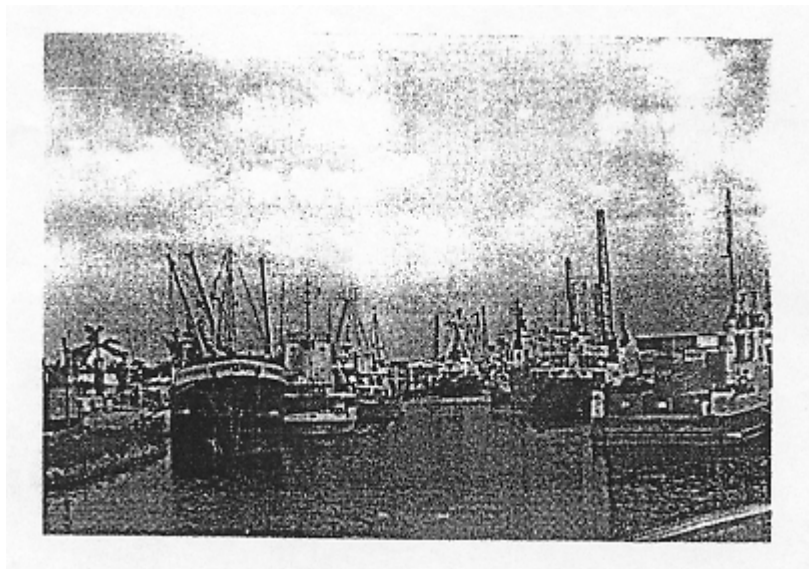


# **MAST ACADEMY OUTREACH**

## **MIDDLE SCHOOL PROGRAM**

### **Miami River Run**

#### **Post-site Package**



**MAST Academy**

**Maritime and Science Technology High School  
Miami-Dade County Public Schools**

**Miami, Florida**

# **MAST ACADEMY OUTREACH PROGRAM**

## **Miami River Run Post-Site Packet**

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## Teacher Instructions



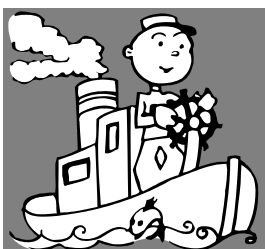
Make a copy of the pre-site package for each of your students. **Do not copy the answer key on page 18.**

Have students complete the post-site activities individually or in cooperative groups. Review the answers with your students using the answer key starting on page 17.

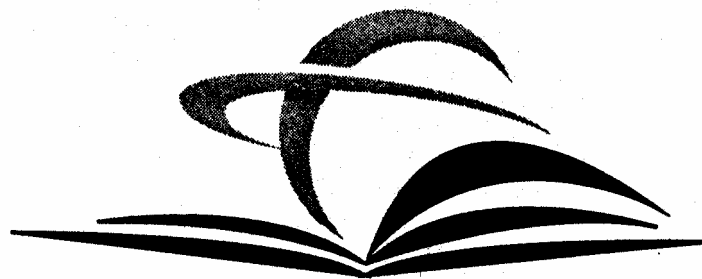


Critical thinking questions will be preceded by the icon to the left.

After scoring the pre, on, and post-site packets, compute the average score for each student. To request Certificates of Achievement, list the names of students who scored 80% or higher on the Certificate Request Form and send (Mail Code 7161) or fax (305-365-9409) to MAST Academy Outreach.



Student directions are preceded by the icon to the right.



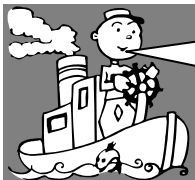
**Miami-Dade County Public Schools**

## The Miami River Commission: Working to Improve the Miami River

The Miami River Commission is divided into four working groups. These four groups, Dredging, Quality of Life, Public Safety and Economic Development, operate separately but work in concert as the issues each one deals with are interrelated.

The Dredging Group deals with all issues about the major project of dredging the River. The Quality of Life Group is dedicated to improving the river's environmental conditions and increasing public access to the River while maintaining its unique character as a working river. The Public Safety Group ensures the River area is safe and that regulations and laws are enforced. The Economic Development Group aims to protect and promote vital industries and businesses along the River while adhering to laws and environmental regulations.

