Watershed Characterization Report
October & November 2018 Feedback from Stakeholders

---------- Forwarded message ---------
From: Faust, Kasey M <faustk@utexas.edu>
Date: Wed, Nov 14, 2018 at 8:00 PM
Subject: RE: Homework and Upcoming Meetings - SC Watershed Stakeholders
To: Joanna Wolaver <joanna@shoalcreekconservancy.org>

Edits on PDF located at:
https://drive.google.com/file/d/0B-_ykKVfLzV0djZjNy1LaWRnMEU5WmRLMEthbVB5Z3NwR3lB/view?usp=sharing

Hi Joanna-

See attached edits. I really learned a lot from the report and enjoyed reading it! Please let me know if my handwriting is illegible as I edited it on my ipad.

Kasey M. Faust, PhD

Assistant Professor
The University of Texas at Austin
Civil, Architectural and Environmental Engineering

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Shoal Creek Characterization Report

Edits by Louisa Brinsmade & Shannon Halley

11.15.18

We will make comments by page number…

P. 3: Introduction, Watershed

Please simplify the acronym to WPD, not COA-WPD. The common usage is WPD. Please align this throughout the document.

Also, please match fonts and serif throughout the document.

P. 5: Figure 3

Are the numbers adjusted for climate change, or projections based on historic rainfall? If not adjusted for climate change, why not?

P. 6: B. Geology, Groundwater, and Springs, and Figure 4

Austin is home to three (3) ecological regions: Edwards Plateau, Blackland Prairie, and Post Oak Savannah.

P. 9: Figure 6

We need a better graph to illustrate the points made in the paragraph on population. The graph should be a line or bar graph – the middle gray area gives us no information. Also, adjust the scale of the graph – the change in the population for the Shoal Creek Watershed looks relatively flat at this scale.

Additionally, go back farther in time – start from the 1950's, perhaps, or some other historic time preceding a population jump in Austin so we have a meaningful look at the impact of the population projections for 2040.

P. 15: Figure 12

Is state land modeled for land use? If so, what category was chosen? Also, there is a blue area of "undeveloped" land on the map; is this state land? If so, again, it should be modeled as being developed at, more than likely, industrial/commercial use.

P. 16: Impervious Cover

Again, how is state land being modeled for impervious cover in the watershed?

P. 20: Table 3 and 4

What does "Narrative Score" mean? Please define.

P. 21: Localized Flooding

"Building flooding is considered the most severe." Please reword to help clarify "building flooding" to say simply "Flooding of buildings..." or something similar. Also, "Flooding of buildings is considered the most severe" of what? Please clarify.

P. 22: Erosion, and Figure 6

Please define "downcutting" and "erosional processes."

Please define "Narrative Score"

P. 23, Figure 16

This figure is hard to read – the dots are really no longer distinguishable, and therefore, meaningless.

Please define "Top 20 Ranked Building Group"

P. 24: Springflow and Groundwater Concerns

Please reword and clarify the relationship between the springs and seeps and urbanization. Is the decrease in springs and seeps due to the urbanization impact of paving over them, or the lack of infiltration to feed the springs and seeps?

P. 25: Habitat and Native Species Concerns, Riparian Zones

1st paragraph:

Please change the first sentence to read: "A riparian zone is the area adjacent to a waterway that serves as ~~comprises~~ the transition zone..."

Insert the following in red: "Healthy, vegetated riparian buffers enhance water quality and quantity in a wide variety of ways, including by reducing nutrients..."

2nd paragraph:

"If these areas are left alone, grasses and trees become established and transform these areas ~~them~~ into more ecologically..."

"...while debris produced from fallen or dead vegetation enhances ~~adds~~ habitat for fish and macroinvertebrates."

Please insert some clarification of the type of temperature that riparian zones affect: "A robust riparian tree canopy also protects organisms in the creek from large fluctuations in (air, water, ambient?) temperature."

4th paragraph

Please define "remote sensing data."

Table 7

Please move this table to the Appendices. It's too long. The maps in Figures 17, 18, and 19 are sufficient and more meaningful.

P. 30: Aquatic Life

Define "benthic macroinvertebrates"

Also, in the first graph, please define "community." Is this the diatom and benthic macroinvertebrate community?

