxygen in the air as proposed in the ELC's Feasibility Study.

(2) Method

In the first stage survey, 3 tailings samples from 3 mill plants are supplied for this test. In the second stage survey, 3 mill tailings samples from mill plants and 2 tailings samples from the tailing ponds are supplied for this test. In the third stage survey, 3 tailings samples from 3 mill plants are supplied.

The apparatus used in this test are shown in Table D-1.

The procedure is as follows.

In the first and the second stage surveys, wooden boxes which are sealed inside with venyl sheets are prepared as water tanks. A box measures 60 cm by width, 60 cm by height and 180 cm by length. In the third stage survey, plastic water tanks which measured 15 cm by width, 15 cm by height and 60 cm by length were prepared. Then air pipes, through which air is sent into the water, are distributed at the bottom of the tanks. Samples and testing water into which ingredients would move from the sample are placed in these tanks. They are agitated for 6 hours while aerating through the air pipe.

The ratios of weights or volumes between samples and testing water are 60ℓ to 400ℓ for the tailings in the first stage survey, 118 kg–303 kg to 300ℓ in the second stage survey and 0.5 kg and 1 kg to 5ℓ in the third stage survey.

(3) Results and Considerations

In the first stage survey, the test was intended to simulate the situation where in the tailings were supposed to be thrown into the river. In order to realize the intention, original samples that had come to the outlet of the mill plants are used. Furthermore, the tapwater (underground water at Binalonan which was supposed to be more similar to the river water of the upstreams than distilled water) was used. The results show that the Cu, Zn and As contents are less than those in the stick water. This means that precipitation rather than elution occurs under the test condition. As a result of the improvement of the method, in the second and the third stage surveys, elution ratios can be calculated as shown in Table D-4.

The Cu elution ratios are 0.23×10^{-4} for average of the samples taken from the Philex mill tailings pond at the second stage survey, 0.14×10^{-3} and 0.27×10^{-4} for the one from the mill plant at the third stage survey. The Cu elution ratios of the Benguet and the Itogon mill tailings cannot be calculated.

The Zn elution ratios for the third stage survey are 0.54×10^{-3} for the Philex mill tailings and 0.10×10^{-3}–0.19×10^{-3} for the Itogon.

The As elution ratios of the Philex mill tailing are 0.65×10^{-3} and 0.87×10^{-2}. Those of the Benguet are 0.14×10^{-2} and 0.19×10^{-2}. Those of the Itogon are 0.38×10^{-3}, 0.43×10^{-3} and 0.10×10^{-1}. The As elution ratio turned out to be able to be calculated in many trials, because the detection limit of chemical analysis was lower than those of Cu and Zn. However the elution ratios vary even among the samples taken from a mill plant.

The elution ratios calculated from the results of the aeration method are in the same order as those calculated by shaking method. It is impossible to distinguish the elution ratios from each other. Therefore, it is not considered that elution are accelerated significantly by oxidation under the test condition.

3. Extraction Test by Wet and Dry Repetition

(1) Purpose

This test aims at determining the extent to which the elution occurs from the sediments settled at the upper part of the San Roque reservoir as planned in the ELC's Feasibility Study, where they are subjected to an alternative environment of wet and dry depending on the water level.

(2) Method

In the first stage survey, three mill tailings samples from three mill plants and one sample from the Binga reservoir were tested. In the second stage survey, one sample which had been sorted as being of the same size that would have been precipitated at the upper part of the reservoir. In the third stage survey two samples over No. 3 filter of the Philex and the Benguet were tested.

The procedure is as follows (in Figs. D-1 and D-2).

In the first stage survey, one liter of slurry state sample material, 10 liters of water (only in the case of the sediments taken from the Binga Dam, 1 kg of solid sample material, and 10 liters.of water) were put into a water tank and mixed. After 4 hours of agitation, the first sample for chemical analysis was taken. It was then dried in a drying furnace at 60°C for 18 hours and finally subjected to an elution process for 4 hours. This marks the completion of one cycle. Four cycles were repeated.

In the second stage survey, five cycles were repeated. In one cycle, 4 kg of sample material were moistened with 1 to 1.4 liter of water, then dried in a drying furnace at 105°C, each of these treatments was repeated 6 times, and finally agitated with 10 liters of water for 4 hours.

In the third stage survey, the procedure is the same as that in the second stage except that the weight of the sample and the volume of the water for moistening are reduced to 1 kg and 0.5ℓ, respectively.

(3) Results and Considerations

The results are shown in Tables D-5 and D-6.

In the first stage survey, the Cu and Zn elution ratios can be calculated only for the first cycle of the test of the Benguet mill tailings and sediments in the Binga reservoir. For other cycles of them and for all the cycle of the other samples, either the Cu and Zn contents in the eluate are less than those in the stick water, or the concentrations are lower than the detection limit of chemical analysis. The As elution ratios of the Binga sediments are between 0.25×10^{-2} and 0.14×10^{-1}.

It was considered that the low rate of elution is due to the character of the samples and also to the short period of time for testing under an ordinary condition. In order to promote the elution in a short time, the temperature in the furnace was raised to 105°C in the second stage survey. At the same time, samples were dehydrated before they were supplied. Owing to this improvement, the Cu and As elution ratios can be calculated as shown in Table D-6. However, the Zn elution ratio cannot be figured out as yet, because the Zn concentrations in the elute are lower than the detection limit of chemical analysis. The Cu elution ratios are between 0.43×10^{-5} and 0.52×10^{-5}, although they do not show a regular tendency in the course of cycles. The As elution ratio are between 0.27×10^{-3} and 0.11×10^{-2} and show a tendency to become lower in the course of the cycles.

In the third stage survey, the Zn elution ratios can be calculated owing to the reduction of the detection limit of chemical analysis. The Cu and As elution ratios are in the same order as ones in the second stage.

The elution ratios of Cu for the Philex mill tailings do not fluctuate very much in the course of the cycles, although they don't show a regular tendency. Those of the Benguet mill tailings can be calculated only for the 1st and 4th cycles, that is 0.53×10^{-1} and 0.65×10^{-4}, respectively, showing large differences between them.

The Zn elution ratios for the Philex mill tailings for the 1st, 2nd and 3rd cycles are between 0.32×10^{-3} and 0.74×10^{-3}, although Zn contents of the eluates for the 4th and 5th cycle are lower than the detection limit. The ratios for the Benguet are between 0.69×10^{-4} and 0.87×10^{-4}, showing about one tenth as large as those of the Philex mill tailings.

The "As" elution ratios for the Philex mill tailings are between 0.34×10^{-2} and 0.62×10^{-2} for the 1st, 4th and 5th cycles, and the "As" contents in the eluates for the 2nd and the 3rd cycles are lower than the detection limit. The ratios of the Benguet mill tailings are between 0.10×10^{-2} and 0.32×10^{-2}, showing an increase in the course of the cycles, except for the 3rd cycle.

It is considered that the difference between the elution ratios in the second stage survey and in the third stage survey may be caused by the difference of sizes of the samples: the sample at the third stage survey consists of grains whose sizes are over No. 3 filter; on the contrary, the coarse grains were selected at the second stage survey.

The Zn elution ratios for the Benguet tailings are smaller in order of magnitude than those for the Philex mill tailings. The As elution ratios for the Benguet are a little larger than those for the Philex. Difference of the Cu elution ratios between the Philex and the Benguet are not clear because the 3 cycle data out of 5 cycles are not comparable. It is considered that extraordinary high Cu concentration of the eluate for the first cycle of the Benguet is due to the Cu originated from the stick water. Therefore, the elution ratio probably has a large error and only the one for the 4th cycle is significant.

4. Extraction Test by a Bacteria Addition

(1) Purpose

Oxidation of sulphide and elution of metal and other elements from them are accelerated by bacteria. In the above-mentioned extraction test by wet and dry repetition method in the second and the third survey, the samples supplied for the test are heated up to 105°C. At this temperature activity of the bacteria is weak, even if it survives, so that the oxidation proceedes slowly. In order to estimate the effect of bacteria on the elution under an appropriate condition, this test is performed.

(2) Method.

The Philex and the Benguet mill tailings over No. 3 filters were supplied.

The procedure is as follows (in Fig. D-3).

The 1.7 kg sample and 10ℓ distilled water are put into a water tank. Two tanks are prepared for the Philex and the Benguet, respectively. In one water tank, a solution with bacteria (Table D-7) is added. In the other tank, bacteria is not added. Then both tanks are treated under the same condition. The water and the sample are agitated for 4 hours once every two days by a mini-pump, while 1 N HCl is added to adjust the pH of the water at 3.

The water sample for chemical analysis is taken from every water tank every other day. Then distilled water is added to compensate for the water taken for chemical analysis. The above-mentioned procedure is repeated 5 times.

(3) Results and Consideration

The results are shown in Table D-8. There is no significant difference between the two kinds of tests in terms of the Cu and Zn concentrations in the eluates. On the contrary, the "As" concentrations in the eluate for the Philex mill tailings with bacteria are lower than those without bacteria. The Cu and Zn concentrations in each test do not show a regular tendency in the course of the cycles. The As concentrations for the Philex seem to decrease as a whole, in the course of cycles, although those for the Benguet do not seem to vary significantly in the course of the cycles.

The higher elution ratios than the ones by the other method are entirely due to an acidic condition caused by the addition of HCl.

The above-mentioned results reveal that bacteria has no effect on the elution so much as the elution ratio changes significantly. The pH condition under which the test was performed was presumably preferable for the activity of bacteria. On the other hand, the pH condition of the river water at the Fixed Point E does not seem to be more preferable to the test condition. Therefore, it is presumed that the Cu, Zn and As elution for the Philex and the Benguet mill tailings would not be increased significantly by bacteria even if the pH condition of the San Roque reservoir would change from about 8 (the present value of the river water at the Fixed Point E) to about 3 (the test condition).

5. Model Test

(1) Purpose

This test is conducted to determine, in combination with the extraction test by wet and dry repetition method, the extent to which the pollutants are eluted from the tailings deposited at the upper part of the San Roque reservoir. This is to be done by looking into the progress of oxidation in the sulfides contained in the tailings which are let to stand in wet and dry environments for a long time.

(2) Method

The Philex tailings were let to stand in an artificial wet environment, and samplings were done once a month to find out changes in the elution ratio.

Two wooden boxes were prepared to simulate the condition. The boxes measure 1 m by width, 2.0 m by length and 1.5 m by height. The sample for this test was the one which had been sorted and selected only for the coarse parts of the Philex mill tailings. The pertinent sample was taken from the depth of about 50 cm by using a hand-auger.

The sediments of the irrigation canal is kept moistened in a natural way. To compare the results obtained in the model test, samples were taken from the sediments on the irrigation canal bed once a month until June.

The results are shown in Tables D-9 and D-10.

The Cu, Zn and "As" contents in the tailings sample do not decrease significantly. This corresponds to the results that the Cu, Zn and As elution ratios are much less than one, showing $0.82 \times 10^{-5} - 0.17 \times 10^{-4}$, $0.28 \times 10^{-3} - 0.97 \times 10^{-3}$ and $0.57 \times 10^{-3} - 0.66 \times 10^{-3}$, respectively. The elution ratios do not show a significant tendency in the course of the month. They are in the same order of magnitude.

On the other hand, the "As" elution ratios for the samples from the irrigation canal are a little higher than those in the model test. The Cu and the Zn elution ratios are in the same order as those in the model test.

6. An Extraction Test for Sieved Samples Under an Acidic Condition

(1) Purpose

The river water and the tailings water from mill plants showed neutral to alkaline in terms of pH. Based on these findings, the above-mentioned tests were conducted under neutral to weakly alkaline conditions except the test by a bacteria addition. Therefore, elution from the mill tailings in the San Roque reservoir or its upstream can be determined on the basis of the results of those test.

On the other hand, it is not deniable that a part of the water discharged from the San Roque reservoir will become acidic in the rice field because of the root acid of rice plants, chemical fertilizers and so on. This test aims at determining the extent of the Cu, Zn and As elutions under such an acidic condition.

The mill tailings will be sorted on the way to the rice fields, and will be rich in finer grains. The elution ratios of mill tailings presumably depend on the grain sizes. Therefore, a series of sorted samples are supplied for this test in order to estimate the dependence of the elution upon the grain sizes.

(2) Method

SS from the Fixed Points B, C. D and E, and mill tailings samples of the Philex, the Benguet and the Itogon are supplied for this test. Firstly, the samples are classified into 4 classes by using sieves, the passing size of which are 25μ, 53μ and 74μ. A 50g classified sample is mixed with 500 mℓ of 0.1 N HCl in a polyethylene container. The container is shaken in the same manner as in the test by shaking method.

(3) Results and Considerations

The results of sieving are shown in Table D-11. The results of chemical analysis of the sieved samples are shown in Tables D-12 and D-13. Then, the results of the extraction test are shown in Table D-14.

The grains of both the SS at the Fixed Points and mill tailings are distributed more in the order of in 5μ–25μ, in 25μ–53μ, and in 53μ–74μ. Among them, the grain size distribution between 5μ and 25μ of the Philex mill tailings, the Benguet mill tailings and Itogon mill tailings are 34.4%, 44% and 12.6%, respectively. The first two samples are thought to be taken from the mill plants at normal operation, although the one of the Itogon might not be taken at the normal operation. On the other hand, the samples from the Fixed Points B, D and E show a similar grain size distribution, although the distributions of the Fixed Point C fluctuate a lot. The samples of the Fixed Point B are rich in finer grains compared to the ones of the Fixed Points D and E.

Differences of the Cu and "As" contents among the different size grains are not clear. The Cu, Zn and "As" contents in the Philex mill tailings are rich in finer size grains. The Cu, Zn and "As" contents of about one half of the samples of the Fixed Points C, D and E are richer in the finer size grains, although the rest do not show this tendency.

The elution ratios show that the Cu, Zn and As in the Philex mill tailings are more easily eluted from the finer size grains. The Cu in the SS at the Fixed Point D, the Zn in the SS at the Fixed Poinc C and the "As" in the SS at the Fixed Point E are more easily eluted from the finer size grains.

7. Grain Size Analyses

(1) Sieve Analysis

In the first stage survey, a sieve-analysis was carried out on the samples from the sediments of the Binga reservoir to get to know the grain size distribution of the sediments at the upper part of the reservoir. The test results are shown in Table D-15 and Fig. D-4. The percentage of the grains of less than 2 mm diameter is 60% with BD 102 and as low as 28 to 36% with the other 3 samples. The percentage of grains smaller than 74μ is very small in respect to BD 104 in which they are contained in the largest quantities (1.9%) of all the samples under review. As a result, it became evident that the sediments at the upper part of the reservoir contain only small quantities of fine grains.

(2) Precipitation test

In the second stage survey, a precipitation test was carried out on the field on samples under 2 mm collected at the Ambuklao and the Binga reservoirs to particularly find out the value of the lower limit to the grain size of the sediments at the upper parts of the reservoir. The test results are shown in Table D-16 and Figs. D-5. Most of the grains were precipitated within one minute with AD 204, AD 207, BD 201, BD 202 and BD 203 and within 5 minutes with the other samples. From this, it became evident that the former samples consisted of coarse sand to fine sand and the latter samples of medium sand to very fine sand and that most silt and clay had been washed away down the stream. However, AD 205 is an exception to the sediments at the upper part of the reservoir. Judging from the fact that its volume decreases due to its own weight, it can be considered to consist mainly of silt. From the results of this test, it became clear that classification should be done after a precipitation of 3 minutes to separate the two different parts of the tailings; one sediment settled in the upper part of the reservoir and the other washed down. The coarse part of the Philex tailings classified as such by this operation was used in the extraction test by wet and dry repetition method (in the 2nd stage survey) and the model test.

(3) Grain size analysis

In the first and the second stage surveys, this test was entrusted to the Bureau of Soils and was carried out on the tailings (3 samples per Mine x 3 Mines), the coarse part of the tailings (classified to be used in the model test), the sediments from the power plant reservoir and irrigation canal. The test results are shown in Table D-17 and Fig. D-6.

In the third stage survey, this test was undertaken in Japan and was carried out on three samples from the 3 mill plants. The results are shown in Table D-18 and Fig. D-6.

1) Tailings

In the first and the second stage surveys, the Philex tailings came up with a wide scattering in the test result with the main part made up of fine sand and very fine sand size grains. They are of the largest grain size of all the tailings from the three Mines. The Itogon tailings consisted mainly of fine sand to silt size; the fine grains came up here in a larger amount than with the Philex tailings. The Benguet tailings, which had eliminated the part of large grain sizes caused by a cyclone, were composed mainly of very fine sand to silt size grains and were of the smallest grain sizes of all the tailings from the three Mines.

In the third stage survey, clayey grain ($<5\mu$) percentages of the Philex, the Benguet and the Itogon mill tailings are 17.5%, 7.8% and 22.3%, respectively. Silt size ($5\mu-74\mu$) grain percentages are 50.3%, 56.9%, 70.4%, respectively.

The clayey grain percentage of the Benguet mill tailings is lower than the other two. It is considered that the result of the analysis does not accurately represent that of the Benguet, as deduced from the fact that the colloidal ($<1\mu$) percentage is 0.5% and extremely low compared to the 7.0% and 8.5% of the Philex and the Itogon, respectively.

2) Sediments in the power plant reservoir

In this test, the same samples as the ones used in the afore-mentioned precipitation test were used. As shown in Table I-17, distinction was made among sand represented by AD 202, AD 204, AD 207, BD 201, BD 202 and BD 203, loamy sand by AD 201, AD 203 and AD 206 and silt loam by AD 205. This distinction, although it deals with AD 202 differently from other distinctions, corresponds very well with the results obtained in the precipitation test.

3) Coarse grain part of the Philex tailings

The sample was classified as such for use in the extraction test by a wet and dry repetition method (in the 2nd stage survey) as well as in the model test. The test results indicate that the sample is similar in grain size composition to the coarser one of the sediments taken from the power plant reservoir so that the purpose of classification was fulfilled.

4) Sediments from the irrigation canal

The sample is the same as the sediments taken from the irrigation canal which was used in the extraction test as a reference for the model test. It indicated that the sediments in the irrigation canal were composed of fine-grained and coarse-grained layers.

(4) Precipitation test over a long period of time

The water stored in the Ambuklao and the Binga reservoirs was found to be clear and to show a low turbidity level in the dry season.

From this it can be deduced that the turbid water which flows down the river from the Point E becomes considerably clearer when it enters the reservoir and begins to flow slowly.

In order to forecast the variation of turbidity in the proposed San Roque reservoir, precipitation test over a long period was conducted. Water samples were collected at the Fixed Points A and E. They were subjected to precipitation test.

In the second stage survey, two samples at the Fixed Point E were supplied for this test. In the third stage survey, 3 samples at the Fixed Point E and one sample at the Fixed Point A were supplied for the test. The test results are shown in Table D-19 and Fig. D-7.

As for the 5 samples from the "E" point, the turbidities are 380 ppm–800 ppm at one hour after the beginning, and 1.8 ppm–8.5 ppm after 7 days. On the other hand, turbidity of the sample from the Fixed Point A at flood time in September shows 173 ppm at one hour after the beginning and 11.5 ppm after 7 days, which is higher than those of the Fixed Point E.

8. **Supplement to the Analysis**

(1) Results of the Analysis of Accessory Constituents

An analysis of accessory constituents was carried out with the main solid materials collected in the preliminary survey. The results are shown in Table D-20. These results indicate that no such constituents were detected that may require to be studied further.

The water samples collected in the preliminary survey were used to analyzed 15 constituents. As a result, the number of the constituents to be analyzed were reduced to 7. The aforementioned Table shows only these 7 constituents; the rest of the constituents are shown collectively in Tables D-21 and D-22.

(2) Results of the Cross Checking Analysis

The results of a checkup analysis using 10 samples in the 1st stage survey and 13 samples in the 2nd stage survey are shown in Table D-23 and D-24.

As can be seen from the resulsts shown in the following table, the results of analysis obtained in the Philippines correspond very closely with those obtained in Japan.

RATIO OF CHEMICAL ANALYSES VALUES IN THE PHILIPPINES AND JAPAN

	2nd Stage				1st Stage		
	n	$\bar{x}$	σ_{n-1}		n	$\bar{x}$	σ_{n-1}
Cu	5	0.994	0.1709	Cu	2	0.890	0.166
Zn	3	1.0	0.03	Zn	4	0.780	0.387
As	5	1.362	0.9446	As	4	1.050	0.574
Ca	13	1.083	0.1138	Ca	6	1.245	0.113
Mg	13	1.0146	0.0826	Mg	6	1.080	0.092
SO_4	13	0.9538	0.0481	SO_4	10	0.764	0.264

n : The number compared
$\bar{x}$: Average ratio of chemical analyses values
σ_{n-1} : Standard deviation

(3) Limit of detection for Cu and Zn

Since the concentrations of Cu and Zn in water samples in generally low, it was requested to reduce detection limits of these elements as far as possible. Therefore, the efforts to lower them was made by means of the following analytical methods.

	analytical method	detection limit	
		Cu (mg/ℓ)	Zn (mg/ℓ)
1st stage	Flame atomic absorption analysis	0.02	0.01
2nd stage	Flame atomic absorption analysis with pretreatment of solvent extraction method	0.01	0.02
3rd stage	Flame atomic absorption analysis with pretreatment of solvent extraction method	0.01	0.01
	Flameless atomic absorption analysis	0.005	0.005

Detection limit of Cu in the 3rd stage survey is 0.01 mg/l since Apr. 1 till Apr. 17, and 0.005 mg/l after Apr. 17.
Detection limit of Zn in the 3rd stage survey is 0.01 mg/l since Apr. 1 till May 9, and 0.005 mg/l after May 9.

Table D-1 APPARATUS FOR TESTS

Test	Apparatus	Description	Reference (stage used)
Shaking Method	Recipro Shaker	Maker: TAIYO SCIENTIFIC INDUSTRIAL CO.	
		Type: SRII	①②③
		Shaking Speed: 100~300 stroke/min	
		Shaking Width: 40 mm	
		Input Power: 200VA	
Aeration Method	Compressor	Maker: HITACHI	
		Type: RC20	①②
		Normal Pressure: 0.4 kg/cm^2	
		Discharge: 130ℓ/min at normal pressure	
		Input Power: 400W	
	Compressor	Maker: SINKU KIKO	③
		Type: DA15S	
		Normal Pressure: 2.7 x 10^{4}Pa	
		Discharge: 15ℓ/min	
		Input Power: 25W	
Wet and Dry Repetition Method	Pump	Type: Mini-Pump	①②
	Pump	Type: Mini Pump	③
	Drying Oven	Maker: YAMATO	
		Type: DS63	
		Temperature: 40°C – 250°C	①②③
		Accuracy: ±1°C	
		Input Power: 1400VA	
Bacteria Addition Method	Pump	Mini-Pump	
Common for All the Tests	Balance	Maker: Mettler, Switzerland	
		Type: AE160	
	pH Mater	Maker: HITACHI-HORIBA	①②③
		Type: M-8	
	Conductivity Meter	Maker: TOA ELECTRONIC	
		Type: CM-1K	

Table D-2 EXTRACTION TEST BY SHAKING METHOD

Sample No.	Description	Solid for Test					Solution									Elution Ratio			
		Weight (g)	Cu (ppm)	Zn (ppm)	As (ppm)	S (%)	Description	Volume (ℓ)	Water Temperature (°C)	pH	EC (μS/cm)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Cu	Zn	As	S
PM110	Philex Mill Tailings	400	470	50	<2.0	0.26	Stick Water	0.22	30.0	9.4	2,100	0.04	<0.01	<0.0005	1,600				
							Solvent	4.0	–	–	–	–	–	–	–				
							Eluate	4.0	26.5	9.1	470	<0.02	<0.01	0.0006	191	n.d.	n.d.	n.c.	0.13
PM215	Philex Mill Tailings	800	720	100	5.8	0.33	Stick Water	1.52	26.0	9.3	2,700	<0.01	<0.02	0.0010	1,584				
							Solvent	1.7	–	–	–	–	–	–	–				
							Eluate	1.7	31.0	8.5	1,700	0.115	<0.02	0.0080	1,084	0.33×10^{-3}	n.d.	0.26×10^{-2}	n.c.
PM310	Philex Mill Tailings	100	810	45	1.1	0.19	Stick Water	0.023	27.0	7.9	1,300	<0.005	0.014	0.0005	905				
							Solvent	1.0	–	5.3	3.7	<0.005	<0.005	<0.0005	<1				
							Eluate	1.0	29.0	8.5	400	<0.005	0.007	<0.0005	161	n.d.	0.93×10^{-3}	n.d.	0.25
BM110	Benguet Mill Tailings	400	270	710	57	2.27	Stick Water	0.76	25.5	11.3	2,900	22.0	10.7	0.0067	1,458				
							Solvent	4.0	–	–	–	–	–	–	–				
							Eluate	4.0	28.0	10.8	540	1.24	0.04	0.0086	182	n.c.	n.c.	0.13×10^{-2}	n.c.
BM215	Benguet Mill Tailings	800	300	880	73	2.44	Stick Water	2.67	26.0	12.1	4,100	39	15	0.0037	1,443				
							Solvent	1.7	–	–	–	–	–	–	–				
							Eluate	1.7	30.0	8.8	2,900	2.7	<0.02	0.0065	1,648	n.c.	n.d.	0.20×10^{-4}	n.c.
BM310	Benguet Mill Tailings	100	230	630	76	2.93	Stick Water	0.045	27.0	9.5	2,500	8.2	1.1	0.0085	1,628				
							Solvent	1.0		5.3	3.7	<0.005	<0.005	<0.0005	<1				
							Eluate	1.0	29.0	8.6	130	<0.005	0.010	0.0245	35	n.d.	n.c.	0.31×10^{-2}	m
IM110	Itogon Mill Tailings	400	130	270	220	1.29	Stick Water	1.24	22.5	10.4	630	0.02	3.60	0.102	90				
							Solvent	4.0	–	–	–	–	–	–	–				
							Eluate	4.0	28.5	9.5	890	0.08	<0.01	–	12	0.57×10^{-2}	n.d.	n.c.	n.c.
IM215	Itogon Mill Tailings	800	130	310	220	1.54	Stick Water	2.12	23.0	11.4	1,400	17	6.5	0.0505	234				
							Solvent	1.7	–	–	–	–	–	–	–				
							Eluate	1.7	28.0	8.8	600	0.705	<0.02	0.380	206	n.c.	n.d.	0.31×10^{-2}	n.c.
IM310	Itogon Mill Tailings	100	120	300	170	2.23	Stick Water	0.032	27.0	8.3	420	<0.005	0.016	0.0700	52				
							Solvent	1.0	–	5.3	3.7	<0.005	<0.005	<0.0005	<1				
							Eluate	1.0	29.0	8.9	110	<0.005	0.007	0.0230	26	n.d.	0.13×10^{-3}	0.12×10^{-2}	0.36×10^{-2}

n.d. : Elution ratio cannot be calculated, because the ingredient in the eluate is below a confidence limit of chemical analysis.
n.c. : Elution ratio cannot be calculated, because precipitation takes place under test conditions.

Table D-3 EXTRACTION TEST BY SHAKING METHOD

Sample No.	Description	Depth (m)	Solid for Test: Weight (g)	Solid for Test: Cu (ppm)	Solid for Test: Zn (ppm)	Solid for Test: As (ppm)	Solid for Test: S (%)	Eluate after Shaking: Volume (ℓ)	Eluate after Shaking: pH	Eluate after Shaking: EC (μS/cm)	Eluate after Shaking: Cu (mg/ℓ)	Eluate after Shaking: Zn (mg/ℓ)	Eluate after Shaking: As (mg/ℓ)	Eluate after Shaking: SO_4 (mg/ℓ)	Elution Ratio: Cu	Elution Ratio: Zn	Elution Ratio: As	Elution Ratio: S
PS211	Philex No. 1 boring	0.0– 0.5	800	1,400	54	1.4	0.31	1.7	8.10	2,350	0.007	<0.02	0.0008	1,456	0.11×10^{-4}	n.d.	0.12×10^{-2}	0.33
PS212	– ditto –	2.0– 4.0	800	990	49	1.3	0.30	1.7	8.20	2,300	0.007	<0.02	0.0009	1,359	0.15×10^{-4}	n.d.	0.15×10^{-2}	0.32
PS213	– ditto –	4.0– 6.0	800	1,200	60	1.7	0.28	1.7	8.30	2,450	0.010	<0.02	0.0009	1,488	0.18×10^{-4}	n.d.	0.11×10^{-2}	0.38
PS214	– ditto –	6.0– 8.0	800	1,100	47	1.2	0.25	1.7	8.30	2,400	0.008	0.02	0.0010	1,464	0.15×10^{-4}	0.91×10^{-3}	0.18×10^{-2}	0.42
PS215	– ditto –	8.0–10.0	800	1,200	53	1.1	0.26	1.7	8.30	2,300	0.083	0.02	0.0011	1,439	0.15×10^{-3}	0.80×10^{-3}	0.21×10^{-2}	0.39
PS221	Philex No. 2 boring	0.0– 2.0	800	1,300	41	1.0	0.30	1.7	8.05	2,500	0.002	<0.02	0.0010	1,365	0.33×10^{-5}	n.d.	0.21×10^{-2}	0.32
PS222	– ditto –	2.0– 4.0	800	1,100	44	1.1	0.24	1.7	8.20	2,500	0.008	<0.02	0.0005	1,292	0.15×10^{-4}	n.d.	0.97×10^{-3}	0.38
PS223	– ditto –	4.0– 6.0	800	1,100	44	<1.0	0.16	1.7	8.25	2,100	0.010	0.03	0.0008	1,373	0.19×10^{-4}	0.15×10^{-2}	n.c.	0.61
PS224	– ditto –	6.0– 8.0	800	1,500	44	1.0	0.18	1.7	8.20	2,000	0.015	0.02	0.0008	1,205	0.21×10^{-4}	0.97×10^{-3}	0.17×10^{-2}	0.48
PS225	– ditto –	8.0–10.0	800	1,200	45	1.2	0.29	1.7	8.20	2,500	0.008	0.02	0.0012	1,439	0.14×10^{-4}	0.95×10^{-3}	0.21×10^{-2}	0.35
PS231	Philex No. 3 boring	0.0– 2.0	800	1,900	48	1.0	0.28	1.7	8.30	1,800	0.010	0.03	<0.0005	1,067	0.11×10^{-4}	0.13×10^{-2}	n.d.	0.27
PS232	– ditto –	2.0– 4.0	800	1,700	44	<1.0	0.31	1.7	8.25	2,200	0.010	0.02	0.0005	1,359	0.13×10^{-4}	0.97×10^{-3}	n.c.	0.31
PS233	– ditto –	4.0– 6.0	800	1,600	46	<1.0	0.33	1.7	8.30	2,400	0.008	0.02	<0.0005	1,523	0.11×10^{-4}	0.93×10^{-3}	n.d.	0.33
PS234	– ditto –	6.0– 8.0	800	1,500	42	1.3	0.35	1.7	8.20	2,450	0.007	0.02	0.0007	1,635	0.99×10^{-5}	0.10×10^{-2}	0.11×10^{-2}	0.33
PS235	– ditto –	8.0–10.0	800	1,400	46	<1.0	0.34	1.7	8.00	2,450	0.007	0.03	0.0006	1,511	0.11×10^{-4}	0.14×10^{-2}	n.c.	0.32
	Average of 15 samples														0.22×10^{-4}	0.11×10^{-2}	0.14×10^{-2}	0.37
BS211	Benguet No. 1 boring	0.0– 0.5	800	1,000	930	130	3.14	1.7	–	2,600	0.018	0.10	0.0010	1,621	0.38×10^{-4}	0.23×10^{-3}	0.16×10^{-4}	0.37×10^{-1}
BS212	– ditto –	2.0– 4.0	800	1,800	740	140	3.33	1.7	8.80	2,450	0.010	<0.02	0.0032	1,428	0.12×10^{-4}	n.d.	0.49×10^{-4}	0.30×10^{-1}
BS213	– ditto –	4.0– 6.0	800	2,100	650	120	3.44	1.7	8.90	2,300	0.008	0.02	0.0280	1,508	0.81×10^{-5}	0.66×10^{-4}	0.50×10^{-3}	0.31×10^{-1}
BS214	– ditto –	6.0– 8.0	800	2,100	510	120	3.77	1.7	8.10	2,400	0.008	0.04	0.0120	1,500	0.81×10^{-5}	0.17×10^{-3}	0.21×10^{-3}	0.28×10^{-1}
BS215	– ditto –	8.0–10.0	800	1,700	610	130	3.71	1.7	8.15	2,400	0.008	0.04	0.0091	1,387	0.10×10^{-5}	0.14×10^{-3}	0.15×10^{-3}	0.27×10^{-1}
BS221	Benguet No. 2 boring	0.0– 0.5	800	1,300	850	85	2.46	1.7	9.50	2,700	0.024	0.02	0.0064	1,481	0.39×10^{-4}	0.50×10^{-4}	0.16×10^{-3}	0.43×10^{-1}
BS222	– ditto –	2.0– 4.0	800	290	880	140	3.62	1.7	8.60	2,450	0.016	0.02	0.0230	1,501	0.12×10^{-3}	0.48×10^{-4}	0.35×10^{-3}	0.29×10^{-1}
BS223	– ditto –	4.0– 6.0	800	300	840	140	3.33	1.7	8.59	2,350	0.010	0.02	0.0115	1,445	0.71×10^{-4}	0.51×10^{-4}	0.17×10^{-3}	0.31×10^{-1}
BS224	– ditto –	6.0– 8.0	800	330	780	120	3.22	1.7	8.65	2,300	0.011	0.03	0.0127	1,468	0.71×10^{-4}	0.82×10^{-4}	0.23×10^{-3}	0.32×10^{-1}
BS225	– ditto –	8.0–10.0	800	320	680	130	2.99	1.7	8.55	2,300	0.015	0.04	0.0136	1,466	0.10×10^{-3}	0.13×10^{-3}	0.22×10^{-3}	0.35×10^{-1}
BS231	Benguet No. 3 boring	0.0– 0.5	800	200	800	120	2.94	1.7	8.60	2,400	0.011	0.04	0.0057	1,337	0.12×10^{-3}	0.11×10^{-3}	0.10×10^{-3}	0.32×10^{-1}
BS232	– ditto –	2.0– 4.0	800	180	750	110	2.63	1.7	8.45	2,400	0.006	0.02	0.0076	1,342	0.71×10^{-4}	0.57×10^{-4}	0.15×10^{-3}	0.36×10^{-1}
BS233	– ditto –	4.0– 6.0	800	260	730	120	2.69	1.7	8.50	2,300	0.007	0.02	0.0142	1,351	0.57×10^{-4}	0.58×10^{-4}	0.25×10^{-3}	0.36×10^{-1}
BS234	– ditto –	6.0– 8.0	800	370	770	120	3.33	1.7	8.20	2,450	0.006	0.03	0.0102	1,350	0.35×10^{-4}	0.83×10^{-4}	0.18×10^{-3}	0.29×10^{-1}
BS235	– ditto –	8.0–10.0	800	360	640	110	3.36	1.7	8.50	2,300	0.009	0.03	0.0087	1,347	0.53×10^{-4}	0.10×10^{-3}	0.17×10^{-3}	0.28×10^{-1}
	Average of 15 samples														0.59×10^{-4}	0.98×10^{-3}	0.19×10^{-3}	0.32×10^{-1}

n.d. : Elution ratio cannot be calculated because the ingredient in the eluate is below a confidence limit of chemical analysis.
n.c. : Elution ratio cannot be calculated because precipitation takes place under the test condition.

