

LOCATION MAP
SCALE: 1" = 2,500'

**AUKE BAY, STEPHENS
PASSAGE TIDAL DATA**

HIGHEST RECORD TIDE . . .	22.0' (EST)
MHHW	15.85'
MHW	14.85'
MTL	8.20'
MLW	1.55'
MLLW . . . (DATUM)	0.00'
LOWEST RECORD TIDE	-6.0' (EST)
HTL	20.3' (COE EST)

SHEET INDEX

SHT.	DESCRIPTION
1	LOCATION MAPS
2	SITE PLAN
3	CROSS SECTION

**PROPOSED CONSTRUCTION OF
SOUTH LENA POINT SUBDIVISION
WASTEWATER OUTFALL SYSTEM**

WITHIN SECTION 24, T. 40 S., R. 64 E., AND
SEC. 19, T. 40 S., R. 65 E., C.R.M., LENA POINT
JUNEAU RECORDING DISTRICT
CITY & BOROUGH OF JUNEAU, ALASKA

CLIENT:
CITY AND BOROUGH OF JUNEAU
ENGINEERING DEPARTMENT
155 SOUTH SEWARD STREET
JUNEAU, ALASKA 99801

SURVEYOR:
R&M ENGINEERING, INC.
P.O. BOX 34278
JUNEAU, ALASKA 99803

SHEET 1 of 4

DATE: MAY, 2002

R&M PROJ. NO. 011839

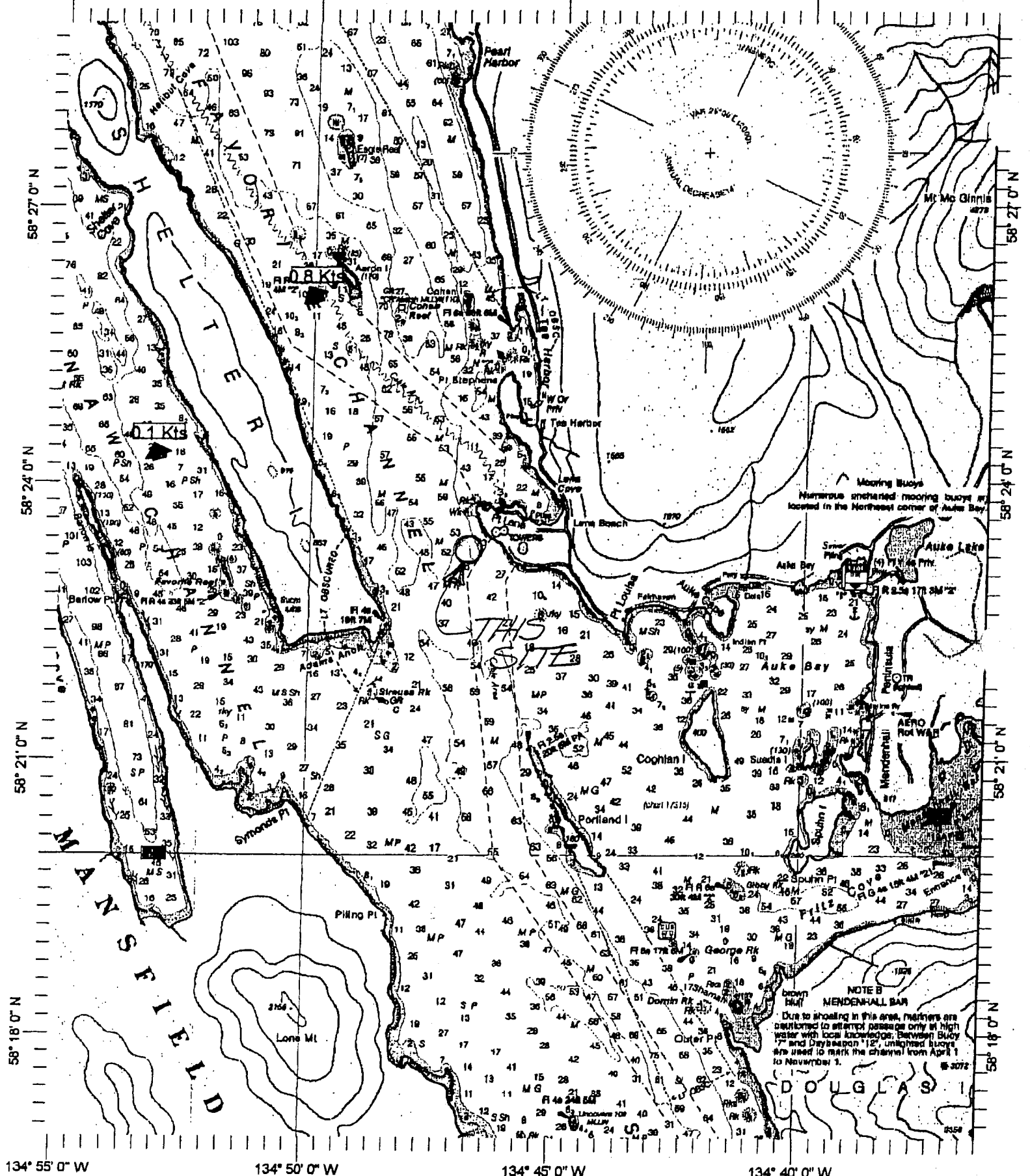
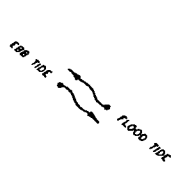
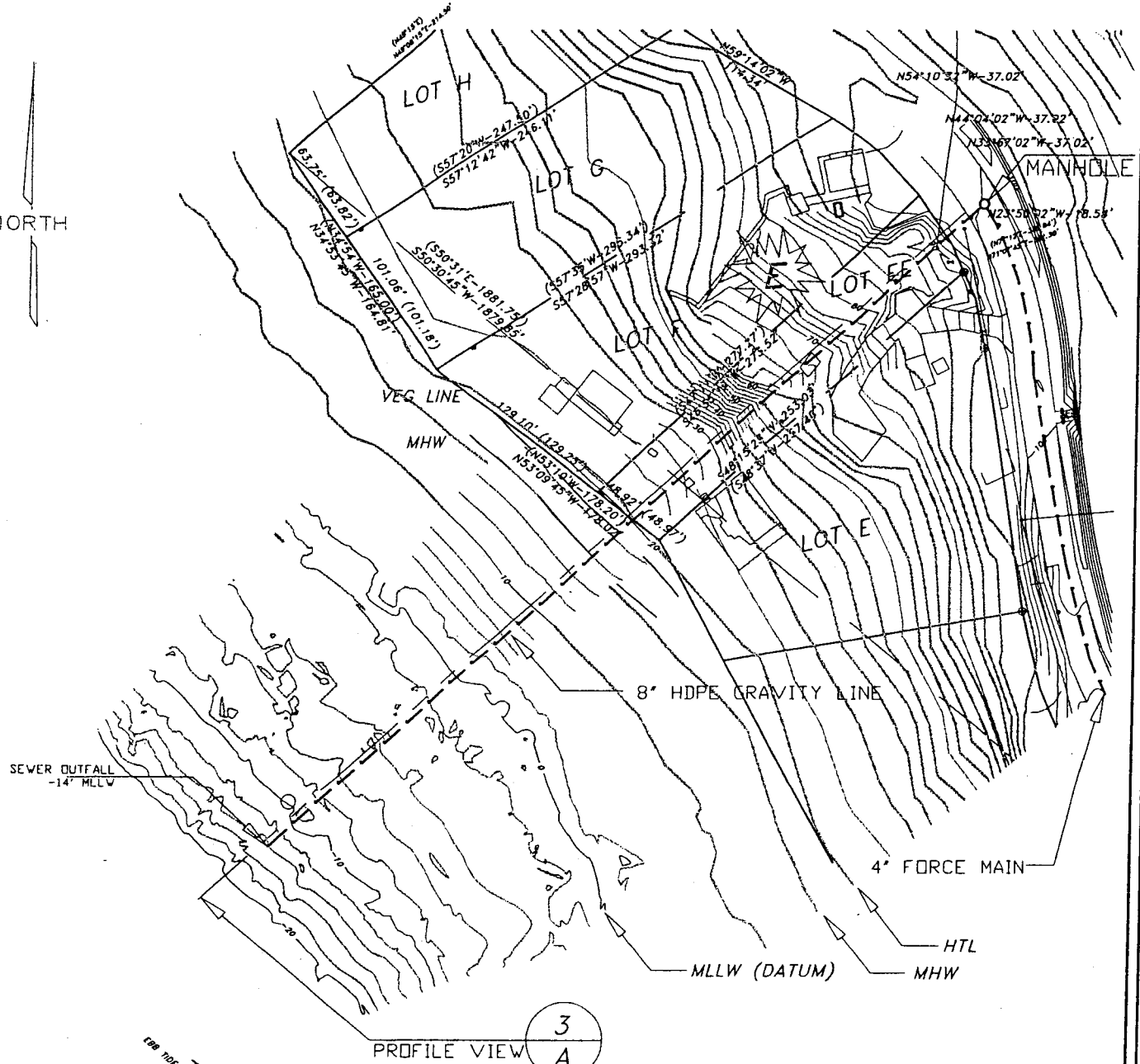
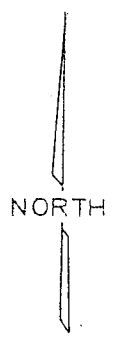


