PROJECT REPORT
SHILLAPOO OAK REFORESTATION PROJECT
METROPOLITAN GREENSPACES PROGRAM
METRO CONTRACT #903442

I: PROJECT DESCRIPTION:

This project was proposed and carried out by the Washington Department of Fish and Wildlife (WDFW) with US Fish and Wildlife Service funding distributed through the Portland Metropolitan Parks and Greenspaces Program (Metro). It involved fencing and planting native trees and shrubs on approximately five acres within the Shillapoo Wildlife Area that had historically been cleared and grazed under private ownership. The wildlife area is immediately adjacent to the City and Port of Vancouver Washington on SR 501 and Lower River Road in Clark County Washington. While grazing still occurs on a large portion of the management area as a technique to produce useful feeding areas for canada geese we have identified other objectives to restore and improve native habitats for other species as well.

The project is an attempt to create a plant community that resembles those that once occurred on the site with oak as the predominant overstory species. The site, located just north of Buckmire Slough and adjacent to SR 501 (figure 1), contained several large remnant oak trees. Forest remnants in nearby areas tend to be either dominated by cottonwood, in the low lying sites, or oak in the higher sites like this one. These stands typically have a mixture of these two species in the overstory along with a few other species. Other tree and shrub species were planted throughout the site which we hope will develop a multi-layer canopy to meet diverse wildlife needs.

Several factors were considered in planning how the project would be carried out. One of our foremost concerns was the presence of several noxious weeds in the area and their ability to spread into disturbed ground. For this reason it was decided to minimize soil disturbance during implementation. Initial site preparation was limited to fencing the area to exclude cattle from the site and mowing to make planting easier.

Oak seedlings were purchased and planted in the spring of 1994. During the summer and early fall the area was mowed to control weeds and squares of plastic mulch were placed around each tree. Watering took place during this time period as well. We had not anticipated this need, brought on by a very dry summer, but were prepared for it. Water was delivered by means of a pickup mounted tank and pump.

Plant shock and dehydration were problems on this site which resulted in extremely high mortality. plant survival among the oak seedlings appears to be as low as 2%. As a result, we plan to remove and replace many of the oak seedlings in the fall/winter/spring of 1995-96 with some changes that will be discussed later.

Other trees and shrubs were planted in the spring of 1995. Plant survival and vigor from this planting appear to be excellent with very limited mortality.

We expect to have to intensively monitor and maintain this planting for up to ten years to assure success.

II: GOALS AND BENEFITS OF PROJECT:

The primary long term goal of the project was to increase the amount of oak forest habitat available on the area. Today the planting does not appear markedly different than its pre-project condition. However, over the next several years as the trees and shrubs on the site grow many different wildlife species will begin to use the site. Various species of birds, amphibians, reptiles, and mammals will benefit from this project.

Many secondary benefits will be derived from this project; some of which have already become apparent. This project was the first habitat restoration effort on the area and the first involvement of non-hunting oriented volunteers. A great deal of interest has been generated by the project. The site has been used on different types of tours as an example of the importance of forest habitats and how agencies within a community can work together. These tours included a site visit with the director and management team from WDFW.

III: WORK TASKS AND TIMELINES:

This project took approximately one year to accomplish. Various work tasks were spread over time with little or no work, other than monitoring, taking place during certain periods. The following is an outline of major events involved in this project.

December 93:	Grant application accepted for funding.
January 94:	No activity.
February 94:	Inquiries and bid process started for oak tree purchase. Coordination with WDFW contract officer on contract approval.
March 94:	Fence construction begins. Bids for trees completed. Pre-project photopoints taken.