Table D-4 EXTRACTION TEST BY AERATION METHOD

Sample No.	Description	Solid for Test: Weight (g)	Cu (ppm)	Zn (ppm)	As (ppm)	S (%)	Solution: Description	Volume (ℓ)	Water Temperature (°C)	pH	EC (μS/cm)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Elution Ratio: Cu	Zn	As	S
PM110	Philex Mill Tailings	12,600	470	50	<2.0	0.26	Stick water	55	30.0	9.4	2,100	0.04	<0.01	<0.0005	1,600				
							Solvent	340	28.0	7.6	280	<0.02	1.86	0.0011	300				
							Eluate	395	27.0	8.1	960	0.03	0.03	0.0006	–	–	–	–	–
PM215	Philex Mill Tailings	303,000	720	100	5.8	0.33	Stick water	64	26.0	9.3	2,650	<0.02	<0.02	0.0010	1,584				
							Solvent	300	27.5	8.3	260	0.02	<0.02	0.0029	4				
							Eluate	381	30.0	8.5	1,900	0.008	<0.02	0.0055	1,137	n.c.	n.d.	0.65×10^{-3}	0.11
PM310	Philex Mill Tailings	500	810	45	1.1	0.19	Stick water	0.115	27.0	7.9	1,300	<0.005	0.014	0.005	905				
							Solvent	5	–	5.3	4.5	<0.005	<0.005	<0.0005	<1				
							Eluate	5	28.0	8.1	460	0.014	<0.005	<0.0005	157	0.14×10^{-3}	n.d.	n.d.	0.24
		1,000	810	45	1.1	0.19	Stick water	0.230	27.0	7.9	1,300	<0.005	0.014	0.005	905				
							Solvent	5	–	5.3	4.5	<0.005	<0.005	<0.0005	<1				
							Eluate	5	28.5	8.1	620	0.007	0.008	0.0024	268	0.27×10^{-4}	0.54×10^{-3}	0.87×10^{-2}	0.20
BM110	Benguet Mill Tailings	17,400	270	710	57	2.27	Stick water	54	25.5	11.3	2,900	22.0	10.7	0.0067	1,458				
							Solvent	340	28.0	7.6	280	<0.02	1.86	0.0011	300				
							Eluate	394	27.0	9.6	810	0.03	0.17	0.0175	390	–	–	–	–
BM215	Benguet Mill Tailings	118,000	300	880	73	2.44	Stick water	437	26.0	12.1	4,100	39	15	0.0039	1,443				
							Solvent	300	27.0	8.4	310	<0.02	<0.02	0.0024	3				
							Eluate	432	30.0	10.3	2,300	15	20	0.0135	610	n.c.	n.c.	0.40×10^{-3}	n.c.
BM310	Benguet Mill Tailings	500	230	630	76	2.93	Stick water	0.225	27.0	9.5	2,500	8.2	1.1	0.0085	1,628				
							Solvent	5	–	5.3	4.5	<0.005	<0.005	<0.0005	<1				
							Eluate	5	28.0	8.4	190	<0.005	<0.005	0.0150	23	n.d.	n.d.	0.19×10^{-2}	n.c.
		1,000	230	630	76	2.93	Stick water	0.450	27.0	9.5	2,500	8.2	1.1	0.0085	1,628				
							Solvent	5	–	5.3	4.5	<0.005	<0.005	<0.0005	<1				
							Eluate	5	29.0	8.3	280	<0.006	0.011	0.0228	70	n.d.	n.c.	0.14×10^{-2}	n.c.
IM110	Itogon Mill Tailings	5,800	130	270	220	1.29	Stick water	58	22.5	10.4	630	0.02	3.60	0.1021	90				
							Solvent	340	28.0	7.6	280	<0.02	1.86	0.0011	300				
							Eluate	398	27.0	8.3	320	0.17	0.08	0.1159	36	–	–	–	–
IM215	Itogon Mill Tailings	154,000	130	310	220	1.54	Stick water	46	23.0	11.4	1,400	17	6.5	0.0505	234				
							Solvent	300	27.0	8.4	310	<0.02	<0.02	0.0036	3				
							Eluate	410	26.0	9.3	430	4.2	<0.02	0.860	111	n.c.	n.d.	0.10×10^{-1}	0.48×10^{-2}
IM310	Itogon Mill Tailings	500	120	300	170	2.23	Stick water	0.160	27.0	8.3	420	<0.005	0.0016	0.0700	52				
							Solvent	5	–	5.3	4.5	<0.005	<0.005	<0.0005	<1				
							Eluate	5	29.0	8.4	170	<0.005	0.006	0.0098	20	n.d.	0.10×10^{-3}	0.43×10^{-3}	0.27×10^{-2}
		1,000	120	300	170	2.23	Stick water	0.320	27.0	8.3	420	<0.005	0.016	0.0700	52				
							Solvent	5	–	5.3	4.5	<0.005	<0.005	<0.0005	<1				
							Eluate	5	28.5	8.3	240	<0.005	0.015	0.0175	58	n.d.	0.19×10^{-3}	0.38×10^{-3}	0.41×10^{-2}
PS299	Philex Mill Tailings (in pond)	119,000	1,309	47	10.7	0.27	Stick water	–	–	–	–	–	–	–	–				
							Solvent	300	28.0	8.0	270	<0.01	<0.02	0.0041	3				
							Eluate	300	29.0	88.0	1,700	0.017	<0.02	0.0024	950	2.3×10^{-4}	n.d.	n.c.	0.29
BS299	Benguet Mill Tailings (in pond)	118,000	646	715	125	3.29	Stick water	–	–	–	–	–	–	–	–				
							Solvent	300	30.0	8.0	610	<0.01	<0.03	0.0040	128				
							Eluate	300	31.0	8.1	2,400	0.003	<0.02	0.034	1,316	n.c.	n.d.	0.61×10^{-3}	0.31×10^{-1}

n.d. : Elution ratio cannot be calculated, because the ingredient in the eluate is below a confidence limit of chemical analysis.
n.c. : Elution ratio cannot be calculated, because precipitation takes place under test conditions.

Table D-5 EXTRACTION TEST BY WET AND DRY REPETITION METHOD (FIRST STAGE)

Sample No.	Description	Cycle	Solid for Test						Stick Water					Eluate After 1 Cycle Process							Elution Ratio			
			Weight (g)	Cu (ppm)	Zn (ppm)	As (ppm)	S (%)	Volume (ℓ)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Volume (ℓ)	pH	EC (μS/cm)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Cu	Zn	As	S
PM111	Philex mill tailings after aeration method	1	190	470	50	<2	0.36	0.93	0.03	0.03	0.0006	40	10	8.2	500	<0.02	<0.01	<0.0005	107	n.d.	n.d.	n.d.	0.50
PM112	– ditto –	2											10	8.5	420	<0.02	0.02	0.0011	47	n.d.	n.c.	n.c.	0.21
PM113	– ditto –	3											10	8.5	400	<0.02	<0.01	0.0010	54	n.d.	n.d.	n.c.	0.25
PM114	– ditto –	4											10	8.4	370	<0.02	<0.01	0.0009	40	n.d.	n.d.	n.c.	0.18
BM111	Benguet mill tailings after aeration method	1	29	270	710	57	2.27	0.99	0.03	0.17	0.0175	390	10	8.3	510	0.07	<0.01	0.0173	127	0.86×10^{-1}	n.d.	0.94×10^{-1}	0.45
BM112	– ditto –	2											10	8.4	400	<0.02	0.01	0.0184	47	n.d.	n.c.	0.10	0.42×10^{-1}
BM113	– ditto –	3											10	8.5	400	<0.02	<0.01	0.0134	47	n.d.	n.d.	0.71×10^{-1}	0.42×10^{-1}
BM114	– ditto –	4											10	8.5	380	<0.02	<0.01	0.0059	48	n.d.	n.d.	0.25×10^{-1}	0.48×10^{-1}
IM111	Itogon mill tailings after aeration method	1	66	130	270	220	1.29	0.98	0.17	0.08	0.1159	36	10	8.4	330	<0.02	0.03	0.0675	15	n.d.	n.c.	0.39×10^{-1}	0.45×10^{-1}
IM112	– ditto –	2											10	8.6	340	<0.02	0.04	0.0190	12	n.d.	n.c.	0.52×10^{-2}	0.33×10^{-1}
IM113	– ditto –	3											10	8.6	300	<0.02	0.04	0.0118	13	n.d.	n.c.	0.22×10^{-3}	0.37×10^{-2}
IM114	– ditto –	4											10	8.5	340	<0.02	0.04	0.0121	28	n.d.	n.c.	0.43×10^{-3}	0.96×10^{-1}
BD1031	Sediments in Binga reservoir	1	1,000	640	140	2	0.14	–	–	–	–	–	10	8.3	720	0.02	<0.01	0.0027	47	n.c.	n.d.	0.14×10^{-1}	0.11
BD1032	– ditto –	2											10	8.7	350	<0.02	<0.01	<0.0005	27	n.d.	n.d.	n.d.	0.64×10^{-1}
BD1033	– ditto –	3											10	8.7	320	<0.02	<0.01	0.0017	28	n.d.	n.d.	0.85×10^{-2}	0.67×10^{-1}
BD1034	– ditto –	4											10	8.8	310	<0.02	<0.01	0.0005	27	n.d.	n.d.	0.25×10^{-2}	0.64×10^{-1}

n.d. : Elution ratio cannot be calculated, because the ingredient in the eluate is below a detection limit of chemical analysis.
n.c. : Elution ratio cannot be calculated, because precipitation takes place under test conditions.

Table D-6 EXTRACTION TEST BY WET AND DRY REPETITION METHOD SECOND AND THIRD STAGE

Sample No.	Description	Cycle	Solid for Test					Stick Water					up: Solvent before the cycle process down: Additional Water							Eluate after 1 Cycle Process								Elution Ratio			
			Weight (kg)	Cu (ppm)	Zn (ppm)	As (ppm)	S (%)	Volume (ℓ)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Volume (ℓ)	pH	EC (μS/cm)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Volume (ℓ)	WT (°C)	pH	EC (μS/cm)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Cu	Zn	As	S
WPM211	Philex Mill Tailings	1	4.0	3000	54	1.9	0.44	0.34	<0.02	<0.02	0.0010	1584	10 -	6.4 -	6.4 -	<0.02 -	<0.02 -	<0.0005 -	<1 -	10.34		8.2	1100	0.016	<0.02	0.0007	588	0.25x10⁻⁴	n.d.	0.58x10⁻³	0.11
WPM212		2	4.0					0.40	0.016	<0.02	0.0007	588	10 8.4	6.4 -	6.4 -	<0.02 -	<0.02 -	<0.0005 -	<1 -	10.00		8.1	580	0.010	<0.02	0.0008	204	n.c.	n.d.	0.66x10⁻³	0.34x10⁻¹
WPM213		3	4.0					0.40	0.010	<0.02	0.0008	204	10 8.4	6.4 -	6.4 -	<0.02 -	<0.02 -	<0.0005 -	<1 -	10.00		7.8	430	0.012	<0.02	0.0007	163	n.c.	n.d.	0.27x10⁻³	0.29x10⁻¹
WPM214		4	4.0					0.40	0.012	<0.02	0.0007	163	10 8.4	6.4 -	2.6 -	<0.02 -	<0.02 -	0.0006 -	<1 -	10.00		7.7	400	0.024	<0.02	0.0009	138	0.43x10⁻⁴	n.d.	n.c.	0.25x10⁻¹
WPM		5	4.0					0.40	0.024	<0.02	0.0009	138	10 8.4	6.4 -	2.6 -	<0.02 -	<0.02 -	0.0006 -	<1 -	10.00		7.8	390	0.016	<0.02	0.0014	119	n.c.	n.d.	0.11x10⁻²	0.21x10⁻¹
WPM311	Philex Mill Tailings	1	1.14	810	45	1.1	0.19	0.61	<0.005	0.014	0.0005	905	10.0 0.0	6.0 -	2.0 -	0.008 -	0.006 -	<0.0005 -	<1 -	10.61	27.0	8.1	520	0.012	0.008	0.0010	203	0.50x10⁻⁴	0.32x10⁻²	0.62x10⁻²	0.25
WPM312		2	1.14					0.51	0.012	0.008	0.0010	203	10.0 3.0	5.3 6.0	4.2 2.0	- 0.008	- 0.006	- <0.0005	- <1	10.00	29.0	8.1	330	<0.005	0.006	<0.0005	113	n.d.	0.74x10⁻²	n.d.	0.16
WPM313		3	1.14					0.45	<0.005	0.006	<0.0005	113	10.0 3.0	5.1 5.3	5.7 4.2	<0.005 -	<0.005 -	0.0007 -	<1 -	10.00	27.0	8.3	270	0.006	0.005	<0.0005	63	0.37x10⁻⁴	0.43x10⁻²	n.d.	0.68x10⁻¹
WPM314		4	1.14					0.44	0.006	0.005	<0.0005	63	10.0 3.0	5.3 5.1	3.7 5.7	<0.005 <0.005	<0.005 <0.005	<0.0005 0.0007	<1 <1	10.00	30.0	8.3	220	0.011	<0.005	0.0009	51	0.81x10⁻⁴	n.d.	0.34x10⁻²	0.73x10⁻¹
WPM315		5	1.14					0.51	0.011	<0.005	0.0009	51	10.0 3.0	5.8 5.3	2.4 3.7	- <0.005	- <0.005	- <0.0005	- <1	10.00	30.0	8.3	210	<0.005	<0.005	0.0007	41	n.d.	n.d.	0.46x10⁻²	0.59x10⁻¹
WBM311	Benguet Mill Tailings	1	1.09	230	630	76	2.93	0.91	8.2	1.1	0.0085	1628	10.0 0.0	6.0 -	2.0 -	0.008 -	0.006 -	<0.0005 -	<1 -	10.91	27.5	9.5	980	1.9	<0.005	0.0084	468	0.53x10⁻¹	n.d.	0.10x10⁻²	0.38x10⁻¹
WBM312		2	1.08					0.56	1.9	<0.005	0.0084	468	10.0 3.0	5.3 6.0	4.2 2.0	- 0.008	- 0.006	- <0.0005	- <1	10.00	29.0	8.2	870	<0.005	0.007	0.0136	425	n.d.	0.74x10⁻⁴	0.16x10⁻²	0.42x10⁻¹
WBM313		3	1.07					0.56	<0.005	0.007	0.0136	425	10.0 3.0	5.1 5.3	5.7 4.2	<0.005 -	<0.005 -	0.0007 -	<1 -	10.00	27.0	8.3	400	<0.005	<0.005	0.0114	141	n.d.	n.d.	0.12x10⁻²	0.12x10⁻¹
WBM314		4	1.06					0.64	<0.005	<0.005	0.0114	141	10.0 3.0	5.3 5.1	3.7 5.7	<0.005 <0.005	<0.005 <0.005	<0.0005 <0.0007	<1 <1	10.00	30.0	8.3	310	0.005	0.008	0.0216	100	0.65x10⁻⁴	0.69x10⁻⁴	0.25x10⁻²	0.97x10⁻²
WBM315		5	1.06					0.57	0.005	0.008	0.0216	100	10.0 3.0	5.8 5.3	2.4 3.7	- <0.005	- <0.005	- <0.0005	- <1	10.00	30.5	8.3	260	<0.005	0.007	0.0273	73	n.d.	0.87x10⁻⁴	0.32x10⁻²	0.72x10⁻²

n.d. : Elution ratio can not be calculated because the ingredient in the eluate is below a confidence limit of chemical analysis.
WT : Water Temperature

Table D-7 CULTURE OF BACTERIA

Culture of Ferrabacillus ferrooxidans	
$(NH_4)_2SO_4$	0.15 g
$MgSO_4 \cdot 7H_2O$	0.50 g
$Ca(NO_3)_2$	0.01 g
$KC\ell$	0.05 g
K_2HPO_4	0.05 g
Distilled Water	1,000 mℓ
Culture of Thiobacillus thioparus	
$Na_2S_2O_3 \cdot 5H_2O$	10.0 g
$MgSO_4 \cdot 7H_2O$	0.1 g
$NH_4C\ell$	0.1 g
$MnSO_4$	0.02 g
K_2HPO_4	2.0 g
$CaC\ell_2$	0.1 g
$FeC\ell_3 \cdot 6H_2O$	0.02 g
Distilled Water	1,000 mℓ

Table D-8 EXTRACTION TEST BY A BACTERIA ADDITION

Sample No.	Description	Cycle	Solid for Test Weight (kg)	Cu (ppm)	Zn (ppm)	As (ppm)	S (%)	Stick Water Volume (ℓ)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Eluate after 1 Cycle Process Volume (ℓ)	WT (°C)	pH	EC (μS/cm)	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	SO_4 (mg/ℓ)	Elution Ratio Cu	Zn	As	SO_4
TPM311	Philex Mill	1	1.70	810	45	1.1	0.19	0.94	<0.005	0.014	0.0005	905	10.12	29.5	3.3	1600	2.4	0.50	0.0030	201	0.18×10^{-1}	0.66×10^{-1}	0.16×10^{-1}	0.12×10^{0}
TPM312	Tailings	2	1.70					9.12	2.4	0.50	0.0030	201	10.17	29.5	3.2	2400	2.9	0.40	0.0030	336	0.55×10^{-2}	n.c.	0.17×10^{-2}	0.16×10^{0}
TPM313	(Without	3	1.70					9.17	2.9	0.40	0.0030	336	10.20	28.0	3.1	2700	2.2	0.50	0.0025	385	n.c.	0.19×10^{-1}	n.c.	0.87×10^{-1}
TPM314	Bacteria)	4	1.70					9.20	2.2	0.50	0.0025	385	10.23	28.5	3.0	2900	2.4	0.52	0.0021	419	0.31×10^{-2}	0.94×10^{-2}	n.c.	0.77×10^{-1}
TPM315		5	1.70					9.23	2.4	0.52	0.0021	419	10.26	29.0	3.1	2800	2.4	0.50	0.0024	417	0.18×10^{-2}	0.43×10^{-2}	0.28×10^{-2}	0.42×10^{-1}
XPM311	Philex Mill	1	1.70	810	145	1.1	0.19	0.67	<0.005	0.014	0.0005	905	10.14	29.0	3.1	2100	2.1	0.40	0.0020	263	0.15×10^{-1}	0.53×10^{-1}	0.11×10^{-2}	0.21×10^{0}
XPM312	Tailings	2	1.70					9.14	2.1	0.40	0.0020	263	10.18	29.5	3.0	2600	2.9	0.28	0.0018	338	0.75×10^{-2}	n.c.	n.c.	0.11×10^{0}
XPM313	(With	3	1.70					9.18	2.9	0.28	0.0018	338	10.21	28.0	3.1	2700	2.8	0.40	0.0021	394	0.14×10^{-2}	0.20×10^{-1}	0.26×10^{-2}	0.95×10^{-1}
XPM314	Bacteria)	4	1.70					9.21	2.8	0.40	0.0021	394	10.23	28.0	3.1	2800	2.5	0.42	0.0019	401	n.c.	0.80×10^{-2}	n.c.	0.49×10^{-1}
XPM315		5	1.70					9.23	2.5	0.42	0.0019	401	10.25	29.0	3.0	2700	2.9	0.50	0.0016	404	0.48×10^{-2}	0.16×10^{-1}	n.c.	0.45×10^{-1}
TBM311	Benguet Mill	1	1.70	230	630	76	2.93	1.90	8.2	1.1	0.0085	1628	10.21	29.0	3.2	2800	0.12	0.70	0.0085	564	n.c.	0.57×10^{-2}	0.61×10^{-3}	0.29×10^{-1}
TBM312	Tailings	2	1.70					9.21	0.12	0.70	0.0085	564	10.36	29.5	3.3	4400	0.12	1.1	0.0148	829	0.35×10^{-3}	0.46×10^{-2}	0.58×10^{-3}	0.23×10^{-1}
TBM313	(Without	3	1.70					9.36	0.12	1.1	0.0148	829	10.43	28.0	3.0	4800	0.10	1.1	0.0141	837	n.c.	0.11×10^{-2}	0.66×10^{-4}	0.65×10^{-2}
TBM314	Bacteria)	4	1.70					9.43	0.10	1.1	0.0141	837	10.49	28.0	3.2	5000	0.10	1.2	0.0131	832	0.27×10^{-2}	0.21×10^{-2}	0.34×10^{-4}	0.56×10^{-2}
TBM315		5	1.70					9.49	0.10	1.2	0.0131	832	10.57	29.0	3.3	4700	0.14	1.26	0.0126	825	0.14×10^{-2}	0.18×10^{-2}	0.69×10^{-4}	0.55×10^{-2}
XBM311	Benguet Mill	1	1.70	230	630	76	2.93	0.90	8.2	1.10	0.0085	1628	10.24	29.0	3.1	3600	0.14	1.10	0.0115	598	n.c.	0.96×10^{-2}	0.85×10^{-3}	0.31×10^{-1}
XBM312	Tailings	2	1.70					9.24	0.14	1.10	0.0115	598	10.35	29.5	3.2	4600	0.15	1.20	0.0185	754	0.66×10^{-3}	0.21×10^{-2}	0.66×10^{-3}	0.15×10^{-1}
XBM313	(With	3	1.70					9.35	0.15	1.20	0.0185	754	10.42	27.5	3.1	4500	0.034	1.06	0.0144	723	n.c.	n.c.	n.c.	0.32×10^{-2}
XBM314	Bacteria)	4	1.70					9.42	0.034	1.06	0.0144	723	10.47	28.0	3.1	4800	0.080	1.05	0.0112	763	0.13×10^{-2}	0.94×10^{-3}	n.c.	0.79×10^{-2}
XBM315		5	1.70					9.47	0.080	1.05	0.0112	763	10.53	29.0	3.1	4400	0.110	1.20	0.0120	752	0.10×10^{-2}	0.25×10^{-2}	0.16×10^{-2}	0.46×10^{-2}

WT : Water Temperature
n.c. : Elution ratio can not be calculated because precipitation takes place under test conditions.

Table D-9 MODEL TEST (FOR PHILEX MILL TAILINGS)

Sample No.	Sampling Date	Solid for Test Cu (ppm)	Solid for Test Zn (ppm)	Solid for Test As (ppm)	Solid for Test S (%)	Eluate after Shaking Volume (ℓ)	Eluate after Shaking WT (°C)	Eluate after Shaking pH	Eluate after Shaking EC (μS/cm)	Eluate after Shaking Cu (mg/ℓ)	Eluate after Shaking Zn (mg/ℓ)	Eluate after Shaking As (mg/ℓ)	Eluate after Shaking SO_4 (mg/ℓ)	Eluate after Shaking Moisture Content (%)	Elution Ratio Cu	Elution Ratio Zn	Elution Ratio As	Elution Ratio S
YPM2111	Mar. 4	2,800	47	2.6	0.38	1.7	27.0	7.8	1000	0.015	<0.02	0.0007	444	5.4	0.11×10^{-4}	n.d.	0.57×10^{-3}	0.83×10^{-1}
YPM2112	Apr. 5	2,400	130	1.6	0.26	1.7	31.0	7.8	1000	0.010	0.017	<0.0005	528	4.5	0.89×10^{-5}	0.28×10^{-3}	n.d.	0.14
YPM2113	May 5	2,700	40	1.6	0.21	1.7	29.5	7.9	1100	0.015	0.010	0.0005	563	6.0	0.12×10^{-4}	0.53×10^{-3}	0.66×10^{-3}	0.19
YPM2114	June 5	2,600	45	1.9	<0.10	1.7	30.0	7.6	1100	0.017	0.015	<0.0005	620	6.5	0.14×10^{-4}	0.71×10^{-3}	n.d.	n.c.
YPM2115	July 5	2,600	50	2.0	<0.10	1.7	29.5	8.0	1100	0.010	0.02	0.0006	644	7.5	0.82×10^{-5}	0.85×10^{-3}	0.64×10^{-3}	n.c.
YPM2116	Aug. 5	2,600	35	2.4	<0.10	1.7	25.5	7.7	1200	0.011	0.016	<0.0005	629	7.5	0.90×10^{-5}	0.97×10^{-3}	n.d.	n.c.
Average															0.11×10^{-4}	0.67×10^{-3}	0.62×10^{-3}	0.14
YPM2121	Mar. 4	2,800	47	2.6	0.38	1.7	28.0	8.1	900	<0.010	<0.02	<0.0005	396	5.1	n.d.	n.d.	n.d.	0.74×10^{-1}
YPM2122	Apr. 5	2,600	35	2.5	<0.10	1.7	31.0	7.7	950	0.017	0.015	<0.0005	441	4.4	0.14×10^{-4}	0.91×10^{-3}	n.d.	n.c.
YPM2123	May 5	2,300	45	2.0	<0.10	1.7	29.5	7.9	1100	0.018	0.012	<0.0005	576	4.7	0.17×10^{-4}	0.57×10^{-3}	n.d.	n.c.
YPM2124	June 5	2,600	53	2.2	0.10	1.7	30.0	7.7	1100	<0.005	0.010	<0.0005	645	6.7	n.d.	0.40×10^{-3}	n.d.	0.46
YPM2125	July 5	2,500	50	2.4	0.10	1.7	29.0	7.9	1200	0.010	0.018	<0.0005	628	7.7	0.85×10^{-5}	0.77×10^{-3}	n.d.	0.44
YPM2126	Aug. 5	2,700	45	1.9	0.11	1.7	26.0	7.7	1200	0.020	0.011	<0.0005	653	7.3	0.16×10^{-4}	0.52×10^{-3}	n.d.	0.42
Average															0.14×10^{-4}	0.69×10^{-3}	–	0.35

n.d. : Elution ratio cannot be calculated, because the ingredient in the eluate is below a confidence limit of chemical analysis.
n.c. : Elution ratio cannot be calculated, because precipitation takes place under test conditions.
WT : Water Temperature

Table D-10 MODEL TEST (IRRIGATION CANAL)

No.	Sampling Date	Weight (g)	Solid for Test Cu (ppm)	Solid for Test Zn (ppm)	Solid for Test As (ppm)	Solid for Test S (%)	Eluate Volume (ℓ)	Eluate WT (°C)	Eluate pH	Eluate EC (μS/cm)	Eluate Cu (mg/ℓ)	Eluate Zn (mg/ℓ)	Eluate As (mg/ℓ)	Eluate SO_4 (mg/ℓ)	Eluate Moisture Content (%)	Elution Ratio Cu	Elution Ratio Zn	Elution Ratio As	Elution Ratio S
GS21	Dec. 15	800	690	39	3.0	<0.10	1.7	–	8.1	73	0.023	0.03	0.0021	13	–	0.71×10^{-4}	0.16×10^{-2}	0.15×10^{-2}	n.c.
GS22	Feb. 6	800	630	76	5.7	<0.10	1.7	–	7.8	350	0.076	0.03	0.0030	126	–	0.26×10^{-3}	0.84×10^{-3}	0.11×10^{-2}	n.c.
GS23	Mar. 5	800	840	44	3.2	<0.10	1.7	29	7.7	100	0.022	<0.02	0.0025	24	–	0.58×10^{-4}	n.d.	0.17×10^{-2}	n.c.
GS24	Apr. 5	800	830	35	2.2	<0.10	1.7	34	7.9	72	0.026	0.010	0.0029	17	3.1	0.67×10^{-4}	0.61×10^{-3}	0.28×10^{-2}	n.c.
GS25	May 10	800	760	40	3.6	<0.10	1.7	32	8.4	100	0.036	0.010	0.0054	22	24.9	0.10×10^{-3}	0.53×10^{-3}	0.32×10^{-2}	n.c.
GS26	June 8	800	850	46	4.0	<0.10	1.7	28	8.3	81	0.021	0.007	0.0028	18	30.0	0.53×10^{-4}	0.32×10^{-3}	0.15×10^{-2}	n.c.
	July, Aug.	Samples were not able to be collected because of irrigation water.																	
	Average		760	47	3.6	<0.10										0.10×10^{-4}	0.78×10^{-3}	0.20×10^{-2}	n.c.

n.d. : Elution ratio cannot be calculated because the ingredient in the eluate is below 0.02 mg/ℓ.
n.c. : Elution ratio cannot be calculated because precipitation takes place under test conditions.