Chart Name: LYNN CANAL ICY STRAIT TO POINT SHERMAN
 Chart ID: 17316 1
 Top Left: 58° 28' 57" N 134° 55' 2" W
 Bottom Right: 58° 16' 50" N 134° 36' 18" W

SURVEY SYMBOLS:

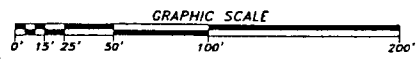
- ⊙ 1410-S PRIMARY MONUMENT RECOVERED THIS SURVEY
- 1410-S SECONDARY MONUMENT RECOVERED THIS SURVEY
- ⊗ G.L.O./B.L.W. MONUMENT RECOVERED THIS SURVEY
- ⊗ G.L.O./B.L.W. MONUMENT OF RECORD
- ⊕ D.O.T./P.F. R.O.W. MONUMENT RECOVERED THIS SURVEY
- ⊕ PRIMARY MONUMENT BY OTHERS RECOVERED THIS SURVEY
- ⊕ SECONDARY MONUMENT BY OTHERS RECOVERED THIS SURVEY
- 🌳 EAGLE TREE (APPROX. LOCATION)

LOT NO.	OWNER / ADDRESS
LOT EE	CITY - BOROUGH OF JUNEAU 155 SO SEWARD ST
LOT F	MIKE ROBINSON 16835 PT LENA LOOP RD
LOT E	CARL DIERKING 16775 PT LENA LOOP RD



PROFILE VIEW 3/A

PLAN VIEW
WASTEWATER OUTFALL



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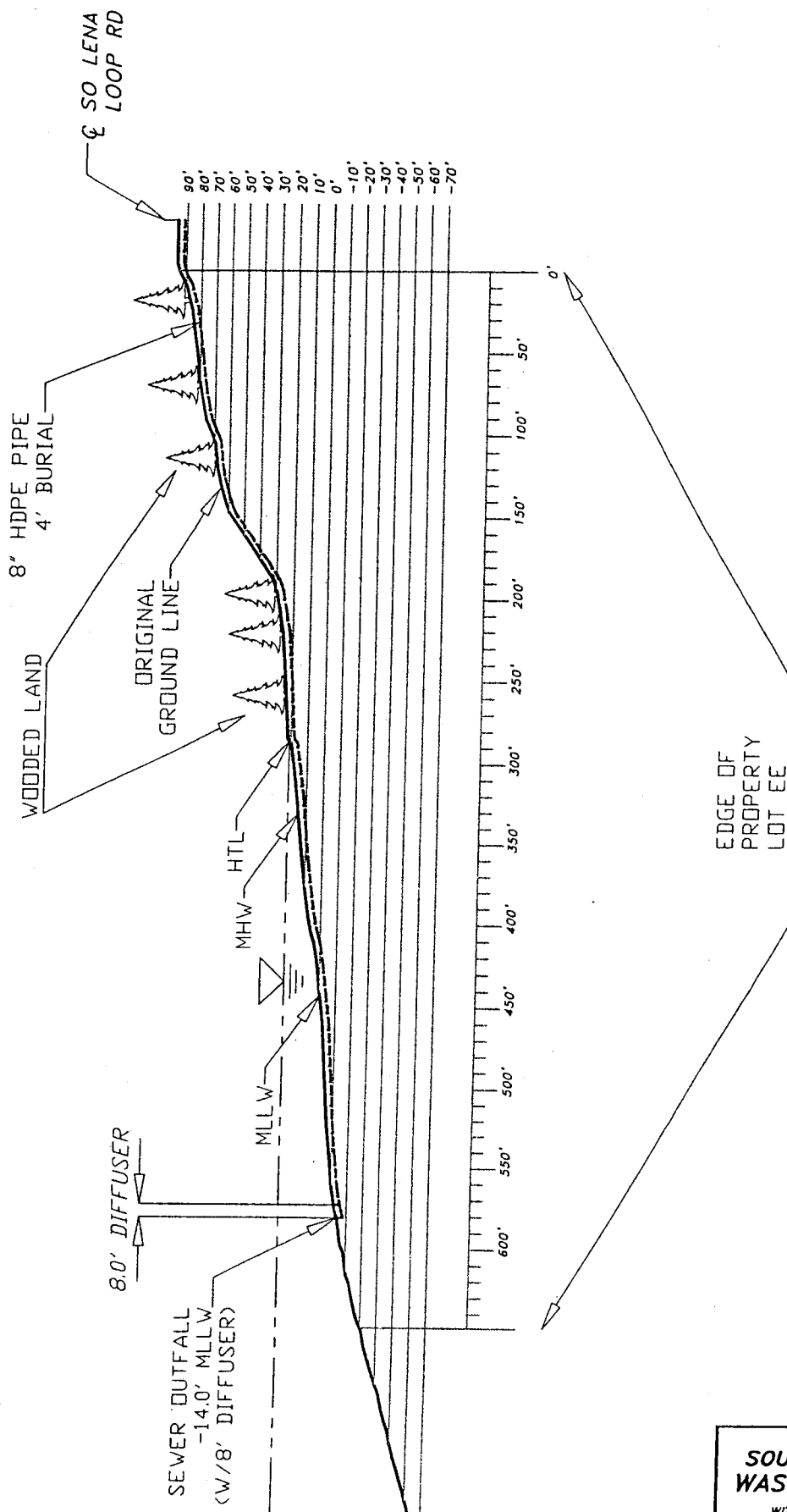
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SHEET 2 OF 4

