YUKON TERRITORIAL GOVERNMENT EXPLORATION INCENTIVES PROGRAM PROJECT 96 - 072

# PLACER PROSPECTING ON THE YUKON RIVER NEAR FORTYMILE RIVER

May 28 - DECEMBER 19, 1996

# TRANSVERSE MERCATOR PROJECTION CO-ORDINATES latitude 64° 25' - longitude 140° 30' PLACER CLAIM SHEETS 116C-7

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Appendix Prospecting Diary

### **Project Scope and Objectives**

The objective of this prospecting work was to examine the gravel bars and islands in and around the mouth of the Fortymile River for placer gold deposition. I confined my work to examining exposed gravels in banks and bars. This approach allowed me to make a cursory evaluation over a large area. I was attempting to determine whether follow up analysis of the gravels, to bedrock depth by trenching or drilling, is warranted Because the bedrock in these gravel deposits is located well below the water table, hand sampling to bedrock is not possible

The work included the examination of two bar/island gravel deposits. One deposit, comprised of two islands and their associated bar/back channel gravel formations, is located approximately ½ mile upstream from the mouth of the Fortymile River. The other deposit consists of an island-delta complex formed at the confluence of the Fortymile and Yukon Rivers.

I had originally planned to examine some other bars both upstream and downstream of the Fortymile on the Yukon River However, after surveying the area from the air, I decided to focus my work at the immediate confluence of the rivers The two deposits which I examined are large, encompassing millions of yards of gravel. Road access to these deposits is already established I also reasoned that gold enrichment from the Fortymile River drainage would be more pronounced in the immediate area of the Fortymile-Yukon confluence.

### **Project Location and Access**

The islands and bars which I examined at the confluence of the Fortymile and Yukon Rivers are

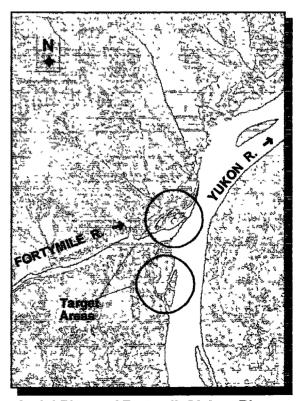
shown on the accompanying Maps 1 and 2, and the accompanying aerial photo. The area is located on NTS map/claim sheets 116-C7 The coordinates are  $64^{\circ} 25'$  latitude and  $140^{\circ} 30'$  longitude.

The areas which I prospected are accessible by bush trails and also by a 2 1/2 mile road which is a spur of the Clinton Creek road This road is shown on **Maps 1 and 2**. The area is also accessible by boat on the river

### **Reason/Rationale**

My reasons and rationale for prospecting this area are as follows:

 This area represents the culmination of the flow of the Fortymile River The Fortymile is a well known gold producing area which cuts through approximately 16,000 km<sup>2</sup> of placer gold bearing drainage The Fortymile River valley at its confluence is approximately one



Aerial Photo of Fortymile/Yukon Rivers

mile wide. I expect that gold carried by the river would drop out in this area.

- 2) A large South African gold producer, Anglo-American Inc., held a dredging lease in this area in the early 1970's. They also held other dredging leases along the Yukon River. They performed an extensive drilling program on this ground in the spring of 1974. One of the drill crew whom I know told me that the results from drilling at the confluence of the Fortymile were the best they found in all of their exploration work on the Yukon River dredging leases.
- I have heard that in the early days the bars of these islands were worked by hand methods.
- 4) Because the gravel deposits in these islands are not deep and are thawed, they would be amenable to development for floater dredging. This mining method is cost efficient, so that reserves of low grade can be mined profitably

### Deposit Type and Geology

This area consists of several large islands which were formed by the merging of the Fortymile and the Yukon Rivers. These islands consist of large stable vegetated cores which are surrounded by bar gravels. Muck depth in the island cores ranges from 5 to 10 feet. Gravel depth to bedrock in these island formations is rumoured to be less than 30 feet. The gravel is well-washed, rounded, and sandy, typical of river bottom gravel. These islands contain millions of yards of gravel.

### Work Description/Methodology

I undertook an aerial survey of the Yukon River. paying particular attention to the area at the confluence of the Fortymile. This allowed me to survey a large geographical area and to gain a perspective on the size of the bars associated with the islands in the river. I felt that an aerial survey would help me better define my area of interest quickly so that I could concentrate my work.



Confluence of the Fortymile with the Yukon River

Once I had determined my areas of focus I examined the location on foot. First I mapped the area. I followed up by taking pans where gravel was exposed, concentrating on the larger bars. All pans taken are recorded in the results The gravel was processed in a 10 inch gold pan which holds approximately 8 to 9 lbs. Rocks over approximately 4 inches diameter were rejected. The gravel was screened through a grizzly pan with 3/8 inch holes so that +3/8 material was washed and discarded. The remaining -3/8 material was panned carefully. Gold colours obtained in the pan were counted and recorded; larger flakes were noted.

In the locations on the bars where I obtained the best pans, I excavated pits to approximately 3 feet deep or to water. Because there is often a surface showing of gold on the bars to a depth of 6 to 10 inches, I wanted to dig below this depth to determine if gold is present below this zone. I took bulk samples of approximately 350 to 450 lbs. from each of these pits. I tried to get a sampling over the entire depth of the pit. I packed these samples in 2 1/2 gallon pails, labelled them, and took them back to camp to be processed in a controlled environment with more accurate concentrating equipment. The pits were back-filled; Department of Fisheries and Oceans is concerned that pits which are left open result in fish entrapment.

Samples were processed in a cleanup room to minimize error. When analyzing relatively low grade gravel containing fine gold particles, the loss of a small number of colours from a sample can affect grade projections significantly Conversely, if a sample is contaminated with some gold particles present in the equipment from a previous sample, results will overestimated. I felt that the larger bulk samples would help to offset the tendency for error associated with analyzing this type of gold bearing gravel. I didn't assign grade figures to the samples which I panned on site; a small sample processed quickly in the field gives a preliminary indication of the extent of gold presence, but is not accurate for grade analysis.

