Fourth Edition

Pilot Project for the Environmental Technology Verification

Treatment Technologies for Human Waste in Mountain Districts

Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts for FY2005

March 29, 2007

Verification Management Organization:
Friends of the Mountains, NPO

Nature Conservation Bureau, the Ministry of the Environment

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I. Introduction

1. Purpose

The present verification test is intended to provide an objective evaluation of the effectiveness of an advanced technology that has gained the status of a real-world application for environmental conservation and to make public the results thereof. Here, we will attempt to establish the methods and organization of verification testing of human waste treatment technology in mountain districts. We will also seek to promote the dissemination of the mountain district human waste treatment technologies found to be most effective in preserving the natural environment in such regions.

2. Target Technologies

The target mountain district human waste treatment technologies for the present verification test are those that will effectively treat human waste in regions with inadequate social infrastructures, such as water supply and sewage systems, electricity (commercial power source), and roads, as in mountain districts.

Treatment technologies include biological, chemical, physical treatment methods applied independently or in combination. The technologies considered in this project will generally be of the non-discharge type; that is, technologies that do not result in the release of wastewater or effluents into public water resources.

Additionally, in fiscal year 2007, the base of a mountain, the seashore and an island area can be included in the target areas, setting test courses.

3. Basic Policies of Verification Tests

To fulfill the above goal, the verification tests will be undertaken as a joint effort involving various associated bodies in the government (Ministry of the Environment), the verification management organization (public utilities, NPOs), the verification organization (local government, public utilities, NPOs), and privately owned mountain resorts. In principle, the results are to be made available to the public.

Information obtained through the verification testing is expected to improve the performance of the tested apparatus and to help end users (including local public agencies and privately owned mountain resorts) select the most suitable model for their own particular needs.

To ensure that the verification tests fulfill their intended purpose, the following points are to be observed in realizing the basic policies:

(a) Treatment technologies for human waste in mountain districts are to be characterized by the treatment methods. The technological features and performances are to be grasped and technical problems are to be identified.

(b) The verification tests will focus primarily on the performance specifications of an apparatus.

(c) The tests will be carried out for the overall purpose of establishing a comprehensive mountain district human waste treatment technology system, from installation to transportation of discharged materials.

(d) The performance characteristics of the apparatus under various natural conditions, seasonal variations, and load conditions are to be assessed.

(e) Verification test items and procedures are to be comprehensively defined in the Protocol. The specifics are to be specified in the Test Plan drawn up by the verification organization.

4. Test Fees

With regard to the costs for the verification test, the costs associated with the verification tests shall be collected as a test fee from the parties which request verification of the target technology. Details are described in the "IV. 5. Distribution of Test Expenses."

5. Overview of Verification Tests

(1) Verification Test Items

The present verification test will evaluate the performance of human waste disposal technologies upon the request of a developer or distributor (hereafter referred to as "verification applicant") under the conditions anticipated for actual use. The verification test items are as follows.

- Appropriate range of operating conditions, required power, and types and consumption of fuel and resources
- Status of operation and maintenance conditions
- Conditions within the toilet
- Effects on the surrounding environment
- Human waste treatment capacity
- Environmental protection effects

(2) Overview of Verification Tests

The verification organization will conduct the tests according to the steps given below. Figure 1 shows the flow of test procedures.

1) Establishment of the Technology Panel

The verification organization will establish a Technology Panel consisting of experts within the field (academic authorities, user representatives, etc.) who will offer advice on solicitation of bids and selection of target verification technology, design of the Test Plan, and production of the Verification Report.

2) Solicitation of Bids and Review of Target Verification Technology

The verification organization shall publicly invite the submission of the target technologies, ask for advices from the Technology Panel as necessary, and examine the technologies according to "III. Review of Target Verification Technology, 2. Preparation of Application Documents." The review results will be notified to the applicant of the technology after authorized by the verification management organization.

3) Design of the Test Plan

The verification organization shall prepare the Test Plan prior to the verification test in accordance with the "IV., 3. Preparation of the Test Plan" as a general guide. The Test Plan shall be prepared by reviewing in the Technology Panel in consultation with the verification applicant, and submitted to the verification management organization.

The verification management organization will provide comments on the Test Plan to the verification organization.

4) Implementation of Verification Tests

The verification organization shall conduct a verification test based on the protocol for the verification tests on human waste treatment technologies in mountain districts (hereinafter, referred to as "Protocol"), and the Test Plan. The verification organization shall determine the amount of the test fee associated with the verification test for technology by technology

and the payment due date, and notify the applicant. After being notified, the applicant shall make a payment for the fee to the verification management organization by the due date. In principle, the due date shall be prior to the start of the verification test.

The verification organization may subcontract/contract portion of the verification test to outside institutions as needed. In this case, the verification organization shall provide with guidance and monitor the work to ensure that the verification test is carried out according to the Protocol and the Test Plan in an appropriate manner in the outside institution.

In the case that the verification test was not completed for some reason, or that changes of the amount of the test fee which must be paid by the applicant arise due to the revision of the Test Plan, etc., the verification organization shall explain the circumstances to the MoE and the verification management organization and after obtaining approval from them, calculate the costs associated with the test up to the point in consultation with the applicant, and determine the new amount which should be paid by the applicant.

The amount of the test fee paid by the applicant to the verification management organization shall be paid to the verification organization by the verification management organization as a part of the costs of the project based on the subcontract/contract.

5) Preparation of Verification Report

The verification organization shall conduct all the data analysis and check, organize the results into a report in consideration of confidentiality protection requested by the verification applicant; after the reviewing process in the Technology Panel, the verification organization shall submit the report to the verification management organization. The verification management organization shall then submit the report and obtain approval. When issuing approval for the report, the MoE and/or verification management organization shall give opinions to the verification organization as needed in consideration of the review by the WG for the human waste treatment technologies in mountain districts. In preparing the Verification Report, in principle, the verification organization shall follow the items and forms shown in "VII. Preparation of Verification Report." The verification organization may commission external parties to manage the work required for verification and to prepare the Verification Report.

The approved Verification Report is returned to the verification organization through the verification management organization. The verification organization shall send the approved Verification Report back to the verification applicant.

6) Creation of Databases

The database management organization shall provide information to users through internet by cataloging data on the databases, such as the Protocol, Test Plans, and Verification Reports, in addition, calls for application for a verification organization and submissions of the technologies, and other relevant information such as the discussions at the pilot project review meetings are entered on the databases at all times.

7) Issuance of the Logo-mark

After giving approval for the Verification Report, the MoE shall issue the logo-mark shown in the attached paper and verified number to the verification applicant. (See "Appendix 5. Use of the Logo-mark.")

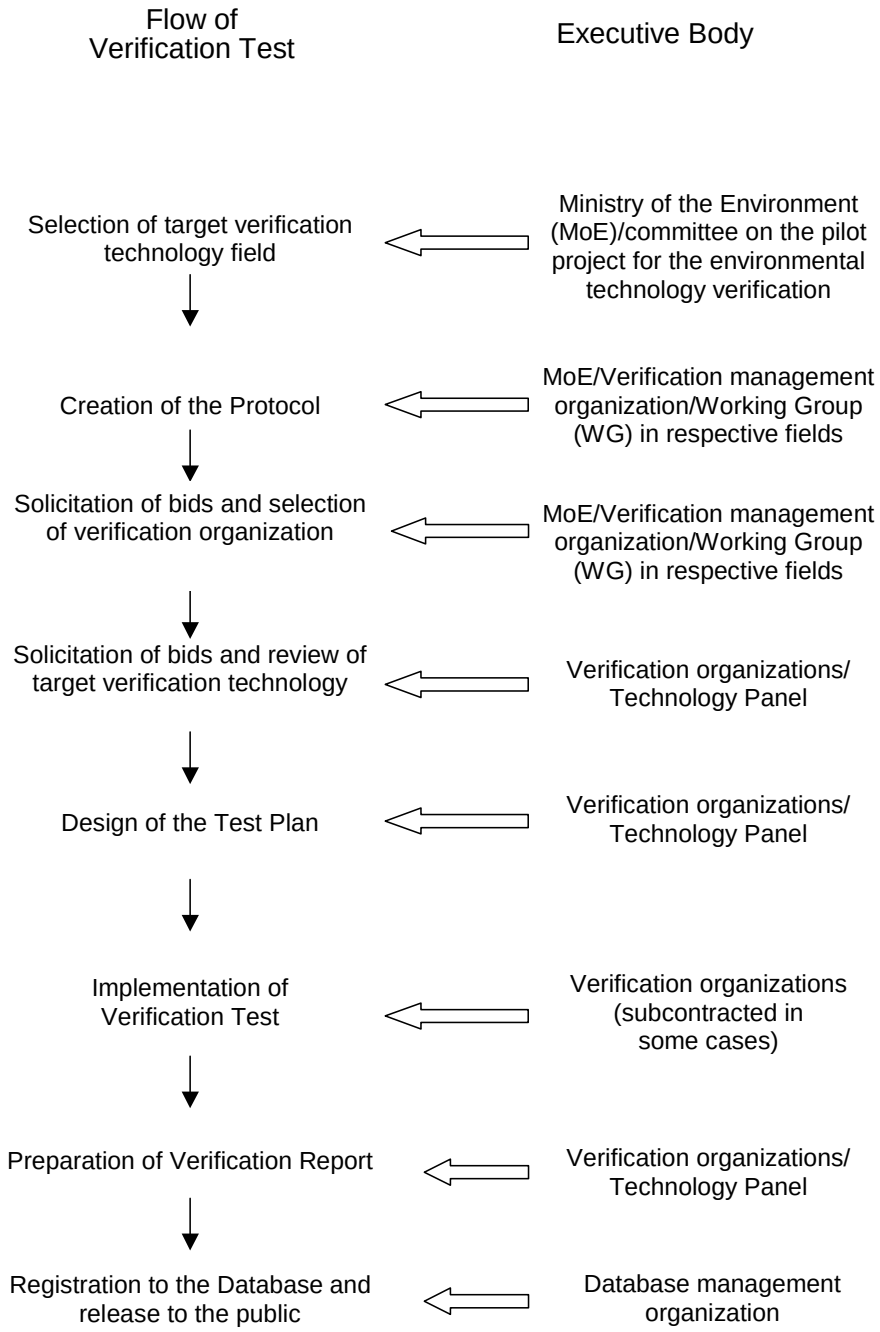


Figure 1. Flow of the pilot project for environmental technology verification

II. Organization for Verification Test Implementation

The roles of the organizations involved in the implementation of the verification tests will be given below. Figure 2 shows the organization for implementation of verification testing for the area of mountain district human waste treatment technologies.

1. Ministry of the Environment

The Ministry of Environment will:

(a) retain responsibility for the operation and management of the overall pilot project and comprehensive examination of projects for establishing the verification method and organization;

(b) form the "Review Committee for the Pilot Project of Environmental Technology Verification" entrusted by the Director-General of the Environmental Policy Bureau, MoE;

(c) select the target verification technology field;

(d) select the verification management organization;

(e) approve verification organizations;

(f) grant approval for the Verification Report;

(g) conduct R&D for the verification test methods;

(h) make relevant information including the results of the verification tests available to public on the databases;

(i) issue the logo-mark and verified number to the applicant after giving approval for the Verification Report.

2. Committee on the Pilot Project for Environmental Technology Verification (Hereinafter, referred to as "Review Committee for the Pilot Project.")

Review Committee for the Pilot Project will:

(a) based on the technical knowledge, review and offer advices on the fundamental issues regarding the implementation of the pilot project including the office work conducted by the MoE;

(b) evaluate the status and results of the pilot projects.

3. Verification Management Organization

Verification management organization will:

(a) establish the working group for the human waste treatment technology in mountain districts (i.e., consisting of experts, including knowledgeable individuals in the area and user representative; in principle, open to public);

(b) prepare and revise the Protocol;

(c) select the verification organizations (Multiple number of organizations may be placed within the budget.);

(d) approve the technologies reviewed by the verification organization;

(e) subcontract the verification tests to the verification organizations;

(f) determine the items of the fee associated with the verification test and collect the fee;

(g) offer advices on the contents of a Test Plan to the verification organization as needed;

(h) submit the Verification Report to the MoE, and obtain approval;

(i) may conduct R&D for the verification test methods in lieu of the MoE as needed;

(j) may also serve as a verification organization only if it was approved to be appropriate in light of the aspects of the selection of a verification organization for the particular technological field described in Section 2, Chapter 5. 2 of the "Environmental Technology Verification Pilot Program Implementation Guide, 4th edition."

