IAWC Exhibit No. 8.0R

REBUTTAL TESTIMONY
OF
YVONNE CICCONE

DOCKET NO. 02-0352

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WITNESS IDENTIFICATION AND BACKGROUND

Q1. Please state your name and business address.

A. My name is Yvonne Ciccone and I am employed by Science Applications International Corporation ("SAIC"), which is located at Two University Plaza, Hackensack, New Jersey 07601.

Q2. Are you the same Yvonne Ciccone who submitted Direct Testimony in this matter?

A. Yes.

PURPOSE OF TESTIMONY

Q3. What is the purpose of your testimony in this proceeding?

A. The purpose of my Rebuttal Testimony is to respond to portions of the Direct Testimony of Pekin witness Carl Adams.

RESPONSES TO MR. ADAMS' TESTIMONY

Q4. Mr. Adams states in his testimony that the Pekin wastewater treatment plant is operated in "an exemplary manner." Is this testimony accurate?

A. No. The purpose of my original Direct Testimony was to evaluate and comment on the statements by Pekin witnesses that Pekin had solved all problem areas of its Wastewater System, had been in compliance with state and federal regulations for years, and had an outstanding track record of efficiently operating its Wastewater System. In my Direct Testimony, I demonstrated

the falsity of these statements by identifying significant deficiencies in the design, operation, and management of Pekin's Wastewater System. Mr. Adams' testimony does not effectively refute my original conclusions, and certainly does not demonstrate that the wastewater treatment plant, much less the system as a whole, is operated in an exemplary manner. As discussed more thoroughly below, Mr. Adams' testimony is misleading in the following respects: (1) Mr. Adams limits his discussion to the treatment plant itself, conveniently avoiding any discussion of the collection system and CSO lagoon, two of the most serious problem areas; (2) Mr. Adams places great significance on his conclusion that the Pekin treatment plant has had only one excursion in the past three years, ignoring the fact that the system as a whole has had seventeen excursions within that same time period; and (3) in formulating his opinions, Mr. Adams ignores conditions I observed during my visit and documented through photographs, and instead relies exclusively upon conditions observed during his later visits, and the openly self-serving statements of Pekin's own operators.

Q5. On page 4, lines 55-59 of his Rebuttal Testimony, Mr. Adams states that he was "retained by counsel for the City of Pekin to evaluate the accuracy and adequacy of Illinois-American's witness' testimony regarding the management of the City of Pekin's *wastewater treatment plant"* (emphasis added). Would you comment on the defined scope of Mr. Adams' review?

A. Yes. Mr. Adams has limited his evaluation, with minor exceptions, to only those issues related to the City's wastewater treatment plant number 1 itself, which he designates as "Pekin's POTW," as opposed to the Wastewater System as a whole, which would include, in addition to the treatment plant, the collection system (comprised of pipes, interceptors, pump stations, and various outfalls that distribute wastewater into the Illinois River), and the storage system

(comprised of the CSO lagoon, plant 2, one outfall, and the storage at the State Street pump station). This is an extremely misleading approach to take for several reasons. First, any evaluation of a city's wastewater system cannot be considered complete if only the wastewater treatment plant is examined. All other areas of the Wastewater System, such as the sewage collection system, CSO lagoon, etc. are integral parts of the Wastewater System and are regulated by both the EPA and the IEPA. The federal regulation governing wastewater systems specifically states that a publicly-owned treatment works, or "POTW," includes "any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage," and "includes sewers, pipes and other conveyances" that transport wastewater to a treatment plant. 40 CFR § 403.3(o). Therefore, Pekin's CSO lagoon, pump stations, and the collection system are all considered part of the Wastewater System, and Mr. Adams' failure to include those components, which represent some of the most significant deficiencies in the system, is disingenuous and misleading.[1]

Second, up to this point, all the testimony submitted concerning the Wastewater System has not been limited to only the treatment plant. The affidavits and direct testimonies of Richard Hierstein and Dennis Kief discuss the Wastewater System as a whole. My own Direct Testimony addressed problems in multiple areas of the Wastewater System and was not confined to only the wastewater treatment plant. By limiting his testimony to only one area of the Wastewater System, Mr. Adams ignores some of the most significant problem areas and does not offer an adequate opinion on the operation of the Pekin Wastewater System.

[1] As used herein, the Pekin "Wastewater System" refers to the entire Pekin wastewater and collection system, including the collection pipes, interceptors and pump stations, treatment plant 1, the storage system (comprised of the CSO lagoon, treatment plant 2, one outfall, and the storage at the State Street pump station) and the various outfalls.

Third, the confusion caused by Mr. Adams' self-limitation on his testimony is compounded by his own inability to follow those limitations, as his testimony occasionally touches on areas beyond the scope of the treatment plant itself. Examples of this include: (1) his comments on the deterioration of the sewage collection system on page 21, lines 424-426; and (2) his comments on the decision to close plant 2 on pages 34-35, lines 731-739, and page 35, lines 746-748.