The procedure which I used to process the samples is outlined as follows:

- 1) The pails from each pit were assembled in batches in the cleanup room and were allowed to thaw. (The samples were processed during the winter)
- 2) A number of the pails were weighed and found to contain, on average, 45 lbs. of gravel.
- Each batch of gravel (7 to 9 pails) was washed and screened through a grizzly pan. The +3/8 gravel was discarded as tailings
- 4) The -3/8 pea-gravel and sand was wet screened again through a 10 mesh (Tyler) screen. The -10 mesh sand fraction, as well as the -3/8" +10 mesh fraction, were saved.
- 5) The +10 mesh fine gravel fraction was carefully panned to determine if any +10 mesh flakes were present.
- 6) The -10 mesh sand fraction was processed through a gold wheel. The gold wheel was 18 inches in diameter with 4 leads. The water used for processing in the gold wheel had a soap solution added to it to discourage flotation of fine gold. The wheel was run on the

high speed and at a relatively shallow angle to split off the light sands from the heavier concentrate. The light sands were spot checked with a gold pan periodically for gold loss. This light sand fraction was then discarded as tailings.

- 7) The concentrate from the gold wheel (consisting of 2 to 4 cups of heavy sands) was run again through the gold wheel. The gold wheel was set at steep angle and on low speed.
- 8) The final concentrate obtained by the gold wheel consisted mostly of black sand and fine gold. The concentrate was dried and spread in a porcelain plate. A magnet was used to draw the magnetic sands from the gold.
- 9) The remaining concentrate, consisting of fine gold particles with a few bits of heavy nonmagnetic sands (mainly hematite and small garnet chips), was carefully panned in a 3 inch gold pan, and then dried. The remaining waste particles were picked out with tweezers.
- 10) The clean gold obtained from each batch was weighed using a gun powder scale.
- 11) The gold was spread out on a grid paper and colours were counted.

I repeated this procedure for each of the 4 bulk samples which I took.

### Results

The results from this prospecting work are encouraging, considering the cursory nature of the work. There was a notable similarity in the grade estimates of the gravel of the 3 bars.

I took the weight of gold obtained from each of the bulk samples and calculated how much gold is present in a loose yard of gravel of this material. The number of yards required to produce an ounce of gold, or a value per yard of gravel can be calculated easily

The results of the work which I performed of the bars are summarized below.

### 1) Results from sampling the Yukon River Bar upstream of Fortymile

A description of the work and sampling results from this bar are shown from pages 1 to 13 in my field book. The results from the pan samples are shown in **Table 1**. The results from the bulk samples are tabulated on page 54 of my field book and shown in **Table 3** The preliminary grade estimate obtained from these 2 pits has been averaged to be **.004 ounces of raw gold per loose yard of gravel**.

I determined a rough yardage estimate of the gravel contained in the portion of the bar which I evaluated. This estimate is shown in **Table 4**. I assumed the gravel depth to be 18 feet to bedrock; this figure is based on reports from people knowledgable in the area. I calculated the volume in loose yards, rather than in-place yards. I assumed a swell factor of 1.3, which is a common figure used by the industry. **The total yardage of the bar which I sampled was 390,000 cubic yards**.

### 2) Results from Sampling Two Bars at the Fortymile Confluence

A description of the work and results are shown from pages 17 to 48 in my field book. The results from the pan samples are shown in **Table 2**. The results of the bulk samples are shown on **Table 3**, and tabulated on page 54 of my field book. The preliminary grade estimates obtained are as follows:

Bar A is estimated to contain .005 ounces of raw gold per loose cubic yard of gravel.

# Bar B is estimated to contain .003 ounces of raw gold per loose cubic yard of gravel.

I calculated rough volume estimates of the reserves contained in each of these bars. The dimensions and gravel volumes contained in the bars are summarized in **Table 4**. These volume estimates are based on the same assumptions as previously mentioned. These volume estimates are listed below.

Bar A contains approximately 520,000 loose cubic yards of gravel.

Bar B contains approximately, and coincidentally, 520,000 loose cubic yards of gravel.

These figures are meant to give a very preliminary sketch of the tenor and volume of ground in the bars examined.

### **Conclusions and Recommendations**

Based on preliminary prospecting, I believe that these bars warrant further investigation Because I didn't sample the gravel to a depth below 3 feet, it is not possible to project grade of the gravel with confidence. However, the work confirmed that the gold is not located only in the surface gravels

While the grade of the ground is quite lean, the volume present makes the deposit attractive Because this gravel is amenable to floater dredging, mining costs would be well below one dollar per yard. There is no stripping required and reclamation would be easy. I expect that grade would improve at greater depths and on bedrock Because there is good road access mining costs would be further reduced.

I recommend that further evaluation work be carried out. The first thing that should be done is to confirm depth to bedrock. This could be done by drilling, or by analyzing the results of the Anglo-American drilling program if they could be obtained When bedrock depth has been confirmed, sampling should be undertaken to determine the tenor of the ground through the total gravel section. This work could be done cost effectively using an excavator if the ground is not too deep, or by drilling if the depth to bedrock is greater than 25 feet

Sample No.	No. of Colours	Remarks
29.1	0	
29.2	2	fine colours
29.3	5	3 are flakes, lots of black sand
29.4	7	fine
29.5	0	no heavy concentrate
29.6	0	
29.7	2	1 is good sized flake
30.8	4	average sized colours, good black sand
30.9	0	•
30.10	0	
30.11	2	fine colours
30.12	5	2 are flakes
30.13	11	good sized colours
30.14	17	6 are good flakes
30.15	13	1 ft below surface, fine colours
30.16	10	2 ft below surface, fine colours
30.17	9	3 are flakes
31.18	6	fine colours
31.19	0	

Table 1 Results of Pan Samples From Yukon Bar

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Sample No.	No. of Colours	Remarks
13.1	0	
13.2	2	fine colours
13.3	0	
13.4	11	5 are good flakes, good black sand
13.5	7	all good sized colours, ~ 3 tsp. black sand
13.6	2	fine colours
14.1	7	medium sized colours
14.2	4	2 are flakes
14.3	6	fine colours
14.4	11	fine colours
14.5	0	
14.6	2	1 is flake
14.7	6	3 are flakes
14.8	0	
14.9	3	fine colours - microscopic
15.1	0	
15.2	2	very fine colours
15.3	4	fine colours
15.4	0	
15.5	0	
15.6	1	fine colours
15.7	0	
16.1	11	fine colours
16.2	4	medium colours
16.3	13	4 are good sized flakes
16.4	3	flakes
16.5	0	

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Table 2Results of Pan Samples from Fortymile Confluence Area

## Table 3 Results of Bulk Samples

### SAMPLES FROM YUKON BAR

Sample No.	Wt. of Gravel	Wt. of Gold	No. of Colour	Projected Grade
Pit YB.1	7 pails = 315 lb	.18 grains	77	.003 oz/yd
Pit YB.2	7 pails = 315 lb	.3 grains	101	.005 oz/yd

### SAMPLES FROM BARS A & B AT MOUTH OF FORTYMILE

Sample No.	Wt. of Gravel	Wt. of Gold		Projected Grade
Bar A - Pit A	9 pails = 405 lb	.34 grains	120	.005 oz/yd
Bar B - Pit B	7 pails = 315 lb	.19 grains	69	.003 oz/yd

Note: In making the above calculations, we used the following constants

1 troy ounce = 486 grains

1 loose yard of gravel = 2,800 lbs.

