1.0. Objectives

- To create publicity and awareness about the state of Chicago water and the need to start taking steps to preserving and restoring it.
- To create a catalog of sustainable methodologies to be implemented in an urban planning strategy throughout the city of Chicago.
- Enhance the impact of the Eco-Boulevards in the community.
- Collaborate with the city of Chicago and the project team regarding possible implementation of ecological strategies regarding water.
- To research and share methods, techniques, practices, equipment, biology, etc. of functional living machines and make it available knowledge.
- To establish a social program for the living machine Pavilions to create public interaction points with the ecological function of the living machine.

2.0. Background

A. The project will be sponsored by IIT & donors to design and develop an area of land along 31st street that will utilize eco-friendly methods researched by the team.
B. The problem consists of designing and creating a space that is eco-friendly and a social space for the neighborhood. An adequate amount of research must be compiled so that a similar space can be implemented in any area of Chicago. It is also beneficial to get a message across about water conservation.
C. Utilizing case studies of how other countries have created eco-friendly spaces along with researched methods of green roofs, cisterns, permeable paving, natural landscaping and filter strips, a proper eco-boulevard with a habitable social space can be attained.
D. Case studies of the Parc de La Villette, in Paris, Cultuurpark Westergasfabriek in Amsterdam, Cheonggye Stream in South Korea and many others have proved that such a space can impact an urban area and convert it from a dead zone to a major social attraction for all.
E. The issue of utilizing green roofs, cisterns, permeable paving and filter strips have all had success in Chicago. Other than a slight increase in initial cost, there are no downsides to its implementation in design. The issue of convincing the city and the land owners on the adjacent property to approve construction will be a problem if they are not convinced of the developments worth.
F. The initial cost of construction maybe higher due to the implementation of green construction methods. This would be offset by the cost to maintain such a facility as well as savings on infrastructure to handle the development. The social impact of such a space could turn an area devoid of social activity into a hub of activity that is located within walking range of a beach.

G. The design of the eco-boulevard for 31st st. will be the basis for others in the city. Its impact on an otherwise dead area of a city street would be invaluable to its residents.
H. Similar solutions for this type of development include the Parc de la Villette, Allianz Arena ,Cultuurpark Westergasfabriek and Cheonggye Stream.

3.0. Methodology/Brainstorm/Work Breakdown Structure

A. Research and catalog of potential social and ecological involvement scenarios of a prototypical eco-boulevard and living machine(s) along the 31st street corridor; north of the IIT campus. Objectives: water retention and recycling, preservation of natural/indigenous habitat, and initiating social awareness in ecology/sustainability.
B. To solve the problem defined in part A., the team first broke into a series of sub-groups to begin a set of research projects and case studies looking at existing eco-boulevards and ecologically sustainable projects, as well as projects which exhibited interesting social qualities and innovations. After this stage was complete, the team was divided into its two main groups for the semester, the eco-boulevard group, and the living machine group. These groups were further broken down into two sub-groups each, ecological solutions and social solutions. The living machine social sub-group is responsible for investigating potential social interaction in and around the actual living machine building(s). This will be accomplished with a variety of methods including, site visits, case studies, and interviews. The living machine ecological sub-group is responsible for researching established living machine systems, analyzing the potential waste and storm water collection in the immediate area, and producing a plan and calculations concerning the treatment and redistribution of this water. This sub-group's investigation will involve site visits, and research of relevant flora and fauna with special attention to viable local species. The eco-boulevard social sub-group is responsible for developing ideas to integrate the eventual built environment with the surrounding residential and commercial neighborhoods, improving the quality of life within these areas, and making the issue of sustainability more prevalent in the lives of the nearby residents and businesses. This will be investigated with background research, site visits and precedent documentation. The eco-boulevard ecological sub-group is responsible for developing best management practices (BMP) as a resource for future strategies to be employed on the site in collaboration with city officials. To accomplish this task, this sub-group will utilize the following methods, site visits, research of local flora and fauna, and in depth research into the typologies of BMP's.
C. Potential design ideas and solutions will be evaluated within the team according to pre-defined criteria including, social impact, sustainability and the overall quality of the proposed design.
D. All of the research will be documented by the specific sub-groups, and uploaded to igroups for team wide access.