R&M PROJ. NO. 011839



A) OUTFALL PROFILE
SCALE: 1" = 100'

PROPOSED CONSTRUCTION OF
**SOUTH LENA POINT SUBDIVISION
WASTEWATER OUTFALL SYSTEM**
WITHIN SECTION 24, T. 40 S., R. 64 E., AND
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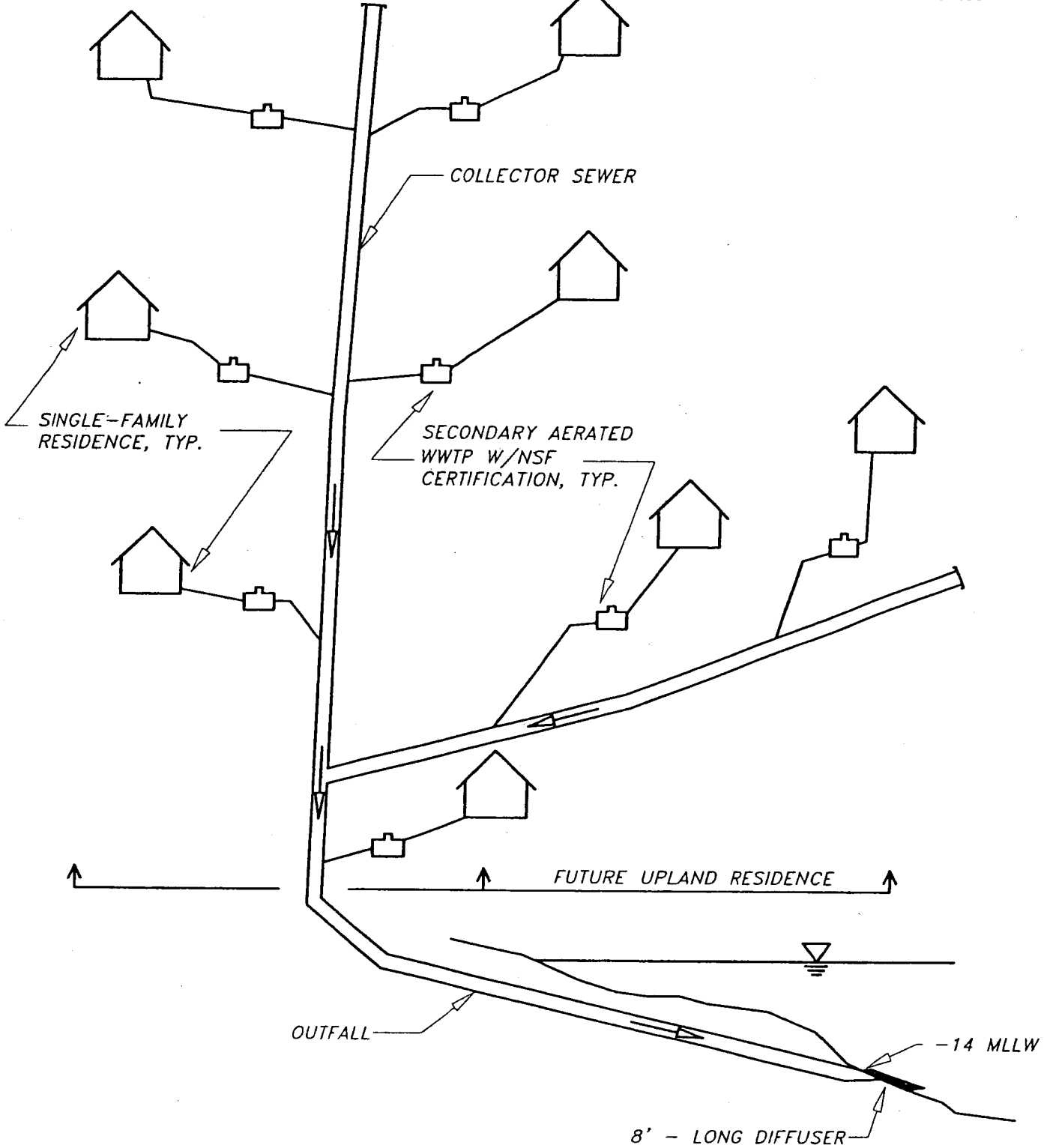
DATE: MAY, 2002