4. Working Group for Human Waste Treatment Technologies in Mountain Districts
(Hereinafter, referred to as "WG.")

WG will:

(a) review and offer expert advices on the tasks which are conducted by the verification management organization, regarding the preparation of the Protocol, selection of the verification organizations, etc.;

(b) offer advices on the operation of the pilot project and Verification Report for the technological field of human waste treatment technology in mountain districts;

(c) assist the Review Committee for the Pilot Project by making use of the expert knowledge;

(d) may hold the extended WG (i.e., stakeholder meeting), which incorporates representative groups for vendors, etc. as needed in order to construct more efficient system.

5. Verification Organization

Verification organization will:

(a) administer and operate verification tests under subcontract/contract with the MoE and verification management organization;

(b) form and operate the Technology Panel which consists of experts (i.e., individuals with knowledge in the area, user representatives, etc.);

(c) determine the details of the amount of verification test fees;

(d) solicit companies and others submission of technologies which are the subject of verification;

(e) review the verification feasibility of the submitted technologies with being advised by the Technology Panel, and obtain approval of the verification management organization;

(f) notify the review results for the submitted technology to the applicant of the technology;

(g) will consult with verification applicants in designing the Test Plan based on the Protocol and submit the same for review by the Technology Panel;

(h) will implement the verification test according to the Protocol and Test Plan and undertake various formalities, including legally required applications and the securing of test sites;

(i) will perform O&M of the verification apparatus based on the "routine operating manual and O&M instructions manual for technical supervisors" created by the verification applicant;

(j) provide with guidance and monitor the work if a part of the verification test is subcontracted to an outside organization;

(k) after having undergone the reviewing process in the Technology Panel, organize the Verification Report, and submit it to the verification management organization;

(l) may advise the verification applicant to continue observation on his own responsibility when continued observation of an apparatus is deemed necessary.

6. Technology Panel

The Technology Panel will review and offer advices from the expert standpoint on the tasks which are conducted by the verification organizations, such as "calls for submissions of technologies, and the review of the submitted technologies," "preparation of the Test Plans," "handling of problems which have occurred during the verification test," "preparation of the Verification Report."

7. Verification Applicant

The verification applicant:

(a) shall submit an application to the verification organization to be included in the verification test;

(b) shall make a payment for the verification test fees to the verification management organization;

(c) shall submit all existing data on technologies;

(d) shall consult with the Verification organization in formulating the Test Plan;

(e) shall submit a letter of consent to the verification organization regarding the contents of the Test Plan;

(f) shall submit an "O&M instructions manual for technical supervisors" and "routine operating manual" to the verification organization;

(g) shall install the verification apparatus at the test site;

(h) shall, in principle, bear the costs which required for transportation, installation, operation and maintenance (O&M), and dismantling of the target verification apparatus, and the costs for chemicals, expendables, electric power and others;

(i) shall add supplemental equipment to the apparatus already installed, if necessary for the verification test;

(j) may assist in the operation of and data collection with the apparatus during the verification test based on the Test Plan or by obtaining approval from the verification organization;

(k) shall provide technicians who have received the necessary training to perform O&M for the apparatus;

(l) in the case of an operation trouble, shall report to the verification organization immediately, obtain approval to handle the trouble, and promptly counter the trouble preferably in the presence of the staff of the verification organization, and then shall report the situation of handling of the trouble to the verification organization;

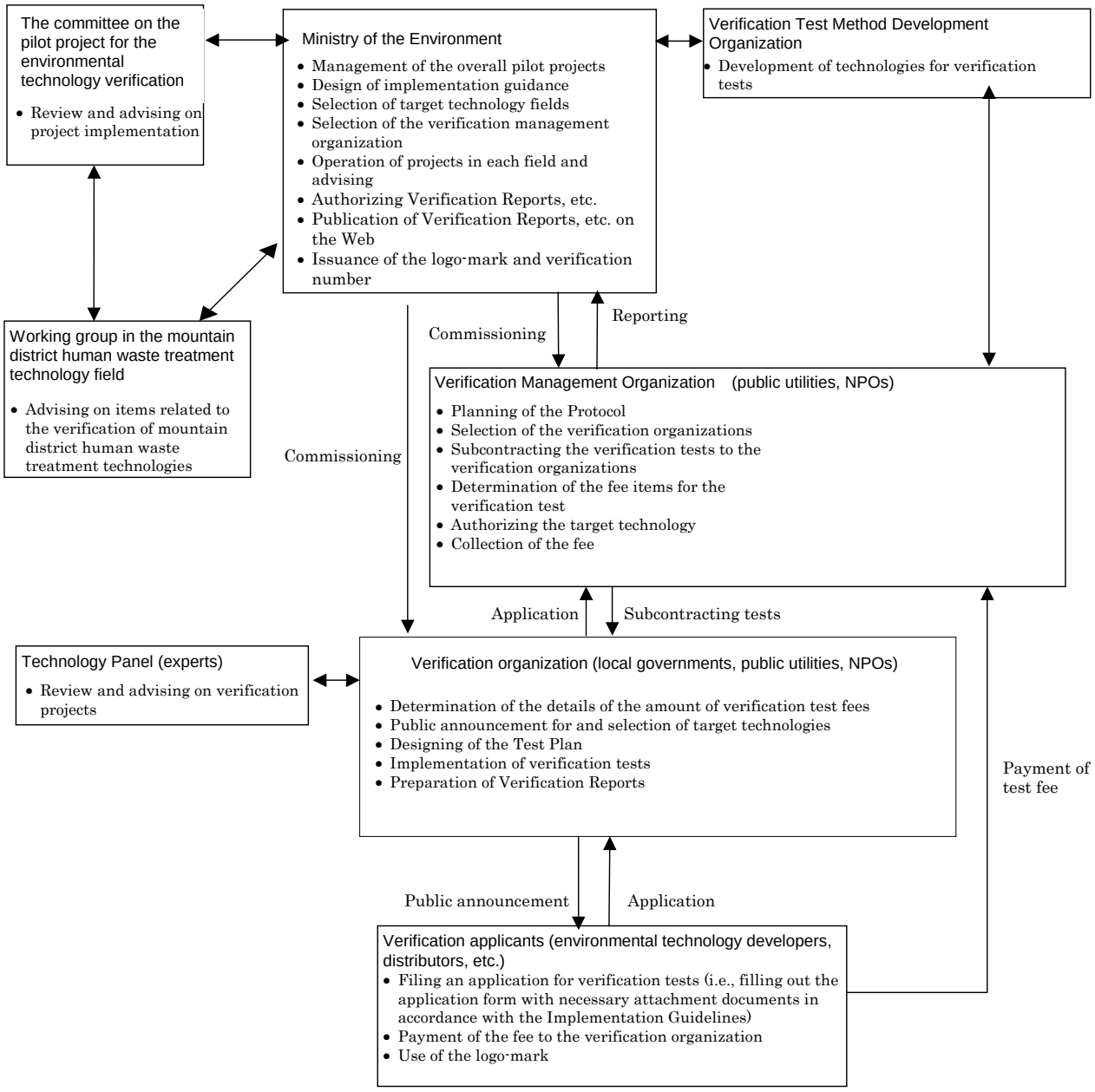
(m) shall cooperate with the verification organization in the preparation process of the Verification Report when requested.

8. Database Management Organization

The database management organization will create databases for the outcomes of the pilot project including the Protocol, Test Plans, Verification Reports, and for information on the announcement of calls for submission and others, and implement operation, management, and announcement.

9. Verification Test Method Development Organization

The MOE or a Verification Management Organization may assign R&D on the methods of verification tests to an appropriate organization when there is no appropriate method of verification test for an certain item.



Note: Changes may be made to the structure for project implementation with the approval by MoE.

Figure 2. Structure of Verification Test Implementation

III. Review of Target Verification Technology

1. Procedure for the Review of Target Technologies

(a) The organizations selected as the verification organizations shall promptly determine the prospective amount of test fee associated with the particular verification test based on the "Test fee items" attached to the Protocol, and also considering their own peculiar pricing and others, in consultation with the verification management organization and if necessary with the MoE, and register the amount at the verification management organization. The prospective amount of fee shall be as concrete as possible to facilitate the applicant to estimate the amount that he has to pay.

(b) The verification organization shall explicitly indicate its own prospective amount of test fee for different technological fields to solicit submissions of technologies. The verification applicant will file an application to the verification organization. The solicitation period shall be set by the verification organization in the same fiscal year and shall be as long as possible within the limits of its own acceptance capacity for verification tests. However, if there is a reasonable reasoning, such as that conducting tests is seasonally limited, the length of the solicitation period may be shortened.

(c) The verification applicant will file an application by filling out the application form with necessary information, and attaching the documents specified. (See "2. Preparing Application Documents".)

(d) The verification organization shall review the verification feasibility of the submitted technologies based on "3. Requirements in the Review of Target Technology," with being advised by the Technology Panel, and obtain approval of the verification management organization. In the case that technologies which are regarded as identical are submitted to more than one verification organizations, the verification organizations can make arrangement so that the verification test is conducted in either one of the verification organizations in order to eliminate duplication of budgetary execution. The verification management organization shall report on the review results to the MoE.

(e) The verification organization shall notify the applicant of the review results for the submitted technology. If it is decided that the technology is not the subject of verification as a result of review, the reason for not being selected shall be clearly stated in the notification to the applicant of the technology. In principle, the verification organization, verification management organization, and MoE shall not release the review results for each submitted technology to public.

(f) The verification organization which also serves as the verification management organization can conduct solicitation for target technologies according to the above rules; however, in order to lessen the concentrated tasks, and to avoid interrupting the project of other verification organization, it is desirable that this is limited to special cases, such as that there is no other verification organization to conduct solicitation. When the verification organization which also serves as a verification management organization conducts solicitation and review of the target technologies, switch the term "verification management organization" over to "MoE," and term "Technology Panel" over to "WG." Such verification organization may subcontract the work of verification for the technologies submitted to its own solicitation announcement to other verification organization of the same technological field by the consent of all the relevant parties as needed. ("Relevant parties" are the MoE, verification organization to which the work is to be subcontracted, and the affected verification applicant.)

2. Preparation of Application Documents

The verification applicant will fill out the "Application form for the Verification of Human Waste Treatment Technologies in Mountain Districts" defined in Appendix 1 with necessary information, attach the following documents, and file the application to the verification organization.

The verification organization may shorten the verification period, simplify the sampling method, or reduce the number of sampling according to the following with being advised by the Technology Panel and verification management organization.

(1) Information on the Candidate Verification Test Sites

1) Location

The name of the mountain region and its elevation above sea level will be given for the (candidate) test site, and the locality will be indicated on a map.

2) Natural Environmental Conditions

As much information as possible will be provided, including information on temperature, ground temperature (when the apparatus must be installed underground), duration of exposure to sunlight, wind speed and direction, amount of rainfall, snow cover (including information such as the frequency of avalanches), topography and geology, and regional vegetation.

3) Infrastructure Requirements for Installation of the Bathrooms

Information will be provided regarding available transportation in and out of the test site, electric power, water supply, etc.

4) Utilization Conditions

As much information as possible is to be provided regarding the times of the year during which the mountain roads are passable, estimated number of climbers, variations in use conditions (by season, month, time of day, etc.), nearby facilities (privately owned mountain resorts, public restrooms).

(2) Information on the Verification Apparatus

1) Technological Overview and Features of the Apparatus

The technological overview and features of the apparatus, and environmental protection effects which are anticipated by the introduction of the apparatus shall be provided. Also, it shall be demonstrated that installation and operation of the apparatus will not cause secondary environmental problems, etc.

2) Basic Design Concepts

Clearly define the general design concept including the water and power supply facilities and their configuration. Provide information on the settings, layout of the apparatus, required electrical capacity and power consumption, required water supply volume, countermeasures against freezing, and potential infiltration of foreign materials. Also, anticipated environmental protection effects shall be shown, and that secondary environmental problems, etc. are not caused by the apparatus shall be demonstrated.

3) Explanation of Apparatus Structure and Functions

Provide a flowchart illustrating the apparatus structure and functions.

