

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION**

UNITED STATES OF AMERICA, et al.,
Plaintiffs,

Case No. 1:02-cv-107

Barrett, J.
Litkovitz, M.J.

vs.

BOARD OF HAMILTON COUNTY
COMMISSIONERS, et al.,
Defendants.

**ORDER RE: REQUEST
FOR REVIEW BY
DG AND PG RENTAL
PROPERTIES, LLC, DANIEL R.
GERTZ & ASSOCIATES, INC.
D/B/A THE GERTZ CO., AND
BID AND WIN IT, LLC'S
REQUEST AND AMENDED
REQUEST FOR REVIEW
(DOCS. 932 AND 1867)**

This matter is before the Court on the Request for Review of the denial of a Sewer Back Up (“SBU”) claim by DG and PG Rental Properties, LLC (“DG and PG”), Daniel R. Gertz & Associates, Inc. d/b/a The Gertz Co. (“Gertz Co.”), and Bid and Win It, LLC’s (“Bid and Win It”, and collectively, “Claimants”) Request for Review and Amended Request for Review (Docs. 932 and 1867), the Metropolitan Sewer District of Greater Cincinnati (“MSD”)’s Response to the Request for Review (Doc. 1866), the closing argument briefs of the parties (Docs. 2003 and 2004), and the parties’ briefs in response (Docs. 2022, 2023). The Court held an eleven-day evidentiary hearing on Claimants’ request for review.

Claimants’ request for review is filed under the Sewer Backup¹ program (formerly known as the Water-in-Basement [WIB] Claims Process Plan) (Doc. 131, Consent Decree,

¹The “Water-In-Basement” program has been renamed the “Sewer Backup” program to more accurately reflect MSD’s responsibility for sewage backups caused by inadequate capacity in MSD’s sewer system. *See* Doc. 452 at 4; Doc. 454 at 16.

Exhibit 8). The Plan states in relevant part:

Subject to the requirements of this Plan, occupants who incur damages as a result of the backup of wastewater into buildings due to inadequate capacity in MSD's Sewer System (both the combined and the sanitary portions) can recover those damages. This plan also provides a means for occupants to recover damages arising from backups that are the result of MSD's negligent maintenance, destruction, operation or upkeep of the Sewer System. The Claims Process is not intended to address water in buildings caused by overland flooding not emanating from MSD's Sewer System or caused by blockages in occupants' own lateral sewer lines.

(*Id.* at 1). Property owners who are dissatisfied with MSD's disposition of a claim under the SBU program may request review of the decision by the Magistrate Judge, whose decision is binding and not subject to any further judicial review. (Docs. 154, 190).

I. Background

Claimants owned the commercial property located at 2700 and 2760 Highland Avenue, Norwood, Ohio 45212 (the "Property" or the "Gertz Property").² The Property, while it has two street numbers, is a connected structure that fronts Highland Avenue. The Property was connected to MSD's Sanitary Sewer and the Norwood, Ohio Storm Sewer (the "Storm Sewer"). Claimants seek compensation for personal and real property loss sustained at the Property on August 28, 2016, due to an alleged public Sanitary Sewer backup. On October 25, 2016, Claimants filed an SBU claim with MSD. MSD denied the claim, finding the damage was not caused by a surcharge of the public Sanitary Sewer but rather by a surcharge of the Norwood Storm Sewer, potentially in combination with overland flooding and issues related to privately owned building sewers. (MSD Ex. 11). Claimants disagreed with MSD's decision and filed this appeal. (Doc. 932).

² DG and PG purchased the Property in November 2013, then sold the Property in August 2020.

II. Evidence

The Gertz Property

The 58,000-square-foot Gertz Property includes three levels, with the lowest, basement level below street grade. The Property housed Bid and Win It and The Gertz Company. Bid and Win It, which occupied 90% of the building space, utilized the space as an online distribution auction house, a retail warehouse and showroom, and office.

Claimants purchased the Property in 2013 and renovated the building. The renovations included re-routing the exterior downspouts to discharge into the main public Storm Sewer and to the street, the professional installation of new windows and doors, and laying new concrete at the exterior of the building, including ramps with a positive flow away from the buildings. (Doc 1962 at PAGEID 48729; Doc. 1963 at PAGEID 48811, 48833-34). Dan Gertz, a licensed plumber, testified that after he rehabbed the building, all of the building's external downspouts connected to the main Storm Sewer system. (Doc. 1964 at PAGEID 48922, 48927). Mr. Gertz further stated that the exterior of the building was consistently kept free of leaves and debris and maintained in good condition. (Doc. 1964 at PAGEID 48892).

The August 28, 2016 Rain Event

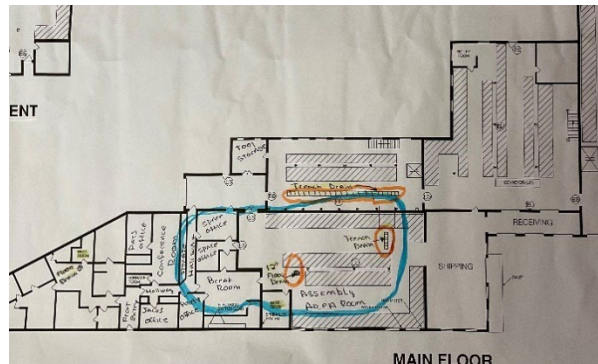
On August 28, 2016, the area in which the Gertz Property was situated experienced a major rain event from 5:00 p.m. to 9:30 p.m. (MSD Ex. 39 at 5). The area received approximately four to five inches of rainfall in a short period of time, with the peak rainfall occurring around 6:30 p.m. and rainfall ending around 8:00 p.m. (Doc. 1965 at PAGEID 49160; Doc. 1967 at PAGEID 49551; MSD Ex. 39 (identifying peak rainfall at 6:30 p.m. with peak flow between 6:45 to 7:30 p.m.); Doc. 1966 at PAGEID 49216). A 55-second video of the rain event

(“rainy day video”) filmed at 7:58 p.m. showed water ponding and flowing downstream on Highland Avenue in the vicinity of the Gertz Property. (Gertz Ex. 40).

Jody Beebe is the Operations Manager for Cohen Recycling, which is directly across Highland Avenue from the Gertz Property. On the day of the event, Mr. Beebe observed³ rainwater travel overland and down Highland Avenue “like a river” and enter the Cohen parking lot. (Doc. 1965 at PAGEID 49131).

Discovery Of Flooding And Observations

The day after the August 28, 2016 rain event, Mr. Gertz went to the Property. He smelled an odor of feces and observed remnants of toilet paper around a floor drain in the first floor assembly room. (Doc. 1964 at PAGEID 49005). Mr. Gertz observed water on the first floor in the area outlined by blue:



He did not observe water on the first floor outside that area. The area that Mr. Gertz circled to show water infiltration on the first floor encompassed the trench drains (circled in orange). The area did not encompass the restroom floor drain on the West side of the building (highlighted in yellow). (Doc. 1963 at 48835; Gertz Ex. 2A).

³ Cohen Recycling had cameras filming the interior and exterior of the Cohen Property, and Mr. Beebe viewed the live feed from those cameras on his laptop at home.

On August 30, 2016, Peggy Gertz went to the Property for the first time after the rain event. When she entered the building, she smelled an odor of raw sewage. The floor was damp in certain areas, and she observed toilet paper residue and raw sewage residue around the legs of the baby cribs and other furniture items in the basement. The sanitary floor drain in the basement was located closest to Highland Avenue, where the baby cribs and changers were located. Mrs. Gertz also observed toilet paper residue on the main floor of the building near the kitchen and bathroom areas.

Following the flooding, some 2,800 photographs were taken of the Property. Mrs. Gertz took some of the photographs a few days after the event, and ServPro⁴ staff took the rest 24 or more days after the incident. (Doc 1962 at PAGEID 48731-32). According to Claimants, many of the photos depict toilet paper residue or remnants on furniture and other items.

Gary Gochoel was the president of an electrical contracting company located at 2764 Highland Avenue, two doors downstream of the Gertz Property. He visited the Gertz Property two days after the rain event. In the basement, he smelled a slight, damp odor of sewage or wet cardboard. He observed a water ring around the room and estimated the water rose eight to ten inches above the basement floor. He observed mud and dirt on the floor and what he described as small pieces of toilet paper stuck on some furniture legs, the walls, and the floor and near the floor drain. Mr. Gochoel did not notice an odor on the first floor of the Property. He observed mud or dirt on the first floor of the Property but not toilet paper. (Doc. 1965 at PAGEID 49151-54).

Dr. John Barton, Ph.D., P.E., is Principal Engineer in MSD's Flow Monitoring Program

⁴ As explained below, ServPro is an MSD contractor who was hired to clean the Property.

Management department. Dr. Barton testified that the white dots and residue lines depicted in the photos he reviewed are consistent with the hundreds of pictures of Styrofoam in the basement. Photographs depict materials onsite that included packing material, Styrofoam, cardboard, or paper that were soaked and damaged by the flooding.

Mike Pittinger was MSD's former Wastewater Collection Superintendent. He is a professional engineer and expert in the civil engineering field of public sewer and backup investigations. Mr. Pittinger testified that Storm Sewers take in overland flooding, which includes debris from roadways, garbage, paper products, chemicals, and grit. (Doc. 1962 at PAGEID 48713). At the time the photographs were taken, cleaning was in progress, items were moved, and drywall was being cut. (*Id.* at PAGEID 48738, 48732).

Cleaning Of The Property By ServPro⁵

ServPro is a restoration company for residential and commercial properties and an MSD contractor. Its restoration work includes remediation for sewer losses. Derek Gilbert, a ServPro employee, testified that he cleaned over 200 homes in Cincinnati, including the Gertz Property, over a two week period after the August 2016 rain event. He observed excrement, toilet paper, and feces on the floor of the Property, especially near the furthest part of the first floor of the building. According to him, the basement flooding reached almost one foot high in some places. He did not test either the water or the debris he saw on the property. (Doc. 1965 at PAGEID 49142-50).

⁵ Under the Consent Decree that governs the Court's review of SBU appeals, "MSD's provision of cleanup services under this program does not constitute an admission of any liability by MSD with regard to any claims that the occupant may have against MSD for real or personal property damage caused by the building backup." (Doc. 131, Ex. 7 at 4). MSD will provide cleanup services when doubt exists about the cause of the backup after an initial investigation based on the health risks posed by floods and water damage. (Doc. 640, Ex. B). Therefore, the fact that MSD provided this cleaning service to the Property and paid for such service is not an admission of liability by MSD.

Mr. Pittinger testified that MSD does not ask its cleaning contractors determine the cause of any backup. Rather, they “are instructed very, very specifically they are not to try and categorize, form opinions or pass those [opinions] onto the customer.” (Doc. 1962 at PAGIED 48707).

Configuration of MSD Sanitary Sewer, Connections, and Building Laterals

The Gertz Property is serviced by an 8-inch Sanitary Sewer, which is maintained by MSD. The first floor of the Property has three building laterals that connected to the Sanitary Sewer. (Doc. 1967 at PAGEID 49363). The Property’s basement contains nine floor drains, eight of which were incorrectly connected to the Norwood Storm Sewer. Only one of the nine basement floor drains connected to MSD’s Sanitary Sewer. (Doc. 1961 at 48609-10; Doc. 1963 at PAGEID 48834). The Property’s first floor contained active trench and floor drains. (Doc. 1965 at PAGEID 49121-22).

The Property is located near the head-end of the Sanitary Sewer, which is 162 feet upstream from the Property on Highland Avenue. (Doc. 1961 at PAGEID 48610).



Only one building, a woodworking shop, connects to MSD's Sanitary Sewer upstream of the Property lateral connections. (Doc. 1961 at PAGEID 48542; Doc. 1961 at PAGEID 48610).

Cohen Recycling ("Cohen") sits directly across Highland Avenue from the Gertz Property and connects to MSD's Sanitary Sewer by a single lateral. The Cohen lateral is upstream of one of the Gertz first floor laterals. The Cohen property's first floor bathrooms properly connected to the Cohen lateral. However, the Cohen storm water catch basins improperly connected to the Cohen lateral, which connected to MSD's Sanitary Sewer. (Doc. 1967 at PAGEID 49365; Doc. 1961 at PAGEID 48544).

MSD attempted to trace the exact path between the catch basin pipes and the Cohen lateral using an underground camera and above ground tracking instrument, but a large steel scrap pile on the Cohen property prevented MSD from successfully tracing the path. (Doc. 1961 at 48559; Doc. 1962 at PAGEID 48700). Thus, there is no evidence of the exact configuration of the connection between the Cohen catch basin pipes and the Cohen lateral. MSD diagrammed the approximate location of the connection between the catch basin pipes and the Cohen lateral using blue dashed lines. The blue lines were intended to show connectivity of the catch basins to the lateral and not the actual physical location. (Doc. 1962 at PAGEID 48700).



(MSD Ex. 9). Mr. Pittinger testified that there must have been some bends and connections from the catch basins to the lateral because “you have multiple inlets that tie into a single point of connection, which inherently means that there are junctions and connections and bends.” (Doc. 1962 at PAGEID 48699-700).

MSD Field Investigations

Claimants contacted MSD on September 12, 2016 to report Property flooding from the August 28, 2016 rain event. (Doc. 1810, Exs. A, B, C). Due to the overwhelming number of calls for service that arose from this storm (over 2,000 reports), MSD prioritized responses to those properties actively experiencing backups. At the time Mr. Gertz reported the backup, a little less than two weeks after the storm, there was no active backup. MSD began its investigation in December 2016.

Technical Field Investigation No. 1

On December 12 and 14, 2016, Anthony Pangallo and Greg Rogers, MSD Senior Engineering Technicians, began MSD’s technical field investigations of the Property and the surrounding area. On December 12, MSD walked the site and took photographs of the interior and exterior of the building. Mr. Pangallo opened the covers of the Sanitary Sewer manholes to investigate their condition. He reported that “[t]he Sanitary mainline was free and clear of any debris and no sign of overload was evident in the manholes.” (MSD Ex. 3). Mr. Pangallo testified there was no evidence of surcharge in the manholes. He testified that evidence of surcharge would include “material, toilet paper, whatnot, either on steps or caught up somewhere in the chamber of the manhole.” (Doc. 1961 at PAGEID 48581). Mr. Pangallo explained that during a surcharge of a manhole, toilet paper and debris “gets caught up on the ladder steps . . .

or any sharp edges within the manhole.” (*Id.*). He testified, “You can usually see a line if a manhole has been surcharged, how high it came,” and he did not observe evidence of surcharge at any of the relevant manholes. (*Id.*).

Mr. Pangallo reported the existence of six 8-inch pipes entering at the bench wall from the South in Manholes 40514009, 40513002, 40513003 and 40513004. He stated that these pipes all contained debris; the pipes’ origins were not evident; they were possibly drain lines for telephone chambers located along the south side of Highland Avenue; and grade dictated that these lines could not be from any other structure on the South side of Highland Avenue. (MSD Ex. 3).

He also reported some trench drains in the rear of the Property appeared to be clogged. Mr. Pangallo reported that the three-level Gertz building has a set of stairs fronting Highland Avenue that sits below grade with a drain at the bottom of those stairs that “appeared to be clogged and full of debris.” (MSD Ex. 3). Mr. Pangallo identified MSD Exhibit 19 as showing a water line from high water on the front of the Gertz building, which Mr. Pangallo considered evidence of overland flooding. (Doc. 1961 at PAGEID 4850, 48542). The first field investigation report indicates that Claimants told MSD that “water cam[e] up through the floors drains for the entire length of the building” at a depth of six to seven inches. (MSD Ex. 3 at 1, 2).

Technical Field Investigation No.1 concludes that following Mr. Pangallo’s above ground visual inspections of the Gertz property and surrounding locations and his review of MSD sewer records:

Chances of a mainline overload of this sanitary sewer are very slight due to the fact that this appears to be a closed system with no visible storm sewer connections.

The only infiltration would be very little from the manhole [ventilation holes in the] lids.

Due to the orientation of the building floor in relationship to the street, a more likely scenario is that overland flooding breeched the curb line of Highland Ave. and entered the building through the doors located below street level.

(MSD Ex. 3).

Mr. Gertz testified that he and Mrs. Gertz showed Mr. Pangallo the locations where toilet paper backed up into the building. (Doc. 1965 at PAGEID 49125). There is no mention of toilet paper or fecal residue in any report prepared by Mr. Pangallo.

Technical Field Investigation No. 2

MSD returned to the Property on January 24 through January 26, 2017, to inspect and video the Sanitary and Storm Sewer lines. (Doc. 1961 at PAGEID 48542; MSD Ex. 5). MSD ran a camera in the Sanitary Sewer segments from the head-end of the Sanitary Sewer at manhole (MH) 40514012 to MH 40513005 to review the condition of the pipe. (Doc. 1961 at 48542; Gertz Exs. 25-30, TV Inspection Reports of Sanitary Sewer Segments). From this inspection, Mr. Pangallo concluded there were no structural issues in the Sanitary Sewer mainline that may have caused a backup at the Property. (*Id.*).

Technical Field Investigation No. 3

On February 10, 2017, MSD conducted dye testing of culverts and inlets located on the exterior of the Gertz Property and the Cohen property. (MSD Ex. 6, MSD Technical Field Investigation No. 3). The culvert above the north side of the railroad tracks, which collected drainage from the hill above the Gertz Property, has an outlet that discharges below the railroad tracks and flows toward the trench drains in the rear parking area of the Property. (Doc. 1961 at PAGEID 48543-44; MSD Ex. 18, MSD_GERTZ 00021, 00024-25). That culvert collected

overland flow from over 24 acres on the hillside. (Doc. 1961 at PAGEID 48544). MSD conducted a dye test behind the Gertz building on the outside catch basin drain in the new concrete, which showed a connection to the downstream Storm Sewer. (*Id.*).

