

## **I Purpose**

To provide a means by which employees can be protected from the hazards associated with entry into confined spaces, permit-required confined spaces, and to develop procedures by which employees shall enter such spaces.

Many workplaces contain confined spaces, not designed for continuous human occupancy, which due to their configuration hinder employee activities including entry, work, and exit. Asphyxiation is the leading cause of death in confined spaces. Also, there have been cases when employees entering confined spaces were harmed, ground-up by augers, crushed, or battered by moving parts inside vessels, mixers, etc. The nature of confined spaces can cause toxic vapors to become highly toxic and harmful, and in some cases, immediately dangerous life and health (IDLH) unless adequate precautions are taken.

## **II Scope and Application**

This program covers all employees and contractors who enter confined spaces and contains the practices and procedures for their safe entry.

## **III Policy**

All spaces that meet the definition of permit required confined spaces shall be identified and appropriately marked and access to such spaces shall be controlled.

Employees are prohibited from entering any space meeting the definition of a permit required confined spaces unless the following conditions are met:

- A. It is determined that employees must enter the permit required confined space to perform their duties.
- B. The employees are trained in the duties under this policy which they are to perform.
- C. The space is rendered safe for entry by:
  1. Issuance and compliance with the conditions of a permit:
  2. The space is reclassified as a non-permit space or
  3. Alternate entry procedures are performed.

## **IV Definitions**

*Acceptable entry conditions:* The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

*Attendant:* An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program. The attendant never enters the confined space or leaves the access point.

*Blanking or blinding:* The absolute closure of a pipe, line, or duct by the fastening of a plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line or duct with no leakage beyond the plate.

*Confined space:* a space that meets all three of the following conditions:

1. Large enough and so configured for a person to bodily enter and perform work;
  2. Has limited or restricted means for entry and exit that requires a person to enter by means other than normal walking, such as, crawling, squatting, climbing, bending or use of devices;
- Not designed for continuous employee occupancy.

*Double Block and Bleed:* The closure of a line, duct or pipe by closing and locking/tagging two in-line valves and opening and locking/tagging out a drain or vent in the line between the two closed valves.

*Emergency:* Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

*Engulfment:* The surrounding and effective capture of a person by a liquid or finely divided solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction or crushing.

*Entrant:* Is the employee who is authorized by the employer to enter a permit space.

*Entry:* The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

*Entry permit:* The written or printed document that is provided by the City to allow and control entry into a permit-required space and that contains the information specified in Section VII, paragraph (I) of this policy.

*Entry supervisor:* Is the trained individual with the responsibility to assure that acceptable entry conditions are present with the permit pace under their jurisdiction, issue a permit authorizing entry, oversees the entry operations and terminates the entry and permit.

*Hazardous atmosphere:* Atmosphere that may expose employees to the risk of death, incapacitation, impairment or ability to self-rescue, injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
2. Air borne combustible dust at a concentration that meets or exceeds its LFL or obscures vision at a distance of five feet or less.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit;
5. Any other atmospheric conditions which are immediately dangerous to life and health.

*Hot work permit:* The employer's written authorization to perform operation (for example, riveting, welding, cutting, burning and heating) capable of providing a source of ignition.

*Immediately dangerous to life or health (IDLH):* Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

*Inerting:* The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. This procedure produces an IDLH oxygen-deficient atmosphere.

*Isolation:* The process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding;

misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

*Line breaking:* The intentional opening of a pipe, line or duct that is or has been carrying flammable, corrosive, or toxic, an inert gas, or any fluid at a volume, pressure, or any fluid at a volume, pressure, or temperature capable of causing injury.

*Non-permit confined space:* A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

*Oxygen deficient atmosphere:* An atmosphere containing less than 19.5 % oxygen by volume

*Oxygen enriched atmosphere:* An atmosphere above 23.5 % oxygen by volume.

*Permit-required confined space:* A space that has one or more of the following characteristics:

1. Contains or has the potential to contain a hazardous atmosphere
2. Contains a material that has the potential for engulfing an entrant and/or has an internal configuration that could trap or asphyxiated an entrant, such as inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section and/or
3. Contains any other recognized serious safety and/or health hazard.

*Permit system:* The employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

*Prohibited condition:* Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

*Rescue service:* The personnel designated to rescue employees from permit spaces.

