

# Mean Clean Water Machine Meeting Agendas and Minutes

## Contents

- Team meeting 9/5/18..... 2
- Team meeting 9/6/18..... 3
- Interview Agenda ..... 4
- Client interview 9/12/18..... 5
- Team Meeting 9/20/18 ..... 6
- Meeting Agenda 9/26/18..... 7
- Team Meeting 9/26/18 ..... 8
- Team Meeting 9/27/18..... 8
- Meeting Agenda 10/4/18..... 10
- Team Meeting 10/4/18 ..... 11
- Meeting Agenda 10/10/18..... 12
- Team Meeting 10/10/18 ..... 13
- Meeting Agenda 10/11/18..... 14
- Team Meeting 10/11/18 ..... 15
- Meeting Agenda 10/17/18..... 16
- Team Meeting 10/17/18 ..... 17
- Team Meeting 10/18/18 ..... 18
- Meeting Agenda 10/24/18..... 19
- Team Meeting 10/24/18..... 20
- Meeting Agenda 10/31/18..... 21
- Team Meeting 10/31/18..... 22
- Team Meeting 11/7/18..... 23
- Meeting Agenda 11/14/18..... 24
- Team Meeting 11/15/18..... 25

Team meeting 9/5/18

3:00-4:00pm JML 71

4:00-5:15pm JML 76

Attending: Courtney Wanke, Dylan Kirkpatrick, McKenzie Walquist, Phillip Hagen Jacob Miller, Dev Shrestha

Minutes: McKenzie Walquist

Discussion:

- Weekly meetings with mentors will be held on Thursdays 3:00-3:30 in GJL Senior Design Suite
- McKenzie will create and share a OneDrive folder with the group before Thursday afternoon

Schedule overview:

- Team member citizenship form must be completed once a semester by each team member, and must include at least one good comment and one suggestion for improvement
- Snapshot 1 (9/25) – the purpose is to have gained a good understanding of the project goals and to have a general idea of how it they could be accomplished
- Snapshot 2 (11/30) – have a blueprint for the possible solutions for this project, and have a complete understanding of the project requirements

Client interview:

- The team will send an email with multiple time slots that work for the members for the client interview. This will be sent before the end of next week.
- Before the interview, the team should study the project more and prepare a detailed list of questions for the client

Contract:

- The printed contract is due in class 9/6/18. It should be reviewed and signed by each member.
- The mission statement should be a team mission, not specific to the project goals.
- The completed signed contract will be typed and uploaded to the shared folder.
- The contract was completed through step 7 during the team meeting. The remaining sections will be completed on 9/6/18.

Upcoming meetings and deadlines:

- 9/6/18 Team meeting at 2:30pm in the ECE lounge in Gauss-Johnson to complete the contract
- 9/25/18 (DUE before): Client visit and interview

Team meeting 9/6/18

2:30-3:00pm GJ 219

Attending: Courtney Wanke, Dylan Kirkpatrick, McKenzie Walquist, Phillip Hagen

Minutes: McKenzie Walquist

Agenda:

1. Progress report
2. Complete, print, and sign contract

Progress report:

Shared folder

- McKenzie created and shared a OneDrive folder with the team members, instructor, and mentor. This will be the primary location of project documentation

Contract

- The team completed the team contract, printed and signed, and given to instructor
- The contract will be uploaded to the shared OneDrive folder

New Tasks:

- 1) Draft budget will be completed at the next team meeting on 9/12
- 2) Client interview will be coordinated by Courtney. She will create a poll to share with the team to determine time slots for meetings. These available times will be sent to the client requesting an interview no later than Monday 9/10.

Upcoming meetings and deadlines

- **9/12/18 Team meeting – 3:00pm GJ 219**
- 9/13/18 Team + mentor meeting – 3:00-3:30pm GJ Senior Design Suite
- 9/13/18 DUE: DRAFT Budget estimates
- 9/25/18 DUE (before): Client visit and interview
- 9/27/18 DUE: Product Requirements Document

## Interview Agenda

September 12, 2018

JEB ThinkTank 2:30pm

### Part 1: Client Interview

1. Client requests from team:
  - Personal goals related to project
  - What you want to learn
  - Anticipated takeaways
  - Schedule overview
2. Questions from team (compiled by Phillip)

