

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
 WATER QUALITY STANDARDS AND)
 EFFLUENT LIMITATIONS FOR THE)
 CHICAGO AREA WATERWAY SYSTEM)
 AND THE LOWER DES PLAINES)
 RIVER: PROPOSED AMENDMENTS)
 TO 35 Ill. Adm. Code Parts 301,)
 302, 303 and 304)

R08-09
 (Rulemaking-
 Water

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STATE OF ILLINOIS
 Pollution Control Board

REPORT OF THE PROCEEDINGS held in the

above entitled cause before Hearing Officer Marie
 Tipsord, called by the Illinois Pollution Control
 Board, taken by Steven Brickey, CSR, for the State
 of Illinois, 100 West Randolph Street, Chicago,
 Illinois, on the 17th day of May, 2011, commencing
 at the hour of 1:30 p.m.

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MS. ALISA LIU, Environmental Scientist
MR. ANAND RAO, Senior Environmental Scientist
MR. TANNER GIRARD, Acting Chairman
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I N D E X

THE WITNESS: JENNIFER WASIK

	PAGE
Examination by Ms. Franzetti.....	4
Examination by Mr. Ettinger.....	52

E X H I B I T S

Marked for
Identification

Exhibit No. 462.....	61
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1 MS. TIPSORD: Let's go on the
2 record. We're going to start with Ms. Franzetti
3 and Midwest Generation.

4 E X A M I N A T I O N

5 BY MS. FRANZETTI

6 Q. Good afternoon, Ms. Wasik. My name
7 is Susan Franzetti. I'm counsel for Midwest
8 Generation. If at any time my questions are
9 unclear to you, please let me know and I will
10 rephrase them so you can understand them. All
11 right?

12 A. Yes.

13 Q. Thank you. Question one. On page
14 four of your pre-filed testimony, you state that
15 when the habit index scores are borderline or
16 inconclusive other important factors should be
17 considered including sediment toxicity and unique
18 flow conditions.

19 Please explain further how such
20 other important factors should be considered in
21 determining the appropriate use classification for
22 a given waterbody?

23 A. This is described on pages six
24 through eight of attachment one to my testimony.

1 Basically, as I touched on earlier with IEPA's
2 questions, we faced a continuum of habitat index
3 scores which we used as a first cut to try and
4 classify the waterways into either category one or
5 category two in the CAWS and there were some that
6 were clearly relatively higher and those that were
7 relatively lower. So these were on the easier end
8 to classify. However, some scores that fell more
9 in the middle required a bit more scrutiny. So
10 with the -- in two cases, the Lower North Branch
11 of the Chicago River and the Chicago River main
12 stem since their scores were 47 and 45, which was
13 right in the middle of the continuum, we had a
14 waterway with the score of 49 that was in category
15 one and waterway that was in category two with a
16 score of 47.

17 So we wanted to use other
18 information to classify the waterways, these
19 waterways. So as I described in my attachment,
20 there were various key habitat features that were
21 worse in the Lower North Branch than in the Upper
22 North Branch. So it appeared reasonable that they
23 should be in two different groups. For example,
24 vertical wall banks, riparian vegetation, bank

1 pocket areas, large substrate and organic sludge
2 were all different enough that we felt they should
3 be considered in two different categories and in
4 addition there were toxic sediments present
5 according to our toxicity essay in the Lower North
6 Branch Chicago River. So considering all of these
7 factors, we decided that the Lower North Branch
8 belonged in category two.

9 Q. Do you recall whether -- I think
10 this morning you did indicate Bubbly Creek. Is
11 that an example of unique flow conditions that
12 effected how you classified?

13 A. Yes, there are a few waterways we
14 ended up classifying as a category three water
15 which were diagnosed waterbodies and I think we
16 did Bubbly Creek, the Grand Calumet River, off
17 channel slips such as the collateral channel and
18 the North Branch Canal. Areas that don't receive
19 flow. We felt that another category should be
20 present to account for these issues as well.

21 Q. Moving onto question two. As you
22 note on page three of attachment one to your
23 pre-filed testimony, CAWS habitat index scores
24 were determined for all the of the CAWS reaches

1 between the Wilmette pump station, Chicago River
2 Controlling Works and O'Brien Lock and Dam and the
3 Lockport Lock and Dam and those results are
4 presented in Table 7-7 on page 139 of the Habitat
5 Evaluation Report. Is it correct that the CAWS
6 habitat index scores the highest score was
7 achieved by the North Shore Channel with a score
8 of 75?

9 A. Yes, that's correct.

10 Q. Is it correct that the Upper North
11 Shore Channel along with the Little Calumet River,
12 which scored a 52, and the Upper North Branch
13 Chicago River which scored a 49 are all proposed
14 to be included in category one?

15 A. Yes.

16 Q. Is it also correct that the CAWS
17 habitat index scores were a major factor in the
18 proposed classification system, but not the only
19 factor used to slot individual segments into the
20 proposed category one through three use
21 classification?

22 A. I would say that is true with the
23 caveat mostly between category one and two. We
24 used habitat index scores. Category three were

1 the stagnant flow conditions.

2 Q. I think you've answered B earlier in
3 discussing the habitat improvement study in
4 response to the Agency's questions. Let me check
5 E. I think you also discussed E in response to
6 the Agency's questions. I want to skip E. I
7 think you touched on F, but I'm going to ask F.

8 Why did the review of habitat
9 improvement potential result -- I'm sorry. Why
10 did the review of the habitat improvement
11 potential result in these scores not going up
12 significantly?

13 A. Certain conditions are not
14 improvable in the index including maximum channel
15 depth, manmade structures, lack of large substrate
16 and presence of organic sludge. These conditions
17 are not feasible to improve and also various
18 waterways may or may not have potential for other
19 improvements and still meet the needs of
20 navigation flood water conveyance, et cetera.

21 Q. Moving to three. Does category one
22 score any segment that scores above 80 and up to
23 100 or is it contemplated that there may be
24 another category above category one?

1 A. No, not in the CAWS.

2 MR. ANDES: Just to be clear.

3 You're answering the first part of that question.

4 Does category one cover any segment with a score

5 above 80 and up to 100 and the answer is, no, not

6 in the CAWS?

7 THE WITNESS: Or is it contemplated

8 that there may be.

9 BY MS. FRANZETTI:

10 Q. So the second part -- let's break it

11 down. Does category one cover any segments that

12 score above 80 and up to 100?

13 A. No.

14 Q. Because there weren't any that

15 scored in that range, correct?

16 A. Yes.

17 Q. Is it contemplated that there may be

18 another category above category one?

19 A. Not for the CAWS.

20 Q. And you've got no opinion as to

21 whether or not the Upper Dresden Island Pool, for

22 example, might fit in above category one?

23 A. Possibly. I don't have -- I,

24 personally, don't have data on that.

1 Q. Question four.

2 MS. WILLIAMS: Can I follow up on
3 that really quick? Could you even use the habitat
4 index to even apply to the Lower Des Plaines River
5 or is it CAWS specific?

6 THE WITNESS: I think because it was
7 generated using CAWS data I'm not sure that it
8 could be used in the Des Plaines, but there are
9 some similarities that might make that a useful
10 comparison or a useful tool. I don't know.

11 BY MS. FRANZETTI:

12 Q. Question four. Were there other
13 factors beyond the habitat index score with and
14 without habitat improvement that were used to
15 place segments of the CAWS into the proposed use
16 classification that you have not already
17 identified in your testimony today?

18 A. I don't think so. I think we've
19 discussed them all now.

20 Q. Question five, on page four of your
21 pre-filed testimony in connection with the
22 discussion of the District's category one proposed
23 use designation you note that the Upper Branch of
24 the Chicago River and Little Calumet River should

1 both be placed in category one. Is it correct
2 that neither these waters is manmade, but both are
3 rivers that have been channelized?

4 A. Yes.

5 Q. Please describe further what you
6 mean by your testimony that while each of these
7 waterbodies contain reaches with earth and bank,
8 they are, quote, steeper than most found in
9 natural systems?

10 A. Just that there's not natural
11 connectivity with the floodplain. There are steep
12 banks that are specifically designed that way.
13 They're channelized to prevent flooding and to
14 convey treated waste water effectively out of the
15 system.

16 Q. You state on page four that, quote,
17 some areas of in stream cover (EG overhanging
18 riparian vegetation, fixed aquatic vegetation,
19 boulders or woody debris), end quote, exist in
20 these areas, can you provide more information
21 concerning the extent of the in stream cover that
22 exists for the Upper Branch Chicago River and the
23 Little Calumet River respectfully?

24 A. I would refer you to page 136 of the

1 Habitat Evaluation Report Table 7-5. It contains
2 the values of key habitat variables assigned to
3 the CAWS reaches. In terms of the Upper North
4 Branch Chicago River, there is an overhanging
5 vegetation parameter. This has percent
6 overhanging vegetation for your first example,
7 which is one example of in stream cover.

8 Q. What is the percent in that table?

9 A. For the Upper North Branch, it's 25
10 percent and for the Little Calumet River it was
11 six percent.

12 MS. WILLIAMS: Ms. Wasik, do you
13 know if that means there were more quantity wise,
14 more overhanging vegetation in the North Branch or
15 is that number a ratio?

16 THE WITNESS: It's a percentage.

17 MS. WILLIAMS: So they could have
18 the same quantity, but it would be -- or no?

19 MS. FRANZETTI: It's a pretty big
20 spread. 6 percent to 25 percent to have the
21 same --

22 THE WITNESS: It probably wouldn't
23 be the same. I'm not sure of the exact length of
24 segments, but I would say --

1 MS. WILLIAMS: What is the relevant
2 question; length or width?

3 THE WITNESS: It would be length for
4 overhanging vegetation.

5 MS. WILLIAMS: Isn't the percent
6 overhanging vegetation a function of the percent
7 across the width, isn't that how that metric is
8 determined? So if you have -- really isn't it
9 just a function of how wide is your stream, not
10 how much vegetation do you have?

11 THE WITNESS: I believe the percent
12 overhanging vegetation is actually by length of
13 the waterway. Limnotech did a video survey and I
14 think by length these are the percentages that had
15 overhanging vegetation.

16 BY MS. FRANZETTI:

17 Q. Just so it's clear in the record.
18 The percentages, that is the percentage of the
19 study location area that was the 400 meter length
20 that Mr. Bell has testified to, correct,
21 Ms. Wasik?

22 A. Actually, I think these may have
23 been -- let me see here. Certain characteristics
24 that could be measured by the video survey I

1 believe include the entire reach.

2 Q. Do you know sitting here offhand?

3 A. I would want to direct that to
4 Scott, but that is my understanding.

5 MR. ANDES: Do you want us to have
6 Mr. Bell answer the question?

7 MS. FRANZETTI: If you don't mind.
8 At least on this issue, are the percentages based
9 on -- Fred, the question is, are the percentages
10 on that table based on a percentage of the 400
11 meter study location area in that segment or is it
12 the length of the actual, for example, Little
13 Calumet River that that's a percentage?

14 MR. ANDES: Do you know which table
15 you're referring to?

16 MR. BELL: No. Show me what table
17 you're on.

18 MS. TIPSORD: I just remind Mr. Bell
19 is still under oath.

20 THE WITNESS: Table 7-5, but the
21 question is actually different because it's based
22 on the 400 meter stretch or the video survey and I
23 think the overhanging vegetation was based on the
24 video survey.

1 MR. BELL: So the original
2 measurements are based on a percentage of the 400
3 meter sampling reach area. So we take the area
4 covered by overhanging vegetation in that 400
5 meter reach on both banks, divide it by the total
6 area of the 400 meters. So length times width of
7 overhanging vegetation divided by length times
8 width of the 400 meter channel segment.

9 Then, when we extrapolate that
10 to characterize the entire reach, we use the
11 digital video to assess similarity along, let's
12 say, the entire North Shore Channel and
13 extrapolate those field areas based on
14 measurements through the whole section, but it's
15 still representative of percentage of channel
16 area. So does that answer the question?

17 MS. FRANZETTI: I think it does.

18 MR. BELL: Okay.

19 MS. WILLIAMS: Do you now want to
20 change your answer, Jennifer?

21 THE WITNESS: To what he said? Yes.

22 BY MS. FRANZETTI:

23 Q. It's only fair, Ms. Wasik, because
24 they were all deferring to you that you get a

1 chance to say I say what he said. Subparagraph C
2 you state that, quote, relatively lower depth
3 areas may be present in these waters. Please
4 explain in more detail what you mean by this
5 statement?

6 A. There are some areas in category one
7 water that have shallower waters than most
8 category two waters. The max depth in the same
9 Table 7-5 and side depths tend to be shallower,
10 for instance, in category one waters than in the
11 Chicago Sanitary and Ship Canal or in the Cal-Sag
12 Channel.

13 Q. So the relatively lower depth there
14 is really referring to as compared to category two
15 waters?

16 A. Right, relative to other CAWS
17 waters.

18 Q. Moving onto D. You state that,
19 quote, commercial navigation is generally absent
20 in category one waters with the exception of the
21 Little Calumet River, end quote. Is there any
22 commercial navigation in the Upper Branch Chicago
23 River? That might have been asked this morning.
24 I don't remember which segment was specifically

1 asked about?

2 A. No, not in the Upper North Branch
3 Chicago River.

4 Q. Do you have any information
5 concerning the extent of the commercial navigation
6 in the Little Calumet River other than what is
7 already contained in the Limnotech report? We
8 touched on this the other day with Mr. Bell, but I
9 don't know whether the District also looked at
10 potentially more recent commercial navigation data
11 as well in categorizing the waters?

12 A. I don't think I have any additional
13 information. I did look at the Army Corps website
14 which I believe was where Limnotech also got their
15 data, but just looking at one year for an example
16 I have tonnages through Lockport in 2008 were just
17 over 12 million and at the -- I'm sorry. Yeah, at
18 O'Brien Lock it was 6.8 tons.

19 Q. Also, in 2008?

20 A. Yes.

21 Q. That is more recent data than what I
22 think is in the Limnotech report. It might have
23 ended in 2005?

24 A. I'd say the navigation is somewhat

1 more significant in the Ship Canal than the Little
2 Calumet.

3 Q. Moving onto six. On pages four to
4 five of your pre-filed testimony, you state that,
5 quote, while fine sediment -- while fine sediments
6 may be widespread in the CAWS category one waters,
7 a majority of sediment samples were demonstrated
8 to be nontoxic, end quote. Is it correct then to
9 state that the category one waters do not
10 generally exhibit the stressor of contaminated
11 sediments?

12 A. I would say that sediment
13 contamination is pretty ubiquitous throughout the
14 CAWS. According to our sediment chemistry data,
15 if you look at various threshold values for
16 sediment contamination in the literature, there
17 are elevated values of various constituents in
18 sediments throughout category one and category two
19 waters.

20 Q. Is it correct to state that the
21 category one waters do have sedimentation issues
22 that adversely impact the quality of the physical
23 habitat for the fish community?

24 A. Yes, definitely the siltation and

1 major sedimentation is throughout category one and
2 two waters of the CAWS. There's fine sediments
3 throughout.

4 Q. Is it correct that unlike the
5 category two waters, category one waters do not
6 have a majority of sediment samples showing
7 contaminated sediments are present? In other
8 words, is that generally a distinction between
9 category one and category two waters?

10 A. So we're talking about sediment
11 contamination whereas one of the factors that the
12 District used in order to classify waterway
13 segments into category one or two was our sediment
14 toxicity data and that is where we found a
15 majority of sediment samples in category two
16 waters showed toxicity.

17 Q. So if I change that question to say
18 is it correct that unlike category two waters
19 category one waters do not have a majority of
20 sediment samples showing toxic sediments are
21 present, would you agree with that?

22 A. That that's generally true, yes.

23 MS. WILLIAMS: Are there any
24 samples, Ms. Wasik, where you used the absence of

1 a majority of contaminated sediments to upgrade
2 the water from its Habitat Evaluation Report?

3 THE WITNESS: No.

4 BY MS. FRANZETTI:

5 Q. Moving to question seven. On page
6 five of your pre-filed testimony, you state that,
7 quote, habitat features that are important to
8 sustaining healthy and balanced warm water aquatic
9 communities as discussed in Dr. Mackey's testimony
10 are not widespread in category one waters,
11 however, the physical habitat in category one
12 waters is relatively better than other waterways
13 in the CAWS, end quote.

14 Please explain further which of
15 the important habitat features are present, but
16 not widespread in category one waters and how the
17 physical habitat in category one waters is
18 relatively better than other parts of the CAWS?

19 MR. ANDES: Let me hold you right
20 there for a second. I want to follow up. Let me
21 interrupt. I want to go and follow up on --

22 MS. WILLIAMS: I think she should
23 answer the question on the record first before we
24 follow up.

1 MR. ANDES: It's a follow up on your
2 question.

3 MS. FRANZETTI: I don't think it's
4 worth arguing about it. If he wants to go back to
5 your topic, I think it's better to have it come
6 sooner in the transcript than start another
7 subject.

8 MS. WILLIAMS: Okay.

9 MS. FRANZETTI: It's up to me. Go
10 ahead.

11 MR. ANDES: Thank you. Can you go
12 over again to what extent the absence of toxic
13 sediment samples resulted in waters moving up
14 rather than down?

15 THE WITNESS: Well, back to your
16 question, Deb, basically the way I described it in
17 my testimony in the Lower North Branch Chicago
18 River the presence of toxic sediments cause that
19 to be in a lower category, but I suppose maybe
20 it's a glass half full half empty scenario where
21 that also played into the fact that the North
22 Branch, the Upper North Branch, not having toxic
23 sediments played into that being in a higher
24 category.

1 MS. WILLIAMS: Really?

2 THE WITNESS: Really, yes.

3 MS. WILLIAMS: So what about the
4 other factors? Were there any other -- when you
5 looked at navigation, were there any waters that
6 you used lack of navigation to put into a higher
7 category instead of using it to put into a lower
8 category?

9 THE WITNESS: I think we talked
10 about this earlier in materials of the North
11 Branch, specifically the Upper and Lower North
12 Branch being navigation versus lack of navigation,
13 toxicity versus lack of toxicity. I think that
14 played into it, yes.

15 MS. WILLIAMS: Not just the habitat
16 score, but you also looked at the lack of the
17 contaminated sediments?

18 THE WITNESS: Toxicity. Sediment
19 toxicity. Not contamination necessarily.

20 MS. WILLIAMS: Okay. Thank you.

21 MR. ANDES: I'm sorry for the
22 interruption.

23 MS. FRANZETTI: It's okay. I'm
24 going to repeat a portion of the question seven

1 just so the transcript is a little easier to
2 follow.

3 BY MS. FRANZETTI:

4 Q. Which of the important habitat
5 features are present, but not widespread in
6 category one waters and explain how the physical
7 habitat in category one waters is relatively
8 better than other parts of the CAWS?

9 A. So what is relatively better about
10 it is the extent to which some of the physical
11 habitat parameters are present in category one
12 versus category two. So, in this instance, we're
13 talking about aquatic vegetation, woody debris,
14 overhanging cover, in general, are more prevalent
15 or the extent to which they're presence in higher
16 in category one versus category two waters.

17 Q. Those habitat features that you just
18 mentioned, are those the important habitat
19 features that are present, but not widespread in
20 category one or do you want to add some more is
21 what I'm getting at?

22 A. These were the main examples. If
23 you wanted to go over other parameters
24 specifically, we could. That same table that we

1 were referring to earlier, 7-5, has various
2 reaches and habitat variables.

3 Q. I was just really trying to get a
4 sense of when you used the phrase in that portion
5 of your testimony important habitat features?

6 A. These are the main examples.

7 Q. Okay. I correct myself. That's not
8 your phrase important habitat features. That's my
9 phrase. Moving onto question A. You also state
10 on page five of your pre-filed testimony that
11 there are, quote, a number of habitat attributes
12 that prevent category one waters from achieving
13 the Clean Water Act's aquatic life goal and are
14 not reversible in the foreseeable future. I
15 believe your testimony this morning pretty well
16 covered that, but are there any additional points
17 you would add in response to this question?

18 A. Just to be safe. I'll say -- I'm
19 referring to sinuosity channel development which
20 is -- and morphology following or pool riffle
21 alternations, various depths and flows, max
22 channel depth, channelization in general,
23 floodplain connectivity, lack of large substrates
24 and the presence of organic sludge are all

1 examples of the habitat attributes that I was
2 referring to and cannot maintain the current uses
3 of navigation and flood control and water
4 conveyance and change most of these parameters.

5 Q. Question eight. On page five of
6 your pre-filed testimony in describing the
7 category one waters you state that, quote,
8 physical habitat in these reaches is not adequate
9 to support a warm water aquatic community that
10 fully meets the goals of the Clean Water Act, nor
11 do they have the potential to do so.

12 Is it correct then to state that
13 the category one waters use designation is for
14 waters that do not currently meet and do not have
15 the potential to meet the Clean Water Act aquatic
16 life goal?

17 A. Yes.

18 Q. Moving to question A and I'm looking
19 for a qualitative answer here, not a specific
20 measurement. To what extent do the category one
21 waters fall short of meeting the Clean Water Act's
22 aquatic life goal in your opinion?

23 A. I think for the reasons we've
24 outlined in previous answers to your previous

1 questions, they are all still well below the
2 potential to meet the Clean Water Act below the
3 potential -- the potential to meet the Clean Water
4 Act goals. So significantly lower.

5 Q. Moving onto B. Is it also correct
6 that the waterbodies that the District is
7 proposing to include in category one waters has
8 conditions that satisfy one or more of the UAA
9 factors?