E. As a whole, the group will evaluate the proposed schemes and critique the work together. Advice will also be gathered from the instructor who has extensive knowledge of sustainability and design.
F. A sub-team will be responsible for the report and will divide the work amongst themselves. Their draft will be presented to the group for feedback and a final draft will be developed from this session.
G. Not applicable

4.0. Expected Results

Eco Boulevard – Ecology

A. Expected activities include proposals for combinations of BMPs and the social areas that can be contained within them or outside them.
B. Expected results include several different ideas on how to make functional BMPs more of a social attraction and to inform people of how they work. Potential ideas for the BMPs include, pathways, prarie grasslands, constructed wetlands, bird estuaries, surface fields (hard/permeable and planted) distributed in a holistic system of water conservation.
C. Outputs are to gain knowledge of BMPs and how people interact with them, sharing knowledge and making strides toward an actual BMP that is to be placed along 31st Street, while providing a body of knowledge that will be available to subsequent IPROs.
D. This body of knowledge will outline capacity, possible layouts, purifications processes, etc., of a working BMP.
E. Our expected results in terms of prototypes and other deliverables is to have several ideas and perhaps models to show how these BMPs can be not only functional, but a ecological/social attractor as well
F. Our expected results will not only address the problem of returning water to the lake, but will also help to make the city more “green” in terms of parks as well as cutting down on wastewater
G. All of the results will lead to better design and more efficient use of the space and the area around a BMP. In addition to ecological gains, the BMPs will help create a more informed social constituency.

Eco Boulevard - Social

A. Expected activities include proposals for Eco Boulevard and the social areas that can be contained within them or outside them.
B. Expected results how the Eco Boulevard can be used socially by community and how the Eco Boulevard can affect their life.
C. Research of other successfully done projects and develop ideas of different types of transportation path, recreational activities and service/facilities that could be placed along the boulevard to serve the community.
D. Outputs are to gain knowledge of importance of social activities for the neighborhood as well as working with other team members to improve the ideas.

E. Our expected results in terms of prototypes and other deliverables are to have several ideas of transportation solution, suitable social activity programs that can benefit the community.
F. Our expected results will not only address the problem of reactivating the green system but at the same time it benefits the community. Furthermore, the city can adapt these ideas to develop better social life.
G. All of the results will guide to better social activities with environmentally friendly area near the neighborhood. Results will help to develop better life in urban area.