Two Cohen catch basins were designed to collect storm water from the Cohen property and deposit that water in the Norwood Storm Sewer. Dye testing showed an improper connection of the Cohen catch basin pipes to the Cohen lateral and ultimately to MSD's Sanitary Sewer. (*Id.*).

Technical Field Investigation No. 4

On February 14, 2017, the MSD crew investigated the floor drains in the lowest, basement level of the Gertz Property. (Doc. 1961 at PAGEID 48545; MSD Ex. 7, MSD Technical Field Investigation Report No. 4). MSD's dye tests revealed that eight of the nine floor drains in the Property's basement tied into the Norwood Storm Sewer. One of the nine floor drains connected to the Sanitary Sewer. (Doc. 1961 at PAGEID 48545). The crew also dye tested a floor drain on the first floor, but the dye from this test did not show up in either the Sanitary or Storm Sewer. (MSD Ex. 7 at Doc. 1866-7 at PAGEID 44645). Mr. Pangallo concluded that the eight storm drains in the basement were significant because "if that storm sewer surcharged, that's an easy way [for water] to get into the building." (*Id.*).

Technical Field Investigation No. 5

On February 24, 2017, MSD conducted its final technical field investigation. (Doc. 1961 at PAGEID 48546; MSD Ex. 8, MSD Technical Field Investigation Report No. 5). Dye from testing two first floor interior floor drains showed in the Sanitary Sewer. With respect to the pipes Mr. Pangallo identified as entering Manholes 40514009, 40513002, 40513003 and

40513004 from the South, Mr. Pangallo testified that most of them were “capped” or “bulkheaded,” meaning there was no sanitary or storm water flow from those lines entering the MSD Sanitary Sewer. (Doc. 1961 at PAGEID 48546). Mr. Pangallo reported that “[t]he Flush Vac truck began flushing the unknown 8" pipes from the south in the 4 manholes. The Flush Vac truck hit hard in 3 of the four manholes at about 17 feet and about 2' in the western most manhole.” (MSD Ex. 8). In response to a question by the Court, Mr. Pangallo clarified that these laterals “were capped at the curb line of the street, so they weren’t in use. They had physical caps on the end of them.” (Doc. 1961 at PAGEID 48553). MSD discovered two building laterals upstream of the Gertz Property. One lateral was at the site of a demolished house and had no flow into the Sanitary Sewer. The other lateral connected to a commercial woodworking shop and actively allowed flow into the Sanitary Sewer. (Doc. 1961 at PAGEID 48546). MSD conducted an additional dye test in an outside roof drain stack which flowed into the Norwood Storm Sewer. (MSD Ex. 8). Mr. Pangallo reported that “[t]he crew ran out of time to launch the 8" pipes in the manholes but will return at a later date to complete this work.” (MSD Ex. 8).

Executive Summary of Technical Field Investigations

Mr. Pangallo prepared an Executive Summary, which included all five Technical Field Investigation Reports, photographs of the Gertz Property and surrounding area, a sewer line map, and a topographical map. (Doc. 1961 at PAGEID 48546-47; MSD Ex. 9). The report states:

WWC crews performed TV inspections on 5 sanitary sewer mainlines and 8 City of Norwood storm sewer lines, as well as all connections to these lines. The results of these inspections showed that there are no storm sewer connections to the sanitary sewer system with the exception of the catch basins on the Cohen Steel property as previously noted. There are 6" pipes entering 4 of the sanitary manholes from the south at the bench wall, all of these pipes were found to be bulk headed

within the right of way. The TV review of these sanitary sewer segments revealed no evidence of a mainline overload.

The building located at 2700 Highland Ave. is situated at the upper most end of the sanitary sewer system in which it is served by. There are only 2 taps upstream of the building and one of them is currently not in service and the other is a woodworking business (TFI 5).

A review of the area downstream of 2700 Highland Ave. shows that there were no other SBU's reported along this sanitary sewer line from where it crosses the Norwood Lateral to the headend MH just to the west of 2700 Highland Ave.

(MSD Ex. 9, Doc. 1866-9 at PAGEID 44655).

Mr. Pangallo observed no structural issues in the videos he reviewed and nothing in the pipes that warranted repair. (Doc. 1961 at PAGEID 48578). Mr. Pangallo testified that if he observed structural issues, i.e., a collapsed pipe, MSD would make repairs by either digging up the street or by rehabilitating the pipe with a liner. (Doc. 1961 at PAGEID 48579). He indicated that it was not his job at MSD to analyze whether potential obstructions such as encrustations or rocks impacted the upstream or downstream flow within the Sanitary Sewer. (Doc. 1961 at PAGEID 48581).

Mr. Pittinger, MSD's former Wastewater Collection Superintendent, reviewed the information gathered in the technical field investigations, conducted his own site visit, reviewed the TV inspections of the Sanitary Sewer, and reviewed Dr. John Barton's analysis of the peak flow and peak capacity of the Norwood Storm Sewer to advise MSD in responding to the Claimants' SBU claim. Mr. Pittinger issued a report opining to a reasonable degree of engineering certainty that:

Based upon the proximity of the building at 2700 Highland Avenue to the "head-end", or beginning, of the MSD sanitary sewer system, the complete lack of sanitary flow in the MSD sanitary system due to the time of the storm event on a Sunday evening and the occupancy status of all attached buildings, the limited number and

limited probable volume of stormwater connections to the MSD sanitary sewer, and the overwhelming physical and hydraulic capacity information regarding the performance of the Norwood storm system, it is my professional opinion that the flooding at 2700 Highland Avenue on 8-28-2016 was unrelated to the MSD sanitary sewer system, and likely caused exclusively by a backup of the Norwood storm sewer system through improperly connected basement floor drains in combination with overland stormwater flow entering various building openings.

(MSD Ex. 13, Doc. 1866-13 at PAGEID 44702). Mr. Pittinger found it significant that eight of the nine sewers in that basement area connected to the Storm Sewer and only one connected to the Sanitary Sewer. (Doc. 1962 at PAGEID 48694). He also concluded that there were no significant defects, such as a blockage or collapse, that would be severe enough to restrict the flow and cause a backup in the Sanitary Sewer. (*Id.*). Mr. Pittinger testified he was “a hundred percent confident that the storm sewer was surcharged completely.” (Doc. 1961 at PAGEID 48612). “The fact that eight of the nine drains in there were connected to the storm sewer, and frankly we know beyond any reasonable doubt that the storm sewer was pressurized and flowing under pressure, that means water was backing up out of those floor drains, I would say that with no hesitation.” (*Id.* at PAGEID 48610).

Mr. Pittinger testified that Storm Sewer inlets take in a lot of debris, grit, chemicals, and garbage, including paper products and dissolved paper or partially dissolved paper, from overland flooding in a roadway. (Doc. 1962 at PAGEID 48713). When asked whether he assumed the toilet paper found on the Gertz floor came through the Storm Sewer, Mr. Pittinger testified, “I did not examine whether what toilet paper was in there, I had no report so I can’t speak to that. I’m saying one possible explanation is if there was dissolved paper or partially dissolved paper, it absolutely still could come from the storm sewer.” (Doc. 1962 at PAGEID 48712). Mr. Pittinger indicated that if he was told of the alleged presence of fecal material and

toilet paper in the Gertz building, he would have questioned the cleaning contractor to learn the evidentiary basis for the contractor's conclusion. Mr. Pittinger testified that based on his past experience, cleaning contractors can misidentify their observations of fecal matter because "[t]he water that backs up from storm sewers in general can be very, very dirty." (*Id.* at 48698).

He also testified about signs of surcharging in a manhole:

Particularly in older sewer systems where the manholes are made of brick. And I think Mr. Pangallo talked about this. A lot of those they have old cast iron steps that were actually placed in the manhole originally to provide access. They're not really used anymore. Most of them are rusted off or gone. But all of those sharp edges on all that, those old protrusions, old cast iron that's left on there, if there is any sort of debris in there, it tends to stick on the stuff.

(*Id.*).

Dr. Kinman's technical investigation

Dr. Riley N. Kinman, Ph.D., is a Civil and Environmental Consultant with RNK Environmental, Inc. Mr. Gertz contacted Dr. Kinman in late May 2017. (Doc. 1967 at PAGEID 49331, 49335; MSD Ex. 37). According to Dr. Kinman, an important part of his investigation included visiting the site and surrounding areas to consider the topography, types of soil, runoff coefficients, and issues involved. He testified he spent over 200 hours on site and more than 40 hours reviewing the videos and technical reports from MSD. (Doc. 1971 at PAGEID 50072).

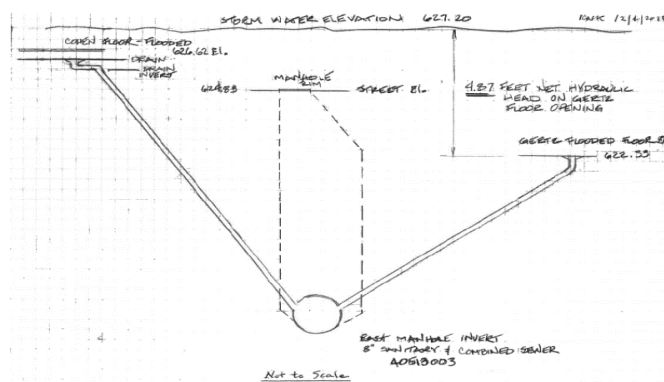
Dr. Kinman reported:

A field inspection of the Gertz building and ground indicated that the water did not enter the building from the front loading dock, the front doorways, or the rear driveway. There were no water marks as opposed to lawn-mowing marks to indicate that water reached the outside of the building from either side.

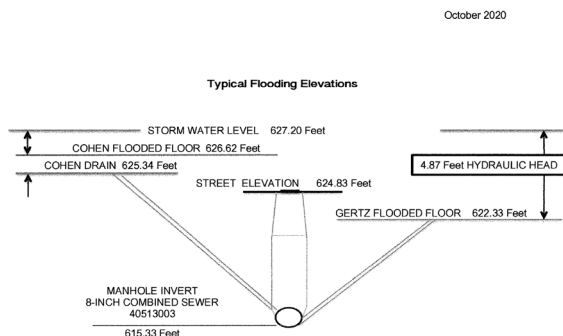
(Doc. 1967 at PAGEID 49469).

Dr. Kinman surveyed elevations and displayed those in relation to the Cohen property,

Highland Avenue, and the Gertz Property in his Original Report. (MSD Ex. 37; Doc. 1966 at PAGEID 49226). Dr. Kinman was advised the flood water rose to about seven inches in the Cohen building. (Doc. 1967 at PAGEID 49352). Dr. Kinman estimated the Cohen flood elevation at 627.2 feet by adding the Cohen floor elevation of 626.62 feet to the seven inches of flood water. (Doc. 1967 at PAGEID 49354). Dr. Kinman determined the street elevation at Manhole 40513003 to be 624.83 feet (less than three feet below the Cohen flood elevation) and the Gertz basement floor to be 622.33. Dr. Kinman depicted the relevant elevations as follows:



(MSD Ex. 37, Original Kinman Report, p. 37). Dr. Kinman’s first expert report depicted water elevation at 4.87 feet across the road to the Gertz building. In his modified report, Dr. Kinman revised his schematic of Typical Flooding Elevations, eliminating from his graphic the line indicating the storm water elevation over the Gertz property:



Dr. Kinman affirmed that “if the main sewer is blocked below where the Cohen lateral enters it, and it’s blocked on the other side of the Gertz lateral, the water from the Cohen catch basin is going to go down towards the Gertz building, because the Gertz building is lower.” (Doc. 1966 at PAGEID 49227).⁶ Dr. Kinman opined:

A major storm stalled out over Norwood, Ohio on August 28th, 2016, which included the watershed serviced by the 8-inch sanitary sewer in question. This sewer was converted to a combined storm and sanitary sewer by the connection of yard drains to the 8-inch sanitary sewer. The rainfall was 5 inches of rain in 40 to 60 minutes. This rain surcharged the sewers in the area and caused the 8-inch sanitary sewer that services 2700 Highland Avenue (the Gertz Building) to backup and contaminate a large quantity of merchandise at the Gertz building. . . .

(Gertz Ex. 9, Doc. 1867-2 at PAGEID 44776). Dr. Kinman stated that “[t]he connection of the two storm catch basins in the Cohen parking lot to the 8-inch sanitary sewer, converts it into a combined sewer.”⁷ (*Id.* at 44777).

The Gertz building’s first floor level sits at an elevation of at least 630.33 feet, at least eight feet higher than the basement floor. (Doc. 1967 at PAGEID 49362). The first floor elevation was, therefore, at least three feet higher than the 4.87 feet of hydraulic head that Dr. Kinman calculated. (*Id.* at PAGEID 49363). Accordingly, the three first floor laterals connected at least three feet above the 4.87 feet of hydraulic head estimated by Dr. Kinman. (*Id.*) Aside from the Cohen lateral, Dr. Kinman did not know of any other connections conveying storm

⁶ Dr. Kinman denied that his original graphic was “more accurate because it showed the storm water elevation that he calculated and based his opinion on hitting the Gertz building as overland flow.” (Doc. 1967 at PAGEID 49360-61). He explained that his first graphic was merely intended “to show the relative difference in elevation between the storm water elevation and the Gertz floor that was flooded.” (Doc. 1967 at PAGEID 49361).

⁷ Under the Consent Decree, a “Combined Sewer System” is defined as “the portion of the Defendants’ Sewer System *designed* to convey municipal sewage (domestic, commercial and industrial wastewaters) and stormwater runoff through a single-pipe system to the Defendants’ Wastewater Treatment Plants or Combined Sewer Overflow Outfalls.” (Doc. 131 at PAGEID 2635) (emphasis added). Contrary to Dr. Kinman’s opinion, a combined sewer does not include a Sanitary Sewer that has improper Storm Sewer connections.

water to the Sanitary Sewer.

Property History

The Gertz Property had no history of sewer backups or reports other than the report following the August 2016 rain event. (Doc. 1963 at PAGEID 48825; Doc. 1965 at PAGEID 49115-16). There have been no reports of sewer backups at the Gertz Property after the report of the August 2016 incident. (Doc. 1963 at PAGEID 48825).

Neighborhood Sewer Backup History

Mr. Gochoel's neighboring property did not experience a sewer backup on August 28, 2016. (Doc. 1965 at PAGEID 49153). Properties that were lower in elevation than the Gertz Property on the same sewer segment did not report Sanitary Sewer backups on or about August 28, 2016. (Doc. 1961 at PAGEID 48612; Doc. 1962 at PAGEID 48696).

Cohen Recycling did not report or experience a Sanitary Sewer backup on or about August 28, 2016 and had no history of any reported SBUs. (Doc. 1965 at PAGEID 49133, 41935; Doc. 1961 at PAGEID 48611). Mr. Pittinger testified, "We do know that we had no reports of backups from the Cohen facility through their sanitary line, which ultimately ties into the same [catch basin] pipe, which then ties into the sanitary sewer, which was another data point to recognize that even with the volume of water that was coming into those catch basins on the Cohen property, they did not seem to have a problem with the sanitary backup." (Doc. 1961 at PAGEID 48611). While the Cohen property first floor flooded, the basement portion of the building did not experience any flooding on August 28, 2016. (Doc. 1965 at PAGEID 49133).

The only manhole in the area that showed signs of surcharge was MH 42626009. This manhole was located 2,500 feet downstream from the Gertz Property. (Doc. 1966 at PAGEID

49235; Doc. 1967 at PAGEID 49496).

Overland Flooding

The location, terrain, and topography in the area made the Gertz Property susceptible to overland flooding. (Doc. 1967 at PAGEID 49380-81). Dr. Kinman opined that “the site setting, the topography and so forth, could lead to some overland flooding of the properties.” (*Id.* at PAGEID 49381). Dr. Kinman explained that topography controls the movement of the water in gravity flow in the sense that water is flowing from a point of higher elevation to a point of lower elevation. Due to the different elevations, Dr. Kinman opined that most of the surface storm water from the upstream hillside flowed into the Cohen yard and not down Highland Avenue. (Doc. 1966 at PAGEID 49214, 49217). Dr. Kinman explained that given the 7% slope of Beech Avenue—the road intersecting Highland Avenue to the North of the Gertz property—and the 14% slope of the driveway from the woodworking factory, the overland flooding from the hillside above the Gertz Property traveled down Highland Avenue, was hit by the water coming out of the woodworking shop, and diverted a major portion of the flow into the Cohen yard and away from the Gertz property. (Doc. 1966 at PAGEID 49217-19; Gertz Exs. 41-43).

