Aloha Lumber Corporation

since 1951

606 Columbia Street NW, Suite 101
Olympia, WA 98501
Office: 360-357-5848

Phillip Roderick, President
Fax: 360-705-0076
Toll Free: 800-355-5848

January 16, 2003

Mr. Dave Sturdevant
Department of Environmental Conservation
400 Willoughby Ave., Suite 105
Juneau, AK 99801

RE: Tolstoi Bay
2003 Bark Monitoring Survey Report

Dear Mr. Sturdevant

Enclosed is a copy of the 2003 Bark Monitoring Survey Report for the Tolstoi Bay LTF. This survey was performed by Haggitt Consulting on behalf of Aloha Lumber Corporation and the Alaska Mental Health Trust Land Office as a requirement for operating the log transfer facility at Tolstoi.

The total production of logs through the LTF was 15,800 Mbf of sawlogs and 595 Mbf of pulpwood logs.

Feel free to call me at 360-357-5848 if you have any additional questions about this survey.

Best regards,

Mark Stahl
Forester

enc.

e-mail: aloha@alohalumber.com

Appendix 2

Annual Report for the Year 2002 **(Page 2)**
NPDES Permit No. AK-G70-0 000

Summary of Log Transfer Activity

Method of Log Transfer	Volume of Timber Transferred
DRIVE-DOWN BUNDLE TRANSFER RAMP.	13,800 MbF SAWLOGS PLUS 700 MbF PULPWOOD

Changes to Notification

List any planned changes to Notification (e.g., changes in log transfer device or volume of timber to be transferred).

NONE

Signature and Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Principal Corporate or Executive Officer/General Proprietor	Printed Name Phillip Roderick
Title/Company Pres.	Date 1-27-03

Submit this Annual Report to:

U.S. Environmental Protection Agency Region 10 1200 Sixth Avenue, OW-130 Seattle, Washington 98101 Attn: LTF Reporting	Alaska Dept. of Environmental Conservation Division of Air and Water Quality 410 Willoughby Avenue, Suite 105 Juneau, AK 99801 Attn: LTF Reporting

Submit this Annual Report by January 31st of the year following each calendar year of operation and discharge under this general NPDES permit. If the LTF was not operated during the reporting year, the permittee shall so indicate in the annual report.

Appendix 4a

Bark Monitoring Survey: Transect Data Form

NPDES Permit Number: AK-G70-0000

Name of Permittee: ALASKA MENTAL HEALTH TRUST AUTHORITY / ALOHA LUMBER CORPORATION

Date/Time of Survey: 12/06/02

Distence along Transect (m)	Transect #1 BD/WD/% Cover	Transect #2 BD/WD/% Cover	Transect #3 BD/WD/% Cover	Transect #4 BD/WD/% Cover	Transect #5 BD/WD/% Cover
SEE ATTACHED PAGES 7-11 FROM DIVE REPORT					

BD: Bark Depth
WD: Water Depth at Mean Lower Low Water
% Cover: Percent of sample area covered by bark (0-100)
T: Trace amounts of bark (10% or less percent cover, less than 1 inch deep)

Appendix 4b

Bark Monitoring Survey Report Form

NPDES Permit Number: AK-G70-0000	Name of Permittee: ALASKA MENTAL HEALTH TRUST OPERATOR: ALOHA LUMBER CORPORATION
Location of LTF: TOLSTOI BAY	Volume Transferred this year (mmbf): 16.5 MMbF
Method of Log Transfer: DRIVE DOWN BUNDLE TRANSFER RAMP	Estimated Area of 100% Coverage (acres): 0.11 ACRES
Date of Survey: 12/06/02	Time of Survey: 9:00 am

Date of Completion of Dive Survey Report: 12/10/02

Name(s) of Person(s) who Performed Analysis: STEVE HAGGITT
HAGGITT CONSULTING
GIG HARBOR, WA

Name(s) of Person(s) Conducting Survey: STEVE HAGGITT
HAGGITT CONSULTING
GIG HARBOR, WA

Name and Signature of Person Responsible for Dive Survey: MARK STAHL
Mark Stahl

Statement of compliance, or noncompliance, with the project area ZOD: BASED ON RESULTS OF THE MOST RECENT BARK MONITORING SURVEY IT IS DETERMINED THAT THE PROJECT AREA ZOD HAS NOT BEEN EXCEEDED AND IS IN COMPLIANCE.

ATTACHMENTS

✓ Narrative description of analytical methods used to delineate bark deposits

✓ Map (to scale) showing location of LTF and transect lines, outer boundary of bark deposit as it relates to the project area, and area of 100% bark cover

2/6/02 dive

Data Tables

Transect 1 290 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	8	>1	60	S
2	9	>1	100	S
3	10	>1	90	S
4	11	>1	80	S
5	13	>1	50	S
6	14	>1	100	S
7	15	>1	100	S
8	15	>1	80	S
9	15	>1	50	S
10	15	>1	80	S
11	16	>1	10	S
12	16		TRACE	S
13	16		TRACE	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 2 320 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	8	1	10	S
2	13	4	100	S
3	15	4	100	S
4	15	4	100	S
5	16	4	100	S
6	17	3	90	S
7	17	1	50	S
8	18	1	40	S
9	18	1	20	S
10	19	>1	10	S
11	20	>1	10	S
12	20	>1	10	S
13	19	>1	10	S
14	19	0	TRACE	S
15	19	0	TRACE	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 3 350 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	10	2	20	S
2	15	2	50	S
3	18	3	100	S
4	23	4	100	S
5	25	3	100	S
6	27	3	90	S
7	28	3	100	S
8	32	3	100	S
9	34	5	100	S
10	36	2	70	S
11	38	2	90	S
12	41	1	100	S
13	46	2	80	S
14	48	1	70	S
15	52	1	30	S
16	55	>1	20	S
17	58	>1	10	S
18	63	>1	10	S
19	68	0	TRACE	S
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33				
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 4 020 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	6	1	50	S
2	8	1	20	S
3	12	1	10	S
4	17	2	100	S
5	18	2	100	S
6	22	>1 CM	40	S
7	25	>1 INCH	100	S
8	28	>1	100	S
9	31	>1	80	S
10	35	>1	50	S
11	38	>1	50	S
12	44	>1	50	S
13	48	>1	50	S
14	52	>1	30	S
15	56	>1	20	S
16	61	>1	25	S
17	64	>1	10	S
18	65	>1	10	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 5 050 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	6	1	50	S
2	8	1	75	S
3	10	>1	30	C
4	10	>1	10	C
5	8	0	TRACE	R
6	8	0	TRACE	R
7				
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

HAGGITT CONSULTING

2003 Bark Monitoring Survey Report

Tolstoi Bay

DECEMBER 6, 2002 SURVEY

Submitted to:
Aloha Lumber Corporation
606 Columbia St. NW
Suite 101
Olympia WA. 98501

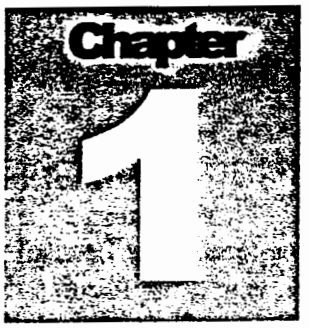
Prepared By:
Haggitt Consulting
15912 14th Ave NW
Gig Harbor WA. 98332

Introduction

This report is the first bark monitoring survey Tolstoi Bay LTF/LSA. Haggitt Consulting conducted a pre-discharge survey at this site on January 1, 2001. This report encompasses the entire project area from the log transfer ramp to the log storage area.

The format of the reports has changed to improve access to the data. The **methods** section can now be found at the end of the report. The methods chapter still describes the actual survey method used in the collection of data points for this report, but now may specifically reference multiple surveys in a single report. This was done to mitigate redundancy and provide the reader direct access to the survey report.

Table of Contents



Tolstoi Bay LTF Dive Survey

Surveyed on December 6, 2002

The survey was conducted at the request of Aloha Lumber Corporation. An underwater reconnaissance was requested to determine the representative condition of an area operating as a Log Transfer Facility (LTF). The survey dive was conducted on December 6, 2002. The site surveyed is located in the southwest portion of Tolstoi Bay on Prince of Wales Island.

This inspection documented findings according to the Alaska Department of Environmental Conservation (ADEC), Environmental Protection Agency (EPA) and NPDES requirements. The percentage of bark coverage was determined by using the protocol for operating a bark-monitoring program given in the EPA General Permit. The area calculation used in this report is outlined in the ADEC publication **"Required Method for Bark Monitoring Surveys under the LTF General Permits".**

Findings

Continuous Coverage	Discontinuous Coverage	Total Survey Area
0.11 Acres / 454 M_2	.94 Acres / 3882 M_2	1.20 Acres / 4956 M_2

Log Transfer Ramp
The reference point hub position, located at the center of the drive down ramp was recorded using a Raytheon DGPS. The coordinates for this hub are N 55° 37.496 by W 132° 27. 447.

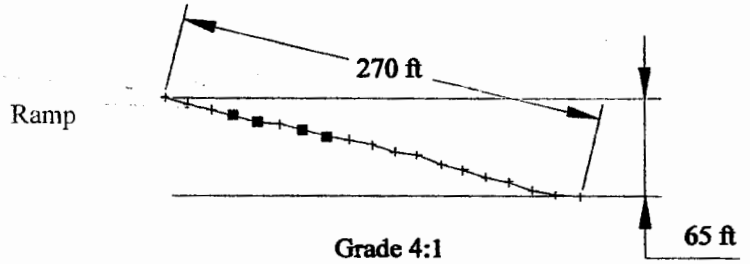
Weather conditions during the survey consisted of overcast skies with winds less than five knots. Diving commenced at 9 a.m. on December 6, 2002 during mid tide. The Hadley Lyman Anchorage tidal station (subordinate station #1461) was used to correct depths to MLLW. The station reported a tide level of 4.7 ft at 9 a.m. The current conditions remained negligible. Seawater temperature was recorded at 45 degrees F. The horizontal visibility was estimated to be 30 feet.

Five transects radiated out from the reference point on bearings labeled T^1 290°, T^2 320°, T^3 350°, T^4 020° and T^5 050°. A total of 55 sample locations were assessed.

Site conditions remained steady with winds less than five knots and overcast skies. Diving concluded at 11:30 a.m., on December 6, 2002 during high tide. The tidal station (subordinate station #1461) was used to correct depths to MLLW. The station reported a tide level of 14.8 ft at 11:30 a.m. The current conditions remained negligible. Seawater temperature was recorded at 45 degrees F. The horizontal visibility was estimated to be 30 feet.

Each transect terminated by 60 ft MLLW or beyond the area of significant bark accumulation. The grade for these transects varied from 4:1 to 50:1.

Transect 4 020 Degrees Magnetic



Grade 4:1

+ Discontinuous Cover
▪ Continuous Cover

Observations

The ramp at Tolstoi Bay Log Transfer Facility was composed of cobble and aggregate and descended from the beach and gently curved to the west. The ramp was elevated from the natural seabed and had discontinuous coverage on its surface. At the terminus it abruptly descended to an area of 100% coverage that extended in a radial pattern. The bark debris reduced in depth and percent of coverage the farther from the point of discharge that the samples were drawn. The survey noted that within the debris field, there are natural deposits of wood and vegetation that have been imported by tidal current forces.

The small amount of *Zostera marina* that was reported in the 2001 pre-discharge survey is located about 15 feet east of the ramp below the MLLW line. This area is interspersed with discontinuous bark debris. At the time of the survey the *Zostera marina* was coping with the impacts from bark debris. The arial extent of the Eelgrass remained approximately the same as was observed in the pre-discharge survey.

