

TO: \_\_\_\_\_ Jim Krull

FROM: Mike Tomlinson

SUBJECT: Flett Creek Water Quality SurveyDATE: August 21, 1974State of  
Washington  
Department  
of Ecology

This is the summation and interpretation of data collected by both Pat Lee and I. This survey indicates that the problem of Flett Creek is more complex than originally thought. Possibly some more investigation is in order.

MT:jmh

## WATER QUALITY SURVEY OF FLETT CREEK

The Flett Creek drainage basin lies south of 6th Avenue and west of I-5 in Tacoma (see Figure 1). The natural basin occupies a little over 8 square miles of this area. Flett Creek, as such, flows through only the lower third on its way to Chambers Creek. The drainage basin was at one time predominantly marshy, however, as urbanization encroached on the area, the marshes were filled. Today Flett Creek's drainage has been substantially altered by man. The marshy areas which are now filled and developed once absorbed storm waters allowing this water to enter the creek over a period of time. This no longer being the case, the storm waters rush to the creek in a matter of hours causing flooding. To further add to the difficulties, some areas previously not in the drainage area have been added due to storm sewers. These two factors have done much to affect the flow of Flett Creek.

Concerning water quality, several factors affect the creek. First, there are the storm sewers mentioned above, second, one must consider the geology of the area and third, there are human activities in the area to be considered. The first factor may in many ways be the most important. Flett Creek now exists as a creek which in a few hours may change from a placid stream to a rather substantial torrent. In examining Table 1, one can discern a notable increase in maximum instantaneous flows during the years 1968 through 1969. As development continues, no doubt this trend will continue as well. The affects of this sudden flow are several. Most importantly, since there is no longer as much marshy area to absorb the water, flooding is more probable. As the water inundates the surrounding land it picks up materials detrimental to water quality. This very probably occurred on the 23rd of January, 1974, when the total coliform near Puget Sound Rendering reached a count greater than 160,000. Later in the year (July 3, 1974) the treatment lagoon showed a total coliform of 1200. The most probable cause for this high coliform was flood waters washing over paunch manure which was awaiting burial and not from the treatment lagoon. No doubt similar cases occur all along this stream. It must be remembered that storm sewers contribute suspended solids, oils, etc. as they drain streets in the area. This flooding is perhaps the toughest problem to clear up but it must be done if one wishes to improve the quality of the water.

As mentioned above, the geology of the area must be considered as well. Figure 2 shows a cross section of the Flett Creek area (the location of this cross section and the distribution of peat may be seen in Figure 3). For the most part we need only concern ourselves with the peat, Vashon Till and its overburden of coarse gravel. The material below this is of variable and unknown permeability and should affect water quality only slightly. The Vashon Till is impermeable and tends to contain water above and below (aquiclude). This has the effect then of taking surface waters which soak into the very permeable gravel overburden and "channeling" this water in the direction of the creek. This water, however, will only reach the creek if it surfaces in the form of a spring which then empties into the creek via the surface or where the creek flows out of the peat and into contact with the gravel (the peat itself is impermeable). On examining Figure 3 one will note that there is only one spring which might feed the creek and because of the peat, the creek is essentially isolated from the ground water. However, closer scrutiny of the peat distribution shows that in a few areas the creek does leave the peat thus putting it in contact with the ground water. A study made by the USGS (1966) has shown that recharge by ground waters does occur in several areas. This contact with ground water has several effects. First, it alters the flow (either adding or subtracting) which will affect concentrations of various materials in the water. Second, because of the "channeling" effect of the Vashon Till, ground water from the southern scarp may be contained and directed to Flett Creek. According to Jerry Bollen of this Department in a statement to the Clover Park School Board (January 11, 1971), "the Chambers Creek Basin (of which Flett Basin belongs) at 80,000 persons has the dubious honor of being the second most populous area in the U.S. served entirely by septic tanks." It is safe to assume that some of the daily 8,000,000 gallons of sewage is directed into Flett Creek via ground water, due to the geology of the area.

The last factor to be considered is the human activities other than residency (mentioned above) which may affect water quality. Flett Creek runs through or past a rendering plant, a cemetery, a sewage treatment plant outfall (primary), and a dairy (with processing plant). Figure 3 shows Station 1-6 where samples were taken. Stations 1-4

were taken January 23 and July 3, 1974, Stations 5 and 6 were taken only July 3, 1974. For a complete site description consult the appendix. Table 2 shows the results of analysis of the samples. It is important to realize that on the 23rd of January, Flett Creek was flooding, whereas on the 3rd of July, the creek between 1 and 3 was ponded (not flowing) and the remainder of the stream was flowing calmly. January 23 revealed a high total coliform throughout the area sampled and near Puget Sound Rendering a phenomenal value of 160,000. As mentioned earlier, this is probably due to flood waters contacting paunch manure awaiting burial. This is further substantiated by the high ammonia values. The fecal coliform to fecal strep ratio of 2.8 may indicate some human wastes as well but from where, is difficult to say without a closer examination of the geology at that point. Continuing with the analysis of the creek during flooding, one should note that while nitrates are high, they aren't excessive. Phosphates on the other hand are not only high but excessive. Since phosphate is most likely the limiting nutrient and 0.01 mg/l concentration is considered the threshold for eutrophication, this poses a serious problem. Perhaps more meaningful, is the survey done on a dry day like July 3, 1974. Here one doesn't have to contend with flood waters confusing the issue thus allowing one to pinpoint problems. Stations 1 and 2 were taken in the ponded segment of the creek. They both show fairly high coliforms. Station 5 is a sample from the non-overflow lagoon of Puget Sound Rendering. The total coliform is considerably less than the adjacent stream. Note that the dissolved oxygen is quite low indicating that the lagoon is definitely working. The integrity of the lagoon should be quite good considering it is dug into impermeable peat. One might assume that if it is truly non-overflow then it must have some contact with the gravelly aquifer since evaporation could hardly account for all of the water. Traveling through this gravel should have a purifying affect on the water. It is interesting to point out that should flooding occur, the stream would pollute the lagoon and not vice versa. At Station 3, downstream from the rendering plant and in the middle of the cemetery, the creek had just begun to flow. Here the coliform drops down considerably. This section is choked with plants and a high dissolved oxygen occurs in the day. The high COD is unaccounted for. Note that this is one of the areas where the creek leaves the peat. Station 6 is just downstream from

