Jackson Bottom Wetlands Preserve Field Program

An investigation of ecosystem biodiversity

Funded By a Grant from Metro Greenspaces

INTRODUCTION:

Jackson Bottom staff have designed a field program for elementary and middle school students which provides learning opportunities in both conceptual and science process skills. These skills provide the background and experience for the student to investigate the natural world on their own. The activities/learning stations the students will participate in can be utilized as a pre-Outdoor School program or post-Outdoor School program. Each station offers the students learning opportunities and experience in ecosystem monitoring and field data collection. The skills and knowledge gained can be transferred to other ecosystem studies.

Schools which visit Jackson Bottom Wetlands Preserve prior to their Outdoor school program will have the field experience and exposure an ecological framework to increase their Outdoor School learning potential. Those schools which visit Jackson Bottom Wetlands after Outdoor School will be able to hone their skills and knowledge to investigate the environment of Jackson Bottom and/or their local natural area.

Biodiversity will be the key ecological concept to bridge the students investigation of the environment with the learning experience. Biodiversity will also provide the conceptual connections between each learning station. This will provide students the opportunity to collect information which helps measure a level of biodiversity for that area and thus the health of the ecosystem. The students will be able to utilize their understanding of biodiversity to measure, ask questions and involve themselves as informed citizens in their own community/natural resource systems.

Measurable Education Objectives: The learner will:

- •gain an understanding of the interrelationships of ecological systems using biodiversity as the key ecological concept.
- •understand the functions and values of wetlands.
- •be able to identify and discuss habitat resource issues.
- •be able to access information on natural resource locations and issues in their community.
- •understand the relationship wetlands have with water quality
- •participate in a citizen field data collection program.
- •learn how to become involved as citizens in local wetland/natural resource issues.

Program Details:

Students will participate in a 2 1/2 hour hands-on field program that provides learning activities focusing on wetland/natural resource concepts. The program will be implemented at Jackson Bottom Wetlands Preserve or Fernhill Wetlands but the same ecological concepts learned by the students will apply to any natural resource area in the region.

Jackson Bottom Wetlands Preserve
123 West Main St., Hillsboro, OR 97123
(503) 681-6206 FAX (503) 681-6232 Internet: pwillis@ese.ogi.edu

Jackson Bottom Wetlands Preserve

Field Survey Program
Stations, Information and Activities

Study 1: Water Quality

Objective: Students will be able to explain three ways pollutants enters the Tualatin River. Water turbidity, temperature and flow will be examined as indicators of water quality. USEPA Stream Walk has been adapted as a method to provide observational skills and knowledge. (Optional: Dissolved oxygen, phosphorous and pH Hach kits are available if requested.)

Concepts:

- Change, Cycle, Interaction, Scale

Process Skills:

- Observe, Measure, Interpret data, Control Variables

Questions:

- How does turbidity effect water quality?
- How do pollutants enter the water?
- What is the temperature of the Tualatin?
- Why is temperature a pollution concern?
- How does increased flow effect water quality?
- How is water quality measured?
- What other factors can be used to evaluate water quality in a stream or river?

Field Equipment Used:

- Modified Streamwalk field data sheet
- Watershed map of the Tualatin River Basin
- Water sample collection jars
- Props/displays of substances that create pollution problems
- Variety of water samples
- Secchi disk and bucket
- Sediment jar
- Thermometers
- Hand operated water pump and hose
- Water Quality kits (if needed)
- Waste disposal containers

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Station 3: Aquatic Life as Indicators of Water Quality

Objective: Students will collect and examine aquatic invertebrates from Kingfisher Marsh at Jackson Bottom. Students will classify and measure population diversity. (Optional: Measure pH of the water as an indicator of water quality.)

Concepts:

- System, Interaction, Order

Process Skills:

- Observe, Classify, Use Numbers, Interpret Data

Questions:

- What are we likely to find more of in the water, plants or animals?
- What are the habitat requirements of aquatic life?
- What is the importance of animals/plants like these in an ecosystem?
- What water quality standards do the animals found in the water sample must have to live?
- Why is proper pH levels important to animals and plants in water?
- What is the pH of the marsh? Is it in a good range for life?

Field Equipment Used:

- Microscopes
- Aerial photo
- Plankton nets
- Collecting nets
- Collecting containers
- Bubble slides
- Mounted samples
- Identifying keys and books
- D nets
- pH kits
- pH charts
- Field Journals

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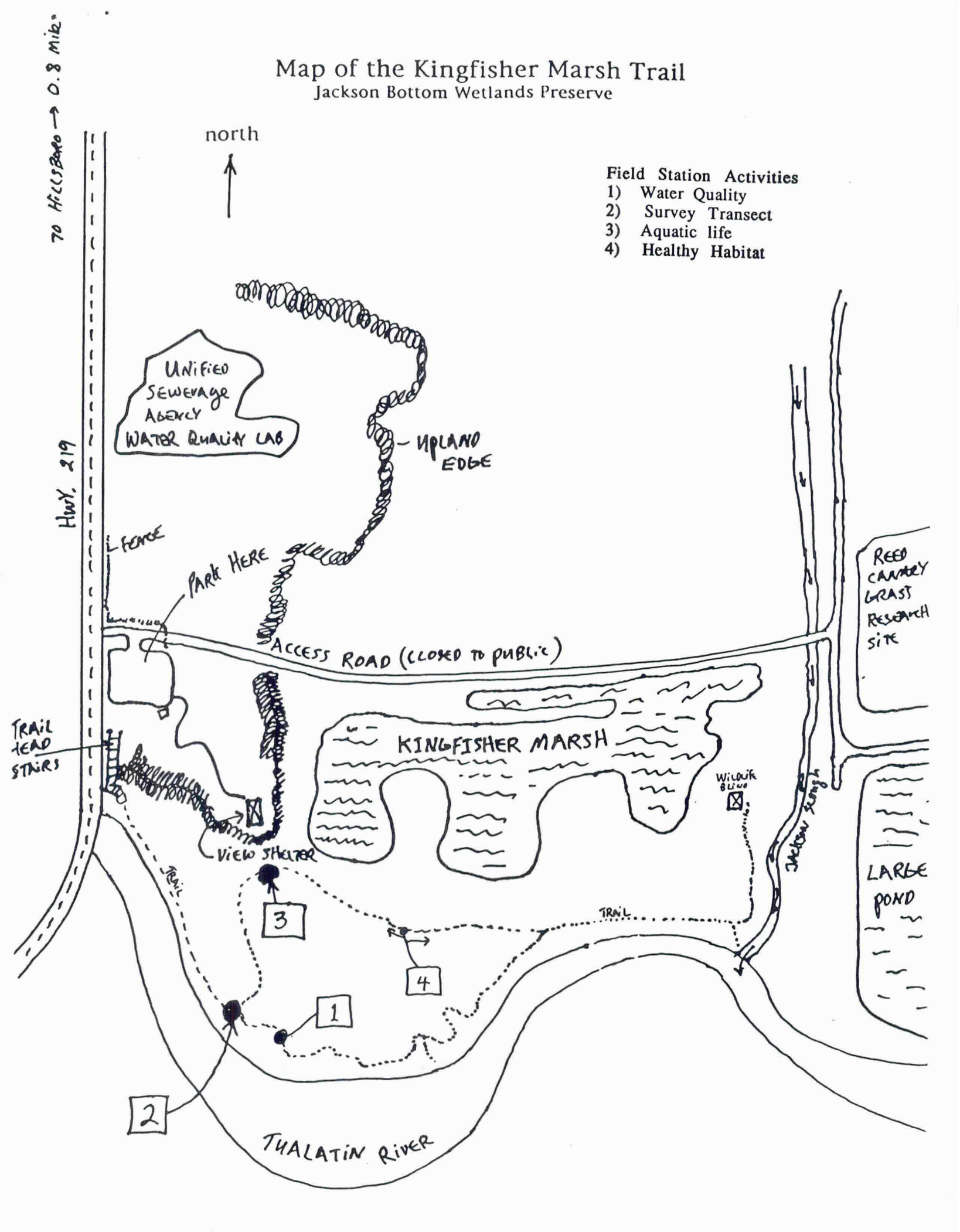
Map of the Kingfisher Marsh Trail