2nd graph:

Define "bug taxa"

3rd graph:

Define "diatom taxa"

4th graph:

Define "diatom taxa"

P. 38: Bacteria

Insert the following correct nomenclature in paragraph 3: "…the City decided to pursue a Total Maximum Daily Load (TDML) Implementation Plan in cooperation with TCEQ…"

Also, please refer the reader to Page 56 for more information on the TDML Implementation Plan details.

P. 40: Figure 28

In the figure legend, please define "Median" and "MPN" in a footnote at the bottom of the legend box.

P. 41: Water Quality Treatment

At the end of the 2nd paragraph, please insert the following: "Because most development occurred prior to 1991, only 19% of the watershed's impervious cover is treated by water quality controls as required under the current 2013 Watershed Protection Ordinance." Please refer to Page 52 for a comprehensive description of watershed regulations.

P. 42: Illicit Discharge Detection and Elimination

Please explain why Shoal Creek has a relatively high rate of illicit discharges compared to other watersheds.

P. 44: Figure 33

Please make the dots darker – they are not really visible.

P. 45: Discharge Permits

Please expand on the SDPP program in this paragraph – it's not really clear what the program does. Also, describe the TPDES system – what is allowed to be released and what is the standard?

P. 47: Ongoing Efforts to Address Watershed Health, Capital Improvement Projects

2nd paragraph: Please provide a link in the first paragraph to the WPD CIP projects website for reference, and perhaps move Table 11 to the Appendices, or simply provide the link – whatever will provide the most current information for future readers.

Also, whatever CIP list is referenced, please make certain it is comprehensive and current.

Figure 35 will quickly be out of date – so again, it may be meaningless given the likely long life of this document.

P. 52: Drainage regulations

Floodplain Protection bullet: Please define "freeboard"

No Adverse Impact bullet: Please note that this requirement is enforceable only by civil court action.

P. 53:

Stormwater Management bullet: Please add some information about detention ponds, as follows, "The basic concept of stormwater management for peak rates of runoff is to provide for a temporary storage

of stormwater runoff, typically held in detention ponds either on-site or by feeding into a regional stormwater detention pond."

Also, mention the difficulty of finding open space to purchase for additional regional stormwater facilities.

Urban Structural Control Fund bullet: Is this a new program and different from the existing Regional Stormwater Management Program? If this is the same program, please use refer to it as Regional Stormwater Management Program (RSMP)

P. 54:

Critical Environmental Features bullet: Please rework the following sentence beginning with "Setbacks protect the natural character and function..." due to the overuse of "quality and quantity" throughout. Perhaps the sentence could be condensed.

Insert a space between "300-foot" and "maximum"

Please clarify if Central Business District is exempt from other CEF protection requirements.

Placeholder for water quality ponds and drainage areas map – please combine this map with the previous map on page 53 of detention ponds and drainage areas, unless this would make the maps too busy.

C. Maintenance Activities, Open Waterways paragraph – Please move all of the information in this paragraph on vegetative clearing to the next section called "Vegetative Maintenance". Move everything from "Widespread vegetation clearing..." to the end.

P. 56:

Please align the terminology of the TDML Implementation Plan throughout the document.

P. 56 & 58:

Please differentiate between the Grow Zones and Riparian Zone Restoration.

VI. Identification of Management Activities to Improve Health, B. Recommended Management Activities:

The bullet items in this category are not actually "activities" – please rework to indicate activities related to water quality, habitat and native species, etc...

END

---------- Forwarded message ---------
From: <WENDY@ecologiaconsulting.com>
Date: Wed, Nov 14, 2018 at 10:45 AM
Subject: comments on characterization report
To: Joanna Wolaver <joanna@shoalcreekconservancy.org>

Hi Joanna,

Since I have a hard copy of report and in the absence of line numbers (something I recommend for future reports on which you want comments), I'll do my best to identify material that needs editing. I do earn some of my keep from scientific editing. Nonetheless, I have not read and edited this report word for word. I looked for obvious problems, which, unfortunately, there were many.