 $1 - 2\frac{1}{2}$  gallon pail of gravel = 45 lbs.

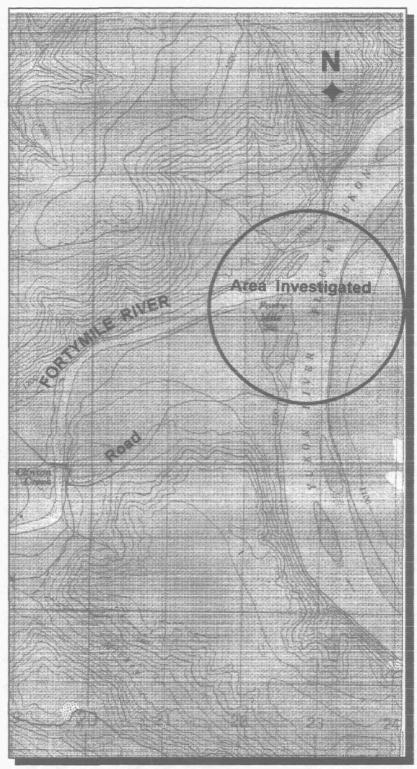
Gold grade was calculated in raw ounces with no conversion to fine ounces.

Table 4 Volumes of Gravel of Bars Tested

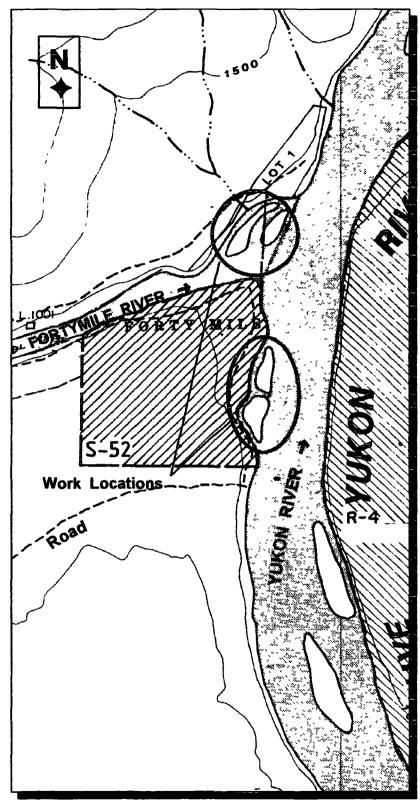
Bar	Length	**************************************	Depth (assumed)	Swell Factor	Volume in loose yds
Yukon	1,500 ft	300 ft	18 ft	1.3	390,000 yd <sup>3</sup>
Bar A	1,500 ft	400 ft	18 ft	1.3	520,000 yd³
Bar B	1,200 ft	500 ft	18 ft	1.3	520,000 yd <sup>3</sup>

Notes:

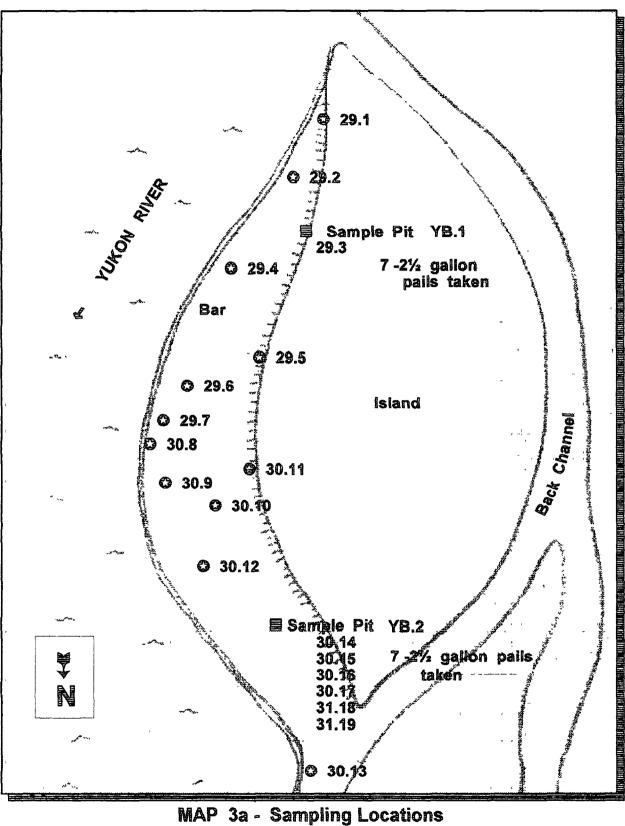
- gravel is assumed to swell 1.3 times when excavated
- depth is assumed to 18 ft based on discussions with people familiar with the area.