Jackson Bottom Wetlands Preserve



DIRECTIONS TO
JACKSON BOTTOM WETLANDS PRESERVE

- FROM ALOHA & BEAVERTON - TAKE TV HIGHWAY #8 WEST TO HILLSBORO, TRAVEL PAST SUNSET ESPLANADE AND THE LIBRARY. TURN WEST (LEFT) ON BASELINE AVE. GO SOUTH (LEFT) ON FIRST ST. WHICH BECOMES HIGHWAY 219. THE JB NORTH VIEW SITE WITH SMALL PARKING LOT IS JUST AT THE EDGE OF TOWN ADJACENT TO THE SMALL SEWERAGE PLANT. THE JB SOUTH VIEW SITE WITH LARGE PARKING LOT IS .8 OF A MILE FARTHER SOUTH.

- FROM PORTLAND - TAKE SUNSET HIGHWAY #26 WEST TO THE NORTH PLAINS EXIT. GO LEFT BACK OVER THE HIGHWAY TOWARD HILLSBORO ON GLENCOE RD. THIS BECOMES FIRST ST. NEARER TOWN. TRAVEL PAST GLENCOE HS, THE POST OFFICE AND THE RAILROAD TRACKS TO HIGHWAY 219. JUST AT THE EDGE OF TOWN, ADJACENT TO THE SEWERAGE PLANT IS THE JB NORTH VIEWING SITE WITH SMALL PARKING LOT. THE JB SOUTH VIEW SITE WITH LARGE PARKING LOT IS .8 OF A MILE FARTHER SOUTH.

- FROM FOREST GROVE - TAKE TV HIGHWAY #8 EAST TOWARD HILLSBORO FOR SEVERAL MILES. TURN SOUTH (RIGHT) ON FIRST ST. TOWARD HIGHWAY 219. AFTER THE RR TRACKS, LOOK FOR THE NORTH VIEW SITE NEXT TO THE SMALL SEWERAGE PLANT AT THE EDGE OF TOWN. THE SOUTH VIEW SITE IS .8 OF A MILE FARTHER SOUTH ON HIGHWAY 219.

BOTH VIEWING SITES ARE MARKED WITH JACKSON BOTTOM SIGNS.

IF YOU GET LOST AND NEED HELP, CALL THE JACKSON BOTTOM OFFICE AT 681-6206. THE MAILING ADDRESS IS 123 W. MAIN, HILLSBORO, OR. 97123.

JACKSON BOTTOM WETLANDS PRESERVE
ENVIRONMENTAL EDUCATION
FIELD PROGRAM

PROGRAM STATISTICS

TOTAL # CONTACTED

2262

TOTAL CONTACT HOURS

1248 HRS

TOURS AND FIELD PROGRAMS

SPRING and SUMMER 1995

APRIL

Chamber of Commerce. Leadership & New Businesses Group, 693-4469, Linda Kelly, USA, 155 N First St., Hillsboro, Or. 97124. Neil Rambo - OSU Extension contact., General Tour, Wed. April 12, 95, **Total served: 30, all adults. Contact hours: 30.** (Curry).

Hillsboro 7th & 8th Alternative School. 693-2922 @ Boys and Girls Club, 560 S.E. 3rd St., Hillsboro, Or. 97123. Jim Neiger and Marion Hout, 2 classes, 7/8 At-risk students, 11 students each.

- General Tour Tuesday April 18, 10-12, no transportation so walked on path West side of Hwy 219. **Total served: 25 (22S/3A). Contact hours: 37 hours.** (Curry, Edmo, Arellano)

- Installation of bat boxes they made. May 15, 95, **Total served: 25 (22S/3A). Contact hours: 37 hours.** (Curry, Arellano, Edmo)

St. Matthew School. 648-2512 221 SE Walnut, Hillsboro, Or. 97123, Kathy Wilde. 5th graders. General Tour, Friday April 21 from 10-12. **Total served: 29 (25S/4A). Contact hours: 34.** (Curry, Arellano, Edmo)

Chapman Elem. School, 280-6295, 1445 NW 26th, Portland, Or. 97210, (Portland Public Schools), Tressa Bauer, (775-1488, 3641 SE Knapp, Prtland, Or. 97202 home) 2nd and 5th-graders for Biodiversity Program on Tues. April 25, 95. **Total served: 65 (55S/10A). Contact hours: 195 hours.** (Curry, Edmo, Arellano)

METRO

Native Plant Society, 645-1992, 3700 NW Columbia, Portland, 97229. Mary Vogel, General Tour, Info. on plants and Ballot Measure 26-26. Sunday, April 30, 2-6 PM. **Total served: 25 adults. Contact hours: 100.** (Curry)

MAY

Evergreen Junior High School, 640-8900, Brad Greenwood, Cici Glaser, Dale Spitzer 7th grade team, FAX 693-1706, Two General Tours, Mon. April 24, 95. **Total served: 120. Contact hours: 180.** (Edmo, Arellano)

W. Vern McKinney Elem. School, 648-8581, 535 NW Darnielle, Hillsboro, Or. 97124, Carol Lewis, General Tour, on Tues. May 2, 95, **Total served: 28 (27S/1A). Contact hours: 42.** (Curry, Edmo, Arellano)

Montclair Elem. School, 591-4548 Wk., 7250 SW Vermont Ct., Portland, Or. 97223 Luann Soderstrom and three other teachers. Biodiversity Field Program on Wed. May 3, 95. Morning and afternoon groups; **Total served: 125 (115S/10A). Contact hours: 312.** (Curry, Arellano, Edmo)

Metro

Community Citizens, Wetlands Celebration Day, Community Event, Sat. May 6, 95, Puppet shows by Teresia Walls, tours by J. McNulty's class, displays, activities. Approximately **100 served. Contact hours: 300.** (Willis, Cross, Edmo, Arellano, Curry, Kuhny, Hosey, Paddon)

Highland Park Middle School, 591-4630; 591-8000 (Dist. Off) 7000 SW Wilson Ave. Beaverton 97005, Walt Cundiff, (home phone 639-9096), 6th Graders. Biodiversity Program for 3 classes of 35-40 students each, Tues May 9, Wed. May 10, Thurs. May 11. 8:30-1:00. **Total served: 115 (100S/15A), Contact hours: 297.** (Curry, Edmo, Arellano).

