Imagine a Space for Healing

Kim Sweet, Lower Kuskokwim School District Bryce Hamels, BDS Architects Steven Paget, Säzän Group

April 22, 2023







Lower Kuskokwim School District // www.lksd.org/ // BDS Architects // www.bdsak.com // Säzän Group // www.sazan.com

Newtok, Alaska





Newtok, Alaska

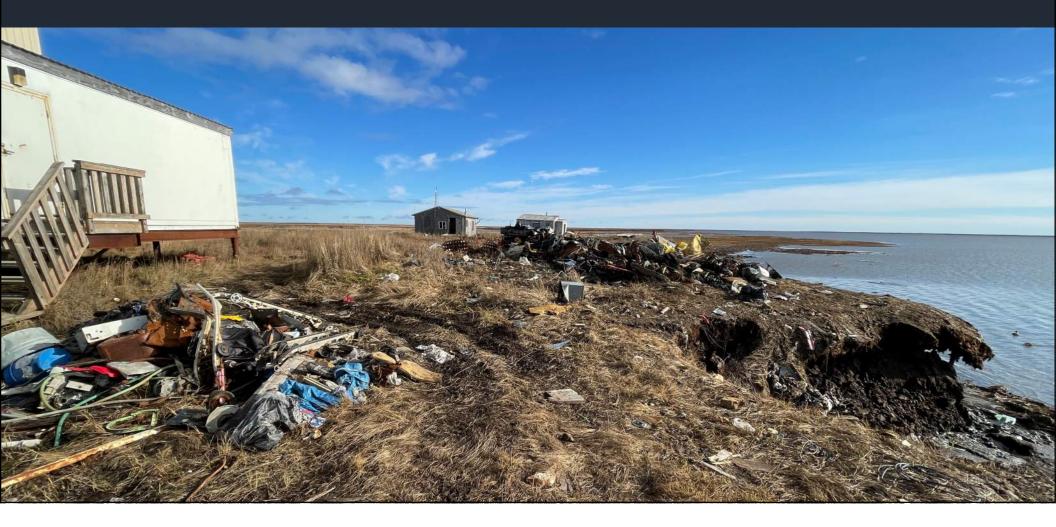




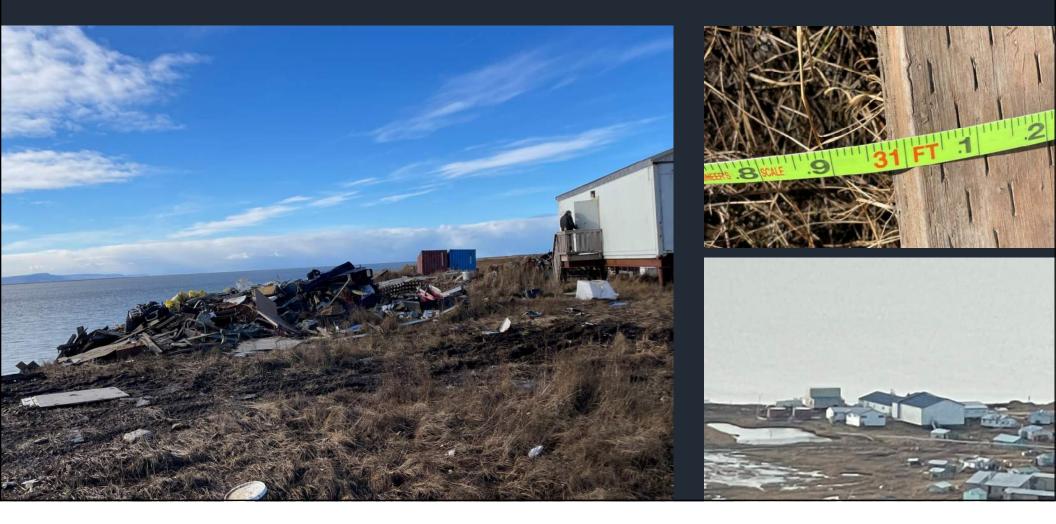




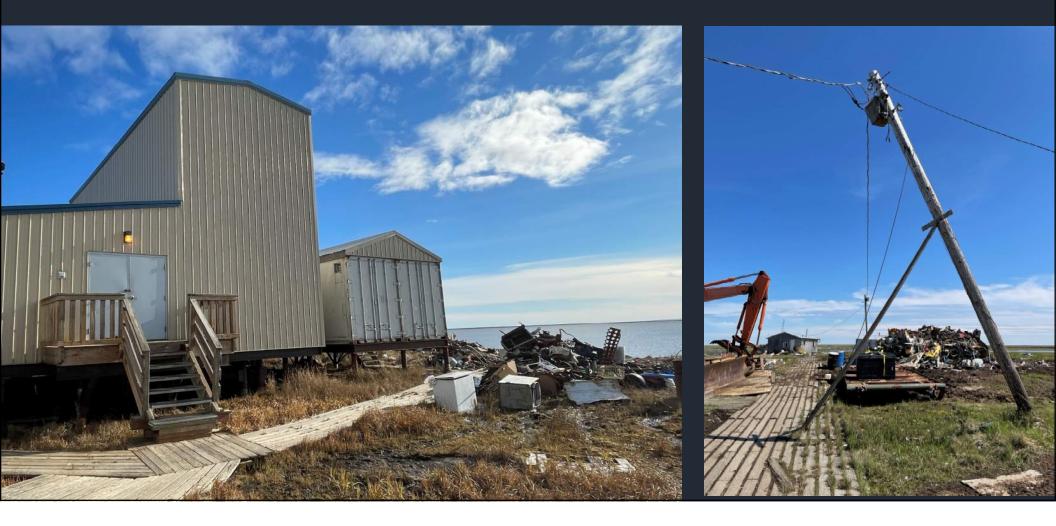












Trauma of Leaving Ancestral Home

"For Newtok people, who have been there for time immemorial, they are being forced to leave the land they have knows for generations and move to land they have not established the same connection with."

- Warren Nicolai, LKSD Project Manager





Trauma of Leaving Ancestral Home

"With climate change, people are being involuntarily displaced from the place called home (for as long as anyone can remember). The effects are devastating to an entire culture."

- David Sparck, LKSD Bethel Facilities Manager





Brief History of Newtok Relocation to Mertarvik

- 1983: Erosion was Documented from Historical Aerial Photos
- 1994: Newtok Traditional Council Identified 6 possible New Town Sites.
- 2000: Arctic Slope Consulting Group (ASC prepared reports for early planning efforts for relocation.
- 2006: Mertarvik Development Begins
- 2008: First Homes Completed in Mertarvik
- 2019: Mertarvik Evacuation Center Completed