SHEET 3 of 4

R&M PROJ. NO. 011839

SCHEMATIC FLOW DIAGRAM

RESIDENCE (TYP)
9 FOR PHASE 1 (2003)
36 FOR PHASE 2 (2004-2006)
ADDITIONAL PHASES AT LATER TIME PERIODS



So. Lena SUBDIVISION SCHEMATIC VIEW

NTS

PROPOSED CONSTRUCTION OF SOUTH LENA POINT SUBDIVISION WASTEWATER OUTFALL SYSTEM

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DATE: MAY, 2002 SHEET 4 of 4

R&M PROJ. NO. 011839

Bayview Subdivision – Summary of Wastewater Permits
(Compiled by Lena Extended Neighborhood Association, LENA)

February 12, 1982: Corps of Engineers permit issued for construction of marine outfall to discharge wastewater for Bayview Subdivision. This permit was issued to the CBJ, yet the wastewater discharge permits (issued by ADEC, see below) were originally issued to “Land Resources Company of Alaska” thru R&M Engineering. Not clear if CBJ paid for or owns the outfall or what, but it may be that CBJ needed to be the applicant since the outfall is likely on CBJ lands? Also of interest is that the approved Corps permit contains a drawing that shows a central sewage treatment plant – not 70 or more individual home treatment plants that were ultimately constructed. It is not known whether the Corps permit was officially modified for use of individual treatment plants. Property maps indicate there about 74 lots in the Bayview subdivision.

March 25, 1982: ADEC issues first wastewater discharge permit to Land Resources Company of Alaska (thru R&M Engineering) for Bayview system. Permit is valid thru December 31, 1986. Permit requires monthly testing of TSS, BOD, and pH. Permit is based on estimated flow rate of 25,000 gpd and 67 lots. All test results were supposed to have been submitted to ADEC on the 14th day of the month following the test date. No record of any tests is found in the file.

November 12, 1986: ADEC grants a renewal permit to the “Bayview Homeowners Association and the “Land Resource Company of Alaska” (thru R&M Engineering) for a flow rate of 25,000 gpd effective through December 31, 1990. Permit requires tests for BOD every 3 months and suspended solids (SS) monthly. No record found of any test results having been made subsequent or following this permit (until 1993, see below).

In June of 1992, a citizen (possibly a Bayview resident) contacts ADEC and asks them to inspect all of the treatment plants and collector lines before the subdivision reaches 51% occupancy. At this occupancy rate the “Homeowners Association” is supposed to be formed and apparently the new association does not want to take over a sub-standard sewage system. No record of follow-up action on this matter.

June 11, 1992: ADEC alerts R&M that they are operating the system without a permit (since Dec 31, 1990). ADEC notes that no test results had been received (the only time they seemed concerned about monitoring stipulations). No further documentation as to whether any tests were made.

Dec. 1, 1992: ADEC again warns R&M by letter that their permit must be renewed. Also requests current test data on effluent for BOD, TSS, and fecal coliform. Previous permit expired on 12/31/1990.

March 8, 1993: Roughly six effluent tests appear to have been performed by CBJ from various manholes in Bayview system (mostly MH 14). One test shows acceptable effluent standards. Most sample test results show system grossly out of compliance on TSS and BOD (Avg TSS=842 mg/l and Avg BOD=84 mg/l). Note: One of the TSS results was 4370 mg/l which is significantly higher than others – might be test error?? Without this result, the average TSS is 136 mg/l. Only two fecal coliform tests performed. These show counts of 9,400 & 52,000.