April 94:	Fence completed. Site mowed. 1200 oak trees planted with volunteer help.
May 94:	Monitored for initial planting success. Initial leaf out estimated at 20 to 30 percent.
June 94:	Continued to monitor, no change noted in survival.
July 94:	WCC crew began weed control work around individual trees and laying plastic mulch material. Dehydration was noted, began watering.
August 94:	Finished laying plastic mulch. Continued watering. Recovery of some trees noted.
September 94:	Continued watering. Site was mowed between groups of trees to control canadian thistle and facilitate spring work.
October 94:	No activity.
November 94:	No activity.
December 94:	No activity.
January 95:	No on the ground activity. Photo points taken.
February 95:	Collected bids for understory trees and shrubs.
March 95:	Understory trees and shrubs, except cottonwood, planted by WCC crew. Planting success rate was good with high survival.
April 95:	Cottonwood trees planted. Monitored shrub survival--still excellent. Oak trees (some) starting to break bud. Started project report.
May 95:	Complete draft project report. Site mowed for weed control.

IV: PROJECT BUDGET:

The major project costs consisted of:

ITEM	ORIGINAL BUDGET	WDFW MATCH	METRO	ACTUAL TOTAL
1) Personnel:				
WA Manager	$2086	1996.05		1996.05
WA Asst Mngr.	$1800	1070.20		1070.20
WCC crew	0	2799.42		2799.42
2) Supplies:				
Fence material	$1400	1211.70		1211.70
Plants				
Oak	$7850	272.40	8598.00	8870.40
Other (mixed)	$1500	713.93		713.93
Other Supplies	$ 948	298.19		298.19
3) Rental Fees				
Tractor/mower/ auger	$ 300	570.82		570.82
4) Professional Services				
Project Planning	$ 695	Included in (1) above.		
5) Volunteer Labor	$ 190	247.00		247.00
6) Employee Overhead/ Benefits	$1146	3179.62		3179.62
7) Vehicle Mileage	$ 50	Not Tracked		
	BUDGET	WDFW	METRO	TOTAL
TOTALS	$17,965	$12,359.33	$8598.00	$20,957.33

ITEMIZED PROJECT EXPENDITURES FOR GOODS AND SERVICES:

DATE	VENDOR/ITEM	COST	DOCUMENT #
03/11/94	LUMBERMANS/FENCE MAT.	58.39	F233969
03/11/94	LACAMAS VALLEY/FENCE MAT.	210.90	F225555
03/30/94	CENEX/FENCE MAT.	697.71	F098925
03/30/94	LUMBERMANS/FENCE MAT.	47.96	F098881
03/30/94	McFARLANES/COMPOST	64.56	F098877
03/31/94	S&I EQUIP/TRACTOR	570.82	F098882
03/31/94	BOSKY DELL NATIVES/TREES	8870.40	F094072
04/08/94	LUMBERMANS/FENCE MAT.	196.74	F098885
08/01/94	LUMBERMANS/PLASTIC	135.85	F069676
08/31/94	LUMBERMANS/PLASTIC	97.78	F225557**
03/13/95	BURNT RIDGE/SHRUBS	713.93	L013592

TIME EXPENDED (HOURS)

MONTH	WA MNGR.	WA ASST MNGR	WCC CREW	VOLUNTEER
DEC 93	2	3		
JAN 94	2	5		
FEB 94		2		
MAR 94	12	51		15
APR 94	21	32		37
MAY 94				
JUN 94				
JUL 94	13		152	
AUG 94	12		127	
SEP 94	16			
OCT 94				
NOV 94	5			
DEC 94				
JAN 95				
FEB 95				
MAR 95	20		150	
APR 95	5			
MAY 95	11			
TOTAL HRS	119	93	429	52
SALARY	1996.05	1070.20	2799.42	247.00
OVERHEAD	518.97	278.25	727.85	N/A
BENEFITS	598.33	346.59	645.41	64.22

V: PROJECT STAFF/WORKERS/VOLUNTEERS:

Washington Department of Fish and Wildlife employees involved in this project included Brian Calkins (Wildlife Area Manager), Eric Anderson (Wildlife Area Assistant Manager), David Wells (Washington Conservation Corps Crew Supervisor), and several WCC crew members. Brian Calkins was responsible for project planning and administration in addition to being involved in all on site work. Eric Anderson was instrumental in the initial phases of the project but unfortunately had to be terminated early on due to funding constraints within WDFW. The availability of the WCC Crew was an unexpected plus for this project and they did a superb job with many of the labor intensive portions of this project.