### Part 2: Team meeting

1. Open Action Items
  - a. Update schedule
  - b. Draft budget
2. Assign new action items
3. Upcoming schedule
  - a. Mentor meeting 9/13/18
  - b. Draft budget due 9/13/18
  - c. Product Requirements Document
4. Review minutes

Client interview 9/12/18

2:30-3:30pm GJ 218

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Martin Baker, Dylan Kirkpatrick, Dev Shrestha, Jacob Miller

Team meeting

3:30-5:30 GJ 219

Attending: Courtney Wanke, Dylan Kirkpatrick, McKenzie Walquist, Phillip Hagen

Minutes: McKenzie Walquist

Client interview:

- Personal goal statements requested by client were shared by the team members
- Martin will be the primary contact for this project
- Compiled questions were answered, and notes kept with product requirements and specifications
- Martin's proposed project schedule aligned with the schedule the team developed. This schedule will be shared on the one drive, and will be updated throughout the project

Draft budget:

- The team created a draft budget from basic design ideas for this project
- The budget was completed and uploaded to the one drive folder

New action items:

- A document summarizing this meeting and the team's understanding of the project will be sent to the client for verification
- Schedule a time to visit the system set up at JML with Martin

Upcoming meetings and deadlines:

- NO meeting Thursday 9/13/18
- 9/19/18 Team meeting: Wednesday 2:30pm GJ218
- 9/27/18 DUE: Product Requirements Document

Team Meeting 9/20/18

3:00-4:00pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Martin Baker, Jacob Miller

Minutes: McKenzie Walquist

Product Requirements:

- The team began writing the product requirements document on 9/19/20 and recorded questions to ask the client for more clarification
- The Moscow wastewater treatment plant has a similar system for addition of particulate materials. Those pictures were distributed via email by Courtney
- Appearance: aesthetic is important in marketing of this product. It should match the current colors and Clean Water Machine logo whenever possible
- The important operating conditions this mechanism must handle are 18.9 psi (up to 20psi) and a flow rate of 15GPM
- The injection system can occur in any order with the  $\text{FeCl}_3$  and ozone systems. The pipe size and flow rate will depend on where the BC is added.
- Because BC is hydrophobic, settling is a major concern. Flow rate, moisture content, turbulence, and mixing will be important considerations to produce accurate dosing and prevent clogging
- We will most likely need to do experiments on particle size and opening size, typically 6-8x the particle size (Beverloo)
- Other notes/suggestions: eductor, positive displacement pump, dehumidifier or heater
- Other specific dimensions, parameters, etc. were specified in the product requirements document

New action items:

- The product requirements document will be completed and formatted for submission at the next meeting

Upcoming meetings and deadlines:

- 9/26/18 (tentative): Clean Water Machine tour with Martin 1:30pm
- 9/26/18 Team meeting 2:30pm
- 9/27/18 DUE: Product Requirements Document

Meeting Agenda 9/26/18  
September 26, 2018  
Facility tour with client 1:30pm  
Meeting GJ 218 ~2:30pm

Part 1: System tour

- Process
- Controls
- Dimensions
- Materials

Part 2: Team meeting

1. Open Action Items
  - a. Product Requirements Document
  - b. Schedule
2. Assign new action items
3. Upcoming schedule
  - a. 9/27/18 Meeting?
  - b. 9/27/18 DUE: Product Requirements Document
  - c. 10/2/18 DUE: Fall/Spring Schedule
4. Review Minutes

Team Meeting 9/26/18

1:30 – 4:00pm GJ 218

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick

Minutes: McKenzie Walquist

Clean Water Machine Tour:

- McKenzie, Courtney, and Phil met with Martin Baker before the team meeting
- The total workspace is a 3m x 3m box
- Client prefers to work from the top level
- Possible location of injection system identified at a space outside the top-level control box
- Courtney suggested including a hoist system if it will be above the ground level
- Two possible dosing locations: 1) in influent before tank 2, or 2) after tank 2 before filter 1
- Tank 2 (bottom) is the starting point (influent), tank 1 is the end (effluent)
- Dimensions were taken and recorded in notes and in the product requirements document
- McKenzie took pictures of the system

Product Requirements:

- The additional information from the tour was compiled in the product requirements documents

New action items:

- McKenzie will upload the pictures of the Clean Water Machine to the shared OneDrive folder