Listed in the table below are issues and/or concerns about the Miami River. You learned about some of these issues in the pre-site activities and on your Miami River cruise.

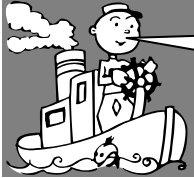


For each issue or concern, check the group that you think deals with that issue. You can check more than one column for each issue.

Issue/Concern	Dredging	Quality of Life	Public Safety	Economic Development
Restore River's original depth				
Create code enforcement inspection teams				
Reduce stormwater runoff				
Promote river businesses				
Deal with zoning issues				
Deal with law enforcement				
Move polluted sediment				
Sponsor Miami River Day				
Encourage river-area expansions of boating and mega-yacht business				
Oversee regulatory agencies				
Oversee marine Police Patrols				
Encourage projects such as new restaurants, nightclubs, etc.				
Develop Greenway/riverwalk				
Increase trade with Caribbean				
Acquire land fills for sediment				
Encourage best use of land and water				
Reduce derelict vessels on the River				
Comply with federal pollution regulations				

## Stormwater Runoff: How You Can Help

You can help solve the stormwater runoff problem. Below are some helpful ideas on how you can get started in your community.



For each helpful idea described, there is a blank in one or more of the sentences. Choose the appropriate word from the list below to best complete each sentence.

environment  
rain  
pesticides  
recycle

sediment  
toxic  
solid wastes  
stormwater runoff

1. Help plant native vegetation at home, school, and in your community where dirt and sand are exposed. This will help prevent particles of dirt or sand from entering stormwater runoff and becoming \_\_\_\_\_ that could eventually settle at the bottom of the Miami River.



2. Encourage family and friends to weed gardens by pulling weeds by hand. This will decrease the use of \_\_\_\_\_ to kill the weeds which will then decrease pollution of stormwater runoff.



3. Join with family and neighbors to compost or mulch yard waste, such as grass clippings. This will prevent yard waste from being washed away with \_\_\_\_\_.

4. Wash cars on lawns and use detergents or soaps that are phosphate free and biodegradable and will not harm the \_\_\_\_\_.



5. Always dispose of cans, bottles, etc. properly and \_\_\_\_\_ reduce, \_\_\_\_\_ reuse, \_\_\_\_\_ or \_\_\_\_\_ when possible.

6. When outside, please do not litter. Keep your trash until you find a garbage can. Keep a garbage bag or pail in the car for disposal of \_\_\_\_\_.

7. Remember, only \_\_\_\_\_ belongs down a storm drain. Never pour used motor oil, paint, or other \_\_\_\_\_ materials on the ground or down storm drains. It is illegal to dump anything into Miami-Dade's waterways or down storm drains unless authorized by the Department of Environmental Resources (DERM). Report violations to DERM at (305)-372-6955 or Crime Stoppers at (305)-471-TIPS.