Thus, care should be taken to avoid taking Mr. Adams' testimony as representative of the Wastewater System as a whole.

Q6. On Page 10, Lines 194-201, of his Rebuttal Testimony, Mr. Adams states that although the Pekin treatment plant occasionally experiences an abnormally high level of grease, which can clog the primary clarifier scum boxes necessitating manual removal, during ADVENT's two plant visits, ADVENT noticed a "rapid and effective response by the operators to alleviate the problems." Would you comment on this testimony?

A. Yes. At the time of my visit to treatment plant 1, the scum boxes on two of the three operating primary clarifiers were blocked with scum and grease. Further, grease could be observed not only clogging the weirs lining the primary clarifiers but also spilling over those weirs and into the effluent trough, allowing it to pass through to the secondary system. In fact, I also observed a considerable amount of grease in the secondary clarifiers. (See photographs labeled Exhibit 8.1R.) Despite the noticeably clogged scum troughs, I observed no effort on the part of the operators to remedy these obviously non-functioning units. This is apparently a recurring problem with the Pekin Wastewater System, as the operator's logbooks make several references to incoming grease, including the entry on March 16, 2002, that states "Lots, Lots,

Lots, Lots, Lots, of grease balls coming into plt." It is important to note that excessive grease has the potential to adversely affect sludge settling.

It should further be noted that an influent concentration of grease in such an amount that it causes clogging of the scum boxes represents a failure on the part of the City to locate the source of the grease and remedy the situation at the source of the offending discharge. In fact, according to the City of Pekin's Sewer Use Ordinance Title 4, Chapter 4, Article A, any entity that discharges such grease into the sewer system in such amounts that inference with plant processes is experienced is in violation of the sewer regulations. It is unclear as to why the City of Pekin has neglected to actively enforce this ordinance and prevent such excess discharges of grease into plant 1.

Q7. Please comment on Mr. Adams' statement on Page 20, Lines 403-405, of his Rebuttal Testimony that "[a] comprehensive assessment would have identified the need for in depth discussions with POTW operators as a primary source of reliable information and included a complete data evaluation."

A. I would have preferred to have conducted discussions with the operators during my visit. This was not possible, though, as counsel for the City expressly prohibited any communication with the operators. However, the over 4,500 pages of documents I reviewed that were produced by the City pursuant to data requests and obtained from the Illinois Environmental Protection Agency's ("IEPA") file on the Wastewater System, together with the visual observations made during my site visit provided sufficient data on which to base my opinion. Apparently, the City agrees my document review was not lacking. In response to Illinois-American's Fifth Data Request to the City of Pekin, Request No. 25, the City stated that "Dr. Adams never testified that he performed a 'complete data evaluation' or that Ms. Ciccone failed to review any documents."

Q8. Please comment on Mr. Adams' statement on Page 21, Lines 424-426, of his Rebuttal Testimony that your testimony regarding the deterioration of the Wastewater System's sewage collection system is "unfounded because there are no data or exhibits noted in Ms. Ciccone's testimony demonstrating that Pekin's separate sewage collection system experiences deterioration."

A. My statement explaining the deterioration of the sewage collection system was provided as background to explain how a sanitary sewage overflow ("SSO") may occur. The documents the City provided indicate the City has not performed an Infiltration & Inflow Study since 1981, so I had no recent data available to me evidencing specific instances of deterioration. It is undeniable, though, that all sewage collection systems will experience deterioration over time.

However, as stated above, my explanation of the deterioration of sewage collection systems served only to introduce my later discussion of the presence of an as yet unlocated SSO in Pekin's sewage collection system. This SSO could potentially be allowing thousands of gallons of raw, untreated sewage to be discharged into the river. Strangely, Mr. Adams fails to address the issue of the SSO whatsoever in his testimony. As I detail at length on pages 20-21, lines 446-473, of my Direct Testimony, the unlocated SSO is a recurring issue that is well documented over the past several years. While the cause of the SSO is uncertain, the presence of the SSO has been addressed numerous times by the IEPA and the City's inability to adequately handle the issue is well documented. For example, a 1996 report by Jim Kammueller of the Pekin IEPA office states that the SSO had been suspected "for the past few years." Later, in 1998, Kenneth Newman, also from the Pekin IEPA office, submitted a report stating that his observations indicate "it was apparent that sewage was being lost from somewhere along the interceptor . . . ." The City's failure to locate and eliminate this SSO is recorded as a deficiency

in the IEPA's CEI O&M inspection of November 1998. Based on the documents I have reviewed, as well as my discussion with Jim Kammueller, it is apparent that the City has not committed the resources necessary to resolve this issue in a timely manner, despite having knowledge of the problem for over ten years. In fact, as late as March 2003, the City had still yet to solve the problem or implement a planned solution. In response to Illinois-American's Fifth Data Request, the City produced a March 12, 2003 United Water meeting agenda which lists as a topic for discussion "[a]nything more on the IEPA revolving loan or the plan to determine whether or not an SSO exists in the South interceptor?" Thus, regardless of what has caused the potential SSO, this is an extremely urgent issue – as the risk is the overflow of raw sewage into the river – that has not received proper attention by the City, and that was completely ignored in Mr. Adams' Rebuttal Testimony.