April 30, 1993: Correspondence in files indicates CBJ has been working with Bayview Homeowners Association and is willing to take over system operation but only if it's in proper

working order. No further documentation on when City actually takes over Bayview system operation, but is believed to be around this time frame.

(Note: Bayview system is currently maintained by CBJ, but CBJ contracts all this work directly to local private contractors. Also note that there are over 2000 individual treatment plants operating in Juneau, essentially maintained by same private contractor).

Dec. 16, 1993: ADEC issues permit for CBJ 3 years after previous one expired. New permit expires Dec. 1998. Maximum discharge requirements are:

Total Flow = 10,000 gpd
Biochemical Oxygen Demand (BOD) = 60 mg/l
Total Suspended Solids (TSS) = 60 mg/l

Note: Above effluent requirements are same values as approved during previously issued permits. There are also average test requirements that are lower than above values since sampling is supposed to be performed in multiple locations and over various time periods. Also of some interest is the effluent flow rate of 10,000 gpd for this permit. Previous permits were for 25,000 gpd. New permit requires CBJ to obtain and test 4 samples per year for fecal coliform only. No mention of any required testing for BOD and SS.

Dec. 1998: CBJ requests permit renewal from ADEC.

Sept. 2000 ADEC alerts CBJ that permit not renewed in 98. ADEC requests application forms and most recent monitoring data.

May 22, 2002: ADEC sends brief inspection report to CBJ which says essentially nothing except that CBJ is operating without valid permits. (There is no record on what may have prompted this inspection) For some reason, monitoring discontinued following CBJ's request for renewal in 1998, yet ADEC says system in compliance as of May 2002. There is no data in files to support this.

Sept 6, 2002: CBJ submits renewal application one day after Kirk Miller contacts ADEC and requests information on existing permits. (Note: ADEC initially informs Kirk that no permits are in place and that there are no files pertaining to this matter. After some persistence, ADEC finally copies files and makes them available to LENA). ADEC indicates that until new permit is in place, monthly sampling and testing by CBJ is to take place. ADEC also submits spreadsheet showing effluent standards until such time formal permit is in place. No indication of whether this "new" testing is presently being performed.

Sept 10, 2002: Lena residents Kirk Miller and John Hudson sample effluent from manhole 15 (last manhole in Bayview system prior to discharge into marine outfall) for independent testing. Effluent was sampled at about 10 AM during relatively low flows (most of the residents appeared to be out).

Sept 18, 2002: After further inquiries were made by Lena resident, ADEC reports via email message that no other test results are on record and that they have checked with CBJ. It appears that the 1993 tests are the only monitoring efforts ever made on the Bayview effluent – regardless that all permits had required periodic sampling and testing.

Sept 23, 2002: Test results received from Analytica Laboratory on Bayview effluent sampled on 9/10. Results are:

TSS = 37 mg/l
BOD = 34 mg/l
Fecal Coliform = 160,000
Residual Chlorine = < 0.10 mg/l

See xls spreadsheet prepared by ADEC for interim effluent standards established by ADEC for comparison to required values. The TSS and BOD are within 7 day average (45 mg/l) and max value (60 mg/l) but are beyond the 30 day average (30 mg/l). The fecal coliform is above max value of 150,000. Note that this test represented one sample from a relatively low flow time period and does not represent averages of multiple samples. It is also not known when the last time the various treatment plants in this subdivision were last pumped. If most of the tanks were recently pumped, the effluent would be cleaner than nearing the end of the two year pumping cycle. Multiple samples would be required to better establish effluent standards; however, the high fecal coliform count is disturbing since this parameter is directly related to waterborne diseases. The high fecal count likely indicates that the UV light or chlorine treatment methods that may be employed on this system is not working.

Sept 3 & 4, 2002: LENA residents sends written request to CBJ (Public Works Dept) asking for maintenance records for Bayview subdivision. Public Works director (Joe Buck) responds records are lengthy and will cost money to copy but he can compile them for our review. Joe indicates that he knows of no past problems with Bayview and is surprised to hear about the 1993 test results. Joe does not indicate that further testing has been done by CBJ. Joe also indicates that CBJ is now starting to test the system per the interim requirements stipulated by ADEC but that results of the first sampling effort (taken sometime in September) are not completed yet.

October 7, 2002: ADEC reports to LENA residents that the Bayview subdivision wastewater permit will be out for public review around the end of October. ADEC requests meeting with LENA residents to discuss Bayview and proposed new system for Lena Point subdivision. Meeting tentatively set up for November 6.