*Rescue types:*

- Self-Rescue - The employee receives ample notice as to when they must exit the space.
- Assisted Rescue - If the entrant is hooked up to a mechanical retrieval device and something goes wrong, the attendant can retrieve him from the space.
- Entry Rescue - The final option and last resort is where something catastrophic has occurred and a rescue team must make a physical entry in order to retrieve the entrant.

*Retrieval system:* The equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

*Testing:* The process by which the hazards that may confront entrants or a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space. Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to and during entry.

## **V. General Requirements**

This program covers the safety requirements, including a permit system, for employees to enter confined spaces, designated as permit-required confined spaces (permit spaces) which:

1. Pose special dangers for entrants;
2. Have configurations hampering efforts;
3. Require protection for entrants from serious hazards including atmospheres that may be:
  - a) Toxic;
  - b) Explosive;
  - c) Asphyxiating;

- d) Which may contain other hazards, such as engulfment, etc.
- B. The City shall designate a Confined Space Entry Team to oversee the program by meeting when necessary to review and update the program, review canceled permits, review the confined space inventory, plan trainings, and meet with the designated rescue authority. See Appendix A for the Team members. Notes of Team meetings will be kept by the HR Coordinator.
- C. Each workplace has been evaluated to identify the permit- required and non-permit required confined spaces. See Appendix B.

## VI. Non-Permit Confined Spaces

- A. For each entry into a non-permit space, the designated Entry Supervisor shall review the work to be performed.
  - 1. If the work introduces a hazard into the space that will cause it to meet the definition for permit required confined space, the supervisor shall:
    - a) Temporarily reclassify the space as a permit space
    - b) Follow the procedures for entry into a permit space
    - c) Upon termination of the permit, inspect the space and take whatever actions necessary to remove the created hazards and
    - d) Reclassify the space as a non-permit space.
  - 2. If the work does not introduce a hazard, the Entry Supervisor may authorize entry into the space.

## VII. Permit-Required Confined Space Program

- A. This permit-required confined space program is designed to prevent unauthorized entry into permit-required confined spaces, identify and evaluate hazards and establish procedures and practices for safe entry including testing and monitoring conditions. The program requires for an attendant stationed outside permit-required confined spaces during entry; procedures to summon rescuers and prevent unauthorized personnel from attempting rescue; and a system for preparing, issuing, using and cancelling city permits. It also includes procedures for entry operations, canceling entry permits and review of the permit program at least annually and additionally as necessary.

The following measures have been implemented as necessary to prevent unauthorized employee entry into permit-required confined spaces.

- 1. All affected employees have been informed through initial safety training about the characteristics and presence of permit-required confined spaces and then at least annually thereafter.
- 2. The City shall identify each space under their jurisdiction which meets the definition of confined space and shall maintain a list of such spaces.
- 3. When feasible, the City shall provide for a danger sign to be posted at the means of ingress to each identified confined space. Such danger sign will say **Permit Required Confined Space** or a similar language.
- 4. All permit-required and non-permit confined spaces are listed in the applicable departmental appendices. However, the posting of danger signs is not all inclusive and each employee must know what a permit-required confined spaces is, the usual hazards involved and what precautions are required to ensure safe entry so they can help ensure their own protection. The list of permit-required and non-permit confined spaces shall be distributed to all affected managers and employees.

