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July 8, 1999

BY FEDERAL EXPRESS

Ms. Geraldine Treutelar Crocket
Clerk of the Court
United States District Court
for the Southern District of Indiana
United States Court House
46 East Ohio Street
Indianapolis, Indiana 46204

Re: United States v. CBS Corporation,
nos. IP-83-9-C and IP 81-448-C (S.D. Ind.)

Dear Ms. Treutelar-Crocket:

Enclosed please find for filing in the above referenced action, the original of the enclosed Status Report of CBS Corporation, with exhibits.

I am also enclosing a copy of this document. Please file-stamp this copy and return it to me in the enclosed envelope.

Please note that I also sending under separate cover a copy of this document directly to the chambers of Magistrate Judge Foster.

Thank you for your attention to this matter.

Sincerely,

David B. Hird

Enclosures

cc: All counsel of record (w/ enclosures)

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July 8, 1999

BY FEDERAL EXPRESS

The Honorable Kennard P. Foster
United States Magistrate Judge
U.S. Courthouse - Room 274
46 East Ohio Street
Indianapolis, Indiana 46204

Re: United States v. CBS Corp., nos. IP 83-9-C and IP 8-448-C (S.D. Ind.)

Dear Honorable Kennard P. Foster:

Today, CBS Corporation ("CBS") is filing a Status Report concerning the federal government's plan to construct a water treatment system at Illinois Central Spring. For your convenience, we are sending the enclosed copy of the Status Report directly to your chambers. Although the original filed with the Clerk of the Court is unbound to comply with the Local Rules, the courtesy copy sent to you is velobound for ease of reference.

As is explained in detail in the Status Report, CBS believes that the treatment system which the federal government is now planning to build at Illinois Central Spring is very different from the one that it originally told the Court in August 1998 that it was planning to construct. The U.S. Environmental Protection Agency ("EPA") no longer plans to have the system operational in the late summer or early fall of this year, but rather the system would not be in operation until the spring of the year 2000, almost two years after EPA made its original decision to build a system. EPA's own estimate of the costs of the proposed system has mushroomed from $1.3 million in capital costs in EPA's original Action Memorandum to $5.2 million. In essence, EPA's design no longer calls for an interim system, as originally contemplated, but for the major components of a final system, including a building with a 20 year useful life, a paved road and parking lot, two huge 30-by-60 foot retention tanks, and a pumping capacity that is three times greater than the highest measured flow through Illinois Central Spring during the last three years. Moreover, because this system will be largely immovable, it

could not be adapted to a different location, if the results of the studies now underway demonstrate that a treatment system would be more effective if placed elsewhere.

CBS believes that by designing and building this truly final system now, the federal government is acting inconsistently with its prior representations to the Court, and is effectively precluding meaningful settlement negotiations about final water treatment, which the Court ordered to occur, at the federal government's urging, after the excavation work at Lemon Lane Landfill is completed. By that time, EPA will have already built its final system.

CBS is bringing this matter to the attention of the Special Master now in order to make a record of the events surrounding the federal government's decision to build this system, including CBS's own efforts to advise EPA of the short-comings of its approach. CBS believes that it is necessary to make this record because of the federal government's frequently reiterated threat of suing CBS to recover the costs it spent designing and building this system. CBS continues to believe that it is protected from such a cost recovery action by the Covenant Not to Sue, paragraph 111 of the Consent Decree in this action which remains in effect.

Respectfully submitted,

David Hird

David B. Hird

Enclosures
cc: All counsel of record (w/enclosures)

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

UNITED STATES OF AMERICA, et al., Plaintiff, v. CBS CORPORATION, f/k/a WESTINGHOUSE ELECTRIC CORPORATION, et al., Defendant. THE CITY OF BLOOMINGTON, INDIANA, et al., Plaintiffs, v. CBS CORPORATION, f/k/a WESTINGHOUSE ELECTRIC CORPORATION, et al., Defendants.	Civil Action No. IP 83-9-C And Civil Action No. IP 81-448-C JUDGE S. HUGH DILLIN MAGISTRATE JUDGE KENNARD P. FOSTER

CBS CORPORATION'S STATUS REPORT CONCERNING THE FEDERAL GOVERNMENT'S PLANS TO CONSTRUCT A FINAL WATER TREATMENT SYSTEM AT LEMON LANE LANDFILL TO BE OPERATIONAL IN THE YEAR 2000, RATHER THAN BUILD AN INTERIM SYSTEM IN 1999, AS IT PREVIOUSLY TOLD THE COURT

CBS Corporation ("CBS") submits this Status Report in an effort to bring to the Special Master's attention the federal government's radical change of direction in its approach to water treatment at Lemon Lane Landfill. Essentially, the U.S. Environmental Protection Agency ("EPA") is no longer proceeding to construct an interim treatment system at Illinois Central Spring with an anticipated date of operation in the late summer or early fall of 1999, as it previously told the Special Master. Instead,

EPA is planning to build a final water treatment system that ***the federal government itself does not expect to be operational until spring 2000 at a cost estimated by EPA of $5.4 million***. EPA's new cost projection is *more than four times EPA's original estimate of $1.3 million for the capital cost of the interim system*, and more than two and a half times its original estimate of $2.1 million for the project as a whole. Moreover, CBS believes that EPA has underestimated the cost of the project and the final cost is likely to be much greater.

EPA's decision to build a final system is inconsistent with its prior representations to the Court and to the parties. By going ahead with its plan, EPA will have made the critical decisions about a final system – e.g., location of facility, pumping capacity, retention capacity, etc. – before complete technical information is available to make these decisions properly. This approach will preclude the parties from conducting meaningful settlement negotiations about final water treatment issues after the excavation work at the landfill is completed in 2000, as they were instructed to do under the Special Master's Report and Recommendations of January 20, 1999, and Judge Dillin's Order of February 1, 1999, because by the time these negotiations are scheduled to begin, EPA will have already built its final system.

CBS is bringing the matter to the attention of the Special Master now because of the federal government's announced intention to seek recovery of the costs spent on building this system from CBS and its intention to try to make CBS take over the operation of the system. CBS continues to believe that the federal government is barred from pursuing such a cost recovery action against CBS by the Covenant Not to Sue in the Consent Decree. In addition, EPA's decision-making process about final water treatment

is inconsistent with the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"), and the National Contingency Plan ("NCP").

Finally, and most important, EPA's decision is not technically supportable; it is not only arbitrary and capricious as a matter of law, but is simply bad decision-making as a matter of common sense. Although EPA had originally agreed with CBS to follow the approach of "phasing" water treatment activities – taking limited interim steps initially and only undertaking more extensive activities later after the excavation work is done, water treatability and hydraulic conduit studies are finished, and more technical information is available – EPA is making technical decisions that involve the expenditure of millions of taxpayer dollars on the basis of incomplete information and unsupportable assumptions. Even now, it is apparent that EPA's final system includes many costly features that may be unnecessary and expensive to operate. Moreover, as the parties learn additional information, many other features of the system will likely prove unnecessary. Indeed, EPA may have placed the system in the wrong location to operate most effectively. All of these problems could be avoided if EPA did what it said it was going to do originally: not spend too much money on an interim system, use a modest and flexible design for the interim system to allow for maximum reuse of the equipment, and wait until further data is collected to design a final system.

As described below, CBS has made these points to EPA in correspondence and face-to-face meetings, but EPA has chosen to continue on this arbitrary course of action. Accordingly, CBS is notifying the Special Master about EPA's decision to prematurely build a final treatment system in order to make a record to support CBS's defenses to the cost recovery action threatened by the federal government.

I. UPDATE ON CBS REMEDIAL ACTIVITIES

Before turning to the principal subject of this Status Report – EPA's decision to build a final treatment system prematurely at Illinois Central Spring – CBS would like to provide the Special Master with a brief update on remedial activities it has undertaken at the various Bloomington sites.

Winston Thomas – All site work is completed except for the remediation of the tertiary lagoon. After the winter shutdown, CBS remobilized in March and spent three weeks treating water that had accumulated in the lagoon. Then, CBS resumed the dredging and filter pressing of the sludge. This operation is complete, and the final excavation of residual sludge at the bottom of the lagoon is almost complete. Post-excavation sampling has not detected polychlorinated biphenyls ("PCBs") in most areas tested; in the limited instances where PCBs were detected, the concentration levels are very low. With the agreement of the other parties, CBS plans to rescrape those grids which show residual PCB contamination until the level of PCBs in those grids is less than 1 part per million ("ppm"). Accordingly, no further cover will be placed over the lagoon. Scraped material with a PCB concentration between 1 and 25 ppm will be placed in the south berm and covered by twelve inches of clean soil. No deed restriction will be required for the 17-acre site, except for the 1 acre south berm area. Site work should be completed in August 1999.

Neal's Landfill – CBS mobilized to begin site work on April 19, 1999 and is proceeding efficiently through the work plan requirements. At the end of June, the first phase of the excavation and consolidation work was about 50% complete, on schedule to

be completed in August. CBS is completing the design for the final RCRA cap, which will be submitted for review by the governmental parties in July.

Neal's Dump – Final site restoration is complete. CBS has submitted a long term ground water monitoring plan to the governmental parties for their review. EPA has begun its process to remove this site from the National Priorities List.

Bennett's Dump – The parties are completing negotiations on a Statement of Work ("SOW"). Even before final agreement on a SOW, CBS has prepared a work plan that is under review by the governmental parties. Preparations are being made to begin site cleanup in August 1999, to be completed by the end of the year.

Lemon Lane Landfill – CBS is continuing its hydraulic conduit investigation, using a combination of geophysical investigation methodologies. A progress report was issued to the governmental parties on May 21, 1999. Additional test borings have been made, and the results of those borings are being evaluated.

II. BACKGROUND RELATING TO WATER TREATMENT ISSUES

1. The Parties' Initial Discussions about Water Treatment

The parties originally began to discuss ground water treatment in connection with Lemon Lane Landfill in the spring of 1998. At that time, the parties disagreed about the performance standards that should be used in designing a treatment system and assessing its success. The governmental parties took the initial position that a water treatment system should capture all the ground water coming from the landfill and treat the polychlorinated biphenyls ("PCBs") in that water to a discharge level of 0.00079 parts per billion ("ppb"), which was the ambient water quality standard adopted by the State of Indiana. The governmental parties believed that the system should operate indefinitely,

and that the performance of the system should be measured by the level of PCBs in the fish 15 miles downstream in Clear Creek.

CBS disagreed. CBS pointed out that based on several years of data collection at Illinois Central Spring, it had learned that the flow of ground water emerging at Illinois Central Spring was generally low, usually less than 300 gallons per minute ("gpm") or less, except in severe wet weather events that do not occur on a frequent basis. Accordingly, CBS contended that a system could be highly effective in capturing most of the mass of PCBs even if it did not capture the full extent of the higher groundwater flows during storm weather. CBS also contended that the State's ambient water quality criterion of 0.00079 ppb for PCBs was impracticable, over-stringent, and not justified by public health considerations. As originally determined by the State, this standard was supposed to apply to the ambient average concentration of PCBs in a stream as a whole, but, in an act of over-cautiousness, the State also claimed that this standard should apply to discharges at the end of the pipe, before the discharged water mixed with other water in the stream. The over-stringency of this standard is apparent when it is compared with the federal standards for PCBs. In particular, in 1998, EPA adopted a comprehensive regulation for PCBs, often referred to as the PCB "Mega-rule," in which the Agency established a default water discharge standard for PCBs of 3 ppb. 40 C.F.R. § 761.79(b)(1)(ii). This State water discharge standard is about 10,000 times as stringent as this federal discharge standard. Moreover, the State discharge standard is about 1000 times more stringent than EPA's *drinking water standard* for PCBs, which is 0.5 ppb. 40 C.F.R. § 761.79(b)(1)(iii). Indeed, the level set by the State is so low, it cannot be detected, using EPA approved methods. Finally, CBS argued that the level of PCBs in

the fish 15 miles downstream was an inappropriate means to measure the performance of a treatment system, since there may be other sources of PCBs feeding into the stream.

Although the parties disagreed about the goals of a water treatment system, EPA and CBS did agree that a final water treatment system for Lemon Lane Landfill could best be designed after completion of CBS's hydraulic conduit study concerning the movement of groundwater around the landfill, the implementation of the excavation remedy at the Landfill, the implementation of surface water controls, and the collection of other data relevant to water treatment, such as the results of treatability studies. These parties agreed that the information gathered during these activities would help design and locate the most effective water treatment system.[1] Indeed, this understanding was confirmed by government correspondence to the Special Master, see Steven D. Ellis' letter to the Special Master of January 13, 1999, and in the Special Master's Status Report of January 20, 1999.

The governmental parties nonetheless demanded that an interim system be constructed until a decision could be reached on final water treatment. They expressed concerns about the supposed continued exposure to fishermen who might eat PCB-contaminated fish, pointing to the Level Five ("do not eat") Fish Advisories for PCBs that the State of Indiana placed on Clear Creek; they contended that an interim system

[1] The City of Bloomington did not agree with this approach initially. Instead, the City wanted to have a full-scale system built as soon as possible and then to turn off the parts of the system that proved to be unnecessary in operation after the money had already been spent to build them. The City threatened to withdraw its prior consent to the negotiated excavation remedy at Lemon Lane Landfill if this approach was not followed. See Letter of Geoffrey M. Grodner to David R. Berz of August 10, 1998 (copy attached as Exhibit 1).

should be installed expeditiously to address this alleged emergency. CBS did not see the urgency for installing an interim system. The State had put a "do not eat" fish advisory for PCBs in most, if not all, game fish species in Clear Creek as far back as 1978, and every stream in Indiana had a Level Five Fish Advisory for PCBs in at least one species.

Further, the information available did not show there was a significant risk of exposure to the public to PCBs in the fish in Clear Creek. The portion of Clear Creek closest to Illinois Central Spring is rarely, if ever, used for fishing. Moreover, the fish throughout Clear Creek are generally too small to be used as food. Most fishermen in the area would tend to fish in nearby Lake Monroe, where the fish are both larger and more plentiful.

Nonetheless, in an effort to resolve the matter, CBS offered to install a simple gravity-based system, which CBS calculated could capture about 50 percent of the mass of PCBs. CBS's proposed system could be installed quickly, in a matter of weeks at low cost. If there really is an emergency, such a system is a practical approach to taking interim action, while leaving the parties maximum flexibility in devising a final treatment system. Instead of CBS's proposal, EPA preferred the construction of a more elaborate and expensive interim system that would capture about 80 percent of the PCB mass. It would take about a year for EPA to install this system, and the capital cost of the project would be between $1 and $2 million dollars.

In July 1998, as the parties continued their discussions, EPA announced that it would conduct a treatability study of low and high flow waters at Illinois Central Spring. EPA indicated that the results of the treatability study might be useful in determining a feasible discharge standard and in identifying which treatment processes would be most

effective. EPA's treatability study was supposed to take eight weeks. But before that time was up, EPA and the other governmental parties raised the disagreement about interim treatment before the Special Master at a hearing on August 14, 1998. The Special Master ordered the parties to negotiate, but EPA and the Department of Justice told CBS that they had no authority to negotiate. The Special Master ordered the representatives of the federal government to get negotiation authority and to resume discussions with CBS on August 18, 1998. But those negotiations never occurred because EPA announced on that date that it would build its own interim system.

2. **EPA's Original Decision to Build an Interim System**

On August 21, 1998, the federal government submitted a Status Report (copy attached as Exhibit 2) to the Special Master, stating that EPA would go ahead and construct its proposed interim system at its own expense, but that the federal government intended to bring a cost recovery action against CBS. In its Status Report, the federal government specifically referred to the State of Indiana Level Fish Advisories at Clear Creek as the justification for its actions.

CBS notified the Court of its concerns about EPA's proposed interim system in a Status Report filed on September 10, 1998. (Copy attached as Exhibit 3) Specifically, CBS noted that if EPA truly believed in the urgency of providing interim treatment, CBS's proposal made more sense because it could be installed in a matter of weeks while EPA's approach would take about a year to install. CBS further expressed the concern that adequate data did not yet exist to properly design a treatment system, and that EPA's proposal to build an interim system on such a large scale was likely to result in the construction of expensive components that could not be used in a final system. CBS

pointed out that its study of the hydraulic conduits around Lemon Lane Landfill was underway and that the technical information being collected in that study would be important in determining the optimal location for a water treatment system and designing the system itself.

Also, in that Status Report, CBS challenged EPA's conclusions, based solely on the Fish Advisories, that current conditions at Clear Creek created a serious risk to human health, pointing to the findings of EPA's sister agency, the Agency for Toxic Substances and Disease Registry ("ATSDR"). After studying the risk presented by PCBs in Illinois Central spring and Clear Creek, ATSDR concluded that "neither children nor adults are likely to engage in activities in the . . . springs and streams that would lead to significant exposures to site-related contaminants," and that these streams were too small to support fishing and that most of the species in the streams were too small for human consumption. Finally, CBS noted for the Court that it was protected from EPA's cost recovery claims by the Covenant Not to Sue in the Consent Decree, but was willing to negotiate with the other parties about appropriate water treatment.

3. **EPA's Action Memorandum and CBS's Comments**

On September 30, 1998, EPA issued a formal Action Memorandum, purporting to authorize the design and construction of its interim system as a CERCLA removal action (copy attached as Exhibit 4). In the Action Memorandum, EPA established two design criteria for the system: (1) the system should operate at 1000 gpm capacity to capture an estimated 80% of the PCB mass, and (2) there should be a retention basin (not a tank, but a basin) to hold two acre-feet of water. Curiously, despite the dispute between the parties about PCB discharge criteria, the Action Memorandum did not reference a PCB

discharge level for the treated water. EPA authorized a total budget of $2,109,303, of which $1,303,172 represented the capital cost of construction, $197,000 represented one year's operation and maintenance, and the remainder represented EPA internal costs and oversight costs. EPA projected that the system would be operational by the summer or fall of 1999. EPA again attempted to justify its decision on the basis of the supposed risk to fishermen in Clear Creek and the Indiana Fish Advisories.

CBS submitted its comments on EPA's Action Memorandum in a letter dated November 10, 1998 (copy attached as Exhibit 5). This letter raised several objections to EPA's interim system, its decision-making process, and its threat to bring a cost recovery action against CBS. Specifically, the letter made the following points:

- The federal government was barred from bringing an action to recover the costs of building its treatment system against CBS by the terms of the Consent Decree (pp. 2-5).
- EPA failed to solicit public comment about its interim system, including comments from CBS, in violation of the Due Process Clause and the NCP (pp. 5-7).
- EPA improperly relied on post-hoc rationalizations to support a previously made decision (pp. 7-8).
- EPA failed to include relevant documents and information in the administrative record – a critical omission was the ATSDR report that found that the spring and the stream created no significant health risk (pp. 8-9).
- EPA overestimated the mass of PCBs emerging from the spring (pp. 9-10).
- EPA had no data to support its conclusions that PCBs from Illinois Central Springs posed a threat to humans through inhalation, ingestion of water, or direct contact (pp. 10-11).
- EPA's analysis overestimates the seriousness of the data regarding PCBs in fish tissue (pp. 11-12).

- EPA's conclusion that people eat fish caught in the part of Clear Creek affected by PCBs was not supported by reliable data, and EPA overestimated the cancer risk to people supposedly eating these fish (pp. 12-15).

- EPA's conceptual design for an interim treatment system was arbitrary and capricious (pp. 15-16).

- EPA's decision violated CERCLA's statutory limits on EPA removal actions because it authorized an expenditure of over $2 million on a project to last more than one year (pp. 16-17).

A key point in the letter was to rebut EPA's contention that emergency response action was justified by recent PCB data in Clear Creek, and the Level 5 Fish Advisories. CBS pointed out that information about PCBs in Clear Creek had existed prior to the entry of the Consent Decree in 1985, and that 1997 data (the data relied on by EPA in its risk analysis) actually showed a decline in PCB levels from the 1996 data. More significantly, both EPA's and the State of Indiana's data for 1997 (the most recent data available) demonstrated that PCB levels in all but one species of fish *were lower than the trigger level for a Level Five Fish Advisory.*[2] Thus, ***if this data had been used by the State of Indiana in setting the Fish Advisories, the State would have set lower level Fish Advisories for all but perhaps one species***. CBS also reported that it had learned from a conversation with the State official responsible for setting Fish Advisories, that the 1997 EPA data had not been submitted to the State, and the 1997 State data was not reviewed in setting the Advisories for the year 1998. See Exhibit 5, at pp. 11-12.

[2] The State of Indiana uses a level of 1900 ppb of PCBs in edible fish tissue to establish a Level Five Fish Advisory. EPA's own 1997 data showed 446 ppb of PCBs in rock bass, 1620 ppb of PCBs in spotted sucker, and 872 ppb of PCBs in largemouth bass. State samples from 1997 also showed levels below 1900 ppb of PCBs for all these species, except spotted sucker.

With respect to EPA's conceptual design for an interim system, the letter pointed out that the system would not be installed for at least a year at a capital cost of $1.3 million, while CBS's proposal could be installed in a matter of weeks at a cost of $75,000, and would be expected to capture the same PCB mass over a three-year period of operation. See Exhibit 5, at pp. 15-16.

EPA never responded to this letter.

4. **EPA's Failure to Consult with CBS on Design Issues**

Following the issuance of the Action Memorandum, EPA transferred authority over the project of designing and building the treatment system away from Thomas Alcamo, who has been EPA's project manager for all other matters relating to the cleanup of the Bloomington sites and who has been involved in the court proceedings relating to the Consent Decree since late 1997. Instead, authority over this project had been given to Ken Theisen who had not been involved in any of the prior discussions among the parties or the proceedings before the Court. Mr. Theisen retained a new contractor, Earth Tech.

Although CBS had disagreed with EPA about its selection of an interim system, CBS had consistently offered to consult with EPA about design and other technical issues, and to share the knowledge it had gathered studying the ground water system at Lemon Lane Landfill over the years. Initially, Earth Tech's Britt Luther contacted CBS's Mike McCann to arrange in the November-December 1998 time frame for a joint tour of the site and of CBS's Neal's Landfill spring water treatment plant, as well as a technical meeting with CBS to discuss CBS's knowledge of the flow at Illinois Central Spring and its experience operating the Neal's Landfill treatment system. CBS was amenable to both

the tour and the meeting, but neither the tour nor the meeting ever happened. Instead, Luther called McCann again to cancel the tour and the meeting, telling McCann that Earth Tech had been instructed that it was to operate under a "gag order" not to communicate with CBS.

EPA finally did arrange for a technical meeting with CBS on January 27, 1999, at which CBS was given sketchy information about EPA's design plans, and was again told by the Earth Tech representatives that they had been operating under instructions not to speak to CBS about design and other technical issues concerning the interim system. At the meeting, Mr. Theisen told CBS that EPA had made its design decisions and that, in order for the Agency to meet its proposed schedule to construct the system by the fall of 1999, EPA could not seriously consider any comments from CBS that would result in anything other than minor changes to that design. CBS was told that the meeting had been scheduled for the purpose of EPA providing other Consent Decree parties with an update on its activities, not to solicit CBS's comments on EPA's design.

Essentially, at this point, EPA's design was set, even though it was not fully described to CBS, and CBS had no meaningful opportunity to submit comments.

5. **EPA's Recent Decision to Build a Final System Prematurely**

There were no further technical communications between EPA and CBS until a meeting on March 25, 1999. It was only at that meeting that CBS learned that EPA had extended its proposed construction schedule for the system by almost another year, and that EPA's new estimate for the cost of building the system was more than four times its original budget for capital costs and more than two and half times its original budget for

the project as a whole. EPA had made the following radical changes from the original conceptual design set forth in the Action Memorandum:

- EPA was planning to house the system in a structure designed to last 20 years with full heating, air conditioning, plumbing, and electrical capacity as a permanent structure. The building would include a large amount of empty space which could be used to house additional structures. A permanent paved road system and parking lot would also be constructed.

- EPA had designed a pumping capacity, based on a model of a 25-year storm event. The total installed pumping capacity would be 9,500 gpm, even though three years of continuous flow records for the spring showed that it had not flowed more than 3,000 gpm.

- EPA planned to build two large enclosed retention tanks, each of which could contain two acre feet of water. EPA's September 30, 1999 Action Memorandum had called for the construction of one "2 acre feet collection basin." EPA planned to double the amount of retention and to use expensive tanks, rather than more practical basins or ponds.

- EPA planned to install three different types of filters in the system.

- EPA no longer planned to have the system operational by the summer or fall of 1999, but instead hoped to have the system operational by the spring of 2000. Thus, a one year construction project had become almost a two year project.

- EPA no longer expected the capital cost of construction to be $1.3 million, as specified in the Action Memorandum. Instead, EPA projected the cost to be about $5.4 million, a four-fold increase.[3]

- EPA was determined to build this system for at least $5.4 million, before the data would be available from CBS's hydraulic conduit study and from EPA's own treatability study. EPA also intended to have the system built before it knew how the excavation work and surface water control measures might affect the flow of PCB-contaminated ground water around the site.

EPA still had not identified what discharge criteria would apply to this system.

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[3] EPA's cost estimates for this project are confusing. But CBS officials who attended this meeting recall that EPA described the cost of the project as $5.4 million, and understood this number to represent the capital cost.

At the meeting, EPA's lawyers made a request for comments from CBS. But EPA's Project Manager, Mr. Theisen, again stated that because of EPA's perceived need to meet its new construction schedule, the Agency would not be able to seriously consider any comments from CBS that would involve anything other than minor changes to the design.

Following this meeting, on April 12, 1999, EPA wrote to CBS stating that it completed design work for the system and demanding that CBS take over the construction of EPA's new design on EPA's time schedule. Letter of Jeffrey A. Cahn to David R. Berz of April 12, 1999 (copy attached as Exhibit 6).

6. **CBS's Efforts to Reopen Negotiations**

CBS wrote back to the Agency on April 22, 1999, indicating that CBS was preparing detailed comments on EPA's design that would be presented shortly[4] and suggested that it would be in the best interests of both parties if EPA made no further commitments to build its new system until EPA had had an opportunity to review CBS's comments. Letter of David R. Berz to Jeffrey A. Cahn of April 22, 1999 (copy attached as Exhibit 7). EPA replied on May 3, 1999, stating that it would not delay its efforts to build the new system, waiting for CBS's comments . EPA further asserted – incorrectly – that information had been regularly shared with CBS throughout the process and that CBS had already had substantial opportunities to make comments. Finally, EPA demanded that CBS undertake the construction of the system "as long as it was built in

[4] At this point, CBS was awaiting complete technical information about EPA's design. EPA did not have all the information available at the March 25, 1999 meeting, and had been providing information to CBS piecemeal over the weeks following the meeting.

accordance with EPA's September 30, 1999 Action Memorandum." Letter from Jeffrey A. Cahn to David R. Berz of May 3, 1999 (copy attached as Exhibit 8). EPA made this demand even though its own Action Memorandum had called for a $1.3 million system to be built by the fall of 1999 and its new design called for a system that would cost about $ 5.4 million to be built by the spring of 2000.

CBS submitted its technical comments on EPA's new system on May 12, 1999, along with a detailed cover letter, figures and tables (copy attached as Exhibit 9). CBS pointed out that what EPA was really designing was a final, not an interim, system, and that the Agency was making important decisions without the complete information that would be available once the excavation work was complete and the hydraulic conduit study was finished. Chief among the decisions made by EPA prematurely was to choose a location for the final treatment plant, determine the size and type of retention system to be used, the amount of pumping capacity, and what types of additional equipment would be needed. The technical comments went into great detail about all of the engineering aspects of EPA's new design.

Following submission of its technical comments, CBS requested a further meeting with EPA about the system. The purpose of the meeting, from CBS's perspective, was to explain how an interim system could be built to meet the design criteria in its original Action Memorandum for an amount approximating EPA's original $1.3 million cost estimate. While CBS believed that the interim system called for in EPA's Action Memorandum was itself unnecessary, it certainly was more practical than EPA's new design.

This meeting occurred on June 1, 1999. At the outset of the meeting, EPA demanded that as a condition for it to seriously consider any other design for a treatment system, CBS first had to agree to reimburse EPA $1 million for the design and site preparation costs that EPA had already spent. During the meeting, CBS attempted to explain how a much less costly treatment system could be built to meet the two essential criteria for an interim system set forth in EPA's September 30, 1999 Action Memorandum: (1) capacity of 1000 gpm; and (2) two acre feet of storage. See CBS Presentation Materials of June 1, 1999 (copy attached as Exhibit 10). CBS even suggested that if EPA agreed to allow CBS latitude with respect to other design issues, CBS might be willing to construct a system that met those two criteria and have it in operation before excavation began at the landfill. But if CBS were to take on this expense, EPA and CBS had to come to a consensus about the overall goals of water treatment, addressing the issues of capture capacity, discharge criteria, and performance standards that the parties had originally discussed in the spring and summer of 1998.

EPA rejected CBS's efforts. After the meeting, CBS attempted to continue a dialogue about water treatment issues. EPA told CBS that the Agency had held an internal meeting during which it resolved to construct the system according to its new design, at a capital cost of at least $5.4 million, to be operational in the spring of 2000. In a letter from Jeffrey A. Cahn to David R. Berz dated June 21, 1999 (but received on June 28, 1999) (copy attached as Exhibit 11), EPA confirmed its intention to go forward with its new design, and its demand that CBS pay it all of its outstanding costs and take over the project as designed by EPA's contractor.

III. DISCUSSION OF CONCERNS RAISED BY EPA'S NEW WATER TREATMENT DESIGN AND ITS CONSTRUCTION SCHEDULE

1. EPA's New Design is for a Final System, not an Interim One

Although EPA continues to call the new system it designed an "interim" system, everything about this design demonstrates that it is really intended to be the final water treatment system, and that it is very different from the proposed interim system that EPA described to the Court in August 1998:

- Schedule: EPA does not expect to have the system constructed and operational until the spring of 2000, almost two years after it began the design process, and almost one year later than it originally projected.[5]

- Location: EPA, in its new design, has predetermined the location of a final treatment system by calling for the construction of an immovable $5.4 million structure at Illinois Central Spring, built to last at least 20 years. Although EPA originally indicated that it was considering designing portable facilities (e.g., skid-mounted treatment systems), the Agency's new design abandons that approach. Thus, EPA's new design completely disregards the possibility that CBS's investigations may support a conclusion that a better location for a final treatment system may be either closer to the landfill itself or further downstream at Quarry Springs.

- Capacity: EPA's new design calls for seven pumps with a collective pumping capacity of 9,500 gpm, based on a model of a 25 year storm event. A 25 year event is an inappropriate model to use for an interim system that would be expected to be operational for only two or three years. Moreover, the 9,500 gpm pumping capacity is three times as great as the spring's highest measured flow rate of 3,000 gpm, as determined over three years of continuous flow measurements.

- Retention Tanks: EPA's new design calls for two large enclosed retention tanks, each capable of holding two acre feet of water. This is twice the retention capacity selected in EPA's September 30, 1999 Action Memorandum. Moreover, EPA plans to build enclosed tanks, rather than use an open pond or basin as originally called for in the Action Memorandum. Each of these tanks will be 60 feet wide by 30 feet tall and will look like an oil refinery. This much retention capacity is not necessary for an "interim" system, and will probably not be needed in a final system. Indeed,

[5] Although the system is scheduled to be installed in the spring of the year 2000, EPA plans to evaluate it as a "final" system in the year 2001. In essence, EPA appears to be planning to build the so-called "interim" system over two years and then subject it to a one-year evaluation period before calling it a final system.

retention capacity may be substantially reduced if CBS is able to intercept the ground water at Lemon Lane Landfill so that only a small amount of water needs to be treated. By constructing tanks, rather than building a lined pond as originally intended, EPA is creating two massive, costly, and immovable structures.

- Size and Useful Life of Structures: The structures called for in EPA's new design are oversized with empty space to house additional unspecified equipment. Moreover, they are being built to last for at least 20 years. Also, a paved road system and parking lot will be built. These structures are characteristic of a final system, not of an "interim" system. Even the Neal's Landfill spring treatment system, which CBS has operated for ten years, has no need for structures as extensive and as permanent. These large, immovable structures are antithetical to the concept of a flexible interim system that can be easily moved and adapted to a subsequent final design.

- Filter Press: EPA's Recent Design includes a dedicated filter press for sludge. An "interim" system that is supposed to operate for only a few years is not likely to generate enough sludge to justify a dedicated filter press.

- Cost: The cost of EPA's Recent Design makes clear that this is not truly an "interim" system, but a final system. EPA's September 20, 1998 Action Memorandum called for an "interim system" with an estimated capital cost of $1.3 million. EPA's projected capital cost for EPA's Recent Design is four times that amount – at least $5.4 million.[6] Based on its review of Earth Tech's cost estimate, CBS believes that EPA has underestimated the capital cost, and that the actual amount will likely be significantly greater than $5.4 million. In addition, there will be other expenses in completing the project; EPA's design and preliminary site preparation costs by themselves have already reached $1 million. Finally, EPA's design decisions are likely to result in unnecessarily high recurring operating costs. Indeed, EPA's new estimate of annual operating costs is $347,000, which is about a 75% increase over the estimate of $197,000 for annual operating costs in EPA's Action Memorandum.

In sum, what EPA is building are the essential features of what it intends will be a final system. It is an "interim" system only in the sense that EPA plans for minor adjustments after an evaluation period during the first year of operation. Indeed, EPA's

[6] EPA now takes the position, as reflected in the words of its contractor Earth Tech, that the cost estimate that EPA used in its presentation to the Court on August 14, 1998 and as a basis for decision-making in its Action Memorandum "does not appear to address the feasibility of implementing the purported concepts, nor does it appear to adequately

design and construction contractor, Earth Tech, confirmed that what it had actually designed was a final system, when it wrote that '[t]he system design and components are biased toward a final remedy" and that its design is based on the concept that "major components of the system would be used in the final design" on pages 1, 2 and 5 of its technical response to comments submitted along with Mr. Cahn' s letter of June 21, 1999 (Exhibit 11).

Moreover, it is clear that EPA's original motivation for building an interim system no longer has any meaning to the Agency. In both the federal government's Status Report of August 21, 1998 (Exhibit 2) and EPA's Action Memorandum of September 30, 1999 (Exhibit 4), EPA took the position that the PCBs flowing through Illinois Central Spring created such a serious risk to human health – through the consumption of fish that nobody eats – that the Agency had to act expeditiously on an emergency basis. Now, EPA is content to let almost two years pass before its system is operational.

2. EPA Made its Final Design Decisions Before Necessary Technical Information Became Available

By moving to a final design prematurely, EPA is making significant design decisions before the relevant technical information becomes available. Back in July 1998, EPA believed that the first step in designing a system was to conduct a treatability study of water at Illinois Central Spring at both (normal) low flow and high (rain storm) flow conditions. EPA projected this study to take eight weeks and to provide data on the

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address the necessary facilities and equipment needed to effectively contain and treat the potential loadings that are anticipated." Exhibit 11, Technical Response at p. 10.

effectiveness of different treatment technologies and on the feasibility of meeting discharge criteria. A year later, EPA's treatability study is unfinished. EPA has only completed the low flow portion of the study, and the reliability of this data is in serious question because EPA allowed the samples to "age" before they were treated and analyzed. More to the point, EPA apparently has never shared with Earth Tech the results of the low flow treatability study, even though Earth Tech was the contractor that had collected the samples in the first place. Exhibit 11, Technical Response at pp. 12-13. Thus, EPA authorized Earth Tech to create its design without the benefit of any treatability data.

Also, EPA has moved forward with its final design without the benefit of the information that is being obtained through CBS's hydraulic conduit study and other investigations. Thus, EPA may be spending almost two years and $5.4 million to build a permanent system in the wrong location. As part of its investigations, CBS is evaluating alternative locations for a treatment system. If CBS is able to divert the flow of ground water so that clean water does not come into contact with PCBs, then it may be more effective to locate a smaller capacity treatment system closer to the landfill itself. CBS is also trying to determine if there is a separate conduit of contaminated ground water that by-passes Illinois Central Spring and emerges further downstream at Quarry Spring. If that is the case, Quarry Spring would be a better location for a final treatment system than Illinois Central Spring. But if EPA builds its $5.4 million permanent and immovable system at Illinois Central Spring, both of those options will be lost before the information is available to evaluate them. Although EPA originally indicated it would try to design a system comprised of skid-mounted equipment that could be moved to another location,

its new design is for permanent fixed equipment. Indeed, Earth Tech, EPA's design contractor, recently admitted that it had been unaware of EPA's prior intention to use skid mounted equipment, and that the pipes and tanks, which make up a substantial portion of the system it designed, will be immovable. Exhibit 11, Technical Response at p. 2.

Also, the system has been designed without the benefit of the information that will become available after the excavation work is completed at the sites and surface water control measures are implemented. The volume and flow patterns of the contaminated water may be very different at that time.

3. EPA's Decision to Build a Full-Scale Final System Contradicts its Prior Representations to the Court

EPA's current approach of prematurely trying to design a final system contradicts the position previously taken by the federal government before the Special Master and incorporated in the Special Master's Report. As recently as January 13, 1999, EPA's lawyer, Steven Ellis, in a letter to the Special Master, explained EPA's reasons why the effort to design a final water treatment system should be deferred until after excavation is complete:

> If EPA were required to select at this time the permanent water treatment aspects of a remedial action for Lemon Lane and Neal's Landfill, EPA would have to select a more conservative and costly water treatment solution than what may be required after excavation is complete. For those reasons, the United States proposed that the determination of permanent water treatment solutions for Lemon Lane and Neal's Landfill be postponed until approximately one year following completion of source control measures at those sites.

But EPA's $5.4 million system – with two enclosed retention tanks, 9,500 gpm of pumping capacity, three different types of filters, a structure built to last 20 years, and a paved road and parking lot – is precisely the type of "costly and conservative water treatment solution" that Mr. Ellis said EPA was not planning to build before excavation was complete.

Indeed, what EPA has actually done is to adopt the design principles originally proposed by the City of Bloomington: build a costly permanent water treatment system first, and then down-size it later when many of its expensive features prove to be unnecessary. See Exhibit 1, at p. 2.

3. **EPA's Decision Abuses its Statutory Authority under CERCLA**

EPA's plan to build this system, with a capital cost of at least $5.4 million over almost two years, is inconsistent with CERCLA and the NCP. In building this treatment system, EPA is purportedly acting under its "removal" power, rather than its "remedial" authority. But EPA's decision to build this $5.4 million system is an egregious abuse of that power.

In CERCLA, Congress carefully distinguished between the two types of response action authorities it gave to EPA: the first is the power to select long term remedies on the basis of detailed investigations and feasibility studies; the second is to take short term emergency "removal" measures. See CERCLA § 101(23), (24), 42 U.S.C. § 9601(23), (24). Typical "removal" actions include: emergency cleanup activities after the derailment of a tankcar or the overturning of truck containing hazardous substances, fighting chemical fires, transporting abandoned drums of chemical wastes to landfills, and providing short term alternative drinking water supplies. But Congress did not intend

for EPA to use its removal power to undertake long term remedial measures, so it put in the statute express limitations on how much money EPA can spend on a removal action and how long such an action can last. Under section 104(c)(1) of CERCLA, 42 U.S.C. § 9604(c)(1), Congress precluded EPA from undertaking a removal action that lasts longer than one year or involves spending more than $2 million. Here, EPA has embarked on a purported removal action that will cost $5.4 million and has adopted a construction schedule to last nearly two years. Thus, on its face this project cannot be squared with the statutory limits on EPA's removal powers. Moreover, this $5.4 million cost is equal to about a third of EPA's $18 million budgeted to be spent on removal actions in a year in the entire six state area served by EPA Region 5, not just Indiana.

The statute allows a removal action to exceed the $2 million and one year limits if: (1) "response actions are immediately required to prevent, limit or mitigate an emergency," (2) "there is an immediate risk to human health, welfare or the environment," and (3) "such assistance would not otherwise be provided on a timely basis." 42 U.S.C. § 9604(c)(1); see also the NCP at 40 C.F.R § 300.415(b)(5). But these criteria have not been met with respect to EPA's decision to spend almost two years and at least $5.4 million building this system. There is no immediate risk to human health that justifies emergency action. EPA has been aware of PCBs in Illinois Central Spring and Clear Creek since well before 1985. Indeed, the State of Indiana "do not eat" Fish Advisories have been in effect for Clear Creek since 1978. But EPA has not seen reason to act in all those years. Moreover, recent data show a decline in PCB levels in fish in Clear Creek that would justify the State of Indiana reducing the severity of its outdated

meaningless. Even if the data that is later developed shows that a system would be more effective and efficient if it were located nearer to the landfill or further away at Quarry Spring, EPA will dispute that data simply because accepting that conclusion would mean admitting that it had spent $5.4 million building a permanent, immovable system in the wrong location. Similarly, if the data shows that a permanent system would be just as effective and less costly with a smaller pumping or retention capacity, EPA will reject that data as well, because to accept such a conclusion would be to admit that it paid too much to build a white elephant.

Throughout those future negotiations, EPA's principal interest is not likely to be to try to develop a more effective and efficient system, but to try to get CBS to pay for the costly system EPA had already built and to take over the operation of that system, with its inefficiencies and inflated operating costs. By contrast, CBS will be reluctant to pay for an over designed system that is too costly and inefficient; CBS will also object to incurring the excessive operating costs and compliance problems that would result from operating a system that was so inefficiently designed.

In other words, because of EPA's actions, those negotiations are less likely to involve true technical deliberations, and more likely to result in a standoff between CBS, trying to develop a final system that is efficient and effective, and EPA, trying to get CBS to pay for its $5 4 million white elephant. Indeed, CBS has already had a taste of what these future negotiations will be like. Both at the meeting on June 1, 1999 and in Mr. Cahn's letter of June 21, 1999, the Agency demanded that CBS reimburse it the $1 million EPA spent on design and site preparation costs as a precondition before EPA would seriously consider alternatives to its design or otherwise allow CBS to participate

in the project. As EPA spends its $5.4 million (and more) on its prematurely designed final system, it will become less and less interested in finding the most efficient and cost-effective means of treating the water, and more and more interested in trying to get its money back.

Although CBS has agreed to negotiate in good faith about final water treatment, if such treatment is necessary, CBS has also reserved its defenses to any cost recovery action. In particular, CBS has reserved its arguments that the United States is precluded from bringing a cost recovery action against CBS under paragraph 111 of the Consent Decree.[9] The Special Master's Report of January 20, 1999, specifically noted on page 5 that CBS's arguments under the Covenant Not to Sue have been preserved with respect to water treatment issues. It continues to be CBS's preference, as it has been throughout the remedial selection process, to work with the other parties to select technically justified and cost-effective alternatives. Where such alternatives have been selected, CBS has consistently implemented them in an expeditious and professional manner. See pp. 4-5, supra. CBS intends to continue to approach remedial issues in that manner. But under the Consent Decree, CBS is protected from being compelled to pay for a cleanup alternative to which CBS has not consented. CBS has certainly not consented to EPA's water treatment system at Illinois Central Spring and cannot be compelled to pay for it. Moreover, CBS has compiled a substantial record that EPA's decision about this system not only violates CERCLA and the NCP, but also is just plain wrong.

[9] For a summary of this argument, see pages 2-5 of the Letter from David R. Berz to Jeffrey A. Cahn, dated November 10, 1998, attached as Exhibit 5.

CONCLUSION

While CBS has made a substantial case that EPA has not only violated its governing statute and regulations, but has acted in contravention of the representations it has made to this Court, CBS is not requesting the Court's intervention at this time. Rather, CBS is making a record to preserve its defenses if and when EPA tries to bring a cost recovery action against it. EPA should be on notice that in pursuing this misguided effort, it is simply wasting taxpayer money.

Respectfully submitted,

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and

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Counsel for CBS Corporation

CERTIFICATE OF SERVICE

I hereby certify that, on this ____ day of July, 1999, I caused to be served either by hand, or by first-class mail, postage prepaid, a copy of the foregoing Status Report upon counsel for the parties at the following addresses:

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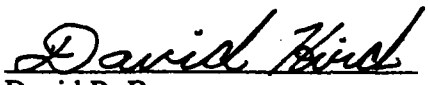
Respectfully submitted,



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Counsel for CBS Corporation

CERTIFICATE OF SERVICE

I hereby certify that, on this 26 day of July, 1999, I caused to be served either by hand, or by first-class mail, postage prepaid, a copy of the foregoing Status Report upon counsel for the parties at the following addresses:

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EXHIBITS

1. Letter from G. Grodner to D. Berz , dated 8/10/98
2. Status Report of the United States, dated 8/21/98
3. Status Report of CBS Corporation, dated 9/9/98
4. EPA Action Memorandum, dated 9/30/98, re: request for a time critical removal action at Illinois Central Spring
5. Letter from D. Berz and D. Hird to J. Cahn, dated 11/10/98
6. Letter from J. Cahn to D. Berz, dated 4/12/99
7. Letter from D. Berz to J. Cahn, dated 4/22/99
8. Letter from J. Cahn to D. Berz, dated 5/3/99
9. Letter from D. Berz to J. Cahn, dated 5/12/99
10. Overhead presentation materials prepared by CBS, made to EPA on 6/1/99
11. Letter from J. Cahn to D. Berz, dated 6/21/99

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August 10, 1998

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By Facsimile Transmission

Re: City of Bloomington et al. vs. CBS

Dear David:

It is my understanding that the Project Managers' meeting last week was not productive. CBS advised the governmental parties that it will consider no more than a 300 gpm non-powered interim treatment system for the Illinois Central Spring ("ICS") and that it may be three to five years before CBS has what it considers sufficient data to evaluate the need for a permanent treatment system.

Over the last several years, all parties have been aware of the continuing release of PCBs at ICS. Based upon CBS own data, at least 6,500 grams of PCBs, or approximately 14.5 pounds, are released at ICS each year. (See enclosed Chart 10 from documents provided by CBS on May 21, 1998). The PCBs released at ICS are believed to be the primary source of the PCB contamination in Clear Creek. The governmental parties have made clear their interest in stopping the release from ICS as quickly as possible, with the ultimate goal of remediating Clear Creek and eliminating the need for fish advisories.

Based upon the assumption that CBS was also committed to stopping the release of PCBs at ICS, the City has participated in negotiations about "hot spot" removal at the Lemon Lane Landfill ("LLL"). The City may have been willing to accept less than a complete removal of all PCB contaminated materials at LLL, provided that meaningful water treatment would be implemented immediately to effectively minimize the continuing release at ICS. In an effort to address concerns expressed by CBS, the City also participated in discussions about interim treatment systems. Unfortunately, it is clear there continues to be significant and apparently unresolvable disagreements between at least CBS and the City over the need for immediate water treatment at ICS, the plant sizing and operating efficiencies required for meaningful treatment at ICS, and the length of any "interim" period.

The City is disappointed in CBS' position on water treatment at ICS, given the repeated statements by CBS about its commitment to a safe and effective remediation of the PCB contamination in Bloomington and Monroe County. CBS' position, if agreed to by the governmental parties, would

result in the continuing release of signifcant amounts of PCBs each year into ICS, Clear Creek and the surrounding environment. Permitting that continued release is certainly not consistent with a commitment to safe and effective remediation.

As our discussions concerning interim water treatment systems seem to have failed, the City will insist that permanent water treatment at ICS be installed as a component of the removal and related remedial activities to be conducted in 1999. The permanent water treatment system would be expected to treat all flows to the applicable State water quality standards. The City understands CBS disputes that any water quality standards apply to the ICS flow. It appears judicial proceedings may be required to resolve that dispute and the general dispute over remedial activities at LLL and ICS.