Tubman Middle School, 280-5630, 2231 N. Flint, Portland, Or., Biodiversity Field Program, Friday, May 12, 95. Contact Person: Ken Kraus, grade 8. Two sessions. **Total served: 148 (140S/8A). Contact hours: 370.** (Edmo, Arellano)

Minter Bridge Elem. School, 648-0113, 1750 Jacqueline Dr., Hillsboro, Or. 97123. Marika Hartfeil, 4th graders, Biodiversity Program, Tues. May 16, 95. **Total served: 26 (25S/1A), Contact hours: 65.** (Curry, Edmo, Adair)

Homelink, Battleground Schools, (Battleground, Wa.) Ruth Mills, General Tour, Age mix with adults, homeschoolers, Wed. May 17, 95. **Total served: 15. Contact hours: 45.** (Curry, Edmo).

Harvey Clarke Elem. School, (Forest Grove Elem S. Dist.), 359-2478, 2516 B St., Forest Grove, Or. Tom Shepherd, 6th grade, Biodiversity Field Program, Thurs. May 18, 95, **Total served: 35 (28S/7A). Contact hours: 87.** (Arellano, Edmo)

Touchstone School, Lake Oswego, Vivian Foster, General Tour, Tues. May 23, 95. **Total served: 6 (4S/2A). Contact hours: 12.** (Curry, Arellano, Adair)

Cedar Park Intermediate School, 591-4610, 11100 SW Park Way, Beaverton, Or. Marietta Kuykendall's home phone: 292-9792) 6th grade, (Curry, Arellano, Adair, 5 Evergreen students)

- Marietta Kuykendall, Biodiversity Field Program, Wed. May 24, 95, **Total served: 66 (58S/8A). Contact hours: 165.** (Curry, Arellano)

- Jennifer McNulty, Long-term project, signage, twelve visits of two hours each. **Total served: 29 (28S/1A), Contact hours: 696.** (Willis).

W. Vern McKinney Elem. School, 648-8581, 535 NW Darnielle, Hillsboro, Or. 97124, 6th graders, General Tours.

- Tuesday, May 23, 9-11:00, Carol Lewis, **Total served: 25 (24S/1A). Contact hours: 37.** (Curry, Arellano, Edmo).

- Thursday, May 25, 9-11:00, Alice Hughes, **Total served 25 (24S/1A). Contact hours: 37.** (Curry, Arellano)

North Clackamas Alternative Jr. High, 653-3540, Burgess Crim, Matt Kellogg, May 26, 95, General Tour, **Total served: 17. Contact hours. 25.** (Edmo, plus another NWSA staff member)

JUNE

Eastwood El. School, 648-2141, 2100 NE Lincoln, Hillsboro, Or. 97124, Elsie Clauson, Greg Trousdale, Biodiversity on Friday June 9 from 10-12. 5th graders. **Total served: 60 (55S/5A). Contact hours: 150.** (Curry, Arellano)

Boy Scouts, David, Sunday, June 4,95, **Total served: 20 (15S/6A). Contact hours: 30.** (Arellano)

Cedar Mill Elem., 591-4546, (Beaverton Elem. S. Dist.) 10265 NW Cornell, Portland, Or. Tues, May 30, NWSA/ESD's first Biodiversity program (4 NWSA staff, Edmo) 5 hours. **Total served: 28. Contact hours: 140.**

Groner Elem., 628-1131, 23405 SW Scholls Ferry Rd, Hillsboro, Or. 97123. (Hillsboro feeder school.). Wed, May 31, NWSA/ESD Biodiversity Program, (4 NWSA staff, Edmo) 5 hours **Total served: 25 Contact hours: 125 hours.**

Minter Bridge Elem., 648-0113, (Hillsboro Elem. S. Dist.)1750 SE Jacqueline, Hillsboro, Or. Thurs. June 1, NSWS/ESD Biodiversity Program, (4 NWSA staff, Edmo) **Total served: 30. Contact hours: 150 hours.**

Highland Park Intermediate School, 591-4630, (Beaverton H.S. District), 7000 SW Wilson Ave. Beaverton, Or., Mon. June 5, NSSA/ESD Biodiversity Program, (4 NWSA staff) **Total served: 30. Contact hours: 150 hours.**

Highland Park Intermed. School, 591-4630, (Beaverton H.S. District), 7000 SW Wilson Ave., Beaverton, Or. Tues, June 6, 95. NWSA/ESD Biodiversity Program. (4 NWSA staff) **Total served: 30. Contact hours: 150.**

Butternut Creek Elem. School, 649-5566, (Reedville Elem. Dist.), 20395 SW Florence, Aloha, Or. Wed. June 7, 95. NWSA/ESD Biodiversity Program, (4 NWSA staff) **Total served: 27. Contact hours: 135 hours.**

Indian Hills Elem. School, 649-5584, (Reedville Elem Dist.), 21260 SW Rock Rd., Aloha, Or. Thurs. June 8, NWSA/ESD Biodiversity Program. (4 NWSA staff) **Total served: 28. Contact hours: 140.**

J. B Thomas Junior High. 640-8939, (Hillsboro H.S. Dist.), Willie Collins, Jeanne Butcher - 7th Grade Team Contacts. Thursday June 1, **120** students and Thursday June 9, **120** students, self-contained school program, slight direction from JB staff. **Total served by J.B. Thomas personnel: 240. Contact hours from JB Thomas staff: 480. Contact hours Jackson Bottom staff: 1.**

Evergreen Junior High, 640-8900, (Hillsboro H.S. Dist.), Cici Glaser, 7th grade team, installing of bat and bird (swallow, owl, and duck) boxes they had made. Wed. June 7, 95. **Total served: 25 (22S/3A). Contact hours: 50 hours.**

Latter Day Saints, Hillsboro stake, Trail building and restoration, Saturday, June 24, 95. Five hours. **Total served: 150 adults. Contact hours: 750.** (Willis, Cross, Arellano)

Straight Ahead Shelter, Forest Grove, Or., Val Donnelly, Director and Brenda Blackburn, NWSA. Mixed-age troubled youth. Sat. June 24, two hours of general tour and activities. **Total served: 18 (15S/3A). Contact hours: 36.** (Arellano)

JULY

D.A.R.E. Program, Highland Park Middle School, 591-4630, Robbyn Bailey (home phone 297-8011), Leigh Rappaport, 6/7th graders. Two sessions for General Tour Tues., July 18. Split into groups of 10. Others at Shute Park. **Total served: 40 students. Contact hours: 60.** (Curry, Cross, Papavero, Adair).