Numerous volunteers took part in the first part of the project and were involved in fence construction and planting oak trees. Terry Thoreson, an advanced hunter education student, spent three days helping with fence construction. Nine individuals from the Michael Servetus Unitarian Universalist Fellowship were on hand on April 2, 1994 and planted the bulk of our oak trees. Several comments were heard suggesting that planting may not have been done well and possibly contributed to the high mortality that was experienced with the oak. Each volunteer was instructed as to how to plant the trees and follow up inspection on the day of planting showed very few problems. These people did a great job!

VI: HOW PROJECT RELATES TO THE GREENSPACES PROGRAM:

This project is consistent with the objectives of the Greenspace program by: Restoring habitat in the urban area that will provide wildlife habitat and serve as a potential site for education and interpretation; Increasing the public's awareness of the importance of diversity in wildlife habitat; Using volunteers in project implementation; The use of native plants in the design of the project; And by providing an easily accessible site for wildlife viewing and enjoyment.

This project is also consistent with WDFW and Clark County wildlife habitat plans for the Vancouver lowlands area.

VII: WHAT WORKED/WHAT DIDN'T/HELPFUL HINTS:

Several strategies were used in this project that worked very well.

Because we anticipated serious weed problems on the site, which still persist, we planted most of the plant material in clusters which allowed us to easily mow the site with a farm tractor while missing the trees and shrubs. Oak saplings were planted in groups of five and later when we planted the rest of the trees and shrubs we planted many of them in association with these clusters.

We also placed 3X3 foot squares of plastic mulch around the oak trees to reduce plant competition and moisture loss. This worked well and probably helped the plants recover from moisture stress more than watering did. Plant recovery was noticed almost immediately after plastic was put down. Even though this was very helpful, it was labor intensive. Furthermore if we were to do this again, larger dimensions, perhaps 4X4 or larger, would be recommended. Also, we did not place the plastic until well after planting of the oak trees due primarily to a delay in labor availability. Putting the material down at the time of planting may have increased survival. WDFW routinely uses plastic mulch in Eastern Washington with great success as it retains moisture, reduces plant competition and rodent damage and extends the growing season by retaining heat in the soil during the spring and fall. Resulting plant growth is often many times that without plastic.

The use of a pickup mounted pump and tank for watering worked very well for a site of this size. This was fairly labor intensive as well. It takes a lot of trips to water 1200 oak trees spread over five acres with a 100 gallon tank.

Our fence was experimental in that we used two-strand barbless wire. There were some concerns that cattle that graze in adjacent pastures would challenge the fence which would be less of a deterrent than if barbed wire were used. This worked extremely well and we have had no problems one year after construction. This wire is a convenience to the public and makes crawling through the wire much easier. We will maintain a tight tension on the wire (inspected often) to reduce the potential for any cattle problems.

Some of the shrubs (snowberry and wild rose) that we used on the site were collected from other parts of the wildlife area where they were not necessarily wanted. These plants survived well and we were able to dig them and plant in the same day. In some cases within a few minutes.

This project marked the first significant use of volunteers in habitat restoration work by WDFW in this area. We were concerned at first with having volunteers plant trees. However, as stated above, we were very pleased with their work. We look forward to working with volunteers in the future.

Although many things were successful in this project a few things have inhibited or delayed the projects success.

We were somewhat disappointed with the root quality of the oak nursery stock that we purchased. The vendor gave us 100 extra trees in addition to the 1100 that we had ordered. These extra trees were smaller than we wanted but had better root systems for the size of plant and had a higher survival rate. The high mortality was probably due, in part, to plant quality and the extremely long hot, dry summer of 1994. We felt that our other

trees and shrubs were of very high quality and have survived quite well. When we replant oak trees in 1995-96 we plan to use smaller or containerized plants. We highly recommend visiting the nursery prior to purchasing plants.