Assuming that CBS proceeded to construct a permanent water treatment system at LLL next year, the City would agree to revisit the system sizing and design at such time as CBS produced data which supported a reduction in the system sizing and operating efficiencies. The City believes this process, building a permanent system now to treat all flows, is the most effective way at this time of minimizing the impact of any continuing releases of PCBs at ICS.

The City is aware of the repeated statement by CBS representatives that CBS is only willing to spend certain but undisclosed sums of money to complete the remedial activities at LLL. Certainly, the City is aware that CBS has an obligation to its shareholders. However, the City also strongly believes that CBS and its shareholders have a greater obligation to the citizens of Bloomington and Monroe County to stop the continuing release of PCBs now.

You have advised me that Dottie Alke has been designated as the "Principal" for CBS to replace Sam Pitts, who has retired. I have been asked by Mayor Fernandez to express the City's disappointment in that appointment. The involvement of Principals has been a procedure for the parties to resolve disputes before resorting to formal litigation. To date, the Principals have been effective in resolving several disputes that the Project Managers and their technical staffs have been unable to resolve. As Ms. Alke is also the lead technical staff for CBS she will be, and is, the person responsible for determining the position of CBS before a dispute is submitted to the Principals. It is unrealistic to believe that her participation as a Principal will lead to resolution of disputes on which she has already been the primary decision maker for CBS.

The City can only assume that the appointment of Ms. Alke as Principal is intended as a statement by CBS that discussions of among the Principals are of no further interest or value to CBS. Accordingly, the City anticipates that all parties will be forced to use the services of the Court to resolve the current disputes and all disputes which may arise in the future.

Finally, I anticipate, based upon the prior history of this matter, that CBS will feel compelled to respond to this letter with a lengthy defense of its position. Please be assured that this letter does not

require a response and is written solely so that CBS is fully aware of the City's position in advance of the Status Conference scheduled with Magistrate Foster for Friday of this week.

Sincerely,

Geoffrey M. Grodner

gmg:nb
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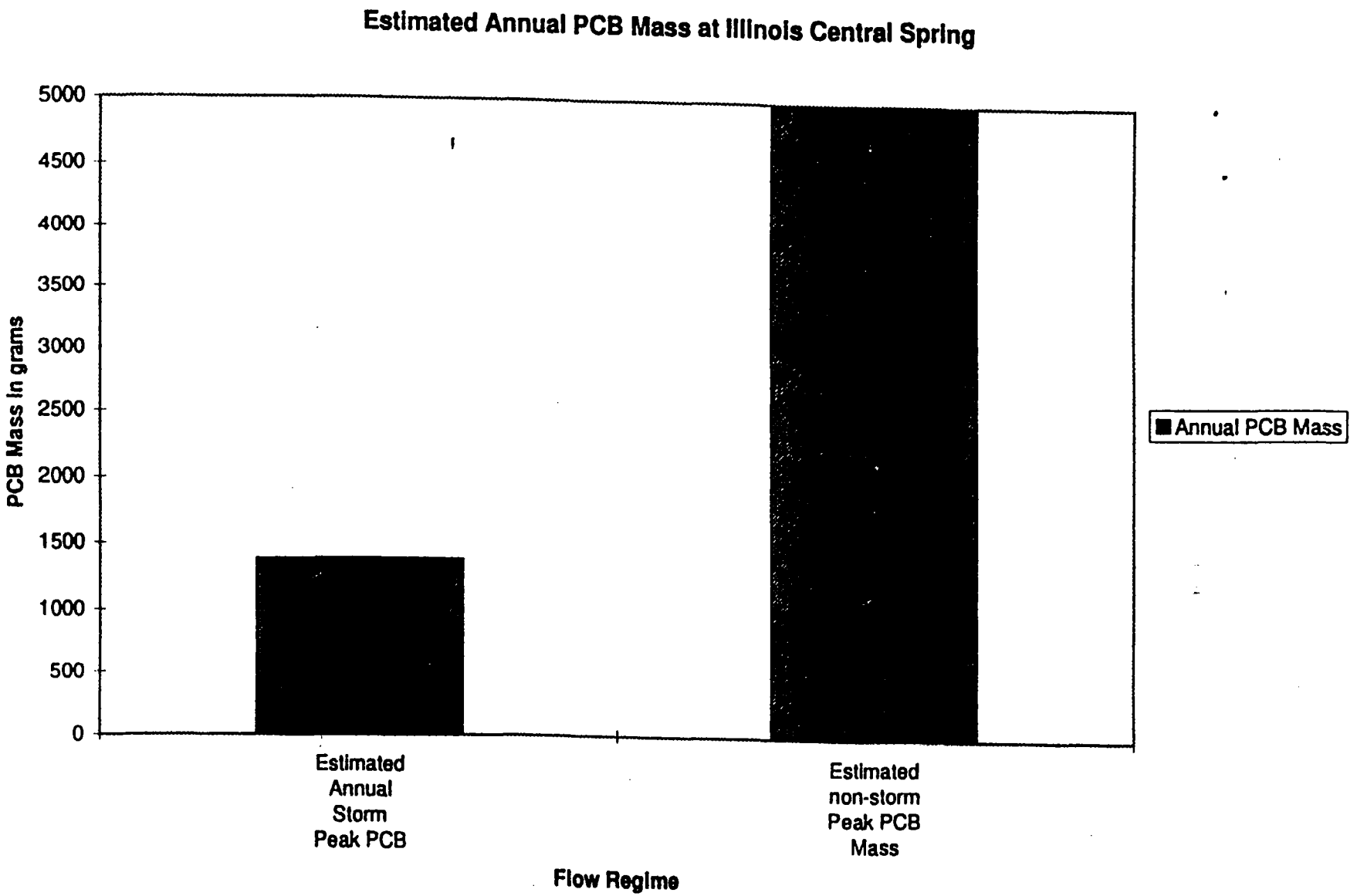
pc: Mayor John Fernandez
Linda Rumkle
John Langley
Bill Steger
Steven Ellis
Jeff Cahn
Myra Spicker
Thomas Cobb


Estimated Annual PCB Mass at Illinois Central Spring
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
PCB Mass in grams
Annual PCB Mass
Estimated Annual Storm Peak PCB
Estimated non-storm Peak PCB Mass
Flow Regime

FOR THE SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

UNITED STATES OF AMERICA, PLAINTIFF, AND THE STATE OF INDIANA AND THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, INTERVENING PLAINTIFFS, V. CBS CORPORATION, f/k/a WESTINGHOUSE ELECTRIC CORPORATION, DEFENDANT.	CA NO. IP 83-9-C
AND THE CITY OF BLOOMINGTON, INDIANA, THE UTILITIES SERVICE BOARD OF BLOOMINGTON, INDIANA, AND MONROE COUNTY, INDIANA PLAINTIFFS, V. CBS CORPORATION, f/k/a WESTINGHOUSE ELECTRIC CORPORATION AND MONSANTO COMPANY, DEFENDANTS.	CA NO. IP 81-448-C JUDGE S. HUGH DILLIN MAGISTRATE JUDGE KENNARD P. FOSTER

STATUS REPORT OF THE UNITED STATES

The United States of America, on behalf of the United States Environmental Protection Agency ("EPA"), hereby submits this status report to the Court confirming the oral report of the parties to this litigation (the "parties") on August 18, 1998 to

Magistrate Judge Foster's chambers concerning resolution of the issue the parties had been deadlocked upon during the August 14, 1998 status conference before Magistrate Judge Foster.

1. During the August 14 status conference, the parties informed Magistrate Judge Foster that they were deadlocked on the issue of interim water treatment at Illinois Central Springs, in Bloomington, Indiana. The United States, the State of Indiana (the "State"), and the City of Bloomington (the "City") believe that PCB contamination from the Lemon Lane Landfill Superfund Site ("Lemon Lane"), migrates through groundwater conduits to emerge as PCB-contaminated surface water at the Illinois Central Springs, about 2000 feet away. The waters emerging from these springs become headwaters of Clear Creek, which flows to the south through the City of Bloomington, until it flows into Salt Creek at Williams Dam, near the Lawrence County line.

2. Each year, the Indiana Department of Natural Resources ("DNR"), the Indiana Department of Environmental Management ("IDEM"), and the Indiana State Department of Health ("ISDH") update and publish the Indiana Fish Consumption Advisory. According to the 1998 Indiana Fish Consumption Advisory, a copy of which is attached to this Status Report, Clear Creek is one of only ten waterways in Indiana in which all fish from the waterway are under the most serious classification of advisory, a Group 5 advisory, which states: "DO NOT EAT FISH CAUGHT IN THESE WATERS BECAUSE OF HIGH LEVELS OF CONTAMINATION." Fish Advisory at 3. (Emphasis in original). Clear Creek's level

5 fish advisory is due to PCB contamination. Fish Advisory at 13.

3. The parties in this litigation are currently negotiating the remedial action for Lemon Lane pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 et seq. The negotiations have involved a combination of "hot spot" excavation and a suitable "cap" over Lemon Lane, and the treatment of water at Lemon Lane, Illinois Central Springs, or both locations. The negotiations over an interim water treatment system -- to be put in place pending evaluations concerning a possible permanent water treatment system -- had become deadlocked.

4. During the August 14, 1998 status conference, the United States presented to Judge Magistrate Foster its position that an interim treatment system with a capacity to treat 1,000 gallons per minute and a retention basin -- capable of holding two acre feet of storm flows -- were necessary to provide adequate protection to human health and the environment for the Clear Creek watershed during the interim period. CBS argued that the United States' proposed system was unnecessarily expensive, and proposed instead to place gravity powered treatment units at the Illinois Central Springs with a capacity to treat 200 to 300 gallons per minute for dry weather flows. EPA has determined that CBS's proposed treatment unit would not be sufficiently protective of human health and the environment as an interim system.

5. On August 18, 1998, the United States informed the other parties to this lawsuit that the United States would resolve the issue of interim water treatment by constructing and funding the initial operation of the interim water treatment system that EPA had determined was necessary and sufficient to protect human health and the environment, while reserving any and all rights of the United States to pursue cost recovery options at a future time, in accordance with a suggestion made by Magistrate Judge Foster during the August 14, 1998 status conference. The parties then informed the chambers of Magistrate Judge Foster that the disputed issue had been taken off the table and the parties will now devote their attention to negotiating the remaining issues. This status report confirms the resolution of that disputed issue.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Status Report of the United States was deposited in a United States Department of Justice facility for same day mailing in the United States mails, first class on August 21, 1998, to the following:

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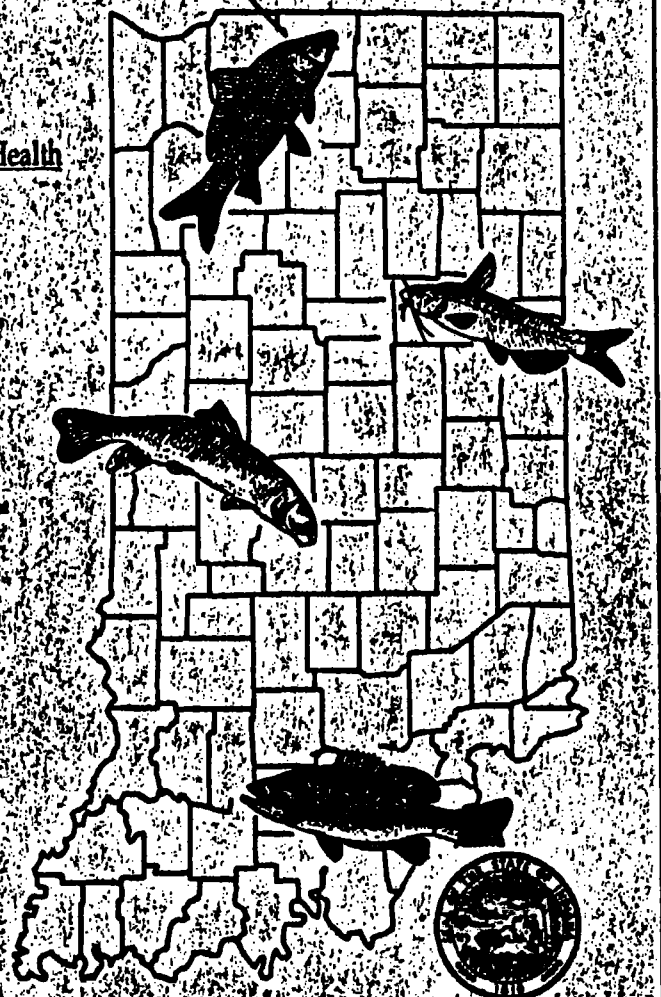
United States Department of Justice

1998 INDIANA FISH CONSUMPTION ADVISORY



Indiana State Department of Health

Indiana Department of Environmental Management

Indiana Department of Natural Resources

Frank L. O'Bannon
Governor

DESCRIPTION OF WATERSHED AREAS

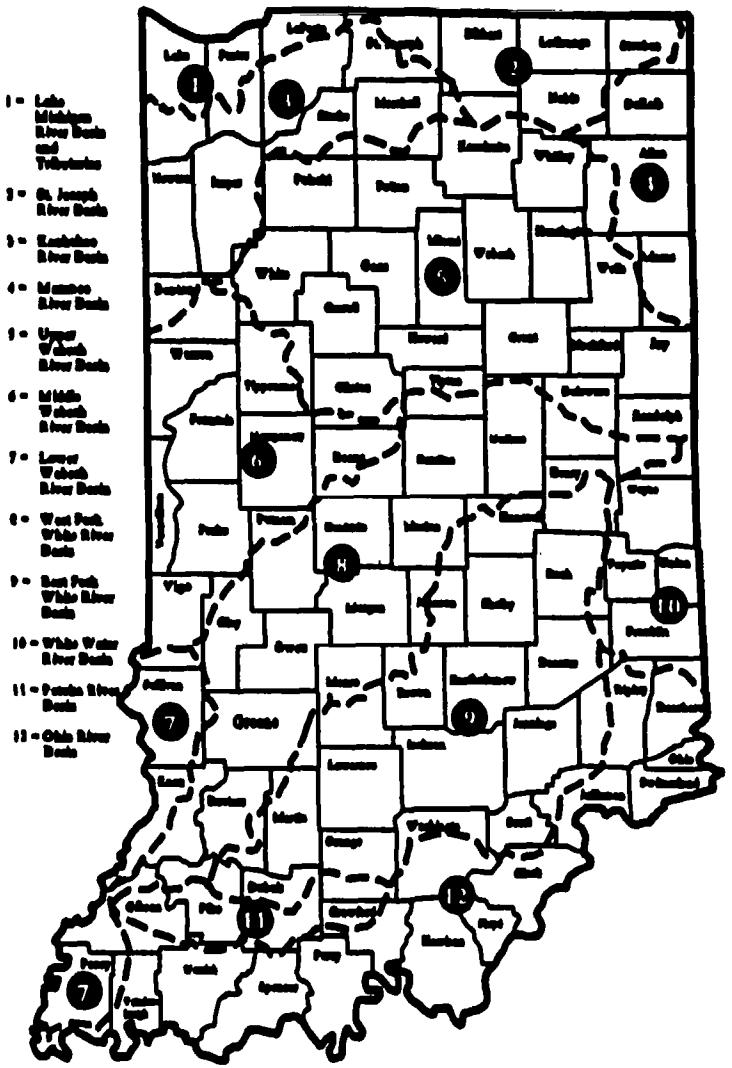
The state of Indiana can be divided into a number of major watershed areas. A watershed is a region where surface water drains into a river, a river system, or a body of water. For the purposes of this report, the watershed areas will be treated as in the *Hydrogeologic Atlas of Aquifers in Indiana*, U. S. Geological Survey, Water Investigations Report 92-41142 as shown in the following map. In this volume, the major watershed units are Lake Michigan Basin, St. Joseph River Basin, Kankakee River Basin, Maumee River Basin, Upper Wabash River Basin, Middle Wabash River Basin, Lower Wabash River Basin, West Fork White River Basin, East Fork White River Basin, Whitewater River Basin, Patoka River Basin, and Ohio River Basin as shown in the following Indiana map. The Wabash River Basin was divided into three units in the report to facilitate the compilation of the data.

There are waterways within each of these drainage basins for which fish consumption advisories have been issued.

The following is a short synopsis of the various waterways and water bodies found within each of these drainage basins in the Indiana Fish Consumption Advisory.

1. LAKE MICHIGAN BASIN: This watershed unit is found in the northwest section of the state of Indiana. The watershed is treated as a unique section in the advisory. The area consists of Lake Michigan and the direct tributaries to the lake in Lake, Porter, and LaPorte Counties. Waterways in this area are not mentioned by name, except for the Grand Calumet River/Indiana Harbor Canal, as the advisory covers all of the direct tributaries to Lake Michigan in the area.

2. ST. JOSEPH RIVER BASIN: This drainage basin is found in parts of Steuben, LaGrange, Dekalb, Noble, Kosciusko, Elkhart, and St. Joseph counties. The following waterways, listed in the advisory, are found in this watershed unit: Elkhart River in Elkhart County, Pigeon Creek in Steuben County, and the St. Joseph River in Elkhart and St. Joseph Counties. Additionally, there are a large number of lakes located within the watershed area. Among the lakes in this watershed area included in the advisory are Jimmerson, Lake James, Long, Marsh, and Snow in Steuben County; Crooked Lake in Noble County; Lake Waubee and Lake Wawasee in Kosciusko County; and Olin and Oliver in LaGrange County.



3. KANKAKEE RIVER BASIN: The Kankakee River Basin in northwestern Indiana includes most of Newton, Jasper, and Starke Counties and portions of Lake, Porter, LaPorte, St. Joseph, Marshall, and Benton Counties. Waterways with fish consumption advisories in this drainage basin include the Kankakee River in LaPorte and Lake Counties, and the Iroquois River in Jasper and Newton Counties.

4. MAUMEE RIVER BASIN: The Maumee River Basin in northeastern Indiana includes parts of Adams, Allen, Dekalb, Noble, and Steuben Counties. Waterways in this drainage basin for which fish consumption advisories have been issued include the Maumee River in Allen County, the St. Joseph River in Allen County, and St. Mary's River in Allen County.

5. UPPER WABASH RIVER BASIN: The Upper Wabash River Basin includes all or most of Blackford, Carroll, Cass, Clinton, Fulton, Grant, Howard, Huntington, Jay, Miami, Pulaski, Wabash, White, Whitley, and Wells Counties. Additionally, this unit includes portions of thirteen other counties. The basin extends from the Indiana-Ohio State Line downstream into Tippecanoe County at the confluence of Wildcat Creek and the Wabash River. Waterways in this basin for which there are fish consumption advisories include Deer Creek in Carroll County; Eel River in Whitley, Wabash, Miami, and Cass Counties; Kokomo Creek in Howard County; Little Mississinewa River in Randolph County; Mississinewa River in Randolph, Delaware, and Grant Counties; Tippecanoe River in Kosciusko, Fulton, and Pulaski Counties; Wabash River in Wells, Huntington, Wabash, Miami, Cass, and Carroll Counties, into Tippecanoe County; and Wildcat Creek in Howard, Carroll and Tippecanoe Counties. Lakes and reservoirs within this watershed area for which there are fish consumption advisories include Kokomo Reservoir #2 in Howard County; Lake Manitou in Fulton County; Lake Maxinkuckee in Marshall County; and Tippecanoe Lake in Kosciusko County. The advisory does not include Kokomo Reservoir #1 or the portions of Kokomo Reservoir #2 and Wildcat Creek above the water works dam.

6. MIDDLE WABASH RIVER BASIN: The middle portion of the Wabash River Basin includes all of Fountain, Montgomery, Vermillion, and Warren Counties; significant portions of Benton, Boone, Parke, Tippecanoe, and Vigo Counties; and small parts of six other counties.

Waterways for which there are fish consumption advisories in this watershed area include Big Pine Creek in Warren County; Big Raccoon Creek in Parke County; Elliot Ditch in Tippecanoe County; Little Sugar Creek in Montgomery County; Sugar Creek in Montgomery County; Wabash River in Tippecanoe, Fountain, Vermillion, and Vigo Counties; and Wea Creek in Tippecanoe County.

7. LOWER WABASH RIVER BASIN: The Lower Wabash River Basin incorporates the drainage area of the Wabash River from Honey Creek in Vigo County to the Ohio River. Included in the area are most of Sullivan and Posey Counties, as well as parts of Vigo, Knox, Greene, Gibson, and Vanderburgh Counties. Fish advisories in this area are for the Wabash River in Vigo, Sullivan, Knox, Gibson, and Posey Counties, and for Dugger Lake in Sullivan County.

8. WEST FORK WHITE RIVER BASIN: This basin includes all or large parts of the following counties: Boone, Clay, Daviess, Delaware, Greene, Hamilton, Hendricks, Knox, Madison, Marion, Monroe, Morgan, Owen, Putnam, Randolph, and Tipton. Waterways within this basin for which there are advisories include Big Walnut Creek in Putnam County; Buck Creek in Delaware County; East Fork of White Lice Creek in Hendricks County; Eel River in Greene County; Fall Creek in Madison and Hamilton Counties; Killbuck Creek in Madison County; Richland Creek in Monroe and Owen Counties; Stoney Creek in Hamilton County; West Fork of the White River in Randolph, Delaware, Madison, Hamilton, Marion, Morgan, Owen,Greene, Daviess, Pike, and Gibson Counties; and White Lick Creek in Hendricks and Morgan Counties. Reservoirs with advisories in this watershed include Geist and Morse Reservoirs in Hamilton County.

9. EAST FORK WHITE RIVER BASIN: This basin includes all or part of the following counties: Bartholomew, Brown, Daviess, Decatur, Dubois, Hancock, Henry, Jackson, Jefferson, Jennings, Johnson, Lawrence, Marion, Martin, Monroe, Orange, Pike, Ripley, Rush, Scott, Shelby, and Washington. Waterways with advisories in the basin include the Big Blue River in Henry, Rush, Shelby, and Johnson Counties; Brandywine Creek in Hancock County; Clear Creek in Monroe County; East Fork of the White River in Bartholomew, Jackson, Lawrence, and Martin Counties; Flatrock River in Rush and Shelby Counties; Little Blue River in Shelby County; Little Sugar Creek in Hancock County; Muddy Fork of Sand Creek in Decatur County; Muscatatuck River in Washington County; Pleasant Run

Creek in Lawrence County; Salt Creek in Lawrence County; Sand Creek in Decatur and Jennings Counties; and Sugar Creek in Hancock and Johnson Counties. Lakes and reservoirs within this watershed and for which there are fish consumption advisories include Dogwood Lake in Daviess County; Monroe Reservoir in Monroe County; and Yellowwood Reservoir in Brown County.

10. WHITEWATER RIVER BASIN: This basin includes all of Wayne and Union Counties, most of Fayette and Franklin Counties, and parts of Randolph, Henry, Decatur, and Dearborn Counties. Waterways in the watershed area for which there are advisories include East Fork of the Whitewater River in Wayne County; West Fork of the Whitewater River in Fayette County; and the Whitewater River in Dearborn County. Reservoirs within the watershed area for which there are advisories include Brookville Reservoir in Franklin County, and Middle Fork Reservoir in Wayne County.

11. PATOKA RIVER BASIN: The Patoka River Basin includes a significant area of Gibson, Pike, Dubois, and Orange Counties. It also includes small parts of three other counties: Warrick, Spencer and Crawford. Within this watershed area there are fish consumption advisories for fish from the Patoka River in Dubois, Pike, and Gibson Counties, and for Patoka Reservoir in Orange County.

12. OHIO RIVER BASIN: The basin includes all of Ohio, Switzerland, Floyd, Harrison, and Perry Counties and large parts of Dearborn, Ripley, Jefferson, Clark, Washington, Crawford, Spencer, Warrick, and Vanderburgh Counties. Waterways within this watershed area found in the advisory listing include the Blue River in Harrison County; Great Miami River in Dearborn County (most of the Miami River originates and flows through Ohio); Pigeon Creek in Vanderburgh County; and Silver Creek in Floyd County. Lakes and Reservoirs within the watershed area for which there are fish consumption advisories include Bischoff and Versailles Reservoirs in Ripley County, and Deam Lake in Clark County.

ADVISORY GROUPS

Group 1 - **Unrestricted consumption. One meal per week for women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15**

Group 2 - **One meal per week (52 meals per year) for adult males and females. One meal per month for women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15.**

Group 3 - **One meal per month (12 meals per year) for adult males and females. Women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15 do not eat.**

Group 4 - **One meal every 2 months (6 meals per year) for adult males and females. Women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15 do not eat.**

Group 5 - **No consumption (DO NOT EAT)**

Risk Comparisons Risk of Death		
Estimated Advisory Group	Level of Risk (chances out of 1,000)	Activity
	35-125	Smoking 1-2 packs of cigarettes per day
	7-30	Having 200 chest x-rays per year
Level 5	5-30	Eating 1 10-oz meal per week of Group 5 fish
	17	Driving a motor vehicle
Level 4	11-12	Eating 1 8-oz meal per week of mixed Great Lakes salmonids at 1984 contaminant levels
Level 3	3-6	Eating 1 8-oz meal per week of mixed Great Lakes salmonids at 1987 contaminant levels
	0.1-6	Breathing air in the U.S. urban areas at early 1980's contaminant levels
	3.5	Recreational boating
	1-2	Drinking 1 12-oz beer per day
	1.5	Recreational hunting
Level 2	0.014	Complications from an insect bite or sting

1998 INDIANA FISH ADVISORY
STREAMS AND RIVERS

	Species	Fish Size (inches)	Contaminant	Location Group
All Indiana Rivers and Streams				
All Counties	**Carp**	15-20	■○	3
		20-25	■○	4
		25+	■○	5
Big Blue River				
Henry County	Creek Chubs	6-7	■	3
		7+	■	4
	Rock Bass	4-7	■	3
		7+	■	4
	White Suckers	8-10	■	3
		10+	■	4
Rush County	Creek Chubs	6+	■	3
Shelby County	Black Redhorse	11+-	■	3
	Golden Redhorse	18+	■	4
	Northern Hogsucker	9-10	■	3
		10+	■	4
	Rock Bass	4-7	■	3
Johnson County	Longear Sunfish	5+	■	3
	Northern Hogsucker	8-10	■	3
		10+	■	4
	Rock Bass	7+	■	3
	Smallmouth Bass	5-8	■	3
		8+	■	4
Big Pine Creek				
Warren County	Black Redhorse	13-16	○	2
		16	○	3
	Channel Catfish	12-17	■	2
	Smallmouth Bass	10-11	■	2
		11+	■	3
Big Raccoon Creek				
Parke County	Carp	19-22	○	2
		22+	○	3

○ = Mercury
■ = PCBs

Group 2 = 1 meal/week
Group 3 = 1 meal/month
Group 4 = 1 meal/2 months
Group 5 = DO NOT EAT

(Women and children see advisory groups on page10)

1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Big Raccoon Creek				
Parke County (Cont.)	Black Redhorse	11-17	O	2
		17+	O	3
	Channel Catfish	17-22	■	3
		22+	■	4
	Spotted Bass	10-14	O	2
		14+	O	3
Big Walnut Creek				
Putnam County	Black Redhorse	11-14	O	2
		14+	O	3
	River Carpsucker	9-14	O	2
		14+	O	3
	Spotted Bass	9-12	O	2
		12+	O	3
Blue River				
Harrison County	Carp	28-29	O	2
		29+	O	3
	Channel Catfish	15+	■	3
	Rock Bass	5-7	■	2
		7+	■	3
	Shorthead Redhorse	14-17	■	3
		17+	■	4
Brandywine Creek				
Hancock County	Northern Hogsucker	8-11	O	2
		11+	O	3
Buck Creek				
Delaware County	Longear Sunfish	5-6	■	3
		6+	■	4
	Rock Bass	6-9	■	3
		9+	■	4
	Smallmouth Bass	8-11	■O	3
		11+	■O	4
Clear Creek				
Monroe County	Creek Chubs	All	■	5
	Green and Longear Sunfish	All	■	5

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Group 4 = 1 meal/2 months
Group 5 = DO NOT EAT
(Women and children see advisory groups on page10)

1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Deer Creek				
Carroll County	Black Redhorse	13-19	O	2
		19+	O	3
	Carp	21-25	■O	2
		25+	■O	3
	Carpsucker	15-17	O	2
		17+	O	3
	Smallmouth Bass	10	■	2
		10+	■	3
East Fork of White Lick Creek				
Hendricks County	Creek Chubs	6-9	■	2
		9+	■	3
	Northern Hogsucker	8-11	■	2
		11+	■	3
	Yellow Bullhead	8-10	■	2
		10+	■	3
East Fork of the White River				
Bartholomew County	Golden Redhorse	8-13	■	2
		13+	■	3
	Silver Redhorse	16-18	■	3
		18+	■	4
Jackson County	Freshwater Drum	17-18	O	2
		18+	O	3
	Golden Redhorse	14-16	■	3
		16+	■	4
	Silver Redhorse	20-22	■	2
		22+	■	3
	Smallmouth Buffalo	19-26	■	3
		26+	■	4
	Bigmouth Buffalo	18+	■O	3
Lawrence County	Carp	22+	■O	5
	Channel Catfish	15-21	■O	4
		21+	■O	5
	Freshwater Drum	12-15	■	4
		15+	■	5

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(Women and children see advisory groups on page10)

1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
East Fork of the White River				
Lawrence County (Cont.)	Flathead Catfish	10-16	■	3
		16+	■	4
	Largemouth Bass	11-14	■	4
		14+	■	5
	River Carpsucker	13+	■	5
	Sauger	14+	■○	3
	Shorthead Redhorse	14-16	■	4
		16+	■	5
	Smallmouth Buffalo	15+	■	5
	Spotted Bass	10+	■○	2
	Spotted Sucker	17+	■	3
Martin County	Channel Catfish	12-14	■	3
		14+	■	4
	Freshwater Drum	10-12	■	3
		12+	■	4
	Shorthead Redhorse	14-16	■	4
		16+	■	5
East Fork of the Whitewater River				
Wayne County	Channel Catfish	12-18	■	3
		18+	■	4
	Smallmouth Bass	8-11	■	4
		11+	■	5
Eel River (West Fork White River Basin)				
Greene County	Bigmouth Buffalo	18-20	○	2
		20+	○	3
	Channel Catfish	18+	■○	2
	Freshwater Drum	14-16	○	2
		16+	○	3
	Sauger	18+	■	3
Eel River (Upper Wabash River Basin)				
Whitley County	Bluegill	4-6	■	3
		6+	■	4
	Carp	11-20	■○	2
		20+	■○	3

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(Women and children see advisory groups on page10)

1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Eel River (Upper Wabash River Basin)				
Whitley County	Northern Hogsucker	7-10	■	3
		10+	■	4
	Rock Bass	7-8	○	2
		8+	○	3
	White Sucker	8-12	■	2
		12+	■	3
Wabash County	Northern Hogsucker	8+	■	3
Miami County	Northern Hogsucker	9-12	○	2
		12+	○	3
	Rock Bass	6-7	○	2
		7+	○	3
	Smallmouth Bass	10+	■	3
Cass County	Northern Hogsucker	8-11	○	2
		11+	○	3
	Rock Bass	7-9	○	2
		9+	○	3
Elkhart River				
Elkhart County	Rock Bass	7-9	■○	3
		9+	■○	4
	Smallmouth Bass	5-6	■	3
	White Sucker	8-13	■	3
		13+	■	4
Elliot Ditch				
Tippecanoe County	**ALL SPECIES**	**ALL**	■	**5**
Fall Creek				
Madison County	Black Redhorse	13-17	○	2
		17+	○	3
	Carp	19-22	■○	3
		22+	■○	4
	Channel Catfish	Up to 22	■	3
		22+	■	4
	Rock Bass	5-7	■	2
		7+	■	3

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(Women and children see advisory groups on page10)

1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Fall Creek				
Madison County	Smallmouth Bass	6-14	O	2
(Cont.)		15-17	O	3
		17+	O	4
	White Sucker	12-16	O	2
		16+	O	3
Hamilton County	Carp	16-23	■	2
		23+	■	3
	Largemouth Bass	12-16	O	2
		16+	O	3
Flatrock River				
Rush County	Northern Hogsucker	8-13	O	2
		13+	O	3
	Longear Sunfish	4-6	O	2
		6+	O	3
	Rock Bass	5-8	O	2
		8+	O	3
Shelby County	Rock Bass	5-8	■O	2
		8+	■O	3
Great Miami River				
Dearborn County	Carp	16-20	■	4
		20+	■	5
	Channel Catfish	15+	■	5
	Largemouth Bass	15-18	■O	2
		18+	■O	3
	White Crappie	8-11	■	3
		11+	■	4
Iroquois River				
Jasper County	Carp	28+	■	3
Newton County	Carp	28+	■	3
Juday Creek				
St. Joseph County	White Sucker	12-17	■	2
		17+	■	3
Kankakee River				
LaPorte County	Bigmouth Buffalo	16-22	O	2
		22+	O	3

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(Women and children see advisory groups on page10)

1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Kankakee River	Channel Catfish	17+	■	3
LaPorte County	Northern Pike	15+	■	2
(Cont.)	Quillback	15-16	■	3
	Shorthead Redhorse	13-17	■O	3
		17+	■O	4
Lake County	Bigmouth Buffalo	18-24	■O	2
		24+	■O	3
	Carp	20-22	■	2
		22+	■	3
	Northern Pike	31+	■	2
	Quillback	13-15	■	2
		15+	■	3
	Shorthead Redhorse	14-16	■	2
		16-19	■	3
		19+	■	4
	Silver Redhorse	18-20	■	2
		20+	■	3
	Smallmouth Buffalo	18-22	■O	2
		22-28	■O	3
		28-32	■O	4
		32+	■O	5
Killbuck Creek				
Madison County	Largemouth Bass	16+	O	3
	Longear Sunfish	5-6	■	3
Kokomo Creek				
Howard County	**ALL SPECIES**	**ALL**	■	5
Little Blue River				
Shelby County	Northern Hogsucker	8-11	■	2
		11+	■	3
Little Mississinewa River				
Randolph County	**ALL SPECIES**	**ALL**	■	5
Little Sugar Creek (Middle Wabash Basin)				
Montgomery County	**ALL SPECIES**	**ALL**	■O	5

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(Women and children see advisory groups on page10)

1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Little Sugar Creek (East Fork White River Basin)				
Hancock County	Creek Chubs	ALL	■○	3
Maumee River				
Allen County	Channel Catfish	14-16	■	3
		16+	■	4
	Largemouth Bass	9+	■	3
	River Redhorse	12-14	■○	3
		14+	■○	4
	Rock Bass	7-8	■	3
	Sauger	15-24	■○	2
		24+	■○	3
	Shorthead Redhorse	14-16	■○	3
		16+	■○	4
Mississinewa River				
Randolph County	**Carp**	**21+**	■○	**5**
	Channel Catfish	**15+**	■○	**5**
	Green Sunfish	**3+**	■	**5**
	Longear Sunfish	3-5	■	3
		5+	■	4
Delaware County	Bluegill	6+	■	2
	Green Sunfish	4-6	■	2
		6+	■	3
	Rock Bass	6-7	■○	2
		7+	■○	3
Grant County	Channel Catfish	11-13	■○	2
		13+	■○	3
	Largemouth Bass	8-11	■	2
		11+	■	3
	White Crappie	8-11	○	2
		11+	○	3
Muddy Fork of Sand Creek				
Decatur County	Black Redhorse	12-15	○	2
		15+	○	3
	Largemouth Bass	6-11	■	3
		11+	■	4

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1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Muddy Fork of Sand Creek				
Decatur County	Northern Hogsucker	6-10	■	3
(Cont.)		10+	■	4
	White Sucker	10-13	○	2
		13+	○	3
Muscatatuck River				
Washington County	Bigmouth Buffalo	17-26	■○	2
		26+	■○	3
	Smallmouth Buffalo	22-23	■○	2
		23+	■○	3
Otter Creek				
Vigo County	Black Redhorse	10-14	■	2
		14+	■	3
	Golden Redhorse	14+	■○	2
	Spotted Bass	8-13	○	3
		13+	○	4
Patoka River				
Dubois County	Bigmouth Buffalo	16-21	○	2
		21+	○	3
	Carp	15-20	■	2
	Freshwater Drum	13-17	○	2
		17+	○	3
Pike County	Bigmouth Buffalo	16-21	○	2
		21+	○	3
	Freshwater Drum	21-22	■○	2
		22+	■○	3
Gibson County	Black Buffalo	24-25	■○	2
		25+	■○	3
	Channel Catfish	16-18	■	2
		18+	■	3
	Flathead Catfish	12-18	■○	2
		18+	■○	3
	Freshwater Drum	14-16	○	2
		16+	○	3

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1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Pigeon Creek (St. Joseph River Basin)				
Steuben County	Carp	21-25	■	3
		25+	■	4
	White Sucker	11-14	O	2
		14+	O	3
Pigeon Creek (Ohio River Basin)				
Vanderburgh	**Channel Catfish**	15-18	■	4
County		18+	■	5
	Largemouth Bass	13+	■	2
	White Crappie	12+	■	2
Pipe Creek				
Madison County	Longear Sunfish	4+	■	2
	White Sucker	10-15	■O	2
		15+	■O	3
Pleasant Run Creek				
Lawrence County	**ALL SPECIES**	**ALL**	■	5
Richland Creek				
Monroe County	Creek Chubs	6-7	■	3
		7+	■	4
	Rock Bass	4-8	■O	2
		8+	■O	3
	White Sucker	8-11	■O	3
		11+	■O	4
Owen County	Creek Chubs	5-9	■O	3
		9+	■O	4
	Longear Sunfish	4-6	■O	2
		6+	■O	3
	Rock Bass	6-7	■O	2
		7+	■O	3
Salt Creek				
Lawrence County	**ALL SPECIES**	**ALL**	■O	5
Sand Creek				
Decatur County	Black Redhorse	14+	O	2
	Northern Hogsucker	10-12	■	3
		12+	■	4

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Location	Species	Fish Size (inches)	Contaminant	Group
Sand Creek				
Decatur County	Spotted Sucker	13-14	O	2
(Cont.)		14+	O	3
	White Sucker	8-11	O	2
		11+	O	3
	Yellow Bullhead	10-12	■	3
		12+	■	4
Jennings County	Rock Bass	6-9	O	2
		9+	O	3
	Spotted Bass	8-12	O	2
		12+	O	3
	Yellow Bullhead	8-11	O	2
		11+	O	3
Silver Creek				
Floyd County	Carp	21-25	■	3
		25+	■	4
	Channel Catfish	17-20	■	3
		20+	■	4
	Freshwater Drum	15-18	■O	2
		18+	■O	3
	Smallmouth Bass	15+	■	2
Stoney Creek				
Hamilton County	**ALL SPECIES**	**All**	■	5
Stouts Creek				
Monroe County	Creek Chubs	4-8	■O	2
		8+	■O	3
St. Joseph River (Maumee River Basin)				
Allen County	Black Crappie	9-11	■	3
		11+	■	4
	Black Redhorse	13-16	■	3
		16+	■	4
	Channel Catfish	20-24	■	3
		25-26	■	4
		26+	■O	5
	Golden Redhorse	12-13	■	3
		13+	■	4

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Location	Species	Fish Size (inches)	Contaminant	Group
St. Joseph River (Maumee River Basin)				
Allen County	Rock Bass	7-9	■	3
(Cont.)		9+	■	4
St. Joseph River (St. Joseph River Basin)				
Elkhart County	Black Redhorse	13-17	O	2
		17+	O	3
	Channel Catfish	20-24	■	3
		25-26	■	4
		26+	■	5
	Golden Redhorse	13-25	■	3
		25+	■	4
	Largemouth Bass	11-12	O	2
		12+	O	3
	Rock Bass	7-9	■	3
		9+	■	4
	Shorthead Redhorse	14-17	■O	3
		17+	■O	4
	Smallmouth Bass	9-13	O	2
		13+	O	3
	Walleye	16-17	O	3
		17+	O	4
St. Joseph County	Black Redhorse	14-17	■O	3
		17+	■O	4
	Carp	**20+**	■O	5
	Channel Catfish	22+	■O	4
	Golden Redhorse	13-22	■	3
		22+	■	4
	Largemouth Bass	15-16	■O	3
		16-18	■O	4
		18+	■O	5
	Shorthead Redhorse	15-19	■O	3
		19+	■O	4
	Smallmouth Bass	7-9	■O	2
		9+	■O	3
	Quillback	18+	■	3
	White Sucker	14-16	■	3
		16+	■	4

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Location	Species	Fish Size (inches)	Contaminant	Group
St. Marys River				
Allen County	Bigmouth Buffalo	20-25	■O	3
		25+	■O	4
	Black Redhorse	12-15	■O	2
		15+	■O	3
	Channel Catfish	13-15	■	3
		15+	■	4
	Largemouth Bass	Up to 15	■O	3
		15+	■O	4
	Quillback	9-14	■O	2
		14+	■O	3
	Silver Redhorse	17+	■O	3
	White Suckers	8-11	■O	2
		11+	■O	3
Sugar Creek (East Fork White River Basin)				
Hancock County	Black Redhorse	11-13	O	2
		13+	O	3
Johnson County	Flathead Catfish	17+	■	2
Sugar Creek (Middle Wabash River Basin)				
Montgomery County	**Black Redhorse**	**10+**	■	5
(Crawfordsville)	**Rock Bass**	4+	■	5
	Smallmouth Bass	7+	■	5
(Shades State Park)	**Black Redhorse**	14-16	■	4
		16+	■	5
	Rock Bass	7+	■	3
	Smallmouth Bass	7-11	■	2
		11+	■	3
		15+	O	3
Parke County	Black Redhorse	12-16	■	3
		16+	■	4
	Smallmouth Bass	8-11	■	2
		11+	■	3
	Channel Catfish	12-13	■	3
		13+	■	4

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Tippecanoe River				
Kosciusko County	Bluegill	6+	O	2
	Redhorse	17-18	■	3
		18+	■	4
	River Redhorse	17+	O	3
	Rock Bass	5+	O	2
Fulton County	Channel Catfish	12-23	■O	2
		23+	■O	3
	Northern Hogsucker	7-12	O	2
		12+	O	3
	Spotted Suckers	13+	O	2
Pulaski County	Black Redhorse	16-17	■	3
		17+	■	4
	Channel Catfish	11-12	■O	2
		12+	■O	3
	Longear Sunfish	3-5	O	2
		5+	O	3
	Northern Hogsucker	13-15	O	2
		15+	O	3
Wabash River				
Wells County	Channel Catfish	13-19	■O	3
		19+	■O	4
	Rock Bass	7-10	O	2
		10+	O	3
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
Huntington County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-16	■O	3
		16+	■O	4
	Freshwater Drum	12-18	■	3
		18+	■	4
	Largemouth Bass	12-14	O	3
		14+	O	4

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Location	Species	Fish Size (inches)	Contaminant	Group
Wabash River				
Huntington County (Cont.)	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
Wabash County	Black Redhorse	16-19	O	2
		19+	O	3
	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	O	2
		19+	O	3
	Freshwater Drum	12-18	■	3
		18+	■	4
	Quillback	12-16	O	2
		16+	O	3
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
	White Bass	11-21	■O	3
		21+	■O	4
Miami County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■O	2
		19+	■O	3
	Freshwater Drum	12-18	■	3
		18+	■	4
	Quillback	13-17	O	2
		17+	O	3
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
Cass County	Black Redhorse	16-19	O	2
		19+	O	3
	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■O	2
		19+	■O	3

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Wabash River				
Cass County (Cont.)	Freshwater Drum	12-18	■	3
		18+	■	4
	Quillback	13-19	○	2
		19+	○	3
	Sauger	13-19	■○	2
		19+	■○	3
	Smallmouth Bass	12-16	○	2
		16+	○	3
	Smallmouth Buffalo	**25+**	■	5
	Walleye	16+	○	2
Carroll County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■○	2
		19+	■○	3
	Freshwater Drum	12-18	■	3
		18+	■	4
	River Redhorse	23-26	○	2
		26+	○	3
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	**25+**	■	5
Tippecanoe County	Bigmouth Buffalo	19-20	■○	2
		20+	■○	3
	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■○	3
		19+	■○	4
	Flathead Catfish	15-24	■○	2
		24+	■○	3
	Freshwater Drum	12-18	■○	3
		18+	■○	4
	Largemouth Bass	9-14	○	2
		14+	○	3
	Quillback	13-19	■	4
		19+	■	5

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Wabash River				
Tippecanoe County (Cont.)	**River Redhorse**	16-19	■○	2
		19+	■○	5
	Sauger	13-19	■○	4
		19+	■○	3
	Paddlefish	34+	■	3
	Shorthead Redhorse	15-17	■	4
	Smallmouth Bass	9-12	■	3
		12+	■	4
	Smallmouth Buffalo	**25+**	■	5
	White Bass	6-11	○	2
		11+	○	3
Fountain County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■	3
		19+	■	4
	Freshwater Drum	12-18	■	3
		18+	■	4
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	**25+**	■	5
Vermillion County	Bigmouth Buffalo	18+	■	3
Vigo County	Blue Sucker	21-26	■○	3
		26+	■○	4
	Carpsuckers	10+	■○	2
	Channel Catfish	13-19	■○	3
		19+	■○	4
	Flathead Catfish	10-20	■○	2
		20+	■○	3
	Freshwater Drum	12-18	■	3
		18+	■	4
	Sauger	13-19	■	4
		19+	■	5
	Shovelnose Sturgeon	30+	■	3
	Smallmouth Buffalo	**25+**	■○	5
	White Bass	13+	■○	3

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Wabash River				
Sullivan County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■○	3
		19+	■○	4
	Flathead Catfish	16-31	■○	3
		31+	■○	4
	Freshwater Drum	12-18	■	2
		18+	■	3
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
Knox County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■	2
		19+	■	3
	Freshwater Drum	12-18	■○	3
		18+	■○	4
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
Gibson County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■○	2
		19+	■○	3
	Freshwater Drum	12-18	■○	2
		18+	■○	3
	Sauger	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
Posey County	Blue Sucker	21-26	■	3
		26+	■	4
	Channel Catfish	13-19	■	2
		19+	■	3
	Flathead Catfish	11-19	■○	2
		19+	■○	3

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Wabash River				
Posey County (Cont.)	**Sauger**	13-19	■	4
		19+	■	5
	Smallmouth Buffalo	25+	■	5
	White Bass	11-21	■○	3
		21+	■○	4
Wea Creek				
Tippecanoe County	**ALL SPECIES**	**ALL**	■	5
West Fork of the White River				
Randolph County	Carp	21-25	■	3
		25+	■	4
	Carpsucker	13-18	■	3
		18+	■	4
	Channel Catfish	14-16	■	3
		16+	■	4
	Longear Sunfish	3-5	■	2
		5+	■	3
	Spotted Sucker	11-13	■	3
		13+	■	4
	White Sucker	8-12	○	2
		12+	○	3
Delaware County	Black Bullhead	Up to 9	■	2
		9+	■	3
	Carpsucker	13-18	■	3
		18+	■	4
	Channel Catfish	14-16	■	3
		16+	■	4
	Largemouth Bass	9-15	■○	3
		15+	■○	4
	Smallmouth Bass	13-15	■○	2
		15+	■○	3
	Spotted Sucker	11-13	■	3
		13+	■	4