Youth Environmental Action Team, 823-7015, Environmental Services, City of Portland, 1120 SW 5th Ave., Portland, Or. Lavern Brooks, supervisor; Erin Chapman, scheduler; At-risk students who usually do environmental projects. General tour and activities. Friday, July 21, 95. **Total served: 14 (12S/2A). Contact hours: 28.**

Tours and Field Programs
SUMMARY:

NUMBER SERVED:

Community Events	100
Restoration Projects*	229
General Tours**:	677
Biodiversity Program:	838

*Projects included were 1) trail building, maintenance, and interpretation 2) bird & bat box installation and 3) general clean-up of the site and structures.

**One group of 240 was a self-contained program with 480 contact hours

TOTAL NUMBER SERVED: 1844

CONTACT HOURS:

Community Events	300
Restoration Projects	1533
General Tours:	1530
Biodiversity Program:	2631

TOTAL CONTACT HOURS: 5994

Jackson Bottom Tours of Schools and Groups 1994

Date	Lth. of Stay	#Adults	#Students & Ages	Total	Contact Hrs	Contact person, address, phone	Description of Tour/Project
MAY 10	1	6	12	18	18	WEB class —	—
MAY 14	2	41	—	41	82	PSU CLASS	—
MAY 17	3	8	42	50	150	KATE SITE class - [illegible] TOUR	—
MAY 18	4	4	25 HS	29	116	STEVE MATHEWS	work
MAY 21	1	62	—	62	62	Spring WETLANDS CLASS	—
MAY 23	3	12	90	102	306	SCOTT [illegible] - Beam school	Tour/proj.
MAY 24	2	6	—	6	12	MARYLHURST CLASS	Tour
MAY 25	4	4	28 HS	32	128	STEVE MATHEWS	work

340 874

~~42~~ 150
90 306

Jackson Bottom Tours of Schools and Groups 1994

Date	Lth. of Stay	#Adults	#Students & Ages	Total	Contact Hrs	Contact person, address, phone	Description of Tour/Project
April 20	1	6		6	6	VANGUARD Sch	Wash
April 21	2	2	—	2	4	Mark Hayes	Research
April 21	1	6	6 pre	12	12	MANNA pre-school	Tour
April 22	3	16	96 MS	112	336	Montclair School	Tour/Hist
April 26	1	8	6 Pre-sc.	14	14	Hills. Headstart	Nice planets
May 5	3	6	27 MS	34	102	meth —	
May 7	4	16	—	16	64	Friends PM	
May 9	3	8	45 MS	53	159	GACA Girls - meth	
				249	667		

Jackson Bottom Tours of Schools and Groups 1994

Date	Lth. of Stay	#Adults	#Students & Ages	Total	Contact Hrs	Contact person, address, phone	Description of Tour/Project
2/28	2	4		4	8	JAN DAS.	
3/10	3	12	92	104	312	ST. SCHW	
3/21	1	16		16	16	TOW FROM PA AND JT.	—
3/22	2	8	— HS	8	16	VON TRILLIG -	BIO BUG
3/30	3	5	26	31	93	STEVE MATHEWS	WORK
March 31	2	6	6 MS	12	24	GLENN POP	BIO BUG
April 9	4	8	—	8	32	FRIENDS WORK DAY	
April 6	3	12	55 MS	67	201	NORTHPLAINS ELEM.	TOUR
				250	702		

PROGRAM INFORMATION

BIOLDIVERSITY FIELD PROGRAM
Volunteer Information Sheet

• GENERAL INFORMATION FOR ALL VOLUNTEERS:

- There is no running water so if you feel you need it, bring drinking water and wet wipes. (They are optional.)
- The meadow has grasses with pollen. If you tend to be allergic, come prepared to combat a possible reaction.
- There is only one porta-potty!

• VOLUNTEERS WHO WILL TEACH STUDY STATIONS:

-Arrive at Jackson Bottom Wetlands Preserve south site parking lot at _____A.M. for the 2-hour training on _____(date).

-Wear or bring appropriate clothes. In wetter times this means boots and raingear. Some sort of sun block is advisable for those who burn easily. You may also want to have a pen to jot extra notes and perhaps tissues.

-Read the rest of the information about the study stations. You will be asked to lead one of the four stations. You will have four groups of students with approximately 6-15 persons per group.

Other pertinent information from the classroom teacher:

_____

• VOLUNTEERS WHO WILL HELP STUDENTS ROTATE

-Arrive at school at_____A.M. to catch the bus or arrive by car at Jackson Bottom Wetlands Preserve south site parking lot at _____A.M. on _____(date).

-Wear or bring appropriate outdoor clothing such as good walking boots and raingear for those wet days or a hat and sun block for hotter days.

-You will be in charge of a single group of 6-15 students who will rotate through four study stations.

-Other pertinent information from the classroom teacher:

_____

Jackson Bottom Wetlands Preserve
123 W. Main, Hillsboro, Or. 97123
503-681-6206

_____
(Your School)

PROJECT: Jackson Bottom Wetlands Preserve
123 West Main Street
Hillsboro, Oregon 97123

CONTACT: Pat Willis (503) 681-6206

BUDGET: Metro grant $3,500
Approximate Volunteer Hours: 185
Total Project $17,710

QUESTION: How can children learn to critically analyze the natural world around them?

GOAL: Use biodiversity and other ecological relationships to help students understand the dynamics of ecosystems.

COMMUNITY:
Jackson Bottom Wetlands is located in Hillsboro and provides hands-on learning experience for grade school and middle school students. Schools located within the Tualatin River Basin were targeted. The experience was designed to complement students either pre-Outdoor School or post-Outdoor School programs.

DESCRIPTION:
The staff of Jackson Bottom designed a 2.5 hour field-oriented curriculum to help students improve their investigation of ecological systems, focusing on wetland areas. Students visited either Jackson Bottom Wetlands or Fernhill Wetlands. Learning stations with volunteer instructors were created to provide students with the opportunity to observe specimens, collect and analyze data, and interpret results. The learning focused on ecological concepts that could be transferred to other ecosystem studies, and included water quality, transects, aquatic life, and healthy habitat indicators. A volunteer information packet was created with curriculum guidelines and teaching techniques, as well as pre and post visit materials.