Q9. Please comment on Mr. Adams' statement on Page 21, Lines 438-440, of his Rebuttal Testimony that "the fact that there has only been one excursion in the last three (3) years confirms that the plant is operated in an exemplary manner."

A. As stated earlier, Mr. Adams has chosen to limit his testimony to the Pekin wastewater treatment plant only. The above quoted testimony should more properly state that only one excursion has occurred at Outfall 001, the plant 1 effluent point. Pekin's NPDES permit regulates two outfalls, 001 and 002. Outfall 002 (the CSO lagoon) has had at least 15 excursions within that same time period. These excursions are ongoing in nature. Moreover, Mr. Adams fails to even mention the suspected SSO, which should certainly be a primary concern for the City. Mr. Adams' statement regarding the "exemplary" operation of the plant also fails to take into account the grease and floatables not being captured in the clogged scum troughs of two of the three operating primary clarifiers, the floating solids and floatables on the surface of the

158 secondary clarifiers, and the floating solids present in the chlorine contact chamber – none of
159 which would be evidenced in excursions, and none of which would be present in a plant
160 operating in an "exemplary manner."

161 **Q10. Please comment on Mr. Adams' statement on Page 21, Lines 438-440, of his**
162 **Rebuttal Testimony that "[a]ctual TSS data are the primary indicator of treatment**
163 **efficiency for these [primary clarifier] units, and a comprehensive evaluation cannot be**
164 **made in their absence."**

165 A. Pursuant to data requests submitted by Illinois-American, the City of Pekin was required
166 to produce numerous documents related to the City of Pekin Wastewater System. Primary
167 clarifier effluent TSS data ("TSS data") was within the set of documents requested by Illinois-
168 American. Only the TSS data prior to 2000 was produced. In Carl Adams' response to Illinois-
169 American's Fifth Set of Data Requests, Request 27, Mr. Adams states that "actual TSS data has
170 not been collected." Therefore, it appears that the City ceased collecting and/or recording TSS
171 data for the primary clarifiers effluent sometime after 2000. It is difficult to see how Mr. Adams
172 could assert that an examination of information that does not exist would be necessary to conduct
173 a comprehensive evaluation of the Wastewater System.

174 However, sufficient treatment in the primary clarifiers also includes the removal of
175 grease, scum, and floatables. The removal of these substances would not be measured by TSS
176 data – and the failure of the primary clarifiers to adequately remove any of these three substances
177 was witnessed during my visit to the wastewater treatment plant. (See photographs labeled
178 Exhibit 8.2R.)

Q11. Please comment on Mr. Adams' statement on Page 23, Lines 479-481, of his Rebuttal Testimony that "it appears that Ms. Ciccone assumed that the four clarifiers were of the same dimensions and, thus, should receive equal flow. This is incorrect."

A. It was clear from my visual observations that the East and West clarifiers are of different sizes. Flow to each of these clarifiers should not be equal in volume, however flow should be proportional to the size of each clarifier. Even taking into account the different amounts of flow that should be directed to each of the clarifiers as determined by the clarifiers' size, the uneven distribution of flow between the clarifiers was apparent during my visit to the wastewater treatment plant. While one clarifier was not operational during my visit, each of the remaining clarifiers had a noticeably different amount of flow passing over its weirs. Further, a review of the primary clarifiers loading data as derived from the past three years of daily reports shows a recurring inability to properly distribute this flow. There are periods of time where loadings to the West set of clarifiers is only 60-70% of that to the East clarifiers, and isolated instances of the West clarifiers receiving less than half of the loading of the East clarifiers. In fact, over the past three years, over 55% of the days in which primary clarifier loading data was taken evidenced an uneven flow distribution of 20% or greater. It was clear that the primary clarifiers were not receiving an even distribution of flow during my visit, and my review of the data confirms that this was not an isolated incident.

Q12. Please comment on Mr. Adams' statement, regarding the collection of floatable and solid materials on the floor of the wastewater treatment plant, on Pages 24-25, Lines 508-513, of his Rebuttal Testimony that "Ms. Ciccone's observation should not have been a factor in her evaluation of the operational performance of the treatment plant."

A. My reference to the condition of the screening room, specifically the pile of floatable and solid materials accumulating on the floor when there was a dumpster nearby apparently designated for their collection, was specifically identified as poor housekeeping as opposed to an operational observation. The presence of floatable and solid materials being accumulated on the floor is simply not indicative, as Mr. Adams states in his testimony, of an "exemplary" system.

