# Natural Disaster
# Water Infrastructure Evaluation
# United States Environmental Protection Agency (USEPA) Region 6 and Texas Commission on Environmental Quality (TCEQ) Disaster Response Procedures

## 1.0   Purpose

**1.1   Water Infrastructure Evaluation Purpose**:  To identify public water supply (drinking water) and/or wastewater systems impacted by an emergency event or natural disaster. The purpose of the evaluation will be to determine operational status, provide technical assistance (as outlined in the objective below), and ensure public health protection.

## 2.0   Objective

**2.1   Water Infrastructure Evaluation Objective:**  Systematically and thoroughly survey areas that were impacted by the event. Identify affected drinking water and wastewater systems in each area, evaluate the systems to determine their operational status, and facilitate system contact with Federal, State and local agencies (i.e. technical assistance).
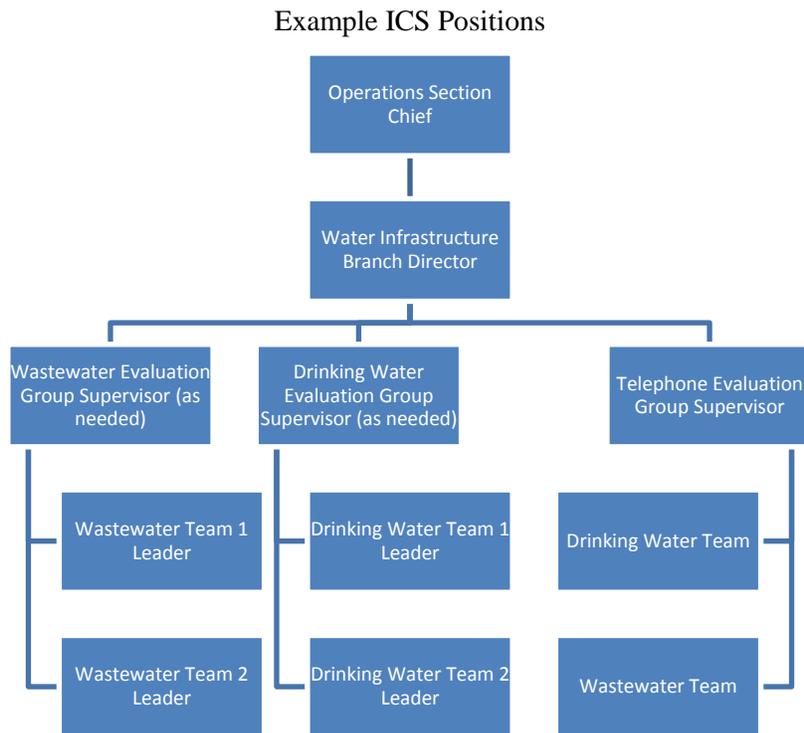
**2.1.1**   This standard operating procedure (SOP) outlines the overall procedures of conducting water infrastructure evaluations for both drinking water and wastewater systems. In some circumstances a mission assignment may only be given to evaluate one type of system.

## 3.0   Water Infrastructure Evaluation Branch Structure

Typically, during Emergency Support Framework #3 (ESF-3) responses, USEPA and TCEQ will be in unified command with other governmental agencies. For incidents in which only one Incident Command Post (ICP) is established, a Water Infrastructure Evaluation Branch will be created to ensure that operational objectives are accomplished. In this circumstance, the Water Infrastructure Branch Director, working under the Operations Section, will have direct control of all Water Infrastructure Evaluation Branch operations. If an incident occurs that covers a large area, an area command may be established. If area command is established, and ICP's are set up in multiple locations, the Branch Director position will be established within Area Command. This position will report to the Operations Section Chief and be responsible for strategic planning, establishing objectives, and coordinating with other stakeholders. Under Area Command, objectives will be given to the individual ICPs and the Operations Section Chief will assign the work to Group Supervisors or Team Leaders.