1. Alternative Procedures – Employees may enter a Permit Required Confined Space when all permit-required confined space entrants are protected from atmospheric hazards including oxygen deficiency (less than 19.5%) or increased oxygen concentration (greater than 23.5%), toxic materials (above the exposure limit), flammable gases and vapors, asphyxiating and engulfment, configuration or any other recognized hazards.
  2. Isolating the Permit-Required Confined Space – All hazardous energy sources associated with permit-required confined spaces, which may expose entrants to potential injury, are isolated, locked out and/or tagged out prior to entry.
  3. Purging, Inerting, Flushing, or Ventilating Permit-Required Confined Spaces – Prior to entry, all permit-required confined spaces are thoroughly purged, inerted, flushed, and/or ventilated as necessary to ensure the elimination and/or control of all hazards which may cause entrants injury and/or illness.
  4. External Hazards – Barriers for pedestrian, vehicular or other potential outside hazards are provided as necessary to protect entrants from external hazards.
  5. Verifying Acceptable Conditions – Conditions in permit spaces are tested and monitored throughout the entry to ensure that they are acceptable for the duration of the authorized entry.
- B. All required safety equipment and PPE shall be provided by the City, at no cost to employees, and shall be maintained properly, and used properly to ensure the safety of employees entering permit spaces.
- C. Evaluating Permit-Required Confined Space Conditions – Permit-required confined space conditions are evaluated (tested/monitored) when entry operations are conducted.
- D. Attendants
1. At least one attendant is required outside the permit-required confined space into which entry is authorized for the duration of the entry operation.
  2. Duties – All attendants are required:
    - a) To know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of the exposure.
    - b) To be aware of possible behavioral effects of hazard(s) exposure in entrants.
    - c) To continuously maintain an accurate count of entrants in the permit-required confined space and ensures a means to accurately identify authorized entrants.
    - d) To remain outside the permit-required confined space during entry operations until relieved by another attendant (once properly relieved, they may participate in other permit-required confined space activities including rescue if they are properly trained and equipped).
    - e) To communicate with entrants as necessary to monitor entrant status and alert entrants of the need to evacuate.
    - f) To monitor, without entry, activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the entrants to immediately evacuate if the attendant:
      - 1) Detects a prohibited condition;
      - 2) Detects entrant behavioral effects of hazard exposure;
      - 3) Detects a situation outside the space that could endanger the entrants; and/or
      - 3) Cannot effectively and safely perform all the attendant duties.
    - g) To summon rescue and other emergency services as soon as the attendant determines that entrant(s) need assistance to escape the permit-required confined space hazards.
    - h) To take the following action when unauthorized persons approach or enter a permit-required confined space while entry is underway:
      - 1) Warn the unauthorized persons that they must stay away from the permit-

- 2) required confined space.
- 2) Advise the unauthorized persons that they must exit immediately if they have entered the space.
- 3) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit-required confined space.
- i) To perform non-entry rescues as specified by the rescue procedure and entry supervisor.
- j) Not to perform duties that might interfere with the attendant's primary duty to monitor and protect the entrants.

#### E. Entrants

1. All entrants must be authorized by the entry supervisor to enter permit-required confined spaces, receive the required training, use the proper equipment and observe the entry procedures and permit. The following entrant duties are required:
  - a) Assure the space has been adequately ventilated, isolated, emptied and otherwise safe.
  - b) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of the exposure.
  - c) Properly use the equipment required for safe entry.
  - d) Communicate with the attendant as necessary to enable the attendant to monitor the status of the entrants and to enable the attendant to alert the entrants of the need to evacuate the space if necessary.
  - e) Alert the attendant whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or any prohibited condition is detected.
  - f) Exit the permit-required confined space as quickly as possible whenever; the attendant or entry supervisor gives an order to evacuate the permit-required confined space, the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, the entrant detects a prohibited condition or an activated evacuation alarm.

#### F. Entry Supervisors

1. Entry supervisors are responsible for the overall permit-required confined space entry and must coordinate all entry procedures, tests, permits, equipment, and other relevant activities. The following entry supervisor duties are required:
  - a) Know the hazards that may be faced during entry, including information on the mode, signs, or symptoms, and consequences of the exposure.
  - b) Verifies, by checking that the appropriate entries have been made on the permit, all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
  - c) Terminate the entry and cancel the permit when the entry is complete or there is a need for terminating the permit.
  - d) Recognize and authorize the reclassification of a permit-required confined space to a non-permit required space if applicable.
  - e) Verify that rescue services are available and means for summoning them are operable.
  - f) Remove unauthorized persons who enter or attempt to enter the space during entry operations.
  - g) Determine whenever responsibility for a permit-required confined space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with the permit terms and that acceptable entry conditions are maintained.
  - h) Must receive training as entry supervisor.
  - i) Ensures proper training for all entrants and attendants.
  - j) Procure the necessary safety equipment and PPE required for entry.
  - k) Ensure adequate numbers of employees receive training as entrants and attendants.