the Clover Park STP outfall and a rather mysterious ditch coming from the general direction of Flett Dairy. The STP is poorly run and may account for some of the coliform, however, the fecal coliform to fecal strep ratio indicates a mixture of both human and animal waste. According to the Flett Dairy Waste Discharge Permit (#5013) all process waste and animal waste are to be discharged on the land. The limit is set at 800,000 gallons per day. One might inquire as to the source of the ditch. The affects of a cemetery are totally unknown and at this time nothing will be said. The last station and hence furthest downstream is 4. Here the coliform is still quite high and appears to be animal in nature. The stream at this point was choked extensively with weeds.

In summary, one sees a stream that is for the most part a product of man's intervention. Little is known of the stream before man intervened. The peat through which it flows no doubt had a detrimental effect on the water. This effect has, however, been completely dominated by more recent events. The stream's drainage basin has been drastically altered and many human activities are contributing detrimental materials to the stream. While it is doubtful that the drainage problem will ever be corrected, it is possible that the stream channel may eventually account for this. In the area of human activity contributions several suggestions are put forth. First, all homes presently on septic tanks be hooked up to a sewage treatment plant and that plant should discharge to a larger body of water (not Flett Creek). Second, concerning the rendering plant, all paunch contents should be hauled out of reach of the flooding creek and the dike which separates the creek from the lagoon should be improved and completed. Third, the Clover Park STP should either increase its efficiency or hookup to the above proposed treatment plant. Fourth, and last, the Flett Dairy should be investigated more closely, not only in an effort to determine the source of the ditch but also to check the efficiency of their land disposal techniques. The stream will never regain its natural status but hopefully with the rectifying of those stated problems, the stream will at least become healthy rather than the sewer it is today.

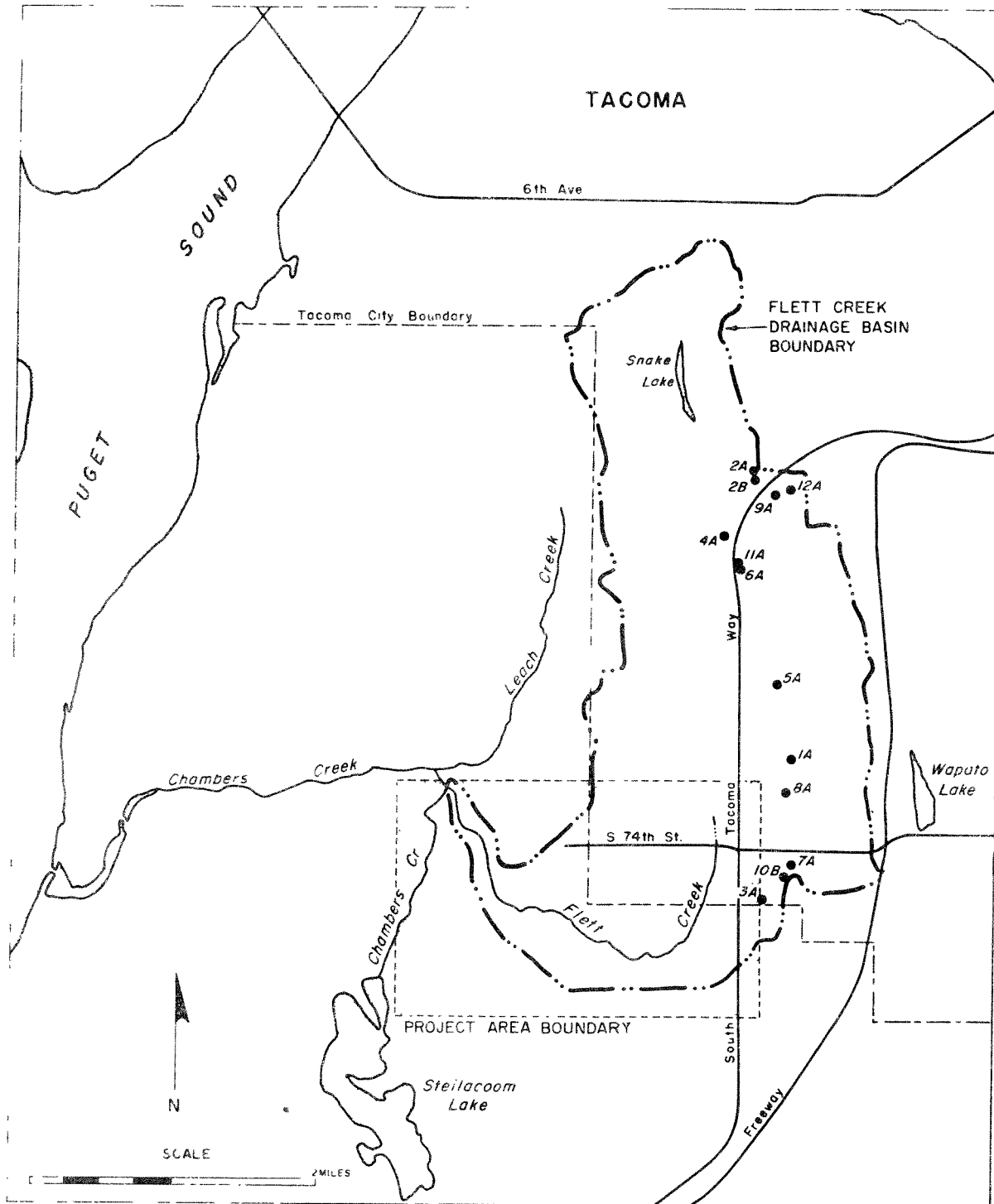


Figure 1 Flett Creek drainage basin and vicinity, showing project area and wells of the Tacoma Department of Public Utilities.