10 A. Yes.

11 Q. Question nine. On page five of your
12 pre-filed testimony referring to the CAWS,
13 generally you state that limited habitat features
14 have, quote, resulted in a biotic community as
15 measured by fish that is tolerant of the modified
16 conditions and appears to be thriving.

17 Is it correct that you are
18 referring here to the fact that the CAWS fish
19 community is generally dominated by fish species
20 that are tolerant of the limited physical habitat
21 features present in these waters?

22 A. Yes.

23 Q. Is it correct that relatively few
24 species, mostly so-called tolerant species, can

1 thrive in these waters?

2 A. Yes.

3 Q. B, are examples of these species;
4 gizzard shad, common carp, green sunfish and blunt
5 nose minnow?

6 A. Yes.

7 Q. Do you agree that generally in the
8 CAWS the quality of the fish community is
9 relatively poor?

10 A. Yes.

11 Q. Question ten, on page five of your
12 pre-filed testimony you state that, quote, the
13 abundance number and weight of large mouth bass
14 and bluegill is significantly higher in category
15 one waters than category two waters. Would you
16 please provide an estimate of the degree to which
17 the abundance of large mouth bass and bluegill is
18 significantly higher in category one waters?

19 A. In 2000 -- according to 2001 through
20 2008 District fish data, the abundance was about
21 double for large mouth bass in category one than
22 category two waters. It was 939 versus 469
23 individuals and about one and a half times more
24 for bluegill it was 347 versus 537 individuals.

1 Q. I'm sorry. Could you give me the
2 bluegill numbers -- individual numbers again?

3 A. Category one and two respectfully
4 were 537 and 347 individual bluegill.

5 Q. Why is this a relevant factor for
6 distinguishing category one from category two
7 waters?

8 A. I think it's relevant because these
9 fish are more prevalent in category one versus
10 category two because of the relatively better
11 physical habitat conditions for forging shelter
12 and other life functions of the fish.

13 Q. In terms of fish community, is the
14 presence of more large mouth bass and bluegills
15 the only biological factor that distinguishes
16 category one from category two?

17 A. There were not a lot of statistical
18 biological differences that could be identified
19 between category one and category two waterways.
20 Some of the other significant ones were white
21 suckers and the abundance was 135 versus 6
22 individuals in 2001 through 2008.

23 In rock bass, there was 156
24 individuals versus 3 in category two, but these

1 catches are both very low compared to the more
2 common fish that you get in the CAWS. We looked
3 at macroinvertebrate data, but didn't really see
4 any significant differences in those populations
5 between category one and two waters probably
6 because as I was saying earlier there's silt and
7 contaminated sediments at least throughout the
8 entire system in both category one and two waters.

9 Q. Moving onto question 11. On page
10 five of your pre-filed testimony, you state,
11 quote, in addition, the abundance of these fish
12 species has increased more in category one waters
13 than in category two waters even though water
14 quality improved throughout all of these
15 waterways. The District believes this can be
16 attributed to the slightly better physical habitat
17 conditions present in category one waters, end
18 quote.

19 Please explain in more detail
20 why the District believes this can be attributed
21 to the slightly better physical habitat conditions
22 present in category one waters?

23 A. Because we know water quality has
24 changed very significantly since the '70s and over

1 time whereas habitat has largely stayed the same
2 since this time. I think you can assume the
3 greater increase in abundance of large mouth bass
4 and bluegill in category one versus category two
5 waters is likely due to the better habitat.

6 Q. Is a piece of that also your
7 testimony that -- you testified earlier that for
8 the most part in about the last ten years we
9 haven't seen significant water quality
10 improvement?

11 A. That's true I would say.

12 MR. ETTINGER: Excuse me. When does
13 the District open its aeration stations in the
14 North Branch?

15 THE WITNESS: I'm not sure.

16 MR. ETTINGER: Thank you.

17 MS. TIPSORD: Mr. Harley?

18 MR. HARLEY: Over what period of
19 time has the abundance of fish species increased
20 more in category one than in category two?

21 THE WITNESS: I'll just check my
22 testimony.

23 MR. HARLEY: Well, I believe your
24 testimony cites to page five, but that doesn't

1 include any timeframe during which fish
2 populations became more abundant.

3 THE WITNESS: Just a moment. I'll
4 consult some of my backup documents here. I have
5 to get back to you on that. I don't have the
6 exact dates with me. I'm not finding them at the
7 moment, but I believe because we were looking at
8 historical fish data the District has collected
9 data since the '70s. I'm not sure exactly what
10 years were used in that analysis.

11 BY MS. FRANZETTI:

12 Q. But you're thinking it was a
13 multi-decade period?

14 A. I believe so.

15 Q. With respect to another reason that
16 you may see the greater abundance in category one
17 versus category two given that the District did
18 look at sediment toxicity for allocated waters in
19 part to category one and two, especially the ones
20 that kind of scored there in the middle, do you
21 think maybe sediment toxicity is also contributing
22 to this abundance issue?

23 A. I'm not sure I can say that based on
24 the available data.

1 MR. ANDES: Let me see if I can
2 clarify. Are you saying that if water quality
3 improvements extended throughout the system and
4 the habitat characteristics were basically the
5 same throughout the testimony over time, that the
6 one factor that differs between the category one
7 and two waters is the difference in habitat
8 quality and, therefore, it is logical to say
9 that's the main reason for the difference in
10 biology?

11 THE WITNESS: Exactly.

12 BY MS. FRANZETTI:

13 Q. Moving onto question 12. On page
14 six of your pre-filed testimony in your
15 description of the Calumet River south of 130th
16 Street to the O'Brien Lock and Dam you reference,
17 quote, a side channel -- channel shallow
18 (approximately 3 feet depth area) with relatively
19 abundant fixed aquatic vegetation is present where
20 the channel widens. A gradually sloping bank with
21 emergent vegetation is present in this reach of
22 the Calumet River to an extent not found in other
23 areas of the CAWS, end quote. Can you provide an
24 estimated percentage of the Calumet River area

1 that this reach represents?

2 A. Sure. The reach to which I was
3 referring constitutes about one mile on the west
4 bank and just under a mile or 0.8 miles on the
5 east bank north of the O'Brien Lock. So the whole
6 Calumet River is about seven miles. So, I think,
7 about 14 percent would be one mile out of seven
8 and the whole CAWS obviously is about 78 miles.

9 Q. That's okay. I don't need to go
10 that big.

11 MR. ANDES: Let me ask the question
12 then. What percentage of the full CAWS is this
13 area?

14 MS. FRANZETTI: If your counsel
15 wishes to, however, that's his prerogative.

16 THE WITNESS: Then we're looking at
17 one mile out of 78. So one and a half percent.
18 1.3 percent.

19 MR. ANDES: Thank you.

20 BY MS. FRANZETTI:

21 Q. Question 13. On page six of
22 attachment one to your pre-filed testimony, you
23 indicate that, quote, the CAWS fish species
24 assemblage is composed primarily 96 percent of

1 fish in three families. Do you mean that 96
2 percent of the species are in these three
3 families?

4 A. No, I don't think that's what I
5 mean.

6 Q. What do you mean?

7 A. It's slightly different. 96 percent
8 of all of the individual fish collected are from
9 one of these three families.

10 Q. So if, for example, you collected
11 1,000 fish, 960 of them are in these three
12 families?

13 A. Yes, that would be a good, simple
14 example.

15 Q. Question A, you further state that
16 40 percent of all fish collected were clupeidaes.
17 Were the vast majority of those clupeidaes gizzard
18 shad?

19 A. Yes. 99.8 percent of these were
20 gizzard shad between 2001 and 2008.

21 Q. Are these clupeidaes one of the
22 three fish families that make up 96 percent of the
23 fish species collected in the CAWS?

24 A. Yes.

1 MR. ANDES: Can you break it down a
2 little more among the clupeidaes how many of them
3 were gizzard shad as opposed to other fish?

4 THE WITNESS: So 10,283 individuals
5 were gizzard shad, 15 were alewives and we caught
6 four skip jack herrings. Those are all
7 clupeidaes.

8 BY MS. FRANZETTI:

9 Q. You caught four what?

10 A. Skip jack herring.

11 MR. ANDES: Similar to a small
12 herring.

13 BY MS. FRANZETTI:

14 Q. Question B, was the carp and minnow
15 family also called cyprinidae one of the three
16 fish families and did this family make up 37
17 percent of the fish community?

18 A. Yes and yes. 36 percent of the
19 cyprinidae caught between 2001 and 2008 were
20 emerald shiners. 30 percent were common carp and
21 20 percent were blunt nose minnows.

22 Q. Thank you for providing that so I
23 didn't have to say that word again. Moving onto
24 C. Was the last of the three fish families that

1 made up 96 percent of all fish species in the CAWS
2 in the sunfish family?

3 A. Yes.

4 Q. Is it also correct that tolerant and
5 moderately tolerant species dominated within the
6 sunfish family?

7 A. Yes, mostly these were large mouth
8 bass, pumpkin seed and bluegill.

9 Q. Question 14. Does the CAWS fish
10 data also show that except for small mouth bass,
11 intolerant or moderately intolerant species are
12 rare or absent in the CAWS?

13 A. It depends on your classification of
14 moderately intolerant species. Very moderately
15 tolerant or --

16 Q. Okay. We were actually using the
17 term moderately intolerant species to be a
18 separate classification than moderately tolerant
19 and coming up from Ohio EPA's fish classification
20 system which does have all four categories in it;
21 tolerant, moderately tolerant, moderately
22 intolerant and intolerant, does that help?

23 A. Yes, I believe in that case that
24 what you said is true except for small mouth bass

1 intolerant or moderately intolerant species are
2 rare or absent.

3 Q. Have I gotten the correct
4 understanding from listening to the testimony that
5 the District itself does not make that distinction
6 between moderately tolerant and moderately
7 intolerant like Ohio's fish classification system
8 and you just put all of those into the moderate
9 category?

10 A. No, I mean the District doesn't
11 necessarily classify these fish on our own
12 volition. We use various indices. We calculated
13 Ohio, Wisconsin IBI's, Illinois IBI, the CAR IBI
14 and you use whatever tables of fish tolerance are
15 set forth in those documents for those
16 calculations. The Illinois IBI has tolerant and
17 intolerant classifications I believe and there are
18 those that aren't classified so I make the
19 assumption that those are moderately tolerant.

20 MS. WILLIAMS: Do you know if that's
21 the same assumption that the Limnotech report made
22 or did they put them all into tolerant if they
23 weren't classified?

24 THE WITNESS: They actually used not

1 just the Illinois IBI references, but I think they
2 had maybe eight different references that they
3 used for tolerance classifications.

4 BY MS. FRANZETTI:

5 Q. Do you know, and if not perhaps we
6 can impose to ask Mr. Bell for the Limnotech
7 report, is it correct that they did just use three
8 classifications; tolerant, moderate and
9 intolerant?

10 A. Yes, that's true.

11 Q. Do you know what defined the
12 moderate category whether it was a certain indices
13 that was being used or was it a combination and
14 then Limnotech made a decision that it fell into
15 the moderate category?

16 A. It looks like page -- where are we?
17 Appendix A of the Limnotech Habitat Evaluation
18 Report. One of the last pages of that appendix
19 has their classifications of the fish that were
20 collected in the CAWS during the study years and
21 their moderate tolerance they used USGS 2008, EPA
22 2008 and Platkin, et al 1999. So there were
23 different references. I couldn't speak any
24 further to their --

1 Q. Can you actually stay with Appendix
2 A for the next question? In my pre-filed
3 questions looking at Figure 2-6 in Appendix A,
4 Habitat Evaluation Report, again, Public Comment
5 284.

6 Is it correct that the five most
7 common species in the CAWS in the 2001 to 2007
8 time period were all tolerant species and
9 accounted for nearly 75 percent of all fish
10 collected?

11 A. So if you use the Limnotech Appendix
12 A classifications, then the tolerant were;
13 gizzard shad, emerald shiner, common carp, blunt
14 nose minnow, golden shiner, green sunfish and
15 large mouth bass. The moderately tolerant were
16 pumpkin seed, bluegill and spot fin shiner.

17 MR. ANDES: Those are the top ten,
18 right?

19 THE WITNESS: Yes.

20 BY MS. FRANZETTI:

21 Q. I was going a little narrower. The
22 five most common species were all tolerant
23 species?

24 A. Yes.

1 Q. And they did, in fact, account for
2 nearly 75 percent of all fish collected?

3 A. Yes, I think that's true.

4 Q. Moving to B, which is a little
5 different now based on that same 2001 to '07 fish
6 data. Is it correct that seven of the top nine
7 were tolerant and the remaining two were
8 moderately tolerant and all nine of those together
9 accounted for 90 percent of all fish collected?

10 A. Yes.

11 MR. ETTINGER: Do you know of any
12 Midwest rivers in which the top five species are
13 not tolerant?

14 THE WITNESS: Not offhand. I'm not
15 sure.

16 MR. ETTINGER: What would you think
17 for the Illinois River?

18 THE WITNESS: Do I think top five
19 Illinois River species are tolerant?

20 MR. ETTINGER: Tolerant.

21 THE WITNESS: I wouldn't necessarily
22 think that was true. I would have to look at the
23 data.

24 MR. ETTINGER: We will.

1 THE WITNESS: Okay.

2 BY MS. FRANZETTI:

3 Q. Based on the 2001 to 2007 fish data,
4 would you agree that there are only a few species
5 most of which are tolerant that are thriving in
6 the CAWS?

7 A. Yes, that's true.

8 Q. D, you agree that on the whole, the
9 quality of the fish community in most of the CAWS
10 is at best fair and often poor?

11 A. Yes, the IBI's indicate that the
12 fish community is poorer to fair.

13 MS. WILLIAMS: Can I ask a quick
14 follow up? When answering Ms. Franzetti's
15 questions about most of the species being
16 tolerant, when you're talking about most of the
17 species being tolerant in response to Ms.
18 Franzetti's questions, are you classifying large
19 mouth bass as tolerant in your answers? Because
20 earlier when I asked you, you did say you thought
21 it was moderately tolerant, correct?

22 THE WITNESS: Yes, using the IEPA
23 convention it would be moderately tolerant. I
24 think that in the Limnotech report their reference

1 said it was tolerant, but the top five.

2 MR. ANDES: I think that answered
3 the question.

4 MS. WILLIAMS: When you answer about
5 what the tolerant -- that's fine.

6 MR. ANDES: To clarify.

7 MS. WILLIAMS: It's not your
8 personal opinion about where they should be
9 placed? You're answering with regard to how
10 Limnotech classified them in the Habitat
11 Evaluation Report, correct?

12 THE WITNESS: Well, question A she
13 actually -- you asked the top five collected.

14 MS. WILLIAMS: Yes.

15 THE WITNESS: So that didn't include
16 large mouth, I believe. And then B counsel said
17 seven of the top nine were tolerant and the
18 remaining two were moderately tolerant.

19 MS. WILLIAMS: What about C?

20 MS. FRANZETTI: Again, counsel, just
21 in fairness, C says most of which are tolerant.

22 MS. WILLIAMS: That is what my
23 question was focused on. When you're answering
24 her question about most which are tolerant, are

1 you considering large mouth bass to be tolerant?

2 THE WITNESS: I don't think it
3 effects my answer either way, but if the point is
4 different literature classifies large mouth bass
5 as moderately tolerant or tolerant? Yes, that's
6 true.

7 MS. WILLIAMS: That's fine.

8 BY MS. FRANZETTI:

9 Q. Fifteen, is it your opinion that
10 because it is not feasible to improve the existing
11 habitat attributes to ones that have positive
12 effects on fish metrics, the fish species that are
13 currently present in the CAWS are basically the
14 fish species that the CAWS can attain regardless
15 of whether you make the water quality standards
16 more stringent?

17 A. Yes, it's the basis for the
18 District's proposal.

19 Q. And the last question. Almost last
20 question because I do want to pick up -- I'm going
21 to hold to this and go back to -- I asked
22 Dr. Mackey and he deferred to you with respect to
23 the District's descriptions of categories one and
24 two appear to use some of the same nomenclature as

1 Ohio's EPA uses in its use classification system
2 and by that I'm referring to Ohio EPA's class
3 called modified warm water aquatic life waters and
4 also its class called limited warm water aquatic
5 life waters. Did you intend for your categories
6 one and two to somewhat mirror the modified and
7 limited use categories under Ohio's system?

8 A. No, that was merely a coincidence or
9 a lack of creativity on our part.

10 Q. Then, I'll go back to my last
11 pre-filed question, 16. Why do you think the
12 District's proposed use classifications are better
13 than those proposed by the Illinois EPA?

14 A. The District believes they're better
15 because in large part use a CAWS specific habitat
16 index. We include a third tier that acknowledges
17 that there's stagnant waterbodies in the system.
18 We've included a wet weather limited use that
19 acknowledges the wet weather conditions in the
20 CAWS pre-carp completion and we consider sediment
21 toxicity to the extent we were able to.

22 Q. Okay.

23 MS. WILLIAMS: Can I ask a follow
24 up, Susan?

1 MS. FRANZETTI: Yes.

2 MS. WILLIAMS: Let's set aside the
3 category three, the wet weather limited use, but
4 just focusing on category one and category two.
5 Can you maybe summarize for the Board really what
6 is the difference between category one and the
7 Agency's use A and category two and the Agency's
8 use B as far as how they're being used?

9 THE WITNESS: If you excluded all of
10 the other things you just mentioned, I would say
11 they're fairly similar. I believe the reaches
12 that were different -- I have to consult a table.

13 MS. WILLIAMS: I even met to set
14 that aside. So set aside even the fact that the
15 District assigned some reaches different. Could
16 you have taken some reaches and said we think
17 instead of A these should go in B and we think
18 instead of B this should be A, otherwise, what is
19 the difference?

20 MR. ANDES: Other than all the
21 differences?

22 MS. WILLIAMS: I mean, we have a
23 definition, that we proposed a definition. I
24 haven't necessarily seen your definition. So how

1 does your definition differ from what is in your
2 proposal for one and two?

3 THE WITNESS: I would say they are
4 similar although we had the knowledge of the large
5 habitat study in the CAWS so that we would
6 identify specific attributes so I think it's a
7 little bit more detailed, but excluding all of the
8 other issues that you have stated, I would say it
9 is similar.

10 Q. Thanks.

11 MS. FRANZETTI: Thank you,
12 Ms. Wasik. I have no more questions.

13 MS. TIPSORD: Mr. Harley, you have a
14 follow up?

15 MR. HARLEY: I want to go back
16 briefly to your answer to 14(b) in which you
17 indicated 90 percent of all fish collected are
18 tolerant or moderately tolerant. Does that mean
19 ten percent of the fish that were collected were
20 moderately intolerant or intolerant?

21 THE WITNESS: I think ten percent
22 then would be either considered moderately
23 intolerant or I think very few of them were
24 intolerant. There's a table or a figure actually

1 2-6 on page 12 of Appendix A of the Habitat
2 Evaluation Report that has the specific total
3 number of individuals collected '01 through '07.

4 MR. HARLEY: In addition to small
5 mouth bass, what were some of the other common --
6 more common moderately intolerant or intolerant
7 species that make up that ten percent?

8 A. Well, in those seven years, there
9 was one rainbow trout, one coho salmon, eight
10 chinook salmon, 25 spot tail shiners. I believe
11 those are intolerant, 143 rock bass.

12 MR. ANDES: That's over what time
13 period?

14 THE WITNESS: This is 2001 through
15 2007.

16 MR. ANDES: So eight years?

17 THE WITNESS: Eight -- seven.

18 MR. ANDES: Seven years. Okay.

19 MS. FRANZETTI: And you went to
20 Harvard Law School?

21 MR. ANDES: It wasn't math school.

22 THE WITNESS: I think there's black
23 buffalo. There's eighteen black buffalo selected.
24 Those are right near the lake and I think those

1 are intolerant. So the abundance -- the relative
2 abundance here compared to the tolerant species is
3 very low.

4 MR. HARLEY: And that reflects the
5 results of the direct electrofishing over that
6 period of time?

7 THE WITNESS: Yes, the District I
8 believe has the most comprehensive fish database
9 for the CAWS.

10 MR. HARLEY: It does not reflect,
11 for example, the results of inventories after
12 rotenone application more recently?

13 THE WITNESS: No, that doesn't.
14 This predated the rotenone event.

15 MR. HARLEY: Thank you.

16 MS. TIPSORD: Ms. Liu?

17 MS. LIU: Ms. Wasik, I have a
18 question as a follow up to Ms. Franzetti's
19 question 16 on the District's proposed use
20 classification. I was wondering is the District
21 planning to propose water quality standards for
22 any of the parameters in this rulemaking to go
23 along with the ultimate proposed use designations?

24 THE WITNESS: Dissolved oxygen is

1 the only parameter where we have a different
2 standard proposed for category one versus category
3 two waters. There are a few other chemical water
4 quality constituents to which the District
5 disagrees with the Agency proposal that I've
6 outlined in my testimony. They wouldn't differ by
7 the category.

8 MS. LIU: Based on the District's
9 Habitat Evaluation Report, do you know if Midwest
10 Generation is planning to propose any alternate
11 water quality standards as well?

12 THE WITNESS: I don't know.

13 MS. LIU: Thank you.

14 MR. ANDES: We can let them answer.

15 MS. FRANZETTI: We weren't -- let me
16 answer as best I can and I feel confident doing so
17 without my client sitting here. With respect to
18 Subdocket C, we were not going to propose any
19 numeric water quality standards because our
20 understanding is that comes in Subdocket D, but
21 when we get to Subdocket D we will be proposing
22 alternative thermal water quality standards.