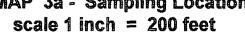


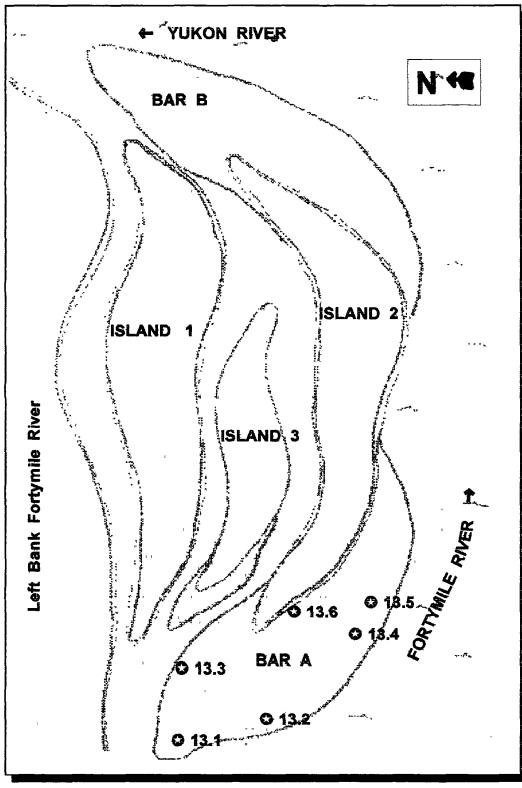
MAP 1 - Property Location NTS Map 116C-7 scale 1:50,000



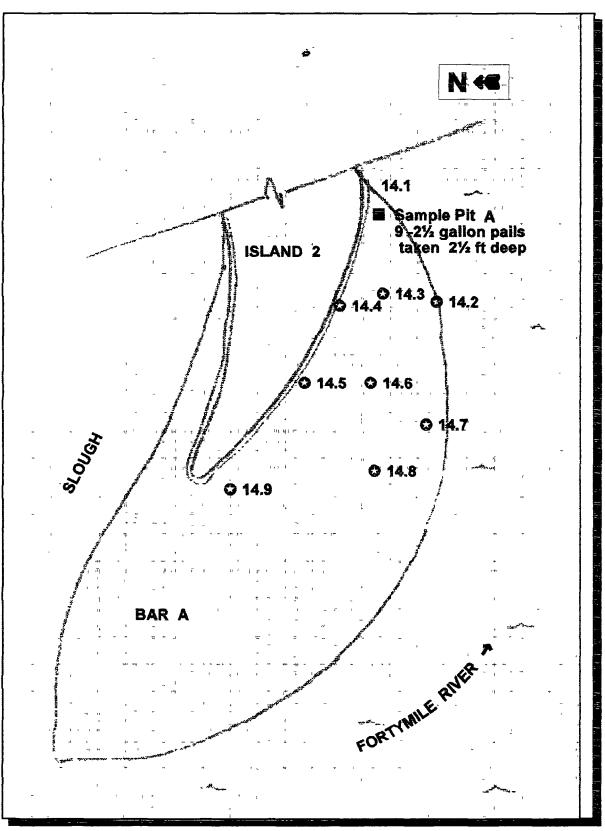
MAP 2 - Work Locations NTS Map 116-C7 scale 1:30,000



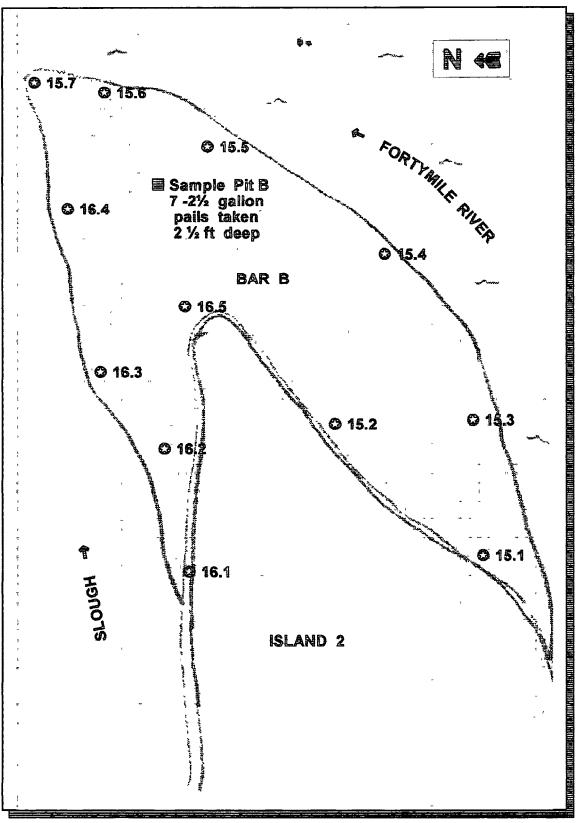




MAP 3b - Sampling Locations scale 1 inch = 300 feet

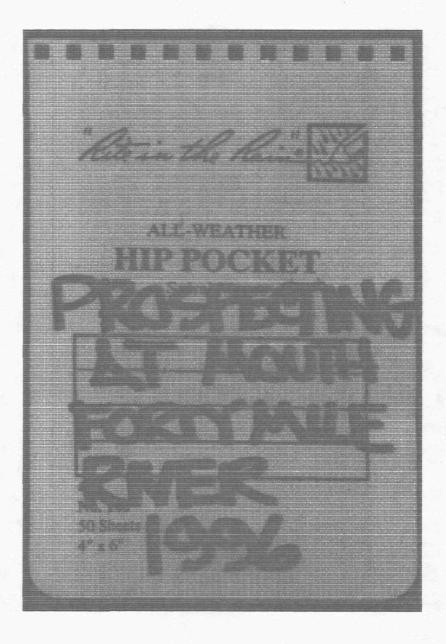


MAP 3c - Sampling Locations scale 1 inch = 130 feet



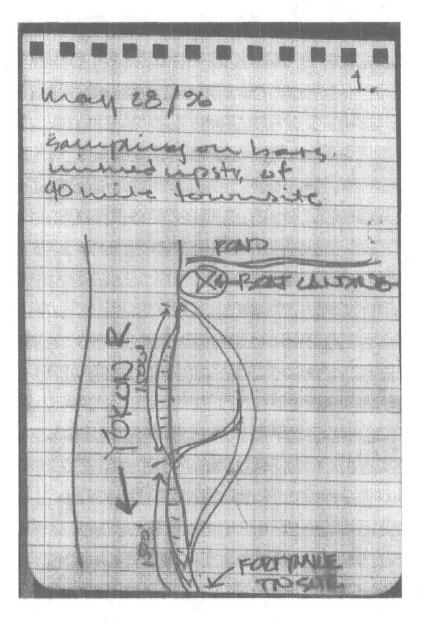
MAP 3d - Sampling Locations scale 1 inch = 130 feet