October 14, 2002: ADEC informs LENA via email that recent testing by CBJ at Bayview is not in compliance with established discharge limits. They measured:

BOD = 134 mg/l
TSS = 41 mg/l
Fecal Coliform = 90,000

ADEC also indicates that they are reevaluating the fecal coliform limits and that it needs to be reduced to 10,000 (in lieu of 150,000 on previous permits) in order to meeting mixing zone water quality standards. This will require the CBJ to install partial disinfection systems.

October 15, 2002: LENA member Kirk Miller attends meeting of the Mendenhall Wetlands Advisory Group and apprises them of Bayview sewer system failure and related issues. Board agrees that these type of systems are detrimental to environment and decides to draft a letter to the CBJ stating that Bayview style sewer systems should not be contemplated in Juneau region due to inadequacy of treatment and lack of controls over effluent standards.

November 6, 2002: ADEC holds an informational meeting w/ Lena residents concerning Bayview and proposed Lena sewer system at Mendenhall Public Library, 7:30 PM. Purpose of the meeting is essentially an open forum for exchange of issues prior to permit applications to be reviewed by ADEC for the proposed Lena sewer system. In attendance were representatives from CBJ and ADEC. CBJ informs residents that Bayview system is now being examined for remedy of problems. Apparently the problem is quite complicated. Some of the homes do not have treatment plants (septic tanks). Some of the homes are not operating the aeration pumps. All of the systems lack final treatment by chlorine or UV light methods. This is causing the high fecal coliform counts. Bottom line is that it will likely take 3-years or more to remedy problems. In the meantime, Bayview system continues to pollute.

Summary of Bayview Issues:

System operated without permits from Dec. 1990 to Dec. 1993 and from Dec. 1998 to present. All permits since 1982 required testing, yet only results provided to us were from 1993, and most of these samples appear to be out of compliance. Recent samples by LENA and CBJ for September, 2002 also indicates non-compliance. Further inquiries to CBJ and ADEC have not revealed any other test results or other monitoring reports.

Track record of permits is very lax. For various reasons, permits allowed to expire and no major effort ever made to get permits back in place, nor is required effluent testing evident on any of the permits except for the series of "one-time" tests made in 1993.

While monitoring and testing seems to be lax to non-existent, it appears that required monitoring seems to get less stringent through time. The exception to this is the current monitoring plan proposed by ADEC (monthly) that is supposed to be taking place monthly until the new permit is in place. Not entirely clear if the new permit that is pending will continue the requirement for monthly monitoring. This is opposite of what should occur. As more residents come on line and as systems become older, inspection and testing efforts of effluent should be increased – not decreased.

In summary, it would appear that Bayview is not a "model" sewer treatment system as purported by the CBJ. If anything, this system is likely out of compliance most of the time from established effluent standards; however, there are no long-term test records that can substantiate this. By evidence of the Bayview history and the severely failed Bonnie Brae system, it is doubtful that this type of system is environmentally acceptable without stringent quality control.

Summary of Questions and Concerns Raised at Public Meeting Proposed South Lena Subdivision

Wednesday, April 17, 2002 – 7:30 p.m.
Assembly Chambers

Sewer

- *How are the on-lot treatment systems being proposed different from the traditional on-lot septic systems?*

Response: This subdivision will be served by a common collection and disposal system similar to that at Bayview Subdivision on north Douglas Island. Each lot will have its own small-aerated treatment plant that will discharge secondary treated wastewater into the collection system. The treatment plants will be inspected on a regular basis by the City Public Works Department and property owners will be directed to correct any deficiencies. These systems will also have solids removed routinely by the Public Works Department. This system will not contaminate groundwater as many on-site drain fields do. In addition, bacteria in the discharge can be reduced or eliminated by the use of on-lot ultraviolet light disinfection systems, which have been found to be effective in recent studies.

In contrast, septic systems remove solids by gravity. Some treatment occurs through anaerobic (thus the word “septic”) processes in the tank, but this is very slow, particularly at low temperatures. Effluent from septic tanks tends to be high in solids, which is one reason why drain fields can plug up. High solids also mean that disinfection is not often feasible. Septic tanks are usually considered “primary” treatment, the gravity removal of solids.

- *Why not just use traditional on-lot septic systems?*

Response: On-lot septic systems must be regularly maintained and replaced; however, homeowners often do not maintain them and the systems begin to malfunction, emitting sewage and stench. In contrast, the individual treatment plants being proposed for the South Lena subdivision will be supervised and pumped out by the City. The City will also maintain the collection line, pump station, force main and outfall.

- *What assurances do the Lena Point residents have that sewage will not be washing up on their beaches? What will the effluent coming out of the sewer outfall look like?*

Response: Effluent coming out of the end of the outfall pipe will contain a low concentration of suspended solids. However, there should be no recognizable pieces of raw sewage or toilet paper, and no soapsuds rising to the ocean surface or washing to the beaches.