23 I don't know that we will be
24 proposing alternatives on any other parameters.

1 It may only be limited to the thermal water
2 quality standards. Does that help you?

3 MS. LIU: To the extent the
4 rulemakings are interrelated to get a big picture
5 prospective, it was helpful to hear that. Thank
6 you.

7 MS. FRANZETTI: You're welcome.

8 MR. ETTINGER: I believe we may be
9 proposing alternative thermal standards also which
10 probably won't look like Ms. Franzetti's.

11 MS. FRANZETTI: Albert, in D as in
12 dog?

13 MR. ETTINGER: Yes, I assumed and
14 we'll get to that. We're going to ask Ms. Tipsord
15 about that because some of the questions I had
16 seemed to go to D, specifically the proposal on
17 cyanide criteria and zinc criteria and do you want
18 us to do that now or later because that's the sort
19 of thing that I thought fit into D rather than C?

20 MS. TIPSORD: You mean as far as
21 your pre-filed questions to Ms. Wasik now?

22 MR. ETTINGER: Yes.

23 MS. TIPSORD: I would say to the
24 extent that Ms. Wasik's testimony was filed in

1 Subdocket C you should ask her questions while you
2 have her here and if we feel some of this needs to
3 be moved to D or some of this can be crossed
4 referenced into D we can certainly do that.

5 MR. ETTINGER: Then we might offer
6 testimony in D as to some of these points.

7 MS. TIPSORD: Okay.

8 MS. FRANZETTI: And you're not -- he
9 is not prevented from doing this?

10 MS. TIPSORD: Correct. Absolutely.

11 MR. ETTINGER: I guess coming at it
12 from a slightly different angle.

13 MS. FRANZETTI: I'm in agreement
14 with you.

15 MR. ETTINGER: I think Ms. Franzetti
16 and I agree that we thought the criteria proposals
17 fit into D which is why we held our fire onto
18 proposing alternative criteria.

19 MS. FRANZETTI: I agree with that.

20 MR. ANDES: Can we take a short
21 break?

22 MS. TIPSORD: Yes. Let's take ten
23 minutes.

24

1 (Whereupon, a break was taken
2 after which the following
3 proceedings were had.)

4 MS. TIPSORD: Let's go back on the
5 record.

6 E X A M I N A T I O N

7 BY MR. ETTINGER

8 Q. Does the Metropolitan Water
9 Reclamation District of Chicago currently operate
10 aeration equipment?

11 A. Yes.

12 Q. Are those the SEPA stations?

13 A. We have SEPA stations one through
14 five and also side stream supplemental aeration
15 stations at Devon and Webster Avenue in the North
16 Branch.

17 Q. Devon and Webster and the SEPA
18 stations are in the Cal-Sag?

19 A. Calumet area. The Cal-Sag Channel
20 and the Calumet River, the Little Calumet River.

21 Q. What purpose do those things serve?

22 A. They aerate the water in the
23 channel.

24 Q. Do they serve any other purpose?

1 A. That's their main purpose.

2 Q. As part of this proposal, does the
3 District propose to turn those machines off?

4 A. No.

5 Q. Why not?

6 A. I'm not sure how that would fit into
7 our proposal.

8 Q. Well, I thought you proved that
9 dissolved oxygen doesn't matter here so why are we
10 spending money to put oxygen in the water?

11 A. The Limnotech report was looking at
12 current conditions in the last several years and
13 during those years the supplemental aeration
14 stations were running.

15 Q. But you think something bad would
16 happen if we turned them off?

17 A. I'm not sure.

18 Q. You're not sure?

19 A. I'm not sure what the levels would
20 be if we didn't run those stations.

21 Q. But you are sure if we put in more
22 stations it wouldn't help anything?

23 A. If you put in more stations and
24 increase the dissolved oxygen further than current

1 conditions, it wouldn't be likely to help the
2 current fish community because they're more
3 limited by the habitat.

4 Q. But if we turned off any of the
5 stations, it wouldn't -- it would potentially hurt
6 the station? The fish --

7 A. I can't say that I've studied if we
8 didn't run any of our aeration stations.

9 Q. Do you think the District has hit
10 the sweet spot on dissolved oxygen and we can't
11 improve it in any direction one way or the other?

12 A. I think if you were to shut the
13 aeration stations off in the summer you'd get down
14 to levels of dissolved oxygen that weren't present
15 in the years that the Limnotech team studied.

16 Q. Now, in this proposal, are you
17 writing into the proposal that the District has to
18 continue to operate its aeration stations?

19 A. I don't believe that was currently
20 written in my testimony, but that was the plan --
21 our plan is to continue to operate the stations.

22 Q. Is there going to be -- helping the
23 guys who are drafting this rule, how are they
24 going to draft the rule to make sure you don't

1 turn off the SEPA station?

2 A. I believe there will be operational
3 controls in effect as part of the wet weather
4 limited use language and that could include
5 aeration stations.

6 Q. So that would go into the wet
7 weather provisions of the rule that the board is
8 supposed to write to incorporate your proposal?

9 A. Or it could also be included in the
10 category three for stagnant waterbodies. We have
11 never proposed to somehow decrease the water
12 quality in the CAWS upon this rulemaking.

13 Q. Well, we haven't, but if we don't
14 write in the rules so that you can't, a future
15 board could decide to do so?

16 A. There are dissolved oxygen standards
17 that we are proposing to meet the aquatic life
18 uses. If it happens that we have to run our
19 existing aeration stations or look at new aeration
20 stations in certain areas as we've, I think, done
21 certain feasibility studies to look at then we
22 will continue to do that.

23 Q. What if you don't?

24 A. What if we don't do --

1 Q. What if for some portion of the year
2 in some places you don't need to run the stations
3 to meet the proposed DO standards?

4 A. We already don't always run every
5 station. I guess I don't understand your
6 question.

7 Q. My question is how are we to know
8 the dissolved oxygen levels won't significantly go
9 down if you decide to fine tune your operation of
10 the stations to just meet the standards that
11 you're writing into now as opposed to the
12 standards that it's currently reaching?

13 MR. ANDES: I think when Mr. Zenz
14 comes up he will talk about the plan that's been
15 developed in terms of what would need to be
16 operated in order to comply with the standards
17 being proposed by the District including
18 additional stations beyond those that are already
19 existing.

20 MR. ETTINGER: So you don't think
21 the existing stations were a waste of money, but
22 new -- some new stations might be called upon to
23 meet your proposal and we're going to hear about
24 that from Mr. Zenz?

1 MR. ANDES: You're going to hear
2 about the District's compliance plan from
3 Mr. Zenz, yes.

4 MR. ETTINGER: The compliance plan
5 is going to be written into the rules or you'll
6 come up with a compliance plan and you know that's
7 what is going to be -- that will meet the standard
8 that the Board is going to write?

9 MR. ANDES: Why don't we wait until
10 Mr. Zenz gets up here.

11 MR. ETTINGER: Okay.

12 BY MR. ETTINGER:

13 Q. My first pre-filed question is what
14 is meant in footnote one of your testimony that
15 the MWRD proposal is subject to the approval by
16 the Board's District of Commissioners?

17 A. Just that expenditures to meet our
18 water quality proposal are subject to our Board
19 approval just like any other large expenditures.

20 Q. Has the Board approved this
21 proposal?

22 A. No, not currently.

23 Q. Page nine of your testimony you
24 discuss Bubbly Creek, the Collateral Channel and

1 other off channel slips. Are you aware of
2 proposals that were developed to establish
3 prairies in shallow aquatic areas in Bubbly
4 Creek, the Collateral Channel and South Branch
5 slips?

6 A. I was on a committee that was
7 involved in the Bubbly Creek capping
8 demonstration. It wasn't habitat restoration, per
9 se. It was just looking at various kinds of
10 active capping measures to put in the South Branch
11 turning basin at the mouth of Bubbly Creek.

12 We were working with the City of
13 Chicago and the Corps of Engineers. I think I've
14 been attending those meetings for somewhere in the
15 order of six years and I think they've rather
16 stalled out because of funding issues from the
17 city. They needed to come up with matching funds
18 to the federal dollars and I think they're having
19 a hard time doing that.

20 Q. What exactly is the point of that
21 proposal?

22 A. It's to look at -- it's a
23 demonstration project to look at sediment
24 remediation in that area of Bubbly Creek and on

1 top of the sediment cap they were going to
2 construct a small wetland area and make it sort of
3 a teaching area with walkways.

4 Q. But that proposal is -- or that
5 concept is stalled out as a result of funding from
6 the city?

7 A. Yes, it's been cutback. I think
8 they still -- the Department of Environment would
9 still like to do it. I think they're just needing
10 funding to move forward.

11 Q. How much funding would it be
12 roughly?

13 A. I would have to check. I don't
14 remember what the matching funds were from the
15 city.

16 Q. Okay. Are you aware of any other
17 proposals to put wetlands anywhere in the system?

18 A. The Water Reclamation District also
19 worked with the Wetlands Initiative to do a
20 similar project on the Collateral Channel. I
21 think it was less than an acre at the end of the
22 Collateral Channel which is off the Chicago
23 Sanitary and Ship Canal to put in an active cap.

24 I don't know if that actually

1 included a wetland on top of a cap or not. I'm
2 not as familiar with that project, but I believe
3 that they're not going forward with it at this
4 time.

5 Q. Do you know why not?

6 A. I think it was also a funding issue.

7 Q. Do you know whether the funding
8 could have caused widespread economic dislocation
9 within the Chicago area?

10 A. No, I don't know that.

11 Q. I'm not going to really have any
12 questions of Ms. Wasik about these given her prior
13 testimony, but I might as well throw them into the
14 record so we know what we're talking about. I'd
15 like to mark as whatever exhibit this is a portion
16 of -- what number are we up to?

17 MS. TIPSORD: 462.

18 MR. ETTINGER: A portion of a
19 document that was authored by the Wetlands
20 Initiative that was sent to me by the US Corps of
21 Engineers pursuant to a Freedom of Information Act
22 request and I'm just giving those to you because I
23 don't really have any questions given Ms. Wasik's
24 testimony.

1 MS. TIPSORD: I've been handed a
2 document that is -- the cover sheet is a letter
3 from Kevin J. Jervi, J-E-R-V-I, Assistant District
4 Counsel, Chicago District US Army Corps of
5 Engineers to Albert Ettinger dated April 4th,
6 2001 -- 2011. If there's no objection, we will
7 admit this as Exhibit 462. Seeing none, it's
8 Exhibit 462.

9 (Document marked as ILPCB
10 Exhibit No. 462 for
11 identification.)

12 BY MR. ETTINGER:

13 Q. I'm sorry. I just handed those out
14 because it was a nice time to distribute them,
15 but, like I said, given your prior testimony, I'm
16 not going to ask you the details of the proposal
17 you haven't seen before. I was going to ask you,
18 though, however, whether to your knowledge you or
19 anyone else at the District made Limnotech aware
20 of proposals like that or other proposals to put
21 in wetlands and abatements in downtown Chicago?

22 A. Maybe as a matter of discussion we
23 talked about the sediment capping in Bubbly Creek,
24 but we did not make them aware for purposes of

1 their project because I didn't see it relevant.
2 It wasn't a restoration project. It was sediment
3 capping as I said.

4 Q. I'm sorry. That sediment capping
5 project my question was broader. Obviously, if
6 you didn't think that project was relevant you
7 didn't tell them about it, but, to your knowledge,
8 did you or anyone else make Limnotech aware of any
9 of these proposals of constructive wetlands in
10 downtown Chicago?

11 MR. ANDES: What proposal? We have
12 a series of slides? I'm not sure I see a
13 proposal.

14 BY MR. ETTINGER:

15 Q. My question was really quite broad
16 and I ask you to put that document away and quit
17 looking at it. My question was, did you or anyone
18 else at the Metropolitan Water Reclamation
19 District make Limnotech aware of any proposal
20 whether it appears on that piece of paper or not
21 for wetlands rehabilitation projects in downtown
22 Chicago?

23 A. No.

24 Q. Thank you. On page 12 of your

1 testimony, you state the testimony provided by the
2 District based on continuous monitoring data
3 throughout the system show that diurnal DO
4 fluctuation rarely occurs in these deep draft
5 waters. What testimony?

6 A. Sam Dennison's 2008 pre-filed
7 testimony discusses dissolved oxygen.

8 Q. Which are the deep draft waters?

9 A. The CAWS is considered deep draft, I
10 would say except for Bubbly Creek and the Grand
11 Calumet River.

12 Q. Are there areas within the CAWS
13 that -- are there areas within the CAWS that have
14 diurnal swings?

15 A. Out of our 30 continuous dissolved
16 oxygen monitoring stations, basically only -- the
17 only diurnal dissolved oxygen fluctuation of a
18 large magnitude or that seems to be caused by
19 photosynthesis was at 36th Street at Bubbly Creek,
20 Main Street on the North Shore Channel and to a
21 lower magnitude occasionally at Halsted in the
22 Little Calumet River because this is a shallower
23 area.

24 Q. Why do diurnal swings rarely occur

1 in much of the CAWS?

2 A. A number of factors. The turbidity,
3 the depth in the CAWS, the lack of substantial
4 aquatic vegetation, the low algae values. Diurnal
5 fluctuations are caused when chlorophyll aquatic
6 vegetation is producing algae or is producing
7 dissolved oxygen during the day and at night when
8 it's no longer photosynthesizing it's perspiring
9 and consuming dissolved oxygen. So you'll get
10 these really nice characteristic signatures,
11 dissolved oxygen patterns that occur day and night
12 when they refer to them as diurnal DO
13 fluctuations.

14 Q. And turbidity is such that it
15 prevents the sunlight from penetrating the water
16 deeply enough to get to any plants?

17 A. In some areas, turbidity may be such
18 that the water can't penetrate very low into the
19 waterway and if it's a deep waterway the same
20 issue may apply.

21 Q. I think we both misspoke there. So
22 let me try again. The turbidity stops the
23 sunlight from penetrating far enough so there will
24 be plants that would cause this swing?

1 A. Plants specifically or algae?

2 Q. Plants or algae, dystonic algae or
3 macrophytes?

4 A. There is algae in the CAWS. There
5 is phytoplankton or in stream algae in the CAWS.
6 It's just generally not a very high value because
7 of possibly the turbidity and there are other
8 reasons.

9 Q. I'm sorry. What other reasons are
10 there?

11 A. For instance, as you know, the CAWS
12 is effluent dominated and downstream of the water
13 reclamation plants. The effluent is largely free
14 of algae. So we have very low algae
15 concentrations.

16 Q. You have a lot of standing water
17 though which normally you would think would breed
18 algae and certainly it does in other sorts of
19 impounded waters?

20 A. Well, downstream -- as you move
21 further downstream, the algae will increase in the
22 water column, but directly downstream at the
23 stations closest to the Water Reclamation District
24 discharges have very low algae and also low

1 turbidity compared to the rest of the system.

2 Q. The turbidity is not coming from the
3 sewerage treatment plants generally?

4 A. Our data indicates that turbidity is
5 lower directly downstream of the treatment plants.

6 Q. The treatment plants are meeting a
7 fertile result?

8 A. Right.

9 Q. The ESS, not TSS standard, right, or
10 whatever it is?

11 A. Yes, they are meeting and the total
12 suspended solids are very low downstream.

13 Q. So total suspended solids are low
14 immediately downstream of the sewage treatment
15 plants so there's some other source of the
16 turbidity in the system?

17 A. Yes. Do you want to know more about
18 that?

19 Q. Yes. I thirst for knowledge.

20 A. The fine sediments in the CAWS
21 because of their resuspension can cause a lot of
22 turbidity in the CAWS and further down in the
23 Illinois River you will notice the turbidity is
24 quite high, too. There's a lot of suspended

1 sediment and resuspension.

2 Q. And how did the sediment get there?

3 A. There's legacy sediments in the
4 CAWS. Silky settlements as Scudder has testified
5 these channels weren't created by natural trivial
6 processes. So there is sediment deposition in a
7 straight channel that you don't see on normal
8 sedimentation processes.

9 Q. On page 14 of your testimony, you
10 state that fish kills do not occur except under
11 extremely worrisome circumstances. Do some fish
12 kills go unobserved?

13 A. I don't know.

14 Q. Okay.

15 MR. ANDES: If they're unobserved.

16 BY MR. ETTINGER:

17 Q. Is it the intent of the MWRD
18 proposal to allow it to create circumstances which
19 will make legal the rare fish kills that do now
20 occur?

21 A. No, if fish kills -- basically, the
22 current proposal as I mentioned before does
23 nothing that would increase the amount of fish
24 kills or decrease the water quality in the CAWS so

1 there's no reason to expect that we'd have
2 additional fish kills.

3 Q. But there are some fish kills now?

4 A. Yes, very occasionally. I think in
5 Adrienne Nemura's testimony she points out when
6 there's antecedent conditions of 90 to 100 degree
7 days and then one or more wet weather events in a
8 row that are of significance, duration or
9 magnitude that's when you are most likely to have
10 a fish kill.

11 Q. Do you know when those events will
12 occur in the future?

13 A. Probably.

14 MR. ANDES: How often do they occur?

15 THE WITNESS: I know that we've
16 submitted our fish kill reports for the past ten
17 years to the Board. I don't recall what exhibit
18 number it is, but they are rare. I believe the
19 last reported fish kill we had in the CAWS was in
20 2008 and that was an example of we had two 100
21 degree days followed by a series of rain events
22 and the North Branch Chicago River had a fish
23 kill.

24

1 BY MR. ETTINGER:

2 Q. Now, the dissolved oxygen levels
3 which are causing those fish kills now are
4 currently a violation of the water quality
5 standards, aren't they?

6 A. I'm not sure to what extent we've
7 concluded the causes of various fish kills.

8 Q. The fish kills that we're seeing now
9 are occurring in conditions in which dissolved
10 oxygen levels are below four mg/L, aren't they?

11 A. It's possible if the DO was less
12 than four, then it would have been a violation of
13 the water quality standard.

14 Q. But under your proposal, a fish kill
15 caused by zero mg/L of dissolved oxygen would be
16 legal as long as it occurred under these
17 circumstances that we talked about here?

18 A. No, I think we envision there being
19 certain criteria for the wet weather limited use
20 to a narrative criteria that states that the
21 levels of DO shouldn't contribute to a fish kill.

22 Q. So this --

23 A. It would harm the resident biota or
24 something to that effect.

1 Q. So this is an additional provision
2 in the water quality standard that the Board is
3 proposing?

4 A. Yes, I think.

5 Q. I'm sorry. The MWRD is proposing
6 that the Board write?

7 A. I would object to that
8 characterization. There would be a narrative -- a
9 description of narrative criteria in the wet
10 weather limited use.

11 Q. So we've got your dissolved oxygen
12 numbers and then you've got wet weather and wet
13 weather exemptions to your dissolved oxygen levels
14 proposal and then on top of that there will be a
15 narrative standard against fish kills or effect on
16 aquatic life?

17 A. Yes, for just that reason. We would
18 have in that wet weather limited use some sort of
19 narrative that described what kind of operational
20 responsibilities the District would have when the
21 wet weather limited use was triggered and any
22 other requirements such as something similar to
23 what is in the general use standard for stagnant
24 waterbodies which doesn't have a numerical

1 criteria for DO, but it says something to the
2 effect that dissolved oxygen won't be such that
3 resident biota is harmed.

4 Q. So -- I'm sorry. That's an existing
5 narrative standard? Are you going to leave the
6 existing narrative standard in place?

7 A. That's an existing narrative
8 standard in the general use waterbodies. I just
9 used it as an example.

10 Q. I believe there's an existing
11 narrative standard in the secondary treatment
12 secondary contact waters, too?

13 A. For stagnant waters, I don't recall,
14 but, no, this would be different because it would
15 be under the wet weather limited use language.

16 Q. I'm trying to -- where in your or
17 Ms. Nemura's testimony is the District's proposal
18 described in sufficient detail so that I can
19 understand how this proposed narrative criteria
20 fits in with your proposed dissolved oxygen
21 criteria?

22 MR. ANDES: The wet weather
23 provisions are discussed in detail in Ms. Nemura's
24 testimony.

1 BY MR. ETTINGER:

2 Q. Does she also discuss this narrative
3 standard -- I'm sorry. I missed --

4 MR. ANDES: I don't recall.

5 MR. ETTINGER: You don't recall.

6 MS. LIU: Mr. Ettinger, may I follow
7 up on your line of questions?

8 MR. ETTINGER: You're the one that
9 has to do the work. You better follow up.

10 MS. LIU: As an alternative to
11 perhaps this wet weather limited use subcategory
12 that you're proposing, would the District be
13 willing to look at a way to include that instead
14 of in the criteria instead of in the use
15 categories?

16 THE WITNESS: I think that under the
17 current conditions because after certain rain
18 events there is a period of time, sometimes very
19 short, where parts of the CAWS a slug of water
20 moves through the CAWS that causes DO to be at
21 zero. I don't know that the standards could
22 adequately -- I don't know that we could propose a
23 DO standard that would adequately protect for that
24 issue in the CAWS if that makes sense.

1 MS. TIPSORD: Can I ask a question?
2 If there are times when a CSO event results in
3 dissolved oxygen at zero occurred currently, which
4 I assume they do occur currently, would that be a
5 correct assumption? Are there CSO --

6 THE WITNESS: After wet weather,
7 there are conditions of zero mg/L DO in the CAWS.
8 I would say it moves through the system. It
9 doesn't hit the system all at once. So I think
10 there's a lot of avoidance of the fish at this
11 point of those conditions.