- l) Contact the local emergency rescue agency and establish assurance that they will perform rescue coverage during entry operations, with the assistance of city management as necessary, shall ensure that the rescue services are adequately trained and equipped to perform rescue operations from the space in compliance with safety regulations. The supervisor may invite rescue personnel to the site to pre-plan rescue operations.
- m) If the rescue services cannot or will not perform such services, the supervisor or employee shall develop and implement a means to perform rescue for the space.
- n) Submit copies of canceled entry permits to supervisor.
- o) Report emergencies and evacuations or other unexpected events related to the entry, which shall be recorded in writing by the Program Coordinator, as designated by the City.

#### G. Testing and Monitoring

1. The accuracy of testing and monitoring equipment may be significantly affected under certain conditions of humidity, pressure or temperature or by the presence of interfering chemicals. However, if the equipment is properly selected, calibrated, maintained and operated by properly trained employees, the confined space testing and monitoring needs can be effectively met. All persons performing tests and monitoring for permit-required confined space entry have been properly trained in the use of and limitations of the testing and monitoring equipment provided by the City.
2. Procedures for Atmospheric Testing – Atmospheric testing is required for two distinct purposes; evaluation of the hazards of the permit-required confined space and verification that acceptable entry conditions for entry into that space exist.
  - a) Evaluation Testing – The atmosphere of a permit-required confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that an appropriate permit entry procedure can be developed, and acceptable entry conditions stipulated for that space. Evaluation and interpretation of this data and development of the entry procedure, may be performed by, or reviewed by, a technically qualified professional (e.g., NCDOL OSHA consultative services, certified industrial hygienist, registered safety engineer, certified safety professional, etc.) based on evaluation of all serious hazards.
  - b) Verification Testing – The atmosphere of a permit-required confined space, which may contain a hazardous atmosphere, is tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) are recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.
  - c) Duration of Testing – Measurement of values for each atmospheric parameter is made for at least the minimum response time of the test instrument specified by the manufacturer of the testing equipment.
  - d) Testing Stratified Atmospheres – When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope is tested at the top, middle and bottom. If a sampling probe is used, the entrant's rate of progress is slowed to accommodate the sampling speed and detector response.

#### H. Permit

1. The entry permit documents that the required measures have been taken to ensure entrant safety. All pertinent safety requirements must be recorded on the permit including the isolation, ventilation, testing and monitoring, personal protective equipment (PPE) and other equipment necessary for entrant safety. See Appendix C. Permits will be kept for two years.

#### I. Reclassification of a Permit Required Confined Space.

1. In some instances, it may be possible to reclassify a confined space if all hazards can be removed.

#### J. Rescue

1. The City has identified the Henderson county Rescue Squad capable of responding to an emergency in a timely manner. The responders must have appropriate rescue equipment, including respirators, and be trained how to use all equipment. Prior to the entry in a permit-required confined space, they must be notified of the work to take place.
2. The standard also requires that all rescuers be trained in first aid and CPR. At a minimum, one rescue team member must be currently certified in first aid and CPR. Rescuers should be aware of the various confined spaces, locations and hazards.

#### K. Training

1. Each employee must be thoroughly trained with respect to lockout/tagout procedure used by the City. Each employee must know that lockout/tagout is used to protect employees against hazardous energy inadvertent operation of equipment or machinery. Each employee must understand that he or she is never to attempt to operate an energy-isolating device when it is locked out or tagged out.
2. All entry supervisors, attendants and entrants are properly trained initially, and refresher training provided when duties and space hazards change or whenever an evaluation determines inadequacies in the employees' knowledge or annually, whichever occurs first. The training provides employees with the necessary understanding; skills and knowledge to safely enter, work in and exit permit-required confined spaces. All training is documented.
3. Training shall be required:
  - a. Within two months of the determination of the employee's entry authorization but prior to entry.
  - b. Whenever the supervisor becomes aware that the employee has failed to follow the instructions provided in the training.
  - c. Annually.
4. The HR Coordinator shall certify that the training required has been accomplished. The certification shall contain each employee's name, the signatures, and the dates of training. The certification shall be available for inspection.

#### L. Records Retention

1. Canceled permits and other documentation shall be retained by the supervisor for one year following the date of entry. Permits shall then be retained as an employee exposure record, if applicable.
2. Employee training certification shall be retained by the City's HR Coordinator for the length of employment.