- *Where will the sewer pump station be located? What will it look like?*

Response: The pump station will be located between proposed Lots 2 and 3 along the existing Point Lena Loop Road. The pump station will be below ground. The electrical components will be above ground. Approximately two parking places will be reserved at the site for City maintenance staff. There will be no generator. In the event of a power outage, the facility will be able to use its reserve capacity for a short term. Should a longer power outage occur, a City crew would connect the system to a portable generator. The pump station will not generate a significant amount of noise when the pumps are operating.

- *The City has no credibility regarding sewage treatment; the Bonnie Brae subdivision is an example of the City's irresponsibility.*

Response: Bonnie Brae subdivision was created by a private developer who did not follow the engineered drawings when placing the sewer outfall. The incorrect placement of the outfall (at +4 elevation) resulted in ongoing problems. The City took over the failed system. The City corrected the problem by extending municipal sewer to North Douglas and connecting the Bonnie Brae subdivision to the City sewer.

- *Move the proposed sewer outfall north to the NOAA site.*

Response: Because the NOAA facility will be withdrawing saltwater from Favorite Channel for use in its laboratory, it wants strict control over any effluent discharged nearby. In fact, in its negotiations to acquire the Lena site for its facility, it indicated it would not allow a sewer outfall, other than its own, on its site.

Lot EE (Marine Outfall Site)

- According an adjacent landowner, Lot EE has blue clay and unstable soils. Currently, large trees (and their roots) seem to be helping stabilize the slopes. *How will the City place the sewer outfall line across Lot EE without destabilizing the slopes?*

Response: A soils investigation will be done to determine the best method for placement of the line.

- *How wide is Lot EE?*

Response: Approximately 50 feet.

- *What will Lot EE look like after the sewer is in place?*

Response: The public will likely not notice a substantial change. At this time, the design calls for the outfall pipe to be buried. The City has no plans to develop a beach access trail at this site because there are several other public beach access routes at Lena Point that are substantially superior in terrain, beach, and amenities.

Eagle Nest

- *What is going to happen to the large tract of land that surrounds the eagle nest located on City property?*

Response: The eagle nest tree will be included in a tract of land that will remain in City ownership. Should the tree or the eagle nest fall down in the future, or if the regulations are changed, the City might consider subdividing the tract and selling additional residential lots.

Drainage

- *Will surface drainage be routed into the natural drainage that is used by a local resident as a surface water catchment system?*

Response: Every reasonable effort will be made to route surface runoff from the new subdivision away from the drainage used for the existing water catchment system.

- *Move the sewer outfall eastward to a location closer to Glacier Highway or north and eastward to Lena Cove.*

Response: The current and mixing action of the water is not as great at those two sites as at Lot EE and, therefore, they are not as suitable for a sewer outfall.

- *Will the sewer utility easement uphill of Point Lena Loop Road be clearcut?*

Response: Some vegetation will be removed, but the site will not likely be clearcut.

- *How does DEC study sewer effluent?*

Response: DEC will require a permit for the outfall. Before the permit is issued the City must provide information to DEC on the amount and type of wastewater that is to be discharged, what type of treatment will be used and the proposed discharge location. The City may also be required to provide other information, including the design of the outfall pipe and diffuser, current and tidal information, dye studies and location of any sensitive areas. DEC may use this information and other data it has to develop a model of the discharge. DEC will ask other agencies to review the proposed permit and must go to public notice and receive public comments before issuing any final permit. DEC must also review and approve the design of the subdivision and the treatment units installed on each lot.

- *What types of things will be monitored at the sewer outfall?*

Response: Likely, the City will be required to monitor for suspended solids, coliform bacteria, and biochemical oxygen demand. Biochemical oxygen demand is a measure of the organic matter in the wastewater. Biochemical oxygen demand and suspended solids are also measures of how well the treatment units are operating. Coliform bacteria counts measure how well the disinfection units are operating and serve as an indicator of other bacteria that might be discharged.

- *What was learned from the dive at the sewer outfall site?*

Response: Preliminary indications from testing done so far reveal the Lot EE site has good dispersal characteristics.

Eliminate Some Lots from Sale

- *Lessen the impact of the subdivision on Lena Point residents by not selling lots along the existing Point Lena Loop Road. Only sell lots along the new NOAA road.*

Response: The City's preliminary review of this subdivision design suggests that these particular lots might be among the most desirable. The most practical access to this land is off of the existing Point Lena Loop Road.