12 MS. TIPSORD: So I guess because I'm
13 just a lawyer, I'm not a scientist, I'm a little
14 confused as to how you develop -- how you change
15 an aquatic life use for a temporary situation and
16 I guess my question is currently we have aquatic
17 life uses existing in the CAWS which under the UAA
18 we have to protect existing uses at a minimum
19 under the Clean Water Act.

20 So I guess my question is do you
21 think that the current secondary contact uses are
22 actually being achieved and what would you say the
23 current aquatic life use is during one of those
24 wet weather events?

1 THE WITNESS: As to specific
2 questions I guess about the wet weather limited
3 use and how it fits into aquatic life uses I think
4 Adrienne is the better person to answer that, but
5 I will say I believe that the situation now is
6 such that a wet weather limited use, I guess, is
7 required in the CAWS in order to reflect the
8 conditions -- the pre-TARP conditions in terms of
9 your question of how is that incorporated or how
10 is that reflected in aquatic life uses I think it
11 would be handled similarly to the way that some
12 communities have handled the recreational use
13 issues for temporary conditions when there's wet
14 weather. They will suspend bacterial water
15 standards. I think it would be handled in a
16 similar way.

17 MS. TIPSORD: I guess my thing is
18 it's real easy to tell people not to recreate
19 after a CSO. It's not as easy to tell a fish not
20 to swim after a CSO and I think that's where I'm
21 having the -- Alisa and I talked a little bit
22 about this at break. I'm having a hard time
23 conceptualizing how you create an aquatic life use
24 for a temporary situation and I can't equate --

1 personally, I can't equate it again. And, again,
2 I'm just the lawyer and not the scientist. I
3 can't equate it with the recreational use where
4 you might say because of the CSO event there's
5 nothing we can do to keep your pathogens from
6 rising this high so don't recreate for 24 hours
7 after a CSO event. I can understand how you can
8 do that, but I don't know how you can tell a fish
9 to avoid this area?

10 THE WITNESS: You don't have to tell
11 the fish to avoid it because they have controls in
12 their body to avoid areas of low DO as I've
13 discussed in some of my attachments to my
14 testimony. There's a lot of evidence that fish
15 will avoid areas of -- anoxic areas or areas that
16 are below, for instance, two mg/L of dissolved
17 oxygen. They'll move to an area with higher DO
18 which is why it's important I think this doesn't
19 hit the CAWS system all at once.

20 There would be areas of refuge
21 and clearly there are currently areas of refuge,
22 DO refuge for fish because as I've pointed out, we
23 really don't have frequent fish kills except under
24 these particular conditions. So I think that the

1 fish are moving out of anoxic zones in the CAWS
2 and, in fact, we've just depleted a first year --
3 the first year of a two year study with the Water
4 Environment Research Foundation and also Limnotech
5 looking at how wet weather conditions effect fish,
6 particularly large mouth bass and carp, in the
7 CAWS and in the Bubbly Creek area.

8 Using radio transmitters, we
9 have tagged several large mouth bass and we're
10 also working with some of the carp that have been
11 tagged with the Army Corps of Engineers for their
12 Asian carp study. To determine -- and using our
13 continuous dissolved oxygen monitoring in the area
14 to determine where these fish are going exactly
15 when the DO levels get low. But as to a specific
16 answer to your question, I do think Adrienne would
17 be able to handle that more articulately.

18 MS. TIPSORD: You helped me out a
19 lot. Thank you.

20 THE WITNESS: All right.

21 MS. LIU: I'm sorry. Just to
22 clarify. So if you don't have the wet weather
23 limited use subcategory, but you do have a wet
24 weather DO criteria of zero, that would not be

1 protective of an aquatic life use that wasn't for
2 wet weather?

3 THE WITNESS: I think we want to
4 acknowledge the wet weather conditions as a
5 temporary and fleeting condition in the CAWS
6 whereas the general minimum criteria we believe
7 should be higher in order to protect aquatic life.
8 We're not suggesting that zero all the time will
9 protect aquatic life in the CAWS by any means.

10 MS. LIU: Thank you.

11 BY MR. ETTINGER:

12 Q. I'm going to skip down to kind of
13 tie up some of these points we just dealt with.
14 This is under my criteria questions. Eight, has
15 US EPA ever approved a state standard that allowed
16 DO levels to fall below 1.5 milligrams for liter?

17 A. This is your number eight?

18 Q. On the second set. I am on the
19 second set. I wasn't clear on how we were going
20 to handle Subdocket C and D so I broke them up.

21 A. EPA has a deficit of 1.0
22 instantaneous minimum for June through September
23 for use two seasonal deep draft refuge. It's
24 described on page nine of my attachment two.

1 Q. So they approved down to one and in
2 the deep draft area in Chesapeake Bay --

3 A. They issued.

4 Q. I'm sorry. They did what?

5 A. They have a use two seasonal deep
6 channel refuge subcategory that's part of their
7 regulations with the dissolved oxygen criteria of
8 1.0 mg/L with instantaneous minimum and that is
9 June 1st through September 30th.

10 Q. Do you know how long you're allowed
11 to hold it at that instantaneous minimum?

12 A. Let me just check my attachment
13 here. It doesn't look like there's a time that
14 you can exceed.

15 Q. We'll check on that. Are you aware
16 of any place where US EPA has allowed an
17 instantaneous below one mg/L?

18 A. Not that I know of.

19 Q. Are there forms of aquatic life that
20 cannot swim away from low oxygen conditions?

21 A. Benthic invertebrates can't
22 necessarily swim away although I don't know if the
23 invertebrates that we generally find in the CAWS
24 would be sensitive to occasional periodic DO dips.

1 I know that they are generally buried in fine
2 sediments. So the DO in those fine sediments is
3 quite low anyway. So the DO in the water column
4 might be the least of their worries.

5 Q. Are there any native mussels in the
6 CAWS?

7 A. Not that we've ever found. I never
8 found any data indicating that or native fresh
9 water mussels in the CAWS reaches.

10 Q. Are native mussels sensitive to low
11 DO conditions?

12 MR. ANDES: You mean fresh water?

13 BY MR. ETTINGER:

14 Q. Fresh water native mussels, are they
15 sensitive to low dissolved oxygen conditions?

16 A. It depends on what mussel. I think
17 they do vary quite a bit. I've seen studies
18 considering low DO on muricidae mussels, but, like
19 I said, I don't believe that they are present in
20 the CAWS, but I think in general there's studies
21 that have shown that sandshells are enlarged less.
22 I'd say they're more tolerant to low DO than fish
23 is in general. So I think our consideration of
24 fish is --

1 Q. Have we discussed whether there
2 would be mussels in the CAWS when there are
3 periodically crashes on dissolved oxygen levels?

4 A. I would find that highly doubtful
5 given their habitat requirements.

6 Q. Are there mussels in the North
7 Branch of the Chicago River?

8 A. Yes, we do find some more tolerant
9 muricidae mussels.

10 Q. But are there any below the dam at
11 the confluence of the North Shore Channel in the
12 North Branch of the Chicago River?

13 A. No. I believe because of habitat
14 they are not.

15 Q. There is no mussel habitat, in your
16 opinion, anywhere in the CAWS?

17 A. I think because of the fine
18 sediments they are pretty rare even in the shallow
19 portions of the North Branch as you mentioned. I
20 don't have my mussel data with me, but we found
21 them in the west fork of the west branch, but we
22 generally just find giant floaters and heel
23 splitters, some of the more tolerant muricidae.
24 We don't find a lot of live ones.

1 Q. Do you know what the dissolved
2 oxygen requirements are of heel splitters?

3 A. Not offhand, no.

4 Q. Do they require any dissolved
5 oxygen?

6 A. Probably.

7 Q. Probably. Have you or anyone else,
8 to your knowledge, discussed the proposed wet
9 weather criteria with US EPA? If so, what did
10 they say?

11 A. No, I did not.

12 Q. Okay. I don't want to belabor this,
13 but you say it's not feasible to eliminate or
14 capture the wet weather sources in the foreseeable
15 feature. What is your basis for that statement?

16 A. Is this a pre-filed question?

17 Q. It is. It is ten. We're back to my
18 first list here.

19 A. Basically what I meant by this is we
20 did -- the District did look at unsafe CSO
21 treatments and explored and is going to be
22 discussed by Mr. Zenz. It was explored and is
23 considered infeasible.

24 Q. Why is it infeasible?

1 A. Well, I think Mr. Zenz could explain
2 that more thoroughly.

3 Q. I'll withdraw the question.

4 A. I'd like to answer it.

5 Q. Okay.

6 A. The study concludes that the end of
7 pipe treatment of 170 CSO outfalls that they
8 looked at in the study area which included the
9 North Shore Channel of the North Branch and the
10 South Branch of the Chicago River was impossible
11 without, quote, demolition of large multistory
12 buildings or relation of major road --

13 MR. ANDES: Relocation?

14 BY THE WITNESS:

15 A. Relocation. Sorry. And to provide
16 end of pipe treatment for 105 sites that they
17 specified which do have available land for
18 installing a treatment facility. The cost -- the
19 total capital expenditure was determined to be
20 \$893 million and having a continual annual cost of
21 nearly \$3.8 million and that's in 2005 dollars
22 because this report is a few years old.

23 BY MR. ETTINGER:

24 Q. Interest rates don't matter to the

1 Metropolitan Water Reclamation District. Is \$890
2 million, is that infeasible?

3 A. I don't know.

4 Q. Okay. Could we do a few of them?

5 A. I am not sure what doing a few of
6 them would do for the aquatic life, but I suppose
7 you could look at that.

8 Q. Is the only bad thing that happens
9 from a CSO is its effect on dissolved oxygen
10 levels?

11 A. There is probably increased
12 bacterial -- indicator bacteria downstream of
13 CSO's --

14 Q. Don't they kind of stink, too?

15 A. I don't know. Maybe I'm immune to
16 that.

17 Q. You might have been on the channel
18 too much.

19 MR. ANDES: Let me follow up a
20 little bit. In the report you're referring to,
21 does it also say that 65 of the 170 there was
22 simply no place to put system treatments at all?

23 THE WITNESS: Yes, that was one of
24 the conclusions.

1 MR. ANDES: If you addressed a few
2 of these 170 CSO's, do you think that would make
3 any significant difference in any of these?

4 THE WITNESS: No, I don't believe
5 so.

6 BY MR. ETTINGER:

7 Q. Do all of the CSO's effect the
8 entire system?

9 A. No, they would be localized.

10 Q. Right. So if you fixed one or two
11 of them, would you not potentially have some
12 localized benefits?

13 A. Potentially. I haven't looked at
14 that.

15 Q. And there's nothing about fixing a
16 CSO -- I'm being sloppy. There's treating CSO is
17 what we're talking about here. They're also
18 creating fixing the CSO in the sense that it's not
19 a CSO anymore. Have you looked at -- let's start
20 with we've been talking about treating CSO's,
21 right?

22 A. I think so.

23 Q. So we continue to have the combined
24 sewer overflow, but we're treating it so it

1 contains less pollutants, that's what we're
2 talking about, right?

3 A. That was the basis for the report
4 that I have just quoted in my testimony although
5 that was regarding bacterial water quality, not
6 even touching dissolved oxygen.

7 Q. This is all from Mr. Zenz's report
8 or is this a different report?

9 A. No, it's from Mr. Zenz's report.
10 I'm just saying that this cost is simply
11 reflecting this study that he did which focused, I
12 believe, on bacterial water quality standards. It
13 didn't even cover dissolved oxygen. So I would
14 think the number is actually conservative. It
15 doesn't necessarily go into improving DO.

16 Q. You're not a treatment engineer, are
17 you?

18 A. No, that's why I think you should
19 ask Mr. Zenz some of these questions.

20 Q. I offered to withdraw the question
21 earlier, but you boldly wanted to move forward.
22 To your knowledge, as a biologist, did the CSO
23 take pollutants in addition to biological -- I'm
24 sorry -- biological oxygen demand?

1 A. It's possible that they do.

2 Q. Do they have metals?

3 A. I don't have any data in front of
4 me. I don't know how dilute the various -- it
5 probably depends on the location and the storm
6 event. I know storm water runoff has metals and
7 CSO may as well.

8 Q. So are there -- okay. So, you know,
9 whether -- stay away from the treatment questions,
10 Albert. Is there anything that you know of as to
11 why we would have to treat all of the CSO's to
12 treat any of them?

13 A. From a bacterial standpoint, I guess
14 we're looking at a comprehensive solution not
15 looking at individual CSO's.

16 Q. I don't know why you would do it any
17 other way, but we don't need to discuss that.
18 We'll go on.

19 A. But, potentially, I suppose you
20 could look at the feasibility of -- the
21 feasibility of -- the feasibility -- I would hope
22 also the benefit that would be associated with
23 treating certain CSO's.

24 MR. ANDES: If you were looking to

1 comply with some water quality standard for
2 bacteria or for dissolved oxygen throughout the
3 system and comply all the time throughout all the
4 reaches, wouldn't you want to address all of the
5 CSO's that are contributing or potentially
6 contributing pollutants?

7 THE WITNESS: Right. From that
8 standpoint, that's a good point.

9 BY MR. ETTINGER:

10 Q. This has gotten a little theoretical
11 here.

12 MR. ANDES: Just now?

13 MR. ETTINGER: Yes. Let me see if
14 we have anything else here.

15 BY MR. ETTINGER:

16 Q. Let's skip the rest of the SSO and
17 CSO questions because Mr. Zenz, who is very swell
18 and young, is going to be addressing those
19 questions and I will be asking directly those
20 questions.

21 MR. ANDES: Flattery isn't going to
22 help much.

23 MR. ETTINGER: You don't know.

24

1 BY MR. ETTINGER:

2 Q. I'd like to talk about the cyanide
3 criteria now. What is your scientific basis for
4 the proposed cyanide criteria that has been placed
5 in the record in this proceeding?

6 A. The scientific basis for our
7 proposal on cyanide is the same basis as for most
8 of the other general use waterways of Cook County
9 that have a site specific cyanide standard. These
10 waterways in Cook County would not be expected to
11 meet the general use water quality standard for
12 cyanide because they aren't expected to support
13 the cool water species that were evaluated to come
14 up with that general use standard.

15 For instance, that was the
16 rainbow trout, which is a cool water species that
17 isn't present in the CAWS. It wouldn't
18 potentially establish a population in the CAWS.
19 So, basically, we dropped that species from the
20 evaluation and then instead of 5.2 mg/L, it would
21 be 10 mg/L which is what the standard is for
22 cyanide in most other Cook County general use
23 waterways.

24 Q. Have you studied whether there are

1 any synergistic effects of low dissolved oxygen
2 levels and cyanide in terms of cyanide toxicities?

3 A. I have not studied that.

4 Q. Are you aware of any of the studies
5 regarding toxicity in cyanide with regard to
6 temperature?

7 A. No, I can't think of any that I'm
8 familiar with.

9 Q. Have you given any thought
10 whatsoever of the potential that high temperatures
11 or low dissolved oxygen -- low dissolved oxygen
12 might increase the toxicities of cyanide?

13 MR. ANDES: This is just
14 hypothetical, correct?

15 MR. ETTINGER: These are all just
16 hypothetical.

17 BY THE WITNESS:

18 A. I think the criteria we're proposing
19 is basically we're using the US EPA water quality
20 criteria documents for the protection of aquatic
21 life. They use the most sensitive species to
22 cyanide in order to come up with those numbers and
23 we are basically saying that one of those numbers
24 is not relevant because we don't have rainbow

1 trout and other than that it's the same as the US
2 EPA criteria.

3 So if US EPA isn't considering
4 DO and temperature, I suppose, no, we are not
5 considering it either.

6 BY MR. ETTINGER:

7 Q. Right. We're not going to discuss
8 philosophy. Did you look here as to whether there
9 were any other species in the system that may be
10 sensitive to cyanide?

11 A. The species that are most sensitive
12 to cyanide according to the toxicity studies that
13 were used in the US EPA criteria are all fish
14 species. They looked at invertebrates and mussels
15 and they found the most cyanide sensitive species
16 were fish; rainbow trout, brook trout, yellow
17 perch and bluegill.

18 We're simply removing the
19 rainbow trout and adding the next most sensitive
20 species which I believe was -- it was white
21 suckers. So I think this is five of the species
22 that are most sensitive to cyanide according to US
23 EPA.

24 Q. Did the US EPA study any toxicities

1 of cyanide under conditions of low dissolved
2 oxygen?

3 A. I don't know if US EPA did any
4 studies, but they use literature, laboratory
5 essays, and I would have to go back to the
6 secondary and look at the secondary references to
7 see what the DO and temperature conditions were
8 under which they ran the laboratory essays.

9 Q. So you don't know?

10 A. Not offhand.

11 MR. GIRARD: Albert, can I ask a
12 follow up along the lines?

13 MR. ETTINGER: Please do.

14 MR. GIRARD: I had a question when I
15 was reading the testimony. Did you calculate what
16 would happen if you dropped out brook trout and
17 then added in the next most sensitive species
18 after the black crappie?

19 THE WITNESS: Black crappie. That
20 was the other one. I misspoke earlier. I said
21 white sucker, but it was actually black crappie
22 that was the next most sensitive fish.

23 MR. GIRARD: What comes after --
24 what is the next sensitive species on the list?

1 THE WITNESS: I'd have to look at
2 the criteria here. It may take me a moment to
3 find, but if you did calculate it it would
4 definitely go down. I'm not sure by how much.

5 MR. GIRARD: In other words, instead
6 of being 9.8 mg/L, it would be 9.9 or something
7 higher, right?

8 THE WITNESS: Yes. I'm sorry. The
9 standard if you were to take the next sensitive
10 fish species instead of the brook trout which also
11 might be a relevant comparison since we also don't
12 have brook trout, you're right, the number would
13 increase above 10 mg/L, although I'm not sure how
14 much. I could easily do that calculation.

15 MR. GIRARD: I'm not asking you to
16 do it right now, but maybe in comments after this
17 you could do that or just give it to us.

18 THE WITNESS: Mm-hmm.

19 MR. GIRARD: Thank you.

20 THE WITNESS: I do note that the
21 waterways in the CAWS at our ambient stations if
22 you look at historical data would almost always
23 meet a 10 mg/L standard.

24

1 BY MR. ETTINGER:

2 Q. Are you aware of any studies showing
3 effects of cyanide in low concentrations on
4 bluegill reproduction?

5 A. I'm only aware of the references,
6 again, in the US EPA document and they did include
7 bluegill. That was one of the essayed species so
8 bluegill should be protected under their criteria
9 as well.

10 Q. Now, the US EPA criteria are based
11 on killing fish in a tank, right?

12 A. They have -- we're talking about
13 chronic standards for cyanide. So, no. The end
14 point wouldn't be death. The growth of --

15 Q. Do you have any independent studies
16 regarding reproduction on the effects of cyanide
17 on bluegill reproduction other than what was used
18 in the US EPA criteria?

19 A. No, but I would say reproduction is
20 one of the main end points in developing chronic
21 criteria. So I believe that the US EPA would
22 cover reproduction effects.

23 Q. You have much more faith in the US
24 EPA than I do, which is surprising for a District

1 employee this week.

2 MR. ANDES: We're full of surprises.

3 BY MR. ETTINGER:

4 Q. Okay. I think I may be done, but I
5 jumped around a little. Just one thing and I may
6 be -- let me ask you. Has the District, to your
7 knowledge, considered any sort of green
8 infrastructure approaches to CSO's?

9 A. Yes. Let me just find my notes
10 here. The storm water section of our engineering
11 department is generally in charge of assessing
12 green technologies and they have some ongoing
13 projects that are exploring this and they also are
14 responsible for implementing the storm water
15 control ordinance.

16 The reduction of system-wide
17 storm flow by green technologies I think is
18 largely unknown in terms of how much flow can be
19 reduced by a specific technology in a combined
20 sewer area. That needs to be explored further.
21 Currently, the District is working with the City
22 of Chicago Department of Transportation and the
23 USGS Streetscape Project to look at pervious
24 pavements and investigate the impact of green

1 technologies on the reduction of storm flow into
2 the system and also the District is conducting an
3 experiment on storm water runoff on our plants in
4 the parking lots with using three different types
5 of permeable pavements. These studies are not
6 complete yet and, to my knowledge, there's not a
7 report on these projects yet.

8 Q. Have you thought of hiring Mr. Bell
9 or someone like him to look at constructive
10 wetlands to approach the CSO's?

11 A. I'm not sure if the District has
12 looked at constructive wetlands in terms of CSO's.
13 I know that there were feasibility studies.
14 Again, they were run by our engineering
15 department, but they were looking at the
16 feasibility of getting some nutrient removal
17 benefit from treatment wetlands near the Lockport
18 area that was Lockport, Marsh and Centennial Trail
19 and they ran into some regulatory issues with
20 that.

21 MR. ETTINGER: I guess we're done.


22 MS. TIPSORD: Any other questions
23 for Ms. Wasik? Thank you very much. We'll recess
24 for the day and come back tomorrow morning.

1 STATE OF ILLINOIS)
2) SS.
3 COUNTY OF COOK)
4

5 I, Steven Brickey, Certified Shorthand
6 Reporter, do hereby certify that I reported in
7 shorthand the proceedings had at the trial
8 aforesaid, and that the foregoing is a true,
9 complete and correct transcript of the proceedings
10 of said trial as appears from my stenographic
11 notes so taken and transcribed under my personal
12 direction.