Table D-11 SIEVE ANALYSIS OF SS AT FIXED POINTS AND MILL TAILINGS

	Sampling Date	Rate of flow (m^3/s)	SS (No.3+, mg/ℓ)	Distribution (wt%)			
				74μm+	53μm–74μm	25μm–53μm	5μm–25μm
B point	Aug. 5	3.17	190	7.9	5.4	15.0	71.7
	Aug. 14	4.94	2,100	4.1	3.1	10.9	81.9
	Aug. 24	14.30	460	40.5	5.3	8.4	45.8
C point	Aug. 3	2.85	23,000	14.8	5.1	18.3	61.8
	Aug. 12	4.31	5,400	60.5	3.8	9.2	26.5
	Aug. 23	7.82	5,800	39.3	8.7	14.6	37.4
D point	Aug. 4	1.62	1,100	41.5	12.3	16.6	29.6
	Aug. 13	2.43	2,100	51.7	6.3	11.5	30.5
	Aug. 22	4.22	1,700	43.1	6.9	18.1	31.9
E point	Aug. 3	92.60	630	25.1	7.5	19.7	47.7
	Aug. 14	88.43	1,800	21.3	8.6	20.8	49.3
	Aug. 24	160.01	1,300	43.8	9.0	16.4	30.8
Philex Mill Tailings	July 27		220,000	40.3	9.1	16.2	34.4
Benguet Mill Tailings	July 30		60,000	28.6	9.7	17.6	44.1
Itogon Mill Tailings	July 30		3,500	73.1	6.6	7.7	12.6

Table D-12 CHEMICAL ANAYSES OF SIEVED SUSPENDED SOLIDS AT FIXED POINTS

Fixed Point	Samp-ing Time	Sampling Date	Size	Analysis No.	Sample No.	Cu ppm	Zn ppm	As ppm	S %
B	1	Aug. 5	74μ +	S-3025	B-311	110	330	35	0.20
		〃	53μ~74μ	S-3026	B-312	150	440	41	<0.10
		〃	25μ~53μ	S-3027	B-313	170	550	46	0.44
		〃	5μ~25μ	S-3028	B-314	330	740	100	1.44
	2	Aug. 14	74μ+	S-3029	B-321	100	260	40	<0.10
		〃	53μ~74μ	S-3030	B-322	78	210	28	<0.10
		〃	25μ~53μ	S-3031	B-323	120	350	29	0.40
		〃	5μ~25μ	S-3032	B-324	210	780	84	1.64
	3	Aug. 24	74μ+	S-3033	B-331	110	260	35	<0.10
		〃	53μ~74μ	S-3034	B-332	150	690	43	0.36
		〃	25μ~53μ	S-3035	B-333	180	750	49	0.77
		〃	5μ~25μ	S-3036	B-334	330	1000	84	0.33
C	1	Aug. 3	74μ+	S-3037	C-311	1000	60	1.2	<0.10
		〃	53μ~74μ	S-3038	C-312	1000	49	1.2	<0.10
		〃	25μ~53μ	S-3039	C-313	830	75	1.0	<0.10
		〃	5μ~25μ	S-3040	C-314	1300	98	1.5	<0.10
	2	Aug. 12	74μ+	S-3041	C-321	1500	44	1.6	0.11
		〃	53μ~74μ	S-3042	C-322	1900	130	1.9	0.24
		〃	25μ~53μ	S-3043	C-323	1900	79	1.9	0.11
		〃	5μ~25μ	S-3044	C-324	2400	160	2.0	0.21
	3	Aug. 23	74μ+	S-3045	C-331	960	43	1.1	<0.10
		〃	53μ~74μ	S-3046	C-332	940	51	1.4	<0.10
		〃	25μ~53μ	S-3047	C-333	910	63	1.4	<0.10
		〃	5μ~25μ	S-3048	C-334	1400	130	1.6	<0.10
D	1	Aug. 4	74μ+	S-3049	D-311	580	56	1.0	<0.10
		〃	53μ~74μ	S-3050	D-312	540	57	1.1	<0.10
		〃	25μ~53μ	S-3051	D-313	820	90	1.5	0.18
		〃	5μ~25μ	S-3052	D-314	1100	190	3.0	0.11
	2	Aug. 13	74μ+	S-3053	D-321	220	68	<1.0	<0.10
		〃	53μ~74μ	S-3054	D-322	260	90	1.2	<0.10
		〃	25μ~53μ	S-3055	D-323	310	93	1.2	<0.10
		〃	5μ~25μ	S-3056	D-324	730	170	2.0	<0.10
	3	Aug. 22	74μ+	S-3057	D-331	560	48	<1.0	<0.10
		〃	53μ~74μ	S-3058	D-332	1100	100	1.7	0.20
		〃	25μ~53μ	S-3059	D-333	1100	55	1.7	0.19
		〃	5μ~25μ	S-3060	D-334	950	130	1.7	<0.10
E	1	Aug. 3	74μ+	S-3061	E-311	570	68	3.1	<0.10
		〃	53μ~74μ	S-3062	E-312	720	140	6.2	<0.10
		〃	25μ~53μ	S-3063	E-313	1200	130	6.1	<0.10
		〃	5μ~25μ	S-3064	E-314	1500	170	7.1	0.11
	2	Aug. 14	74μ+	S-3065	E-321	540	78	2.5	<0.10
		〃	53μ~74μ	S-3066	E-322	750	160	2.8	<0.10
		〃	25μ~53μ	S-3067	E-323	730	95	2.5	<0.10
		〃	5μ~25μ	S-3068	E-324	1200	120	2.9	<0.10
	3	Aug. 24	74μ+	S-3069	E-331	650	75	6.4	<0.10
		〃	53μ~74μ	S-3070	E-332	950	100	11	0.26
		〃	25μ~53μ	S-3071	E-333	850	130	7.9	0.24
		〃	5μ~25μ	S-3072	E-334	990	160	6.6	<0.10

Table D-13 CHEMICAL ANALYSES OF SIEVED MILL TAILINGS

Locality	Grain Size	Sample No.	Cu (ppm)	Zn (ppm)	As (ppm)	S %
Philex	74μ+	PM-311	1200	50	1.1	<0.10
	53μ~74μ	PM-312	430	89	<1.0	<0.10
	25μ~53μ	PM-313	320	130	<1.0	<0.10
	5μ~25μ	PM-314	590	120	1.0	<0.10
Benguet	74μ+	BM-311	70	210	28	0.63
	53μ~74μ	BM-312	260	720	90	3.18
	25μ~53μ	BM-313	360	840	140	5.35
	5μ~25μ	BM-314	240	840	100	2.73
Itogon	74μ+	IM-311	73	190	73	0.72
	53μ~74μ	IM-312	140	340	190	2.64
	25μ~53μ	IM-313	170	440	250	3.55
	5μ~25μ	IM-314	140	520	170	1.31

Table D-14 EXTRACTION TEST BY SHAKING METHOD UNDER AN ACIDIC CONDITION

Description	Sample No.	Size (μm)	Source Solid: Weight (kg)	Source Solid: Cu (ppm)	Source Solid: Zn (ppm)	Source Solid: As (ppm)	Source Solid: S %	Eluate: Volume (ℓ)	Eluate: WT (°C)	Eluate: pH	Eluate: EC (μS/cm)	Eluate: Cu (mg/ℓ)	Eluate: Zn (mg/ℓ)	Eluate: As (mg/ℓ)	Eluate: SO_4 (mg/ℓ)	Elution Ratio: Cu	Elution Ratio: Zn	Elution Ratio: As	Elution Ratio: S
Fixed Point B	B311	74 +	0.05	110	330	35	0.20	0.5	30.0	2.3	11000	0.3	7.0	0.0298	52	0.27×10^{-1}	0.21	0.85×10^{-2}	0.87×10^{-1}
	B312	53~74	0.05	150	440	41	<0.10	0.5	32.0	1.3	26000	1.2	8.8	0.0773	3	0.80×10^{-1}	0.20	0.19×10^{-1}	n.c.
	B313	25~53	0.05	170	550	46	0.44	0.5	32.0	1.8	15000	1.8	1.26	0.1100	8	0.11	0.23×10^{-1}	0.24×10^{-1}	0.61×10^{-2}
	B314	5~25	0.05	330	740	100	1.44	0.5	32.0	5.6	9700	0.3	6.0	0.0250	68	0.91×10^{-2}	0.81×10^{-1}	0.25×10^{-2}	0.16×10^{-1}
Fixed Point C	C311	74, +	0.05	1000	60	1.2	<0.10	0.5	32.0	1.2	33000	21.0	0.44	0.0041	79	0.21	0.73×10^{-1}	0.34×10^{-1}	n.c.
	C312	53~74	0.05	1000	49	1.2	<0.10	0.5	32.0	1.2	31000	10.0	0.90	0.0037	79	0.10	0.18	0.31×10^{-1}	n.c.
	C313	25~53	0.05	830	75	1.0	<0.10	0.5	32.0	1.3	27000	7.0	2.3	0.0060	123	0.84×10^{-1}	0.31	0.60×10^{-1}	n.c.
	C314	5 ~25	0.05	1300	98	1.5	<0.10	0.5	32.0	1.3	25000	14.0	3.5	0.0099	97	0.11	0.36	0.66×10^{-1}	n.c.
Fixed Point D	D311	74 +	0.05	580	56	1.0	<0.10	0.5	32.0	1.2	33000	1.6	1.9	0.0039	14	0.28×10^{-1}	0.34	0.39×10^{-1}	n.c.
	D312	53~74	0.05	540	57	1.1	<0.10	0.5	33.0	1.2	28000	5.0	1.7	0.0069	84	0.93×10^{-1}	0.30	0.63×10^{-1}	n.c.
	D313	25~53	0.05	820	90	1.5	0.18	0.5	33.0	1.3	26000	10.0	3.7	0.0107	220	0.12	0.41	0.73×10^{-1}	0.41
	D314	5~25	0.05	1100	190	3.0	0.11	0.5	33.5	1.5	18000	28.0	7.4	0.0178	120	0.26	0.39	0.59×10^{-1}	0.36
Fixed Point E	E311	74, +	0.05	570	68	3.1	<0.10	0.5	33.0	1.2	28000	6.0	3.02	0.0222	20	0.11	0.44	0.72×10^{-1}	n.c.
	E312	53~74	0.05	720	140	6.2	<0.10	0.5	33.0	1.2	28000	8.0	6.4	0.0236	30	0.11	0.46	0.38×10^{-1}	n.c.
	E313	25~53	0.05	1200	130	6.1	<0.10	0.5	33.0	1.3	25000	11.0	6.4	0.0295	73	0.92×10^{-1}	0.49	0.48×10^{-1}	n.c.
	E314	5~25	0.05	1500	170	7.1	0.11	0.5	33.5	1.5	18000	31.0	5.5	0.1260	65	0.21	0.32	0.18	0.20
Philex Mill Tailings	PM310	5 +	0.05	430	55	(0.9) <1.0	0.19	0.5	28.5	1.4	23000	10.0	1.12	0.0139	604	0.23	0.20	0.15	n.c
	PM311	74 +	0.05	1200	50	1.1	<0.10	0.5	28.0	1.2	30000	2.1	1.82	0.0051	76	0.18×10^{-1}	0.36	0.46×10^{-1}	
	PM312	53~74	0.05	430	89	(0.7) <1.0	<0.10	0.5	28.0	1.3	29000	4.0	3.6	0.0050	128	0.93×10^{-1}	0.40	0.71×10^{-1}	n.c.
	PM313	25~53	0.05	320	130	(0.8) <1.0	<0.10	0.5	29.0	1.6	29000	4.8	7.5	0.0067	95	0.15	0.58	0.84×10^{-1}	n.c.
	PM314	5~25	0.05	590	120	1.0	<0.10	0.5	29.0	1.6	19000	14.5	6.3	0.0143	76	0.25	0.53	0.14	n.c.
Benguet Mill Tailings	BM310	5 +	0.05	230	580	78	2.86	0.5	28.5	4.6	9400	0.14	4.8	0.0140	22	0.61×10^{-2}	0.83×10^{-1}	0.82×10^{-2}	0.26×10^{-2}
	BM311	74 +	0.05	70	210	28	0.63	0.5	28.0	2.2	11000	0.060	1.84	0.0268	57	0.86×10^{-2}	0.88×10^{-1}	0.96×10^{-2}	0.30×10^{-1}
	BM312	53~74	0.05	260	720	90	3.18	0.5	31.0	5.2	9900	0.14	4.2	0.0070	88	0.54×10^{-2}	0.58×10^{-1}	0.78×10^{-2}	0.92×16^{-2}
	BM313	25~53	0.05	360	840	140	5.35	0.5	30.5	5.0	10000	0.080	2.3	0.0073	101	0.22×10^{-2}	0.27×10^{-1}	0.52×10^{-2}	0.63×10^{-2}
	BM314	5~25	0.05	240	840	100	2.73	0.5	31.0	5.9	9900	0.015	4.1	0.0080	154	0.63×10^{-3}	0.49×10^{-1}	0.80×10^{-2}	0.19×10^{-1}
Itogon Mill Tailings	IM310	5 +	0.05	120	410	150	1.13	0.5	28.5	2.3	11000	0.16	3.2	0.0212	23	0.13×10^{-1}	0.78×10^{-1}	0.14×10^{-2}	0.68×10^{-2}
	IM311	74 +	0.05	73	190	73	0.72	0.5	30.0	1.8	15000	0.036	1.21	0.0136	5	0.49×10^{-2}	0.64×10^{-1}	0.19×10^{-2}	0.23×10^{-2}
	IM312	53~74	0.05	140	340	190	2.64	0.5	30.0	4.6	10000	0.030	1.9	0.0330	9	0.21×10^{-2}	0.56×10^{-1}	0.17×10^{-2}	0.11×10^{-2}
	IM313	25~53	0.05	170	440	260	3.55	0.5	31.0	5.4	9900	0.020	3.1	0.0825	11	0.12×10^{-2}	0.71×10^{-1}	0.32×10^{-2}	0.10×10^{-2}
	IM314	5~25	0.05	140	520	170	1.31	0.5	31.0	6.3	9900	<0.005	2.8	0.0326	27	0.18×10^{-3}	0.54×10^{-1}	0.19×10^{-2}	0.69×10^{-2}

n.c.: Elution ratio cannot be calculated.

Table D-15 SIEVE ANALYSIS OF SEDIMENTS IN THE BINGA RESERVOIR

Sample No.	Percent Particle Size Distribution										
	38.1 mm	25.4 mm	19.1 mm	9.52 mm	4.76mm	2.00 mm	0.84 mm	0.42 mm	0.25 mm	0.105 mm	0.074 mm
BD 101	0.89	4.58	5.45	22.50	18.99	19.33	11.01	8.38	5.10	3.11	0.33	0.33
BD 102	–	1.85	3.49	10.73	12.13	10.20	8.27	13.66	20.63	15.88	1.58	1.58
BD 103	0.89	11.35	9.23	19.85	14.32	13.11	12.40	10.46	4.35	2.91	0.49	0.64
BD 104	1.29	6.66	4.19	16.09	17.19	16.83	11.56	9.48	7.83	5.77	1.24	1.87

Table D-16 PRECIPITATION TEST OF SEDIMENTS IN THE AMBUKLAO RESERVOIR AND BINGA RESERVOIR

Sample No.	Time Passed After Mixing								
	10 s (mℓ)	30 s (mℓ)	1 min (mℓ)	2 min (mℓ)	5 min (mℓ)	15 min (mℓ)	30 min (mℓ)	60 min (mℓ)	90 min (mℓ)
AD 201	45	70	70	70	76	76	76	78	83
AD 202	60	70	70	72	88	85	84	83	81
AD 203	50	60	67	72	99	95	92	91	90
AD 204	45	70	72	72	72	72	70	70	66
AD 205	20	30	40	75	165	128	110	102	100
AD 206	50	70	80	82	89	84	82	82	81
AD 207	75	77	78	80	77	72	72	65	65
BD 201	70	70	71	72	72	72	72	72	62
BD 202	60	70	70	71	70	70	69	69	
BD 203	80	81	81	82	82	81	80	82	73

AD : Sediments in the Ambuklao reservoir
BD : Sediments in the Binga reservoir
Volume of one tested sample is one liter.
Figures show the volume of precipitates.

Table D-17 GRAIN SIZE ANALYSIS (1)

Sample No.	Description	Percent particle size distribution								Textural Guide
		Total sand	Very Coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay	
			2 mm – 1 mm	1 mm – 0.5 mm	0.5 mm – 0.25 mm	0.25 mm – 0.1 mm	0.1 mm – 0.05 mm	0.05 mm – 0.002 mm		
PM 11	Philex mill tailings	72.4	0.6	7.0	17.6	26.8	20.4	19.6	8.0	SL (Sand Loam)
BM 11	Benguet mill tailings	39.4	0.2	0.2	0.6	10.4	28.0	52.6	8.0	SiL (Silt Loam)
IM 11	Itogon mill tailings	62.4	0.2	0.6	8.4	32.4	20.8	25.6	12.0	SL (Sand Loam)
PM215	Philex mill tailings	72.8	1.0	7.2	21.8	27.4	15.4	17.2	10.0	SL (Sand Loam)
BM215	Benguet mill tailings	30.2	0.2	0.2	0.4	4.6	24.8	53.8	16.0	Sil (Silt Loam)
IM 215	Itogon mill tailings	58.8	0.2	1.8	15.0	25.2	16.6	23.2	18.0	SL (Sand Loam)
PM225	Philex mill tailings	50.4	0.2	0.2	7.0	22.0	21.0	34.6	15.0	L (Loam)
BM225	Benguet mill tailings	30.6	0	0.2	0.2	4.6	25.6	46.4	23.0	L (Loam)
IM 225	Itogon mill tailings	72.8	0.2	0.8	11.2	37.4	23.2	11.2	16.0	SL (Sand Loam)
PM219	Philex mill tailings (Coarse part)	95.2	1.4	11.6	43.0	35.4	3.8	0	4.8	S (Sand)
AD201	Sediments, Ambuklao dam	88.4	4.6	5.2	7.2	48.6	22.8	3.2	8.4	LS (Loamy Sand)
AD202	Sediments, Ambuklao dam	91.0	0.4	1.4	11.2	62.0	16.0	1.6	7.4	S (Sand)
AD203	Sediments, Ambuklao dam	89.4	0.8	0.8	2.4	59.0	26.4	2.2	8.4	LS (Loamy Sand)
AD204	Sediments, Ambuklao dam	96.8	9.4	15.0	34.2	34.0	4.2	0	3.2	S (Sand)
AD205	Sediments, Ambuklao dam	35.6	0.2	0.2	1.8	8.0	25.4	50.0	14.4	Sil (Silt Loam)
AD206	Sediments, Ambuklao dam	89.2	1.6	8.4	28.2	34.8	16.2	2.4	8.4	LS (Loamy Sand)
AD207	Sediments, Ambuklao dam	96.2	25.0	36.4	23.2	9.4	2.2	0	3.8	S (Sand)
BD201	Sediments, Binga dam	96.8	24.6	43.4	24.4	3.6	0.8	0	3.2	S (Sand)
BD202	Sediments, Binga dam	96.0	3.8	14.4	40.4	31.2	6.2	0	4.0	S (Sand)
BD203	Sediments, Binga dam	95.6	2.0	14.0	63.2	15.4	1.0	0	4.4	S (Sand)
G21	Sediments, Irrigat. canal	97.4	0.2	1.8	79.6	14.2	1.6	0	2.6	S (Sand)
G22	Sediments, Irrigat. canal	66.2	0.2	0.8	18.2	8.8	38.2	25.4	8.4	SL (Sand Loam)

Table D-18 GRAIN SIZE ANALYSIS (2)

Diameter (mm)	PM31 Cumulative Distribution (%)	BM31 Cumulative Distribution (%)	IM31 Cumulative Distribution (%)
2.00			
0.84	100.0	100.0	
0.42	99.7	99.7	100.0
0.25	98.3	98.5	99.5
0.105	75.6	78.7	94.1
0.074	68.0	64.7	92.7
0.0474	48.2	57.9	76.6
0.0345	35.7	45.3	64.0
0.0221	29.4	26.4	54.6
0.0128	26.3	17.8	42.0
0.0091	23.1	12.2	32.6
0.0065	20.0	9.1	26.3
0.0033	13.7	5.9	16.9
0.0027	12.2	4.4	15.3
0.0014	9.0	1.2	10.6

Table D-19

PRECIPITATION TESTS FOR A LONG PERIOD ON SAMPLES AT FIXED POINT "A" AND "E"

Time Elapsed	Fixed Point (Sampling Date)					
	E (March)	E (March)	E (Aug. 10)	E (Aug. 15)	E (Aug. 29)	A (Sep. 3)
1 hour	400 ppm	340 ppm	380 ppm	480 ppm	800 ppm	178 ppm
2					390	149
4	90	120	138	142	194	103
6					146	89
1 day	22	32	40	27	59	50
2	13	18	29	6.5	37	47
3	8.5	9.5	17	6.0	23	29
4	60	60	11	4.5	18	22
5	4.5	3.0	6.5	3.5	13	16
6	3.0	2.0	4.0	2.5	11	15
7	2.8	1.8	2.0	3.5	8.5	12
8			1.3	2.0	6.5	10
9					5.5	9
10					4.5	8
11					4.0	7
12					3.5	6

The figures show the turbidities of the samples at the time elapsed after shaking.

Table D-20 CHEMICAL ANALYSES OF ACCESSORY ELEMENTS IN SOLIDS

Description	Date of sampling	Ba (ppm)	Cr (ppm)	F (ppm)	Se (ppm)	Ag (ppm)	Cl (ppm)	Be (ppm)	B (ppm)	Co (ppm)	Li (ppm)	Mo (ppm)	Ni (ppm)	V (ppm)
Mill tailings Philex	Nov. 30, '83	92	29	172	10	<1	380	0.3	12	16	8	4	11	172
Mill tailings Benguet	Dec. 1, '83	232	34	266	7	1	11	0.4	28	13	29	11	14	146
Mill tailings* Benguet	Dec. 1, '83	244	24	375	6	1	160	0.4	15	13	30	10	10	150
Mill tailings Itogon	Dec. 2, '83	237	158	554	13	<1	18	0.7	12	25	32	9	68	218
Sediments Binga dam	Dec. 5, '83	138	260	468	4	<1	6	0.4	8	20	11	7	103	202
Suspended solids Fixed point C	Dec. 6, '83	102	20	890	11	<1	450	0.3	5	18	8	7	7	174
Suspended solids Fixed point D	Dec. 13, '83	234	7	320	10	<1	160	0.6	5	13	14	11	2	111
Suspended solids Fixed Point E	Dec. 2–7, '83	119	16	1,023	9	<1	420	0.2	9	20	11	5	8	143
Suspended solids Fixed point E	Dec. 8–14, '83	114	16	554	10	<1	390	0.2	4	21	10	7	8	146

* : Stored in tailings dam

Table D-21 CHEMICAL ANALYSES OF MINOR CONSTITUENTS IN THE FILTRATE AT FIXED POINT A TO E

Sample No.	Pb (mg/ℓ)	Cd (mg/ℓ)	Hg (mg/ℓ)	Mn (mg/ℓ)	Fe (mg/ℓ)	K (mg/ℓ)	Na (mg/ℓ)	Cl (mg/ℓ)
E11302	<0.01	<0.01	<0.0005	<0.02	<0.05	5.0	10.0	15.6
E12012	<0.01	<0.01	0.0007	0.02	<0.05	6.9	10.5	11.3
E12022	<0.01	<0.01	<0.0005	<0.02	<0.05	7.9	10.5	31.0
E12032	<0.01	<0.01		<0.02	<0.05	6.9	9.5	40.0
E12042	<0.01	<0.01	0.0007	<0.02	<0.05	6.1	9.5	82.0
E12052	<0.01	<0.01	<0.0005	0.02	0.05	6.3	11.5	52.5
E12062	<0.01	<0.01	<0.0005	<0.02	0.05	5.0	9.0	
E12072	<0.01	<0.01	0.0008	<0.02	<0.05	7.3	13.5	
E12082	<0.01	<0.01	0.0008	0.02	<0.05	7.7	14.5	
E12092	<0.01	<0.01		<0.02	0.09	6.2	9.5	
E12102	<0.01	<0.01		<0.02	<0.05	6.2	9.5	
E12112	<0.01	<0.01		<0.02	0.08	5.9	10.0	
E12121	<0.01	<0.01		0.02	0.15	5.7	16.0	22.5
E12122	<0.01	<0.01		<0.02	<0.05	5.7	10.0	19.9
E12131	<0.01	<0.01		<0.02	0.27	7.0	10.5	31.9
E12132	<0.01	<0.01		<0.02	<0.05	7.0	11.0	29.8
E12141	<0.01	<0.01		<0.02	0.20	4.4	9.5	25.5
E12142	<0.01	<0.01		<0.02	<0.05	4.5	9.5	32.6

Sample No.	Pb (mg/ℓ)	Cd (mg/ℓ)	Hg (mg/ℓ)	Mn (mg/ℓ)	Fe (mg/ℓ)	K (mg/ℓ)	Na (mg/ℓ)	Cl (mg/ℓ)
A12051	<0.01	<0.01	0.0006	<0.02	<0.05	0.9	7.5	58.1
B12051	<0.01	<0.01	0.0007	1.06	<0.05	4.2	33.0	53.9
C12061	<0.01	<0.01	<0.0005	0.08	0.05	13.5	15.0	31.2
D12031	<0.01	<0.01		0.80	<0.05	6.9	15.0	44.0
A12141	<0.01	<0.01		<0.02	<0.05	1.1	8.0	29.8
A12142	<0.01	<0.01		<0.02	<0.05	1.1	8.0	38.2
B12141	<0.01	<0.01		1.40	0.14	4.9	42.0	32.6
B12142	<0.01	<0.01		1.38	<0.05	4.9	42.5	28.2
C12121	<0.01	<0.01		0.10	0.37	13.1	13.5	24.1
C12122	<0.01	<0.01		0.10	0.06	12.4	14.0	19.9
D12131	<0.01	<0.01		1.02	0.13	8.2	17.3	34.0
D12132	<0.01	<0.01		1.02	<0.05	8.7	18.5	

– : No data

Table D-22 CHEMICAL ANALYSES OF MINAR CONSTITUENTS IN THE FILTRATE FOR MINE DRAINAGES AND MILL TAILINGS

Sample No.	Pb (mg/ℓ)	Cd (mg/ℓ)	Hg (mg/ℓ)	Mn (mg/ℓ)	Fe (mg/ℓ)	K (mg/ℓ)	Na (mg/ℓ)	Cl (mg/ℓ)
PT11	<0.01	<0.01	0.0005	0.02	0.18	0.4	5.5	23.0
PT12	<0.01	<0.01		0.05	0.94	4.8	9.0	20.0
BT11	<0.01	<0.01	<0.0005	5.20	6.70	1.8	13.0	51.0
BT12	<0.01	<0.01		0.88	1.32	12.8	98.0	100
IT11	<0.01	<0.01	<0.0005	0.52	0.26	3.5	12.0	72.0
PM11	<0.01	<0.01	<0.0005	0.03	0.74	87.2	70.0	48.2
BM11	<0.01	<0.01	<0.0005	0.13	0.76	35.2	172	30.6
IM11	<0.01	<0.01		<0.02	0.50	12.8	32.0	116

P : Philex
B : Benguet
I : Itogon
T : Mine drainage
M : Mill tailings

Table D-23 CROSS CHECKING ANALYSES (1)

Sample No.	Description	Laboratory	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	Ca (mg/ℓ)	Mg (mg/ℓ)	SO_4 (mg/ℓ)
A1214	Filtrate, Point A	P	<0.02	<0.01	0.003	25	5.6	22
		J	<0.02	<0.02	<0.01	22	4.8	22
B1214	Filtrate, Point B	P	0.07	<0.01	–	300	22.0	566
		J	0.09	<0.02	0.04	230	21.0	620
C1206	Filtrate, Point C	P	<0.02	<0.01	0.001	207	6.7	–
		J	0.02	<0.02	<0.01	160	6.0	410
D1213	Filtrate, Point D	P	<0.02	<0.01	<0.0005	203	7.6	464
		J	<0.02	<0.02	<0.01	190	6.8	490
E1207	Filtrate, Point E	P	<0.02	<0.01	0.007	104	8.5	124
		J	0.02	<0.02	0.01	78	7.2	170
BM11	Benguet mill tailings	P	22	10.7	0.007	840	0.4	1,458
		J	22	8.1	0.01	630	0.44	1,500
WBM112	Eluate of Extraction test	P	<0.02	0.01	0.018			47
		J	<0.02	0.02	0.02			72
WPM112	– ditto –	P	<0.02	0.02	0.001			47
		J	<0.02	<0.02	<0.01			66
WIM112	– ditto –	P	<0.02	0.04	0.019			12
		J	<0.02	0.05	0.01			27
WBD1034	– ditto –	P	<0.02	<0.01	0.0005			27
		J	0.03	0.02	<0.01			26

P : Chemical analyses in the Philippines
J : Chemical analyses in Japan

Table D-24 CROSS CHECKING ANALYSES (2)

Sample No.	Description	Laboratory	Cu (mg/ℓ)	Zn (mg/ℓ)	As (mg/ℓ)	Ca (mg/ℓ)	Mg (mg/ℓ)	SO_4 (mg/ℓ)
A02262	Filtrate, Point A	P	<0.02	<0.02	0.0036	24	5.8	24
		J	<0.02	<0.02	<0.01	28	5.8	27
B02262	Filtrate, Point B	P	1.0	<0.02	0.0405	320	24	760
		J	1.2	<0.02	0.03	310	22	820
C02272	Filtrate, Point C	P	0.01	<0.02	0.0007	340	8.0	856
		J	<0.02	<0.02	<0.01	330	8.2	820
D02271	Filtrate, Point D	P	<0.01	<0.02	0.001	260	7.6	662
		J	<0.02	<0.02	<0.01	270	8.0	660
E02291	Filtrate, Point E	P	0.01	<0.02	0.0045	62	6.4	91
		J	<0.02	<0.02	<0.01	53	6.1	96
E02292	– ditto –	P	0.01	0.02	0.0044	64	6.5	90
		J	<0.02	<0.02	0.01	56	6.4	98
E03061	– ditto –	P	0.01	<0.02	0.0056	142	9.2	308
		J	<0.02	<0.02	<0.01	140	9.8	340
E03062	– ditto –	P	0.01	<0.02	0.0043	143	9.4	321
		J	<0.02	<0.02	<0.01	140	9.8	340
BW22	Mill tailings in Benguet Phase 2 dam	P	14	0.75	0.26	590	18	1,596
		J	15	0.40	0.09	510	16	1,600
PW21	Mill tailings in Philex No. 1 dam	P	<0.01	<0.02	0.0007	620	17	1,186
		J	<0.02	0.02	<0.01	500	16	1,200
PM22	Philex mill tailings	P	0.01	<0.02	0.001	720	12	1,533
		J	0.03	0.02	<0.01	600	11	1,600
IM22	Itogon mill tailings	P	16	6.0	0.072	122	0.2	212
		J	14	5.8	0.06	100	0.24	240
BM22	Benguet mill tailings	P	29	25	0.0078	720	0.7	1,587
		J	24	25	0.01	690	0.64	1,600

P : Chemical analyses in the Philippines
J : Chemical analyses in Japan

Table D-25 X-RAY DIFFRACTION ANALYSES

Sample	Minerals					
	Quartz	Chlorite	Mica (Biotite, Illite)	Plagioclase	Calcite	Pyrite
Philex mill tailings	◎	○	◎	◎	–	–
Benguet mill tailings	◎	○ Δ	○	–	○	○
Itogon mill tailings	◎	○ Δ	○	□	○	○
SS of the fixed point B	○	○	○	○	–	–
SS of the fixed point C	◎	○	○	○	–	–
SS of the fixed point D	○	○	○	○	–	–
SS of the fixed point E (between No. 3 and GS-25 Filters)	○	○	○	○	–	–
SS of the fixed point E (Dec. 2 – Dec. 7)	○	○	○	○	–	–
SS of the fixed point E (Dec. 8 – Dec. 14)	○	○	○	○	–	–

◎ : Abundant
○ : Common
– : Not detected
□ : The feldspar shows an X-ray pattern similar to orthoclase
Δ : The chlorite peak may superimpose the kaolinite peak

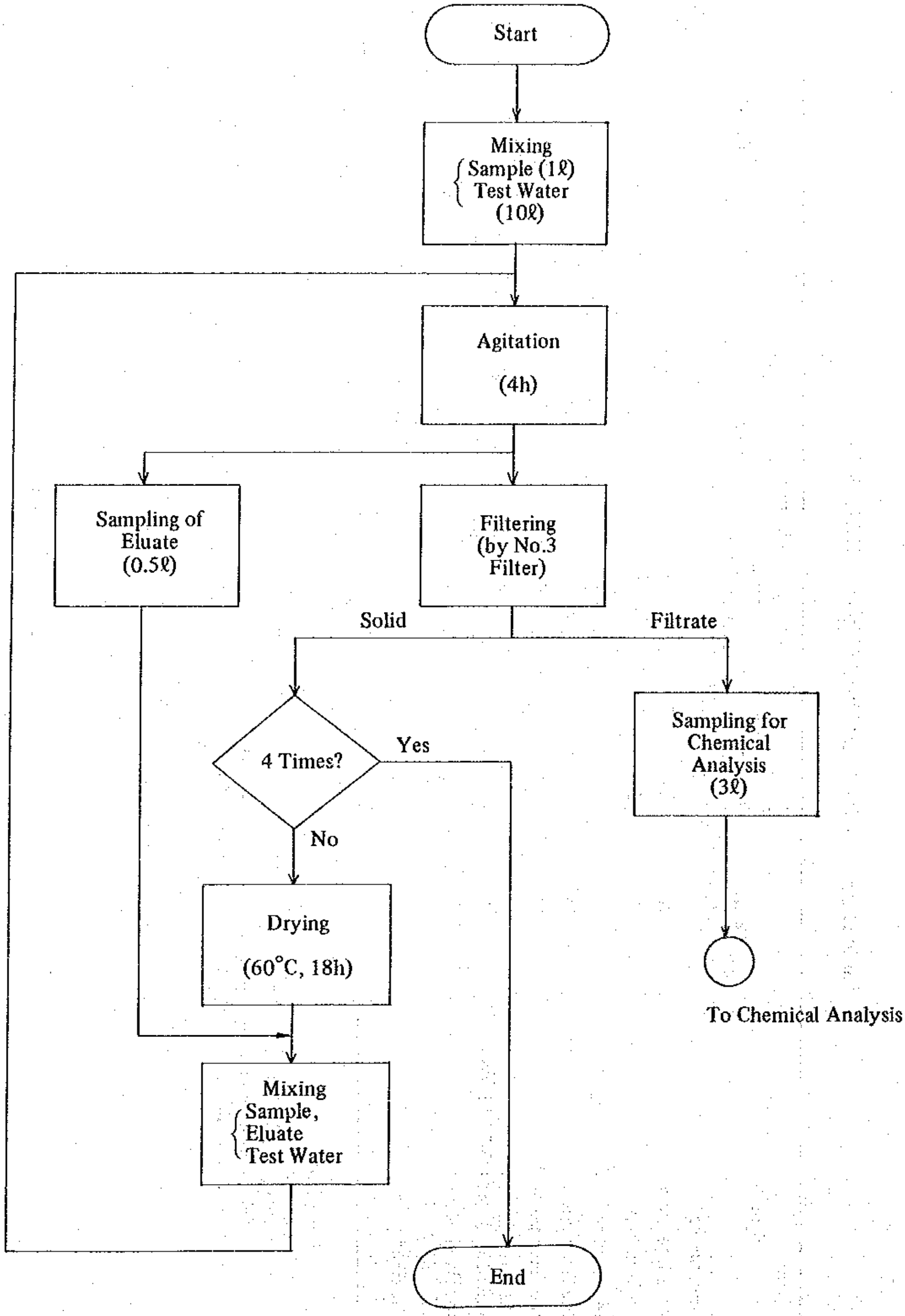


Fig. D-1 Flow Chart of Extraction Test by Wet and Dry Repetition Method (First Stage Survey)