4) Treatment Performance

The treatment performance shall be clearly shown, and the concept, design standards, evidence, etc. which serve the grounds for determining the performance shall be provided.

5) Standard Plan

Show plan, cross-sectional, and external views.

6) Reference Materials on Past Installation Records

Provide information on past installation records by tabulating installation sites, purpose of installation, year of installation, and scale of waste treatment.

7) Technical Performance Data

To review the verification methods and accelerate the verification process, technological performance data shown below shall be attached to the application. The data to be attached shall be obtained by the methods based on this Protocol except for the data obtained in the past.

(a) If the application is filed with the apparatus that has already installed, the past performance data for the particular apparatus shall be submitted.

(b) If the application is filed with the apparatus that is to be installed anew, the past performance data for the same type of apparatus which has already installed shall be submitted.

In the case that no past performance data are available, relevant data such as the factory test data, shall be submitted. In this case also, except for the data performed in the past, the data shall be obtained in the manner prescribed in this Protocol.

8) O&M Instructions Manual

The O&M instructions manual for the verification apparatus shall be attached to the application. The startup and shutdown procedures shall be clearly shown.

9) Installation Conditions

Define the operating conditions of the apparatus, or restrictions on installation conditions.

(3) Other

1) Company Profile

2) Reference Materials

3. Requirements in the Review of Target Technology

The verification organization shall review the submitted technologies in light of the following requirements. The verification management organization can add points to be checked in the selection regarding the environmental protection effects and others for different technological fields as needed in consideration of the review by the WG.

(1) Formal Conditions

(a) The technology in the application must fall within the boundaries set for the particular category of target technology.

(b) All the necessary information must be provided and the contents of the application form are correct.

(c) The technology must be ready to be introduced commercially.

(2) Feasibility of Verification

(a) The technology must be verifiable given budgetary and administrative constraints.

(b) It must be possible to devise a Test Plan for the technology.

(c) An appropriate test site must exist for the designed verification test.

(d) It must be possible to install the apparatus at the test site.

(e) The conditions of the test site must be comparable to those at the actual site of operations.

(f) Both the owner of the test site and the supervisor of the mountain resort must consent to the verification test.

(g) The verification applicant must bear the test fee.

(3) Environmental Conservation Effects, Etc.

(a) It should be possible to explain the principles and mechanisms underlying the technology.

(b) The technology must not result in secondary adverse effects upon the environment.

(c) The technology must offer reasonable potential for effective environmental conservation.

IV. Preparation for Verification Tests

1. Categorization of Target Technologies

These treatment technologies for human waste in mountain districts consist of biological, chemical, and physical treatment methods applied independently or in combination. The treatment methods are categorized in Table 1 from the viewpoint of verification items. The "Other" category corresponds to treatment methods that do not fall under any of the five categories above it, but are relevant to the technology shown in "I. 2. Target Technologies." Treatment schemes that are combined methods are categorized under the central treatment method in the scheme.

Table 1. Classification of Human Waste Treatment Technology in Mountain Districts

No.	Treatment Method	Treatment Method
1	Biological treatment	Microbes are enlisted to treat.
2	Physicochemical treatment	Physicochemicals are used to treat.
3	Soil treatment	The effluent is passed through an underground distribution pipe and allowed to leach into the ground.
4	Evaporation and incineration treatment	Human waste is transformed into powder form by using evaporation and combustion to remove moisture.
5	Composting treatment	The treatment methods in which the waste is mixed with cedar chips and saw dust and others and stirred for treatment
6	Other	Treatment methods that do not fall under any of the above categories

2. Verification Test Checkpoints

Table 2 lists various checkpoints in the implementation of verification tests. Information on actual performance is required to confirm that an apparatus is operating properly, together with information on operating conditions at the installation site and effects on surroundings.

Table 2. Verification Checkpoints

No.	Checkpoints	Description
1	Operating conditions/status	The required preconditions for proper operation of the human waste treatment apparatus are to be verified.
2	Maintainability	The maintainability of the apparatus will be verified.
3	Indoor conditions	Acceptable hygienic and odor-related conditions inside the toilet booth will be verified.
4	Effects on surrounding environment	The effects of the apparatus on the surrounding environment will be verified.
5	Treatment capacity	The treatment capacity of the apparatus will be verified.

3. Preparation of the Test Plan

The verification organization will formulate the Test Plan based on the Protocol and submit it to the verification management organization. In the preparation processes, the Plan shall be reviewed by the Technology Panel, and discussion with the applicant shall be carried out. The verification management organization can give opinions to the verification organization regarding the Test Plan as needed. The items which shall be defined in the Test Plan are shown in Appendix 4.

The Verification applicant shall submit a document of consent on the contents of the Test Plan to the verification organization.

It is possible that the environmental protection effects, etc. of the technology of interest cannot be verified properly by following the Protocol applied for this technology, such as the cases where secondary environmental impact which is not assumed in the Protocol due to the peculiarity of the technology in question. If it is appropriate to partially modify the test methods defined in the Protocol, the verification organization may adopt a test method which is different from the Protocol as necessary in consultation with the verification management organization and the applicant.

4. Treatment of Intellectual Property

(1) The verification management organization and verification organization shall not use information relating to the environmental technology of the verification applicant, which may be obtained through the verification test, for any purposes other than the verification of technologies. When providing confidential information relating to the relevant technology to the verification organization, the verification applicant may request the verification organization to execute a confidentiality agreement in a form separately designated by the verification organization.

(2) If the right prescribed by Article 30, Paragraph 1, of the Law on Special Measures for Industrial Revitalization (hereinafter referred to as the "Patent") has been newly acquired as a result of the implementation of the verification test, the Ministry of the Environment may elect that such Patent should not be granted. In this case, the verification management organization and verification organization shall consult with the Ministry of the Environment, if necessary, regarding the treatment of the relevant Patent to ensure the efficient use of the relevant Patent.

(3) Copyrights related to works that may be prepared through the implementation of this project, including but not limited to the Protocol and the Verification Report, shall belong to the Ministry of the Environment.

5. Distribution of Test Expenses

The verification applicant shall bear the costs entailing transportation of apparatuses into the Test Site, installation of the apparatuses, O&M of the target technology when the on-site verification test is carried out, dismantling and transportation of the target verification apparatuses after the completion of the test. The applicant shall bear the costs associated with the implementation of the test (i.e., costs of measurement and analysis, labor cost, expendables and traveling costs which arise at the verification organization) as a test fee, and in principle, the MoE shall bear the remainder (operation of the Technology Panel, planning of Test Plans, preparation of Verification Reports, and others). Table 3 shows the detailed information.

If unexpected cost has arisen, the verification organization shall consult with the MoE, verification management organization, and verification applicant. The "nominal cost for verification test" can include general administrative cost as necessary.

The verification organization shall determine the amount of the fee for the specific verification test and the due date after making adjustment with the verification management organization and provide notification about the fee to the verification applicant. The applicant will receive the

notification, and make a payment to the verification management organization by the due date. In the case that the verification test was not completed for any reason, or any change of the amount of fee which needs to be paid by the applicant, the verification organization shall explain the circumstances to the MoE and Verification Management Organization and obtain approval, then calculate the amount which the portion of the test cost up to the point, and determine the amount which the applicant has to pay.

Table 3 Task by Process of the Project (Implementation and the Cost Bearing)

Process of the Project	Work in Detail	Parties in Charge of the Task	Party to Bear the Cost
Soliciting application for serving as the verification management organization, and the selection	Announcement, receiving application, and selection of an organization	Verification management organization	Government
	Operation of the WG	Verification management organization	Government
	Preparation of the application form, and others	Verification organization	Verification organization
Soliciting submissions of target technologies and review	Announcement, receiving and review of submissions	Verification organization	Government
	Verification management organization	Verification organization	Government
	Preparation of the application form, and others	Applicant	Applicant
Planning of the Test Plan	Preparation of the draft of the Test Plan	Verification organization	Government
	Operation of the Technology Panel	Verification organization	Government
Implementation of the test	Transportation of the apparatus into the test site and setup	Applicant	Applicant
	O&M of the apparatus	Verification organization and Applicant	Applicant
	Measurement/analysis, etc.*	Verification organization	Applicant
	Expendables for the test*	-	Applicant
	Travel cost for the verification organization*	Verification organization	Applicant
	Travel cost for the applicant	Applicant	Applicant
	Dismantling of the apparatus, transportation	Applicant	Applicant
Preparation of the report	Writing, data compilation, and editing the report	Verification organization	Government
	Operation of the Technology Panel	Verification organization	Government
Entering the data on the website database to make them publicly available	(The whole process)	Government	Government

For details about items marked with an asterisk, see Appendix 3.

6. Exclusion

(a) The Ministry of the Environment, verification management organization, verification organization, organization operating the database, and other parties participating in the pilot project shall not be liable for any breakdown of or damage to the apparatus

during the implementation of this pilot project, except in cases of intentional wrongdoing or gross negligence.

(b) The verification applicant shall be held liable for any damage incurred to a third party resulting from defects in the apparatus, except in cases of intentional wrongdoing or gross negligence by the third party. The Ministry of the Environment, verification management organization, verification organization, organization operating the database, and other parties participating in the pilot project shall not be held liable.

(c) The Ministry of the Environment, verification management organization, verification organization, organization operating the database, and other parties participating in the pilot project shall not be held liable for any disputes arising between the verification applicant and a third party as a result of the public release of the Verification Report.

(d) If the specifications relating to the basic performance for the target technology are modified, the data for the Verification Report shall not be applied to the modified technology, and the logo-mark shall not be used.

(e) When the logo-mark for the pilot project is being used, and if a problem and the like arises for the logo-mark users, the MoE, verification management organization, verification organization, database management organization, and any other organizations relevant to the pilot project accept no responsibilities whatsoever for the problems.

V. Verification Test Method

The verification organization shall conduct a verification test for the target technology according to the Protocol and Test Plan. The verification organization may subcontract or contract the portion of the test to an outside institution. In this case, the verification organization shall provide with guidance and monitor the outside institution to ensure that the verification test is carried out properly according to the Protocol and Test Plan.

Figure 3 shows the verification test procedures.

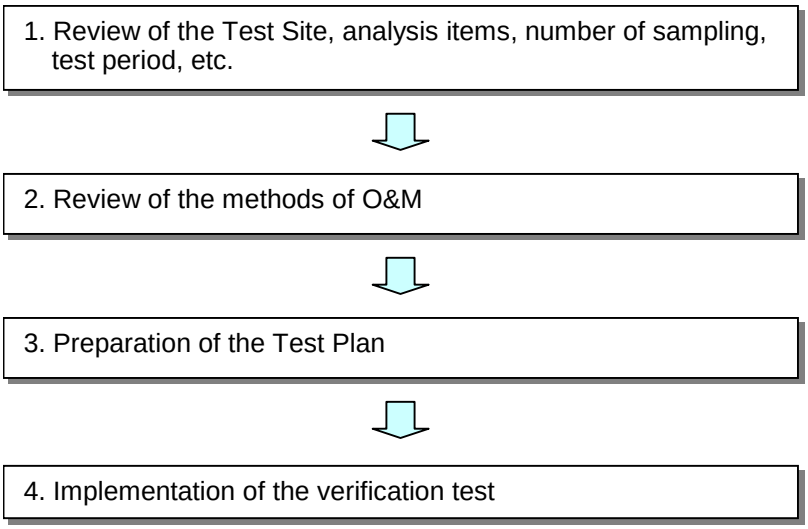


Figure 3. Procedure for Conducting the Verification Test

1. Test Site

The verification tests are to be conducted under one of the two conditions given below.

The test site will be determined through discussions between the verification organization and the verification applicant. Test site selection should account for how efficiently verification tests can be performed at the site in question.

(1) Apparatus already installed at the test site and operational

(2) Verification Apparatus to be installed at the verification test site

Since the verification apparatus being tested is to be used in remote areas (mainly in mountain districts) with inadequate access to social infrastructures, the temperature and altitude of the selected test site should be similar to those expected for mountain/foothill regions. However, in fiscal year 2007, the seashore and islands are also included for installation on the trial for verification. The site shall be the place where constant usage is expected, and the operating conditions and state shall be set to meet the treatment performance, operating levels and limits, which are specified by the verification applicant. Although the human waste influx load may exceed the capacity of the apparatus at times, the load must not deviate excessively from the range.