Living Machine Pavilion

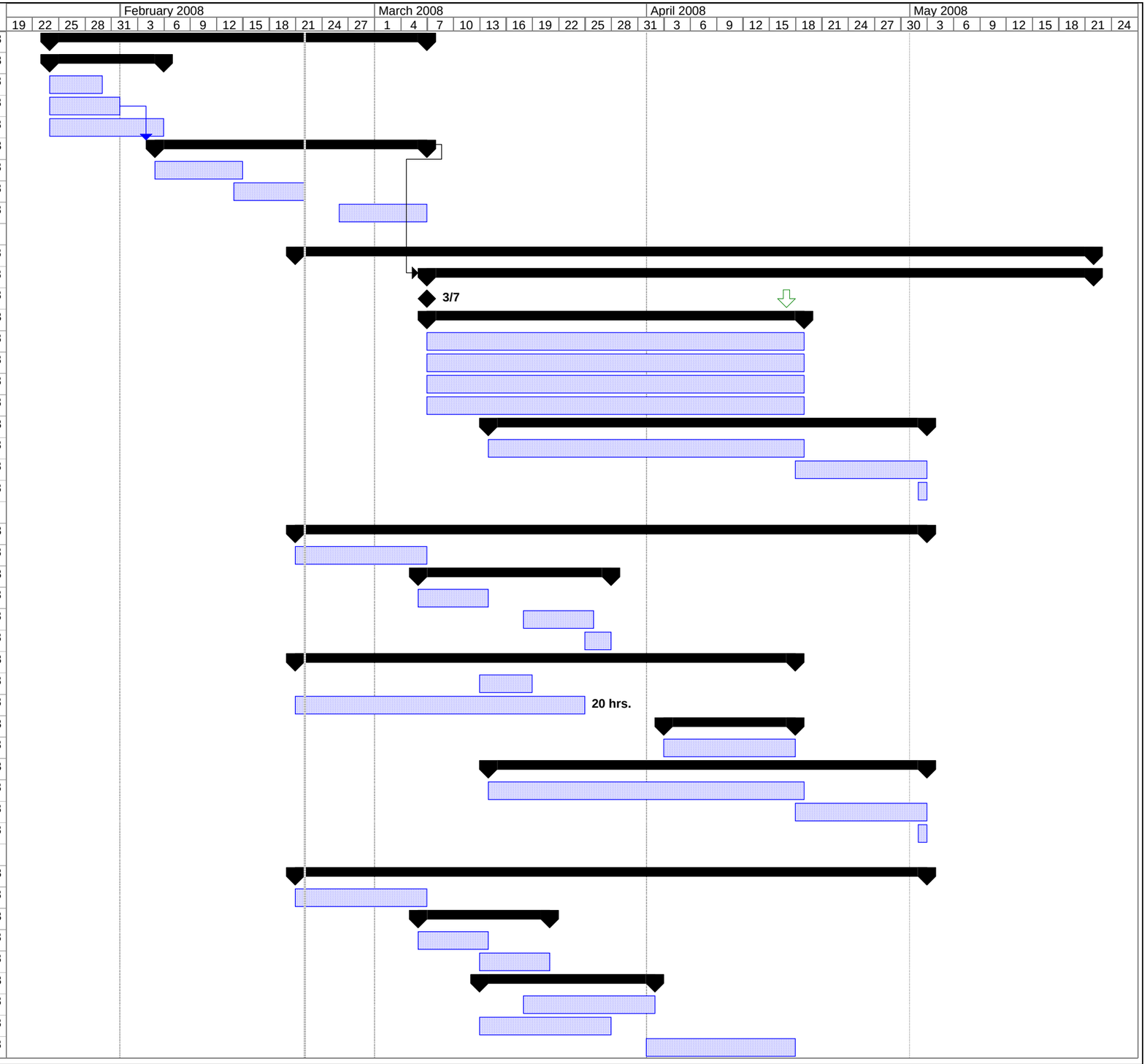
A. Expected activities include proposals for living machines and the social areas that can be contained within them or around them. Included in the activities is the creation of a catalog of ideas that can be drawn from in a modular fashion to suit the desired look and resources for a specific site.
B. Expected results include several different ideas on how to make the living machines more of a social attraction and to inform people of how they work. Also included in the results are drawings and sketches.
C. Potential ideas for the living machines include, coffee shops, bike rental locations and information centers telling people how to better use/conserve water.
D. Outputs are to gain knowledge of living machines and how people interact with them, sharing knowledge and making strides toward an actual living machine that is to be placed on or near 31st Street.
E. Deliverables include drawings, sketches, and information on the various aspects of the living machine as it relates to function.
F. Our expected results will not only address the problem of returning water to the lake, but will also help to make the city more “green” in terms of parks as well as cutting down on wastewater. The project will fulfill the needs of IIT and the City of Chicago to help provide more parks and social gathering places while benefiting Lake Michigan.
G. The results of IPRO 322 will lead to further designs and ideas as this IPRO gets continued and will serve as a springboard and an idea bank that future IPRO’s can draw from and expand upon.