#### M. Contractors

1. All contractor entry into permit-required confined spaces must comply with all sections of this procedure. The employer shall ensure that every contract for work within an identified permit space, or work within a non-permit space that will introduce a reclassifying hazard, shall:
  - a. Apprise the contractor that the space is a permit-required confined space and of the hazards within the space;
  - b. Require the contractor to control entry into the space by a permit system meeting the

- requirements of 29 CFR 1910.146; and
- c. Require the contractor to eliminate any temporary hazards created by the work or notify the supervisor responsible for the space of any permanent hazards created by the work.
2. The Contractor or its designee shall notify the responsible supervisor prior to entry.
    - a. The supervisor shall notify any employees near or affected by entry; and
    - b. If employees shall enter the space with contracted employees, the supervisor shall ensure that entry operations are coordinated with the contractor or designee to assure that:
      - 1) All entrants of both employers can be accounted for during the entry;
      - 2) The work of one employer does not endanger the employees of the second employer;
      - 3) There is a properly trained attendant in place whenever employees of either employer have entered the space; and
      - 4) Temporary hazards are eliminated, and the supervisor is apprised of new permanent hazards.
  3. The Contractor or designee shall meet with the supervisor after completion of the entry to provide notification of:
    - a. Any new permanent hazards created by the work and/or
    - b. Any unidentified hazards encountered during the entry.



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John F. Connet, City Manager

6/30/23

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Date of Approval

*Adopted by City Council 01.07.2004  
Revised by the Safety Committee 09.12.2017, 10.06.2020  
Reviewed by HR Coordinator 09.21.2018, 10.3.2019, 7\_5\_2023*

**Appendix A to the Permit Required Confined Space Entry Program**  
Members of the City of Hendersonville Confined Space Entry Team

<b><i>Job Title</i></b>	<b><i>Organization</i></b>
HR Coordinator PW Building Maintenance Supervisor Fire Chief (828-674-6339) Deputy Fire Chief Ward (828-606-7683) Deputy Fire Chief Williams (828)702-7110 Battalion Chief (828-674-5608) Training Captain (828-388-8075) Utilities Operations Manager Utilities Facilities Maintenance Supervisor Utilities Systems Supervisors Water Treatment Facilities Manager Wastewater Treatment Facilities Manager	City of Hendersonville
Deputy Chief	Henderson County Emergency & Rescue

## Appendix B to the Confined Space Entry Program

### Wastewater Treatment Plant

<b>ID Number</b>	<b>Location</b>	<b>Hazard(s)</b>	<b>Permit – Required</b>
WWTP - 01	Main Pump Station Bar Channel		No
WWTP – 02	Main Pump Station Wet Well (when empty)	A; E	Yes
WWTP – 03	Main Pump Station Pump Side		No
WWTP – 04	Inclined Mechanical Rake at Grit Chamber		No
WWTP – 05	Grit Channels at Grit Chamber (when empty)		No
WWTP – 06	Aeration Basins (when empty)		No
WWTP – 07	Clarifiers Splitter Box	A; E	Yes
WWTP – 08	Clarifiers (when empty)		No
WWTP – 09	Recycle West Well (when empty)	A; E	Yes
WWTP – 10	Waste Wet Well (when empty)	A; E	Yes
WWTP – 11	Sand filter Wet Well (when empty)	A; E	Yes
WWTP – 12	Sand Filter (when empty)		No
WWTP – 13	Sand Filter Effluent Wet Filter (when empty)		No
WWTP – 14	Ultraviolet Disinfection Channel (when empty)		No
WWTP – 15	Ultraviolet Disinfection Step Aeration (when empty)	A; E	Yes
WWTP – 16	Septage Wet Will (when empty)	A; E	Yes
WWTP – 17	Lime Storage Tank (when empty)	A; E	Yes
WWTP – 18	Day Lime Storage Tank (when empty)	A; E	Yes
WWTP – 19	Thickeners (when empty)		No
WWTP – 20	All plant sewer manholes	A; E	Yes
WWTP – 21	Return Activated Sludge (RAS) Building – lower level under grating for motor repairs & maintenance		No

Types of Hazards:

A = Atmospheric

E = Engulfment

C = Configuration that could trap

O = Other (such as electrical, moving parts such as augers)

NOTE: Non-permit required confined spaces and other spaces not designated as confined spaces may contain hazards that are to be recognized and protection provided for with personal protective equipment (PPE); follow all other standards and operating procedures/policies.