1. Captions for figures are in an odd, light-colored font that is hard to read.
2. Figure 3 claims to contain data through 2018 but that is impossible so someone either needs to update the dataset or change the title.
3. Also in that same on p. 5 it seems that there ought to be a brief mention of how climate has already changed in recent times with record high temperatures and an overall shift to higher highs and lows.
4. The discussion of population density on p. 9 for the watershed is meaningless without a comparison. Is Shoal Creek more or less dense than other parts of Austin?
5. Figure 6 and many others suffer from a lack of contrast. Whatever that light tone is should be a little darker. Also, get rid of extraneous "chart junk" lines; they don't serve any purpose except to clutter the figure.
6. Figure 8: ditto.
7. Header on p. 11 makes no sense. Either you are talking about "Vulnerability to Hazards" or the "Social Vulnerability Index." Using the phrase "social vulnerability to hazards" is ambiguous and confusing. Also, in second paragraph the use of "predominated" is awkward. Either areas are "dominated by" something or are "predominately" something. They are not "predominated by."
8. Change title of map to "Vulnerability to Hazards."
9. P. 14 Should read "The Shoal Creek watershed." This seems to be a consistent usage. Do a find and replace. It's either "Shoal Creek" or "the Shoal Creek watershed." Also, same problem with 'predominate' in this paragraph.
10. Figure 12 caption rather uninformative since it is just restating title. This seems to occur in a lot of places. Use the caption to say something.
11. Figure 13: ditto on color and lines.
12. P. 17: bottom paragraph needs editing. First sentence should read "subindices, which results in equal weighting of each subindex." And, "the 2017 EII indicates that Shoal Creek is in the fair range with a score of 57.5."
13. Figure 14: lines are especially redundant if vertices are labelled.
14. What is "Creek Flood" on p. 20? Creek Flooding maybe. Also, where does Atlas 14 fit into this picture. Either data need to reflect Atlas 14 or mention has to be made that there are new data, which may change the rankings. etc.
15. Same with "Localized Flood." Not really English. Localized Flooding. Within paragraph, I have an issue with 'aging materials'. Materials age as soon as they are manufactured so this is very vague. Last sentence: "localized flood-prone areas."
16. Tables 3-6 titles are vague. "Top 20 Ranked Low-Water Crossings" - by what? What are "Flood Building Clusters"? Don't know what an "Erosion Reach" is. Etc.
17. P. 24: Header is not English. "Brief overview of spring flow and groundwater...causes"?

18. Ditto top of p. 25: "habitat causes"?
19. I wrote in a comment around the middle of the page: Riparian areas very prone to invasive species. I don't see this discussed anywhere. Also on p. 25, the last paragraph needs editing. An "index" is not an "effort" - first sentence. It could be based on remotely-sensed data. There is a space missing between words in the fourth line. That same sentence is poorly phrased. "This method" has not been described anywhere. An index is not a method, it is a proxy. This entire paragraph needs to be rewritten to explain what is going on.
20. Table 7 cuts across two pages.
21. P. 27, Figure is not labeled.
22. Ditto on p, 28.
23. Ditto on p. 29.
24. P. 30: "insight into."
25. All the ensuing graphics need work: a) they are just plopped on the page, b) they have those annoying lines, c) the text is oddly place. Each figure needs a number and each figure needs a caption OUTSIDE of the graphic NOT INSIDE the graphic. Also, many of them have scaling problems, making it very hard to read the data (see below).
26. P. 32: "The following graphs are a summary of" but even better would be "On the following pages are figures depicting the EII ...(Figures XX-XX). Move that text to caption. The Y-axis needs to be rescaled using a broken scale that will allow the reader to see the data at the low end.
27. P. 33: Ditto. There is no reason to have Y-axis that greatly exceeds the maximum value and otherwise obscures the data. Same with min/max on pH.
28. P. 34: Ditto. And capitalize Shoal Creek (Figure 21).
29. P. 35: "important component of"
30. P. 36: Ditto on figures.
31. P. 37: eliminate "that are associated with it"
32. P. 38: Ditto on figure.
33. P. 39 has two figure references
34. P. 40: figure color and lines
35. P. 41: ditto
36. P. 42: ditto
37. P. 44: Odd wording "This program also establishes..." Has it already done so or it is going to in the future?
38. P. 46: Don't toggle back and forth between "capital solutions" (I don't even know what those are) and "capital projects." And "(COA-WPD) is using"
39. P. 47: Those awkward phrases "Creek Flood" and "Localized Flood" come up again. Change them.
40. P. 51: in the section on 'floodplain protection' the initial sentence should read "The City of Austin has established"? Also, I don't know what "Encroachment of buildings and parking areas...prohibited on the floodplain" means in that sentence. Sentences needs to be redrafted.
41. P. 53: missing a space between words in CEF section.