## 3.1 Water Infrastructure Evaluation Branch

Under a single ICP structure, the Water Infrastructure Evaluation Branch will work within the Operations Section. The Water Infrastructure Evaluation Branch will be directed by a Water Infrastructure Branch Director and may consist of several Drinking Water and Wastewater Teams. Depending on the number of teams, Group Supervisor (Group Sup) positions may be utilized to stay within the proper span of control. Each Team will be directed by a Team Leader. If a Group Supervisor is not assigned, the Branch Director will coordinate with the Planning Section Chief to ensure that each Team Leader has the appropriate assignments and maps to complete their objectives. If a Group Supervisor is assigned, he/she will assume all direct coordination with the Team Leaders. The Team Leaders will coordinate daily assignments, accomplishment, resource needs, or issues encountered. The Team Leader will oversee his/her team and will ensure the documentation of progress in the field is reported daily to the Group Sup/Branch Director. The Team Leader will work for and report to the Group Supervisor, Branch Director, Operation Section Chief, or their designee.

Example ICS Positions

Operations Section Chief

Water Infrastructure Branch Director

Wastewater Evaluation Group Supervisor (as needed)

Drinking Water Evaluation Group Supervisor (as needed)

Telephone Evaluation Group Supervisor

Wastewater Team 1 Leader

Drinking Water Team 1 Leader

Drinking Water Team

Wastewater Team 2 Leader

Drinking Water Team 2 Leader

Wastewater Team

### 3.1.1 Water Infrastructure Evaluation Team Composition

A typical Water Infrastructure Evaluation Team will consist, at a minimum, of two staff members, one vehicle, and proper electronic equipment for navigation, communication, and documentation. One member will be designated as the Team Leader by the Water Infrastructure Evaluation Group Sup/Branch Director. The Water Infrastructure Evaluation Team Leader will request additional support through the Water Infrastructure Evaluation Group Sup/Branch

Director. Each Team member will comply with the Federal Emergency Management Agency (FEMA) requirements for National Incident Management System (NIMS) training for their specific position. The Team Leader will be required to have completed courses equivalent to a Basic Incident Command System (ICS) level (ICS-200). Team members will be required to have completed courses equivalent to an Introduction to ICS level (ICS 100).

The team will be responsible for navigating to impacted areas to complete water infrastructure evaluations and establishing a point of contact with the system(s) to be evaluated. Teams must collect documentation supporting the system's reported operational status and provide technical assistance. Both team members will work together to make the field determination of a system's operational status. However, if the team is comprised of a state and federal representative, the State has the final determination.

# 4.0 Core Resources Required

## 4.1 Resources for Water Infrastructure Evaluation Activities

### 4.1.1 Water Infrastructure Evaluation Branch Director

The Water Infrastructure Evaluation Branch Director is responsible for the oversight of the water infrastructure evaluation operations. The Branch Director should ensure their Water Infrastructure Evaluation Teams have appropriate personnel, vehicles, and equipment for the type of operations required. The Branch Director should ensure that each Water Infrastructure Evaluation Group Sup/Team Leader has appropriate assignments and maps for the water infrastructure evaluation operations. It is critical for the Branch Director to work directly with both the Planning Section Chief and Group Sup/Team Leaders to maintain situational awareness on daily progress for operational planning purposes. The Branch Director is responsible for implementation of the ICS 204 forms (see attachments); so that all group operations are current and consistent with the Incident Objectives in the Incident Action Plan (IAP). The Branch Director will be required to have completed courses equivalent to an Intermediate ICS level (ICS-300).

### 4.1.2 Telephone Evaluation Group Supervisor

The Telephone Evaluation Group Supervisor works for and reports to the Water Infrastructure Branch Director. The Telephone Evaluation Group Supervisor provides assignments to the Telephone Evaluation Team personnel. The Group Supervisor ensures that all Evaluation Team personnel have proper documentation training before initiating evaluations. This training should be delivered by the Group Supervisor prior to making assignments. The Group Supervisor will be required to have completed courses equivalent to an Intermediate ICS level (ICS-300).

### 4.1.3 Water Infrastructure Evaluation Team Leaders

Water Infrastructure Evaluation Team Leaders are responsible for the oversight of their team's water infrastructure evaluation operations. Team Leaders should ensure that their Water Infrastructure Evaluation Teams have the appropriate assignments and maps for each daily operation. These assignments and maps can be obtained before the daily operations. If additional

maps are needed, Team Leaders should request maps through their Group Super/Branch Director utilizing a Map Request Form (see attachments). Teams are responsible for making the operational status determination in the field. Team Leaders are responsible for ensuring each team's ICS 214B form (see attachments) is submitted daily to the Group Sup/Branch Director. Team Leaders are to ensure that their teams have the following resources, at a minimum: cellular communication device, GPS unit, evaluation forms (see attachments), digital camera, sufficient photo placards, multi-card reader, memory stick, PDA/laptop, power inverter, multi-ac power outlet, supplemental field forms, clip board, batteries (if necessary), maps of assigned area, (3) tire fix-a-flat per vehicle, 6 bottles of water per person, and a general first aid kit. The Team Leader(s) will be required to have completed courses equivalent to a Basic ICS level (ICS 200).