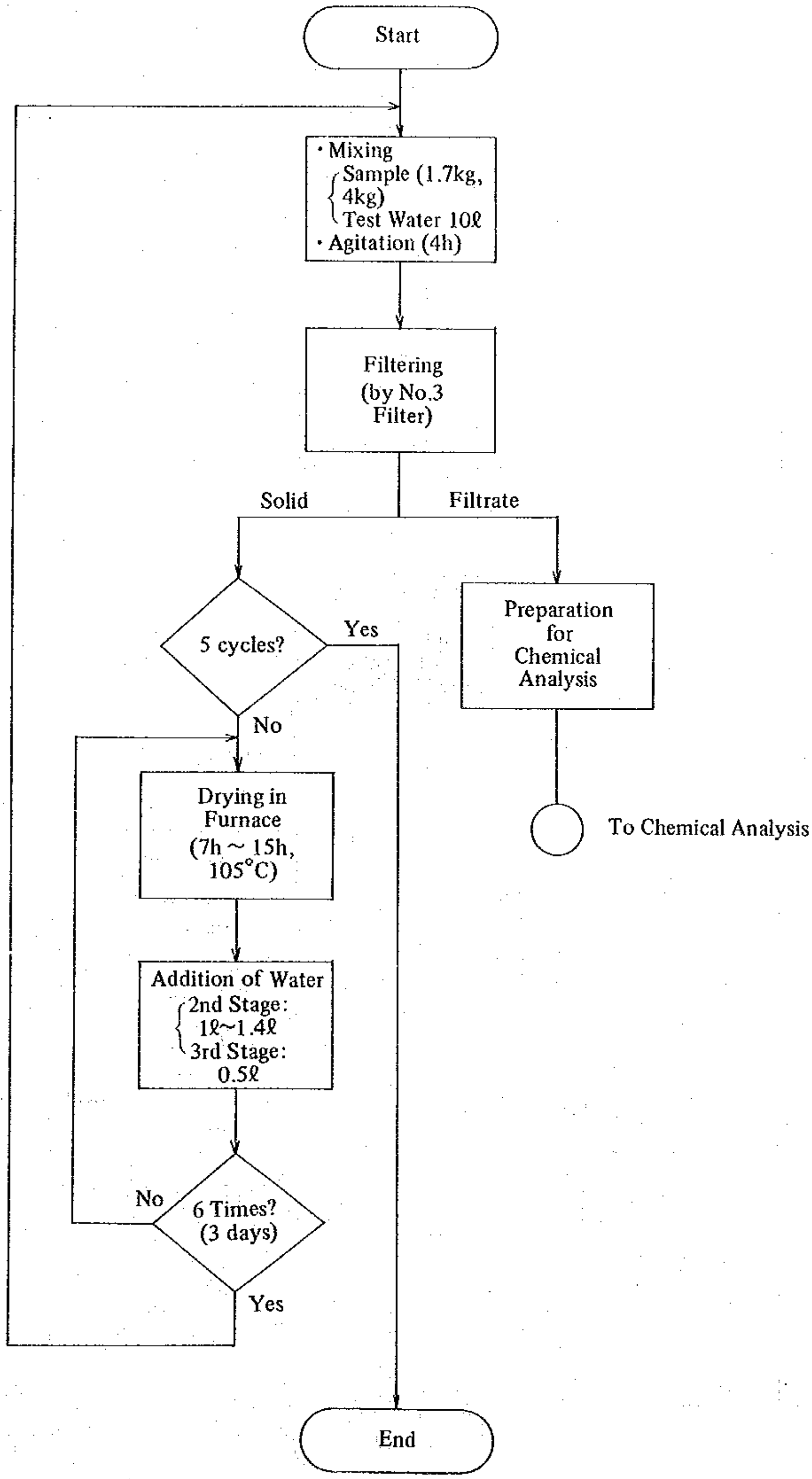


Fig. D-2 Flow Chart of Extraction Test by Wet and Dry Repetition Method (Second and Third Stage Surveys)

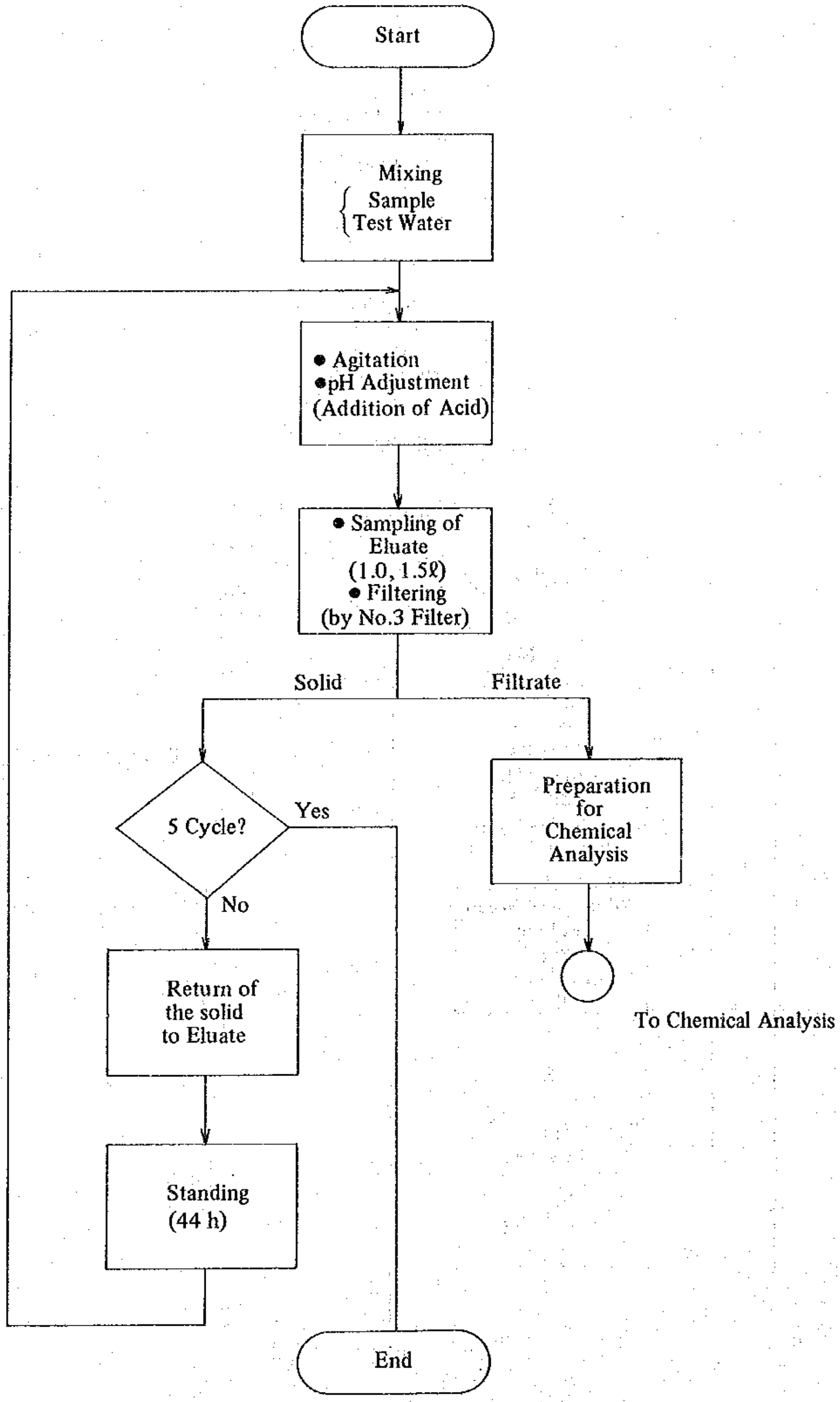
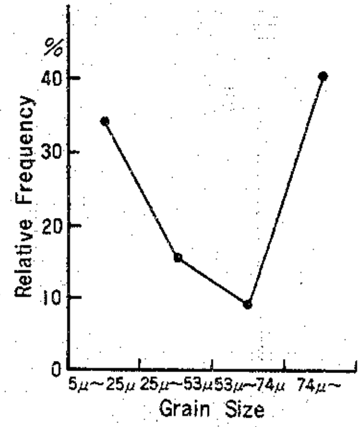
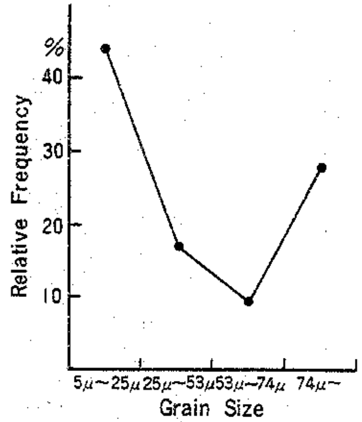


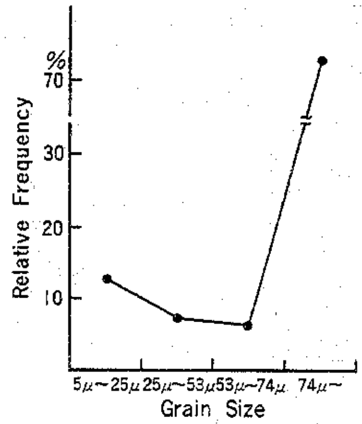
Fig. D-3 Flow Chart of Extraction Test by a Bacteria Addition Method



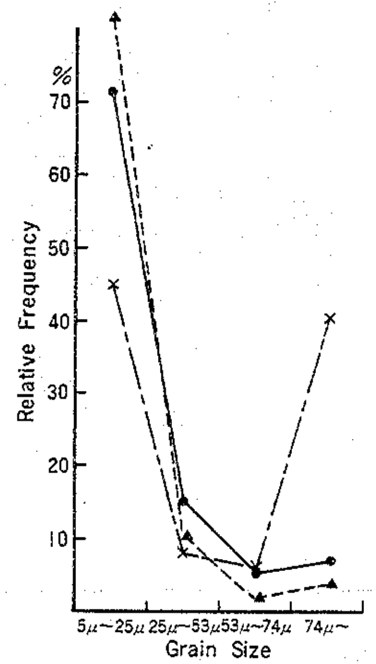
Philex Mill Tailings



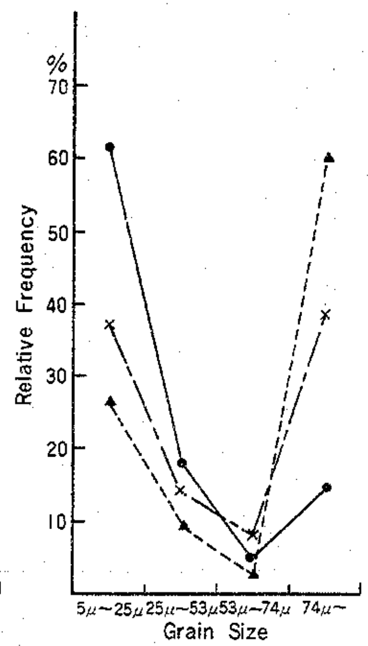
Benguet Mill Tailings



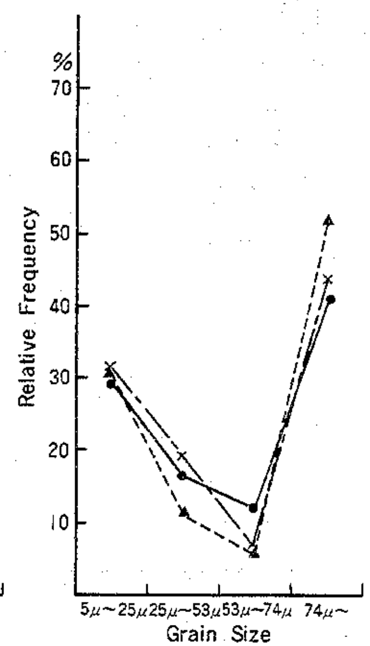
Itogon Mill Tailings



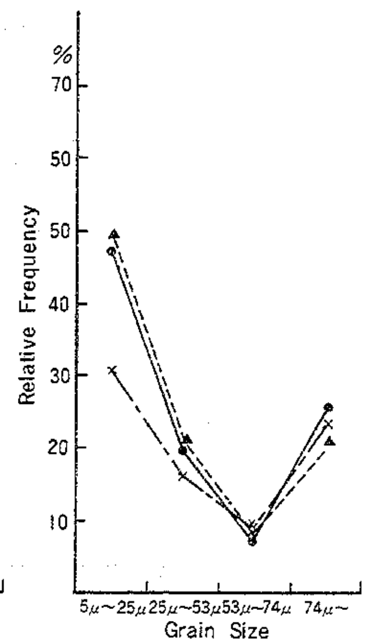
B point



C point



D point



E point

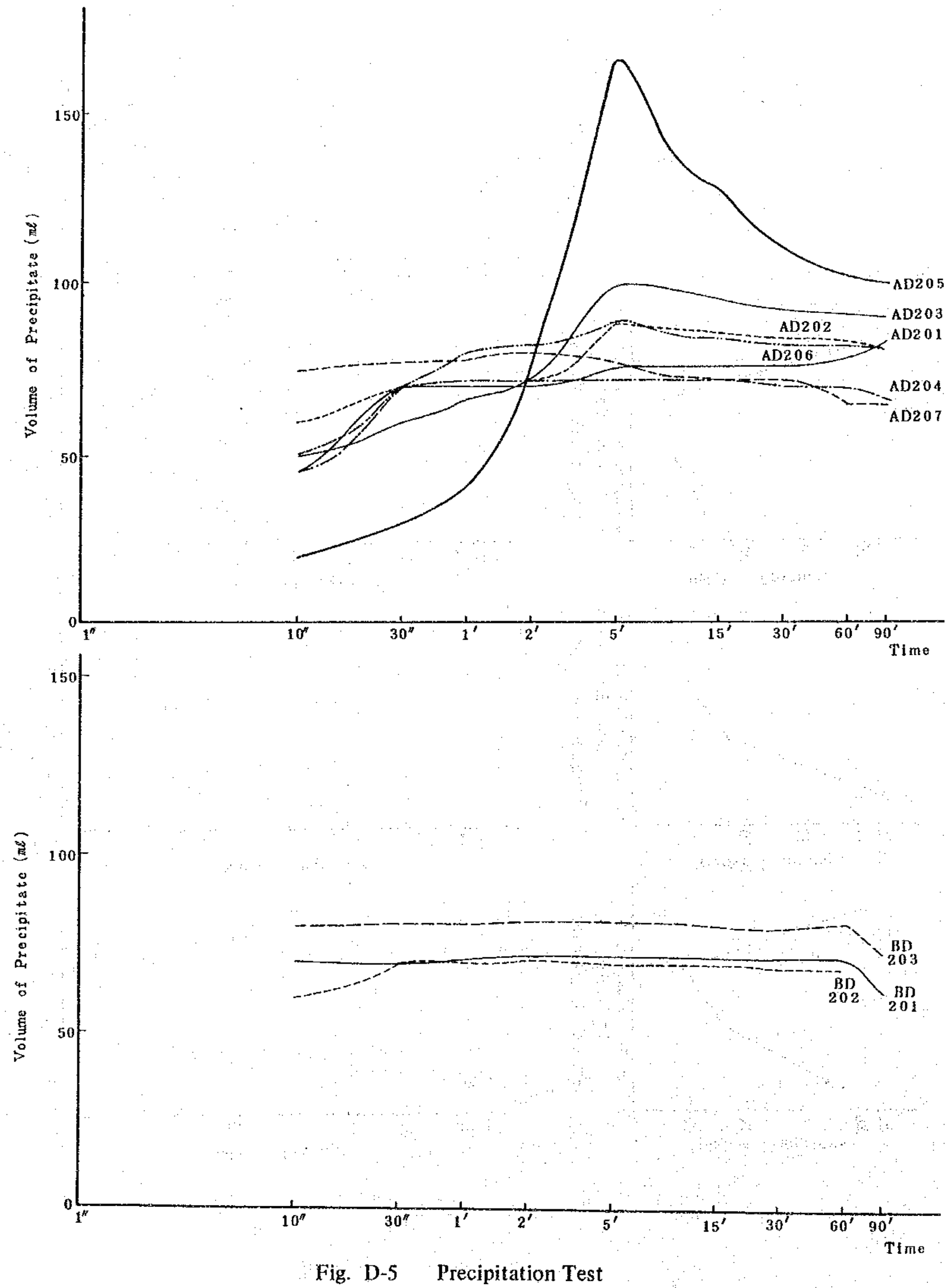


Fig. D-5 Precipitation Test

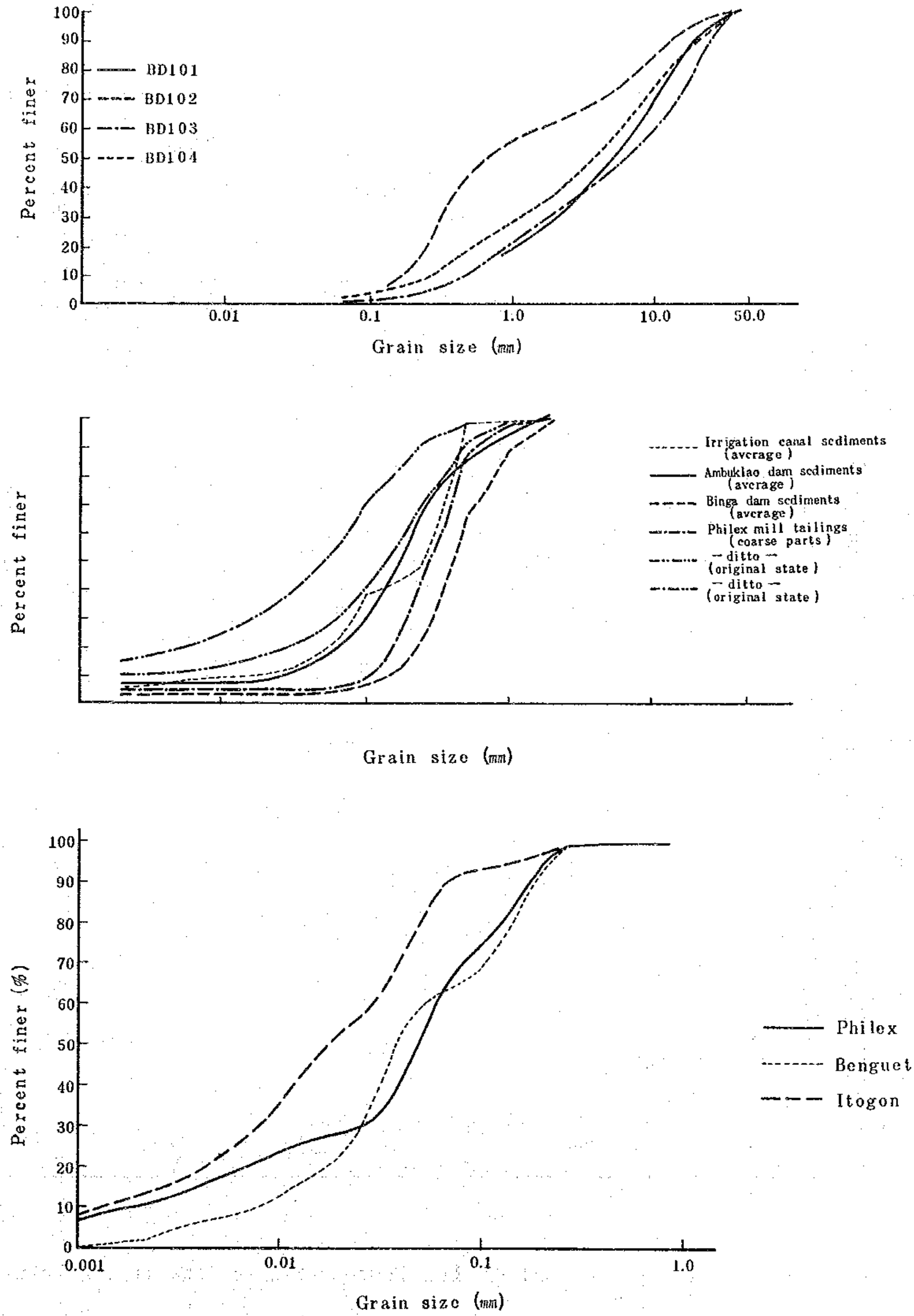


Fig. D-6 Grain Size Accumulation Curve

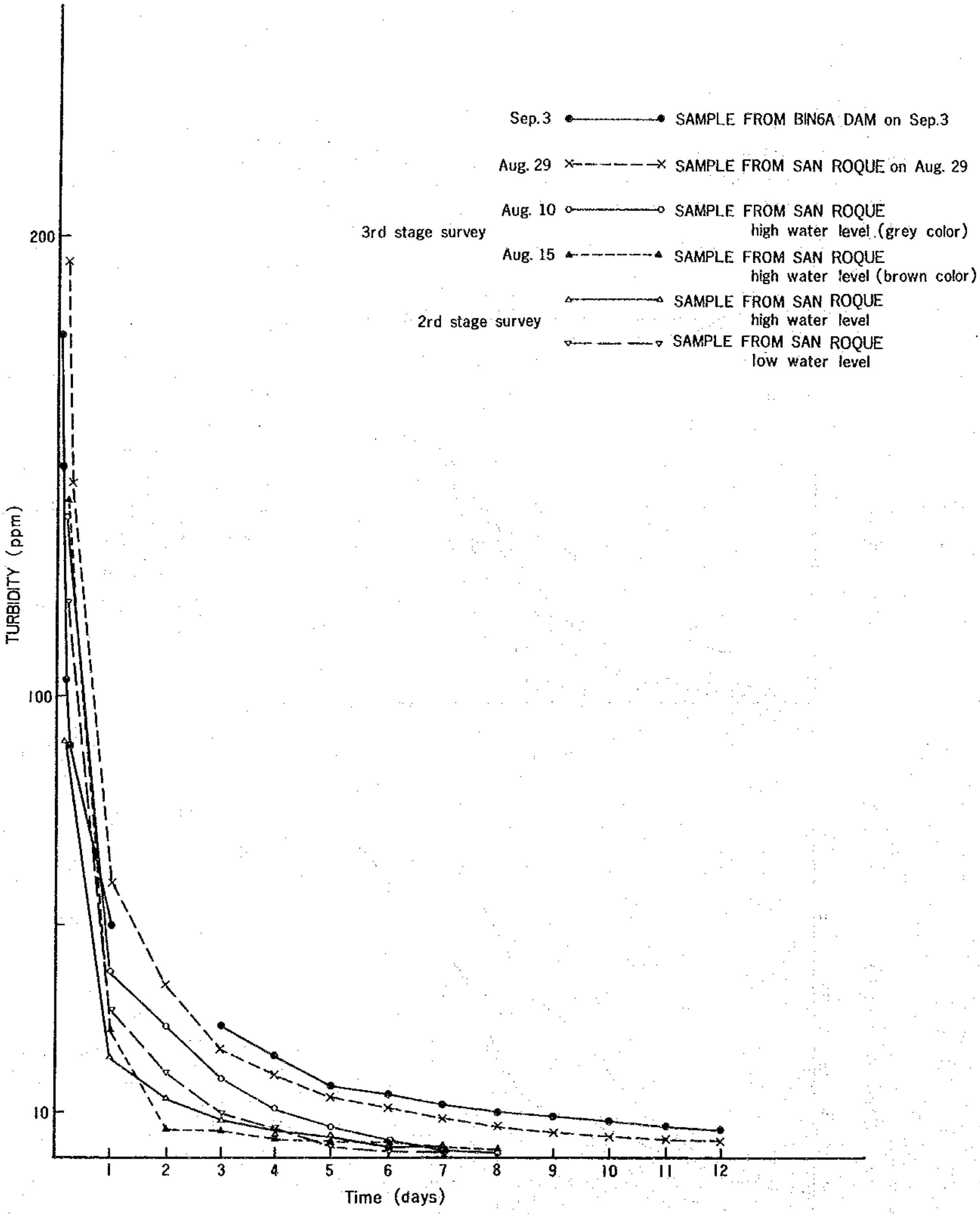


Fig. D-7 Precipitation Test for a Long Period on Samples Taken at Fixed Point "A" and "E"

APPENDIX "E"

OUTPUTS OF THE CALCULATION

CONTENTS FOR APPENDIX "E"

OUTPUTS OF THE CALCULATION

1. List of Calculation Showing Combination of Variables

		Rate of Inflow	Solibility Product	Reaction rate	Residual rate	Mine life (year)	
		A: Average E: Measured	○ Apprepriate ● Worst	○ Apprepriate ● Worst	○ Apprepriate ● Worst	Benguet Itogon	Philex
Dissolved Matter	Run-1	A	○	○	○	30	30
	Run-2	A	●	●	●	30	30
	Run-3	E	○	○	○	30	30
	Run-4	E	●	●	●	30	30
	Case 1	A	●	○	○	30	30
	Case 2	A	○	○	○	20	30
	Case 3	A	○	○	○	30	20
Suspended Solid	Run-1	A	○	○	○	30	30
	Run-2	E	○	○	○	30	30
	Case 2	A	○	○	○	20	30
	Case 3	A	○	○	○	30	20

2. List of Abbreviations

Y : year

M : month

Q00 : rate of inflow (m^3/s)

rate of outflow
- R1 : for primary generation (m^3/s)
- R2 : for secondary generation (m^3/s)
- R3 : overflow (m^3/s)

W1 : primary energy output (Gwh)

W2 : secondary energy output (Gwh)

H1 : water level (m)

E1 : evaporation ($\times 10^6$ m^3)

WST : volume of sediments stored ($\times 10^6$ m^3)

VW : volume of water stored ($\times 10^6$ m^3)

TR : residence time (h)

DO : maximum diameter of suspended solids in outflow (μ)

SS : suspended solids (mg/ℓ)

Cu : Copper (mg/ℓ for dissolved Cu, ppm for Cu content in suspended solids)

Zn : Zinc (mg/ℓ for dissolved Zn, ppm for Zn content in suspended solids)

As : Arsenic (mg/ℓ for dissolved As, ppm for As content in suspended solids)

(1) Rate of Inflow and Outflow Run-1, Run-2 (1/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
1	7	120.4	0.0	0.0	0.0	0.0	0.0	225.3	.55	.58	321.34
1	8	226.9	0.0	0.0	0.0	0.0	0.0	288.0	1.40	1.17	927.09
1	9	216.2	0.0	0.0	191.7	0.0	0.0	290.0	1.83	1.73	988.27
1	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	2.32	987.68
1	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	2.88	987.12
1	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	3.19	925.57
2	1	30.3	93.3	0.0	0.0	103.0	0.0	272.7	3.39	3.29	753.05
2	2	23.1	114.2	0.0	0.0	103.0	0.0	250.5	2.91	3.13	527.38
2	3	19.8	97.1	0.0	0.0	82.0	0.0	225.1	2.34	2.86	317.55
2	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	3.21	316.30
2	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	3.57	316.43
2	6	62.7	57.5	0.0	0.0	43.2	0.0	226.6	1.20	4.17	328.00
2	7	120.4	50.8	0.0	0.0	43.2	0.0	249.1	1.32	5.32	512.58
2	8	226.9	41.2	9.1	0.0	43.2	3.5	290.0	1.62	6.74	983.26
2	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	7.31	982.69
2	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	7.39	982.11
2	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	8.46	981.54
2	12	39.2	60.8	0.0	0.0	70.8	0.0	286.0	3.54	8.70	919.99
3	1	30.3	93.3	0.0	0.0	103.0	0.0	272.7	3.39	8.53	747.45
3	2	23.1	114.3	0.0	0.0	103.0	0.0	250.4	2.91	7.89	521.65
3	3	19.8	96.5	0.0	0.0	81.5	0.0	225.1	2.34	6.81	313.59
3	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	7.16	312.84
3	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	7.52	312.43
3	6	62.7	57.5	0.0	0.0	43.2	0.0	226.6	1.20	8.19	321.05
3	7	120.4	50.7	0.0	0.0	43.2	0.0	249.2	1.33	10.05	508.69
3	8	226.9	41.2	9.7	0.0	43.2	10.2	290.0	1.62	12.32	977.63
3	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	12.83	977.12
3	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	13.47	976.53
3	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	14.03	975.97
3	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	14.20	914.42
4	1	30.3	93.3	0.0	0.0	103.0	0.0	272.6	3.39	13.76	741.85
4	2	23.1	114.3	0.0	0.0	103.0	0.0	250.3	2.91	12.63	515.93
4	3	19.8	95.8	0.0	0.0	80.9	0.0	225.1	2.33	10.77	309.64
4	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	11.11	308.89
4	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	11.47	308.53
4	6	62.7	57.5	0.0	0.0	43.2	0.0	226.6	1.20	12.21	320.10
4	7	120.4	50.7	0.0	0.0	43.2	0.0	249.3	1.33	14.78	504.79
4	8	226.9	41.2	10.4	0.0	43.2	10.9	290.0	1.62	17.80	972.11
4	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	18.48	971.54
4	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	19.04	970.96
4	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	19.61	970.39
4	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	19.71	908.34
5	1	30.3	93.4	0.0	0.0	103.0	0.0	272.6	3.39	19.00	736.24
5	2	23.1	114.4	0.0	0.0	103.0	0.0	250.2	2.91	17.38	510.20
5	3	19.8	95.1	0.0	0.0	80.3	0.0	225.1	2.83	14.72	305.68
5	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	15.08	304.94
5	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	15.43	304.57
5	6	62.7	57.5	0.0	0.0	43.2	0.0	226.6	1.20	16.23	316.15

(1) Rate of Inflow and Outflow Run-1, Run-2 (2/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
5	7	120.4	50.7	0.0	0.0	43.2	0.0	249.4	1.33	19.52	500.89
5	8	226.9	41.2	11.0	0.0	43.2	11.5	290.0	1.62	23.47	966.53
5	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	24.03	965.97
5	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	24.62	965.38
5	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	25.18	964.82
5	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	25.21	903.26
6	1	30.3	93.4	0.0	0.0	103.0	0.0	272.6	3.39	24.24	730.64
6	2	23.1	114.4	0.0	0.0	103.0	0.0	250.1	2.90	22.11	504.48
6	3	19.8	94.5	0.0	0.0	79.7	0.0	225.1	2.33	18.68	301.73
6	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	19.02	300.98
6	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	19.38	300.62
6	6	62.7	57.5	0.0	0.0	43.2	0.0	226.6	1.20	20.25	312.21
6	7	120.4	50.7	0.0	0.0	43.2	0.0	249.5	1.33	24.26	496.99
6	8	226.9	41.2	11.6	0.0	43.2	12.2	290.0	1.62	29.05	960.95
6	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	29.61	960.39
6	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	30.19	959.81
6	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	30.76	959.24
6	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	30.72	897.68
7	1	30.3	93.4	0.0	0.0	103.0	0.0	272.5	3.39	29.47	725.04
7	2	23.1	114.5	0.0	0.0	103.0	0.0	250.0	2.90	26.85	498.75
7	3	19.8	93.8	0.0	0.0	79.2	0.0	225.1	2.33	22.63	297.77
7	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	22.97	297.03
7	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	23.33	296.67
7	6	62.7	57.5	0.0	0.0	43.2	0.0	226.6	1.20	24.27	308.26
7	7	120.4	50.7	0.0	0.0	43.2	0.0	249.6	1.33	29.01	493.09
7	8	226.9	41.2	12.3	0.0	43.2	12.9	290.0	1.62	34.62	955.38
7	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	35.19	954.81
7	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	35.77	954.23
7	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	36.33	953.67
7	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	36.22	892.11
8	1	30.3	93.4	0.0	0.0	103.0	0.0	272.5	3.39	34.70	719.43
8	2	23.1	114.6	0.0	0.0	103.0	0.0	249.9	2.90	31.58	493.02
8	3	19.8	93.2	0.0	0.0	78.6	0.0	225.1	2.33	26.59	293.82
8	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	26.92	293.08
8	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	27.29	292.71
8	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	28.29	304.31
8	7	120.4	50.6	0.0	0.0	43.2	0.0	249.7	1.33	33.77	489.20
8	8	226.9	41.2	12.9	0.0	43.2	13.6	290.0	1.62	40.20	949.80
8	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	40.76	949.24
8	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	41.35	948.65
8	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	41.91	948.09
8	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	41.72	886.53
9	1	30.3	93.4	0.0	0.0	103.0	0.0	272.5	3.39	39.93	713.83
9	2	23.1	114.6	0.0	0.0	103.0	0.0	249.8	2.90	36.30	487.29
9	3	19.8	92.5	0.0	0.0	78.0	0.0	225.1	2.32	30.54	289.86
9	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	30.88	289.13
9	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	31.24	288.76
9	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	32.31	300.36

(1) Rate of Inflow and Outflow Run-1, Run-2 (3/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
9	7	120.4	50.6	0.0	0.0	43.2	0.0	249.8	1.33	38.53	485.30
9	8	226.9	41.2	13.6	0.0	43.2	14.2	290.0	1.62	45.77	944.23
9	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	46.34	943.66
9	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	46.92	943.08
9	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	47.49	942.51
9	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	47.23	880.95
10	1	30.3	93.4	0.0	0.0	103.0	0.0	272.4	3.39	45.16	708.23
10	2	23.1	114.7	0.0	0.0	103.0	0.0	249.6	2.89	41.01	481.56
10	3	19.3	91.8	0.0	0.0	77.4	0.0	225.1	2.32	34.50	285.91
10	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	34.83	285.17
10	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	35.19	284.81
10	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	36.33	296.42
10	7	120.4	50.6	0.0	0.0	43.2	0.0	249.9	1.33	43.29	481.40
10	8	226.9	41.2	14.2	0.0	43.2	14.9	290.0	1.62	51.35	938.65
10	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	51.91	938.09
10	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	52.50	937.50
10	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	53.06	936.94
10	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	52.73	875.37
11	1	30.3	93.4	0.0	0.0	103.0	0.0	272.4	3.39	50.39	702.62
11	2	23.1	114.7	0.0	0.0	103.0	0.0	249.5	2.89	45.72	475.83
11	3	19.8	91.2	0.0	0.0	76.8	0.0	225.1	2.32	33.45	281.96
11	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	33.78	281.22
11	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	39.14	280.86
11	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	40.35	292.47
11	7	120.4	50.6	0.0	0.0	43.2	0.0	250.0	1.33	48.06	477.51
11	8	226.9	41.2	14.8	0.0	43.2	15.6	290.0	1.62	56.92	933.08
11	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	57.49	932.51
11	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	58.07	931.93
11	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	58.64	931.38
11	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	58.23	869.80
12	1	30.3	93.4	0.0	0.0	103.0	0.0	272.4	3.39	55.62	697.02
12	2	23.1	114.8	0.0	0.0	103.0	0.0	249.4	2.89	50.42	470.09
12	3	19.8	90.5	0.0	0.0	76.3	0.0	225.1	2.32	42.41	278.00
12	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	42.73	277.27
12	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	43.09	276.91
12	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	44.38	288.52
12	7	120.4	50.6	0.0	0.0	43.2	0.0	250.1	1.33	52.83	473.61
12	8	226.9	41.2	15.5	0.0	43.2	16.2	290.0	1.62	62.50	927.50
12	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	63.06	926.94
12	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	63.65	926.35
12	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	64.21	925.79
12	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	63.74	864.22
13	1	30.3	93.4	0.0	0.0	103.0	0.0	272.3	3.39	60.84	691.42
13	2	23.1	114.8	0.0	0.0	103.0	0.0	249.3	2.89	55.11	464.36
13	3	19.8	89.8	0.0	0.0	75.7	0.0	225.1	2.32	46.36	274.05
13	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	46.68	273.32
13	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	47.05	272.95
13	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	48.40	284.58