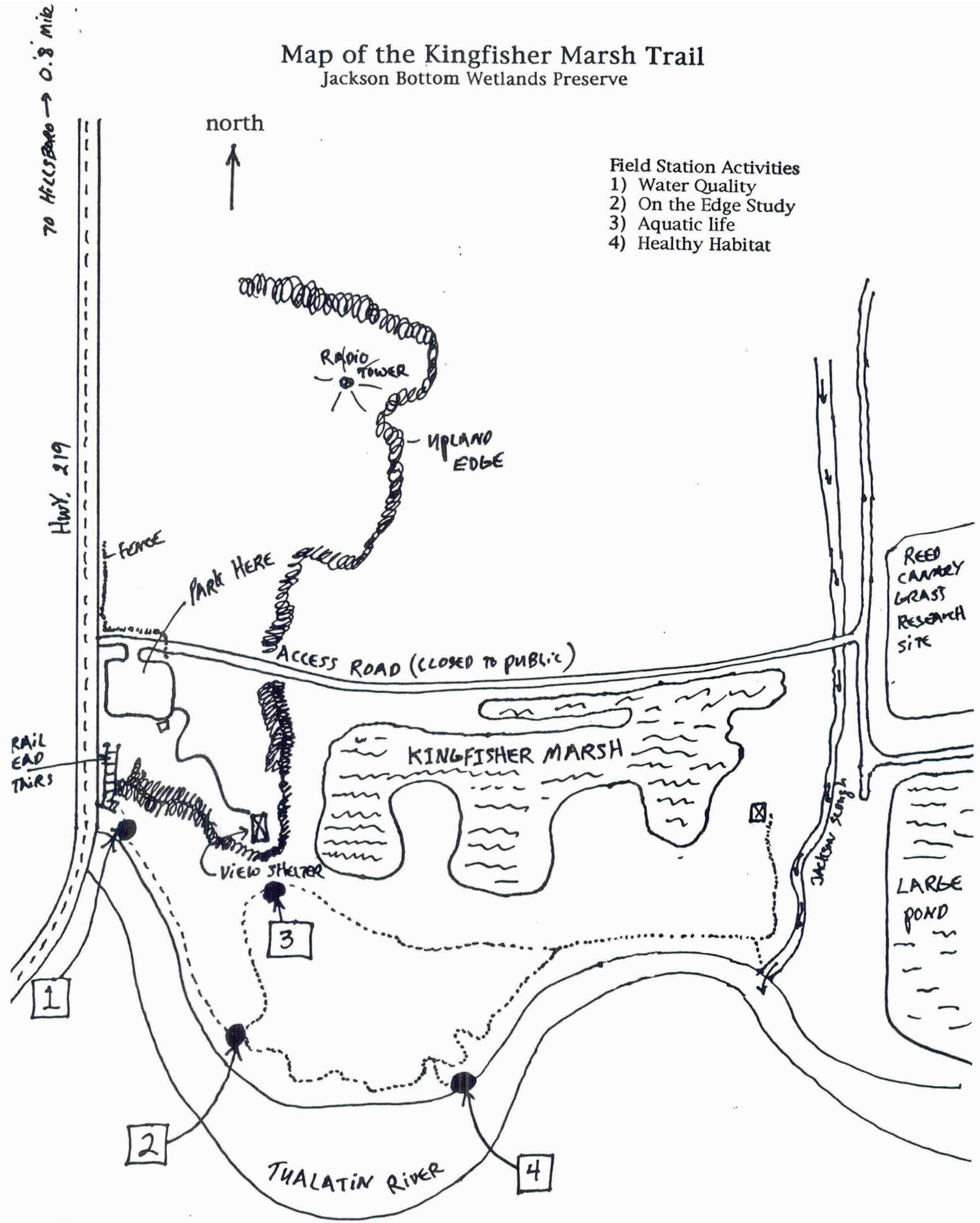
ACTION:
January 1994
- Finalize outline of program
- Develop concept/process goals
- Design registration system
- Advertise to schools in the Tualatin Basin
- Order materials

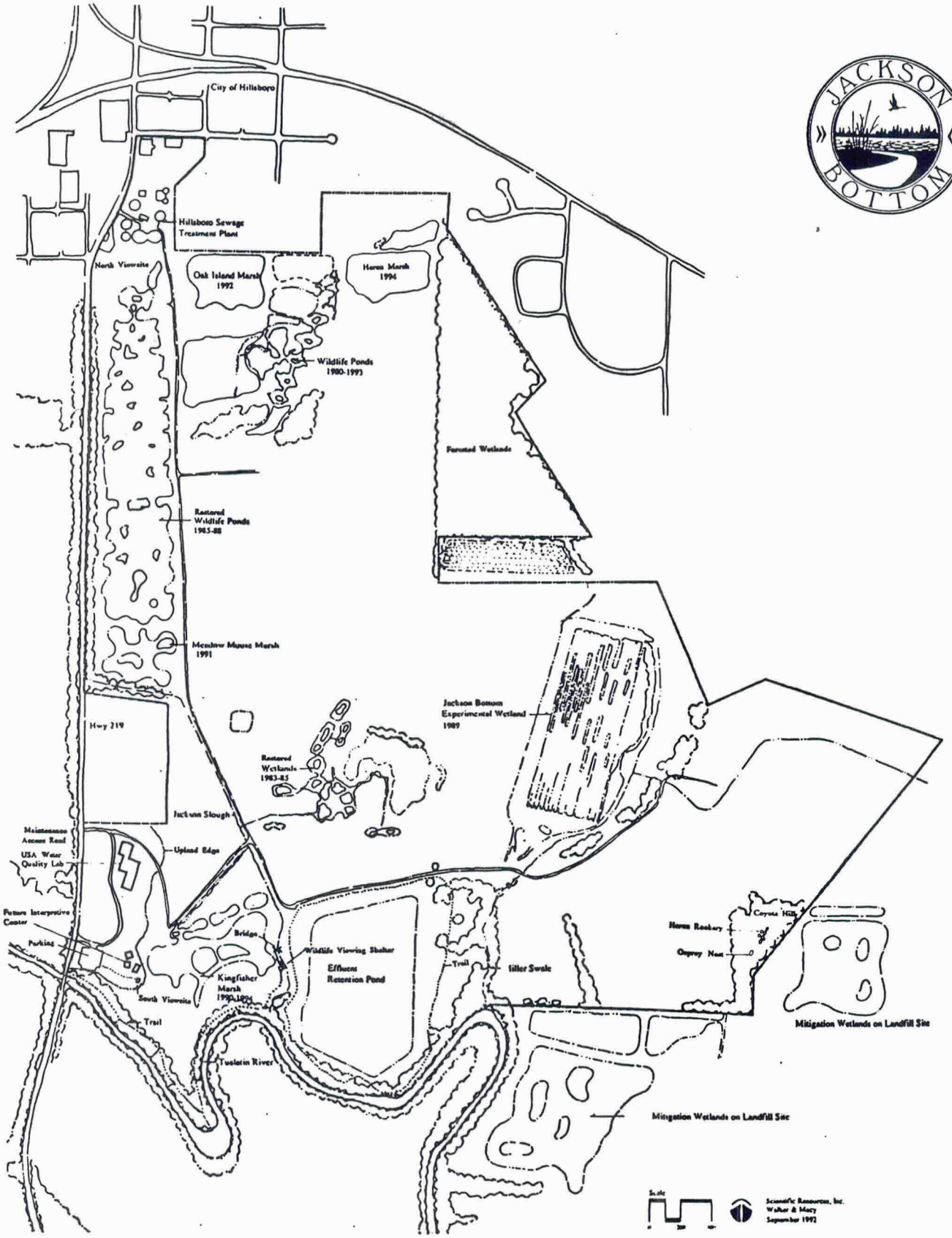
February 1994
- Design volunteer training program
- Print data sheets and information packets for stations
- Begin registration
- Reserve buses