Team Meeting 9/27/18

3:00-3:30pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick, Jacob Miller

Minutes: McKenzie Walquist

Product Requirements and Schedule:

- Final formatting for this document was completed and approved by the team
- Courtney emailed the client to verify whether any regulations applied to this system to include in the requirements
- The schedule provided by Martin is complete and will be used to make the year schedule

Snapshot Day 1:

- Information and requirements are on mindworks for snapshot day
- Create a poster board showing the status of the team's project
- Focus on objectives, understanding of the problem, possible solutions, and other ways that this has been addressed



New action items:

- Courtney will upload the Project Requirements document to the OneDrive and will email a copy to Dr. Shrestha
- Courtney will complete the schedule formatting and share before the due date (Tuesday 10/2/18)
- McKenzie will plan for biochar experiments to go over at the next meeting
- Each team member will research, in their area of expertise, possible options to include on snapshot day

Upcoming meetings and deadlines:

- 10/2/18 DUE: Fall/Spring Schedule
- **10/3/18 Team Meeting: 11:30am-12:30pm Senior Design Suite**
- 10/4/18 DUE: Logbook and Portfolio
- 10/9/18 Snapshot Day 1

## Meeting Agenda 10/4/18

October 4, 2018

3:00 – 4:00pm GJ Senior Design Suite

1. Open Action Items
  - a. Project Schedule
2. New action items
  - a. Portfolio
  - b. Snapshot Day 1 poster board
3. Upcoming schedule
  - a. 10/11/18 DUE: Logbook and portfolio
  - b. 10/9/18 Snapshot Day 1
  - c. 10/18/18 DUE: Design validation plan

Team Meeting 10/4/18

3:00 – 4:00pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick, Jacob Miller

Minutes: McKenzie Walquist

Schedule:

- Courtney will upload the schedule to the OneDrive folder before the next meeting

Portfolio:

- Portfolio must be completed for snapshot day 1 on Tuesday. The final version is due Thursday
- Content form on Mindworks
- The team agreed on a problem statement (recorded below), and Dylan will document it and upload as a file to the shared folder before the next meeting
  - “Design a mobile biochar injection system that will accept and inject biochar into pressurized water lines in an accurate, controlled, and recorded manner in tandem with existing systems on the Clean Water Machine with minimal adaption of current systems.”
- In preparation for the next meeting, each team member will compile their individual research and references (in MLA format) which we will compile for the portfolio
- Other documents (minutes, client communication, schedule, budget, system diagrams) are on the OneDrive folder and will be printed for the portfolio

Snapshot Day 1:

- Poster boards are available in the senior design suite. Will be put together at the next meeting.
  - Gaant chart, budget, problem statement, current or similar systems, preliminary ideas, pictures

Upcoming meetings and deadlines:

- **10/8/18 Team Meeting 6:30pm GJ 218**
- 10/9/18 Snapshot Day 1
- 10/11/18 Logbook and Portfolio due

## Meeting Agenda 10/10/18

October 8, 2018

GJ 218 6:30pm

1. Portfolio
  - a. Print required documents from OneDrive
  - b. Compile and print individual team members' research and references
  
2. Snapshot Day 1
  - a. Print documents from OneDrive (Problem statement, Gaant chart, highlighted product requirements, budget, diagrams, pictures)
  - b. If space allows, include preliminary solutions
  - c. Presentation plans
  
3. Upcoming schedule
  - a. 10/9/18 Snapshot Day 1
  - b. 10/11/18 Logbook and portfolio due

Team Meeting 10/10/18

4:00pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick, Jacob Miller

Minutes: McKenzie Walquist

Portfolio and logbooks:

- Logbooks are due tomorrow 10/11/18 at the team meeting
- Dylan turned in portfolio
- Will ask for verification on how to separate “wants” and “needs” in portfolio at next meeting
- McKenzie will compile the portfolio documents into a pdf, since the clients requested a copy
- McKenzie will email Courtney the pdf version and Courtney will share with the clients

Upcoming schedule:

- 10/11/18 Team meeting GJ 108 3:00-3:30 pm (Logbooks due)
- 10/17/18 Team meeting GJ 218 2:30pm
- 10/18/18 Design Validation Plan due