(1) Rate of Inflow and Outflow Run-1, Run-2 (4/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
13	7	120.4	50.5	0.0	0.0	43.2	0.0	250.2	1.34	57.61	469.72
13	8	226.9	41.1	16.1	0.0	43.2	16.9	290.0	1.62	68.07	921.93
13	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	68.64	921.36
13	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	69.22	920.78
13	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	69.79	920.21
13	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	69.24	858.64
14	1	30.3	93.4	0.0	0.0	103.0	0.0	272.3	3.39	66.07	685.81
14	2	23.1	114.9	0.0	0.0	103.0	0.0	249.2	2.89	59.79	458.62
14	3	19.8	89.2	0.0	0.0	75.1	0.0	225.1	2.32	50.32	270.10
14	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	50.64	269.37
14	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	51.00	269.00
14	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	52.42	280.63
14	7	120.4	50.5	0.0	0.0	43.2	0.0	250.3	1.34	62.39	465.83
14	8	226.9	41.1	16.7	0.0	43.2	17.6	290.0	1.63	73.65	916.35
14	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	74.21	915.79
14	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	74.80	915.20
14	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	75.36	914.64
14	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	74.74	853.06
15	1	30.3	93.5	0.0	0.0	103.0	0.0	272.3	3.39	71.29	680.21
15	2	23.1	114.9	0.0	0.0	103.0	0.0	2491	2.88	64.47	452.88
15	3	19.8	88.5	0.0	0.0	74.5	0.0	225.1	2.31	54.27	266.14
15	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	54.59	265.41
15	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	54.95	265.05
15	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	56.45	276.68
15	7	120.4	50.5	0.0	0.0	43.2	0.0	250.4	1.34	67.17	461.93
15	8	226.9	41.1	17.4	0.0	43.2	18.3	290.0	1.63	79.22	910.78
15	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	79.79	910.21
15	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	80.37	909.63
15	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	80.94	909.06
15	12	39.2	60.8	0.0	0.0	70.6	0.0	286.0	3.54	80.25	847.49
16	1	30.3	93.5	0.0	0.0	103.0	0.0	272.3	3.39	76.51	674.61
16	2	23.1	115.0	0.0	0.0	103.0	0.0	248.9	2.88	69.13	447.14
16	3	19.8	87.8	0.0	0.0	73.9	0.0	225.1	2.31	58.22	262.19
16	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	58.54	261.46
16	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	53.90	261.10
16	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	60.47	272.74
16	7	120.4	50.5	0.0	0.0	43.2	0.0	250.5	1.34	71.96	458.04
16	8	226.9	41.1	18.0	0.0	43.2	18.9	290.0	1.63	84.80	905.20
16	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	85.37	904.63
16	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	85.95	904.05
16	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	86.51	903.49
16	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.54	85.75	841.91
17	1	30.3	93.5	0.0	0.0	103.0	0.0	272.2	3.39	81.73	669.00
17	2	23.1	115.1	0.0	0.0	103.0	0.0	248.8	2.88	73.78	441.40
17	3	19.8	87.2	0.0	0.0	73.3	0.0	225.1	2.31	62.18	258.24
17	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	62.49	257.51
17	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	62.85	257.15
17	6	62.7	57.5	0.0	0.0	43.2	0.0	226.7	1.20	64.50	268.79

(1) Rate of Inflow and Outflow Run-1, Run-2 (5/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
17	7	120.4	50.5	0.0	0.0	43.2	0.0	250.6	1.34	76.75	454.14
17	8	226.9	41.1	18.6	0.0	43.2	19.6	290.0	1.63	90.38	899.62
17	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	90.94	899.06
17	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	91.52	898.48
17	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	92.09	897.91
17	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.54	91.25	836.33
18	1	30.3	93.5	0.0	0.0	103.0	0.0	272.2	3.39	86.95	663.40
18	2	23.1	115.1	0.0	0.0	103.0	0.0	248.7	2.88	78.43	435.65
18	3	19.8	86.5	0.0	0.0	72.8	0.0	225.1	2.31	66.13	254.28
18	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	66.44	253.56
18	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	66.80	253.20
18	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.20	68.52	264.85
18	7	120.4	50.4	0.0	0.0	43.2	0.0	250.7	1.34	81.55	450.25
18	8	226.9	41.1	19.3	0.0	43.2	20.3	290.0	1.63	95.95	894.05
18	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	96.52	893.48
18	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	97.10	892.90
18	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	97.67	892.33
18	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	96.75	830.75
19	1	30.3	93.5	0.0	0.0	103.0	0.0	272.2	3.38	92.17	657.79
19	2	23.1	115.2	0.0	0.0	103.0	0.0	248.6	2.87	83.07	429.91
19	3	19.8	85.8	0.0	0.0	72.2	0.0	225.1	2.31	70.08	250.33
19	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	70.39	249.61
19	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	70.75	249.25
19	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.20	72.55	260.90
19	7	120.4	50.4	0.0	0.0	43.2	0.0	250.8	1.34	86.35	446.36
19	8	226.9	41.1	19.9	0.0	43.2	21.0	290.0	1.63	101.53	888.47
19	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	102.09	887.91
19	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	102.68	887.32
19	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	103.24	886.76
19	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	102.25	825.18
20	1	30.3	93.5	0.0	0.0	103.0	0.0	272.1	3.38	97.39	652.19
20	2	23.1	115.2	0.0	0.0	103.0	0.0	248.4	2.87	87.70	424.16
20	3	19.8	85.2	0.0	0.0	71.6	0.0	225.1	2.30	74.04	246.38
20	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	74.34	245.66
20	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	74.70	245.30
20	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	76.58	256.96
20	7	120.4	50.4	0.0	0.0	43.2	0.0	250.9	1.34	91.15	442.47
20	8	226.9	41.1	20.6	0.0	43.2	21.6	290.0	1.63	107.10	882.90
20	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	107.67	882.33
20	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	108.25	881.75
20	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	108.82	881.18
20	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	107.75	819.60
21	1	30.3	93.5	0.0	0.0	103.0	0.0	272.1	3.38	102.60	646.58
21	2	23.1	115.3	0.0	0.0	103.0	0.0	248.3	2.87	92.32	418.42
21	3	19.8	84.5	0.0	0.0	71.0	0.0	225.1	2.30	77.99	242.42
21	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	78.29	241.71
21	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	78.66	241.34
21	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	80.73	252.89

(1) Rate of Inflow and Outflow Run-1, Run-2 (6/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
21	7	120.4	50.4	0.0	0.0	43.2	0.0	251.0	1.34	96.21	438.33
21	8	226.9	41.1	21.2	0.0	43.2	22.3	290.0	1.63	113.05	876.95
21	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	113.74	876.26
21	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	114.45	875.55
21	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	115.14	874.86
21	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	113.99	813.27
22	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	108.50	640.22
22	2	23.1	115.4	0.0	0.0	103.0	0.0	248.2	2.87	97.54	411.89
22	3	19.8	83.7	0.0	0.0	70.3	0.0	225.1	2.30	82.46	237.96
22	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	82.76	237.24
22	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	83.12	236.88
22	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	85.23	243.43
22	7	120.4	50.4	0.0	0.0	43.2	0.0	251.1	1.34	101.66	433.93
22	8	226.9	41.1	21.9	0.0	43.2	23.1	290.0	1.63	119.38	870.62
22	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	120.07	869.93
22	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	120.78	869.22
22	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	121.47	868.53
22	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	120.23	806.94
23	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	114.40	633.86
23	2	23.1	115.4	0.0	0.0	103.0	0.0	248.0	2.86	102.74	405.36
23	3	19.8	83.0	0.0	0.0	69.6	0.0	225.1	2.30	86.92	233.49
23	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	87.22	232.78
23	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	87.53	232.42
23	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	89.84	243.98
23	7	120.4	50.3	0.0	0.0	43.2	0.0	251.2	1.35	107.12	429.54
23	8	226.9	41.0	22.7	0.0	43.2	23.9	290.0	1.63	125.71	864.29
23	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	126.39	863.61
23	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	127.10	862.90
23	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	127.79	862.21
23	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	126.47	800.62
24	1	30.3	93.6	0.0	0.0	103.0	0.0	272.0	3.38	120.30	627.50
24	2	23.1	115.5	0.0	0.0	103.0	0.0	247.9	2.86	107.93	398.83
24	3	19.8	82.2	0.0	0.0	69.0	0.0	225.1	2.29	91.39	229.03
24	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	91.68	228.32
24	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	92.05	227.95
24	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	94.39	239.52
24	7	120.4	50.3	0.0	0.0	43.2	0.0	251.3	1.35	112.58	425.14
24	8	226.9	41.0	23.4	0.0	43.2	24.6	290.0	1.63	132.03	857.97
24	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	132.72	857.28
24	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	133.43	856.57
24	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	134.12	855.88
24	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	132.70	794.29
25	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	126.20	621.14
25	2	23.1	115.6	0.0	0.0	103.0	0.0	247.7	2.86	113.11	392.30
25	3	19.8	81.4	0.0	0.0	68.3	0.0	225.1	2.29	95.85	224.56
25	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	96.15	223.86
25	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	96.51	223.49

(1) Rate of Inflow and Outflow Run-1, Run-2 (7/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
25	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	98.95	235.06
25	7	120.4	50.3	0.0	0.0	43.2	0.0	251.4	1.35	118.05	420.75
25	8	226.9	41.0	24.1	0.0	43.2	25.4	290.0	1.63	138.36	851.64
25	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	139.04	850.96
25	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	139.76	850.24
25	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	140.44	849.56
25	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	138.94	787.96
26	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	132.09	614.78
26	2	23.1	115.6	0.0	0.0	103.0	0.0	247.6	2.85	118.28	385.76
26	3	19.8	80.6	0.0	0.0	67.6	0.0	225.1	2.29	100.32	220.10
26	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	100.61	219.39
26	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	100.97	219.03
26	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	103.51	230.61
26	7	120.4	50.3	0.0	0.0	43.2	0.0	251.5	1.35	123.53	416.36
26	8	226.9	41.0	24.9	0.0	43.2	26.2	290.0	1.64	144.68	845.32
26	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	145.37	844.63
26	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	146.03	843.92
26	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	146.77	843.23
26	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	145.17	781.63
27	1	30.3	93.6	0.0	0.0	103.0	0.0	271.8	3.38	137.98	608.42
27	2	23.1	115.7	0.0	0.0	103.0	0.0	247.4	2.85	123.43	379.22
27	3	19.8	79.9	0.0	0.0	66.9	0.0	225.1	2.29	104.78	215.63
27	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	105.07	214.93
27	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	105.43	214.57
27	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	108.07	226.15
27	7	120.4	50.2	0.0	0.0	43.2	0.0	251.7	1.35	129.01	411.97
27	8	226.9	41.0	25.6	0.0	43.2	27.0	290.0	1.64	151.01	838.99
27	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	151.70	838.30
27	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	152.41	837.59
27	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	153.09	836.91
27	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	151.41	775.30
28	1	30.3	93.6	0.0	0.0	103.0	0.0	271.8	3.38	143.87	602.06
28	2	23.1	115.8	0.0	0.0	103.0	0.0	247.3	2.85	128.57	372.68
28	3	19.8	79.1	0.0	0.0	66.3	0.0	225.1	2.28	109.25	211.17
28	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	109.53	210.47
28	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	109.89	210.11
28	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	112.63	221.70
28	7	120.4	50.2	0.0	0.0	43.2	0.0	251.8	1.35	134.50	407.57
28	8	226.9	41.0	26.3	0.0	43.2	27.8	290.0	1.64	157.33	832.67
28	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	158.02	831.98
28	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	158.73	831.27
28	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	159.42	830.58
28	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	157.64	768.98
29	1	30.3	93.6	0.0	0.0	103.0	0.0	271.8	3.38	149.76	595.70
29	2	23.1	115.9	0.0	0.0	103.0	0.0	247.1	2.85	133.70	366.14
29	3	19.8	78.3	0.0	0.0	65.6	0.0	225.1	2.28	113.71	206.70
29	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	113.99	206.01
29	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	114.36	205.64
29	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	117.19	217.24

(1) Rate of Inflow and Outflow Run-1, Run-2 (8/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
29	7	120.4	50.2	0.0	0.0	43.2	0.0	251.9	1.35	139.99	403.18
29	8	226.9	41.0	27.0	0.0	43.2	28.5	290.0	1.64	163.66	826.34
29	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	164.35	825.65
29	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	165.06	824.94
29	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	165.75	824.25
29	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	163.88	762.65
30	1	30.3	93.6	0.0	0.0	103.0	0.0	271.7	3.38	155.65	589.34
30	2	23.1	115.9	0.0	0.0	103.0	0.0	246.9	2.84	138.81	359.59
30	3	19.8	77.5	0.0	0.0	64.9	0.0	225.1	2.28	118.18	202.24
30	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	118.46	201.54
30	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	118.82	201.18
30	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	121.75	212.79
30	7	120.4	50.2	0.0	0.0	43.2	0.0	252.0	1.35	145.49	398.79
30	8	226.9	41.0	27.8	0.0	43.2	29.3	290.0	1.64	169.98	820.02
30	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	170.67	819.33
30	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	171.38	818.62
30	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	172.07	817.93
30	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	170.11	756.32
31	1	30.3	93.6	0.0	0.0	103.0	0.0	271.7	3.38	161.53	582.98
31	2	23.1	116.0	0.0	0.0	103.0	0.0	246.8	2.84	143.91	353.05
31	3	19.8	76.8	0.0	0.0	64.2	0.0	225.1	2.28	122.64	197.78
31	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	122.92	197.08
31	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	123.28	196.72
31	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	126.32	208.34
31	7	120.4	50.1	0.0	0.0	43.2	0.0	252.1	1.36	151.00	394.40
31	8	226.9	41.0	28.5	0.0	43.2	30.1	290.0	1.64	176.31	813.69
31	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	177.00	813.00
31	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	177.71	812.29
31	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	178.40	811.60
31	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	176.35	749.99

(2) Rate of Inflow and Outflow Run-3, Run-4 (1/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
1	7	97.6	0.0	0.0	0.0	0.0	0.0	217.0	.48	.53	260.35
1	8	126.5	0.0	0.0	0.0	0.0	0.0	257.8	1.11	1.17	597.47
1	9	181.3	0.0	0.0	29.7	0.0	0.0	290.0	1.68	1.73	988.27
1	10	165.5	61.3	103.1	0.0	70.6	118.7	290.0	3.04	2.32	987.68
1	11	64.0	62.1	.5	0.0	70.6	.6	290.0	3.49	2.88	987.12
1	12	51.1	60.4	0.0	0.0	70.6	0.0	288.2	3.57	3.22	958.32
2	1	45.7	91.1	0.0	0.0	103.0	0.0	279.3	3.53	3.44	832.97
2	2	23.4	108.5	0.0	0.0	103.0	0.0	260.5	3.17	3.45	621.95
2	3	18.5	115.9	0.0	0.0	103.0	0.0	230.4	2.58	3.04	358.25
2	4	18.5	33.7	0.0	0.0	25.8	0.0	225.0	1.69	3.23	316.84
2	5	43.7	43.2	0.0	0.0	33.4	0.0	225.0	1.34	3.59	316.41
2	6	49.6	49.1	0.0	0.0	36.7	0.0	225.0	1.19	4.16	315.84
2	7	180.8	48.2	0.0	0.0	43.2	0.0	265.3	1.46	5.75	668.95
2	8	357.9	41.4	198.3	0.0	43.2	207.3	290.0	1.74	6.74	983.26
2	9	121.9	38.4	82.7	0.0	43.2	93.2	290.0	1.95	7.31	982.69
2	10	289.6	64.3	224.1	0.0	70.6	245.9	290.0	3.04	7.89	982.11
2	11	56.7	62.3	0.0	0.0	70.6	0.0	288.9	3.47	8.43	963.56
2	12	31.3	61.4	0.0	0.0	70.6	0.0	283.1	3.47	8.60	879.18
3	1	22.9	95.8	0.0	0.0	103.0	0.0	266.6	3.25	8.36	630.45
3	2	16.1	121.2	0.0	0.0	103.0	0.0	238.7	2.64	7.27	420.95
3	3	10.6	49.8	0.0	0.0	40.6	0.0	225.0	2.15	6.84	313.38
3	4	12.5	12.0	0.0	0.0	9.0	0.0	225.0	1.62	7.18	312.82
3	5	54.6	54.1	0.0	0.0	41.8	0.0	225.0	1.34	7.55	312.45
3	6	68.0	57.1	0.0	0.0	43.2	0.0	228.6	1.22	8.33	338.81
3	7	105.3	50.9	0.0	0.0	43.2	0.0	246.2	1.32	9.89	482.51
3	8	327.3	42.3	99.3	0.0	43.2	101.6	290.0	1.59	12.32	977.68
3	9	212.0	39.4	171.9	0.0	43.2	188.7	290.0	1.95	12.88	977.12
3	10	70.9	60.2	9.6	0.0	70.6	11.3	290.0	3.04	13.47	976.53
3	11	53.9	62.4	0.0	0.0	70.6	0.0	288.4	3.46	13.96	950.53
3	12	35.1	61.5	0.0	0.0	70.6	0.0	283.3	3.47	14.07	876.19
4	1	21.1	95.8	0.0	0.0	103.0	0.0	266.4	3.25	13.47	672.59
4	2	18.0	121.3	0.0	0.0	103.0	0.0	238.8	2.64	11.76	417.61
4	3	13.0	52.5	0.0	0.0	42.8	0.0	225.0	2.15	10.84	309.38
4	4	18.7	18.2	0.0	0.0	13.6	0.0	225.0	1.62	11.19	308.81
4	5	37.1	36.6	0.0	0.0	28.3	0.0	225.0	1.34	11.55	308.45
4	6	56.3	55.8	0.0	0.0	41.7	0.0	225.0	1.19	12.12	307.88
4	7	49.5	49.1	0.0	0.0	37.9	0.0	225.0	1.10	12.70	307.30
4	8	180.6	48.2	0.0	0.0	43.2	0.0	265.5	1.23	16.56	660.18
4	9	154.2	40.8	0.0	0.0	43.2	0.0	288.8	1.73	18.41	951.76
4	10	139.1	61.0	69.6	0.0	70.6	80.5	290.0	3.03	19.04	970.96
4	11	58.2	62.3	0.0	0.0	70.6	0.0	289.1	3.48	19.57	956.39
4	12	31.8	61.3	0.0	0.0	70.6	0.0	283.5	3.48	19.58	873.63
5	1	24.5	95.4	0.0	0.0	103.0	0.0	267.6	3.28	18.80	680.16
5	2	16.6	120.2	0.0	0.0	103.0	0.0	240.2	2.68	16.52	424.31
5	3	13.7	57.2	0.0	0.0	46.9	0.0	225.0	2.17	15.09	305.15
5	4	13.4	12.9	0.0	0.0	9.6	0.0	225.0	1.62	15.43	304.57
5	5	15.2	14.7	0.0	0.0	11.4	0.0	225.0	1.34	15.80	304.20
5	6	148.0	51.7	0.0	0.0	43.2	0.0	254.9	1.43	19.63	551.82

(2) Rate of Inflow and Outflow Run-3, Run-4 (2/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
5	7	219.2	40.6	22.6	0.0	43.2	24.1	290.0	1.97	22.89	967.11
5	8	358.2	39.8	266.2	51.5	43.2	289.4	290.0	1.95	23.47	966.53
5	9	184.7	39.0	144.9	0.0	43.2	160.6	290.0	1.95	24.03	965.97
5	10	121.8	60.7	60.0	0.0	70.6	69.8	290.0	3.04	24.62	965.38
5	11	116.2	62.6	52.2	0.0	70.6	58.9	290.0	3.49	25.18	964.82
5	12	56.2	60.3	0.0	0.0	70.6	0.0	289.1	3.59	25.48	950.04
6	1	31.3	91.4	0.0	0.0	103.0	0.0	277.2	3.52	24.75	785.33
6	2	19.6	110.7	0.0	0.0	103.0	0.0	256.1	3.07	22.81	559.88
6	3	17.0	112.5	0.0	0.0	96.6	0.0	225.0	2.43	18.70	301.33
6	4	18.8	18.2	0.0	0.0	13.6	0.0	225.0	1.62	19.05	300.95
6	5	19.9	19.4	0.0	0.0	15.0	0.0	225.0	1.34	19.42	300.58
6	6	24.1	23.6	0.0	0.0	17.7	0.0	225.0	1.19	19.98	300.02
6	7	37.1	36.7	0.0	0.0	28.4	0.0	225.0	1.10	20.56	299.44
6	8	148.8	49.7	0.0	0.0	43.2	0.0	256.8	1.16	25.70	563.18
6	9	182.9	41.9	0.0	0.0	43.2	0.0	287.8	1.66	29.44	926.16
6	10	121.0	60.9	46.2	0.0	70.6	53.6	290.0	3.01	30.19	959.81
6	11	143.0	63.0	78.7	0.0	70.6	88.2	290.0	3.49	30.76	959.24
6	12	65.4	60.1	3.9	0.0	70.6	4.6	290.0	3.60	31.12	958.88
7	1	26.1	91.1	0.0	0.0	103.0	0.0	277.3	3.53	30.14	780.90
7	2	18.6	110.7	0.0	0.0	103.0	0.0	255.9	3.07	27.79	552.90
7	3	13.1	107.6	0.0	0.0	92.4	0.0	225.0	2.42	22.91	297.10
7	4	11.3	10.7	0.0	0.0	8.0	0.0	225.0	1.62	23.26	296.74
7	5	15.8	15.3	0.0	0.0	11.8	0.0	225.0	1.34	23.62	296.38
7	6	21.5	21.0	0.0	0.0	15.8	0.0	225.0	1.19	24.18	295.82
7	7	46.7	46.3	0.0	0.0	35.8	0.0	225.0	1.10	24.77	295.23
7	8	84.3	53.7	0.0	0.0	43.2	0.0	235.6	1.00	27.26	375.48
7	9	107.4	50.1	0.0	0.0	43.2	0.0	253.0	1.21	30.70	522.18
7	10	81.4	74.4	0.0	0.0	70.6	0.0	254.8	2.13	31.57	538.12
7	11	42.0	79.4	0.0	0.0	70.6	0.0	243.5	2.31	30.19	438.30
7	12	17.2	70.4	0.0	0.0	58.3	0.0	225.0	1.97	26.93	293.34
8	1	21.9	21.3	0.0	0.0	16.5	0.0	225.0	1.78	27.28	292.72
8	2	14.3	13.6	0.0	0.0	9.6	0.0	225.0	1.82	27.61	292.39
8	3	12.4	11.7	0.0	0.0	9.0	0.0	225.0	1.93	27.97	292.03
8	4	18.1	17.5	0.0	0.0	13.1	0.0	225.0	1.62	28.32	291.68
8	5	26.9	26.4	0.0	0.0	20.4	0.0	225.0	1.34	28.68	291.32
8	6	24.0	23.5	0.0	0.0	17.6	0.0	225.0	1.19	29.25	290.75
8	7	40.9	40.5	0.0	0.0	31.3	0.0	225.0	1.10	29.83	290.17
8	8	82.6	53.9	0.0	0.0	43.2	0.0	235.0	1.00	32.46	365.54
8	9	170.0	47.5	0.0	0.0	43.2	0.0	269.5	1.34	38.51	681.22
8	10	84.2	66.7	0.0	0.0	70.6	0.0	273.4	2.56	39.55	724.91
8	11	74.7	67.9	0.0	0.0	70.6	0.0	274.7	3.01	40.26	739.09
8	12	54.7	66.0	0.0	0.0	70.6	0.0	271.8	3.08	40.27	705.51
9	1	37.8	102.9	0.0	0.0	103.0	0.0	254.4	2.89	38.07	528.03
9	2	27.5	124.9	0.0	0.0	96.8	0.0	225.0	2.25	32.23	287.80
9	3	27.0	26.3	0.0	0.0	20.3	0.0	225.0	1.93	32.59	287.41
9	4	32.9	32.3	0.0	0.0	24.2	0.0	225.0	1.62	32.94	287.06
9	5	29.7	29.2	0.0	0.0	22.6	0.0	225.0	1.34	33.30	286.70
9	6	49.3	48.8	0.0	0.0	36.5	0.0	225.0	1.19	33.87	286.13

(2) Rate of Inflow and Outflow Run-3, Run-4 (3/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	EI	WST	VW
9	7	73.5	54.6	0.0	0.0	43.2	0.0	231.6	1.15	35.99	334.82
9	8	106.9	49.7	0.0	0.0	43.2	0.0	250.1	1.16	40.39	486.33
9	9	207.2	42.7	0.0	0.0	43.2	0.0	287.9	1.61	46.15	910.44
9	10	119.6	60.8	45.2	0.0	70.6	52.5	290.0	3.02	46.92	943.08
9	11	74.4	62.2	10.9	0.0	70.6	12.3	290.0	3.49	47.49	942.51
9	12	60.9	60.1	0.0	0.0	70.6	0.0	289.9	3.60	47.84	940.65
10	1	42.9	90.2	0.0	0.0	103.0	0.0	280.9	3.59	47.14	809.95
10	2	28.0	106.9	0.0	0.0	103.0	0.0	263.8	3.25	45.02	613.94
10	3	25.5	111.6	0.0	0.0	103.0	0.0	237.7	2.75	40.03	380.21
10	4	23.2	54.7	0.0	0.0	43.2	0.0	226.8	1.81	37.55	296.45
10	5	25.2	29.7	0.0	0.0	23.2	0.0	225.0	1.36	37.39	282.63
10	6	42.8	42.3	0.0	0.0	31.7	0.0	225.0	1.19	37.95	282.05
10	7	69.9	54.9	0.0	0.0	43.2	0.0	230.3	1.14	39.99	320.39
10	8	61.1	53.2	0.0	0.0	43.2	0.0	232.9	1.02	41.26	339.86
10	9	66.4	53.6	0.0	0.0	43.2	0.0	237.0	1.07	42.86	371.27
10	10	44.6	77.8	0.0	0.0	62.7	0.0	225.0	1.59	40.08	280.07
10	11	23.5	22.9	0.0	0.0	17.2	0.0	225.0	1.66	40.64	279.36
10	12	21.5	20.9	0.0	0.0	16.2	0.0	225.0	1.71	41.00	279.00
11	1	30.4	29.7	0.0	0.0	23.0	0.0	225.0	1.78	41.36	278.64
11	2	20.9	20.2	0.0	0.0	14.2	0.0	225.0	1.82	41.69	278.31
11	3	15.5	14.8	0.0	0.0	11.4	0.0	225.0	1.93	42.06	277.94
11	4	19.9	19.3	0.0	0.0	14.4	0.0	225.0	1.62	42.41	277.59
11	5	29.3	28.8	0.0	0.0	22.3	0.0	225.0	1.34	42.77	277.23
11	6	74.8	56.5	0.0	0.0	43.2	0.0	231.2	1.25	45.18	322.62
11	7	84.8	51.1	0.0	0.0	43.2	0.0	242.4	1.31	48.55	410.84
11	8	444.8	44.6	204.4	0.0	43.2	198.3	290.0	1.57	56.92	933.08
11	9	112.9	38.3	73.8	0.0	43.2	83.2	290.0	1.95	57.49	932.51
11	10	80.9	60.2	19.5	0.0	70.6	22.9	290.0	3.04	58.07	931.93
11	11	27.4	63.2	0.0	0.0	70.6	0.0	283.5	3.39	57.81	835.26
11	12	14.8	64.2	0.0	0.0	70.6	0.0	272.7	3.23	56.56	699.72
12	1	25.0	103.6	0.0	0.0	103.0	0.0	251.5	2.86	52.87	486.29
12	2	25.2	110.9	0.0	0.0	85.4	0.0	225.1	2.21	45.84	274.57
12	3	23.2	22.6	0.0	0.0	17.5	0.0	225.0	1.93	46.18	273.82
12	4	22.2	21.6	0.0	0.0	16.2	0.0	225.0	1.62	46.53	273.47
12	5	29.3	28.8	0.0	0.0	22.3	0.0	225.0	1.34	46.89	273.11
12	6	47.2	46.7	0.0	0.0	34.9	0.0	225.0	1.19	47.46	272.54
12	7	164.7	48.8	0.0	0.0	43.2	0.0	261.8	1.43	57.56	580.96
12	8	135.4	40.5	0.0	0.0	43.2	0.0	283.6	1.66	61.68	832.84
12	9	157.1	39.1	80.8	0.0	43.2	89.4	290.0	1.89	63.06	926.94
12	10	106.3	60.5	44.7	0.0	70.6	52.1	290.0	3.04	63.65	926.35
12	11	46.2	62.6	0.0	0.0	70.6	0.0	287.0	3.44	63.82	879.84
12	12	40.1	61.8	0.0	0.0	70.6	0.0	282.7	3.44	63.54	818.02
13	1	27.2	95.8	0.0	0.0	103.0	0.0	266.9	3.25	61.13	630.69
13	2	20.4	120.6	0.0	0.0	103.0	0.0	239.9	2.66	54.80	383.12
13	3	29.1	70.4	0.0	0.0	57.4	0.0	225.0	2.17	50.18	270.07
13	4	31.5	31.0	0.0	0.0	23.2	0.0	225.0	1.62	50.51	269.49
13	5	43.5	43.0	0.0	0.0	33.2	0.0	225.0	1.34	50.88	269.12
13	6	36.4	35.9	0.0	0.0	26.9	0.0	225.0	1.19	51.44	268.56

(2) Rate of Inflow and Outflow Run-3, Run-4 (4/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
13	7	180.2	48.0	0.0	0.0	43.2	0.0	266.2	1.47	63.54	620.44
13	8	175.0	39.3	22.3	0.0	43.2	24.5	290.0	1.75	68.07	921.93
13	9	243.8	39.9	203.2	0.0	43.2	220.3	290.0	1.95	68.64	921.36
13	10	104.8	60.5	43.2	0.0	70.6	50.4	290.0	3.04	69.22	920.78
13	11	45.1	62.7	0.0	0.0	70.6	0.0	286.8	3.44	69.32	871.34
13	12	44.9	61.7	0.0	0.0	70.6	0.0	283.4	3.44	69.12	822.59
14	1	48.9	93.8	0.0	0.0	103.0	0.0	273.6	3.37	67.63	698.65
14	2	39.5	111.9	0.0	0.0	103.0	0.0	256.1	3.01	63.97	518.74
14	3	35.2	118.5	0.0	0.0	103.0	0.0	228.7	2.48	55.56	293.05
14	4	28.1	37.9	0.0	0.0	28.8	0.0	225.0	1.67	54.39	265.66
14	5	22.3	21.8	0.0	0.0	16.9	0.0	225.0	1.34	54.75	265.25
14	6	153.6	51.2	0.0	0.0	43.2	0.0	257.3	1.50	65.92	523.51
14	7	112.3	42.0	0.0	0.0	43.2	0.0	275.1	1.84	70.48	714.07
14	8	131.9	38.3	17.2	0.0	43.2	19.4	190.0	1.82	73.65	916.35
14	9	347.6	41.1	264.9	40.8	43.2	278.7	290.0	1.95	74.21	915.79
14	10	92.0	60.3	30.5	0.0	70.6	35.7	290.0	3.04	74.80	915.20
14	11	36.7	62.9	0.0	0.0	70.6	0.0	285.3	3.42	74.57	843.36
14	12	18.6	63.3	0.0	0.0	70.6	0.0	275.8	3.30	73.05	720.21
15	1	17.2	101.9	0.0	0.0	103.0	0.0	253.5	2.94	67.69	490.28
15	2	18.8	110.9	0.0	0.0	86.0	0.0	225.1	2.24	57.54	262.91
15	3	10.0	9.4	0.0	0.0	7.3	0.0	225.0	1.93	57.87	262.13
15	4	24.1	23.5	0.0	0.0	17.6	0.0	225.0	1.62	58.22	261.78
15	5	17.1	16.6	0.0	0.0	12.9	0.0	225.0	1.34	58.59	261.41
15	6	21.4	20.9	0.0	0.0	15.7	0.0	225.0	1.19	59.15	260.85
15	7	55.7	55.3	0.0	0.0	42.7	0.0	225.0	1.10	59.74	260.26
15	8	502.1	47.4	211.0	0.0	43.2	192.4	290.0	1.44	79.22	910.78
15	9	255.3	40.1	214.5	0.0	43.2	231.4	290.0	1.95	79.79	910.21
15	10	282.2	64.1	217.0	0.0	70.6	238.9	290.0	3.04	80.37	909.63
15	11	99.5	62.4	35.7	0.0	70.6	40.4	290.0	3.49	80.94	909.06
15	12	57.0	60.2	0.0	0.0	70.6	0.0	289.2	3.59	81.17	896.48
16	1	14.0	92.4	0.0	0.0	103.0	0.0	273.1	3.45	78.06	682.78
16	2	9.2	115.8	0.0	0.0	103.0	0.0	245.9	2.85	70.19	419.44
16	3	13.6	72.8	0.0	0.0	60.7	0.0	225.0	2.26	62.03	258.32
16	4	10.4	9.9	0.0	0.0	7.4	0.0	225.0	1.62	62.36	257.64
16	5	6.3	5.8	0.0	0.0	4.5	0.0	225.0	1.34	62.72	257.28
16	6	33.4	32.9	0.0	0.0	24.7	0.0	225.0	1.19	63.29	256.71
16	7	193.6	47.4	0.0	0.0	43.2	0.0	270.0	1.50	79.84	646.14
16	8	167.2	38.9	30.7	0.0	43.2	34.1	290.0	1.78	84.80	905.20
16	9	129.7	38.5	90.5	0.0	43.2	101.7	290.0	1.95	85.37	904.63
16	10	116.4	60.6	54.7	0.0	70.6	63.7	290.0	3.04	85.95	904.05
16	11	29.9	63.1	0.0	0.0	70.6	0.0	284.0	3.40	85.28	814.05
16	12	16.0	63.9	0.0	0.0	70.6	0.0	273.5	3.25	83.10	682.28
17	1	7.9	105.0	0.0	0.0	103.0	0.0	246.4	2.80	74.68	419.09
17	2	8.0	74.4	0.0	0.0	56.6	0.0	225.0	2.13	65.74	254.60
17	3	8.1	7.5	0.0	0.0	5.8	0.0	225.0	1.93	66.08	253.92
17	4	8.6	8.0	0.0	0.0	6.0	0.0	225.0	1.62	66.43	253.57
17	5	229.4	46.1	0.0	0.0	43.2	0.0	278.7	1.94	86.14	742.31
17	6	175.9	39.5	74.1	0.0	43.2	81.0	290.0	2.38	89.21	900.79

