

**The New Jersey Department of Environmental Protection
County Environmental and Waste Enforcement**

Sinkhole Guidance Document

(Revision Date: February 16, 2023)

PURPOSE

The Department of Environmental Protection's Bureau of Solid Waste Compliance and Enforcement (BSWC&E) has prepared this guidance document in order to serve the general public's periodic inquiries concerning sinkholes caused by the improper disposal of solid waste.

It should be understood that this document, and the function of BSWC&E as it relates to this matter, is limited to sinkholes that result from the improper deposition of solid waste at unlicensed or unapproved disposal sites. Quite often these solid waste sinkholes are found in or around residential communities that were built in the early to mid-1980's, at about the same time New Jersey experienced a dramatic rise in solid waste disposal costs.

HISTORY

In 1986, in an effort to conserve limited remaining landfill capacity, the then New Jersey Department of Environmental Protection (NJDEP) adopted regulations that permitted builders to deposit limited types and quantities of solid waste at construction sites. These regulations, which were set forth in the now amended N.J.A.C. 7:26-1.7(e), established certain limitations and restrictions including setbacks and buffer requirements that would minimize the potential for environmental impacts, including sinkhole problems. In addition, the on-site burial regulations required the developer to submit an engineering design for approval by the Department, obtain the appropriate municipal and county approvals, as well as establish an agreement with the local/county health department to assume responsibility for enforcement of the program. Few developers chose to pursue approval for on-site disposal under this program, perhaps due to the preconception that the approval process would be time-consuming and cumbersome.

Another option that was more widely used for on-site burial during the 1980's was the clean fill program. In order to maximize the recycling of certain demolition materials, which would otherwise end up in sanitary landfills, the Department allowed for the limited use of certain inert, uncontaminated, innocuous waste materials such as brick and concrete. This material would be used as "clean fill", supplementing or replacing more common products such as earth or crushed stone, typically used at construction sites. Under this program, interested parties would apply to the Department on a case-by-case

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basis, providing a narrative description of the intended activities including: type of material, address of fill site, dimensions, final land use, and schedule of activities. Although numerous clean fill approvals were granted, no sinkhole problems related to this activity have been reported to the Department as of the time of this writing.

The solid waste sinkhole problems that are reported to the Department generally are the result of the decomposition and settlement of improperly deposited waste materials and the subsequent subsidence of the ground surface.

ACTION

In the event of a sinkhole incident, the following course of action should be considered:

A. Secure The Area:

As evidenced by the April, 1993 tragedy in North Brunswick involving a seven year old boy, sinkholes can create dangerous conditions that are a direct threat to the safety of those living in the affected areas. The use of fencing or other suitable blockade should be used to prevent access to the area by children or other unsuspecting individuals.

B. Contact Appropriate Officials:

Report the suspected sinkhole to the local (or county, as the case may be) health department. This agency has the authority to enforce the Department's Solid Waste Regulations (N.J.A.C. 7:26-1 et. seq.) should the need for enforcement action be established. Also, this agency has the advantage of proximity to the location of the incident as well as potential knowledge of the site's history. BSWC&E stands prepared to assist local/county health departments with technical and/or regulatory matters as needed.

Report the incident to NJDEP by calling the NJDEP 24-hour Action Hotline at 1-877-WARNDEP (1-877-927-6337). This will establish a permanent record of the incident in the event future assistance is required. This also provides the Department an opportunity to ascertain whether or not appropriate approvals were granted to the site in question. Be sure to obtain from the investigator logging the complaint the incident identification number. This number can be used for future reference. Additionally, through this reporting/recording system, the Department is better equipped to monitor the magnitude of the sinkhole problem from a statewide perspective.

Contact the municipal engineer's office. This office may be able to provide important historical information concerning the previous use of the property, any permits or approvals issued, and any oversight or inspections conducted over the

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years. Furthermore, this office may be able to provide the technical assistance necessary to determine the cause of the sinkhole; i.e., solid waste burial, underground stream, broken water main, etc. In addition, you may solicit their assistance with the preparation of remedial work activities. If this assistance is not available through your municipal engineer's office, you may consider hiring a Civil Engineer or Geotechnical Consultant.

To determine if the observed ground subsidence could be caused by geologic factors or abandoned mine shafts, contact the New Jersey Geological and Water Survey (609) 292-1185. The Survey provides assistance to the public in areas requiring expertise in the fields of geology, hydrology, geophysics, and topography. Limited assistance is available free of charge. In some cases, a field visit to inspect the subsidence will be made. Extensive commitments of personnel and equipment may require reimbursement.

Historical aerial photography maps may prove helpful in determining the year in which the filling activities occurred. These are available through NJ-GeoWeb, an on-line graphical tool which displays spatial data. This tool is available at nj.gov/dep/gis/geoweb splash.htm.

C. Site Investigation Requirements:

Preliminary site investigations conducted to determine the type of sinkhole, presence and location of buried materials, and to some degree, type of materials present, may often be conducted in a non-intrusive manner. Equipment and techniques available include: electrical resistivity, electromagnetics, gravity meter, and ground penetrating radar (GPR), to name a few. These techniques do not require the disturbance of subsurface materials.