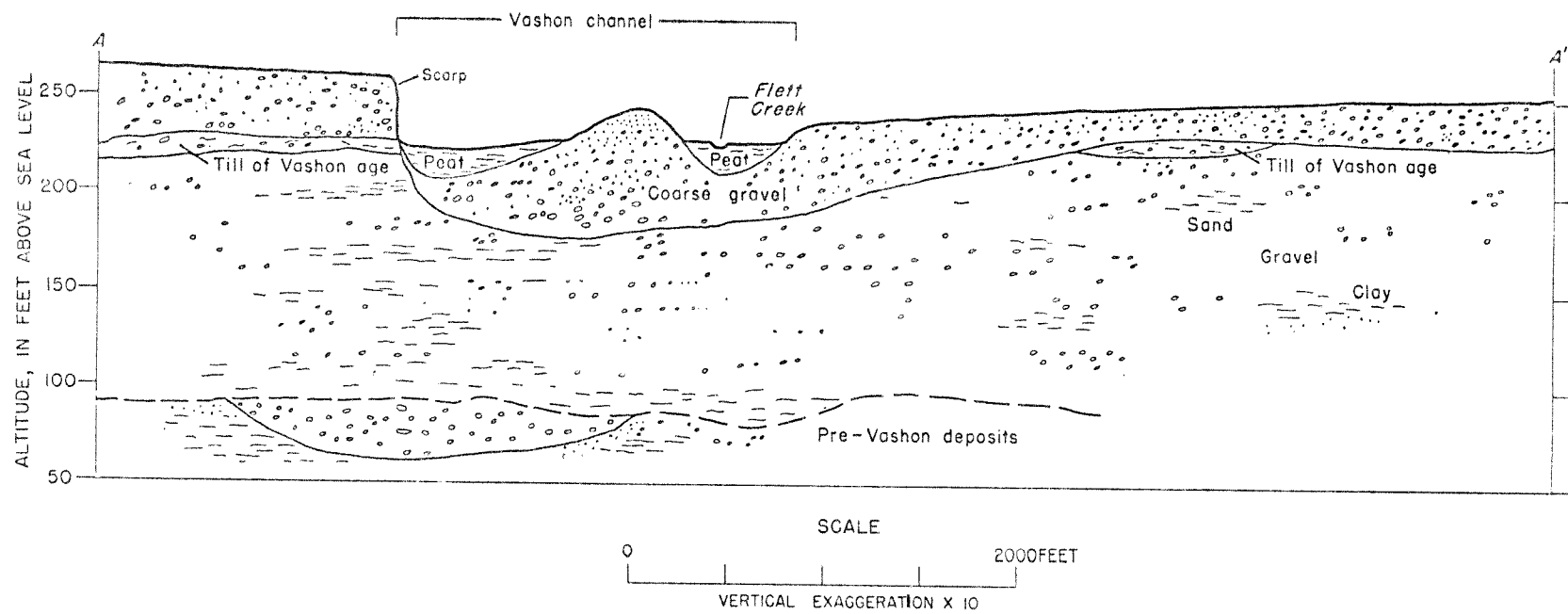


Figure 2: Generalized geologic section across Flett Creek area.