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West Fork of the White River				
Madison County	Green Sunfish	4-6	■	2
		6+	■	3
	Longear Sunfish	5+	■	2
	Rock Bass	6+	■	2
	Spotted Suckers	11+	■	3
Hamilton County	**Carp**	17-20	■	4
		20+	■	**5**
	Carpsucker	13-18	O	3
		18+	O	4
	Largemouth Bass	11-17	■O	3
		17+	■O	4
	Longear Sunfish	4-9	■	3
		9+	■	4
Marion County	Bluegill	7+	■	2
	Carp	**19+**	■	**5**
	Channel Catfish	14-18	■	3
		18-24	■	4
		24+	■	**5**
	Flathead Catfish	13-15	■O	3
		15+	■O	4
	Largemouth Bass	9+	■O	3
	Quillback	13-18	■	4
		18+	■	**5**
	Spotted Sucker	11-13	■O	3
		13+	■O	4
Morgan County	Black Redhorse	15-16	■O	3
		16+	■O	4
	Channel Catfish	14-16	■O	3
		16+	■O	4
	Flathead Catfish	11-17	O	2
		17+	O	3
	Gizzard Shad	10+	■	2
	Largemouth Bass	12+	■	3
	Quillback	13-18	■O	3
		18+	■O	4

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West Fork of the White River				
Morgan County (Cont.)	River Carpsucker	12-15	■	3
		15+	■	4
	Spotted Sucker	11-13	■	3
		13+	■	4
Owen County	Bigmouth Buffalo	16-24	■O	2
		24+	■O	3
	Carpsucker	13-18	■	3
		18+	■	4
	Channel Catfish	14-16	■	3
		16+	■	4
	Spotted Sucker	11-13	■	3
		13+	■	4
	White Bass	14-15	■O	3
		15+	■O	4
Greene County	Bigmouth Buffalo	Up to 20	■	2
		20+	■	3
	Carpsucker	13-18	■	2
		18+	■	3
	Channel Catfish	14-16	■	3
		16+	■	4
	Spotted Sucker	11-13	■	3
		13+	■	4
Daviess County	Bigmouth Buffalo	17-19	■O	2
	Carpsucker	13-18	■	3
		18+	■	4
	Channel Catfish	14-16	■	3
		16+	■	4
	Flathead Catfish	11-14	■O	2
		14+	■O	3
	Spotted Sucker	11-13	■	3
		13+	■	4
	White Bass	11-14	■O	3
		14+	■O	4
Pike County	Bigmouth Buffalo	21-25	■O	2
		25+	■O	3

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West Fork of the White River				
Pike County (Cont.)	Carpsucker	13-18	■	3
		18+	■	4
	Channel Catfish	14-16	■	3
		16+	■	4
	Flathead Catfish	9-16	■	2
		16+	■	3
	Quillback	14-15	O	3
		15+	O	4
	Smallmouth Bass	7-12	O	2
		12+	O	3
	Spotted Bass	9+	■	3
	Spotted Sucker	11-13	■	3
		13+	■	4
Gibson County	Carpsucker	6-18	■	3
		18+	■O	4
	Channel Catfish	14-16	■	3
		16+	■	4
	Freshwater Drum	12-14	■	2
		14+	■	3
	Largemouth Bass	11-17	O	2
		17+	O	3
	Quillback	Up to 11	■	2
		11+	■	3
	River Carpsucker	16-18	■O	3
		18+	■O	4
	Spotted Sucker	11-13	■	3
		13+	■	4
West Fork of the Whitewater River				
Fayette County	Black Redhorse	11-14	■O	2
		14+	■O	3
	Largemouth Bass	15-17	O	3
		17+	O	4
	Quillback	15+	O	3
	Smallmouth Bass	7-9	■O	2
		9+	■O	3

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Location	Species	Fish Size (inches)	Contaminant	Group
White Lick Creek				
Hendricks County	Channel Catfish	21-22	■O	2
		22+	■O	3
	Smallmouth Bass	8-14	■O	2
		14+	■O	3
Morgan County	Channel Catfish	20+	■O	2
	Smallmouth Bass	8-12	■	2
		12+	■	3
Whitewater River				
Dearborn County	Black Redhorse	14-16	■O	2
		16+	■O	3
	Channel Catfish	15-23	■O	3
		23+	■O	4
	Freshwater Drum	14-15	■O	2
		15+	■O	3
Wildcat Creek				
Howard County	**ALL SPECIES**	**ALL**	■	5
Carroll County	**ALL SPECIES**	**ALL**	■	5
Tippecanoe County	Channel Catfish	10-16	■	3
		16+	■	4
	Spotted Bass	8+	■	3
Young's Creek				
Johnson County	Northern Hogsucker	7-10	■	2
		10+	■	3

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Group 4 = 1 meal/2 months
Group 5 = DO NOT EAT
(Women and children see advisory groups on page10)

1998 LAKES AND RESERVOIRS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Bischoff Reservoir				
Ripley County	Largemouth Bass	12-15	O	2
		15+	O	3
Brookville Reservoir				
Franklin County	Largemouth Bass	13-18	O	2
		18+	O	3
Barre & Half Lake				
Kosciusko County	Largemouth Bass	5-13	O	2
		13+	O	3
	Bullhead	10-13	O	2
		13+	O	3
Bass Lake				
Starke County	Channel Catfish	up to 11	O	2
		11+	O	3
	Largemouth Bass	up to 6	O	2
		6+	O	3
	Walleye	up to 14	O	2
		14+	O	3
Bixler Lake				
Noble County	Bullhead	up to 11	O	2
		11+	O	3
	Largemouth Bass	6-10	O	2
		10+	O	3
Cataract Lake (Cagle's Mill)				
Putnam County	Carp	18-25	O	2
		25+	O	3
	Largemouth Bass	13-16	O	2
		16+	O	3
Cedar Lake				
Lake County	Channel Catfish	13-16	■	2
		16+	■	3
Center Lake				
Kosciusko County	Black Bullhead	11-14	■	3
		14+	■	4
	Bluegill	6-7	■	2

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1998 LAKES AND RESERVOIRS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Center Lake				
Kosciusko County	Largemouth Bass	8-14	■	2
(Cont.)		14+	■	3
Crooked Lake				
Noble County	Largemouth Bass	9-17	O	2
		17+	O	3
Deam Lake				
Clark County	Largemouth Bass	10-12	O	2
		12+	O	3
Dewert Lake				
Kosciusko County	Bullhead	7-12	O	2
		12+	O	3
	Largemouth Bass	8-13	O	2
		13+	O	3
Dogwood Lake				
Daviess County	Largemouth Bass	10-14	O	2
		14+	O	3
Dugger Lake				
Sullivan County	All Catfish	All	■	3
Eagle Creek Reservoir				
Marion County	Largemouth Bass	1-20	■O	2
		20+	■O	3
Geist Reservoir				
Hamilton County	Channel Catfish	22-28	■O	2
		28+	■O	3
	Largemouth Bass	10-13	O	2
		13+	O	3
Hamilton Lake				
Steuben County	Largemouth Bass	16-19	O	2
		19+	O	3
Jimmerson Lake				
Steuben County	Bullhead	8-10	O	2
		10+	O	3
	Largemouth Bass	9-15	O	2
		15+	O	3

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1998 LAKES AND RESERVOIRS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Kokomo Reservoir #2				
Howard County	Largemouth Bass	11-17	O	2
		17+	O	3
Lake George				
Lake County	Northern Pike	18+	■	2
Lake James				
Steuben County	Largemouth Bass	10-13	O	2
		13+	O	3
	Yellow Bullhead	10+	O	2
Lake Lemon				
Monroe County	Flathead Catfish	10-20	■	2
		20+	■	3
	Largemouth Bass	10-15	O	2
		15+	O	3
Lake Manitou				
Fulton County	Bullhead	up to 12	O	2
		12+	O	3
	Largemouth Bass	8-13	O	2
		13+	O	3
Lake Maxinkuckee				
Marshall County	Channel Catfish	16-21	■O	2
		21+	■O	3
	Largemouth Bass	6-17	O	2
		17+	O	3
	Walleye	22-23	O	2
		23+	O	3
Lake Shipshewana				
LaGrange County	Carp	27-30	■	2
		30+	■	3
Lake Tippecanoe				
Kosciusko County	Largemouth Bass	7-12	O	2
		12+	O	3
Lake Waubee				
Kosciusko County	Bowfin	14-23	O	2
		23+	O	3

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1998 LAKES AND RESERVOIRS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Lake Waubee				
Kosciusko County (Cont.)	Bullhead	10-13	O	2
		13+	O	3
	Largemouth Bass	4-8	O	2
		8+	O	3
Lake Wawasee				
Kosciusko County	Bullhead	9-15	■	2
		15+	■	3
	Largemouth Bass	11-12	O	2
		12+	O	3
Long Lake				
Noble County	Bullhead	up to 13	O	2
		13+	O	3
	Largemouth Bass	7-12	O	2
		12+	O	3
Steuben County	Largemouth Bass	9-13	O	2
		13+	O	3
Marquette Park Lagoon				
Lake County	Largemouth Bass	12+	■	3
Marsh Lake				
Steuben County	Largemouth Bass	13-17	O	2
		17+	O	3
	Yellow Bullhead	6-11	O	2
		11+	O	3
Middlefork Reservoir				
Wayne County	Largemouth Bass	12-18	O	2
		18+	O	3
Monroe Reservoir				
Brown County	Largemouth Bass	11+	O	2
Monroe County	Largemouth Bass	10-18	O	2
		18+	O	3
Morse Reservoir				
Hamilton County	Largemouth Bass	13-17	O	2
		17+	O	3

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1998 LAKES AND RESERVOIRS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Olin Lake				
LaGrange County	Bowfin	22+	O	2
	Largemouth Bass	19+	O	5
	Smallmouth Bass	5+	O	2
Oliver Lake				
LaGrange County	Largemouth Bass	6-11	O	2
		11+	O	3
Patoka Reservoir				
Orange County	Bluegill	5-6	O	2
		6+	O	3
	Largemouth Bass	13+	O	2
		13+	O	3
Dubois County	Largemouth Bass	13+	O	2
Pleasant Lake				
Stueben County	Largemouth Bass	up to 12	O	2
	Bullhead	12+	■O	3
Pike Lake				
Kosciusko County	Largemouth Bass	11-13	O	3
		13+	O	4
	Walleye	9-14	■O	3
		14+	■O	4
Shock Lake				
Kosciusko County	Largemouth Bass	up to 8	O	2
		8+	O	3
Snow Lake				
Steuben County	Largemouth Bass	9-16	■	2
		16+	O	3
Spear Lake				
Kosciusko County	Largemouth Bass	up to 13	O	3
		13+	O	4
Starve Hollow				
Jackson County	Largemouth Bass	up to 13	O	2
		13+	O	3
	Bluegill	up to 7	O	2
		7+	O	3

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(Women and children see advisory groups on page10)

1998 LAKES AND RESERVOIRS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Sylvan Lake				
Noble County	Largemouth Bass	up to 13	O	2
		13+	O	3
Tippecanoe Lake				
Kosciusko County	Largemouth Bass	9-15	O	2
		15+	O	3
Versailles Lake				
Ripley County	Largemouth Bass	14+	O	3
Webster Lake				
Kosciusko County	Largemouth Bass	14-20	O	2
		20+	O	3
Winona Lake				
Kosciusko County	Black Bullheads	12+	■	2
	Largemouth Bass	9-12	■	2
		12+	■	3
Wolf Lake				
Lake County	Largemouth Bass	13-17	■	3
		17+	■	4
	White Bass	13-15	■	3
		15+	■	4
Yellowwood Lake				
Brown County	Largemouth Bass	9-14	O	2
		14+	O	3

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(Women and children see advisory groups on page10)

1998 LAKE MICHIGAN AND TRIBUTARIES ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Grand Calumet River/Indiana Harbor Canal				
Lake County	All	All	■○	5
Lake County	Goldfish	4+	■	5
	Golden Shiner	3-6	■	5
Lake County,	Black Crappie	7-8	■	3
Laporte County, &		8+	■	4
Porter County	Bloater	10+	■	3
	Brook Trout	All	■	3
	Brown Trout	Up to 18	■	3
		18-27	■	4
		27+	■	5
	Carp	All	■○	5
	Catfish	All	■	5
	Chinook Salmon	Up to 26	■	3
		26-30	■	4
		30+	■	5
	Coho Salmon	17-28	■	3
		28+	■	4
	Freshwater Drum	17-22	■	3
		22+	■	4
	Lake Trout	Up to 21	■	3
		21-26	■	4
		26+	■	5
	Lake whitefish	9-12	■○	2
		12-20	■○	3
		20-24	■○	4
		24+	■○	5
	Largemouth Bass	4-7	■	3
		7+	■	4
	Longnose Sucker	14-23	■○	4
		23+	■	5
	Northern Pike	10-14	■	3
		14+	■	4
	Pink Salmon	All	■	3
	Rainbow Trout	Up to 22	■	3
		22+	■	4

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1998 LAKE MICHIGAN AND TRIBUTARIES ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
Lake County	Steelhead	26-32	■	4
LaPorte County& Porter County (Cont.)		32+	■	5
	Walleye	17-26	■	3
		26+	■	4
	White Sucker	15-23	■○	3
		23+	■	4

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1998 OHIO RIVER ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group
All	**Carp**	15-20	■	3
		21-25	■	4
		25+	■	5
	Channel Catfish	13-18	■	3
		19-21	■	4
		21+	■	5
	Flathead Catfish	up to 22	■	3
		22+	■	4
	Freshwater Drum	15	■	3
		15+	■	4
	Largemouth Bass	11-13	■	2
		13+	■	3
	*Paddlefish	All	■	3
	Sauger	13-16	■	3
		16+	■	4
	Smallmouth Buffalo	15-17	■	3
		17+	■	4
	Smallmouth Bass	13-15	■	4
		15+	■	5
	Spotted Bass	12-13	■	2
		13+	■	3
	Walleye	up to 19	■	3
		19+	■	4
	White Bass	11-13	■	3
		13+	■	4

**Special Note- this fish has been added as a precaution due to elevated levels of PCBs that have been noted in preliminary tissue and egg samples. Comprehensive sampling has been planned for the 1999 Advisory.*

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HEALTH RISK

Your risk of getting cancer from eating contaminated fish cannot be predicted with certainty. Cancer currently affects about one in every four people by the age of 70, primarily due to smoking, diet, and hereditary risk factors. Exposure to contaminants in fish you eat **may not** increase your cancer risk at all. If you follow this advisory over your lifetime, you should minimize your exposure and reduce whatever cancer risk is associated with these contaminants. At worst, it is estimated that individuals who eat fish according to this advisory over their lifetime would have a low risk of developing cancer.

When properly prepared, fish provide a diet high in protein and low in saturated fats. Many doctors suggest that eating ½ pound of fish each week is helpful in preventing heart disease. Almost any kind of fish may have real health benefits when it replaces a high-fat source of protein in the diet. You can get the health benefits of fish and reduce unwanted contaminants by following this advisory.

You can get the health benefits of fish and reduce unwanted contaminants by following this advisory.

See the Advisory Groups and Risk Comparison Tables on Pages 10 and 11 for more detail.

Since Fish species differ in diet, habitat, growth rate, and physiology, fish accumulate contaminants at different rates. Long-term effects of human exposure to PCBs and pesticides have not been fully determined by health experts. Because contaminants may produce harmful effects when consumed over a period of time, the ISDH advises that limited amounts of these fish be consumed.

Cause of Risk

Once in a lake, Mercury is converted to Methylmercury by bacteria and other processes. Fish absorb Methylmercury from their food and from water as it passes over the gills. Mercury is tightly bound to proteins in all fish tissue, including muscle. There is no method of cooking or cleaning fish which will reduce the amount of Mercury in a meal.

Fish absorb PCBs from water, suspended sediments, and food. PCBs concentrate in the fat of fish and in fatty fish such as Carp and Catfish. Cleaning and cooking a fish to remove fat will lower the amount of PCBs in a fish meal. Larger, older fish, and fish which eat other fish, accumulate more contaminants than smaller, younger

fish, which eat less contaminated prey. Contaminants are not usually detected in panfish such as Bluegill and Crappie.

PCBs and pesticides tend to be stored in the fat of fish. A substantial amount of fat is located near the skin of the fish, and because of this, a boneless, skinless fillet should be prepared for cooking. The boneless, skinless fillet--with the fat layer along the belly flap and the midpoint of the back removed--will limit the amount of fat consumed.

PCBs and Methylmercury build up in your body over time. It may take months or years of regularly eating contaminated fish to accumulate levels which are a health concern. As you follow the fish advisory, the amount of Methylmercury you take into your body is safely eliminated between meals. Larger amounts of Methylmercury may harm the nervous system. A fetus is especially sensitive to Mercury poisoning. The first symptoms of adult poisoning include incoordination and a burning or tingling sensation in the fingers and toes. As Mercury levels increase, your ability to walk, talk, see, and hear may all be affected in subtle ways. The consumption advice in this booklet is intended to help keep the Mercury in your body below levels that damage the nervous system. We excrete Mercury from our bodies, but it takes time; so, it is important to space out meals over the weeks or month you eat contaminated fish. Young children, women of child-bearing age, and developing children are especially sensitive to the effects of Mercury.

The consumption advice for PCBs is intended to protect children from developmental problems. PCBs also cause changes in human blood, and in the liver and immune function of adults. The meal advice for PCB-contaminated fish is based on the reproductive effects that have been measured in women and their infants. It is difficult to say what other effects PCBs may have on anglers and their families, but PCBs cause cancer in laboratory animals and may cause cancer in humans.

Health Benefits of Eating Fish

Fish provide a high protein, low-fat diet, which is low in saturated fats. Many researchers suggest that ½-pound of fish a week in the diet is beneficial in preventing heart disease. The health benefits of fatty fish rich in omega-3 fatty acids are not clear. What is clear is that fish of almost any species, lean or fat, may have a substantial health benefit when they replace a high-fat source of protein in the diet.

Nutritionists recommend eating 3 to 4 ounces of fish in a meal. The meal guidelines are based on a 8-ounce serving (weight before cooking) for a 150-pound person. The meal per week or month, which is suggested in the advisory guidelines, can be eaten as two or three smaller meals over the same time period.

How to Reduce Your Health Risk

BE SELECTIVE. Be picky about the types and size of fish you eat. Fish taken from some waters are not recommended for consumption.

KEEP THE SMALL FISH. Throw back the larger fish and keep the small ones for dinner. Small fish taste better and are less contaminated than older, larger fish. Many popular fish such as bass, trout, salmon, and catfish must exceed a specific minimum size to keep. Also, it is illegal to sort and release a fish taken previously in the day with another fish. Please consult the State Fishing Guide.

EAT LESS CONTAMINATED FISH. Check the fish advisory for those with Group 5 advisories. Substitute fish taken from the Group 3 or higher categories for those in lower categories.

EAT SMALLER MEALS. When you eat large fish, eat small servings. Freeze the rest and use it over time.

CLEAN/COOK FISH PROPERLY. A substantial amount of fat is located near the skin of the fish, and because of this, a boneless, skinless fillet should be prepared for cooking. The boneless, skinless fillet with the fat layer along the belly flap and the midpoint of the back removed will limit the amount of fat consumed (see How to Prepare Fish on page 49). Broiling, baking, or grilling fish so that the fat drips away reduces PCB and Dioxin levels. Mercury is bound to the meat of the fish, and these precautions will not reduce the amount in a meal of fish.

This advisory is not intended to discourage individuals from eating fish, but should serve as a guide to choosing fish which are low in contaminants.

Who Is At Risk

People who regularly eat sport fish, women of childbearing age, and children are particularly susceptible to contaminants that build up in the body over time. If you fall into one of these categories, you should be especially careful to space out fish meals according to the advisory table. Your body can get rid of some contaminants over time. Spacing fish meals out over time prevents the contaminants from building up to harmful levels in the body. For example, if the fish you eat is in the "Group 4" (one meal every two months) wait a month before eating another meal of fish from this Group.

Please note that one meal is assumed to be one-half pound of fish (weight before cooking) for a 150-pound person. This meal advice is equally protective for larger people who eat larger meals and smaller people who eat smaller meals.

Women, Pregnant/Nursing

A woman's exposure **before** pregnancy also matters. Women should follow the fish consumption advice given to pregnant and nursing women for several years before becoming pregnant. It takes up to six years or more for the body to get rid of PCBs, and up to one year to get rid of Mercury.

Women past childbearing years should follow the advisory to reduce their total exposure to contaminants (see advice under men).

Babies

In high amounts, Mercury can cause severe mental and physical retardation in a baby. Lower amounts can delay walking and talking, and can cause other effects such as learning deficits.

Exposure to PCBs is linked to infant development problems in children whose mothers were exposed to PCBs before becoming pregnant.

Men

Men face fewer health risks from contaminants. However, they should also follow the advisory to reduce their total exposure to contaminants. It is the total number of meals that you eat during the year that becomes important, and many of those meals can be eaten during a few months of the year. If most of the fish you eat are from the Group 2 (one meal a week) advisory, you should not exceed 52 meals per year; likewise, if most of the fish you eat are from the Group 3 (one meal a month) advisory, you should not exceed 12 meals per year. Animal studies show that Mercury can damage sperm, which could result in fertility problems.

REMEMBER:

Eating one meal of fish from the Group 3 group is comparable to eating four meals from the Group 2 group.

COMMONLY ASKED QUESTIONS

Why has the fish advisory changed?

Recent studies show that individuals eat more sport caught fish than was previously assumed. Therefore, a more stringent advisory was needed in order to protect human health and allow individuals to make informed decisions on the types and amounts of fish they eat.

What if where I fish is not listed on the Advisory?

If you don't know the safety of fish in the lake or river you are fishing:

- Read the Summary of this Advisory.
- Assume that the fish are in a Group 2 advisory. (This is based on studies that show that anglers eat less than one meal per week of their catch.)
- Follow the cooking instructions on page 50.

What contaminants are in fish?

Contaminants found in Indiana fish include PCBs, pesticides, and heavy metals. Two of these contaminants, Mercury and PCBs, are the major contaminants found in Indiana fish.

What are PCBs?

PCBs are synthetic oils once widely used in electrical transformers and capacitors. PCBs break down very slowly in the environment.

What is Mercury?

Mercury is a naturally-occurring metal which does not break down, but recycles between land, water, and air. Some Mercury that reaches Indiana waters occurs naturally. Mercury is also released from coal-burning power plants, and from burning household and industrial waste.

How do PCBs and Mercury get into fish?

PCBs and Mercury collect in the soil, water, sediment, and in microscopic animals. They build up in fish, especially in those fish that eat other fish.

Should I stop eating fish?

DON'T STOP EATING FISH. It is a good source of protein, and low in saturated fat. You can still get the benefits of eating fish by wisely choosing safer types of fish, safer places to catch fish, safer ways to prepare fish, and moderation in how often you eat fish and how much you eat.

How can I tell if a fish is contaminated?

Contaminated fish may not smell, taste, or look different, but they can still harm anyone who eats them. The Fish Advisory informs you about which fish are contaminated.

How are sampling areas chosen?

Sampling areas are selected by various criteria, which include:

- bi-annual historical areas,
- concerns from inspectors or water quality survey groups,
- closeness to superfund sites, and
- random fishing trips looking for problems.

HOW TO PREPARE FISH

If you decide to keep and eat your catch, you should keep it in the best possible condition until it reaches the table. Freshly caught fish should be chilled on ice or put in a refrigerator as soon as possible to avoid spoilage. Then, at the earliest opportunity, the fish should be cleaned, dressed, and refrigerated or preserved for future use.

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SURVEY

The following is one of the procedures commonly used for gutting, filleting, and skinning fish:

1. **Gutting**

   - Place the fish on a flat surface with its back facing you at a right angle. Slit open the belly forward from the vent (anal opening) to the head, and remove the internal organs.

2. **Filleting**

   - Cut through the skin and flesh just behind the head down to, but not through, the backbone.
   - Now cut along the backbone, front to back, using a sawing motion with the tip of your knife touching the top of the ribs, keeping it as close to the backbone as possible.

- When you reach a point opposite the vent, push the knife all the way through to the vent and cut back to the tail with the knife riding on the backbone.
- Next, hold the fillet up and using the knife tip, cut the fillet completely away from the rib cage.

- After cutting the fillet away from the rib cage, continue to cut on down until it can be separated at the stomach bottom.

3. Skinning

- With the skin side down, grasp the tail of the fillet with your thumb and forefinger. Make a cut just ahead of your thumb and, holding the knife flat against the skin, either pull the fillet toward you while holding the knife still, or move the knife forward along the skin to remove the fillet. If the previous step is done properly, a layer of light-colored fat will remain on the skin.

- Trim away the strip of light-colored fat that remains along the belly flap at the bottom of the fillet as well as any fat that may be present along the sides and the midpoint of the back.

- You are now left with a skinless, boneless fillet.
- Wash in clean, cold water and cook, refrigerate, freeze, or preserve as desired.
- Repeat the process on the opposite side of the fish.

Cooking

A substantial amount of fat is located near the skin of the fish, and because of this, a boneless, skinless fillet should be prepared for cooking. The boneless, skinless fillet with the fat layer along the belly flap and the midpoint of the back removed, will limit the amount of fat consumed. Broiling, baking, or grilling fish so that the fat drips away reduces PCB and Dioxin levels. Mercury is bound to the meat of the fish and these precautions will not reduce the amount of Mercury in a meal of fish. Frying breaded fish is not recommended for larger, fatty fish. Throw away drippings. Do not make soup or gravy with the liquid.

REMINDER:

One meal is assumed to be 7 ounces of fish for a 130-pound person; and 2 ounces for a 40-pound child. It is a good idea to eat smaller meals; for example, eat two 3-ounce meals during the week instead of one 7-ounce meal.

PARASITES AND TUMORS IN FISH

Parasites

Anglers sometimes catch fish which contain worms, grubs, cysts, or nodules in the flesh. When cleaning fish, anglers may notice worms in or around the intestines of the fish, or fungus growths on the skin, fins, or gills. These parasites of fish are a normal part of the ecosystem in which the fish lives. While not esthetically pleasing, the edible portions containing parasites, if properly and thoroughly cooked, do not present a health hazard.

Some of the most commonly seen parasites of fish are black spots, yellow grubs, and tapeworms. Most fish have parasites, and they seldom affect the well being of the fish except under unusual conditions. Parasites in fish are only a problem when fish are not thoroughly cooked or are eaten raw.

<u>Black Spot</u>

Black spot is caused by a parasite called a fluke, which burrows into the skin of fish. The black pigment (about pin-head size) forms in the tissue surrounding the fluke, and is a reaction of the fish caused by the parasite. The fluke itself is actually a whitish color.

Yellow Grub

Yellow grubs are also caused by a fluke, which penetrates the skin of fish and curls up into a sac under the skin or in the muscle where it grows to be the grub. The grubs are often found in the flesh of fish near the dorsal fins. When freed from the sac, the grub may be up to ½-inch long.

Tapeworms

Young tapeworms are common in the organs and body cavity of many fish. They usually live in the internal organs of the fish. They resemble long, thin ribbons about 1/16-inch wide.

Tumors

Occasionally, anglers catch fish with external growths, tumors, sores, or other lesions. Such abnormalities generally result from viral or bacterial infections. Abnormalities in the liver or intestines are sometimes seen in tolerant fish such as White Suckers and Brown Bullheads, and can be caused by parasites or tumors. Concern about the potential effects of these diseases on the fish themselves, and the possible role of pollution in causing tumors in some coarse fish, has prompted ongoing investigations into these abnormalities. Growths on game fish caused by viruses include lymphocystis, dermal sarcoma, and lymphosarcoma.

Viruses infect fish skin through contact with infected fish during the spring spawning run, forming pale or white cauliflower-like growths. Lymphocystis does not kill affected fish, and tagging studies have shown that these fish can lose the growths by the following spring. There is no known health risk from consuming an infected fish once it has been skinned and cooked.

Dermal sarcoma, another viral disease affecting Walleye, is caused by viruses which infect cells and cause growths just under the skin. These growths can be removed by skinning the fish.

The appearance of viral or bacterial infections in fish may be unsightly, but there is no evidence to suggest that these infections pose a threat to consumers of infected fish.

WHERE CAN I GET MORE INFORMATION?

If you have any questions or comments, please contact the ISDH Environmental Epidemiology Section (317) 233-7808, or write to:

Indiana State Department of Health
Environmental Epidemiology Section
2 N. Meridian Street, 3rd Floor
Indianapolis, IN 46204

Indiana State Department of Health

On health risks of contaminants, or for a copy of this booklet, call the ISDH at (317) 233-7808.

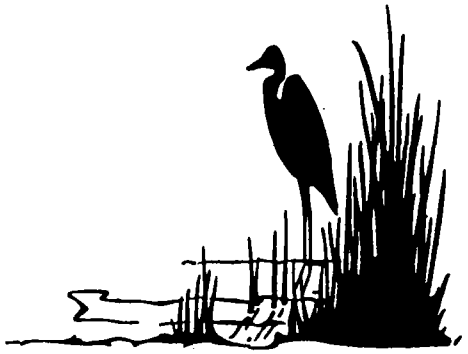
On the sources of contaminants in Indiana waterways and collecting and testing of fish, call the IDEM at (317) 232-8560.

On good places to fish in Indiana, or the Fishing Rules & Regulations, call the DNR, Division of Wildlife, at (317) 232-4080.

INDIANA FISH IDENTIFICATION

BLACK BASS	
Largemouth bass	upper jaw extends beyond back of eye
Smallmouth bass	upper jaw does not extend beyond back of eye
Spotted bass	red eye, horizontal lines of dark spots on lower sides.
TRUE BASS	
Striped bass	tooth patches on back of tongue in two parallel patches, first stripe below lateral line complete to tail, stripes above lateral line are unbroken.
White bass	single tooth patch on back of tongue, first stripe below lateral line not complete to tail
Hybrid striped	two tooth patches on back of tongue are joined, first stripe below lateral line complete to tail, stripes above lateral line usually broken.
CATFISH	
Channel catfish	24-29 rays in rounded anal fin, caudal fin is deeply forked, dark spots on sides.
Blue catfish	30-35 anal fin rays, anal fin margin is straight, caudal fin is deeply forked.
White catfish	caudal fin margin is nearly straight (slightly forked), no dark spots on sides
Bullhead catfish	caudal fin is straight
PERCH	
Walleye	no spots on dorsal fin, dusky spot at rear of spiny dorsal fin, tip of lower caudal tail and anal ring are white.
Sauger	3 or 4 saddle shaped blotches on back and sides, spotted dorsal fin.
SUNFISH	
Bluegill	5 to 9 vertical bars on sides, black opercle flat (ear) with no margin, dark spot at rear of dorsal fin.
Black crappie	7-8 dorsal spines, random blotches on sides
White crappie	6 dorsal spines, black side markings from vertical bars rather than random spots.
TROUT & SALMON	
Rainbow trout	or steelhead; white mouth, teeth and gums; small black spots on back, sides, caudal and dorsal fins, caudal fin margin is square
Lake trout	white mouth, teeth and gums, some orange or red spots on sides, some spots enriched with light blue, caudal fin margin is square
Chinook salmon	or King salmon; teeth are set in dark gum, black spots on back and both lobes of caudal fin, 15-17 anal fin rays

1-800-TIP-IDNR



Turn in a Poacher/Turn in a Polluter is a joint effort between Hoosier outdoor enthusiast and the DNR to eliminate the illegal taking of Indiana's fish and wildlife and the polluting of Indiana's environment.

TIP offers rewards for information leading to the arrest of wildlife law violators. Citizens may report violators by calling the toll-free TIP number. Callers are not required to give their names or testify in court.

TIP offers a minimum reward of $200 for information on cases involving big game and endangered species. For other cases, the minumum reward is $100.

Free Fishing Information from DNR

The annual Indiana Fishing Guide, distributed by the Indiana Department of Natural Resources, provides anglers, with information on general rules and regulations, where to fish, fish identification, record fish program, special regulations for Lake Michigan and the Ohio River and public access. A copy of the fishing guide is available at most bait and tackle stores, or you may contact the Division of Fish and Wildlife's Indianapolis office: Fisheries Section, IGC-273W, 402 W. Washington Street, Indianapolise, IN 46204, (317) 232-4080.

FOR THE SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

UNITED STATES OF AMERICA, PLAINTIFF, AND THE STATE OF INDIANA AND THE ENVIRONMENTAL MANAGEMENT BOARD OF THE STATE OF INDIANA, INTERVENING PLAINTIFFS, v. CBS CORPORATION, f/k/a WESTINGHOUSE ELECTRIC CORPORATION, DEFENDANT.	CA NO. IP 83-9-C
AND THE CITY OF BLOOMINGTON, INDIANA, THE UTILITIES SERVICE BOARD OF BLOOMINGTON, INDIANA, AND MONROE COUNTY, INDIANA PLAINTIFFS, V. CBS CORPORATION, f/k/a WESTINGHOUSE ELECTRIC CORPORATION AND MONSANTO COMPANY, DEFENDANTS.	CA NO. IP 81-448-C JUDGE S. HUGH DILLIN MAGISTRATE JUDGE KENNARD P. FOSTER, SPECIAL MASTER

STATUS REPORT OF CBS CORPORATION

In anticipation of the September 15, 1998 status conference before the Special Master, CBS Corporation ("CBS") submits this Status Report to apprise the Court of construction activities taken and contemplated at Winston

Thomas and Neal's Dump, and to respond to the United States' Report with respect to interim water treatment in connection with the Lemon Lane Landfill site.

1. Winston Thomas

CBS began work at Winston Thomas on May 18, 1998. As the Court is aware, the commencement of work was delayed as a result of negotiations concerning a soil cover on the tertiary lagoon. Because the City could not commit to a future land use of the site, the governmental parties demanded that a soil cover be placed on the site, after remediation, until the City made its decision. The parties were unable to agree to the Stipulation concerning cleanup of the remainder of the site until the dispute over the need for such a cover, the thicknesses of the cover, and who would pay for it, was resolved.

At the time work began, CBS informed the Court that a very aggressive schedule had to be met, with no room to accommodate unexpected conditions or routine delays typically encountered in complex construction projects, if the remediation work was to be completed in the 1998 construction season. Indeed, CBS mobilized its contractors before the Stipulation approving this work was finalized.

At this point, CBS has completed two of the three components of the Winston Thomas cleanup, the trickling

filter and the abandoned lagoons, but will not be able to complete the third component, remediation of the tertiary lagoon, until next year. A number of conditions were encountered in performing the work which impeded CBS' ability to remediate the tertiary lagoon in one season, including thickness of the vegetation which had to be removed, thickness and characteristics of the sludge requiring multiple dredging passes, and more volume of sludge than anticipated.

CBS will be able to complete the dredging/pressing phase of the tertiary lagoon cleanup in 1998 by continuing the work into mid-November. This will result in the removal of the vast majority of contaminated material from the tertiary lagoon. At that time, it will be too late in the construction season to begin the final excavation phase of removing contaminated material that is not suitable for dredging/pressing. That phase will be deferred until the 1999 construction season because warm, dry weather is needed for this operation.

The presses, dredge and water treatment equipment will be decontaminated and removed from the site late this year. During the winter, 35 ft x 35 ft grids will be sampled, and the excavation plan may be revised based on

this data. A water cover will be maintained at the lagoon during the winter months.

Excavation of the remaining clay is expected to occur in the spring and summer of 1999. Remaining water will be removed prior to excavation.

The deferral of excavation of the contaminated clay layer until next year provides the City of Bloomington with additional time to decide on the future use of the Winston Thomas site. If the City is able to reach a decision before work resumes, then CBS will have the information it needs to develop the proper "Soil Cover Plan" based on the City's plans for future use of the site. That may simplify and speed up completion of the project.

2. Neal's Dump

The United States asked CBS to remediate another one of the Consent Decree sites this year. Because consensus has been reached on the excavation of materials from Neal's Dump, the United States has suggested that CBS attempt to remediate that site this year. The optimal time to start the Neal's Dump excavation would have been in mid-to-late summer, so that the project may be best performed in dry weather. The completion of the federal government's public participation process, however, interferes with CBS' ability to start work as soon as possible.

Nonetheless, CBS is willing to try to implement the Neal's Dump remediation project this construction season. CBS is making preparations to mobilize its contractors to the site this month to begin the removal action as soon as it can. Once again, it is important to start work soon so that the work can be completed in dry weather conditions. If the work is to be done this year, CBS cannot postpone the starting work until the conclusion of EPA's public participation process, which will not be completed until October 1 at the earliest, and the Department of Justice's separate public comment period on the Consent Decree amendment, which has not yet begun. Therefore, CBS will begin at its own risk before governmental decision documents are finalized.

If CBS is going to be able to implement this remediation project this year, then the governmental parties will need to work expeditiously with CBS on resolving a number of items. EPA and IDEM will need to come to closure with CBS on an acceptable Scope of Work. CBS's work plan must be reviewed and approved quickly. IDEM also needs to concur on CBS' proposal for the treatment and disposal of contaminated water from the excavation project. If the parties act expeditiously, it may be possible to perform the work in the tight window of time remaining this year.

The Neal's Dump project will involve removal of contaminated soil, capacitors, capacitor parts and other materials from Neal's Dump and appropriate disposal of excavated materials. In preparation for this excavation work to begin later this month, CBS has already undertaken numerous activities, including land clearing and grubbing, pre-excavation sampling, access road construction, and completion of access agreements.

If all goes as planned, this project will be completed this year. Because CBS is starting so late in the year, however, bad weather or unexpected conditions may require CBS to demobilize and complete the project next season. But CBS is hopeful about getting it done this year.

3. Lemon Lane Landfill Interim Water Treatment

The United States' Status Report of August 21, 1998, has, in CBS' view, over-simplified the issues before the parties concerning water treatment at the Illinois Central spring. The main issue of disagreement is not simply the cost of an interim water treatment system at Illinois Central, but the need for any system (interim or final) and the purposes it is intended to accomplish. Now is not the time for a full scale description of the points of disagreement among the parties. CBS hopes to continue to work with the Consent Decree parties to resolve water

treatment issues. If an amicable resolution is not ultimately reached, or if the federal government attempts to pursue cost recovery, CBS will describe its position in greater detail for the Court.

CBS must, however, respond to the accusation in the United States' Status Report that CBS's interim treatment proposal would not adequately protect human health and the environment. In making this accusation, the United States relies exclusively on the Indiana Fish Advisories. The United States ignores the findings of its own Agency for Toxic Substances and Disease Registry ("ATSDR") -- the federal agency tasked under CERCLA to conduct health assessments. ATSDR studied PCBs from the streams and springs, including Illinois Central, and concluded that they present no significant health risks. ATSDR determined "neither children nor adults are likely to engage in activities in the mentioned springs and streams that would lead to significant exposures to site-related contaminants." ATSDR Report at 4. ATSDR further concluded that the PCB levels in fish were not a health concern because these streams were too small to support fishing, and that most of the species close to the sites are not considered a human food source. Id. at 5. (a copy of the relevant portions of the ATSDR report are attached). Although Clear Creek has a

level 5 fish advisory, every stream in Indiana has a level 5 fish advisory, for both PCBs and mercury, for at least one fish species. Also, CBS's analysis of the data raises significant questions about whether there is truly a correlation between the PCBs from the Illinois Central and the PCBs found in fish many miles downstream in Clear Creek.

For the record, CBS also wants to point out that the governmental parties did not bargain for <u>any</u> water treatment at Illinois Central in the original Consent Decree, even though they were aware that PCBs had migrated through the ground water under Lemon Lane and emerged at the spring. Although a treatment system at Illinois Central is not legally required under either the Clean Water Act or CERCLA and is not called for in the Consent Decree, CBS has been willing to negotiate with the governmental parties for a water treatment system as part of an overall settlement. If negotiations fail, however, CBS reserves the right to argue that such a system is not required.

In order to develop the most effective approach toward addressing PCBs at Illinois Central, CBS has spent years gathering data about the spring and studying the flow of water through and around the landfill; this effort is continuing with such activities as the hydraulic conduit study about which CBS has briefed the Special Master. CBS

believes that to best understand how to address the ground water system, these studies need to continue until sometime after the Lemon Lane Landfill itself is remediated.

CBS proposed implementing an interim water treatment system until such time as these studies are completed when a final system would be installed. CBS's concept of an interim system is one that could be quickly installed and be relatively simple to maintain. Unlike an industrial source which has a regular rate of flow, the flow through Illinois Central varies from less than 100 gpm in ordinary weather to over 3500 gpm in very wet weather. CBS's proposed system would catch all the flow in ordinary weather and mild wet weather events, and would catch a substantial portion of the flow in more intense wet weather events.

CBS's proposed interim system, which was first presented to the governmental parties in July 1998, could be operational this year, while a more complex system, such as the one proposed by the United States, may not be operational until the summer of 1999 at the earliest. The CBS interim system could capture approximately 50% of the PCBs at the spring on an average annual basis, and could be implemented at one tenth of the cost of EPA's proposed system. EPA projects that its proposed system, when it

finally is put on line, would capture approximately 80% of the PCBs. Since CBS' proposal could be operational about a year earlier than EPA's, however, it would be three years before EPA's system would capture as much PCBs as the CBS system, assuming the EPA system worked as planned. Thus, the CBS interim system is implementable and cost-effective, and will result in a greater reduction of PCBs in the short term.

Also, CBS is concerned that the expensive components of the United States' interim system may not be useful in constructing a final system. Additionally, EPA may undertake costly site preparation activities could interfere with or create difficulties for the installation of the final solution. In sum, CBS is concerned that the EPA system will be simply a costly white elephant that may be of little use for final treatment of the water.[1]

Finally, the United States indicates that it may seek to recover the cost of this interim system from CBS. In Paragraph 111 of the Consent Decree, however, the United States covenanted not to sue CBS for further response costs related to Lemon Lane Landfill. That Covenant Not to Sue

1. Although it disagrees with the federal government's proposal, CBS has already offered provide the United States with the benefit of CBS's technical knowledge and judgment as EPA designs the interim system.

remains in effect. The United States may spend its money if it chooses, but the Covenant Not to Sue precludes the United States from recovering this money from CBS. We understood Special Master Foster's comments as encouraging parties other than CBS to contribute financial to the cleanup, not deciding that CBS could be held liable for other party's costs.

Respectfully submitted,

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Counsel for CBS Corporation

II. Summary Conclusions and Recommendations for the Bloomington Consent Decree PCB Sites

The Agency for Toxic Substances and Disease Registry (ATSDR) reaches conclusions about the public health impact of sites based on analyses of the following information and data:

- the nature and extent of contamination at the areas of concern;
- site-specific health outcome data for the potentially impacted community;
- health concerns expressed by community members;
- published results of environmental, toxicologic, and epidemiologic investigations; and
- direct observations by health assessors of site features that provide insight into the nature and patterns of human activities leading to exposure, i.e., feasible human exposure pathways. Completed exposure pathways consist of five elements, all of which must be present or likely to be present: a source of contamination, an environmental medium and transport mechanism, a point of exposure, a route of exposure, and a receptor population.

ATSDR considers the evaluation and analyses of *feasible human exposure pathways* as the most critical factor in the overall evaluation of public health impact. If significant human contact with or human exposure to site-related contaminants does not occur, then adverse health effects due to site-related contaminants will not occur in spite of elevated environmental contaminant levels. A pathways analysis includes evaluation of the kinds and frequencies of behavior that bring humans into contact with contaminants and, if contact is considered feasible, an estimate of the extent of exposure. ATSDR performs both a screening level estimate based on a worst-case, maximum exposure scenario and a more detailed analysis based on more site-specific data and information, particularly information related to human activity patterns that could feasibly lead to exposure.

ATSDR and Indiana State Department of health (ISDH) staff members have made a number of visits, during which they have looked at the potential for human exposures to site-related contaminants at the Bloomington sites. Based largely on the initially conservative exposure scenarios and pathways identified in Volume I, information related to the following topics was of particular interest:

- the ease and likely frequency of children gaining access to streams and springs associated with Bennett's Stone Quarry,

Lemon Lane, Neal's Landfill, and the Winston-Thomas Facility and a subjective assessment of feasible behavior patterns that might lead to exposure (e.g., frequently ingesting contaminated sediments in the springs);

- the ingestion of contaminated groundwater by those, if any, on private wells near Bennett's Stone Quarry, Lemon Lane, Neal's Landfill, and, particularly, Neal's Dump; and

- the frequent ingestion of contaminated fish and game potentially affected by contamination at Bennett's Stone Quarry, Lemon Lane, Neal's Landfill, and the Winston-Thomas facility.

A brief discussion of each appears below.

Streams and Springs -- Volume I identified the streams and springs mentioned above as the primary source or locations of exposure and designated them as completed exposure pathways in accordance with the *ATSDR Public Health Assessment Guidance Manual, 1992*. Based on ATSDR screening criteria or comparison values, the assessors designated a number of these pathways as public health hazards (see Volume I, pages 164-168).

ATSDR, on the basis of its site visits, is of the opinion that neither children nor adults are likely to engage in activities in the mentioned springs and streams that would lead to significant exposures to site-related contaminants and therefore to increased body burdens. The springs and streams are not easily accessible to very young children (i.e., children ages 1 to 2 years old), who would be most likely to ingest sediments and surface water. Older children and adults may have greater access but are not likely to ingest significant quantities of sediments and surface water. Furthermore, given the levels of PCBs (polychlorinated biphenyls) and other contaminants detected (or likely to be present) in those streams and sediments, the available toxicologic and epidemiologic data strongly suggest that even occasional ingestion of and dermal contact with these sediments and surface water are not likely to pose a health hazard.

Groundwater -- While complete well surveys have not been conducted, most residents except those near Neal's Dump appear to have access to public water supplies and are therefore not likely to be drinking or using contaminated groundwater. Where private wells have been sampled, the levels of PCBs, if detected, have been below levels of health concern. On the other hand, residents adjacent to Neal's Dump do depend on deep well groundwater for potable water. As of January 1, 1996, PCBs have not been detected in their wells. However, PCBs have been detected at low levels in the monitoring wells that draw water from the area's shallow aquifers. Existing data are insufficient to determine whether the deep and shallow aquifers

are hydrogeologically connected or whether other site-related contaminants are present in the potable wells. Monitoring of the wells used for potable water is ongoing.

Fish and Game -- ATSDR does not believe that fishers and hunters use fish in the streams and game close to the sites as frequent or substantial sources of food. The springs and streams around Lemon Lane are not likely to support game fish and hunting. Any hunting or fishing for food that does occur is likely to be infrequent. Fish in the streams associated with Bennett Stone Quarry, Neal's Landfill, and the Winston-Thomas Facility are showing signs of recontamination but do not appear to be the species or size that would be considered a human food source even infrequently. If fish further downstream of these locations are contaminated and of the size that would serve as a food source, then some restrictions on eating fish may be advisable. The ISDH has issued advisories in the past and may issue more in the future if conditions warrant.

ATSDR also considered exposures through contaminated air and dermal exposures to contaminated soils, sediments, and water for the locations identified in Volume I. Again, based on review of the locations, the feasible frequency of contact, and the levels of contamination, ATSDR considers the exposure potential via these pathways either unlikely or insignificant in terms of public health consequence.

II.A. Conclusions

The following conclusions and recommendations, based on the available information for the six Bloomington Consent Decree PCB Sites, supersede those in previous releases of Volume I and provide a summary of the overall conclusions and recommendations in previous releases of Volume II. They represent ATSDR's most recent analyses of available data:

- Current conditions present no apparent public health hazard to the general population. The general populations of Bloomington and surrounding areas either are not currently being exposed to PCBs and other site-related contaminants or are not being exposed at levels that would be expected to produce human body burdens sufficient to cause adverse health effects. Some questions remain regarding the consumption of fish from impacted streams.