5.0. Budget

A. Unforeseen expenses:	$100
B. Printing expenses:	$100
C. Presentation supplies (mounting and modeling):	$200
Total	**$400**

6.0. Milestones, Task Schedule

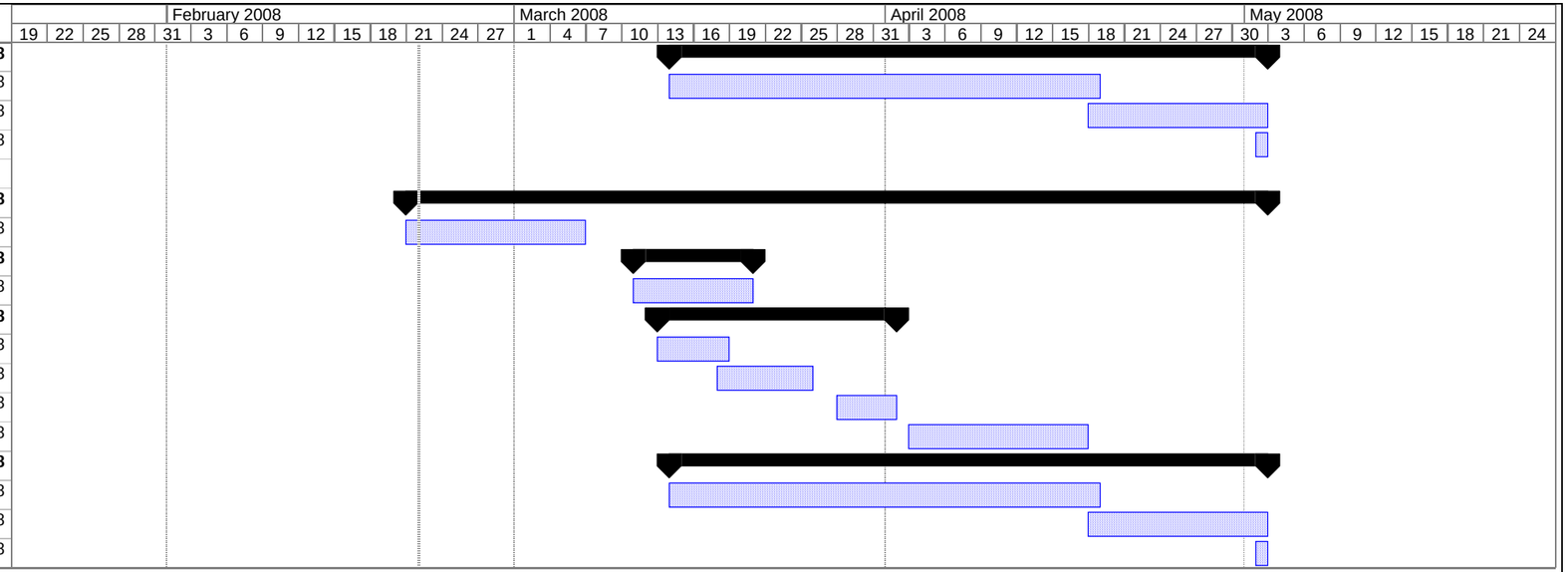
ID	Task Name	Duration	Start	Finish
1	**Ipro Start Up and Intial Phase**	**31 days**	**Thu 1/24/08**	**Thu 3/6/08**
2	**Backround**	**9 days**	**Thu 1/24/08**	**Tue 2/5/08**
3	reading 1	4 days	Thu 1/24/08	Tue 1/29/08
4	reading 2	6 days	Thu 1/24/08	Thu 1/31/08
5	reading 3	9 days	Thu 1/24/08	Tue 2/5/08
6	**Research**	**23 days**	**Tue 2/5/08**	**Thu 3/6/08**
7	Case Study 1	8 days	Tue 2/5/08	Thu 2/14/08
8	Case Study 2	6 days	Thu 2/14/08	Thu 2/21/08
9	Case Study 3	8 days	Tue 2/26/08	Thu 3/6/08
10				
11	**Subteam Semester Schedules**	**65 days**	**Thu 2/21/08**	**Wed 5/21/08**
12	**Eco Blvd Social**	**54 days**	**Fri 3/7/08**	**Wed 5/21/08**
13	Research	54 days	Fri 3/7/08	Wed 5/21/08
14	**Creation of Catalog**	**31 days**	**Fri 3/7/08**	**Fri 4/18/08**
15	Transportation	31 days	Fri 3/7/08	Fri 4/18/08
16	Facilities/Services	31 days	Fri 3/7/08	Fri 4/18/08
17	Community Outreach	31 days	Fri 3/7/08	Fri 4/18/08
18	Recreational Spaces	31 days	Fri 3/7/08	Fri 4/18/08
19	**Create Presentation and Website**	**36 days**	**Fri 3/14/08**	**Fri 5/2/08**
20	Layout	26 days	Fri 3/14/08	Fri 4/18/08
21	Assembly	11 days	Fri 4/18/08	Fri 5/2/08
22	Present	1 day	Fri 5/2/08	Fri 5/2/08
23				
24	**Eco Blvd Eco**	**52 days**	**Thu 2/21/08**	**Fri 5/2/08**
25	Preliminary Planning	11 days	Thu 2/21/08	Thu 3/6/08
26	**Research**	**16 days**	**Thu 3/6/08**	**Thu 3/27/08**
27	Biological/Ecological Research/Site Visits	6 days	Thu 3/6/08	Thu 3/13/08
28	Building: possible materials, greenhouse/r	6 days	Tue 3/18/08	Tue 3/25/08
29	Financial: Cost of operation, construction,	3 days	Tue 3/25/08	Thu 3/27/08
30	**Brainstorming**	**41 days**	**Thu 2/21/08**	**Thu 4/17/08**
31	Ecological Implications	4 days	Thu 3/13/08	Tue 3/18/08
32	Social Implications	23 days	Thu 2/21/08	Mon 3/24/08
33	**BMP Implementation**	**11 days**	**Thu 4/3/08**	**Thu 4/17/08**
34	Design	11 days	Thu 4/3/08	Thu 4/17/08
35	**Create Presentation and Website**	**36 days**	**Fri 3/14/08**	**Fri 5/2/08**
36	Layout	26 days	Fri 3/14/08	Fri 4/18/08
37	Assembly	11 days	Fri 4/18/08	Fri 5/2/08
38	Present	1 day	Fri 5/2/08	Fri 5/2/08
39				
40	**Living Machine Social**	**52 days**	**Thu 2/21/08**	**Fri 5/2/08**
41	Preliminary Planning	11 days	Thu 2/21/08	Thu 3/6/08
42	**Research**	**11 days**	**Thu 3/6/08**	**Thu 3/20/08**
43	Precedents for social pavilions	6 days	Thu 3/6/08	Thu 3/13/08
44	Chicago Zoning	6 days	Thu 3/13/08	Thu 3/20/08
45	**Brainstorming**	**14 days**	**Thu 3/13/08**	**Tue 4/1/08**
46	Diagramming Social interaction	11 days	Tue 3/18/08	Tue 4/1/08
47	Loctions of Living machines	11 days	Thu 3/13/08	Thu 3/27/08
48	Design	13 days	Tue 4/1/08	Thu 4/17/08



