

# Instructor Summary Sheet

This Instructor Summary Sheet contains all the links and resources needed to facilitate the Environmental Justice (EJ) Greenway Case Study. For more information, visit the EnviroAtlas Educational Materials webpage at <https://www.epa.gov/enviroatlas/enviroatlas-educational-materials>

**Suggested Grades:** 9 and above

**Suggested Topics:** Geospatial information systems (GIS), geospatial science, environmental justice, decision-making, ecosystems, ecosystem services, city and regional planning, debate, environmental science

**Key Concept:** EJ decision making can be driven from easily available environmental and geospatial data.

## **Time Considerations**

**Prep Time:** None - however long you want to familiarize yourself with the materials

**Videos 1-3:** Each video ~10 minutes

**Background Reading + Comprehension Questions:**

30 minutes - 1 hour

**Understanding Maps worksheet:**

~15 - 30 minutes

**Public Hearing:** ~15 - 60 minutes

**Materials:** Computer(s), internet, handouts (provided), maps (provided)

**NGSS Standards:** HS-LS2-6, HS-LS2-7, HS-LS4-5, HS-ESS3-1, HS-ESS3-3, HS-ETS1-3. NGSS Science and Engineering Practices: 1, 2, 4, 5, 6, 7, 8.

## **Learning Objectives**

**By the end of this lesson module, students will be able to:**

- Explain and describe map elements and features, including concepts such as census block groups and graduated symbols.
- Define, describe, and explain **EJ**, including both historical and present-day references.
- Incorporate an environmental justice perspective into **decision making**.
- Describe characteristics of a greenway that can be beneficial for the environment, the economy, and equity.
- Use maps and data to explore concepts of environmental justice and ecosystem services using the EPA's **EJSCREEN** and **EnviroAtlas** online mapping tools.
- Explain an issue or problem from multiple perspectives.
- Integrate data from multiple sources to generate an argument.
- Assess and refine a technological solution that reduces the impacts of human activities on natural systems.
- Describe the opportunities and challenges associated with multi-sectoral decision making.
- Compare scenarios that integrate access to recreational opportunities, conservation of open space, and community development.
- Generate, justify, and defend recommendations based on the available data.
- Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and **biodiversity**.

## Resources you will need for this lesson:

- **Background Reading:**
  - [https://www.epa.gov/system/files/documents/2022-01/ejgreenwaycasestudy\\_background\\_0.pdf](https://www.epa.gov/system/files/documents/2022-01/ejgreenwaycasestudy_background_0.pdf)
- **Student Map Set:**
  - [https://www.epa.gov/system/files/documents/2022-02/ejgreenwaycasestudy\\_student\\_map\\_set.pdf](https://www.epa.gov/system/files/documents/2022-02/ejgreenwaycasestudy_student_map_set.pdf)
- **Understanding Maps Worksheet:**
  - [https://www.epa.gov/system/files/documents/2022-02/ejgreenwaycasestudy\\_und\\_maps\\_ws.pdf](https://www.epa.gov/system/files/documents/2022-02/ejgreenwaycasestudy_und_maps_ws.pdf)
- **Stakeholder Slips:**
  - [https://www.epa.gov/system/files/documents/2022-02/ejgreenwaycasestudy\\_stakeholder\\_roles.pdf](https://www.epa.gov/system/files/documents/2022-02/ejgreenwaycasestudy_stakeholder_roles.pdf)
- **Student Glossary:**
  - [https://www.epa.gov/system/files/documents/2022-01/ejgreenwaycasestudy\\_intro\\_addtl\\_0.pdf](https://www.epa.gov/system/files/documents/2022-01/ejgreenwaycasestudy_intro_addtl_0.pdf)
- **EnviroAtlas Interactive Mapping Application:**  
<https://enviroatlas.epa.gov/enviroatlas/interactivemap/?featuredcollection=4cfb477805224007ad5e7e4b79bd58eb>

## Part 1: Introduction to the Case Study

### **Activity**

**Students Watch Video 1** (either collectively in class, or individually for homework) or Instructor introduces case study scenario.

- Video 1 link: <https://www.youtube.com/watch?v=ACSqyLIHemQ>
- If in a classroom setting: When prompted, pause the video to let the students discuss decision-making contexts and share their experiences.

### **Additional Reading for *Concepts in Action: Houston’s Bayou Greenways 2020***

For extension options on a real-world environmental justice example covered in the reading, students can explore the following articles.

- [Redlining and segregation in Houston](#)
- [Houston’s Bid for Park Equity](#)
- [Why Race Matters in Planning Public Parks](#)
- [The Rice University Survey](#)
- [Bayou Greenways 2020 project](#)
- [Beyond the Bayous](#)

### **Assignment**

**Students read the Background Information document for information on the case study**

- Make sure students have the Student Glossary to reference as needed.
- As part of the reading, the students should complete the **Reading Comprehension questions**. The Reading Comprehension questions are in the Student Instruction Sheet. Decide if you want students to turn these answers in to you or discuss them synchronously/asynchronously.

## Part 2: Understanding Maps & Data

### Activity

**Students Watch [Video 2](#)** (either collectively in class, or individually for homework) or Instructor introduces mapping concepts and Student Map Set.

- Video 2 link: <https://youtu.be/kInWaCMof-U>
- If in a classroom setting: When prompted, pause the video to let the students discuss some of their answers to the Reading Comprehension questions.

### Assignment

**Students complete the [Understanding Maps Worksheet](#)**

- Decide if you want students to turn the worksheet in for a grade or credit.