- Private wells supplying potable water near Neal's Dump may be affected in the future. Currently data show no contamination in the deep aquifers. Hydrogeologic data are not sufficient to discount connections between the contaminated shallow aquifer and the deep aquifer that serves as a source of potable water for the residents living adjacent to Neal's Dump.

- **Data are insufficient to determine whether members of the general population exposed to site-related PCBs in the past have been adversely affected.** Those individuals that showed elevated body burdens of PCBs were most likely those who came in direct contact with industrial grade PCBs and heavily contaminated soils (thousands of parts per million) as a result of occupational activities or metals-scavenging activities. County level health outcome data are not sufficient to determine whether effects have occurred in the exposed subgroups. Other sources of health outcome data do not appear to be available.

- **Despite interim remedial actions at the sites, PCB recontamination is appearing in off-site springs and streams associated with Bennett Stone Quarry, Lemon Lane, Neal's Landfill, and the Winston-Thomas facility.** The PCB contamination appears to be entering these off-site areas as a result of the movement of contaminated groundwater and seeps; no air or surface water transport mechanisms were identified. The off-site levels would not be expected to pose a health hazard to humans.

- **Information that would make possible a comprehensive evaluation of the public health implications of a remedial technology is not available.** If either incineration or any of the non-incineration technologies are selected for implementation, there would need to be evaluation of design and operating plans, monitoring and control systems, and site-specific treatability testing. In addition, there would need to be evaluation of fugitive emissions associated with the excavation, handling, and transportation of contaminated materials.

II.B. Recommendations

- Continue monitoring any active private wells potentially affected by Neal's Dump and Lemon Lane Landfill.

- Continue monitoring for site-related contaminants in springs and streams associated with Bennett Stone Quarry, Lemon Lane, Neal's Landfill, and Winston-Thomas Facility. Continue monitoring human consumption of game and fish associated with the streams.

- Identify populations, if any, that use the affected streams and surface waters for fishing and hunting. Determine their extent of contact with contaminated water and sediments and take appropriate measures to eliminate ingestion of contaminated fish and game.

- Determine the potential public health implications of the technology(ies) selected for use at any of the Bloomington

CERTIFICATE OF SERVICE

I hereby certify that, on this 9th day of September, 1998, I caused to be served by first-class mail, postage prepaid, a copy of the foregoing Status Report of CBS Corporation, upon counsel for the parties at the following addresses:

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

SR-6J

MEMORANDUM

DATE: SEP 1998

SUBJECT: **ACTION MEMORANDUM** - Request for a Time-Critical Removal Action at Illinois Central Spring, Bloomington, Monroe County, Indiana

FROM: Thomas Alcamo, Remedial Project Manager
Kenneth Theisen, On-Scene Coordinator

TO: William E. Muno, Director
Superfund Division

THRU: Richard C. Karl, Chief R. Karl
Emergency Response Branch

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval to expend up to $2,109,303 for the proposed time-critical removal action to address an imminent and substantial threat to public health and the environment posed by the presence of polychlorinated biphenyl (PCB) contaminated water discharging in the Illinois Central Spring Site (ICS Site), located in Bloomington, Indiana. ICS is the headwater of Clear Creek which flows through the City of Bloomington until it flows into Salt Creek at Williams Dam, near the Lawrence County line. Groundwater migrates through karst terrain conduits and comes into contact with PCBs at the Lemon Lane Landfill and emerges approximately 2000 feet away at ICS. The removal action proposed will minimize the continued discharge of PCB contaminated groundwater to ICS and the further PCB loading to sediments and surface waters of ICS.

CBS Corporation (CBS), formerly known as the Westinghouse Electric Corporation, has refused to implement an acceptable interim water treatment plant for treatment of PCB contaminated water at ICS.

The Illinois Central Spring is not on the National Priorities List (NPL) but the Lemon Lane Landfill was placed on the NPL in September 1983.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID # IND 980794341

A. PHYSICAL LOCATION

The ICS is hydraulically connected to the Lemon Lane Landfill, which is listed on the NPL. The Lemon Lane Landfill and the ICS are located in Bloomington, Indiana. The Lemon Lane Landfill is approximately 10-acres in size and is bordered on the west and north by private owned pasture land and residences, on the east by Lemon Lane and residences and on the south by the Louisville and Nashville Railroad and Valhalla Memory Gardens Cemetery (Attachment A). The Lemon Lane site is owned by the City of Bloomington and sits on karst terrain. Karst topography is characterized by sinkholes and underground channels and caves. The ICS lies approximately 2000 feet south-southeast of the Lemon Lane Landfill. The ICS becomes headwaters of Clear Creek which flows south through the City of Bloomington. The ICS Site lies at Latitude 39°10'1.8" North and Longitude 86°33'14.9" West.

An Environmental Justice (EJ) analysis has been prepared for the area surrounding the ICS Site in Bloomington, Indiana (Attachment B). The affected medium is a fishery, Clear Creek, which is fed by the spring at the ICS Site. The population most affected by the ICS Site is fisherman who might live in any census block group in the area. Since not all census block groups in this area meet the low income criteria and none meet the minority percentage criteria for an EJ case, the ICS Site would not qualify as an EJ case.

B. SITE DESCRIPTION AND BACKGROUND

From 1933 to 1964, the City of Bloomington disposed of both municipal and industrial waste into and around two large sinkholes at the Lemon Lane Landfill. From 1958 to 1964, PCB-contaminated oil filled capacitors, PCB oil soaked rags and PCB contaminated sawdust were disposed of into the Lemon Lane Landfill. Estimates are that as many as 60,000 oil filled capacitors were disposed of at the Lemon Lane Landfill. Large numbers of capacitors were salvaged at the Lemon Lane Landfill for copper parts with the PCB contaminated oil being dumped on the ground surface and in many instances the PCB oil being burned with garbage.

Sampling investigations in the early 1980s identified PCBs in soils at the Lemon Lane Landfill with levels up to 57,000 parts per million (ppm). Based upon the concentrations of PCBs within the Lemon Lane Landfill and the exposure pathways, the U.S. EPA placed the Lemon Lane Landfill on the National Priorities List (NPL) in September 1983. Borings into the Lemon Lane Landfill in 1996 showed that the southern portion of the landfill is contaminated with PCBs with levels as high as 200,000 ppm. Periodic sampling at ICS has shown that PCBs are released into the environment and dye tracing studies in October 1987, May 1989, May 1990, and May 1992 and May 1996 have clearly demonstrated that the Lemon Lane Landfill is the source of the PCBs.

Groundwater near and around the Lemon Lane Landfill flows through the karst conduits and emerges at the ICS. Flow rates at the ICS during non-rain events averages approximately 200 to 300 gallons per minute (gpm). During large rain events, however, flow rates increase exponentially at ICS and have exceeded 5000 gpm. At the 200 to 300 gpm flow rate, concentrations of PCBs in the range of 5 to 10 parts per billion (ppb). During large rain events concentrations of PCBs can be greater than 200 ppb. The high PCB concentrations during storm events when compared to non-storm events likely is due to the karst conduits and possibly the portions of the landfill itself, being flushed of PCB contaminated soil and sediment.

On January 4, 1983, the United States filed a civil suit against Westinghouse, now known as CBS Corporation, pursuant to Section 7003 of the Resource Conservation and Recovery Act (RCRA) and Sections 104, 106, and 107 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) alleging disposal of PCBs at two sites in the Bloomington area and seeking relief for the contamination resulting from that disposal. During the fall of 1983, CBS expressed its interest in negotiating a settlement of that suit as well as a civil action filed by the City of Bloomington for improper PCB disposal at two sites owned by the City (the Lemon Lane Landfill and Winston Thomas Wastewater Treatment Plant). After negotiations among CBS, U.S. EPA, the City of Bloomington, Monroe County, and the Indiana State Board of Health (collectively the "parties"), a Consent Decree was signed in 1985 and subsequently entered by the court on August 22, 1985, for the cleanup of six sites, including the Lemon Lane Landfill. The Illinois Central Spring was not included in the settlement. The Consent Decree called for the construction of a permitted, municipal solid waste fired incinerator to be used to destroy PCBs contaminating material excavated from the six sites. Interim cleanup measures such as placing a liner over the Lemon Lane site have been completed by CBS.

Beginning in 1991, the Indiana State Legislature passed several laws that purported to delay and then block the implementation of the incineration remedy required in the 1985 Consent Decree. In February 1994, the parties agreed to jointly explore, under the Operating Principals, alternatives to the incineration remedy required under the Consent Decree. In November 1997, Federal Judge Hugh Dillin issued a judicial order stating that the six Consent Decree sites must be remediated by December 1999 and assigned Magistrate Judge Kennard Foster to oversee the progress of the parties toward meeting the December 1999 deadline.

During a status conference on August 14, 1998, with Magistrate Foster, the parties informed the court that they were deadlocked as to the need for, and the implementation of, an interim water treatment plant at ICS to be put in place pending evaluations concerning a possible permanent water treatment system.

C. RELEASE OR THREATENED RELEASE INTO THE ENVIRONMENT OF A HAZARDOUS SUBSTANCE, OR POLLUTANT OR CONTAMINANT

PCBs are hazardous substances as defined by section 101 (14) of CERCLA and are regulated pursuant to Part 761 of the Toxic Substances Control Act.

Continuous flow monitoring of ICS, including periodic sampling for PCBs during non-storm and storm events, began in late 1995 and continues through the date of this Action Memorandum. Estimates using data submitted by CBS show that in 1996, approximately 41.23 pounds of PCBs were released at ICS. During the latest storm event monitoring at ICS for PCBs from April 15, 1998, through April 19, 1998, 2.14 inches of precipitation produced a maximum flow of 3000 gpm with a PCB concentration at 200 ppb. This 2.14 inches of precipitation produced approximately 6.40 pounds of PCBs being released into Clear Creek.

Water samples collected by CBS in November 1997 at ICS, Quarry Springs and Clear Creek at Country Club Road was found to have PCBs, respectively, 11,000, 44, and 23 times the 0.79 parts per trillion PCB ambient water quality criteria. In the latest sampling event for fish on August 19, 1997 in Clear Creek show elevated levels of PCBs in fish. The August 19, 1997, analysis of rock bass, largemouth bass, and suckers from Clear Creek revealed that PCB fish tissue levels averaged, respectively, 18, 33, and 65 times those derived (0.025 ppm) from state ambient water quality criteria. Edible-sized fish tissue results from the August 19, 1997 analysis show rock bass with a mean concentration of 446 ppb PCBs, spotted sucker with a mean concentration of PCBs of 1620 ppb and largemouth bass with a mean PCB concentration of 872 ppb. The Indiana Department of Environmental Management and the Indiana State Department of Health have placed a fish consumption advisory on Clear Creek for PCBs. Clear Creek is one of only ten waterways out of a total of 104 in Indiana in which all fish from the waterway are under the most serious classification of advisory, a Level 5, which states that fish caught in these water should not be eaten in any quantity at any time because of high levels of PCBs (greater than 1.9 ppm) within the fish. Creek chub, a major food item for wildlife, have PCBs ranging from 0.4 to 42 ppm PCBs, considerably above levels associated with reproductive effects in fish eating mammals such as mink, otter, and racoons.

D. OTHER ACTIONS TO DATE

The U.S. EPA, Indiana Department of Environmental Management, City of Bloomington, Monroe County and CBS have been discussing proposed remedial alternatives for the Lemon Lane Landfill. A conceptual understanding has been reached regarding the "hot spot" removal of PCBs and this agreement may be submitted for public comment in December 1998. The parties had also discussed interim water treatment measures for the ICS to address the on-going releases of PCBs, but were deadlocked. Discussions continue on permanent water treatment at ICS and U.S. EPA is in the process of doing a treatability study for the water from ICS. The treatability study will analyze treatment technologies to treat PCBs in water and determine the best possible solution for water treatment. The results from the U.S. EPA sponsored treatability study will be used in the discussions for the permanent water system at ICS.

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions present at the ICS constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended (NCP), 40 CFR § 300.415(b)(2). These factors include, but are not limited to, the following:

a. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminants.

This factor is present at ICS and subsequently in Clear Creek due to the existence of water contaminated with PCBs which exists in an uncontrolled manner potentially allowing direct access by surrounding human and animal populations. The United States Fish and Wildlife Service and local Bloomington residents have documented individuals fishing in Clear Creek, even with the publicity associated with the Level 5 fish advisory, thereby exposing individuals to PCBs. For the average freshwater sport fish consumer, ingesting an average of 15g/day of largemouth bass (about a meal a week), cancer risks would exceed 1x10E-4 (one in 10,000). This value exceeds U.S. EPA's acceptable excess cancer risk. Further, within the fenced-off area surrounding one of the areas where water from ICS resurges to the surface (and where a weir to measure flow is located), evidence of human trespassing exists in the form of vandalized bird nesting boxes erected by the U.S. Fish and Wildlife Service. Wildlife, including river otter, as evidenced by tracks along Clear Creek, are exposed to PCBs through contact with PCB contaminated water, sediment and fish.

b. High levels of hazardous substances or pollutants or contaminants in soil and sediments at ICS and Clear Creek largely at or near the surface, that may migrate.

This factor is present at the Site due to the existence of highly PCB contaminated soil and sediment situated at ICS and within Clear Creek.

c. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

This factor is present at the Site due to groundwater flowing through the landfill and surface water flowing into the karst conduits during heavy rain events which will migrate and potentially increase the area already defined as being contaminated. PCB contamination from surface and subsurface soil could reach Clear Creek where contamination could migrate off-site.

d. The unavailability of other appropriate federal or state response mechanisms to respond to the release.

This factor supports the actions required by this Order at the Site because the Indiana Department of Environmental Management does not have the necessary resources to mitigate threats to public health, welfare, and the environment posed by PCB contamination at the ICS site.

IV. ENDANGERMENT DETERMINATION

Given the site conditions, the nature of the hazardous substances on-site, and the potential exposure pathways to nearby populations as described in Sections II and III above, actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare or the environment.

PCBs are hazardous substances as defined by Section 101(14) of CERCLA and are regulated pursuant to Part 761 of the Toxic Substance Control Act. PCBs are suspected to be cancer causing agents in humans, and pose a threat via inhalation, ingestion, and direct contact exposure to individuals entering or fishing within Clear Creek. PCBs are readily absorbed into the body by all routes of exposure. PCBs may persist in tissues for years after exposure stops. PCBs at high levels have been shown to produce cancer and birth defects in laboratory animals.

V. PROPOSED ACTION

The U.S. EPA proposes to fund and build an interim water treatment plant for PCBs near the ICS. The U.S. EPA funded, and has placed into the Administrative Record, an Alternatives Evaluation Report, dated September 21, 1998, for determining the size and cost of an interim water treatment plant at ICS. The Alternative Evaluation Report uses 1996 rainfall data as a basis for the analysis of treatment flow rates and PCB mass reductions.

The Alternatives Evaluation Report analyzed treatment flow rates of 200 gpm, 500 gpm, 1000 gpm, and 1500 gpm. Using 1996 flow and PCB concentration data from ICS, it was determined that an interim water treatment plant with a 2-acre feet collection basin at ICS, operating at 200 gpm, 500 gpm, 1000 gpm, and 1500 gpm would capture the following PCB mass:

200 gpm - 55% PCB mass removal
500 gpm - 65% PCB mass removal
1000 gpm - 80% PCB mass removal
1500 gpm - 90% PCB mass removal

After analysis of ICS flow rates and PCB mass removal, collection and removal technologies were evaluated in the Alternatives Evaluation Report for treatment of PCBs in water. Screening various water collection and water treatment technologies, it was determined that a collection basin(s) would be the best approach to collect water from ICS. The most effective water treatment technologies for the interim water treatment system at ICS were determined to be filtration technology, such as multi-media filters or cartridge filters (to remove suspended solids) and granulated activated carbon (GAC) (to remove dissolved PCBs). Backwashing of the filters and GAC would occur regularly to prevent buildup of solids on the equipment and to maintain removal efficiencies. The collection basin would also be used to remove suspended solids along with capturing and storing water produced during storm events. Since the highest concentrations of PCBs are released in storm events, a collection basin will provide storage to attenuate peak flow.

The Alternative Evaluation Report evaluated the capital cost and operation and maintenance cost associated with 200 gpm, 500 gpm, 1000 gpm, and 1500 gpm treatment plants with a 2-acre feet collection basin. The following is a summary of the costs for the four options:

Item	Cost($)			
	Flow Rates(gpm)			
	200	500	1,000	1,500
Site Preparation/Civil Works	320,440	320,440	320,440	320,440
Treatment Plant & Building	228,000	378,000	682,000	872,000
Subtotal	548,440	698,440	1,002,440	1,192,440
Engineering (10%)	54,844	69,844	100,244	119,244
Contingency (20%)	109,688	139,688	200,488	238,488
Subtotal	712,972	907,972	1,303,172	1,550,172
Annual O&M Costs	148,100	160,600	197,000	233,660
Total	861,072	1,068,572	1,500,172	1,783,832

Based upon the attenuation of peak PCB flows during storm events and removal of at least 80 percent of the PCB mass, the 1000 gpm system is appropriate for the interim waste water treatment plant at ICS.

REMOVAL PROJECT COST SUMMARY

Extramural Costs	
Cleanup Contractor	$1,500,172
START	$ 50,000
Extramural Subtotal	$1,550,172
Extramural Contingency (40%)	$ 465,051
Extramural Total	$2,015,223
Intramural Costs	
U.S. EPA Direct	
($30.00 x 960 Regional Hours + 96 HQ Hours)	$ 31,680
U.S. EPA Indirect Costs ($65.00 x 960 Regional Hours)	$ 62,400
Total Intramural	$ 94,080
TOTAL PROJECT	$2,109,303

The On-Scene Coordinator (OSC) has begun planning for the provision of post-removal site control, consistent with the provisions of Section 300.415(l) of the NCP. The State of Indiana, via letter dated September 29, 1998, has agreed to takeover the operation and maintenance of the water treatment plant one year after construction is completed.

The interim water treatment system to be designed and constructed as part of this removal action is intended to remove 80% of the PCB mass being released at the ICS. This removal is being undertaken in conjunction with separate source control measures at the Lemon Lane Landfill. At this time, it is difficult to assess whether any threat will remain after conclusion of this interim removal action and the source control measures. After completion of the source control measures U.S. EPA will evaluate whether further action is required at the ICS. Further response activities at ICS, in connection with development of a final water treatment system, or the adoption of the interim system as the final system, will be documented through a remedial action decision document.

The response actions described in this Memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the facility which may pose an imminent and substantial endangerment to public health and the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

With respect to the interim removal activities contemplated by this Action Memorandum, all applicable or relevant and appropriate requirements (ARARs) will be complied with to the extent practicable. The U.S. EPA requested State ARARs from the Indiana Department of Environmental Management, in writing, via letter dated September 24, 1998. State ARARs that are timely identified will be complied with to the extent practicable.

Consistent with Section 104(b) of CERCLA, 42 U.S.C. § 9604(b), and 40 C.F.R. § 300.415(g), the interim removal activities contemplated in this Action Memorandum shall, to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or threatened release.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed or non-action may result in increased likelihood of direct contact threat of high PCB concentrations to human or wildlife populations accessing ICS and Clear Creek. Because PCBs are bioaccumulative, intermittent trespassers exposed to PCBs in the ICS area may suffer increased body burdens of PCBs. Delayed action also increases the PCB contaminated water and sediment to be released into the waters of Clear Creek, threatening the environment and exacerbating the levels of PCBs in aquatic biota (including fish) in Clear Creek. Bioaccumulative effects may also be seen in upper trophic level ecological receptors from ingestion of contaminated prey.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues associated with this site.

VIII. ENFORCEMENT

For administrative purposes, information concerning confidential enforcement strategy for this site is contained in the Enforcement Confidential Addendum (Attachment C).

IX. RECOMMENDATION

This decision document represents the selected removal action for the ICS site located in Bloomington, Monroe County, Indiana developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for this site (Attachment D). Conditions at the site meet the NCP Section 300.415 (b)(2) criteria for a

removal action and I recommend your approval of the propsed action. The total project ceiling if approved, will be $2,015,223. Of this, an estimated $1,965,223 may be used for the cleanup contractor costs. You may indicate your decision by signing below.

APPROVE: W. E. Muno DATE: 9/30/98
William E. Muno, Director
Superfund Division

DISAPPROVE: _____ DATE: _____
William E. Muno, Director
Superfund Division

Attachments: A. Figure 1
B. EJ Profile
C. Confidential Enforcement Addendum
D. Administrative Record

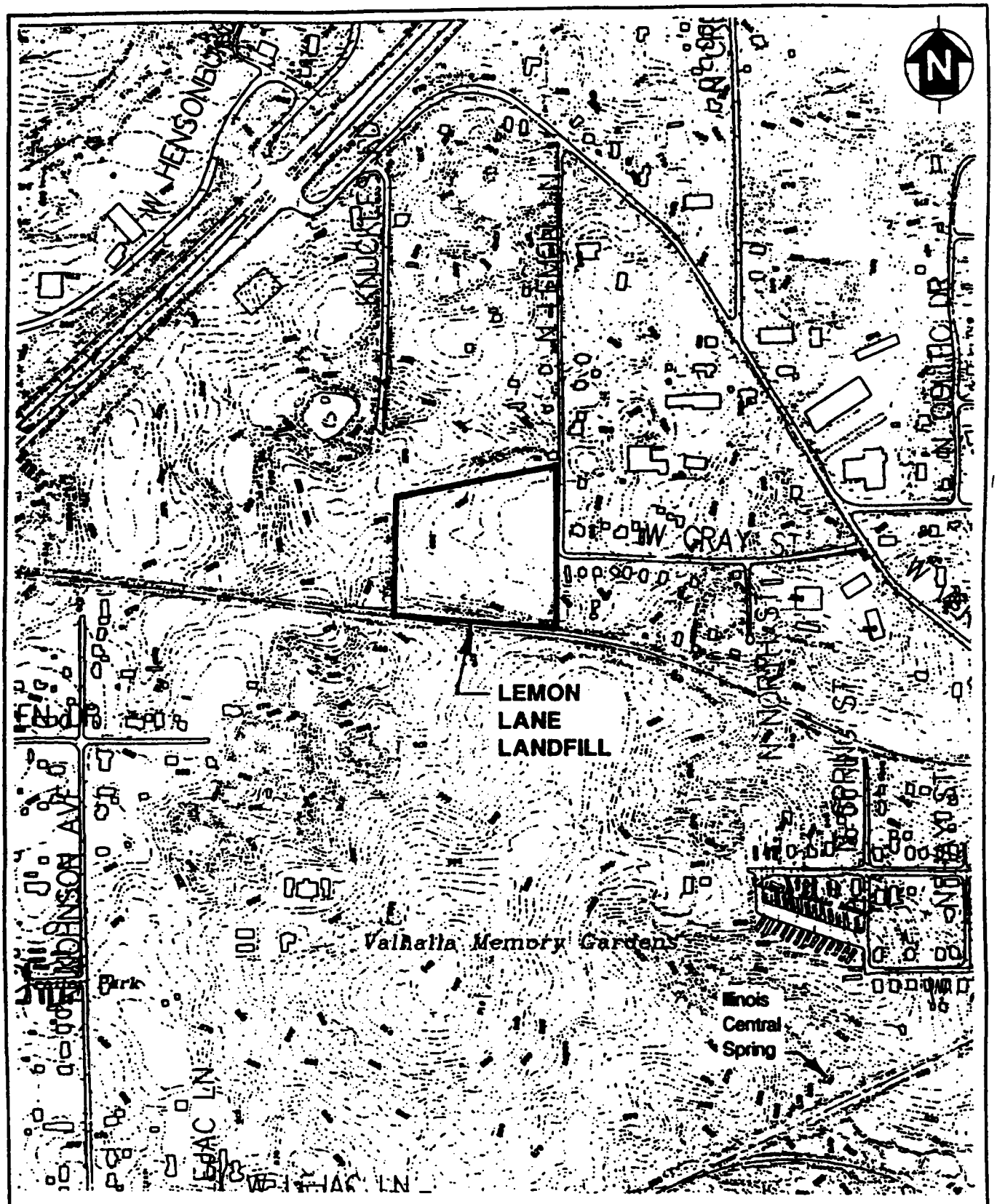
cc: K. Mould, U.S. EPA HQ, 5202G
M. Chezik, U.S. Department of Interior, w/o Enf. Addendum
E. Admire, IDEM, w/o Enf. Addendum
G. Doxtater, IDNR, w/o Enf. Addendum

BCC PAGE

REDACTED

NOT RELEVANT TO THE SELECTION OF REMOVAL ACTION

ATTACHMENT A



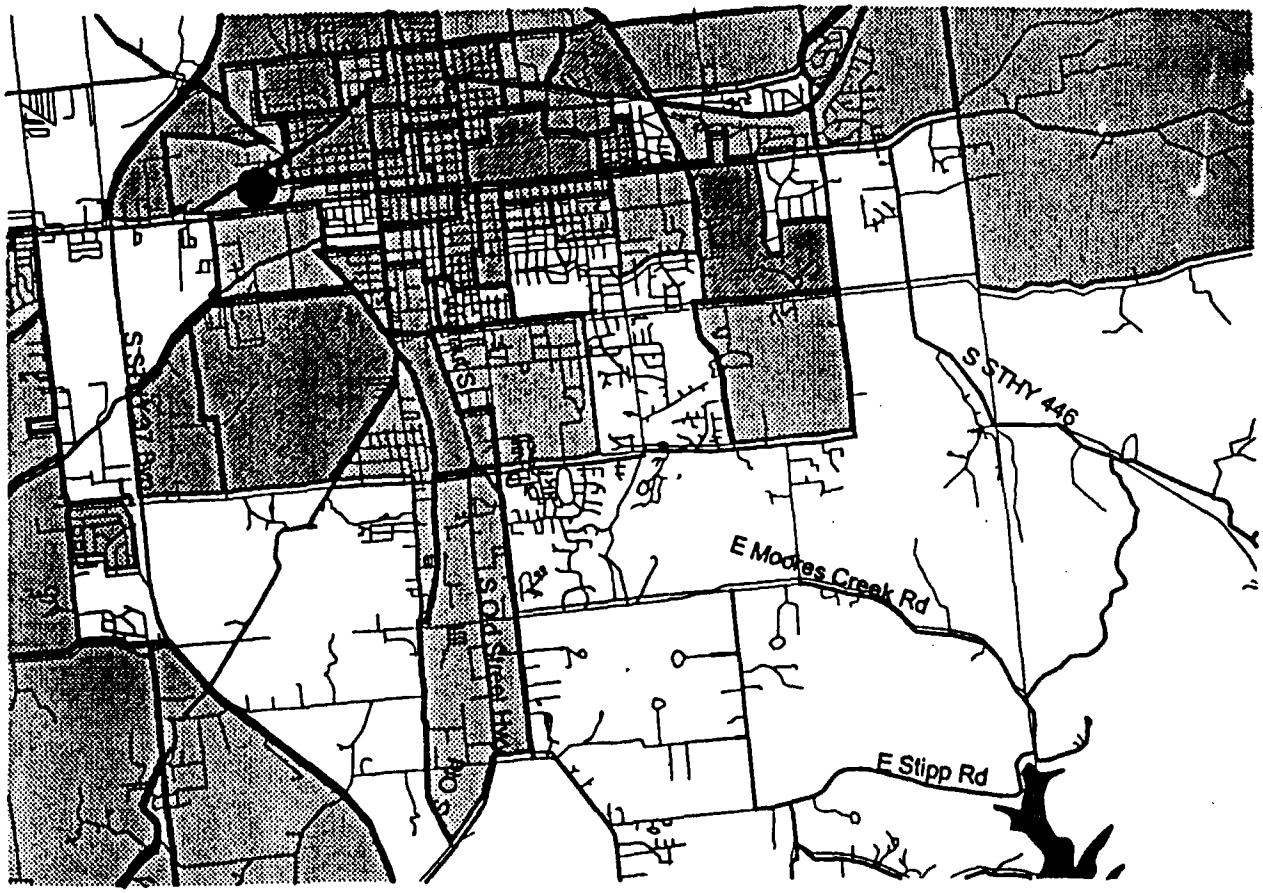
CBS CORPORATION
ILLINOIS CENTRAL SPRING
BLOOMINGTON, INDIANA

FIGURE 1
INTERIM WATER REMEDIATION
SYSTEM STUDY AREA

Tetra Tech EM Inc.

Region 5 Superfund EJ Analysis
Illinois Central Spring , Bloomington, IN

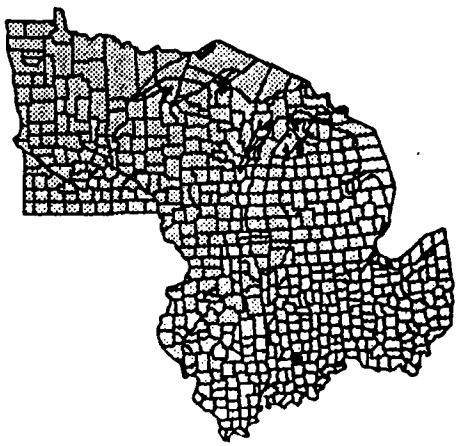
Latitude 39.10.02 Longitude 86.33.15



EJ Identification

- Census Block Group Boundary
- Low Income and Minority Less than State Average
- Low Income or Minority at or Greater than State Average
- Low Income or Minority 2 Times or Greater than State Average

Indiana Statewide
Percentages:
Low Income 29%
Minority 10%



N

0.5 0 0.5 1 Miles

Date of Map 9/26/00
Source of Map 1990 Census Database

ATTACHMENT D

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
ILLINOIS CENTRAL SPRING SITE
BLOOMINGTON, MONROE COUNTY, INDIANA

ORIGINAL
SEPTEMBER 30, 1998

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	1976-1997	U.S. EPA; et al.	File	Historic and Recent Data for the Westinghouse Sites: (1) IDEM/OWM Biological Studies Fish Tissue Contamination Results; (2) Recent Data for Lemon Lane, Clear Creek and Winston-Thomas Sites; (3) CBS Recent Data for Clear Creek; (4) Historic Data for Neal's Landfill and all Westinghouse Sites; (5) GNC Information Concerning Clear Creek, Salt Creek and the East Fork of the White River; and (6) Indicator Sediment Areas in Bloomington, IN Area Streams	258
2	11/00/97_	U.S. EPA	File	Chart/Table re: IC/CC PCB Mass at Low Flow at Various Sampling Stations	2
3	12/03/97	Sprenger, M., U.S. EPA/ ERB/ERT	Alcamo, T., U.S. EPA	Memorandum re: Ecological Risk Evaluation for Clear Creek	7
4	12/05/97	Clark, J., U.S. EPA	Hopkins, D. & T. Alcamo; U.S. EPA	Memorandum re: Health Concerns from PCBs in Clear Creek Fish	7
5	12/05/97	Kim, P., Roy F. Weston, Inc.	Hopkins, D., U.S. EPA	Memorandum Forwarding Final Report Tables for the Lemon Lane Landfill Site	13
6	04/00/98	U.S. EPA	File	Graphs for the Illinois Central Spring Site: (1) April 15-19 1998 Storm; (2) Flow and Rain for the Period April 1-30, 1998; and (3) Flow & Conductivity for the Period April 1-30, 1998	3

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
7	07/20/98	Alke, D., CBS Corporation	Alcamo, T., U.S. EPA	Letter re: Preliminary Design Information for the Interim Water Treatment System for the Illinois Central Spring Site	4
8	08/03/98	Alcamo, T., U.S. EPA	Alke, D., CBS Corporation	Letter re: Interim Water Treatment System at the Illinois Central Spring Site w/ Attached Technical Review Comments on the In-Situ Spring Water Treatment System Design Document for Lemon Lane Landfill	6
9	08/21/98	U.S. District Court/Southern District of Indiana	Respondents	*Status Report* re: Interim Water Treatment at the Illinois Central Spring Site	6
10	09/11/98	Pruitt, S., U.S. DOI/ Fish & Wildlife Service	Alcamo, T., U.S. EPA	Letter re: FWS' Response to U.S. EPA's Request for Information Concerning the Fishing Use and Ecological Risk Concerns Associated with the Continuing Release of PCBs to Clear Creek from the Lemon Lane Landfill Site w/ Attachments	59
11	09/17/98	Dovantzis, K., Tetra Tech EM, Inc.	Alcamo, T., U.S. EPA	Letter re: Estimates of Polychlorinated Biphenyl (PCB) Mass Discharged from Lemon Lane Landfill via Groundwater to Illinois Central Spring (ICS) in 1996 and During the April 1998 Storm Event	11
12	09/21/98	Tetra Tech EM, Inc.	U.S. EPA	*Final Alternatives Evaluation Report for Interim Water Remediation System* for the Illinois Central Spring Site	55
13	09/24/98	Alcamo, T., U.S. EPA	File	Memorandum: Individuals Fishing in Clear Creek	1
14	09/24/98	Alcamo, T., U.S. EPA	Hansen, S., IDEM	Letter re: U.S. EPA's Request for Indiana ARARs for the Interim Water Treatment Plant at the Illinois Central Spring Site	1

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
15	09/29/98	Hensel, D., IDEM	Cahn, J., U.S. EPA	Letter: IDEM's Assumption of Operation and Maintenance Responsibility at the Illinois Central Spring Facility	2
16	00/00/00	Alcamo, T., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum: Request for a Time-Critical Removal Action at the Illinois Central Spring Site (PENDING)	

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November 10, 1998

Jeffrey A. Cahn, Esq.
Associate Regional Counsel
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3490

Re: EPA Action Memorandum for Removal Action at Illinois Central Springs

Dear Mr. Cahn:

CBS Corporation ("CBS") submits these objections to the U.S. Environmental Protection Agency's ("EPA") Action Memorandum of September 30, 1998 because EPA has threatened to bring an action against CBS to recover the costs of constructing and operating the water treatment system at Illinois Central Springs ("ICS"), as contemplated by the Action Memorandum. As a matter of law, EPA has already relinquished any rights it may have had to recover these costs from CBS under the terms of the Consent Decree in United States v. CBS Corp., civil action nos. IP 83-9-C and IP 81-448-C (S.D. Ind.).

Moreover, as discussed in greater detail throughout this letter, EPA's decision to construct and operate a water treatment system at ICS is based on erroneous and incomplete facts, is arbitrary and capricious, and is not in accordance with law. Specifically, EPA's conclusion that the PCBs in the water at ICS create an imminent and substantial endangerment to human health, welfare or the environment is not supported by the facts. Although EPA claims serious risks to humans eating fish contaminated with PCBs from the ICS, it is unable to document this route of exposure. EPA only presents limited evidence of fishing in Clear Creek and no evidence of human consumption of fish. Moreover, although EPA bases much of its concern about human consumption of fish on the fact that the State of Indiana has imposed a Level 5 Fish Advisory on all species caught in Clear Creek, the most recent fish data, including 1997 data obtained by

EPA, show that the Level 5 Fish Advisories are not warranted for game fish species. Also, EPA's decision is arbitrary and capricious in rejecting CBS's proposed treatment system in favor of a more costly alternative which will take much longer to implement. Despite EPA's assertion that it is deciding to undertake a time-critical removal action, the Agency has chosen a more expensive and time-consuming approach over a more practical one that could be implemented much more quickly.

Further, in reaching its decision, EPA failed to follow the procedural requirements of the Administrative Procedure Act ("APA"), the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"), and the National Contingency Plan ("NCP"), 40 C.F.R. Part 300 and denied CBS due process of law. In particular, EPA failed to include relevant materials in its administrative record, failed to consider information which undermines its decision, and failed to solicit public comment, not even seeking comment from CBS, the party whom it has threatened to sue for cost recovery.

Finally, the Action Memorandum provides an incomplete and erroneous record of the negotiations among the Consent Decree parties over an interim system. EPA states that negotiations stopped when an impasse was reached at the time of the August 14, 1998 status conference before Special Master Foster, and that CBS failed to propose an acceptable system. Actually, at the close of that status conference, CBS representatives informed the government that CBS was prepared to continue negotiations. The EPA representatives indicated they did not have authority at that time to continue negotiations, and scheduled a meeting for the following week when they expected to have authority to continue the discussions. Subsequently, EPA cancelled the meeting and announced that it would build its own treatment system. Thus, it was EPA's unilateral action that brought discussions to a close.

Accordingly, CBS submits this letter to protest EPA's unlawful, ill-considered and ultra vires action, to identify the substantive and procedural flaws in EPA's decision-making, and preserve its defenses against the Agency's threatened cost recovery action.

I. EPA's Cost Recovery Claim is Barred by the Bloomington Consent Decree

At the outset, CBS notes that the United States has already agreed in the Consent Decree not to sue CBS for response costs related to water treatment at Illinois Central Springs. The statement made by EPA on page 3 of the Action Memorandum that "Illinois Central Springs was not included in the settlement" contained in the 1985 Consent Decree between the United States and CBS Corporation (under its former name of Westinghouse Electric Corporation) is simply wrong. Although the parties to the Consent Decree agreed not to treat PCB-contaminated groundwater emerging from ICS,

the Covenant Not to Sue in the Consent Decree clearly bars the United States from pursuing environmental claims relating to ICS against CBS.[1]

At the time, the Consent Decree was entered by the Court, the parties were well aware that groundwater contaminated with PCBs from Lemon Lane Landfill was flowing through karst conduits to emerge at Illinois Central Springs. The parties agreed in the Consent Decree, however, not to treat this contaminated ground water, and the governmental parties agreed not to sue CBS for further relief with respect to ICS. Indeed, in one of the public comments submitted to the Department of Justice with respect to the Consent Decree, an individual named Ron Smith criticized the settlement for not addressing PCB contamination at ICS:

> A contaminated spring about 1500 feet southeast of Lemon Lane is gushing high levels of PCB. . . This indicates that a very large amount of material has already traveled from the upper portion of the site through sinkholes and dissolution cavities present in the fractured karst topography surrounding this site. If this aquifer is not treated immediately, the contamination will remain, and spread . . .

Letter of Ron Smith to Assistant Attorney General, June 24, 1985.[2] In the "Response of the United States to Public Comments on the Consent Decree and Request to Enter Consent Decree," filed with the Court, the United States acknowledged the presence of PCB contamination in groundwater near Lemon Lane and other sites, but responded to criticisms by Mr. Smith and others by stating that "[g]iven the infeasibility of traditional groundwater remedial measures, the proposed settlement adequately addresses potential groundwater problems at the sites." Response at p. 30. The groundwater measures in the Consent Decree consisted of a groundwater monitoring program within a 5000-foot radius around the sites, including Lemon Lane Landfill, a residential well survey, and a commitment by Westinghouse (now CBS) to provide alternative drinking water supplies, if drinking water wells within 5000 feet of a site become contaminated with PCBs above detection. See Consent Decree ¶¶ 69-82.

The Covenant Not to Sue in Paragraph 111(a) of the Consent Decree expressly protected CBS from any environmental claims by the United States relating to PCB-

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[1] Nonetheless, in the course of settlement discussions with the government relating to alternatives to the original Consent Decree remedies, CBS offered to implement an appropriate interim treatment system at ICS, and to consider implementing a final system.

[2] Mr. Smith also stated that "[t]he majority of groundwater beneath Lemon Lane moves in conduit patterns responding to rain events." So the general relationship between rain events and PCB-contaminated ground water at ICS was also known at the time.

contaminated groundwater migrating from Lemon Lane Landfill. The Covenant Not to Sue states that it bars any claim under an environmental law "resulting from or relating to:" (1) "[t]he past disposal or discharge of PCBs or materials contaminated with PCBs at . . . the sites and areas specified" in certain paragraphs of the decree; and (2) "[t]he release or threatened release of PCBs or material contaminated with PCBs from" those areas.

Under subparagraph 111(a)(1), the Covenant Not to Sue bars any environmental claim that "results from or relates to" the disposal or discharge of PCBs in the designated areas, including Lemon Lane Landfill. In the Action Memorandum, at pp. 2-3, EPA asserts that "Lemon Lane Landfill is the source of PCBs" at ICS, and that PCB-contaminated water flows from ICS to Clear Creek. Thus, EPA has alleged that the contamination at ICS and Clear Creek "results from" and "relates to" the disposal of PCBs at Lemon Lane Landfill.[3] Accordingly, claims relating to addressing this contamination are barred by the Covenant Not to Sue.

Also, under subparagraph 111(a)(2), the Covenant Not to Sue precludes any claim under an environmental law that "results from or relates to: . . . (2) [t]he release or threatened release of PCBs or materials contaminated with PCBs from" the specified sites and streambeds, including Lemon Lane Landfill. This language expressly covers PCBs that have been released into the groundwater and migrated from the sites where they had been originally disposed and released.[4] Accordingly, the Covenant Not to Sue bars claims relating to PCBs and PCB-materials that have been released into the groundwater at Lemon Lane Landfill and have migrated to ICS and Clear Creek.

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[3]Moreover, the geographic scope of the Covenant Not to Sue in paragraph 111(a) of the Consent Decree was not limited to six disposal sites, but extended to various "sites and areas" identified in specific paragraphs of the Consent Decree, including certain streambeds listed in paragraph 51. One of those streambeds is Clear Creek, which EPA now contends has been impacted by PCB-contaminated water from Illinois Central Springs. Therefore, the Covenant Not to Sue expressly protects CBS from environmental claims relating to contamination at Clear Creek.

[4] See Rumpke of Indiana, Inc. v. Cummings Engine Co., 107 F.3d 1235 (7th Cir. 1997), in which the Seventh Circuit construed language in a CERCLA consent decree that barred claims relating to contamination transported from the site to preclude claims relating to contamination which leaches from the site into the groundwater, reasoning that "the word 'from' is understood to relate to . . . phenomena, such as leaching and other similar leakage from the Seymour site itself." Id. at 1243 (Emphasis supplied).

Finally, paragraphs 78 and 82 of the Consent Decree further demonstrate that claims relating to the ICS were resolved. In paragraph 78, Westinghouse (now CBS) agreed to provide an alternative drinking water supply if PCBs were detected in drinking wells within 5000 feet of Lemon Lane Landfill. In paragraph 82, the United States and other governmental parties agreed that "provision by Westinghouse of a permanent alternative potable water supply source in compliance with [paragraph 78] shall be the exclusive civil or administrative remedy available to the United States . . . against Westinghouse to remedy the problem of PCB-contaminated groundwater . . . within the 5000-foot radius of the boundaries of . . . Lemon Lane Landfill." (Emphasis supplied). As EPA's Action Memorandum acknowledges, ICS is located about 2000 feet from Lemon Lane Landfill, well within the 5000-foot radius.[5]

Collectively, these provisions demonstrate that, at the time the Consent Decree was entered, the United States was aware that PCB-contaminated groundwater emerged from ICS, but agreed not to bring future environmental claims against CBS with respect to that situation.

II. Procedural Errors

The Action Memorandum purports to document an EPA decision to undertake a removal action. It fails to meet the procedural requirements of the APA, CERCLA, and the NCP for such decisions in three significant respects: (1) EPA failed to solicit public comments on its action, particularly comments from CBS; (2) EPA reached its decision before receiving much of the information which it now cites to support its decision; and (3) the administrative record excludes substantial relevant information available to EPA which conflicts with the decision reached.

A. EPA Failed to Solicit Public Comment, Including Comment from CBS

Under 40 C.F.R. §§ 300.415(n), 300.820, EPA is required, prior to undertaking a removal action, to provide the public – including any known potentially responsible parties (PRPs) – with at least 30 days to submit public comments on the proposed decision. The right to submit comments is important to PRPs because it is often their best opportunity to establish a record on which to contest EPA's decision. Since section 113(j)(1) of CERCLA, 42 U.S.C. § 9613(j)(1), purports to limit judicial review of EPA removal actions, in many cases, to review of the applicable administrative record, the

[5] CBS also notes that under the heading "Site Conditions and Background," EPA listed CERCLIS ID # IND 9807-4341 as the relevant CERCLIS number for the affected site. This CERCLIS number refers to Lemon Lane Landfill. There is no separate CERCLIS number for Illinois Central Springs. This demonstrates that EPA has always regarded Illinois Central Springs as part of the Lemon Lane site.

opportunity to submit comments may be the PRP's only significant opportunity to create a record of its position to support a challenge to EPA's action in court. Failure to provide such an opportunity to a PRP whom EPA threatens with a cost recovery action denies due process of law to that PRP in violation of the U.S. Constitution.

In United States v. Seymour Recycling Corp., 679 F. Supp. 859 (S.D. Ind. 1987), the U.S. District Court for the Southern District of Indiana held that the Due Process Clause of the U.S. Constitution required EPA to allow a PRP to submit written comments on a proposed response action "at a meaningful time, in a meaningful manner." Id. at 864, quoting Armstrong v. Manzo, 380 U.S. 545, 552 (1965). The court further held that "[t]he most meaningful time to comment on selection of a remedy is before the decision is made." 679 F.Supp. at 864. Similarly, the court in United States v. Rohm & Haas Co., 669 F. Supp. 672, 683 (D.N.J. 1987) held that where EPA only allowed PRPs five days to submit comments on a proposed action, it failed to provide a meaningful opportunity to comment in violation of their rights to due process.

In issuing its Action Memorandum, EPA provided no opportunity for CBS to submit comments at all. Indeed, EPA reached a decision summarily on August 18, 1998, and then issued a supporting Action Memorandum 43 days later on September 30, 1998. But at no time – either before its summary decision or its Action Memorandum – did EPA allow for public comments. This is an egregious procedural error depriving CBS of the opportunity to persuade EPA to take a different course of action, and the opportunity to create a record of its position to defend against a future cost recovery action.

EPA apparently is trying to justify its failure to solicit public comment by describing its removal action as "time critical." But EPA includes no explanation in the Action Memorandum why this action should be considered so time critical that public comment is not allowed. Therefore, EPA's decision to treat this removal action as time-critical is itself arbitrary and capricious, and not justified by the administrative record.

Even if EPA had attempted to justify its characterization of this action as "time-critical," the facts do not support that position. EPA has known about PCBs in the water at ICS for more than 13 years, and similarly, has known about the Fish Advisories in Clear Creek since at least the 1980's. Indeed, as discussed in greater detail below, the August 19, 1997 fish data upon which EPA principally relies in its risk analysis actually shows decreases over the PCB levels found in samples taken in 1996. Moreover, these 1997 levels are well below the 1900 ppb standard that the State of Indiana uses for setting Level 5 Fish Advisories. In other words, had EPA submitted this data to the State of Indiana (which it did not), this data may have provided support for removing the Level 5 Fish Advisories which so alarm EPA.

Moreover, EPA does not plan to have its ICS water treatment system operational until the summer of 1999 at the earliest.[6] Thus, EPA is not acting at a time critical pace. Indeed, had EPA intended to act as quickly as possible, it would have approved CBS's proposal for a system that could be installed within a couple of months and capture about 55% of the estimated annual PCB mass emerging through the ICS, rather than waiting almost a year to install its chosen system.

Finally, more than 30 days elapsed between EPA's August 21, 1998 announcement to the U.S. District Court in Indianapolis that it intended to construct its own treatment system and its September 30, 1998 Action Memorandum. Therefore, EPA had time to collect public comments on its proposal. Accordingly, there is nothing time-critical about EPA's decision. Under the circumstances, EPA cannot rely on a characterization that the selection of a treatment system at ICS is "time critical" to deprive CBS of its right to submit comments.