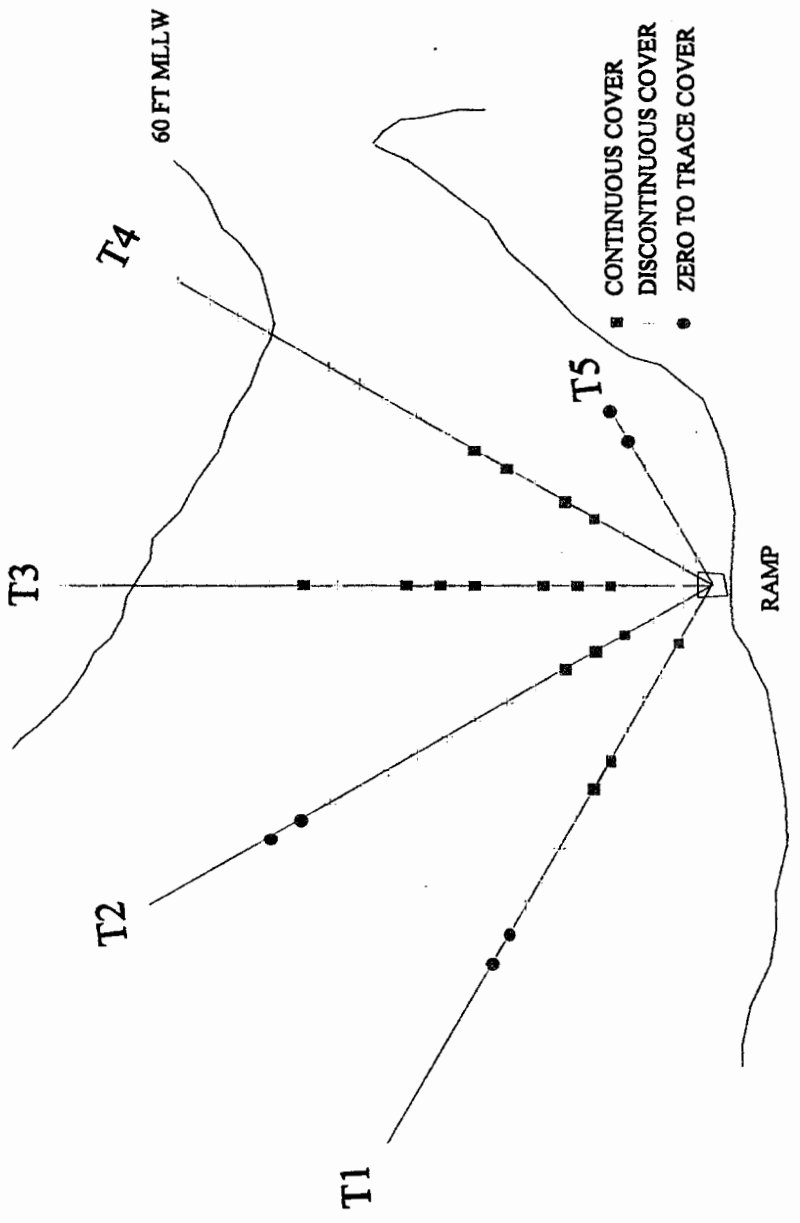
Conclusions

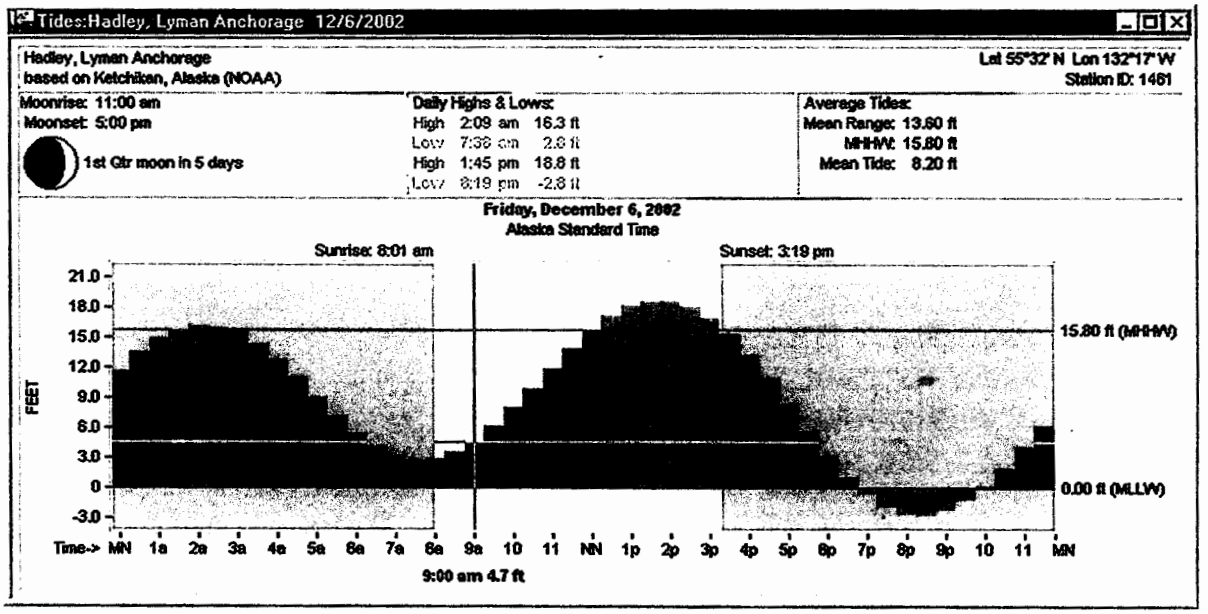
The General Permit AK-G70-1000 requires the bark monitoring survey to evaluate whether the discharge site has exceeded the zone of deposit. The ADEC has defined the ZOD as the outer boundary of the project area.

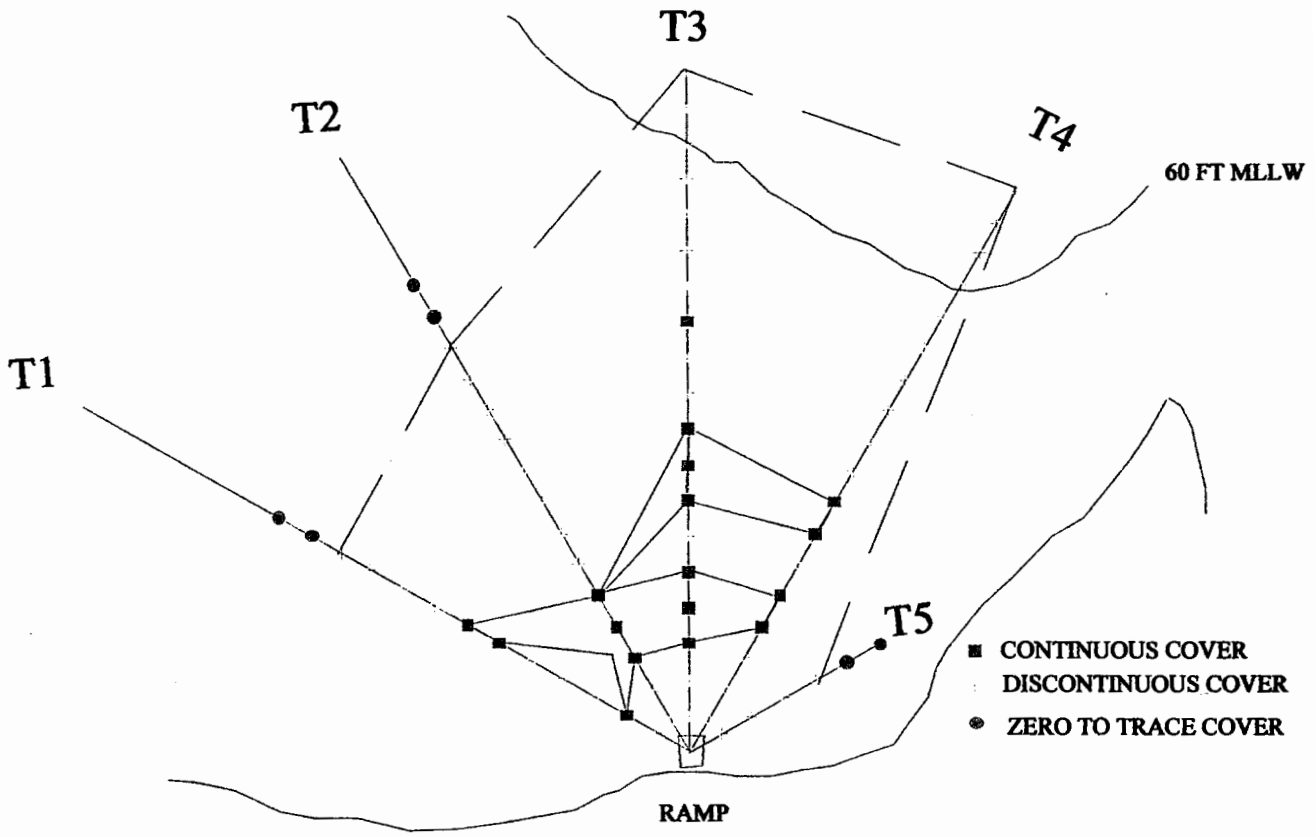
In accordance with the requirements listed above and with regard to the project area that was surveyed according to the methods approved by the EPA and ADEC, it is my opinion that the discharge site has not exceeded the zone of deposit. This determination is based on the calculations derived from the transect data collected for this report only.

Respectfully submitted,

Stephen Haggitt December 10, 2002


60 FT MLLW
T4
T5
T3
T2
T1
RAMP
CONTINUOUS COVER
DISCONTINUOUS COVER
ZERO TO TRACE COVER


Tides:Hadley, Lyman Anchorage 12/6/2002
Hadley, Lyman Anchorage
based on Ketchikan, Alaska (NOAA)
Lat 55°32' N Lon 132°17' W
Station ID: 1461
Moonrise: 11:00 am
Moonset: 5:00 pm
1st Qtr moon in 5 days
Daily Highs & Lows:
High 2:09 am 16.3 ft
Low 7:36 am 2.8 ft
High 1:45 pm 18.8 ft
Low 8:19 pm -2.8 ft
Average Tides:
Mean Range: 13.60 ft
MHHW: 15.80 ft
Mean Tide: 8.20 ft
Friday, December 6, 2002
Alaska Standard Time
Sunrise: 8:01 am
Sunset: 3:19 pm
FEET
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0
-3.0
15.80 ft (MHHW)
0.00 ft (MLLW)
Time-> MN 1a 2a 3a 4a 5a 6a 7a 8a 9a 10 11 NN 1p 2p 3p 4p 5p 6p 7p 8p 9p 10 11 MN
9:00 am 4.7 ft



Total Survey Area: 52,486 Sq. Ft.

Continuous Coverage: 4,607 Sq. Ft.

0.106 acre

Discontinuous Coverage: 40,813 Sq. Ft

Data Tables

Transect 1 290 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	8	>1	60	S
2	9	>1	100	S
3	10	>1	90	S
4	11	>1	80	S
5	13	>1	50	S
6	14	>1	100	S
7	15	>1	100	S
8	15	>1	80	S
9	15	>1	50	S
10	15	>1	80	S
11	16	>1	10	S
12	16		TRACE	S
13	16		TRACE	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 2 320 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	8	1	10	S
2	13	4	100	S
3	15	4	100	S
4	15	4	100	S
5	16	4	100	S
6	17	3	90	S
7	17	1	50	S
8	18	1	40	S
9	18	1	20	S
10	19	>1	10	S
11	20	>1	10	S
12	20	>1	10	S
13	19	>1	10	S
14	19	0	TRACE	S
15	19	0	TRACE	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 3 350 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	10	2	20	S
2	15	2	50	S
3	18	3	100	S
4	23	4	100	S
5	25	3	100	S
6	27	3	90	S
7	28	3	100	S
8	32	3	100	S
9	34	5	100	S
10	36	2	70	S
11	38	2	90	S
12	41	1	100	S
13	46	2	80	S
14	48	1	70	S
15	52	1	30	S
16	55	>1	20	S
17	58	>1	10	S
18	63	>1	10	S
19	68	0	TRACE	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 4 020 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	6	1	50	S
2	8	1	20	S
3	12	1	10	S
4	17	2	100	S
5	18	2	100	S
6	22	>1 CM	40	S
7	25	>1 INCH	100	S
8	28	>1	100	S
9	31	>1	80	S
10	35	>1	50	S
11	38	>1	50	S
12	44	>1	50	S
13	48	>1	50	S
14	52	>1	30	S
15	56	>1	20	S
16	61	>1	25	S
17	64	>1	10	S
18	65	>1	10	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 5 050 Degrees

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	6	1	50	S
2	8	1	75	S
3	10	>1	30	C
4	10	>1	10	C
5	8	0	TRACE	R
6	8	0	TRACE	R
7				
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Abundance Tables

Scientific Name	Common Name	Abundance
Plants		
Ulva / Monstroma spp.	Sealettuce	L
Lessoniopsis littoralis		L
Cystoseira osmundacea		L
Laminaria saccharina	Suger kelp	L
Macrocystis pyrifera		L
Zostara marina	Eel grass	L
Invertebrates		
Macoma nasuta	Bent nosed clam	L
Protothaca staminea	Littleneck clam	C
Parastichopus californicus	Sea cucumber	C
Beggiatoa spp.	White sulfur bacteria	C
Balamus spp.	Barnical	C
Pagurus spp.	Hermit crab	L
Orthasterias koehleri	Mottled sea star	L
Pycnopodia helianthoides	Sunflower star	L
Saxidomus giganteus	Butter clam	A
Mercenaria mercenaria	Quahog	L
Clinocardium nuttallii	Heart cockle	L