When an apparatus is to be installed, the verification applicant, the owner of the test site, and the management and operations personnel are to hold discussions to coordinate efforts to secure an environment permitting smooth implementation of the verification test. The test site must also be convenient for the O&M personnel of the apparatus as well as for users. Efforts should be made to harmonize the apparatus with the surrounding scenery. The test site should not be altered unless absolutely necessary. In general, the verification applicant must restore the test site to its original state when testing is complete.

2. Verification Test Period

Verification of mountain-district human waste treatment technology is susceptible to variations in weather conditions. Accordingly, the test period for the apparatus of this technology shall be such that the performance of the apparatus is appropriately determined based on the characteristics and past performance data of the apparatus in consideration of climate conditions and seasonal fluctuation of uses.

(See "4. (5) 1) Period and Timing of Conducting Survey" for detail)

3. Operations and Maintenance Method

The verification organization will perform operations and maintenance tasks to maintain stable apparatus operating conditions throughout the test period and to optimize and promote efficient operations. Multiple parties may be involved in the O&M work, depending on content and methods. The verification organization coordinates the activities of all the parties and defines the scope of responsibility of those involved in the Test Plan.

An overview of the O&M structure is given below.

(1) Confirmation of the Operation of the Verification Apparatus

The verification applicant will perform startup operations for the verification apparatus as described in operations manual and O&M instructions manual. After the startup of the target verification apparatus, the verification organization shall make certain that the operation of target verification apparatus has reached stability to the level the verification test can be carried out. If the operating conditions are found to be unsatisfactory, revisions and adjustments should be made in Test Plans.

The verification applicant shall attach a sign, on which necessary information was put by referring to the list below, onto an easy-to-read position of the verification apparatus.

- Name of target verification apparatus
- Model #, serial number
- Company name, address, person in charge of project, contact in case of problems
- Name, address, person in charge of project, contact in case of problems of the verification organization
- Power supply voltage, phase, current, and frequency
- Precautions for handling and shipping
- Clear and easily understood precautions or warnings
- Treatment capacity, etc.

(2) Routine Operations and Maintenance

The verification organization will clean and handle the apparatus for proper O&M during the test period as specified in the "Routine operations manual" prepared by the verification applicant. The verification organization may subcontract this work to an outside institution as needed. The verification applicant shall have meetings sufficiently with the personnel in charge of the actual work regarding O&M, and provide with guidance on the work procedures.

To guarantee data reliability and impartiality, the subcontractor must always contact the verification applicant through the verification organization, except in cases of problems such as machine malfunctions. For more information on responding to problems, see Section 4 "Response to Problems."

(3) Technical Operations and Maintenance

The verification organization will perform periodic maintenance, inspections, and the cleaning procedures required for proper O&M of the apparatus during the test period, as specified in the "O&M instructions manual for technical supervisors" prepared by the verification applicant. Personnel or organizations with experience in human waste treatment and familiar with the tasks will be in charge of the technical O&M. The verification organization may subcontract tasks to outside parties when necessary. The verification applicant will be responsible for convening meetings to explain O&M procedures to personnel actually performing the technical work and for providing guidance on actual procedures.

(4) Response to Problems

The verification organization is to contact the verification applicant immediately in the event of problems. It shall then devise measures to restore the apparatus to normal operating conditions as indicated by the applicant. In the event of unforeseen events, the verification organization and the verification applicant will work together to resolve any problems that arise.

The sampling results during anomalous operation will not be used as effective analytical values, which are to be on the Verification Report, however, the conditions, causes, results, and recovery method for the anomalous operation shall be described in the report.

4. Verification Test Methods

The verification items, the measurement methods, frequency and others are shown in the following paragraphs which are organized by the different points to be verified.

(1) Operating Conditions and Status

Table 4 shows the prerequisites for proper use of the verification apparatus for the target technology. From Table 4, the verification organization will select the items that it believes will be required for verification.

The verification organization may decide to use verification items not found in Table 4. The Verification Report should also include results of verification for such items.

The above applies as well to (2)–(5).

The conditions of the natural environment at the test site during the test period should be recorded in detail. The operating conditions of the apparatus must be clearly specified. Data on the natural environment should include temperatures, ground temperatures, duration of sunlight, wind velocity and direction, amount of rainfall, and snow conditions (snow cover, etc.).

Table 4. Operating Conditions and Status and the Method and Frequency of Sampling of Verification Items

No.	Classification	Verification Item	Method of Measurement	Frequency
1	Treatment capacity	Number of people using toilet	Installation of counter and checking the count at 10:00 AM	Daily
2	Water	Volume of water initially required (t) *1	Record the volume fed initially	At startup
3		Replenished volume of water (t) *1	Record the volume per replenishment	At replenishment
4	Electric power	Power consumption (kWh/day) *1	Installation of power meter	Daily
5	Fuel	Type of fuel, volume consumed (l · kg · Nm^3/month) *1	Record consumption between each meter inspection	Accordingly
6	Raw materials	Type of raw material, cost, volume consumed (l · kg · Nm^3/month) *1	Record consumption between each meter inspection	Accordingly
7	Temperature	Temperature at site of installation	Automatic data collection	Daily
8	Weather	Weather at site of installation	Record weather conditions	Daily

*1 Calculate the costs as much as possible and determine the running cost.

(2) Maintainability

The verification organization will operate and maintain the apparatus as described in the routine operating manual and O&M instructions manual for technical supervisors submitted by the verification applicant. It will also evaluate the user friendliness of the two manuals and verify the accuracy of the descriptions and items of the manuals. Table 5 shows items to be included in the manuals. Survey frequency will depend on the contents of the routine operating manual and O&M instructions manual for technical supervisors. The verification organization should discuss the most suitable frequency and system for sampling with verification applicants.

Prepare a maintenance checklist for both routine and technical maintenance tasks in accordance with the following items:

For works which did not need to be carried out within the test period, such as transporting the treated product from the site, the work situations shall be estimated form the site conditions, drawings of the site, etc. and important points shall be listed up.

Table 5. Method and Frequency of Measurement of Items for Maintainability Verification

No.	Classification	Verification Items	Time of Recording	Frequency
1	Routine maintenance in general	Description of work, required number of personnel and time, ease of work, etc.	During routine work	Follow instructions in the routine operating manual and O&M instructions manual
2	Technical maintenance in general		During technical work	
3	Preparations at closing and opening of mountain season *1		On the closing and opening of the mountain season	At the closing and opening of the mountain season
4	Transporting out end products and their processing and disposal		When transporting end products from the test site	When transporting end products from the test site
5	Troubleshooting		When problems arise	When problems arise
6	Reliability	Clarity and accuracy of entries in manual	At the end of testing	At the end of testing

*1 If the Site needs to be closed during the winter period, the operating conditions and treatment performance at the time of startup of the target verification apparatus in the new season. In the case that wintering performance can be determined from the past data, the above check may be omitted.

(3) Indoor Conditions

Table 6 shows the verification items for ensuring that use of the facility toilets is pleasant for guests.

Table 6. Verification Items for Indoor Conditions

No.	Verification Items		Method	Frequency
1	Temperature		Automatic recording	Daily
2	Acceptable Range*1	Pleasantness	Interview user to survey the acceptable range of conditions concerning the pleasantness of the facility (Example: odor, circulating washwater, etc.).	More than 50 people during the open season
3		User friendliness	Interview user to survey the acceptable range of conditions concerning the user friendliness of the facility (Example: wash method, manual operation buttons, etc.).	

*1 The acceptable range should be appropriate for indoor conditions in a mountain environment.

(4) Effects on Surrounding Environment

While the target technologies for the present verification are all of the non-discharge type, they may nevertheless have certain adverse effects on the surrounding environment. Treatment of human waste may generate certain gases. Soil treatment technologies require assessment of their effects]on surrounding soil conditions. This section examines the effects of end products of human waste treatment technologies on surroundings as well as the effects on soil. Table 7 shows the currently anticipated verification items. Items other than those listed below that are predicted to affect the surrounding environments are to be examined in the Test Plan.

Table 7. Verification Items for Effects on Surrounding Environment

No.	Classification	Verification Items	Measurement Method	Frequency
1	Soil alteration conditions	Surface area of installation, terrain alteration, tree felling, scale of earthwork	Record measurements as indicated by drawings and as determined to be appropriate by on-site observations.	Once/survey period
2	Surrounding soil	Nitrate-nitrogen, chloride ion	See *1.	Once/survey period

*1 Given below is a detailed verification method for assessing effects on the surrounding environment.

- The items to be recorded will be same as for sampling in "(5) 3) Items to Record During Sampling." The sampling for this item shall be made at the same time as the final sampling during periods of normal use (2) in Figure 5. Samples will be analyzed for nitrate-nitrogen (soil nutrient analysis method) and chloride ions (JIS K 0102 35.1). The sample solution for analysis should be prepared according to the method specified in "Environmental Quality Standards for Soil Pollution (Ministry of the Environment Notification #46)." Figure 4 is an example of apparatus sampling locations. In this case, samples are collected at both points A and B. The samples collected at point B serve as a reference sample to determine whether the effects of the human waste treatment apparatus are evident in the point A sample.

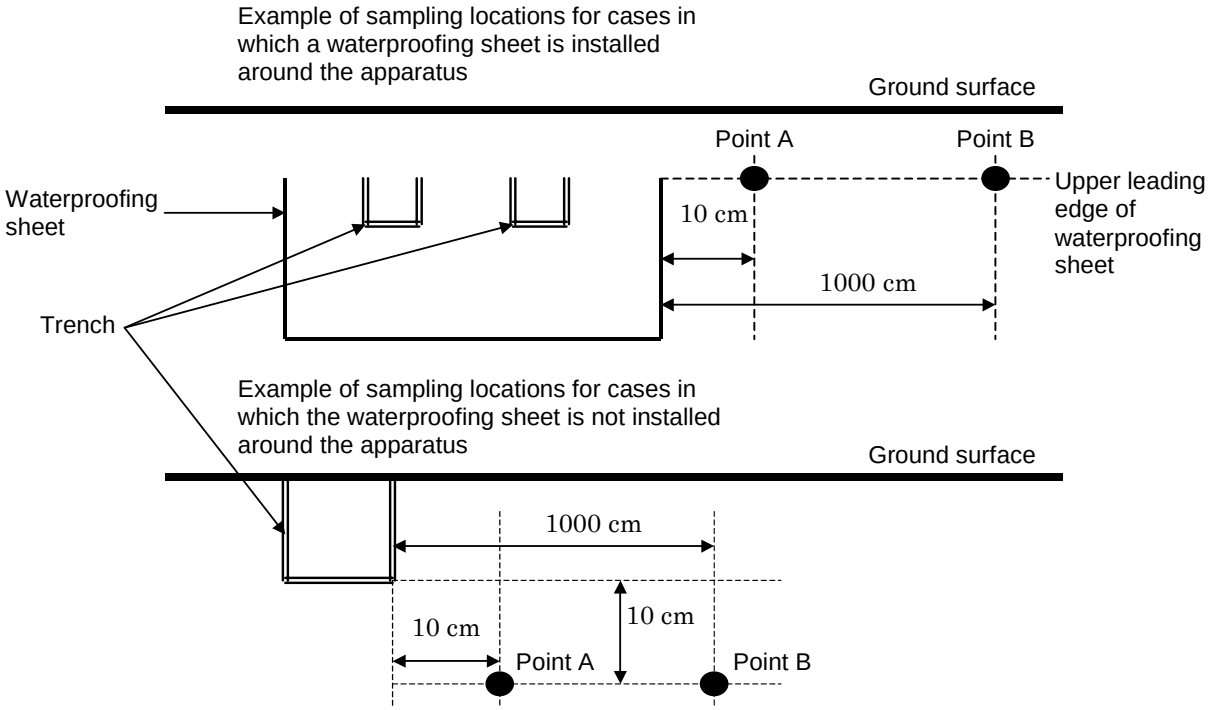


Figure 4. Sampling locations (Example)

(5) Treatment Capacity

The categories for the verification of the treatment performance are shown in Table 8 organized by treatment methods. The verification items and standard methods of sample analysis are shown in Table 9 organized by the category items. If any of the items of performance indicated by the applicant is not listed in Table 9, the item shall be verified; further, if the verification organization found an item which is necessary to review the maintainability or treatment capability of the target verification apparatus, the verification organization may add the item based on its own judgment. Also, the measurement of the items which can be measured at the site in a simple manner shall be positively carried out. On the other hand, if verification of certain item is difficult due to the circumstances

including the installation conditions, the item, etc. may be changed corresponding to the site conditions. Based on these verification items, the verification organization shall check as to whether the target verification apparatus is operated adequately, and the waste treatment is carried out smoothly.