B. EPA Improperly Relied on Post-Hoc Rationalizations to Support a Previously Made Decision.

By its own admission, EPA had made its decision to build the interim treatment plant by at least as early as August 18, 1998. In the United States' Status Report of August 21, 1998 to the U.S. District Court, at p. 5, the federal government specifically announced that "[o]n August 18, 1998, the United States informed the other parties to the lawsuit that the United States would resolve the issue of interim water treatment by constructing and funding the initial operation of the interim water treatment system." Significantly, EPA did not say that it was proposing or considering the construction of such a system, but that it had already decided to build one.

Nonetheless, the September 30, 1998 Action Memorandum included in the administrative record several documents which were only created after EPA had made its decision on August 18, 1998. These documents include Administrative Record items nos. 10-15, many of which were relied upon for the decision in the Action Memorandum. For example, items nos. 10 and 13 were relied upon to support EPA's (erroneous) conclusion that fishing for food occurs in Clear Creek.[7] As discussed below,

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[6] Under 40 C.F.R. §§ 300.415(n), 300.820, a public comment period is required whether or not on-site removal will occur within six months; however, if there is a planning period of at least six months, EPA must also perform an Engineering Evaluation/Cost Analysis ("EE/CA"), 40 C.F.R. § 300.415(a)(4)(i), and submit the EE/CA for public comment. 40 C.F.R. §§ 300.415(n), 300.820. Even though the treatment system will not be operational for more than six months, EPA has not prepared an EE/CA.

[7] CBS also objects that administrative record item no. 10, the September 10, 1998 letter from Scott E. Pruit of the U.S. Fish and Wildlife Service to Mr. Alcamo contains

EPA's misplaced concern about potential exposure to fishermen is the principal basis for its finding of an imminent and substantial endangerment. Yet both of these documents, which provide EPA's only support for its conclusion that fishing occurs at Clear Creek, came into existence after EPA made its August 18 decision to build the system. Item no. 11 contains Tetra Tech's (erroneous) calculations of the mass of PCBs released through ICS, upon which EPA relies for its determination of an imminent and substantial endangerment. Similarly, item no. 12 consists of Tetra Tech's "Final Alternatives Evaluation" of different treatment options. This document also came into existence after EPA decided to build its proposed system.

Under traditional rules of administrative law, an agency is not allowed to use post hoc rationalizations to support a previously made decision. Federal Power Comm. v. Texaco, 417 U.S. 380, 397 (1974); Burlington Truck Lines, Inc. v. United States, 371 U.S. 156, 168-69 (1962); SEC v. Chenery Corp., 332 U.S. 194, 196 (1947). In its September 30, 1998 Action Memorandum, EPA has attempted to justify its August 18, 1998 decision, by using information that it did not have at the time the decision was made. This action contravenes the accepted norms of administrative decision-making. In Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1212 (5th Cir. 1991), the Fifth Circuit overturned an EPA decision because it relied on a methodology and information that had not been disclosed to the public, and therefore had not been subject to comment. See Aqua Slide 'N' Dive v. CPSC, 569 F.2d 831, 842-43 (5th Cir. 1978). Here, EPA has not only deprived CBS of the opportunity to comment on this data, but more significantly, EPA has relied on this data to justify a decision that it actually had made weeks before it knew this information.

C. EPA has failed to Include Relevant Documents and Information in the Administrative Record

Pursuant to 40 C.F.R. §§ 300.810, 300.820, EPA is required to compile a complete administrative record for a decision selecting a removal action. In connection with its decision to install a water treatment system at ICS, EPA has failed to include in the administrative record many documents in its possession that are substantially related to the decision. Many of the documents omitted from the record provide data and analysis which undermine the rationale for EPA's decision.

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references to preliminary data concerning songbirds downstream from ICS, but does not include this data. For almost a year now, Fish and Wildlife has referred to this data, but has failed to produce it despite numerous requests from CBS and frequent assurances by lawyers from the Department of Justice and the Department of the Interior that the data will be provided. It violates not only due process, but also every principle of good government, for the United States to invoke against CBS data that it refuses to provide. These references should be struck from the administrative record.

EPA's chief omission is its failure to include the Agency for Toxic Substances and Disease Registry's ("ATSDR") health assessment of the Bloomington sites (including Lemon Lane Landfill and Illinois Central Springs). Under 40 C.F.R. § 300.810(a)(1), EPA is expressly required to include in an administrative record supporting a removal action all "ATSDR health assessments." In this case, EPA's omission is particularly noteworthy because, as discussed in greater detail below, the ATSDR health assessment for this site expressly contradicts the basis for EPA's finding of an imminent and substantial endangerment. Thus, in making its decision, EPA deliberately ignored the findings of its sister agency, which is directly tasked under CERCLA with conducting assessments of "the potential risk to human health posed by individual sites and facilities." See 42 U.S.C. § 9604(i).

Moreover, EPA omitted from the administrative record, numerous documents and other information about the PCB-contaminated water at ICS provided to it by CBS and others. These documents include correspondence between CBS and EPA throughout 1998 concerning water treatment, overheads and other demonstrative documents used by CBS at meetings with EPA (including sets of overheads containing annotations which EPA requested CBS add), and CBS's own Status Report to the U.S. District Court, submitted on September 10, 1998.

The omission of these documents is critical because they describe the technical and legal issues ignored by EPA in reaching its decision. These documents also describe CBS' position about the need for treatment at ICS and the selection made by EPA. By both omitting these documents from the record, and not providing CBS with an opportunity for public comment, EPA has attempted unfairly to exclude all information supporting CBS's position from the administrative record and has selectively included only documentation that supports its own conclusion.

III. EPA's Finding of an Imminent and Substantial Endangerment is Arbitrary and Capricious, and based on Incomplete and Erroneous Evidence

EPA's conclusion that PCB-contaminated water at ICS presents "an imminent and substantial endangerment" is arbitrary and capricious, and is based on incomplete and erroneous evidence. Indeed, in some instances, EPA's conclusions are based on no data at all.

A. EPA has Grossly Overestimated the Mass of PCBs Emerging through Illinois Central Springs

In the Action Memorandum, EPA states that "[e]stimates using data submitted by CBS show that in 1996, approximately 41.23 pounds of PCBs were released at ICS" and that discharges during a storm period from April 15 to April 19, 1998 resulted in

"approximately 6.40 pounds of PCBs being released into Clear Creek." Not only are both estimates wrong, they are more than double the true values for these periods. Using the same data, CBS has calculated that the mass of PCBs released in 1996 – a comparatively wet year – was 15.4 pounds, less than half the amount estimated by EPA. With respect to the April 15 to 19, 1998 period, CBS estimated the mass of PCBs emerging from the spring to be 1.8 pounds, less than a third of the amount estimated by EPA. CBS does not know how EPA made its errors. CBS has reviewed administrative record item no. 11, containing the estimates of PCB mass by EPA's contractor, Tetra Tech. This document does not provide sufficient information about how Tetra Tech made its calculations to allow CBS to determine how Tetra Tech made its errors. CBS would be willing to meet with EPA and Tetra Tech to review its calculations.[8]

B. EPA has Included No Data to Support its Conclusion that PCBs from ICS Pose a Threat to Humans through Inhalation, Ingestion of Water or Direct Contact

Although EPA concludes that PCBs at ICS "pose a threat via inhalation, ingestion, and direct contact," the Action Memorandum contains no information demonstrating human exposure through inhalation, ingestion of water, or direct contact with PCBs. Indeed, EPA's Dr. Milton Clark has stated in meetings with CBS and the City of Bloomington that ICS presents no risk to humans through these routes of exposure. Water from the ICS is not suitable for drinking for reasons having nothing to do with PCBs, and EPA has no information that any one actually drinks it. Therefore, this route of exposure creates no risk. No discussion is given in the Action Memorandum about how PCBs from ICS may be inhaled, and in what quantities. Thus, this route of exposure is totally unjustified. As for the possibility of direct contact, there is no evidence of swimming or other contact with the water and EPA admits that the area around the ICS has been fenced off. The only information that EPA provides related to a direct contact scenario is information from the Fish and Wildlife Service that its bird nest boxes nearby have been vandalized. This is not substantial evidence of a significant direct exposure pathway.

The ATSDR health assessment, which EPA excluded from the administrative record, considered these potential routes of exposure in great detail and concluded "neither children nor adults are likely to engage in activities in the . . . springs and streams that would lead to significant exposures to site-related contaminants." ATSDR

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[8] An additional factual error in the Action Memorandum is worth noting. EPA states that "as many as 60,000 capacitors were disposed of at Lemon Lane Landfill." Although many estimates have been given of the number of capacitors disposed of at Lemon Lane Landfill, we have never seen an estimate anywhere near that high. The highest estimate we have seen is 40,000 capacitors.

Report at 4. EPA has provided no evidence which contradicts ATSDR's conclusion, but simply ignores it.

C. EPA's Theory of Human Exposure through Eating Fish Is Arbitrary and Capricious and Not Supported by the Evidence

Although EPA pays lip service to other routes of exposure, EPA's discussion of human risks is based almost entirely on its theory that people will eat fish contaminated with PCBs from ICS. EPA's theory has three analytical supports: (1) its reliance on the Indiana State Fish Advisories as an indicator of endangerment to human health; (2) its use of incomplete and erroneous data to conclude that people fish in Clear Creek and eat the fish caught; and (3) its erroneous estimate of cancer risk. As discussed below, upon close analysis, each of these supports collapses of its own weight.

1. EPA Exaggerates the Seriousness of the PCB Data and Overemphasizes the Significance of the Indiana Fish Advisories

The cornerstones of EPA's conclusions that eating fish from Clear Creek represents a serious human health risk are its 1997 PCB data from the fish caught in the Creek and the State of Indiana Level 5 Fish Advisory, warning against eating fish from the Creek. In particular, EPA emphasizes that Clear Creek is one of ten streams in Indiana where there is a Level 5 Fish Advisory against eating all species.

EPA describes the August 19, 1997 data as showing "elevated" levels of PCBs; however, this data actually shows decreases as compared to fish sampling in 1996. More significantly, EPA's 1997 results would not justify the State of Indiana Level 5 Fish Advisories. EPA indicates that its 1997 results show a mean concentration of PCBs in edible fish tissue of: 446 ppb in rock bass, 1620 ppb in spotted sucker, and 872 ppb in largemouth bass. All of these figures, however, are substantially below the level of 1900 ppb that the State of Indiana uses as a bench mark for establishing a Level 5 Fish Advisory for PCBs;[9] indeed, the PCB concentration in largemouth bass is less than half the 1900 ppb trigger for a Level 5 Fish Advisory, and the PCB concentration in rock bass is less than a fourth of the 1900 ppb trigger. Similarly, IDEM's own 1997 data do not show PCB concentrations which would justify Level 5 Fish Advisories for game fish species.[10]

[9] According to James Stahl of IDEM, EPA never submitted its 1997 data to IDEM for consideration in establishing fish advisories.

[10] Even though IDEM had collected its own 1997 fish data, that information was not considered by IDEM in setting the 1998 Fish Advisories; rather, IDEM simply continued to apply the pre-existing Level 5 Advisories to Clear Creek in 1998 without examining

Thus, EPA's "elevated" 1997 data would have actually provided a basis for removing the Level 5 Fish Advisories at Clear Creek on at least some species. In which case, Clear Creek would be no different from all of the other streams in Indiana, since the State of Indiana has placed a Level 5 Fish Advisory on every stream in Indiana for PCBs (and mercury) in at least one species, and most other waterways in Indiana have lower level Fish Advisories for PCBs in other species. The fact that significant PCB levels have been found in at least one species in every stream in Indiana indicates that PCBs are ubiquitous in Indiana waterways, and implies other sources may account for the PCB levels in fish in Clear Creek. More significantly, this information shows that the PCB levels in the fish in Clear Creek do not present an unusual risk to humans that is not encountered elsewhere in Indiana.

2. EPA's Conclusion that People Frequently Fish in Clear Creek and Eat the Fish Caught There is based on Flawed Data

Also, in order to show that fish in Clear Creek represent a serious health risk to humans, EPA must produce evidence that Clear Creek is actually used on a frequent basis for fishing, and that people actually eat the fish caught there. EPA has gathered limited anecdotal data on fishing in Clear Creek, but has provided no data to indicate that people actually eat fish from Clear Creek at all, let alone on a frequent basis.

EPA relies on three pieces of data to support its conclusion that fishing occurs frequently in Clear Creek, at least two pieces of this data came into existence after EPA announced its decision on August 18, 1998. The first piece of data is a five-line memorandum from Thomas Alcamo dated September 24, 1998 (administrative record item no. 13), stating that persons attending two Bloomington Citizens Information Committee meetings informed him that "people do fish frequently in Clear Creek." This memorandum fails to identify who are Mr. Alcamo's informants, who fishes in Clear Creek, how many people do so, how often is meant by "frequently," whether fish are caught of the appropriate species and size to be eaten, or whether people eat them.

The second and third pieces of data come from the September 11, 1998 letter (and its attachments) from Scott E. Pruitt of the U.S. Fish and Wildlife Service to Mr. Alcamo (administrative record item no. 10).[11] Mr. Pruitt's letter includes the anecdotal statement

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new data. Except in the case of the spotted sucker, which is not generally considered a game fish, IDEM's 1997 data would not support Level 5 Fish Advisories.

[11] The letter itself is clearly dated after EPA announced its decision on August 18, 1998. The attachments, 1991 and 1994 studies of fishing in Lake Monroe and 1993 sample data, are from an earlier date, but there is no information that EPA was aware of that information until the date of Mr. Pruitt's letter.

that "[e]vidence of fishing can be seen at every bridge crossing in lower Clear Creek." But no description of this evidence is offered, other than a statement that on one occasion a father was seen with two children going to fish in Clear Creek. Even with respect to this observation, there is no information that these people were fishing for food; indeed, the section of the stream at Gordon Pike where they were seen is too small to support a population of edible fish.

Mr. Pruitt's letter also refers to the 1991 and 1994 State of Indiana studies of fishing in the Lake Monroe area. In these studies, data is presented that in 1991 there were 14,492 angler/days per year in Salt Creek below the Monroe Reservoir dam, and in 1994, there were 9,635 angling days per year in the same area. Mr. Pruitt fails to point out that this data concerned fishing in the portion of Salt Creek before it reaches the confluence with Clear Creek. In other words, this data concerns fishing in a portion of Salt Creek, that is not impacted by waters from Clear Creek. There is no data in these reports concerning fishing in Clear Creek itself. Thus, the data referred to by Mr. Pruitt does not support a conclusion that Clear Creek waters are heavily fished. Indeed, the 1991 and 1994 studies demonstrate that Lake Monroe and other areas nearby provide better locations for fishing than Clear Creek, and that these locations are fished more frequently. In a 1997 newspaper article, Indiana state officials were quoted as saying that the State tested fish in the area just below the dam, and determined that "they came back clean," i.e., not at concentrations which would support Level 5 Fish Advisories. S. Hinnefeld, "Health Advisories Cover Many Area Fishing Spots," Bloomington Herald-Times (Aug. 10, 1997) (copy attached). Moreover, the article quoted State officials as indicating that there was little fishing in Salt Creek below the confluence with Clear Creek because of limited public access.

Although EPA includes attempts to include anecdotal evidence of fishing, it offers no data to indicate that fish caught in Clear Creek is actually consumed as food (as opposed to recreational sport fishing, in which fish are simply thrown back). The same 1997 newspaper article reported that there was much catch and release fishing around Lake Monroe, particularly for bass. It is important to note that the Indiana Fish Advisories provide warnings about eating fish, but they do not restrict catch and release fishing for sport.

Furthermore, EPA ignores the conclusions of the ATSDR in its health assessment that Clear Creek did not provide a significant source of food for human consumption. ATSDR specifically concluded that the PCB levels in fish in Clear Creek were not a health concern because the stream was too small to support fishing for food, and that most of the species close to Lemon Lane Landfill are not considered a human food source. ATSDR Report at p. 5. EPA does not try to contradict this conclusion, but again simply ignores it.

The ATSDR findings are corroborated by the statements of long time Monroe County fisherman Dan Combs, who was quoted in the 1997 newspaper article. The 44-year old Mr. Combs said that "[n]ot since I was a kid have I seen anyone fishing for food in [Clear Creek]." Mr. Combs further explained:

> It just got such a horrid reputation. And what gave it the horrid reputation was the Winston-Thomas raw sewage instead of the PCBs.

S. Hinnefeld, "Health Advisories Cover Many Area Fishing Spots," Bloomington Herald-Times (Aug. 10, 1997). Although the Winston-Thomas plant has been closed, the Dilman Road sewage plant is operating and discharging into the same area.

3. EPA's Calculation Overestimates Cancer Risks

EPA calculates a supposed cancer risk associated with eating fish from Clear Creek as follows: "[f]or the average freshwater sport fish consumer, ingesting an average of 15 g/day of largemouth bass, cancer risks would exceed 1 x 10E-4 (one in 10,000)." This conclusion is based on two unreliable assumptions. First, EPA uses an ingestion rate of 15 g/day. Except in the Great Lakes area, the State of Indiana uses a standard fish ingestion rate of 6.5 g/day to calculate cancer risk levels.[12] 327 IAC 2-1-8.6. The standard of 6.5 g/day also is used generally by EPA as a national average for fish consumption in calculating cancer risks. EPA does not explain why in this calculation, it has used an ingestion rate that is more than double the accepted rate that serves as its own national standard and the standard in Indiana.

Second, EPA assumes that its hypothetical consumer eats fish from Clear Creek on an ongoing weekly basis. If someone were fishing for food on a weekly basis, that person would be more likely to fish in Lake Monroe or the area of Salt Creek just below the dam and before the confluence with Clear Creek, where the fish are both larger and more plentiful, than to try to catch them in Clear Creek where they are smaller and less abundant.[13] The more regularly someone would fish for food in the Bloomington waterways, the more likely that person would find the better fishing spots. Therefore, the possibility that someone would continue to eat fish from Clear Creek week in and

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[12] Indiana uses an ingestion rate of 15 g/day to calculate the risks of eating Great Lakes fish, because the fish caught in the Great Lakes are generally larger than those caught in smaller waterways, and because this rate is considered appropriate for a specific subpopulation that consumes Great Lakes fish.

[13] The 1991 and 1994 fishing studies attached to Mr. Pruitt's letter substantiate that fishing occurs very frequently at Lake Monroe, which provides a good location for catching edible fish.

week out, while ignoring better fishing in Lake Monroe, is absurd. In other words, EPA has created an unrealistic hypothetical to justify its endangerment determination.

IV. EPA's Selection of an Interim Treatment System is Arbitrary and Capricious, and Inconsistent with the NCP

Even assuming that there was a need for action and that need was time-critical, EPA has made an arbitrary and capricious selection of an interim treatment system. In settlement discussions, CBS had proposed a 300 gpm system. This system could catch all the water flowing through the ICS during normal weather (when the estimated flow is in the range of 100 gpm) and during mild wet weather events; it would also capture a significant portion of flow during more severe wet weather events. On an annual basis, it could capture an estimated 55% of the estimated PCB mass.[14] The principal virtue of CBS's proposal was that it could be installed within a couple of months at an estimated capital cost of $75,000. By comparison, it will take EPA almost a year to install its selected system at a capital cost of $1.3 million.[15] For almost a year of delay, and over $1 million additional expenditure, EPA will be able to achieve a capture efficiency of 80% of the PCB mass.

If EPA is truly concerned about taking an interim response to a time-critical problem, its decision is highly questionable. By delaying almost a year in implementing its system, EPA would be allowing the PCB mass to continue to flow through ICS unreduced throughout that time, while CBS's proposal could be capturing 55% of PCB mass during that year. Over a three year period, EPA's proposal would capture an annual average of 53% of the PCB mass – 0 % in year 1 and 80 % in each of years 2 and 3 – about the same average capture percentage that CBS's system would achieve over the same period. But CBS's approach would allow capture to start about a year earlier and save over a $1 million in capital costs alone. In selecting an interim system that is only

[14] In the Action Memorandum, EPA incorrectly makes reference to a 200 gpm system which would capture 55% of the PCB mass at an estimated cost of $75,000. This appears to be an error, and CBS's proposal for a 300 gpm system is intended.

[15] In Thomas Alcamo's letter of July 20, 1998 to Dorothy Alke (administrative record item no. 7), EPA raised concerns that CBS's proposed 300 gpm system would not work as intended. CBS disputed these concerns and prepared responses to each of EPA's criticisms. When CBS offered to present those responses at a face to face meeting with EPA and representatives of other Consent Decree parties on August 5, 1998, however, the governmental parties, including EPA, told CBS it was not necessary to respond because even if each of these criticisms were adequately addressed, CBS's proposal would still be rejected because they wanted a bigger system.

likely to be in use for a period between one and five years, there is no rational basis for choosing EPA's system rather than CBS's proposal.

Curiously, nowhere in EPA's Action Memorandum does the Agency address the question of how soon the various systems – either EPA's selected system or the one proposed by CBS – could be put into operation. Although the Agency calls its decision "time-critical," it completely omits any discussion of the timing of its action. EPA's failure to address the question of timing is significant, because the Agency has chosen, arbitrarily and capriciously, to reject the most timely approach in favor of one that will take almost a year to implement.

Moreover, although EPA describes its approach as an "interim" system, the Agency has ignored the importance of avoiding unnecessary duplication of effort and expense in constructing both an interim and a final system. One of the reasons why CBS had proposed a simple and inexpensive interim system was to allow time to complete on-going activities at Lemon Lane Landfill that may enable a more effective and efficient final system to be constructed. In particular, CBS has been undertaking an investigation of geologic conduits under the Landfill. This investigation may provide information about how to divert clean ground water and/or storm water before it can be contaminated with PCBs. Moreover, this study may help identify a better location for a final treatment system than the location selected by EPA. In addition, CBS is investigating different water management practices that may reduce the flow of water through ICS or the level of PCB contamination in that water.

EPA's Action Memorandum completely ignores these efforts. Instead, EPA calls for a year-long effort to design and construct a massive system in a particular location, which may or may not be the location of a final system. EPA's decision is likely to result in the wasteful construction of an expensive facility that could be obsolete within a few years.[16]

V. EPA's Decision Contravenes the Statutory Limits on Removal Actions

In the Action Memorandum, EPA has obligated $2,015,223 to be spent over a period of more than one year.[17] In doing so, EPA has violated section 104(c)(1) of

[16] EPA does not identify the ARARs (applicable or relevant or appropriate requirements) in its Action Memorandum, but simply states that ARARs will be identified later. CBS, of course, would reserve all rights to challenge EPA's determination of ARARs in any cost recovery action.

[17] As part of this cost figure, EPA includes a 40% extramural contingency of $465,051; this amount is calculated on top of a 20% contingency already built into the construction cost. EPA does not explain what this 40% contingency is for.

CERCLA, 42 U.S.C. § 9604(c)(1), which prohibits EPA from obligating more than $2 million or undertaking a removal action for more than one year unless the Agency makes certain specific findings.[18] The Agency has not made the necessary findings, nor could it do so based on the factual record.

The statute allows EPA to exceed the $2 million and one year limits if: (1) "response actions are immediately required to prevent limit or mitigate and emergency," (2) "there is an immediate risk to human health, welfare or the environment," and (3) "such assistance would not otherwise be provided on a timely basis." 42 U.S.C. § 9604(c)(1); see also the NCP at 40 C.F.R § 300.415(b)(5).[19] Thus, the statutory standard which must be met for EPA to commit more than $2 million for a removal action or to undertake removal action beyond one year is more stringent than the imminent and substantial endangerment standard. To avoid these limits on its removal action power, EPA must show that an actual emergency exists and that the risks are immediate. This standard has clearly not been met. Although EPA has asserted (without adequate support) that there is an imminent and substantial endangerment, EPA has not asserted or presented evidence to support a finding that there is an immediate risk to human health or that this system is needed to prevent an emergency. Here EPA admits in the Action Memorandum itself that it has known about the situation at ICS for over 13 years. Moreover, the 1997 fish data upon which EPA relies so heavily, shows decreases over 1996 data and concentrations that do not support Level 5 Fish Advisories. Most significantly, EPA has not decided to take immediate action. Rather, it has chosen to spend almost a year designing a treatment system, while rejecting CBS's proposal of a system that could be implemented in a couple of months.

Finally, EPA cannot support a conclusion that assistance would not be otherwise provided on a timely basis. CBS had offered to install its proposed system that would have been operational in a couple of months, long before EPA's system will be ready. But EPA rejected this proposal. CBS also offered to continue discussions of compromise approaches, but EPA cancelled a meeting scheduled for further discussions with CBS and announced its unilateral decision to take action and try to make CBS pay for it.

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[18] EPA's proposed selection of an interim system includes almost a year of design and construction work, followed by a year of operation by EPA before turning the system over to the State.

[19] An additional exception to these limits exists where the removal action is consistent with a selected remedial action. But the Action Memorandum indicates that EPA has not determined to select any remedial action for the ICS.

EPA's decision not only violates the express requirements of CERCLA, but conflicts with the Congressional policy behind the limitations on EPA's removal power. These limits are imposed to prevent EPA from skirting the substantive and procedural requirements for remedial decision making by calling long term actions "removals." This is precisely what EPA has done here: by calling its decision a time-critical removal, EPA has decided on a remedial action without going through the process, or meeting the substantive requirements, for selecting a remedy.

Sincerely,

David Berz/DBH

David R. Berz

David Hird

David B. Hird
Counsel for CBS Corporation

cc: Steven D. Ellis
Thomas Alcamo

bcc: Dorothy M. Alke
Russell P. Cepko

Health advisories cover many area fishing spots

8-1097

By Steve Hinnefeld
Sunday Herald-Times

Twenty years after the government banned most uses of PCBs, it's still a bad idea to eat fish from area streams that were polluted with the chemicals, state officials say.

But the state's fish consumption advisory covers much more than PCB-tainted stretches of Clear Creek, Salt Creek and Richland Creek.

It also warns against eating too much of certain fish from the relatively clean waters of Lake Monroe and still-polluted waterways such as the East Fork of the White River.

The Indiana Department of Natural Resources, State Department of Health and Department of Environmental Management issue the advisory.

"We're not discouraging people from eating fish," said Dollis Wright, director of environmental epidemiology with the state health department.

"In fact, fish are good for you. Our whole purpose is to provide people with information so they can make good choices on what fish to eat."

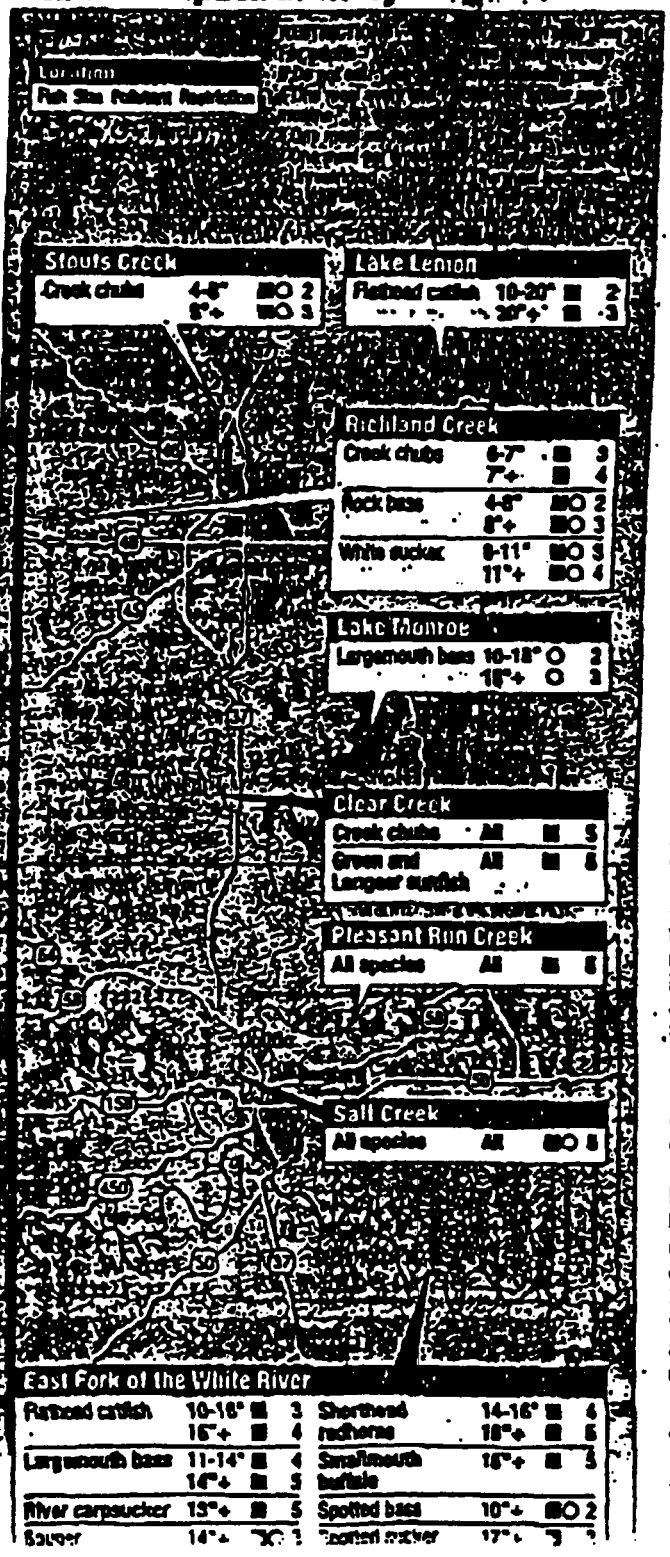
But many anglers are only vaguely aware of the state recommendations. Some won't eat any fish they catch. Others dismiss the warnings or refuse to hear them.

And while state waterways have

▶See FISH / A12

David Bruner of Bedford relaxes while fishing off the bank of the East Fork of the White River. Bruner said he fishes for recreation and throws back the fish he catches in the river. An Indiana state fish advisory warns against eating some fish from the river.

Fish consumption advisory



How to reduce risk

The 1997 Indiana Fish Consumption Advisory comes with these suggestions for reducing health risks from eating fish:

- **Be selective.** Be picky about the types and size of fish you eat.
- **Keep the small fish.** Small fish taste better and are less contaminated than older, larger fish.
- **Eat less-contaminated fish.** Go with fish from the Group 2 or 3 advisory instead of those from the Group 4 or 5 advisory.
- **Eat smaller meals.** The state's risk guidelines are based on eating an 8-ounce serving of fish; nutritionists recommended eating 3 to 4 ounces of fish per meal.
- **Clean and cook fish properly.** PCBs and some other toxic chemicals are stored in the fat, so a skinless, boneless fillet has lower chemical content than an entire fish. Baking, broiling or grilling fish so the fat drips away reduces PCB and dioxin levels.

For copies of the fish advisory booklet, contact the Indiana State Department of Health at 317 233-7808

Health advisories co . r many area fishing spots

Fish / from A1

generally gotten cleaner, the list of lakes and streams covered by the fish advisory has grown. It takes up 20 pages in a 32-page booklet that also includes health information and suggestions on how to prepare fish to minimize the risks.

Wright said the advisory got bigger partly because the state knows more about fish contamination, and partly because it has become more cautious and conservative.

"We are being more protective of health, which is what we want to be," she said.

Levels of risk

The warnings range from Group 2, a suggestion that most people shouldn't eat fish more than once a week, to Group 5, a warning against eating any fish.

And they are more stringent for women who are pregnant, breast-feeding or plan to have children and for children under 15 — groups that are more sensitive to chemical risks.

They target areas where fish contain mercury and PCBs, or polychlorinated biphenyls. Both can cause a range of health problems.

Bigger fish, bottom-feeding fish and fish that eat other fish are riskier to eat. They've had more time and opportunity to build up contaminants in their bodies.

In the Bloomington-Bedford area, there are Group 5 "don't-eat" warnings for the following:

■ Clear Creek in southern Monroe County and Salt Creek and Pleasant Run Creek in Lawrence County, all downstream from the PCB site at Bloomington's old Winston-Thomas sewage plant.

■ Bigger largemouth bass, river carpsuckers, redhorse and buffalo in the East Fork of the White River in Lawrence County.

There are also Group 3 and 4 advisories for big catfish and small bass in the White River and for certain fish in Richland Creek in Monroe and Owen counties.

Those advisories mean children under 15 and women who are pregnant, breast-feeding or plan to have children should never eat the fish.

There's a Group 3 warning for big bass in Lake Monroe and Yellowwood Lake and big catfish in Lake Lemon.

Childbearing women and children shouldn't eat these fish, the advisory says. And no one should eat them more than once a month.

State officials suggest applying Group 2 consideration to any fish not listed in the advisory. That means they shouldn't be eaten more than once a week and children and pregnant women shouldn't eat them more than once a month.

Warnings often ignored

There's a summary of the advisory in the current state fishing guide. But if people want to know specifics, they have to get the booklet from the state or local health department.

Then they have to decide whether to abide by it.

Stanley Fullerton has been property manager at the state's Williams Dam site on the White River for 26 years. He said state warnings aren't likely to carry much weight with people who eat river fish.

"There's a tendency for them to ignore these advisories, just based on a few die-hard local fishermen," he said. "I've heard it more than once: 'I've been eating it all my life and it ain't hurt me.'

"It's just a way of life," he said. "River life's a whole lot different than living on a lake."

At Lake Monroe, there's a lot of catch-and-release fishing — especially for bass, the tournament fish that's the subject of a Group 3 advisory in the lake.

"For a bass fisherman, it's a mortal sin to kill a bass," said Jim Fleetwood, a Bloomington tournament [illegible]

"There's only so many bass in the lake and only so many bass allowed. If we kept [illegible] a lot of people keep crappie and bluegill, there would be no fish around for our kids."

Many people do eat a lot of panfish — bluegill and crappie — from Lake Monroe, however.

On the other hand, many people overestimate the risks and refuse to eat fish from the lake, said Brian Schoenung, assistant fisheries biologist at Acton State Fish Hatchery.

"It's unfortunate, too," he said. "In many cases, there's nothing wrong with eating fish that you catch. It's probably safer than eating shellfish from the supermarket."

Creeks rarely fished

Schoenung said he thinks there's not much fishing in Salt Creek in Lawrence County, where there's a don't-eat advisory because of PCBs. That's because there just aren't many good public access points to the creek.

Salt Creek right below the Lake Monroe dam is fished heavily, especially for walleye, crappies and hybrid bass.

"We suspect most of them fish just get shot out through the drain structures," Schoenung said.

The state tested fish at the dam several years ago, he said, and "they came back clean." But some of the fish may have lived in the creek for some time, moving downstream as far as the confluence with Clear Creek.

Bloomington angler Dan Combs, a Harrodsburg native, said he doesn't know of anyone who eats fish from Clear Creek, where there's a don't-eat advisory for PCBs.

People stopped fishing there because it was downstream from the Winston-Thomas sewage plant. Not it wasn't PCBs they were worried about.

"Not since I was a kid have I seen anyone fishing for food in there," said Combs, who's 44.

"It just got such a horrid reputation. And what gave it the horrid reputation was the Winston-Thomas raw sewage instead of the PCBs."

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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77 WEST JACKSON BOULEVARD
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REPLY TO THE ATTENTION OF
C-14J

April 12, 1999

Mr. David R. Berz
Weil Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036-5610

RE: Illinois Central Spring

Dear Mr. Berz:

Thank you for meeting with the United States Environmental Protection Agency ("U.S. EPA") regarding the above-referenced site on March 25, 1999. As CBS Corporation ("CBS") was informed, U.S. EPA has completed its design of the water treatment plant for the site, and has more accurately determined the plant's cost. CBS was informed that the cost of the plant, as designed, is now greater than the cost estimated at the time of the action memorandum. U.S. EPA is now completing site-preparation work, and will soon start construction of the water treatment plant. As we discussed, U.S. EPA extends to CBS the opportunity to take over work at the site, assuming that CBS can implement U.S. EPA's design and complete construction in accordance with U.S. EPA's schedule. As CBS was informed, there are limited lead times for ordering some of the materials needed to equip the plant and meet the site-cleanup construction completion target date. Accordingly, CBS should timely advise U.S. EPA whether CBS is interested in entering an administrative order on consent with U.S. EPA.

Please contact me if you have any questions or comments regarding this matter.

Very truly yours,

Jeffrey A. Cahn
Associate Regional Counsel

cc: Tom Alcamo, RPM
Ken Theisen, OSC

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April 22, 1999

Jeffrey A. Cahn, Esq.
Associate Regional Counsel
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Re: United States v. CBS Corp.

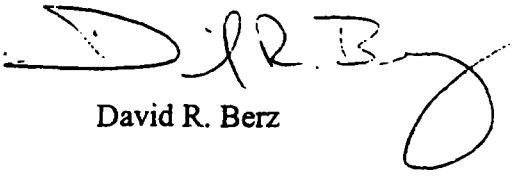
Dear Mr. Cahn:

I have shared your letter of April 12, 1999 with our firm's client, CBS Corporation ("CBS"). CBS is currently preparing comments on the U.S. Environmental Protection Agency's ("EPA" or "the Agency") proposed design, and its overall approach, for a water treatment system at Illinois Central Springs, as explained at the March 25, 1999 Chicago meeting. CBS received the remaining document that is needed to understand EPA's design earlier in the week, but has yet to receive the Agency's design assumption. Please provide that document as soon as possible. CBS should be prepared to submit its comments on EPA's proposal in about two weeks. At that time, CBS will also be able to respond formally to the request made in your April 12, 1999 letter.

The proposal you outlined for us in Chicago does not resemble in any respect the interim water treatment system you described to Judge Foster and the other parties to the litigation last year. Moreover, your cost projections are at least triple the estimates you presented in Court. Under these circumstances, we believe that it is in both EPA's and CBS's interest that the Agency makes no further commitments to construct its

proposed system until it has reviewed CBS's comments and its response to your letter. If this schedule is not feasible, please contact me.

Very truly yours,



David R. Berz

cc: Steven D. Ellis
Dorothy M. Alke

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF
C-14J

May 3, 1999

Mr. David R. Berz
Weil Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036-5610

RE: Illinois Central Spring

Dear Mr. Berz:

This letter responds to your letter of April 22, 1999, which in turn was prompted by the March 25, 1999, meeting between the United States Environmental Protection Agency ("U.S. EPA") and CBS Corporation ("CBS"), and my follow-up letter to you, dated April 12, 1999, regarding the Illinois Central Spring treatment facility. U.S. EPA has given CBS numerous opportunities to design, build, and operate an interim water treatment system at Illinois Central Spring over the past year. After difficult negotiations, the parties reported a deadlock to the Court on August 14, 1998. The U.S. EPA concluded that CBS's proposal for treatment of emerging surface water at Illinois Central Spring likely would not provide adequate protection to human health and the environment as an interim measure. Rather than going to trial over this issue, U.S. EPA proceeded with addressing the discharge of PCB-contaminated water from Illinois Central Spring itself. On September 30, 1998, EPA issued its decision document (an action memorandum) for the Illinois Central Spring interim treatment facility and started the design of the system. In accordance with a suggestion from Magistrate Judge Foster, U.S. EPA reserved its rights to bring claims against CBS for cost recovery at a future time. U.S. EPA's resolution of this heated issue allowed the parties to concentrate their efforts on negotiating clean-up measures for the remaining sites.

Despite the failure of the negotiations over the treatment system during the summer of 1998, at all times subsequent to the deadlock, U.S. EPA made it clear through informal channels, that CBS could take over and complete the design and construction of the treatment system as long as the system was designed and built in accordance with EPA's September 30, 1998, action memorandum. During that entire time, CBS provided U.S. EPA with no indication

that it would be willing to take over the project. In order to complete the treatment system during the 1999 construction season, CBS knew that EPA had to proceed with the design and construction without any delays. U.S. EPA kept CBS informed as it made decisions and progress on the design of the system.

On March 25, 1999, U.S. EPA met with CBS and explained the final design of the water treatment system in detail, and gave CBS another opportunity to take over the construction of the project. Copies of design documents were also provided to CBS. On April 22, CBS asked U.S. EPA to delay the start of construction until after (1) CBS has had a chance to "formally" respond to U.S. EPA's proposal and April 12, 1999, follow-up letter, and (2) U.S. EPA has had a chance to consider CBS's proposal and presumably open up a new round of negotiations with CBS. Informally we heard from CBS only that CBS may renew its offer to build the system CBS proposed in the summer of 1998, which U.S. EPA had previously rejected, and which would be inconsistent with U.S. EPA's action memorandum.

U.S. EPA declines your request to delay the construction of the water treatment system. U.S. EPA must continue to move forward in order to accommodate contract lead times, meet the construction schedule, and ensure that the water treatment plant is operational in time for the anticipated start of the source control operable unit of the Lemon Lane Landfill remedial action. U.S. EPA informed CBS about these deadlines during the March 25, 1999 meeting.

U.S. EPA must also respond to CBS's allegation that U.S. EPA's design of the water treatment system is not consistent with what the United States proposed to Magistrate Judge Foster in the August 14, 1999, deadlocked status conference. U.S. EPA's now-complete design is consistent with the proposal to Judge Foster and with the September 30, 1999 action memorandum. The costs are higher than the earlier, pre-design estimate, because details regarding the design have been worked out. During the August 14, 1999, hearing CBS also suggested variables to the treatment proposal it made to Magistrate Judge Foster, wherein costs could be increased by a factor of four or more. During the design process, EPA paid careful consideration to CBS's concern that money to build the interim system should not be wasted by building components which would be incompatible with a final water treatment system that will be considered after the completion of the Lemon Lane source control measures. The final design of the Illinois Central Spring interim treatment system provides for flexibility and the ability for expansion of treatment capacity should such measures be required as part of a permanent system.

Please contact me if you have any further questions or comments regarding this matter.

Very truly yours,

Jeffrey A. Cahn
Associate Regional Counsel

cc: Ken Theisen, OSC
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Please contact me if you have any further questions or comments regarding this matter.

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Associate Regional Counsel

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May 12, 1999

Jeffrey A. Cahn, Esq.
Associate Regional Counsel (Mail Code C-14J)
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Re: United States v. CBS Corp.

Dear Mr. Cahn:

As promised in my April 22, 1999 letter I am submitting on behalf of our client, CBS Corporation ("CBS"), the enclosed technical comments on the design for a water treatment plant at Illinois Central Spring that the U.S. Environmental Protection Agency ("EPA") first revealed to CBS in a meeting on March 25, 1999 ("Revised Design").[1] In your letter of May 3, 1999, you indicated that EPA refused to delay the construction of the water treatment system even to await the receipt of technical comments that would be forthcoming from CBS in a matter of days. EPA's refusal to consider CBS's comments before making further commitments to construct the system is a failure by the United States to negotiate in good faith about water treatment issues in accordance with the Special Master's Report of January 20, 1999, which was agreed to by all parties and approved by the Court.

CBS's request that EPA consider its comments before committing to a design is reasonable and consistent with the Court's order to continue water treatment negotiations. The statement in your May 3, 1999 letter that "EPA kept CBS informed as it made decisions and progress on the design of the system" is simply wrong. Since August 1998, when EPA announced that it intended to construct a water treatment plant, CBS has offered to provide EPA with the benefit of its technical knowledge to assist EPA

[1] At that meeting, EPA did not have available all the technical documents describing its Recent Design. Those documents have only been provided to CBS in the weeks following the meeting.

in formulating a design. Prior to disclosing its Recent Design to CBS on March 25, 1999, however, EPA's only technical communication with CBS about its "interim" water treatment system occurred at a single meeting on January 26, 1999. Moreover, at that meeting, CBS was told that the contractors hired by EPA to design the system had been acting under an internal "gag order" not to talk with CBS. EPA's failure to consult with CBS about design issues – even though all of EPA's information about the flows at Illinois Central Spring came from CBS – is not only a breach of its obligations under the Special Master's Report, but is just plain foolish from a technical standpoint.

Your two letters allow no opportunity for discussion about technical issues, but simply demand CBS function as a construction contractor to build a system to the Agency's design, regardless of its technical merits. Moreover, the two letters make inconsistent demands on CBS. The April 12, 1999 letter states that EPA "offers" CBS the opportunity to "take over work at the site, assuming that CBS can implement U.S. EPA's design and complete construction in accordance with EPA's schedule." But, the May 3, 1999 letter demands that CBS complete the design and construction of the "interim" treatment system "as long as it was built in accordance with EPA's September 30, 1998 Action Memorandum." EPA's Action Memorandum called for a $1.3 million system to be operational by the fall of 1999; EPA's Recent Design calls for a $6 million system to be operational by the spring of 2000.

This inconsistency is at the heart of what is wrong with EPA's Recent Design – it bears no resemblance to an "interim" system, and is radically different from the system EPA described in its Action Memorandum. EPA's $1.3 million proposal of September 30, 1998 for a costly interim system has been scrapped for a $6 million design of a system that is "interim" in name only and ultimately is beyond anything necessary for the site.

Moreover, EPA plans to begin construction of this final system at a time when the Agency, by its own acknowledgement, does not have the information to come up with the most effective or efficient design, or even the most appropriate location for a final system. The Recent Design calls for an immovable $6 million system to be built at Illinois Central Spring, even though the results of CBS's hydraulic conduit study may demonstrate that a system would be more effective if it were located either closer to Lemon Lane Landfill itself or further from the landfill at Quarry Spring. Moreover, EPA has abandoned its original "interim" schedule: EPA now does not expect to have the system completely constructed until the spring of 2000 at the earliest, a year later than originally planned. After construction is complete, a startup and shakedown period that could last for months will follow. Thus, there will be no operable system coming online until two years after EPA announced its decision to build an interim system. Indeed, rather than place its interim system in operation before the excavation work starts at Lemon Lane, as EPA told the Court it wanted to do, EPA's Recent Design is not likely to be operational until the excavation work is well underway.

Your letter of May 3, 1999 suggests that EPA's Recent Design is "flexible" because components of its system might be used for final water treatment. This is not flexibility, but over-design and redundancy – putting in costly extras and duplicating capacity when the Agency does not have the information to know whether these features will be needed in a final system at all. Moreover, EPA has abandoned any attempt at designing a system that could be moved to other locations. What EPA has actually decided to do instead of building the interim system it originally proposed is to adopt the City of Bloomington's approach, as described in Geoffrey Grodner's letter of August 10, 1998, of building a full-capacity final system first, putting it in operation, and then possibly deciding later to shut down portions of the system, if they were shown to be unnecessary (after the cost had been incurred). EPA's Recent Design calls for oversized pumps, tanks, and structures, and redundant equipment when it does not have enough information to know whether they will be necessary. If they are not needed, their expense will simply go to waste. Indeed, EPA has taken the City's approach one step further, by proposing to build an immovable $6 million system that may have to be scrapped if the results of CBS's hydraulic conduit study show that a treatment system will be more effective in another location. EPA's entire approach is ill-conceived, premature and grossly inconsistent with the principles underlying the National Contingency Plan as well as its September 30, 1998 Action Memorandum.

Whether or not CBS takes over the construction of a water treatment system from EPA is irrelevant to the issue of what design makes sense from a technical standpoint. EPA's first concern should be what design is both technically appropriate to achieve its goals and cost-effective, not who pays for it. It makes no sense for the Agency to close its ears to valuable technical information from CBS, simply because it is using government funds to build the system. Indeed, if government monies are being spent on the project, EPA has a duty to the U.S. taxpayers to see that their money is spent wisely. Even if EPA is relying on successfully recouping its expenditures in a cost recovery claim against CBS, such a gross misuse of public resources is inexcusable.