T1 S1

60%
>1

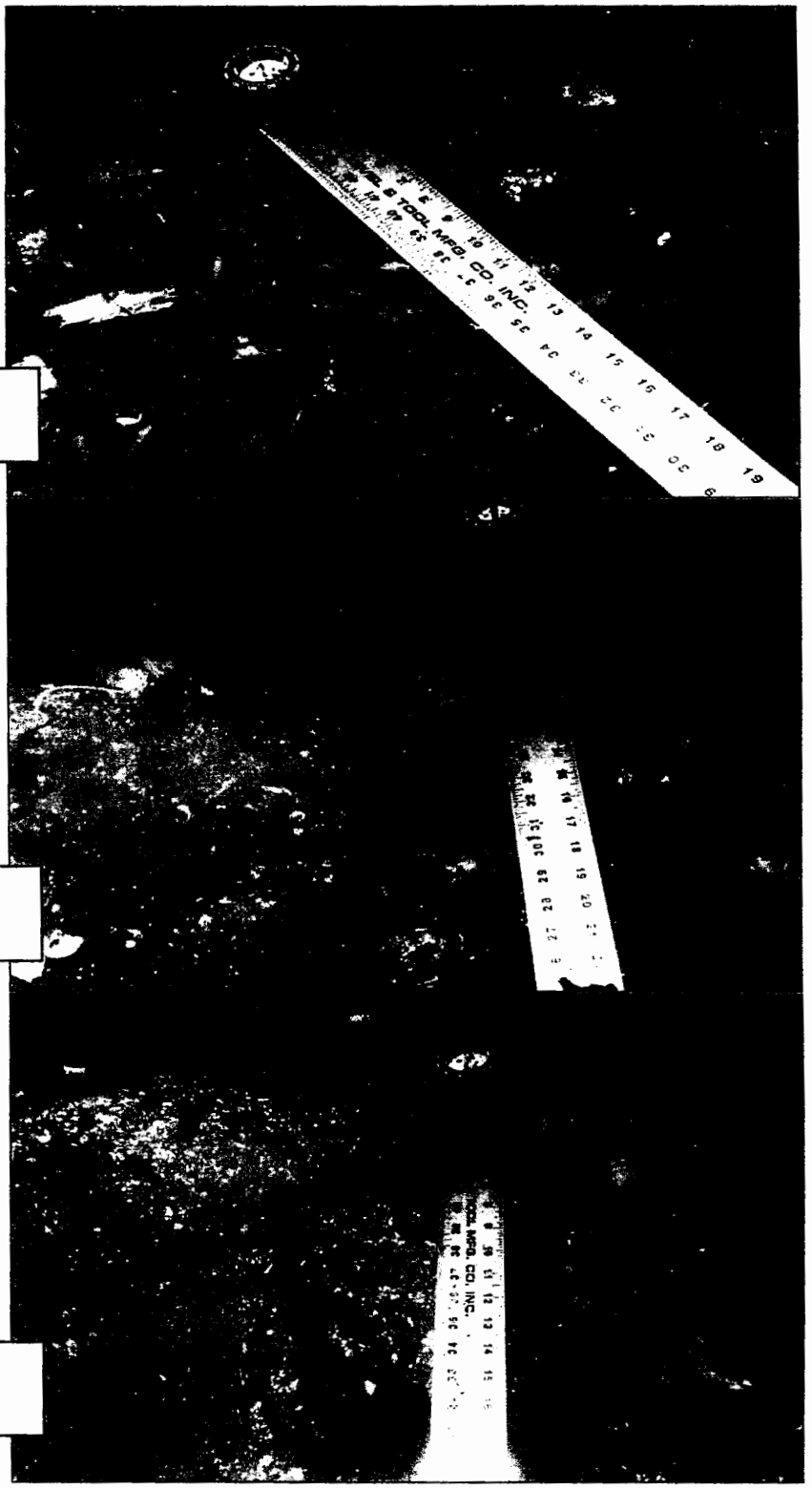
T1 S2

100%
>1

T1 S3

90%
>1


T1 S4
T1 S5
T1 S6
80 %
50 %
100 %


T1 S7
T1 S8
T1 S9
100%
80%
50%

T1 S10

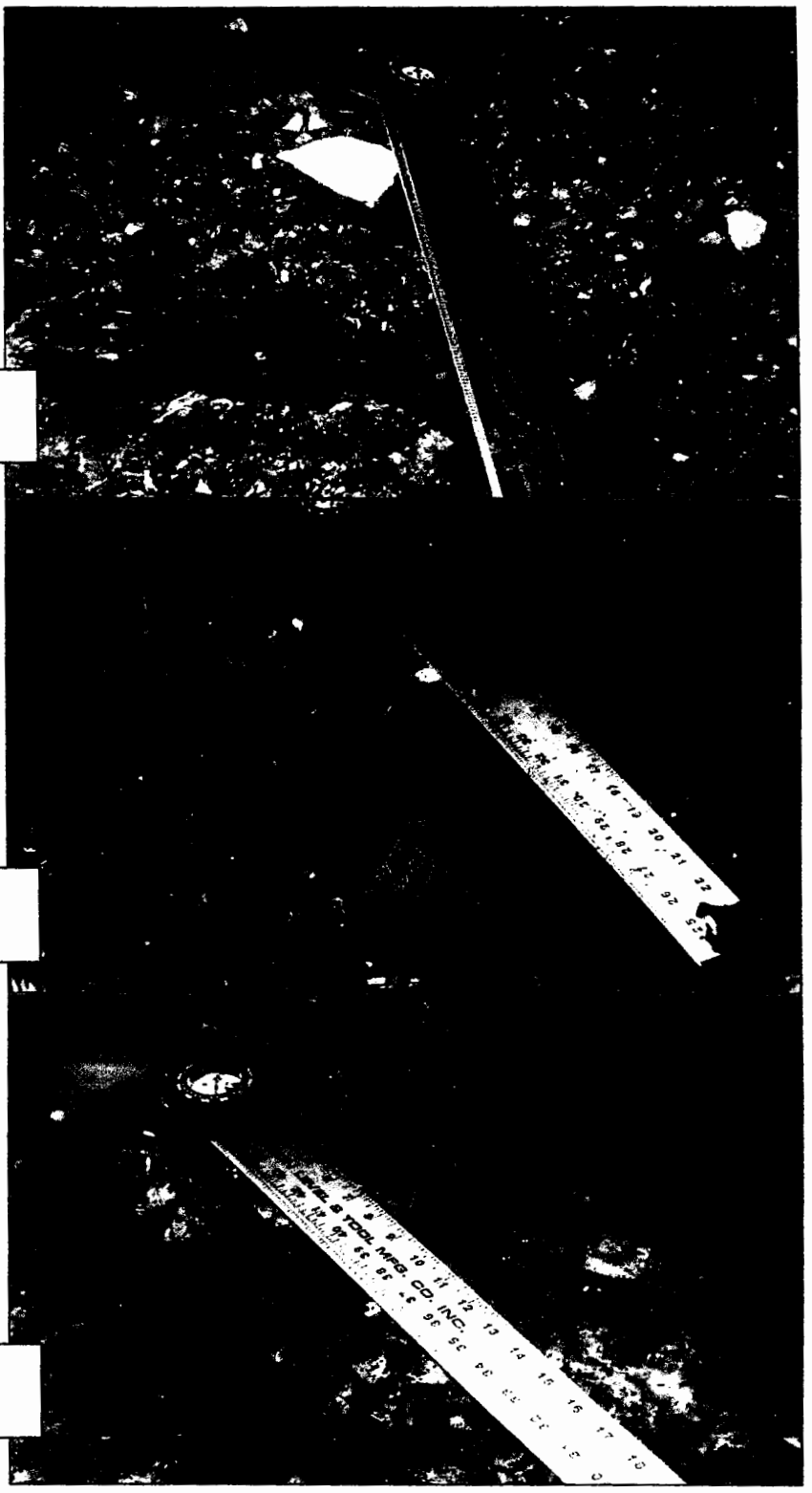
80 %

T1 S11

10 %

T1 S12

Trace



T2 S1

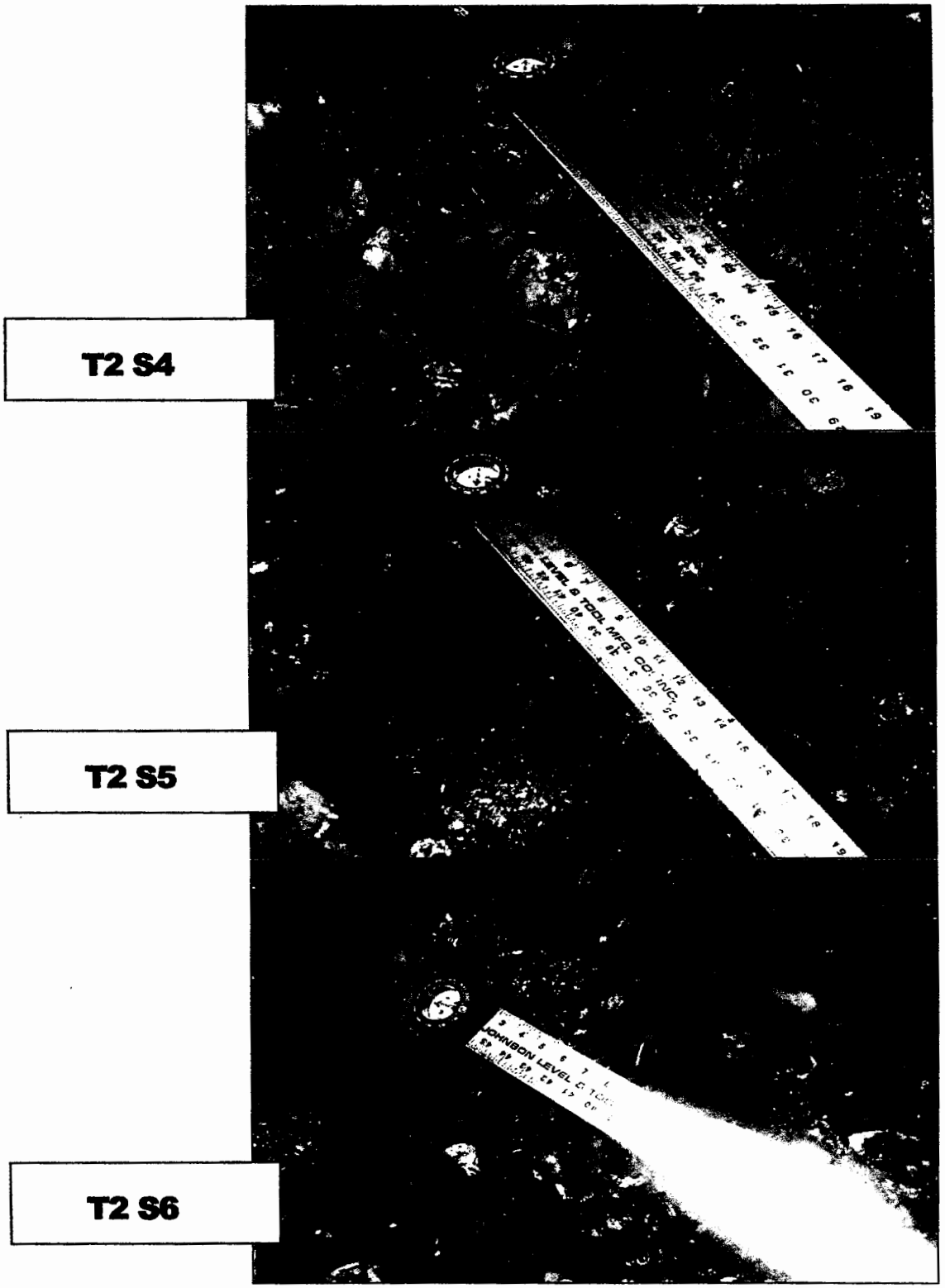
10%

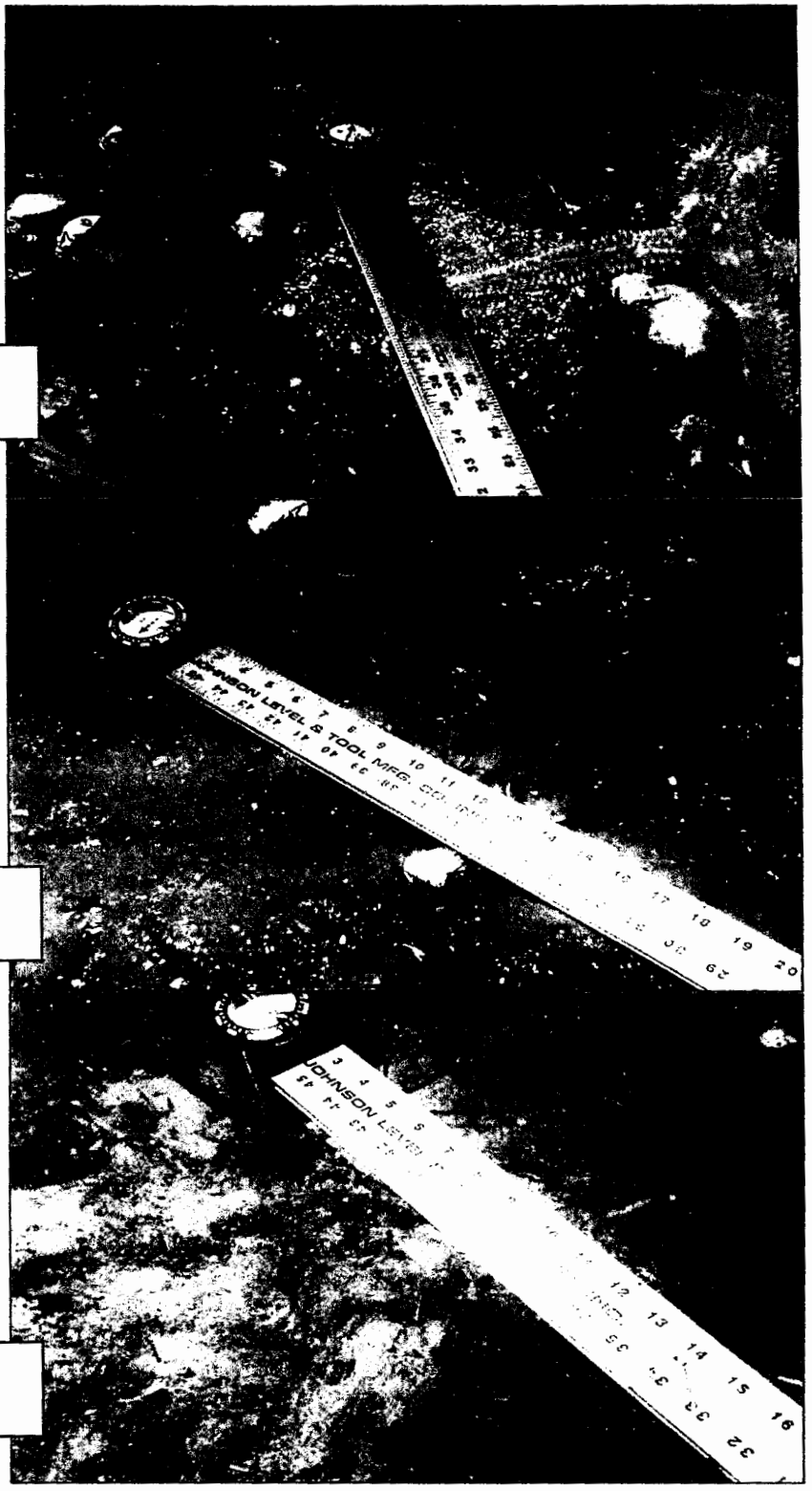
T2 S2

100%

T2 S3

100%


T2 S4
100%
T2 S5
100%
T2 S6
90%


T2 S8
40%
T2 S11
10%
T2 S13
10%

T3 S1

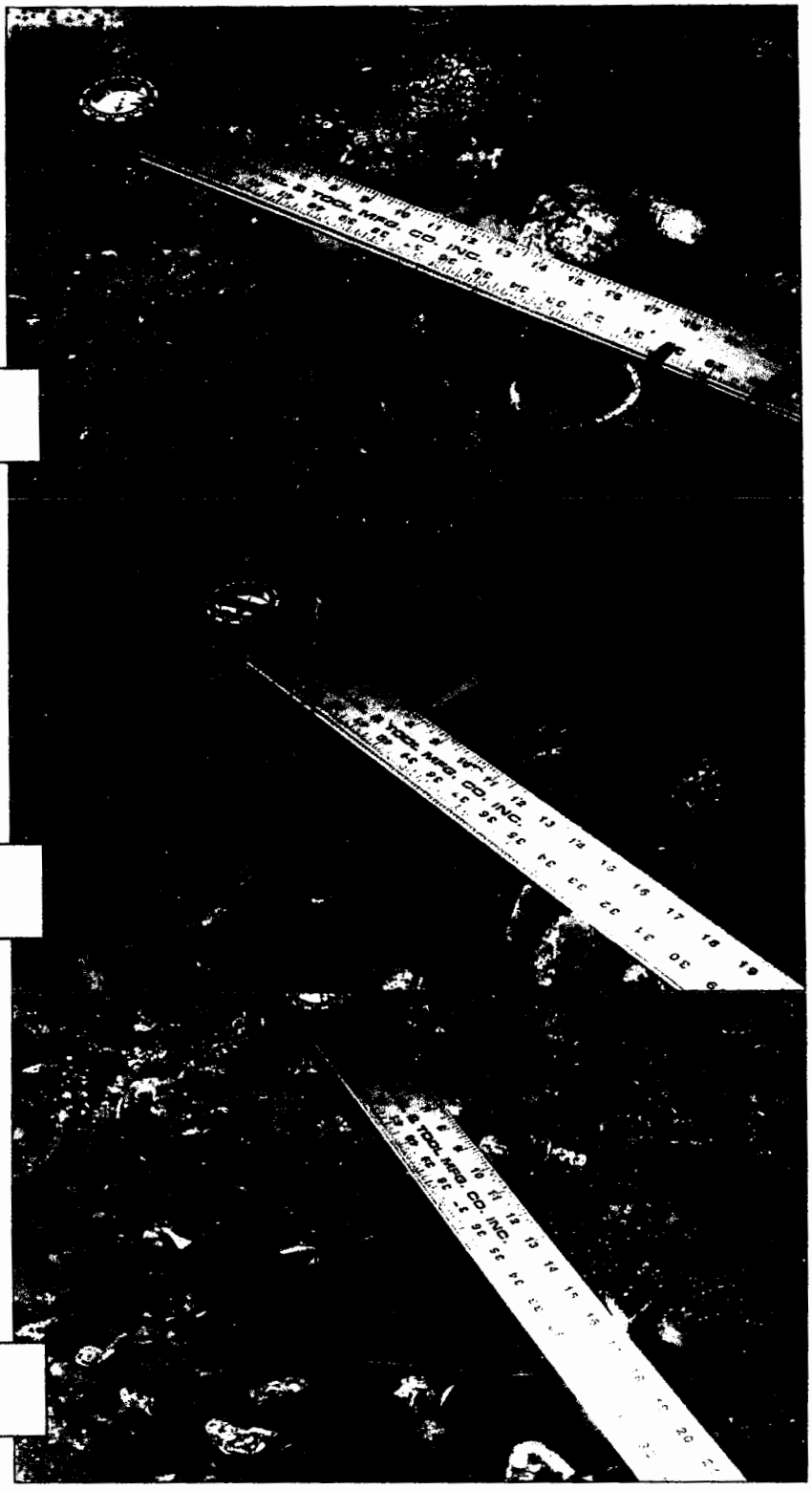
20%

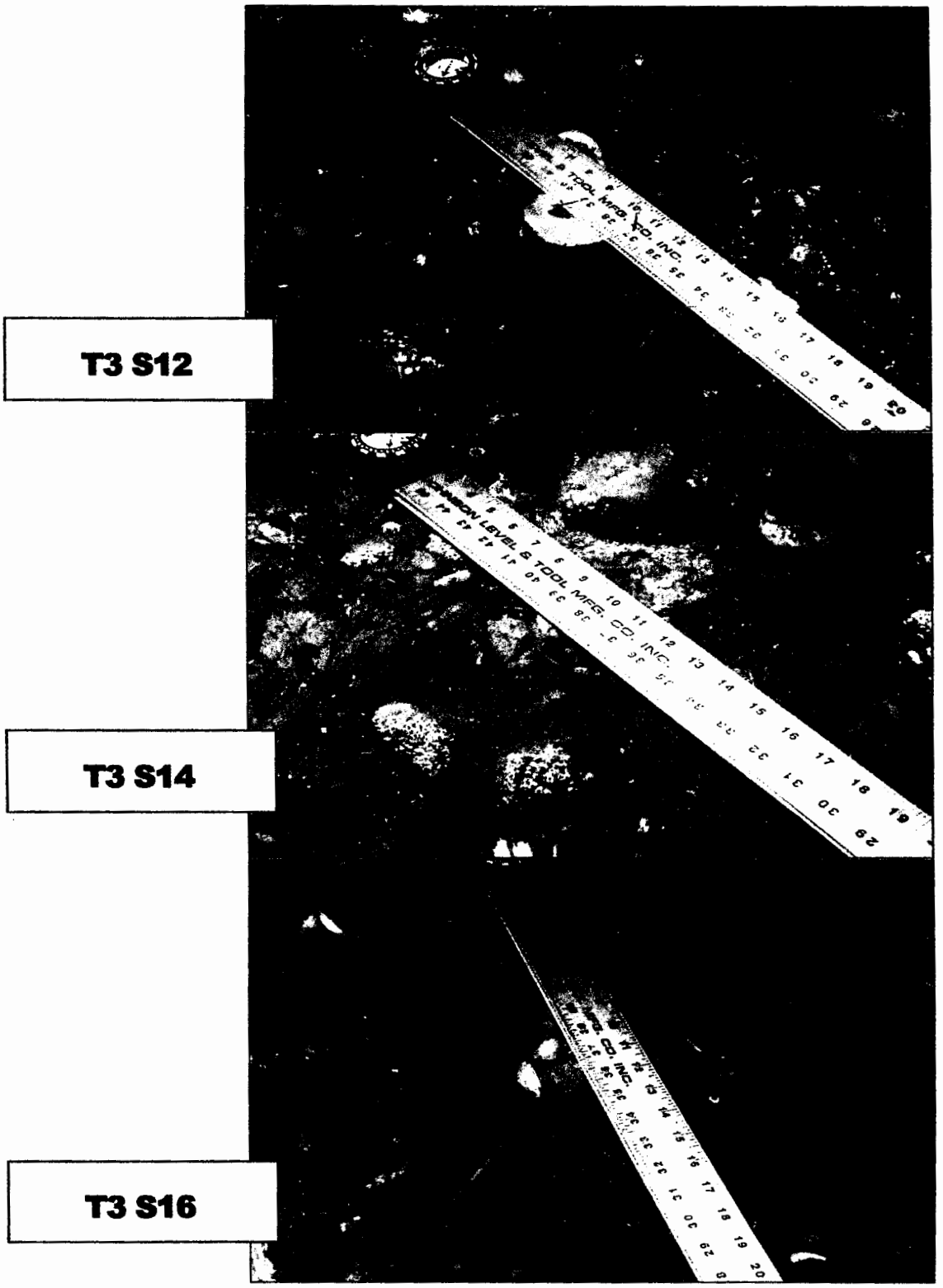
T3 S2

50%

T3 S4

100%


T3 S6
T3 S8
T3 S10
90
100
