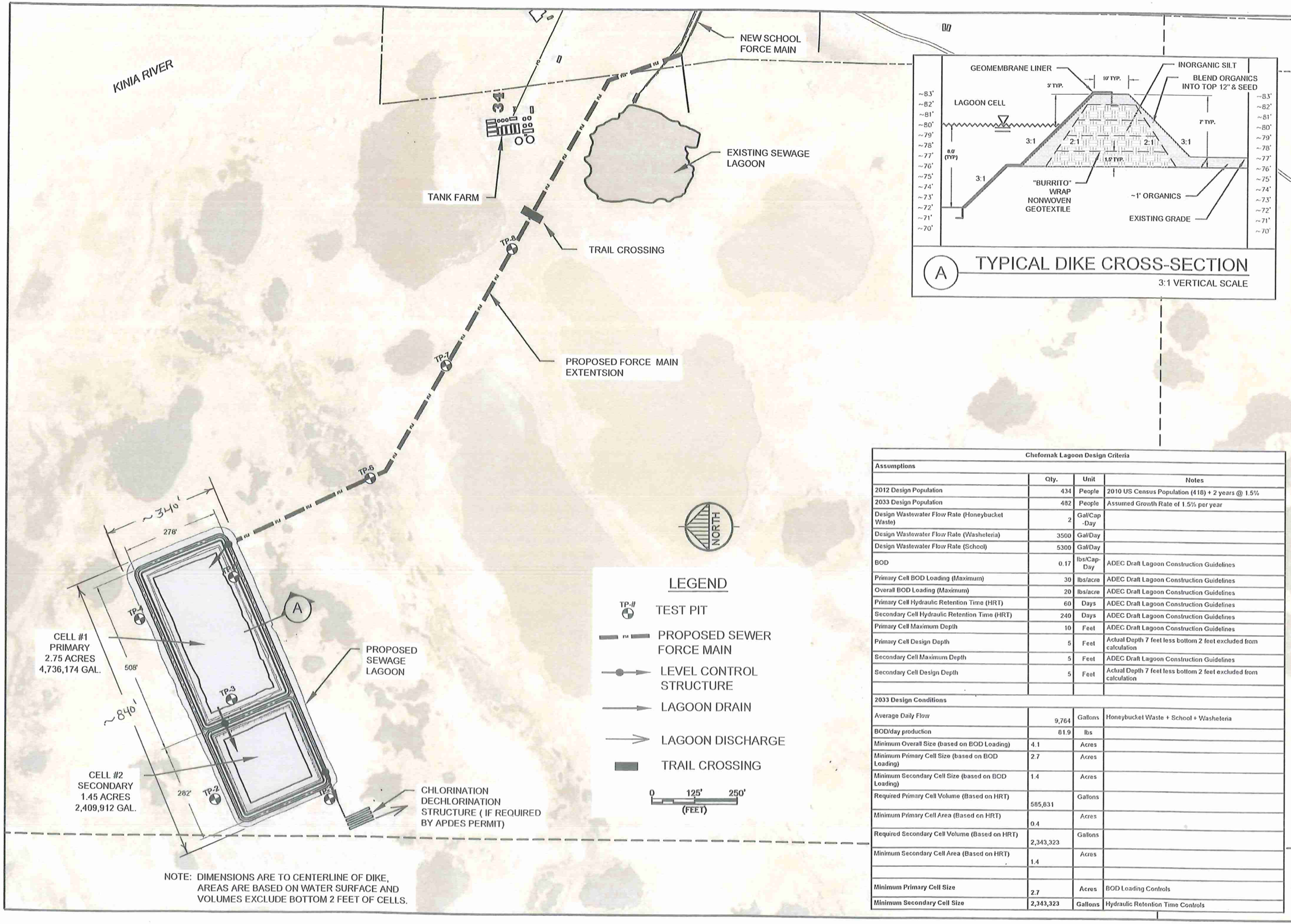

NOTE: DIMENSIONS ARE TO CENTERLINE OF DIKE, AREAS ARE BASED ON WATER SURFACE AND VOLUMES EXCLUDE BOTTOM 2 FEET OF CELLS.

Chefornak Lagoon Design Criteria			
Assumptions			
	Qty.	Unit	Notes
2012 Design Population	434	People	2010 US Census Population (418) + 2 years @ 1.5%
2033 Design Population	482	People	Assumed Growth Rate of 1.5% per year
Design Wastewater Flow Rate (Honeybucket Waste)	2	Gal/Cap -Day	
Design Wastewater Flow Rate (Washeteria)	3500	Gal/Day	
Design Wastewater Flow Rate (School)	5300	Gal/Day	
BOD	0.17	lbs/Cap-Day	ADEC Draft Lagoon Construction Guidelines
Primary Cell BOD Loading (Maximum)	30	lbs/acre	ADEC Draft Lagoon Construction Guidelines
Overall BOD Loading (Maximum)	20	lbs/acre	ADEC Draft Lagoon Construction Guidelines
Primary Cell Hydraulic Retention Time (HRT)	60	Days	ADEC Draft Lagoon Construction Guidelines
Secondary Cell Hydraulic Retention Time (HRT)	240	Days	ADEC Draft Lagoon Construction Guidelines
Primary Cell Maximum Depth	10	Feet	ADEC Draft Lagoon Construction Guidelines
Primary Cell Design Depth	5	Feet	Actual Depth 7 feet less bottom 2 feet excluded from calculation
Secondary Cell Maximum Depth	5	Feet	ADEC Draft Lagoon Construction Guidelines
Secondary Cell Design Depth	5	Feet	Actual Depth 7 feet less bottom 2 feet excluded from calculation
2033 Design Conditions			
Average Daily Flow	9,764	Gallons	Honeybucket Waste + School + Washeteria
BOD/day production	81.9	lbs	
Minimum Overall Size (based on BOD Loading)	4.1	Acres	
Minimum Primary Cell Size (based on BOD Loading)	2.7	Acres	
Minimum Secondary Cell Size (based on BOD Loading)	1.4	Acres	
Required Primary Cell Volume (Based on HRT)	585,831	Gallons	
Minimum Primary Cell Area (Based on HRT)	0.4	Acres	
Required Secondary Cell Volume (Based on HRT)	2,343,323	Gallons	
Minimum Secondary Cell Area (Based on HRT)	1.4	Acres	
Minimum Primary Cell Size	2.7	Acres	BOD Loading Controls
Minimum Secondary Cell Size	2,343,323	Gallons	Hydraulic Retention Time Controls

FIGURE 1

CHEFORNAK WASTEWATER LAGOON & FORCEMAIN DAR

PROPOSED (2 CELL) WASTEWATER LAGOON

CHEFORNAK, ALASKA

Scale: SEE GRAPHIC

Date: DEC. 2013

Drawn: CM

CE2 ENGINEERS, INC.

G:\ACAD\CHEFORNAK\CYF1101 Sewage Lagoon\Fig 1 Lagoon Layout Latest DEC 2013.dwg, 12/13/2013 1:46:50 PM, cmerz, LANIER MP C2050_LD520C PCL 6 (temporary).pc3