LOWER KUSKOKWIM

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Mertarvik, Alaska

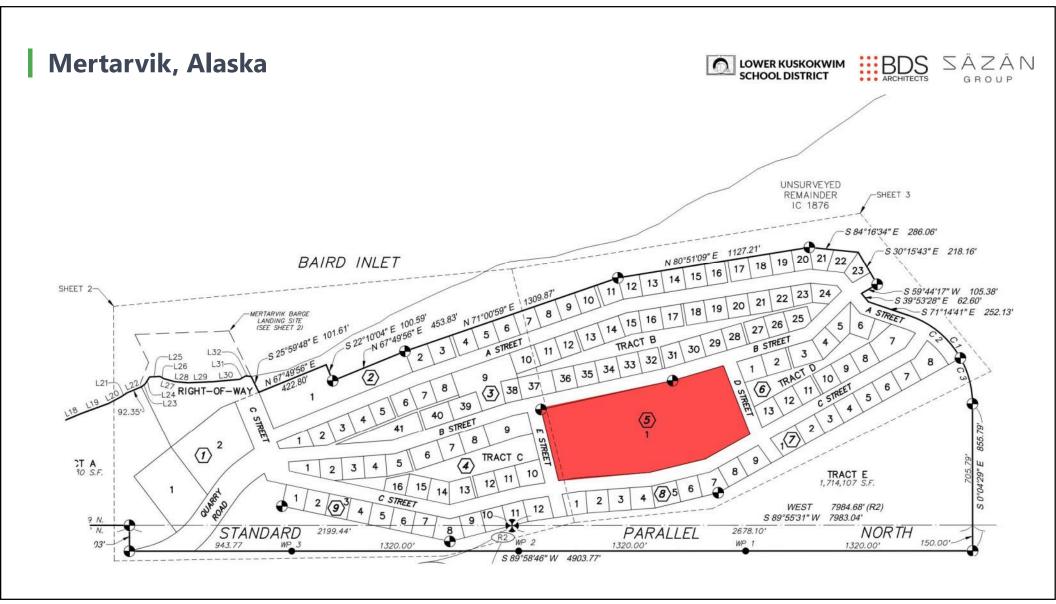




Mertarvik, Alaska







Importance of School Building in Rural Alaskan Villages



State of Alaska Educational Grant Funding Process

 State of Alaska Department of Education and Early Development (DEED) Provides Formulated Average Daily Membership (ADM) For Each School based on Population.





Projected Student Population

• Average Daily Membership (**ADM**) determines Allowable Gross Square Footage (**GSF**)

\$

- Allowable Gross Square Footage
- X \$ per Square Foot
- X % State Match
- = \$ State Match funded

Π







State of Alaska Educational Grant Funding Process

- State of Alaska Department of Education and Early Development (DEED) Provides Formulated Average Daily Membership (ADM) For Each School based on Population.
- Districts hire A/E Teams to Complete Condition Surveys, Concept, and/or Schematic Design Reports
- Districts Submit State Grant Application
- State of Alaska Objectively Ranks Grant Applications Annually
- If Funds are Available, Highest Ranked Project(s) is Funded.



BDS

AZAN

Brief History BDS Architects Involvement

- Summer 2021: BDS Architect completes Schematic Design Report for DEED Grant Application
- Fall 2021: Grant Application submitted and project was Ranked #1.
- 2022: LKSD hired BDS Architects to start design prior to receiving grant funding from the State of Alaska due to state of the riverbank.
- Designed Square footage was under sized 3,168 SF from ADM Data Available.
- Phase 1 Awarded, Phase 2 Design Complete Early 2024





Project Challenges

- Dispersed Newtok Population
- Keeping Newtok School Operational and Safe
- Lack of Housing in Mertarvik
- \$16 Million Gap in Project Funding and 3,168 SF







Objective of the Mertarvik Independent Value Analysis (IVA):

Reach a Consensus Recommendation

on

Project Scope, Delivery Approach, and Budget

<u>Preparatory to DEED including the project in the FY2024 Capital Improvement Projects list</u> <u>submitted to the Governor and Legislature</u>

Independent Value Analysis Process



- Systematic process to **IMPROVE** the **VALUE** of a project
- VALUE is needs or FUNCTIONS delivered relative to cost VALUE = FUNCTIONS/COST
- FUNCTIONS often measured by PERFORMANCE
 - Quality, Quantity or Size, Aesthetics, Durability, Maintainability, Sustainability, or other factors
- Value Analysis employs Creative and Analytical Techniques to identify ALTERNATIVE means to <u>deliver required functions</u> <u>while improving performance and reducing cost</u>



Workshop setting by a collaborative interdisciplinary team led by a qualified Value Analysis facilitator



INNOVATION

Context of the Mertarvik Independent Value Analysis (IVA):

- Level 3 IVA in accordance with DEED Capital Project Administration Handbo
- Meetings between LKSD, BDS and Säzän to scope study objectives
- Site visit by Säzän and HMS, accompanied by LKSD and BDS
- 3-day virtual workshop with a mixed team:
 - Lower Kuskokwim School District
 - Säzän
 - BDS Architects
 - DEED
 - VA team Subject Matter Experts HMS, Design 2Last, Coffman Engineers, and CCHRC/NREL

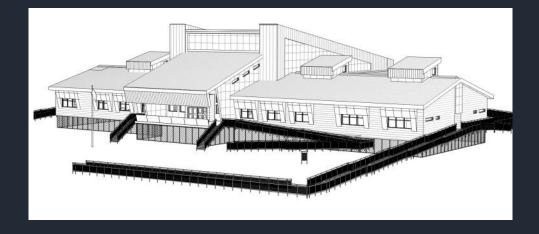




Capital Improvement Project of a second and a second and

IVA Study Focus:

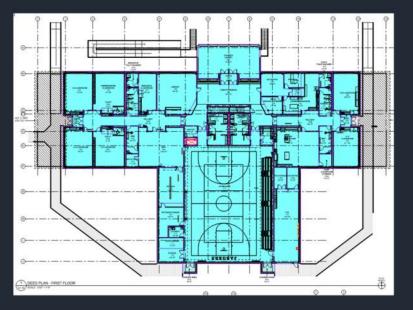
- Validate the design program GSF area
- Identify strategies to improve value of the new facility design
- Identify an alternative methodology for projecting student population which accounts for displaced students
- Facilitate decommissioning and demolition of the existing school facilities at Newtok
- Reduce the gap between the DEED Capital Improvement Plan (CIP) budget and LKSD estimated cost



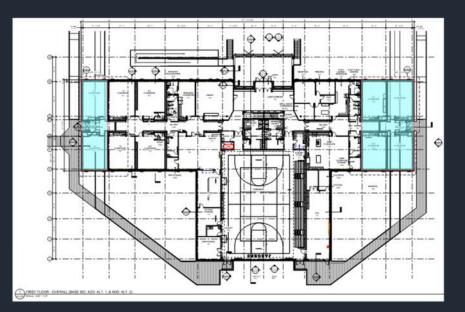


Gross Square Foot Analysis

Allowable GSF 10% below Program GSF



Floorplate based on DEED Allowable GSF



Floorplate based on Base Bid + Alts 1 & 2





- Unprecedented dispersion and relocation of a people
- Decline driven by climate-change impacts and lack of new housing in Mertarvik
- Standard linear population projection did not account for dispersed families unable to relocate to Mertarvik



Newtok Ayaprun School and Community on October 17, 20200 at Low Tide



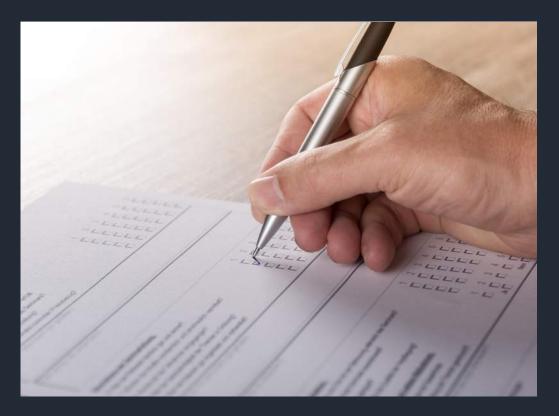
Establishing an Alternative Methodology for Forecasting Student Population

- DEED agreed to accept a proposed alternative methodology that was <u>more predictive</u>, <u>would equitably</u> <u>account for the broader school population</u>, <u>and be</u> <u>defensible</u>
- Qualitative Assessment
 - Family surveys
- Quantitative Assessment
 - Houses in Village
 - Average Child per House
 - Projected Housing Starts
 - ➤ the new factor



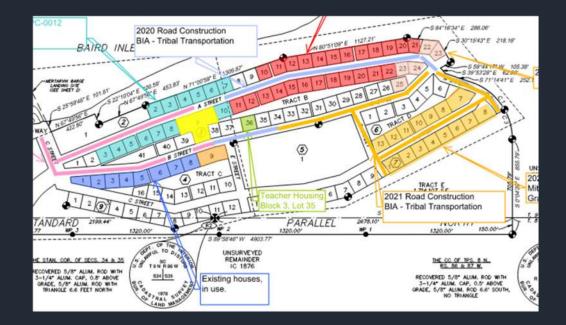


- Family surveys
 - Interviews with dispersed families who would move to Mertarvik when housing is available
 - Identified 61 displaced students whose families plan on returning
 - Lack of housing emerged as limiting factor



- Houses in Village
 - Mertarvik housing development 2018 2022
 - 26 currently occupied houses
 - 6 single family houses under construction
 - 2 four-plexes under construction





- Average Child Per House
 - Assessment of 3 representative tundra villages
 - Using the data you have:
 - ✓ Impact Aid grant data
 - ✓ Annual OASIS student count
 - ✓ Mapping houses occupied by students
 - Average of 1.55 students/household
 - Comparison to Newtok/Mertarvik
 - Measuring displaced students