70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T3 S18
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T4 S2
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50
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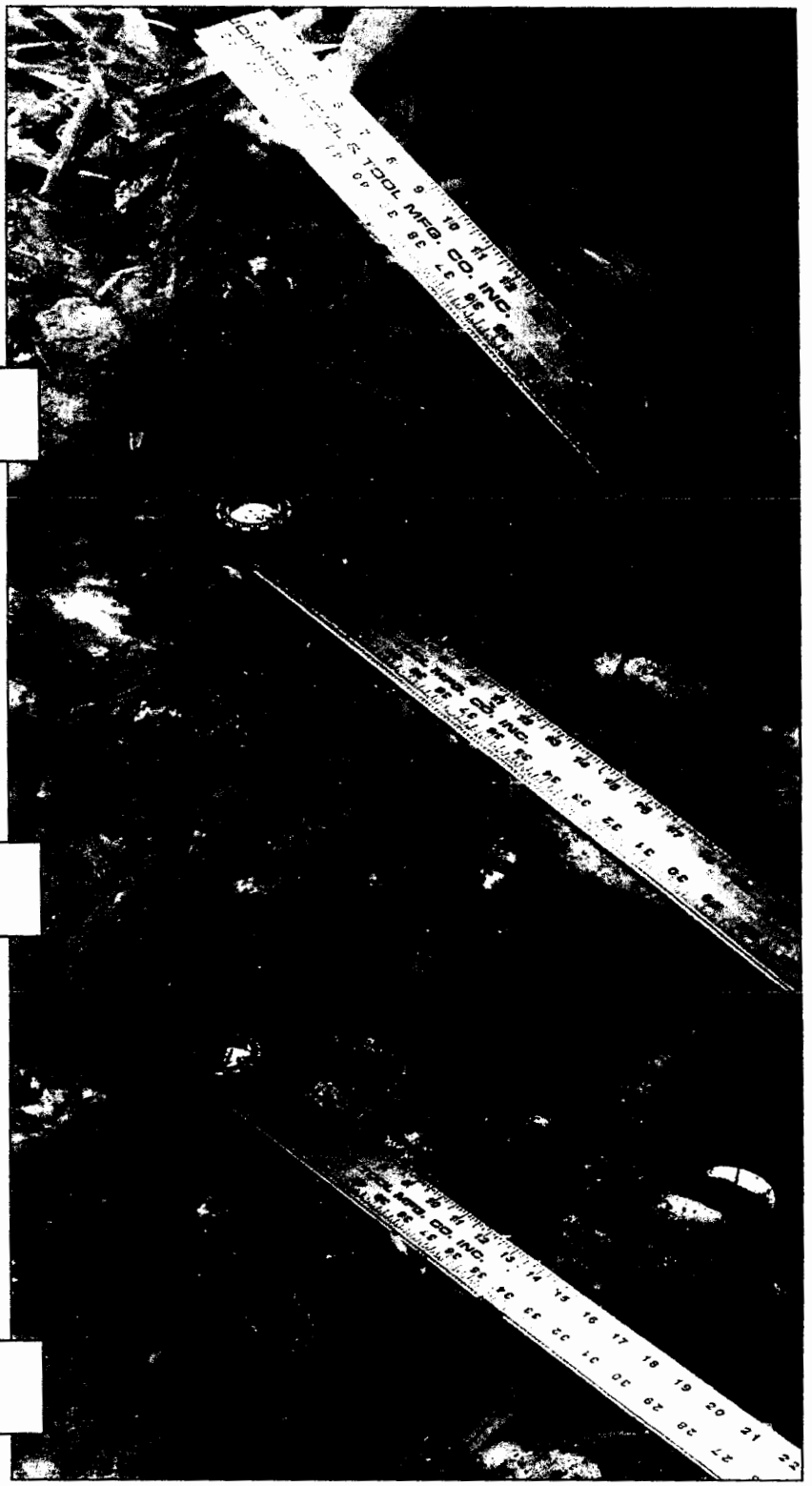
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100
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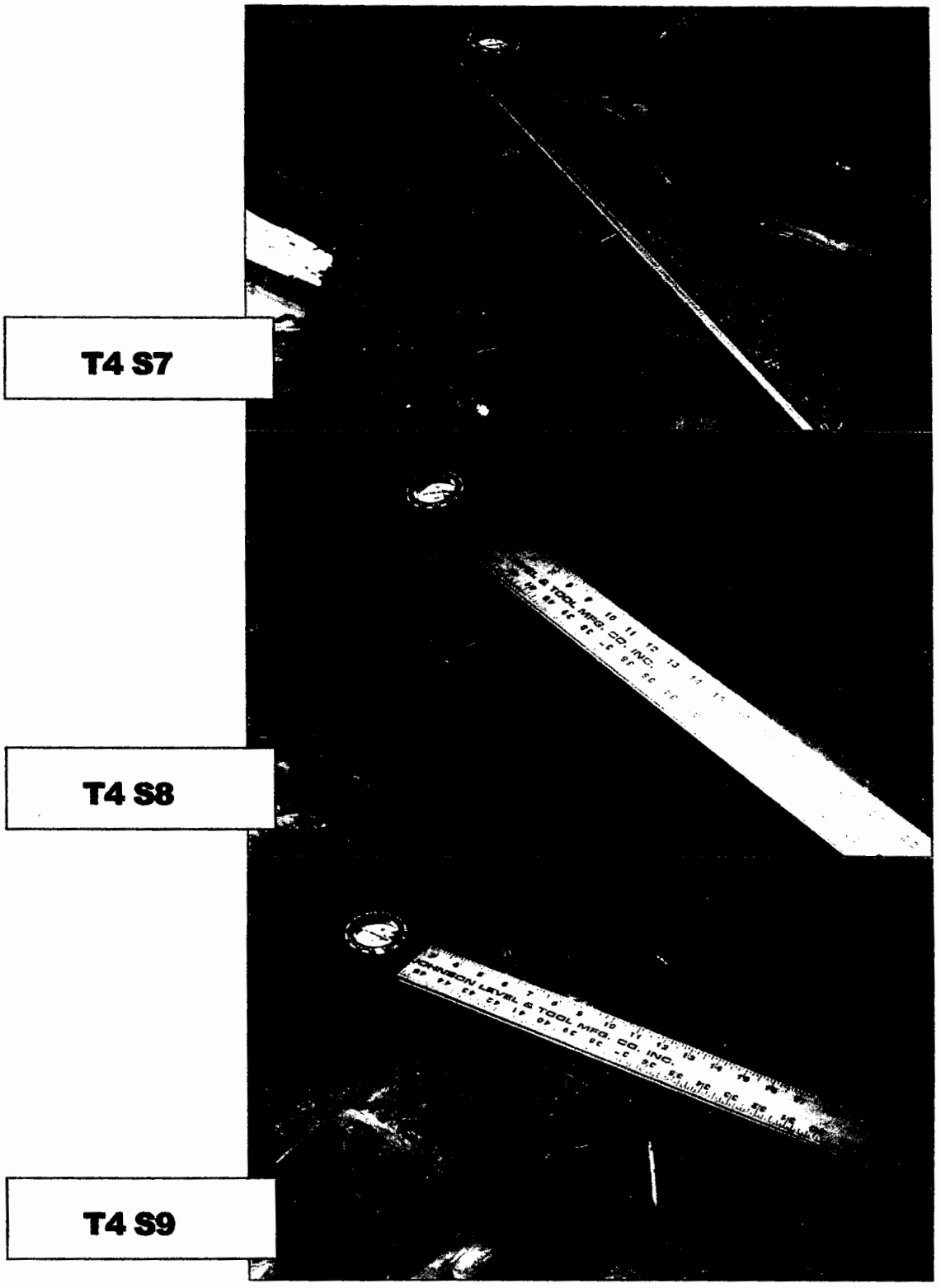
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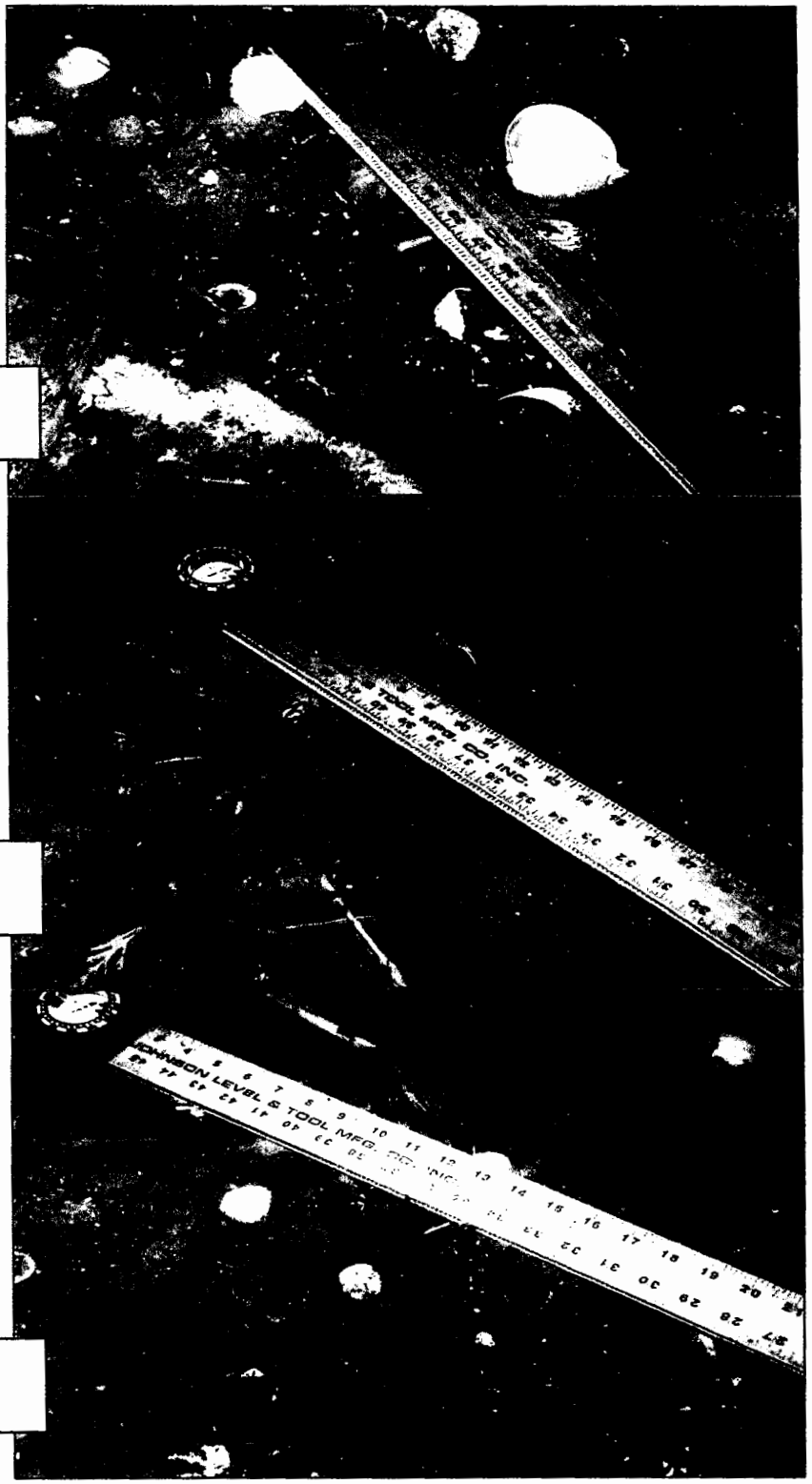
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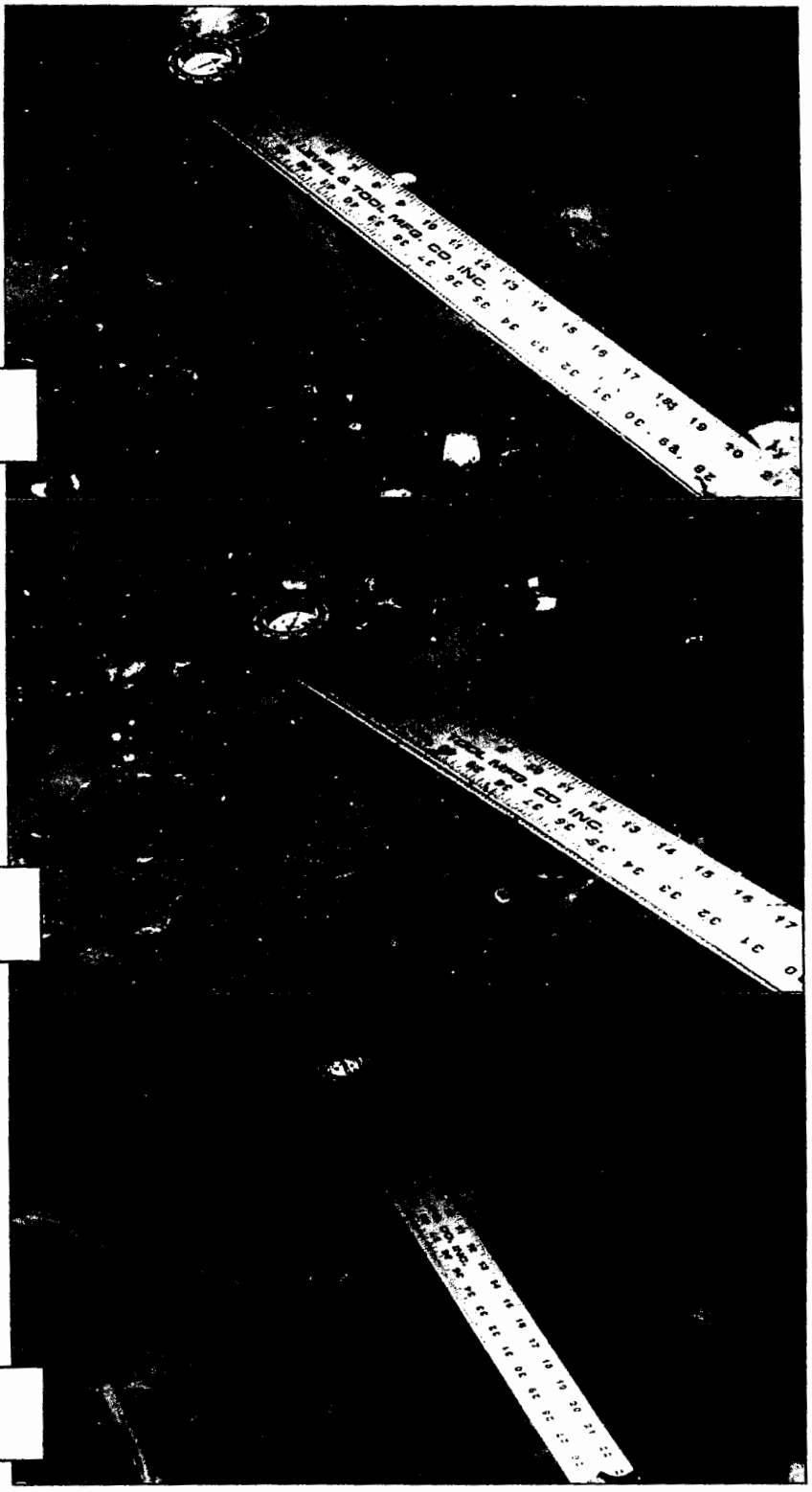