## Water Treatment Plant

<b>ID Number</b>	<b>Location</b>	<b>Hazard(s)</b>	<b>Permit – Required</b>
WTP - 01	Clear well: 2 million-gallon storage tank (when empty)	A; E	Yes
WTP - 02	Vault beside clear well with pumps	A	Yes
WTP - 03	Sedimentation basins: larger part of the treatment train		No
WTP - 04	Flocculator: a ladder is required to access		No
WTP - 05	Filters		No
WTP - 06	Vault: Flow meter vault #1		No
WTP - 07	Vault: Future flow meter vault #2		No
WTP - 08	Vault: Flow meter #3 (raw water)		No
WTP - 09	Vault: Surge valve vault	A	Yes
WTP - 10	Vault: Rapid mix chemical vault	A	Yes
WTP - 11	Vaults: In the finish water pump station		No
WTP - 12	Vaults: Beside the flash mixers		No
WTP - 13	Wastewater clarifiers	A	Yes
WTP - 14	Coagulant day tank (when empty)	A; E	Yes
WTP - 15	Caustic day tank (when empty)	A; E	Yes
WTP - 16	Phosphate tank (when empty)	A; E	Yes
WTP - 17	Chemical feed line (when empty)	A; E	Yes
WTP - 18	Sludge transfer building		No
WTP - 19	Finish water pump house		No
WTP - 20	Wet well in finish water pump house		No
WTP - 21	Bicarbonate feed pump	A	Yes
WTP - 22	Bulk chemical building: 6,000-gallon coagulant tanks (when empty)	A	Yes
WTP - 23	Bulk chemical building: 12,000-gallon Caustic (sodium hydroxide) tanks (when empty)	A; E	Yes
WTP - 24	Bulk chemical building: 48,000 lb. sodium bicarbonate tank (when empty)	A; E	Yes
WTP - 25	Bulk chemical building: 6,000-gallon fluoride tank (when empty)	A; E	Yes
WTP - 26	Bulk chemical building: Mixing tank (when empty)	A; E	Yes
WTP - 27	Wastewater flow meter vault (outside fence line)	A	Yes
WTP - 28	Ewart Hills: 5 million-gallon storage basin (when empty)	A	Yes
	All plant manholes	A	Yes
	Ewart Hills: manhole	A	Yes
	Ewart Hills: underground vaults		No

### Types of Hazards:

A = Atmospheric

E = Engulfment

C = Configuration that could trap

O = Other (such as electrical, moving parts such as augers, etc.)

NOTE: Non-permit required confined spaces and other spaces not designated as confined spaces may contain hazards that are to be recognized and protection provided for with personal protective equipment (PPE); follow all other standards and operating procedures/policies.

**Public Works**

<b>ID Number</b>	<b>Location</b>	<b>Hazard(s)</b>	<b>Permit – Required</b>
PW - 01	Patton Pool: Sand filter		Yes
PW - 02	Patton Pool: Plumbing chase for shower house		No
PW - 03	Patton Pool: Plumbing chase for outside restrooms		No
PW - 04	Patton Pool: Concession stand attic		No
PW - 05	Patton Pool: Maintenance shop attic		No
PW - 06	Train Depot: Attic HVAC equipment		No
PW - 07	Patton Park Building: Attic HVAC equipment		No
PW - 08	City Hall: Spring head pits		No
PW - 09	City Hall: Air handler on roof		No
PW - 10	Main Street Fountain: pump pit		No
PW - 11	Fire Station #1: HVAC equipment		No
PW - 12	Fire Station #2: HVAC equipment		No
PW - 13	Fleet: Wash bay pit		No
PW - 14	Sullivan Park: Restroom attic		No
PW - 15	Whitmire Building: Attic		No
PW - 16	City Operations: Attic		No
PW - 17			
	Street Sweeper Hopper		No
	Leaf Machine Hopper		No
	Back of Sanitation Truck		No
	Catch Basins		Yes
	Storm Drain Lines		No

Types of Hazards:

A = Atmospheric

E = Engulfment

C = Configuration that could trap

O = Other (such as electrical, moving parts such as augers, etc.)

NOTE: Non-permit required confined spaces and other spaces not designated as confined spaces may contain hazards that are to be recognized and protection provided for with personal protective equipment (PPE); follow all other standards and operating procedures/policies.