Project: Project1
Date: Fri 2/22/08

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

ID	Task Name	Duration	Start	Finish
49	**Create Presentation and Website**	**36 days**	**Fri 3/14/08**	**Fri 5/2/08**
50	Layout	26 days	Fri 3/14/08	Fri 4/18/08
51	Assembly	11 days	Fri 4/18/08	Fri 5/2/08
52	Present	1 day	Fri 5/2/08	Fri 5/2/08
53				
54	**Living Machine Eco**	**52 days**	**Thu 2/21/08**	**Fri 5/2/08**
55	Preliminary Planning	11 days	Thu 2/21/08	Thu 3/6/08
56	**Research**	**8 days**	**Tue 3/11/08**	**Thu 3/20/08**
57	Living Machine capacity	8 days	Tue 3/11/08	Thu 3/20/08
58	**Brainstorming**	**14 days**	**Thu 3/13/08**	**Tue 4/1/08**
59	Living Machine Location	4 days	Thu 3/13/08	Tue 3/18/08
60	Layout of Living Machine	6 days	Tue 3/18/08	Tue 3/25/08
61	Biological/Ecological functions	3 days	Fri 3/28/08	Tue 4/1/08
62	Design	11 days	Thu 4/3/08	Thu 4/17/08
63	**Create Presentation and Website**	**36 days**	**Fri 3/14/08**	**Fri 5/2/08**
64	Layout	26 days	Fri 3/14/08	Fri 4/18/08
65	Assembly	11 days	Fri 4/18/08	Fri 5/2/08
66	Present	1 day	Fri 5/2/08	Fri 5/2/08