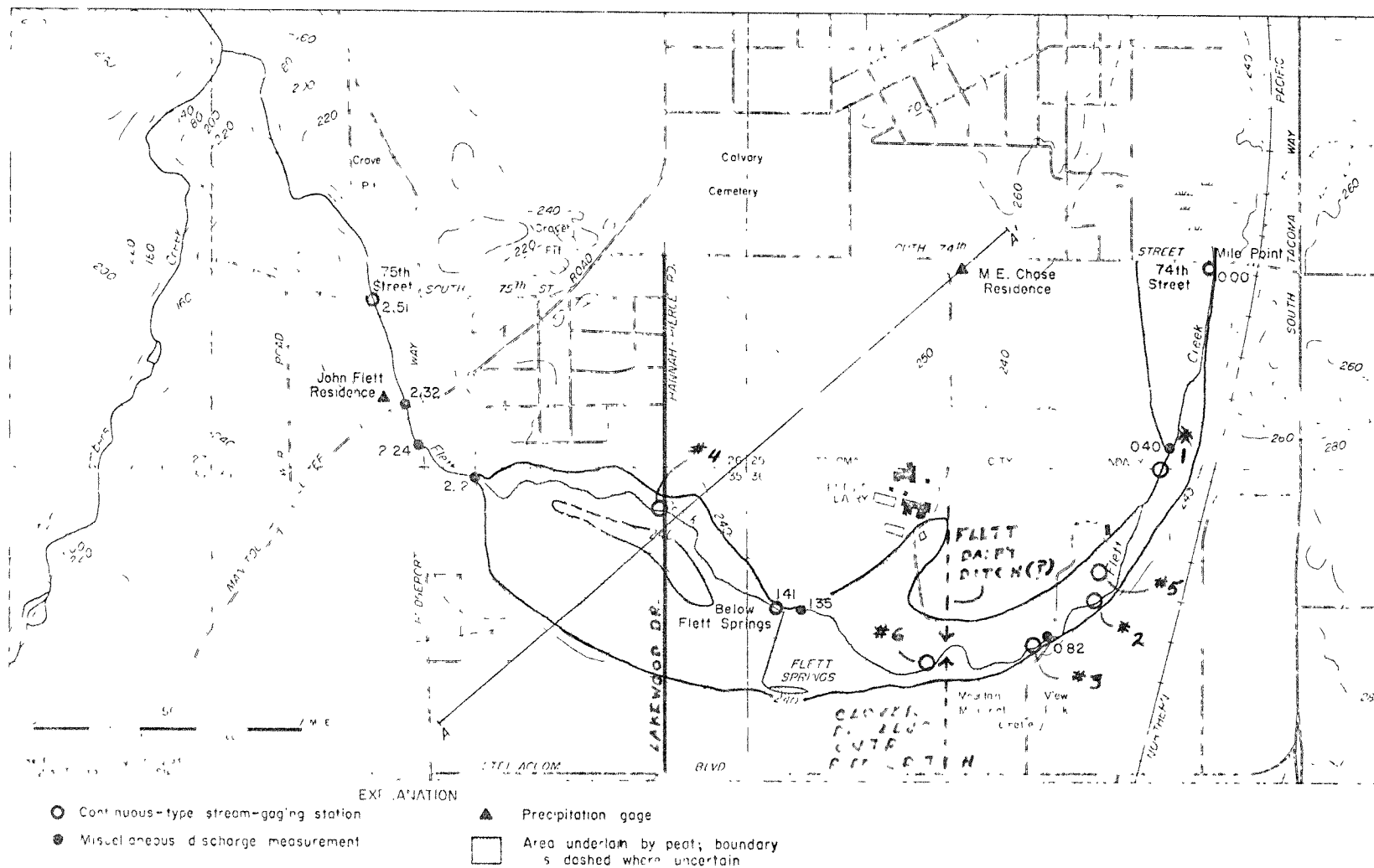


Figure 3. Land-surface contours, peat deposits, stream-gaging sites, and precipitation stations in the lower Flett Creek area. Approximate areal extent of peat is indicated by shading. A-A' shows location of geologic cross section.



Table 1: Annual peak flows of Flett Creek

<u>Year</u>	<u>Maximum Instantaneous Flow</u>	<u>Average daily during peak flow</u>
59-60	36	25 CFS
60-61	43	35
61-62	22	10
62-63	43	11
63-64	86	71
64-65	39	27
65-66	27	19
66-67	39	30
67-68	33	32
68-69	47	45
69-70	60	52
70-71	57	52
71-72	132	90
72-73	55	43

STATION	23 JAN 74 #1	03 JUL 74 #1	23 JAN 74 #2	03 JUL 74 #2	23 JAN 74 #3	03 JUL 74 #3	23 JAN 74 #4	03 JUL 74 #4	03 JUL 74 #5	03 JUL 74 #6
T °C	—	18.0	—	16.9	—	16.5	—	15.0	18.5	17.1
pH	6.9	7.6	6.7	7.0	6.8	7.4	6.6	6.6	6.9	7.0
COND umhos/cm	110	210	160	240	120	230	150	230	350	220
DO mg/l	—	13.7	—	8.9	—	13.5	—	10.5	<0.5	8.2
COD mg/l	—	26	39	19	19	48	23	7	41	11
BOD mg/l	8	—	14	—	<8	—	<12	—	—	—
T.C. c./100 ml	3,300	4,100	>160,000	2,800	18,000	600	19,000	3,600	1,200 E.	22,000
F.C. c./100 ml	70	20 E.	54,000	80 E.	1,000	100 E.	2,200	<20	60 E.	320 E.
F.S. c./100 ml	180	<20	19,000	80 E.	1,000	<20	1,200	<20	160	140
FC/FS —	0.39	>1(?)	2.80	1 E.	1.60	>5	1.90	1	0.38	2.28
NO <sub>3</sub> mg/l	0.96	—	0.80	—	1.15	—	1.79	—	—	—
NH <sub>3</sub> mg/l	0.02	—	3.00	—	0.12	—	0.30	—	—	—
KJELN mg/l	0.16	—	3.40	—	0.46	—	0.70	—	—	—
O-PO <sub>4</sub> mg/l	0.20	—	0.10	—	0.25	—	0.20	—	—	—
T-PO <sub>4</sub> mg/l	1.0	—	1.3	—	1.3	—	1.0	—	—	—
TS mg/l	100	160	142	162	109	157	132	164	243	142
TSS mg/l	15	19	24	30	10	11	10	3	11	4
TDS mg/l	85	141	118	132	99	146	122	161	232	138
COLOR PtCo	60	88	210	75	73	66	96	27	56	43

April 8, 1974

Memo to: Jim Krull, Ron Robinson

From: Pat Lee

Subject: Survey of Flett Creek.

A brief water quality survey was conducted on Flett Creek on January 23, 1974. Samples were collected at the following four stations:

- #1 Upstream of Puget Sound Rendering by 100 yards at the weir.
- #2 The effluent of the Puget Sound Rendering "Lagoon" system.
- #3 Flett Creek at the Valley Chapel Road approximately 50 yards downstream from Station #2.
- #4 Flett Creek at Lakewood Drive downstream of both Puget Sound Rendering and the Flett Dairy.