CBS strongly urges EPA to reconsider its decision to construct a system according to this design. CBS requests a meeting to more fully explain the errors in EPA's design and suggest alternatives that are more consistent with the concept of an "interim" system that may be installed more quickly.

1. Background

When the parties began their discussions on water treatment over the spring and summer of 1998, EPA and CBS were in agreement that a water treatment system could best be designed after the excavation at the landfill was undertaken and CBS had completed its hydraulic conduit study. But EPA told the Court that it believed it was important to construct an interim system at Illinois Central Spring sooner, rather than wait until after the excavation work was done. Although EPA and CBS disagreed

about what interim system was appropriate, EPA did agree with CBS that the interim system should be designed to be flexible so that as many of its components as possible may be adapted for a final water treatment system, if one was necessary. EPA also recognized that the results of CBS's hydraulic conduit study may show that a different type of treatment design should be used or that a treatment system might be better placed in a different location (either closer to the landfill or further away at Quarry Spring). Accordingly, EPA told CBS that it was trying to design a system that was movable and could be disassembled into component parts.

At the time EPA proposed its system, CBS had substantial concerns that the proposal would not result in a flexible, portable system that made sense on an interim basis and could be adaptable as a final system. CBS was concerned that EPA's proposal for a $1.3 million system would take over a year to design and construct, and then would only operate for two years before being replaced by a final system. CBS was further concerned that the components of this system might not be usable in a final system and would have to be scrapped. CBS expressed these concerns in its Status Report to the Court of September 10, 1998 and its letter to EPA of November 10, 1998.

CBS suggested instead that a simple gravity-based system be used on an interim basis. This system would have the virtue of being installed in a few weeks or months at low cost, and would reduce the PCB mass discharge by approximately 50%. Although it had a lower capture capacity than EPA's proposal, this system would have been effective in reducing significant amounts of PCBs and would have had the advantage of being installed one year, and now two years, earlier. Moreover, installation of CBS's proposal would have allowed for increased flexibility in designing a final treatment facility, because there would be no need to try to include expensive existing facilities in the design.

Unfortunately, EPA rejected CBS's proposal and decided to build a more elaborate interim facility. In its Action Memorandum of September 30, 1998, EPA proposed a design for a system estimated at $1.3 million in capital costs, which EPA planned to have operational during the summer or fall of 1999. Although CBS disagreed with EPA's decision, it offered to consult with EPA on the analysis of spring data it had provided to the Agency and consult with the Agency about design issues.

Neither EPA nor its contractors consulted with CBS as they developed the design. Indeed, at the only meeting that EPA scheduled with CBS to discuss water treatment (on January 26, 1999), CBS learned that EPA's contractors could not speak with CBS about design issues. Although CBS was told some additional information about EPA's design activities at that meeting, CBS was not given the details of EPA's design, and was not told that the capital cost of the design had increased from $1.3 to $6 million, or that EPA did not expect to have its system constructed until the spring of 2000. CBS only learned this information at the meeting on March 25, 1999, and only

learned the details of the technical information behind EPA's design in documents provided thereafter.

2. EPA has Abandoned the Idea of Building an Interim System and is Planning to Build a Final System Prematurely without Adequate Information

While there are many technical errors in EPA's Recent Design, most of them flow from one major conceptual error – EPA is really trying to design and build a final system now; rather than wait for information that will only be available after the treatability work is done, excavation is complete, surface water controls are in place and the hydraulic conduit study is further along. EPA's current approach of trying to design a final system prematurely contradicts the position taken by the United States before the Special Master and incorporated in the Special Master's Report. As recently as January 13, 1999, EPA's lawyer, Steven Ellis, in a letter to the Special Master, explained EPA's reasons why designing a final water treatment system should be deferred until after excavation is complete:

> If EPA were required to select at this time the permanent water treatment aspects of a remedial action for Lemon Lane and Neal's Landfill, EPA would have to select a more conservative and costly water treatment solution than what may be required after excavation is complete. For those reasons, the United States proposed that the determination of permanent water treatment solutions for Lemon Lane and Neal's Landfill be postponed until approximately one year following completion of source control measures at those sites.

Mr. Ellis further noted that the Special Master had agreed with the parties to defer permanent water treatment negotiations until excavation was complete:

> The parties then advised the Special Master of their agreement to negotiate water treatment in two phases; the Special Master agreed that the proposed process is desirable. By metaphor, the Special Master explained that there is significant advantage to "taking the cancer out of the body and letting the body stabilize" before determining what further treatment, if any, is necessary.

Yet despite its lawyer's statements to the Court just a couple of months ago, EPA is now scrapping the idea of building any type of an interim system – including

the $1.3 million proposal it had originally made – in favor of building a $6 million final system without waiting for the additional information that will become available through the treatability work, the excavation work, the implementation of surface water control measures and the hydraulic conduit study. EPA's unilateral decision to plow ahead with a final system violates the commitment made by the parties and incorporated in the Special Master's Report for the parties to negotiate about final water treatment after the excavation of the Landfill is complete. How can the parties have meaningful negotiations at that time if EPA will have already built its final treatment system?

On the issue of the dramatic four hundred percent increase in the cost of the Agency's Recent Design, your May 3, 1999 letter is far from accurate. As described above and in the attached comments, EPA's current cost estimates result from an entirely new approach and design criteria, not from refinements to what was presented to Judge Foster in open Court on August 14, 1998.

Although EPA still calls its Recent Design an "interim" system, any way one looks at the design, it is clear that what EPA now plans to build is a really a final, not an interim system:

- Schedule: EPA does not expect to have the system constructed until the spring of 2000 and operational some time thereafter, two years after it begins the design process, and one year later than it originally projected.[2] Moreover, EPA does not expect to have the system operational until after the excavation work at Lemon Lane Landfill is expected to be well underway, even though EPA asked the Court to defer the commencement of excavation work at Lemon Lane until the year 2000, because it wanted an interim system in operation before excavation began. If EPA were truly interested in having an interim system in place as soon as possible, it would have accepted CBS's offer to install a gravity-based system that could be made operational in a matter of weeks and which could have captured significant PCB mass at a cost of about $300,000.

- Location: EPA's Recent Design has predetermined the location of a final treatment system by calling for the construction of an immovable $6 million structure at Illinois Central Spring, built to last at least 20 years. Although EPA originally indicated that it was considering designing portable facilities (e.g., skid-mounted treatment systems), the Agency's Recent Design abandons that approach. Thus, EPA's Recent Design completely disregards the possibility that CBS's study of the hydraulic

[2] Although the system will be installed in the middle of the year 2000, EPA plans to evaluate it as a "final" system in the year 2001. In essence, EPA is really planning to build the so-called "interim" system over two years and then subject it to a one-year shakedown period before calling it a final system.

conduits around Lemon Lane Landfill may identify a better location for a treatment facility than at Illinois Central Spring. One of the major reasons why the parties agreed to defer negotiations over a final system was to await the results of that study so they could be used in designing a water treatment system. The study is examining whether ground water can be intercepted before it leaves the Lemon Lane Landfill. If this can be done, it may be more effective to locate a smaller treatment system closer to the landfill itself. Also, the study is looking at the relationship between Illinois Central Spring and Quarry Springs, which is located further away from the Landfill. There may be a separate conduit that bypasses Illinois Central Spring and emerges at Quarry Spring, or the two springs may be hydraulically connected so that an effort to capture water at Illinois Central Spring may have the unintended effect of diverting the water to Quarry Spring. In either case, it may be more effective to locate a final treatment system at Quarry Spring. But it may be futile to evaluate building a final system at these other locations if EPA has already built a $6 million white elephant at the wrong place.

- Capacity: EPA's Recent Design is based on a January 1997 storm event, which EPA used to construct a model of a 25 year storm event. For various reasons described in detail in the attached comments, this is a poor event to use as a design model for the system, and CBS believes that EPA's contractors made various errors in modeling that event. This mid-winter event is not typical because much of the water flow consisted of melting snow and ice. Thus, EPA's contractors have overestimated the flow of water and underestimated the loading of total suspended solids in creating a model based on this event. But, more importantly, a 25 year event is a poor model for what is supposed to be an interim system that will only be operational for two or three years. As a result of using this model, the Recent Design calls for an excessive pumping capacity – a total of seven pumps with a collective capacity of 9,500 gpm. Based on CBS's three years of continuous flow records for the spring, there was no time during which the spring flowed more than 3,000 gpm. Thus, it would not make sense to build a pumping capacity three times as great as the spring's measured maximum flow rate in a permanent system. It is even more absurd to do so in what is supposed to be an "interim" system intended to last only a few years.

- Retention Tanks: EPA's September 30, 1999 Action Memorandum called for a "2 acre feet collection basin." EPA's Recent Design calls for twice as much storage in two 2 acre foot tanks. First, there is no rationale for creating so much retention capacity in what is supposed to be an "interim" system. Second, by calling for the construction of tanks, rather than building a lined pond as originally intended,[3] EPA

[3] As described in the comments, if EPA has concerns about birds and wildlife coming into contact with a retention pond, there are other, less costly ways to address those concerns than to build massive retention tanks.

is creating two massive and costly structures. These structures would be immovable and their subsequent use would pose an economically unacceptable engineering dilemma if it were determined that a final treatment system would be better located either closer to the landfill or at Quarry Springs. Third, once the excavation work at the Landfill and CBS's hydraulic conduit study are completed, this much storage capacity may not be needed, especially if CBS is able to intercept the ground water at Lemon Lane Landfill so that only a small amount of water needs to be treated.

- Size and Useful Life of Structures: The structures called for in EPA's Recent Design are over-designed with empty space to house additional unspecified structures. Moreover, they are intended to last for at least 20 years. These are characteristics of a final system, not one of an "interim" system such as EPA claims to be building. Even the Neal's Landfill spring treatment system, which has operated for ten years, is not designed to be so massive and so permanent. These large, immovable structures are antithetical to components of a flexible interim system that can be easily moved and adapted to a subsequent system.

- Filter Press: EPA's Recent Design includes a dedicated filter press for sludge. As explained in greater detail in the enclosed comments, an "interim" system that is supposed to operate for only a few years is not likely to generate enough sludge to justify a dedicated filter press.

- Collection Sump: EPA proposes to build a concrete subsurface sump. It makes no sense to build such a structure in an "interim" system, if the final system may be located elsewhere.

- Cost: The cost of EPA's Recent Design makes clear that this is not truly an "interim" system, but a final system. EPA's September 20, 1998 Action Memorandum called for an "interim system" with an estimated capital cost of $1.3 million. The capital cost for EPA's Recent Design is four times that amount -- $6 million. Moreover, as described in CBS's comments, EPA has failed to take into consideration additional cost items that are likely to increase the cost of construction substantially above $6 million. In addition, EPA's design decisions are likely to result in unnecessarily high operating costs, such as the costs of electricity to heat and air condition an oversized building, and the additional maintenance costs of such an elaborate structure. Mr. Ellis told the Court that "[i]f EPA were required to select at this time the permanent water treatment aspects of a remedial action for Lemon Lane and Neal's Landfill, EPA would have to select a more conservative and costly water treatment solution than what may be required after excavation is complete." EPA's Recent Design is precisely the sort of "conservative and costly water treatment solution" that EPA's lawyer told the Court it was not going to select at this time. Indeed, this appears to be an example of the government designing a $100 hammer or a $400 toilet seat.

3. Other Design Errors

In addition, the enclosed comments identify and discuss a number of other errors in EPA's Recent Design. These errors relate to such aspects of the EPA design as: water intake structures, surface water diversion structures, solids removal equipment, Lamella filters, multimedia filters, bag filters, thickener tanks, and the effluent/backwash storage tank. The comments also address construction issues, operational issues, and concerns about overall costs. Rather than repeat these concerns here, we direct EPA to the technical comments.

4. Summary

CBS urges EPA to consider these comments seriously, rather than go ahead with an ill-considered design. While CBS had, and continues to have, substantial differences with EPA over its original plan for an interim system in August and September 1998, EPA now appears to have lost sight of its original goals for an interim system in embracing this Recent Design for what is really a final system. Before moving forward, the Agency should consider seriously what aspects of a treatment system are needed on an interim basis and what aspects are best left to be designed in the future when more complete information is available. It does not make sense to include costly extra features or redundant capacity in an interim system, just because you do not know now whether they will be needed. It also does not make sense to design features for unlikely worst case scenarios in a system that may only operate two or three years. Finally, EPA may want to consider whether a less ambitious system, that can be installed more quickly, is better on an interim basis than an elaborate system that will take two years to build and will not be operational before excavation begins.

CBS continues to believe that the gravity-based system it proposed in July 1998 is the best approach for an interim system because it can be made operational quickly and at low cost, thus providing the flexibilities the parties discussed when they appeared before Judge Foster in 1998. Moreover, EPA's Recent Design even abandons its earlier proposal for a portable, reusable system in favor of an inflexible oversized and permanent system. But even if EPA remains unconvinced of the merits of CBS's original proposal, it should not ignore the serious flaws in its Recent Design simply because CBS brought those errors to EPA's attention. Moreover, it is unreasonable for EPA to demand, as your letter appears to do, that CBS commit to building EPA's design before EPA will listen to CBS's comments on the errors in that design.

CBS is committed to continuing to negotiate with EPA in good faith about a resolution to water treatment issues.[4] But such negotiations are unlikely to be fruitful if instead of building any type of interim system, EPA constructs a $6 million final system, that is poorly designed, immovable, and bloated with costly and unnecessary features, before the information is available to properly design – and locate – an effective and efficient final system. Accordingly, CBS requests that EPA reconsider its decision to make commitments to build its so-called interim system without considering CBS's technical comments. CBS is prepared to sit down with EPA to further discuss these issues.

Very truly yours,

David R. Berz

cc: Dorothy M. Alke
Russell P. Cepko
Thomas Alcamo
Steven Ellis

[4] Although CBS reserves its legal arguments that it is not required under the Consent Decree to implement – or pay for – further water treatment in the event the parties are unable to reach consensus, it has committed to negotiate about these issues in good faith.

CBS CORPORATION

Technical Comments on the Environmental Protection Agency's Design for Illinois Central Spring's Water Treatment Facility

MAY 12, 1999

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Technical Comments on the
Environmental Protection Agency's Design for
Illinois Central Spring's Water Treatment Facility

Consistent with our discussions in Chicago on March 25, 1999 and subsequent correspondence regarding the Environmental Protection Agency's ("EPA" or the "Agency") most recent design for the Illinois Central Spring Water Treatment Facility, the following technical comments are submitted for the Agency's review. These comments are submitted with the understanding that CBS is not waiving any rights it may have under the 1985 Bloomington Consent Decree or any other environmental laws or regulations to challenge the need for or the cost of constructing the treatment facility in any subsequent judicial or administrative proceeding.

Summary and Conclusions:

The Environmental Protection Agency ("EPA") design basis appears to have changed substantially from the original intent outlined in the Agency's oral and written presentations/documentation of 1998. What was to be an interim facility with portable skid mounted equipment has turned into a permanent sited system. For example:

- The components of the facility are those that would be associated with a long-term service life (20 years or greater). The features of the facility (e.g., building size, exterior construction materials, conveyance structures, office space, etc.) and the quality/type of process equipment (permanently mounted vs. skid mounted, inclusion of dewatering equipment, etc.) substantially exceed what we would consider an interim (1-5 year) facility.

- Earth Tech's design basis to capture a 25 year, 6 hour storm event is inconsistent with the original design intent (to capture a minimum 80 percent of the PCB annualized mass loading, which CBS had calculated to be a 1,000 gpm treatment plant with no storage). The current design includes 4 acre-ft of storage which is not required by the original design intent. This feature has a significant cost. By Earth Tech's own estimate construction costs would exceed $500,000. Moreover, by using tanks, rather than a basin for storage, EPA is unnecessarily creating a need for additional pumping capacity.

- Oversizing of process equipment has resulted in additional expense for equipment and building space that will have low utilization.

- The current system design includes a high degree of redundancy of pumps and process equipment the purpose of which may be to minimize "down-time" associated with equipment failure and maintenance activities. The need for redundancy may be reduced if acceptable periods of system "down-time" are established with the parties to address equipment malfunctions and routine maintenance. If the original 2 acre foot storage basin was maintained in this new design, then since the flow is at or below 250 gpm, the majority (over 80%) of the hours in a year, most repairs and maintenance could be done with no bypass of flow and thus without this redundancy.

- The facility site is being outfitted for a full suite of utilities including gas, sanitary sewer, potable water, electric, phone, and paved access roads/parking lots. By comparison CBS has built and operated a similar plant at Neal's landfill for the last 10 years with the only utilities added being electric power and a telephone line.

Although the design basis has changed substantially, and the system cost has risen drastically, there is no data to support the proposition that the design will be successful in moderate to high flow conditions. Based on CBS's knowledge of the springs in Bloomington, the Company has substantial concerns that the current design could meet the stated goals during a 25 year storm event. Even in more typical storm conditions, CBS is concerned about the ability of the solids filtering equipment.

The original intent of an interim system was to provide for significant treatment so that the following issues could be more fully understood before designing and building a final system:

- The impact of remediation at the landfill on spring water quality would include both PCB removal and surface water controls. Both EPA and CBS felt that in combination, these remedial actions would have positive impacts on spring water and reduce the government parties perceived requirement for long term water treatment.

- The ability and impact of finding the contaminated pathways between the site and the spring: CBS is attempting to find the karst conduits which carry PCBs from beneath the landfill to the IC Spring. Finding these pathways should allow for the ability to either intercept the contaminated waters in a more highly concentrated form closer to the landfill or to route uncontaminated water around subsurface source areas.

- More complete characterization of spring waters during low and high flow periods: There are significant data gaps concerning water quality

during storms that could have substantial impacts on treatment plant designs. Data such as the particle loading and particle size distributions during different periods of a storm hydrograph are not understood.

- The relationship between PCBs discharged at IC Spring and PCB fish advisories downstream. The stated EPA goals have been to reduce PCB fish advisories in Clear Creek and beyond. The relationship between PCBs released at IC Spring and fish advisories miles downstream has not been established.

- The best location for any final plant should be determined before investing substantial site development cost.

- The treatment goals and effluent standards must be more fully developed, including the shutdown criteria for the facility.

- The trade-offs between treatment capacity and storage could be fully optimized based on post remedial relationships between PCB and flow.

These issues received substantial discussion in mid-1998. The parties acknowledged that they could not be resolved at that time and so an interim system would be put in place quickly. Ultimately, these issues will be resolved. Unfortunately, EPA's proposed facility may prove to be the wrong size, the wrong design, and at the wrong location.

Prematurely sinking over 6 million dollars into EPA's proposed design is unwarranted. Additionally, the operation of this facility would require an estimated $15,000,000 to be spent over the next 30 years. This works out to over $100,000 per pound of PCBs captured. This is an unreasonable sum of money, particularly in the absence of any risk assessment to determine the need for the facility. Given what is now proposed, once this "interim" facility is in place, there will be no room to negotiate final system parameters based on a realistic assessment of what is necessary.

Specific Design Comments:

1. Design Basis.

a. EPA Stated Design Basis

EPA's original design basis was outlined in its August 14, 1998 presentation to Judge Foster and the September 30 ,1998 Action Memorandum, which included the following:

- Minimum 80% annual capture of PCBs using 1000 gpm system with 2 acre feet of storage utilizing a basin for storage.
- Filtration based on a settling basin and backwashable cartridge type filters with 40 micron apertures.
- 3 large pumps (with one standby pump).
- Flexible design with an eye toward maximum reuse of components in the final system even if the final system were located elsewhere (skid mounted modular type subsystems).
- Bypass of system during extreme conditions allowed.
- Discharge criteria for PCBs awaiting the outcome of a low and high flow treatability study.

The system outlined above was estimated to cost approximately $1,303,000 and was to be constructed beginning in spring 1999 and be operational by fall 1999. In a 1/26/99 meeting with the EPA and its designer (Earth Tech), CBS learned that the design basis had changed somewhat and now included:

- 1000 gpm system with 4 acre feet of storage. Storage would be in tanks.
- Total plant automation such that the system could be operated from an internet site anywhere in the world.
- Consideration of a 25 year 6 hour storm event as the design storm basis with the ability to handle 70% of the solids emitted at the spring during the storm. The 25 year storm was modeled after a January 1997 storm measured at the spring using an assumption of linear extrapolation for both flows and TSS loading.
- Multiple filtration units including a set of non-backwashable bag filters with very small filter apertures (1 or possibly 3 micron).

The basic system design was presented at the January 25, 1999 meeting. No mention was made that the cost estimate for the system had changed. EPA also stated that to meet the original schedule, the design was set and that equipment orders would be placed as soon as possible. The EPA acknowledged that it has not completed a treatability study at the high flow condition and would forge ahead with equipment procurement even though the Agency did not have the necessary data for proper design for the high flow condition. CBS expressed several concerns at this meeting including

that it had not been consulted by the designers about the flow history and interpretation of design storms even though CBS had vastly greater experience in monitoring and evaluating the ground water at the springs. The designers answered that they were directed not to talk to CBS because of a "gag" order. No written material was provided at the meeting.

CBS again met with the EPA on 3/26/99 to review the system design cost and schedule. At this meeting, CBS was given a copy of the facility drawings for the first time. In this meeting CBS also learned that the estimated cost for the system was now more than $5,000,000 and that it would be very difficult for EPA to complete construction of the system until spring of the year 2000. Additionally, several changes to the original design basis became apparent including:

- The system would now not operate automatically or remotely.
- There was maximum redundancy built into the system including backup pumps and an emergency diesel generator.
- The results of the low flow treatability tests apparently showed that the system could reliably meet a non-detectable PCB standard.

At this meeting, CBS was asked to review the design of the system. CBS agreed and requested copies of several design documents including drawings, specifications, cost estimates, design assumptions, schedules, and 25 year event calculations.

b. CBS Review of Design Basis

(i) A 25 Year Event is a Poor Basis for Designing An Interim System

For an "interim system" it is not clear why one would choose a 25 year event as a design storm. CBS recommends a one year event as the proper design event for a system that will only operate for a few years before upgrades are considered. A one year event could be similarly modeled. Table 6 shows the modeled CBS hydrograph and chemographs for a one year event and comparison data from the April 1998 event. Since actual data on TSS and PCBs is available for the April 1998 event and this event is close in magnitude to the one year event, CBS would urge EPA to use the flows, TSS and PCBs from the April 1998 event as the design event. Note that the average TSS during the most intense period for the April 1998 event is about 100 ppm.

Obviously, the choice of design basis events has a major impact on both the design and cost of the interim system. Based on CBS's models and sampling data, the Earth Tech design basis 25 year event has overestimated flows, and underestimated

TSS loading. This combination would lead one to oversize the hydraulic capacity (such as pumps needed to place water in storage) and underdesign filtering capacity. This combination, which can lead to an expensive plant, may not work under actual storm conditions if they ever materialized. Fortunately, a 25 year event is very rare. The system may see one over its design life. CBS estimates for TSS loading for a one year event is well within the loading capability of the solids filtering units Earth Tech has designed.

However, even at a lower storm loading, it is not clear that the Earth Tech solids filtering equipment will perform adequately because CBS is not aware what Earth Tech used for particle size assumptions during high or low flows. This data is critical to proper design of the filtration equipment. Even if the gross TSS storm loading is within design limits, if the filtering equipment is not designed for the proper particle size distribution, the filtering equipment may fail to protect the carbon (causing a higher effluent PCB level or lower system flow) or develop high differential pressures (lowering system flows) or require multiple bag changes during storm events. CBS recommends that data concerning the particle size distribution at least during major storm events be collected before completing this design.

CBS has no information on what assumptions Earth Tech made concerning more traditional water chemical parameters such as pH and hardness. Plating out of calcium deposits impact design specifications. It is not clear how this has been considered in the Agency's design.

(ii) Design Hydrograph

Earth Tech has constructed a design hydrograph by multiplying flow values recorded at the Illinois Central weir from 1/22/97 0:00 hours to 1/23/97 12:00 hours (the January 1997 storm) by 2.96. This is a storm event in response to a 0.82 inch rainfall. The 2.96 linear multiplier is reportedly derived from scaling the rain event to the 25 year / 6 hour storm probability. The rainfall, however, occurred while there was at least 6 inches of hard-packed snow and ice in the watershed. The failure to take into account the antecedent conditions in the watershed causes the storm to be over-designed because, in effect, the 0.82" rain is credited with producing more runoff than the rainfall itself actually did. The "unit" of rain calculated to produce the "unit volume" of runoff would be over-predicted because the snow and ice melt was a significant component of the runoff. A rainstorm with significant snow and ice melt is a poor choice of storms on which to construct a unit hydrograph.

The concept of using recorded spring discharge data during a storm as a unit hydrograph, though, is a valid one. *Dimensionless hydrographs developed by the* Soil Conservation Service with which to construct a unit hydrograph are based on surface watershed runoff empirical data which obviously can not take into account the runoff passing through the cavernous conduit system. Since CBS has collected an abundance of

storm flow data at the spring, an examination of that data should produce the best hydrograph to use. These data are discussed below.

Figures 1 through 4 show the normalized flow hydrographs from the time of peak flow to 50 hours after peak flow for Illinois Central Spring storms with peak flows greater than 1000 gpm (surface runoff excluded) that were recorded between January and June for 1995, 1996, 1997, 1998, and through February of 1999. Table 1 shows the peak flow (surface runoff excluded) for those storms. Inspection of these figures shows that most of the large wet-weather storms at IC Spring have similar-shaped recession hydrographs with 25% to 50% of the peak flow having receded by 50 hours from the time of the peak. The notable exceptions to the general trend are the 1996 storms and the January 1997 storm. Those storms show only 88% to 91% of flow having receded by 50 hours from peak flow. This establishes that using the 1996 water year as a design year is a very conservative assumption. It also shows that using the January 1997 storm is overly conservative, and tends toward over-design.

Table 2 illustrates the rain and flow data for the 17 storms which CBS has monitored for PCBs. The largest storm for which reliable flow data exist is the 4/15/98 (April 1998) storm. This would be the best storm to use as a basis for design.

(iii) Determination of Rainfall Distribution for 25 year/6 hour Storm Event

Table 3 shows the dimensionless distribution of rainfall for the SCS Type B storm, which is applicable in Central Indiana (from: "Rainfall Frequency for Indiana," Indiana Department of Natural Resources, Division of Water, September 1994). Multiplying by a total time of 6 hours and a total rain of 3.7" yields the distribution of the 25 year / 6 hour rainfall, which is also shown in Table 2.

(iv) Determination of Peak Flow at IC Spring for the 25 year/6 hour Event

Based on the analysis done by CBS and reported in "An Evaluation of the Relationship of Rainfall and Peak Storm Flows at Illinois Central Spring" (January 1998), peak flow at IC Spring can be estimated from the following equation:

Peak Flow = (541.609)(total rain)+(648.903)(maximum-3 hour)+(1.086)(pre-flow)+(350.124)(season)-507.502

For the 25 year/6 hour event, the total rain would be 3.7", and from Table 2 the maximum 3-hour intensity would be 2.79" (between 1.32 and 4.32 hours). The season variable would be 1 for wet season. Using a pre-storm flow of 471 gpm, the calculated peak flow for IC spring for the 25 year/6 hour event would be 4169 gpm.

(v) Generation of 25 year/6 hour Storm Hydrograph

Table 4 shows how to generate the 25 year/6 hour design hydrograph from the April 1998 storm flow data. The first column shows the recorded flow at the IC weir. The second column corrects that flow for surface water inflow, which is to be diverted. It should be noted that the Earth Tech storm did not correct for surface water inflow, again another factor that leads to over-design. Dividing all flows by the peak flow of 2638 gpm yields the dimensionless hydrograph in the third column. Multiplying the dimensionless column by the calculated peak flow of 4169 gpm gives the hydrograph for the 25 year/6 hour event.

(vi) Comparison to Earth Tech Design Storm

Table 4 also shows the Earth Tech storm, the CBS storm cumulative flow, and the Earth Tech cumulative flow. It is apparent the Earth Tech storm is over-designed. Peak flow for the Earth Tech storm is 5403 gpm versus 4169 gpm for the CBS storm. Where the Earth Tech storm had passed 7.5 million gallons of cumulative flow the CBS storm had passed 5.6 million gallons.

(vii) Chemographs for the Design Event:

To produce an estimated 25 year 6 hour storm chemograph for PCBs and TSS, Earth Tech took the chemographs for the January 1997 storm event and multiplied them by a factor of 2.96. It is not clear what the justification for this method of estimation is. CBS used the following procedure for estimating the chemographs:

- The April 15, 1998 storm event chemographs for PCB and TSS were unitized by dividing all hourly readings by the maximum reading for the event.

- A correlation between storm peak spring flow and PCB/TSS peak concentrations during storms was developed. The data utilized for these correlations was from 5 storm events where adequate data was available. Figures 5 and 6 show the data and correlations. A power function relationship was chosen as the most reasonable relationship because it gave the best fit correlation coefficient for the data and makes the most sense from a physical phenomenon standpoint. For example, the power of water, and thus it's scouring or flushing potential, changes with the flow by a power function.

- The unitized PCB and TSS values from the April 1998 event were then multiplied by the maximum PCB and TSS values obtained by the correlation between peak flow and peak TSS/PCBs. The peak

flow used in the correlation is the predicted peak flow for the 25 year event or 4169 gpm.

The CBS estimates for PCB and TSS concentrations during a 25 year 6 hour event are much higher than those predicted by Earth Tech (a side by side comparison is shown on Table 5) . The reasons for this are that even though Earth Tech has predicted a high peak flow for the event, their linear scaling of the TSS and PCB concentrations from the January 1997 storm event is not based on any review of all the TSS and PCB data for other storms CBS has monitored. CBS believes that a power relationship exists between peak storm flow and peak TSS and PCB concentrations based on CBS's review of all relevant storm data. Of particular concern is the much higher TSS loading predicted by the CBS estimate. If EPA believes that a 25 year event is a proper design basis, then CBS would question the adequacy of the solids filtration equipment in the current design. While Earth Tech has estimated a 12 hour average TSS loading of 266 ppm for their 25 year event, the CBS estimate is about twice that (566 ppm).

(viii) Water Year Performance:

CBS used correlations between flow and PCBs/TSS to estimate the hourly discharge of PCBs and TSS for the years 1996-1998. CBS has reviewed the performance of the proposed Earth Tech system against this data. Table 7 summarizes the pertinent data. Note that the current Earth Tech system achieves PCB removal rates of 87 to 100% depending on the water year examined. This is better than the original intent of at least 80% PCB capture, but the costs have risen dramatically. This type of data was not considered by Earth Tech in its design but is important to determine overall system utilization rates and system requirements. For example, the yearly amounts of TSS loading to the facility vary greatly. The TSS loading for 1997 was a fraction of that estimated for 1996 and 1998. Because Earth Tech used a 25 year event to size the sludge concentrating systems (thickeners and filter press), these systems may be oversized for the typical yearly TSS loading in even a high flow year such as 1996.

2. Specific Comments On Process Systems

a. Facility Location

The Earth Tech design situates the facility in the railroad wye just downstream from the main Illinois Central emergence. The collection points are at the main emergence. CBS has the following concerns about investing any significant funds at this site for the permanent facility proposed by the Agency:

- This location is upstream of what may be the underflow spring for this basin (Quarry Spring). Therefore any collection system may be susceptible to future undermining/flow robbing by the

underflow system. Any underflow would not be captured or treated by the proposed system. The parties have already observed this phenomenon at the Neal's Landfill site between South Spring and North Spring. Years ago, when the spring treatment facility was designed at Neal's Landfill, South Spring was the dominant low flow spring. Now it appears that North Spring flows more at low flows and it also appears that the storm flows at North Spring have increased.

- Several factors indicate to us that this may happen between Quarry and Illinois Central Springs. For example, in preparing an estimated water balance for the Illinois Central Spring it is difficult to account for all the rain that falls on the basin. While there are several potential explanations for this, one is that the Quarry Springs system is robbing flow from Illinois Central. Additionally, in performing the karst conduit study, CBS has noticed that there is significant solution activity in a bedding plane at the 795 to 800 feet amsl horizon and that this horizon is the major water producing level between the landfill and IC Spring. We suspect that the main conduit feeding the springs is at this level. The elevation of Illinois Central Springs is 815.5 amsl, but the elevation of Quarry Spring A is 797 amsl, and Quarry B is 792 amsl. Figure 7 illustrates the potential connection between Quarry and IC Springs.

- Discharging cleaned water upstream of the Swallow Hole will continue to allow water to flush trapped sediments from the conduit between the Swallow Hole and Quarry Springs. These sediments are assumed to be contaminated and would not be captured by the proposed EPA system. Therefore, water cleaned by the facility may be recontaminated as it descends into the Swallow Hole subsurface area. How long it would take to cleanse these sediments from the subsurface is unknown.

- The Swallow Hole area is a natural in line retention/equalization basin. Placing the facility upstream of this neglects the potential cost savings of using and/or enhancing this feature. An appropriate design can address any concerns about the Swallow Hole being located in karst terrain.

b. Water Intake Structures

Earth Tech plans to construct two new culverts under the tracks south of the spring. One will be for contaminated spring water and the other for clean surface

water. The existing culvert at the emergence will remain. The design drawings do not show in what condition this old culvert will remain. For example, we assume the old culvert will be blocked in some manner. However, this old culvert is most likely undercut by years of drainage. It would not be surprising if some flow under this old culvert would persist.

The Earth Tech design shows little detail about the water collection system near the spring emergence. The new culvert appears to be located closer to the spring emergence and 6 inches lower than the current culvert. However, at higher flows there are multiple springs flowing from a larger area. Some of these high flow springs do not enter the current stream channel until right before the existing culvert. These flows will tend to want to bypass the new culvert and find some leakage path under the existing culvert. We recommend using the existing culvert for spring water rather than using two new culverts. Not only will this lower construction costs, but it will also solve the problem of water undercutting into the existing stream channel. We would also recommend collecting the spring water on the downstream side of the tracks at the existing stream channel. This would allow all overflows to be collected efficiently.

c. Surface Water Diversion Structures

The Earth Tech design collects the surface water from the spring area separately and routes this water to an area downstream of the current weir and upstream of the Swallow Hole. While there is a provision for a 70 foot diversion wall north of the spring, the wall does not account for any flow from the western wall of the surface valley. There are a number of small sink holes that have appeared over the last few years in the west wall of the valley due to soil piping at high flows. These sinkholes continue to enlarge and may at some point allow groundwater to enter the valley from the area north of the spring. CBS would also recommend that any clean surface water be routed to downstream of the Swallow Hole to prevent contamination in the subsurface downstream of the Swallow Hole.

d. Collection Sump

For an interim system that may not be the final system location, we would recommend that a much less expensive method of sumping flow for the system feed pumps should be evaluated. For example, it should be possible to use the stream channel between the railroad tracks and the existing weir as the collection basin by widening, deepening and lining it. This would avoid more expensive bedrock excavation below the water table which the Earth Tech design requires.

If the current subsurface concrete tank is built, CBS recommends that it be designed for construction in a water saturated zone. Even though the geotechnical borings performed by Earth Tech did not indicate groundwater at the depth drilled at the sump location, the sump will be constructed at an elevation lower than the depth explored

and the bottom of the sump will be substantially below the elevation of the creek bed. In karst, there may not be a general area of saturation at any location, but once you are below a source of water and have excavated into highly fractured and solutioned rock, water will tend to find the sump. CBS would expect this sump to be regularly subject to buoyant forces particularly during high flow periods, if not always.

e. Pumps

The current Earth Tech design has 7 pumps in the collection sump. This includes 3 - 2500 gpm pumps, 2-300 gpm pumps and 2-700 gpm pumps. The larger pumps are meant to operate only during periods when spring flow exceeds 1000 gpm. Based on CBS's continuous flow records for three seasons, there was no time when the spring flowed more than 3000 gpm. It seems obvious that this is an area where the system requirements could be met with much less equipment. For example, one 2500 gpm pump could be supplied along with one 300 and one 700 gpm unit. The ability to back up pumping capability of the smaller pumps with the larger ones could be achieved with valving and logic rather then total redundancy. Reducing the number of pumps will not only save in capital costs, but pumping also drives power requirements for the site and substantial energy costs savings would result from fewer pumps.

f. Retention Tanks

The Earth Tech design uses two 2 acre foot tanks for retention storage. These tanks will be visible and costly. The construction of these tanks will also lock in the current site as the long term facility location since it will not be economical to move these once constructed in place. CBS views a pond as a much more efficient design for water retention. A lined retention pond (using an impermeable membrane) is a very typical design for water retention features in karst areas. The Swallow Hole is a natural pond area that now ponds during storms. This area could be easily and more economically enhanced to serve as a pond by excavating and lining. CBS has estimated that more than 4 acre feet of storage could be installed at this area for less than $150,000. This contrasts with the $500,000 that the Earth Tech design includes for 4 acre feet of storage in tanks. Any other issues with ponds rather than tanks such as ecological concerns could be satisfied by minimizing the size and covering the permanent pool section.

g. Solids Removal Equipment

To review the solids removal equipment design, it is best to have actual data on the particle size distribution of matter suspended in the water during both low and high flow. This data does not exist or at least has not been provided. CBS is aware that Earth Tech took a large volume of water from the spring last fall under low flow conditions. The water was sent to US Filter and some treatability work was performed. CBS has not seen any formal data from this effort. CBS is also aware that Earth Tech is

attempting to obtain a high flow sample from the spring. This water will also be sent to US Filter for bench scale testing. CBS highly recommends that this testing include a particle size characterization.

CBS has also expressed concern in the past that shipping large volumes of water to an out of state vendor for analysis and bench scale testing may not be representative of actual conditions for two reasons: First, taking a large volume sample over several hours during an event will provide only a composite for the event. This composite may mask or miss the actual extremes of TSS loading and other chemical variables during the event. Second, given the time between sample collection and analysis, natural coagulation can occur and shift the apparent particle distribution. The best approach is to test the particle distribution and loading during storm events at the site with periodic small volume grabs taken across the hydrograph.

What is the most appropriate design basis storm event is central to sizing solids removal equipment. In the absence of proper particle size information from Earth Tech, CBS can comment on the solids removal equipment based on our experience at Neal's Landfill, some limited data from Neal's Landfill, our experience in sampling Illinois Central Spring, and appropriate literature. In 1994, CBS collected several samples of treatment plant influent at Neal's Landfill and sent the samples to a lab for particle size distribution. Two typical distributions are shown in figures 8 and 9. Note that at low flow, the particle size distribution was centered at about 5 microns and at higher flow, the distribution was centered at 9 microns. While it is not known whether these samples are representative for actual spring conditions at Illinois Central (the samples were taken downstream of the settling basin, actual flow rates are unknown, and the samples did sit for days prior to lab analysis), based on our experience, in taking thousands of samples between both sites, we do expect these springs' TSS loading and distributions to be similar.

(i) Lamella Filters

The surface area given in the specifications for the settler is 2,910 ft^2. At the design flow rate of 1,000 gpm, the surface overflow rate (SOR) is about 500 gpd/ ft^2. Assuming that the solids content of the spring water is similar to turbid river water, the recommended SOR for settling turbid river water (WITH the addition of coagulant & flocculent) is typically 400 to 800 gpd/ft^2. The 500 gpd/ft^2 seems very high for a system without coagulation and flocculation. If a coagulant were used, the SOR would seem reasonable considering the water source. The average solids loading rate based on Earth Tech assumptions would be approximately 1.1 lb/day/ft^2 with a maximum of about 12.6 lb/day/ft^2. This is within typical design ranges.

We believe tests should be conducted to determine the effectiveness of settling without the addition of coagulant. The mass balance diagram shows a TSS

removal of 81.6% through the settler. The potential presence of silts (5 - 75 mm) and clays (1-5 mm) in the water will most likely require coagulation and flocculation or a substantially larger settling area to achieve this removal percentage.

Without coagulant, we do not think the SOR is likely sufficient to achieve the assumed removal of 81.6%. Additionally, if the solids loading rate for the 25 year event is much greater as predicted by CBS, then even at the assumed removal rates, TSS loading to the multimedia filter will be much higher than assumed and all downstream components may be overloaded during a 25 year event.

For the CBS predicted 1 year event, TSS loading will be much less than the EPA design loading. However, the removal efficiencies may or may not be sufficient (because of particle distributions) to achieve acceptable system performance. Consequently, solids loading to the multi-media filters and bag filters could be substantially greater than estimated resulting in unacceptably frequent backwashing and bag change-out. If settling tests show the SOR to be too high, we recommend the clarifier size and/or coagulant testing be evaluated.

(ii) Multimedia Filters

The technical specifications state the following requirements for the multimedia filters:

- Solids loading rate of 4 lb/ft^2
- 90-95% removal of particles greater than 20 mm
- Design flow rate of 1,200 gpm
- Design influent TSS concentration of 50 mg/L.

Using these assumptions, we calculate that the necessary active surface area of the filters would be 180 ft^2. This results in a hydraulic loading rate of 6.6 gpm/ft^2, which appears high for the anticipated influent TSS concentration. At this solids loading rate, CBS would expect typical hydraulic rates to range from 2-6 gpm/ft^2, so the proposed specification is on the high end of the range.

The solids loading rate of 4.0 lb/ft^2 is also high. A typical solids loading rate is around 1.5 to 2.0 lb/ft^2. The lower the solids loading rate, the longer the filter run. It appears that these units are undersized for projected flows and TSS loading assumptions. The problem is further exacerbated if the TSS concentrations are greater than 50 mg/L, which is likely to occur without the use of clarifier settling aids during storm events.

CBS estimates that each filter should be about 150 ft^2, assuming a hydraulic loading rate of 4 gpm/ft^2 and one unit out of service for backwashing. At the design solids loading rate, it is possible that the filters will each require an unacceptable number of backwashes per day during storm events. Again, for proper sizing of these units, settling tests should be performed to support the assumption of 50 mg/L TSS loading during a storm event.

Under the current design, the process flow being treated would be the same for a 1 year storm or a 25 year storm (1,000 gpm). However, based on CBS data, the 1 year storm would be expected to have a peak TSS concentration of about 25% of a 25 year storm (240 vs. 1,000 mg/L). Therefore, it is conceivable that the TSS loading from the clarifier could be less than 50 mg/L (particularly if settling aids are used). In this case, the sizing of these units could be reduced. EPA's current assumption should also be supported by settling tests.

Finally, the technical specification does not contain a requirement for designing the system with one filter out of service (in backwash mode). The design should specify the minimum filter surface area required being on-line at all times. In the current design it appears that each filter is backwashed in turn with filtered effluent from the other two filters. Since the backwash water goes to the sludge thickener tanks and is then recycled to the filter feed tank, this will effectively cut the flow through capacity of the plant during the backwash cycle. This will be the case especially in times of high solids loading during storms if the clarifier is not sized properly for the TSS load or particle distribution.

(iii) Bag Filters

The design contains two bag filter housings; each rated for 1,200 gpm. This provides the ability to remove the bags from one filter housing while still having the capability to pass 1,200 gpm. This may not be the most cost-effective method for meeting the necessary performance criteria. For sizing of this equipment as well, settling tests and particle size analysis in representative spring water are necessary. If the particle size distribution is comprised mostly of 20 microns or greater, the pressure filter will perform sufficiently well under most circumstances (non-storm) to not require the use of the bag filter before the GAC units.

There may be times, particularly at the beginning of storm events when the TSS concentration is high, that will require the use of the bag filter. Typically, the influent to the GAC unit should have a TSS concentration less than 5 mg/L. As noted above, the settler will not be able to reduce the high solids concentration to the filter sufficiently during storm events without settling aids. The high influent TSS concentration to the pressure filters and the potential presence of fine suspended solids such as silts and clays will likely reduce their performance sufficiently to exceed an effluent of 5 mg/L. The bag filter will be required to drop the TSS to below 5 mg/L

which may require unacceptably high bag change-out during storm events. Particle size analysis is critical to this assessment.

Moreover, the specifications for the bags appear incomplete. For example, there is no micron rating specified for the bags and there is no mention of whether the bags are nominal or absolute. This information needs to be specified. CBS expects the bag rating would be about 2 microns to protect the GAC units. This is a small micron size and the bags would load quickly if there were a significant quantity of solids below the 20 micron size in the water stream. High loads of small particles will quickly cause high pressure drops across bag filters. This may cause the bag life to be very short.

For the Agency's proposed system, the bag filters are manually changed out. Therefore, an operator would likely need to be present during storm events to switch online banks and change bags. In lieu of this operator requirement, automatic backwash filters could be considered. This would reduce the potential for reduction of flow through the system as a result of headloss in the bag filters during storm events. This would also have the potential to reduce the operator contact with PCB laden solids.

h. Granulated Activated Carbon System

It has not been established what the phase association of the PCBs are during different flow regimes. Our expectation is that at low flows, much of the PCB load is dissolved. However, during high flows much of the PCBs may be sorbed on suspended sediments or colloids. The small suspended material will pass through the carbon beds and cause higher levels of PCBs to be discharged. Our experience at Neal's Landfill is that during storm events PCBs rise in the plant effluent above detectable levels. Again, without particle size distribution data across a large storm hydrograph the effectiveness of the filtering and sorption systems to remove PCBs is not readily predictable.

The planned bench tests to be performed by EPA will help evaluate these issues, but again, CBS is concerned with the representativeness of large composite samples that have sat for long periods of time.

i. Filter Press

The estimated annual sludge production given for 1996 was 9.2 tons of dry solids. If the filter press produces a 30% cake, this is equal to 33 wet tons of sludge per year. Assuming a typical cake density of 75 lb/ft^3, this will result in 818 ft^3 of wet sludge a year. Given that the filter press is a 50 ft^3 unit, this will require only 16 runs of the filter press annually. Each run is expected to take about 4-6 hours to complete.

The total mass of dry solids estimated for the 1 year event is 1.05 tons. Assuming the same values as above, this would be equal to 93 ft^3 of sludge cake. This would require two runs of the filter press, which should be completed in 1 day.

The total mass of dry solids estimated for the 25 year event, as estimated using the CBS hydrograph and TSS chemograph, is 6.4 tons. Assuming the same values as above, and that all of it is captured and treated, this would be equal to 569 ft^3 of sludge cake. This would require about eleven runs of the filter press to dewater the sludge, which would be completed in about 6 days assuming two filter press runs per day.

In summary, looking at dewatering on an annual basis, a 1 year storm, or a 25 year storm, a filter press of this size would have a very low utilization rate. Based on these sludge production numbers and the frequency of the 25 year event, the filter press appears oversized. A smaller unit with a capacity of 25 ft^3 or less would be more than adequate.

As an alternative to providing a dedicated filter press, the sludge could potentially be stored in storage/thickening tanks. On an annual or semi-annual basis, the sludge could be dewatered and hauled off-site by a contract dewatering firm. The estimated storage capacity for the year's worth of sludge (approximately 10 tons based on the 1996 data) would be about 80,000 gallons, assuming that the sludge thickens to about 3%. Earth Tech's current thickener capacity is about 46,000 gallons. Elimination of the dewatering equipment would result in minimum capital equipment and installation cost savings of $100,000 not including O&M, building space, electrical, piping, and other appurtenances.

j. Thickener

There is no need for a second thickener tank. Redundancy is unnecessary because there are essentially no moving parts in the unit that would require frequent service. One thickener tank would minimize building space and tank cost. The solids loading rate for this unit would typically be about 10 lb/day/ft^2.