If buried solid waste is suspected to be the cause of the sinkhole, it then becomes necessary to physically disrupt the subsurface materials. Investigations of waste sites involving soil borings or test pits normally require the issuance of a "disruption approval" by the Solid and Hazardous Waste Management Program (SHWMP), Bureau of Landfill and Hazardous Waste Permitting (BL&HWP). To expedite this review process, the SHWMP has developed a streamlined application, review, approval and notification process. Before disrupting any previously deposited solid waste, you must contact BL&HWP at 609-984-6985 to obtain a disruption approval application. A review fee based on the complexity of the application will be assessed.

D. Corrective Action Options:

Corrective actions for sinkhole problems include:

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- 1) Excavate the site to remove the buried materials and transport those materials to a landfill or recycling center depending on the nature of the material removed. The site is to be restored with clean soil.
- 2) Process the debris, if appropriate, for use on-site as mulch, wood chips, aggregate, etc.
- 3) Redeposit the waste in a designated area on-site under an approved closure plan. Contact the BL&HWP at the above phone number for more information regarding this option.
- 4) Allow the debris to remain in place under a controlled landfill closure scenario and restrict access to the affected area. Contact the BL&HWP at the above phone number for more information regarding this option.

The selected alternative will depend upon the nature of the buried debris and the specific site characteristics. The Department's jurisdiction over the site will continue with options three (3) and four (4) above. Also, in both cases, the property owner will be required to file a deed notice with the appropriate County Recording Office documenting the presence and location of buried solid waste.

E. Reimbursement for Site Abatement:

The ultimate responsibility rests with the property owner to ensure that his/her property does not pose an unreasonable threat to public health, safety or welfare.

To the extent possible, the property owner confronted with a sinkhole problem resulting from earlier illegal deposition of solid waste should thoroughly document all remedial activities conducted to restore the affected area. This may include the use of still photography, video camera, and maintenance of representative samples of solid waste taken from the disposal site. This information, when used in a court of law as part of a civil action to recover cleanup costs, may help to incriminate the party responsible for the original dumping activity.

It is suggested, however, that every effort be made to avoid unnecessary litigation by involving the suspected responsible party from the time the sinkhole is first discovered. In many cases, the responsible party will consent to conduct the remediation and restoration activities when confronted, in writing, with sound evidence that the sinkhole problem is related to his/her earlier wrongdoing. The appropriate statutes/regulations that should be referenced (upon verifying through NJDEP that necessary approvals were never obtained) include the following:

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N.J.S.A. 13:1E-9a:

All codes, rules and regulations adopted by the department related to solid waste collection and disposal shall have the force and effect of law. These codes, rules and regulations shall be observed throughout the State and shall be enforced by the department and by every local board of health, or county health department, as the case may be.

N.J.S.A. 13:1E-9f:

Any person who violates the provisions of P.L.1970, c. 39, or any code, rule or regulation adopted pursuant thereto shall be liable to a penalty of not more than \$50,000.00 per day, to be collected in a civil action commenced by a local board of health, a county health department, or the commissioner.

N.J.A.C. 7:26-1.4:

Defines a solid waste facility as any system, site, equipment or building which is utilized for the storage, collection, processing, transfer, transportation, separation, recycling, recovering or disposal of solid waste but shall not include a recycling center.

N.J.A.C. 7:26-2.13 (g) 1.iii:

Defines solid waste ID #13 as large items of waste material such as appliances, furniture, automobiles and vehicle parts and tires.

N.J.A.C. 7:26-2.13(g) 1.iv:

Defines solid waste ID 13C as Construction and Demolition waste: Waste building material and rubble resulting from construction, remodeling, repair, and demolition operations on houses, commercial buildings, pavements and other structures. The following materials may be found in construction and demolition waste: treated and untreated wood scrap; tree parts, tree stumps and brush; concrete, asphalt, bricks, blocks and other masonry; plaster and wallboard; roofing materials; corrugated cardboard and miscellaneous paper; ferrous and non-ferrous metal; non-asbestos building insulation; plastic scrap; dirt; carpets and padding; glass (window and door); and other miscellaneous materials; but shall not include other solid waste types.

N.J.A.C. 7:26-2.8 (f):

No person shall begin construction or operation of a solid waste facility without obtaining a SWF Permit unless exempt pursuant to N.J.A.C. 7:26-1.1, 1.7, or 1.8.

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N.J.A.C. 7:26-1.7 (e): *[This rule allowing for on-site disposal has since sunset and has not been readopted by the Department.]*

Provides specific criteria for exempting on-site disposal of construction debris and vegetative waste removed in preparation for new construction provided that appropriate NJDEPE approval is granted prior to disposal.

The Solid Waste Management Act (N.J.S.A. 13:1E) was adopted by the Department of Environmental Protection in 1970. The New Jersey Solid Waste Regulations (N.J.A.C. 7:26-1 et. seq.) were adopted by the Department in 1974. Prior to this time, Chapter VIII of the State Sanitary Code provided the following:

Dumps are hereby declared to be nuisances hazardous to human health.

Beginning July 1, 1958, disposal of organic and/or combustible matter or other forms of solid waste on lands in this State shall be made only through use of sanitary landfills, incinerators or other methods of disposal as may be approved by the State Department of Health.

As indicated earlier in this document, should the local or county health department find it appropriate/necessary to take enforcement action against the suspected responsible party due to their lack of cooperation in remedying the problem, the Bureau of Solid Waste Compliance and Enforcement will provide guidance and enforcement assistance as needed.

Any further questions concerning solid waste sinkholes may be directed to Anthony Fontana, Bureau Chief of Solid Waste Compliance and Enforcement, 609-292-9880.

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