hour training session immediately before the school's visit. Parents then lead the stations, allowing teachers to visit the entire site and act as crowd control. Jackson Bottom also trains Outdoor School teachers who are expected to volunteer for a time at the wetland.

Map of the Kingfisher Marsh Trail

Jackson Bottom Wetlands Preserve

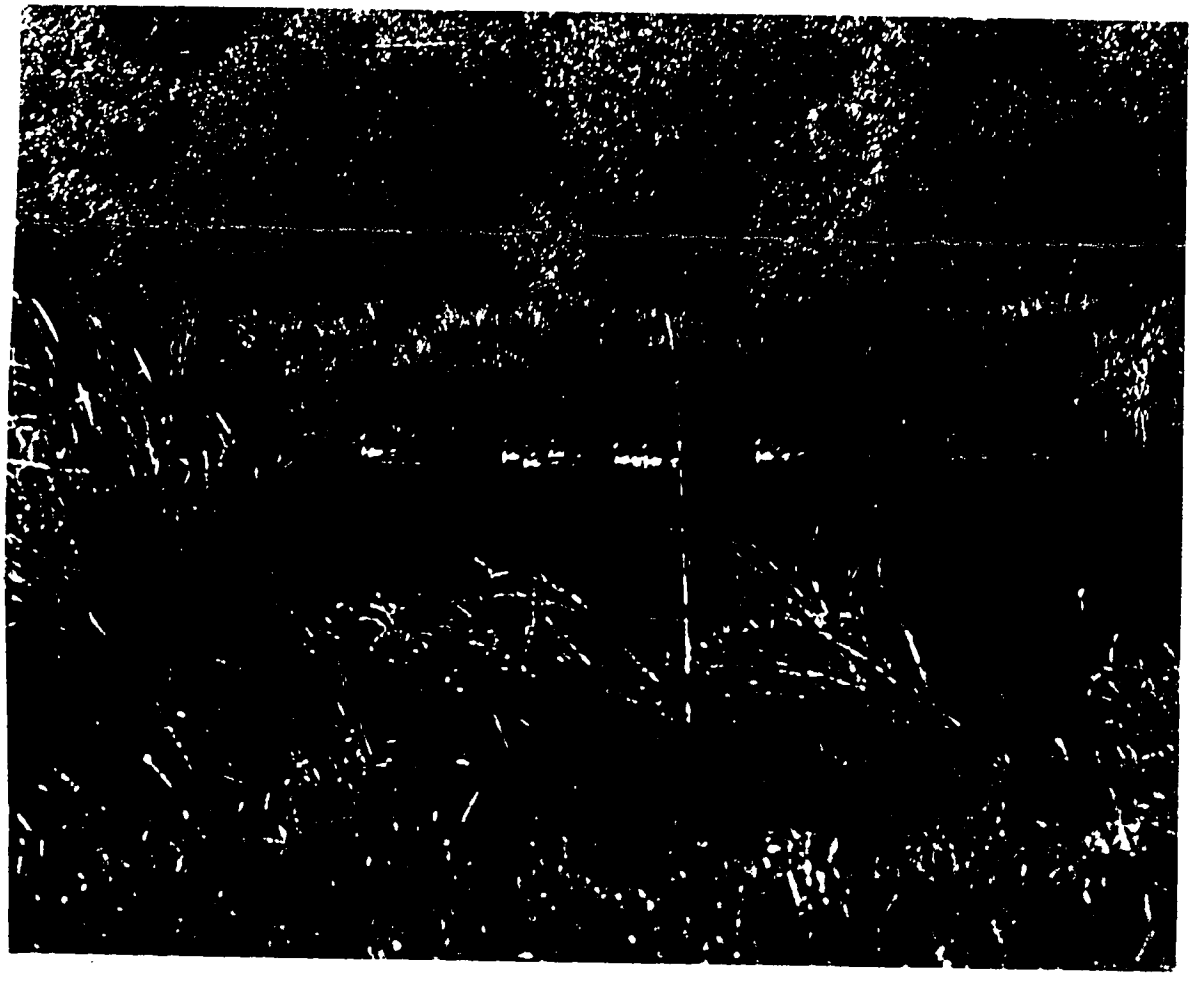




Jackson Bottom Wetlands Preserve is located south of the City of Hillsboro in the floodplain of the Tualatin River, Washington County, Oregon.

Jackson Bottom Wetlands Preserve
Field Program

Volunteer Information Packet



Funded By a Grant From Metro Greenspaces

Welcome and thank you for participating

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A Few Good Teaching Techniques

Voice	-vary tone, pitch and volume -articulate well -use excited speech mannerisms
Eyes	-maintain eye contact w/o staring -good eye contact characterized shining, dancing eyes--
Body	-move freely, walk rapidly, unpredictable and energetic
Language	-use (gestures) arms, hands, face, touch -natural body movements, change pace
Facial Expressions	-broad smiles, a pleased/happy look -appear vibrant, change expressions often
Vocabulary	-be highly descriptive, use many and varied adjectives -re-direct/re-focus, maintain at their level but be challenging
Positives	-be quick to accept ideas and feelings, praise, encourage -vary responses, vigorous nodding, use touch, re-clarify
Energy	-exuberant, high degree of energy and vitality -very mobile, expressive and enthused!

Other Helpful Hints:

•Never be afraid to say "I Don't Know"; but lets find out together!

•Never be afraid to ask for help. The classroom teachers and Jackson Bottom staff are all available to help.