# 5.0   On-Site Evaluation Procedures
## 5.1   Water Infrastructure Evaluation Branch Director

The Water Infrastructure Evaluation Branch Director reports directly to the Operations Section Chief, or their designee. The Branch Director oversees his/her assigned Group Supervisors or Water Infrastructure Evaluation Teams if Group Supervisors are not assigned. The Branch Director works directly with the Operation Section Chief and coordinates with the Planning Section Chief (at the direction of the Operations Section chief), or their designee, in the daily planning of water infrastructure evaluation operations to ensure the evaluation objectives are being met. The Branch Director plans the daily operations for the teams and delivers team assignments and maps to the Group Sups/Team Leaders on a daily basis. The Branch Director ensures that all Evaluation Team personnel have proper documentation training before initiating field activities. This training should be delivered by the Branch/ICP prior to making field assignments. The Team Leader provides ICS 214B forms to the Group Sup/Branch Director at the end of every operational day for each of his/her Evaluation Teams. These ICS 214B forms are daily summaries of team activities, including the systems evaluated and their operational status, and any resource needs.

**5.1.1   Daily Task Overview**:
1) Collect maps for Water Infrastructure Evaluation Teams from GIS.
2) QA/QC – Check master map against previous day's 214B's to ensure that status coders were correctly uploaded.
3) Organize assignment folders (ICS 204 Forms and Maps) for each Water Infrastructure Evaluation Team.
4) Coordinate morning Operational/Health & Safety meeting with Water Infrastructure Evaluation Teams.
5) Distribute assignment folders to each Group Sup/Team Leader and dispatch Water Infrastructure Evaluation Teams into the field.
6) Plan evaluation operations for the following day in coordination with the Planning Section Chief.
7) Determine what personnel and resources will be needed.
8) Convey resource needs to the Operations Section Chief.
9) Discuss timelines and changing needs and goals with the Operations Section Chief.
10) Order maps needed for the following day's evaluation activities from GIS using the Map Request Form.

11) Debrief Group Supervisors/Team Leaders as they return from the field and collect the daily ICS 214B form(s) from the Team Leader for each team. The ICS 214B forms will document the following for operational planning: geographical area each team worked, which county/quadrant each team covered, and how many systems were in each county/quadrant, an overview of the operational status of systems,

12) Coordinate with TXWARN representatives concerning system resource requests submitted via TXWARN electronic system.

13) Compile all electronic ICS 214B forms for the daily activities and deliver them to the Operations Section Chief. Branch Chief is responsible for submitting ICS 214B forms to Documentation Unit.

14) Utilize the ICS 214B forms to ensure the ICS 204s for each operational period have been completed as assigned.

15) Utilize the 214B forms to assist in planning for the next operational day so that assignments and 204 forms will be accurate and current.

16) Prioritize data collected from the Telephone Evaluation Group to assist with assignment of tasks to On-Site Evaluations Teams.

17) Ensure all data collected in the field is correctly uploaded into the Response Manager system.

18) Ensure all data is accurate and available at the end of each day.

## 5.2 Water Infrastructure Evaluation Team

The Water Infrastructure Evaluation Team will be in charge of navigation through the geographical area being evaluated, documenting the operational status of drinking water and/or wastewater systems and their critical resource needs, and providing technical assistance as needed. Team members will be required to have completed courses equivalent to Introduction to ICS (ICS 100).

### 5.2.1 Daily Task Overview: Team needs to ensure the following:

- Check field kit and replenish with necessary supplies.

- Check batteries in GPS unit, camera, and other necessary equipment. Have extra batteries on hand.

- Attend Water Infrastructure Evaluation Team morning operational / health & safety meeting.

- Obtain ICS 204 form, maps, and assignments from the Water Infrastructure Evaluation Team Leader.

- Mobilize to the field to perform water infrastructure evaluation and documentation as specified in Section 5.3 of this SOP.