Table 5: Average S	ble 5: Average Student per House in the Tundra Villages				
Village	Impact Aide Average Occupancy	Percentage of Impact Aide Houses	Average Student per House		
Atmautluak	2.17	58%	1.26		
Kasigluk-Akiuk	2.90	72%	2.09		
Kasigluk-Akula	2.39	52%	1.24		
Nunapitchuk	2.88	56%	1.61		
		Tundra Village Average	1.55		

easuring Displaced Students Over the Past 3 Years				
	FY23	FY22	FY21	FY20
Combined Count Newtok/Mertarvik	88	94.8	107.25	107.65
Change over time	5.8	12.45	0.4	0
			Total	18.65



- <u>Projected Housing Starts</u> the missing factor in the traditional population forecast
 - Projections from multiple sources
 - Variances in the historic data
 - Used more conservative average of 6.8/year

Year	Number of homes built Per NREL	Per PLM		
2018	4	8		
2019	13	13		
2020	9	4		
COVID 2021	2	5		
2022	6	6		
Average	6.8	7.2		





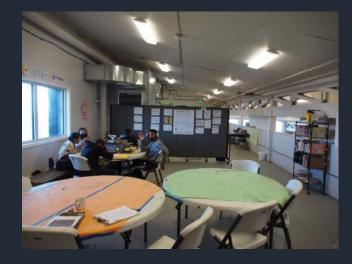


Quantitative Assessment

- Forecasting Student Counts based on Projected Housing Starts
- 3 models developed
 - Pace #1 linear model of historic housing builds
 - Pace #2 incorporating a FEMA event
 - Pace #3 conservative builder projection of builds
- Results of 3 models averaged
 - Forecast of 134 students

43% Difference Between District and DEED Forecasts

Table 11: Total Predicted Student Count:			
	Current Mertarvik Student Count	Predicted Count for FY30	Total Student Population
Pace #1	43	84.32	127.32
Pace #2	43	112.22	155.22
Pace #3	43	79.05	122.05
		Average	134.86





- <u>Calculating GSF</u>
- DEED provides Allowable Space Calculation Workbook
 - Ratio of GSF to ADM is not disclosed
 - Table provides stepped GSF for range of ADMs
- Calculation of GSF based on Newtok/Mertarvik
 Total ADM

Table 14: At curren	able 14: At current Elementary to Secondary student ratio (43.05:51.75)				
GSF	Total ADM	Elem	Sec		
24000	84.43	38.34	46.09		
26000	93.43	42.43	51		
28000	102.83	46.7	56.13		
30000	112.64	51.15	61.49		
32000	122.89	55.81	67.08		
34000	133.59	60.67	72.92		





Independent Value Analysis Results

Alternative Methodology for Forecasting Student Population

- <u>IVA Objective</u>: Validate allowable GSF for the Mertarvik K-12 New School facilities
- <u>DEED accepted alternative methodology as defensible</u>
- Discounted District ADM results 10%

13% increase over original Allowable GSF



At current Eler	mentary to S	econdary	student ratio (43.05:51.75	1		
Desired GSF	and an and the same and same a second s		Sec		, 		
24000	84.43	38.34	46.09				
26000	93.43	42.43	51.00				
28000	102.83	46.70	56.13				
29111	108.22	49.14	59.08				
29911	112.19	50.95	61.24				
30000	112.64	51.15	61.49				
31710	121.37	55.12	66.25	90%	% of VA forecast of 134.8		
32000	122.89	55.81	67.08				
32043	123.11	55.91	67.20				
34000	133,59	60.67	72.92				





Independent Value Analysis Results

Approved Budget

• DEED adjusted GSF Budget

19% Increase over Original Budget

- Results:
 - 4 Additional Classrooms
 - Increase to All Classroom Square Footage





Mertarvik K-12 School





Newtok School Managed Retreat

- Demolish / Move Any Site Buildings away from River Edge
- Demolish Portion of School closest to River
- Reroute Power, Heating, and Sanitary Lines
- Keep functional for 3 years
 - Power
 - Heat
 - Potable Water
 - Well Water for Flush Toilets



LOWER KUSKOKWIM SCHOOL DISTRICT BDS

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Healing of A Community: Community Advocates





"During your visit, I learned taking action or speaking up makes an impact on decisions...I also learned how important it is to advocate for our community."