Our biggest problem, in the near future, on this site will be weed control. We had anticipated this problem and designed the project to allow for it. In retrospect it would have been a much better approach to take measures to control the weeds prior to planting. Spraying the site for weeds prior to planting would have reduced the short and long term maintenance of the site. One measure taken to reduce weed problems was to minimize soil disturbance on the site to prevent weed problems from getting worse. This did work to a limited degree and a small reduction in weed density in small areas has been noted.

VIII: ADVICE FOR OTHER PROJECT MANAGERS:

Other project managers should be cautious when purchasing plants and inspect them prior to purchase.

Whenever possible, problems should be anticipated in advance. We anticipated many of the problems that we encountered. For instance, even though we did not anticipate a need for watering we had located a tank that could be used if we needed it.

We highly recommend the use of plastic or other mulch materials to reduce watering and other maintenance needs.

The use of collected plants worked very well and was efficient. If an area to collect plants is available and the collection does not significantly impact the site it can be a very effective means of securing plants. We have more snowberry and wild rose on the area that could be made available to other projects.

Partnerships with local groups can be very beneficial to a project. Such a long term partnership may have been very beneficial to this project particularly in maintenance activities. We will at least attempt to locate partners for any future grant projects.

IX: MONITORING AND MAINTENANCE PLAN:

Because this site is conveniently located, monitoring is very easy and has become part of the regular routine on the area. The site is monitored at least weekly by driving by and less frequently by walking the site to determine the need for watering, mowing, weed control etc. The walk throughs are more frequent during times when potential problems are anticipated, such as spring and summer. We plan to continue monitoring via the established photopoints at least once annually.

We plan to maintain the site by watering as needed and mowing weeds two to three times a year.

Spraying of specific weeds may be necessary on a limited basis. Increased control of canada thistle will now be necessary because Clark County has upgraded this plant to a "B designate" noxious weed which makes control legally required. We will explore the possibility of introducing biological control agents to the area however, we may be required by the county weed board to do some spraying in the short term.

We have already recognized the need to replant oak trees due to high mortality. This will occur during the fall/winter of 1995/96. The survival of other plants will be monitored to assess the need for replanting although this is not anticipated based on their initial survival.