Q13. Please comment on Mr. Adams' statement on Page 25, Lines 525-529, of his Rebuttal Testimony that "[d]ata, collected at my direction on March 24, 2003, confirmed a removal of total suspended solids of greater than 50% and visual observation indicated that practically all of the scum/grease was removed through the primary clarifiers. Therefore, the Primary clarifiers at the Pekin POTW are performing well."

A. Nowhere in my Direct Testimony do I state that the primary clarifiers at the Pekin wastewater treatment plant are not removing at least 50 percent of total suspended solids. Indeed, this is not a statement that I could make since the City has failed to provide data that could be used to determine TSS removal after 1999, and has apparently ceased collecting and/or recording this data. I do, however, note in my Direct Testimony that I observed a significant difficulty experienced by the primary clarifiers in removing floatables and scum/grease. This difficulty was manifested by the presence of numerous floatables that had passed over the weirs of the primary clarifiers (See photograph labeled Exhibit 8.3R), the presence of floatables within the secondary clarifiers (See photograph labeled Exhibit 8.4R), and the presence of scum/grease in the secondary clarifier (See photograph labeled Exhibit 8.5R). It is interesting to note that although Mr. Adams was asked to comment on my statement that "a properly operating primary clarifier will remove . . . almost all of the ***floatables and scum/grease,"*** (emphasis added), he merely replies that his visual observations indicated a removal of ***scum/grease*** – making no

mention of the adequacy of the removal of ***floatables*** by the primary clarifiers. This is consistent with Mr. Adams' approach throughout his Rebuttal Testimony in which he places great importance on TSS removals and ignores the documented evidence of floatables and significant scum and grease escaping from the primary clarifiers and being present in the secondary clarifiers. Scum/grease and floatables removals are not adequately measured by TSS analysis. My visual observations, coupled with the photographic exhibits noted above, together with my review of the flow data for the past three years, clearly show that Pekin's primary clarifiers are not "performing well."

Q14. Please comment on Mr. Adams' statement on Page 26, Lines 537-542, of his Rebuttal Testimony that "[a]gain, Ms. Ciccone failed to recognize that two of the four primary clarifiers at the Pekin POTW are different sizes. Ms. Ciccone also mentions that one of the four primary clarifiers was receiving no incoming wastewater, while the other corresponding clarifier was receiving excess flow. According to my discussions with Pekin POTW personnel, the clarifier that was not receiving incoming wastewater was out of service for maintenance at the time of Ms. Ciccone's visit."

A. As stated earlier, the difference in primary clarifier size was apparent and does not resolve the problem experienced by the Pekin wastewater facility in adequately splitting the flow among the four primary clarifiers. The fact that one of the primary clarifiers was out of service also has no bearing on this issue, as the remaining three primary clarifiers were receiving unequal flow during my inspection. As noted earlier in response to Question 12, there have been repeated instances of uneven flow distribution between the primary clarifiers.

Q15. Please comment on Mr. Adams' statement on Page 27, Lines 560-562, of his Rebuttal Testimony that "[t]here is no basis whatsoever for Ms. Ciccone to relate the floating incident of the 1970's to an unequal flow distribution today."

A. Nowhere in my testimony did I state that the unequal flow distribution is the result of a floating incident in the 1970s. The testimony simply notes an observation in the IEPA report so as to be thorough by including all information that may be related to the unequal flow distribution. Regardless of the cause, it was obvious during my inspection of the wastewater treatment plant, as well through my review as the primary clarifier loading data, that the flow is not being distributed evenly between the primary clarifiers, and therefore, the clarifiers are not working as well as they could.

Q16. Please comment on Mr. Adams' statement on Page 27, Lines 574-575, of his Rebuttal Testimony that "[i]t is entirely possible that Ms. Ciccone confused the ice and snow with grease constituents, which can appear as similar materials."

A. There was no confusion of ice and snow with grease constituents, as they are markedly different in appearance. (See photograph labeled Exhibit 8.6R.) Further, the photographs taken during my inspection of the Pekin wastewater plant clearly show that the scum removal mechanisms in the primary clarifiers were not operational and that materials that should have been captured were instead flowing over the weirs and proceeding to the next stages of treatment. (See photographs labeled Exhibit 8.7R.) Again, I point to the condoms and other floatables on the edge of the primary clarifier (See photograph labeled Exhibit 8.8R) and in the secondary clarifier (See photograph labeled Exhibit 8.9R), as well as the grease in the secondary clarifier (See photographs labeled Exhibit 8.10R) as evidence that the scum removal systems

were not working. Had they been functioning properly, this breakdown in wastewater treatment would not have occurred.