Meeting Agenda 10/11/18

October 11, 2018

GJ 108 3:00-3:30pm

1. Turn in logbooks
2. Portfolio
  - a. Portfolio edits
  - b. Email client portfolio pdf
3. New action items
  - a. CAD
  - b. Biochar experiments
4. Upcoming schedule
  - a. 10/17/18 Team meeting 2:30pm GJ 218
  - b. 10/18/18 Due: Design validation plan
5. Review minutes + next meeting agenda

Team Meeting 10/11/18

3:00-3:30 pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick, Jacob Miller, Dev Shrestha

Minutes: McKenzie Walquist

New action items:

- Logbooks can be picked up Friday 3-5pm
- McKenzie will email Courtney a combined pdf file of the portfolio documents by Friday
- Courtney will share the portfolio with the clients
- Courtney and Phil will begin CAD designs and share at next meeting
- McKenzie and Dylan will research and design biochar experiments to determine ideal properties

Upcoming schedule:

- 10/17/18 Team meeting GJ 218 2:30pm
- 10/18/18 Design Validation Plan due

## Meeting Agenda 10/17/18

October 17, 2018

GJ 218 2:30pm

### 1. Open Action Items

Assignment	Team Member(s)	Due
• CAD designs of ideas	Phil and Courtney	Update at meeting 10/17/18
• Biochar experiment design	Dylan and McKenzie	10/17/18
• Compile current portfolio pdf, and email to Courtney	McKenzie	Before 10/17/18
• Share portfolio with clients	Courtney	Unspecified

### 2. Write Design Validation Plan

### 3. Assign new action items, including:

- Design validation plan submission
- Testing biochar

### 4. Review minutes and next meeting agenda



Team Meeting 10/17/18

2:30 - 3:30 pm GJ 218

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick

Minutes: McKenzie Walquist

Open action items update:

- McKenzie completed putting the documents together for the portfolio and emailed the pdf to Courtney
- Courtney emailed the portfolio to the clients

New action items:

- Design validation plan – completed during meeting

Upcoming schedule:

- 10/24/18 Team meeting GJ 218 2:30pm
- 10/25/18 Project Value Proposition due

Team Meeting 10/18/18

3:00-3:30 pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick, Martin Baker, Dev Shrestha

Minutes: McKenzie Walquist

New action items:

- McKenzie will do the Wiki workshop on Thursday 10/25/18
- McKenzie will add Martin to OneDrive folder
- Courtney will research metering techniques and share at next meeting
- McKenzie will design BC experiments and share at next meeting
- Phil will research microcontrollers and contact Martin to order

Upcoming schedule:

- 10/24/18 Team meeting GJ 218 2:30pm
- 10/25/18 Project Value Proposition due
- 10/25/18 Wiki workshop (McKenzie only)

Brainstorming notes:

The team's three primary design ideas were discussed with Martin and we also developed a new design possibility. (Drawings/discussion on logbook notes)

How to compare designs: Manufacturing, cost, maintenance, accessibility, etc.

Companies for products/parts: Fischer Scientific, Granger Omgea, Automation Direct

Computer on CWU won't be operational until around December

Parameters to consider/test:

- Bulk density as a function of moisture content
- Pressure, flow rate, velocity necessary to avoid settling
- Batch vs. continuous process

## Meeting Agenda 10/24/18

October 24, 2018

GJ 218 2:30pm

### 5. Open Action Items

Assignment	Team Member(s)	Due
• Wiki workshop	McKenzie	10/23/18
• Add Martin to OneDrive	McKenzie	10/24/18
• Metering technique research	Courtney	Update 10/24/18
• Biochar experiment design	McKenzie and Dylan	Update 10/24/18
• Microcontroller research	Phil	Update 10/24/18

### 6. Design Value Proposition

### 7. Wikipage update

### 8. Assign new action items

### 9. Review minutes and next meeting agenda

Team Meeting 10/24/18

10/24/18 2:30-3:00 pm GJ 218

10/25/18 3:00-3:30 pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick, Jacob Miller, Dev Shrestha

Minutes: McKenzie Walquist

Completed action items:

- McKenzie – wikipage template is created
- Phil – decided to use Arduino Uno
- McKenzie - initial BC experiments will test for density, moisture content, time/energy to dry
- Courtney – metering techniques require more research for this specific application

New action items:

- McKenzie will finish the Wikipage (due 11/1/18)
- McKenzie will create a folder in the OneDrive to share research literature/sources
- Courtney will contact clients to confirm November 8, 3:00pm, as the design review date
- Phil will check ECE conference room availability for November 8, 3:00pm
- When the date is confirmed by clients, McKenzie will contact Dr. Swenson with the details
- McKenzie will contact Chad Dunkel to arrange BC experiments next week

Upcoming schedule:

- 10/31/18 Team meeting GJ 218 2:30pm
- 11/1/18 Draft wikipage due
- 11/8/18 Tentative - design review

## Meeting Agenda 10/31/18

October 31, 2018

GJ 218 2:30pm

### 1. Open Action Items

Assignment	Team Member(s)	Due
• Wikipage	McKenzie	11/1/18
• BC Experiment schedule	McKenzie	10/31/18
• Confirm Design Review with clients	Courtney	10/31/18
• Create OneDrive folder for research	McKenzie	10/31/18

### 2. Wikipage Review

### 3. Concept Design Review

### 4. Assign new action items including:

- Share design review date with Dr. Swenson
- Upload wikipage
- Schedule design review location

### 5. Review minutes and next meeting agenda

Team Meeting 10/31/18

2:30-3:00 pm GJ 218

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick

Minutes: McKenzie Walquist

Completed action items:

- McKenzie emailed about BC experiments, waiting to schedule
- McKenzie created Research folder in OneDrive folder
- ECE conference room not available on selected date

New action items:

- For wikipage – due before Thursday 11/1/18
  - Phil will send McKenzie the picture of project description
  - Each team member will send McKenzie their information for the bio section
  - Each team member will send McKenzie their project learning documents
- McKenzie will contact Russell McClanahan on Friday 11/1/18 to confirm IRIC 321 for Nov 8 3-4pm
- McKenzie will contact Dr. Swenson this week with design review details
- McKenzie will finish Wikipage draft by 11/1/18
- BC experiments – begin before next meeting

Add to wikipage:

- References section
- Team picture
- Bios
- Project learning documents
- Team contract
- Design validation
- Project description for background

Upcoming schedule:

- 11/1/18 Draft Wikipage due
- 11/7/18 Team Meeting 2:30pm
- **11/8/18 Concept Design Review 3pm**

Team Meeting 11/7/18

1:30-5:00 pm GJ 218

Attending: McKenzie Walquist, Courtney Wanke, Phillip Hagen, Dylan Kirkpatrick, Martin Baker

Minutes: McKenzie Walquist

New action items:

- McKenzie will confirm dates with Chad Dunkel for BC experiments 11/15, 11:00am
- McKenzie will print the following documents and bring to the Design Review:
  - Outline (15)
  - Flow diagram (15)
  - Slides (2 per page) (15)
  - Designs (15)
- A team picture at the CWM will be scheduled by Phil for next week
- Courtney will complete CAD pictures for PowerPoint tonight
- Phil will complete budget tonight to add to presentation

Upcoming schedule:

- **Meet 1:30 tomorrow to practice in IRIC**
- **11/8/18 Concept Design Review 3pm IRIC 321**
- 11/12/18 Log books due
- 11/14/18 Team meeting 2:30pm
- 11/16/18 Team member citizenship due

## Meeting Agenda 11/14/18

November 14, 2018

GJ 218 2:30pm

### 6. Open Action Items

Assignment	Team Member(s)	Due
• Biochar experiments	McKenzie + Dylan	11/16/18
• CAD designs	Courtney	Update 11/14/18
• Team picture schedule	Phil	Update 11/14/18

### 7. Design Update

- Update schedule and budgets
- Materials list

### 8. Upcoming schedule

- Reminder: attend two other team design reviews
- 11/16/18 Team Member Citizenship form due
- 11/30/18 Snapshot day 2

### 9. Review minutes and next meeting agenda



Team Meeting 11/15/18

3:30-4:00 pm GJ 108

Attending: McKenzie Walquist, Courtney Wanke, Dylan Kirkpatrick, Dev Shrestha, Jacob Miller

Minutes: McKenzie Walquist

New action items:

- McKenzie will update Wikipage with most current documentation and designs
- Courtney will do analysis for parts to order after the break
- McKenzie and Dylan will finish BC experiments before next meeting

Upcoming schedule:

- 11/16/18 Team Member Citizenship forms due
- 11/30/18 Snapshot Day 2
- 12/7/18 Project deliverables due