APPENDIX Prospecting Diary

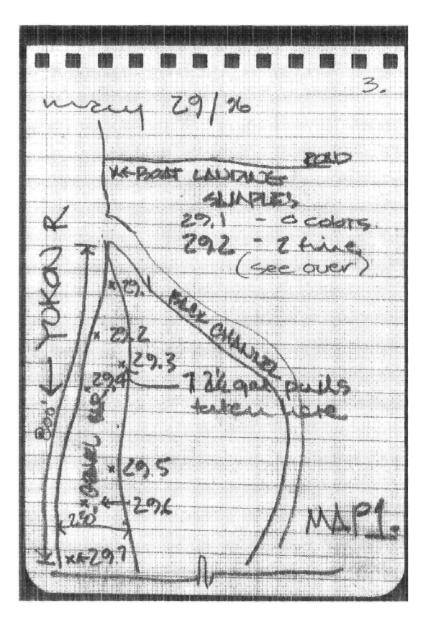


Bill Claxton YMIP Project 96-072

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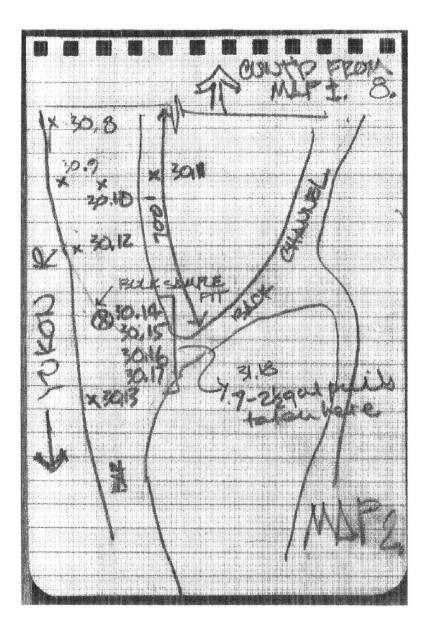
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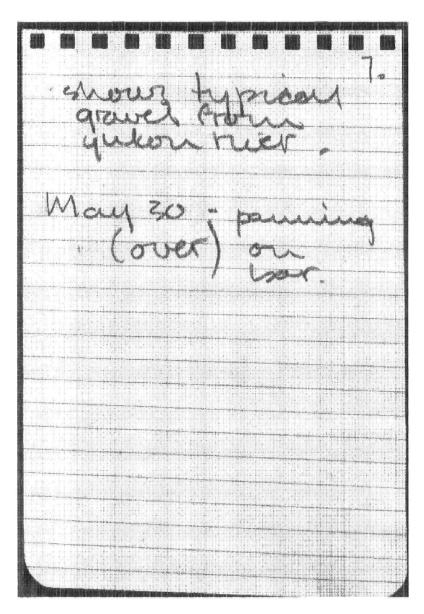


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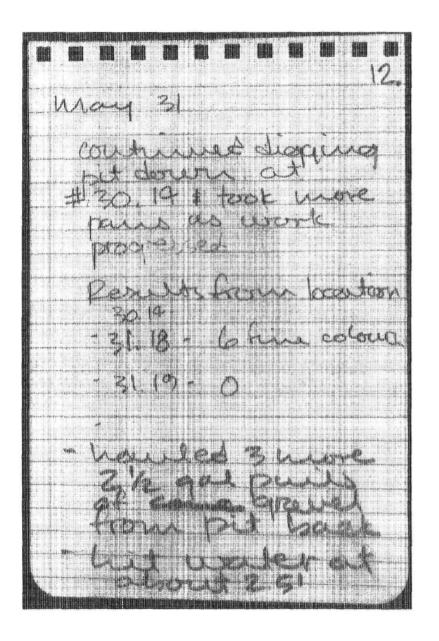
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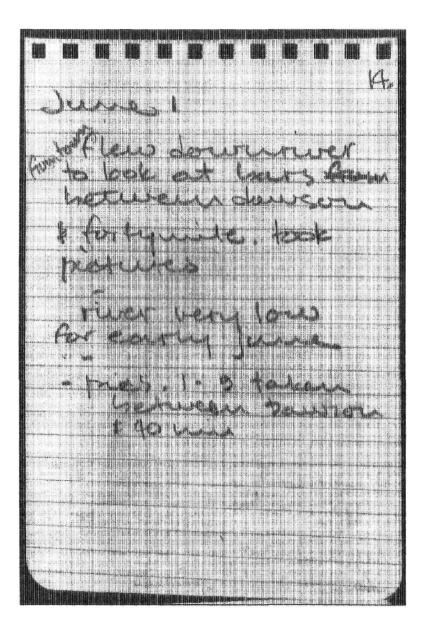


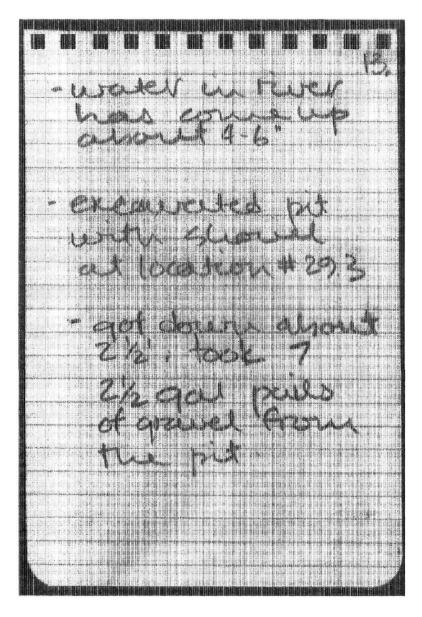
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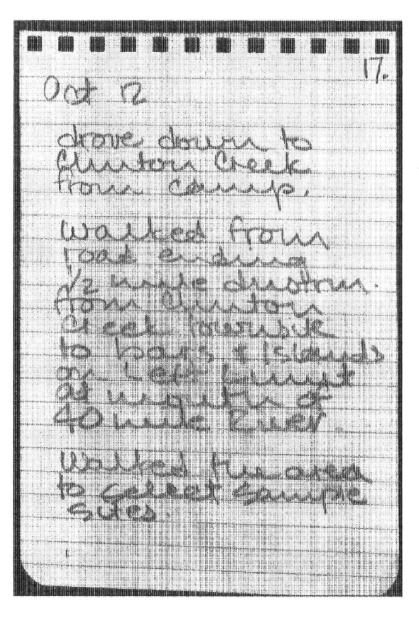