The following field observations were noted:

1. It had been raining on the previous three days and on the day of the survey, thus any surface water runoff was occurring during the survey.
2. The temperature of the "lagoon" effluent was 6.4° C.
3. I walked the length of the Puget Sound Rendering Lagoon System and found it to be an open channel from the plant to Flett Creek. It had some bends in it but essentially it was just a waterway. I probed the juncture of the lagoon and the creek with our 10' sampler and did not find a bottom, thus I would tend to doubt a "non-overflow" condition had existed for a while.

The relevant lab data is summarized below:\*\*

	#1	#2	#3	#4
pH	6.9	6.7	6.8	6.6
Conductivity	110	160	120	150
COD	---	39	19	23
BOD	8	14	< 8	< 12
T. Coliform	3,300	> 160,000	18,000	19,000
F. Coliform	70	54,000	1,600	2,200
Fecal Strep.	180	19,000	1,000	1,200
NO <sub>3</sub> -N	.96	.80	1.15	1.79
NH <sub>3</sub> -N	.02	3.0	.12	.30
T.Kjeldahl-N	.16	3.4	.46	.70
O-PO <sub>4</sub> -P	.20	.10	.25	.20
T-PO <sub>4</sub> -P	1.0	1.3	1.3	1.0
Total Solids	100	142	109	132

Memo to: Jim Krull, Ron Robinson

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April 8, 1974

	#1	#2	#3	#4
T. Sus. Solids	15	24	10	10
T. Dis. Solids	85	118	99	122
Color	60	210	73	96
Oil		None Detected		

\*Not Analyzed

\*\*All results are reported in ppm except coliform and fecal strep which are reported in colonies per 100 ml. and pH.

Interpretation of the above results is not too difficult. Essentially the increase of the concentration of pollutants between Stations #1 and #3 is due to the addition of wastes from Puget Sound Rendering (Station #2). Likewise the increase of the concentration of pollutants between Stations #3 and #4 is due to the influence of the Dairy on the creek. Because Flett Dairy is a non-point source, no sample was taken of its discharge. One additional point should be made regarding the fecal coliform/fecal strep ratio's. The ratios are as follows:

	#1	#2	#3	#4
<u>Fecal Coliform</u>	.39	2.8	1.6	1.9
<u>Fecal Strep</u>				

Station #1 indicates non-human sources (cows, sheep, etc.) while Stations #2, #3 and #4 indicate a mixed loading of both human and non-human sources. Ratios  $\geq 4.0$  indicate strictly human sources. As can be seen, Station #2, the effluent from the rendering plant, exhibits the highest ratio.

PL:jmh

## FIELD REPORT

FLETT CREEK 03JUL74 - S. TACOMA

### General

Flett Creek south of Tacoma is a tributary of Chambers Creek. The upper portion of Flett Creek (that surveyed) runs through a peat soil. The gradient of the upper portion of the stream is very slight. The stream flows intermittently through wooded areas, a cemetery, areas discharging wastewater (a rendering plant, dairy, STP, possibly other sources), and through farm land. The weather for at least the last week had been dry, warm, with clear to partially obscured skies.

### Site Descriptions

- #1 - Upstream of Puget Sound Rendering by 100 yards at weir. There was no water running over weir nor was any visible upstream of weir. The water that existed was ponded between the weir (where sample was taken) and the culvert under Valley Chapel Road. The still water was brownish in color very possibly attributed to the peat in which the water is contained. This portion of the "stream" showed very little algae or small green plants.
- #2 - Sample taken where, during high water, contents of Puget Sound Rendering Lagoon and the presently nonflowing Flett Creek might interact. On this day there was no overflow from lagoon (original and natural creek bed) to the new and artificial Flett Creek bed. The description of #1 above applies to this portion of the Creek as well.
- #5 - This sample was taken approximately mid-point in the linear aerobic lagoon of the Puget Sound Rendering Plant. The lagoon is partially separated from the Creek by a peat and clay dike which, according to Mr. Sorenson should be completed fairly soon, thus isolating the lagoon from Flett Creek during all but the highest waters. The lagoon waters look very similar to that of the ponded Flett Creek. There was little odor from the lagoon. The water was clear and many shrimp (daphnia?) were visible as were a few wrigglers.

Puget Sound Rendering is located in the middle of Mt. View Cemetery. It is of the dry-inedible type of plant. The paunch manure is carefully removed from material to be rendered (this insures whiter tallow). This manure is then buried on site. The plant also bags sawdust for sale, however, no discharge is apparent from this operation.

The sanitary waste (minimal) of the plant and the two residences on the site are disposed of via septic tank (location unknown).

- #3 - It was felt that sampling on the upstream side of Valley Chapel Road culvert would have been meaningless since the waters of Flett Creek were 8 - 12" below the culvert effectively damming it. Samples #1 and #2 should represent this water fairly well. The sample was taken on the down stream side of the culvert. There was no apparent motion but the character change in the water was dramatic. The water was choked with algae and small leaved green aquatic plants. This station is approximately 50 yards downstream from #2.

- #6 - This sample was taken approximately 50 feet downstream of Mt. View Cem. and Flett Dairy property line (delineated approximately by both a fence and power lines). Along this line coming from Flett Dairy at a distance of approximately 1/2 mile is a ditch containing a black-brown semi-liquid. No noticeable odor from this ditch. On the other side of Flett Creek running directly opposite the Flett Dairy ditch is the "Clover Park Educ. Center" STP outfall ditch. In actuality the STP is in Lakewood and maintained by Clover Park. It is a primary plant with chlorination. Maintenance has been reported as poor, this has been partially substantiated by the poor condition of the manholes. The effluent is pumped through various size mains which end up going down to the valley where it enters the above ditch and thence to Flett Creek. It was impossible to determine if there was an STP effluent.
- #4 - The sample taken at Lakewood Drive was downstream from all of the above stations. The stream was now definitely flowing with clear water but the stream was almost entirely choked with dull green streaming algae and the same small leaved aquatic plants (Lemnaceae *Lemna minor* or lesser Duckweed).