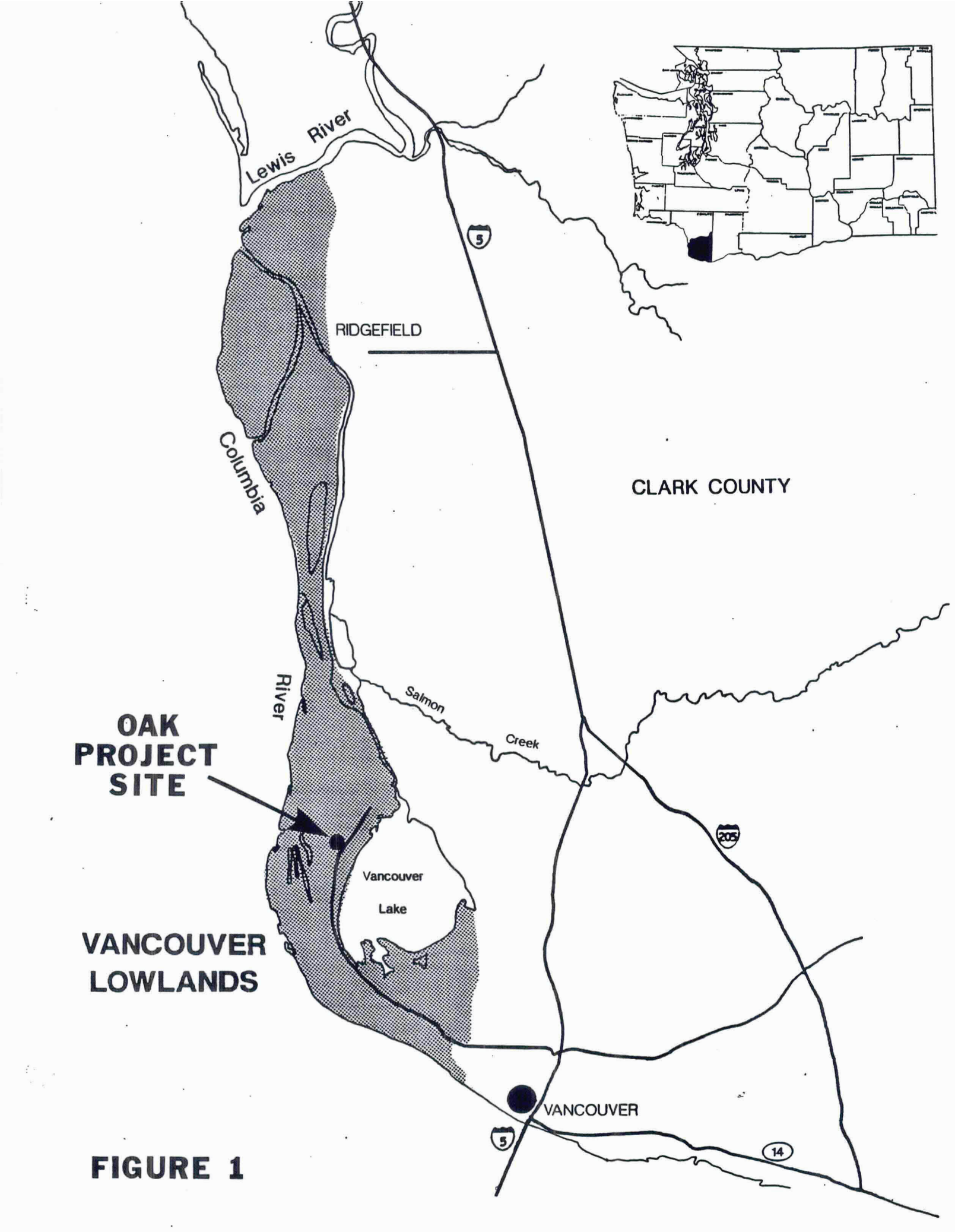