•Never be afraid to ask the students to listen or be involved. Often times the students, in their own way, are asking you to ask them to be involved.

•Be yourself. The students don't want someone else, they want to hear from you!

•Have fun!!!!!!

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Jackson Bottom Wetlands Preserve
Field Study Program Volunteer information

Station 1: Water Quality

At the end of this activity, the students will be able to explain three ways pollution enters the Tualatin River. They will be able to measure water temperature, a level of turbidity and identify local indicators of stream bank concerns/benefits.

Equipment:

USEPA Modified Streamwalk form
secchi disk and bucket
water pump and hose
empty jar
map of the Tualatin river
sediment jar
thermometer
detergent bucket
jars of labeled water samples
- Jar#1 is upper Tualatin River water
- Jar#2 is pond water from Jackson Bottom
- Jar#3 is Columbia river water at Portland
- Jar#4 unknown

What to do:

1) Guide students through the use of the EPA Streamwalk and modified data form. Use the Data Sheet to ask the students questions about what they observe about the river.
2) Describe the Secci Disk and what it is used for. Use the secchi disk in the bucket fill with river water.
3) Collect a sample of water from the river using the pump and compare with the sample jars.
4) Measure the temperature of the Tualatin river sample and discuss what would increase or decrease temperature of a river or marsh.

Questions to ask:

1) What is water turbidity?
(The amount of suspended material in the water; it's what makes the water cloudy looking)
2) How does turbidity effect water quality?
(It increases sediment, decreases dissolved oxygen, increases amount of bacteria that can survive in the water)
3) How do pollutants enter the water?
(Roads, parking lots, farms, clear cuts, factories, car washes, curb side drains, illegal dump sites, construction, ships, boats, cows, etc. etc.)
4) What is the temperature of the Tualatin?
5) Why is temperature a pollution concern? How does increased flow effect water quality?
(Increased temperature=decreased dissolved oxygen, higher temp. promotes algae to grow fast)
6) How can poor water quality reduce the number of plants and animals living in the area?

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Jackson Bottom Wetlands Preserve
Field Study Program Volunteer Information

Station 2: Survey Transect: plants and soil

Objective: Students will be able to describe the characteristics of the riparian corridor. Students will measure and record vegetation zones within the riparian zone of the Tualatin river. Using soil probes, students will characterize soil texture from the riparian zone to soils found in the wetland.

Equipment:

folding table
soil probes
cross section drawing of a riparian zone
mounted samples of plants adapted to hydric soils
tape measure
one meter quadrates
transect line
plant identification books
transect data sheet

What to Do:

1) Describe the transect set up along the riparian corridor.
2) Have students count the number of different species along tape measure.
3) Record their locations.
4) If you know the plant names, record that too.
5) Using the soil probes, collect 3 samples of soil along the transect and characterize their differences, including color and texture.
6) Discuss the importance of maintaining a healthy riparian zone and the habitat value of edges in an ecosystem.

Questions to Ask:

1) How does the edge of the riparian zone differ from the open areas of the Preserve? Why are there more species of plants found along the riparian area than in the open field?
(These areas a generally more diverse because of differences in light, soil and water)
2) Why is an increase of plant types important for wildlife diversity?
(They provide a more diverse or variety of food sources for wildlife)
3) Was the soil different along the riparian corridor as compared to the open wetland area? If so, why?
(Floods deposit heavier material out first near the river, forming a levee. Finer grain material travels further away into the wetland)
4) Does soil type effect plants and animals?
(Plants are specialized to survive within narrow soil characteristics or types, providing habitat for animals)
5) What makes wetlands soils different from upland soils?
(Wetland soils are called hydric soils; soils that are saturated with water and lack oxygen)
6) What are some special adaptations of wetlands plants to these soils?
(Wetlands plants are adapted to live in anaerobic soils, soils that lack oxygen, they can pump oxygen down to their roots, they can survive in often acidic soils)
7) How do wetland plants improve water quality?
(They can take in nutrients from rivers and surface water run-off to use like fertilizers)
8) Why are riparian zones and wetlands important for a healthy ecosystem?

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Jackson Bottom Wetlands Preserve
Field Study Program Volunteer Information

Station 3: Aquatic Life as Indicators of Water Quality

Objective: Students will collect and examine aquatic invertebrates from Jackson Bottom. Students will be able to classify and measure population diversity in a sample of water.

Equipment:

microscopes
aerial photo/map of Jackson Bottom
hand lenses
fishing pole
plankton nets
two tables
collection jars
collecting nets
ice trays
species separation tools (paint brushes)
identifying keys
ph kits and charts
dip nets

What to do:

1) Send two students to the marsh edge to collect a 250 ml water sample with the plankton net.
2) Using the microscopes, hand lenses, paint brushes, ice cube trays and , have students separate (categorize) the aquatic invertebrates into groups. Place the different types of invertebrates and green algae found in the ice tray cups. The greater number of different invertebrate types or species found, the healthier the system.
3) Categorize as many different species the entire 250ml jar of water.
4) You are welcome to identify the animals/plants if you like. Knowing the name of the plants/animals is not as important as understanding that species diversity is a measure of the health of the marsh, river or ecosystem.
5) *GENTLY* return the water sample to the pond and wash out the equipment for the next group.

Questions to ask:

1) What are the habitat requirements of aquatic life?
(Non-polluted water, oxygen, heat, light, cover, food)
2) What is the importance of animals/plants like these?
(They are the base of the food chain)
3) Why is a stream/pond considered healthier if a variety of species are found vs. just one or two?
(Increased diversity=the stream/pond provides food, shelter, for a wide range of life forms. If the water has less variety of species, something in the water or the environment is limiting the growth of that life.)

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Station 4: Healthy Habitat Indicators

Objective: Students will be able to list elements that make up a healthy animal and plant habitat. They will be able to locate habitat types in the Jackson Bottom area.

Equipment:
beaver artifacts, animal specimens
hand lenses
bird and bat box (along trail)
binoculars
spotting scope
Jackson Bottom bird list
birding map of Jackson Bottom
field guides
bird pictures

What to do:

1) Have the students walk quietly along the trail.
2) Describe the good observation skills; ask them to name their five senses; it is important they learn to use all there senses, not just their eyes.
3) Ask students to locate as many animal signs as possible, near the ground, in the brush, high in the trees, in the tall grass, the marshes and along the river.
4) At the end of Vic's Grove, have the student sit or stand quietly. At the end of an appropriate amount of time, have the students share their thoughts.
   Ask them: What did you hear?
   What do you smell?
   What did you think about?
   Is their a place near your home where you can sit and listen to the sounds of the land? Describe it!
5) If time permits, walk out to the view point at the end of the trail. Count the number of different animals you have seen/heard/observed signs of.