Project: Project1
Date: Fri 2/22/08

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

7.0. Individual Team Member Assignments

A. Team Members

Last Name	Name	Major/Minor	Skills and Strengths	Experience and academic interests	Team	Assignments done for IPRO so far
De Vita	Niels	Architecture	CAD drafting Design skills Photoshop skills Model Building Hardworking	Teacher Assistant Architectural Guide to the IIT Campus Interest in building design innovative technologies and structures	Social aspect of Eco-Boulevard	Helped in the editing of the project plan Independent Research Provided suggestions for possible social components of Blvd.
Kreitzer	Michael	Computer Science	Software Design Java, C, C++, Visual Basic Programming Software Engineering Leadership	Teaching Assistant Interest in: · Real Estate Entrepreneurship · Modelling and Simulation	Social aspect of Eco-Boulevard	Project Plan editing, Readings, Research
Oh	Hyunjoo	Architecture	CAD drafting Design skills Adobe CS 3 skills Sketchup 3D skills Model Building Hardworking	Habitat for Humanity Architectural Practice as an Intern Interest in building design sustainable technologies	Social aspect of Eco-Boulevard	Editing project plan Research Reading Provided suggestions for possible social components of Blvd.
Vassi	Anna	Chemical Engineering	NMR, FTIR, GC, and IC analysis Chemical processes flowcharts HYSYS software Research	Researcher in a chem. lab Interest in: Process Control Engineering Environmental Engineering	Social aspect of Eco-Boulevard	Background Reading Research Editing project plan Came up with ideas to contribute to the social aspect of the eco-blvd.
Boder	Matthew	Architecture	Autocad 3ds max Photoshop/Illustrator Design Composition	Philosophy,Film, Literature,Architecture, Music,Sustainability	Social aspect of Living Machine	Research Helped develop project plan
Johnson	Drew	Architecture Minor CAE Minor CAD	CAD drafting Design skills Adobe CS 3 skills Maya, Rhino, 3ds max Leadership Hardworking	Lead Ipro 335 Architecture, Philosophy, Graphic Design, Travel	Social aspect of Living Machine	Background Reading Research Lead project plan Came up with ideas to
Fong	Patrick	Architecture	CAD drafting & 3D Modeling	Architecture, Industrial Design	Social aspect of Living Machine	Research

			Design skills Adobe Illustrator/Photoshop 3ds max + Vray	Graphic Design Intern Architect @ SCB		Edit Project Plan
Ramey	Ronald	Architectural Engineering	Structural design, Materials, General Design		Social aspect of Living Machine	Research Edit Project Plan
Stopic	Milena	Architecture	Design Visualisaton	Intern Architect Parametric Design	Ecological aspect of Eco boulevard	Readings/Presentations Case studies BMP Research Strategy
De Marco	Juan	Architecture	Design Visualisaton	Intern Architect Parametric Design	Ecological aspect of Eco boulevard	Readings/Presentations Case studies BMP Research Strategy
Irish	Sean	Architecture	CAD drafting & 3D Modeling Design skills Adobe Illustrator/Photoshop 3ds max + Vray	Interest in building design innovative technologies and structures	Ecological aspect of Eco boulevard	Readings/Presentations Case studies BMP Research Strategy
Urdiales	Miguel	Civil Engineering	CAD drafting & 3D Modeling Pro-Engineer	Drafter/Designer work experience, interested in the design and analysis of structures.	Ecological aspect of Living Machine	Readings/Presentations Case studies project planning
Blackketter	Joshua	Mat. Eng.	Materials Selection, Copy Editing		Ecological aspect of Living Machine	Readings/Presentations Case studies project planning
Konwar	Riju	BME,CHE, MMAE			Ecological aspect of Living Machine	Readings/Presentations Case studies
Kuzmicki	Kamil				Ecological aspect of Living Machine	