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

M. Tomlinson  
COPIES TO  
.....  
.....  
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Source PUGET SOUND RENDERSH (SW REGION)

Collected By M. Tomlinson & B. Lindskog

Date Collected 7-3-74

Goal, Proj. Obj. \_\_\_\_\_

Log Number:	74-2794	95	96	97	98	99	STORED			
Station:	1	2	3	4	5	6				
pH	7.6	7.0	7.4	6.6	6.9	7.0				
Turbidity (JTU)	7	6	5	3	8	4				
Conductivity (umhos/cm) @ 25°C	210	240	230	230	350	220				00095
COD	26.	19.	48.	7.	41.	11.				003
BO <sub>5</sub> (5 day)										00510
Total Coliform (Col./100ml)	4300	2800	600	3600	EST 1200	22,000				315
Fecal Coliform (Col./100ml)	EST 20	EST 80	EST 100	<20	EST 60	EST 320				31610
NO <sub>3</sub> -N (Filtered)										0062
NO <sub>2</sub> -N (Filtered)										0061
NH <sub>3</sub> -N (Unfiltered)										00620
T. Kjeldahl-N (Unfiltered)										00625
O-P <sub>04</sub> -P (Filtered)										0067
Total Phos.-P (Unfiltered)										00660
Total Solids	160	162	157	164	243	142				0050
Total Non Vol. Solids										
Total Suspended Solids	19	30	11	3	11	4				0050
Total Sus. Non Vol. Solids										
Fecal Strept (col/100ml)	<20	EST 80	<20	<20	160	140				
COLOR	88	75	66	27	56	43				
T.D.S.	141	132	146	161	232	138				

Note All results are in PPM unless otherwise specified. ND is "None Detected"  
Convert those marked with a \* to PPB (PPM X 10<sup>3</sup>) prior to entry into STORET

Summary By Stephen D. Ruhl Date 7-29-74

# DEPARTMENT OF ECOLOGY

DANIEL J. EVANS  
GOVERNOR

JOHN A. BIGGS  
DIRECTOR

## STATEMENT TO CLOVER PARK SCHOOL BOARD TO BE GIVEN AT MEETING OF JANUARY 11, 1971

The Department of Ecology has been extremely concerned with the deterioration of both ground and surface water in Chambers Creek Basin for many years. Because of this concern, the department in 1970 issued a requirement to Pierce County to proceed immediately to construct sewers and a treatment facility serving the basin.

I should like to make clear the position of the Department of Ecology by discussion of a few particular points:

1. We have heard discussion of a magic "black box" which can turn sewage into drinking water, and at a lesser cost than the system proposed by Pierce County. The "box" does not exist today and will not exist tomorrow. No responsible person with knowledge in the field of sanitary wastes would make such a prediction.
2. The Chambers Creek Basin at 80,000 persons has the dubious honor of being the second most populous area in the United States served entirely by septic tanks. Suffolk County on Long Island New York is the most populous. Last month, sale of detergents in the county was banned. That county is now making moves toward a sewerage system.

We believe the Chambers Creek Basin problem is particularly critical when considering the 8,000,000 gallons of sewage entering the basin each day, which has resulted in the deterioration of Chambers Creek and the water quality of the several popular lakes. The aging of these lakes is accelerated by the present method of sewage disposal. Continued aging will be controlled only by the collection and central treatment of the basin's wastes.



3. The Department of Ecology has evaluated and approved the comprehensive study which calls for primary treatment of wastes at the Chambers Creek Sewage Treatment Plant. Studies have shown that at this location on Puget Sound the receiving water can assimilate the wastes without measurably affecting water quality. The discharge to Puget Sound will be in compliance with established water quality standards. In the future as federal and state standards become more stringent, this plant will undoubtedly need to add secondary treatment. The present plans have provided for this expansion. Sound engineering dictates that this second step be added at a later time, and not as part of the Stage I improvements.
4. Federal and state grant monies, which cover 45% of the construction cost of sewage treatment plants and interceptor sewers are only made available when the concept of regionalization has been applied. Regionalization means that sewerage planning shall arrive at the results that give the highest water quality at the lowest cost for a drainage basin as a whole. In the instance of the Chambers Creek-Clover Creek Basin, with minimal stream flows, this means a single treatment plant on Puget Sound. Other, more fractionalized solutions would not receive grant monies, nor would they be the most economical.
5. A specific matter concerns the Clover Park School District. The vocational school and administrative buildings are served by an outdated primary treatment system, an Imhoff Tank that discharges to Flett Creek. Flett Creek has a quite low summertime flow. The Department of Ecology last year ordered that a higher degree of treatment be provided the school's sanitary wastes. Tertiary treatment will be necessary due to the small creek flow. This is a very expensive means of treatment and requires very complex operation. A

**better solution for all concerned would be for the sanitary wastes to be intercepted to the proposed county sewage system.**

- 6. The question may be asked, if the proposed U.L.I.D. is turned down, what is the position of the Department of Ecology? Because of our extreme concerns about the condition of the basin, the department will have no alternative but to issue an order to the county. The order would halt continued issuance of septic tank permits within the basin.**

**The county is now in the process of complying with the requirement that was issued by the Department of Ecology in 1970. We urge that the residents of the basin give their support to the county's proposal.**

**R. Jerry Bollen  
Assistant Director**

**STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY  
OLYMPIA, WASHINGTON**

In accordance with Chapter 90.48 RCW  
and Chapter 372-24 WAC  
A WASTE DISCHARGE PERMIT is issued to:

Permit No.	<u>5013</u>
Date of Issue	<u>May 7, 1973</u>
Date of Expiration	<u>May 7, 1978</u>

**Flett Dairy, Inc.  
P. O. Box 9130  
South Tacoma, Washington 98409**

Waste from the permittee's industrial operation located at Tacoma, Washington, not exceeding 800,000 gallons per day may be discharged to uplands and may only enter Flett Creek, via seepage at the following point of discharge: grasslands owned by Flett Dairy, Inc.