13 Witness my official signature in and for
14 Cook County, Illinois, on this 27th day of
15 May, A.D., 2010.

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A	39:9 40:9	Adrienne	allocated	56:13 57:1	96:10
abatements	achieved 7:7	68:5 74:4	31:18	57:9 62:11	appendix
61:21	73:22	76:16	allow 67:18	67:15 68:14	38:17,18
able 44:21	achieving	adversely	allowed	71:22 72:4	39:1,3,11
76:17	24:12	18:22	77:15 78:10	79:12 82:13	47:1
about 17:1	acknowledge	aerate 52:22	78:16	83:19 84:1	application
19:10 21:4	77:4	aeration	almost 43:19	86:24 87:12	48:12
22:3,10	acknowledged...	30:13 52:10	92:22	87:21 89:13	apply 10:4
23:9,13	44:16,19	52:14 53:13	along 7:11	94:2	64:20
27:20,23	acre 59:21	54:8,13,18	15:11 48:23	angle 51:12	approach
30:8 33:3,6	across 13:7	55:5,19,19	91:12	annual 82:20	95:10
33:7,8	Act 25:10,15	aforsaid	already	another 6:19	approaches
41:15,16	26:2,4	96:8	10:16 17:7	8:24 9:18	94:8
42:4,8,19	60:21 73:19	after 48:11	56:4,18	21:6 31:15	appropriate
42:24 50:15	Acting 2:3	52:2 72:17	alternate	anoxic 75:15	4:21
56:14,23	active 58:10	73:6 74:19	49:10	76:1	approval
57:2 60:12	59:23	74:20 75:7	alternations	answer 9:5	57:15,19
60:14 61:23	actual 14:12	91:18,23	24:21	14:6 15:16	approved
62:7 66:17	actually	92:16	alternative	15:20 20:23	57:20 77:15
69:17 74:2	13:12,22	afternoon	49:22 50:9	25:19 42:4	78:1
74:22 84:15	14:21 36:16	4:6	51:18 72:10	43:3 46:16	approxima...
84:17,20	37:24 39:1	again 21:12	alternatives	49:14,16	32:18
85:2 88:2	42:13 46:24	28:2 35:23	49:24	74:4 76:16	April 61:5
93:12	59:24 73:22	39:4 42:20	although	82:4	aquatic
above 1:8	85:14 91:21	64:22 75:1	46:4 78:22	answered 8:2	11:18 20:8
8:22,24 9:5	Act's 24:13	75:1 93:6	85:4 92:13	42:2	23:13 24:13
9:12,18,22	25:21	95:14	always 56:4	answering	25:9,15,22
92:13	add 23:20	against 70:15	92:22	9:3 41:14	32:19 44:3
absence	24:17	Agency 2:6	ambient	42:9,23	44:4 55:17
19:24 21:12	added 91:17	49:5	92:21	answers	58:3 64:4,5
absent 16:19	adding 90:19	Agency's 8:4	AMENDM...	25:24 41:19	70:16 73:15
36:12 37:2	addition 6:4	8:6 45:7,7	1:4	antecedent	73:16,23
Absolutely	29:11 47:4	agree 19:21	among 35:2	68:6	74:3,10,23
51:10	85:23	27:7 41:4,8	amount	anymore	77:1,7,9
abundance	additional	51:16,19	67:23	84:19	78:19 83:6
27:13,17,20	17:12 24:16	agreement	analysis	anyone 61:19	89:20
28:21 29:11	56:18 68:2	51:13	31:10	62:8,17	area 1:3
30:3,19	70:1	ahead 21:10	ANAND 2:3	81:7	13:19 14:11
31:16,22	address 87:4	al 38:22	ANDES 2:13	anything	15:3,3,6,16
48:1,2	addressed	Albert 2:10	9:2 14:5,14	53:22 86:10	32:18,24
abundant	84:1	50:11 61:5	20:19 21:1	87:14	33:13 52:19
31:2 32:19	addressing	86:10 91:11	21:11 22:21	anyway 79:3	58:24 59:2
according	87:18	alewives 35:5	32:1 33:11	anywhere	59:3 60:9
6:5 18:14	adequate	algae 64:4,6	33:19 35:1	59:17 80:16	63:23 75:9
27:19 90:12	25:8	65:1,2,2,4,5	35:11 39:17	appear 43:24	75:17 76:7
90:22	adequately	65:14,14,18	42:2,6	appeared	76:13 78:2
account 6:20	72:22,23	65:21,24	45:20 47:12	5:22	82:8 94:20
40:1	Adm 1:5	Alisa 2:2	47:16,18,21	appears	95:18
accounted	admit 61:7	74:21	49:14 51:20	26:16 62:20	areas 6:1,18

11:17,20	attributed	BARNES	74:5 77:6	71:3	58:4,10
15:13 16:3	29:16,20	2:13	79:19 80:13	biotic 26:14	68:22 80:7
16:6 32:23	attributes	based 14:8	84:4 85:12	bit 5:9 46:7	80:12,19,21
55:20 58:3	24:11 25:1	14:10,21,23	90:20 93:21	74:21 79:17	82:9,10
63:12,13	43:11 46:6	15:2,13	believes	83:20	break 9:10
64:17 75:12	authored	31:23 40:5	29:15,20	black 47:22	35:1 51:21
75:15,15,15	60:19	41:3 49:8	44:14	47:23 91:18	52:1 74:22
75:20,21	available	63:2 93:10	Bell 13:20	91:19,21	breed 65:17
arguing 21:4	31:24 82:17	basically 5:1	14:6,16,18	BLANKE...	Brickey 1:10
Army 17:13	Avenue 2:7	21:16 32:4	15:1,18	2:4	2:18 96:5
61:4 76:11	52:15	43:13 63:16	17:8 38:6	bluegill	96:20
around 94:5	avoid 75:9,11	67:21 81:19	95:8	27:14,17,24	briefly 46:16
articulately	75:12,15	88:19 89:19	belonged 6:8	28:2,4 30:4	broad 62:15
76:17	aware 58:1	89:23	below 26:1,2	36:8 39:16	broader 62:5
Asian 76:12	59:16 61:19	basin 58:11	69:10 75:16	90:17 93:4	broke 77:20
aside 45:2,14	61:24 62:8	basis 43:17	77:16 78:17	93:7,8,17	brook 90:16
45:14	62:19 78:15	81:15 85:3	80:10	bluegills	91:16 92:10
asked 16:23	89:4 93:2,5	88:3,6,7	benefit 86:22	28:14	92:12
17:1 41:20	away 62:16	bass 27:13,17	95:17	blunt 27:4	Bubbly 6:10
42:13 43:21	78:20,22	27:21 28:14	benefits	35:21 39:13	6:16 57:24
asking 87:19	86:9	28:23 30:3	84:12	board 1:1,10	58:3,7,11
92:15	A.D 96:15	36:8,10,24	Benthic	45:5 55:7	58:24 61:23
assemblage		39:15 41:19	78:21	55:15 57:8	63:10,19
33:24	B	43:1,4 47:5	best 41:10	57:18,20	76:7
assess 15:11	B 3:8 8:2	47:11 76:6	49:16	68:17 70:2	buffalo 47:23
assessing	26:5 27:3	76:9	better 20:12	70:6	47:23
94:11	35:14 40:4	Bay 78:2	20:18 21:5	Board's	buildings
assigned 12:2	42:16 45:8	became 31:2	23:8,9	57:16	82:12
45:15	45:17,18	before 1:8	28:10 29:16	body 75:12	buried 79:1
Assistant	back 21:4,15	20:23 61:17	29:21 30:5	boldly 85:21	C
61:3	31:5 43:21	67:22	44:12,14	borderline	C 2:1 16:1
associated	44:10 46:15	being 21:23	72:9 74:4	4:15	35:24 42:19
86:22	52:4 81:17	22:12 38:13	between 7:1	both 11:1,2	42:21 49:18
assume 30:2	91:5 95:24	41:15,17	7:23 19:8	15:5 29:1,8	50:19 51:1
73:4	backup 31:4	45:8 56:17	28:19 29:5	64:21	77:20
assumed	bacteria	69:18 73:22	32:6 34:20	boulders	calculate
50:13	83:12 87:2	84:16 92:6	35:19 37:6	11:19	91:15 92:3
assumption	bacterial	belabor	45:6	Boulevard	calculated
37:19,21	74:14 83:12	81:12	beyond 10:13	2:11	37:12
73:5	85:5,12	believe 13:11	56:18	Box 2:7	calculation
attachment	86:13	14:1 17:14	big 12:19	branch 5:10	92:14
4:24 5:19	bad 53:15	24:15 30:23	33:10 50:4	5:21,22 6:6	calculations
6:22 33:22	83:8	31:7,14	biological	6:7,18 7:12	37:16
77:24 78:12	balanced	36:23 37:17	28:15,18	10:23 11:22	called 1:9
attachments	20:8	42:16 45:11	85:23,24	12:4,9,14	35:15 44:3
75:13	bank 5:24	47:10 48:8	biologist	16:22 17:2	44:4 56:22
attain 43:14	11:7 32:20	50:8 54:19	85:22	21:17,22,22	Calumet 6:16
attending	33:4,5	55:2 60:2	biology 32:10	22:11,12	7:11 10:24
58:14	banks 5:24	68:18 71:10	biota 69:23	30:14 52:16	11:23 12:10
	11:12 15:5				

14:13 16:21	19:19 20:10	36:9,12	16:12 24:19	chinook	Code 1:5
17:6 18:2	20:11,16,17	38:20 39:7	24:22 32:17	47:10	coho 47:9
32:15,22,24	21:19,24	41:6,9	32:17,20	chlorophyll	coincidence
33:6 52:19	22:7,8 23:6	43:13,14	52:19,23	64:5	44:8
52:20,20	23:7,11,12	44:15,20	57:24 58:1	chronic	collateral
63:11,22	23:16,16,20	46:5 48:9	58:4 59:20	93:13,20	6:17 57:24
Cal-Sag	24:12 25:7	55:12 63:9	59:22 63:20	circumstan...	58:4 59:20
16:11 52:18	25:13,20	63:12,13	67:7 78:6	67:11,18	59:22
52:19	26:7 27:14	64:1,3 65:4	80:11 82:9	69:17	collected
Canal 6:18	27:15,18,21	65:5,11	83:17	cites 30:24	31:8 34:8
16:11 18:1	27:22 28:3	66:20,22	channeliza...	city 58:12,17	34:10,16,23
59:23	28:6,6,9,10	67:4,24	24:22	59:6,15	38:20 39:10
cap 59:1,23	28:16,16,19	68:19 72:19	channelized	94:21	40:2,9
60:1	28:19,24	72:20,24	11:3,13	clarify 32:2	42:13 46:17
capital 82:19	29:5,8,12	73:7,17	channels	42:6 76:22	46:19 47:3
capping 58:7	29:13,17,22	74:7 75:19	67:5	class 44:2,4	column 65:22
58:10 61:23	30:4,4,20	76:1,7 77:5	characteris...	classification	79:3
62:3,4	30:20 31:16	77:9 78:23	64:10	4:21 7:18	combination
capture	31:17,19	79:6,9,20	characteris...	7:21 10:16	38:13
81:14	32:6 37:9	80:2,16	13:23 32:4	36:13,18,19	combined
CAR 37:13	38:12,15	88:17,18	characteriz...	37:7 44:1	84:23 94:19
carp 27:4	45:3,4,4,6,7	92:21	70:8	48:20	come 21:5
35:14,20	49:2,2,7	Centennial	characterize	classificati...	57:6 58:17
39:13 76:6	55:10	95:18	15:10	37:17 38:3	88:13 89:22
76:10,12	caught 35:5,9	CENTER	charge 94:11	38:8,19	95:24
CARRIE 2:5	35:19	2:10	check 8:4	39:12 44:12	comes 49:20
case 36:23	cause 1:8	certain 8:13	30:21 59:13	classified	56:14 91:23
cases 5:10	21:18 64:24	13:23 38:12	78:12,15	6:12 37:18	coming 36:19
catches 29:1	66:21	55:20,21	chemical	37:23 42:10	51:11 66:2
categories	caused 60:8	69:19 72:17	49:3	classifies	commencing
6:3 36:20	63:18 64:5	86:23	chemistry	43:4	1:12
43:23 44:5	69:15	certainly	18:14	classify 5:4,8	Comment
44:7 72:15	causes 69:7	51:4 65:18	Chesapeake	5:18 19:12	39:4
categorizing	72:20	Certified	78:2	37:11	comments
17:11	causing 69:3	96:5	Chicago 1:3	classifying	92:16
category 5:4	caveat 7:23	certify 96:6	1:11 2:11	6:14 41:18	commercial
5:5,14,15	CAWS 5:5	cetera 8:20	2:15 5:11	Clean 24:13	16:19,22
6:8,14,19	6:23,24 7:5	Chairman	5:11 6:6 7:1	25:10,15,21	17:5,10
7:14,20,23	7:16 9:1,6	2:3	7:13 10:24	26:2,3	Commissio...
7:24 8:21	9:19 10:5,7	chance 16:1	11:22 12:4	73:19	57:16
8:24,24 9:4	10:15 12:3	change 15:20	16:11,22	clear 9:2	committee
9:11,18,18	16:16 18:6	19:17 25:4	17:3 21:17	13:17 77:19	58:6
9:22 10:22	18:14 19:2	73:14	52:9 58:13	clearly 5:6	common 27:4
11:1 16:6,8	20:13,18	changed	59:22 60:9	75:21	29:2 35:20
16:10,14,20	23:8 26:12	29:24	61:4,21	client 49:17	39:7,13,22
18:6,9,18	26:18 27:8	channel 6:17	62:10,22	closest 65:23	47:5,6
18:18,21	29:2 32:23	6:17 7:7,11	68:22 80:7	clupeidaes	communities
19:1,5,5,9,9	33:8,12,23	8:14 15:8	80:12 82:10	34:16,17,21	20:9 74:12
19:13,15,18	34:23 36:1	15:12,15	94:22 96:22	35:2,7	community

18:23 25:9	77:4 78:20	contaminat...	26:17,23	89:18,20	49:21 50:11
26:14,19	79:11,15	18:10 19:7	36:4 37:3	90:2,13	50:16,19
27:8 28:13	91:1,7	20:1 22:17	38:7 39:6	92:2 93:8	51:3,4,6,17
35:17 41:9	conducting	29:7	40:6 41:21	93:10,18,21	77:20
41:12 54:2	95:2	contaminat...	42:11 51:10	crossed 51:3	dam 7:2,3
compared	confident	18:13,16	73:5 89:14	CSO 73:2,5	32:16 80:10
16:14 29:1	49:16	19:11 22:19	96:9	74:19,20	data 9:24
48:2 66:1	confluence	contemplat...	cost 82:18,20	75:4,7	10:7 17:10
comparison	80:11	8:23 9:7,17	85:10	81:20 82:7	17:15,21
10:10 92:11	confused	continual	counsel 4:7	83:9 84:16	18:14 19:14
complete	73:14	82:20	33:14 42:16	84:16,18,19	27:20 29:3
95:6 96:9	connection	continue	42:20 61:4	85:22 86:7	31:8,9,24
completion	10:21	54:18,21	County 88:8	87:17	36:10 40:6
44:20	connectivity	55:22 84:23	88:10,22	CSO's 83:13	40:23 41:3
compliance	11:11 24:23	continuous	96:3,14	84:2,7,20	63:2 66:4
57:2,4,6	conservative	63:2,15	COURT 1:24	86:11,15,23	79:8 80:20
comply 56:16	85:14	76:13	2:24 3:24	87:5 94:8	86:3 92:22
87:1,3	consider	continuum	cover 9:4,11	95:10,12	database
composed	44:20	5:2,13	11:17,21	CSR 1:10	48:8
33:24	considerati...	contribute	12:7 23:14	2:18,19	dated 61:5
comprehen...	79:23	69:21	61:2 85:13	96:20,23	dates 31:6
48:8 86:14	considered	contributing	93:22	current 25:2	day 1:12 17:8
concentrati...	4:17,20 6:3	31:21 87:5	covered 15:4	53:12,24	64:7,11
65:15 93:3	46:22 63:9	87:6	24:16	54:2 67:22	95:24 96:14
concept 59:5	81:23 94:7	control 1:1,9	crappie	72:17 73:21	days 68:7,21
conceptual...	considering	25:3 94:15	91:18,19,21	73:23	dealt 77:13
74:23	6:6 43:1	Controlling	crashes 80:3	currently	death 93:14
concerning	79:18 90:3	7:2	create 67:18	25:14 43:13	Deb 21:16
11:21 17:5	90:5	controls 55:3	74:23	52:9 54:19	DEBORAH
concluded	constituents	75:11	created 67:5	56:12 57:22	2:6
69:7	18:17 49:4	convention	creating	69:4 73:3,4	debris 11:19
concludes	constitutes	41:23	84:18	73:16 75:21	23:13
82:6	33:3	convey 11:14	creativity	94:21	decide 55:15
conclusions	construct	conveyance	44:9	cut 5:3	56:9
83:24	59:2	8:20 25:4	Creek 6:10	cutback 59:7	decided 6:7
condition	constructive	Cook 88:8,10	6:16 57:24	cyanide	decision
77:5	62:9 95:9	88:22 96:3	58:4,7,11	50:17 88:2	38:14
conditions	95:12	96:14	58:24 61:23	88:4,7,9,12	decrease
4:18 6:11	consult 31:4	cool 88:13,16	63:10,19	88:22 89:2	55:11 67:24
8:1,13,16	45:12	Corps 17:13	76:7	89:2,5,12	deep 63:4,8,9
26:8,16	consuming	58:13 60:20	criteria 50:17	89:22 90:10	64:19 77:23
28:11 29:17	64:9	61:4 76:11	50:17 51:16	90:12,15,22	78:2,5
29:21 44:19	contact 71:12	correct 7:5,9	51:18 69:19	91:1 93:3	deeply 64:16
53:12 54:1	73:21	7:10,16	69:20 70:9	93:13,16	deferred
68:6 69:9	contain 11:7	9:15 11:1	71:1,19,21	cyprinidae	43:22
72:17 73:7	contained	13:20 18:8	72:14 76:24	35:15,19	deferring
73:11 74:8	17:7	18:20 19:4	77:6,14		15:24
74:8,13	contains 12:1	19:18 24:7	78:7 81:9	D	deficit 77:21
75:24 76:5	85:1	25:12 26:5	88:3,4	D 3:1 16:18	defined
				41:8 49:20	

definitely 18:24 92:4	designed 11:12	direction 54:11 96:12	distribute 61:14	double 27:21	easy 74:18,19
definition 45:23,23,24 46:1	detail 16:4 29:19 71:18 71:23	directly 65:22 66:5 87:19	District 17:9 19:12 26:6 27:20 29:15 29:20 30:13 31:8,17 37:5,10 44:14 45:15 48:7,20 49:4 52:9 53:3 54:9 54:17 56:17 57:16 59:18 61:3,4,19 62:19 63:2 65:23 70:20 72:12 81:20 83:1 93:24 94:6,21 95:2,11	doubtful 80:4	economic 60:8
degree 27:16 68:6,21	detailed 46:7	disagrees 49:5	discharges 65:24	down 9:11 21:14 35:1 54:13 56:9 66:22 77:12 78:1 92:4	effect 55:3 69:24 70:15 71:2 76:5 83:9 84:7
demand 85:24	determine 76:12,14	discuss 57:24 72:2 86:17 90:7	discusses 63:7	downstream 65:12,20,21 65:22 66:5 66:12,14 83:12	effected 6:12
demolition 82:11	determined 6:24 13:8 82:19	discussed 8:5 10:19 20:9 71:23 75:13 80:1 81:8 81:22	discussing 8:3	downtown 61:21 62:10 62:21	effectively 11:14
demonstrat... 18:7	determining 4:21	discussion 10:22 61:22	District's 10:22 43:18 43:23 44:12 48:19 49:8 57:2 71:17	Dr 20:9 43:22	effects 43:3 43:12 89:1 93:3,16,22
demonstrat... 58:8,23	develop 73:14	dislocation 60:8	diurnal 63:3 63:14,17,24 64:4,12	draft 54:24 63:4,8,9 77:23 78:2	effluent 1:3 65:12,13
Dennison's 63:6	developed 56:15 58:2	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	divided 15:7	drafting 54:23	eight 4:24 25:5 38:2 47:9,16,17 77:14,17
department 59:8 94:11 94:22 95:15	developing 93:20	dislocation 60:8	document 60:19 61:2 61:9 62:16 93:6	drive 2:14	eighteen 47:23
depends 36:13 79:16 86:5	development 24:19	dislocation 60:8	documents 31:4 37:15 89:20	drive 2:14	either 5:4 43:3 46:22 90:5
depleted 76:2	Devon 52:15 52:17	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	diurnal 63:3 63:14,17,24 64:4,12	Dresden 9:21	electrofishi... 48:5
deposition 67:6	diagnosed 6:15	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	divided 15:7	Drive 2:14	elevated 18:17
depth 8:15 16:2,8,13 24:22 32:18 64:3	differ 46:1 49:6	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	divided 15:7	dropped 88:19 91:16	eliminate 81:13
depths 16:9 24:21	difference 32:7,9 45:6 45:19 84:3	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	divided 15:7	due 30:5 68:8	emerald 35:20 39:13
Des 1:4 10:4 10:8	differences 28:18 29:4 45:21	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	document 60:19 61:2 61:9 62:16 93:6	duration 38:20 53:13 64:7 73:23	emergent 32:21
describe 11:5	different 5:23 6:2,3 14:21 34:7 38:2,23 40:5 43:4 45:12,15 49:1 51:12 71:14 85:8 95:4	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	document 60:19 61:2 61:9 62:16 93:6	during 31:1 38:20 53:13 64:7 73:23	employee 94:1
described 4:23 5:19 21:16 70:19 71:18 77:24	differs 32:6	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	documents 31:4 37:15 89:20	dystonic 65:2	empty 21:20
describing 25:6	digital 15:11	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	dog 50:12	each 11:6	end 5:7 11:19 16:21 18:8 20:13 29:17 32:23 59:21 82:6,16 93:13,20
description 32:15 70:9	dilute 86:4	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	doing 49:16 51:9 58:19 83:5	earlier 5:1 8:2 22:10 24:1 29:6 30:7 41:20 85:21 91:20	ended 6:14 17:23
descriptions 43:23	dips 78:24	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	dollars 58:18 82:21	earth 11:7	engineer 85:16
designation 10:23 25:13	direct 14:3 48:5	dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	dominated 26:19 36:5 65:12	easier 5:7 23:1	engineering 94:10 95:14
designations 48:23		dissolved 48:24 53:9 53:24 54:10 54:14 55:16 56:8 63:7 63:15,17 64:7,9,11 69:2,9,15 70:11,13 71:2,20 73:3 75:16 76:13 78:7 79:15 80:3 81:1,4 83:9 85:6,13 87:2 89:1 89:11,11 91:1	done 55:20 94:4 95:21	easily 92:14 east 2:7 33:5	