8. What else can you do to help the stormwater runoff problem?

\_\_\_\_\_

\_\_\_\_\_

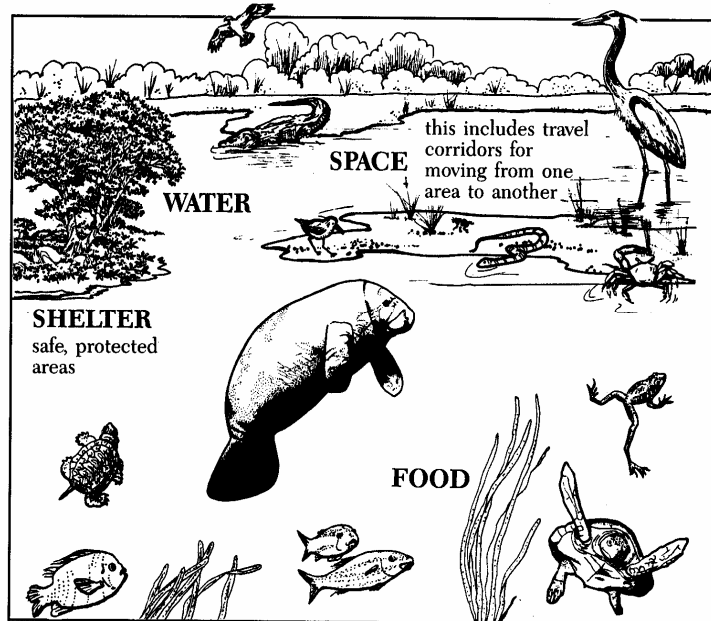
\_\_\_\_\_



## Save The Manatee

An important concept to understand is the progression of events that may occur as a result of an individual's action. In the case of manatees, there are several causes of manatee deaths that could be reduced or alleviated if people would consider the consequences of their actions before the actions are actually taken. Let's take a look at some of the causes of manatee deaths.

The causes of manatee deaths are mostly related to human contact or encroachment. Loss of habitat is the most serious threat facing the manatee today. The population growth in South Florida with its added pollution, litter, and boat traffic, has degraded and/or eliminated manatee habitat. Many freshwater and marine seagrasses, the food of manatees, have been lost due to pollution, herbicides, and surface runoff. There are very few places left where the manatee is free from the danger, stress, and harassment posed by human activity. If these sources are not controlled, the manatee may become extinct.



**NEEDS OF MANATEES**

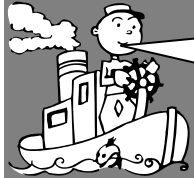
Because the manatee is slow-moving, needs to surface to breathe air, and prefers shallow water, it is vulnerable to boat hits. Sensing danger, the manatee will attempt to get away, but often there is not time to get out of the path of a speeding boat. Consequently, the manatee suffers injury and/or death due to the impact of the hull or the slashing impact of the propeller. Manatees may also be caught between a vessel and the water bottom or a vessel and docking structure.

Harassment by boaters, divers, swimmers, and people fishing can force manatees to leave preferred habitat such as warm water refuges. Harassment can also lead to separation of mother and calf. Harassment refers to any act that causes the manatee to change its behavior and can include; pursuing, chasing, poking, prodding, grabbing, riding, and feeding a manatee. This disrupts their behavior and conditions them to take food from people.

Manatees can be crushed in the closing of flood gates and canal locks that are used to control water levels throughout Florida. Deaths due to drowning have also occurred when the tremendous suction created by water rushing through opening gates pins animals under the water.

Remember, everything you do has a consequence. For every action, there is a reaction.

**ACTION** —————→ **REACTION**



Now consider the actions below. Think about what the result or results are for each action. Results can be positive or negative. Write the results in the space next to each action.

1. Following posted speed zone signs in manatee areas on the Miami River. \_\_\_\_\_  
\_\_\_\_\_
2. Touching manatees. \_\_\_\_\_  
\_\_\_\_\_
3. Driving your boat fast in a manatee area on the Miami River. \_\_\_\_\_  
\_\_\_\_\_
4. Passive observation of manatees. \_\_\_\_\_  
\_\_\_\_\_
5. Building a dock over a seagrass bed. \_\_\_\_\_  
\_\_\_\_\_
6. Feeding manatees in the Miami River. \_\_\_\_\_  
\_\_\_\_\_
7. Monitoring the opening and closing of flood control structures on the Miami River.  
\_\_\_\_\_
8. Canoeing down a river. \_\_\_\_\_  
\_\_\_\_\_

9. Picking up litter on the Miami River bank. \_\_\_\_\_  
\_\_\_\_\_

10. Throwing monofilament line or plastic into the Miami River. \_\_\_\_\_  
\_\_\_\_\_

### **Things You Can Do To Help Save Manatees**

1. Join the *Save The Manatee Club* (SMC).



Save The Manatee® Club

Go to the Website <http://www.savethemanatee.org>

2. Join SMC's E-Mail Action Network. This is the grassroots effort to inform local, state, and federal decision-makers about manatee protection issues and how you feel about them. Just e-mail SMC at [action@savethemanatee.org](mailto:action@savethemanatee.org) and specify "Email Action Alert Team" in the subject box.
3. If you are a SMC member, you can volunteer your services by contacting [volunteer@savethemanatee.org](mailto:volunteer@savethemanatee.org).