Said discharge is authorized subject to the following conditions:

1. The word "waste" in the above statement refers to the total volume of cooling and contaminated water to be discharged.
2. Waste prevention practices are to be used which will minimize loss of milk and milk products as waste. These shall include:
  - a. Drip collection throughout the plant.
  - b. Collection of residual milk solids and products in pipelines, tanks and vats, including a spray rinse of tanks, vats and other equipment prior to washing.
  - c. Sour milk and milk solids collected as indicated above are to be utilized, sold as animal feed, or disposed of in an acceptable sanitary manner which will prevent their entry into state waters.
3. Such contaminated waste water remaining after the above practices are in effect is to be disposed of on land in such a manner that it can enter Flett Creek only by means of seepage through the soil.
4. Animal wastes that accumulate in barns, loafing areas, etc. are to be disposed of on land in such a way that the wastes or leachates do not enter Flett Creek.
5. All local regulations governing the installation, construction and maintenance of onsite sewage disposal systems are hereby made a condition of this permit.
6. In the event the permittee is temporarily unable to comply with any of the above conditions of this permit, due to breakdown of equipment or other cause, the permittee is to immediately notify this Department. This report is to include pertinent information as to the cause and what steps are being taken to correct the problem and prevent its recurrence.

Page 2  
Flett Dairy, Inc.  
South Tacoma, WA

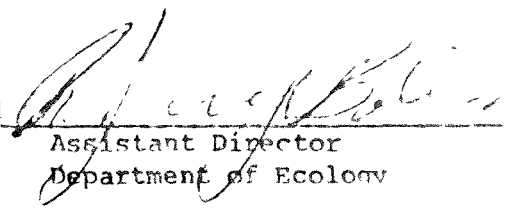
Permit No. 5013  
Date of Issue Mar 7, 1971  
Date of Expiration Mar 7, 1972

This permit does not allow the discharge of wastes other than those mentioned herein. A new application shall be submitted whenever a change in the waste to be discharged is anticipated.

This permit is subject to termination if the Department finds: (1) That it was procured by misrepresentation of any material fact or by lack of full disclosure in the application; (2) That there has been a violation of the conditions thereof; (3) That a material change in quantity or type of waste disposal exists.

In the event that a material change in the conditions of the state waters utilized creates a dangerous degree of pollution, the Department may specify additional conditions to this permit.

Signed

  
Assistant Director  
Department of Ecology

DEPARTMENT OF ECOLOGY  
State of Washington

Type .....  
Permit No. .... **5013** .....  
Date rec'd .....  
Date Issued .....  
Date Expired .....  
New ..... Renewal .....  
DOE Drainage Basin .....  
Expired Permit No. ....  
Advertising needed .....

Application is hereby made for a permit to discharge wastes into the state waters in accordance with Chapter 90.48 RCW and Chapter 372.24 WAC.

A. Name of Company FLETT DAIRY, INC.

B. Mailing Address P. O. Box 9130 South Tacoma, Washington 98409

C. Location of Plant Discharging Waste if Different From Above \_\_\_\_\_  
South 80th & Verde Tacoma, Washington Phone GR2-3301

D. Specific Type of Industry Dairy Manufacturing

E. Name of Waterway Receiving Waste Discharge Flett Creek

F. Location of Industrial Waste Discharge Point (s) One discharge point - 1/4 mile from creek .... One discharge point - 1/8 mile from creek Land disposal

G. Raw Water Supply: Source Wells Volume maximum 800,000 Gallons/Day

G.1 Authorization For Use: Recorded Right No. 460-D Public Supply \_\_\_\_\_  
" " " 461-D  
Other " " " 462-D  
(Specify) " " " 3713-A

H. Waste Discharge Volumes:

	Average Gallons/Day	Maximum Gallons/Day
Industrial Processing	<u>150,000</u>	<u>200,000</u>
Cooling	<u>400,000</u>	<u>600,000</u>

I. Plant Operation:

	Days per Year	Number of Employees per Shift		
		Day	Night	Swing
Average	<u>312</u>	<u>10</u>	<u>3</u>	<u>--</u>
Maximum	<u>365</u>	<u>12</u>	<u>4</u>	<u>--</u>

J. Raw Materials and Chemicals Used in Processes:

Brand Name	Chemical, Scientific or Actual Name	Quantity Used Per Day*	
		Average	Maximum
<u>                    </u>	<u>Chlorine</u>	<u>                    </u>	<u>3.4 gal 150</u>
<u>                    </u>	<u>Alkali</u>	<u>                    </u>	<u>20%</u>

Production:

Quantity Produced Per Day\*

Item	Average	Maximum
<u>Cheese</u>	<u>                    </u>	<u>2,500 lbs</u>
<u>Ice Cream</u>	<u>                    </u>	<u>1,500 gals</u>
<u>Milk Processing</u>	<u>                    </u>	<u>10,000 gals</u>
<u>                    </u>	<u>                    </u>	<u>                    </u>

L. Sanitary Wastes: Treatment NONE Discharged to Septic Tank

M. Explain any seasonal variation in waste discharge volumes, plant operations, raw materials and chemicals used in processes, and/or production:                     

NONE

N. Give a detailed description of the sources of all industrial wastes within your industry. Describe in detail the treatment given each of these wastes. Include in this description the disposal methods used for these wastes and also for any sludge collected by your waste treatment system. Include a schematic flow diagram showing the sources of all wastes and their flow pattern. Submit this information with your application as Exhibit 1.