(2) Rate of Inflow and Outflow Run-3, Run-4 (5/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
17	7	156.8	37.5	118.5	0.0	43.2	136.7	290.0	2.31	89.79	900.21
17	8	178.6	37.7	140.2	0.0	43.2	160.8	290.0	1.95	90.38	899.62
17	9	244.6	39.9	204.0	0.0	43.2	221.1	290.0	1.95	90.94	899.06
17	10	60.0	60.1	0.0	0.0	70.6	0.0	289.8	3.04	91.48	895.07
17	11	54.3	62.5	0.0	0.0	70.6	0.0	288.2	3.46	91.71	869.94
17	12	58.5	60.8	0.0	0.0	70.6	0.0	287.6	3.53	91.93	859.94
18	1	27.1	92.6	0.0	0.0	103.0	0.0	273.8	3.44	88.63	680.68
18	2	14.5	114.5	0.0	0.0	103.0	0.0	248.6	2.90	80.03	433.32
18	3	10.3	77.4	0.0	0.0	65.2	0.0	225.1	2.31	69.39	251.01
18	4	14.9	14.4	0.0	0.0	10.8	0.0	225.0	1.62	69.71	250.29
18	5	18.5	18.0	0.0	0.0	13.9	0.0	225.0	1.34	70.08	249.92
18	6	15.7	15.2	0.0	0.0	11.4	0.0	225.0	1.19	70.64	249.36
18	7	108.0	51.9	0.0	0.0	43.2	0.0	244.6	1.27	80.58	397.67
18	8	561.1	45.7	260.3	69.0	43.2	246.4	290.0	1.58	95.95	394.05
18	9	726.0	41.1	264.9	419.2	43.2	278.7	290.0	1.95	96.52	893.48
18	10	275.0	63.9	210.0	0.0	70.6	232.1	290.0	3.04	97.10	892.90
18	11	60.1	62.2	0.0	0.0	70.6	0.0	289.4	3.48	97.54	883.39
18	12	24.9	61.4	0.0	0.0	70.6	0.0	282.4	3.47	96.08	781.82
19	1	21.7	96.5	0.0	0.0	103.0	0.0	264.7	3.21	90.85	577.96
19	2	20.4	123.4	0.0	0.0	103.0	0.0	235.6	2.56	78.74	323.88
19	3	24.0	51.9	0.0	0.0	41.8	0.0	225.0	2.10	73.44	246.74
19	4	10.0	9.4	0.0	0.0	7.1	0.0	225.0	1.62	73.78	246.23
19	5	43.0	42.5	0.0	0.0	32.9	0.0	225.0	1.34	74.14	245.86
19	6	64.3	57.4	0.0	0.0	43.2	0.0	227.4	1.21	76.04	261.99
19	7	213.7	46.0	0.0	0.0	43.2	0.0	276.9	1.59	97.39	709.05
19	8	244.8	39.1	137.8	0.0	43.2	152.5	290.0	1.84	101.53	888.47
19	9	350.2	41.1	264.9	43.4	43.2	278.7	290.0	1.95	102.09	887.91
19	10	188.3	61.7	125.5	0.0	70.6	143.5	290.0	3.04	102.68	887.32
19	11	58.2	62.3	0.0	0.0	70.6	0.0	289.1	3.47	103.03	872.76
19	12	18.2	61.8	0.0	0.0	70.6	0.0	280.6	3.44	100.97	752.34
20	1	72.2	94.0	0.0	0.0	103.0	0.0	275.5	3.35	99.74	690.19
20	2	70.4	107.6	0.0	0.0	103.0	0.0	267.0	3.21	97.06	596.01
20	3	54.9	105.1	0.0	0.0	103.0	0.0	252.6	3.04	91.51	458.42
20	4	41.3	47.7	0.0	0.0	43.2	0.0	250.5	2.32	90.86	439.26
20	5	47.8	46.4	0.0	0.0	43.2	0.0	250.7	1.90	91.33	440.84
20	6	84.3	46.3	0.0	0.0	43.2	0.0	261.3	1.79	96.43	536.78
20	7	200.5	39.9	30.2	0.0	43.2	32.7	290.0	2.03	106.52	883.48
20	8	270.9	39.1	231.1	0.0	43.2	255.8	290.0	1.95	107.10	882.90
20	9	240.6	39.8	200.0	0.0	43.2	217.2	290.0	1.95	107.67	882.33
20	10	259.6	63.4	195.1	0.0	70.6	217.1	290.0	3.04	108.25	881.75
20	11	71.2	62.2	7.7	0.0	70.6	8.7	290.0	3.49	108.82	881.18
20	12	23.1	61.3	0.0	0.0	70.6	0.0	282.7	3.48	107.04	775.18
21	1	36.5	95.2	0.0	0.0	103.0	0.0	269.2	3.29	102.62	614.47
21	2	32.0	117.0	0.0	0.0	103.0	0.0	246.7	2.80	92.77	403.99
21	3	24.9	85.2	0.0	0.0	71.2	0.0	225.0	2.28	80.55	239.82
21	4	28.7	28.2	0.0	0.0	21.1	0.0	225.0	1.62	80.87	239.13
21	5	77.5	54.2	0.0	0.0	43.2	0.0	233.6	1.43	86.56	299.82
21	6	95.4	51.4	0.0	0.0	43.2	0.0	247.9	1.49	95.11	411.70

(2) Rate of Inflow and Outflow Run-3, Run-4 (6/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
21	7	124.1	43.9	0.0	0.0	43.2	0.0	270.4	1.71	105.86	624.00
21	8	95.0	39.6	0.0	0.0	43.2	0.0	282.6	1.72	110.88	769.91
21	9	123.6	38.9	42.7	0.0	43.2	47.4	290.0	1.88	113.74	876.26
21	10	109.7	60.5	48.0	0.0	70.6	56.0	290.0	3.04	114.45	875.55
21	11	350.3	67.1	238.9	43.0	70.6	251.3	290.0	3.49	115.14	874.86
21	12	79.3	60.2	17.7	0.0	70.6	20.8	290.0	3.60	115.50	874.50
22	1	31.9	90.8	0.0	0.0	103.0	0.0	278.4	3.55	112.04	712.78
22	2	21.1	109.8	0.0	0.0	103.0	0.0	257.6	3.11	103.53	493.12
22	3	16.2	111.4	0.0	0.0	96.2	0.0	225.0	2.45	84.63	235.41
22	4	13.8	13.2	0.0	0.0	9.9	0.0	225.0	1.62	84.97	235.03
22	5	11.9	11.4	0.0	0.0	8.8	0.0	225.0	1.34	85.34	234.66
22	6	25.0	24.5	0.0	0.0	18.4	0.0	225.0	1.19	86.02	233.98
22	7	97.6	52.6	0.0	0.0	43.2	0.0	241.3	1.24	97.20	352.58
22	8	126.5	45.6	0.0	0.0	43.2	0.0	265.6	1.36	110.41	567.27
22	9	181.3	40.7	22.9	0.0	43.2	24.3	290.0	1.74	120.07	869.93
22	10	165.5	61.3	103.1	0.0	70.6	118.7	290.0	3.04	120.78	869.22
22	11	64.0	62.1	0.5	0.0	70.6	0.6	290.0	3.49	121.47	868.53
22	12	51.1	60.4	0.0	0.0	70.6	0.0	288.2	3.57	121.28	839.72
23	1	45.7	91.1	0.0	0.0	103.0	0.0	279.0	3.53	118.39	714.15
23	2	23.4	109.0	0.0	0.0	103.0	0.0	259.1	3.14	109.96	501.83
23	3	18.5	118.6	0.0	0.0	102.8	0.0	225.0	2.48	89.21	230.79
23	4	18.5	17.9	0.0	0.0	13.4	0.0	225.0	1.62	89.56	230.44
23	5	43.7	43.2	0.0	0.0	33.4	0.0	225.0	1.34	89.92	230.08
23	6	49.6	49.1	0.0	0.0	36.7	0.0	225.0	1.19	90.61	229.39
23	7	180.8	47.8	0.0	0.0	43.2	0.0	267.7	1.48	116.52	583.39
23	8	357.9	41.3	210.8	0.0	43.2	220.7	290.0	1.76	125.71	864.29
23	9	121.9	38.4	82.7	0.0	43.2	93.2	290.0	1.95	126.39	863.61
23	10	289.6	64.3	224.1	0.0	70.6	245.9	290.0	3.04	127.10	862.90
23	11	56.7	62.3	0.0	0.0	70.6	0.0	288.8	3.47	127.43	844.21
23	12	31.3	61.4	0.0	0.0	70.6	0.0	283.0	3.47	125.70	759.76
24	1	22.9	96.1	0.0	0.0	103.0	0.0	265.7	3.24	118.60	560.23
24	2	16.1	123.3	0.0	0.0	103.0	0.0	234.8	2.57	100.57	295.85
24	3	10.6	35.6	0.0	0.0	28.6	0.0	225.0	2.09	93.69	226.48
24	4	12.5	11.9	0.0	0.0	8.9	0.0	225.0	1.62	94.02	225.98
24	5	54.6	54.1	0.0	0.0	41.8	0.0	225.0	1.34	94.39	225.61
24	6	68.0	57.0	0.0	0.0	43.2	0.0	228.9	1.23	98.09	252.05
24	7	105.3	50.5	0.0	0.0	43.2	0.0	248.1	1.34	111.67	396.68
24	8	327.3	42.2	112.0	0.0	43.2	114.8	290.0	1.61	132.03	857.97
24	9	212.0	39.4	171.9	0.0	43.2	188.7	290.0	1.95	132.72	857.28
24	10	70.9	60.2	9.6	0.0	70.6	11.3	290.0	3.04	133.43	856.57
24	11	53.9	62.4	0.0	0.0	70.6	0.0	288.4	3.46	133.57	830.43
24	12	35.1	61.5	0.0	0.0	70.6	0.0	283.2	3.46	131.96	756.01
25	1	21.1	96.1	0.0	0.0	103.0	0.0	265.4	3.24	124.24	551.59
25	2	18.0	123.4	0.0	0.0	103.0	0.0	234.9	2.57	105.57	291.66
25	3	13.0	38.1	0.0	0.0	30.6	0.0	225.0	2.09	98.22	221.96
25	4	18.7	18.1	0.0	0.0	13.6	0.0	225.0	1.62	98.55	221.45
25	5	37.1	36.6	0.0	0.0	28.3	0.0	225.0	1.34	98.91	221.09
25	6	56.3	55.8	0.0	0.0	41.7	0.0	225.0	1.19	99.60	220.40

(2) Rate of Inflow and Outflow Run-3, Run-4 (7/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
25	7	49.5	49.1	0.0	0.0	37.9	0.0	225.0	1.10	100.31	219.69
25	8	180.6	47.8	0.0	0.0	43.2	0.0	267.9	1.25	129.01	573.49
25	9	154.2	40.4	5.8	0.0	43.2	6.3	290.0	1.76	139.04	850.96
25	10	139.1	60.9	77.1	0.0	70.6	89.3	290.0	3.04	139.76	850.24
25	11	58.2	62.3	0.0	0.0	70.6	0.0	289.1	3.47	140.14	835.55
25	12	31.8	61.3	0.0	0.0	70.6	0.0	283.4	3.48	138.27	752.71
26	1	24.5	95.7	0.0	0.0	103.0	0.0	266.7	3.26	130.82	558.49
26	2	16.6	122.1	0.0	0.0	103.0	0.0	236.5	2.61	111.85	298.04
26	3	13.7	43.0	0.0	0.0	34.7	0.0	225.0	2.11	103.03	217.17
26	4	13.4	12.8	0.0	0.0	9.6	0.0	225.0	1.62	103.36	216.64
26	5	15.2	14.7	0.0	0.0	11.4	0.0	225.0	1.34	103.72	216.28
26	6	148.0	51.3	0.0	0.0	43.2	0.0	257.1	1.50	127.48	464.79
26	7	219.2	40.4	35.4	0.0	43.2	37.9	290.0	1.99	143.97	846.03
26	8	358.2	39.8	266.2	51.5	43.2	289.4	290.0	1.95	144.68	845.32
26	9	184.7	39.0	144.9	0.0	43.2	160.6	290.0	1.95	145.37	844.63
26	10	121.8	60.7	60.0	0.0	70.6	69.8	290.0	3.04	146.08	843.92
26	11	116.2	62.6	52.2	0.0	70.6	58.9	290.0	3.49	146.77	843.23
26	12	56.2	60.3	0.0	0.0	70.6	0.0	289.1	3.59	146.79	828.45
27	1	31.3	91.5	0.0	0.0	103.0	0.0	276.8	3.51	141.68	663.47
27	2	19.6	111.4	0.0	0.0	103.0	0.0	254.3	3.03	129.24	436.22
27	3	17.0	99.1	0.0	0.0	84.9	0.0	225.1	2.40	107.13	213.39
27	4	18.8	18.4	0.0	0.0	13.8	0.0	225.0	1.62	107.42	212.53
27	5	19.9	19.4	0.0	0.0	15.0	0.0	225.0	1.34	107.78	212.22
27	6	24.1	23.6	0.0	0.0	17.7	0.0	225.0	1.19	108.47	211.53
27	7	37.1	36.7	0.0	0.0	28.4	0.0	225.0	1.10	109.18	210.82
27	8	148.8	49.3	0.0	0.0	43.2	0.0	259.0	1.18	135.41	475.48
27	9	182.9	41.4	0.6	0.0	43.2	0.6	290.0	1.69	151.70	838.30
27	10	121.0	60.6	59.2	0.0	70.6	68.9	290.0	3.04	152.41	837.59
27	11	143.0	63.0	78.7	0.0	70.6	88.2	290.0	3.49	153.09	836.91
27	12	65.4	60.1	3.9	0.0	70.6	4.6	290.0	3.60	153.46	836.54
28	1	26.1	91.2	0.0	0.0	103.0	0.0	276.9	3.53	147.82	658.30
28	2	18.6	111.5	0.0	0.0	103.0	0.0	254.0	3.03	134.67	428.24
28	3	13.1	94.0	0.0	0.0	80.5	0.0	225.1	2.39	111.90	208.62
28	4	11.3	10.9	0.0	0.0	8.1	0.0	225.0	1.62	112.19	207.81
28	5	15.8	15.3	0.0	0.0	11.8	0.0	225.0	1.34	112.55	207.45
28	6	21.5	21.0	0.0	0.0	15.8	0.0	225.0	1.19	113.24	206.76
28	7	46.7	46.3	0.0	0.0	35.8	0.0	225.0	1.10	113.95	206.05
28	8	84.3	53.5	0.0	0.0	43.2	0.0	236.7	1.01	124.81	286.76
28	9	107.4	49.5	0.0	0.0	43.2	0.0	255.2	1.24	139.36	434.82
28	10	81.4	73.2	0.0	0.0	70.6	0.0	257.4	2.19	141.54	453.78
28	11	42.0	78.0	0.0	0.0	70.6	0.0	246.2	2.38	134.12	357.46
28	12	17.2	73.7	0.0	0.0	61.5	0.0	225.0	2.00	116.50	203.83
29	1	21.9	21.3	0.0	0.0	16.5	0.0	225.0	1.78	116.82	203.18
29	2	14.3	13.6	0.0	0.0	9.6	0.0	225.0	1.82	117.15	202.85
29	3	12.4	11.7	0.0	0.0	9.0	0.0	225.0	1.93	117.51	202.49
29	4	18.1	17.5	0.0	0.0	13.1	0.0	225.0	1.62	117.86	202.14
29	5	26.9	26.4	0.0	0.0	20.4	0.0	225.0	1.34	118.23	201.77
29	6	24.0	23.5	0.0	0.0	17.6	0.0	225.0	1.19	118.91	201.09

(2) Rate of Inflow and Outflow Run-3, Run-4 (8/8)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
29	7	40.9	40.5	0.0	0.0	31.3	0.0	225.0	1.10	119.63	200.37
29	8	82.6	53.6	0.0	0.0	43.2	0.0	236.0	1.01	130.29	276.19
29	9	170.0	46.9	0.0	0.0	43.2	0.0	272.1	1.37	155.85	593.18
29	10	84.2	65.6	0.0	0.0	70.6	0.0	276.2	2.63	158.73	639.49
29	11	74.7	66.8	0.0	0.0	70.6	0.0	277.7	3.09	160.16	656.29
29	12	54.7	64.8	0.0	0.0	70.6	0.0	275.1	3.18	159.21	625.83
30	1	37.8	100.6	0.0	0.0	103.0	0.0	258.3	3.00	149.53	454.43
30	2	27.5	131.1	0.0	0.0	103.0	0.0	225.2	2.31	122.56	199.06
30	3	27.0	26.8	0.0	0.0	20.8	0.0	225.0	1.94	122.71	197.30
30	4	32.9	32.3	0.0	0.0	24.2	0.0	225.0	1.62	123.06	196.94
30	5	29.7	29.2	0.0	0.0	22.6	0.0	225.0	1.34	123.42	196.58
30	6	49.3	48.8	0.0	0.0	36.5	0.0	225.0	1.19	124.11	195.89
30	7	73.5	54.4	0.0	0.0	43.2	0.0	232.4	1.16	131.81	245.11
30	8	106.9	49.2	0.0	0.0	43.2	0.0	252.3	1.18	148.78	397.85
30	9	207.2	42.2	1.4	0.0	43.2	1.4	290.0	1.64	170.67	819.33
30	10	119.6	60.6	57.8	0.0	70.6	67.3	290.0	3.04	171.38	818.62
30	11	74.4	62.2	10.9	0.0	70.6	12.3	290.0	3.49	172.07	817.93
30	12	60.9	60.1	0.0	0.0	70.6	0.0	289.9	3.60	172.40	816.06
31	1	42.9	90.3	0.0	0.0	103.0	0.0	280.6	3.58	168.46	685.20
31	2	28.0	107.4	0.0	0.0	103.0	0.0	262.6	3.22	158.41	483.07
31	3	25.5	113.9	0.0	0.0	103.0	0.0	233.3	2.66	135.52	248.49
31	4	23.2	44.0	0.0	0.0	34.0	0.0	225.0	1.72	127.73	192.39
31	5	25.2	24.7	0.0	0.0	19.2	0.0	225.0	1.34	128.08	191.92
31	6	42.8	42.3	0.0	0.0	31.7	0.0	225.0	1.19	128.77	191.23
31	7	69.9	54.7	0.0	0.0	43.2	0.0	230.9	1.15	135.35	229.74
31	8	61.1	52.9	0.0	0.0	43.2	0.0	233.9	1.03	138.90	249.91
31	9	66.4	53.1	0.0	0.0	43.2	0.0	238.4	1.09	143.70	282.41
31	10	44.6	78.7	0.0	0.0	63.8	0.0	225.0	1.60	131.35	188.83
31	11	23.5	22.9	0.0	0.0	17.2	0.0	225.0	1.66	132.02	187.98
31	12	21.5	20.9	0.0	0.0	16.2	0.0	225.0	1.71	132.38	187.62

(3) Rate of Inflow and Outflow Case 2 (1/3)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
21	7	120.4	50.4	0.0	0.0	43.2	0.0	251.0	1.34	96.21	438.33
21	8	226.9	41.1	21.2	0.0	43.2	22.3	290.0	1.63	113.05	876.95
21	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	113.74	876.26
21	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	114.45	875.55
21	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	115.14	874.86
21	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	113.99	813.27
22	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	108.48	640.25
22	2	23.1	115.4	0.0	0.0	103.0	0.0	248.2	2.87	97.50	411.94
22	3	19.8	83.7	0.0	0.0	70.3	0.0	225.1	2.30	82.41	238.01
22	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	82.68	237.32
22	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	83.02	236.98
22	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	85.16	248.56
22	7	120.4	50.4	0.0	0.0	43.2	0.0	251.1	1.34	101.49	434.08
22	8	226.9	41.1	21.9	0.0	43.2	23.1	290.0	1.63	119.17	870.83
22	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	119.83	870.17
22	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	120.52	869.48
22	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	121.18	868.82
22	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	119.92	807.26
23	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	114.08	634.21
23	2	23.1	115.4	0.0	0.0	103.0	0.0	248.0	2.86	102.44	405.74
23	3	19.8	83.0	0.0	0.0	69.7	0.0	225.1	2.30	86.65	233.77
23	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	86.92	233.08
23	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	87.25	232.75
23	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	89.48	244.33
23	7	120.4	50.3	0.0	0.0	43.2	0.0	251.2	1.35	106.67	429.91
23	8	226.9	41.1	22.6	0.0	43.2	23.8	290.0	1.63	125.18	864.82
23	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	125.84	864.16
23	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	126.53	863.47
23	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	127.19	862.81
23	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	125.84	801.24
24	1	30.3	93.6	0.0	0.0	103.0	0.0	272.0	3.38	119.69	628.16
24	2	23.1	115.5	0.0	0.0	103.0	0.0	247.9	2.86	107.37	399.53
24	3	19.8	82.3	0.0	0.0	69.0	0.0	225.1	2.29	90.89	229.53
24	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	91.16	228.85
24	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	91.49	228.51
24	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	93.80	240.10
24	7	120.4	50.3	0.0	0.0	43.2	0.0	251.3	1.35	111.86	425.74
24	8	226.9	41.0	23.3	0.0	43.2	24.6	290.0	1.63	131.19	858.81
24	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	131.85	858.15
24	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	132.54	857.46
24	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	133.20	856.80
24	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	131.77	795.23
25	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	125.29	622.12
25	2	23.1	115.6	0.0	0.0	103.0	0.0	247.7	2.86	112.29	393.32
25	3	19.8	81.5	0.0	0.0	68.4	0.0	225.1	2.29	95.13	225.29
25	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	95.39	224.61
25	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	95.73	224.27
25	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	98.13	235.87

(3) Rate of Inflow and Outflow Case 2 (2/3)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
25	7	120.4	50.3	0.0	0.0	43.2	0.0	251.4	1.35	117.06	421.57
25	8	226.9	41.0	24.0	0.0	43.2	25.3	290.0	1.63	137.20	852.80
25	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	137.87	852.13
25	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	138.55	851.45
25	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	139.21	850.79
25	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	137.69	789.22
26	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	130.89	616.08
26	2	23.1	115.6	0.0	0.0	103.0	0.0	247.6	2.86	117.20	387.11
26	3	19.8	80.8	0.0	0.0	67.8	0.0	225.1	2.29	99.36	221.05
26	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	99.63	220.37
26	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	99.96	220.04
26	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	102.46	231.64
26	7	120.4	50.3	0.0	0.0	43.2	0.0	251.5	1.35	122.25	417.40
26	8	226.9	41.0	24.7	0.0	43.2	26.0	290.0	1.63	143.21	846.79
26	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	143.88	846.12
26	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	144.56	845.44
26	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	145.22	844.78
26	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	143.62	783.21
27	1	30.3	93.6	0.0	0.0	103.0	0.0	271.8	3.38	136.48	610.03
27	2	23.1	115.7	0.0	0.0	103.0	0.0	247.4	2.85	122.10	380.90
27	3	19.8	80.1	0.0	0.0	67.1	0.0	225.1	2.29	103.60	216.81
27	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	103.86	216.14
27	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	104.20	215.80
27	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	106.79	227.41
27	7	120.4	50.2	0.0	0.0	43.2	0.0	251.6	1.35	127.46	413.23
27	8	226.9	41.0	25.4	0.0	43.2	26.8	290.0	1.64	149.23	840.77
27	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	149.89	840.11
27	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	150.57	839.43
27	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	151.23	838.77
27	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	149.54	777.19
28	1	30.3	93.6	0.0	0.0	103.0	0.0	271.8	3.38	142.08	603.99
28	2	23.1	115.8	0.0	0.0	103.0	0.0	247.3	2.85	126.98	374.68
28	3	19.8	79.3	0.0	0.0	66.5	0.0	225.1	2.29	107.84	212.58
28	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	108.10	211.90
28	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	108.43	211.57
28	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	111.12	223.18
28	7	120.4	50.2	0.0	0.0	43.2	0.0	251.7	1.35	132.67	409.07
28	8	226.9	41.0	26.1	0.0	43.2	27.5	290.0	1.64	155.24	834.76
28	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	155.90	834.10
28	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	156.58	833.42
28	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	157.24	832.76
28	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	155.47	771.18
29	1	30.3	93.6	0.0	0.0	103.0	0.0	271.8	3.38	147.67	597.94
29	2	23.1	115.8	0.0	0.0	103.0	0.0	247.1	2.85	131.85	368.46
29	3	19.8	78.6	0.0	0.0	65.8	0.0	225.1	2.28	112.08	208.34
29	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	112.33	207.67
29	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	112.67	207.33
29	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	115.45	218.95

(3) Rate of Inflow and Outflow Case 2 (3/3)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
29	7	120.4	50.2	0.0	0.0	43.2	0.0	251.9	1.35	137.89	404.90
29	8	226.9	41.0	26.8	0.0	43.2	28.3	290.0	1.64	161.25	828.75
29	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	161.91	828.09
29	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	162.59	827.41
29	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	163.26	826.74
29	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	161.39	765.17
30	1	30.3	93.6	0.0	0.0	103.0	0.0	271.7	3.38	153.27	591.90
30	2	23.1	115.9	0.0	0.0	103.0	0.0	247.0	2.84	136.71	362.24
30	3	19.8	77.9	0.0	0.0	65.2	0.0	225.1	2.28	116.31	204.10
30	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	116.57	203.43
30	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	116.90	203.10
30	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	119.78	214.73
30	7	120.4	50.2	0.0	0.0	43.2	0.0	252.0	1.35	143.11	400.73
30	8	226.9	41.0	27.5	0.0	43.2	29.0	290.0	1.64	167.26	822.74
30	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	167.92	822.08
30	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	168.60	821.40
30	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	169.27	820.73
30	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	167.32	759.15
31	1	30.3	93.6	0.0	0.0	103.0	0.0	271.7	3.38	158.86	585.85
31	2	23.1	116.0	0.0	0.0	103.0	0.0	246.8	2.84	141.56	356.02
31	3	19.8	77.1	0.0	0.0	64.5	0.0	225.1	2.28	120.55	199.86
31	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	120.80	199.20
31	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	121.14	198.86
31	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	124.11	210.50
31	7	120.4	50.2	0.0	0.0	43.2	0.0	252.1	1.35	148.33	396.56
31	8	226.9	41.0	28.2	0.0	43.2	29.8	290.0	1.64	173.27	816.73
31	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	173.93	816.07
31	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	174.62	815.38
31	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	175.28	814.72
31	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	173.24	753.14

(4) Rate of Inflow and Outflow Case 3 (1/3)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
21	7	120.4	50.4	0.0	0.0	43.2	0.0	251.0	1.34	96.21	438.33
21	8	226.9	41.1	21.2	0.0	43.2	22.3	290.0	1.63	113.05	876.95
21	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	113.74	876.26
21	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	114.45	875.55
21	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	115.14	874.86
21	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	113.99	813.27
22	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	108.21	640.56
22	2	23.1	115.3	0.0	0.0	103.0	0.0	248.2	2.87	97.08	412.56
22	3	19.8	83.9	0.0	0.0	70.5	0.0	225.1	2.30	81.85	238.56
22	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	81.83	238.17
22	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	81.85	238.15
22	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	83.68	250.02
22	7	120.4	50.4	0.0	0.0	43.2	0.0	251.1	1.34	99.51	435.84
22	8	226.9	41.1	21.8	0.0	43.2	22.9	290.0	1.63	116.75	873.25
22	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	117.11	872.89
22	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	117.49	872.51
22	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	117.85	872.15
22	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	116.32	810.90
23	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	110.40	638.17
23	2	23.1	115.4	0.0	0.0	103.0	0.0	248.1	2.87	99.00	410.10
23	3	19.8	83.6	0.0	0.0	70.2	0.0	225.1	2.30	83.49	236.93
23	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	83.46	236.54
23	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	83.49	236.51
23	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	85.35	248.39
23	7	120.4	50.4	0.0	0.0	43.2	0.0	251.1	1.34	101.53	434.23
23	8	226.9	41.1	22.1	0.0	43.2	23.2	290.0	1.63	119.12	870.88
23	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	119.48	870.52
23	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	119.86	870.14
23	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	120.22	869.78
23	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	118.65	808.52
24	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	112.58	635.79
24	2	23.1	115.4	0.0	0.0	103.0	0.0	248.1	2.86	100.91	407.64
24	3	19.8	83.3	0.0	0.0	69.9	0.0	225.1	2.30	85.12	235.30
24	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	85.09	234.91
24	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	85.12	234.88
24	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	87.02	246.76
24	7	120.4	50.3	0.0	0.0	43.2	0.0	251.1	1.35	103.55	432.63
24	8	226.9	41.1	22.4	0.0	43.2	23.5	290.0	1.63	121.49	868.51
24	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	121.86	868.14
24	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	122.23	867.77
24	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	122.60	867.40
24	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	120.99	806.15
25	1	30.3	93.5	0.0	0.0	103.0	0.0	272.0	3.38	114.77	633.40
25	2	23.1	115.4	0.0	0.0	103.0	0.0	248.0	2.86	102.83	405.18
25	3	19.8	83.0	0.0	0.0	69.6	0.0	225.1	2.30	86.75	233.66
25	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	86.73	233.27
25	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	86.75	233.25
25	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	88.69	245.13

(4) Rate of Inflow and Outflow Case 3 (2/3)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
25	7	120.4	50.3	0.0	0.0	43.2	0.0	251.2	1.35	105.57	431.02
25	8	226.9	41.1	22.6	0.0	43.2	23.9	290.0	1.63	123.87	866.13
25	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	124.23	865.77
25	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	124.61	865.39
25	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	124.97	865.03
25	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	123.32	803.77
26	1	30.3	93.6	0.0	0.0	103.0	0.0	272.0	3.38	116.96	631.01
26	2	23.1	115.5	0.0	0.0	103.0	0.0	248.0	2.86	104.74	402.72
26	3	19.8	82.6	0.0	0.0	69.4	0.0	225.1	2.30	88.39	232.03
26	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	88.36	231.64
26	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	88.39	231.61
26	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	90.36	243.50
26	7	120.4	50.3	0.0	0.0	43.2	0.0	251.2	1.35	107.59	429.42
26	8	226.9	41.0	22.9	0.0	43.2	24.2	290.0	1.63	126.24	863.76
26	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	126.60	863.40
26	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	126.98	863.02
26	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	127.34	862.66
26	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	125.65	801.40
27	1	30.3	93.6	0.0	0.0	103.0	0.0	272.0	3.38	119.15	628.62
27	2	23.1	115.5	0.0	0.0	103.0	0.0	247.9	2.86	106.65	400.26
27	3	19.8	82.3	0.0	0.0	69.1	0.0	225.1	2.29	90.02	230.39
27	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	89.99	230.01
27	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	90.02	229.98
27	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	92.04	241.87
27	7	120.4	50.3	0.0	0.0	43.2	0.0	251.3	1.35	109.61	427.81
27	8	226.9	41.0	23.2	0.0	43.2	24.5	290.0	1.63	128.61	861.39
27	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	128.98	861.02
27	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	129.35	860.65
27	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	129.72	860.28
27	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	127.98	799.03
28	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	121.34	626.23
28	2	23.1	115.5	0.0	0.0	103.0	0.0	247.8	2.86	108.56	397.80
28	3	19.8	82.0	0.0	0.0	68.8	0.0	225.1	2.29	91.66	228.76
28	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	91.63	228.37
28	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	91.65	228.35
28	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	93.71	240.24
28	7	120.4	50.3	0.0	0.0	43.2	0.0	251.3	1.35	111.64	426.21
28	8	226.9	41.0	23.5	0.0	43.2	24.8	290.0	1.63	130.99	859.01
28	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	131.35	858.65
28	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	131.73	858.27
28	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	132.09	857.91
28	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	130.31	796.65
29	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	123.52	623.84
29	2	23.1	115.6	0.0	0.0	103.0	0.0	247.8	2.86	110.47	395.34
29	3	19.8	81.7	0.0	0.0	68.6	0.0	225.1	2.29	93.29	227.13
29	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	93.26	226.74
29	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	93.29	226.71
29	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	95.38	238.61