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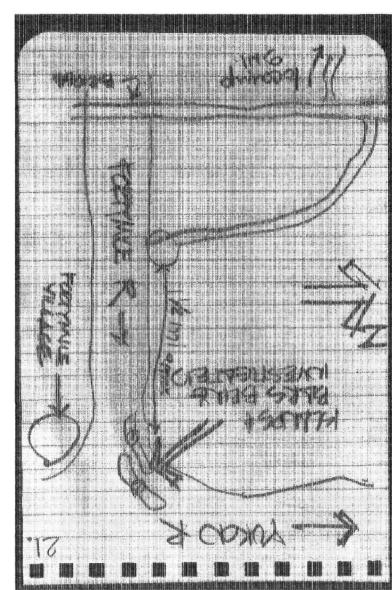
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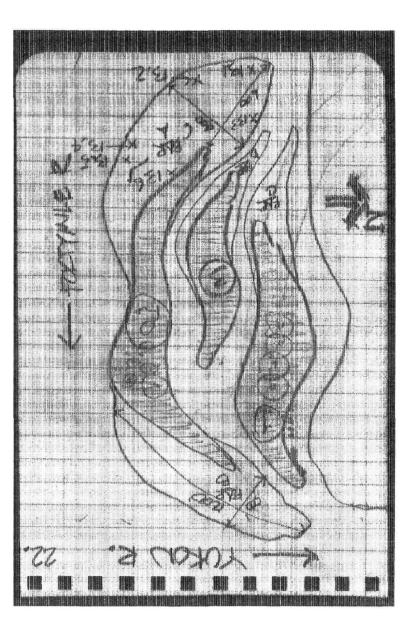
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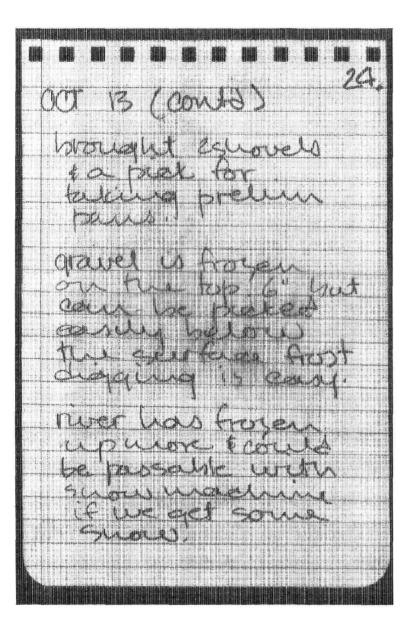
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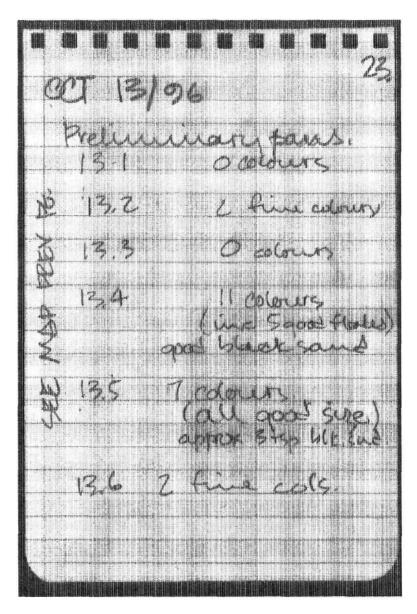
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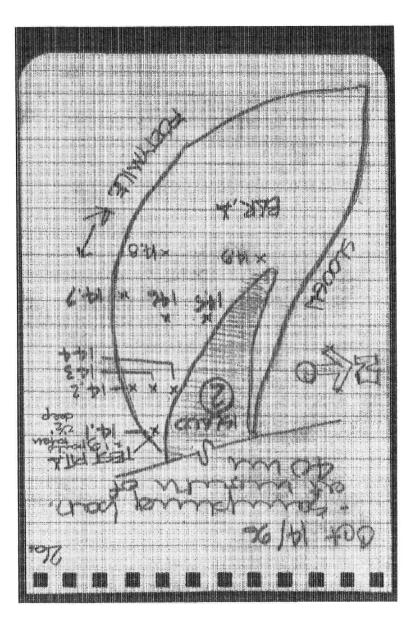


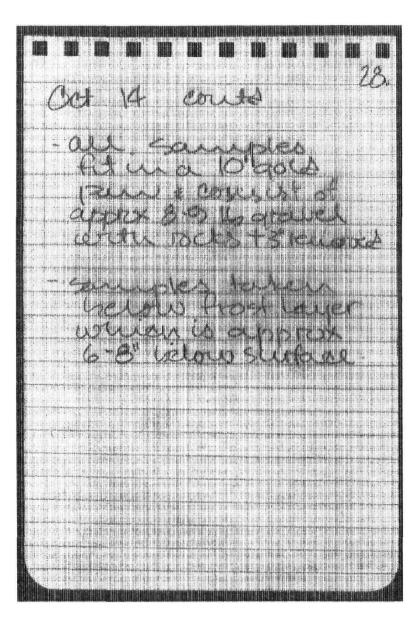
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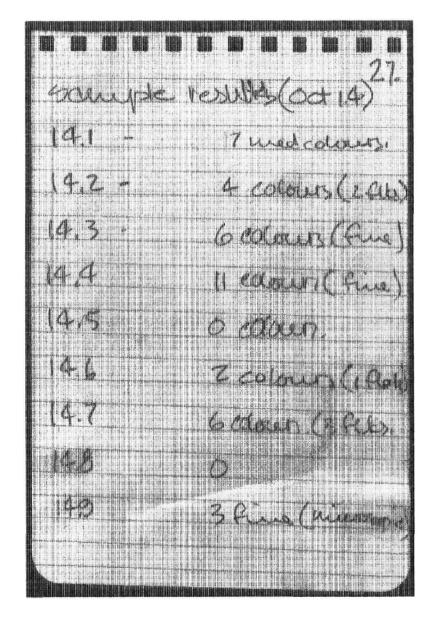