Information regarding the sampling tools shall be clearly described in the Test Plan. The sampling methods shall, in principle, performed in accordance with the JIS or the Wastewater Test Methods, and the details shall be reviewed in the Test Plan.

Table 8 Categories for the Verification of the Human Waste Treatment Performance

No.	Human Waste Treatment Method	Categories
1	Biological treatment	The operating conditions of the unit apparatus, circulating water, treatment process water, sludge, etc. (See Table 9-1) (For the soil treatment, the analysis for surrounding soil shall be carried out. See V. 4. (4) "Effects on Surrounding Environment.")
2	Physicochemical treatment	
3	Soil treatment	
4	Evaporation and incineration treatment	The operating conditions of the unit apparatus, ash from incineration, carbonized materials, waste gases, etc. (See Table 9-2)
5	Composting treatment	The operating conditions of the unit apparatus, saw dust/cedar chips,*1 waste gases, etc. (See Table 9-3)
6	Other	Review in the Test Plan

*1: These refer to saw dust, cedar chips, and the like which are the residues of the human waste treatment.

Table 9-1. Verification Items for Treatment Capacity (Biological treatment methods, physicochemical treatment methods, and soil treatment)

	Classification	Verification Items	Test Site	Survey and Analysis Methods
1	Operational status of each unit apparatus		F	To be confirmed using configuration and function documents and maintenance manual
			F	Conduct interviewing the personnel in charge of maintenance
2	Circulating water Treatment process water	Increased water volume	F	To be examined in the Test Plan
		Color	F	Visual observation
		Odor	F	Confirmation of odor
		pH	F&L	JIS K 0102 12
		TOC	L	JIS K 0102 22
		BOD	L	JIS K 0102 21
		Chloride ions	L	JIS K 0102 35.1
		Suspended solids	L	Test of Sewage Volume 2, Chapter 2, Section 12
		Coliform group	L	Test of Sewage Volume 3, Chapter 3, Section 7
		Other	—	
3	Sludge	Color	F	Visual observation
		Odor	F	Confirmation of odor
		pH	F&L	JIS K 0102 12
		Residue on evaporation	L	Test of Sewage Volume 2, Chapter 4, Section 6
		Loss on ignition	L	Test of Sewage Volume 2, Chapter 4, Section 8
		Sludge volume	L	Test of Sewage Volume 2, Chapter 3, Section 8
		Suspended solids	L	Test of Sewage Volume 2, Chapter 4, Section 9
		Other	—	

* F (field) in the Test Site column presents measurements in the field and L (Laboratory) presents measurements in laboratories.

* If the end product must be transported from the test site, measure the volume of each batch of transported material. Record the accumulated volume even in cases in which the end product does not need to be removed from the test site.

* For the soil treatment, the soil around the site, which is defined in V. 4. (4) "Effects on Surrounding Environment" shall be analyzed for nitrate nitrogen and chloride ions.

Table 9-2. Verification Items for Treatment Capacity (Evaporation and combustion treatment methods)

	Classification	Verification Items	Test Site	Survey and Analysis Method
1	Operational status of each unit apparatus		F	To be confirmed using configuration and function documents and maintenance manual
			F	Conduct interviewing the personnel in charge of maintenance
2	Incineration Ash/Carbonized residue	Accumulated volume	F	To be examined in Test Plan
		Color	F	Visual observation
		Odor	F	Confirmation of odor
		Residue on evaporation	L	Test of Sewage Volume 2, Chapter 4, Section 6
		Loss on ignition	L	Test of Sewage Volume 2, Chapter 4, Section 8
		pH	F&L	JIS K 0102 12 *1
		TOC	L	JIS K 0102 22 *1
		Electrical conductivity	L	JIS K 0102 13 *1
		Other	—	
3	Gas emission *2	Ammonia	L	Test of Sewage Volume 2, Chapter 5, Section 2
		Hydrogen sulfide	L	Test of Sewage Volume 2, Chapter 5, Section 2
		Other	—	

* F (field) in the Test Site column presents measurements in the field and L (Laboratory) presents measurements in laboratories.

* If the end product must be transported from the test site, measure the volume of each batch of transported material. Record the accumulated volume even in cases in which the end product does not need to be removed from the test site.

*1 The sample solution for analysis should be prepared according to the method of analysis given in Test Method for Metals Contained in Industrial Wastes (Ministry of the Environment Notification #13).

*2 For evaporation and combustion treatment methods, also examine verification items for SOx, NOx, CO, methyl mercaptan, and dioxin. Specify the corresponding analysis method in the Test Plan.

Table 9-3. Verification Items for Treatment Capacity (Composting treatment methods)

	Classification	Verification Items	Test Site	Survey and Analysis Method
1	Operational status of each unit apparatus		F	To be confirmed using configuration and function documents and maintenance manual
			F	Conduct interviewing the personnel in charge of maintenance
2	Sawdust/cedar chips	Mixing and agitation condition	F	Visual observation
		Color	F	Visual observation
		Odor	F	Confirmation of odor
		Residue on evaporation and moisture content	L	Test of Sewage Volume 2, Chapter 4, Section 6
		Loss on ignition	L	Test of Sewage Volume 2, Chapter 4, Section 8
		pH	F&L	JIS K 0102 12 *1
		TOC	L	JIS K 0102 22 *1
		Electrical conductivity	L	JIS K 0102 13 *1
		Unit volume weight	L	Method adheres to Test of Sewage Volume 2, Chapter 4, Section 4
		Coliform group	L	Test of Sewage Volume 3, Chapter 3, Section 7 *1
		Other	—	
3	Gas emission *2	Ammonia	L	Test of Sewage Volume 2, Chapter 5, Section 2
		Hydrogen sulfide	L	Test of Sewage Volume 2, Chapter 5, Section 2
		Other	—	

* F (field) in the Test Site column presents measurements in the field and L (Laboratory) presents measurements in laboratories.

* If the end product must be transported from the test site, measure the volume of each batch of transported material. Record the accumulated volume even in cases in which the end product does not need to be removed from the test site.

*1 The sample solution for analysis should be prepared according to the method of analysis given in Test Method for Metals Contained in Industrial Wastes (Ministry of the Environment Notification #13).

*2 For evaporation and combustion treatment methods, also examine verification items for SOx, NOx, CO, methyl mercaptan, and dioxin. Specify the corresponding analysis method in the Test Plan.

1) Period and Timing of Conducting Survey

The survey period shall be divided into busy time and normal time as shown in Figure 5, and the treatment performance shall be kept track of from the four different points shown below.

Point 1: Surveying the treatment performance of the normal time, which has relatively low load

Point 2: Surveying the treatment performance of the busy time, which has high load.

Point 3: Surveying the treatment performance of post-busy time.

Point 4: If necessary, during the winter season, close the bathroom for a short time to conduct a test for wintering performance to understand the operating conditions of the next season.

The number of times to conduct survey shall be such that the performance can be properly checked based on the characteristics of the target verification apparatus and data submitted by the applicant, which is about three times total, one each before, during, and after the busy time. If the capability of maintaining stability over the winter time can be determined from the past data, the test for this may be omitted.

Prior to the first sampling at normal time (1), check the operating conditions to make sure that the apparatus is operated properly. When the treated product is removed for transportation, the treatment performance shall be checked at that time.

The busy time refers to an about 4-seek period in which many bathroom users are particularly expected during the test period; the specific period of the busy time shall be determined by the verification organization in consideration of the use conditions of the Test Site. The normal time refers to the rest of the time other than the busy time.

Sampling shall be performed on-time as much as possible.

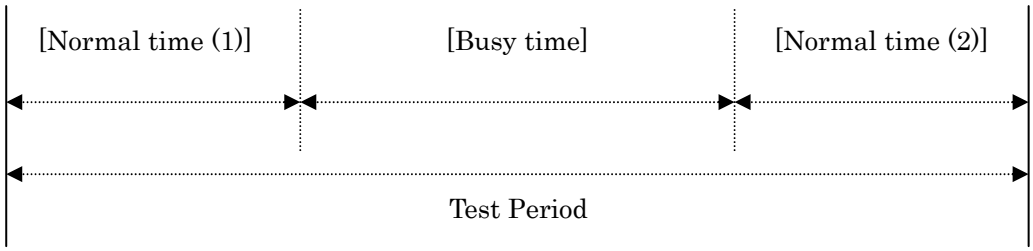


Figure 5. Survey Period

2) Sampling Location

The sampling locations are organized by treatment methods in Table 10.

Table 10. Sampling Locations Categorized by Human Waste Treatment Methods

No.	Human Waste Treatment Method	Category	Sampling Location
1	Biological treatment Physicochemical treatment Soil treatment	Circulating water	The washing water for the low tank, toilet bowl, or the storage tank right before from which the water is supplied to these.
		Treatment process water	Primary treatment tank
		Sludge	Locations which is intended for accumulation of sludge, such as the sludge storage tank
		Surrounding soil	Only required for the soil treatment; sample soil according to "V. 4. (4) "Effects on Surrounding Environment."
		Other	
2	Evaporation and incineration treatment	Ash from incineration, carbonized materials	Locations at which ash generated from incineration and carbonized materials are stored
		Waste gases	Exhaust ducts, etc. for gases generated from the target verification apparatus
		Other	
3	Composting treatment	Saw dust/cedar chips*1	Agitation tank
		Waste gases	Exhaust ducts, etc. for gases generated from the target verification apparatus
		Other	
4	Other		

*1: These refer to saw dust, cedar chips, and the like which are the residues of the human waste treatment.

3) Items to Record During Sampling

Based on the JIS K 0094 "6. Items to Record During Sampling," the following items have been selected for recording during sampling:

- Sample name and number
- Name of sampling site and location (if sample is not from the ground surface, indicate the sampling depth)
- Date and time of sampling
- Name of person performing the sampling
- Conditions of the sampling site (e.g., a schematic diagram showing the sampling site)
- Temperature of sample and ground temperature upon sampling
- Other details, such as sample appearance (color, turbidity, etc.), presence of odor

5. Implementation of Additional Test

In the case that, in order to improve the treatment performance, a partial modification has been made to the apparatus which was subject to the verification test by the verification organization and approved by the MoE in the past for the same project, or that redoing the verification test on the treatment performance is desired several years after the last test, the additional verification test can be carried out at the request of the environmental technology developer or the distributor.

VI. Analysis of Verification Test Data

1. Data Quality Management

The field of mountain-district human waste treatment covers a wide range of technologies, and verification items are also similarly complex and varied. Items range from quantifiable measurements to more subjective observations. Thus, some basic precautions must be heeded to increase the certainty and reliability of the data obtained through these verification tests.

These precautions are given below.

(a) Sampling and analysis shall be carried out by the environmental measurement certification businesses or the laboratories which can secure the same level of quality control.

(b) Treatment performance of the human waste treatment technology tends to be influenced greatly by the natural environments of the area and use conditions; therefore, data such as climate data and number of users should be measured with automatic measuring devices as much as possible and the data should be processed.

(c) The qualitative data shall be collected in the uniform format to minimize error between the data.

(d) Variations in weather conditions and user load will vary from test site to test site. If clearly anomalous values are detected during data processing, the appropriate response will depend on the extent to which they are the end results of weather, usage, and operating factors.

2. Data Analysis and Presentation

Give due consideration to maintaining confidentiality requested by the verification applicant when disclosing information in the Verification Report on the test site, verification environment, and technical specifications for the verification apparatus.

The data obtained by the verification tests will be analyzed and compiled for easily understandable presentation to a wide range of users, particularly the toilet installation businesses who will be the primary consumers of such human waste treatment technologies in mountain districts. In the sample analysis and discussion of the results, duly consider the operating status of the verification apparatus and the natural environmental and usage conditions at the time of sampling.

Below are the standard analysis and presentation method for each verification checkpoint.