Engineers	50:8,13,22	34:10,14	32:3	feasible 8:17	34:1,8,11
58:13 60:21	51:5,11,15	48:11 68:20	extent 11:21	43:10 81:13	34:16,22,23
61:5 76:11	52:7 56:20	71:9	17:5 21:12	feature 24:14	35:3,16,17
enlarged	57:4,11,12	examples	23:10,15	68:12 81:15	35:24 36:1
79:21	60:18 61:5	23:22 24:6	25:20 32:22	features 5:20	36:9,19
enough 6:2	61:12 62:14	25:1 27:3	44:21 50:3	20:7,15	37:7,11,14
64:16,23	67:16 69:1	exceed 78:14	50:24 69:6	23:5,17,19	38:19 39:9
entire 14:1	72:1,5,6,8	except 36:10	extrapolate	24:5,8	40:2,5,9
15:10,12	77:11 79:13	36:24 63:10	15:9,13	26:13,21	41:3,9,12
29:8 84:8	82:23 84:6	67:10 75:23	extremely	federal 58:18	43:12,12,14
entitled 1:8	87:9,13,15	exception	67:11	feel 49:16	46:17,19
Environe...	87:23 88:1	16:20		51:2	48:8 54:2,6
59:8 76:4	89:15 90:6	excluded	F	feet 32:18	67:10,11,19
Environe...	91:13 93:1	45:9	F 8:7,7	fell 5:8 38:14	67:21,23
2:2,3,6,10	94:3 95:21	excluding	faced 5:2	felt 6:2,19	68:2,3,10
envision	evaluated	46:7	facility 82:18	fertile 66:7	68:16,19,22
69:18	88:13	Excuse 30:12	fact 21:21	few 6:13	69:3,7,8,14
EPA 38:21	evaluation	exemptions	26:18 40:1	26:23 41:4	69:21 70:15
44:1,13	7:5 12:1	70:13	45:14 76:2	46:23 49:3	73:10 74:19
77:15,21	20:2 38:17	exhibit 3:11	factor 7:17	82:22 83:4	75:8,11,14
78:16 81:9	39:4 42:11	18:10 60:15	7:19 28:5	83:5 84:1	75:22,23
89:19 90:2	47:2 49:9	61:7,8,10	28:15 32:6	field 15:13	76:1,5,14
90:3,13,23	88:20	68:17	factors 4:16	Fifteen 43:9	79:22,24
90:24 91:3	even 10:3,4	exist 11:19	4:20 6:7	figure 39:3	90:13,16
93:6,10,18	29:13 45:13	existing	10:13 19:11	46:24	91:22 92:10
93:21,24	45:14 80:18	43:10 55:19	22:4 26:9	filed 50:24	93:11
EPA's 36:19	85:6,13	56:19,21	64:2	fin 39:16	fit 9:22 50:19
44:2	event 48:14	71:4,6,7,10	fair 15:23	find 78:23	51:17 53:6
equate 74:24	73:2 75:4,7	73:17,18	41:10,12	80:4,8,22	fits 71:20
75:1,3	86:6	exists 11:22	fairly 45:11	80:24 92:3	74:3
equipment	events 68:7	expect 68:1	fairness	94:9	five 10:20
52:10	68:11,21	expected	42:21	finding 31:6	18:4 20:6
especially	72:18 73:24	88:10,12	faith 93:23	fine 18:5,5	24:10 25:5
31:19	ever 77:15	expenditure	fall 25:21	19:2 42:5	26:11 27:11
ESS 66:9	79:7	82:19	77:16	43:7 56:9	29:10 30:24
essay 6:5	every 56:4	expenditures	familiar 60:2	66:20 79:1	39:6,22
essayed 93:7	evidence	57:17,19	89:8	79:2 80:17	40:12,18
essays 91:5,8	75:14	experiment	families 34:1	fire 51:17	42:1,13
establish	exact 12:23	95:3	34:3,9,12	first 5:3 9:3	52:14 90:21
58:2 88:18	31:6	explain 4:19	34:22 35:16	12:6 20:23	fixed 11:18
estimate	exactly 31:9	16:4 20:14	35:24	57:13 76:2	32:19 84:10
27:16	32:11 58:20	23:6 29:19	family 35:15	76:3 81:18	fixing 84:15
estimated	76:14	82:1	35:16 36:2	fish 18:23	84:18
32:24	Examination	explored	36:6	26:15,18,19	Flattery
et 8:20 38:22	3:4,5	81:21,22	far 45:8	27:8,20	87:21
Ettinger 2:10	example 5:23	94:20	50:20 64:23	28:9,12,13	fleeting 77:5
3:5 30:12	6:11 9:22	exploring	feasibility	29:2,11	floaters
30:16 40:11	12:6,7	94:13	55:21 86:20	30:19 31:1	80:22
40:16,20,24	14:12 17:15	extended	86:21,21	31:8 33:23	flood 8:20
			95:13,16		

25:3	11:16 18:3	front 86:3	given 4:22	green 27:4	happens
flooding	35:6,9	full 21:20	31:17 60:12	39:14 94:7	55:18 83:8
11:13	36:20 69:10	33:12 94:2	60:23 61:15	94:12,17,24	hard 58:19
floodplain	69:12	fully 25:10	80:5 89:9	groups 5:23	74:22
11:11 24:23	Franzetti 3:4	function 13:6	giving 60:22	growth 93:14	Harley 30:17
flow 4:18	4:2,5,7 9:9	13:9	gizzard 27:4	guess 51:11	30:18,23
6:11,19 8:1	10:11 12:19	functions	34:17,20	56:5 73:12	46:13,15
94:17,18	13:16 14:7	28:12	35:3,5	73:16,20	47:4 48:4
95:1	15:17,22	funding	39:13	74:2,6,17	48:10,15
flows 24:21	20:4 21:3,9	58:16 59:5	glass 21:20	86:13 95:21	harm 69:23
fluctuation	22:23 23:3	59:10,11	go 4:1 20:21	guys 54:23	harmed 71:3
63:4,17	31:11 32:12	60:6,7	21:4,9,11		Harvard
fluctuations	33:14,20	funds 58:17	23:23 33:9	H	47:20
64:5,13	35:8,13	59:14	43:21 44:10	H 3:8	having 21:22
focused	38:4 39:20	further 4:19	45:17 46:15	habit 4:15	58:18 74:21
42:23 85:11	41:2 42:20	11:5 20:14	48:22 50:16	habitat 5:2	74:22 82:20
focusing 45:4	43:8 45:1	34:15 38:24	52:4 55:6	5:20 6:23	healthy 20:8
follow 10:2	46:11 47:19	53:24 65:21	56:8 67:12	7:4,6,17,24	hear 50:5
20:20,21,24	49:15 50:7	66:22 94:20	85:15 86:18	8:3,8,10	56:23 57:1
21:1 23:2	50:11 51:8	future 55:14	91:5 92:4	10:3,13,14	Hearing 1:8
41:14 44:23	51:13,15,19		goal 24:13	12:1,2	2:2
46:14 48:18	Franzetti's	G	25:16,22	18:23 20:2	heel 80:22
72:6,9	41:14,18	GARY 2:4	goals 25:10	20:7,11,15	81:2
83:19 91:12	48:18 50:10	general 23:14	26:4	20:17 22:15	held 1:7
followed	Fred 14:9	24:22 70:23	going 4:2 8:7	23:4,7,11	51:17
68:21	FREDRICK	71:8 77:6	8:11 22:24	23:17,18	help 36:22
following	2:13	79:20,23	39:21 43:20	24:2,5,8,11	50:2 53:22
24:20 52:2	free 65:13	88:8,11,14	49:18 50:14	25:1,8	54:1 87:22
footnote	Freedom	88:22	54:22,24	26:13,20	helped 76:18
57:14	60:21	generally	56:23 57:1	28:11 29:16	helpful 50:5
foregoing	frequent	16:19 18:10	57:5,7,8	29:21 30:1	helping
96:8	75:23	19:8,22	59:1 60:3	30:5 32:4,7	54:22
foreseeable	fresh 79:8,12	26:13,19	60:11 61:16	38:17 39:4	her 42:24
24:14 81:14	79:14	27:7 65:6	61:17 71:5	42:10 43:11	51:1,2
forging 28:11	from 20:2	66:3 78:23	76:14 77:12	44:15 46:5	60:12
fork 80:21	24:12 28:6	79:1 80:22	77:19 81:21	47:1 49:9	herring
forms 78:19	28:16 34:8	94:11	87:18,21	54:3 58:8	35:10,12
forth 37:15	36:19 37:4	generated	90:7	80:5,13,15	herrings 35:6
forward	46:1 51:9	10:7	golden 39:14	half 21:20,20	high 65:6
59:10 60:3	51:12 56:24	Generation	good 4:6	27:23 33:17	66:24 75:6
85:21	57:2 58:16	4:3,8 49:10	34:13 87:8	Halsted	89:10
found 11:8	59:5,14	gets 57:10	gotten 37:3	63:21	higher 5:6
19:14 32:22	61:3 64:15	getting 23:21	87:10	handed 61:1	21:23 22:6
79:7,8	64:23 66:2	95:16	gradually	61:13	23:15 27:14
80:20 90:15	75:5 78:20	giant 80:22	32:20	handle 76:17	27:18 75:17
Foundation	83:9 85:7,9	GIRARD 2:3	Grand 2:7	77:20	77:7 92:7
76:4	86:9,13	91:11,14,23	6:16 63:10	handled	highest 7:6
four 4:14	87:7 88:19	92:5,15,19	greater 30:3	74:11,12,15	highly 80:4
10:1,12,20	95:17 96:10	give 28:1	31:16	happen	him 95:9
		92:17		53:16 91:16	

hiring 95:8	impose 38:6	10:13 44:16	interrelated	30:21 31:3	72:22 75:8
historical	impossible	indicate 6:10	50:4	33:4 37:8	78:10,18,22
31:8 92:22	82:10	33:23 41:11	interrupt	38:1,7	79:1 81:1
hit 54:9 73:9	impounded	indicated	20:21	42:20 45:4	83:3,15
75:19	65:19	46:17	interruption	45:10 56:10	86:4,6,8,10
hold 20:19	improvable	indicates	22:22	57:17,19	86:16 87:23
43:21 78:11	8:14	66:4	intolerant	58:9 59:9	91:3,9
hope 86:21	improve 8:17	indicating	36:11,11,14	60:22 61:13	95:13
hour 1:13	43:10 54:11	79:8	36:17,22,22	65:6 70:17	knowledge
hours 75:6	improved	indicator	37:1,1,7,17	71:8 73:13	46:4 61:18
hurt 54:5	29:14	83:12	38:9 46:20	75:2 76:2	62:7 66:19
hypothetical	improveme...	indices 37:12	46:20,23,24	76:21 77:13	81:8 85:22
89:14,16	8:3,9,10	38:12	47:6,6,11	78:12 80:22	94:7 95:6
	10:14 30:10	individual	48:1	85:4,10	
I	improveme...	7:19 28:2,4	inventories	87:12 89:13	L
IBI 37:13,13	8:19 32:3	34:8 86:15	48:11	89:15 92:17	laboratory
37:16 38:1	improving	individuals	invertebrat...	94:5,9	91:4,8
IBI's 37:13	85:15	27:23,24	78:21,23	J-E-R-V-I	lack 8:15
41:11	include 14:1	28:22,24	90:14	61:3	22:6,12,13
identificati...	26:7 31:1	35:4 47:3	investigate		22:16 24:23
3:10 61:11	42:15 44:16	infeasible	94:24	K	44:9 64:3
identified	55:4 72:13	81:23,24	involved 58:7	keep 75:5	lake 47:24
10:17 28:18	93:6	83:2	Island 9:21	Kevin 61:3	land 82:17
identify 46:6	included	information	issue 14:8	key 5:20 12:2	language
IEPA 41:22	7:14 44:18	5:18 11:20	31:22 60:6	kill 68:10,16	55:4 71:15
IEPA's 5:1	55:9 60:1	17:4,13	64:20 72:24	68:19,23	large 6:1
Ill 1:5	82:8	60:21	issued 78:3	69:14,21	8:15 24:23
Illinois 1:1,9	including	infrastruct...	issues 6:20	killing 93:11	27:13,17,21
1:11,12 2:6	4:17 8:14	94:8	18:21 46:8	kills 67:10,12	28:14 30:3
2:8,11,15	56:17	Initiative	58:16 74:13	67:19,21,24	36:7 39:15
37:13,16	inconclusive	59:19 60:20	95:19	68:2,3 69:3	41:18 42:16
38:1 40:17	4:16	installing		69:7,8	43:1,4
40:19 44:13	incorporate	82:18	J	70:15 75:23	44:15 46:4
66:23 96:1	55:8	instance	J 2:18 61:3	kind 31:20	57:19 63:18
96:14,22	incorporated	16:10 23:12	jack 35:6,10	70:19 77:12	76:6,9
ILPCB 61:9	74:9	65:11 75:16	Jackson 2:11	83:14	82:11
immediately	increase 30:3	88:15	Jennifer 2:16	kinds 58:9	largely 30:1
66:14	53:24 65:21	instantane...	3:2 15:20	know 4:9	65:13 94:18
immune	67:23 89:12	77:22 78:8	Jervi 61:3	10:10 12:13	last 30:8
83:15	92:13	78:11,17	JOHNSON	14:2,14	35:24 38:18
impact 18:22	increased	instead 22:7	2:4	17:9 29:23	43:19,19
94:24	29:12 30:19	45:17,18	jumped 94:5	37:20 38:5	44:10 53:12
implementi...	83:11	72:13,14	June 77:22	38:11 40:11	68:19
94:14	independent	88:20 92:5	78:9	49:9,12,23	later 50:18
important	93:15	92:10	just 9:2 11:10	56:7 57:6	Law 2:10
4:16,20	index 4:15	intend 44:5	13:9,17	59:24 60:5	47:20
20:7,15	5:2 6:23 7:6	intent 67:17	14:18 17:15	60:7,10,14	lawyer 73:13
23:4,18	7:17,24	Interest	17:16 22:15	65:11 66:17	75:2
24:5,8	8:14 10:4	82:24	23:1,17	67:13 68:11	least 14:8
75:18			24:3,18	68:15 72:21	29:7 79:4

leave 71:5	likely 30:5	live 80:24	lots 95:4	19:15,19	50:20 79:12
legacy 67:3	54:1 68:9	LLC 1:24	low 29:1 48:3	20:1 34:17	means 12:13
legal 67:19	LIMITATI...	2:24 3:24	64:4,18	make 10:9	77:9
69:16	1:3	LLP 2:13	65:14,24,24	34:22 35:16	meant 57:14
length 12:23	limited 26:13	localized	66:12,13	37:5,18	81:19
13:2,3,12	26:20 44:4	84:9,12	75:12 76:15	43:15 47:7	measured
13:14,19	44:7,18	location	78:20 79:3	54:24 59:2	13:24 26:15
14:12 15:6	45:3 50:1	13:19 14:11	79:10,15,18	61:24 62:8	measureme...
15:7	54:3 55:4	86:5	79:22 89:1	62:19 67:19	25:20
less 59:21	69:19 70:10	Lock 7:2,3	89:11,11	84:2	measureme...
69:11 79:21	70:18,21	17:18 32:16	91:1 93:3	makes 72:24	15:2,14
85:1	71:15 72:11	33:5	lower 1:4 5:7	manmade	measures
let 4:9 8:4	74:2,6	Lockport 7:3	5:10,21 6:5	8:15 11:2	58:10
13:23 20:19	76:23	17:16 95:17	6:7 10:4	many 35:2	meet 8:19
20:20 32:1	Limnotech	95:18	16:2,13	Marie 1:8 2:2	25:14,15
33:11 49:14	13:13 17:7	logical 32:8	21:17,19	mark 60:15	26:2,3
49:15 64:22	17:14,22	long 69:16	22:7,11	marked 3:10	55:17 56:3
78:12 83:19	37:21 38:6	78:10	26:4 63:21	61:9	56:10,23
87:13 94:6	38:14,17	longer 64:8	66:5	Marsh 95:18	57:7,17
94:9	39:11 41:24	look 17:13	L.A 1:24	matching	88:11 92:23
letter 61:2	42:10 53:11	18:15 31:18	2:24 3:24	58:17 59:14	meeting
let's 4:1 9:10	54:15 61:19	40:22 50:10	<hr/>	materials	25:21 66:6
15:11 45:2	62:8,19	55:19,21	M	22:10	66:11
51:22 52:4	76:4	58:22,23	M 4:4 52:6	math 47:21	meetings
84:19 87:16	line 72:7	72:13 78:13	machines	matter 1:2	58:14
levels 53:19	lines 91:12	81:20 83:7	53:3	53:9 61:22	meets 25:10
54:14 56:8	list 81:18	86:20 90:8	Mackey	82:24	mentioned
69:2,10,21	91:24	91:6 92:1	43:22	max 16:8	23:18 45:10
70:13 76:15	listening 37:4	92:22 94:23	Mackey's	24:21	67:22 80:19
77:16 80:3	liter 77:16	95:9	20:9	maximum	merely 44:8
83:10 89:2	literature	looked 17:9	macroinve...	8:14	met 45:13
License 2:19	18:16 43:4	22:5,16	29:3	may 1:12	metals 86:2,6
life 24:13	91:4	29:2 82:8	macrophytes	8:18,18,23	meter 13:19
25:16,22	little 7:11	84:13,19	65:3	9:8,17	14:11,22
28:12 44:3	10:24 11:23	90:14 95:12	made 36:1	13:22 16:3	15:3,5,8
44:5 55:17	12:10 14:12	looking	37:21 38:14	18:6 31:16	meters 15:6
70:16 73:15	16:21 17:6	17:15 25:18	61:19	50:1,8	metric 13:7
73:17,23	18:1 23:1	31:7 33:16	magnitude	64:17,20	metrics 43:12
74:3,10,23	35:2 39:21	39:3 53:11	63:18,21	72:6 86:7	Metropolit...
77:1,7,9	40:4 46:7	58:9 62:17	68:9	90:9 92:2	52:8 62:18
78:19 83:6	52:20 63:22	76:5 86:14	main 5:11	94:4,5	83:1
89:21	73:13 74:21	86:15,24	23:22 24:6	maybe 21:19	mg/L 69:10
like 37:7	83:20 87:10	95:15	32:9 53:1	31:21 38:2	69:15 73:7
38:16 50:10	94:5	looks 38:16	63:20 93:20	45:5 61:22	75:16 78:8
57:19 59:9	Liu 2:2 48:16	lot 28:17	maintain	83:15 92:16	78:17 88:20
60:15 61:15	48:17 49:8	65:16 66:21	25:2	mean 11:6	88:21 92:6
61:20 78:13	49:13 50:3	66:24 73:10	major 7:17	16:4 34:1,5	92:13,23
79:18 82:4	72:6,10	75:14 76:19	19:1 82:12	34:6 37:10	middle 5:9
88:2 95:9	76:21 77:10	80:24	majority	45:22 46:18	5:13 31:20
			18:7 19:6		