Dr. Barton disagreed with Dr. Kinman’s conclusion that the area’s topography diverted the flow of water to the Cohen property such that the Gertz Property did not similarly experience the same amount of flooding. Dr. Barton explained that according to Dr. Kinman’s survey, the water level above the Sanitary Sewer manhole was two and one-half feet. Dr. Barton testified that given the relative elevations in front of the Gertz building of 625 feet and 626 feet, any flood level of 627.02 feet at the Cohen property and above the manhole would necessarily reach the Gertz Property. (*Id.* at PAGEID 49472-73). According to Dr. Barton, water at that level would

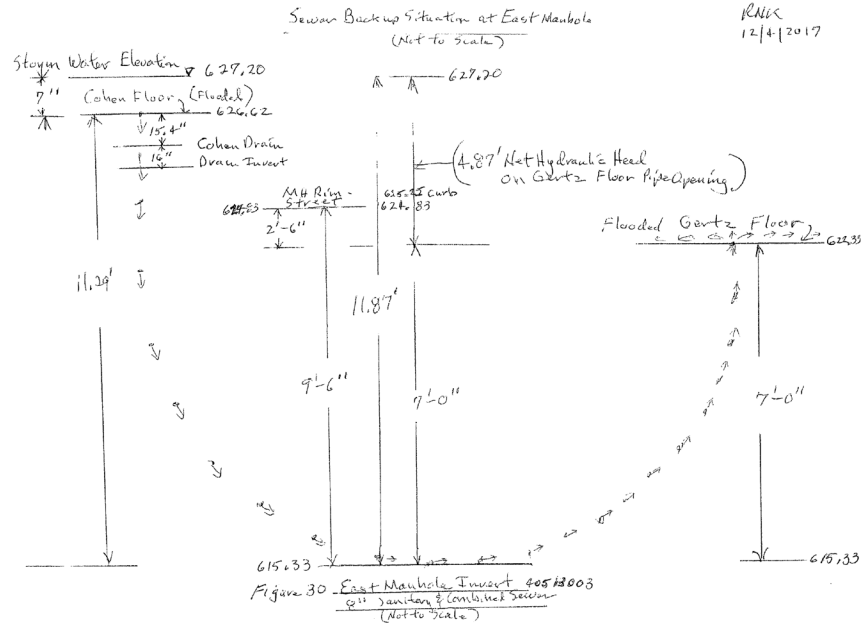
similarly reach two and one-half feet up the wall of the Gertz building, placing the water level near window level and filling the stairwell. (Doc. 1967 at PAGEID 49470-71).



Figure 3: Closer view of hydraulic elevations shown across Highland Avenue, stairwell labeled

(MSD Ex. 14, Fig. 3, street view of the Property and Highland Avenue, with Dr. Kinman's elevations noted).

Dr. Kinman disagreed. He testified there was no indication that water ever reached the Gertz building by overland flooding. (Doc. 1967 at PAGEID 49450). According to Dr. Kinman, any ponding of water over the Cohen catch basins would flow through the Cohen lateral, into the Sanitary Sewer, and then into the Gertz building through the building lateral rather than overland (*Id.* at PAGEID 49419-20), as depicted in this graphic by Dr. Kinman:



Dr. Kinman testified that based on the elevation of 627.20 feet surrounding the ponded water over the Cohen catch basins, any water that breached the perimeter of the pond would not cross the street into the Gertz Property stairwells. Rather, based on the relative elevations of the surrounding area, the water would travel East, parallel to the building and Highland Avenue to the lower elevations and re-enter the street below the Cohen Building. (Doc. 1967 at PAGEID at 49418-22; Doc. 1971 at PAGEID 50052-53). He testified that the rainy day video supported his conclusion that the overland “flow came down and entered Highland Avenue from behind the [Gertz] building and around and did not enter the building as any overland flow.” (Doc. 1971 at PAGEID 50072).

Mr. Gertz tested the water tightness of the exterior window and door wells in June 2017 and June 2020. (Doc. 1964 at PAGEID 48953). There was no video or documentation of the 2017 test. The video of the 2020 test showed minimal amounts of water entering the basement from the door. (Gertz Ex. 35). Similar testing of the back window well showed no water

leakage. (*Id.*). Mr. Gertz testified that dye testing of the drain at the bottom of window well in the back of the basement showed a connection to the Storm Sewer. (Doc. 1964 at PAGEID 48947).

Mr. Pangallo testified that he observed a water flood level mark on the front wall of the Gertz building when he did his technical field investigation. (MSD Ex. 19; Doc. 1961 at PAGEID 48542). Mr. Gertz and Dr. Kinman both identified the line as discharge from lawn mowing rather than a flood indicator. (Doc. 1964 at PAGEID 48937; Gertz Ex. 35 (lawn mowing video); Doc. 1966 at PAGEID 49222). Mr. Gertz pointed out that the mark does not appear above the concrete areas bordering the building. In other words, the mark exists only where grass is adjacent to the building. (Doc. 1964 at PAGEID 48943).

Norwood, Ohio Municipal Storm Sewer

The Gertz Property is serviced by a separate 15-inch Norwood Storm Sewer that discharges into a larger 30-inch Storm Sewer. (Doc. 1961 at PAGEID 48587; MSD Ex. 30). Dr. Barton analyzed whether the August 2016 rain event would have overloaded the Norwood Storm Sewer. (Doc. 1961 at PAGEID 48586). To do so, Dr. Barton determined (i) how much flow came to the Storm Sewer (peak flow) and (ii) the Storm Sewer capacity (peak hydraulic capacity). (*Id.*). Dr. Barton's initial expert report sets forth his analysis and opinions regarding the peak flow and peak hydraulic capacity of the Norwood Storm Sewer and the resulting hydraulic grade line (how high the water would surface in or above the Storm Sewer pipe). (Doc. 1961, at PAGEID 48588; MSD Ex. 12). Dr. Barton, who offered his opinions to a reasonable degree of engineering certainty, opined that the 15-inch and 30-inch storm sewers servicing the Property did not have adequate capacity to handle the August 28, 2016 storm. In

other words, the Norwood Storm Sewer could not convey the flow coming off of the hillside from the tributary area. (Doc. 1961 at PAGEID 48588). The hydraulic grade line (HGL) in front of the Gertz Property would have been higher than the surface of Highland Avenue, and the basement laterals which were connected to the Storm Sewer would have backed up and flooded the basement. (Doc. 1961 at PAGEID 48589).

Dr. Barton employed two scientific methods in his analysis. First, Dr. Barton's rational method analysis determined a peak flow of 12 cubic feet per second (CFS) by analyzing rainfall intensity from radar data, topography, slope, and acreage of the surrounding area to calculate the tributary area flowing to the Storm Sewer inlets serving the Gertz Property. (Doc. 1961 at PAGEID 48589-90; MSD Ex. 12). Dr. Barton initially analyzed the capacity of a 12-inch pipe serving the property that sits at a 12% slope, which was 3.8 cubic feet per second. (*Id.*). Dr. Barton subsequently learned that the pipe was actually 15 inches, adjusted his calculations accordingly, and came to the same conclusion: that flow coming from the tributary area of 20 acres (12 CFS) would have significantly exceeded the capacity of the Storm Sewer 15-inch pipe (4 CFS) servicing the inlets in front of the Property. (Doc. 1961 at PAGEID 48590, 48592). Dr. Barton also analyzed the 30-inch portion of the Norwood Storm Sewer based on an expanded tributary area, and concluded that the 30-inch pipe did not have capacity to handle the peak flow. (Doc. 1961 at PAGEID 48603).

Second, Dr. Barton's modeling team analyzed the capacity of the Storm Sewer to convey the flow by using the EPA-SWMM model. (Doc. 1961 at PAGEID 48590). Dr. Barton explained that the EPA-SWMM model is the industry standard for hydraulic modeling of sewer and storm pipes as it analyzes the entire rainfall event using rain gauge and radar data. (Doc.

1961 at PAGEID 48590-91, 48596). According to Dr. Barton, this second method of analysis confirmed that the flow coming from the hillside tributary area (19.6 CFS) far exceeded the Storm Sewer pipe capacity (6.6 CFS). (Doc. 1961 at PAGEID 48591-92; MSD Ex. 12 at 1). Dr. Barton concluded that the Storm Sewer lacked adequate capacity for the rainfall during the event. When a Storm Sewer does not have adequate capacity to convey water, the water will travel overland or surcharge back into a connection, like a floor drain. (*Id.* at PAGEID 48593). Dr. Barton concluded that the Norwood Storm Sewer was completely full and flowing under pressure, creating surface flooding on the road, resulting in water and muck pouring out of the eight basement floor drains in the Gertz property. (Doc. 1967 at PAGEID 49474-77).

Dr. Kinman also testified that the Norwood Storm Sewer filled and surcharged during the rain event. (Doc. 1966 at PAGEID 49237; Doc. 1967 at PAGEID 49394, Gertz Ex. 9, Modified Report of Dr. Kinman, at PAGEID 44813, “Storm water fills all storm sewers in Highland Avenue to street level by running fast (Runoff Coefficient 0.6 - 1.0) down Highland Ave.”). Dr. Kinman estimated that “five inches of rain dropped an estimated 17,526,843 gallons on the watershed surfaces in the 40-to-60 minute period per Norwood Officials” (Gertz Ex. 9; Doc. 1867-2 at PAGEID 44776), and a lot of that water went into the Storm Sewer. (Doc. 1967 at PAGEID 49351).

The rainy day video was consistent with the Storm Sewer becoming full and flooding. The video shows surface water covering and flowing down Highland Avenue. (Gertz Ex. 40).

Condition of Sanitary Sewer System in the Neighborhood

Inspection of the Relevant Manholes

In early December 2016, Mr. Pangallo pulled the relevant Sanitary Sewer manhole lids

and observed that the mainline was free and clear of any debris, and there were no signs of overload or surcharge in the manholes. He testified that surcharge evidence includes a water line within the chamber or toilet paper or other debris hanging from the ladder steps or on the walls of the manhole chamber. (MSD Ex. 3; Doc. 1961 at PAGEID 48581).

Dr. Kinman did not observe or record any signs of surcharge in the manholes adjacent to or immediately downstream from the Gertz Property's laterals. (Doc. 1967 at PAGEID 49398-99).⁸ Dr. Kinman photographed MH 40513003 (Gertz Ex. Figures 23 and 24), the manhole closest to the Gertz basement lateral. He testified that if he saw signs of surcharging it would have been significant, and he would have documented it. (Doc. 1967 at PAGEID 49399). When asked whether the lack of surcharge evidence in MH 40513002 and MH 40513003 was significant, Dr. Kinman responded, "The surcharge there could have been caused by groundwater, and in that sense that groundwater would be cleaner than the sanitary and also the surface storm water. So it would drain down and not really impact the manhole with any grease or anything like that." (Doc. 1967 at PAGEID 49407).

Dr. Barton testified there would have been clear signs of surcharge, such as debris in the manhole or a surcharge ring, in the Sanitary Sewer manholes adjacent to the Gertz Property had

⁸ Claimants allege that "the TFI Report No. 1 prepared by Mr. Pangallo indicates that the four 6-8 inch lines from the South unknown sources did contain debris in all four sanitary MH's, which is contrary to Mr. Pittinger finding that there was no evidence of overload or debris in the sanitary MH's." (Doc. 2004 at PAGEID 51375). This is a misreading of Mr. Pangallo's report, which states that the pipes, not the manhole walls, contained debris in them:

The Sanitary mainline was free and clear of any debris and no sign of overload was evident in the manholes. Manholes 40514009, 40513002, 40513003 and 40513004 all have 6-8" pipes entering at the bench wall from the south, these **pipes** all had debris and the origins of the pipes were not evident, they are possibly drain lines for telephone chambers located along the south side of Highland Ave. Grade dictates that these lines could not be from any other structure on the south side of Highland Ave.

(Doc. 1866-3 at PAGEID 44634) (emphasis added).

the Sanitary Sewer caused a backup into the Property. He also addressed the concept that there could be surcharge in the manhole without resulting debris:

[O]n the one side we have the Cohen property, and it's got a foot and-a-half of mud, dirt, debris that had to be cleared away with Bobcats. On the other side, we have the Gertz basement that -- if you look at the photograph, the floor is covered with mud and gravel and sand and a ring around all the furniture. So everything is covered with a layer of debris up to the depth of the water, everything except our manhole; no debris ring up at the manhole where it has to be, and it has to be up within a foot or two of the top.

So the concept that a sewer could surcharge and the water would be so clean, yet one side we have, you know, truckloads of muck [at the Cohen Basins], and on the other side we have a basement full of muck and dirt [the Property's basement]. And coming down the street, the video we saw for 45 seconds or whatever, it was dirty, brown, runoff water. Yet the one place it has to be for our sewer to have been the cause is in our sewer within the top three feet of the manhole, and it's not there.

(Doc. 1967 at PAGEID 49467-68).

Dr. Kinman noted and photographed signs of surcharge in MH 42616009, which was located 2,500 feet downstream from the Gertz Property. (Gertz Ex. 9, figures 25-27). He opined that a surcharge in MH 42616009 contributed to the Gertz Property backup:

A second problem location for this 8" diameter sewer occurs downstream. The 8" is enlarged to 12" sewer at one location. A second 12" diameter sewer is connected to it from Duramed Drive. At the connecting point, the two 12" diameter sewers are directed to a 10" diameter sewer for passage under 1-71. This is an attempt to direct 24" of flow through a 10" diameter pipe. It cannot not happen if both of the 12" pipes are flowing full. The sewer will back up and this sewer backed up at 2700 Highland Ave. This back up would be expected under these hydraulic conditions.

(Gertz Ex. 9, Figure 25; Doc. 1867-2 at PAGEID 44780). Figure 25 is a photograph MH 42616009, which is located on the 10-inch section of the Sanitary Sewer at the convergence of the two 12-inch diameter sewers. (Doc. 1966 at PAGEID 49235). Dr. Kinman noted "the grease and crud on the manhole and the manhole steps from a previous backup." (*Id.*).



Figure 25: Manhole on the 10" section of the 8" sewer where two 12" diameter sewers converge to feed the 10" under I-71. Note the grease and crud on the manhole and the manhole steps from a previous back-up. July 29th, 2017. RNK DG Kevin.

Dr. Kinman acknowledged that the surcharged Sanitary Sewer depicted in Figure 25 was 2,500 feet downstream from the Gertz lateral. He testified that he examined seven other manholes in the vicinity of MH 40513003 across from the Gertz lateral, but MH 42616009 (Figures 25-27) was the only one in which he observed grease and crud from a previous backup. (Doc. 1967 at PAGEID 49398). When asked whether each intervening manhole leading upstream to the Gertz lateral would overflow or provide a point of release for the surcharging manhole, Dr. Kinman responded "not necessarily" because of "a time factor here of 2500 feet" and other variables within the system. (Doc. 1966 at PAGEID 49235-36).

Dr. Barton agreed that MH 42616009 overflowed, but he testified it had no impact on the flow of sewer water along Highland Avenue and the Gertz Property. Dr. Barton opined:

The rim of the surcharging manhole at the bottom of a steep hill overflows at an elevation 43.98 feet lower than the invert of the sewer near the property. If all the pipes were relatively flat (which they are not), the tailwater could affect upstream depths of flow. However, in this case where pipes are very steep, therefore downstream tailwater does not affect upstream levels. Hydraulically we would say the steep pipes have supercritical flow. A Froude number greater than 1 indicates supercritical flow. In this case the Froude number varies in the range of 2-3 in the steeper sections of the pipe. Again simply put, tailwater cannot propagate upstream

in supercritical flow; it cannot propagate from the overflowing manhole back up the steep pipe.

(Doc. 1866-14 at PAGEID 44712). Dr. Barton explained that the Sanitary Sewer mainline slopes very steeply from the Gertz Property down to MH 42616009:

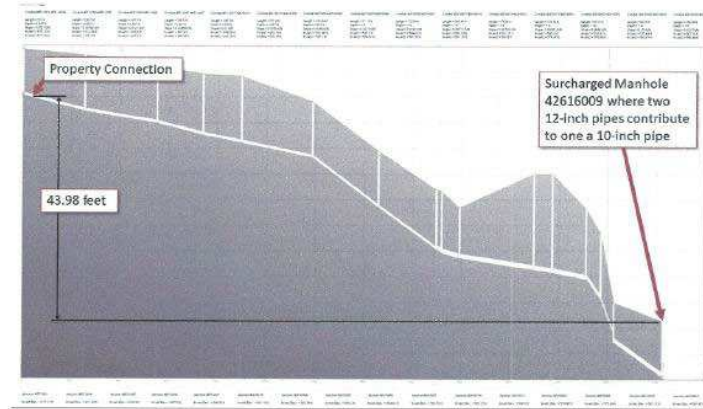


Figure 8: Hydraulic profile showing steep pipes on the hillsides upstream of manhole 42916009.

(MSD Ex. 14, Fig. 8; Doc. 1967 at PAGEID 49496). Dr. Barton noted that MH 42616009's rim elevation is 43.98 feet below the Gertz Property lateral connection and its invert is 55 feet below the Gertz Property connection. (*See also* Gertz Ex. 13). According to Dr. Barton, there would need to be at least 30 or 40 feet of surcharge above MH 42616009's rim to back up the Sanitary Sewer line enough to reach the Gertz Property. Dr. Barton testified that given the distance and relative elevations between the Gertz Property and MH 42616009 "[i]t is impossible for a surcharge at Manhole [42616]009 to have hydraulic impact on the sewer runs along Highland Avenue. It's too far down the hill." (Doc. 1967 at PAGEID 49498). According to Dr. Barton, the 14 manholes between MH 42616009 and the Gertz Property would release any flow of sewage before it could reach the Gertz lateral. (*Id.*). Dr. Barton concluded that "sewer surcharge reported down there [at MH 42616009] is irrelevant to what happened at the Gertz property." (*Id.* at PAGEID 49499).

The Condition of the 8-inch Sanitary Sewer Pipe

As discussed above in connection with Technical Field Investigation 2, on January 24 through January 26, 2017, MSD performed a TV camera video inspection of the Sanitary Sewer line from the head-end of the Sanitary Sewer at MH 40514012 to MH 40513005 to review the condition of the pipe. (Doc. 1961 at 48542; Gertz Exs. 25-30, TV Inspection Reports of Sanitary Sewer segments). MSD's TV Inspection Reports set forth the video's relevant findings, which are described as incidents or observations. (Gertz Exs. 25-30). The TV Inspection Reports reflect the sewer segment videoed; the direction (upstream/downstream); the length of the relevant segments; the weather conditions; conditions observed at a particular footage; and comments. The TV Inspection Report of Sanitary Sewer segment MH 40513003 to MH 40513002 indicates that MSD abandoned the survey at the 11:00 foot mark due to heavy deposits at this point. (Gertz Ex. 27: "Cleaning main line sewer segment 40513002-40513003 so that a main line TV inspection can be made." "Flushed main line. Small amount of debris brought back. Deposit cut main line using milling saw. Deposits attached at 240 feet upstream from downstream manhole 40513003. Needs to be deposit cut."). Following the deposit cut, MSD then reversed its inspection starting at MH 40513002, the upstream manhole, and proceeded downstream. (Gertz Ex. 28).