4. Write a letter to Florida's Governor and/or State senator and Representative telling them why you support strong manatee protection in Florida. You can write, type, phone, fax or e-mail. The Governor's phone number is 850-488-4441 and fax is 850-487-0801.  
To find out the name of your Florida state senator, you can call the Florida Senate President's Office at 850-487-1157. For your state representative, call 850-488-1157.

5. Ask your parents to buy a manatee license plate for your car. Funds raised go to the state of Florida for manatee conservation and environmental education.
6. Consider adopting a manatee. Go to the SMC website for information.

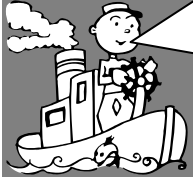
### **Other Study Suggestions:**

1. Make a poster that presents a message about manatees.
2. Write an essay or poem about manatees.
3. Do a library or internet search for current news items about manatees.
4. Imagine you are a manatee. Write a speech to Florida residents telling them what is important for them to know about manatees. Present it to your class.



## Miami River Careers Is This The Job For You?

Many people work along the Miami River in many different types of jobs. All of these occupations are needed to keep the River a truly working river.



Read the career information on pages 10 - 14. Choose a career that interests you and imagine you are going to do that job on the River.

Answer the following questions about the career. If a career that interests you is not on the list, use other resources such as the Internet or a Career Guide to find a career that might be found on the Miami River and answer the questions.

1. What career interests you the most? \_\_\_\_\_



2. What would be some of the daily tasks? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



3. What things should you be able to do well? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



4. What things should you like to do? \_\_\_\_\_  
\_\_\_\_\_

5. Is the work inside or outside, clean or dirty, heavy or light? \_\_\_\_\_  
\_\_\_\_\_



6. In what way is this job useful to society? \_\_\_\_\_  
\_\_\_\_\_



7. What subjects do you think you will need to study in school? \_\_\_\_\_  
\_\_\_\_\_

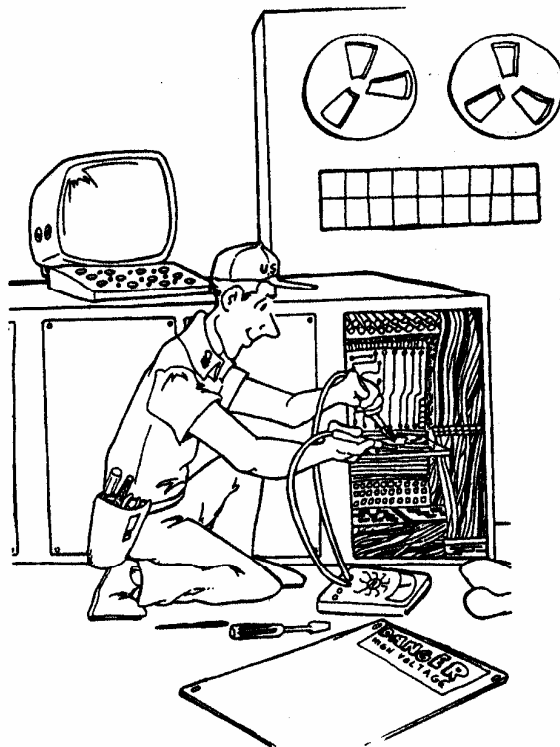
## Careers on the Miami River

**Bait Shop Owner/Employee:** provides bait for recreational fishermen. Must have expertise in recreational fishing, fishing techniques, knowledge of fish in season and familiarity with new trends and equipment. Business skills and leadership ability are necessary.

**Boat Builders:** constructs boats or parts of boats. The majority of this industry's employees are considered professional or highly skilled. Examples are:

**Boat carpenters:** cuts and shapes materials, such as wood, plastic, and fiberglass with hand and power tools. They join materials with nails, screws, or glues. They must be good working with their hands, have good eye-hand coordination and balance and have good math skills.

**Marine electricians:** responsible for assembling, installing, and maintaining electrical systems. They follow blueprints and advise as to the safety of electrical components. Their work is active and, sometimes, strenuous. They must be good working with their hands.