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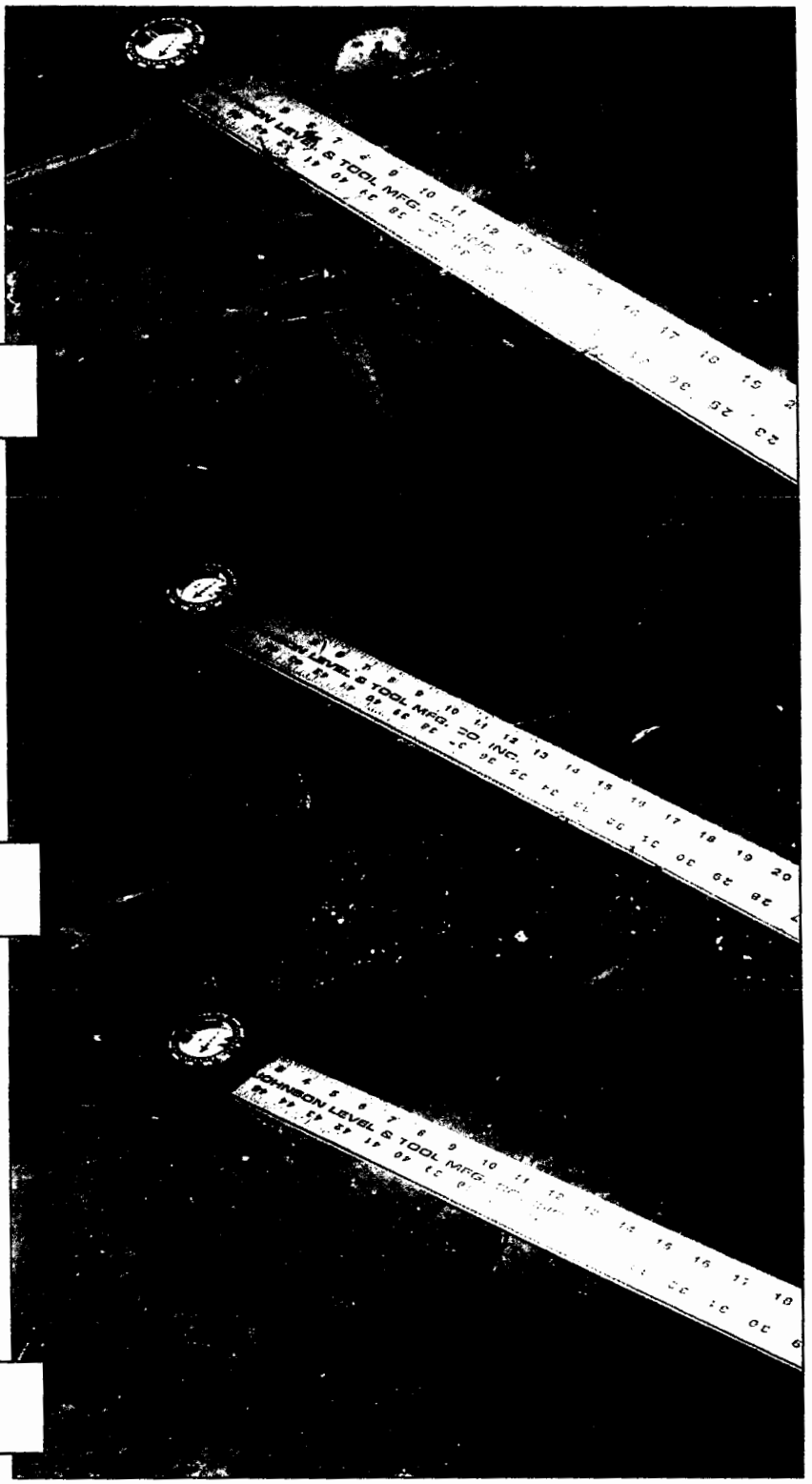
T4 S16

25

T5 S1

50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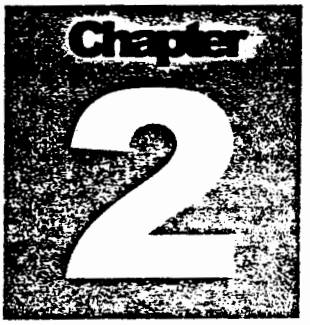
T5 S4



Tolstoi Bay LSA Dive Survey

Surveyed on December 6, 2002

The survey was conducted at the request of Aloha Lumber Corporation. An underwater reconnaissance was requested to determine the representative condition of an area operating as a Log Storage Area (LSA). The survey dive was conducted on December 6, 2002. The site surveyed is located in the southwest portion of Tolstoi Bay on Prince of Wales Island.

This inspection documented findings according to the Alaska Department of Environmental Conservation (ADEC), Environmental Protection Agency (EPA) and NPDES requirements. The percentage of bark coverage was determined by using the protocol for operating a bark-monitoring program given in the EPA General Permit. The area calculation used in this report is outlined in the ADEC publication **"Required Method for Bark Monitoring Surveys under the LTF General Permits".**

Findings

Continuous Coverage	Discontinuous Coverage	Total Survey Area
0.0 Acres / 0.0 M_2	0.0 Acres / 0.0 M_2	4.87 Acres / 20,113 M_2

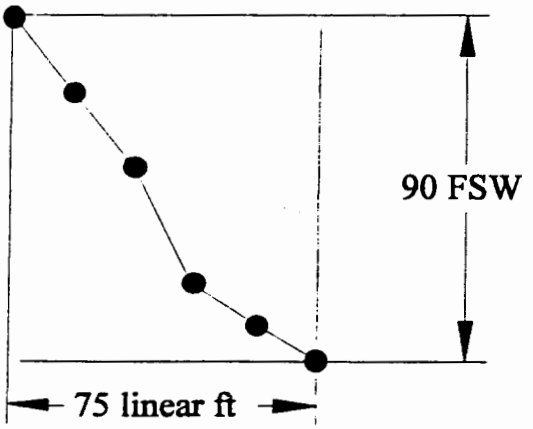
Log Storage Area

Three linear transects, bearing 110° were established perpendicular to shore in a parallel arrangement. A total of 25 sample locations were assessed. The DGPS coordinates for each parallel hub are as follows:
Transect 1: N 55° 37. 670 by W 132° 27. 350.
Transect 2: N 55° 37. 791 by W 132° 27. 170.
Transect 3: N 55° 37. 891 by W 132° 27. 090.

Weather conditions during the survey consisted of partly cloudy skies with winds less than five knots. Diving commenced at 11:30 a.m. during high tide. The tidal station (subordinate station #1461) was used to correct depths to MLLW. The station reported a tide level of 14.8 ft at 11:30 a.m. on December 6, 2002. The current conditions remained negligible. Seawater temperature was recorded at 45 degrees F. The horizontal visibility was estimated to be 40 feet.

Site conditions remained steady with winds less than five knots and overcast skies. Diving concluded at 3:30 p.m., on December 6, 2002 during MHHW. The tidal station (subordinate station #1461) was used for depth corrections, reporting a 5.3 ft tide level at 3:30 p.m. The tidal current velocity was estimated at 0.5 knots. The horizontal visibility remained constant and was estimated to be 40 feet.

Each transect terminated by 90 FSW, corrected to MLLW at subordinate station #1461. The grade for transects 1 and 2 averaged 1.5 feet horizontal to 1 foot vertical. The grade for transect 3 was 1 foot horizontal to 1.2 feet vertical, until transect termination.



Transect 3
Grade 1:1.2

Observations

The log storage raft was located offshore in deep water. This survey was conducted using the same reference point hub positions as the pre-discharge survey. Each transect terminated by 90fsw MLLW without reaching the storage raft.