MSD's videos showed the presence of rocks, grease, "drippers," broken pipe, encrustations, ponding water, and deposits at various locations within the Sanitary Sewer segment. (Gertz Ex. 28, 29, 38). The video from MH 4051004 to MH 4051003 shows rocks and debris located upstream at 244.10 feet from MH 4051004. MH 405004 is downstream three to five feet below the Gertz basement lateral tap. MSD's commentary after completing the

inspection of this section of the Sanitary Sewer indicates there is heavy debris in this section and that it needs cleaning as soon as possible. (Doc. 1964 at PAGEID 49065-66; Gertz Ex. 29). The TV Inspection Reports and accompanying video descriptions for the segments show that MSD subsequently replaced several sections of Sanitary Sewer line due to conditions found in the videos. (Gertz Exs. 25-30).

Mr. Pangallo, who performed MSD's technical field investigations of the Property, testified he did not observe any structural issues with the pipe that might have caused a backup at the Property and nothing that warranted repair. (Doc. 1961 at 48542).

Mr. Pittinger also reviewed the segments of the six videos in Court. Mr. Pittinger testified, "So what we saw in the TV investigations I think probably pretty accurately represents the state of those sanitary sewers as they were in August of that year." (Doc. 1962 at PAGEID 48710). He identified within the pipes encrustations, water sags (standing water in a flat pipe), obstacles, capped taps, fine deposits, broken pipe, cracks, compacted deposits, possible toilet paper at 238.10 feet, rocks, manholes and manhole lids. (Doc. 1962 at PAGEID 48684-91). He testified that encrustations can form from mineral deposits, grease, and other things. (*Id.* at PAGEID 48679). The rocks encountered during the TV inspection were easily moved by the camera, and did not appear to restrict or affect the flow in the pipe. (*Id.* at PAGEID 48691). At that time, the maximum obstruction identified in the sanitary sewer was approximately 12%. (MSD Ex. 14, Figs. 9 and 10; Doc. 1967 at PAGEID 49502-03, describing the method and calculation of the 12 percent obstruction). This obstruction was located in the Sanitary Sewer between the Cohen catch basin taps and upstream of the Gertz Property basement lateral. The obstruction would have blocked only upstream flow and reduced the flow from the Cohen lateral

and through the Sanitary Sewer to the Gertz Property basement lateral.

Mr. Pittinger reviewed the videos to assess the current capacity of the Sanitary Sewer and to determine if there were “any significant blockages or breakages, anything that would really block it up.” (Doc. 1962 at PAGEID 48693). According to Mr. Pittinger, the field investigation reports revealed no significant defects, such as a blockage or collapse, that would severely restrict the flow and cause a backup in the main Sanitary Sewer serving the Gertz Property. (Doc. 1962 at PAGEID 48694). Mr. Pittinger testified that watching the video of the Sanitary Sewer line again confirmed his conclusion that there was no structural damage or other obstructions that would inhibit flow in the pipe. He stated that the debris and rocks within the pipe were transient and easily moved by the video camera, indicating they did not affect the flow in the pipe. (*Id.* at PAGEID 48707).⁹ When asked about the “large rock” on a segment of the

⁹The Gertz brief represents that “Mr. Pittinger identified Gertz Exhibit G-37 as being a screenshot of an incident at approximately 231 feet heading US from MH 4 to MH 3 *noting a 40% blockage* in the pipe.” (Doc. 2004 at PAGEID 51399) (emphasis added). This is not an accurate characterization of Mr. Pittinger’s testimony:

Q. And what is G-37?

A. It is a screenshot showing the incident 10 called out at approximately 231 feet heading upstream.

Q. And it shows a percentage of what?

A. Forty

Q. Forty, okay, we talked about that.

(Doc. 1962 at PAGEID 48691). Mr. Pittinger actually testified that he disagreed with the 40 percent characterization of the incident description depicted in Gertz Ex. 37:



(Doc. 1962 at PAGEID 48690):

TV video that was located “immediately downstream” of the Gertz lateral, Mr. Pittinger testified it would not cause him concern because in the video he observed “how easily it was moved by the camera. . . . The cameras have very limited power, so it [the rock] was not fixed. Any significant flow in that pipe would move that downstream with no effect on the flow.” (Doc. 1962 at PAGEID 48703-04).

Dr. Kinman also reviewed the TV videos of the relevant Sanitary Sewer lines. He opined, to a reasonable degree of scientific certainty, that the impaired condition of the public Sanitary Sewer pipe to which the Gertz lateral connected, combined with the heavy rain and the additional storm water from the Cohen catch basins, floor drains, and urinal, overloaded the Sanitary Sewer and changed the gravity flow within the Sanitary Sewer to pressure flow, causing the Sanitary Sewer to back up into the Gertz building.¹⁰

Dr. Kinman testified that the condition of the Sanitary Sewer pipe itself contributed to the backup of sewage into the Gertz building. According to Dr. Kinman, the Sanitary Sewer pipe

Mr. Pangallo was asked about this same reference to “Percentage:” in Gert Ex. 37. Mr. Pangallo did not know what the term “Percentage” meant. (Doc. 1961 at PAGEID 48575). He testified, “I’m assuming it’s blockage like he [counsel for Claimants] said.” (*Id.*). Mr. Pangallo was directed by the Court to not make assumptions but to testify based on his first-hand knowledge. Then, in response to Claimant’s counsel’s question whether in his experience does the photo show what appears to be a 40 percent blockage, Mr. Pangallo testified “no.” (*Id.* at PAGEID 48576).

There is no evidence that either Mr. Pittinger or Mr. Pangallo interpreted the term “Percentage” to reference the amount of “blockage” in the pipe. Mr. Pittinger testified that the notation of “Percentage” in the video camera system is meant to approximate the percentage of the overall cross-section of the pipe area that the incident covers, not “blockage” of a pipe. (Doc. 1962 at PAGEID 48686).

¹⁰ Dr. Kinman’s expert reports set forth no opinions on the maintenance, maintenance schedule, required maintenance, or any negligence for complying with maintenance schedules or maintenance requirements relating to “negligent maintenance” as that term is used in the Consent Decree. Therefore, the Court sustained MSD’s objection on this point and prohibited Dr. Kinman from offering an opinion or testifying on MSD’s general duty to properly maintain the Sanitary Sewer system. The Court distinguished between Dr. Kinman’s opinion on the conditions of the sewer pipe and the effect of those conditions on flow through the pipe and hydraulic jump. (Doc. 1971 at PAGEID 50087-90).

had numerous impediments to the flow of water and sewage through the pipe, including encrustations, heavy deposits, rocks, broken pipe, sags, holes, fractures, obstacles and slope changes. (Doc. 1966 at PAGEID 49221-22, 49225, 49237, 49239, 49258). For example, Dr. Kinman stated that the MSD video, as captured in these still shots, showed settled deposits and an obstruction in the Sanitary Sewer line which posed an impediment to flow:



(Gertz Ex. 37; Gertz Ex. 10, Addenda at Doc. 1867-3 at PAGEID 44853). Dr. Kinman testified that a large brick-like object in the Sanitary Sewer pipe approximately 1.5 feet below the junction of the Gertz lateral also presented an impediment to flow:



(Gertz Ex. 38).

Dr. Kinman further opined that among the defects in the Sanitary Sewer pipe downstream from the Cohen lateral and upstream from the Gertz lateral was an obstruction, which contributed to the poor condition of the pipe and the backup into the Gertz property. (Gertz Ex.

9; Doc. 1867-2 at PAGEID 44779). Dr. Kinman stated:

When MSD attempted to send a camera upstream from manhole 003 to 002 in the 8-inch sewer segment, this sewer was found by MSD to be so clogged that the camera inspection had to be abandoned and reattempted by going downstream from manhole 002.

(*Id.*).

According to Dr. Kinman, the Sanitary Sewer was replete with these obstacles, as demonstrated in the TV video reports. (Gertz Exs. 25-30). Dr. Kinman's modified expert report contains seven pages summarizing the pipe conditions of the relevant sewer segments on Highland Avenue. (Gertz Ex. 9, Doc. 1867-2 at PAGEID 44816-44822).

Capacity of the 8-inch Sanitary Sewer Pipe

Dr. Kinman opined that the obstacles in the Sanitary Sewer caused changes in velocity and turbulence within the sewer pipe which, in combination with the additional flow from the Cohen catch basins and groundwater entering the pipe, changed the pipe's gravity flow to pressure flow, causing the Sanitary Sewer to backup into the Gertz building laterals. (Doc. 1966 at PAGEID 49259-60). Dr. Kinman explained that the interaction of an increased volume of storm water and obstacles within the Sanitary Sewer pipe produces turbulence within the pipe, resulting in a rise of the water level within the pipe. If the pipe is completely blocked, such that water cannot flow by gravity, the gravity flow changes to pressure flow causing a "hydraulic jump" within the Sanitary Sewer. Dr. Kinman testified that a hydraulic jump can be triggered by many impediments to flow within a sewer pipe, including obstacles, ponded water, a sag in the pipe, a change of slope, or a change of velocity. According to Dr. Kinman, this pressurized jump forced the combination of sewage and storm water up seven feet of the Gertz sanitary basement lateral—which was the point of least resistance—causing the basement to flood. Dr. Kinman

testified, “Now, in this case, we had a horribly defective downstream sewer here with many quote/unquote possibilities for hydraulic jump, and by that I mean there were many impediments to flow that could trigger the hydraulic jump. Now, which one triggered it, I don’t know, but the point is that there’s a phenomenon.” (Doc. 1966 at PAGEID 49228). He stated that “when this happens downstream of the point of interest, in this case the Gertz lateral, you have what we call choking. You now block the normal flow of the pipe. And so, that pipe now switches from gravity flow to pressure flow.” (*Id.*). He further testified, “And then the point of least resistance is the Gertz floor because there’s a lateral leading up there open to atmospheric pressure, whereas the pipe pressure now is exceeding. In other words, it was gravity flow where you have literally open air and the atmosphere is pushing on it. You now have pressure flow, and it’s going to go right up into the building.” (*Id.*).

Dr. Kinman opined that there were three sources of water entering the Sanitary Sewer pipe that caused the backup into the Gertz Property: sanitary flow, groundwater, and storm water entering the sanitary pipe from the Cohen catch basins. (Doc. 1967 at PAGEID 49340). Dr. Kinman “determined that the three major sources into the Cohen yards here that created our problem across in the Gertz building was the water coming down the slopes here behind the woodworking building, that’s one, the water coming down Highland Avenue, and then the ground water that was impacted through the railroad ties here and behind the building here.” (Doc. 1966 at PAGEID 49214).

Additional sanitary flow from upstream

There was no added upstream sanitary flow to the Sanitary Sewer on Sunday, August 28, 2016. No one occupied the woodworking shop that day, which was the one building upstream

from the Gertz Property with an active Sanitary Sewer tap. (Doc. 1961 at PAGEID 48610-11; Doc. 1967 at PAGEID 49371).

Groundwater entering the Sanitary Sewer

Dr. Kinman testified that flow through the 8-inch Sanitary Sewer mainline was affected by groundwater infiltration and a large number of encrustations in the pipe. (Doc. 1966 at PAGEID 49260; Doc. 1970 at PAGEID 49970, 49972). According to Dr. Kinman, encrustations reduce the roundness of the pipe and provide solid evidence of ground water infiltration, opining “the encrustations not only reduce the area of the pipe, but they are triggers for hydraulic jump.” (Doc. 1970 at PAGEID 49972, 49980-82).

Dr. Kinman testified that groundwater north of the Gertz Property penetrated through 35 acres of railroad ballast, consisting of 10 to 12 feet of large porous rock, allowing “rapid drainage from the surface water into the groundwater which fully immersed the sanitary sewer pipe.” (Doc. 1967 at PAGEID 49430). According to Dr. Kinman, groundwater entered the 8-inch Sanitary Sewer via holes in the pipe and leaking joints. (Doc. 1970 at PAGEID 49970, 49972). He testified, “Water will get to the pipe and flow right down along that pipe and into any holes inside the pipe, then, and will impact your ground water flow, the infiltration inflow into the pipe. And the topo here is such that I believe it was a major impact in this flow here. And both the surface water and the ground water impacted what we see happening here.” (*Id.* at PAGEID 49972). Dr. Kinman reiterated that the groundwater infiltrating the water table exerted “pressure on the holes in the pipe to put more ground water in [the pipe],” and “this is a significant loading factor with adding five inches of water on that ground water table. . . .” (Doc. 1970 PAGEID 49973). He testified that “groundwater had a major impact on this particular

backup.” (Doc. 1967 at PAGEID 49342).

Dr. Kinman also observed “groundwater flow” in the Sanitary Sewer line on a Saturday in July of 2017, during dry weather conditions, when no one was working in the area to contribute to the sanitary flow. According to Dr. Kinman, groundwater flow filled one-fourth to one-third of the sewer capacity. (Doc.1966 at PAGEID 49222, 49260). He testified, “There is evidence of groundwater flow on that main line both in the encrustations and the holes in the pipe.” (Doc. 1967 at PAGEID 49430). Dr. Kinman also found evidence of dry weather water flow in the Sanitary Sewer line on Wednesday, October 4, 2017, during the work week.¹¹ (Doc. 1967 at PAGEID 49441). Dr. Kinman estimated that groundwater filled the Sanitary Sewer pipe one-quarter to one-third full by looking into the manhole “from the top of the manhole.” (Doc. 1967 at PAGEID 49438; Gertz Ex. 31):



Dr. Kinman did not measure the volume of the dry weather flow within the Sanitary Sewer pipe. (Doc. 1967 at PAGEID 49383).

¹¹ The significance of this evidence from Dr. Kinman is not apparent. As it was during the workweek, one would expect some flow in the Sanitary Sewer pipe from the use of fixtures, including sinks and toilets, from the business upstream of the Gertz Property.

When asked whether the observations listed in MSD's TV Inspection Report of the Sanitary Sewer segment from MH 40513003 to MH 40513004 (Gertz Ex. 29) are sources of possible water infiltration into the sewer system, Mr. Pittinger testified that "anything underground is subject to infiltration." (Doc. 1962 at PAGEID 48692). However, "[T]here's a significant delay from the time that the rain falls from the time that it really influences groundwater, significant delay. So in this particular case to suggest that the rainfall that was in the area was pouring into the -- the sanitary sewer through the ground, in my opinion that would be an inappropriate conclusion." (Doc. 1962 at PAGEID 48702).

Storm water from the Cohen lateral

The Cohen lateral, across from the Gertz Property, is located downstream from the first-floor Gertz laterals and upstream from the Gertz basement-floor laterals. (Doc. 1961 at PAGEID 48545). At the time of the August 28, 2016 storm, the Cohen catch basins were improperly connected to the Cohen lateral and ultimately to the MSD Sanitary Sewer. MSD first learned of the unauthorized Cohen catch basins through dye testing during the February 2017 technical field investigation. (Doc. 1961 at PAGEID 48544).

Cohen manager Mr. Beebe observed three-inch rocks from the railroad tracks up the street being carried by the overland flooding down Highland Avenue. The water breached the maintenance roll-up door on the first floor of the Cohen property facing Highland Avenue and accumulated outside the building to a depth of one to two feet. There is a catch basin across from this door and another one 30 feet away. The day after the August 28, 2016 storm, Mr. Beebe observed a foot and a half of debris, rock, mud, and dirt at the catch basins in the parking lot. He used Bobcats to remove the dirt and debris from the catch basins and Cohen's main gate,

which also had a lot of rock, dirt, mud and “sandy type stuff” in front of it. He noticed between an inch to six-inches of water on the floor of the Cohen building. (Doc. 1965 at PAGEID 49131-32, 49139). He testified that the catch basins were draining slowly. (*Id.* at PAGEID 49133).

Mr. Pittinger testified that the Cohen catch basins were not well-maintained and would clog easily, meaning they would not be able to convey a high volume of storm water to the Cohen lateral. (Doc. 1961 at PAGEID 48612). According to Mr. Pittinger, the 8-inch Cohen lateral likely was not flowing 100% full even if water ponded over the catch basins due to blockages at the inlet site (catch basins) and the physical arrangement of the pipes. (*Id.* at PAGEID 48701). He opined that there was not enough flow through the Cohen lateral to back up the Sanitary Sewer. (*Id.*). Mr. Beebe confirmed that the catch basins would regularly back up with “a good heavy rain.” (Doc. 1965 at PAGEID 49132). Based on the history of the area, Mr. Pittinger would not expect the storm water flow from the Cohen catch basins to the Sanitary Sewer to cause a backup or surcharge of the Sanitary Sewer. He testified that the ponded water in the Cohen driveway signified that the water was not free flowing from the Cohen catch basins into the Sanitary Sewer. Debris constrained the inlets thereby limiting the amount of water that flowed through the Cohen pipes to the Sanitary Sewer. (Doc. 1962 at PAGEID 48707-08). The design of the inlets further restricted the water volume that could flow into the Sanitary Sewer at once, similar to the drain at the bottom of a sink. (*Id.* at PAGEID 48708).

The exact configuration of the catch basin connections to the Cohen lateral is unknown. MSD attempted to map the connection by running a camera through the pipe but lost the ability to trace the camera above ground due to a large steel scrap pile on the Cohen property. (Doc. 1961 at PAGEID 48559-60; Doc. 1962 at PAGEID 48708). However, according to Mr.