Q17. Please comment on Mr. Adams' statement on Page 28, Lines 586-591, of his Rebuttal Testimony that "Ms. Ciccone does not provide data of individual Primary Clarifier effluent TSS to demonstrate that this is a current or realistic condition at the Pekin POTW. As previously discussed, ADVENT's data confirm that the Primary Clarifiers are performing within the specifications given by Ms. Ciccone, i.e., greater than 50 percent removal of TSS."

A. The reference in my Direct Testimony to a primary clarifier's expected removal of at least 50 percent of TSS was a general statement relating to the expected minimum performance of a primary clarifier. That statement did not purport to be, nor was it implied to be, a "specification" for Pekin's primary clarifiers. My Direct Testimony did not make any reference to the Pekin wastewater facility's ability or inability to achieve a 50 percent or greater removal of TSS. As already mentioned, the City's inability to produce primary clarifier effluent TSS data for the past three years, and the prohibition against my collecting any data during my visit, prevented any substantive review of whether the primary clarifiers are removing 50 percent of TSS. The fact that the primary clarifier scum troughs were blocked was apparent during my inspection of the wastewater facility, and is well documented in the photographs taken during that inspection. The blocked scum troughs would prevent effective removal of scum/grease and floatables, which would not be adequately reflected in TSS data alone.

Q18. Please comment on Mr. Adams' statement on Page 30, Lines 627-643, of his Rebuttal Testimony that "Periodic fluctuations are normal for any activated sludge facility

and are only a concern when dissolved oxygen concentrations are consistently and persistently below 1.0 mg/L."

A. While it is true that the dissolved oxygen ("DO") concentration will not remain absolutely stable in any basin, the fluctuations experienced in the Pekin basins far exceed the normal fluctuations that may be caused by wastewater strength or temperature. DO concentrations as high as 9.1 mg/l have been measured in the activated sludge basins, which cannot possibly be labeled "normal" in a conventional activated sludge plant. DO concentrations are measured once a day for each of the three basins. A review of the daily reports shows that in 2002 alone, the DO concentrations were below 2.0 mg/l 333 times; the readings were above 4.0 mg/l 432 times; and the readings were within the normal range of 2.0 mg/l to 4.0 mg/l only 219 times. While Mr. Adams may believe that DO concentrations are only a concern when consistently and persistently below 1.0 mg/l, that is certainly not an opinion shared by myself, or the Water Environment Federation's WEF MOP-11 cited by Mr. Adams. The WEF MOP-11 states that DO should be kept within 2-3 mg/l to ensure adequate microorganism activity. It further notes that, "over aeration wastes energy, may create excess turbulence and may break up the biological floc resulting in poor settling and high effluent solids."

Mr. Adams also concedes that low DO levels are "occasionally" experienced at the treatment plant. In actuality, low DO levels were experienced at least 333 times in 2002. The WEF MOP-11 notes that poor sludge settling as a result of the predominance of filamentous organisms has been associated with low DO concentrations. Low DO concentrations in Pekin's aeration basins have also been of concern to the IEPA. As recently as 2002, the IEPA sent the City of Pekin a letter recommending that DO concentrations be maintained at a minimum of 2.0 mg/l at all times. (Exhibit 8.11R, IEPA-51.)

Q19. Please comment on Mr. Adams' statement on Page 31, Lines 654-656, of his Rebuttal Testimony that "no correlation between DO concentration and effluent TSS concentration at the Pekin POTW was provided by Ms. Ciccone . . . ."

A. Fluctuations and/or excessively high or low DO concentrations will not necessarily manifest themselves as an immediate change in effluent TSS concentration. Rather, the effects will be subtler, which is to be expected in a biological system. The DO extremes experienced by the Pekin wastewater treatment plant would certainly prevent the effluent quality from being of the highest quality achievable within design limitations, and again would not occur in a facility run in an "exemplary" manner.

Q20. Please comment on Mr. Adams' statement on Page 31, Lines 656-659, of his Rebuttal Testimony that "according to the data that ADVENT reviewed and discussions with the Pekin POTW operators, in the last three years, the Pekin POTW has not experienced a poor settling sludge that resulted in loss of biomass from the Secondary Clarifiers."

A. A thorough review of documents maintained by the Pekin Wastewater System reveals that contrary to Mr. Adams' testimony, Pekin has experienced numerous instances where poor settling sludge has resulted in a loss of biomass in the Secondary Clarifiers. A loss of biomass, also called a "blowout," occurs where solids, which should settle to the bottom of the secondary clarifier and be removed from the wastewater, overflow the secondary clarifier weirs and proceed into the chlorine contact chamber. The operator's logbooks clearly detail a serious problem with poorly settling solids, resulting in blowouts that apparently began on February 17, 2002. On that day, the operator's logbooks state "FBOP high turbidity, tank blowout."