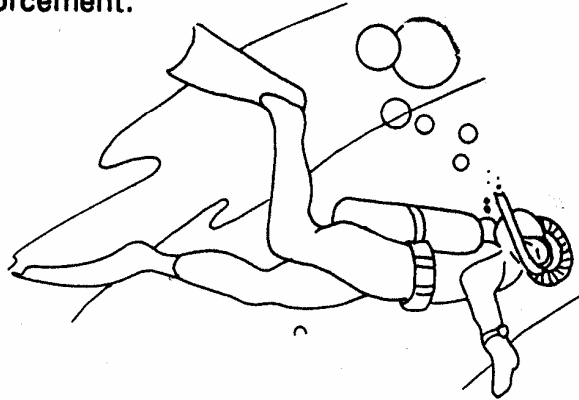


**Captain:** in command of an ocean going vessel; has complete responsibility for the ship's operation and the safety of the crew, passengers, and cargo. Captains coordinate water and food supplies, piloting, and towing services. They must have three years of work experience aboard a ship or be a graduate of an approved training program at a maritime academy. There are Coast Guard tests to be passed and there are age and health qualifications.



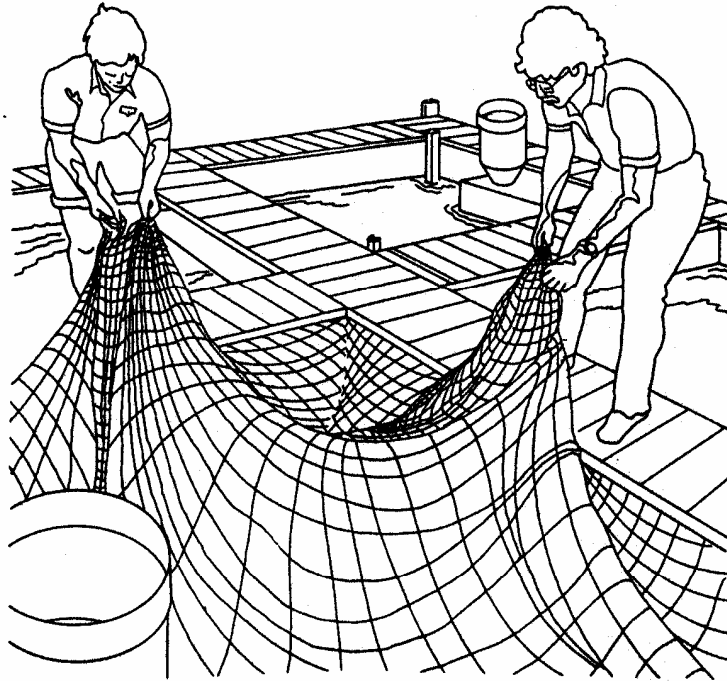
**Crew:** most are assigned to a specific department and job title. There are three main areas: deck (ordinary seaman, able seaman, helmsman, carpenter,) engine (oilers, electrician, pumpman,) and steward's departments (cook, baker, messman.)

**Divers:** work underwater using scuba gear or a diving suit with air lines to the surface to inspect, repair, remove and/or install equipment or structures. Specific jobs on the Miami River include: anchor and cable inspection, barge and pier construction and inspection, demolition, dredging, equipment cleaning, maintenance of flotation devices, salvage, marine environmental control, law enforcement.



**Deep-sea game fishing guide:** conducts parties of sport fishermen to off shore locations where their knowledge and expertise lead them to catch large game fish. They may provide bait, tackle, cleaning services, food and drink for their clients. Boat sizes vary from 20 to 120 feet. Much sea-going and fishing experience is needed since most are usually the captains of their own boats. They must have physical strength, alertness, and discipline.