Based on the 1 year event, which has an hourly maximum sludge loading of 5,450 lb/day, this would require a tank with a surface area of 545 ft^2 (about 26 ft. diameter). The total sludge storage capacity of the tank should be sufficient for the 25 year event. The total sludge estimated for the event, based on the CBS hydrograph and TSS chemograph, is approximately 6.4 tons. Assuming a thickened sludge concentration of 3%, this would require 51,100 gallons of storage.

Based on a surface area of 545 ft^2, a sludge volume requirement of 51,100 gallons, a bottom slope of 45 degrees, and a clear water depth of 3 ft., the thickener

would have a diameter of 26 ft and a total depth of approximately 24 ft. The GAC units currently shown in the design have a height of about 22 ft.

Also, the thickener aid is shown as discharging directly to the thickener on the P&ID. We recommend this be introduced and sufficiently mixed with the sludge before going to the thickener as this typically promotes better coagulation and flocculation. An in-line static mixer could potentially be used for this.

CBS is also concerned that it is assumed that the water effluent from the thickener tanks has 0 TSS loading. During a storm with a high influent TSS load, backwash water from the multimedia filters and/or carbon vessels may contain significant TSS load. If the thickener is not effective in reducing this TSS to near zero, these solids may build up and eventually put the multimedia filters in continuous backwash or load up the bag filters.

3. **Overall System Cost**

In September 1998, EPA and Tetra Tech estimated the capital costs of an interim system to be about $1.3 million. The project now appears to be in excess of $6 million. Based on the partial cost estimate provided by Earth Tech, the design basis and philosophy has significantly changed and accounts for the majority of the disparity. Specifically, the following design basis changes are most responsible for the cost increases:

- The decision to use a 25 year event for specifying the pumping capacity and solids filtering/sludge processing equipment.
- The decision to make this site a permanent facility with regard to utilities, site access, design life of building/associated facilities and receiving sump.
- The decision to have 4 acre feet of storage in tanks.
- The decision to design for emergency power backup and redundant pumping capacity.
- The decision to oversize the building and process piping for future expansion.

In addition, there are a significant number of line items that are not included in the current cost estimate that will drive the total project capital cost much higher than the information provided. Specific comments are provided below.

- Several additional costs would also be necessary to complete this project, according to EPA's Recent Design. Some of those

additional costs are itemized in the list of exclusions as noted by Earth Tech on the estimate including design, engineering support, construction management, inspection, accounting, leases, temporary utilities, waste removal, survey, QA/QC testing, temporary sanitary facilities, contingencies. Other additional costs would include a contingency for potential change orders and costs for the agencies (EPA/IDEM) having the work done (management, travel, administrative, legal, etc). The major items not included can typically represent the following percentage of total project cost:

- Design — 10 to 15 percent
- Engineering support and construction management — 8 to 10 percent
- Contingency for change orders — 5 to 10 percent
- Agency involvement costs (e.g., management, administrative, legal, etc.) - 20 percent

Therefore, the total capital cost of the project would be expected to be substantially in excess of $6 million dollars.

- The electrical costs for both the receiving pump station and the treatment building seem high at around 19% of the facility total. We would expect it to be about 10-12%.
- The instrumentation and control (I&C) cost for the receiving pump station seems high at about 14% of the facility total. We would expect it to be about 5%.
- The metal building cost for the treatment facility seems high. It appears that there may be some duplication of costs. For example, the siding, the exterior hollow metal, overhead doors, louvers, roofing, soffit, trim and insulation are priced separately [see items 074602 (pg. 17), 081001 (pg. 17), 131212 (pg. 19), 131212 (pg. 27)]. These items are typically included in the quote from the building vendor. Perhaps Earth Tech did not specifically request the quotation to include these things.
- Based on prior experience, the treatment building total cost for concrete at $520 per cubic yard is high. From our recent project experience, the cost has been $300 to $400 per cubic yard.

- Based on our experience, the cost for the storage tanks is high at $.46 per gallon for this size tank. In our experience, we would expect these costs to be about $.35 per gallon.

- There appears to be an error in the sales tax calculation on the subcontract cost. Five percent of the subcontract cost ($1,543,712) is $77,136, not $23,011, a underestimate of about $54,000.

The Earth Tech estimate is limited to capital costs. Life cycle costs to operate and maintain this facility are not included but would comprise a major portion of the total project cost over the long-term. For example, it is not unreasonable to expect that the operating and maintenance cost for this facility could run $300,000 per year. Over a 30 year time period this is $9,000,000. Added to the capital cost of over $6,000,000 this is over $15,000,000 for 30 years. Over this same 30 year period the estimated PCB discharges would be 140 lbs (10 times the 3 year total shown on Table 7). This works out to over $100,000 per pound of PCB captured.

Moreover, it is not known how long the treatment facility may have to operate. There has been no discussion with the Consent Decree parties on criteria to shut down the facility and there is not enough information at this time to understand how the groundwater contamination will change with time after all remedial efforts have been completed.

In summary, a system based on reasonable interim objectives of treatment that approximates the original August 1998 EPA interim treatment goals could be built for much less than this facility.

4. Schedule

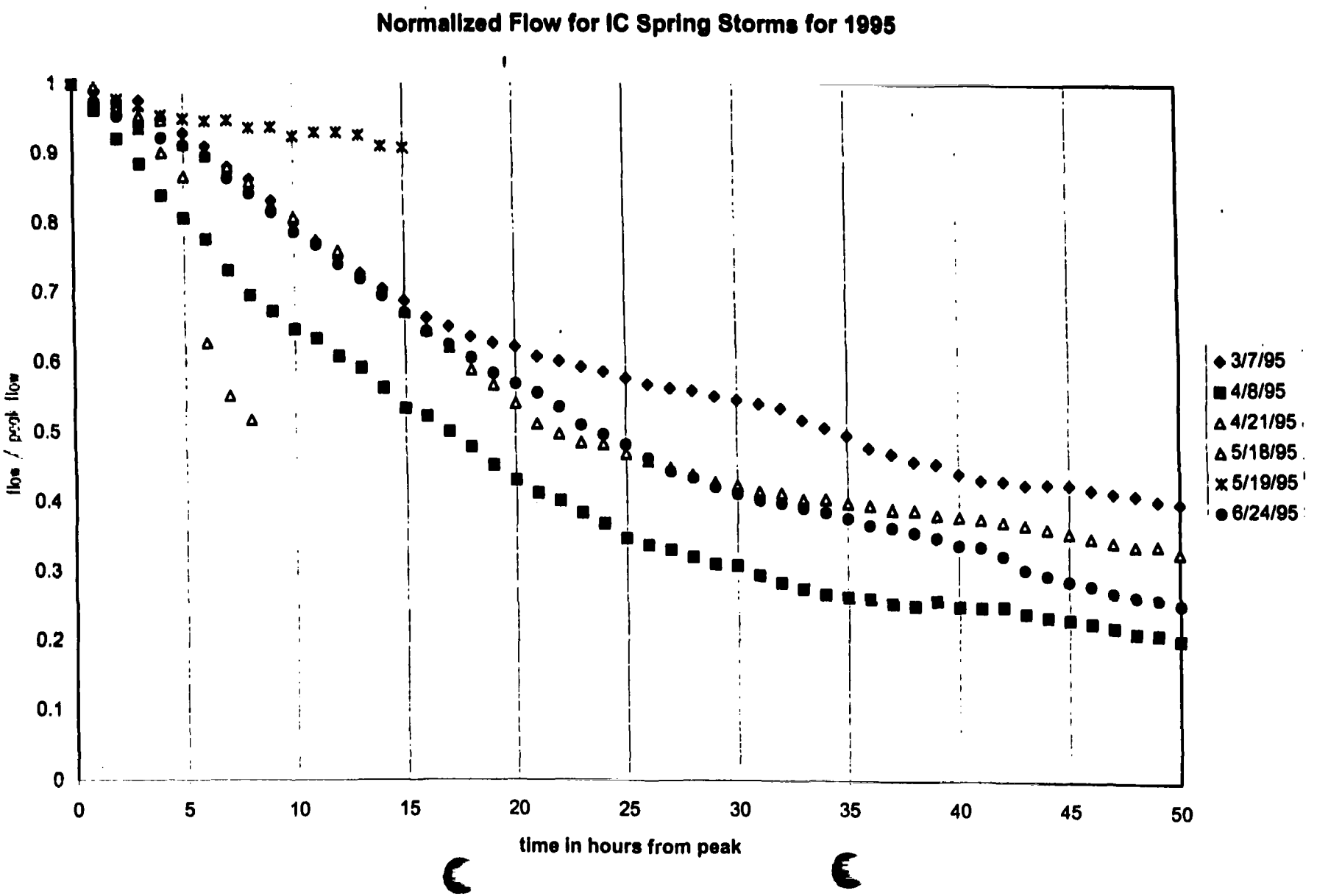
The original EPA schedule was to have the system operational in the fall of 1999. The latest EPA schedule now has a startup period of spring 2000. This is a substantial slip in schedule and it is not likely that even this revised schedule will be met. Moreover, this two year construction period is completely inconsistent with the concept of an interim system.

5. Operations

There has been no formal discussion or information provided on operability issues for this facility. It is clear that an operator needs to be on hand for any substantial storm event. However, there was no information provided that described the target operations cost or personnel manning.

FIGURES

Figure 1


Normalized Flow for IC Spring Storms for 1995
flow / peak flow
time in hours from peak
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0.4
0.5
0.6
0.7
0.8
0.9
1
0
5
10
15
20
25
30
35
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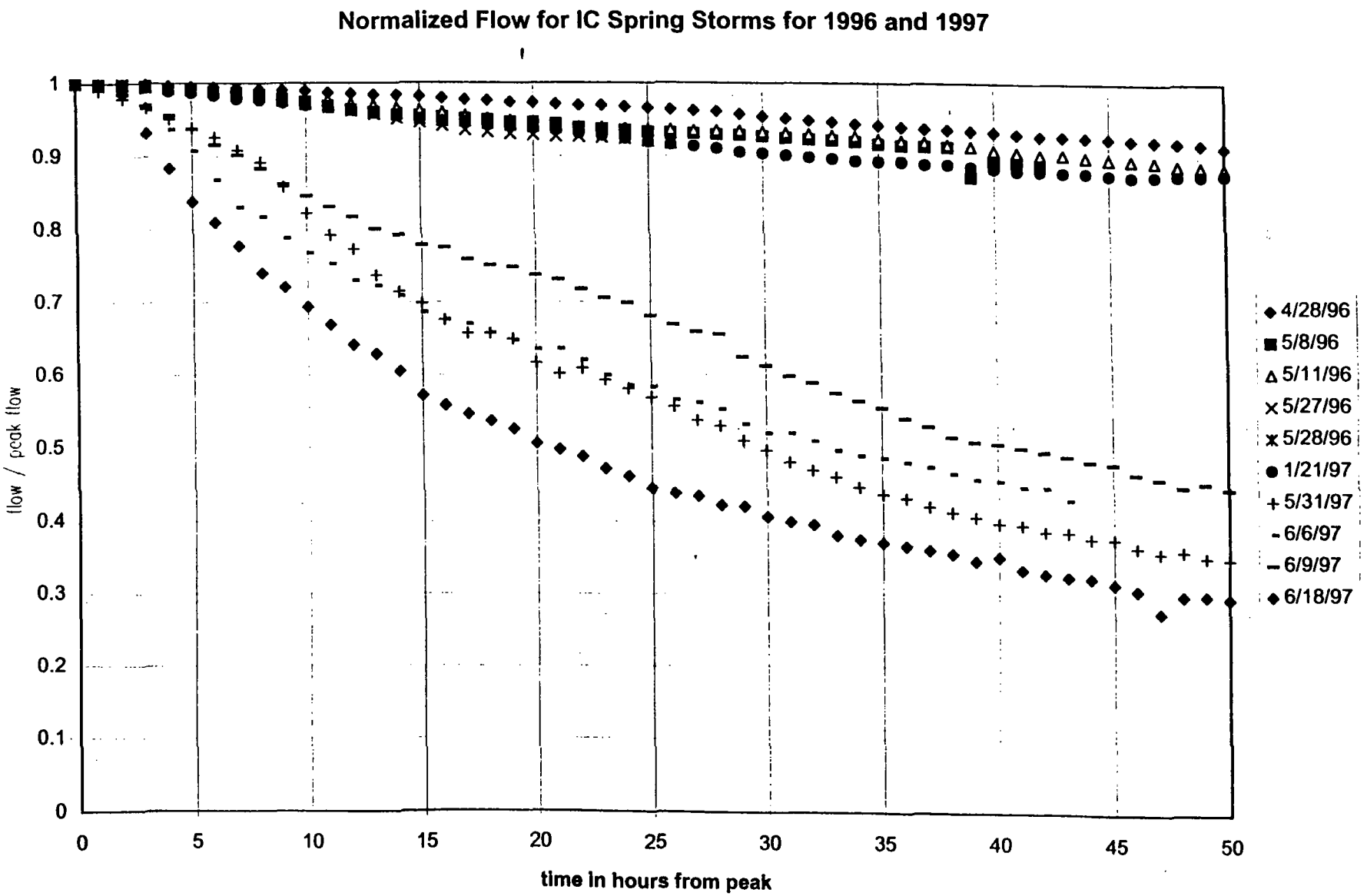
5/18/95
5/19/95
6/24/95

Figure 2


Normalized Flow for IC Spring Storms for 1996 and 1997
flow / peak flow
time in hours from peak
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0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
5
10
15
20
25
30
35
40
45
50
4/28/96
5/8/96
5/11/96
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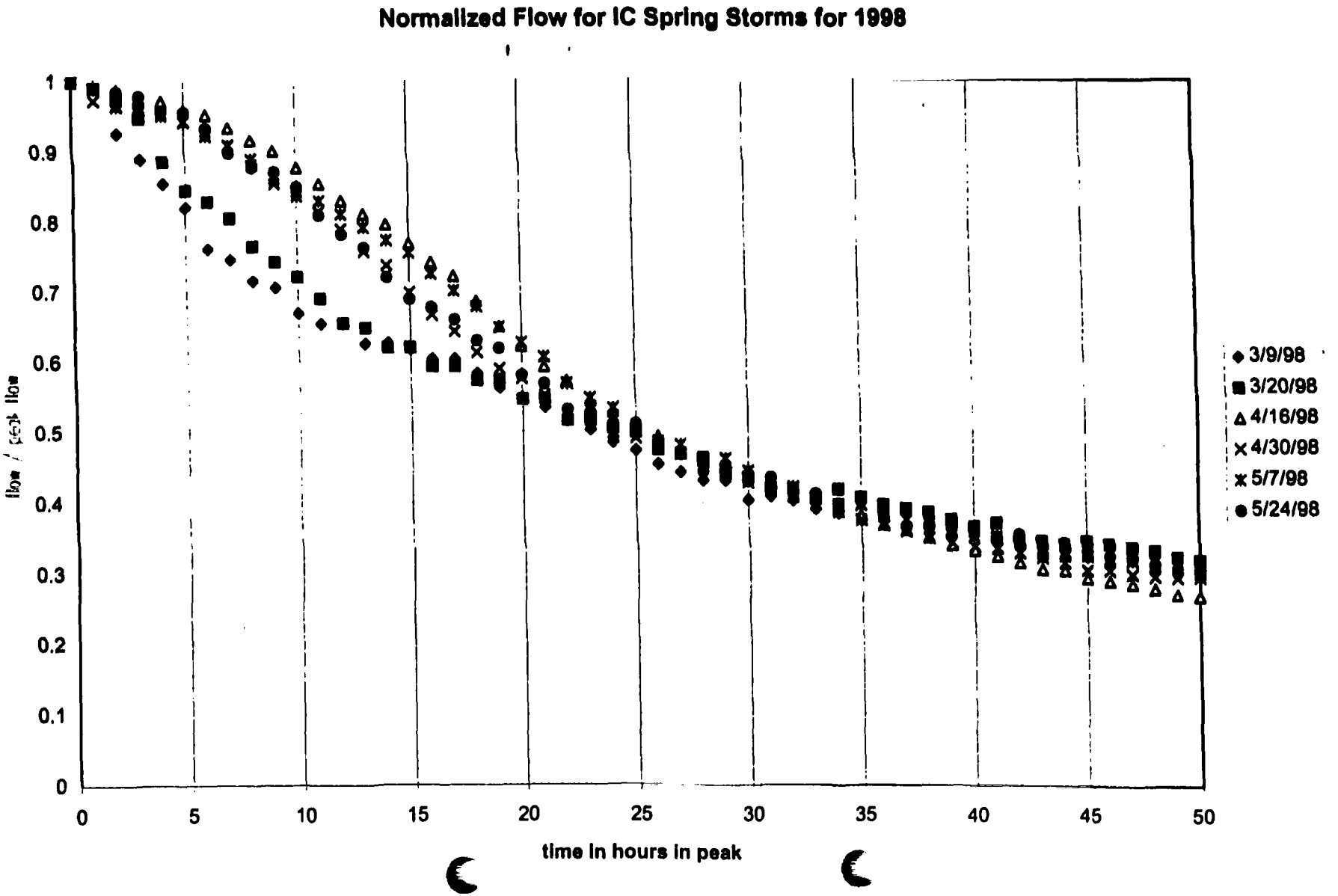
6/9/97
6/18/97

Figure 3


Normalized Flow for IC Spring Storms for 1998
flow / peak flow
time in hours in peak
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0.3
0.4
0.5
0.6
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0.8
0.9
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5
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15
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25
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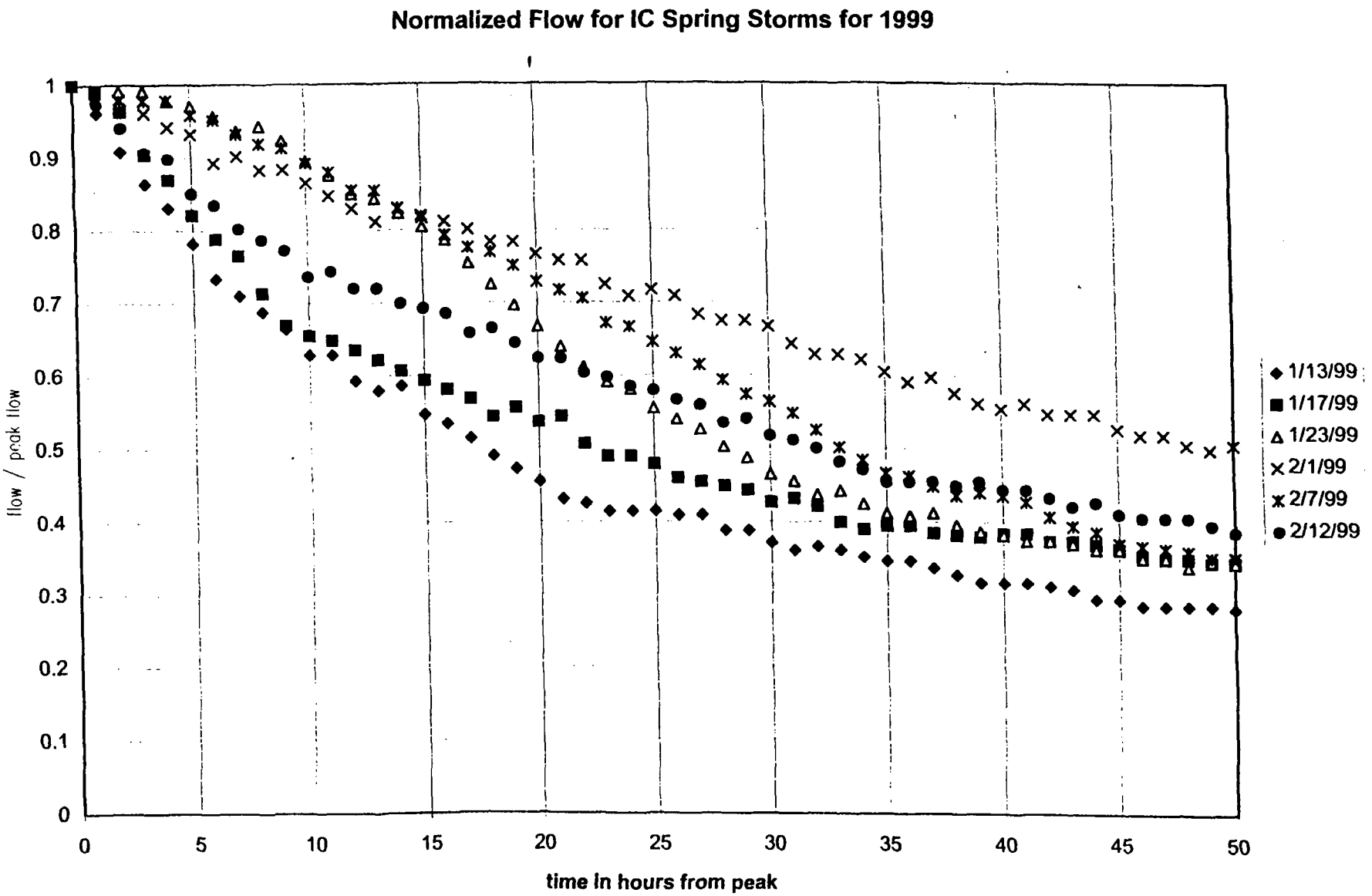
4/30/98
5/7/98
5/24/98

Figure 4


Normalized Flow for IC Spring Storms for 1999
flow / peak flow
time in hours from peak
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1/17/99
1/23/99
2/1/99
2/7/99
2/12/99
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
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0
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10
15
20
25
30
35
40
45
50

Figure 5
PCB Maximum concentration vs IC Spring Peak Storm Flow (Post lining data only)

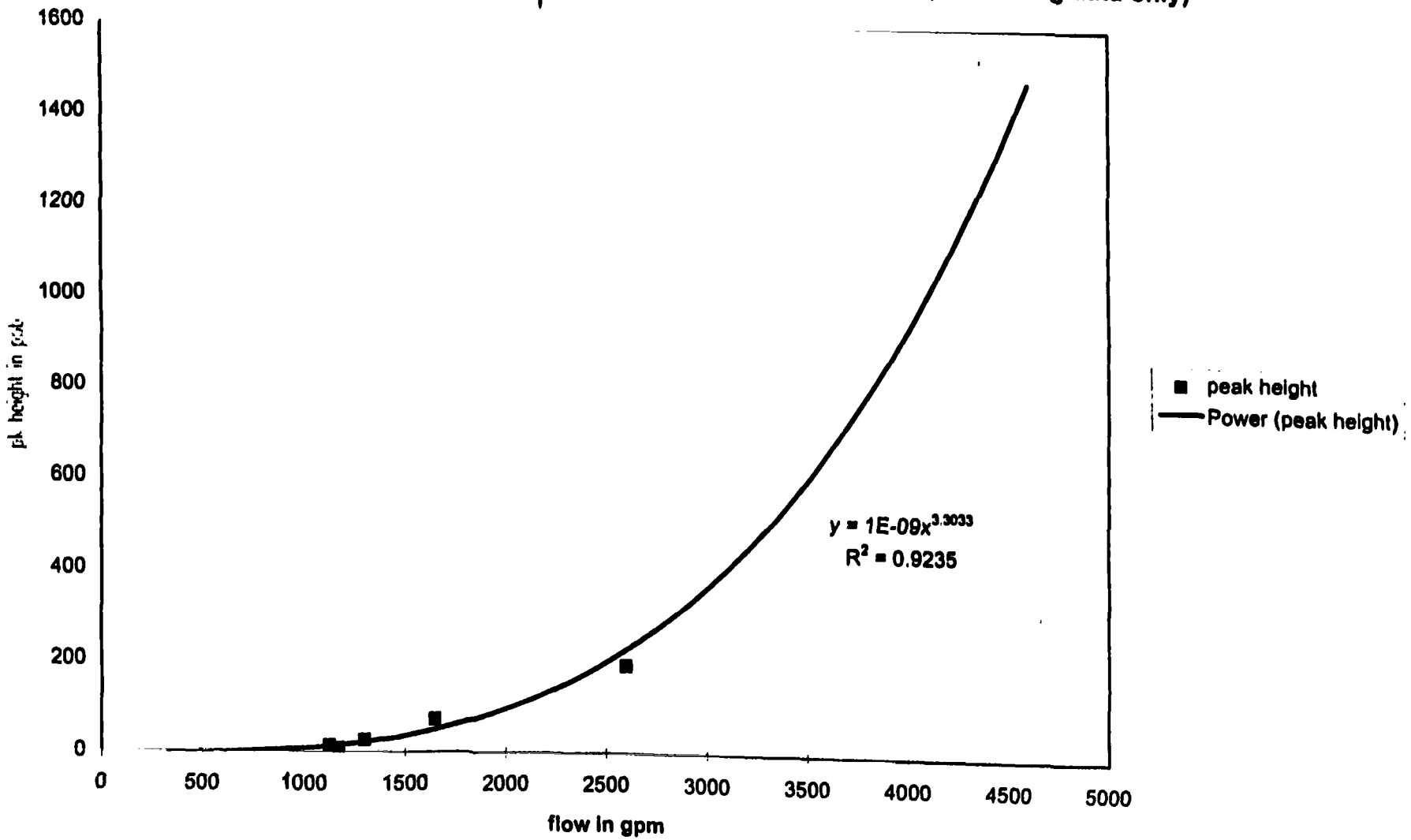
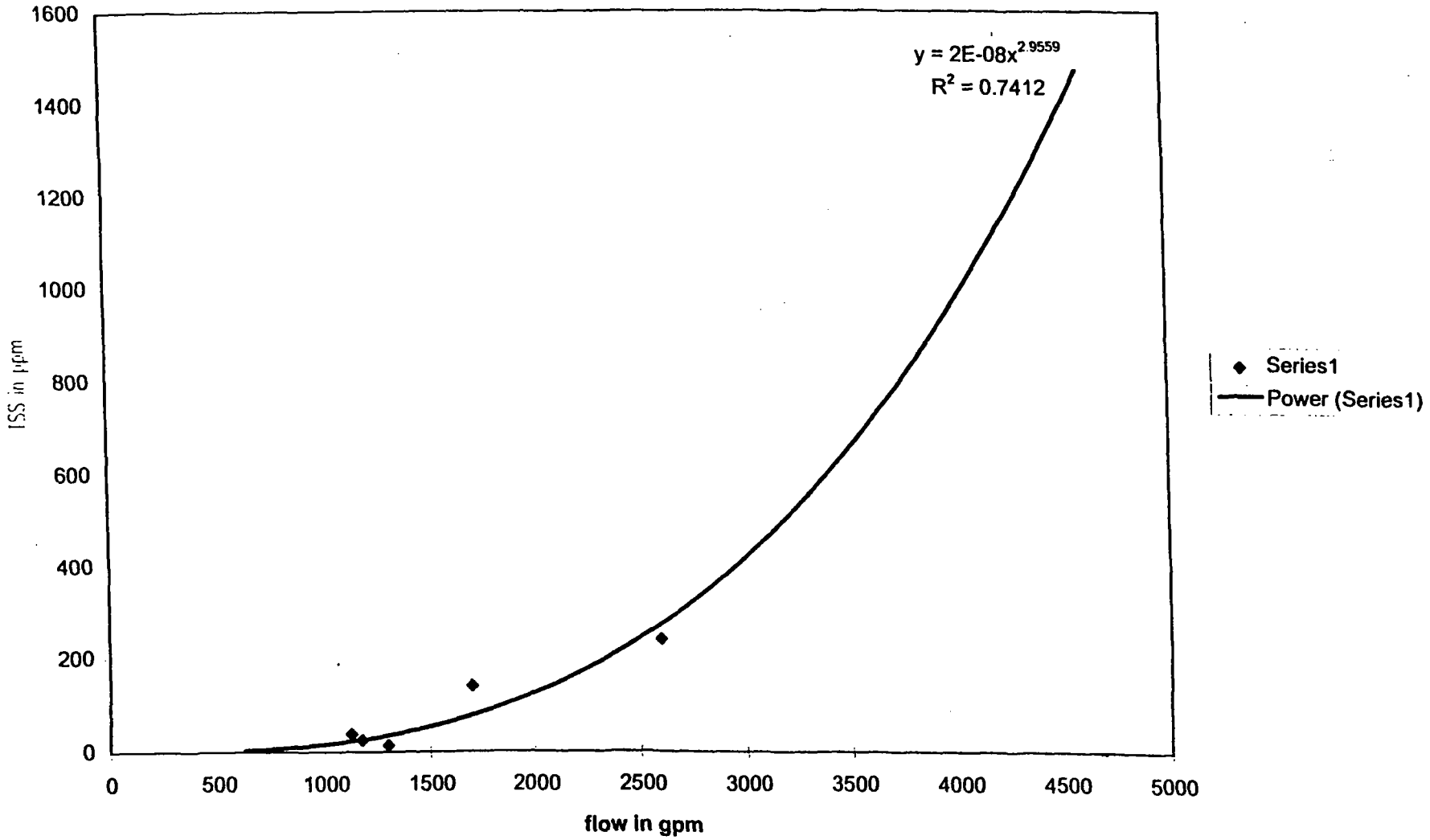


Figure 6
Peak TSS vs Peak Flow IC Spring (post lining data only)



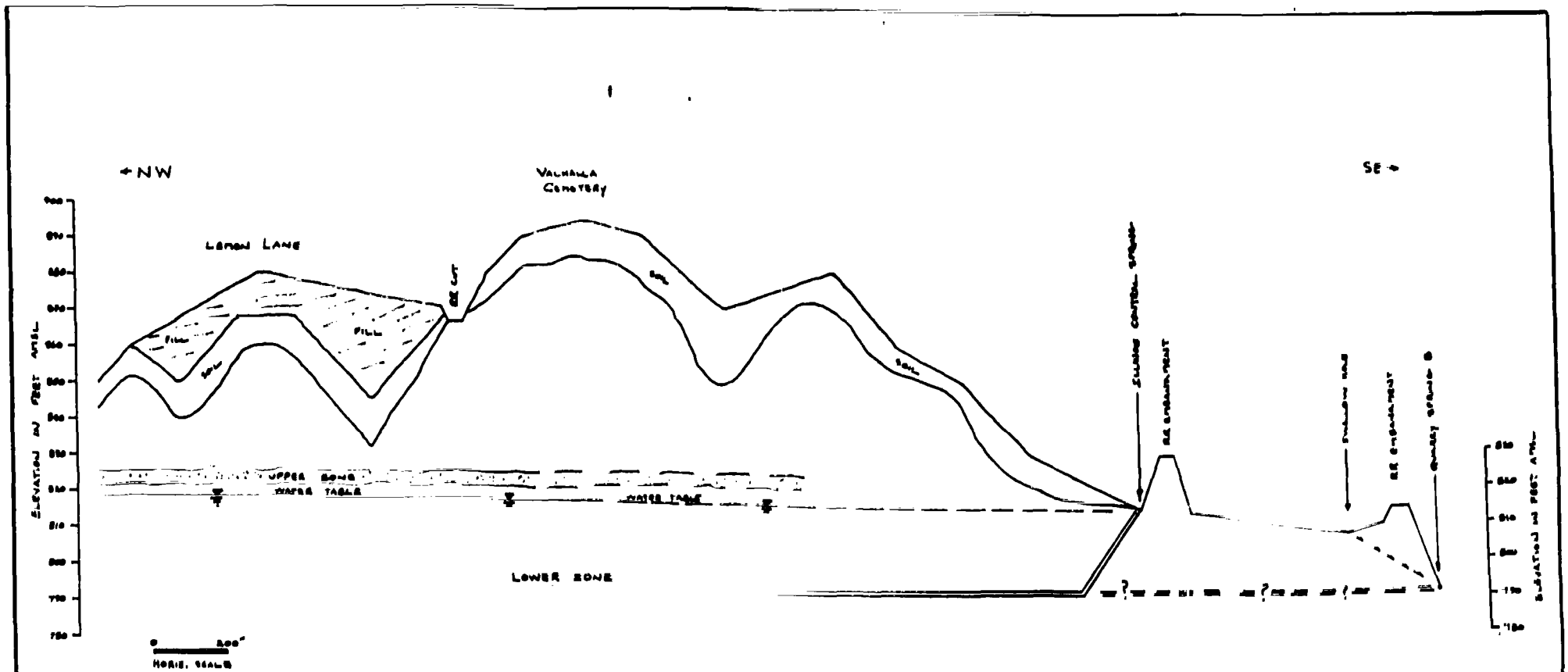


Figure 7 - Lemon Lane to Quarry Spring Profile

Figure 8
NLF Low Flow Sample Particle Size Distribution

ELZONE(tm) Particle Size Analysis

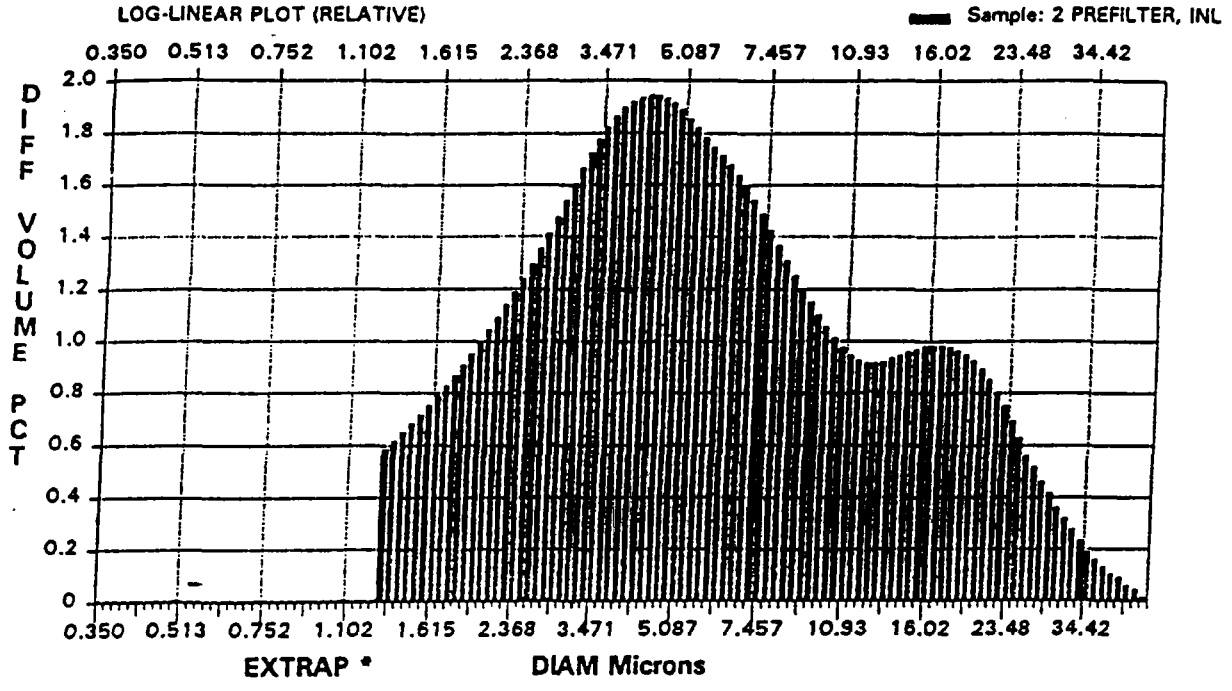
For: WESTINGHOUSE ELECTRIC CORP.
1 CITY CENTRE ROOM 210
BLOOMINGTON IN 47404

By: PARTICLE TECHNOLOGY LABS, LTD.
P. O. BOX 267
DOWNERS GROVE, IL. 60515

Operator: RK

Comments:
VOLUME (mass) DATA

Date done: 18:09 28 Apr 94
Disk File: 1278-02D.HST
Sample #: 2 PREFILTER, INLET
Lot/Job #: 1278
Material: SPRING WATER
Source: MR. D. ROHAUS



Geometric Mean Size:	5.711 um	-- PERCENTILES --
Geom. Std Deviation:	2.228 um	0.100% Volume above 41.25 um
Geom. Skewness:	0.647	1.000% Volume above 32.44 um
Geom. Coeff Variation:	39.01	6.000% Volume above 22.08 um
		20.00% Volume above 12.43 um
Arithmetic Mean Size:	7.946 um	50.00% Volume above 5.225 um
Median Size:	5.190 um	80.00% Volume above 2.776 um
Mode Size:	4.269 um	94.00% Volume above 1.742 um
Kurtosis:	3.664	99.00% Volume above 1.343 um
Arith Std Deviation	7.421 um	99.90% Volume above 1.264 um

Figure 9
NLF Higher Flow Sample Particle Size Distribution

ELZONE(tm) Particle Size Analysis

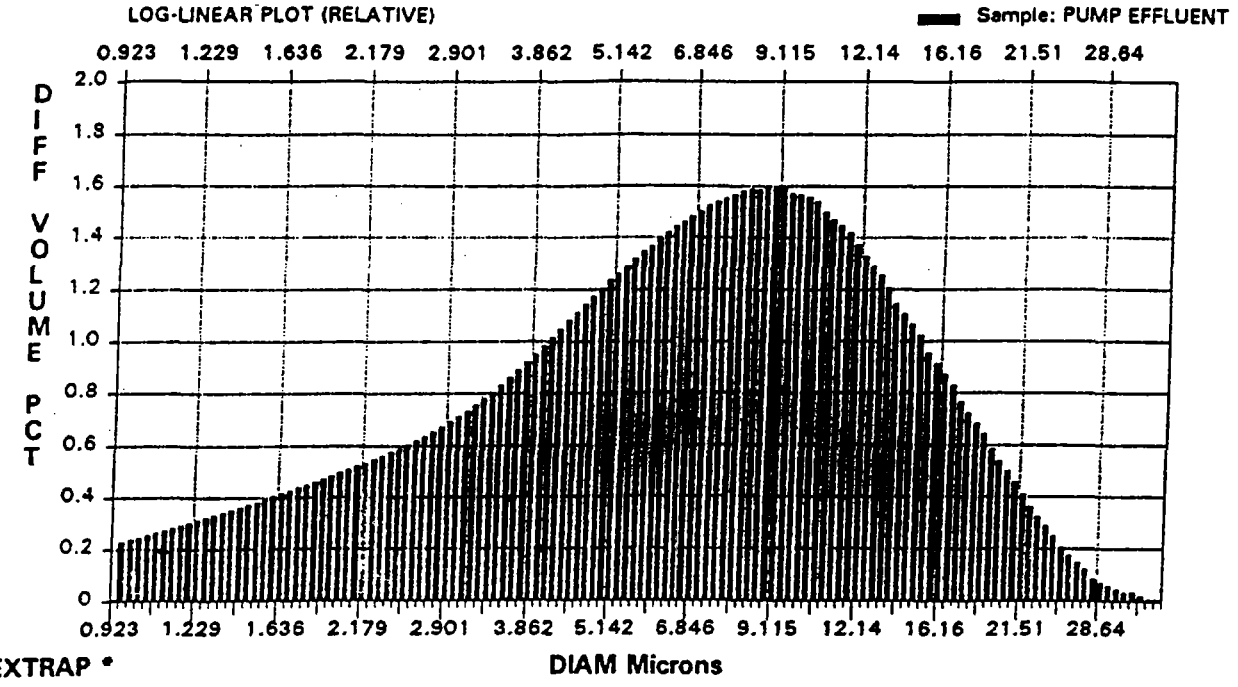
For: WESTINGHOUSE
1 CITY CENTER RM 210
BLOOMINGTON, IN 47404

By: PARTICLE TECHNOLOGY LABS, LTD.
P. O. BOX 267
DOWNERS GROVE, IL. 60515

Operator: RK

Comments:
VOLUME (mass) DATA

Date done: 15:01 30 Apr 95
Disk File: 1513-04Z.HST
Sample #: PUMP EFFLUENT
Lot/Job #: 1513
Material: GROUND WATER
Source: MR. JACK MILLS



Geometric Mean Size:	6.261 um	-- PERCENTILES --
Geom. Std Deviation:	2.108 um	0.100% Volume above 30.38 um
Geom. Skewness:	-1.291	1.000% Volume above 24.37 um
Geom. Coeff Variation:	33.67	6.000% Volume above 17.82 um
		22.00% Volume above 11.56 um
Arithmetic Mean Size:	8.002 um	50.00% Volume above 6.873 um
Median Size:	6.765 um	78.00% Volume above 3.527 um
Mode Size:	8.983 um	94.00% Volume above 1.627 um
Kurtosis:	2.371	99.00% Volume above 1.055 um
Arith Std Deviation	5.633 um	99.90% Volume above 0.942 um

TABLES

Table 1 - Start Date and Peak Flow for Storms in Figures 1 though 4			
Start Date	Peak Flow (gpm)	Start Date	Peak Flow (gpm)
3/8/95	2048	6/18/97	1072
4/8/95	2016	3/9/98	1323
4/21/95	2991	3/20/98	1493
5/18/95	~4000	4/16/98	2638
5/19/95	~3500	4/30/98	2488
6/24/95	2800	5/7/98	2658
5/8/96	1930	5/24/98	2380
5/11/96	1851	1/13/99	1382
5/27/96	1995	1/17/99	1530
5/28/96	1816	1/23/99	2705
1/20/97	1792	2/1/99	1147
5/31/97	1224	2/7/99	2965
6/6/97	1127	2/12/99	1626
6/9/97	1513		

Table 2- Illinois Central Spring PCB, Rain and Flow Data

Storm	Start Date	PCB Peak Conc. ppb	PCB Peak Mass (grams)	Storm Volumn Discharge (cu-ft)	Peak Flow gpm	Tot. Rain (inches)	Max 1-hr. Instnsity (inches)	Max 2-hr Intensity (inches)	Max 3-hr. Instensity (inches)	Previous Rainfall 5-day (inches)	Previous Rainfall 10-day (inches)	Previous Rainfall 15-day (inches)	Pre-Storm Flow (gpm)
1	5/16/95	15	21	308852	1195	0.77	0.28	0.42	0.46	1.19	1.67	2.51	153
2	5/17/95	470	>1000	>750000	>3500	2.44	1.13	1.52	1.79	1.96	4.31	4.65	1028
3	5/18/95	240	>1000	>750000	>3500	0.9	0.42	0.53	0.88	4.25	5.08	5.42	>2000
4	10/27/95	27	1	5266	134	0.64	0.25	0.44	0.49	0.03	0.64	0.64	25
5	5/8/96	68	55	342260	1930	1.33	0.37	0.44	0.63	1.83	1.97	6.21	661
6	5/10/96	42	26	219871	1437	0.72	0.71	0.79	0.79	1.37	3.24	7.48	834
7	5/11/96	38	31	319367	1851	0.66	0.43	0.44	0.45	2.09	3.91	8.34	1314
8	5/27/96	310	187	361247	1995	1.01	0.7	0.8	0.81	2.18	2.21	2.4	1072
9	5/28/96	120	52	309207	1816	0.72	0.47	0.72	0.72	3.19	3.22	3.39	1073
10	1/21/97	170	177	376501	1792	significant snow melt renders these numbers incomparable							80
11	5/31/97	26	40.5	290275	1224	2.58	0.19	0.44	0.57	1.17	2.47	2.47	65
12	6/6/97	10	8.6	193203	1127	1.11	0.36	0.65	0.78	0.82	2.66	3.63	224
13	6/9/97	72	114	564536	1513	1.25	0.27	0.42	0.6	1.2	3.83	4.83	515
14	6/18/97	15	10.5	176681	1072	1.42	0.41	0.63	0.72	0.3	1.58	2.75	140
15	7/14/97	14	2	2671	122	0.75	0.59	0.71	0.74	0	0	0.22	47
16	1/7/98	7	5	138585	640	1.13	0.14	0.21	0.25	0.83	0.83	1.79	134
17	4/16/98	188	541	606522	2638	1.67	0.34	0.56	0.82	2.15	2.15	3.35	500

Table 3 - SCS Type B Storm Distribution and 25yr/6hr Rainfall
(Rainfall Frequency for Indiana, DNR Div.of Water, Sept. 1994)

Time/Total Time	Rain/Total Rain	25yr/6hr Time	25yr/6hr Rain
0.00	0.000	0	0
0.02	0.008	0.12	0.0296
0.04	0.015	0.24	0.0555
0.06	0.024	0.36	0.0888
0.08	0.035	0.48	0.1295
0.10	0.040	0.6	0.148
0.16	0.077	0.96	0.2849
0.20	0.100	1.2	0.37
0.22	0.112	1.32	0.4144
0.25	0.138	1.5	0.5106
0.33	0.224	1.98	0.8288
0.34	0.264	2.04	0.9768
0.36	0.354	2.16	1.3098
0.38	0.440	2.28	1.628
0.40	0.520	2.4	1.924
0.42	0.608	2.52	2.2496
0.44	0.632	2.64	2.3384
0.46	0.660	2.76	2.442
0.48	0.680	2.88	2.516
0.50	0.704	3	2.6048
0.52	0.720	3.12	2.664
0.54	0.739	3.24	2.7343
0.56	0.758	3.36	2.8046
0.58	0.772	3.48	2.8564
0.60	0.788	3.6	2.9156
0.62	0.800	3.72	2.96
0.64	0.817	3.84	3.0229
0.66	0.827	3.96	3.0599
0.68	0.840	4.08	3.108
0.70	0.852	4.2	3.1524
0.72	0.866	4.32	3.2042
0.74	0.877	4.44	3.2449
0.76	0.888	4.56	3.2856
0.78	0.900	4.68	3.33
0.80	0.908	4.8	3.3596
0.82	0.918	4.92	3.3966
0.84	0.928	5.04	3.4336
0.86	0.936	5.16	3.4632
0.88	0.945	5.28	3.4965
0.90	0.952	5.4	3.5224
0.92	0.964	5.52	3.5668
0.94	0.972	5.64	3.5964
0.96	0.982	5.76	3.6334
0.98	0.992	5.88	3.6704
1.00	1.000	6	3.7

Table 4 - 25 yr. / 6 hr. Design Storm Using April 98 Storm As Unit Hydrograph							
	Apr-98	Apr-98		CBS	Earthtech	CBS	Earthtech
	Recorded	Corrected	q/Qp	25yr/6hr	25yr/6hr	cum. flow	cum. flow
Date/Time	Flow	Flow		reg. eq.		gallons	gallons
4/15/98 20:00	495	495	0.19	782	611	46940	97330
4/15/98 21:00	512	512	0.19	809	730	95473	141132
4/15/98 22:00	584	584	0.22	923	1029	150834	202877
4/15/98 23:00	718	718	0.27	1135	1510	218940	293463
4/16/98 0:00	1200	1000	0.38	1580	2116	313768	420450
4/16/98 1:00	1884	1300	0.49	2055	2936	437045	596581
4/16/98 2:00	2841	1600	0.61	2529	3424	588771	802014
4/16/98 3:00	2919	1800	0.68	2845	4018	759462	1043068
4/16/98 4:00	3005	2100	0.80	3319	5318	958602	1362141
4/16/98 5:00	2728	2350	0.89	3714	5403	1181449	1686326
4/16/98 6:00	2638	2638	1.00	4169	5279	1431559	2003093
4/16/98 7:00	2624	2624	0.99	4146	5224	1680341	2316522
4/16/98 8:00	2605	2605	0.99	4117	5296	1927331	2634282
4/16/98 9:00	2558	2558	0.97	4043	5283	2169940	2951244
4/16/98 10:00	2562	2562	0.97	4049	5302	2412881	3269341
4/16/98 11:00	2528	2528	0.96	3996	5256	2652645	3584688
4/16/98 12:00	2512	2512	0.95	3970	5182	2890816	3895615
4/16/98 13:00	2463	2463	0.93	3893	5072	3124379	4199940
4/16/98 14:00	2415	2415	0.92	3817	4886	3353427	4493119
4/16/98 15:00	2375	2375	0.90	3754	4810	3578673	4781737
4/16/98 16:00	2310	2310	0.88	3651	4671	3797737	5062014
4/16/98 17:00	2251	2251	0.85	3557	4507	4011186	5332458
4/16/98 18:00	2187	2187	0.83	3457	4459	4218595	5600009
4/16/98 19:00	2137	2137	0.81	3378	4335	4421253	5860123
4/16/98 20:00	2095	2095	0.79	3311	4225	4619918	6113618
4/16/98 21:00	2024	2024	0.77	3198	4118	4811803	6360688
4/16/98 22:00	1953	1953	0.74	3087	4027	4996994	6602309
4/16/98 23:00	1901	1901	0.72	3004	3907	5177215	6836707
4/17/98 0:00	1806	1806	0.68	2855	3801	5348504	7064769
4/17/98 1:00	1710	1710	0.65	2702	3675	5510651	7285270
4/17/98 2:00	1637	1637	0.62	2587	3578	5665847	7499968
4/17/98 3:00	1560	1560	0.59	2465	3495	5813770	7709642
4/17/98 4:00	1508	1508	0.57	2384	3435	5956809	7915750
4/17/98 5:00	1434	1434	0.54	2266	3377	6092774	8118379
4/17/98 6:00	1391	1391	0.53	2198	3320	6224652	8317565

Table 5
25 Year Storm Hydrograph/Chemograph Comparison

hour	CBS Flow	Earth Tech Flow	CBS TSS	CBS PCB	Earth Tech PCB	Earth Tech TSS
1	782	611	25.1	11.9	19.6	0.0
2	809	730	20.9	10.0	0.0	0.0
3	923	1029	20.9	12.4	20.4	0.0
4	1135	1510	66.9	18.2	0.0	0.0
5	1580	2116	204.9	28.7	64.3	42.9
6	2055	2936	501.7	133.8	46.4	278.7
7	2529	3424	878.0	621.2	64.3	393.0
8	2845	4018	1003.4	907.9	428.7	500.1
9	3319	5318	919.8	716.8	428.7	500.1
10	3714	5403	794.4	669.0	607.3	393.0
11	4169	5279	668.9	425.3	182.2	182.2
12	4146	5224	459.9	525.6	264.4	307.2
13	4117	5296	347.0	401.4	225.1	203.6
14	4043	5283	280.1	305.8	135.8	157.2
15	4049	5302	179.8	219.8	157.2	125.0
16	3996	5256	179.8	181.6	125.0	107.2
17	3970	5182	158.9	129.0	135.8	28.6
18	3893	5072	142.2	109.9	92.9	10.7
19	3817	4886	125.4	95.6	107.2	21.4
20	3754	4810	108.7	71.7	60.7	25.0
21	3651	4671	92.0	52.6	57.2	21.4
22	3557	4507	79.4	47.8	39.3	25.0
23	3457	4459	71.1	45.4	57.2	21.4
24	3378	4335	66.9	35.8	35.4	7.1
25	3311	4225	62.7	32.5	30.7	53.6
26	3198	4118	50.2	33.4	31.8	0.0
27	3087	4027	41.8	36.8	46.4	7.1
28	3004	3907	46.0	23.9	23.2	0.0
29	2855	3801	54.4	17.2	24.3	25.0
30	2702	3675	54.4	17.2	22.9	14.3
31	2587	3578	54.4	17.2		21.4

Table 6

1 Year Design Storm Estimate (1.95 inches in 6 hours) and April 98 Event (2.14 inches in 14 hours)

Flow		PCB		TSS	
1 Year Estimate	April 98 Actual	1 Year Estimate	April 98 Actual	1 Year Estimate	April 98 Actual
443.5	497.8				
458.5	495.0	2.4	2.5	2.8	6.0
523.0	511.8	2.7	2.1	2.6	5.0
643.5	583.8	3.1	2.6	2.4	5.0
895.9	718.2	3.9	3.8	3.4	16.0
1164.7	1000.0	5.0	6.0	8.9	49.0
1433.5	1300.0	9.2	28.0	28.2	120.0
1612.7	1600.0	32.7	130.0	62.2	210.0
1881.4	1800.0	71.9	190.0	109.3	240.0
2105.4	2100.0	81.9	150.0	140.5	220.0
2363.0	2350.0	110.0	140.0	173.1	190.0
2350.5	2637.5	71.5	89.0	147.4	160.0
2333.5	2623.5	84.7	110.0	106.8	110.0
2292.1	2604.6	63.0	84.0	82.2	83.0
2295.3	2558.4	42.6	64.0	48.0	67.0
2265.3	2561.9	29.3	46.0	29.6	43.0
2250.2	2528.4	23.7	38.0	29.0	43.0
2206.7	2511.6	15.8	27.0	24.2	38.0
2164.0	2463.0	12.6		20.5	
2128.1	2415.4	10.4	20.0	17.2	30.0
2069.7	2375.3	7.1		13.7	
2016.6	2310.1	4.8	11.0	10.7	22.0
1959.6	2250.9	3.9		8.5	
1914.7	2187.2	3.5	9.5	7.1	17.0
1877.0	2137.1	2.6		6.3	
1812.9	2095.0	2.1	6.8	5.3	15.0
1749.7	2023.5	1.9		3.9	
1702.7	1952.9	1.9	7.7	3.0	10.0
1618.3	1900.5	1.0		2.8	
1531.9	1806.3	0.6	3.6	2.8	13.0
1466.3	1709.9	0.0		0.0	

Table 7

IC Spring Treatment Facility Estimated Annual Performance

Year	Total Precip	Spring Flow	Flow Bypass	% Flow Captured	TSS at Spring	PCB at Spring	PCB Bypass	% PCB Captured
1996	61.41	1.51×10^8	10.08×10^6	93.3	9.2	6.186	0.813	87
1997	39.3	7.04×10^7	0	100	2.19	2.62	0	100
1998	51.01	1.1×10^8	5.26×10^6	95.2	7.4	5.23	0.171	97

Notes

1. Precip data in inches
2. Flow data in gallons
3. TSS data in dry tons
4. PCB data in kilograms
5. Mean annual precip for Bloomington is 43.14 inches
6. All data assumes 100% plant availability and capacity factors
7. All performance data assumes that an operator is available during storms to ensure proper filling/draining of retention tanks
8. All plant performance data assumes no backwash during storms is required.