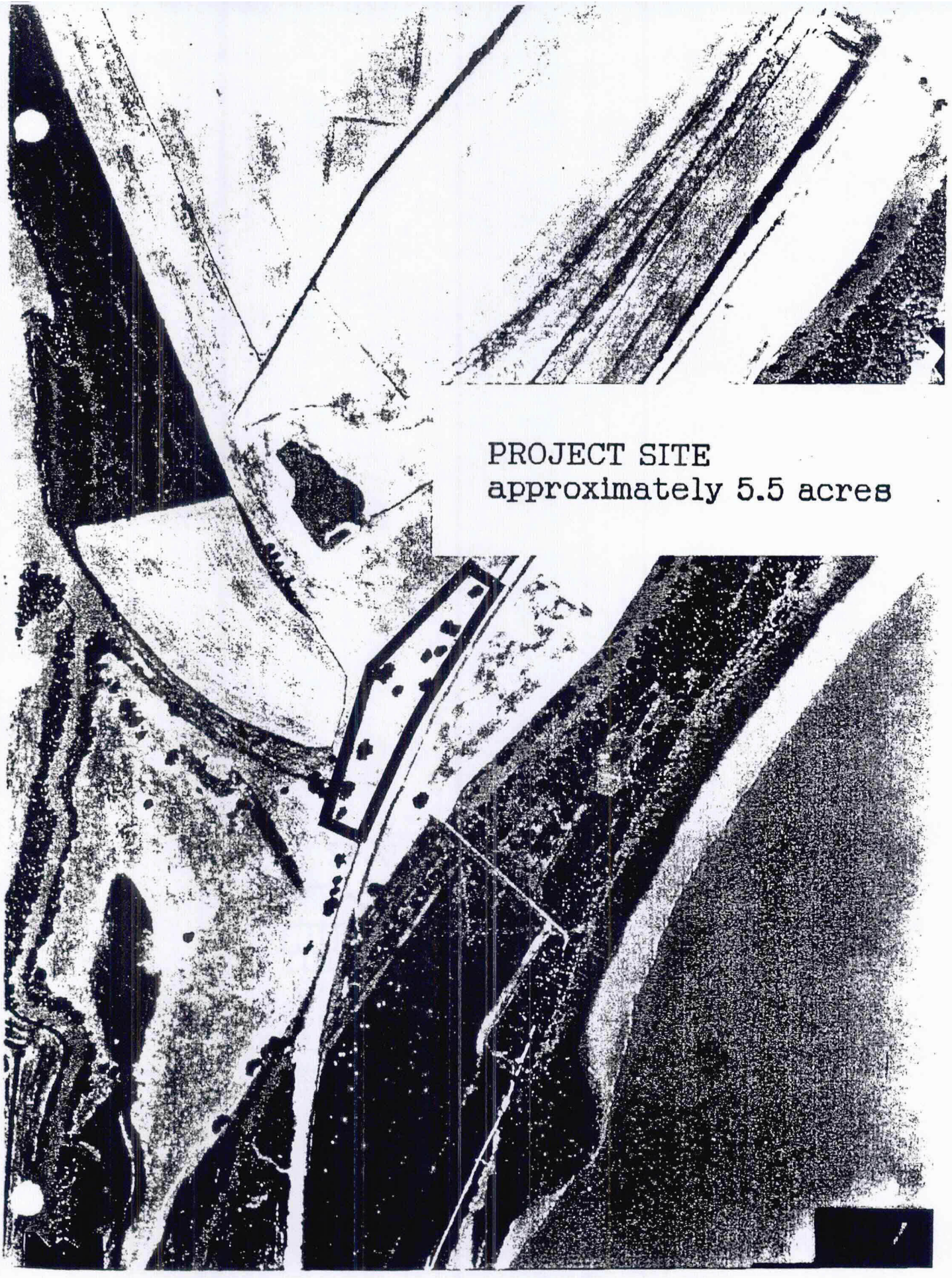