- At the end of daily operations, each team completes their daily ICS 214B form documenting evaluation activities as outlined in Section 5.3.2 of this SOP. Team Leaders convene with Group Sup/ Branch Director to debrief on areas covered and obtain a plan for the following day activities.

- Provide a copy of the electronic ICS 214B to the Group Sup/ Branch Director.

▪ All evaluations, including photos, must be uploaded and synched into Response Manager daily. This may be completed by the team member or a data manager (if available).

## 5.3 Water Infrastructure Evaluation Procedure for Documenting Items

### 5.3.1 Field Documentation and Terminology

**All water infrastructure evaluation data must be entered into the Response Manager System. If a staff member does not have the ability to use Response Manager that staff member must document the information below on the appropriate Water Infrastructure Evaluation Data Sheet, see Attachments. Upon return to the command post this information must be entered into the Response Manager System daily.**

**System Name and Unique Identifying Number**: Verify, when possible, that the correct system was evaluated by identifying the Public Water System Identification (PWS ID) Number at drinking water systems or the Permit Number for wastewater systems. GPS locations should be available for drinking water systems and for the outfalls of wastewater systems. If GPS location information is not available, a GPS location for each facility should be collected at the time of the evaluation.

**Document damage to a system on the evaluation form and take photos.** In addition to noting critical damage on the data sheet, take photos of any damage to facilities associated with a system. This can be done by utilizing the Water Infrastructure Photo Placard Form (see attachments). Water Infrastructure Evaluation Teams will use the placard as the photo log. Photos will be entered into Response Manager for each evaluation.

**Enter data into PDA/Laptop or Field Water Infrastructure Evaluation Form.** Enter all data recorded into the PDA/laptop either during the evaluation or immediately following the evaluation. If the PDA/laptop becomes inoperable or damaged during the field day, the team may continue to document throughout the day by utilizing the Water Infrastructure Evaluation Data Sheets. The team should obtain a working PDA/laptop at the end of the field day and enter the acquired data from the forms into the Response Manager system. It is preferred that data is collected electronically. However, if a staff member does not use a PDA/laptop (for whatever reason), they MUST document all essential data as outlined above on the appropriate Water Infrastructure Evaluation Data Sheet located in Attachments D & F and submit the sheets daily so they can be entered electronically.

### 5.3.2 214B Documentation

Each Water Infrastructure Evaluation Team will provide an ICS 214B form to the Group Sup/Branch Director. The ICS 214B form should include essential information so that the Branch Director/Operations Section Chief has a daily report on the progress of the Water Infrastructure Evaluation Teams. An ICS 214B form is located in the attachments. The ICS 214B form should include:

- Team member names in the Personnel Roster Assigned Section
- Team needs/resources in the Next Operation Period Requirements Section
- Out of the ordinary experiences in the General Remarks Section
- Health and Safety Issues in the Health & Safety Issues Section
- Team accomplishments in the General Remarks Section
  - The drinking water or wastewater system name and unique identifying number and the county where the system is locate.  Example: "AJ's Mobile Home Park, PWS ID TX2009870, Chambers County."
  - The operational status of the system.  This can be as simple as the status code (i.e. INOP) or a VERY short sentence describing the evaluation if it is unique and cannot be properly captured in a status code.
- Equipment in the Equipment Assigned Section

### 5.3.3   Operational Status Determination:

It is the responsibility of the Water Infrastructure Evaluation Team members to make the final determination of operational status for systems/facilities for which they are assigned.  Team members must utilize the operational status codes definitions related to the type of evaluation being conducted.  The operational status codes and definitions are located in the attachments.  These documents will assist staff in deciding, based on information obtained during the evaluation, which code best describes the operational status of the system/facility at the time of the evaluation.  If a team consists of an EPA Region 6 and a TCEQ member, the final determination of operational status will be made by TCEQ.  If a team consists of two EPA or two TCEQ members, the Team Leader will make the final determination.

## 6.0   Telephone Evaluation Procedures

### 6.1   Water Infrastructure Evaluation Branch Director

The Water Infrastructure Evaluation Branch Director reports directly to the Operations Section Chief, or their designee. The Branch Director oversees his/her assigned Water Infrastructure Evaluation Teams. The Branch Director works directly with the Operation Section Chief and Planning Section Chief, or their designee, in the daily planning of water infrastructure evaluation operations to ensure the evaluation objectives are being met. The Branch Director plans the daily operations for his/her teams and delivers team assignments to the Group Sups/Team Leaders on a daily basis. The Branch Director will be required to have completed courses equivalent to an Intermediate ICS level (ICS-300).