Water Treatment at Illinois Central Spring - CBS Perspectives

June 1, 1999

Interim System Design Philosophy

- Utilize temporary or mobile equipment when cost effective to do so
- Design process train based on April 98 event
- Utilize interim period for bench/pilot testing of other process equipment to aid in final system selection
- Allow bypass during maintenance periods and equipment failures
- Focus on rapid deployment and shakedown of equipment rather then strict adherence to discharge criteria and/or process availability/capacity factor issues

Final System Design Philosophy

- Overall goal of the Lemon Lane remedial efforts is to reduce PCBs in the ICS. If this goal is accomplished to an agreed upon standard, the ICS water treatment system should be shutdown or scaled back.
- It is unreasonable to expect treatment "forever" at any natural site.
- If the shutdown criteria cannot be met within a reasonable amount of time, then the final system can be shutdown based on technical impracticability. Reasonable is defined as 10 years.
- A best efforts approach at continuing to assess ways to reduce discharges at the spring will continue after hot spot removal, surface water controls and capping. Additional remedial measures can be accomplished with the goal to reduce PCB levels in the spring after capping, but will not require removal of the final cap system or additional removal from the capped volume.
- The final system should be allowed to bypass treatment capacity during periods of maintenance and equipment failures

Final System Design Criteria

- Design flow and storage capacity no higher than the interim criteria
- Final process train components to be decided based on bench/pilot scale data
- Actual location and final capacity (if lowered) to be determined based on post remedial data assessment. Capacity and storage specification to be determined by achieving system shutdown criteria at receiving stream based on 1996 PCB/flow relationships.
- Discharge criteria .3 ppb during low flow. During high flow to be determined based on bench/pilot scale testing. Cost effectiveness to determine high flow discharge criteria will be a factor.
- The shutdown goal to be to determined/negotiated. Possibilities include 80% reduction from 1996 PCB/Flow relationships, risk based, or influent levels based.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF
C-14J

June 21, 1999

Mr. David R. Berz
Weil Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036-5610

RE: Illinois Central Spring

Dear Mr. Berz:

Thank you for your letter of May 12, 1999. Your letter requires response. To begin, enclosed with this letter find a detailed response to the many erroneous comments submitted by CBS Corporation ("CBS") regarding technical issues related to the Illinois Central Spring interim water treatment system designed by the United States Environmental Protection Agency ("U.S. EPA"). U.S. EPA provided CBS with all relevant design and design-related materials to afford CBS an understanding of U.S. EPA's approach to the problems and threats posed by the Illinois Central Spring ("ICS") site. The materials were also provided to CBS to give CBS an opportunity to assume responsibility for the ICS site removal action.

Since the date of your letter, U.S. EPA and CBS have discussed the issue of CBS assuming responsibility for the removal action. In fact, U.S. EPA technical and legal representatives met with CBS on June 1, 1999. A main purpose of that meeting was for U.S. EPA to listen to CBS's conceptual proposal for an alternative interim treatment system. CBS did not make a detailed presentation at that meeting, and does not appear to have advanced beyond the "conceptual" stage. As expressed at that meeting, however, U.S. EPA does have substantive, technical differences with CBS regarding how to address, on an interim basis, the environmental problems posed by the ICS site. The differences in approach are highlighted in the accompanying technical response to your writing of May 12, 1999. As we discussed on June 1, 1999, and in phone conversations thereafter, U.S. EPA has also expended nearly $1,000,000 to date in design work, site preparation work, and other site-related work. U.S. EPA has incurred these costs since the fall of 1998, when U.S. EPA determined that CBS was not prepared to timely

undertake an appropriate response action.[1] As you know, U.S. EPA demands reimbursement of these costs, as well as payment of future oversight costs, as part of any proposal by CBS to take over the ICS site removal action. CBS has refused to reimburse U.S. EPA's past costs.

Your letter contains many misstatements regarding U.S. EPA's interim removal action and representations made to the Court. Your letter also accuses U.S. EPA of failure to act in good faith in negotiating water treatment issues and breach of its obligations under the Special Master's report. The matter of what has been represented to the Court was addressed by U.S. EPA in correspondence to you dated May 3, 1999. Your accusations of bad faith and breach of the Special Master's report are demonstrated false by the discussions that U.S. EPA has attempted to have with CBS over the design and requests that CBS assume responsibility for taking over the ICS removal action. It is unfortunate that CBS has resorted to accusations of bad faith in an effort to construct a record for itself. The mere fact that there are differences between U.S. EPA and CBS regarding the technical merits of different approaches to addressing on an interim basis the environmental threats posed by the ICS site is certainly no justification for questioning the good faith of the U.S. EPA and the United States.

U.S. EPA is continuing its work at the ICS site. The ICS interim treatment system will be constructed in time to meet the proposed start dates for source control measures at the Lemon Lane Landfill. Although U.S. EPA does not anticipate any problems in completing construction in early Spring of 2000, it was interesting to hear from CBS that it had flexibility in timing the start of the Lemon Lane source control measures.

As you know, U.S. EPA is always open to hearing CBS's concerns. CBS also knows U.S. EPA's positions regarding CBS's assuming responsibility for the ICS removal Action. Finally,

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[1] As you may recall, CBS's last proposal in the fall of 1998 was to jam carbon-filled bags into a trench along the spring system. This "gravity based" "system" could at best be described as "Mickey-Mouse." In light of CBS's failure to step forward with a response action proposal that made any sense or that responded to the threats posed, U.S. EPA took upon itself addressing, on an interim basis, the site threats. Although CBS's most recent "conceptual" proposal shows progress, differences remain, and it is clear that CBS simply has not applied the level of scrutiny to the issues that U.S. EPA has applied over the last months.

U.S. EPA will be prepared to engage CBS in dialogue over issues regarding final water treatment matters at the Lemon Lane Landfill when those matters are ripe.

Please contact me if you have any questions or comments regarding this matter.

Very truly yours,

Jeffrey A. Cahn
Associate Regional Counsel

cc: Ken Theisen, OSC
Tom Alcamo, RPM
Steven Ellis, U.S. DOJ

EARTH TECH RESPONSE TO CBS COMMENTS ON EARTH TECH'S DESIGN OF THE WATER TREATMENT FACILITY PREPARED FOR THE U. S. ENVIRONMENTAL PROTECTION AGENCY'S ILLINOIS CENTRAL SPRING PROJECT IN BLOOMINGTON INDIANA.

As requested by the U.S. Environmental Protection Agency on June 2, 1999, this document contains Earth Tech Inc.'s (Earth Tech) response to CBS comments on Earth Tec's design of the water treatment facility for U.S. Environmental Protection Agency's Illinois Central Spring project in Bloomington, Indiana. CBS comments were presented to us in the document titled, "CBS Corporation, Technical Comments on the Environmental Protection Agency's Design for Illinois Central Spring's Water Treatment Facility" dated May 12, 1999. This document was enclosed in a May 12, 1999 letter from David Berz of Weil, Gotshal & Manges LLP to Jeffrey Cahn, Associate Regional Counsel, U.S. Environmental Protection Agency, Region 5 (U. S. EPA). Our response is limited to comments in the enclosure to the letter and do not address comments in the letter itself. Earth Tech did not address the comments on pages 1, 2 and 3 under the heading, "Summary and Conclusions." Earth Tech's response begins with CBS comments at the bottom of page 3 under the heading, "Specific Design Comments:".

1.a. Bullet 1 Earth Tech is not aware of the reported commitment to achieve 80% capture of PCBs. A system of 1000 gpm capacity with a minimum of 2-acre feet of storage was known.

1.a. Bullet 2 Earth Tech is not aware of the reported commitment to provide back-washable cartridge filters or a need to have bag filters with 40-micron pore size. However, Earth Tech did contact numerous filter vendors and determined that the source of back-washable bag filters systems are limited and that they are generally not preferred to the normal replaceable bag filter systems. Back-washable filters may work within a system with flows and loadings that are reasonably constant but in this case the loading will substantially vary over short time frames. Earth Tech selected 1-micron filters, not 40-micron filters due to the need to protect the GAC filters from suspended solids loadings. By definition, total suspended solids include particle sizes down to approximately 1.5 microns.

1.a. Bullet 3 Earth Tech is not aware of the reported commitment to provide 3 pumps and 1 standby.

1.a. Bullet 4 Earth Tech has provided a flexible design that can be entirely reused for the final system. The system design and components are biased toward a final remedy by providing

equipment that may be readily upgraded or supplemented with parallel systems or supplemental equipment to increase capacity or volume. We are not aware of a reported commitment to provide a skid mounted modular system. However, all the equipment can be moved to another location without disassembly except the pipe and the tanks. The tanks are bolted steel tanks that can be unbolted, disassembled and moved elsewhere. Furthermore, the pipe connections were selected for easy disassembly and reassembly. The system design provides both flexibility and portability if so desired. Earth Tech's task is to provide a system that treats known PCB discharges at a known emergence.

1.a. Bullet 5 In the event that "extreme" conditions occur beyond the systems capability, the system can be bypassed. Though not required for continuous operation, the design allows for the operation to be manually manipulated to capture any part or parts of an event. These manual operations can be supplemented or programmed with controls as so desired.

1.a. Bullet 6 A treatability study is not within Earth Tech's scope of work.

1.a. Bullet 7 Yes, we agree. The system includes 1000 gpm treatment capability and 4 acre feet of storage capacity within tanks.

1.a. Bullet 8 Early in the design process Earth Tech decided that off-site control of the operation would be potentially too dangerous with the presence of on-site operators or maintenance personnel. Furthermore, the potential of problems developing from off-site control or problems going undetected are too great given the type of contamination that the system is treating. Earth Tech did design the system to enable flexibility in terms of off-site monitoring of the system.

1.a. Bullet 9 Yes, we agree.

1.a. Bullet 10 Yes, we agree.

1.a. Bullet 11 Earth Tech designed the system to operate automatically and to be monitored remotely.

1.a. Bullet 12 Appropriate redundancy was built into the system for the type of materials and substances that the system is to process. Maximum redundancy was not incorporated into the design.

1.a. Bullet 13 Results of a low flow treatability study have not been made available to Earth Tech's design team.

1.b.(i). Hydraulically, the information collected at this specific site has a very brief history (4 years) with measurements limited to relatively low flows. A short streamflow record is defined as one of less than 10 years in length. In order to provide a better model, approximately 15 years of data would be required with some extrapolation still necessary. This assumes that little or no changes to the topography or subsurface conditions occur. Unfortunately, this amount of time is not available given the type of the contamination that is present.

Given the limitations of both the quantitative and qualitative measurements, a 25 year storm event was selected as the design model in order to provide a predictable system design. This model provides the platform for which changes or additions to the system can be made with predictable results as data comes available. Note that the system design does not report to contain or treat an entire 25 year storm event. The event was used to provide the basis for accounting for the flows generated. A more stringent requirement may be warranted given the hazardous nature of the materials currently being discharged.

The type of model selected depends on the quality and quantity of reliable data and the purpose of the analysis. Regardless of the model selected, empirical coefficients are required with greater number of coefficients needed as the complexity of the model increases. At higher flows the nature of the hydraulic properties associated with the spring are not known and may only be predictable over the long term as measurements are made available from the system. To date, measurements of higher flows have not been obtained due to the limitations of CBS's measuring devices. Given the time critical nature of the site and the continuing loss of PCB's into the environment, a rather simple model was selected in order to predict the spring's effects at higher flows. The design event selected was based on the following parameters:

- The system is an interim approach to be upgraded as data is assessed.
- The system is to be incorporated into a final design.

- PCB's are a listed hazardous material and would not knowingly be allowed within a discharge.
- A 25 year storm event is considered a moderate event (4% chance). Typical run-on and run-off analysis for public health, safety, and welfare concerns are based on a 25 year event. Given the nature of this site, one may be able to effectively argue that a larger year event would be in order or that a greater capture rate be applied.
- Snow and ice melt are not currently modeled but may be taken into account in the final design.
- Extended, multiple, or reoccurring events are not currently modeled but may be taken into account in the final design.
- The model is an empirical approach in lieu of reliable data.
- The system operation is will be over a wide variation of flows.

A review of the information provided in the design was based on a very limited data base that was compiled in January, 1998. Due to changes at Lemon Lane Landfill, applicable data within this reporting was further restricted to approximately 9 months. The April, 1998 event reported in the CBS comments was not made available to the design team until February, 1999 after the designs were completed. A review and assessment of the information as it related to the designs was made by Earth Tech. A comparison of the January, 1997 and April, 1998 singular events does provide differences in the analysis, but did not provide any substantial information that warranted changes in the designs. Though tendencies can be recognized or hypothesized, arguments over singular events in terms of long term designs can not be supported with the data collected to date. Variables that are not accounted for in the relatively low flow data as it may relate to higher flows include: varying storm duration, rainfall intensity, antecedent moisture conditions, reoccurring storms, multiple storms, changing hydraulics versus stage relationships within karst areas, changes in the source, outlet control, inlet control, pressure conduits, additional overflows into or out of the system, changes in turbulence and scouring, etc. In order to provide substantial improvements in the designs, long term data would be required without substantial changes to the spring's network. Earth Tech is of the understanding that the continued discharge of PCB's for an extended period is not acceptable for the purpose of extended study. Note that additional testing for certain

design parameters that have been omitted to date should be included in the on-going programs (ie. particle size analysis).

Earth Tech's design is based on the concept that while the plant is an interim remedy, the major components of the system would be used within the final design. System components were design on a basis of a twenty year life span. The pipes installed under the railroad track are anticipated to be in place for an extended time period. These pipes will provide drainage for the foreseeable future. A 25-year storm event is an appropriate basis of design for the inlets, pipes, and other structures that are related to the hydraulic capacity of this portion of the overall project. In the past, the area North of the Rail Road has flooded off the controlled site, substantially increasing potential liability in terms of areas affected and the risk to public health and safety.

CBS states that Earth Tech has overestimated flow rates and underestimated TSS loading. It is unclear whether these incorrect estimates are relative to a 1-year or twenty-fiveyear storm event. In either case, it seems contradictory to say that the plant is expensive but undersized for TSS removal. The difficulty in interpreting the meaning of the comment and the apparent contradiction make it difficult for Earth Tech to address the comment.

At the end of the second paragraph it is stated that the "TSS loading for a 1 year event is well within the loading capability of the solids filtering units...." At the beginning of the third paragraph, it is stated that "even at a lower storm loading, it is not clear that the Earth Tech filtering equipment will perform adequately..." This seems contradictory, making it difficult for Earth Tech to address the comments.

As part of the basis of design, Earth Tech prepared particle size distribution assumptions. Earth Tech's design includes one-micron bag filters. These bag filters will protect the carbon, minimizing any concerns about higher effluent PCB concentrations.

Earth Tech did evaluate the potential affects of hardness and pH on the plating out of calcium deposits and concluded that plating out of hardness would not be a major problem.

1.b.(ii). At the time of Earth Tech's analysis, the available hydrograph data were limited to 1995, 1996, and 1997. It is Earth Tech's understanding that modifications were made to the drainage contribution area (i.e. the landfill) in 1996. Thus, it is inappropriate to use the data from 1995 and 1996 in the generation of the unit hydrograph. Furthermore, we agree with CBS that the use of this site-specific hydrograph data would provide a better model than the use of the SCS unit hydrographs. The SCS hydrograghs have not been shown to be applicable for rainfall-discharge ratios through cavernous conduit systems. At the time that the designs were started the only storm information that was available that reflected current conditions were those occurring during the calendar year 1997. This rainfall was the best-documented post-1996 storm event at the time of Earth Tech's analysis.

The 1997 storms were inconsistent in rainfall-runoff-PCB concentrations. The following chart indicates the variability. As can be seen, there is poor correlation between 1997 rainfall volumes, peak flows, and PCB concentrations. This poor correlation meant that the best available option was to scale up TSS and PCB concentrations linearly proportional to flow rate. As additional storm events are monitored a greater understanding of PCB and flow relationships will develop. The data provided for the 1998 and 1999 storms do seem to show improved consistency for the above criteria at low flows. The existing data supports the premise that the system is more complicated than any single event can predict. Whether this data will support the assumptions made for high flows will need to be assessed as information and data are collected.

Storm Date	Rainfall Inches	Peak Flow GPM	PCB Peak Conc., ppb	PCB Peak Mass, grams
5/31/97	2.58	1224	26	40.5
6/6/97	1.11	1127	10	8.6
6/9/97	1.25	1513	72	114

The antecedent conditions during the January 1997 storm were unknown during Earth Tech's analysis. The information that was provided did not report any differing conditions at the site. Based on CBS's representation of the conditions, Earth Tech agrees with CBS that snowmelt, including snow water content and ambient temperatures could potentially have an impact on the hydrograph resulting from the rainfall event. The snowmelt would create a higher hydraulic loading than a rainfall event without the snowmelt. Earth Tech believes that the impact of this snowmelt on PCB and TSS concentrations is unknown relative to a rainfall event without snowmelt, but agrees that their concentrations could be reduced by the introduction of snowmelt to the drainage.

Based on data provided by CBS in Figures 1 through 4 and Table 1, Earth Tech agrees that using the January 1997 storm event as a basis to predict the 25-year model storm event is a conservative approach (relative term only) since flows from it did not decrease at the same rate as flows in subsequent years. However, we do not feel that it is appropriate to use this limited data set to conclude that Earth Tech's approach has resulted in "over-design". This type of event did occur. Information on future storms can only be predicted with little accuracy and the term of the study is too short to predict normalized flows. In either case it should be noted that the current design capacity is not sufficient to treat and store the entire event.

Use of the April 1998 storm event as the basis to model future storm events would increase the size of the project and the costs as currently projected. Given the interim status of the project Earth Tech does not recommend adding treatment capacity at this time though the current designs can be easily modified by additions to the proposed equipment. Please note that that the basis of the final design model may be larger than the 25 year event or may require containment and treatment of the entire volume.

1.b.(iii) Table 2 does not show 25-year storm data. We are not sure what CBS is saying.

1.b (iv), (v), (vi) CBS claims that even for a 25-year storm, Earth Tech over estimated the flow, resulting in "over-design". Assuming that flows are over estimated, the greater flow rate has little

affect on cost. Based on the differences between the two representations the pumping capacity would be approximately 20% greater and the percentage of PCBs captured would be less during storm events. As of this date, insufficient information has been collected to support the arguments. (See previous discussions concerning development of the hydrograghs.)

The hydrograph for a 25-year storm event generated by CBS has lower peak flows and total flows than the hydrograph generated by Earth Tech. CBS claims that hydrograph data that they have collected during 1998 and 1999, subsequent to the January 1997 storm event used by Earth Tech as the basis of design, indicate that Earth Tech's unit hydrograph may be conservative. This is a relative term given that this type of event did occur. It should be noted that neither the CBS, nor the Earth Tech hydrographs incorporate future modifications to the watershed system that may effect runoff. These factors due not preclude that a larger storm event in the final design may be warranted. Regardless, a conservative approach is normally accepted in dealing with hazardous materials.

Earth Tech's design hydrogragh based on the January, 1997 event would include flows, if any, originating from the adjacent watershed that is to be diverted. The significance of the watersheds influence on the design is not known given that the measurements have not been accounted for within the reporting that has been provided. Development of the CBS (design) hydrogragh using the April, 1998 appears to use the same basis for expanding or modeling the anticipated flows for the given design. A weir currently exists near the location of interest but no measurements have been provided. Within this reporting, CBS represents that a number of sinkholes are located within the adjacent watershed. These features may in fact contribute to the spring's flow.

1.b.(vii). Earth Tech used linear scaling of flow rate data from the unit hydrograph to determine the PCB and TSS concentrations for the 25-year design storm. The data available to Earth Tech at the time of design suggested that there was no compelling reason to use

other scaling factors Subsequent to Earth Tech's analysis, CBS used 1998 and 1999 data to estimate chemographs. CBS chose to use a power function to fit 1998 and 1999 data, given that the power of the flow of water is a power relationship to the velocity of the water. It is important to note that CBS's approach also has certain limitations. Though the model may be representative of low flows within a given range, a number of variables may and probably due change as higher flows are encountered. This is readily evident in pipe flows that have defined dimensions, grades, and coefficients. The lack of high flow data does not allow for the verification of their assumptions. If the subterranean channels are somewhat consistent in cross-sectional areas and turbulent flows (Froude Number) remain consistent, their assumptions may be valid.

Deposition of solids will be influenced by the retention time in natural underground channels, the receiving sump, and the storage tanks. These structures could reduce the levels of TSS and PCB's entering the treatment plant. Likewise, changes in turbulence or pressure flows within the Karst features and disturbances within the system could cause dramatic changes. Data is not currently available to support the position that a single equation can be used accept for the possible relationship across a limited range of flow.

CBS claims that Earth Tech underestimated the TSS and PCB concentrations that will occur during a 25-year storm event leading to an under-design of the system. Earth Tech was instructed to install GAC treatment to handle flow rates of 1,000 gpm. The affect of higher PCB concentrations on the GAC units will cause a shorter service life leading to higher operations and maintenance costs, but will have no affect on either the design or its initial cost.

Should the TSS concentration be higher than anticipated, additional TSS removal equipment can be added to the plant Earth Tech's flexible design will make this task relatively easy and inexpensive. CBS predicts that the TSS concentrations may be double Earth Tech's prediction. Earth Tech's design will enable the solids handling equipment to be duplicated within the existing building such that TSS concentrations that are twice as high as predicted can be handled

It is difficult for Earth Tech to address CBS comments when some of the comments suggest that the system has been over-designed, while other comments suggest that the system has been under-designed.

1.b.(viii). CBS states that, "This type of data was not considered by Earth Tech." We are unclear as to the type of data referred to, but Earth Tech did generate spreadsheets to predict the percentage removal of PCB by the plant and determined that during a 25-year storm event, 70 percent of the total PCB load would be captured. CBS claims that the original intent was to capture at least 80 percent of the PCB. CBS claims that the plant will capture between 87 and 100% of the PCBs. This range of percentages falls within the description of "at least 80 percent PCB capture". It is unclear of what CBS is representing.

CBS states that the "costs have risen dramatically." Earth Tech is unaware of any cost estimate except the one prepared by Tetra Tech in the Draft Alternatives Evaluation Report dated August 20, 1998. The purpose and conditions under which this estimate was prepared is not known. The cost estimate does not appear to address the feasibility of implementing the purported concepts, nor does it appear to adequately address the necessary facilities and equipment needed to effectively contain and treat the potential loadings that are anticipated. Given the brevity of the reporting, it appears that its use is limited identifying and comparing relative cost of potential treatment options and not address or provide the basis for an engineers estimate.

2.a. Earth Tech was not involved in determining the general location of the treatment facility.

2.b. Earth Tech plans to install two culverts under the tracks to separate contaminated spring water from uncontaminated, localized surface runoff. Once separated, the uncontaminated flow would bypass the treatment system. Bypassing the uncontaminated water reduces the size of the treatment plant and the capital cost. Treating less water also minimizes operating and maintenance costs.

Earth Tech does not share the CBS concern about undercutting of the existing culvert, but we question why CBS would propose using the culvert if it is being undercut? We have no information to suggest that this will be a problem or that the rail road has being losing its fill in this area. Given the unknown age of structure, its location in a contaminated zone, constructing in the wet, and the potential leakage of PCB contaminated water the replacement of the structure in a location conducive to the construction and operation of the system was deemed prudent. Likewise, should a problem occur with the proposed piping, the existing pipe could be pressed back into service. Should leakage around the existing pipe become a problem, a positive seal and / or cut-off wall will need to be installed. Rather than spend money on a problem that is not known to exist, we have elected to obtain confirmation once the pipe is abandoned.

2.c Earth Tech cannot adequately respond to this comment since we do not know the locations of the sinkholes on the northwestern wall to which CBS refers. Does CBS have information that the reported sink holes flow during any storm event or that they are connected to the Illinois Central Spring?

At additional cost and possibly additional property, the bypass line transmitting uncontaminated and treated surface water could be lengthened to extend beyond the area in question. This has some problems if the CBS proposal to use the area for a basin would come to fruit. Pipe sizing would need to addressed. Hydraulic balances downstream could be affected.

Should extending the bypass line, as suggested by CBS, become desirable in the future, it could be accomplished as part of the final remedy. Is there any evidence to suggest that additional scouring would pose a problem or is it only conjecture? Also, if this argument makes sense, then does it also make sense that the bypass line should be extended even further downstream to prevent scouring in all stream bed locations where PCB-impacted sediments might have accumulated?

2.d. CBS recommends constructing an in-ground sump using the stream channel area between the railroad tracks and the existing weir as a collection basin. Earth Tech believes CBS's

concept combines the collection sump with the retention basin. To achieve a storage capacity equal to the current designs, the retention basin would require one acre of land at an average depth of 4-foot or its equivalent. In the event that sufficient area and volume could be constructed in line with the stream bed, the following problems would need to be addressed: identification / removal and proper disposal of contaminated soils, clearing within a containment zone, sealing the structure bottom, uplift forces on the lining, rock removal, scouring of hazardous sediments from the basin, hazardous waste dam construction / permits / and certification, methods of cleaning sediments and debris without compromising the integrity of the structure, leak detection, sufficient freeboard from overtopping,, security, wildlife and water fowl protective measures, pump volume considerations, rodent and animal control (burrowing), freeze considerations, access, potential property acquisition, backwater effects, karst features, seasonal water table, life of structure considerations, expansion capability, operation flexibility, abandonment of a hazardous structure, leakage around the existing pipe, etc.

For the basin to be used as a collection sump with reasonable pump cycle times, an additional area of 3,800 square feet at a depth of four feet would be needed. Earth Tech questions whether this volume is available in the area between the tracks and the weir without excavation.

CBS indicates that their idea of a collection sump will be much less expensive than that which was designed by Earth Tech. It is unclear the size of the collection basin which CBS has proposed and if it has adequate volume for high flow conditions, thus it is difficult at this time to compare the associated costs. The feasibility of such a structure is questionable for this application. (See previous discussions)

CBS seems to suggest that the area between the tracks and the weir could serve as a collection/storage basin and then under item 2.f. below, CBS suggests that the Swallow Hole could be used as a location to construct a collection/storage basin. These are two different locations and CBS suggestions therefore seem to be contradictory.

2.e. CBS reports dismiss seven storm events over the period of 9/31/94 through 10/20/96 due to significant snow at the time of rain, excessive sediments over the transducer, overtopping of the weir, etc. Within a three year period there appears to be reported events (exclusive of unreported events) that have exceeded the capacity of CBS to measure flows. Representations that the flows will not exceed 3000 gpm do not appear to be valid. The stage storage relationship of pooled water and pipe restrictions on the North side of the railroad would also cause flow calculations to be skewed. The larger events over a three year period have exceed the reported flows.

CBS indicates that the number of pumps (spring receiving pumps) could be reduced without affecting the ability to meet the system design flows and that total pump redundancy is not necessary. CBS states that for three consecutive years, the spring did not flow at a rate greater than 3,000 gpm making it unnecessary to pump flows greater than this magnitude (See discussion above). The system was designed for an influent flow from a 25-year storm event with a safety factor of 10 percent. If the combined capacity of the primary pumps were only a maximum of 3,000 gpm, then the design criteria of meeting the hydraulic loading from a 25-year storm would not be met. To our knowledge, CBS does not currently have the direct capability of measuring events greater than 4500 gpm.

Redundancy is provided for all of the primary spring receiving sump pumps since the consequences of any of those pumps being down would result in PCBs bypassing the treatment system and continuing downstream untreated. Using the larger capacity pumps with valves and logic to back-up the smaller capacity pumps in lieu of back-up pumps would leave the system without back-up pumps for the larger capacity pumps. A situation like this would again cause PCBs to bypass the system during high flow conditions (i.e., 25-year storm). Earth Tech agrees that the project capital costs are higher due to the inclusion of back-up costs, however, we feel that it is justified against PCBs bypassing the treatment system during high-flow conditions. Waste that are not listed typically have similar systems in place.

CBS indicates that substantial electrical energy savings would be realized by reducing the number of pumps. This would not be the case since back-up pump operations do not coincide with primary pump operation. CBS states that "pumping drives power requirements". This is obviously true, but to save electrical costs requires less pumping which results in the capture of lesser amounts of PCBs.

2.f. CBS indicates that using two 2-acre foot storage tanks, as designed, will lock in the current site as the long-term facility location because it will not be economically feasible to move the tanks. As an alternative, CBS suggests the Swallow Hole as a location where 4-acre feet lined retention pond could be constructed. Earth Tech contends that bolted steel tanks can be relocated, but an in-ground retention pond cannot.

If a 4-acre foot retention pond were constructed in the area of the swallow hole the following problems would need to be addressed: removal and proper disposal of contaminated soils, sealing the structure bottom, uplift forces on a lining, rock removal, scouring of hazardous sediments from the basin, hazardous waste dam construction / permits / and certification, methods of cleaning sediments and debris without compromising the integrity of the structure, leak detection, sufficient freeboard from overtopping, security, wildlife and water fowl protective measures, pump volume considerations, rodent and animal control (burrowing), freeze considerations, access, backwater effects, karst features, seasonal water table, life of structure considerations, expansion capability, operation flexibility, flooding and backwater effects, abandonment of structure, etc. Given that reasonable alternatives are available, placing a flexible lined basin on top of a known Karst feature does not appear reasonable or prudent.

If a retention pond were used, the storage capacity of the system would be considered in-line storage, in lieu of the designed off-line storage provided by the two 2-acre feet storage tanks. Earth Tech believes that the off-line storage approach will provide for capture of a higher percentage of TSS and PCBs than would in-line storage.

2.g. CBS states that they are aware that Earth Tech sampled large volumes of spring water in the fall of 1998 and sent the samples to U.S. Filter. The work, which CBS is referring to,

:s low-flow sampling work that Earth Tech performed under a subcontract agreement with Tetra-Tech. The work was completed using sampling methods and protocols defined by Tetra-Tech. Samples were forwarded to U.S. Filter for treatability analysis as required by Tetra-Tech. Results of the low flow treatability analyses have not been made available to Earth Tech. Earth Tech anticipates completing the high flow sampling for Tetra Tech during spring/summer 1999.

2.g.(i) CBS thinks that the 500 gpd/ft^2 surface overflow rate of the Lamella Clarifier seemed very high for a system without coagulation and flocculation. The 500 gpd/ft^2, which translates to 0.35 gpm/ft^2 was stated as sufficient by Don Bzdyl, a representative of Enprotec, the manufacturer of the selected equipment, to handle the 25-year storm conditions shown in Earth Tech's design basis. However, despite these vendor assurances, Earth Tech agrees that this SOR may be too low to be effective without coagulation/flocculation. It is for this reason that we have designed the system to be easily retrofitted with coagulation/flocculation equipment. All bidders for the clarifier were required to specify a unit that could have a coagulation/flocculation unit installed upstream. Coagulation and flocculation are anticipated to be added at a later date once Tetra Tech study is complete.

Should the solids loading be much higher during a 25-year storm event than was predicted by Earth Tech, it is also possible, as previously stated, to add solids removal equipment to the process. Earth Tech's flexible design should enable relatively easy addition of process equipment.

2.g.(ii). At a solids loading rate of 4 lb/ft^2, CBS indicates that they would expect typical hydraulic rates to range from 2-6 gpm/ft^2, so the calculated proposed rate of 6.6 gpm/ft^{2}is on the high end of the range. Earth Tech's discussions with Don Bzdyl (Enprotec / manufacturer) that the hydraulic loading rate is acceptable.

CBS also indicates that the solids loading rate of 4.0 lb/ft^2 is also high. Earth Tech discussions with Don Bzdyl (Enprotec / Manufacturer) that in a short term, as would be found during a 25-year storm event, the specified multi-media filter would be able to

handle the anticipated solids loading. Mr. Bzdyl represents this is due to the ability of the top layer of filter media to store solids.

CBS estimates that each filter should be about 150 ft^2, assuming a hydraulic loading rate of 4 gpm/ft^2 and one unit out of service for back-washing. They indicate that the designed units are undersized and may each require an unacceptable number of backwashes per day during storm events. Under normal conditions, back-washing is anticipated to occur infrequently enough that such a low hydraulic loading rate is not necessary. The design solids loading rate is not the day-to-day solids loading rate. The system is sized to easily handle normal solids loading and handle the rare 25-year storm event solids loading for a short time period.

CBS states that since the backwash water is routed to the sludge thickener tanks and is then recycled to the filter feed tank, the flow capacity of the plant will be effectively reduced during backwash cycles. The thickeners and the sand filters have been sized to avoid such a reduction in capacity of the plant.

Earth Tech has specified solids handling equipment that perform at peak performance to meet the demands of a 25-year storm event. We recognize that it may fail to do so, but we were sensitive in our selection of equipment. We designed a flexible system so that if solids loading is higher than anticipated or the equipment does not perform as represented, it will be possible to add parallel treatment capacity. Furthermore, Earth Tech anticipates that the plant operators will be testing the systems during use. This testing will commence soon after startup in order to preclude potential problems that may occur during extended periods of operations. This should include review of coagulation/flocculation requirements if so warranted.

2.g.(iii). CBS indicates that if the particle size distribution is comprised mostly of 20 microns or greater, the multimedia filters will perform sufficiently well under most circumstances (non-storm) to not require the use of bag filters before the GAC units. Because Earth Tech was directed to design for storm conditions, given our assumptions, we felt it would be necessary to protect the GAC units from solids with bag filters.

CBS states that the bag filters will be required to drop the TSS to below 5 mg/L which may require an unacceptably high frequency of bag change-outs during storm events. Because of the difficulty in predicting TSS concentrations and particle sizes, Earth Tech has specified an operator to be on site during storm events. Earth Tech anticipates initially using 1-micron mesh filter bags, but has selected bag filter housings that can accept bags of various aperture sizing. The flexibility to use bag filters of varying apertures in the specified housing allows the system to remain flexibile with the system tailored to actual demands. CBS suggests that in lieu of the specified bag filters, automatic backwash filters could be considered. Back-washable filters have limitations that are addressed previously in this document.

2. h. CBS contends that during high flow conditions, PCBs may be sorbed on small, suspended solids or colloids, which may pass through the carbon beds. It is inferred that this has happened at the Neal's Landfill system.

In December of 1998, Earth Tech spoke with Mr. Mark Stenzel of Calgon Carbon Corporation regarding the possibility of small suspended particles passing through their Model 10 liquid GAC adsorbers. These are the adsorbers that Earth Tech specified. Mr. Stenzel represents that the possibility of PCBs sorbed to particles of 5 micron size or smaller passing through the system (Model 10 GAC) bed is remote with proper maintenance. Earth Tech also spoke with a company in December 1998 that installed and is currently operating a water treatment system for the U.S. EPA (Superfund project) which uses liquid GAC to treat PCB-contaminated dredge water from the Manistique River in Manistique, Michigan. Mr. Rick Chanelli of Superior Specialty Services indicated that they do not have any problems meeting the 0.1 ppb PCB discharge limit of the treated water to the river. Their system includes in-line bag filters after liquid GAC treatment using 1-micron mesh filter bags.

At this time Earth Tech anticipates initially using 1-micron mesh filter bags in-line before the GAC system. The system has been designed for maximum flexibility. If needed,

smaller micron bags could be used in the bag filter housings or additional finer filters could be incorporated if PCBs are detected in the effluent.

2. i. CBS contends that the filter press, as designed is oversized based on CBS's calculations. Earth Tech's design basis indicates our design is sufficient to de-water the sludge from a 25-year event in one day, assuming the filter press is expanded to its full capacity of 100 ft^2. Note that this statement contradicts previous statements by CBS that the system will experience higher TSS loads.

CBS states that the elimination of the dewatering equipment would result in minimum capital equipment and installation cost savings of $100,000 not including O&M, building space, electrical, piping, and other appurtenances. Earth Tech believes that the reported savings of eliminating the filter press would not be realized given the addition of sludge storage (including the means to prevent freezing) combined with the transport of unclarified water during periods that the storage capacity would be exceeded. Storage and transport of hazardous water is typically not cost effective. The potential of reoccurring, multiple, and extended storm events could cause additional operation problems. These type of events have been experienced in the area over the past few years.

CBS states that a smaller filter press should be considered. Then they suggest that no filter press would be needed if sufficient storage volume were provided. It is not reasonable to evaluate every conceivable option put forth by CBS to the level of detail required to determine whether or not it is a more cost-effective, more efficient way to achieve the treatment objectives. In Earth Tech's judgement, the filter press as specified will enable the operators to contend with the 2.5 tons of wet solids anticipated to be present in a 25-year storm event. If a smaller filter press were installed, it would be undersized relative to the rest of the facility. This means that the filter press would not keep up with the rest of the plant in processing TSS-adsorbed PCBs. The consequences would involve excessive solids production that would result in a shut down until the filter press could catch up. When the plant is shut down, untreated water containing PCBs bypass the plant. The filter press is also sized to handle the hydraulic flow rate, and not just the solids loading rate.

CBS proposes to replace the filter press with thickening and off-site disposal of de-watered sludge. It is not clear how it would be more cost-effective for an outside contractor to come in and de-water the sludge on an annual basis. Furthermore, the idea that this could potentially be cost-effective is based on addressing TSS over the course of one year (1996) and not on addressing the solids from a 25-year storm event.

2.j. CBS does not believe there is a need for a second thickener. Two thickeners would be more efficient because of the difference in initial sludge concentration between the clarifier underflow and the multi-media backwash. Using one thickener would in effect be diluting the sludge from the clarifier that had already been partially thickened.

CBS believes that Earth Tech intends to have thickener aid added directly to the thickener. Final design of a thickener aid system has not been initiated. Any future design of a thickener aid addition system would use information collected from the operation of the system or the Tetra Tech reporting.

We agree with CBS that this would be a problem, but we have not designed the systems with the idea in mind that the thickener overflow or filter press filtrate will have zero TSS

3. Bullets 1 through 5 Based on the qualifications and discussions as previously presented in this document, we agree with the information presented here.

3. Bullet 6 There appears to be a misunderstanding about Earth Tech's cost estimate. The estimate provided to CBS was primarily for the construction of the facilities only with certain line item costs included for contractor overhead and profit. Our cost estimate does include the items that CBS says are excluded such as design, engineering support, construction management, inspection, accounting, leases, temporary utilities, waste removal, survey, QA/QC testing and contingencies. It also includes operations and maintenance costs for the first year. Therefore, Earth Tech anticipates that the total project cost will not be "substantially in excess of $6 million dollars." Given that bids for the various phases of

construction will be received in the next few weeks, the actual costs, less contingencies, will be known. The costs of the project for the line items presented by CBS appear to be below or well within the percentages as reported.

3. Bullets 7 and 8 — Earth Tech recently received three bids for the electrical contract, which includes I&C. These three bids were $428,000, $427,000 and $530,000. Earth Tech has let the work to the lowest responsible contractor for this work.

3. Bullet 9 — Earth Tech's building cost estimate does not contain any known duplications. In any event, the contract to construct the building has been let.

3. Bullet 10 — Earth Tech's concrete cost estimate for the treatment building may be high, but we will be receiving four bids on June 11, 1999 to perform this work. Initial indications are that the estimates may be too low.

3. Bullet 11 — Earth Tech's storage tank cost estimate is based on the lowest bid from three tank vendors that submitted quotations. Earth Tech mailed purchase inquiries to more than 3 vendors.

3. Bullet 12 — Earth Tech and its subcontractors are paying no sales tax on equipment or materials purchased for this project. This may be an issue that needs to be addressed if CBS were to take over the operation of the facility.

The cost of the project, less salvage values, verses the projected gallons of water to be treated over the facilities life would probably be a better comparison. Earth Tech did not evaluate the data presented by CBS in Table 7 so we neither agree nor disagree with the estimates of PCB mass at the spring or percentages of PCB captured. However, it is important to note that Table 7 indicates that a total of 14.036 kilograms of PCB passed from the spring in 1996, 1997 and 1998. This mass converts to 30.88 pounds of PCB, which over 30 years would total 308.8 pounds of PCB. The cost would therefore be $50,000 per pound, not $100,000 per pound. It appears that CBS did not convert from kilograms to pounds in their calculation of cost per pound.

On page 20, CBS states, "In summary, a system based on reasonable interim objectives of treatment that approximates the original August 1998 EPA interim treatment goals could be built for much less than this facility." Earth Tech does not understand how the information presented in the first 19 pages can be used to make this conclusion. In order to make a comparison, an alternate system would need to be designed with an estimate prepared; *similar to the methodology* followed by Earth Tech. Earth Tech does not accept CBS's premise that it would be feasible and practical to construct a portable, interim system that costs significantly less and is functional in terms of removal of both dissolved-phase PCBs and PCBs that are adsorbed to TSS, *unless* significant design assumptions were changed or bypasses of the system were allowed.

4. Earth Tech approached this project with a completion date of October 26, 1999. By request of the U.S. EPA, the time line was extended to May, 2000. CBS should consult with the U.S. EPA concerning the change in the completion date. As of this date, the operation is projected to be operational by May, 2000.

5. At the request of EPA, Earth Tech prepared an operations and maintenance (O&M) cost estimate. It was finalized in April 1999. We estimate the annual O&M cost to be $343,000. This is based on a number of assumptions including that the labor cost will be equivalent to one full-time operator. We assumed that no operator would be present during dry periods, but that rainy weather may require several operators at one time.

This concludes Earth Tech's response to CBS comments.