1) Analysis and Presentation Methods for Operating Conditions and Status

(a) Time-series data and a graph showing transitions in number of toilet users, volume of replenished water, amount of water used, amount of electrical power used, amount of fuel used, and temperature

(b) Minimum, maximum and monthly means for the number of toilet users, volume of replenished water, amount of water used, amount of electrical power used, amount of fuel used, and temperatures

(c) Type, volume, and cost of raw materials

(d) Other

2) Analysis and Presentation Methods for Maintainability

(a) Summary of observations

(b) Summary of the daily routine operation and technical operation

(c) Summary of procedures at the opening and closing of the mountain district to the climbers

(d) Summary of the capability to maintain performance over the winter

(e) Summary of transportation of the treated product from the bathroom, and the treatment, and disposal

(f) Summary of response to troubles

(g) Summary of reliabilities of instruction manuals and O&M protocol

(h) Other

3) Analysis and Presentation Methods for Indoor Conditions

(a) Summary of observations

(b) The time-series bathroom temperature data and graphs showing the change of the bathroom temperature

(c) The maximum, minimum, and monthly average of the bathroom temperatures

(d) Summary of the acceptable ranges

(e) Other

4) Analysis and Presentation Methods for Effects on Surrounding Environment

(a) Summary of observations

(b) Drawings and photographs regarding the land modification status, and the area of the affected site, and others

(c) Analysis results for soil samples from surrounding areas

(d) Other

5) Analysis and Presentation Method for Treatment

(a) Summary of observations

(b) Graph showing sampling results

(c) A graph showing the correlation between data and the number of toilet users (Also provide graphs on operating factors and status items that show a strong correlation with the data.)

(d) Discussions of results and their correlation to operational and usage conditions

(e) Other

VII. Preparing the Verification Report

The verification organization shall organize and conclude the Verification Report after reviewing by the Technology Panel, and obtain approval of the MoE through the verification management organization. The verification organization shall prepare the executive summary of the Verification Report. In Principle, Verification Reports and executive summaries shall be prepared in accordance with the following items and formats.

After giving approval to the Verification Report, the MoE shall promptly issue the logo-mark and the verified number to the applicant.

All the Verification Reports shall be cataloged on the databases and made publicly available.

1. Verification Report

[Overview part]

1. The purport and aim
2. Overview of the Verification Test
3. Overview of the Test Site
   - 3-1 Test Site
   - 3-2 Conditions of the Test Site
4. Overview of the verification apparatus
   - 4-1 Features of the verification apparatus and treatment flow
   - 4-2 Specifications of the verification apparatus
   - 4-3 Installation and building methods of the verification apparatus
   - 4-4 Operation and maintenance of the verification apparatus
   - 4-5 Condition settings of the verification apparatus
5. Verification test methods
   - 5-1 Implementation system of the verification test
   - 5-2 Functions of the parties
   - 5-3 Verification test period
   - 5-4 Items of the verification test
   - 5-5 Operating conditions and status
   - 5-6 Maintainability
   - 5-7 Indoor environment
   - 5-8 Impact on the environment around the site
   - 5-9 Treatment performance

[Result part]

6. Verification test results
   - 6-1 Operating conditions and status
     - 6-1-1 Temperature, number of users, and amount of water/electric power usage, etc.
     - 6-1-2 Summary of operating conditions and status
   - 6-2 Maintainability
     - 6-2-1 Daily routine maintenance
     - 6-2-2 Technical maintenance
     - 6-2-3 Procedures at the opening and closing of the mountain district to the climbers
     - 6-2-4 Transportation of the treated product from the bathroom, and the treatment/disposal

6-2-5 Response to troubles
6-2-6 Reliability of the O&M manual
6-2-7 Summary of the maintainability
6-3 Indoor environment
6-3-1 Indoor temperature
6-3-2 Acceptable limits
6-3-3 Summary of the indoor environment
6-4 Impact on the environment around the site
6-4-1 The land modification status
6-4-2 Impact on the soil around the site
6-4-3 Summary of impact on the environment around the site
6-5 Treatment performance
6-5-1 Results of the sample analysis
6-5-2 Summary of treatment performance
6-6 The general summary of the test results

[Introduction part]

7. Important issues in introducing the verification apparatus
7-1 Important issues regarding installation conditions
7-1-1 Important issues related to the natural conditions
7-1-2 Important issues related to the social conditions
7-1-3 Important issues related to the infrastructure requirements
7-2 Important issues regarding designing and O&M
8. Challenge and expectation

[References] Descriptions of the major verification items regarding treatment performance

[Appendices] (Test Plan, documents submitted by the verification applicant, methods of sample control and analysis, monitoring records, maintenance records, references, etc.)

2. Executive Summary for the Verification Report

Human waste treatment method/technology Note	
Verification organization	TEL FAX
Verification applicant/Environmental technology developer	TEL FAX

Note: For the human waste treatment method, enter the category defined in the Protocol.

(1) Overview of the verification apparatus	
Features of the verification apparatus	
Flow chart and explanation of the human waste treatment	

(2) Overview of the Verification Test

1. Overview of the Test Site

Name of the municipality	（ ）
Name of the mountain	Name of mountain: ( ); Name of mountain region: ( ); Elevation: (m)
Date bathroom use started (for already installed bathroom only)	(/ /) (Mo/Day/Yr the bathroom was installed and started being used)
Period of bathroom use	*Circle one (All year round/ Seasonal use)

*Whole view of bathroom, photo of inside the bathroom

2. Specifications and treatment performance of the verification apparatus

Item	Specifications and treatment capability	
Name of apparatus	Name: ( ); Model: ( )	
Dimension	Building area of the bathroom: (m^2) (W mm × D mm) Dimension of the treatment apparatus: (m^2) (W mm × D mm × H mm) The other area: (m^2) (W mm × D mm × H mm) Total: (m^2)	
Number of toilet	Male (Seat: , upright:); Female (Western style: , Japanese style:); unisex ( ); Total: ( )	
Treatment capability, etc. (Design, specifications)	Number of users	Normal time: (man • time/day); Busy time: (man • time/day)
	Quality of circulating water, etc.	( )
	Amount of water required	Initial amount of water: (m^3); amount of water refilled: (m^3)
	Amount of electric power required	Electric power required: (W); power consumed: (kWh/month)
	Type and amount of fuel required	(Type:); (Amount:)
	Type and amount of materials required	(Type:); (Amount:)
	Natural energy use	Purpose: ( ) Type: ( ) Specifications: nominal maximum output (W)
	Operating temperature range	（ °C to °C)
	Technical maintenance	(times/year)
	Treated products which need to be removed and transported from the bathroom	Type of product: ( ) Amount of product and frequency: ( ) Method of final disposal: ( )

(3) The Verification Test Results

1. Operating conditions and status

Item	Verification Test Results
Test period	Test period: from / / to / / (for days)
Use status	Total number of users: (person) (for days)
	Busy time: (Max. person/day, Ave: person/day (for days))
	Normal time: (Max: person/day, Ave.: person/day (for days))
Paper	Handling of bathroom tissue: (Discard in the toilet bowl/collect separately)* Circle one
Air temperature	Max: (°C), Min: (°C), Ave.: (°C)
Amount of water used	Initial amount of water: (m^3), amount of water refilled: (m^3) Water procurement method: municipal water/ rain water/ creek water/ spring water/ other ( ) *Circle one
Electric power consumption	Electric power required: (W); power consumed: (kWh/day) Electric power procurement method: commercial power/ self-power generation/ other ( ) *Circle one
Transportation methods	Methods of transportation of fuel, maintenance materials, and treated products such as sludge Vehicle/ helicopter/ bulldozer/ manpower/ other ( ) * Circle one

2. Maintainability

Item	Verification Test Results	
Daily routine	Contents:	
	Amount of work per maintenance: (person/ min.), Frequency: (times/day)	
Technical	Contents:	
	Amount of work per maintenance: (person/ min.), Frequency: (times/test period)	
Procedures at the opening/closing time of the mountain district to climbers		
	Amount of work per maintenance: (Opening time (person) (min.), (Closing time (person) (min.)	
Information on troubles	Contents:	
	(remedies:.)	
Running cost (excluding airship fees)	Electricity fee or the fuel cost for the power use	(yen/month)
	Water fee	(yen/month)
	Expendable fee	(yen/month), Detail ( )
	Costs of transportation and treatment for the treated product, etc.	(yen/month)
	Other	(yen/month)
Graphs of number of users		

- Present the data on the number of users during the verification test period in a graph.
- Make the x-axis represent the time, and the y-axis the number of users
- Indicate the number of users with bars, whereas the accumulated number of users with a line on the same graph.
- Organize the graph in a way that the busy time and normal time can be distinguished
- In the case that the removal of the product or troubles occurred, indicate the time at which the incident occurred

Workability of daily routine maintenance	➢ Summarize on the workability
Workability of technical maintenance	➢ Summarize on the workability
Reliability of the O&M manual	➢ Summarize on the reliability

3. Indoor environment

- Summarize on the comfortableness and ease in operation in the bathroom based on the user questionnaires and others.

4. Treatment performance

- The analytical results for the treatment performance must be summarized with graphical representation in an easy-to-understand manner. Describe about the impact on the environment of the area as needed.

5. Cost

Construction	Total cost (　　thousand yen) (sum of i and ii)
	i. Construction cost for the body (　　thousand yen) total human waste treatment system (　　thousand yen ＊except construction cost)
	ii Delivery cost etc. (　　thousand yen)
O&M	Total (　　thousand yen/month) (sum of i-vi)
	i　Waste treatment cost (　　thousand yen) Included delivery cost (　　thousand yen)
	ii　Fuel cost (　　thousand yen) Included delivery cost (　　thousand yen)
	iii Technical management cost (　　thousand yen)
	iv Consumable cost (　　thousand yen) Included delivery cost (　　thousand yen)
	v Cost for trouble remedies (　　thousand yen) Included delivery cost (　　thousand yen)
	vi Others　(　　thousand yen) (contents:　　)

(4) Important issues towards introduction of the apparatus

1. Important issues regarding the installation conditions

- Provide issues that need to be aware of when reviewing the introduction of the apparatus in the future.

2. Important issues regarding designing and O&M

- Provide issues that need to be aware of when reviewing the introduction of the apparatus in the future.

(5) Challenges and expectations

(Reference information)

All information on this page is provided by the environmental technology developer in an application for a verification test at its own responsibility. The Ministry of the Environment and the verification organization assume no responsibility for the information.

○ Product information

Item		Description (to be filled in by the environmental technology developer)			
Name/model					
Human waste treatment method					
Name of manufacturer (distributor)					
Contact information	TEL/FAX				
	Website				
	E-mail				
Size and weight					
		If the apparatus can be transported by smaller parts and assembled, enter the size and weight of the parts			
Period required for installation					
Service life of the target verification technology					
Cost estimation (yen)*		Expense item	Unit cost	Qty	Amount
Initial costs					Additional
					yen
					yen
				Total	yen
Running costs					yen
					yen
				Total	yen
* Assumptions for the cost estimation (e.g., treatment capability, number of holes) are as follows. The transportation costs are not included.					

○ Information from other manufacturers

Appendix 1. Application form for the Verification of Human Waste Treatment Technologies in Mountain Districts

1. Applicant

Company name	Seal
Address	
Tel & Fax number	TEL FAX
E-mail	
Name of person in charge	
Division	

2. Overview of Verification Apparatus

Item	Entry
Name of apparatus	
Waste treatment method	(1) Biological (2) Physicochemical (3) Soil Treatment (4) Evaporation and Combustion (5) Composting (6) Other ( )
Model number	
Manufacturer	
Contact	Person in charge:
	TEL FAX
	E-mail:
Price (yen)	
Installation requirements	Water: (1) Dependable supply required (2) Only initial volume necessary (t) (3) Not required * Volume of replenishment (t/month)
	Electric power: (1) Required (kWh/d) (2) Not required
	Access to roads: (1) Required (2) Not required
Fuel type	Type of fuel ( ), consumption (l · kg · Nm^3/month)
Required resources	Type of resources ( ), consumption (l · kg · Nm^3/month)
Temperature	Temperature range for normal operations (°C)
Apparatus type	Design of toilet and treatment apparatus: (1) integrated unit (2) separate units installed close to each other

Dimensions	Integrated unit types: w (mm) × d (mm) × h (mm)
	Separate unit types (specify dimensions only for the treatment apparatus): w (mm) × d (mm) × h (mm)
Weight	Integrated unit types: t Separate unit types (only for the treatment apparatus): t
Treatment capacity	Normal usage conditions: persons/day (liters/day) Concentrated usage conditions: persons/day (liters/day) * Calculate using a unit volume of human waste liters/usage.
Method of final disposal	
Warranty period	years
Amortization period	years
Operating costs	yen/month
Number of devices previously installed	facilities
Miscellaneous (Special notes)	

* List of documents that need to be attached to the application form (See the Protocol, "III. 2. Preparation of Application Documents.")