The substrate adjacent to the log storage area consisted primarily of bedrock. The shoreline was populated by species of seaweeds, lichens, and animals commonly associated with a rocky substratum. At the base of the rock walls, the substrate changed to cobble and sand/aggregate mix that supported sea stars and sea cucumbers in lower abundances than were noted on the rock wall.

High densities of *Fucus gardneri* were observed at the shallow sample points, but abundance declined with depth. Subtidally, several species of *Laminaria* populated the wall in common abundance along with unidentified species of foliose red algae.

Abundance of *Parastichopus californicus* ranged from low to high, depending on substrate and food availability. Echinoderms observed along the slope in 40 to 90 FSW range included the sea star species *Evasterias troschelli, Crossaster papposus, Dermasterias imbricata, Mediaster aequalis,* and *Pycnopodia helianthoides.* Mussels observed were identified as *Mytilus edulis* and were found in high abundance on the rock wall at the shallower sample points. Fish abundance was low at all sample points.

The bathymetric conditions of rock walls harbored small amounts of debris, similar to that found in the prior survey. The debris comprised both natural wood and the type of wood debris commonly associated with log storage areas. The algal and animal life appeared to be healthy and not adversely impacted by the nearby storage raft.

Conclusions

The General Permit AK-G70-1000 requires the bark monitoring survey to evaluate whether the discharge site has exceeded the zone of deposit. The ADEC has defined the ZOD as the outer boundary of the project area.

In accordance with the requirements listed above and with regard to the project area that was surveyed according to the methods approved by the EPA and ADEC, it is my opinion that the discharge site has not exceeded the zone of

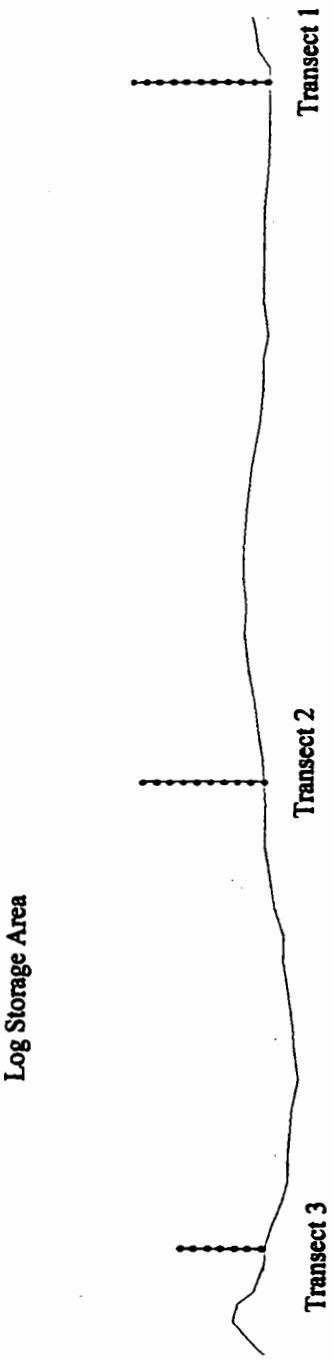
deposit. This determination is based on the calculations derived from the transect data collected for this report only.

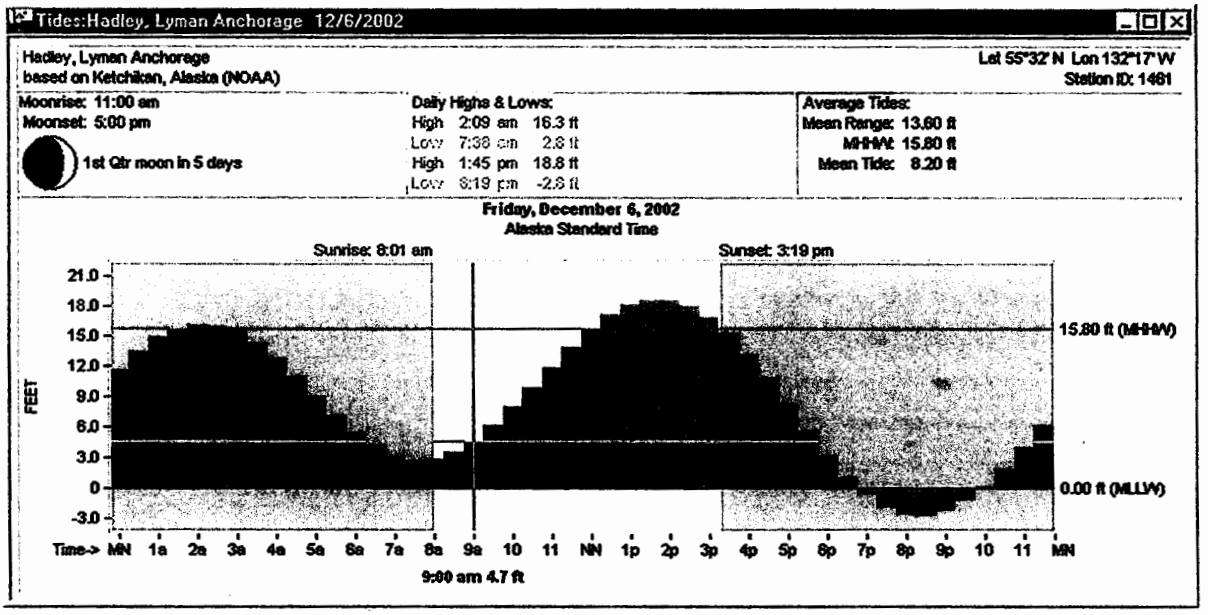
If you have need of further service regarding this report, please contact me directly at (253) 209 9380. E-mail correspondence can be forwarded to Haggitt1@juno.com. I appreciate the opportunity to provide you with this report.

Respectfully submitted,

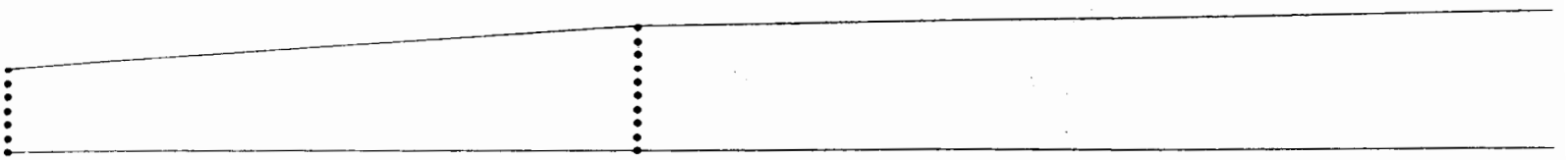
Stephen Haggitt December 10, 2002

Transect Diagrams




Tides:Hadley, Lyman Anchorage 12/6/2002
Hadley, Lyman Anchorage
based on Ketchikan, Alaska (NOAA)
Lat 55°32' N Lon 132°17' W
Station ID: 1461
Moonrise: 11:00 am
Moonset: 5:00 pm
1st Qtr moon in 5 days
Daily Highs & Lows:
High 2:09 am 16.3 ft
Low 7:38 am 2.8 ft
High 1:45 pm 18.8 ft
Low 8:19 pm -2.8 ft
Average Tides:
Mean Range: 13.60 ft
MHHW: 15.80 ft
Mean Tide: 8.20 ft
Friday, December 6, 2002
Alaska Standard Time
Sunrise: 8:01 am
Sunset: 3:19 pm
FEET
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0
-3.0
15.80 ft (MHHW)
0.00 ft (MLLW)
Time-> MN 1a 2a 3a 4a 5a 6a 7a 8a 9a 10 11 NN 1p 2p 3p 4p 5p 6p 7p 8p 9p 10 11 MN
9:00 am 4.7 ft

Calculation Sheet



Total Survey Area: 211,994 Sq. Ft.

Continuous Coverage: 0.0 Sq. Ft.

Discontinuous Coverage: 0.0 Sq. Ft

Data Tables

Transect 1 110 Degrees

Hub Coordinates: Latitude N 55° 37.670 Longitude W 132° 27.350

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	10	0	0	R
2	12	0	0	R
3	18	0	0	S, R
4	21	0	0	R
5	32	0	0	S, SH
6	40	0	0	S, G
7	53	0	TRACE	S, R, SL
8	64	0	TRACE	S, R, SH
9	75	0	0	S, C, SL
10	90	0	0	
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 2 110 Degrees

Hub Coordinates: Latitude N 55° 37.791 **Longitude** W 132° 27.170

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	9	0	TRACE	R
2	20	0	0	R
3	32	0	0	R
4	42	0	0	R
5	52	0	TRACE	S, C
6	60	0	0	S, C
7	70	0	TRACE	S, G
8	80	0	0	S, G, SH
9	91	0	0	S
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Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Transect 3 110 Degrees

Hub Coordinates: Latitude N 55° 37.891 Longitude W 132° 27.090

Sample Point	Depth at MLLW	Bark Depth *(Inches)*	% of Cover	Substrate Type
1	7	0	TRACE	R
2	21	0	0	R, S
3	40	0	0	R
4	72	0	0	S, C
5	80	0	0	S, SHALE
6	93	0	0	S, SH, R
7				
8				
9				
10				
11				
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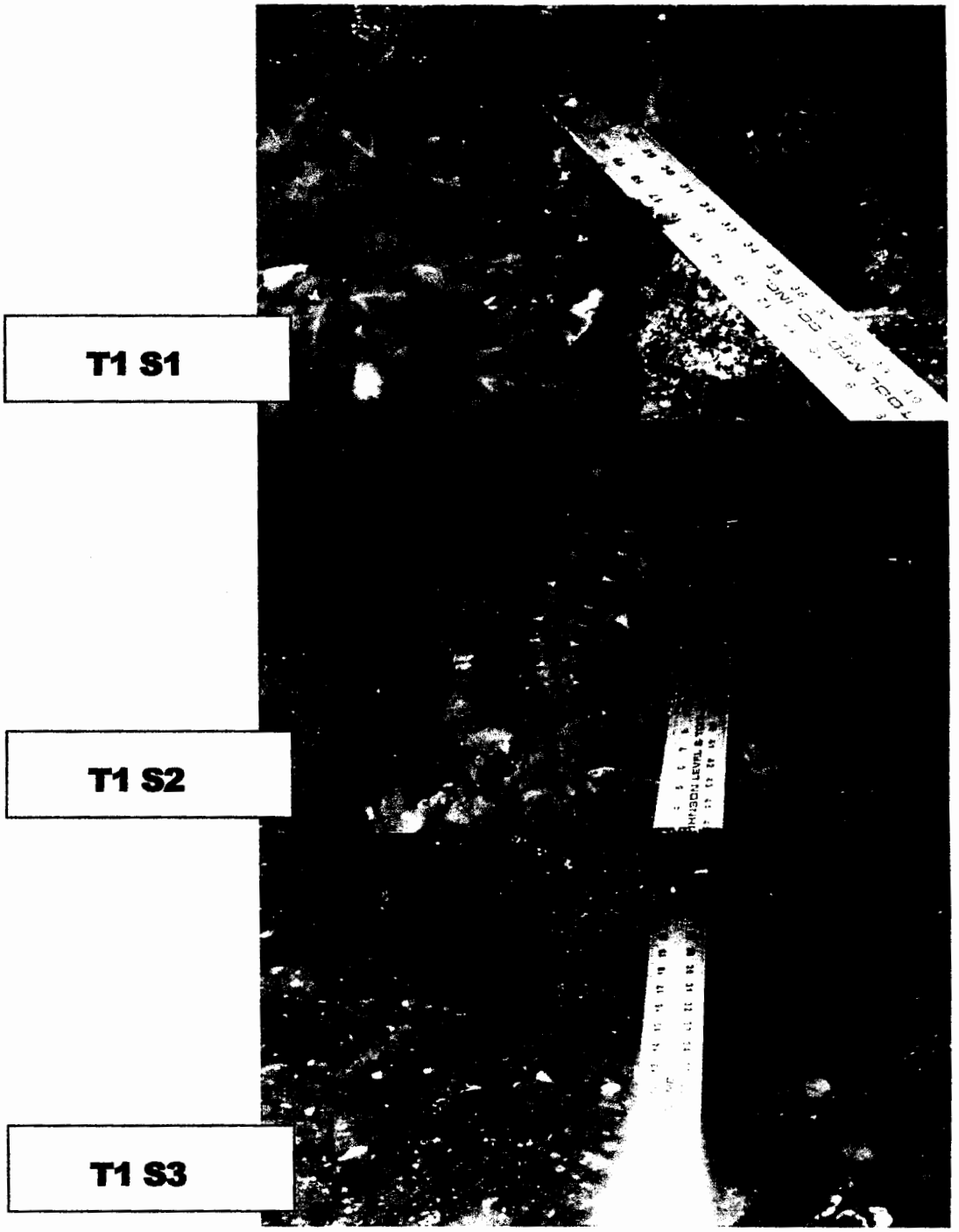
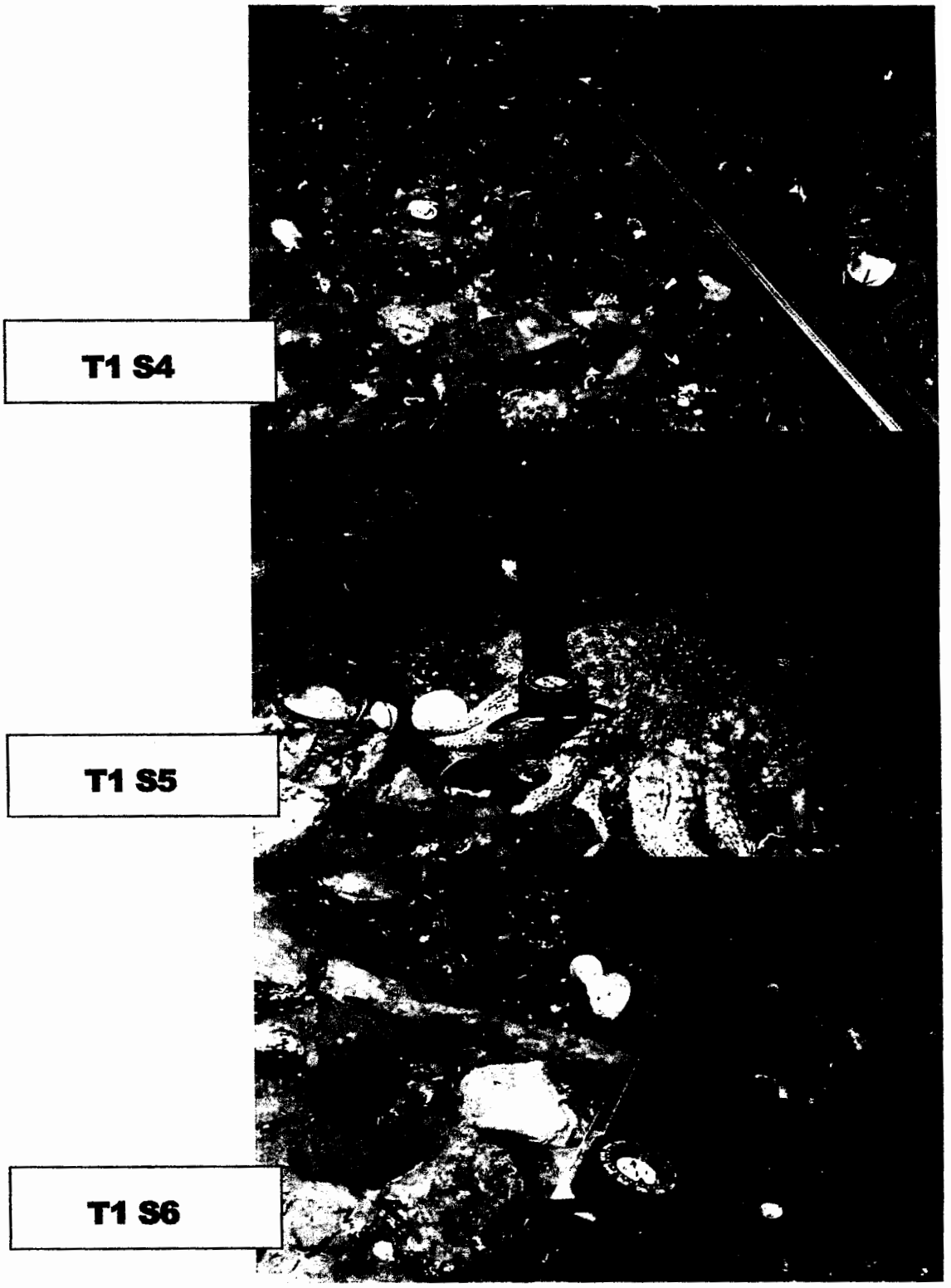
Key:
Substrate Type; S=Sand, M=Mud, Sl=Silt, R=Rock, C=Cobble, G=Gravel
Bark Depth Recorded in Inches