Note: Students can use the [PDF Student Map Set](#) OR the [EnviroAtlas Interactive Mapping Application](#) to explore the maps. If using the mapping application, the following guidance materials may be helpful (also provided in student handout):

- **Quick Use Guide:** [https://www.epa.gov/sites/default/files/2020-09/documents/enviroatlas\\_quick\\_start\\_infographic.pdf](https://www.epa.gov/sites/default/files/2020-09/documents/enviroatlas_quick_start_infographic.pdf)
- **Tutorials:** <https://www.epa.gov/enviroatlas/tutorials>

## Part 3: Preparing for the Public Hearing

### Activity A

**Students Watch [Video 3](#)** (either collectively in class, or individually for homework) or Instructor introduces stakeholders and decision making tasks.

- Video 3 link: <https://youtu.be/oK9DffR3dOc>
- If in a classroom setting: When prompted, pause the video to let the students discuss why stakeholder involvement may be important.

### Activity B

**Assign Stakeholder roles to students** from the [Stakeholder Roles handout](#)

- Decide if you’re going to have students meet in their groups to make a **Stakeholder Group Decision** – schedule that if necessary (i.e., if there are more students than stakeholder roles, you might have some students in the same role – they should get together and come to a consensus).

## Part 4: The Public Hearing

### Activity A

In class, have individual students or collective stakeholder groups (depending on your approach) **present their pitch or argument** for the chosen route based on their assigned stakeholder role.

### Activity B

As students present, **keep track of the recommended routes visually for the class**. This can be done using an online co-working tool or whiteboard such as Google Jamboard, where the student or instructor can draw each presented route on the map (great for virtual learning), with a map projected on a whiteboard (in person), or showing tallies for the routes that are proposed.

Once all groups/students have presented and the class can see all the proposed routes, the class should attempt to agree on **one** route to put forth for the pilot section.

**Questions for class discussion:**

- As a large group with different stakeholder teams, can you collectively decide on the most favorable route? If no, why not?
- Do you agree with the original pilot section route the Board of County Commissioners chose? If not, which route did you collectively decide was preferable?
- What were the main factors in your decision?
- What information would have been useful to have available to help make this final decision?
- How did environmental justice considerations influence your decision? Was the decision-making process itself equitable and just?
- What did this exercise teach you about decision-making contexts?
- Can you connect this activity to situations in your own community? If so, how?

# Additional Reading Resources

- Campbell, H.S. Jr. & Munroe, D.K. 2007. Greenways and greenbacks: The impact of the Catawba Regional Trail on property values in Charlotte, North Carolina. *Southeastern Geographer*, 47(1):118-137. DOI: 10.1353/sgo.2007.0002.
- Coutts, C. 2010. Green Infrastructure and Public Health in the Florida Communities Trust Public Land Acquisition Program. *Planning, Practice & Research*, 25(4):439-459.
- Dallat, M. A. T., Soerjomataram, I., Hunter, R. F., Tully, M. A., Cairns, K. J., & Kee, F. 2013. Urban greenways have the potential to increase physical activity levels cost-effectively. *The European Journal of Public Health*. DOI: 10.1093/eurpub/ckt035
- Flink, C. A. 1993. The great American greenway movement. *Canadian Water Resources Journal / Revue Canadienne des ressources hydriques*. 18(4):485-492. DOI: 10.4296/cwrj1804485
- Harnik, P. & Welle, B. 2009. Measuring the economic value of a city park system. The Trust for Public Land.
- Mason, J., Moorman, C., Hess, G., & Sinclair, K. 2007. Designing suburban greenways to provide habitat for forest-breeding birds. *Landscape and Urban Planning*, 80(1-2):153-164. DOI: 10.1016/j.landurbplan.2006.07.002
- Jackson, L.E., Daniel, J., McCorkle, B., Sears, A., & Bush, K. F. 2013. Linking ecosystem services and human health: the Eco-Health Relationship Browser. *International Journal of Public Health*, 58(5):747-55. DOI: 10.1007/s00038-013-0482-1.
- Lee, C. & A. V. Moudon. 2004. Physical Activity and Environment Research in the Health Field: Implications for Urban and Transportation Planning Practice and Research. *Journal of Planning Literature*, 19(2): 147-181.
- Lindsey, G., Man, J., Payton, S. and Dickson, K. 2004. Property values, recreation values, and urban greenways. *Journal of Park and Recreation Administration*, 22(3):69-90.
- Mohai, P., Pellow, D., & Roberts, J. T. 2009. Environmental Justice. *Annual Review of Environment and Resources*, 34(1):405-430. DOI: 10.1146/annurev-environ-082508-094348
- Nelson, R. K. Winling, L., Marciano, R. Connolly, N. et al. 2021. Mapping Inequality. American Panorama. <https://dsl.richmond.edu/panorama/redlining/#text=intro>
- Nicholls, S. and Crompton, J.L. 2005. The impact of greenways on property values: Evidence from Austin, Texas. *Journal of Leisure Research*, 37(3):321-341.
- Sandt, L., Pullen-Seufert, N., LaJeunesse, S., & Gelinne, D. 2012. Leveraging the health benefits of active transportation: Creating an actionable agenda for transportation professionals. *TR News*. 280:18.
- Searns, R. M. 1995. The evolution of greenways as an adaptive urban landscape form. *Landscape and Urban Planning*, 33(1-3):65-80. ISSN 0169-2046. DOI: 10.1016/0169-2046(94)02014-7.
- Willow, S. L., Dawkins, C. 2020. The power of participatory story mapping: Advancing equitable development in disadvantaged neighbourhoods. *Community Development Journal*, 55(3):473-495. DOI: 10.1093/cdj/bsy064