**Distribution System / Sewer Pumping Stations**

<b>ID Number</b>	<b>Location</b>	<b>Hazard(s)</b>	<b>Permit – Required</b>
WS - 01	3106 Spartanburg Highway (GE)		Yes
WS - 03	306 Lawn Lane (Garden Lane)		Yes
WS - 08	649 Browning Avenue (Browning)		Yes
WS - 010	238 Mitchell Drive (Outback Steakhouse)		Yes
WS - 011	82 York Ridge land (Bonclarken)		Yes
WS - 012	35 Highland lake Drive, (Highland Lake)		Yes
WS - 014	228 Williams Meadows Loop (Dunroy)		Yes
WS - 015	34 Bay Willow court (Carriage Park – Grapevine)		Yes
WS - 016	477 Winding Meadow Drive (Kenmure)		Yes
WS - 017	1841 Little River Road (Carl Sandburg)		Yes
WS - 018	514 Candlewood Lane (Kenmure-Brookwood)		Yes
WS - 019	268 Highland Golf Drive (Highland Lake Golf Villas)		Yes
WS - 020	37 Lodge Drive (Carriage Road – Leverrette)		Yes
WS - 023	817 Ballenger Road (Lakewood RV)		Yes
WS - 024	204 Shaws Creek Farm Road (Shaws Creek Farm)		Yes
WS - 025	738 Ridge Road (Dana Elementary School)		Yes
WS - 026	735 N. Clear Creek Road (Clear Creek Elementary)		Yes
WS - 028	1014 Airport Road (Eagle Point)		Yes
WS - 029	133 Preserve Court (Carriage Park – Preserve)		Yes
WS - 030	59 Barnsdale Lane (Carriage Park – Barnsdale)		Yes
WS - 031	434 Sumerfield Place (Orchards)		Yes
WS - 032	163 Deep Valley Lane (Carriage Park – Deep Valley)		Yes
WS - 033	108 Wood Owl Court (Carriage Park – Wood Owl)		Yes
WS - 034	2270 Sugarloaf Road (Sugarloaf Elementary)		Yes
WS - 035	180 High fields Road (Carriage Park – High Fields)		Yes
WS - 036	280 Carriage Crest Drive (Carriage Park – Crest)		Yes
WS - 037	512 Carriage Park Way (Carriage Park)		Yes
WS - 038	Carriage Park West Drive (Carriage Park West)		Yes
WS - 040	Old Kanuga Road (Atkinson Elementary)		Yes
WS - 041	234 Strick Garden Lane (Okalawaha)		Yes
WS - 042	632 Sugarloaf Road (Fire Station #2)		Yes
ID Number	Water Storage Tanks/Location		
301	Carriage Park-112 Ashefield Ct. Hendersonville, NC 28791		Yes
302	Champion Hills-33 Armour Court Hendersonville, NC 28791		Yes
303	Cummings Cove-3548 Cummings Cove Parkway Horse Shoe, NC 28742		Yes
304	Fletcher-21 Burney Mountain Rd. Fletcher, NC 28732		Yes
305	Haywood Knolls-529 Starmount Ln. Hendersonville, NC 28791		Yes
306	High Vista Falls Tank 1-1079 High Vista Dr. Mills River, NC 27859		Yes
	High Vista Falls Tank 2-1081 High Vista Dr. Mills River, NC 27859		Yes
307	Kenmure Double Tank 1-233 Greenleaf Dr. Flat Rock, NC 28731		Yes
	Kenmure Double Tank 2-235 Greenleaf Dr. Flat Rock, NC 28731		Yes
308	Kenmure (Pinnacle Mtn)-23 Argyle Lane, Flat Rock, NC 28731		Yes