Abundance Tables

Scientific Name	Common Name	Abundance
Plants		
Ulva / Monstroma spp.	Sealettuce	L
Lessoniopsis littoralis		L
Cystoseira osmundacea		L
Laminaria saccharina	Suger kelp	L
Macrocystis pyrifera		L
Fucus gardneri	Rock weed	A
Invertebrates		
Macoma nasuta	Bent nosed clam	L
Protothaca staminea	Littleneck clam	C
Stichopus californicus	Sea cucumber	C
Balamus spp.	Barnical	C
Pagurus spp.	Hermit crab	L
Orthasterias koehleri	Mottled sea star	L
Pycnopodia helianthoides	Sunflowerstar	L
Saxidomus giganteus	Butter clam	L
Mercenaria mercenaria	Quahog	L
Clinocardium nuttallii	Heart cockle	L

Photographic Documentation

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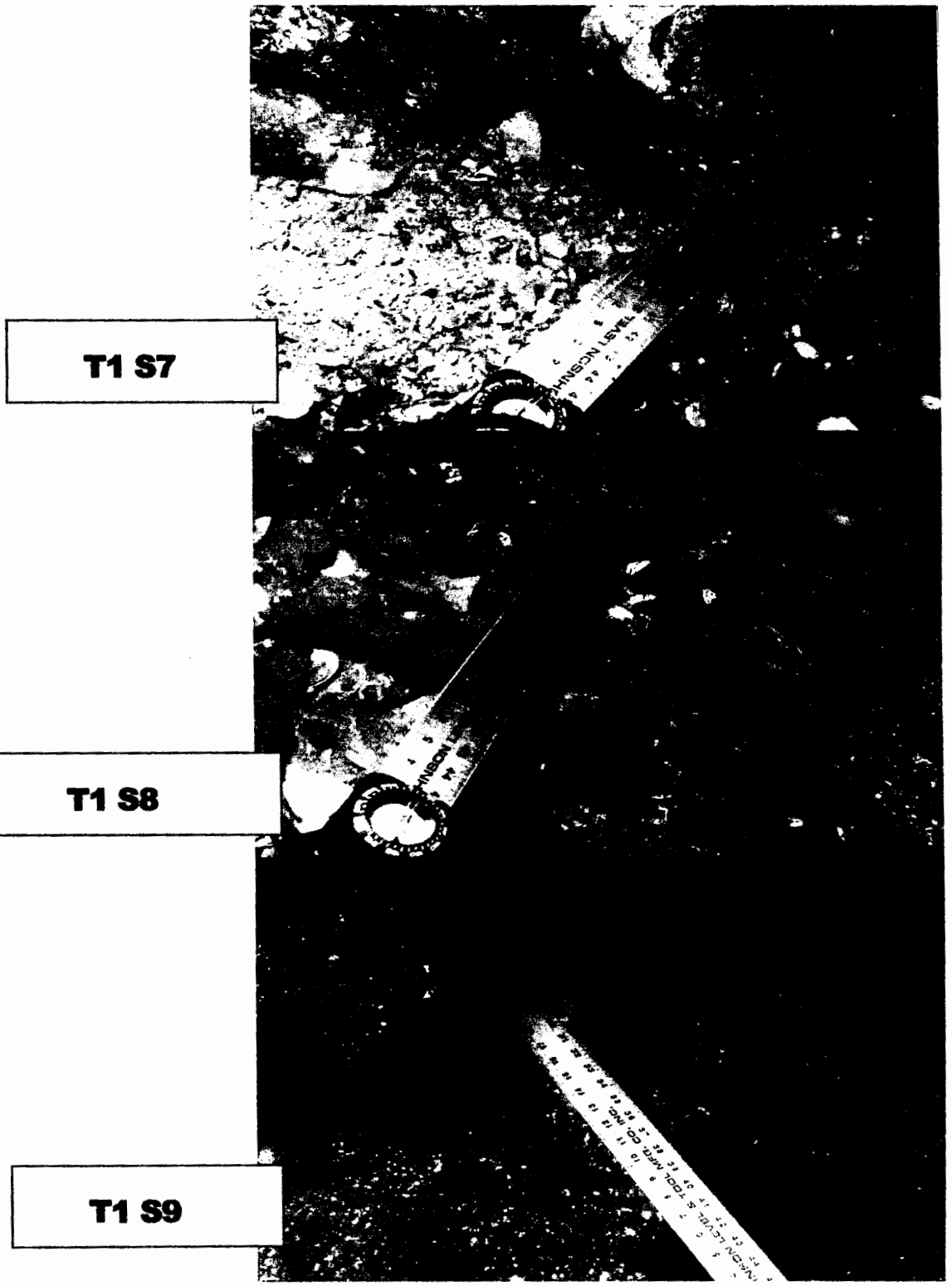
T1 S6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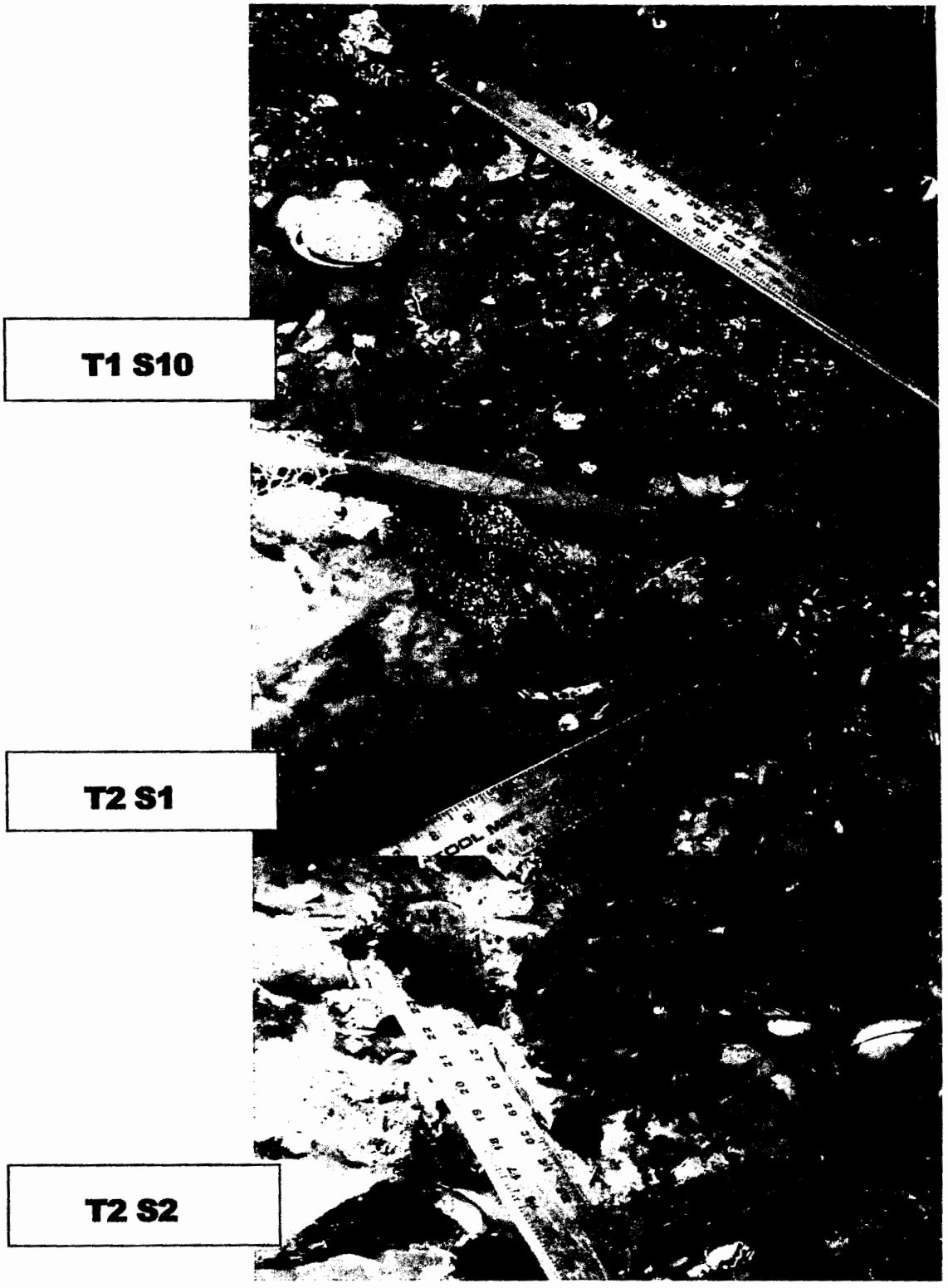
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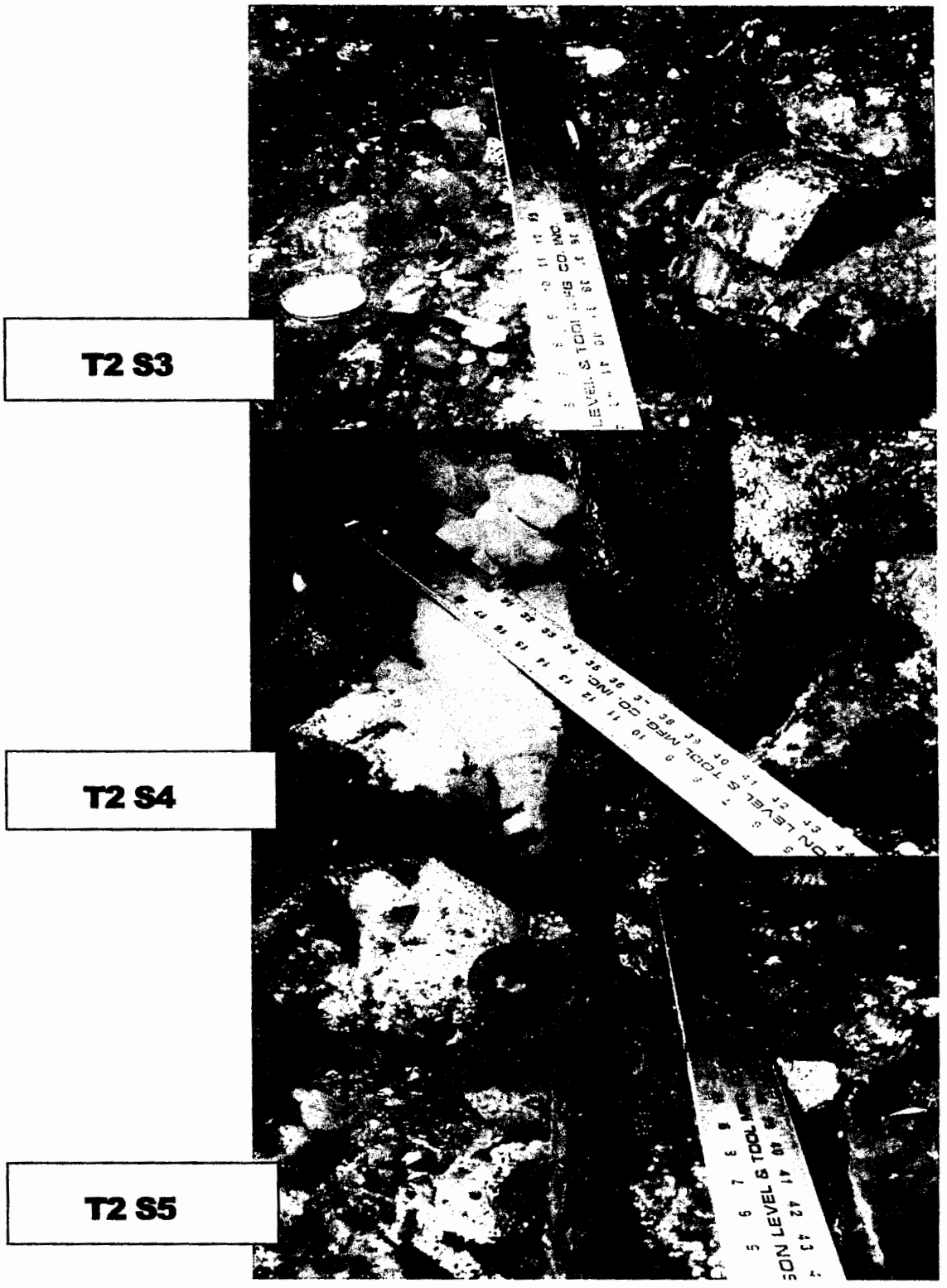
T2 S2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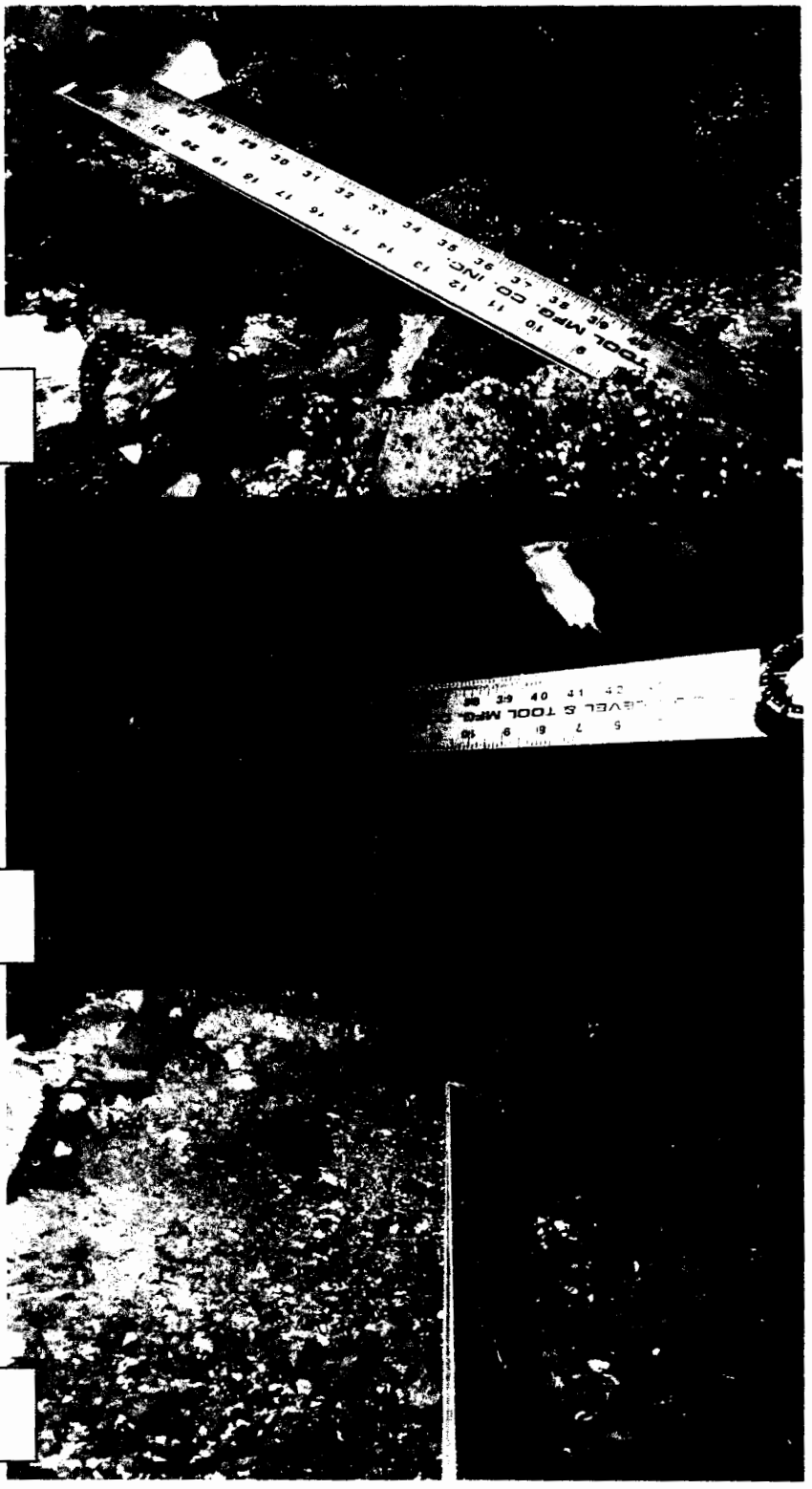