No.	Item	
(1)	Information on the candidate verification test site	1) Location
		2) Natural environmental conditions
		3) Infrastructure requirements for installation of the bathrooms
		4) Condition of use
(2)	Information on apparatus	1) Basic concepts for designing
		2) Explanation of structure and functions
		3) Treatment performance
		4) Standard plans
		5) Installation records
		6) Technical performance data
		7) O&M instruction manual
		8) Installation requirements
(3)	Other	1) Company profile
		2) Reference materials

Appendix 2. Form for Performance Data

(1) Overview of the sampling locations for the performance data

Name of the municipality	
Location of installation (Enter the names of mountain, mountain region, elevation, etc.)	
Starting date of the bathroom service (Enter the date the bathroom was installed and started being used)	
Period of the bathroom use (also note on the presence/absence of winter closing period)	

(2) Specifications and treatment performance of the verification apparatus

Item	Specifications and treatment capability	
Name of apparatus	Name: ( ); Model: ( )	
Dimension	Building area of the bathroom: (m^2) (W mm × D mm) Dimension of the treatment apparatus: (m^2) (W mm × D mm × H mm) The other area: (m^2) (W mm × D mm × H mm) Total: (m^2)	
Number of toilet	Male (Seat: , upright:); Female (Western style: , Japanese style:); unisex ( ); Total: ( )	
Treatment capability, etc. (Design, specifications)	Number of users	Normal time: (man • time/day); Busy time: (man • time/day)
	Quality of circulating water, etc.	( )
	Amount of water required	Initial amount of water: (m^3); amount of water refilled: (m^3)
	Amount of electric power required	Electric power required: (W); power consumed: (kWh/month)
	Type and amount of fuel required	(Type:); (Amount:)
	Type and amount of materials required	(Type:); (Amount:)
	Natural energy use	Purpose: ( ) Type: ( ) Specifications: nominal maximum output (W)
	Operating temperature range	(°C to °C)
	Technical maintenance	(times/year)
	Treated products which need to be removed and transported from the bathroom	Type of product: ( ) Amount of product and frequency: ( ) Method of final disposal: ( )

(3) The Verification Test Results

Item	Verification Test Results	
Test period	Test period: from / / to / / (for days) Test period for wintering performance: from / / to / / (for days)	
Use status	Total number of users: (person) (for days)	
	Busy time: (Max. person/day, Ave: person/day (for days))	
	Normal time: (Max: person/day, Ave.: person/day (for days))	
Paper	Handling of bathroom tissue: (Discard in the toilet bowl/collect separately)*Circle one	
Air temperature	Max: (°C), Min: (°C), Ave.: (°C)	
Amount of water used	Initial amount of water: (m^3), amount of water refilled: (m^3)	
Electric power consumption	Electric power consumed: (kWh/day) Electric power procurement method: commercial power/ self-power generation/ other ( ) *Circle one	
Transportation methods	Methods of transportation of fuel, maintenance materials, and treated products such as sludge Vehicle/ helicopter/ bulldozer/ manpower/ other ( ) *Circle one	

(4) Maintainability

Item	Verification Test Results	
Daily routine	Amount of work per maintenance: (person/ min.), Frequency: (times/day)	
Technical	Amount of work per maintenance: (person/ min.), Frequency: (times/)	
Procedures at the opening/closing time of the mountain district to climbers	Amount of work per maintenance: (Opening time (person) (min.), (Closing time (person) (min.)	
Transportation, treatment, and disposal of the treated product	(person/ min.) (Methods:)	
Construction	Total cost (thousand yen) (sum of i and ii)	
	i. Construction cost for the body (thousand yen) total human waste treatment system (thousand yen ＊except construction cost)	
	ii Delivery cost etc. (thousand yen)	
O&M	Total (thousand yen/month) (sum of i-vi)	
	i Waste treatment cost (thousand yen) Included delivery cost (thousand yen)	
	ii Fuel cost (thousand yen) Included delivery cost (thousand yen)	
	iii Technical management cost (thousand yen)	
	iv Consumable cost (thousand yen) Included delivery cost (thousand yen)	
	v Cost for trouble remedies (thousand yen) Included delivery cost (thousand yen)	
Information on troubles	(Number of troubles, description, remedies, etc.)	
Running cost (excluding airship fees)	Electricity fee or the fuel cost for the power use	(yen/month)
	Water fee	(yen/month)
	Expendable fee	(yen/month), Detail ( )

	Costs of transportation and treatment for the treated product, etc.	(yen/month)
	Other	(yen/month)

Graphs of number of users

- Present the data on the number of users during the verification test period in a graph.
- Make the x-axis represent the time, and the y-axis the number of users
- Indicate the number of users with bars, whereas the accumulated number of users with a line on the same graph.
- Organize the graph in a way that the busy time and normal time can be distinguished
- In the case that the removal of the product or troubles occurred, indicate the time at which the incident occurred

(5) Treatment performance

- The analytical results for the treatment performance must be summarized with graphical representation in an easy-to-understand manner. Describe about the impact on the environment of the area as needed.

Appendix 3. Fee Items

The verification applicant shall bear the costs for which the applicability column is circled. For the items in 1. Costs for measurement and analysis, the items are organized by different treatment methods because the items differ from method to method. If which treatment method the technology in question belongs to is not clear, the applicant shall check with the verification organization.

(1) Costs for the measurement and analysis

(1)-1 Biological/physicochemical treatment methods

No.	Appli-cable	Test item	Measurement/analysis item	Qty	Estimated unit price	Estimated amount
		Operating conditions and status				
1	○		Number of bathroom users			
2	○		Amount of initial water required			
3	○		Amount of water refilled			
4	○		Electric power consumption			
5	○		Fuel type, fuel consumption			
6	○		Types of materials consumed and the cost, and consumption			
7	○		Air temperature of the installation location			
8	○		Weather of the installation location			
9	○		Indoor temperature of the bathroom			
10	○		Comfortableness of inside the bathroom			
11	○		Ease in operation of the bathroom			
		Circulating water and treatment process water				
12	○		Increased amount			
13	○		Color			
14	○		Odor			
15	○		pH			
16	○		TOC			
17	○		BOD			
18	○		Chloride ions			
19	○		Suspended solid			
20	○		Coliform bacteria			
		Sludge				

21	○		Color			
22	○		Odor			
23	○		pH			
24	○		Evaporated residue			
25	○		Ignition loss			
26	○		Sludge sedimentation rate			
27	○		Suspended solid			
		Other				
					(1)-1 Total	

(1)-2 Soil treatment method

No.	Appli-cable	Test item	Measurement/analysis item	Qty	Estimated unit price	Estimated amount
		Operating conditions and status				
1	○		Number of bathroom users			
2	○		Amount of initial water required			
3	○		Amount of water refilled			
4	○		Electric power consumption			
5	○		Fuel type, fuel consumption			
6	○		Types of materials consumed and the cost, and consumption			
7	○		Air temperature of the installation location			
8	○		Weather of the installation location			
9	○		Indoor temperature of the bathroom			
10	○		Comfortableness of inside the bathroom			
11	○		Ease in operation of the bathroom			
		Circulating water and treatment process water				
12	○		Increased amount			
13	○		Color			
14	○		Odor			
15	○		pH			
16	○		TOC			
17	○		BOD			
18	○		Chloride ions			

19	○		Suspended solid			
20	○		Coliform bacteria			
		Sludge				
21	○		Color			
22	○		Odor			
23	○		pH			
24	○		Evaporated residue			
25	○		Ignition loss			
26	○		Sludge sedimentation rate			
27	○		Suspended solid			
		Soil around the bathroom area				
28			Nitrate nitrogen			
29			Chloride ions			
		Other				
					(1)-2 Total	

(1)-3 Evaporation and incineration treatment method

No.	Appli-cable	Test item	Measurement/analysis item	Qty	Estimated unit price	Estimated amount
		Operating conditions and status				
1	○		Number of bathroom users			
2	○		Amount of initial water required			
3	○		Amount of water refilled			
4	○		Electric power consumption			
5	○		Fuel type, fuel consumption			
6	○		Types of materials consumed and the cost, and consumption			
7	○		Air temperature of the installation location			
8	○		Weather of the installation location			
9	○		Indoor temperature of the bathroom			
10	○		Comfortableness of inside the bathroom			
11	○		Ease in operation of the bathroom			

		Ash generated from incineration, carbonized materials				
12	○		Accumulated amount			
13	○		Color			
14	○		Odor			
15	○		Evaporated residue			
16	○		Ignition loss			
17	○		pH			
18	○		TOC			
19	○		Electric conductivity			
		Waste gases, etc.				
20	○		Ammonia			
21	○		Hydrogen sulfide			
		Other				
					(1)-3 Total	

(1)-4 Composting treatment method

No.	Appli-cable	Test item	Measurement/analysis item	Qty	Estimated unit price	Estimated amount
		Operating conditions and status				
1	○		Number of bathroom users			
2	○		Amount of initial water required			
3	○		Amount of water refilled			
4	○		Electric power consumption			
5	○		Fuel type, fuel consumption			
6	○		Types of materials consumed and the cost, and consumption			
7	○		Air temperature of the installation location			
8	○		Weather of the installation location			
9	○		Indoor temperature of the bathroom			
10	○		Comfortableness of inside the bathroom			
11	○		Ease in operation of the bathroom			
		Saw dust and cedar chips				
12	○		Mixing and stirring state			

13	○		Color			
14	○		Odor			
15	○		Evaporated residue and water content			
16	○		Ignition loss			
17	○		pH			
18	○		TOC			
19	○		Electric conductivity			
20			Weight per unit volume			
21			Coliform bacteria			
		Waste gases, etc.				
22	○		Ammonia			
23	○		Hydrogen sulfide			
		Other				
					(1)-4 Total	

(2) Labor costs associated with the verification test

No.	Appli-cable	Purpose	Name of the technicians, etc.	Qty	Estimated unit price	Estimated amount
1	○	Meetings prior to the test				
2	○	Setting up the testing devices for the test				
3	○	Sampling				
3	○	Cleaning up after the test				
		(Example of description)				
		Sampling	Technical staff 2 staff × 3 times			
					Total of (2)	

(3) Expendables, etc. associated with the verification test (including lease and rental fees)

No.	Appli-cable	Purpose	Name of expendables	Qty	Estimated unit price	Estimated amount
1	○	Measuring the number of bathroom users	Number of user counter			
2	○	Measurement of electric power	Electric power monitor			
3	○	Measurement of the bathroom temperature	Temperature sensor			
4	○	Sampling	Polyester jars (1 L)			
5	○		Polyester jars (0.5 L)			
6	○		Sterilized jars			
7	○		PVC gloves			

8	○	Waste gas measurement	Sterilized jars			
9	○		PVC gloves			
		(Example of description)				
	○	Sampling	Polyester jars (1 L)			
					Total of (3)	

(4) Travel costs associated with the verification test

No.	Appli-cable	Test item	Description	man• times	Estimated unit price	Estimated amount
1	○	Meetings prior to the test				
2	○	Setting up the testing devices for the test				
3	○	Sampling				
4	○	Cleaning up after the test				
		(Example of description)				
	○	Sampling	From the XXX Research Institute to the Test Site			
					Total of (4)	

Total	Biological treatment method	yen
	Physicochemical treatment method	yen
	Soil treatment method	yen
	Evaporation and incineration treatment method	yen
	Composting treatment method	yen

Appendix 4. Verification Test Plan

The contents of the Verification Test Plan must be discussed in-depth with the verification applicant, taking into consideration comments and advice from the Technology Panel. The specifics of the Test Plan may differ depending on the target technology and test site. However, they should include at least the following:

1. Cover sheet, table of contents

2. Description and objectives of test

3. Participating organizations and the responsibilities of the participants

4. Overview of the target verification technology for mountain-district human waste treatment
   (1) General characteristics and overview of technology for the treatment method of the target verification technology
   (2) Characteristics of the target verification technology

5. Overview of the Test Site

6. Verification Test Method
   (1) Operating conditions and status
   (2) Maintainability
   (3) Indoor environment
   (4) Treatment performance
   (5) Impact on the environment of the area
   * Describe the organization (or individual) in charge, schedules, verification items, analytical devices, and methods for each of the above items.