**Fishermen:** usually work in boats, traveling far out onto open water in search of their catch. The occupation encompasses a wide area of specialized industries, from large scale high-tech ships, using electronic gear to flat bottom boats using fishing poles or nets. They are at the mercy of unstable conditions, such as weather and market value of seafood,



**Longshoremen (Stevedores):** load and unload ships and move cargo in and out of warehouses. Specific jobs include carloaders, crane operators, truck drivers, guards, gearmen, and ship cleaners,

**Marine engineer:** closely related to naval architect. They often work together but this field is broader. They may work on ships, oil rigs and dock construction. Shipyard related tasks include supervision of ship repairs, evaluation, design of boilers, ventilating and propulsion systems. Personal skills are much the same as a Naval Architect.

**Marina workers:** perform various duties around a marina or boatyard, such as sell gas, bait and fishing supplies, clean boats and do minor repairs

**Seafood processing and marketing:** receiving, cleaning, icing and packing fish and shellfish for sale in retail markets locally or out of state. Marketing specialists meet with newspaper food editors as well as television and radio program directors and distribute brochures about different seafood.

**Marine plumber:** installs and repairs pipe systems. Must know about copper, plastic, and galvanized steel. Physical stamina is required. They work in cramped and dirty places.

**Shipfitters:** lay out and make structural parts, such as plates, bulk heads and frames and brace them in position. They prepare molds of non-standard parts and cut, bend and shape sheet metal. They must have mechanical aptitude. The work is strenuous and active.

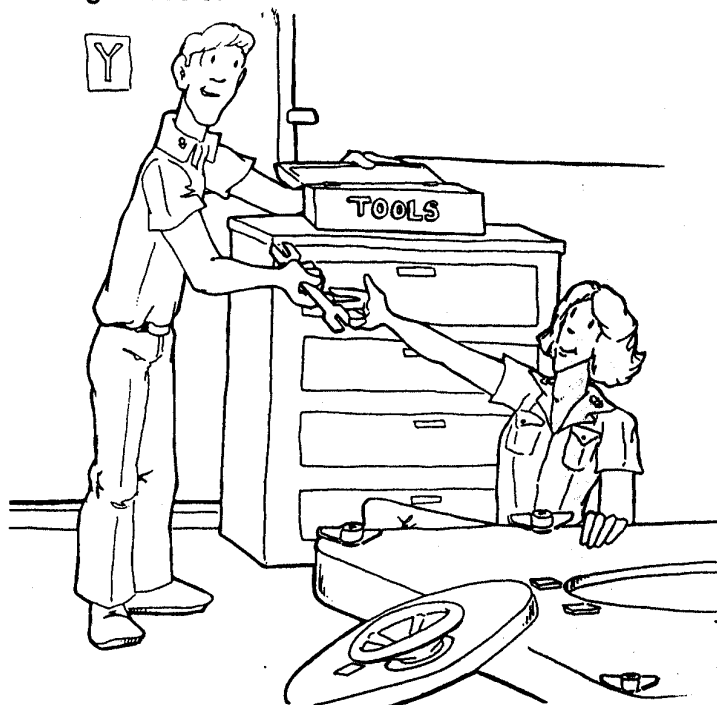
**Welders:** join steel plates, beams, and pipes. They must know the characteristics of metals, have good hand coordination, and be able to concentrate for long periods of time. The work is active and strenuous.



**Marine Architect:** prepares designs and working plans for recreational, commercial and merchant vessels; naval ships, docks, oil-drilling rigs, and marine facilities. They make cost estimates and supervise construction. Good communication and interpersonal skills are necessary. They must be able to meet deadlines, concentrate for long periods of time, lead others, make decisions, and exercise patience.



**Marine engine mechanic:** fix and service boat motors and marine diesel and auxiliary engines. Graduates of marine engineer technology programs often take jobs as charter boat captains, diesel mechanics, and master engineers for commercial fishing vessels.



**Ship's Pilot:** often referred to as just pilot or harbor pilot. They are highly skilled maritime officers who guide vessels safely through the hazards of specific harbors, coastal waters, and inland waterways. They also board ships approaching a port or shore to advise the captain on navigating the ship. Personal qualities, training and education are similar to those needed for a ship's captain.



