

CE2 Engineers, Inc.

TECHNICAL MEMORANDUM

TO: Ms. Susan Randlett, P.E., Village Safe Water
FROM: Michael R. Erdman, P.E., CE2 Engineers
DATE: January 15, 2014 **MRE**
SUBJECT: Chefnak Wastewater Lagoon - Estimated Sludge Accumulation

REFERENCE

US Army Corps of Engineers, "Accumulation, Characterization, and Stabilization of Sludges for Cold Regions Lagoons".

ESTIMATED SLUDGE ACCUMULATION

Reference provides a sludge accumulation rate of 8.8 to 14.0 cubic feet per 1,000 per day.
(Assume mid-range 11.4 CF/day)

Design Population 482 persons.

Estimated Sludge Accumulation

$$= 11.4 \text{ CF/Day}/1,000 \text{ people} * 482 \text{ people} = 5.5 \text{ CF/Day}$$

$$\text{Annual Accumulation} = 365 \text{ Days} * 5.5 \text{ CF/Day} = 2,008 \text{ CF/Year}$$

$$\text{Design Life Accumulation} = 20 \text{ Years} * 2,008 = 40,160 \text{ CF}$$

$$\text{Bottom Area of Primary Cell} = 79,380 \text{ SF}$$

$$\text{Average Depth} * = 40,160 \text{ CF}/79,380 \text{ SF} = 0.5 \text{ Feet}$$

(Accumulation will, of course, be concentrated near the inlet.)