B. Team Leaders

- Drew Johnson- Living Machine
- Michael Kreitzer- Eco Boulevard

C. Sub- Teams

1. Eco Boulevard Social Team

- Niels De Vita
- Michael Kreitzer
- Hyunjoo Oh
- Anna Vassi

2. Eco Boulevard Eco Team
   - Sean Irish
   - Juan De Marco
   - Milena Stopic
3. Living Machine Social Team
   - Drew Johnson
   - Patrick Fong
   - Mathew Boder
   - Ronald Ramey
4. Living Machine Eco Team
   - Joshua Blackketter
   - Miguel Urdiales
   - Riju Konwar
   - Kamil Kuzmicki

D. Sub- Team Leaders

- Michael Kreitzer- Eco Boulevard Social Team
- Juan De Marco - Eco Boulevard Eco Team
- Drew Johnson- Living Machine Social Team
- Riju Konwar- Living Machine Eco Team

E. Sub Team Responsibilities

1. Eco Boulevard Social Team
   - To create a catalog of sustainable methodologies to be implemented in an urban planning strategy throughout the city of Chicago.
   - Provide suggestions that would enhance the impact of the Eco-Boulevards in the community.
   - To create publicity and awareness about the project
2. Eco Boulevard Eco Team
   - To propose, through case study and research different, BMPs within the scope of the IPRO
   - Categorize research into a catalog to serve as a resource for future strategies to be employed at the urban level, in collaboration with City officials.
   - To initiate a collaboration between the city of Chicago and the project team regarding possible implementation strategies
3. Living Machine Social Team
   - Research possible social uses of the living machine pavilions
   - Establish a catalog or “Growing Water Toolkit” of different possibilities for living machine pavilions.
   - Prototype what several of these possible catalog solutions could be.
4. Living Machine Eco Team
   - Technical specifications of the Living Machine

- Research waste processing needs for the Living Machine
- Establish guidelines for placing living machines in social spaces

F. Sub- Team Individual Responsibilities

1. Eco Boulevard Social Team
   - Niels De Vita – Recreational Spaces
   - Michael Kreitzer – Services and Facilities
   - Hyunjoo Oh – Transportation
   - Anna Vassi – Community Outreach
2. Eco Boulevard Eco Team
   - Sean Irish – BMP case studies, typology classification, catalog
   - Juan De Marco - BMP case studies, prototypes catalog, presentation
   - Milena Stopic - BMP case studies, prototypes catalog, presentation
3. Living Machine Social Team
   - Drew Johnson – Research, diagramming, and prototyping
   - Patrick Fong – Research, presentation, and design
   - Mathew Boder – Research , presentation, and design
   - Ronald Ramey – Research, and Prototyping
4. Living Machine Eco Team
   - Joshua Blackketter - Research, design, ecological/biological components.
   - Miguel Urdiales - Research, design, ecological/biological components
   - Riju Konwar - Research, design, wastewater volume, processing requirements
   - Kamil Kuzmicki- Research, design, wastewater volume, processing requirements

8.0. Designation of Roles

A. Assign Meeting Roles
   - **Minute Taker:** Milena Stopic
   - **Agenda Maker:** Michael Kreitzer
   - **Time Keeper:** Riju Konwar

B. Assign Status Roles
   - **Weekly Timesheet Collector/ Summarizer:** none. As a group, we decided that we will all keep track of our work by uploading outlines from the individual phases. We do this within our own sub groups and then inform the group to keep moving toward the same goal.
   - **Master Schedule Maker:** Drew Johnson
   - **IGroups:** Drew Johnson