### 6.1.1   Daily Task Overview:

1. Request & ensure that ICS 204 forms are accurate and represent resources assigned to each Telephone Evaluation Team.
2. Plan evaluation operations for the following day in coordination with the Planning Section Chief and the Telephone Evaluation Group Supervisor.
3. Determine what personnel and resources will be needed.
4. Convey resource needs to the Operations Section Chief.

5. Coordinate with the Telephone Evaluation Group Supervisor
6. Compile all electronic ICS 214B forms for the daily activities and deliver them to the Operations Section Chief. Branch Chief is responsible for submitting ICS 214B forms to the Documentation Unit.
7. Utilize the ICS 214B forms to ensure the ICS 204s for each operational period have been completed as assigned.
8. Prioritize data collected from the Telephone Evaluation Group to assist with assignment of tasks to On-Site Evaluations Teams.

## 6.2 Telephone Evaluation Group Supervisor

The Telephone Evaluation Group Supervisor works for and reports to the Water Infrastructure Branch Director. The Telephone Evaluation Group Supervisor provides assignments to the Telephone Evaluation Group members. The Telephone Evaluation Group Supervisor ensures that all Group personnel have proper documentation training before initiating evaluations. This training should be delivered by the Group Supervisor prior to making assignments. The Group Supervisor will be required to have completed courses equivalent to an Intermediate ICS level (ICS 300).

### 6.2.1 Daily Task Overview:
1. Coordinate daily meeting with Telephone Evaluation Teams (water & wastewater).
2. Plan/prioritize & distribute assignments for each Telephone Evaluation Team.
3. Utilize the 214B forms to assist in planning for the next operational day so that assignments and 204 forms will be accurate and current.
4. Determine what personnel and resources will be needed.
5. Convey resource needs to Branch Director.
6. Discuss timelines and changing needs and goals with the Branch Director.
7. Identify & assign TCEQ assets to Telephone Evaluation Teams
8. Utilize the Response Manager report to assist in planning for the next operational day so that assignments will be accurate and current.
9. Ensure all data collected is correctly uploaded into the Response Manager system.
10. Ensure all data is accurate and available at the end of each day.

## 6.3 Telephone Evaluation Team

The Telephone Evaluation Team will be in charge of attempting initial contact with all potentially impacted drinking water and wastewater systems, documenting the condition and operational status of drinking water and/or wastewater systems, and their critical resource needs. Additionally, team members can assist system and local officials with identifying organizations which can provide resources to help meet critical system needs (i.e. Public Works Response Team, TXWARN, RWEAC, etc). If a system/facility is unable to complete and deliver a 213 request for itself, TCEQ staff can record the request and report it to the Telephone Evaluation Group Supervisor. Staff assigned to complete telephone evaluations will be notified and assigned a list of systems to contact and will utilize Response Manager for all evaluations. All assigned staff will receive training for Response Manager prior to initiating telephone evaluations. Team members will be required to have completed courses equivalent to Introduction to ICS (ICS 100).

**6.3.1 Daily Task Overview**:

1. Attend daily meeting with Telephone Evaluation Group Supervisor.
2. Obtain daily assignments from the Telephone Evaluation Group Supervisor.
3. Attempt to contact each assigned system/facility once per day to in order complete an evaluation.
4. Enter evaluations into Response Manager at the completion of each individual evaluation, but no later than the end of the current work day.
5. Once an evaluation is entered into Response Manager it must by synchronized.
6. Team members who are unable to contact an assigned system/facility after three (3) attempts or a maximum time frame of 72 hours, will change the operational status for that system/facility to "SITE". (**No more attempts will be made**)
7. Any unusual or potential emergency situation reported by a system/facility should immediately be reported to the Telephone Evaluation Group Supervisor.
8. Once assignment is complete or at the end of the day, individual team members must report completion to the Telephone Evaluation Group Supervisor.

NOTE: Once a system no longer has an operational status of "UNKNOWN" or "OUT", calls will cease and any follow-up evaluations will be conducted by field staff. At this time all reporting will also be completed by field staff or the Field Operations Support Division.