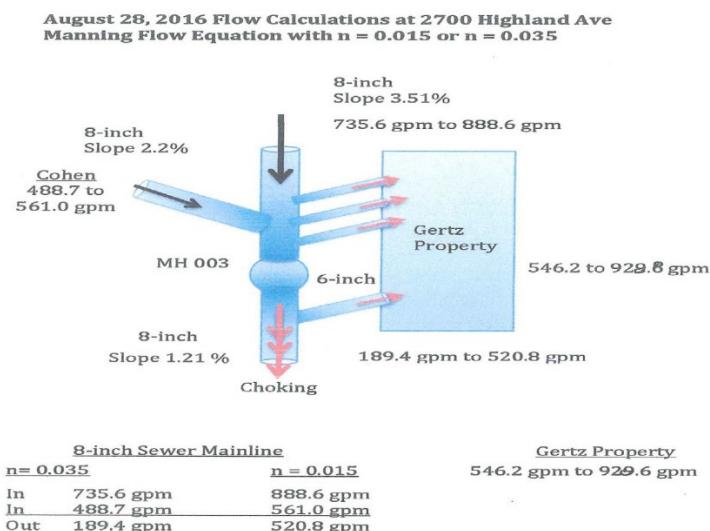
Pittinger, the pipes connecting to the Cohen lateral necessarily contained bends and pipe connections because of the multiple inlets tying into a single point of connection. (Doc. 1962 at PAGEID 48699). Prior to the August 2016 storm, there were four-inch lines running from the Cohen basins to the Cohen lateral. (Doc. 1965 at PAGEID 49134; Doc. 1967 at PAGEID 49410). After August 2016, Cohen changed those pipes to six-inch pipes to handle more water. (Doc. 1965 at PAGEID 49134).

Manning equation and hydraulic jump

Dr. Kinman stated that three triggers contributed to the hydraulic jump within the Sanitary Sewer: (1) the brick or large rock located two feet downstream from the Gertz lateral; (2) a 12% blockage eight feet upstream from the Gertz lateral; and (3) a change in the slope from 3.5% to 1.2%. (Doc. 1971 at PAGEID 50080). Dr. Kinman testified the following factors were significant: the pressure head was caused by the hydraulic jump; the elevation head was caused by the difference in elevation; and the velocity head was caused by the change in slopes of the Sanitary Sewer line from 3.5% to 1.2%. (Doc. 1966 at PAGEID 49226). Dr. Kinman explained that “the velocity coming into this manhole three right ahead of the Gertz line is coming in on a slope of 3.5 percent. The slope leaving the manhole is 1.21 percent. Now, that water is coming down faster than it can get away. So, what does it do? It follows the path of least resistance. It climbs up into the Gertz building.” (Doc. 1966 at PAGEID 49224). According to Dr. Kinman, these triggers combined with increased water flow resulting in a greater likelihood of hydraulic jump and backup into the Gertz building. (Doc. 1971 at PAGEID 50080-81).

Dr. Kinman used the Manning equation to calculate the upstream and downstream flows within the Sanitary Sewer. Dr. Kinman calculated the pipe flowing full based on slope and

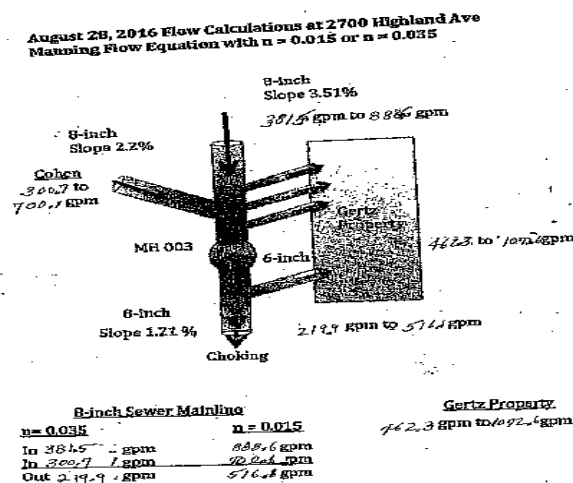
gravity flow. (*Id.* at PAGEID 49365-67). He depicted the summary of the flows in the various segments of pipe to show the amount of backup into the Gertz building as follows:



Dr. Kinman estimated the backup into the Gertz building to be between 546.2 gallons per minute to 920.6 gallons per minute using the Manning equation and the estimated “N” values. (Doc. 1966 at PAGEID 49251). He explained that the pipe segment downstream of MH 40513003 “is very heavily damaged in terms of the pipe carrying away its designated volume. And since it can’t get away and it’s coming in at higher slopes, and the opening then that’s available to it is to go up into the Gertz building.” (*Id.* at PAGEID 49252). In other words, the volume of water coming into the Sanitary Sewer pipe from the Cohen lateral and upstream of that lateral exceeded the volume of water able to flow out of the Sanitary Sewer pipe below MH 40513003 because of pipe defects, slope, and other factors. As a result, sewer water entered and backed up into the path of least resistance—the Gertz laterals. (*Id.* at PAGEID 49252).

Subsequent to his direct testimony on September 17, 2021, Dr. Kinman realized he had made mistakes in the calculation of his “adaptation of the Manning Equation to the flow in the

sanitary sewer at and near 2700 Highland Avenue.” (Gertz Ex. 52, Doc. 1925, Kinman Aff., ¶ 4). Dr. Kinman re-calculated the numbers referenced in his Manning equation and ensured that the new calculations were accurate. (*Id.*). Dr. Kinman stated that the calculation errors did “not affect his opinion that the flow in the main line of the sanitary sewer and the pipes leading from the Cohen building caused a back-up at the Gertz building at 2700 Highland Avenue.” (*Id.*, ¶ 5). Dr. Kinman depicted his Manning flow equation using the re-calculated numbers:



(Doc. 1925 at PAGEID 46315).

According to his Manning equation calculations, independent of any flow coming from the Cohen lateral, there were 381.5 to 888.6 gallons per minute flowing through the Sanitary Sewer pipe upstream of the Gertz property. In his expert reports, however, Dr. Kinman did not analyze how much groundwater he estimated was entering this pipe from upstream. (*Id.* at PAGEID 49372). When asked how it was possible for that amount of water to enter the pipe upstream of the Gertz property, Dr. Kinman testified, “There are possible ways for the groundwater, yes. There are not constructed¹² ways.” (*Id.* at PAGEID 49372). He did not

¹² Dr. Kinman testified that he used the term “constructed” to mean laterals that are constructed to convey sewage

further elaborate this point.

Although Dr. Kinman was “focused on the main [basement] lateral down below Manhole 3,” he opined it was likely the three first floor laterals of the Gertz building also backed up. (*Id.* at PAGEID 49373). He testified:

I did not conclude in my report that those three laterals backed up because I didn’t know. I’m saying that based upon the hydraulic jump considerations, it’s most likely they did back up also. I focused on the lateral right below Manhole 3 because that is the closest vertical elevation to the Cohen building.

(*Id.* at PAGEID 49374). Dr. Kinman explained there is “not much in terms of the difference between seven and eight feet in terms of if it switches to pressure flow in the jump, they both would back up.” (*Id.* at PAGEID 49374). Under Dr. Kinman’s pressure flow analysis, all three first floor laterals, which are at the same heights, would have “most likely” backed up. (*Id.* at PAGEID 49375). Dr. Kinman explained that sewage water from the Sanitary Sewer could reach the main first floor of the Gertz building through a “hydraulic jump caused by obstacles in the pipe. . . .” (Doc. 1967 at PAGEID 49429).

Dr. Barton’s rebuttal opinion

Dr. Barton disagreed with Dr. Kinman’s conclusion that “the elevation head on the Gertz floor pipe was found to be 4.87 feet.” (Doc. 1967 at PAGEID 49477). Dr. Barton stated that Dr. Kinman’s elevation head is based on the total dynamic head at the Gertz property. (*Id.*). According to Dr. Barton, Dr. Kinman’s opinion neglects “the fact that there is a sewer at the bottom of that pipe.” (*Id.*). He testified that Dr. Kinman’s conclusion of 4.87 feet of elevation head would mean the Sanitary Sewer pipe downstream of the Gertz Property was 100% blocked,

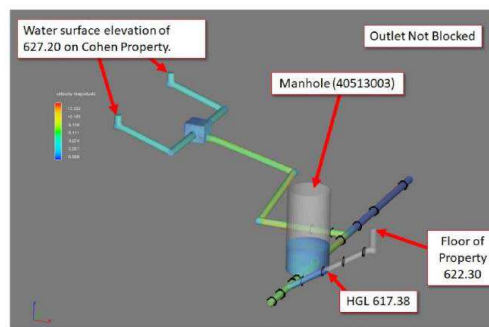
from the point of generation out to the main line, as opposed to a hole in a pipe that allows groundwater to enter the pipe. (Doc. 1967 at PAGEID 49428).

but Dr. Kinman's "report makes no such supposition or claim." (*Id.* at PAGEID 49478; MSD Ex. 14; Doc. 1866-14 at PAGEID 44711). He explained that the pressure head would change with anything less than 100% blockage and reduce the ability of the Gertz Sanitary Sewer lateral to convey sewage to the Gertz basement. For example, a blockage of "zero" would mean there was no hydraulic head on the Gertz Sanitary Sewer lateral, meaning there was no pressure pushing sanitary waste up the Gertz lateral.

To analyze this issue, Dr. Barton performed Computational Fluid Dynamics (CFD) modeling, which is used to analyze small sections of a sewer with complicated hydraulics. The CFD model looked at potential blockages in the Sanitary Sewer pipe and storm water from the Cohen catch basins entering the Sanitary Sewer pipe. He analyzed both to determine when sanitary flow would enter the Gertz basement through the building lateral.

Dr. Barton stated that he did not "know how the two [Cohen] catch basins were connected . . . [s]o [he] took the conservative approach that they were separately connected to the system." (*Id.* at PAGEID 49491). Variables such as geometry, size, angles, and shapes of pipes; the presence of manholes, outlets, and inlets; and flood elevation are used to determine hydraulic grade line. (*Id.* at PAGEID 49480). Based on eight-inch Cohen lateral lines with no blockage of the downstream Sanitary Sewer line (outfall), the hydraulic grade line (elevation of the water surface in the lateral with zero obstruction of the downstream pipe) would reach 617.38 feet into the Gertz lateral, which was below the basement floor elevation of 622.30 feet. (*Id.*). Dr. Barton reviewed the video of the downstream Sanitary Sewer segment to determine the blockage referenced in Dr. Kinman's report and found at most an approximate 17% blockage of the pipe. Dr. Barton then assumed a conservative estimate of 25% and 50% blockage of the Sanitary

Sewer to determine the effect on the elevation of water into the Gertz lateral. According to Dr. Barton, even with a 50% blockage in the downstream Sanitary Sewer line the water would not back up high enough to reach the Gertz basement floor level of 622.30 feet. (*Id.* at PAGEID 49481).



Dr. Barton testified that his CFD model was based on two assumptions that he later learned were incorrect and that actually made him more confident in his conclusions. (Doc. 1967 at PAGEID 49552). First, his model assumed there were two separate eight-inch pipes from the Cohen catch basins to the Cohen lateral. Dr. Barton subsequently discovered from Mr. Beebe’s deposition that the Cohen catch basins were actually connected by four-inch, not eight-inch, pipes to the eight-inch Cohen lateral. Dr. Barton testified that a four-inch pipe contains one-fourth the flow of an eight-inch pipe due to hydraulic radius. Dr. Barton opined, “There’s no way this system would have backed up with two four-inch pipes.” (*Id.* at PAGEID 49489). Second, when he made the model, Dr. Barton was not aware that the Cohen catch basins were completely filled with debris, so much so that Mr. Beebe used Bobcats to clean them out the day after the storm. This further reduced the flow from the Cohen catch basins to the Sanitary Sewer leading Dr. Barton to conclude there was “no possibility of flooding to the Gertz basement.” (*Id.* at PAGEID 49490).

Dr. Kinman criticized Dr. Barton’s use of computer models and computational tactical fluid dynamics models like CFD because they did not rely on valid or “hard” data. (Doc. 1971 at PAGEID 50070). For example, Dr. Kinman stated that Dr. Barton did not consider water entering the Cohen lateral from bathroom fixtures that were cut off at floor level. (Doc. 1971 at PAGEID 50067). Dr. Kinman further testified that Dr. Barton’s assumptions about bends in the Cohen catch basin pipes were unfounded because MSD’s field investigation showed the catch basin drains connected to the Cohen lateral in a general sweeping curve. Dr. Kinman stated that adding bends to a pipe increases head loss, which in turn reduces flow from the catch basins to the Cohen lateral and Sanitary Sewer. (Doc. 1971 PAGEID 50069). Dr. Kinman opined that due to a lack of reliable data, Dr. Barton’s model predictions of what happened during the storm would be incorrect. (Doc. 1971 at PAGEID 50070).

Dr. Barton also discussed what was described by Dr. Kinman as a significant obstruction downstream from the Gertz lateral. The video of the pipe showed a block-like obstruction at 19.6 feet. (MSD Ex. 38). However, when the camera truck rig was retracted and ran over the obstruction, the obstruction flattened out. Dr. Barton testified that what appeared to be a “blockage” on the video was most likely toilet paper which was easily dispersed by the force of the encounter with the video camera and did not present an obstruction to the flow of fluid within the pipe.



Dr. Barton also examined the defect Dr. Kinman identified in the Sanitary Sewer pipe between MH 40513003 and MH 40513002 to determine the nature of the obstruction and its effect on flow. He reviewed the video of the relevant pipe segment and confirmed with the Wastewater Collection Department the nature of the blockage:

Although RNK [Dr. Kinman] infers that this is a serious sewer condition problem, it was not. The minimal obstruction was only a deposit on the side of the pipe which caught the edge of the camera rig. It obstructs less than 12% of the pipe capacity. More importantly, it is between the tap from the Cohen property catch basins and the Gertz Property tap. Thus, it blocks upstream flow. It serves to reduce, not increase the level in the sewer downstream at the Gertz Property tap.

(MSD Ex. 14, Doc. 1866-14 at PAGEID 44714). Dr. Barton's rebuttal report includes figures depicting the obstruction, and he testified about the calculations and method he used to determine the 12% obstruction.



Figure 9: camera footage of the obstruction which prevented camera passage

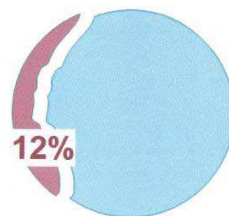


Figure 10: graphic depicting the 12% pipe obstruction of the deposit shown in Figure 9.

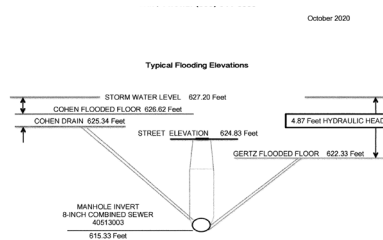
(MSD Ex. 14, Figs. 9 and 10, Doc. 1967 at PAGEID 49501-02). Dr. Barton reiterated that his CFD model included free flow from the Cohen lateral to the Gertz lateral and did not include this obstruction, thereby providing “the most conservative estimate of what that level could have been,” in other words, “the highest possible level.” (*Id.* at PAGEID 49504).

Dr. Kinman testified that the 12% obstruction was only one of three factors that could trigger a hydraulic jump: (1) large obstructions and obstacles, such as a large rock or brick; (2) a change in slope of the main Sanitary Sewer line; and/or (3) infiltration of storm water and ground water from holes in the pipe and fractures, all of which were present in the main Sanitary Sewer

line near the Gertz sanitary lateral. (Doc. 1971 at PAGEID 50103-04).

Dr. Barton testified that he looked for evidence that the Sanitary Sewer system backed up but found none. The only evidence of a surcharge was one-half mile downstream, which would not affect the Gertz lateral. He “saw ample evidence that confirmed to me that the storm system was significantly flooded and that there’s eight drains connected to the basement.” (*Id.* at PAGEID 49506).

Dr. Barton addressed Dr. Kinman’s modified opinion that the hydraulic head was the same on both sides of an open, flowing pipe. (MSD Ex. 16; Doc. 1967 at PAGEID 49512).



According to Dr. Barton, Dr. Kinman’s figure does not account for losses in flow in the Cohen lateral caused by inlets, twists, turns and junctions. (MSD Ex. 16; Doc. 1967 at PAGEID 49512). He contrasted this with the CFD model, which calculated the losses from all sources. Dr. Barton also testified that the hydraulic head is never the same across an open pipe; it has to be 100% blocked in order for the head to be the same on both sides. (Doc. 1967 at PAGEID 49513).¹³ If the pipe is not 100% blocked, some amount of water will drain, producing a

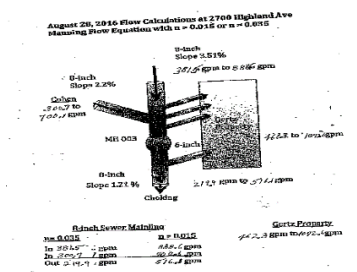
¹³ Dr. Barton gave this example:

[I]f the fact that an open drain could have the same hydraulic head on both sides were true, then every single household, every time you drained the sink, the bathtub should flush up because the bathtub is lower than the sink. So if I have a full sink of water and I pull the plug, it should come up my shower drain. If it actually comes up my shower drain if I had the same head on both sides, I call the plumber because my drain is plugged. The fact that the drain is open means that I can pull my sink plug, I can pour as much water as I want down there, and it drains out the line.

velocity, which in turn produces losses along the pipe as it moves. (Doc. 1967 at PAGEID 49513). He testified his CFD model answers the question of the amount of blockage needed before the Gertz Property will flood.