<b>Post-Site Optional Activities</b>
--------------------------------------

1. Design a magazine ad, magazine billboard cover, or travel brochure cover for a "Trip Down the Miami River."
2. Write a friendly letter to a friend or relative briefly describing your field trip experience as you traveled down the Miami River.
3. Write a business letter, perhaps to a City of Miami Commissioner, the Governor of Florida, or a state Senator or Representative discussing your trip down the Miami River and any concerns you have about the River.
4. Write a Haiku or other form of poetry describing your experience and your feelings during your Miami River trip.
5. Pretend you are opening a new restaurant on the Miami River. Give your restaurant a name. Prepare a menu using food items available from the Miami River environment. Set a price value for each entrée and other items.
6. Prepare a classroom review game called "Who or What Am I." Each student is to write 3 clues about a historical person, a historical site, or a career appropriate to the Miami River on a piece of paper. The answer should be written on the back of the paper. Example:

**CLUES**

**ANSWER**

1. I am a famous Florida developer.
2. I built the first railroad to Miami.

3. I built the Royal Palm Hotel.

Henry Flagler

Place the "Who or What Am I" clues in a container.

Select one or two students to be the emcees. The emcee(s) will randomly take a paper out of the container and read the clues to the class.

Members of the class will guess the correct answer.

Perhaps the class can be divided into teams for competition.

7. Design a Miami River Trip bumper sticker.

8. If your school has a newspaper, write a newspaper article or review of your Miami River Trip.
9. Create an individual or small group T.V. commercial informing the public of the hazards of polluting the Miami River.
10. Create a magazine ad highlighting the hazards of polluting the Miami River.
11. Choose a topic of concern to you as a result of your Miami River trip and write a letter to the Editor of the local newspaper.  
Possible topics may include – derelict boats, manatee protection, water pollution, dredging, the Greenway, etc.
12. Create an anti-pollution mobile, using items either brought back from your trip or items commonly seen along or in the Miami River. (For example, soda cans, pieces of wood, etc.)
13. Using long brown rolled art paper (like mailing paper), construct the Miami River going down the middle of your classroom floor. Draw in the historical sites, points of interest, bridges, parks, and businesses you saw along the river.
14. The same project can also be a wall mural.

## **Acknowledgements**

We would like to thank the Board of County Commissioner, the Miami-Dade County Department of Resource Management (DERM), Miami-Dade Water and Sewer Department (MDWASD) and the Department of Solid Waste Management (DSWM) for funding the environmental Miami River Tours. We would also like to thank the Miami River Commission with the support of the City of Miami for their partnership in providing the Miami River tours.

## **Resources**

Manatee's - An Educator's Guide. Save the Manatee Club, 4<sup>th</sup> edition, 1994.

Manatee – Everglades National Park. <http://www.nps.gov/ever/eco/manatee.htm>. 8/31/01, 11:48 AM.

Miami River Commission's 2001 Miami River Economic Report, available at [www.miamirivercommission.org](http://www.miamirivercommission.org).

Miami River Commission's Stormwater Subcommittee's "Water Quality Improvement Report," available at [www.miamirivercommission.org](http://www.miamirivercommission.org).

"Miami-Dade County Manatee Protection Plan," available from the Department of Environmental Resource Management, (305) 372-6789.

Miami River Economic Report, One Voice for the River. Miami River Commission, 2001.

Miami River Economic Report, One Voice for the River. Spring 2000 Report. Miami River Commission.

Sevin, Jennifer. Make the Connection. Youth Environmental Programs, Inc. Coral Gables, Florida.

## Answer Key (98 Total Points)

### **The Miami River Commission: Working to Improve the River (36 Total Points – 2 points for each issue – Be sure at least one column is checked for each issue.)**

Issue/Concern	Dredging	Quality of Life	Public Safety	Economic Development
Restore River's original depth	X			
Create code enforcement inspection teams		X		
Reduce stormwater runoff		X		
Promote river businesses		X		X
Deal with zoning issues		X		X
Deal with law enforcement			X	
Move polluted sediment	X			
Sponsor Miami River Day		X		
Encourage river-area expansions of boating and mega-yacht business				X
Oversee regulatory agencies			X	
Oversee marine Police Patrols			X	
Encourage projects such as new restaurants, nightclubs, etc.		X		X
Develop Greenway/riverwalk		X		
Increase trade with Caribbean				X
Acquire land fills for sediment	X			
Encourage best use of land and water		X		X
Reduce derelict vessels on the River			X	
Comply with federal pollution regulations			X	