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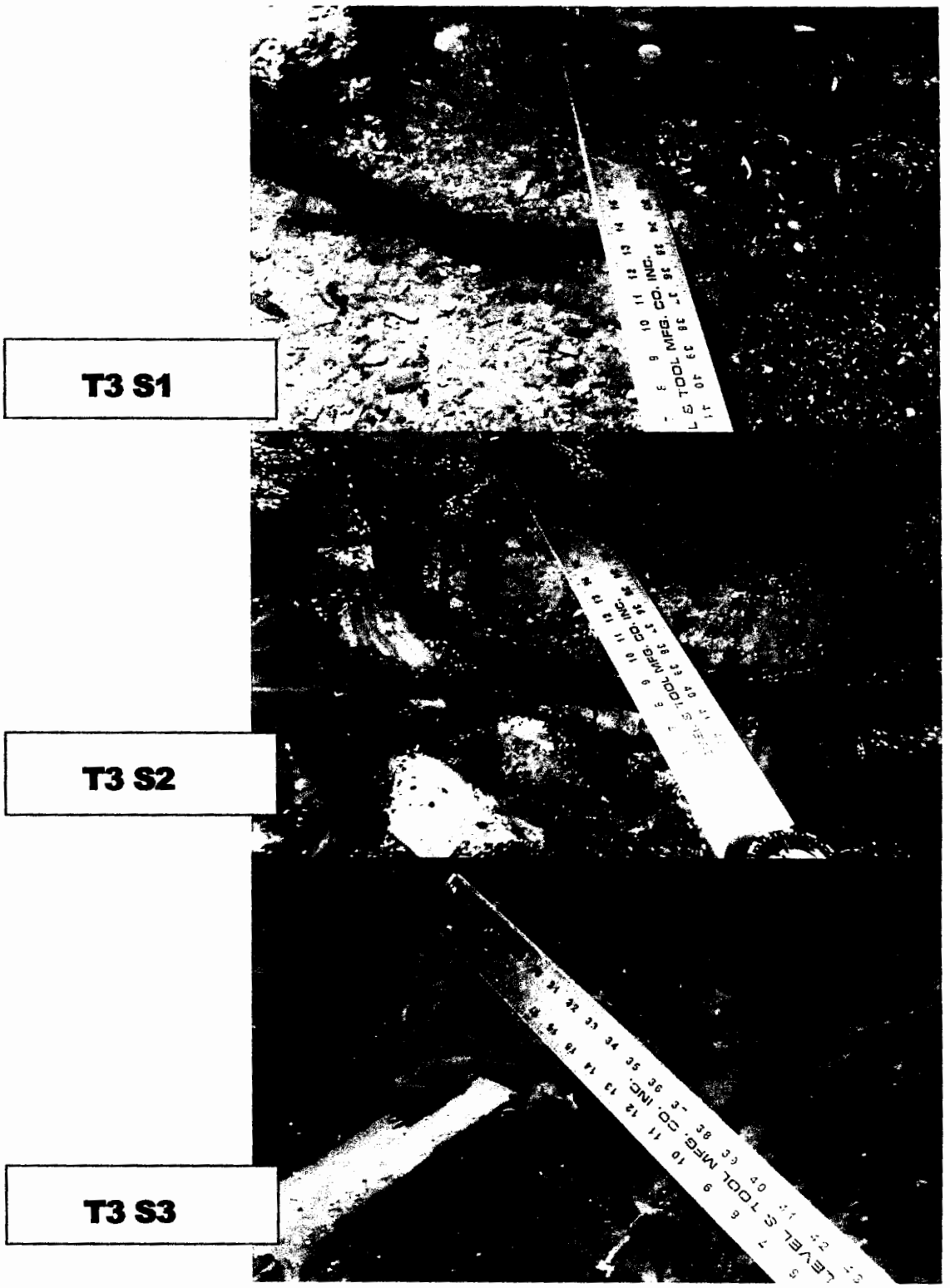
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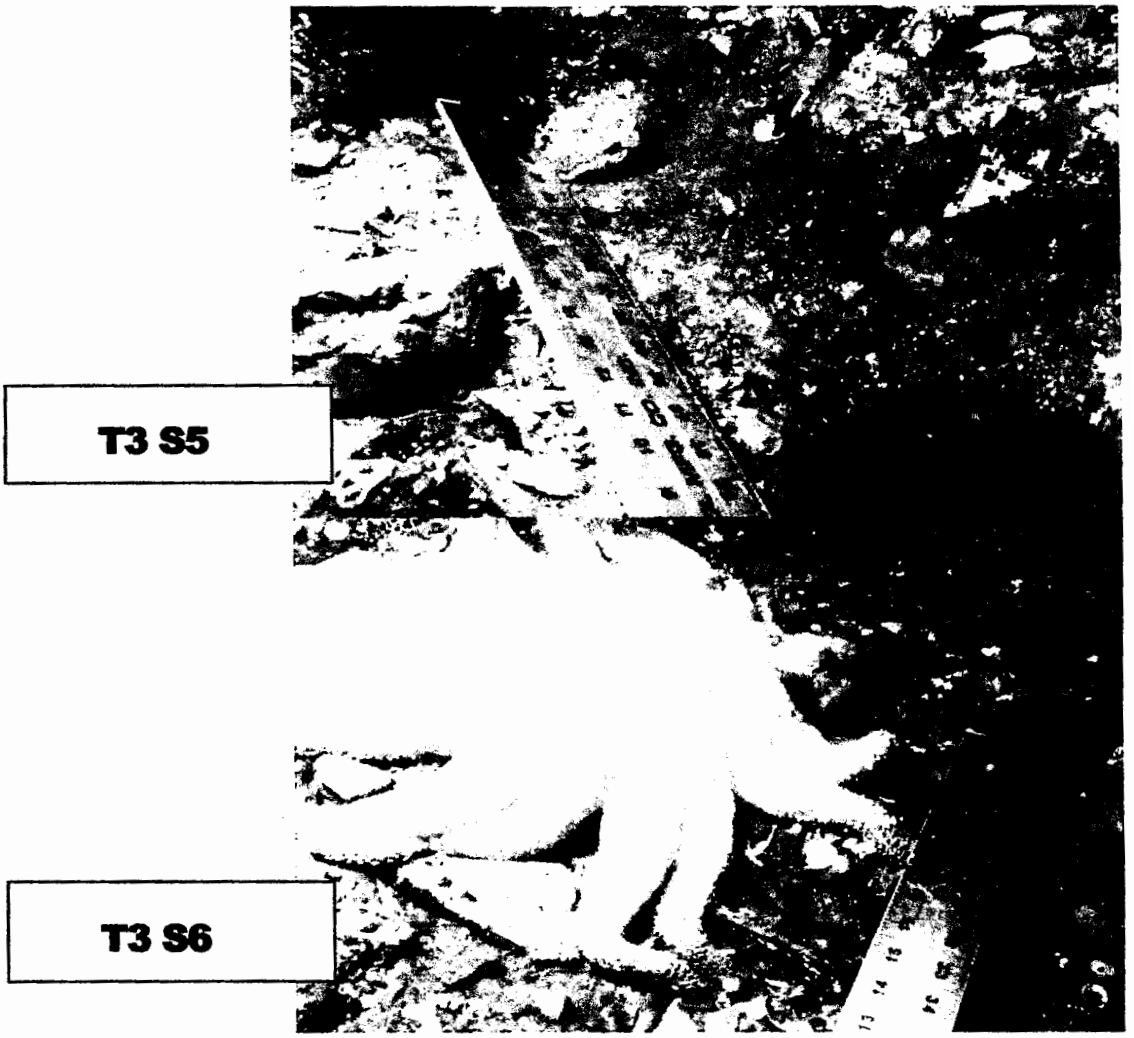
T3 S3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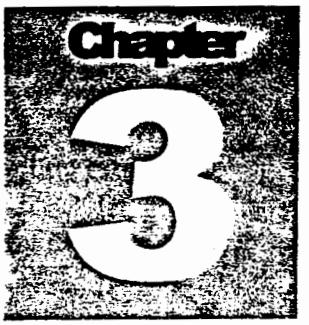

Survey Comparison

The LTF has accumulated significant bark debris since the pre-discharge survey. This is a combination of debris accumulation from the input ramp and the storage area. The pattern of coverage extends towards the log storage area, but as is typical, the percent of coverage and debris depth is mitigated the greater the distance from the discharge source.

The shore parallel to the LSA has remained much as it appeared in the pre-discharge survey. The debris at this location is characterized as insignificant.

Methods

Area calculations were accomplished by drafting scaled transect diagrams from the sample point tables in TurboCad professional v6.

Radial Transects

The fixed hub reference point for the transects radiating from the log transfer ramp was initially located by reviewing maps and diagrams created by Haggitt Consulting for the January 2001 pre-discharge survey. The hub location was then "fixed" at the center of the ramp with DGPS coordinates.

The reference hub was located as close as possible to the center of the discharge site to facilitate future reconnaissance. Five transects were established, radiating from the reference hub at 30-degree intervals. Two separate magnetic compasses were compared to determine the bearings. Vessel based personal monitored the divers progress and used radio/diver-telephone communications for course adjustments.

Parallel Transects

The parallel transects reference point hubs were initially located by reviewing maps and diagrams created by Haggitt Consulting for the January 2001 pre-discharge survey. The DGPS coordinates were verified, and the bearing of 110 degrees was followed. Each transect ended at 90 feet MLLW.

Sample Points

Samples were taken at intervals of 15 linear feet along each radial and parallel transect. This interval distance was established with the use of a rolling tape measure, the accuracy is reported as +/- 3 inches at 1000 feet.

For the 2001 pre-discharge LSA survey, it was requested by Dave Sturdevant of DEC that the transect termination criteria of 60 feet MLLW be exceeded. The transects for the 2003 LSA survey were terminated by 90 feet MLLW.

At each sample point observations were noted on the abundance and type of marine organisms present, the native vegetation, and composition of the substrate. Data including the water depth, current direction, and estimated current velocity also were incorporated into the field notes. Each of the sample points also included relevant observations on operational debris and existing bark debris. Photographic documentation was used at representative sample locations to record algal life, animal life, substrate, and debris present. Sample location depth notations are based on readings from a Cochran Consulting Nemeses IIA dive computer calibrated for saltwater and altitude