(Attached as Exhibit, 8.12R.) The next day, on February 18, 2002, both the FBOP clarifier and the south secondary clarifier experienced a loss of solids, with the operator's logbook stating: "So [south secondary clarifier] and FBOP tanks started blow-out solids." (Attached as Exhibit 8.13R.) Later the same day, the operator's logbooks reveal that the FBOP tank continued to have problems, noting "FBOP tank blowing out." It is also worth noting that the effluent TSS concentration as noted on the plant operating data sheet for this date was 61 mg/L. Although this is not a permit excursion because the permit does not contain a maximum daily limit, this measurement indicates an unusually high concentration of effluent solids TSS. The problem with the FBOP secondary clarifier eventually reached such a magnitude that the City was forced to shut down the clarifier on March 18, 2002, with the operator's logbook entry for that day reading "Had to shut down FBOP. Solids going over." (Attached as Exhibit 8.14R.) Apparently, problems with poorly settling sludge continued, as the March 19, 2002 operator's logbook entry reads "FBOP started to blow . . . South tk started to blow." The City's problem with the FBOP clarifier worsened that same day when it began to rain and the City was forced to "close[] North Pekin Diversion Gate to take some flow off the plant. Shut down all but two pumps." (Attached as Exhibit 8.15R.) Mr. Adams' statement that Pekin has not experienced a poor settling sludge that resulted in a loss of biomass is simply incorrect.

Q21. Please comment on Mr. Adams' statement on Page 32, Lines 674-675, of his Rebuttal Testimony that "[t]he presence of filaments does not automatically indicate a dissolved oxygen issue or a performance concern."

A. My testimony did not state that a dissolved oxygen issue or a performance concern had been indicated as related to filamentous bacteria. I merely noted that low DO concentrations aid in the formation of filamentous bacteria. As early as 1991, however, the City itself attributed a

portion of its historical TSS and fecal coliform excursions to the presence of excess filamentous bacteria. Specifically, a 1997 IEPA inspection report states that a wastewater treatment plant operator "reports they continue to experience chronic problems with sludge settling due to filamentous organisms." (Attached as Exhibit 8.16R.) The IEPA suggested that this problem might be the result of low DO concentrations in the aeration basins. In 1998, the City contracted with a third party, the Stover Group, to identify the filamentous bacteria. The report issued by the Stover Group lists a low DO concentration as one of the possible causes of the City's filamentous problem. Since excessive filamentous bacteria has caused a problem at the wastewater treatment plant for a number of years, it would seem to be a wise precaution to avoid the conditions identified by the IEPA and the Stover Group report as possible causes of that problem.

In addition, throughout the entries in the operator's logbooks detailing the blowout problem discussed in response to Question 19 above, repeated references are made to a "lot of filaments in all tanks" and the "filament problem" as an explanation for the blowouts. (Attached as Exhibit 8.17R.)

It is clear from the logbook entries that solids were lost from the clarifiers due to some type of sludge settling problems. The logbook entries imply, with their emphasis on filaments, that the operators believe that could be the cause of the problem. In each case, the operators did take some action to remediate the solids loss, such as decreasing flow to the affected tank, chlorinating the return sludge, or adding polymer to aid in settling. Even drastic actions such as shutting down the FBOP secondary clarifier had to be employed. However, all the actions noted in the operator's logbooks are reactionary as opposed to preventative. No cause for the incidents is noted in the logbooks, and, except for an entry indicating contractor's examination of the

filament problem, it does not appear as though any effort was made to prevent this from happening again. Throughout February and the beginning of March 2002, the dissolved oxygen levels in the FBOP activated sludge tank were always less than 2.0 mg/l and often less than 1 mg/l; such low levels are often indicative of sludge settling problems. In the beginning of March, the DO concentration experienced a drastic increase, with concentrations as high as 12.5 recorded, before returning to lower concentrations in the end of March.

The operator logbooks reveal that the operators at the Pekin treatment plant resort to chlorination of the return activated sludge on a regular basis apparently as a remedy to settling problems in the secondary clarifiers. Chlorination of return activated sludge is a traditional solution to the problem of excessive growth of filamentous bacteria, which may cause poorly settling sludge and subsequent blowouts, but chlorination alone is not an adequate long-term remedy. As stated in the MOP-11, "chlorinating return activated sludge will temporarily solve the problem but the underlying cause (such as insufficient DO) must be corrected or the problem will return." Except for the contractor's efforts to examine the filament problem, there are no noted efforts to determine and correct the root cause of the problem. At an "exemplary" plant, the effort would be put forth to ascertain the corrective actions necessary to prevent a reoccurrence of such incidents.

Q22. Please comment on Mr. Adams' statement on Pages 32-33, Lines 685-696, of his Rebuttal Testimony regarding your testimony concerning the inability to see the sludge level and the presence of floating solids and floatables in the secondary clarifiers.