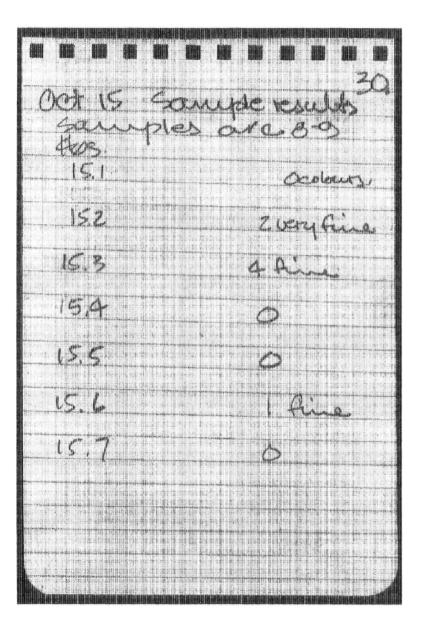


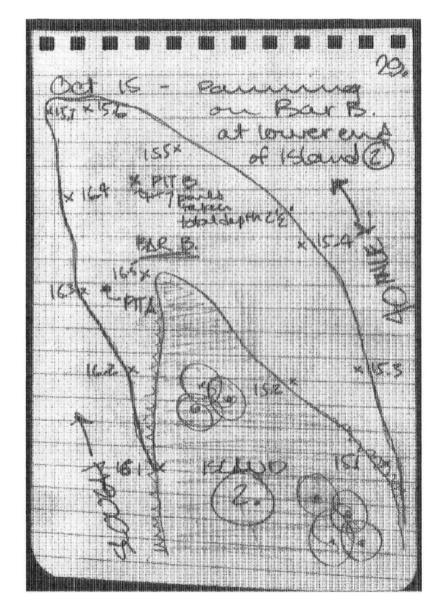
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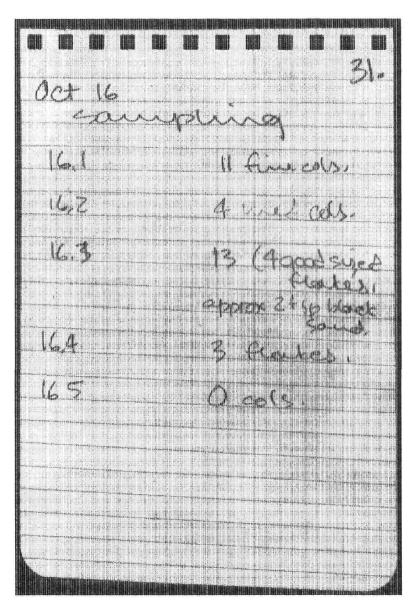


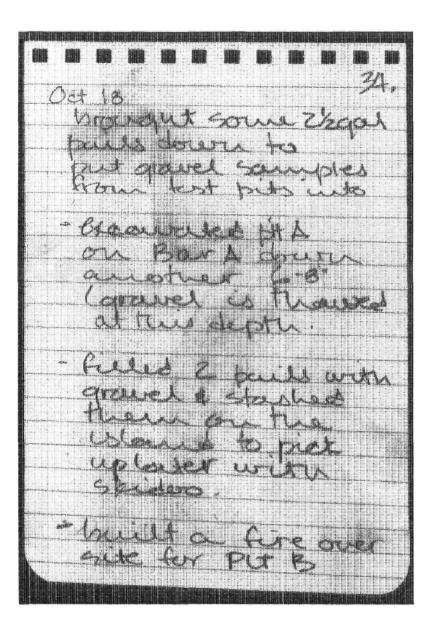


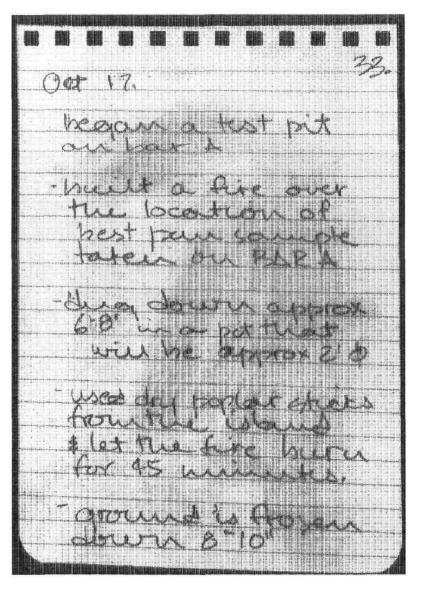




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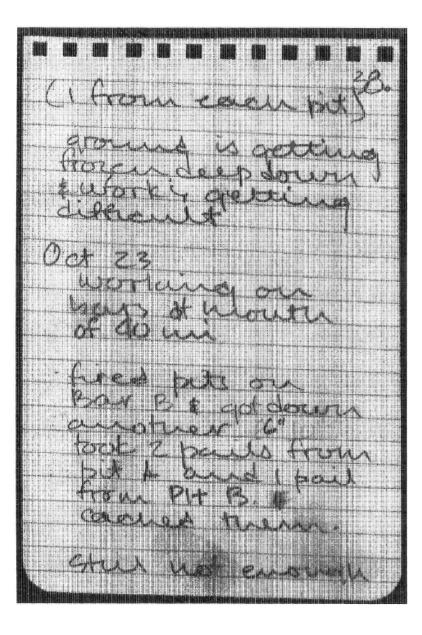