Emerald Carl P.O. Box WWT ertarvik Pioneer School wtok, AK 99559

Kim Sweet LKSD Director of Operations P.O. Box 305 Bethel, AK 99559

March 3, 2023

Dear Ms. Kim,

Thank you for choosing to stay, and t nank you for choosing to stay, and learned as much as my peets did t

During your visit. Hearned takini During your visit, I warned taxini when we petitioned for a bigger also learned how important it i

I'm thankful and excited for ' on mankin and exceed lot graduate when the school i community events, such a

Sincerely Emercald Oar Enverald Carl

William Zacheriah Andy P.O. Box 5603 Newtok Mertarvik Pioneer School Bethel, AK 99559 Kin Sweet Lksd Director of Operations P.D. Box 385

Bethel, Ak 99559 3/3/23 Dear Kim,

I thank you for helping here in Mertarvik and for the new school, show more about for the new school because we low it. I appreciate yo new school for Mertarvik and helping the students have a better sci basketball court. The students can't wai. For the new school to be the Newtok and Mertarvik people are excited. I am interested in school because it tackes us what we dan't know a to hern before we graduate, school temphes us a lot of things becaus know what to do shern valore outside or when your do things becaus know has to do all ad about. School texas wereything on the school school was know here the school and school and school school school with meet year, the mistake you made will stay with you and you know what o what I learned and have observed is that Newtok school will go down bee erosion getting closer and will know to tear it down and take bring them to Newtorvik where the new school is being built. The new school will be done in 2025 and some older friends will graduate later the new school is done. The new school will be big and better than have. If the new school is from doarn night as well bring the stuff to me leave them until the new school is built. Again, Thank you for your time and all of your information. Please come to graduation in 2026.

William Zachariah Andy

Joiean George P.O. Box WWT Mertarvik pioneer school Newtok, AK 99559

Kim Sweet LKSD Director P.O. Box 305 Bethel, AK 99559

3/2/23

Dear Ms. Sweet.

Thank you for giving me the opportunity to speak with you during a visit and for sharing with us how the school will look in the future

I just found out vesterday that your job was difficult I did not know that you analyze, and evaluate business procedures and implement policies and strategies that will improve the day-to-day operations of

our schools and ensure work environments are adequate and safe. I thought that your job was just to help the village school only

I hope to see you when the school is built and see my graduation

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Healing of A Community: Community Advocates





"I would like to be a coach in the new school so that I could be a part of education in our community."

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Healing of A Community: Community Advocates





"Our school that's going to be demolished this year has a lot of memories from when I was a kid, including when I was in kindergarten. It will be sad to see it go, but we also look forward to the future."

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Planning For Climate Change

LOWER KUSKOKWIM SCHOOL DISTRICT

- Incorporate into your Thinking, Planning and Design, the Question: <u>how will our project be responsive to a</u> <u>changing climate?</u>
- Location, Location, Location: Know Your Area's Potential Natural Disasters
- Allow for Additional or Different Infrastructure, Envelope, and Services
- Think Out of the BOX for the Unexpected and Possible Solutions
- Advocate For Your Community
- Know Your Resources



Closing Thoughts

- Know Where Your Data Is
- Diaspora Report Availability
- Research what State and/or Federal Climate Change Adaptation and Hazard Mitigation Plans have been prepared for your Region by FEMA, NREL, DOE, EPA, others and potential implications for your project
- <u>Newtok, The Water is Rising</u> Patagonia Documentary Free on YouTube
- <u>Newtok/Mertarvik Relocation</u>
- NEWTOK PLANNING GROUP



LOWER KUSKOKWIM SCHOOL DISTRICT AZAN

BDS

Thank you!

Kim Sweet, <u>kim_sweet@lksd.org</u> Bryce Hamels, <u>bryceh@bdsak.com</u> Steven Paget, <u>spaget@sazan.com</u> <u>Patagonia: "Newtok, The Water is Rising": Free on YouTube</u>







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