A. Mr. Adams devotes his entire response to explaining why the sludge level in the secondary clarifiers should not be visible, and I am in general agreement with his statements in this area. Since counsel for the City prohibited any discussions with plant personnel during my

inspection of the Wastewater System, as well as the observance of any sludge judge readings, I merely noted that I could not observe the sludge level. The observation that the sludge blanket was not visible was simply a statement of fact in the lack of any way to determine the sludge blanket depth. No conclusion or deficiency was noted in accordance with the statement discussed by Mr. Adams.

Rather, the thrust of my testimony with regard to the secondary clarifiers concerned the presence of floating solids and floatables. These would not be measured by a sludge judge reading. The testimony presented regarding the presence of these substances in the secondary clarifiers, which represents a significant breach in acceptable wastewater treatment, was ignored by Mr. Adams in his Rebuttal Testimony. When there are as many floatables in the secondary clarifiers as observed during my inspection of the Pekin Wastewater System, it is obvious that the primary clarifiers are not performing adequately. These are the conditions which were noted to be deficient, along with the condition of the algae covered weirs. Secondary clarifiers should have only minor floating solids and the rarest floatable item. The photos of the secondary clarifiers at plant 1 clearly show a degree of floating solids that is not within the acceptable performance range for a secondary clarifier.

Q23. Please comment on Mr. Adams' statement on Page 33, Lines 704-707, of his Rebuttal Testimony that "[t]he photograph supplied as Exhibit 8.6 in Ms. Ciccone's testimony is unclear as to the extent of any algae or solids buildup. It is my opinion that the photographs show treated water flowing between each of the weir teeth, and no impairment blockage was present."

A. The algae buildup on the secondary clarifier weirs was clearly excessive. Although the presence of algae is expected in secondary clarifiers, the amount of algae in Pekin's secondary

clarifiers is significantly greater than the amount expected to be seen in a secondary clarifier located in Illinois during winter. (See photographs labeled as Exhibit 8.18R.) Further, it is standard operating procedure that the removal of algae from secondary clarifier weirs should be performed as often as necessary to ensure proper functioning of the secondary clarifiers. (See California State University's "Operation of Wastewater Treatment Plants" attached as Exhibit 8.19R.)

Q24. Please comment on Mr. Adams' statement on Page 34, Lines 719-724, of his Rebuttal Testimony that "[t]he total suspended solids (TSS) test will most definitely quantify solids that are the result of floatables."

A. This paragraph actually discusses two things: floatables and floating solids. Floatables are items such as tampons, condoms, plastic wrappers, etc. As their name implies, they float on the surface of the wastewater. No floatables were actually observed in the chlorine contact chamber, although they were observed overflowing the weirs of the secondary clarifiers. As noted in my Direct Testimony, the chlorine contact chamber has no automatic devices for the removal of such floatables. An operator must remove these manually. The effluent TSS data is collected at the sample intake point at the point the effluent from the two parshall flumes joins in the chlorine contact chamber. The sample intake point is a tube of about ½ inch diameter that extends for an unknown distance beneath the effluent surface. It may or may not have had a strainer on the end; neither the presence of the strainer nor the depth of the sample intake point could be observed. The majority of floatables will not be captured in a ½ inch diameter tube, even if they could somehow sink below the surface far enough to be near the intake. Therefore, most floatables will not even be collected in the effluent sample.

448 Mr. Adams also discusses floating solids. There were floating solids (i.e., clumps of
449 algae and sludge) actually observed in the chlorine contact chamber. The floating solids that
450 were observed in the chlorine contact chamber had in fact already passed the sample point.
451 Therefore, when these floating solids go out Outfall 001, like the floatables, they will not have
452 been measured as TSS. (See photographs labeled Exhibit 8.20R.)

453 **Q25. Please comment on Mr. Adams' statement on Pages 34-35, Lines 731-739, of his**
454 **Rebuttal Testimony that "I have seen no evidence, either through ADVENT's investigation**
455 **or provided in Ms. Ciccone's testimony, which indicates that Plant 2 was not operated or**
456 **maintained properly. Ms. Ciccone's statement of improper operation and maintenance is**
457 **not substantiated with facts. In fact, an evaluation by a qualified engineering consulting**
458 **firm (Randolf and Associates) concluded that it would be more operationally cost-effective**
459 **to shut down Plant No. 2 and utilize the money for upgrades at Plant No. 1. . . . Illinois EPA**
460 **agreed with this decision."**

461 A. Mr. Adams is apparently attempting to show proper operation and maintenance of plant 2
462 by pointing to the opinions of Randolf and Associates and the IEPA that plant 2 should be shut
463 down and its operating funds dedicated to the upgrade of plant 1. In actuality, the opinions of
464 these two entities that plant 2 should have been shut down would tend to support the argument
465 that the plant was not properly operated and/or maintained, as a lifespan of only 19 years is
466 abnormally short for a wastewater treatment plant such as plant 2, which should be measured in
467 decades, not years. The actual reason(s) for the shut down of Plant No. 2 are unknown at this
468 time. The fact that it was considered operationally more cost effective to shut down Plant No. 2
469 does not preclude the possibility that this situation may have come about due to poor

maintenance practices. Mr. Kammueller of the IEPA confirmed that his office viewed the shutdown of Plant No. 2 after only 19 years in service as a gross waste of funds.