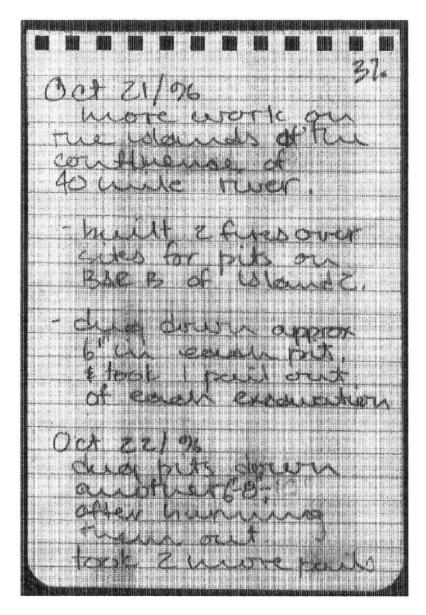




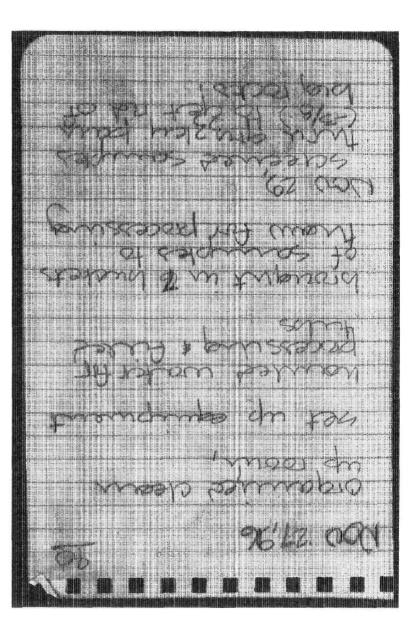
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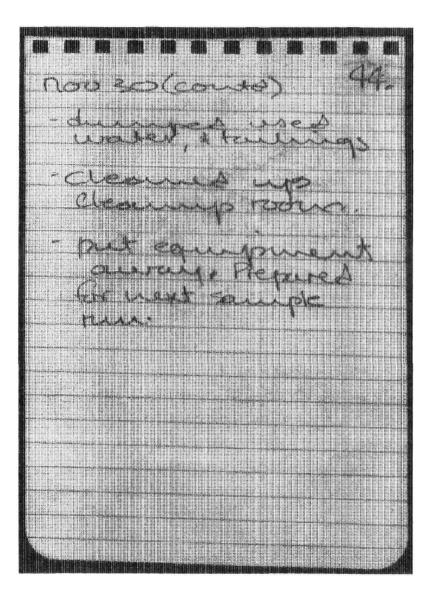
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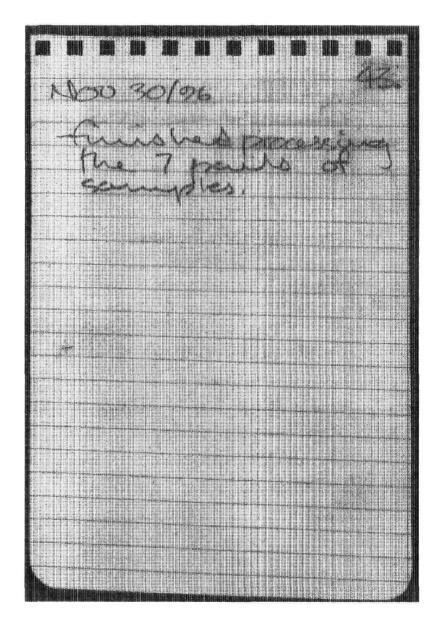
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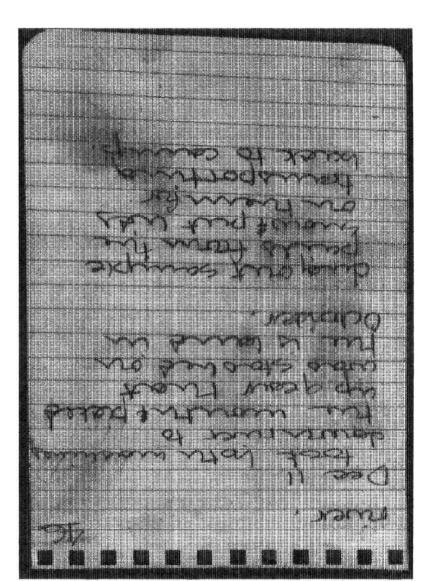
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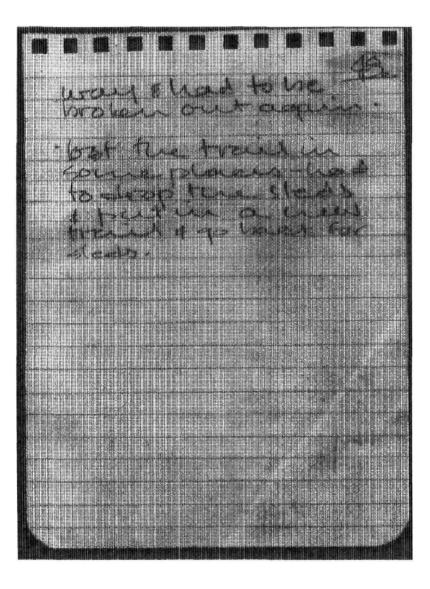
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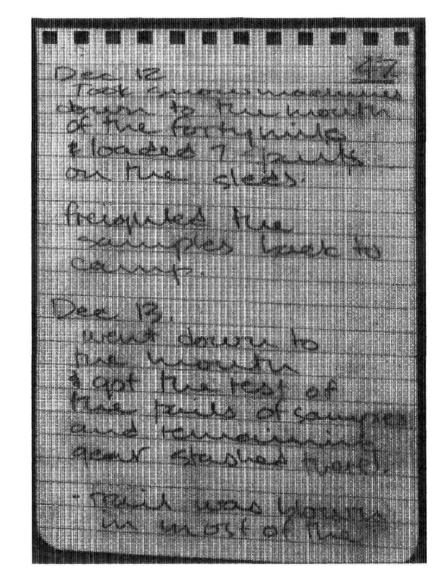




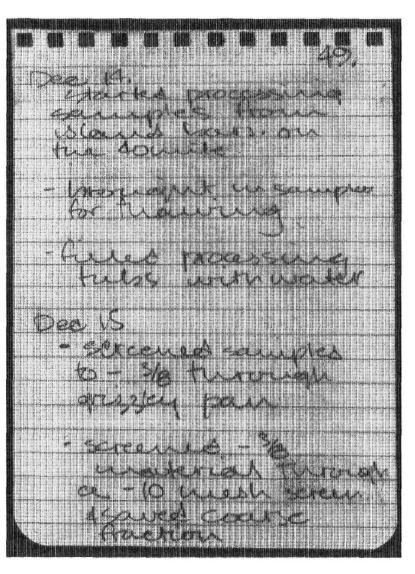


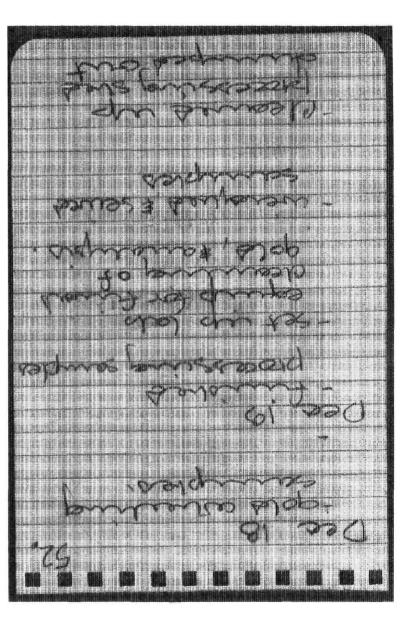
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