Midwest 4:3 4:7 40:12 49:9	modified 26:15 44:3 44:6	mouth 27:13 27:17,21 28:14 30:3 36:7,10,24 39:15 41:19 42:16 43:1 43:4 47:5 58:11 76:6 76:9	4:4 52:6,6 name 4:6 narrative 69:20 70:8 70:9,15,19 71:5,6,7,11 71:19 72:2	nine 26:11 40:6,8 42:17 57:23 77:24	nutrient 95:16
might 9:22 10:9 16:23 17:22 51:5 56:22 60:13 75:4 79:4 83:17 89:12 92:11	moment 31:3 31:7 92:2	move 59:10 65:20 75:17 85:21	narrower 39:21	nomenclat... 43:24	<hr/> O
mile 33:3,4,7 33:17	money 53:10 56:21	moved 51:3	native 79:5,8 79:10,14	none 61:7	O 4:4 52:6
miles 33:4,6 33:8	monitoring 63:2,16 76:13	moves 72:20 73:8	natural 11:9 11:10 67:5	nontoxic 18:8	oath 14:19
milligrams 77:16	Monroe 96:21	moving 6:21 8:21 16:18 18:3 20:5 21:13 24:9 25:18 26:5 29:9 32:13 35:23 40:4 76:1	navigation 8:20 16:19 16:22 17:5 17:10,24 22:5,6,12 22:12 25:3	normal 67:7	object 70:7
million 17:17 82:20,21 83:2	more 5:8,9 11:20 12:13 12:14 16:4 17:10,21 18:1 23:14 23:20 26:8 27:23 28:9 28:14 29:1 29:12,19 30:20 31:2 35:2 43:16 46:7,12 47:6 48:12 53:21,23 54:2 66:17 68:7 76:17 79:22 80:8 80:23 82:2 93:23	much 13:10 59:11 64:1 83:18 87:22 92:4,14 93:23 94:18 95:23	near 47:24 95:17	normally 65:17	objection 61:6
mind 14:7	Moving 6:21 8:21 16:18 18:3 20:5 21:13 24:9 25:18 26:5 29:9 32:13 35:23 40:4 76:1	multistory 82:11	nearly 39:9 40:2 82:21	north 2:7,14 5:10,21,22 6:5,7,18 7:7 7:10,12 12:3,9,14 15:12 17:2 21:17,21,22 22:10,11 30:14 33:5 52:15 63:20 68:22 80:6 80:11,12,19 82:9,9	obviously 33:8 62:5
minimum 73:18 77:6 77:22 78:8 78:11	Mm-hmm 92:18	multi-decade 31:13	need 33:9 56:2,15 86:17	notoxic 18:8	occasional 78:24
minnow 27:5 35:14 39:14	morphology 24:20	muricidae 79:18 80:9 80:23	necessarily 22:19 37:11 40:21 45:24 78:22 85:15	normal 67:7	occasionally 63:21 68:4
minnows 35:21	most 11:8 16:7 25:4 30:8 39:6 39:22 41:5 41:9,15,16 42:21,24 48:8 68:9 88:7,22 89:21 90:11 90:15,19,22 91:17,22	mussel 79:16 80:15,20	need 33:9 56:2,15 86:17	normally 65:17	occur 63:24 64:11 67:10 67:20 68:12 68:14 73:4
minutes 51:23	Moving 6:21 8:21 16:18 18:3 20:5 21:13 24:9 25:18 26:5 29:9 32:13 35:23 40:4 76:1	mussels 79:5 79:9,10,14 79:18 80:2 80:6,9 90:14	nearly 39:9 40:2 82:21	note 6:22 10:23 92:20	occurred 69:16 73:3
mirror 44:6	Mm-hmm 92:18	MWRD 57:15 67:17 70:5	need 33:9 56:2,15 86:17	notes 94:9 96:11	occurring 69:9
missed 72:3	Morning 6:10 16:23 24:15 95:24	multi-decade 31:13	needed 58:17	note 6:22 10:23 92:20	occurs 63:4
misspoke 64:21 91:20	Morphology 24:20	multi-decade 31:13	needing 59:9	note 6:22 10:23 92:20	off 6:16 53:3 53:16 54:4 54:13 55:1 58:1 59:22
Mm-hmm 92:18	Morning 6:10 16:23 24:15 95:24	multi-decade 31:13	needs 8:19 51:2 94:20	note 6:22 10:23 92:20	offer 51:5
moderate 37:8 38:8 38:12,15,21	Morning 6:10 16:23 24:15 95:24	multi-decade 31:13	neither 11:2	note 6:22 10:23 92:20	offered 85:20
moderately 36:5,11,14 36:14,17,18 36:21,21 37:1,6,6,19 39:15 40:8 41:21,23 42:18 43:5 46:18,20,22 47:6	Morphology 24:20	multi-decade 31:13	Nemura's 68:5 71:17 71:23	note 6:22 10:23 92:20	offhand 14:2 40:14 81:3 91:10
	Morphology 24:20	multi-decade 31:13	never 55:11 79:7	note 6:22 10:23 92:20	Officer 1:8 2:2
	Morphology 24:20	multi-decade 31:13	new 55:19 56:22,22	note 6:22 10:23 92:20	official 96:13
	Morphology 24:20	multi-decade 31:13	next 39:2 90:19 91:17 91:22,24 92:9	note 6:22 10:23 92:20	often 41:10 68:14
	Morphology 24:20	multi-decade 31:13	nice 61:14 64:10	note 6:22 10:23 92:20	Ohio 36:19 37:13 44:2
	Morphology 24:20	multi-decade 31:13	night 64:7,11	note 6:22 10:23 92:20	Ohio's 37:7 44:1,7
	Morphology 24:20	multi-decade 31:13		note 6:22 10:23 92:20	okay 15:18 21:8 22:20 22:23 24:7 33:9 36:16 41:1 44:22 47:18 51:7 57:11 59:16 67:14 81:12
	Morphology 24:20	multi-decade 31:13		note 6:22 10:23 92:20	
	Morphology 24:20	multi-decade 31:13		note 6:22 10:23 92:20	
	Morphology 24:20	multi-decade 31:13		note 6:22 10:23 92:20	

82:5 83:4	80:24	54:11 57:19	80:3 81:2,5	pavements	pervious
86:8 94:4	ongoing	58:1 59:16	83:9 85:6	94:24 95:5	94:23
old 82:22	94:12	61:20 65:7	85:13,24	penetrate	philosophy
once 73:9	only 7:18	65:9,18	87:2 89:1	64:18	90:8
75:19	15:23 28:15	66:15 70:22	89:11,11	penetrating	Phone 96:22
one 2:14 4:13	41:4 49:1	86:17 88:8	91:2	64:15,23	photosynth...
4:24 5:4,15	50:1 63:16	88:22 90:1	O'Brien 7:2	people 74:18	63:19
6:22 7:14	63:17 83:8	90:9 91:20	17:18 32:16	per 58:8	photosynth...
7:20,23	93:5	92:5 93:17	33:5	percent 12:5	64:8
8:21,24 9:4	onto 6:21	95:22		12:8,10,11	phrase 24:4,8
9:11,18,22	16:18 18:3	otherwise	P	12:20,20	24:9
10:22 11:1	24:9 26:5	45:18	P 2:1,1,13	13:5,6,11	physical
12:7 16:6	29:9 32:13	out 11:14	page 3:3 4:13	33:7,17,18	18:22 20:11
16:10,20	35:23 51:17	33:7,17	6:22 7:4	33:24 34:2	20:17 23:6
17:15 18:6	open 30:13	58:16 59:5	10:20 11:16	34:7,16,19	23:10 25:8
18:9,18,21	operate 52:9	61:13 63:15	11:24 20:5	34:22 35:17	26:20 28:11
19:1,5,9,11	54:18,21	68:5 75:22	24:10 25:5	35:18,20,21	29:16,21
19:13,19	operated	76:1,18	26:11 27:11	36:1 39:9	phytopl...
20:10,11,16	56:16	91:16	29:9 30:24	40:2,9	65:5
20:17 23:6	operation	outfalls 82:7	32:13 33:21	46:17,19,21	pick 43:20
23:7,11,16	56:9	outlined	38:16 47:1	47:7	picture 50:4
23:20 24:12	operational	25:24 49:6	57:23 62:24	percentage	piece 30:6
25:7,13,20	55:2 70:19	over 17:17	67:9 77:24	12:16 13:18	62:20
26:7,8	opinion 9:20	21:12 23:23	pages 4:23	14:10,13	pipe 82:7,16
27:15,18,21	25:22 42:8	29:24 30:18	18:3 38:18	15:2,15	place 10:15
27:23 28:3	43:9 80:16	32:5 47:12	paper 62:20	32:24 33:12	71:6 78:16
28:6,9,16	opposed 35:3	48:5	parameter	percentages	83:22
28:19 29:5	56:11	overflow	12:5 49:1	13:14,18	placed 11:1
29:8,12,17	order 19:12	84:24	parameters	14:8,9	42:9 88:4
29:22 30:4	56:16 58:15	overhanging	23:11,23	perch 90:17	places 56:2
30:20 31:16	74:7 77:7	11:17 12:4	25:4 48:22	perhaps 38:5	Plaines 1:4
31:19 32:6	89:22	12:6,14	49:24	72:11	10:4,8
32:6 33:3,7	ordinance	13:4,6,12	parking 95:4	period 30:18	plan 54:20,21
33:17,17,22	94:15	13:15 14:23	part 9:3,10	31:13 39:8	56:14 57:2
34:9,21	organic 6:1	15:4,7	30:8 31:19	47:13 48:6	57:4,6
35:15 38:18	8:16 24:24	23:14	44:9,15	72:18	planning
43:23 44:6	original 15:1	own 37:11	53:2 55:3	periodic	48:21 49:10
45:4,6 46:2	other 4:16,20	oxygen 48:24	78:6	78:24	plants 64:16
47:9,9 49:2	5:17 8:18	53:9,10,24	particular	periodically	64:24 65:1
52:13 54:11	10:12 16:16	54:10,14	75:24	80:3	65:2,13
57:14 68:7	17:6,8 19:7	55:16 56:8	particularly	permeable	66:3,5,6,15
72:8 73:23	20:12,18	63:7,16,17	76:6	95:5	95:3
78:1,17	22:4,4 23:8	64:7,9,11	parts 1:5	person 74:4	Platkin 38:22
83:23 84:10	23:23 28:12	69:2,10,15	20:18 23:8	personal	played 21:21
89:23 91:20	28:20 32:22	70:11,13	72:19	42:8 96:11	21:23 22:14
93:7,20	35:3 45:10	71:2,20	past 68:16	personally	please 4:9,19
94:5	45:20 46:8	73:3 75:17	pathogens	9:24 75:1	11:5 16:3
ones 28:20	47:5 49:3	76:13 78:7	75:5	perspiring	20:14 27:16
31:19 43:11	49:24 52:24	78:20 79:15	patterns	64:8	29:19 91:13
			64:11		

pocket 6:1	48:14	probably	56:17 71:19	p.m 1:13	41:15,18
point 43:3	prerogative	12:22 29:5	71:20 81:8	P.O 2:7	46:12 50:15
58:20 73:11	33:15	50:10 68:13	88:4		50:21 51:1
87:8 93:14	presence	81:6,7	proposing	Q	60:12,23
pointed	8:16 21:18	83:11 86:5	26:7 49:21	qualitative	72:7 74:2
75:22	23:15 24:24	proceeding	49:24 50:9	25:19	77:14 85:19
points 24:16	28:14	88:5	51:18 55:17	quality 1:2	86:9 87:17
51:6 68:5	present 6:4	proceedings	70:3,5	18:22 27:8	87:19,20
77:13 93:20	6:20 16:3	1:7 52:3	72:12 89:18	29:14,23	95:22
POLICY	19:7,21	96:7,9	prospective	30:9 32:2,8	quick 10:3
2:10	20:15 23:5	processes	50:5	41:9 43:15	41:13
pollutants	23:11,19	67:6,8	protect 72:23	48:21 49:4	quit 62:16
85:1,23	26:21 29:17	producing	73:18 77:7	49:11,19,22	quite 62:15
87:6	29:22 32:19	64:6,6	77:9	50:2 55:12	66:24 79:3
Pollution 1:1	32:21 43:13	project 58:23	protected	57:18 67:24	79:17
1:9	54:14 79:19	59:20 60:2	93:8	69:4,13	quote 11:8,16
pool 9:21	88:17	62:1,2,5,6	protection	70:2 85:5	11:19 16:2
24:20	presented 7:4	94:23	2:6 89:20	85:12 87:1	16:19,21
poor 27:9	pretty 12:19	projects	protective	88:11 89:19	18:5,8 20:7
41:10	18:13 24:15	62:21 94:13	77:1	quantity	20:13 24:11
poorer 41:12	80:18	95:7	proved 53:8	12:13,18	25:7 26:14
population	prevalent	proposal	provide	question 4:13	27:12 29:11
88:18	23:14 28:9	43:18 46:2	11:20 27:16	6:21 9:3	29:18 32:17
populations	prevent	49:5 50:16	32:23 82:15	10:1,12,20	32:23 33:23
29:4 31:2	11:13 24:12	53:2,7	provided	13:2 14:6,9	82:11
portion	prevented	54:16,17	63:1	14:21 15:16	quoted 85:4
22:24 24:4	51:9	55:8 56:23	providing	19:17 20:5	
56:1 60:15	prevents	57:15,18,21	35:22	20:23 21:2	R
60:18	64:15	58:21 59:4	provision	21:16 22:24	R 2:1
portions	previous	61:16 62:11	70:1	24:9,17	radio 76:8
80:19	25:24,24	62:13,19	provisions	25:5,18	rain 68:21
positive	pre-carp	67:18,22	55:7 71:23	26:11 27:11	72:17
43:11	44:20	69:14 70:14	Public 39:4	29:9 32:13	rainbow 47:9
possible	pre-filed	71:17 88:7	pump 7:1	33:11,21	88:16 89:24
69:11 86:1	4:14 6:23	proposals	pumpkin	34:15 35:14	90:16,19
possibly 9:23	10:21 18:4	51:16 58:2	36:8 39:16	36:9 39:2	ran 91:8
65:7	20:6 24:10	59:17 61:20	purpose	42:3,12,23	95:19
potential 8:9	25:6 26:12	61:20 62:9	52:21,24	42:24 43:19	Randolph
8:11,18	27:12 29:10	propose	53:1	43:20 44:11	1:11
25:11,15	32:14 33:22	48:21 49:10	purposes	48:18,19	range 9:15
26:2,3,3	39:2 44:11	49:18 53:3	61:24	56:6,7	RAO 2:3
89:10	50:21 57:13	72:22	pursuant	57:13 62:5	rare 36:12
potentially	63:6 81:16	proposed 1:4	60:21	62:15,17	37:2 67:19
17:10 54:5	pre-TARP	7:13,18,20	put 22:6,7	73:1,16,20	68:18 80:18
84:11,13	74:8	10:15,22	37:8,22	74:9 76:16	rarely 63:4
86:19 87:5	primarily	44:12,13	53:10,21,23	81:16 82:3	63:24
88:18	33:24	45:23 48:19	58:10 59:17	85:20 91:14	rates 82:24
prairies 58:3	prior 60:12	48:23 49:2	59:23 61:20	questions 4:8	rather 21:14
predated	61:15	55:11 56:3	62:16 83:22	5:2 8:4,6	50:19 58:15
				26:1 39:3	ratio 12:15

reach 14:1 15:3,5,10 32:21 33:1 33:2	74:12 75:3	20:12,18 23:7,9 26:23 27:9 28:10 32:18	93:4,16,17 93:19,22	92:12,16 93:11	R08-09 1:2
reaches 6:24 11:7 12:3 24:2 25:8 45:11,15,16 79:9 87:4	reduced 94:19	relevant 13:1 28:5,8 62:1 62:6 89:24 92:11	request 60:22 require 81:4 required 5:9 74:7 requireme... 70:22 80:5 81:2	riparian 5:24 11:18 rising 75:6 River 1:4 5:11,11 6:6 6:16 7:1,11 7:13 10:4 10:24,24 11:22,23 12:4,10 14:13 16:21 16:23 17:3 17:6 21:18 32:15,22,24 33:6 40:17 40:19 52:20 52:20 63:11 63:22 66:23 68:22 80:7 80:12 82:10	<hr/> S <hr/> S 2:1 3:8 safe 24:18 salmon 47:9 47:10 Sam 63:6 same 12:18 12:21,23 16:8 23:24 30:1 32:5 37:21 40:5 43:24 64:19 88:7 90:1 samples 18:7 19:6,15,20 19:24 21:13 sampling 15:3 sandshells 79:21 Sanitary 16:11 59:23 satisfy 26:8 saying 29:6 32:2 85:10 89:23 says 42:21 71:1 scenario 21:20 school 47:20 47:21 scientific 88:3,6 scientist 2:2 2:3 73:13 75:2 score 5:14,16 7:6,7 8:22 9:4,12 10:13 22:16 scored 7:12 7:13 9:15 31:20 scores 4:15 5:3,8,12 6:23 7:6,17 7:24 8:11
reaching 56:12	referenced 51:4	Relocation 82:13,15 remaining 40:7 42:18	Research 76:4 resident 69:23 71:3 respect 31:15 43:22 49:17	rivers 11:3 40:12 road 82:12 rock 28:23 47:11 rotenone 48:12,14 roughly 59:12 row 68:8 rule 54:23,24 55:7 rulemaking 1:3 48:22 55:12 rulemakings 50:4 rules 55:14 57:5 run 53:20 54:8 55:18 56:2,4 95:14 running 53:14 runoff 86:6 95:3	
reading 91:15	references 38:1,2,23 91:6 93:5	remediation 58:24	respectfully 11:23 28:3 response 8:4 8:5 24:17 41:17 responsibil... 70:20		
real 74:18	referring 14:15 16:14 24:1,19 25:2 26:12 26:18 33:3 44:2 83:20	remember 16:24 59:14	result 8:9,11 59:5 66:7 21:13 26:14		
really 10:3 13:8 16:14 22:1,2 24:3 29:3 45:5 60:11,23 62:15 64:10 75:23	reflect 48:10 74:7	remind 14:18	resulted 21:13 26:14		
reason 31:15 32:9 68:1 70:17	reflected 74:10	removal 95:16	results 7:3 48:5,11 73:2		
reasonable 5:22	reflecting 85:11	removing 90:18	resuspension 66:21 67:1		
reasons 25:23 65:8 65:9	reflects 48:4	repeat 22:24	reversible 24:14		
recall 6:9 68:17 71:13 72:4,5	refuge 75:20 75:21,22 77:23 78:6	rephrase 4:10	review 8:8,10		
receive 6:18	regard 42:9 89:5	report 1:7 7:5 12:1 17:7,22 20:2 37:21 38:7,18 39:4 41:24 42:11 47:2 49:9 53:11 82:22 83:20 85:3,7,8,9 95:7	rifle 24:20 right 4:11 5:13 16:16 20:19 39:18 47:24 66:8 66:9 76:20 84:10,21 85:2 87:7 90:7 92:7		
recent 17:10 17:21	regarding 85:5 89:5 93:16	reported 2:17 68:19 96:6	Reporter 96:6		
recently 48:12	regardless 43:14	REPORTER... 1:24 2:24 3:24	REPORTER... 1:24 2:24 3:24		
recess 95:23	regulations 78:7	reports 68:16	representat... 15:15		
reclamation 52:9 59:18 62:18 65:13 65:23 83:1	regulatory 95:19	representat... 15:15	reproduction		
record 4:2 13:17 20:23 52:5 60:14 88:5	rehabilitati... 62:21	reproduces 33:1			
recreate 74:18 75:6	relation 82:12				
recreational	relative 16:16 48:1				
	relatively 5:6 5:7 16:2,13				

8:22	seems 63:18	94:20	8:12 26:4	8:16 24:24	sort 50:18
Scott 14:4	seen 30:9	sewerage	27:14,18	slug 72:19	59:2 70:18
scrutiny 5:9	45:24 61:17	66:3	29:24 56:8	small 35:11	94:7
Scudder 67:4	79:17	shad 27:4	Silky 67:4	36:10,24	sorts 65:18
se 58:9	segment 8:22	34:18,20	silt 29:6	47:4 59:2	source 66:15
seasonal	9:4 14:11	35:3,5	siltation	solids 66:12	sources 81:14
77:23 78:5	15:8 16:24	39:13	18:24	66:13	south 32:15
second 9:10	segments	shallow	similar 35:11	solution	58:4,10
20:20 77:18	7:19 9:11	32:17 58:3	45:11 46:4	86:14	82:10
77:19	10:15 12:24	80:18	46:9 59:20	some 5:5,8	so-called
secondary	19:13	shallower	70:22 74:16	10:9 11:17	26:24
71:11,12	selected	16:7,9	similarities	16:6 23:10	speak 38:23
73:21 91:6	47:23	63:22	10:9	23:20 28:20	species 26:19
91:6	Senior 2:3	sheet 61:2	similarity	31:4 43:24	26:24,24
section 15:14	sense 24:4	shelter 28:11	15:11	45:15,16	27:3 29:12
94:10	72:24 84:18	shiner 39:13	similarly	47:5 50:15	30:19 33:23
sediment	sensitive	39:14,16	74:11	51:2,3,6	34:2,23
4:17 18:5,7	78:24 79:10	shiners 35:20	simple 34:13	56:1,2,22	36:1,5,11
18:12,14,16	79:15 89:21	47:10	simply 83:22	64:17 66:15	36:14,17
19:6,10,13	90:10,11,15	Ship 16:11	85:10 90:18	67:11 68:3	37:1 39:7,8
19:15,20	90:19,22	18:1 59:23	since 5:12	70:18 74:11	39:22,23
21:13 22:18	91:17,22,24	Shore 7:7,11	29:24 30:2	75:13 76:10	40:12,19
31:18,21	92:9	15:12 63:20	31:9 92:11	77:13 80:8	41:4,15,17
44:20 58:23	sent 60:20	80:11 82:9	sinuosity	80:23 84:11	43:12,14
59:1 61:23	SEPA 52:12	short 25:21	24:19	85:19 87:1	47:7 48:2
62:2,4 67:1	52:13,17	51:20 72:19	site 88:9	94:12 95:16	88:13,16,19
67:2,6	55:1	shorthand	sites 82:16	95:19	89:21 90:9
sedimentat...	separate	96:5,7	sitting 14:2	somehow	90:11,14,15
18:21 19:1	36:18	show 14:16	49:17	55:11	90:20,21
67:8	September	36:10 63:3	situation	someone 95:9	91:17,24
sediments	77:22 78:9	showed	73:15 74:5	something	92:10 93:7
6:4 18:5,11	series 62:12	19:16	74:24	53:15 69:24	specific 10:5
18:18 19:2	68:21	showing 19:6	six 4:23	70:22 71:1	25:19 44:15
19:7,20	serve 52:21	19:20 93:2	12:11 18:3	92:6	46:6 47:2
20:1 21:18	52:24	shown 79:21	32:14 33:21	sometimes	74:1 76:15
21:23 22:17	set 37:15	shut 54:12	58:15	72:18	88:9 94:19
29:7 66:20	45:2,13,14	side 16:9	skip 8:6 35:6	somewhat	specifically
67:3 79:2,2	77:18,19	32:17 52:14	35:10 77:12	17:24 44:6	11:12 16:24
80:18	settlements	signature	87:16	58:14	22:11 23:24
see 13:23	67:4	96:13	slides 62:12	sooner 21:6	50:16 65:1
29:3 31:16	seven 20:5	signatures	slightly 29:16	sorry 8:9	specified
32:1 62:1	22:24 33:6	64:10	29:21 34:7	17:17 22:21	82:17
62:12 67:7	33:7 40:6	significance	51:12	28:1 61:13	spending
87:13 91:7	42:17 47:8	68:8	slips 6:17	62:4 65:9	53:10
seed 36:8	47:17,18	significant	58:1,5	70:5 71:4	splitters
39:16	several 53:12	18:1 28:20	sloping 32:20	72:3 76:21	80:23 81:2
seeing 61:7	76:9	29:4 30:9	sloppy 84:16	78:4 82:15	spot 39:16
69:8	sewage 66:14	84:3	slot 7:19	85:24 92:8	47:10 54:10
seemed 50:16	sewer 84:24	significantly	sludge 6:1		spread 12:20