Further, the thrust of my testimony was not the fact that Plant No. 2 had been shut down but rather that it would have been an asset were it still in operation. By accepting and treating sewage flows from the north side of Pekin, that much more capacity would be available at Plant 1 to treat wet weather flow. Plant 2 may also have provided enough treatment capacity so that a less extensive upgrade to Plant 1 would be possible.

Q26. Please comment on Mr. Adams' statement on Page 38, Lines 810-818, of his Rebuttal Testimony that "[w]ith respect to TSS and coliform excursions, Ms. Ciccone's testimony dealt with a period in 1996 when the overflow of a stormwater basin was limited in disinfection effectiveness due to a regulatory requirement for a chlorine residual . . . . Subsequently, the residual chlorine residual was raised by IEPA to 2.0 mg/l. Since that time, there have been no excursions."

A. To my knowledge, there is no "stormwater basin" in the Pekin wastewater treatment system. Perhaps Mr. Adams was attempting to refer to the two basins utilized by the City for the storage and treatment of combined sewage which discharge via Outfall 002 (the CSO lagoon). Outfall 002 does not presently have, nor at any time in the past has it had, a limit for TSS. Thus, there could have been no TSS excursions at Outfall 002. However, there have been ongoing excursions of the NPDES permit fecal coliform limit at Outfall 002 in that area. Therefore, it is unclear as to what outfall Mr. Adams has in mind when he states "[s]ince that time, there have been no excursions."

Also, Mr. Adams stated earlier in his testimony (Page 17, Lines 345-347) that "[t]he Pekin POTW has had one permit exceedance in the past three years . . . . All other past issues of

493 noncompliance have been dealt with (see Question 53.)" By referring to Question 53, Mr.
494 Adams gives the impression that he will address the numerous excursions that have plagued the
495 Pekin wastewater treatment system over the years. However, all he really does is detail the
496 increase in chlorine residual levels and make a vague statement that there have been no
497 excursions since that increase. Nowhere does he address the historical TSS excursions that
498 occurred with significant frequency at plant 1 or the ongoing fecal coliform excursions currently
499 occurring at the Outfall 002 (the CSO Lagoon).

500 **Q27. Please comment on Mr. Adams' statement on Pages 36, Lines 759-765, of his**
501 **Rebuttal Testimony that "no one that ADVENT talked to could recollect where the**
502 **requirement for treatment of 14 times the dry weather flow originated. Even the local**
503 **office of IEPA (Peoria) had no knowledge of this requirement, although the local manager**
504 **had been in the office when this condition was imposed. The manager had no knowledge of**
505 **anyone else in the State of Illinois who was under the same condition. Consequently, as far**
506 **as my evaluation is concerned, this issue is irrelevant."**

507 A. As I explained in my Direct Testimony, the requirement that the City of Pekin treat 14
508 times dry weather flow stems from an exception to CSO regulations granted by the Illinois
509 Pollution Control Board in 1986. (See Exception attached as Exhibit 8.21R.) Under this
510 exception, the City is exempted from certain CSO regulations. During the application process,
511 the City submitted a CSO operational strategy that included an assertion that the City would treat
512 14 times dry weather flow, and the exception was granted based in part on that assertion.
513 Contrary to Mr. Adams' testimony, the IEPA is aware of this requirement and has requested
514 compliance in the past. (See letter from IEPA Peoria Office attached as Exhibit 8.22R.)

Q28. Please comment on Mr. Adams' statement on Pages 38, Lines 813-817, of his Rebuttal Testimony that "Although IEPA sent out a standard and required Notice of Violation letter, no threat of legal action in the form of a lawsuit was contained in the letter. In fact, IEPA agreed that the chlorine residual was established at too low a concentration for effective disinfection. Subsequently, the residual chlorine residual was raised by IEPA to 2.0 mg/L."

A. Mr. Adams places a great deal of emphasis on the fact that the letter attached as an exhibit to my Direct Testimony does not specifically contain a threat of legal action against the City of Pekin. Nowhere in my Direct Testimony did I state that the referenced letter contained a threat of legal action. What I did assert was that during my meeting with Jim Kammueller, he stated that his office recommended that legal action be taken against the City of Pekin for their numerous and frequent TSS violations in the mid-nineties. Tellingly, while Mr. Adams discusses the letter extensively, nowhere in his Rebuttal Testimony does he refute the fact that legal action was recommended by the Peoria District office of the IEPA.

Q29. Does this conclude your testimony?

A. Yes it does.