Wendy

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Joanna Wolaver
Executive Director
Shoal Creek Conservancy
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Support the Conservancy Today

From: **Arthur Talley** <mactalley@aol.com>
Date: Fri, Nov 9, 2018 at 8:49 AM
Subject: Shoal Creek Characterization Report Review
To: Joanna Wolaver <joanna@shoalcreekconservancy.org>

Joanna,

I appreciate having the opportunity to review the Draft Shoal Creek Characterization Report. I have provided my input below roughly following the format of the report. I want to point out a couple references I found useful in my review:

- EPA's Watershed Planning Handbook provides useful guidance on watershed planning including watershed characterization strategies and methods.

https://www.epa.gov/sites/production/files/2015-09/documents/2008_04_18_nps_watershed_handbook_handbook-2.pdf

- Texas State's Cypress Creek watershed characterization report provides a good example of a watershed report for Central Texas.

https://static1.squarespace.com/static/57adee9546c3c4f7faf94b98/t/58a11bb5cd0f68e8d0470a73/1486953460656/ Cypress+Creek+Project+Watershed+Characterization+Report+%282%29.pdf

Let me know if you have any questions.

Thanks, Arthur

Introduction (pg3)
What is a "watershed characterization report" anyway? Please consider including an overview of the watershed planning process for Shoal Creek and an explanation of how the report fits in.

Rainfall Data (fig3)
For this and other datasets identified in the report, it may be useful to:

- provide citations and brief background summaries of the data such as who collects the data, how is the data collected, coverage, frequency, parameters, field and laboratory quality control provisions, etc.;
- provide assessments and conclusions from the data; and,
- explain how these data are to be used in the watershed planning project.

Groundwater (pg6)
What role does groundwater play in the overall flow and water quality in Shoal Creek?

How will the development of a watershed plan for Shoal Creek be coordinated with conservation programs for the Jollyville Plateau salamander?

Social Vulnerability Index (pg11)
The City's programs to evaluate and locate risks such as the Social Vulnerability Index, Environmental Integrity Index, Index of Riparian Integrity, flooding, and erosion hazards are highly consistent with EPA guidance on prioritizing problems and targeting solutions. It may be useful to consistently provide citations and summary descriptions of the data and procedures used in these programs.

Aquatic Life (pg30) Water Chemistry (pg32)
The explanations in the shaded text boxes of the individual datasets are very useful.

How does the City prioritize overall water quality issues?

It may be useful to provide an overall assessment of the data which ties together the results of the individual analyses.

It may be useful to identify specific water quality issues that need to be addressed in the watershed plan.

Water Quality Treatment (pg40) Ongoing Efforts (pg46)

The explanations of programs being implemented by the City to address water quality, flooding, and erosion issues in the Shoal Creek watershed are very helpful. It may be useful to include an inventory of these programs including jurisdiction, authority, funding, facilities, staffing, etc. It may be useful to provide an assessment of these programs and identify issues that need to be addressed in the watershed plan.

Water Quality Modeling (pg57)
When will the data to be used in the water quality modeling of Shoal Creek be included in the report?

---------- Forwarded message ---------
From: **Nicole Hall** <Nicole.Hall@tceq.texas.gov>
Date: Tue, Oct 9, 2018 at 9:54 AM
Subject: RE: First Draft WCR
To: Joanna Wolaver <joanna@shoalcreekconservancy.org>

Joanna,

I have reviewed the draft Watershed Characterization report. This is a great first draft of the document. I agree with all of your comments and didn't include those here. Many of your comments referred to the intended audience of the report, the average stakeholder, and I agree that it is important to remember who the audience is. The Shoal Creek stakeholders are interested in knowing all of the technical and scientific information but including definitions and data summaries throughout will be helpful. Other than some grammatical typos that I noticed, the remainder of my comments are below.