[Appended Materials]

The following materials are to be appended to the Test Plan:

- Application documents
- O&M protocol
- Workplace sanitation and safety plans
- Other documents and reference data

Appendix 5. Use of the Logo-mark

1. Aim

Aiming at the dissemination of this project to the public, the logo-mark shown in the Appendix will be defined as the "Logo-mark for the MoE Environmental Verification Technology Pilot Project (Hereinafter called, "the logo-mark").

2. Scope and Limitation of the Use of the Logo-mark

(1) The logo-mark can be used to introduce the pilot project to general public on newspapers, magazines, academic papers, websites and the like, and no special permission is required for the uses of these types.

(2) The logo-mark can be used for the technology, the Verification Report of which has been approved by the MoE and the verification management organization, for the purposes of introduction, advertisement, etc. of the technology. (No special reporting to and permission from the relevant organization are required.) For the use of the logo-mark, however, labeling must be carried out complying by the methods shown in 3. Methods of Labeling. Moreover, the logo-mark shall not be used in the manner such that the guarantee, certification, licensing, or others of the technology concerned by the MoE or other organizations relevant to the pilot project is suggested even at a slight degree.

(3) The logo-mark can be used by the organizations selected as the verification management organization and verification organization to inform that the organization is being selected to serve as the respective organization. (No special reporting to or permission from the relevant organization is necessary.) However, after the period of serving as the verification management organization or verification organization has been expired, the logo-mark shall not be used newly by the organization concerned.

(4) In principle, logo-mark uses other than the above cases (1), (2), and (3) shall not be allowed. In the case that any questionable issue arises, it shall be consulted with the MoE.

3. Methods of Labeling

(1) General compliance issues

1) The logo-mark shall not be used in the manner such that the guarantee, certification, licensing, or others of the businesses, products, technologies, services, etc. of the target verification technology concerned by the MoE, the verification management organization, verification organization, database management organization, or other organizations relevant to the pilot project is suggested even at a slight degree.

2) The logo-mark shall not be used in the part of the name of products, services, technologies, etc.
* When the verification applicant uses the logo-mark for the purposes of introduction, advertisement, and others of the technology, the following issues must be complied.

3) The verified number, which is issued by the MoE and unique to the verification technology, shall be shown in proximity to the logo-mark.

4) The logo-mark shall be shown in close proximity to the name of the target verification technology so that the target verification technology can be clearly distinguished. In the case that only one model out of the series of products is of the target verification technology, the labeling shall be carried out in the manner that the distinction is clearly recognized. And in the case that only one model out of the series of products was the subject of the verification, in principle, the logo-mark shall not be used for any other model in the same series of the products, unless the technology and performance of the product is identical to those of the verified product. Should a question arise

concerning the judgment as to whether the technologies and performances are identical or not, consult with the MoE.

5) When used in the introduction of the technology, and the like, the logo-mark shall not be used by itself, and make certain to add the description in proximity to the logo-mark, such as "Information regarding the performance of the technology can be obtained through the website for the MoE pilot project for the environmental technology verification. The title of the "MoE pilot project for the environmental technology verification and the use of the logo-mark will not indicate guarantee, certification, and permission by the MoE and others regarding the technology and its performance." The description shall be labeled large enough for the readily legibility.

(2) Methods of the logo-mark labeling

1) The color arrangement of the logo-mark shall be the one shown in the Appendix, and no other color arrangement shall be used.
2) The logo-mark shall be labeled in the manner that it can be readily identifiable as an independent mark.
3) No modification shall be made to the logo-mark, such as cutting, division, and deformation. The logo-mark can be enlarged or reduced.
4) When the logo-mark is used on the website, the logo-mark shall be hot-link to the homepage of the MoE pilot project for the environmental technology verification (http://etv-j.eic.or.jp/).

4. Guidance of Improvement and Others

The MoE can give instruction for improvement or suspension of the logo-mark use to the parties which are using the logo-mark without complying to the Protocol.

Appendix 6. Review of Developments in the Working Group for Human Waste Treatment Technologies in Mountain Districts

[FY2003]

First meeting held on Thursday, June 26, 2003

Agenda

- ○ Outline of the pilot project for environmental technology verification
- ○ Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts (draft)

Second meeting held on Friday, July 18, 2003

Agenda

- ○ Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts (draft)
- ○ Solicitation of verification organization

Third meeting held on Wednesday, October 15, 2003

Agenda

- ○ Distribution of transportation expenses relating to the installation of human waste treatment apparatuses in mountain districts
- ○ Balance between human waste treatment capacity and load of target technology
- ○ Protocol, Test Plan and on-site coordination
- ○ Establishment of an organization to implement a verification process

Fourth meeting held on Thursday, November 25, 2003

Agenda

- ○ Review of issues relating to the future implementation of verification tests on human waste treatment technologies in mountain districts
- ○ Review of Provisional Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts for FY2004 (draft)

Fifth meeting held on Thursday, February 5, 2004

Agenda

- ○ Provisional Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts for FY2004 (draft)
- ○ Solicitation of verification organization for mountain district human waste treatment technologies for FY2004

Sixth meeting held on Tuesday, March 9, 2004

Agenda

- ○ Provisional Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts for FY2004
- ○ Selection of a verification organization (candidate) for mountain district human waste treatment technologies for FY2004

[FY2004]

First meeting held on Friday, July 28, 2004

Agenda

- ○ Review policies and details of the WG for FY2004
- ○ Progress status of the verification organization for FY2004
- ○ Regarding how the future verification should be
- ○ Executive summary version of the Verification Report
- ○ Schedules of the WG meetings for FY2004

Second meeting held on Tuesday, August 31, 2004

Agenda

- ○ Contents of the verification tests and implementation status of the tests
- ○ Executive summary version of the Verification Report

Third meeting held on Tuesday, September 29, 2004

Agenda

- ○ Contents of the verification tests and implementation status of the tests
- ○ Review of the executive summary version of the Verification Report

Fourth meeting held on Thursday, October 21, 2004

Agenda

- ○ Contents of the verification tests and implementation status of the tests
- ○ Review of the executive summary version of the Verification Report

Fifth meeting held on Thursday, February 3, 2005

Agenda

- ○ Table of contents and the executive summary version of the Verification Report
- ○ Review of the Verification Report
- ○ Report of the Review Committee for the Pilot Project for the Environmental Technology Verification
- ○ Review of the Protocol for Verification Tests on human waste treatment technologies in mountain districts

Sixth meeting held on Friday, February 22, 2005

Agenda

- ○ Check of the summary of the agenda for the fifth meeting of the WG for human waste treatment technology in mountain districts
- ○ Verification Report (draft)
- ○ Future policies

[FY2005]

First meeting held on Friday, October 24, 2005

Agenda

- FY2005 pilot project for the environmental technology verification, human waste treatment technologies in mountain districts
- Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts, 3rd (draft)

Second meeting held on Tuesday, December 6, 2005

Agenda

- Directions of the project for FY2006 and beyond
- Verification Report (draft)
- Revisions of the Protocol

Third meeting held on Tuesday, January 24, 2006

Agenda

- Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts, 3rd (draft)
- Documents for solicitation of verification organizations (draft)
- Upcoming schedules (draft)

Fourth meeting held on Tuesday, March 7, 2006

Agenda

- Selection of verification organizations
- Challenges in the future

[FY2006]

First meeting held on Tuesday, August 1, 2006

Agenda

- ○ Review details and schedule of the WG FY2006
- ○ Test Plan of FY2006 target technologies (draft)
- ○ Expectation in the future

Second meeting held on Thursday, October 26, 2006

Agenda

- ○ Progress status of the verification tests
- ○ Exhibition of pilot project for the environmental technology verification (Eco-Products)
- ○ Solicitation of verification Organization
- ○ Increase in the number of the WG members
- ○ Direction of revising the Protocol

Third meeting held on Friday, December 22, 2006

Agenda

- ○ Progress status of each verification test
- ○ Report of Eco-Products 2006
- ○ Revision of the Protocol
- ○ Proposal to the committee on the pilot project

Fourth meeting held on Friday, February 16, 2007

Agenda

- ○ Progress status of the verification tests
- ○ Name (draft) of human waste treatment technology field in mountain districts
- ○ The Protocol (draft) of FY2007

Fifth meeting held on Thursday, March 22, 2007

Agenda

- ○ Verification Report of FY2006 (draft)
- ○ The Protocol of FY2006 (draft)

Appendix 7. Revision History of the Protocol for Verification Tests on Human Waste Treatment Technologies in Mountain Districts

First Edition: Published August 8, 2003

Second Edition: Published June 2, 2004

(Content of revisions made to the first edition)

- Technical terms have been organized (overall).
- The information to be provided relating to the (candidate) test site has been stipulated.
- The design concept has been added to the information to be provided relating to the apparatus.
- It has been stipulated in the selection procedures that the verification applicant should be interviewed regarding the target verification apparatus, if necessary, during the selection stage.
- The content of explanations for human waste treatment methods has been modified.
- It has been stipulated that the conditions of the natural environment at the test site should be recorded in as much detail as possible.
- The items necessary to determine the acceptable range have been added to the verification items for indoor conditions.
- The "Treatment of Intellectual Property" section has been added.

Third Edition: Published March 10, 2006

(Major revisions from the second edition)

- Descriptions on the verification management organization were added.
- Descriptions on the logo-mark and verified number were added.
- Descriptions on the change to the fee-based system were added.
- Descriptions on the technical performance data of the application documents were changed to make more concrete
- Descriptions on the categorization of the human waste treatment technology and the treatment methods were revised.
- The test fee items were set.
- The requirements for the Test Site were loosened.
- Efficiency of the verification test items, test period, and the survey period for the treatment performance was improved.

Fourth Edition: Published March 29, 2007

(Major revisions from the third edition)

- Human waste treatment technologies in foothills, on seashore and the islands besides mountains were also to be solicited on the trial to be tested.
- Database institution was substituted with the Ministry of the Environment.
- Descriptions on advertisement projects of the Ministry of the Environment were added.

Appendix 8. Committee on the Pilot Project for Environmental Technology Verification for FY2005

Members List of Working Group for Human Waste Treatment Technologies in Mountain Districts

Kazumasa Kashiwabara	Kashima-yari Kanko Kaihatsu, Inc. (Tsumetaike cottage, Taneike cottage, Shinkoshi Norikoshi cottage)
Toshiro Sakurai	Plant & Environment Headquarters, Mitsui Engineering & Shipping Co., Ltd.
Tomio Suzuki	Researcher for Nagano Environmental Conservation Research Institute
Naoyuki Funamizu	Professor of Graduate School of Engineering at Hokkaido University
Takeaki Mori	Professor of Department of Electrical and Electronic Engineering at Kanagawa Institute of Technology (Chairman)
Takao Yoshida	Representative of the Environmental Resources Conservation Study Group (NPO)
Takao Watanabe	Chief Researcher at Research and Study Department of Japan Education Center of Environmental Sanitation

(Listed in order of the Japanese syllabary)

[Secretariat (Ministry of the Environment)]

Mitsuru Ebara	Director for Park Facilities and Conservation Technology, Nature Conservation Bureau
Tatsuro Sekine	Assistant to the Director for Park Facilities and Conservation Technology, Nature Conservation Bureau
Kenetsu Sasaki	Facility Specialist for Division of Park Facilities and Conservation Technology, Nature Conservation Bureau
Kenji Ueda	Coordination Specialist of Environmental Technology and Research Office, Environmental Policy Bureau
Yuichiro Yoshizawa	Section Head of Education and Promotion, Office of Johkasou Management, Waste Management Division, Waste Management and Recycling Department

[Secretariat (Friends of the Mountains, NPO)]

Koo Ue	Chief Director
Takemi Harada	Secretary-General
Atsushi Kato	Staff Researcher, Survey and Planning Group