(4) Rate of Inflow and Outflow Case 3 (3/3)

Y	M	Q00	R1	R2	R3	W1	W2	H1	E1	WST	VW
29	7	120.4	50.3	0.0	0.0	43.2	0.0	251.4	1.35	113.66	424.60
29	8	226.9	41.0	23.8	0.0	43.2	25.1	290.0	1.63	133.36	856.64
29	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	133.72	856.28
29	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	134.10	855.90
29	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	134.46	855.54
29	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	132.64	794.28
30	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	125.71	621.45
30	2	23.1	115.6	0.0	0.0	103.0	0.0	247.7	2.86	112.38	392.88
30	3	19.8	81.4	0.0	0.0	68.3	0.0	225.1	2.29	94.92	225.49
30	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	94.89	225.11
30	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	94.92	225.08
30	6	62.7	57.5	0.0	0.0	43.2	0.0	226.8	1.21	97.05	236.98
30	7	120.4	50.3	0.0	0.0	43.2	0.0	251.4	1.35	115.69	423.00
30	8	226.9	41.0	24.1	0.0	43.2	25.4	290.0	1.63	135.73	854.27
30	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	136.10	853.90
30	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	136.47	853.53
30	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	136.84	853.16
30	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	134.97	791.90
31	1	30.3	93.6	0.0	0.0	103.0	0.0	271.9	3.38	127.90	619.07
31	2	23.1	115.6	0.0	0.0	103.0	0.0	247.6	2.86	114.28	390.42
31	3	19.8	81.1	0.0	0.0	68.0	0.0	225.1	2.29	96.56	223.86
31	4	20.1	19.6	0.0	0.0	14.7	0.0	225.0	1.62	96.52	223.48
31	5	40.4	39.9	0.0	0.0	30.8	0.0	225.0	1.34	96.55	223.45
31	6	62.7	57.5	0.0	0.0	43.2	0.0	226.9	1.21	98.72	235.35
31	7	120.4	50.3	0.0	0.0	43.2	0.0	251.5	1.35	117.71	421.39
31	8	226.9	41.0	24.4	0.0	43.2	25.7	290.0	1.63	138.11	851.89
31	9	216.2	39.4	176.0	0.0	43.2	192.9	290.0	1.95	138.47	851.53
31	10	139.3	60.9	77.3	0.0	70.6	89.6	290.0	3.04	138.85	851.15
31	11	75.8	62.2	12.2	0.0	70.6	13.9	290.0	3.49	139.21	850.79
31	12	39.2	60.8	0.0	0.0	70.6	0.0	285.9	3.53	137.30	789.53

(5) Dissolved Matters Run-1, Run-2 (1/8)

Y	M	Cu	Zn	As	Cu	Zn	As
1	7	0.0125	0.0062	0.0031	0.0197	0.0095	0.0031
1	8	0.0081	0.0102	0.0029	0.0144	0.0124	0.0029
1	9	0.0054	0.0112	0.0028	0.0135	0.0125	0.0028
1	10	0.0044	0.0117	0.0029	0.0146	0.0126	0.0029
1	11	0.0033	0.0131	0.0030	0.0169	0.0137	0.0030
1	12	0.0026	0.0154	0.0032	0.0182	0.0157	0.0032
2	1	0.0025	0.0179	0.0033	0.0192	0.0182	0.0033
2	2	0.0024	0.0208	0.0035	0.0201	0.0210	0.0035
2	3	0.0028	0.0235	0.0038	0.0213	0.0238	0.0038
2	4	0.0035	0.0270	0.0042	0.0229	0.0275	0.0042
2	5	0.0046	0.0293	0.0043	0.0246	0.0302	0.0043
2	6	0.0054	0.0275	0.0041	0.0260	0.0287	0.0041
2	7	0.0069	0.0209	0.0036	0.0229	0.0226	0.0036
2	8	0.0069	0.0156	0.0032	0.0168	0.0174	0.0032
2	9	0.0053	0.0144	0.0030	0.0151	0.0156	0.0030
2	10	0.0044	0.0139	0.0030	0.0158	0.0148	0.0030
2	11	0.0033	0.0150	0.0031	0.0179	0.0156	0.0031
2	12	0.0026	0.0171	0.0033	0.0191	0.0174	0.0033
3	1	0.0025	0.0195	0.0034	0.0200	0.0198	0.0034
3	2	0.0024	0.0223	0.0036	0.0209	0.0225	0.0036
3	3	0.0028	0.0249	0.0039	0.0220	0.0252	0.0039
3	4	0.0035	0.0282	0.0043	0.0235	0.0287	0.0043
3	5	0.0047	0.0302	0.0043	0.0251	0.0311	0.0043
3	6	0.0054	0.0281	0.0041	0.0264	0.0292	0.0041
3	7	0.0069	0.0211	0.0036	0.0231	0.0228	0.0036
3	8	0.0070	0.0157	0.0032	0.0169	0.0176	0.0032
3	9	0.0053	0.0145	0.0030	0.0151	0.0157	0.0030
3	10	0.0044	0.0139	0.0030	0.0158	0.0149	0.0030
3	11	0.0033	0.0151	0.0031	0.0179	0.0156	0.0031
3	12	0.0026	0.0171	0.0033	0.0191	0.0174	0.0033
4	1	0.0025	0.0196	0.0034	0.0201	0.0199	0.0034
4	2	0.0024	0.0223	0.0036	0.0209	0.0226	0.0036
4	3	0.0028	0.0250	0.0039	0.0221	0.0253	0.0039
4	4	0.0036	0.0283	0.0043	0.0236	0.0287	0.0043
4	5	0.0047	0.0303	0.0044	0.0252	0.0312	0.0044
4	6	0.0055	0.0281	0.0041	0.0264	0.0293	0.0041
4	7	0.0070	0.0211	0.0036	0.0231	0.0228	0.0036
4	8	0.0070	0.0157	0.0032	0.0169	0.0176	0.0032
4	9	0.0053	0.0145	0.0030	0.0151	0.0157	0.0030
4	10	0.0045	0.0140	0.0030	0.0158	0.0149	0.0030
4	11	0.0034	0.0151	0.0031	0.0179	0.0156	0.0031
4	12	0.0026	0.0171	0.0033	0.0191	0.0175	0.0033
5	1	0.0025	0.0196	0.0034	0.0201	0.0199	0.0034
5	2	0.0024	0.0224	0.0036	0.0210	0.0226	0.0036
5	3	0.0028	0.0250	0.0039	0.0221	0.0253	0.0039
5	4	0.0036	0.0283	0.0043	0.0236	0.0288	0.0043
5	5	0.0047	0.0304	0.0044	0.0252	0.0312	0.0044
5	6	0.0055	0.0281	0.0041	0.0265	0.0293	0.0041

(5) Dissolved Matters Run-1, Run-2 (2/8)

Y	M	Cu	Zn	As	Cu	Zn	As
5	7	0.0070	0.0210	0.0036	0.0231	0.0227	0.0036
5	8	0.0070	0.0157	0.0032	0.0168	0.0176	0.0032
5	9	0.0053	0.0145	0.0030	0.0151	0.0158	0.0030
5	10	0.0045	0.0140	0.0030	0.0158	0.0149	0.0030.
5	11	0.0034	0.0151	0.0031	0.0179	0.0156	0.0031
5	12	0.0027	0.0172	0.0033	0.0191	0.0175	0.0033
6	1	0.0025	0.0196	0.0034	0.0201	0.0199	0.0034
6	2	0.0024	0.0224	0.0036	0.0210	0.0226	0.0036
6	3	0.0028	0.0251	0.0039	0.0221	0.0254	0.0039
6	4	0.0036	0.0284	0.0043	0.0236	0.0289	0.0043
6	5	0.0048	0.0304	0.0044	0.0253	0.0313	0.0044
6	6	0.0056	0.0281	0.0041	0.0265	0.0293	0.0041
6	7	0.0071	0.0210	0.0036	0.0231	0.0227	0.0036
6	8	0.0071	0.0157	0.0032	0.0168	0.0176	0.0032
6	9	0.0054	0.0145	0.0030	0.0151	0.0158	0.0030
6	10	0.0045	0.0140	0.0030	0.0158	0.0149	0.0030
6	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
6	12	0.0027	0.0172	0.0033	0.0192	0.0175	0.0033
7	1	0.0025	0.0197	0.0034	0.0201	0.0199	0.0034
7	2	0.0024	0.0224	0.0036	0.0210	0.0227	0.0036
7	3	0.0029	0.0251	0.0039	0.0221	0.0254	0.0039
7	4	0.0036	0.0284	0.0043	0.0237	0.0289	0.0043
7	5	0.0048	0.0304	0.0044	0.0253	0.0313	0.0044
7	6	0.0056	0.0281	0.0042	0.0265	0.0293	0.0042
7	7	0.0071	0.0209	0.0036	0.0231	0.0226	0.0036
7	8	0.0071	0.0157	0.0032	0.0168	0.0176	0.0032
7	9	0.0054	0.0146	0.0030	0.0151	0.0158	0.0030
7	10	0.0045	0.0140	0.0030	0.0158	0.0149	0.0030
7	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
7	12	0.0027	0.0172	0.0033	0.0192	0.0175	0.0033
8	1	0.0025	0.0197	0.0034	0.0202	0.0200	0.0034
8	2	0.0025	0.0225	0.0036	0.0210	0.0227	0.0036
8	3	0.0029	0.0251	0.0039	0.0222	0.0255	0.0039
8	4	0.0037	0.0285	0.0043	0.0237	0.0290	0.0043
8	5	0.0048	0.0305	0.0044	0.0254	0.0314	0.0044
8	6	0.0056	0.0281	0.0042	0.0266	0.0293	0.0042
8	7	0.0071	0.0208	0.0036	0.0231	0.0226	0.0036
8	8	0.0071	0.0157	0.0031	0.0168	0.0175	0.0031
8	9	0.0054	0.0146	0.0030	0.0151	0.0158	0.0030
8	10	0.0045	0.0140	0.0030	0.0158	0.0149	0.0030
8	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
8	12	0.0027	0.0172	0.0033	0.0192	0.0175	0.0033
9	1	0.0025	0.0197	0.0034	0.0202	0.0200	0.0034
9	2	0.0025	0.0225	0.0036	0.0211	0.0228	0.0036
9	3	0.0029	0.0252	0.0039	0.0222	0.0255	0.0039
9	4	0.0037	0.0286	0.0043	0.0238	0.0291	0.0043
9	5	0.0049	0.0305	0.0044	0.0254	0.0315	0.0044
9	6	0.0057	0.0281	0.0042	0.0266	0.0293	0.0042

(5) Dissolved Matters Run-1, Run-2 (3/8)

Y	M	Cu	Zn	As	Cu	Zn	As
9	7	0.0072	0.0208	0.0036	0.0231	0.0225	0.0036
9	8	0.0071	0.0157	0.0031	0.0168	0.0175	0.0031
9	9	0.0054	0.0146	0.0030	0.0151	0.0158	0.0030
9	10	0.0045	0.0140	0.0030	0.0157	0.0149	0.0030
9	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
9	12	0.0027	0.0172	0.0033	0.0192	0.0175	0.0033
10	1	0.0025	0.0197	0.0034	0.0202	0.0200	0.0034
10	2	0.0025	0.0225	0.0036	0.0211	0.0228	0.0036
10	3	0.0029	0.0252	0.0039	0.0222	0.0256	0.0039
10	4	0.0037	0.0286	0.0044	0.0238	0.0291	0.0044
10	5	0.0049	0.0306	0.0044	0.0255	0.0315	0.0044
10	6	0.0057	0.0280	0.0042	0.0267	0.0293	0.0042
10	7	0.0072	0.0207	0.0036	0.0231	0.0225	0.0036
10	8	0.0072	0.0157	0.0031	0.0168	0.0175	0.0031
10	9	0.0054	0.0146	0.0030	0.0151	0.0159	0.0030
10	10	0.0045	0.0140	0.0030	0.0157	0.0149	0.0030
10	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
10	12	0.0027	0.0172	0.0033	0.0192	0.0176	0.0033
11	1	0.0025	0.0198	0.0034	0.0202	0.0200	0.0034
11	2	0.0025	0.0226	0.0036	0.0211	0.0228	0.0036
11	3	0.0029	0.0253	0.0039	0.0223	0.0256	0.0039
11	4	0.0038	0.0287	0.0044	0.0239	0.0292	0.0044
11	5	0.0049	0.0306	0.0044	0.0255	0.0316	0.0044
11	6	0.0057	0.0280	0.0042	0.0267	0.0293	0.0042
11	7	0.0072	0.0206	0.0036	0.0231	0.0224	0.0036
11	8	0.0072	0.0157	0.0031	0.0167	0.0175	0.0031
11	9	0.0055	0.0146	0.0030	0.0150	0.0159	0.0030
11	10	0.0045	0.0140	0.0030	0.0157	0.0149	0.0030
11	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
11	12	0.0027	0.0172	0.0033	0.0192	0.0176	0.0033
12	1	0.0026	0.0198	0.0034	0.0202	0.0201	0.0034
12	2	0.0025	0.0226	0.0036	0.0211	0.0229	0.0036
12	3	0.0029	0.0253	0.0039	0.0223	0.0256	0.0039
12	4	0.0038	0.0287	0.0044	0.0239	0.0292	0.0044
12	5	0.0050	0.0307	0.0044	0.0256	0.0316	0.0044
12	6	0.0058	0.0280	0.0042	0.0268	0.0292	0.0042
12	7	0.0073	0.0206	0.0036	0.0231	0.0223	0.0036
12	8	0.0072	0.0156	0.0031	0.0167	0.0175	0.0031
12	9	0.0055	0.0146	0.0030	0.0150	0.0159	0.0030
12	10	0.0046	0.0140	0.0030	0.0157	0.0149	0.0030
12	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
12	12	0.0027	0.0172	0.0033	0.0192	0.0176	0.0033
13	1	0.0026	0.0198	0.0034	0.0202	0.0201	0.0034
13	2	0.0025	0.0226	0.0036	0.0211	0.0229	0.0036
13	3	0.0030	0.0253	0.0040	0.0223	0.0257	0.0040
13	4	0.0038	0.0288	0.0044	0.0240	0.0293	0.0044
13	5	0.0050	0.0307	0.0044	0.0256	0.0317	0.0044
13	6	0.0058	0.0280	0.0042	0.0268	0.0292	0.0042

(5) Dissolved Matters Run-1, Run-2 (4/8)

Y	M	Cu	Zn	As	Cu	Zn	As
13	7	0.0073	0.0205	0.0036	0.0231	0.0223	0.0036
13	8	0.0072	0.0156	0.0031	0.0167	0.0175	0.0031
13	9	0.0055	0.0146	0.0030	0.0150	0.0159	0.0030
13	10	0.0046	0.0140	0.0030	0.0157	0.0150	0.0030
13	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
13	12	0.0027	0.0173	0.0033	0.0192	0.0176	0.0033
14	1	0.0026	0.0198	0.0034	0.0203	0.0201	0.0034
14	2	0.0025	0.0227	0.0036	0.0212	0.0229	0.0036
14	3	0.0030	0.0254	0.0040	0.0224	0.0257	0.0040
14	4	0.0038	0.0288	0.0044	0.0240	0.0294	0.0044
14	5	0.0050	0.0307	0.0044	0.0257	0.0317	0.0044
14	6	0.0059	0.0280	0.0042	0.0268	0.0292	0.0042
14	7	0.0074	0.0204	0.0036	0.0231	0.0222	0.0036
14	8	0.0073	0.0156	0.0031	0.0167	0.0175	0.0031
14	9	0.0055	0.0146	0.0030	0.0150	0.0159	0.0030
14	10	0.0046	0.0140	0.0030	0.0157	0.0150	0.0030
14	11	0.0034	0.0151	0.0031	0.0180	0.0157	0.0031
14	12	0.0027	0.0173	0.0033	0.0192	0.0176	0.0033
15	1	0.0026	0.0198	0.0034	0.0203	0.0201	0.0034
15	2	0.0025	0.0227	0.0036	0.0212	0.0230	0.0036
15	3	0.0030	0.0254	0.0040	0.0224	0.0258	0.0040
15	4	0.0039	0.0289	0.0044	0.0241	0.0294	0.0044
15	5	0.0051	0.0308	0.0044	0.0257	0.0318	0.0044
15	6	0.0059	0.0279	0.0042	0.0269	0.0292	0.0042
15	7	0.0074	0.0203	0.0036	0.0231	0.0222	0.0036
15	8	0.0073	0.0156	0.0031	0.0167	0.0175	0.0031
15	9	0.0055	0.0146	0.0030	0.0150	0.0159	0.0030
15	10	0.0046	0.0140	0.0030	0.0157	0.0150	0.0030
15	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
15	12	0.0027	0.0173	0.0033	0.0193	0.0176	0.0033
16	1	0.0026	0.0198	0.0034	0.0203	0.0201	0.0034
16	2	0.0025	0.0227	0.0036	0.0212	0.0230	0.0036
16	3	0.0030	0.0254	0.0040	0.0224	0.0258	0.0040
16	4	0.0039	0.0289	0.0044	0.0241	0.0295	0.0044
16	5	0.0051	0.0308	0.0044	0.0258	0.0318	0.0044
16	6	0.0059	0.0279	0.0042	0.0269	0.0292	0.0042
16	7	0.0074	0.0203	0.0036	0.0231	0.0221	0.0036
16	8	0.0073	0.0156	0.0031	0.0166	0.0175	0.0031
16	9	0.0055	0.0146	0.0030	0.0150	0.0159	0.0030
16	10	0.0046	0.0140	0.0030	0.0157	0.0149	0.0030
16	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
16	12	0.0027	0.0173	0.0033	0.0193	0.0176	0.0033
17	1	0.0026	0.0199	0.0034	0.0203	0.0202	0.0034
17	2	0.0025	0.0228	0.0036	0.0212	0.0230	0.0036
17	3	0.0030	0.0255	0.0040	0.0225	0.0258	0.0040
17	4	0.0039	0.0290	0.0044	0.0242	0.0295	0.0044
17	5	0.0052	0.0309	0.0044	0.0258	0.0319	0.0044
17	6	0.0060	0.0279	0.0042	0.0270	0.0292	0.0042

(5) Dissolved Matters Run-1, Run-2 (5/8)

Y	M	Cu	Zn	As	Cu	Zn	As
17	7	0.0075	0.0202	0.0036	0.0230	0.0220	0.0036
17	8	0.0073	0.0155	0.0031	0.0166	0.0174	0.0031
17	9	0.0056	0.0146	0.0030	0.0149	0.0159	0.0030
17	10	0.0046	0.0140	0.0030	0.0157	0.0149	0.0030
17	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
17	12	0.0027	0.0173	0.0033	0.0193	0.0176	0.0033
18	1	0.0026	0.0199	0.0034	0.0203	0.0202	0.0034
18	2	0.0025	0.0288	0.0036	0.0212	0.0231	0.0036
18	3	0.0030	0.0255	0.0040	0.0225	0.0259	0.0040
18	4	0.0040	0.0290	0.0044	0.0242	0.0296	0.0044
18	5	0.0052	0.0309	0.0045	0.0259	0.0319	0.0045
18	6	0.0060	0.0278	0.0042	0.0270	0.0291	0.0042
18	7	0.0075	0.0201	0.0036	0.0230	0.0219	0.0036
18	8	0.0074	0.0155	0.0031	0.0166	0.0174	0.0031
18	9	0.0056	0.0146	0.0030	0.0149	0.0159	0.0030
18	10	0.0046	0.0140	0.0030	0.0157	0.0149	0.0030
18	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
18	12	0.0027	0.0173	0.0033	0.0193	0.0176	0.0033
19	1	0.0026	0.0199	0.0034	0.0203	0.0202	0.0034
19	2	0.0025	0.0228	0.0037	0.0213	0.0231	0.0037
19	3	0.0031	0.0256	0.0040	0.0225	0.0259	0.0040
19	4	0.0040	0.0291	0.0044	0.0243	0.0297	0.0044
19	5	0.0052	0.0309	0.0045	0.0259	0.0319	0.0045
19	6	0.0061	0.0278	0.0042	0.0271	0.0291	0.0042
19	7	0.0076	0.0200	0.0036	0.0230	0.0219	0.0036
19	8	0.0074	0.0155	0.0031	0.0166	0.0174	0.0031
19	9	0.0056	0.0146	0.0030	0.0149	0.0159	0.0030
19	10	0.0047	0.0139	0.0030	0.0157	0.0149	0.0030
19	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
19	12	0.0028	0.0173	0.0033	0.0193	0.0176	0.0033
20	1	0.0026	0.0199	0.0034	0.0203	0.0202	0.0034
20	2	0.0026	0.0228	0.0037	0.0213	0.0231	0.0037
20	3	0.0031	0.0256	0.0040	0.0226	0.0260	0.0040
20	4	0.0040	0.0291	0.0045	0.0243	0.0297	0.0045
20	5	0.0053	0.0310	0.0045	0.0260	0.0320	0.0045
20	6	0.0061	0.0277	0.0042	0.0271	0.0291	0.0042
20	7	0.0076	0.0199	0.0036	0.0230	0.0218	0.0036
20	8	0.0074	0.0155	0.0031	0.0165	0.0174	0.0031
20	9	0.0056	0.0146	0.0030	0.0149	0.0159	0.0030
20	10	0.0047	0.0139	0.0030	0.0157	0.0149	0.0030
20	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
20	12	0.0028	0.0173	0.0033	0.0193	0.0176	0.0033
21	1	0.0026	0.0199	0.0034	0.0204	0.0202	0.0034
21	2	0.0026	0.0229	0.0037	0.0213	0.0231	0.0037
21	3	0.0031	0.0256	0.0040	0.0226	0.0260	0.0040
21	4	0.0041	0.0292	0.0045	0.0244	0.0298	0.0045
21	5	0.0053	0.0310	0.0045	0.0260	0.0320	0.0045
21	6	0.0062	0.0277	0.0042	0.0271	0.0290	0.0042

(5) Dissolved Matters Run-1, Run-2 (6/8)

Y	M	Cu	Zn	As	Cu	Zn	As
21	7	0.0076	0.0198	0.0036	0.0230	0.0217	0.0036
21	8	0.0074	0.0154	0.0031	0.0165	0.0174	0.0031
21	9	0.0056	0.0146	0.0030	0.0149	0.0159	0.0030
21	10	0.0047	0.0139	0.0030	0.0156	0.0149	0.0030
21	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
21	12	0.0028	0.0173	0.0033	0.0193	0.0176	0.0033
22	1	0.0026	0.0199	0.0034	0.0204	0.0202	0.0034
22	2	0.0026	0.0229	0.0037	0.0213	0.0232	0.0037
22	3	0.0031	0.0257	0.0040	0.0227	0.0260	0.0040
22	4	0.0041	0.0292	0.0045	0.0244	0.0298	0.0045
22	5	0.0054	0.0310	0.0045	0.0261	0.0321	0.0045
22	6	0.0062	0.0276	0.0042	0.0272	0.0290	0.0042
22	7	0.0077	0.0197	0.0036	0.0230	0.0216	0.0036
22	8	0.0075	0.0154	0.0031	0.0165	0.0173	0.0031
22	9	0.0057	0.0146	0.0030	0.0149	0.0159	0.0030
22	10	0.0047	0.0139	0.0030	0.0156	0.0149	0.0030
22	11	0.0035	0.0151	0.0031	0.0180	0.0157	0.0031
22	12	0.0028	0.0173	0.0033	0.0193	0.0177	0.0033
23	1	0.0026	0.0200	0.0034	0.0204	0.0203	0.0034
23	2	0.0026	0.0229	0.0037	0.0214	0.0232	0.0037
23	3	0.0032	0.0257	0.0040	0.0227	0.0261	0.0040
23	4	0.0042	0.0293	0.0045	0.0245	0.0299	0.0045
23	5	0.0054	0.0311	0.0045	0.0262	0.0321	0.0045
23	6	0.0063	0.0276	0.0042	0.0272	0.0290	0.0042
23	7	0.0077	0.0196	0.0036	0.0230	0.0215	0.0036
23	8	0.0075	0.0153	0.0031	0.0165	0.0173	0.0031
23	9	0.0057	0.0146	0.0030	0.0148	0.0159	0.0030
23	10	0.0047	0.0139	0.0030	0.0156	0.0149	0.0030
23	11	0.0035	0.0150	0.0031	0.0180	0.0157	0.0031
23	12	0.0028	0.0173	0.0033	0.0193	0.0177	0.0033
24	1	0.0026	0.0200	0.0034	0.0204	0.0203	0.0034
24	2	0.0026	0.0230	0.0037	0.0214	0.0232	0.0037
24	3	0.0032	0.0257	0.0040	0.0227	0.0261	0.0040
24	4	0.0042	0.0293	0.0045	0.0246	0.0300	0.0045
24	5	0.0055	0.0311	0.0045	0.0262	0.0322	0.0045
24	6	0.0063	0.0275	0.0042	0.0273	0.0289	0.0042
24	7	0.0078	0.0195	0.0036	0.0230	0.0214	0.0036
24	8	0.0075	0.0153	0.0031	0.0164	0.0173	0.0031
24	9	0.0057	0.0146	0.0030	0.0148	0.0159	0.0030
24	10	0.0047	0.0139	0.0030	0.0156	0.0149	0.0030
24	11	0.0036	0.0150	0.0031	0.0180	0.0157	0.0031
24	12	0.0028	0.0173	0.0033	0.0194	0.0177	0.0033
25	1	0.0027	0.0200	0.0034	0.0204	0.0203	0.0034
25	2	0.0026	0.0230	0.0037	0.0214	0.0233	0.0037
25	3	0.0032	0.0258	0.0040	0.0228	0.0262	0.0040
25	4	0.0042	0.0294	0.0045	0.0246	0.0300	0.0045
25	5	0.0055	0.0311	0.0045	0.0263	0.0322	0.0045
25	6	0.0064	0.0274	0.0042	0.0273	0.0289	0.0042

(5) Dissolved Matters Run-1, Run-2 (7/8)

Y	M	Cu	Zn	As	Cu	Zn	As
25	7	0.0078	0.0194	0.0036	0.0230	0.0213	0.0036
25	8	0.0075	0.0153	0.0031	0.0164	0.0172	0.0031
25	9	0.0057	0.0146	0.0030	0.0148	0.0159	0.0030
25	10	0.0048	0.0138	0.0030	0.0156	0.0149	0.0030
25	11	0.0036	0.0150	0.0031	0.0180	0.0156	0.0031
25	12	0.0028	0.0173	0.0033	0.0194	0.0176	0.0033
26	1	0.0027	0.0200	0.0034	0.0205	0.0203	0.0034
26	2	0.0026	0.0230	0.0037	0.0214	0.0233	0.0037
26	3	0.0032	0.0258	0.0040	0.0228	0.0262	0.0040
26	4	0.0043	0.0294	0.0045	0.0247	0.0301	0.0045
26	5	0.0056	0.0311	0.0045	0.0264	0.0322	0.0045
26	6	0.0064	0.0274	0.0042	0.0274	0.0288	0.0042
26	7	0.0079	0.0193	0.0036	0.0230	0.0212	0.0036
26	8	0.0076	0.0152	0.0031	0.0164	0.0172	0.0031
26	9	0.0057	0.0145	0.0030	0.0148	0.0159	0.0030
26	10	0.0048	0.0138	0.0030	0.0156	0.0149	0.0030
26	11	0.0036	0.0150	0.0031	0.0180	0.0156	0.0031
26	12	0.0028	0.0173	0.0033	0.0194	0.0176	0.0033
27	1	0.0027	0.0200	0.0035	0.0205	0.0203	0.0035
27	2	0.0026	0.0230	0.0037	0.0215	0.0233	0.0037
27	3	0.0033	0.0258	0.0041	0.0229	0.0262	0.0041
27	4	0.0043	0.0295	0.0046	0.0248	0.0301	0.0046
27	5	0.0057	0.0311	0.0045	0.0264	0.0323	0.0045
27	6	0.0065	0.0273	0.0042	0.0275	0.0287	0.0042
27	7	0.0080	0.0191	0.0036	0.0230	0.0211	0.0036
27	8	0.0076	0.0152	0.0031	0.0163	0.0172	0.0031
27	9	0.0058	0.0145	0.0030	0.0147	0.0159	0.0030
27	10	0.0048	0.0138	0.0030	0.0156	0.0148	0.0030
27	11	0.0036	0.0150	0.0031	0.0180	0.0156	0.0031
27	12	0.0028	0.0173	0.0033	0.0194	0.0176	0.0033
28	1	0.0027	0.0200	0.0035	0.0205	0.0203	0.0035
28	2	0.0026	0.0231	0.0037	0.0215	0.0234	0.0037
28	3	0.0033	0.0259	0.0041	0.0229	0.0263	0.0041
28	4	0.0044	0.0295	0.0046	0.0248	0.0302	0.0046
28	5	0.0057	0.0312	0.0046	0.0265	0.0323	0.0046
28	6	0.0066	0.0272	0.0042	0.0275	0.0287	0.0042
28	7	0.0080	0.0190	0.0036	0.0229	0.0210	0.0036
28	8	0.0076	0.0151	0.0031	0.0163	0.0171	0.0031
28	9	0.0058	0.0145	0.0030	0.0147	0.0159	0.0030
28	10	0.0048	0.0138	0.0030	0.0156	0.0148	0.0030
28	11	0.0036	0.0150	0.0031	0.0181	0.0156	0.0031
28	12	0.0028	0.0173	0.0033	0.0194	0.0176	0.0033
29	1	0.0027	0.0200	0.0035	0.0205	0.0203	0.0035
29	2	0.0027	0.0231	0.0037	0.0215	0.0234	0.0037
29	3	0.0033	0.0259	0.0041	0.0230	0.0263	0.0041
29	4	0.0044	0.0296	0.0046	0.0249	0.0303	0.0046
29	5	0.0058	0.0312	0.0046	0.0266	0.0323	0.0046
29	6	0.0066	0.0271	0.0042	0.0276	0.0286	0.0042

(5) Dissolved Matters Run-1, Run-2 (8/8)

Y	M	Cu	Zn	As	Cu	Zn	As
29	7	0.0081	0.0189	0.0035	0.0229	0.0209	0.0035
29	8	0.0077	0.0151	0.0031	0.0163	0.0171	0.0031
29	9	0.0058	0.0145	0.0030	0.0147	0.0158	0.0030
29	10	0.0048	0.0138	0.0030	0.0155	0.0148	0.0030
29	11	0.0036	0.0149	0.0031	0.0181	0.0156	0.0031
29	12	0.0028	0.0173	0.0033	0.0194	0.0176	0.0033
30	1	0.0027	0.0200	0.0035	0.0205	0.0204	0.0035
30	2	0.0027	0.0231	0.0037	0.0216	0.0234	0.0037
30	3	0.0034	0.0259	0.0041	0.0230	0.0263	0.0041
30	4	0.0045	0.0296	0.0046	0.0250	0.0303	0.0046
30	5	0.0058	0.0312	0.0046	0.0266	0.0324	0.0046
30	6	0.0067	0.0270	0.0042	0.0276	0.0285	0.0042
30	7	0.0081	0.0187	0.0035	0.0229	0.0208	0.0035
30	8	0.0077	0.0150	0.0031	0.0162	0.0171	0.0031
30	9	0.0058	0.0145	0.0030	0.0146	0.0158	0.0030
30	10	0.0048	0.0137	0.0030	0.0155	0.0148	0.0030
30	11	0.0036	0.0149	0.0031	0.0181	0.0156	0.0031
30	12	0.0029	0.0173	0.0033	0.0194	0.0176	0.0033
31	1	0.0027	0.0200	0.0035	0.0206	0.0204	0.0035
31	2	0.0027	0.0232	0.0037	0.0216	0.0234	0.0037
31	3	0.0034	0.0259	0.0041	0.0231	0.0264	0.0041
31	4	0.0046	0.0297	0.0046	0.0250	0.0304	0.0046
31	5	0.0059	0.0312	0.0046	0.0267	0.0324	0.0046
31	6	0.0068	0.0269	0.0042	0.0277	0.0284	0.0042
31	7	0.0082	0.0186	0.0035	0.0229	0.0206	0.0035
31	8	0.0077	0.0150	0.0031	0.0162	0.0170	0.0031
31	9	0.0058	0.0144	0.0030	0.0146	0.0158	0.0030
31	10	0.0049	0.0137	0.0030	0.0155	0.0148	0.0030
31	11	0.0037	0.0149	0.0031	0.0181	0.0155	0.0031
31	12	0.0029	0.0172	0.0033	0.0194	0.0176	0.0033

(6) Dissolved Matters Run-3, Run-4 (1/8)