309	Kenmure- 129 Poplar Loop, Flat Rock, NC 28731		Yes
310	Laurel Park Place -493 Laurel Park Place Laurel Park, NC 28739		Yes
311	Solomon Jones-360 Village Springs Ln. Hendersonville, NC 28739		Yes
312	Sugar Hollow-46 South Ridge Rd. Hendersonville, NC 28739		Yes
313	Dunroy-453 High Road Overlook Hendersonville, NC 28739		Yes
314	Etowah old / new-66 Vista View Ct. Etowah, NC 28729 / 445 Eade Rd		Yes
315	Ewart Hills Reservoir East-427 Armstrong Ave. Hendersonville, NC 28792		Yes
	Ewart Hills Reservoir West-429 Armstrong Ave. Hendersonville, NC 28792		Yes
316	Pinnacle Falls-4470 Pinnacle Mountain Rd. Zirconia, NC 28790		Yes
317	Cummings Cove-121 Sanctuary Trail Horse Shoe, NC 28742		Yes
318	Eastside-361 Bearwallow Mtn. Rd. Edneyville, NC 28729		Yes
319	Grand Highlands-69 N. Snow Ridge Dr. Gerton, NC 28735		Yes
320	Cobblestone-859 Pinnacle Mountain Rd. Flat Rock, NC 28731		Yes
321	Hebron Tanks 1 & 2-2201 Hebron Rd Laurel Park, NC 28739		Yes
322	Echo Mountain Tank-127 Royal Rd. Laurel Park, NC 28739		Yes
323	Apple Tanks 1 & 2-3422 Laurel Park Highway. Laurel Park, NC 28739		Yes
324	Sky Village Tank-3755 Laurel Park Highway. Laurel Park, NC 28739		Yes
325	Fleetwood Tanks 1 & 2-400/1600 Fleetwood Plaza Laurel Park, NC 28739		Yes

Manholes

Water Vaults

Vactor Truck

## CONFINED SPACE ENTRY PERMIT

*This form will be completed and kept at job site. After completion or stoppage of the job, the original will be retained by the supervisor for review up to one year.*

*In case of emergency, call 911 and tell them: your name, phone number, say CONFINED SPACE EMERGENCY, description of incident, and address or meeting point location, if hard to locate.*

Date & time issued:	Date & time expires:
Supervision in charge:	
Job address:	Cityworks Work Order #
Work to be performed:	

Hot Work Permit required? Yes \_\_\_\_\_ No \_\_\_\_\_  
 If yes, work to be done: Grinding \_\_\_\_\_ Cutting \_\_\_\_\_ Welding \_\_\_\_\_ Other \_\_\_\_\_

ENTRANTS	ATTENDANTS	RUNNERS

**AIR PUMP MUST SAMPLE AT EACH LEVEL FOR ONE MINUTE FOR EVERY TEN FEET OF HOSE**

Are the instruments used properly calibrated (bumped)? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Is oxygen at least 19.5% and less than 23.5%? Yes \_\_\_\_\_ No \_\_\_\_\_

If space is over ten feet deep, record levels at top, middle and bottom in each box. List initial and then the continuous monitoring results every 10 minutes.									
Time of test									
Oxygen (O <sub>2</sub> ) 19.5% - 23.5%									
Explosive (LEL) 10									
Carbon Monoxide (CO) 35									
Hydrogen Sulfide (H <sub>2</sub> S) 10									

Tester's signature \_\_\_\_\_

Will Entrant always be in Attendant's sight? Yes \_\_\_\_\_ No \_\_\_\_\_  
 If no, how will you communicate? \_\_\_\_\_

Isolation Required	Yes	No	N/A
Has the space been isolated from other systems?			
Has electrical equipment been locked out/tagged out?			
Have disconnects been used where possible?			
Is mechanical equipment blocked, chocked and/or disengaged?			
Have lines under pressure been blanked and bled?			

Ventilation Required	Yes	No	N/A
Will ventilation be natural ventilation only?			
Will ventilation be mechanical?			
Is air intake away from vehicles and free of combustible dusts, vapors and/toxic substances?			

Check/Inspect each item required for this job.					
Barricade/cones _____	Gloves, rubber _____	Safety glasses _____			
Ear Protection _____	GFI drop cord _____	Tripod _____			
Force ventilation _____	Harness/lifeline _____	Warning signs _____			
Gas monitor _____	Lighting _____	Water hose _____			
Gloves, work _____	Rubber boots _____	Winches _____			

I have reviewed the area and given the work crew instructions on how to do the job safety. All actions and conditions for safe entry have been performed.

\_\_\_\_\_  
 Supervisor in charge Date

**At the end of shift or job stoppage:**

Job completed Date \_\_\_\_\_ Time \_\_\_\_\_ Supervisor \_\_\_\_\_  
 Job not complete: Date \_\_\_\_\_ Time \_\_\_\_\_ Supervisor \_\_\_\_\_

Observations at job site needing repair. \_\_\_\_\_