### **Stormwater Runoff: How You Can Help (21 Total points –2 points for each word and 5 points for number 8)**

1. sediment
2. pesticides
3. stormwater runoff
4. environment
5. recycle
6. solid wastes
7. rain, toxic
8. answers will vary

**Save The Manatee (20 Total Points – 2 points for each answer) (Below are suggested answers but students may have additional appropriate answers.)**

1. Following posted speed zones will help protect manatees. They will not get in the way of the boat.
2. Touching manatees may cause them to flee their habitat which could harm them.
3. A speeding boat could hit a manatee or the propeller could cut a manatee that is too slow to get out of the way.
4. Just observing manatees passively will not harm them.
5. Building a dock over seagrass could kill the seagrass due to lack of sunlight. This would reduce the food source of manatees which could cause them to starve.
6. Feeding manatees anywhere would make them accustomed to humans giving them food. Then they would stop looking for their own food. They would start to rely on humans for food.
7. Manatees would be safer if floodgates are monitored. They would not be crushed in the floodgates or drown in the suction.
8. As long as you watch out for manatees so as not to collide with one, canoeing can be safe for manatees. Or, if you do not watch out for manatees, a collision could harm one.
9. Picking up litter will reduce pollution of the river which will make the manatee's habitat cleaner.
10. Throwing plastic or monofilament line into the River may harm manatees. They could get wrapped up in the line or eat the plastic.

**Career Interest Activity (21 Total Points – 3 points for each question)**

Answers will vary.

**Grading of optional activities is up to your discretion.**

The School Board of Miami-Dade County, Florida, adheres to a policy of nondiscrimination in employment and educational programs/activities and strives affirmatively to provide equal opportunity for all as required by:

**Title VI of the Civil Rights Act of 1964** - prohibits discrimination on the basis of race, color, religion, or national origin.

**Title VII of the Civil Rights Act of 1964**, as amended - prohibits discrimination in employment on the basis of race, color, religion, gender, or national origin.

**Title IX of the Education Amendments of 1972** - prohibits discrimination on the basis of gender.

**Age Discrimination in Employment Act of 1967 (ADEA)**, as amended - prohibits discrimination on the basis of age with respect to individuals who are at least 40.

**The Equal Pay Act of 1963**, as amended - prohibits sex discrimination in payment of wages to women and men performing substantially equal work in the same establishment.

**Section 504 of the Rehabilitation Act of 1973** - prohibits discrimination against the disabled.

**Americans with Disabilities Act of 1990 (ADA)** - prohibits discrimination against individuals with disabilities in employment, public service, public accommodations, and telecommunications.

**The Family and Medical Leave Act of 1993 (FMLA)** - requires covered employers to provide up to 12 weeks of unpaid, job-protected leave to "eligible" employees for certain family and medical reasons.

**The Pregnancy Discrimination Act of 1978** - prohibits discrimination in employment on the basis of pregnancy, childbirth, or related medical conditions.

**Florida Educational Equity Act (FEEA)** - prohibits discrimination on the basis of race, gender, national origin, marital status, or handicap against a student or employee.

**Florida Civil Rights Act of 1992** - secures for all individuals within the state freedom from discrimination because of race, color, religion, sex, national origin, age, handicap, or marital status.

**School Board Rules 6Gx13- 4A-1.01, 6Gx13- 4A-1.32, and 6Gx13- 5D-1.10** - prohibit harassment and/or discrimination against a student or employee on the basis of gender, race, color, religion, ethnic or national origin, political beliefs, marital status, age, sexual orientation, social and family background, linguistic preference, pregnancy, or disability.

*Veterans are provided re-employment rights in accordance with P.L. 93-508 (Federal Law) and Section 295.07 (Florida Statutes), which stipulate categorical preferences for employment.*

REVISED 8/1/01