Lewis River
RIDGEFIELD
Columbia River
CLARK COUNTY
Salmon Creek
OAK PROJECT SITE
Vancouver Lake
VANCOUVER LOWLANDS
VANCOUVER
5
205
14

FIGURE 1


PROJECT SITE
approximately 5.5 acres

Site Plan

NOTE: Please mark photo sites on the site map

Submit slides and photos

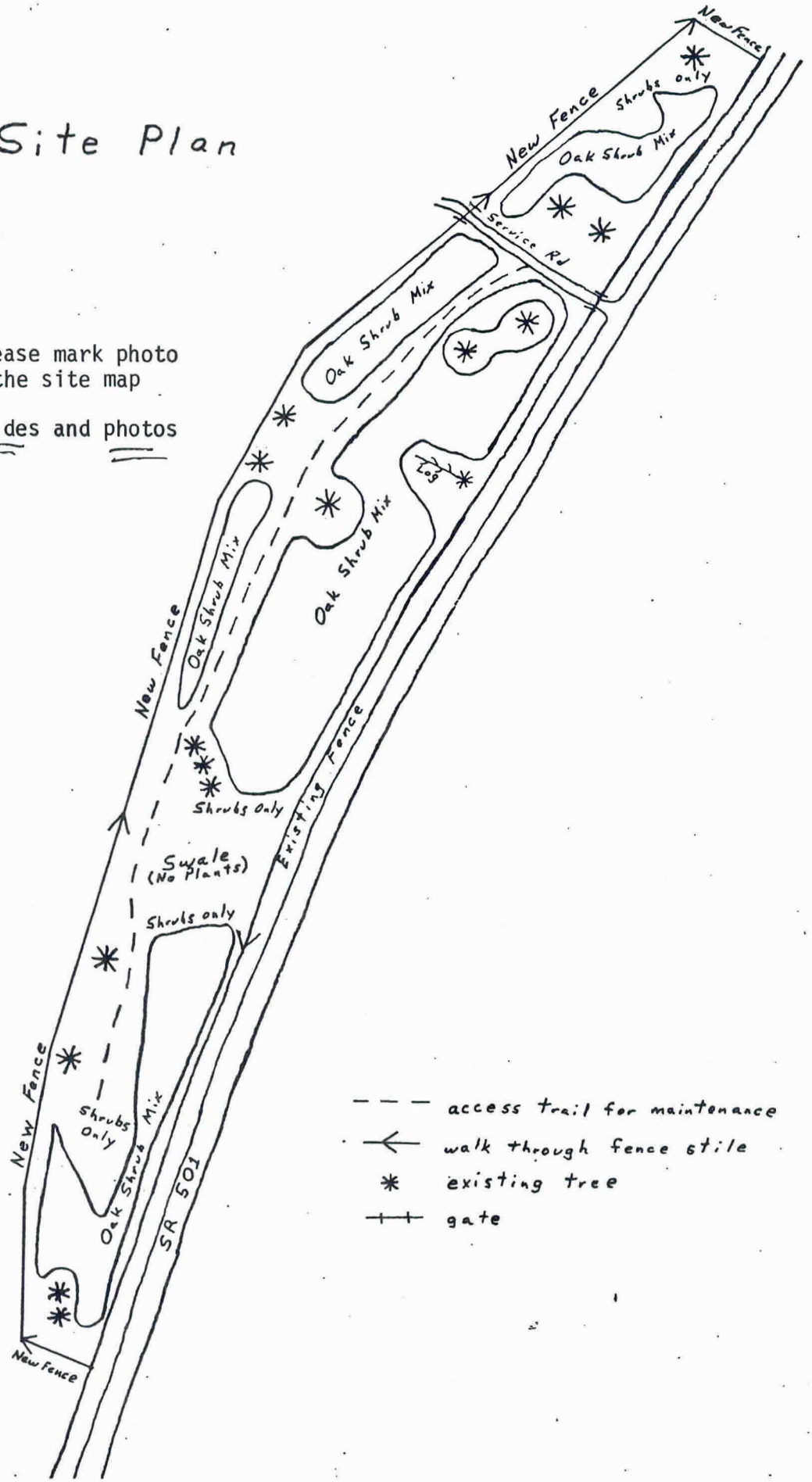


PHOTO MONITORING POINTS FOR SHILLAPOO OAK REFORESTATION PROJECT

Photographic monitoring is being used as one means of monitoring this project. A total of six photo-points have been established at recognizable landmarks in and around the project boundaries. To date, photographs have been taken three times from these points.

The photopoints are described as follows:

POINT #	DESCRIPTION
01	From the railroad tie fencepost adjacent to the agfield north of the project looking into the site. Line of site is parallel to the road.
02	From the base of the northernmost existing oak tree within the project looking south. Line of site is parallel to the road.
03	From the fence stile into the field west of the site, looking directly at the road.
04	From the base of the existing oak tree on the south side of the swale within the project, looking directly towards the gate entering the project off of SR 501.
05	From the fence stile access along SR 501 on the south side of the swale, looking westerly along the swale directly at the large ash tree in the distance.
06	From the north end of the guardrail on the west side of SR 501, looking north, directly up the shoulder of the road.

The following three sets of photographs do not show dramatic changes in vegetation. However, project developments are illustrated. We intend to continue to utilize these points, at least annually, to illustrate the long term development of the site. The three sets of photographs are described as follows.

SET 1 (MARCH 10, 1994)

This set shows pre-project conditions. The site had been grazed the previous year. Little residual ground cover is evident and ruts from farm traffic are evident.

SET 2 (JANUARY 04, 1995)

Blue and orange flags seen in photos 02 and 05 show the location of planted oak trees. Plastic squares around the trees are seen in photo 02. The project fence can be seen in photo 03. A difference can be noted within the project when compared to the grazed pasture in the foreground even though most of the project site had been mowed. Taller residual ground cover is evident in photos 02, 03, 04, and 05.

SET 3 (MAY 19, 1995)

This set of photos illustrate spring conditions and the need for maintenance activities. These were taken just prior to mowing of the site to control weeds, plant competition and rodent damage. Shrubs and other trees had been planted by this date but are not evident in the pictures due to the tall grass and weeds.