Dr. Barton also disputed Dr. Kinman's use of the Manning equation and his conclusions. Dr. Barton explained that the Manning equation does not identify the amount of flow in a pipe on any given day or under a variety of circumstances. Rather, the Manning equation identifies how much flow the pipe will carry when it is full. He stated that Dr. Kinman incorrectly assumes that the flow within the pipe is the same as the capacity designated by the Manning equation without identifying a source of the flow. According to Dr. Barton, Dr. Kinman translates the capacity of the pipe into a source of flow and speculates on sources of flow without showing the quantity of flow from those sources. (Doc. 1967 at PAGEID 49517). Dr. Barton also noted that Dr. Kinman's Manning equation fails to account for any losses from the Cohen catch basins, depicting them as a straight single pipe with no losses. (Doc. 1967 at PAGEID 49519).

Dr. Barton was surprised that Dr. Kinman included the three first floor Gertz laterals in his Manning equation depiction because flow from these three laterals had not previously been mentioned.



Dr. Barton testified that more importantly:

(Doc. 1967 at PAGEID 49513).

[T]he first floor is eight to nine feet above the Gertz basement, so [Dr. Kinman] was drawing hydraulic elevation showing 4.87 feet of head from the Cohen property, and yet now was indicating arrows that were some nine feet above the basement of the Gertz floor, which would be four or five feet above the hydraulic head that he had drawn. And . . . there was no explanation as to how this flow rate would be coming out of those pipes when they're higher than the driving force.

(Doc. 1967 at PAGEID 49520). In other words, Dr. Kinman's assumption of 4.87 feet of head is inconsistent with water pushing through the three upstream laterals which are four or five feet above that hydraulic head. Dr. Barton testified that based on his CFD model with an assumption of 50% blockage, neither the basement nor the first floor laterals would back up. (Doc. 1967 at PAGEID 49520).

Dr. Barton also criticized Dr. Kinman's use of the Manning equation because it fails to account for head in the sewer pipe. He testified that the Manning equation is based on pipe slope, which becomes irrelevant once there is pressure flow within a pipe. (Doc. 1967 at PAGEID 49528-29). According to Dr. Barton, Dr. Kinman inconsistently used the Manning equation to estimate flow in the pipe when he previously postulated that there was hydraulic head pressure above the top of the pipe at the upstream end as depicted in Figure 1. (*Id.*; MSD Ex. 16 at 5).

Dr. Barton further disputed Dr. Kinman's conclusion that hydraulic jump caused sewer water to back up into the Gertz laterals. Dr. Barton explained that "[h]ydraulic jumps are when supercritical flow become subcritical flow, steep fast flow becomes slow deep flow." (Doc. 1967 at PAGEID 49530). He testified that hydraulic jumps increase the water level downstream, not upstream:

Hydraulic jumps always increase the level of the water when it goes through hydraulic jump downstream because the energy of the velocity is converted into the depth. It is not, as was incorrectly stated, a case of switching from Manning's to

pressure. That is not the case of a hydraulic jump.

* * *

So the concept of a hydraulic jump increasing the water level upstream was just – it’s flat wrong. The hydraulic choking, what he was saying was I have these turbulent pockets that are occurring in the pipe, and they’re causing – the water in these turbulent pockets is causing the lateral to back up seven or eight feet. And we have obstructions and encrustations at a million locations at MSD system. . . .

To say that an obstruction all of a sudden causes the water itself to choke and then push up an 8-foot lateral is just unverified. There’s no evidence of it. . . .

The other point to make is that if this is happening, if this were to be happening, why don’t we consider it on the other side, where we have all this stuff coming down the Cohen pipe, right angles, junctions with the mainline, real serious turbulence issues, and why is that not causing the problem on the Cohen side.

Why is it all of a sudden just where our lateral is, and why isn’t it causing problems in other places where we have obstructions in our system. It’s just – there’s no evidence for it. Zero evidence. . . .

(Doc. 1967 at PAGEID 49530-31).

Dr. Barton further testified that Dr. Kinman’s “modified report incorrectly states that when water ponds during dry weather, it affects flow rates when the pipes are under pressure conditions.” (Doc. 1967 at PAGEID 49532). Dr. Barton explained that ponded water in a pipe has no impact on the capacity of the pipe. He testified that “in the case of pressure flow, the pipe is full of water. It’s not being backed up by its own water.” (*Id.*). Dr. Barton reported that this phenomenon is easily demonstrated by water main pipes, which are 100% ponded. That pipe is full and has zero flow when water is not being used “but no obstruction from the ‘water’ when subjected to pressure.” (MSD Ex. 16 at 5).

Dr. Barton also disagreed with Dr. Kinman’s opinion that the CFD model was an inappropriate way to calculate the flows. Dr. Barton identified the CFD model as the gold

standard utilized across the industry to determine flows in light of complicated local hydraulic conditions, like those presented in this case. (Doc. 1967 at PAGEID 49533).

Dr. Barton also opined that contrary to Dr. Kinman's modified report, many small defects within the pipe do not add up to a large blockage. He explained that a piece of corrugated pipe demonstrates that a number of small defects do not add up to a major obstruction:



Dr. Barton explained:

The corrugated pipe in the figure is essentially a 4.5 inch pipe with about fifteen obstructions every foot. Each obstruction represents about 20% of the pipe cross-section. In a 100' section of pipe there would be 1,500 20% obstructions. In this case, do we consider the pipe blocked after we pass five of these ($20+20+20+20+20 = 100\%$ blocked)? Or after we have passed the first 1,500 in 100' No! Even with 1,500 obstructions in a 100 foot section we still consider it as a 4" pipe (4.5 inches less 20%). Why do we consider it a 4" pipe? Because when we look down the pipe we see a 4" opening all the way through.

It should be self-evident that the overall degree of obstruction is not derived by adding the individual defects together as the RNK Modified Report repeatedly asserts. Rather, the percent obstruction is conservatively estimated from the cross-sectional area of the most restricting location. Here, it is 12%.

(MSD Ex. 16 at 6).

Dr. Barton also reviewed the more than 2,000 photographs submitted in this case. The photographs he viewed did not show feces or toilet paper but an abundance of mud, debris and "storm muck." (Doc. 1967 at PAGEID 49538-42). He opined that the white dots appearing on hundreds of photos were not toilet paper but rather Styrofoam particles. The gray and brown residue lines present on furniture legs were consistent with the normal debris markings he has

observed from muddy storm water. He also observed “gravelly sand debris” around the storm drains in the basement. To the extent there was observable debris around the Sanitary Sewer drain, he opined this would be consistent with the storm drains surcharging into the basement and flowing towards the only open drain—the Sanitary Sewer drain.

Dr. Barton also found Dr. Kinman’s opinion that the wall of MH 40513003 did not show signs of surcharge because clear groundwater essentially washed the muck off the wall to be inconsistent with the other evidence:

So to me storm water, muddy storm water, sanitary -- sorry, storm sewers -- storm sewer pressurized, that explains that. Piles of muck in the Cohen property, storm water supplies that, but somehow the sanitary main has clear water, not leaving any residual in our manhole, but leaving all this residual -- the story doesn’t fit. It’s completely consistent with -- the storm sewer flooding is completely inconsistent with the sanitary sewer flooding.

(Doc. 1967 at PAGEID 49543). Dr. Barton opined that if muddy water was coming from the sanitary sewer, then there would be observable and “telltale” signs of surcharging in the manhole. (*Id.*).

When asked to assume the presence of feces or toilet paper on the floor of a building, Dr. Barton testified there are two ways that could happen. First, there could have been a backup of a Sanitary Sewer. Second, there could have been a backup of the building lateral unrelated to a surcharge of the Sanitary Sewer. (Doc. 1968 at PAGEID 49643). He noted, however, that the first floor laterals were three or four feet above the flood level of the Cohen property. When asked how toilet paper and feces could have been observed on the first floor, as the Claimants testified, Dr. Barton stated that it was not the result of a backup of MSD’s Sanitary Sewer. He testified that either internal or external connections to the sanitary lateral can cause a backup of toilet paper and feces into buildings. According to Dr. Barton, MSD has “seen many, many

cases where the external connections of whatever cause the flooding in the building in the basement” because building laterals carry human waste and toilet paper in them. (Doc. 1967 at PAGEID 49545). Dr. Barton testified:

So it’s very common for that sort of situation. And that is consistent with it being one of the three, not all three.

In the sanitary sewer, as you go up the hill, the head’s higher, it should be all three of them, especially the upper ones that are going off. So if we’re only seeing one, that’s entirely consistent with the common effect we see repeatedly that the building sewer backs up its own lateral. . . . If the sanitary sewer backed up, we would expect all three. That would be typical. To only see one strongly supports the suggestion that we see commonly, that a building sewer backed itself up and flushed out whatever was in that lateral.

(Doc. 1967 at PAGEID 49546-47).

Dr. Barton also disputed Dr. Kinman’s conclusion that the Sanitary Sewer pipe was one quarter to one-third full of flow during dry weather conditions. Dr. Barton testified that if Figure 9 depicts dry weather flow of groundwater that entered the pipe, it is one-twentieth to one-fiftieth full. (Doc. 1967 at PAGEID 49503):



Figure 9: camera footage of the obstruction which prevented camera passage

III. Resolution

Under the Consent Decree, property owners may be compensated for personal or real property damage caused by (1) inadequate capacity in MSD’s Sewer System, or (2) MSD’s

negligent maintenance, destruction, operation or upkeep of the Sewer System. (Doc. 131, Consent Decree, Exhibit 8 at 1). In determining the cause of SBU, MSD must exercise its good faith reasonable engineering judgment and consider the following non-exclusive factors: amount of precipitation, property SBU history, condition of the sewer system in the neighborhood, results of a visual inspection of the neighborhood to look for signs of overland flooding, neighborhood SBU history, capacity of nearby public sewer lines, and topography. (Doc. 131, Consent Decree, Ex. 8 at 2). Damages arising from basement backups for which MSD is responsible are limited to documented real and personal property. *Id.* Claimants who seek review of the denial of an SBU claim bear the burden of proof to show that the backup of wastewater into their property was caused by inadequate capacity in MSD's Sanitary Sewer system (a sewer surcharge) and not by overland flooding or blockages in the homeowner's privately-owned building sewer line. (Doc. 131, Consent Decree, Ex. 8 at 1).

As an initial matter, the Court has ruled that the Claimants were precluded from introducing evidence via Dr. Kinman's testimony about any alleged "negligent maintenance, destruction, operation or upkeep of the Sewer System." (Doc. 131, Consent Decree, Exhibit 8 at 1). Dr. Kinman's expert reports did not include any opinions or analysis on MSD's alleged negligence in maintaining the Sanitary Sewer system, and the Court sustained MSD's objection to the belated attempt to introduce such evidence at the hearing. (Doc. 1970 at PAGEID 49983-84). Therefore, the Court does not consider any such evidence in its decision.

Claimants have not established by a preponderance of the evidence that any alleged wastewater backup into the basement and first floor of the Gertz property on August 28, 2016 was caused by inadequate capacity in MSD's Sanitary Sewer system. The Court has considered

numerous factors in reaching this conclusion and, based on those factors, concludes that the Claimants' appeal is denied.

The Gertz Property is tied into the head end segment of the public Sanitary Sewer line. There is only one active Sanitary Sewer lateral tap from a woodworking factory upstream of the Gertz Property. The storm occurred on Sunday, August 28, 2016, and there was no occupancy in that building. Therefore, there was no added upstream sanitary flow to the Sanitary Sewer.

Claimants argue there are four unknown 8-inch taps in the upstream manhole bench walls on the South side of the Gertz Property that "could have been designed to convey storm sewer water into the 8-inch main sanitary line from telephone chambers, making the main sanitary line now a combined sewer line." (Doc. 2004 at PAGEID 51358, referencing MSD Ex. 8, Technical Field Investigation Report No. 5). Claimants argue these taps could have contributed storm water flow to the Sanitary Sewer, but any impact from these lines is unknown because MSD failed to return to complete its investigation of these lateral lines. (*Id.*). Mr. Pangallo testified, however, that these lateral lines were all capped with no flow entering the Sanitary Sewer. (Doc. 1961 at PAGEID 48546). In response to the Court's question, Mr. Pangallo confirmed that these laterals "were capped at the curb line of the street, so they weren't in use. They had physical caps on the end of them." (Doc. 1961 at PAGEID 48553).¹⁴ Claimants also argue that another lateral from a torn down building upstream of the Gertz Property could have possibly allowed storm water to enter the Sanitary Sewer line. (Doc. 2023 at PAGEID 52056; Doc. 1961 at PAGEID 48552). There is no evidence of an improper storm water connection to this lateral or that storm water actually entered this line. To conclude otherwise would be speculative.

¹⁴ Mr. Pangallo was never asked about this specific issue by Claimants' counsel on cross-examination.

Therefore, the Court is not persuaded that any additional flow from these lines entered the Sanitary Sewer.

In sum, the public Sanitary Sewer line upstream of the Gertz laterals likely received no additional flow from the Sanitary Sewer connections (with the exception of the Cohen lateral as discussed below). It is therefore unlikely that a Sanitary Sewer backup caused the water damage to the Gertz Property.

The Court also considers the Property and neighborhood Sanitary Sewer backup history. There have been no previous reports of Sanitary Sewer backups at the Gertz Property and no known capacity problems with that sewer. No other properties on the same Highland Avenue Sanitary Sewer segment in the immediate vicinity of the Gertz Property reported a Sanitary Sewer backup. If the Gertz Property had a Sanitary Sewer backup, it is likely that properties downstream of the Gertz lateral, which sit at lower elevations, would have also experienced an SBU. Neither Mr. Gochoel nor Cohen Recycling reported or experienced a backup of their Sanitary Sewer building laterals from the August 28, 2016 rain event, and neither of their properties has a history of any reported SBUs.¹⁵ MSD received no other reports of SBU in the vicinity, and Claimants offered no evidence of such backups. The lack of history of SBUs and the absence of other properties experiencing SBU on August 28, 2016 supports the conclusion that the mainline Sanitary Sewer did not back up.

¹⁵ Claimants argue that “[t]he testimony from Mr. Beebe at the Cohen building proved that ‘an unreported’ sewer backup in its parking lot was a ‘regular’ experience that actually occurred on several occasions even though none of these backups were reported to MSD.” (Doc. 2023 at PAGEID 52119, citing Doc. 1965 at PAGEID 49132). This is not accurate. Mr. Beebe testified that the catch basins repeatedly backed up after a heavy rain because “they wouldn’t be able to handle the water” and get plugged with debris, requiring periodic cleaning. (Doc. 1965 at PAGEID 49132). He did not testify that the Cohen property experienced a Sanitary Sewer backup.

The Court also considers whether overland flooding caused or contributed to the flooding of the Gertz Property. There is no dispute that overland flooding inundated the Norwood Storm Sewer, resulting in a surcharge of the Storm Sewer and water flow down Highland Avenue. The evidence on whether overland flooding actually entered the Gertz property through doorways or window wells, however, is inconclusive. There is conflicting evidence on the pathway of the flow of overland flooding from the hill upstream of the Gertz Property and the elevation of such flow. Dr. Kinman testified the elevation and slope of the surrounding topography directed the flow away from Highland Avenue toward the Cohen property, resulting in flooding and ponding of water on that property. Dr. Barton testified that given the elevation of the flooding on the Cohen property as determined by Dr. Kinman and the relative elevations of the Cohen property, the Gertz property, and MH 40514003, the flood water necessarily flowed from the Cohen property across the Highland Avenue to the Gertz Property. As part of his field investigation, Mr. Pangallo observed a water line on the Gertz building front wall signifying the flood level. Mr. Gertz testified that this so-called water line was actually a mark from lawn mower grass clippings. Mr. Gertz pointed out that portions of the building that were not adjacent to the lawn, like concrete walkways, did not show the “water line” identified by MSD, bolstering his conclusion that the line was a grass stain. Mr. Gertz also performed an investigation by filling a window well and door well with water from a garden hose to test for building leaks. While video of the event showed no water entering the building from the window well, a small amount of water seeped into the building from the door well to the basement floor. However, the conditions of Mr. Gertz’s investigation were dissimilar to the rain storm, minimizing the significance of his findings. Finally, the rainy day video, which was taken close to 8:00 p.m.

after the peak of the rainfall, showed water traveling down Highland Avenue and breaching the curb at certain points. The Court cannot conclude one way or the other whether overland flooding contributed to the Gertz's flooded basement by entering through doors, windows, or cracks in the foundation of the building.

The Court next considers the impact of the Norwood Storm Sewer on the Gertz Property damage. The evidence is overwhelming that the Norwood Storm Sewer could not carry the August 28, 2016 rainfall and surcharged. The testimony of Dr. Barton, Mr. Pittinger, Dr. Kinman, and Mr. Beebe, as well as the rainy day video, support this conclusion. The evidence establishes that eight of the nine Gertz basement laterals were improperly connected to the Norwood Storm Sewer line instead of the MSD Sanitary Sewer line. As a result, the eight storm laterals connected to the Gertz building basement, which were at a lower elevation than the surcharged Storm Sewer inlets on Highland Avenue, overflowed into the basement carrying storm water, muck, and debris from the surrounding hillside, area, and streets. This is one clear cause of the Gertz basement flooding, and the Consent Decree does not provide damages for solely a Storm Sewer backup.

The Court next examines the conditions of the Sanitary Sewer system connected to the Gertz building laterals. In investigating Sanitary Sewer backups, manholes are examined for signs of surcharging. During the surcharge of a manhole, toilet paper and debris catch on the walls and ladder steps of the manhole. In addition, an observable surcharge ring indicates the height of the surcharge within the manhole. None of the manholes serving the Gertz Property or those immediately downstream of the Property showed signs of surcharge, with the exception of MH 42626009, which was 2,500 feet downstream from the Gertz Property. (Doc. 1966 at

PAGEID 49235; Doc. 1967 at PAGEID 49496). The Court places little weight on Dr. Kinman's opinion that clear ground water essentially washed clean the manhole walls in front of the Gertz property. The photographs and testimony in this case indicate that the Gertz basement floor was covered in mud and sand, with debris rings around the furniture legs. The Cohen catch basins collected debris and muck, with some of that flow going into the Sanitary Sewer. The rainy day video showed brown, dirty water flowing down Highland Avenue. It is not logical that the Sanitary Sewer manholes connected to the Property laterals showed no similar signs of debris or surcharge.