O. Describe in detail the physical and chemical properties of the effluent to be discharged into state waters. Include in this description the sampling and analytical methods used to derive this information. Submit this information with your application as Exhibit 2.

P. Briefly describe any additional treatment or changes in waste disposal methods you are planning or have under construction. Submit this information as Exhibit 3. Include all information for previous questions, where additional space is necessary as part of Exhibit 3. Also include any additional information or comments you feel necessary to clarify this application with Exhibit 3.

... NONE ..... JUST COMPLETED FACILITY

The information given on this application is complete and accurate to the best of my knowledge.

Walter J. Fuchs  
Signature

Walter J. Fuchs

                      
Printed

Manager

                      
Title

3/30/72

Date

\*Please specify units. For example: Tons per day, pounds per day, barrels per day.

Field Creek

← riprap 200 yds  
from creek

outlets

main line

discharge

discharge

ice cream plant

milk plant

discharge from milk plant

1000 gal  
Settling tank

pump

moveable line  
water runs on field

60 acres

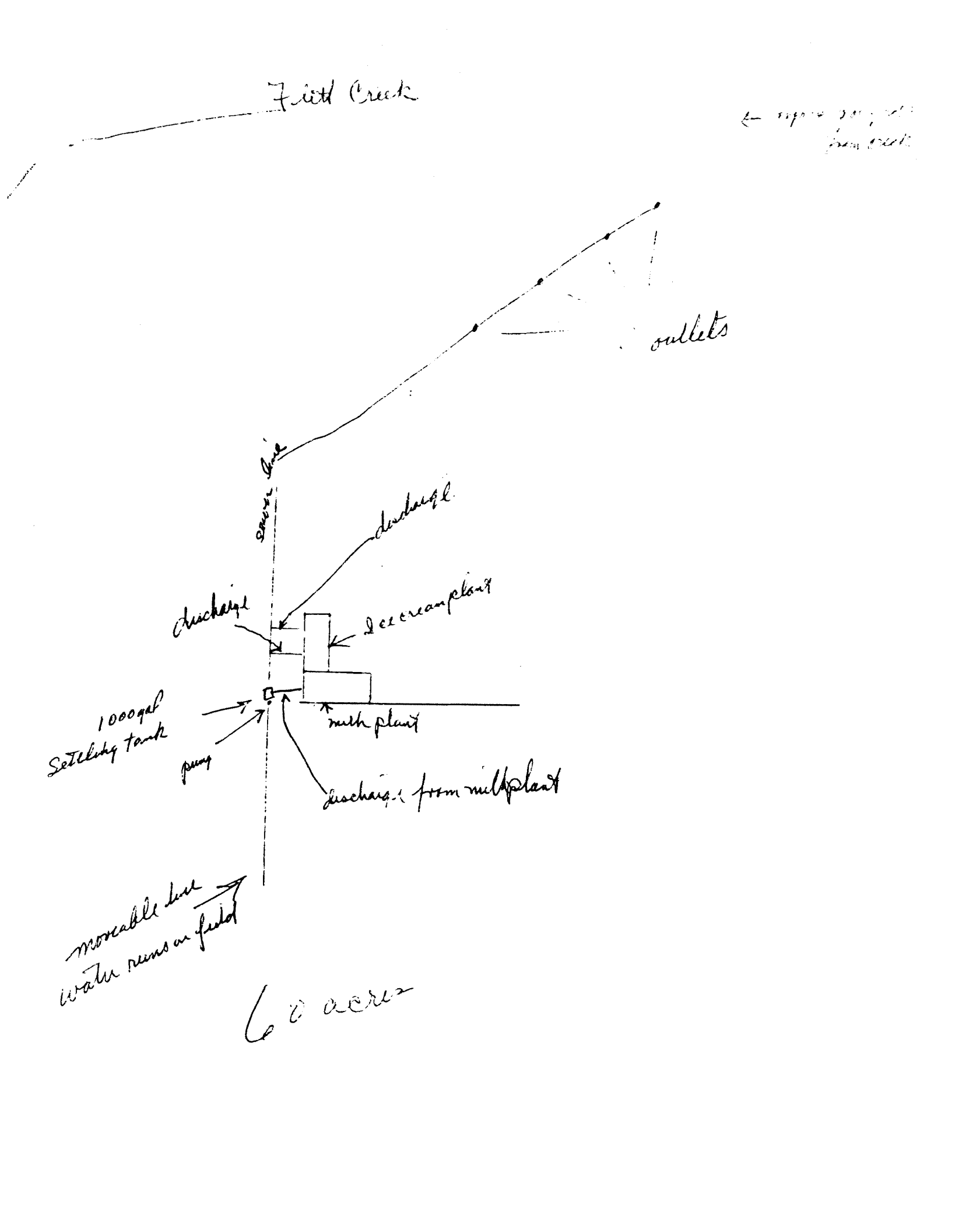


EXHIBIT 2

- 0 (a) Animal waste applied to fields (approx 260 acres)
- (b) 1000 gals whey waste per day wash waste from ice cream  
and milk plant clean up.