- Is the data included in the report only COA data? Was TCEQ SWQMIS data used?
- On Page 30, where the Spicewood Springs impairment is discussed - Although the segment was removed from the 303(d) list through the development of a TMDL, the segment is still considered impaired with a bacteria geomean greater than the primary contact recreation standard of 126 cfu/100mL and is still listed on the Draft 2016 Texas Integrated Report Index of Water Quality Impairments. I think it is important to have this information in the report. As the language reads now, it implies that the segment is no longer impaired.
- This report is a great start for the Watershed Characterization Report although it is missing some elements. Once the LDCs and the SELECT modeling are complete these elements will be addressed. The contract and schedule of deliverables was written so that the Modeling Report, the LDCs and SELECT, would be complete before the Watershed Characterization Report was written. Since this was written first, the modeling information is missing. [JW Note: I talked with Nicole about this comment and she is no longer concerned now that she understands it's an early draft.]
    - Subtask 5.1 describes the information that should be included. The elements missing from this draft are

- Identify, map, and describe the potential causes of pollution and water quality impairments – this element was partially done in the report. Places with high erosion were mapped but different sources of bacteria and nutrients were not.
- Quantify pollutant loadings from these sources
- Estimate future pollutant loadings
- Quantify load reductions required for current and future conditions
- Identify management activities to mitigate pollution and impairments

Thanks, we can discuss all of this further in our conference call next week if you have any questions.
Nicole

Nicole Hall

Project Manager | Nonpoint Source Program

Texas Commission on Environmental Quality

(512) 239-6609 | nicole.hall@tceq.texas.gov

---------- Forwarded message ---------
From: **Kerry Kimbrough** <kerrykimbrough@gmail.com>
Date: Sun, Oct 14, 2018 at 2:41 PM
Subject: Draft SC Characterization Report: some feedback
To: Joanna Wolaver <joanna@shoalcreekconservancy.org>

After reading this draft, I have a few comments to share with you.

This is inherently a very technical document -- essentially, a catalog of facts. The organization of the information makes sense to me. But I see two ways that it could be improved to deliver its message more clearly.

First, clarify the graphs. For some, the lack of explanation makes them impossible to interpret. (For example, all of the graphs in Aquatic Life.) For others, the scale needs to be adjusted to make the information legible. (For example, most of the graphs in Water Chemistry.)

Second, conclude each of the major sections II, IV, and V with a summary of how these elements contribute to an overall understanding of the character of Shoal Creek. Such summaries would help draw a clearer line between the detailed facts and the responses needed.

---------- Forwarded message ---------
From: **Ixchel Granada de Rayo** <ixchel@peasepark.org>
Date: Wed, Oct 10, 2018 at 10:22 AM
Subject: Shoal Creek Characterization Report

To: Joanna Wolaver <joanna@shoalcreekconservancy.org>, <alexa@shoalcreekconservancy.org>

Thank you for an instructive stakeholder meeting and access to the watershed steward workshop. It is important to understand our watersheds, care for them and manage them as science and experience evolves and I always enjoy dipping my toes back in the scientific community.

I've attached our comments on the *Shoal Creek Characterization Report.* A lot of our comments come as a stakeholder from the perspective of managing large swaths of park land (invasives and erosion control).

Thanks for these opportunities to partner,
Ixchel

--
Ixchel Granada, MLA
Director of Projects and Programming
Pease Park Conservancy
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Shoal Creek Characterization Report
Pease Park Conservancy Comments

Section IV., page 25
C. Riparian Zones
PPC Comments: Water quality begins on the land. Intact riparian areas are one piece of an integrated whole system which provides green infrastructure function,

Section V., page 53
B. Critical Environmental Features
PPC Comments: Critical Environmental Features may include Endangered or Threatened Species of interest

Section V., page 54
D. Ongoing Programs and Watershed Education
PPC Comments: Invasive plant management is one important component of Vegetation Maintenance.

Section V., page 55

D. Grow Zones:

PPC Comments: “Grow Zones” also known and managed as “No-Mow Zones”

Section VI., page 57

A. Riparian Zone Restoration:

PPC Comments: Maintenance of riparian zones should include a plan for invasive management and reduction of soil erosion in riparian zones.

B. Recommended Management Activities

PPC Comments: Implement restoration of land areas where applicable as additional recommended management activities