The Court further finds the evidence of surcharge in MH 42626009 irrelevant to whether the Sanitary Sewer segment to which the Gertz Property connected backed up. There is a 55-foot difference in elevation between the Gertz basement lateral and the invert of MH 42626009. The surcharged manhole, MH 42626009, is located at the bottom of a steep hill, with the rim of that manhole at an elevation of 43.98 feet lower than the Gertz lateral connection. Dr. Barton explained that where, as here, the Sanitary Sewer pipe is very steep, the downstream tailwater does not affect upstream levels. He also testified that the 14 intervening manholes between MH 42626009 and the Gertz Property would release any flow of sewage from a surcharge of MH 42626009 before it could reach the Gertz lateral. When asked about this latter point, Dr. Kinman testified that the intervening manholes would "not necessarily" be a release point for the overflow, but he failed to explain the underlying bases for his conclusion in a cogent fashion. (Doc. 1966 at PAGEID 49235-36). The Court gives little weight to Dr. Kinman's conclusion and finds Dr. Barton's explanation and conclusion more persuasive.

The Court further considers the internal condition of the Sanitary Sewer pipe connected

to the Gertz laterals. MSD's TV video inspections showed the presence of rocks, grease, "drippers," broken pipe, encrustations, ponding water, and deposits at various locations within the relevant segments. The significance of those findings depends on whether the conditions of the Sanitary Sewer line in January 2017 as depicted in the videos accurately reflect the conditions as they existed at the time of the August 28, 2016 storm.

It is unknown whether and to what extent rocks and other movable debris may have been present in the Sanitary Sewer in August 2016. MSD's videos were taken from January 24 to 26, 2017, some five months after the rain event. MSD argues that the size and location of any debris in the Sanitary Sewer at the time of the August 28, 2016 storm is unknown. MSD points to Mr. Beebe's testimony that after removing the muck and debris from the Cohen catch basins after the rain event, the line was jetted to clear any remaining debris, suggesting that any rocks or debris in the line could have been flushed into the line from the Cohen lateral. The Court recognizes that Claimants had no control over the timing of MSD's investigation of the Sanitary Sewer system five months after the rain event because of the number of properties affected by the August 2016 storm and MSD's focus of resources on those properties experiencing an active backup. Mr. Pittinger opined that MSD's TV video "probably pretty accurately represents the state of those sanitary sewers as they were in August. . . ." (Doc. 1962 at PAGEID 48710). Given Mr. Pittinger's opinion that the condition of the Sanitary Sewer in January 2017 was likely the condition in August 2016, the Court will assume for purposes of this decision that the condition in August 2016 was similar to that depicted in the videos.

The TV Inspection Reports and accompanying video descriptions demonstrate that MSD subsequently replaced several sections of Sanitary Sewer line due to conditions found in the

videos. (Gertz Exs. 25-30). Claimants argue that these conditions resulted in “major replacement/relining of the pipes,” suggesting significant structural damage in the Sanitary Sewer line. (Doc. 2004 at PAGEID 51350). Mr. Pangallo and Mr. Pittinger, however, testified that they did not observe any structural issues within the pipe, such as a collapse, that might have blocked the flow of sewage through the pipe. Mr. Pittinger testified that neither the field reports nor his review of the videos showed any significant defects in the main Sanitary Sewer serving the Property. He defined a “significant defect” as a “blockage or collapse that would be enough to severely restrict the flow and cause a backup.” (Doc. 1962 at PAGEID 48694). When asked whether a hole in the pipe would be a “substantial defect,” he testified this was a defect that represented a “potential failure of the pipe” but “[f]rom a flow perspective, it is not.” (*Id.* at PAGEID 48694-95). Therefore, any repair or preventative maintenance on the pipe does not signal a blockage of the line. The relevant consideration is not whether the condition of the pipe required some repair but whether the particular condition had an impact on flow through the pipe, such as a collapse or blockage of the pipe. The Court finds Mr. Pittinger’s testimony credible and determines that MSD’s repair of these Sanitary Sewer segments does not indicate defects like a collapse or blockage that would cause a backup of the Sanitary Sewer line.

The next issue concerns the other defects or incidents identified in MSD’s TV inspection reports. Dr. Kinman testified that encrustations, heavy deposits, rocks, broken pipe, sags, holes, fractures, slope changes, and obstacles in the Sanitary Sewer pipe were impediments to water and sewage flow. Dr. Kinman opined that these obstacles in the Sanitary Sewer caused changes in velocity and turbulence within the sewer pipe. When combined with the additional flow from the Cohen catch basins and groundwater, the pipe’s gravity flow changed to pressure flow

causing the Sanitary Sewer to back up through the Gertz laterals into the Property via hydraulic jumps. Dr. Kinman opined that the hydraulic jump was triggered by: (1) the brick or large rock, which was two feet downstream from the Gertz lateral; (2) a 12% blockage eight feet upstream from the Gertz lateral; and (3) a change in the slope from 3.5% to 1.2%. He further opined that three sources of water entered the Sanitary Sewer pipe causing the backup into the Gertz Property: sanitary flow, groundwater, and storm water entering the sanitary pipe from the Cohen catch basins. (Doc. 1967 at PAGEID 49340). The Court places little weight on Dr. Kinman's opinions because they are based, in part, on faulty assumptions and unfounded conclusions not set forth in his written expert opinion. In addition, Dr. Kinman did not consider the Consent Decree factors that govern resolution of this matter.

Dr. Kinman opined that the presence of a large rock or brick in the lateral just downstream of the Gertz basement lateral caused a choking of the Sanitary Sewer pipe. The confluence of the brick and water flow caused a hydraulic jump in the pipe and pushed sewage water into and up the Gertz basement and first floor laterals. Dr. Kinman testified that MSD's TV video showed a large brick-like object in the Sanitary Sewer pipe approximately 1.5 feet below the junction of the Gertz lateral, which presented an impediment to flow and a trigger for a hydraulic jump, as depicted in this still shot of the video (Gertz Ex. 38):



The Court has again viewed the video of this obstruction. Following the location depicted in Gertz Ex. 38, the camera pushes the brick to 247.70 feet upstream, altering the orientation of the brick:



The camera then continues in reverse allowing a view of the brick at a location of 246.60 feet:



The depiction of the brick at this location visually appears to be a much less significant obstruction than that depicted in Gertz Ex. 38 and detracts from the persuasiveness of Dr. Kinman's opinion and Gertz Ex. 38.

More importantly, the TV camera easily moved the brick through the pipe. The video shows the camera continues to push this brick an additional 2.2 feet to the location of 250.50 feet. The camera then moves past the rock to 252.60 feet, showing daylight through the holes of the lid of MH 40513003. The camera's ability to push the brick through the sewer pipe indicates that any obstruction it may have presented was not permanent. Mr. Pittinger testified this rock,

which was located “immediately downstream” of the Gertz lateral, would not cause him concern because in the video he observed “how easily it was moved by the camera. . . . The cameras have very limited power, so it [the rock] was not fixed. Any significant flow in that pipe would move that [the brick] downstream with no effect on the flow.” (Doc. 1962 at PAGEID 48703-04). The Court gives less weight to Dr. Kinman’s opinion on the effect of this brick on flow in light of the evidence that it was easily moved by the camera and did not present a significant obstruction.

Dr. Kinman’s opinion on hydraulic jump is additionally based on the other obstructions he viewed in MSD’s videos of the Sanitary Sewer line. There are numerous still shots of MSD’s TV video inspections upon which Dr. Kinman relied for his opinion, which are attached to the Addenda to his Modified Expert Report. (Gertz Ex. 10). One is a screen shot of the sewer line between MH 40513003 and MH 40513004 depicting what is labeled as a “large obstruction in flow line of main sanitary sewer line”:



(Gertz Ex. 10, Addenda at Doc. 1867-3 at PAGEID 44853; Gertz Ex. 37, page 2).¹⁶

¹⁶ In their rebuttal brief, Claimants allege they did not identify this exhibit as a “significant” obstruction at any time and that MSD is attempting to manufacture an issue where there is none. Contrary to Claimants’ argument, their own expert identified the exhibit as a “large obstruction” and attached it to his expert report in support of his opinion.

The identification of this “large obstruction” in the still shot is misleading. As MSD points out, the video shows that when the camera truck rig retracted and ran over the obstruction, the obstruction flattened out. Dr. Barton testified that upon retraction of the camera truck rig over the obstruction, what appeared to be a “blockage” on the video was most likely toilet paper which was easily dispersed by the force of the encounter with the video camera and did not present an obstruction to the flow of fluid within the pipe:



(MSD Ex. 38). Dr. Kinman’s overstatement of the significance of this “obstruction” detracts from the overall credibility of his opinion.

Dr. Kinman also relied on the condition of the Sanitary Sewer line from MH 40513003 to 40513002 as reflected MSD’s TV Inspection Report of that sewer segment. He highlighted this segment, noting that “this sewer was found by MSD to be *so clogged* that the camera inspection had to be abandoned and re-attempted by going downstream from manhole 002.” (Gertz Ex. 9 at Doc. 1867-2 at PAGEID 44779) (emphasis added). Dr. Kinman attached to the Addenda of his Modified Report the MSD TV Inspection Report indicating the survey was abandoned at 11.00 feet due to “heavy deposits at this point.” (Gertz Ex. 10; Gertz Ex. 27). A photo of the obstruction is included as the last page of Gertz Ex. 27¹⁷:

¹⁷ The red arrow is not included in the original photo but was added by Dr. Barton in his analysis of the obstruction.



Figure 9: camera footage of the obstruction which prevented camera passage

On further examination of the video identifying the defect reported by Dr. Kinman, Dr. Barton determined that the obstruction was a deposit on the side of the pipe which caught the edge of the camera rig. He opined the obstruction was minimal, obstructing less than 12% of the pipe capacity. (MSD Ex. 14; Doc. 1866-14 at PAGEID 44714):

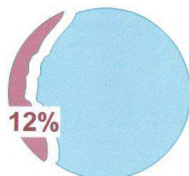


Figure 10: graphic depicting the 12% pipe obstruction of the deposit shown in Figure 9.

(MSD Ex. 14, Fig. 10; Doc. 1967 at PAGEID 49501-02). Importantly, this 12% obstruction was located between MH 40513003 and the Cohen catch basin connection upstream of the Gertz Property lateral and would block flow to MH 40513003, thereby reducing, not increasing, the flow entering the Gertz basement lateral. (Doc. 1967 at PAGEID 49504). In any event, in examining the potential flow from the Cohen lateral, Dr. Barton’s CFD model did not include this obstruction, thereby providing “the most conservative estimate of what that level could have been.” (*Id.* at PAGEID 49505).

In his rebuttal, Dr. Kinman explained that “although technically it is reducing the flow by 12 percent, according to Dr. Barton, the ‘blockage,’ quote/unquote, is only part of the problem with these encrustations because the jump would give you a hundred-percent blockage downstream. So the 12 percent is only a small part of a hundred percent.” (Doc. 1971 at

PAGEID 50103-04). Dr. Kinman's explanation is confusing. It is not clear why an obstruction of flow upstream would contribute to and cause a hydraulic jump downstream. To the extent Dr. Kinman may be suggesting that the 12% obstruction was just one of many obstructions that cumulatively blocked the Sanitary Sewer line and caused a hydraulic jump, the Court finds Dr. Barton's explanation on this point much more persuasive. As Dr. Barton explained using a corrugated pipe as a demonstrative, the only relevant consideration for calculating obstruction within a pipe is the largest obstruction, and not a cumulative adding of all the obstructions. (Doc. 1967 at PAGEID 49535-37). The identification of these obstructions as significant in Dr. Kinman's Modified Report, when the evidence demonstrates they were not, detracts from the overall persuasiveness of Dr. Kinman's opinion about the condition of the Sanitary Sewer pipe and the effects of the "obstructions" or "defects" he identified within the line.

Dr. Kinman also opined that a change in slope from 3.5% to 1.2% was a trigger for hydraulic jump. Dr. Kinman testified that water entered MH 40513003 at a slope of 3.5% and left the manhole at a slope of 1.2% and was "coming down faster than it can get away" so it "climbs up into the Gertz building" as the path of least resistance. (Doc. 1966 at PAGEID 49224). However, Dr. Kinman failed to explain or analyze how the slope change would impact flow, block flow in the pipe, or cause a hydraulic jump. In contrast, Dr. Barton analyzed the slope of the Sanitary Sewer line from MH 40513003 to the surcharging manhole at MH 42616009 in his CFD modeling and determined those slopes did not cause a surcharge in MH 40513003. (Doc. 1971 at PAGEID 50111-12; MSD Ex. 27; MSD Ex. 28, Froude chart).

Dr. Kinman further opined that groundwater infiltrated the Sanitary Sewer line through holes and leaking joints and "had a major impact on this particular backup." (Doc. 1967 at

PAGEID 49342). Dr. Kinman observed the Sanitary Sewer pipe one-quarter to one-third full of groundwater by looking into the manhole “from the top of the manhole.” (Doc. 1967 at PAGEID 49438; Gertz Ex. 31). He also testified that encrustations within the pipe evidenced the presence of groundwater.

Dr. Kinman did not measure the dry weather flow of the Sanitary Sewer in determining the amount of alleged groundwater within the sewer. He estimated the dry weather flow by eyeballing the sewer from the open lid of a manhole. None of the photographs submitted corroborate Dr. Kinman’s estimate of groundwater filling the pipe one-fourth to one-third full.

Mr. Pittinger acknowledged that by virtue of a clay pipe being underground, it was subject to infiltration. He also testified, however, there is a significant delay from the time rain falls to the time it influences groundwater infiltration into a sewer. Even if the Court concludes that some amount of groundwater entered the Sanitary Sewer pipe, there is no evidence establishing that the volume of groundwater that entered the pipe upstream was equivalent to the volume determined in Dr. Kinman’s Manning equation. Dr. Kinman estimated there were 381.5 to 888.6 gallons of water per minute entering the Sanitary Sewer pipe upstream of the Gertz and Cohen laterals. Dr. Kinman’s Manning equation assumes a completely full pipe of groundwater and assumes, without evidence, that the capacity of the pipe is equivalent to the actual flow of groundwater in the pipe. Dr. Kinman’s Modified Report states that five inches of rain dropped in excess of 17 million gallons of water on the surface of 129 acres of watershed in 40 to 60 minutes. Yet, Dr. Kinman’s expert reports and addenda do not analyze the volume or impact of groundwater in support of his opinion in this case. His “Findings” do not mention groundwater. (Gertz Ex. 9, Doc. 1867-2 at PAGEID 44777). Dr. Kinman’s “Supporting Findings That Need

To Be Highlighted” do not analyze the volume or effect of groundwater on flow through the sewer pipe. (*Id.* at PAGEID 44778-79). Dr. Kinman’s “Discussion of Findings” do not mention or analyze groundwater flow. (*Id.* at PAGEID 44780). Instead, Dr. Kinman discusses the impact of storm water from the Cohen lateral and downstream issues with two 12-inch sewer lines directed to a 10-inch sewer line (discussed above). (*Id.*). Dr. Kinman’s “Summary” does not discuss groundwater. (*Id.* at PAGEID 44781). Dr. Kinman’s nine “Water Path Segments to Assist in Understanding Sewer Back-up at 2700 Highland Ave.” do not discuss or analyze groundwater. (*Id.* at PAGEID 44813).¹⁸ Dr. Kinman’s Modified Report calculates the “Volume of Water to Cohen Yard Drain.” (*Id.* at PAGEID 44814). There is no similar calculation of the volume of water allegedly entering the upstream Sanitary Sewer pipe in the form of groundwater. The only place where groundwater is mentioned in the Modified Report is in connection with downstream *impediments* to flow (“Hole in pipe adds groundwater parameters (head, volume, quality, etc.) to 8-inch sanitary sewer flow.”) (*Id.* at PAGEID 44815), not added capacity or volume to the flow.

Nevertheless, at the hearing in this matter, Dr. Kinman testified that “groundwater had a major impact on this particular backup.” (Doc. 1967 at PAGEID 49342). According to Dr. Kinman, 14 million gallons of rainwater fell on the 35-acre railroad yard, which had a direct path to the gravel bed surrounding the sanitary sewer; this rainwater raised the groundwater table five inches; and this in turn created a loading factor, exerting pressure on the holes in the pipe, and

¹⁸ During the hearing, Dr. Kinman acknowledged that he did not mention groundwater in this list. (Doc. 1967 at PAGEID 49343). However, he suggests a reason for this omission: “This is dated December the 16th of 2016. I was early on in my investigation when I was locating these water path segments, and I didn’t have all the information on the groundwater at the time.” (*Id.*). Dr. Kinman’s justification is unfounded. Dr. Kinman was not even contacted by Mr. Gertz until May 2017 (Doc. 1966 at PAGEID 49212), and Dr. Kinman included the list of Water Path Segments in his Modified Report, which was created after his August 2020 deposition. (Doc. 1967 at PAGEID 49343). His suggested reason is inconsistent with the evidence in this case.

forced groundwater in the pipe. (Doc. 1970 at PAGEID 49973). None of this factual information is in Dr. Kinman's expert reports, and his conclusions on the groundwater table, loading factor, and pressure are unsupported by any explanations or calculations.

Dr. Kinman's experts reports were required to contain a complete statement of all the opinions he would express, the basis and reasons for those opinions, and the facts or data he considered in forming his opinions. Fed. R. Civ. P. 26(a)(2)(B). Dr. Kinman's expert reports do not identify groundwater having "a major impact" or any particular significance in the Gertz basement flooding. Therefore, the Court gives no weight to Dr. Kinman's opinions on the effect of groundwater on the Sanitary Sewer pipe capacity.