Questions to ask:

1) What elements make up a habitat?
(food, water, shelter, space)
2) What kinds of animals might you expect to find at Jackson Bottom?
(alot!!!)
3) Why are edges in natural areas so important for wildlife habitat?
(It creates a shelter and food variety, usually water is associated with an edge, increased diversity of plants)
4) What are some of the things that might limit how many creatures can use a habitat?
(Human impact, lack of food, water, shelter or space)
5) How many potential habitats or possible niches do you see around you? How does limiting the diversity of the plants in the area reduce the number of animals that can live their?

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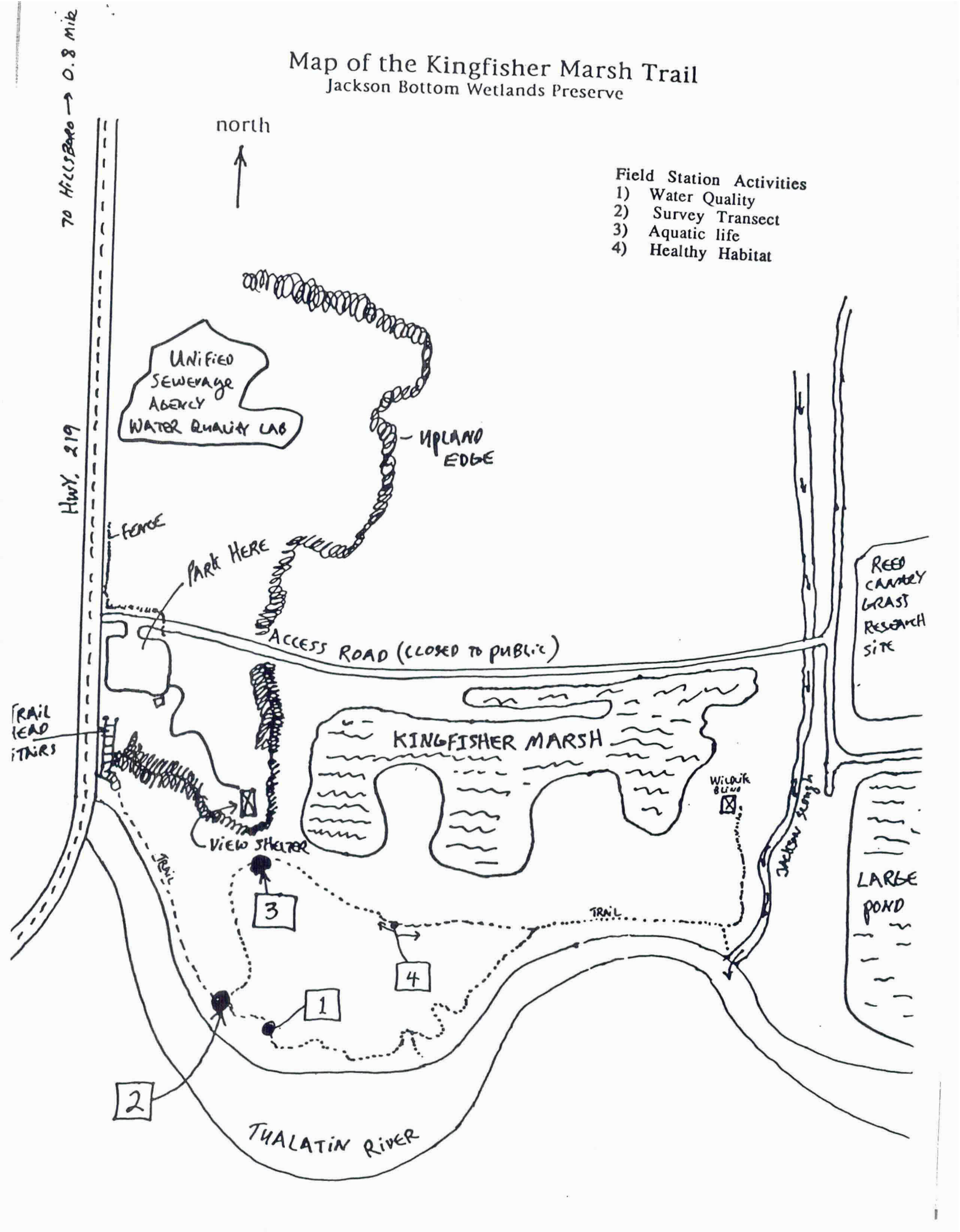
Map of the Kingfisher Marsh Trail

Jackson Bottom Wetlands Preserve



DIRECTIONS TO
JACKSON BOTTOM WETLANDS PRESERVE

- FROM ALOHA & BEAVERTON - TAKE TV HIGHWAY #8 WEST TO HILLSBORO, TRAVEL PAST SUNSET ESPLANADE AND THE LIBRARY. TURN WEST (LEFT) ON BASELINE AVE. GO SOUTH (LEFT) ON FIRST ST. WHICH BECOMES HIGHWAY 219. THE JB NORTH VIEW SITE WITH SMALL PARKING LOT IS JUST AT THE EDGE OF TOWN ADJACENT TO THE SMALL SEWERAGE PLANT. THE JB SOUTH VIEW SITE WITH LARGE PARKING LOT IS .8 OF A MILE FARTHER SOUTH.

- FROM PORTLAND - TAKE SUNSET HIGHWAY #26 WEST TO THE NORTH PLAINS EXIT. GO LEFT BACK OVER THE HIGHWAY TOWARD HILLSBORO ON GLENCOE RD. THIS BECOMES FIRST ST. NEARER TOWN. TRAVEL PAST GLENCOE HS, THE POST OFFICE AND THE RAILROAD TRACKS TO HIGHWAY 219. JUST AT THE EDGE OF TOWN, ADJACENT TO THE SEWERAGE PLANT IS THE JB NORTH VIEWING SITE WITH SMALL PARKING LOT. THE JB SOUTH VIEW SITE WITH LARGE PARKING LOT IS .8 OF A MILE FARTHER SOUTH.

- FROM FOREST GROVE - TAKE TV HIGHWAY #8 EAST TOWARD HILLSBORO FOR SEVERAL MILES. TURN SOUTH (RIGHT) ON FIRST ST. TOWARD HIGHWAY 219. AFTER THE RR TRACKS, LOOK FOR THE NORTH VIEW SITE NEXT TO THE SMALL SEWERAGE PLANT AT THE EDGE OF TOWN. THE SOUTH VIEW SITE IS .8 OF A MILE FARTHER SOUTH ON HIGHWAY 219.

BOTH VIEWING SITES ARE MARKED WITH JACKSON BOTTOM SIGNS.

IF YOU GET LOST AND NEED HELP, CALL THE JACKSON BOTTOM OFFICE AT 681-6206. THE MAILING ADDRESS IS 123 W. MAIN, HILLSBORO, OR. 97123.