**6.3.2 Additional Information**:

Any information beyond the scope of the telephone evaluation (i.e. Boil Water Notice rescind documentation) can be documented and transmitted via email or fax to the appropriate program as described below:

Public Drinking Water:  Information that must be included in email correspondence includes, but is not limited to: **PWS Name, PWS ID, PWS Contact Person Name and Title, and Phone Number.**  Additionally, water systems that encompass multiple facilities that can and would like to provide one report can do so by scanning and emailing completed copies of the Response Manager data sheet to pdws@tceq.state.tx.us or the specific staff member who is assigned to that system for telephone evaluation completion.  They can also fax these forms to 512-239-0030. The assigned staff member is responsible for data entry of the paper form into Response Manager during the same operational period in which the form was received.

Wastewater:  For wastewater systems, information that must be included in email correspondence includes, but is not limited to: **WWTP Name, TPDES Permit# (WQ00xxxxxyyy), WWTPS Contact Person Name and Title, and Phone Number.**  Office staff will coordinate with applicable regional offices as directed by WQD management. Additionally, wastewater systems that encompass multiple facilities that can and would like to provide one report can do so by scanning and emailing completed copies of the Response Manager data sheet to homeland@tceq.state.tx.us or the specific staff member who is assigned to that system for telephone evaluation completion.  They can also fax these forms to 512-239-4430.  The assigned staff member is responsible for data entry of the paper form into Response Manager during the same operational period in which the form was received.

## 7.0 Maps
### 7.1 Requesting Maps:
- The Branch Director should order maps by 1900 hours each day in order for GIS to produce the maps by 0600 hours the following day.  This is critically important during large responses with a high demand for maps throughout ICS.  The Branch Director can delegate this ordering process to the Group Supervisors.

- The GIS Group is capable of customizing maps to meet the needs of various groups.  It is important that the individual requesting the maps effectively communicates which "layers" the maps should show in order to be useful.  Suggestions on effective layers follow in Section 7.2 of this SOP.

### 7.2 Map Layer Requirements:

- EPA GIS grid overlay – not actual lat/long lines.  Grid lines should depict boundaries to the second decimal degree i.e. 33.54 and -101.94 (rather than an actual point such as 33.546172, -101.945739).
- County/Parish boundaries

- Bodies of water

- Water Infrastructure Assessment Teams should have 2 sets of maps: large scale overview maps and small scale grid maps.

- Large scale maps provide a location frame-of-reference for driving directions, while smaller scale grid maps are used to perform water infrastructure evaluations on the various systems in an efficient manner.

- Small scale quadrant maps should show system locations with associated unique identifying nomenclature ("public water supply number") written beside each colored dot.  This prevents Water Infrastructure Evaluation teams from producing double entries on already assessed systems.

#### 7.2.1 Ground Maps

- Layers for maps utilized in ground evaluations and acquisition should include highways, city streets, county/parish boundaries, cities, water bodies, wetland areas.  It is important to have layers which show areas not accessible by car and foot such as lakes, canyons, large landfills, and large sections of restricted private property (such as gated and guarded chemical plants).

## 8.0 Field Safety

All ICPs, Branches/Divisions will have a Health and Safety Officer (HSO).  All health and safety is managed by this officer.  The HSO will be able to provide overall field health and safety.  The HSO will also have job aids/job safety analysis/hazard analyses available for the teams.

# 9.0   <u>Coordination with Property Owners and Residents</u>

Coordinating with property owners and residents is a difficult but essential mission following a natural disaster.  It is important that you inform them of what you are doing in the field if asked. If an owner or resident requests something which you are unsure, please relay that question/request to the Group Supervisor if these positions have been assigned in order maintain span of control.  If Group Supervisors have not been assigned and Team Leaders are reporting directly to the Branch Director, then these questions/requests should be provided to the Branch Director.  Any issues with residents and owners in the field need to be elevated immediately through the same chain up the Operations Section Chief.  Resident disputes, denial of entry, or any conversation outside of the ordinary should be documented in the 214B.


**ATTACHMENTS:**

ICS FORM 204

ICS FORM 214B

MAP REQUEST FORM

DRINKING WATER INFRASTRUCTURE EVALUATION DATA SHEET

DRINKING WATER OPERATIONAL STATUS CODE DEFINITIONS

WASTEWATER INFRASTRUCTURE EVALUATION DATA SHEET

WASTEWATER OPERATIONAL STATUS CODE DEFINITIONS

WATER INFRASTRUCTURE PHOTO PLACARD FORM