Springfield 2:8	station 7:1 54:6 55:1	stringent 43:16	54:13	system 1:3 7:18 11:15	94:12,17 95:1
SS 96:2	56:5	structures 8:15	sunfish 27:4 36:2,6 39:14	29:8 32:3 36:20 37:7	technology 94:19
SSO 87:16	stations 30:13 52:12	studied 54:7 54:15 88:24	sunlight 64:15,23	44:1,7,17 59:17 63:3	tell 62:7 74:18,19 75:8,10
stagnant 8:1 44:17 55:10 70:23 71:13	52:13,15,18 53:14,20,22	89:3	supplemen... 52:14 53:13	66:1,16 73:8,9	temperature 89:6 90:4 91:7
stalled 58:16 59:5	53:23 54:5 54:8,13,18	studies 55:21 79:17,20	support 25:9 88:12	75:19 83:22 84:8 87:3	temperatur... 89:10
standard 49:2 57:7 66:9 69:13 70:2,15,23 71:5,6,8,11 72:3,23 77:15 87:1 88:9,11,14 88:21 92:9 92:23	54:21 55:5 55:19,20 56:2,10,18 56:21,22 63:16 65:23 92:21	89:4 90:12 91:4 93:2 93:15 95:5 95:13	suppose 21:19 83:6 86:19 90:4	90:9 95:2 systems 11:9	temporary 73:15 74:13 74:24 77:5
standards 1:2 43:15 48:21 49:11 49:19,22 50:2,9 55:16 56:3 56:10,12,16 69:5 72:21 74:15 85:12 93:13	statistical 28:17	study 8:3 13:19 14:11 38:20 46:5 76:3,12 82:6,8 85:11 90:24	supposed 55:8	system-wide 94:16	ten 27:11 30:8 39:17 46:19,21 47:7 51:22 68:16 81:17
standing 65:16	stay 39:1 86:9	subcategory 72:11 76:23 78:6	sure 10:7 12:23 30:15 31:9,23 33:2 40:15 53:6,17,18 53:19,21 54:24 62:12 69:6 83:5 92:4,13 95:11	table 7:4 12:1 12:8 14:10 14:14,16,20 16:9 23:24 45:12 46:24	terms 12:3 28:13 56:15 74:8 89:2 94:18 95:12
standpoint 86:13 87:8	stayed 30:1	Subdocket 49:18,20,21 51:1 77:20	surprises 94:2	tables 37:14	tend 16:9
start 4:2 21:6 84:19	steep 11:11	subject 21:7 57:15,18	surprising 93:24	tagged 76:9 76:11	term 36:17
state 1:10 4:14 11:16 16:2,18 18:4,9,20 20:6 24:9 25:7,12 26:13 27:12 29:10 34:15 63:1 67:10 77:15 96:1	stem 5:12	submitted 68:16	survey 13:13 13:24 14:22 14:24	tail 47:10	terms 12:3 28:13 56:15 74:8 89:2 94:18 95:12
stated 46:8	stenographic 96:10	Subparagr... 16:1	Susan 4:7 44:24	take 15:3 51:20,22 85:23 92:2 92:9	testified 13:20 30:7 67:4
statement 16:5 81:15	Steven 1:10 2:18 96:5 96:20	substantial 64:3	suspend 74:14	taken 1:10 45:16 52:1 96:11	testimony 4:14,24 6:23 10:17 10:21 11:6 18:4 20:6,9 21:17 24:5 24:10,15 25:6 26:12 27:12 29:10 30:7,22,24 32:5,14 33:22 37:4 49:6 50:24 51:6 54:20 57:14,23 60:13,24 61:15 63:1 63:1,5,7 67:9 68:5 71:17,24
states 69:20	still 8:19 14:19 15:15 26:1 59:8,9	substrate 6:1 8:15	suspended 66:12,13,24	talk 56:14 88:2	
	straight 67:7	substrates 24:23	sustaining 20:8	talked 22:9 61:23 69:17 74:21	
	stream 11:17 11:21 12:7 13:9 52:14 65:5	sucker 91:21	sweet 54:10	talking 19:10 23:13 41:16 60:14 84:17 84:20 85:2 93:12	
	Street 1:11 32:16 63:19 63:20 96:21	suckers 28:21 90:21	swell 87:17	tank 93:11	
	Streetscape 94:23	Suite 2:14 96:21	swim 74:20 78:20,22	TANNER 2:3	
	stressor 18:10	summarize 45:5	swing 64:24	teaching 59:3	
	stretch 14:22	summer	swings 63:14 63:24	team 54:15	
			synergistic 89:1	technologies	

75:14 85:4	51:15 53:15	26:16 41:5	37:22 38:8	transcript	54:4
91:15	54:9,12	through 4:24	39:8,15,22	21:6 23:1	turning
Thank 4:13	55:20 56:13	7:20 15:14	40:7,8,13	96:9	58:11
21:11 22:20	56:20 58:13	17:16 27:19	40:19,20	transmitters	two 5:5,10,15
30:16 33:19	58:15,18	28:22 47:3	41:5,16,17	76:8	5:23 6:3,8
35:22 46:11	59:7,9,21	47:14 52:13	41:19,21,23	Transport...	6:21 7:23
48:15 49:13	60:6 62:6	72:20 73:8	42:1,5,17	94:22	16:8,14
50:5 62:24	64:21 65:17	77:22 78:9	42:18,21,24	treat 86:11	18:18 19:2
76:19 77:10	68:4 69:18	throughout	43:1,5,5	86:12	19:5,9,13
92:19 95:23	70:4 72:16	18:13,18	46:18,18	treated 11:14	19:15,18
Thanks	73:9,21	19:1,3 29:7	48:2 79:22	treating	23:12,16
46:10	74:3,10,15	29:14 32:3	80:8,23	84:16,20,24	27:15,22
their 5:12	74:20 75:18	32:5 63:3	tolerants	86:23	28:3,6,10
17:14 38:19	75:24 76:16	87:2,3	39:12	treatment	28:16,19,24
38:21,24	77:3 79:16	throw 60:13	tomorrow	66:3,5,6,14	29:5,8,13
41:24 53:1	79:20,23	tie 77:13	95:24	71:11 82:7	30:4,20
62:1 66:21	80:17 82:1	tier 44:16	tonnages	82:16,18	31:17,19
75:12 76:11	84:2,22	time 4:8 30:1	17:16	85:16 86:9	32:7 40:7
78:6 79:4	85:14,18	30:2,19	tons 17:18	95:17	42:18 43:24
80:5 93:8	89:7,18	32:5 39:8	tool 10:10	treatments	44:6 45:4,7
theoretical	90:21 94:4	47:12 48:6	top 39:17	81:21 83:22	46:2 49:3
87:10	94:17	58:19 60:4	40:6,12,18	trial 96:7,10	68:20 75:16
thermal	thinking	61:14 72:18	42:1,13,17	triggered	76:3 77:23
49:22 50:1	31:12	74:22 77:8	59:1 60:1	70:21	77:24 78:5
50:9	third 44:16	78:13 87:3	70:14	trivial 67:5	84:10
thing 50:19	thirst 66:19	timeframe	topic 21:5	trout 47:9	types 95:4
74:17 83:8	THOMAS	31:1	total 15:5	88:16 90:1	
94:5	2:4	times 15:6,7	47:2 66:11	90:16,16,19	<u>U</u>
things 45:10	THORNB...	27:23 73:2	66:13 82:19	91:16 92:10	UAA 26:8
52:21	2:13	Tipsord 1:9	touched 5:1	92:12	73:17
think 6:9,15	thoroughly	2:2 4:1	8:7 17:8	true 7:22	ubiquitous
8:2,5,7 10:6	82:2	14:18 30:17	touching	19:22 30:11	18:13
10:18,18	though 29:13	46:13 48:16	85:6	36:24 38:10	ultimate
13:14,22	61:18 65:17	50:14,20,23	toxic 6:4	40:3,22	48:23
14:23 15:17	thought	51:7,10,22	19:20 21:12	41:7 43:6	unclear 4:9
17:12,22	41:20 50:19	52:4 60:17	21:18,22	96:8	under 14:19
20:22 21:3	51:16 53:8	61:1 73:1	toxicities	try 5:3 64:22	33:4 44:7
21:5 22:9	89:9 95:8	73:12 74:17	89:2,12	trying 24:3	67:10 69:14
22:13 25:23	three 6:14,22	76:18 95:22	90:24	71:16	69:16 71:15
28:8 30:2	7:20,24	today 10:17	toxicity 4:17	TSS 66:9	72:16 73:17
31:21 33:6	8:21 34:1,2	together 40:8	6:5 19:14	tune 56:9	73:19 75:23
34:4 38:1	34:9,11,22	tolerance	19:16 22:13	turbidity	77:14 91:1
40:3,16,18	35:15,24	37:14 38:3	22:13,18,19	64:2,14,17	91:8 93:8
40:22 41:24	38:7 45:3	38:21	31:18,21	64:22 65:7	96:11
42:2 43:2	55:10 95:4	tolerant	44:21 89:5	66:1,2,4,16	understand
44:11 45:16	threshold	26:15,20,24	90:12	66:22,23	4:10 56:5
45:17 46:6	18:15	36:4,5,15	Trail 95:18	turn 53:3	71:19 75:7
46:21,23	thrive 27:1	36:18,21,21	transcribed	55:1	understan...
47:22,24	thriving	37:6,16,19	96:11	turned 53:16	14:4 37:4
					49:20

unique 4:17 6:11	90:13 93:17	48:3 64:18	20:2,8	27:15,15,18	47:8 49:11
unknown 94:18	useful 10:9 10:10	65:6,14,24	24:13 25:3	27:22 28:7	53:8 55:13
unlike 19:4 19:18	uses 25:2 44:1 55:18	66:12 68:4	25:9,10,15	29:5,8,12	60:13 65:20
unobserved 67:12,15	73:17,18,21	72:18 87:17	25:21 26:2	29:13,17,22	82:1 86:7
unsafe 81:20	74:3,10	95:23	26:3 29:13	30:5 31:18	93:9
until 57:9	USGS 38:21 94:23	video 13:13 13:24 14:22	29:23 30:9	32:7 44:3,5	went 47:19
upgrade 20:1	using 10:7 22:7 36:16	14:24 15:11	32:2 43:15	49:3 63:5,8	were 5:5,6,6 5:7,12,20 5:20 6:2,4 6:15,24 7:17,24 10:12,14 12:13 15:24 17:16 18:7 22:4,5 23:22 24:1 28:4,17,20 31:7,10 32:4 34:16 34:17,19 35:3,5,5,19 35:20,21 36:7,16 38:19,22 39:8,12,15 39:22 40:7 40:7 42:17 42:18 44:21 45:12 46:19 46:19,23 47:5 49:18 52:3 53:14 54:12 56:21 58:2,12 59:1,14 77:19 86:24 88:13 90:9 90:13,16 91:7 92:9 95:13,14,15
Upper 5:21 7:10,12 9:21 10:23 11:22 12:3 12:9 16:22 17:2 21:22 22:11	41:22 76:8 76:12 89:19 95:4	violation 69:4,12	44:3,4 48:21 49:3 49:11,19,22 50:1 52:8 52:22 53:10 55:11 57:18 59:18 62:18 64:15,18 65:12,16,22 65:23 67:24 69:4,13 70:2 72:19 73:19 74:14 76:3 79:3,9 79:12,14 83:1 85:5 85:12 86:6 87:1 88:11 88:13,16 89:19 94:10 94:14 95:3	65:19 71:12 71:13 waterway 1:3 5:14,15 13:13 19:12 64:19,19 waterways 5:4,18,19 6:13 8:18 20:12 28:19 29:15 88:8 88:10,23 92:21 way 11:12 21:16 43:3 54:11 72:13 74:11,16 86:17 weather 44:18,19 45:3 55:3,7 68:7 69:19 70:10,12,13 70:18,21 71:15,22 72:11 73:6 73:24 74:2 74:6,14 76:5,22,24 77:2,4 81:9 81:14 website 17:13 Webster 52:15,17 week 94:1 weight 27:13 welcome 50:7 well 6:20 17:11 21:15 24:15 26:1 30:23 42:12	wasn't 47:21 58:8 62:2 77:1,19 waste 11:14 56:21 water 1:2,3 6:14 8:20 11:14 16:7
use 4:21 5:17 7:20 10:3 10:15,23 15:10 25:13 37:12,14 38:7 39:11 43:24 44:1 44:7,12,15 44:18 45:3 45:7,8 48:19,23 55:4 69:19 70:10,18,21 70:23 71:8 71:15 72:11 72:14 73:15 73:23 74:3 74:6,12,23 75:3 76:23 77:1,23 78:5 88:8 88:11,14,22 89:21 91:4	value 65:6 values 12:2 18:15,17 64:4 variables 12:2 24:2 various 5:20 8:17 18:15 18:17 24:1 24:21 37:12 58:9 69:7 86:4 vary 79:17 vast 34:17 vegetation 5:24 11:18 11:18 12:5 12:6,14 13:4,6,10 13:12,15 14:23 15:4 15:7 23:13 32:19,21 64:4,6 versus 22:12 22:13 23:12 23:16 27:22 27:24 28:9 28:21,24 30:4 31:17 49:2 vertical 5:24 very 29:1,24 36:14 46:23	wait 57:9 walkways 59:3 wall 5:24 want 8:6 14:3 14:5 15:19 20:20,21 23:20 43:20 46:15 50:17 66:17 77:3 81:12 87:4 wanted 5:17 23:23 85:21 wants 21:4 warm 20:8 25:9 44:3,4 Wasik 2:16 3:2 4:6 12:12 13:21 15:23 19:24 46:12 48:17 50:21 60:12 95:23 Wasik's 50:24 60:23	waterbodies 6:15 11:7 26:6 44:17 55:10 70:24 71:8 waterbody 4:22 waters 11:2 16:3,7,8,10 16:15,17,20 17:11 18:6 18:9,19,21 19:2,5,5,9 19:16,18,19 20:10,12,16 20:17 21:13 22:5 23:6,7 23:16 24:12 25:7,13,14 25:21 26:7 26:21 27:1	wasn't 47:19 58:8 62:2 77:1,19 waste 11:14 56:21 water 1:2,3 6:14 8:20 11:14 16:7	weren't 9:14 37:23 49:15 54:14 67:5 west 1:11 2:11 33:3 80:21,21 96:21 wet 44:18,19 45:3 55:3,6
used 5:3 7:19 7:24 10:8 10:14 19:12 19:24 22:6 24:4 31:10 37:24 38:3 38:13,21 45:8 71:9	V	W			

68:7 69:19	18:6 20:10	84:4 87:7	yellow 90:16	62:24	<hr/> 3 <hr/>
70:9,12,12	20:16 23:5	89:17 91:19	young 87:18	13 33:21	3 28:24 32:18
70:18,21	23:19 60:8	92:1,8,18	<hr/> Z <hr/>	130th 32:15	30 35:20
71:15,22	width 13:2,7	92:20 96:13	ZALEWSKI	135 28:21	63:15
72:11 73:6	15:6,8	wondering	2:5	136 11:24	30th 78:9
73:24 74:2	WILLIAMS	48:20	Zenz 56:13	139 7:4	301 1:5
74:6,13	2:6 10:2	woody 11:19	56:24 57:3	14 33:7 36:9	302 1:5
76:5,22,23	12:12,17	23:13	57:10 81:22	67:9	303 1:5
77:2,4 81:8	13:1,5	word 35:23	82:1 85:19	14(b) 46:16	304 1:5
81:14	15:19 19:23	words 19:8	87:17	143 47:11	312 1:24 2:15
wetland 59:2	20:22 21:8	92:5	Zenz's 85:7,9	15 35:5	2:24 3:24
60:1	22:1,3,15	work 72:9	zero 69:15	156 28:23	96:22
wetlands	22:20 37:20	worked	72:21 73:3	16 44:11	347 27:24
59:17,19	41:13 42:4	59:19	73:7 76:24	48:19	28:4
60:19 61:21	42:7,14,19	working	77:8	17th 1:12	35 1:5
62:9,21	42:22 43:7	58:12 76:10	zinc 50:17	170 82:7	36 35:18
95:10,12,17	44:23 45:2	94:21	zones 76:1	83:21 84:2	36th 63:19
we'll 50:14	45:13,22	Works 7:2	<hr/> \$ <hr/>	19276 2:7	37 35:16
78:15 86:18	willing 72:13	worries 79:4	\$3.8 82:21	1999 38:22	<hr/> 4 <hr/>
95:23	Wilmette 7:1	worrisome	\$890 83:1	<hr/> 2 <hr/>	4 3:4
we're 4:2	Wisconsin	67:11	\$893 82:20	2-6 39:3 47:1	4th 61:5
19:10 23:12	37:13	worse 5:21	<hr/> 0 <hr/>	20 35:21	40 34:16
33:16 50:14	wise 12:13	worth 21:4	0.8 33:4	2000 27:19	400 13:19
56:23 60:14	wishes 33:15	wouldn't	01 47:3	2001 27:19	14:10,22
69:8 76:9	withdraw	12:22 40:21	07 40:5 47:3	28:22 34:20	15:2,4,6,8
77:8 81:17	82:3 85:20	49:6 53:22	084-004675	35:19 39:7	419-9292
84:17,24	Witness 3:2	54:1,5 87:4	2:19 96:23	40:5 41:3	1:24 2:24
85:1 86:14	9:7 10:6	88:17 93:14	<hr/> 1 <hr/>	47:14 61:6	3:24 96:22
89:18,19	12:16,22	write 55:8,14	1st 78:9	2005 17:23	4400 2:14
90:7,18	13:3,11	57:8 70:6	1,000 34:11	82:21	45 5:12
93:12 94:2	14:20 15:21	writing 54:17	1.0 77:21	2007 39:7	462 3:11
95:21	20:3 21:15	56:11	78:8	41:3 47:15	60:17 61:7
we've 10:18	22:2,9,18	written 54:20	1.3 33:18	96:21	61:8,10
25:23 44:18	30:15,21	57:5	1.5 77:16	2008 17:16	469 27:22
55:20 68:15	31:3 32:11	<hr/> X <hr/>	1:30 1:13	17:19 27:20	47 5:12,16
69:6 70:11	33:16 35:4	X 3:1,8 4:4	10 88:21	28:22 34:20	49 5:14 7:13
76:2 79:7	37:24 39:19	52:6	92:13,23	35:19 38:21	<hr/> 5 <hr/>
84:20	40:14,18,21	<hr/> Y <hr/>	1021 2:7	38:22 63:6	5.2 88:20
whatsoever	41:1,22	Yeah 17:17	92:13,23	68:20	52 3:5 7:12
89:10	42:12,15	year 17:15	10,283 35:4	2010 96:15	53 2:11
while 11:6	43:2 45:9	56:1 76:2,3	100 1:11 8:23	2011 1:12	537 27:24
18:5,5 51:1	46:3,21	76:3	9:5,12 68:6	61:6	28:4
white 28:20	47:14,17,22	years 30:8	68:20	214-8310	<hr/> 6 <hr/>
90:20 91:21	48:7,13,24	31:10 38:20	1021 2:7	2:15	6 12:20 28:21
whole 15:14	49:12 68:15	47:8,16,18	105 82:16	217 2:8	6.8 17:18
33:5,8 41:8	72:16 73:6	53:12,13	11 29:9	24 75:6	60603 96:22
wide 13:9	74:1 75:10	54:15 58:15	12 17:17	25 12:9,20	60604 2:11
widens 32:20	76:20 77:3	68:17 82:22	32:13 47:1	47:10	
widespread	82:14 83:23			284 39:5	

60606 2:15
61 3:11
62794-9276
2:8
65 83:21

7

7-5 12:1
14:20 16:9
24:1
7-7 7:4
70s 29:24
31:9
75 7:8 39:9
40:2
773 2:12
78 33:8,17
782-5544 2:8

8

8 96:21
80 8:22 9:5
9:12
818-4825
2:12

9

9.8 92:6
9.9 92:6
90 40:9 46:17
68:6
939 27:22
96 33:24 34:1
34:7,22
36:1
960 34:11
99.8 34:19