The Court also places little weight on Dr. Kinman's opinion that the combination of storm water from the Cohen catch basins entering the Sanitary Sewer pipe and obstacles encountered within the Sanitary Sewer triggered a hydraulic jump. Dr. Kinman determined there were 300 to 700 gallons per minute of storm water flowing through the Cohen catch basins and Cohen lateral to the Sanitary Sewer. He opined that the volume of this flow, in combination with the volume of water upstream of the Cohen lateral, exceeded the capacity of the Sanitary Sewer pipe below MH 40513003. Dr. Kinman concluded that when this flow encountered the defects within the pipe, a hydraulic jump occurred causing sewer water to back up into the Gertz laterals as the path of least resistance.

Dr. Kinman's opinion on the amount of storm water flowing through the Cohen catch basins is based on the unfounded assumption that the catch basin drains were connected to the Cohen lateral by 8-inch pipes. However, Cohen manager Mr. Beebe testified these were 4-inch, not 8-inch pipes. Dr. Barton testified that the four-inch pipe contains one-fourth the flow of an

eight-inch pipe due to hydraulic radius. Dr. Kinman agreed that using a four-inch as opposed to an eight-inch pipe would be significant. (Doc. 1967 at PAGEID 49410). In addition, the evidence establishes that the Cohen catch basins were completely filled with debris, so much so that Mr. Beebe used Bobcats to clean them out the day after the storm, thereby further reducing the flow from the Cohen catch basins into the Cohen lateral. Dr. Kinman's analysis does not account for the smaller circumference of the pipe and the debris-filled catch basins, both of which would reduce the volume of water reaching the Sanitary Sewer.

Dr. Kinman's Manning equation is also based on the assumption that the Cohen catch basin drains connected in a general sweeping curve to the Cohen lateral. The exact configuration of the connection between the Cohen catch basins and the Cohen lateral is unknown. MSD diagrammed the approximate location of the connection of the catch basin pipes to the Cohen lateral using blue dashed lines. (MSD Ex. 9). The blue lines were intended to show connectivity of the catch basins to the lateral, not actual physical location. (Doc. 1962 at PAGEID 48700). Mr. Pittinger testified that there must have been some bends and connections in the pipes from the catch basins to the Cohen lateral. He explained that there are "multiple inlets that tie into a single point of connection, which inherently means that there are junctions and connections and bends," and "[t]here is no way to go from separate through a straight line into a single connection without having some sort of fitting or bends or junctions." (Doc. 1962 at PAGEID 48699-700). The Court finds Mr. Pittinger's testimony credible and persuasive and concludes that given the location of the two Cohen catch basin drains there necessarily must be at least some bends in the pipes to connect to the Cohen lateral.

Dr. Kinman's Manning equation did not account for any bends in the Cohen catch basin

drain pipes and depicted them as a straight pipe with no losses. Both Dr. Kinman and Dr. Barton agreed that adding bends to the connection between the Cohen catch basin drain pipes and the Cohen lateral increases the head loss, which in turn reduces the flow to the Cohen lateral and Sanitary Sewer. Dr. Barton's CFD model accounted for such losses and considered how a blockage of the Sanitary Sewer pipe would impact the hydraulic head. Dr. Barton opined that even if the pipe was 50% blocked, there would be inadequate head pressure to force water into the Gertz lateral.

The Claimants criticize Dr. Barton's report because he failed to consider a 40% "blockage" of the Sanitary Sewer line between MH 40513003 and 40513004 at the 230.9 foot location. (Gertz Ex. 38). Both Mr. Pangallo and Mr. Pittinger testified the video of this section of pipe did not show a 40% blockage; Dr. Kinman described it as a "40 percent obstacle"; and visually, the photo of the settled deposits in the sewer line depicted in Gertz Ex. 38 clearly do not show a 40% blockage of the pipe. Therefore, Dr. Barton's failure to consider this evidence does not detract from his opinion.

Claimants also contend that Dr. Barton ignored "many additional blockages listed in the TV videos in the 10-25% range" in giving his opinion. However, as Dr. Barton credibly testified, in assessing impediment to flow, the largest impediment – not an accumulation of the impediments – should be analyzed. Dr. Barton's CFD model conservatively assumed both a 25% and a 50% impediment to flow, neither of which would result in a backup of the Gertz Property lateral.

Claimants further criticize Dr. Barton's CFD model, contending it ignores "the Cohen bathroom fixtures cut off at floor level that emptied into the Cohen lateral. . . ." (Doc. 2004 at

PAGEID 51316). However, Dr. Kinman did not include this information in his two expert reports or addenda. Dr. Kinman's Modified Report discusses and analyzes the two Cohen storm water catch basins only. (Gertz Ex. 9, Doc. 1867-2 at PAGEID 44777, 44778, 44780, 44781, 44813). Dr. Kinman calculated the "Volume of Water to Cohen Yard Drain From 5 inches/hour rain directly opposite 2700 Highland Ave." (*Id.* at PAGEID 44814). However, Dr. Kinman did not calculate the volume of water entering the Cohen active bathroom drains or the elevation of those drains. (Doc. 1971 at PAGEID 50114). Dr. Barton testified he based his CFD model on the information Dr. Kinman relied upon in his reports, and Dr. Kinman "never reported a bathroom on the first floor." (Doc. 1970 at PAGEID 49958). Therefore, Claimant's criticism of Dr. Barton's CFD model is unfounded.

Dr. Kinman's opinion also assumed a 100% blockage of the Sanitary Sewer line downstream of the Gertz building basement lateral. There is no evidence that rocks, encrustations, sags, etc. caused a complete blockage of the pipe. Nonetheless, Dr. Kinman testified that the numerous impediments within the Sanitary Sewer pipe triggered a hydraulic jump that caused a 100% blockage or choking of the pipe. He testified the backup rose not only into the Gertz basement lateral but the first floor laterals as well.

Dr. Kinman failed to present any analysis in his expert opinions about the first floor laterals in the Gertz building. He testified he does not know which particular impediments or incidents within the pipe actually caused the hydraulic jump. He does not explain his conclusion as to why any particular hydraulic jump would cause a backup into some but not all of the Gertz laterals. More importantly, Dr. Kinman's hydraulic jump theory ignores the impact of a hydraulic jump on the Cohen lateral. The Cohen lateral is located between the first and second

Gertz laterals connected to the first floor. The first floor level of the Gertz building sits at an elevation of at least 630.33 feet. By Dr. Kinman's own calculations, the Cohen first floor elevation sits at 626.26 feet, four feet below the elevation of the Gertz first floor laterals. Based on Dr. Kinman's theory that the pressurized sewer water from a hydraulic jump seeks the point of least resistance, it would be expected that the pressurized flow would release from the Cohen lateral connections, which sit at a lower elevation, before the Gertz first floor lateral connections. However, the evidence shows that the Cohen property did not experience a Sanitary Sewer backup of the fixtures in the Cohen building's first floor. Dr. Kinman's opinion on causation via a hydraulic jump theory lacks support in the evidence and a substantial explanation as to why hydraulic jump occurred in the Gertz laterals but not the Cohen lateral.

Dr. Barton's expert reports and testimony were more cogent and convincing than Dr. Kinman's. In addition, the Court finds Dr. Barton to be better qualified than Dr. Kinman for the opinions on sewer pipe capacity and flow factors in this case. Dr. Barton has a superior record of expertise, project experience, and publications directly related to the causation theory advanced by Claimants. (Compare MSD Ex. 16 with Gertz Exs. 7 and 8). As noted in multiple instances above, Dr. Kinman often overstated the significance of the materials upon which he relied and his explanations tended to be disjointed. Dr. Kinman's expert reports and testimony fall short of making a persuasive case for the cause of the Gertz Property damage.

In addition, Dr. Kinman did not consider the relevant Consent Decree factors that govern the resolution of this SBU claim. In forming his opinions, Dr. Kinman did not request information on surrounding properties other than the information that he obtained on the Cohen property; he did not consider whether surrounding properties experienced sewer backups on

August 28, 2016; he did not investigate or determine the condition of the private building sewer or laterals for the Gertz Property, which are the responsibility of the building owner and not MSD; he did not know whether the Gertz Property had ever experienced or reported a previous Sanitary Sewer backup; and he did not know what volume, if any, of sanitary flow and debris were in that Sanitary Sewer on August 28, 2016. (*Id.* at PAGEID 49376-82). In all, Dr. Kinman did not present a persuasive case that the backup was caused by a surcharge of the public Sanitary Sewer. For these reasons, Dr. Kinman's conclusions are given little weight.

The Court has also considered the testimony from eyewitnesses who observed what they believed to be the presence of feces, toilet paper, and waste matter on the floors of the Property on or about August 28, 2016.¹⁹ The Court notes that MSD's Executive Report did not include any reported information about toilet paper and fecal residue, and both MSD experts, Mr. Pittinger and Dr. Barton, testified they had been given no reports of toilet paper and therefore did not consider it in formulating their opinions. The presence of such waste matter does not, however, necessarily establish there was a surcharge of the public Sanitary Sewer. Where a private building lateral becomes overloaded, the lateral can back up and any waste matter already present in the lateral necessarily backs up with the water surfacing through basement drains or fixtures. Therefore, while the presence of such waste matter may be indicative of a public Sanitary Sewer backup, it may also be indicative of a private building sewer backup.

An illegal storm water connection to the sanitary building lateral can be a source of overloading in a private building sewer. MSD's dye tests of the outside drains, roof stacks,

¹⁹ One such witness was a ServPro employee who testified he observed feces and toilet paper on the Property floor. As the Court advised the parties at the hearing, this Court's authority to award damages is limited by the terms of the Consent Decree, and MSD cannot be bound by any statements or opinions of its cleaning contractors. (Doc. 1962 at PAGEID 48734).

downspouts, and external trench drains at the Gertz Property showed proper connections to the Storm Sewer. MSD dye tested some of the internal floor drains, with one such test being inconclusive. MSD dye tested a first floor internal floor drain on February 14, 2017, but the dye from this test did not show up in either the Sanitary or Storm Sewer. (MSD Ex. 7 at Doc. 1866-7 at PAGEID 44645). MSD dye tested two first floor internal floor drains on February 24, 2017, and both showed in the sanitary sewer. (MSD Ex. 8 at Doc. 1866-8 at PAGEID 44647). A first floor toilet dye tested that same day showed in the sanitary sewer. (Gertz Ex. 28). Mr. Gertz testified he dye tested the window well drain which showed in the Storm Sewer. (Doc. 1964 at PAGEID 48947). However, there is no evidence how or to what sewer (building, sanitary, or storm) the outside door well drain connected. (Doc. 1965 at PAGEID 49114-15). In addition, there is no evidence that the internal building plumbing and laterals were videoed to determine the condition of the building laterals or whether there were any improper connections. Property owners, and not MSD, are responsible for the maintenance and cleaning of building lateral sewer lines, which are owned by the property owner. (Consent Decree, Ex. 8 at 1; Doc. 580, Ex. C, Section 2008, MSD Rules and Regulations) (“The owner of the premises served by a sewer shall be responsible for the maintenance and cleaning of the building sewer from the building to the point of connection with the public local sewer.”). *See also* Order Re: Request for Review by Wardell Hill, Doc. 685 at 13, n.8 (March 27, 2014). If there were improper lateral connections or blockages within the Gertz building laterals, the responsibility for remediating those problems lies with the Claimants and not MSD. In addition, there was testimony that garbage, mud, debris and paper products routinely enter Storm Sewer inlets and would have entered the Property through the various floor drains given the overloading of the Norwood Storm Sewer. This

provides another likely explanation for the observations. Because there are no other signs that the main public Sanitary Sewer line surcharged on August 28, 2016, the presence of feces or debris on the Gertz Property floors is not dispositive.

Finally, if the public Sanitary Sewer surcharged, it would be expected that all three first floor laterals would have backed up, but that did not occur in this case. In their rebuttal brief, Claimants allege that MSD misconstrues Mr. Gertz's testimony to limit the area of SBU to the circled blue line depicted in Gertz Ex. G-2A when in fact it encompassed the far West bathroom serviced by the last upstream building lateral. Claimants argue Mr. Gertz drew a blue line to indicate only his observations of the first floor sewer backup on the day he discovered it, and it was not intended to encompass other areas of the building, including the far West first floor bathroom. (Doc. 2023 at PAGEID 52092, citing Doc. 1963 at PAGEID 48834, Page 121, L. 22-25 and Page 122, Page 123 and Page 124).

This is not what the relevant testimony demonstrates:

Q. Now, you came down and saw this the day after the incident. Can you show us *where the water was and where it didn't go*? And what I'd ask you to do is take a colored pen over there, oh, I'd say blue, and *draw a line around the farthest limit* where the water went.

A. (Witness complied). In proximity, I think you'd be very safe to use that line as a limit from my –

Q. Go back over on the right side.

A. As far as from my observation.

(Doc. 1963 at PAGEID 48834) (emphasis added). Mr. Gertz was specifically asked to depict the “farthest limit,” and the far West bathroom was not included.

Claimants contend Mr. Gertz did not depict the far West bathroom because “the Gertz's were not really inhabiting that area.” (Doc. 1965 at PAGEID 49121). They allege that “Mr. Gertz did not initially discover the sewer backup in the back bathroom until sometime later,

which he explained to the Court in his testimony, located at Doc. 1964 at PAGEID #49005, Page 122, L. 21-25 and Page 123, L. 1-6.” (Doc. 2023 at PAGEID 52092-93). This is not what the testimony states:

Mr. Gertz: There are three taps that service 2700 Highland Avenue. On the main level, there are three taps, on the main level, and one on the lower level.

Q. All right.

A. Those three taps are here, here, here. (Indicating.)

Q. You can put that exhibit down now.

A. Okay.

Q. And you can have a seat.

THE COURT: Can I just ask a clarifying question? On the blue highlighted portion, I thought you said earlier that that was the portion where within that circle was areas that had water?

THE WITNESS: Yes, Judge.

THE COURT: But not outside that area on the main level?

THE WITNESS: That’s correct. The morning that I got there and after some time, I identified that area to have been impacted or had water.

THE COURT: Thank you.

(Doc. 1964 at PAGEID 49004-05). Contrary to Claimants’ argument, this testimony does not indicate Mr. Gertz identified the far West bathroom as having had experienced a backup.

Viewed in context, the phrase “that area” is in reference to the subject of the Court’s question: “the blue highlighted portion.”

The additional testimony Claimants cited to indicate that Mr. Gertz later realized the West bathroom was impacted does not support Claimants’ argument. (Doc. 2023 at PAGEID 52093, citing Doc. 1965 at PAGEID 49121, Page 103, L. 10-24). This testimony indicates the involvement of the trench drain in the room adjacent to the tool storage room.

Claimants argue the testimony of ServPro’s representative supports a finding that the far West bathroom, and by extension the farthest upstream first floor lateral, was affected by Sanitary Sewer backup. Claimants argue in their rebuttal brief: “ServPro’s representative, Mr.

Gilbert, specifically identified this area on the far West side of the building as where he first observed wastewater flowing from and across the first floor into the basement on the East side of the Gertz building.” (Doc. 2023 at PAGEID 52152, citing Doc. 1965 at PAGEID 49144, Page 195, L. 3-8). This is not accurate. The Court has reviewed this testimony, and Mr. Gilbert did not specify the direction he proceeded through the building, nor did he specifically identify the far West bathroom as showing signs of wastewater backup.

In determining causation in SBU cases, the Court examines many factors, including the amount of precipitation, property SBU history, condition of the sewer system in the neighborhood, results of a visual inspection of the neighborhood to look for signs of overland flooding, neighborhood SBU history, capacity of nearby public sewer lines, and topography. (Doc. 131, Consent Decree, Ex. 8 at 2). Those and other factors do not establish, by a preponderance of the evidence, that the Sanitary Sewer surcharged and caused the Gertz Property’s damage. There was no additional sanitary flow from upstream of the Gertz Property; the Property had not previously reported an SBU and there are no known capacity problems with that Sanitary Sewer line; there were no reports of SBU by property owners on the same Sanitary Sewer line segment downstream and at lower elevations, which would be expected if an SBU occurred at the Gertz Property; the Norwood Storm Sewer surcharged to at least street level and discharged storm water into eight of the nine Gertz basement laterals that were tied to the Storm Sewer; there were no signs of surcharge in the relevant Sanitary Sewer manholes; and the evidence on Sanitary Sewer capacity and flow from Dr. Barton was more persuasive than from Dr. Kinman. In this case, the preponderance of the evidence does not establish that inadequate capacity in MSD’s Sanitary Sewer caused the flooding to the Gertz Property. Rather, a backup

of the Norwood Storm Sewer system more likely caused the flooding.

The Court is sympathetic to the losses suffered by the Claimants in this case. Nevertheless, the Court must decide this case by analyzing the evidence and weighing the persuasiveness and supportability of the evidence. The Court is bound by the terms of the Consent Decree, which places the burden of proof on the Claimants to show the cause of the damage to their property was a capacity-related public Sanitary Sewer problem. The undersigned is responsible for ensuring that any costs for damages to an individual's private property that must be paid by MSD (and ultimately the rate payers of Hamilton County) under the Consent Decree are the result of the backup of wastewater into the property due to inadequate capacity in MSD's Sanitary Sewer system. In the absence of evidence establishing Claimants' property damage was more likely caused by a surcharge in the public Sanitary Sewer line and not by the surcharge of the Norwood Storm Sewer or some other cause, the Court is constrained to uphold MSD's decision in this case. Therefore, the Court denies Claimants' appeal in this case.

IT IS SO ORDERED.


Karen L. Litkovitz, Magistrate Judge
United States District Court