Y	M	Cu	Zn	As	Cu	Zn	As
1	7	0.0127	0.0062	0.0033	0.0237	0.0096	0.0033
1	8	0.0077	0.0126	0.0031	0.0210	0.0144	0.0031
1	9	0.0062	0.0133	0.0030	0.0179	0.0148	0.0030
1	10	0.0048	0.0135	0.0030	0.0170	0.0145	0.0030
1	11	0.0031	0.0148	0.0031	0.0187	0.0153	0.0031
1	12	0.0029	0.0166	0.0032	0.0200	0.0170	0.0032
2	1	0.0028	0.0185	0.0033	0.0211	0.0189	0.0033
2	2	0.0023	0.0212	0.0035	0.0219	0.0214	0.0035
2	3	0.0025	0.0239	0.0038	0.0227	0.0241	0.0038
2	4	0.0032	0.0270	0.0042	0.0239	0.0274	0.0042
2	5	0.0048	0.0282	0.0042	0.0254	0.0291	0.0042
2	6	0.0049	0.0283	0.0042	0.0265	0.0292	0.0042
2	7	0.0080	0.0182	0.0034	0.0189	0.0202	0.0034
2	8	0.0055	0.0131	0.0029	0.0127	0.0150	0.0029
2	9	0.0041	0.0132	0.0030	0.0153	0.0140	0.0030
2	10	0.0050	0.0117	0.0029	0.0128	0.0131	0.0029
2	11	0.0030	0.0129	0.0030	0.0157	0.0133	0.0030
2	12	0.0025	0.0155	0.0032	0.0169	0.0157	0.0032
3	1	0.0023	0.0184	0.0034	0.0179	0.0186	0.0034
3	2	0.0023	0.0217	0.0036	0.0187	0.0219	0.0036
3	3	0.0026	0.0255	0.0040	0.0199	0.0257	0.0040
3	4	0.0031	0.0317	0.0045	0.0214	0.0320	0.0045
3	5	0.0052	0.0310	0.0043	0.0238	0.0321	0.0043
3	6	0.0056	0.0275	0.0041	0.0256	0.0287	0.0041
3	7	0.0065	0.0220	0.0037	0.0241	0.0235	0.0037
3	8	0.0062	0.0140	0.0030	0.0142	0.0161	0.0030
3	9	0.0053	0.0130	0.0029	0.0136	0.0142	0.0029
3	10	0.0033	0.0140	0.0031	0.0164	0.0145	0.0031
3	11	0.0029	0.0159	0.0032	0.0180	0.0164	0.0032
3	12	0.0026	0.0182	0.0033	0.0191	0.0185	0.0033
4	1	0.0023	0.0210	0.0035	0.0199	0.0212	0.0035
4	2	0.0024	0.0241	0.0037	0.0208	0.0243	0.0037
4	3	0.0028	0.0274	0.0042	0.0219	0.0277	0.0042
4	4	0.0035	0.0321	0.0045	0.0234	0.0326	0.0045
4	5	0.0045	0.0339	0.0046	0.0250	0.0347	0.0046
4	6	0.0053	0.0315	0.0044	0.0263	0.0326	0.0044
4	7	0.0051	0.0297	0.0043	0.0272	0.0307	0.0043
4	8	0.0080	0.0187	0.0034	0.0191	0.0207	0.0034
4	9	0.0056	0.0172	0.0032	0.0180	0.0185	0.0032
4	10	0.0045	0.0167	0.0032	0.0178	0.0176	0.0032
4	11	0.0030	0.0178	0.0033	0.0194	0.0183	0.0033
4	12	0.0025	0.0200	0.0034	0.0203	0.0203	0.0034
5	1	0.0024	0.0226	0.0036	0.0211	0.0228	0.0036
5	2	0.0023	0.0257	0.0038	0.0219	0.0258	0.0038
5	3	0.0028	0.0288	0.0042	0.0229	0.0291	0.0042
5	4	0.0032	0.0343	0.0047	0.0242	0.0346	0.0047
5	5	0.0034	0.0409	0.0051	0.0254	0.0413	0.0051
5	6	0.0075	0.0265	0.0039	0.0204	0.0283	0.0039

(6) Dissolved Matters Run-3, Run-4 (2/8)

Y	M	Cu	Zn	As	Cu	Zn	As
5	7	0.0069	0.0188	0.0033	0.0161	0.0205	0.0033
5	8	0.0048	0.0142	0.0030	0.0122	0.0159	0.0030
5	9	0.0050	0.0129	0.0029	0.0139	0.0140	0.0029
5	10	0.0042	0.0131	0.0030	0.0154	0.0140	0.0030
5	11	0.0041	0.0138	0.0030	0.0166	0.0146	0.0030
5	12	0.0030	0.0153	0.0031	0.0183	0.0158	0.0031
6	1	0.0025	0.0178	0.0033	0.0193	0.0181	0.0033
6	2	0.0023	0.0208	0.0035	0.0201	0.0210	0.0035
6	3	0.0026	0.0237	0.0038	0.0211	0.0240	0.0038
6	4	0.0035	0.0270	0.0042	0.0228	0.0274	0.0042
6	5	0.0037	0.0331	0.0046	0.0242	0.0336	0.0046
6	6	0.0038	0.0377	0.0048	0.0255	0.0382	0.0048
6	7	0.0046	0.0377	0.0048	0.0266	0.0385	0.0048
6	8	0.0077	0.0238	0.0038	0.0208	0.0257	0.0038
6	9	0.0064	0.0190	0.0033	0.0177	0.0205	0.0033
6	10	0.0043	0.0185	0.0033	0.0182	0.0194	0.0033
6	11	0.0045	0.0173	0.0032	0.0179	0.0183	0.0032
6	12	0.0032	0.0180	0.0033	0.0196	0.0186	0.0033
7	1	0.0024	0.0205	0.0035	0.0204	0.0207	0.0035
7	2	0.0023	0.0233	0.0037	0.0212	0.0235	0.0037
7	3	0.0025	0.0265	0.0040	0.0220	0.0267	0.0040
7	4	0.0031	0.0309	0.0045	0.0234	0.0312	0.0045
7	5	0.0034	0.0380	0.0049	0.0247	0.0384	0.0049
7	6	0.0037	0.0428	0.0051	0.0258	0.0433	0.0051
7	7	0.0051	0.0395	0.0049	0.0269	0.0405	0.0049
7	8	0.0064	0.0303	0.0042	0.0270	0.0318	0.0042
7	9	0.0062	0.0245	0.0038	0.0248	0.0259	0.0038
7	10	0.0048	0.0234	0.0037	0.0258	0.0244	0.0037
7	11	0.0035	0.0250	0.0038	0.0265	0.0256	0.0038
7	12	0.0029	0.0286	0.0042	0.0272	0.0289	0.0042
8	1	0.0038	0.0317	0.0045	0.0281	0.0323	0.0045
8	2	0.0032	0.0391	0.0049	0.0288	0.0394	0.0049
8	3	0.0032	0.0457	0.0054	0.0296	0.0461	0.0054
8	4	0.0036	0.0508	0.0056	0.0301	0.0513	0.0056
8	5	0.0041	0.0511	0.0056	0.0303	0.0517	0.0056
8	6	0.0039	0.0522	0.0057	0.0306	0.0528	0.0057
8	7	0.0049	0.0474	0.0054	0.0303	0.0484	0.0054
8	8	0.0064	0.0351	0.0045	0.0292	0.0366	0.0045
8	9	0.0074	0.0229	0.0036	0.0213	0.0247	0.0036
8	10	0.0043	0.0226	0.0036	0.0229	0.0234	0.0036
8	11	0.0039	0.0226	0.0036	0.0241	0.0233	0.0036
8	12	0.0034	0.0234	0.0036	0.0250	0.0239	0.0036
9	1	0.0030	0.0251	0.0038	0.0256	0.0255	0.0038
9	2	0.0030	0.0274	0.0040	0.0263	0.0277	0.0040
9	3	0.0042	0.0281	0.0043	0.0273	0.0287	0.0043
9	4	0.0044	0.0315	0.0045	0.0280	0.0323	0.0045
9	5	0.0043	0.0340	0.0046	0.0286	0.0347	0.0046
9	6	0.0052	0.0328	0.0045	0.0288	0.0339	0.0045

(6) Dissolved Matters Run-3, Run-4 (3/8)

Y	M	Cu	Zn	As	Cu	Zn	As
9	7	0.0061	0.0274	0.0041	0.0287	0.0287	0.0041
9	8	0.0066	0.0221	0.0037	0.0256	0.0236	0.0037
9	9	0.0071	0.0169	0.0032	0.0188	0.0186	0.0032
9	10	0.0043	0.0170	0.0032	0.0191	0.0179	0.0032
9	11	0.0034	0.0179	0.0033	0.0208	0.0184	0.0033
9	12	0.0032	0.0190	0.0033	0.0220	0.0195	0.0033
10	1	0.0028	0.0208	0.0035	0.0229	0.0211	0.0035
10	2	0.0025	0.0231	0.0036	0.0235	0.0234	0.0036
10	3	0.0028	0.0251	0.0038	0.0244	0.0255	0.0038
10	4	0.0034	0.0276	0.0041	0.0254	0.0281	0.0041
10	5	0.0040	0.0307	0.0044	0.0265	0.0313	0.0044
10	6	0.0049	0.0315	0.0044	0.0274	0.0325	0.0044
10	7	0.0061	0.0272	0.0041	0.0279	0.0285	0.0041
10	8	0.0054	0.0258	0.0040	0.0282	0.0269	0.0040
10	9	0.0054	0.0246	0.0039	0.0284	0.0257	0.0039
10	10	0.0045	0.0259	0.0040	0.0287	0.0267	0.0040
10	11	0.0040	0.0290	0.0044	0.0293	0.0296	0.0044
10	12	0.0039	0.0345	0.0047	0.0298	0.0350	0.0047
11	1	0.0044	0.0372	0.0048	0.0301	0.0379	0.0048
11	2	0.0037	0.0417	0.0051	0.0305	0.0422	0.0051
11	3	0.0035	0.0468	0.0055	0.0310	0.0472	0.0055
11	4	0.0038	0.0509	0.0057	0.0313	0.0515	0.0057
11	5	0.0044	0.0502	0.0056	0.0312	0.0509	0.0056
11	6	0.0062	0.0386	0.0047	0.0301	0.0399	0.0047
11	7	0.0062	0.0301	0.0042	0.0289	0.0315	0.0042
11	8	0.0057	0.0141	0.0030	0.0127	0.0165	0.0030
11	9	0.0041	0.0144	0.0030	0.0157	0.0152	0.0030
11	10	0.0036	0.0154	0.0031	0.0181	0.0160	0.0031
11	11	0.0024	0.0179	0.0033	0.0190	0.0181	0.0033
11	12	0.0022	0.0210	0.0035	0.0197	0.0212	0.0035
12	1	0.0026	0.0239	0.0037	0.0208	0.0241	0.0037
12	2	0.0030	0.0265	0.0040	0.0220	0.0269	0.0040
12	3	0.0041	0.0282	0.0044	0.0238	0.0288	0.0044
12	4	0.0039	0.0341	0.0047	0.0253	0.0347	0.0047
12	5	0.0044	0.0368	0.0048	0.0265	0.0376	0.0048
12	6	0.0052	0.0351	0.0046	0.0274	0.0361	0.0046
12	7	0.0081	0.0208	0.0036	0.0198	0.0229	0.0036
12	8	0.0057	0.0191	0.0034	0.0191	0.0204	0.0034
12	9	0.0050	0.0177	0.0032	0.0180	0.0188	0.0032
12	10	0.0040	0.0174	0.0032	0.0190	0.0182	0.0032
12	11	0.0028	0.0190	0.0033	0.0202	0.0194	0.0033
12	12	0.0028	0.0208	0.0035	0.0213	0.0212	0.0035
13	1	0.0025	0.0233	0.0036	0.0221	0.0236	0.0036
13	2	0.0025	0.0262	0.0039	0.0229	0.0265	0.0039
13	3	0.0037	0.0273	0.0041	0.0243	0.0279	0.0041
13	4	0.0045	0.0290	0.0043	0.0258	0.0298	0.0043
13	5	0.0052	0.0297	0.0043	0.0269	0.0307	0.0043
13	6	0.0048	0.0311	0.0044	0.0277	0.0320	0.0044

(6) Dissolved Matters Run-3, Run-4 (4/8)

Y	M	Cu	Zn	As	Cu	Zn	As
13	7	0.0084	0.0187	0.0034	0.0189	0.0209	0.0034
13	8	0.0062	0.0168	0.0032	0.0171	0.0183	0.0032
13	9	0.0053	0.0147	0.0030	0.0146	0.0161	0.0030
13	10	0.0040	0.0146	0.0031	0.0164	0.0154	0.0031
13	11	0.0028	0.0165	0.0032	0.0179	0.0169	0.0032
13	12	0.0029	0.0185	0.0033	0.0194	0.0189	0.0033
14	1	0.0031	0.0202	0.0035	0.0208	0.0207	0.0035
14	2	0.0029	0.0222	0.0036	0.0219	0.0226	0.0036
14	3	0.0034	0.0236	0.0038	0.0232	0.0241	0.0038
14	4	0.0041	0.0253	0.0041	0.0248	0.0260	0.0041
14	5	0.0041	0.0304	0.0045	0.0261	0.0310	0.0045
14	6	0.0080	0.0206	0.0036	0.0200	0.0226	0.0036
14	7	0.0056	0.0197	0.0034	0.0205	0.0209	0.0034
14	8	0.0051	0.0185	0.0033	0.0198	0.0197	0.0033
14	9	0.0049	0.0142	0.0030	0.0142	0.0159	0.0030
14	10	0.0038	0.0142	0.0031	0.0165	0.0149	0.0031
14	11	0.0026	0.0165	0.0032	0.0178	0.0168	0.0032
14	12	0.0023	0.0195	0.0034	0.0187	0.0197	0.0034
15	1	0.0024	0.0229	0.0037	0.0196	0.0231	0.0037
15	2	0.0027	0.0262	0.0040	0.0207	0.0265	0.0040
15	3	0.0032	0.0306	0.0046	0.0223	0.0309	0.0046
15	4	0.0042	0.0369	0.0049	0.0241	0.0376	0.0049
15	5	0.0038	0.0424	0.0052	0.0255	0.0429	0.0052
15	6	0.0040	0.0467	0.0054	0.0267	0.0473	0.0054
15	7	0.0058	0.0396	0.0049	0.0275	0.0408	0.0049
15	8	0.0058	0.0130	0.0029	0.0100	0.0154	0.0029
15	9	0.0054	0.0122	0.0029	0.0127	0.0136	0.0029
15	10	0.0052	0.0107	0.0028	0.0120	0.0122	0.0028
15	11	0.0039	0.0115	0.0029	0.0145	0.0123	0.0029
15	12	0.0031	0.0135	0.0030	0.0166	0.0140	0.0030
16	1	0.0021	0.0168	0.0033	0.0174	0.0169	0.0033
16	2	0.0021	0.0206	0.0035	0.0181	0.0207	0.0035
16	3	0.0028	0.0242	0.0039	0.0195	0.0245	0.0039
16	4	0.0032	0.0304	0.0046	0.0211	0.0308	0.0046
16	5	0.0030	0.0416	0.0053	0.0225	0.0418	0.0053
16	6	0.0047	0.0434	0.0052	0.0245	0.0442	0.0052
16	7	0.0086	0.0221	0.0036	0.0169	0.0243	0.0036
16	8	0.0060	0.0193	0.0033	0.0162	0.0207	0.0033
16	9	0.0044	0.0185	0.0033	0.0169	0.0194	0.0033
16	10	0.0043	0.0176	0.0032	0.0178	0.0185	0.0032
16	11	0.0025	0.0197	0.0034	0.0188	0.0200	0.0034
16	12	0.0022	0.0227	0.0036	0.0196	0.0229	0.0036
17	1	0.0021	0.0268	0.0039	0.0203	0.0269	0.0039
17	2	0.0024	0.0313	0.0043	0.0212	0.0314	0.0043
17	3	0.0031	0.0371	0.0050	0.0227	0.0374	0.0050
17	4	0.0031	0.0479	0.0056	0.0241	0.0481	0.0056
17	5	0.0086	0.0223	0.0036	0.0152	0.0246	0.0036
17	6	0.0057	0.0198	0.0033	0.0150	0.0211	0.0033

(6) Dissolved Matters Run-3, Run-4 (5/8)

Y	M	Cu	Zn	As	Cu	Zn	As
17	7	0.0049	0.0177	0.0032	0.0153	0.0187	0.0032
17	8	0.0052	0.0156	0.0031	0.0149	0.0167	0.0031
17	9	0.0053	0.0133	0.0029	0.0133	0.0147	0.0029
17	10	0.0032	0.0143	0.0031	0.0163	0.0148	0.0031
17	11	0.0030	0.0164	0.0032	0.0180	0.0169	0.0032
17	12	0.0032	0.0180	0.0033	0.0197	0.0185	0.0033
18	1	0.0025	0.0206	0.0035	0.0206	0.0208	0.0035
18	2	0.0022	0.0239	0.0037	0.0214	0.0241	0.0037
18	3	0.0026	0.0277	0.0042	0.0224	0.0279	0.0042
18	4	0.0036	0.0324	0.0047	0.0240	0.0328	0.0047
18	5	0.0040	0.0391	0.0051	0.0254	0.0396	0.0051
18	6	0.0037	0.0458	0.0055	0.0266	0.0463	0.0055
18	7	0.0074	0.0305	0.0042	0.0240	0.0323	0.0042
18	8	0.0052	0.0129	0.0029	0.0100	0.0149	0.0029
18	9	0.0041	0.0092	0.0026	0.0082	0.0105	0.0026
18	10	0.0053	0.0085	0.0027	0.0092	0.0100	0.0027
18	11	0.0032	0.0102	0.0028	0.0121	0.0107	0.0028
18	12	0.0024	0.0133	0.0031	0.0146	0.0135	0.0031
19	1	0.0024	0.0167	0.0033	0.0158	0.0169	0.0033
19	2	0.0026	0.0202	0.0036	0.0172	0.0204	0.0036
19	3	0.0038	0.0227	0.0040	0.0196	0.0233	0.0040
19	4	0.0033	0.0304	0.0046	0.0213	0.0303	0.0046
19	5	0.0054	0.0322	0.0045	0.0239	0.0333	0.0045
19	6	0.0062	0.0281	0.0042	0.0259	0.0295	0.0042
19	7	0.0088	0.0160	0.0032	0.0165	0.0183	0.0032
19	8	0.0061	0.0144	0.0030	0.0140	0.0161	0.0030
19	9	0.0050	0.0117	0.0028	0.0112	0.0134	0.0028
19	10	0.0053	0.0110	0.0028	0.0131	0.0122	0.0028
19	11	0.0031	0.0127	0.0030	0.0154	0.0132	0.0030
19	12	0.0022	0.0158	0.0032	0.0164	0.0160	0.0032
20	1	0.0038	0.0172	0.0033	0.0189	0.0179	0.0033
20	2	0.0037	0.0184	0.0034	0.0209	0.0190	0.0034
20	3	0.0038	0.0193	0.0035	0.0225	0.0200	0.0035
20	4	0.0038	0.0211	0.0037	0.0239	0.0218	0.0037
20	5	0.0042	0.0230	0.0038	0.0252	0.0237	0.0038
20	6	0.0052	0.0220	0.0037	0.0259	0.0231	0.0037
20	7	0.0068	0.0171	0.0032	0.0194	0.0188	0.0032
20	8	0.0054	0.0144	0.0030	0.0153	0.0159	0.0030
20	9	0.0054	0.0124	0.0029	0.0136	0.0138	0.0029
20	10	0.0054	0.0110	0.0028	0.0125	0.0125	0.0028
20	11	0.0034	0.0122	0.0030	0.0156	0.0128	0.0030
20	12	0.0024	0.0152	0.0032	0.0167	0.0154	0.0032
21	1	0.0029	0.0179	0.0034	0.0182	0.0182	0.0034
21	2	0.0029	0.0206	0.0035	0.0196	0.0209	0.0035
21	3	0.0034	0.0230	0.0039	0.0213	0.0235	0.0039
21	4	0.0046	0.0255	0.0042	0.0236	0.0263	0.0042
21	5	0.0068	0.0230	0.0039	0.0259	0.0245	0.0039
21	6	0.0066	0.0207	0.0036	0.0252	0.0222	0.0036

(6) Dissolved Matters Run-3, Run-4 (6/8)

Y	M	Cu	Zn	As	Cu	Zn	As
21	7	0.0064	0.0186	0.0034	0.0227	0.0201	0.0034
21	8	0.0048	0.0193	0.0034	0.0233	0.0203	0.0034
21	9	0.0047	0.0187	0.0033	0.0221	0.0197	0.0033
21	10	0.0042	0.0183	0.0033	0.0220	0.0191	0.0033
21	11	0.0050	0.0137	0.0029	0.0151	0.0154	0.0029
21	12	0.0037	0.0139	0.0031	0.0177	0.0146	0.0031
22	1	0.0026	0.0165	0.0032	0.0189	0.0168	0.0032
22	2	0.0024	0.0197	0.0035	0.0198	0.0199	0.0035
22	3	0.0027	0.0230	0.0038	0.0210	0.0233	0.0038
22	4	0.0037	0.0273	0.0044	0.0228	0.0277	0.0044
22	5	0.0036	0.0372	0.0050	0.0244	0.0376	0.0050
22	6	0.0045	0.0421	0.0052	0.0259	0.0428	0.0052
22	7	0.0074	0.0291	0.0042	0.0248	0.0309	0.0042
22	8	0.0069	0.0227	0.0036	0.0220	0.0243	0.0036
22	9	0.0064	0.0189	0.0033	0.0185	0.0204	0.0033
22	10	0.0051	0.0173	0.0032	0.0174	0.0184	0.0032
22	11	0.0033	0.0180	0.0033	0.0192	0.0186	0.0033
22	12	0.0031	0.0196	0.0034	0.0206	0.0201	0.0034
23	1	0.0030	0.0213	0.0035	0.0218	0.0218	0.0035
23	2	0.0025	0.0240	0.0037	0.0226	0.0243	0.0037
23	3	0.0028	0.0267	0.0040	0.0235	0.0270	0.0040
23	4	0.0041	0.0293	0.0045	0.0252	0.0299	0.0045
23	5	0.0056	0.0306	0.0045	0.0266	0.0317	0.0045
23	6	0.0058	0.0291	0.0043	0.0276	0.0303	0.0043
23	7	0.0088	0.0169	0.0033	0.0184	0.0191	0.0033
23	8	0.0058	0.0130	0.0029	0.0122	0.0151	0.0029
23	9	0.0044	0.0134	0.0030	0.0155	0.0143	0.0030
23	10	0.0053	0.0116	0.0028	0.0128	0.0132	0.0028
23	11	0.0031	0.0129	0.0030	0.0154	0.0134	0.0030
23	12	0.0026	0.0157	0.0032	0.0168	0.0160	0.0032
24	1	0.0025	0.0189	0.0034	0.0180	0.0192	0.0034
24	2	0.0025	0.0226	0.0037	0.0190	0.0228	0.0037
24	3	0.0031	0.0268	0.0043	0.0206	0.0271	0.0043
24	4	0.0036	0.0350	0.0049	0.0225	0.0354	0.0049
24	5	0.0061	0.0326	0.0045	0.0251	0.0339	0.0045
24	6	0.0065	0.0269	0.0041	0.0267	0.0284	0.0041
24	7	0.0074	0.0207	0.0036	0.0244	0.0224	0.0036
24	8	0.0066	0.0134	0.0030	0.0137	0.0157	0.0030
24	9	0.0057	0.0131	0.0029	0.0134	0.0144	0.0029
24	10	0.0035	0.0140	0.0030	0.0167	0.0146	0.0030
24	11	0.0031	0.0162	0.0032	0.0184	0.0166	0.0032
24	12	0.0027	0.0186	0.0033	0.0197	0.0189	0.0033
25	1	0.0024	0.0217	0.0036	0.0206	0.0219	0.0036
25	2	0.0026	0.0251	0.0038	0.0215	0.0253	0.0038
25	3	0.0033	0.0287	0.0044	0.0230	0.0290	0.0044
25	4	0.0042	0.0346	0.0049	0.0248	0.0352	0.0049
25	5	0.0054	0.0356	0.0048	0.0264	0.0366	0.0048
25	6	0.0062	0.0313	0.0044	0.0274	0.0326	0.0044

(6) Dissolved Matters Run-3, Run-4 (7/8)

Y	M	Cu	Zn	As	Cu	Zn	As
25	7	0.0060	0.0284	0.0043	0.0281	0.0296	0.0043
25	8	0.0089	0.0165	0.0033	0.0184	0.0188	0.0033
25	9	0.0061	0.0169	0.0032	0.0176	0.0183	0.0032
25	10	0.0048	0.0167	0.0031	0.0176	0.0177	0.0031
25	11	0.0032	0.0178	0.0032	0.0193	0.0183	0.0032
25	12	0.0026	0.0202	0.0034	0.0204	0.0205	0.0034
26	1	0.0025	0.0231	0.0036	0.0213	0.0233	0.0036
26	2	0.0025	0.0265	0.0039	0.0222	0.0267	0.0039
26	3	0.0033	0.0298	0.0044	0.0236	0.0301	0.0044
26	4	0.0038	0.0368	0.0050	0.0253	0.0373	0.0050
26	5	0.0040	0.0448	0.0055	0.0267	0.0454	0.0055
26	6	0.0084	0.0255	0.0039	0.0202	0.0277	0.0039
26	7	0.0074	0.0185	0.0033	0.0157	0.0204	0.0033
26	8	0.0051	0.0140	0.0029	0.0118	0.0158	0.0029
26	9	0.0053	0.0125	0.0029	0.0139	0.0138	0.0029
26	10	0.0045	0.0128	0.0030	0.0156	0.0137	0.0030
26	11	0.0043	0.0135	0.0030	0.0169	0.0144	0.0030
26	12	0.0032	0.0152	0.0032	0.0187	0.0157	0.0032
27	1	0.0026	0.0180	0.0033	0.0198	0.0183	0.0033
27	2	0.0024	0.0212	0.0036	0.0207	0.0215	0.0036
27	3	0.0029	0.0245	0.0039	0.0220	0.0248	0.0039
27	4	0.0043	0.0279	0.0045	0.0240	0.0285	0.0045
27	5	0.0044	0.0352	0.0049	0.0257	0.0359	0.0049
27	6	0.0046	0.0401	0.0052	0.0270	0.0409	0.0052
27	7	0.0055	0.0388	0.0050	0.0280	0.0398	0.0050
27	8	0.0086	0.0217	0.0037	0.0204	0.0239	0.0037
27	9	0.0070	0.0184	0.0033	0.0173	0.0201	0.0033
27	10	0.0046	0.0185	0.0032	0.0181	0.0194	0.0032
27	11	0.0048	0.0170	0.0032	0.0178	0.0181	0.0032
27	12	0.0034	0.0178	0.0033	0.0197	0.0183	0.0033
28	1	0.0025	0.0205	0.0035	0.0206	0.0207	0.0035
28	2	0.0024	0.0237	0.0037	0.0215	0.0239	0.0037
28	3	0.0027	0.0272	0.0041	0.0226	0.0274	0.0041
28	4	0.0037	0.0323	0.0048	0.0243	0.0327	0.0048
28	5	0.0042	0.0413	0.0053	0.0259	0.0418	0.0053
28	6	0.0045	0.0464	0.0055	0.0272	0.0471	0.0055
28	7	0.0061	0.0403	0.0050	0.0280	0.0415	0.0050
28	8	0.0074	0.0281	0.0042	0.0276	0.0298	0.0042
28	9	0.0070	0.0227	0.0037	0.0249	0.0244	0.0037
28	10	0.0054	0.0227	0.0036	0.0261	0.0238	0.0036
28	11	0.0039	0.0245	0.0038	0.0269	0.0252	0.0038
28	12	0.0032	0.0285	0.0042	0.0276	0.0289	0.0042
29	1	0.0047	0.0313	0.0047	0.0287	0.0320	0.0047
29	2	0.0039	0.0406	0.0052	0.0297	0.0411	0.0052
29	3	0.0039	0.0490	0.0058	0.0306	0.0495	0.0058
29	4	0.0043	0.0547	0.0061	0.0311	0.0554	0.0061
29	5	0.0050	0.0534	0.0059	0.0312	0.0543	0.0059
29	6	0.0048	0.0535	0.0060	0.0313	0.0542	0.0060

(6) Dissolved Matters Run-3, Run-4 (8/8)

Y	M	Cu	Zn	As	Cu	Zn	As
29	7	0.0059	0.0462	0.0054	0.0307	0.0474	0.0054
29	8	0.0074	0.0312	0.0044	0.0291	0.0330	0.0044
29	9	0.0082	0.0200	0.0035	0.0204	0.0220	0.0035
29	10	0.0047	0.0214	0.0035	0.0224	0.0223	0.0035
29	11	0.0041	0.0217	0.0035	0.0239	0.0225	0.0035
29	12	0.0036	0.0227	0.0036	0.0249	0.0233	0.0036
30	1	0.0032	0.0246	0.0037	0.0257	0.0251	0.0037
30	2	0.0032	0.0270	0.0040	0.0264	0.0274	0.0040
30	3	0.0051	0.0267	0.0044	0.0277	0.0276	0.0044
30	4	0.0054	0.0307	0.0046	0.0286	0.0317	0.0046
30	5	0.0053	0.0333	0.0048	0.0292	0.0343	0.0048
30	6	0.0062	0.0313	0.0045	0.0292	0.0326	0.0045
30	7	0.0072	0.0245	0.0040	0.0289	0.0262	0.0040
30	8	0.0075	0.0198	0.0036	0.0252	0.0216	0.0036
30	9	0.0077	0.0158	0.0031	0.0180	0.0177	0.0031
30	10	0.0046	0.0168	0.0031	0.0187	0.0178	0.0031
30	11	0.0036	0.0176	0.0032	0.0206	0.0182	0.0032
30	12	0.0034	0.0188	0.0033	0.0220	0.0194	0.0033
31	1	0.0030	0.0208	0.0035	0.0230	0.0212	0.0035
31	2	0.0026	0.0234	0.0036	0.0238	0.0237	0.0036
31	3	0.0031	0.0255	0.0039	0.0247	0.0259	0.0039
31	4	0.0042	0.0276	0.0043	0.0261	0.0282	0.0043
31	5	0.0051	0.0313	0.0047	0.0275	0.0321	0.0047
31	6	0.0060	0.0317	0.0046	0.0283	0.0329	0.0046
31	7	0.0072	0.0254	0.0041	0.0284	0.0271	0.0041
31	8	0.0064	0.0241	0.0040	0.0287	0.0255	0.0040
31	9	0.0062	0.0230	0.0038	0.0287	0.0244	0.0038
31	10	0.0052	0.0248	0.0040	0.0290	0.0258	0.0040
31	11	0.0049	0.0279	0.0045	0.0298	0.0287	0.0045
31	12	0.0049	0.0346	0.0049	0.0304	0.0354	0.0049

(7) Dissolved Matters Case 1 (1/2)

Y	M	Cu	Zn	As
1	7	0.0125	0.0062	0.0031
1	8	0.0124	0.0102	0.0029
1	9	0.0133	0.0112	0.0028
1	10	0.0133	0.0117	0.0029
1	11	0.0139	0.0131	0.0030
1	12	0.0141	0.0154	0.0032
2	1	0.0141	0.0179	0.0033
2	2	0.0142	0.0208	0.0035
2	3	0.0143	0.0235	0.0038
2	4	0.0144	0.0270	0.0042
2	5	0.0141	0.0293	0.0043
2	6	0.0138	0.0275	0.0041
2	7	0.0133	0.0209	0.0036
2	8	0.0127	0.0156	0.0032
2	9	0.0133	0.0144	0.0030
2	10	0.0136	0.0139	0.0030
2	11	0.0139	0.0150	0.0031
2	12	0.0141	0.0171	0.0033
3	1	0.0141	0.0195	0.0034
3	2	0.0142	0.0223	0.0036
3	3	0.0143	0.0249	0.0039
3	4	0.0144	0.0282	0.0043
3	5	0.0141	0.0302	0.0043
3	6	0.0138	0.0281	0.0041
3	7	0.0133	0.0211	0.0036
3	8	0.0127	0.0157	0.0032
3	9	0.0133	0.0145	0.0030
3	10	0.0136	0.0139	0.0030
3	11	0.0139	0.0151	0.0031
3	12	0.0141	0.0171	0.0033
4	1	0.0141	0.0196	0.0034
4	2	0.0142	0.0223	0.0036
4	3	0.0143	0.0250	0.0039
4	4	0.0144	0.0283	0.0043
4	5	0.0141	0.0303	0.0044
4	6	0.0138	0.0281	0.0041
4	7	0.0133	0.0211	0.0036
4	8	0.0127	0.0157	0.0032
4	9	0.0133	0.0145	0.0030
4	10	0.0136	0.0140	0.0030
4	11	0.0139	0.0151	0.0031
4	12	0.0141	0.0171	0.0033
5	1	0.0141	0.0196	0.0034
5	2	0.0142	0.0224	0.0036
5	3	0.0143	0.0250	0.0039
5	4	0.0144	0.0283	0.0043
5	5	0.0141	0.0304	0.0044
5	6	0.0138	0.0281	0.0041

(7) Dissolved Matters Case 1 (2/2)

Y	M	Cu	Zn	As
5	7	0.0133	0.0210	0.0036
5	8	0.0127	0.0157	0.0032
5	9	0.0133	0.0145	0.0030
5	10	0.0136	0.0140	0.0030
5	11	0.0139	0.0151	0.0031
5	12	0.0141	0.0172	0.0033
6	1	0.0141	0.0196	0.0034
6	2	0.0142	0.0224	0.0036
6	3	0.0143	0.0251	0.0039
6	4	0.0144	0.0284	0.0043
6	5	0.0141	0.0304	0.0044
6	6	0.0138	0.0281	0.0041
6	7	0.0133	0.0210	0.0036
6	8	0.0127	0.0157	0.0032
6	9	0.0133	0.0145	0.0030
6	10	0.0136	0.0140	0.0030
6	11	0.0139	0.0151	0.0031
6	12	0.0141	0.0172	0.0033