

SASS Replacement update

March 25, 2024

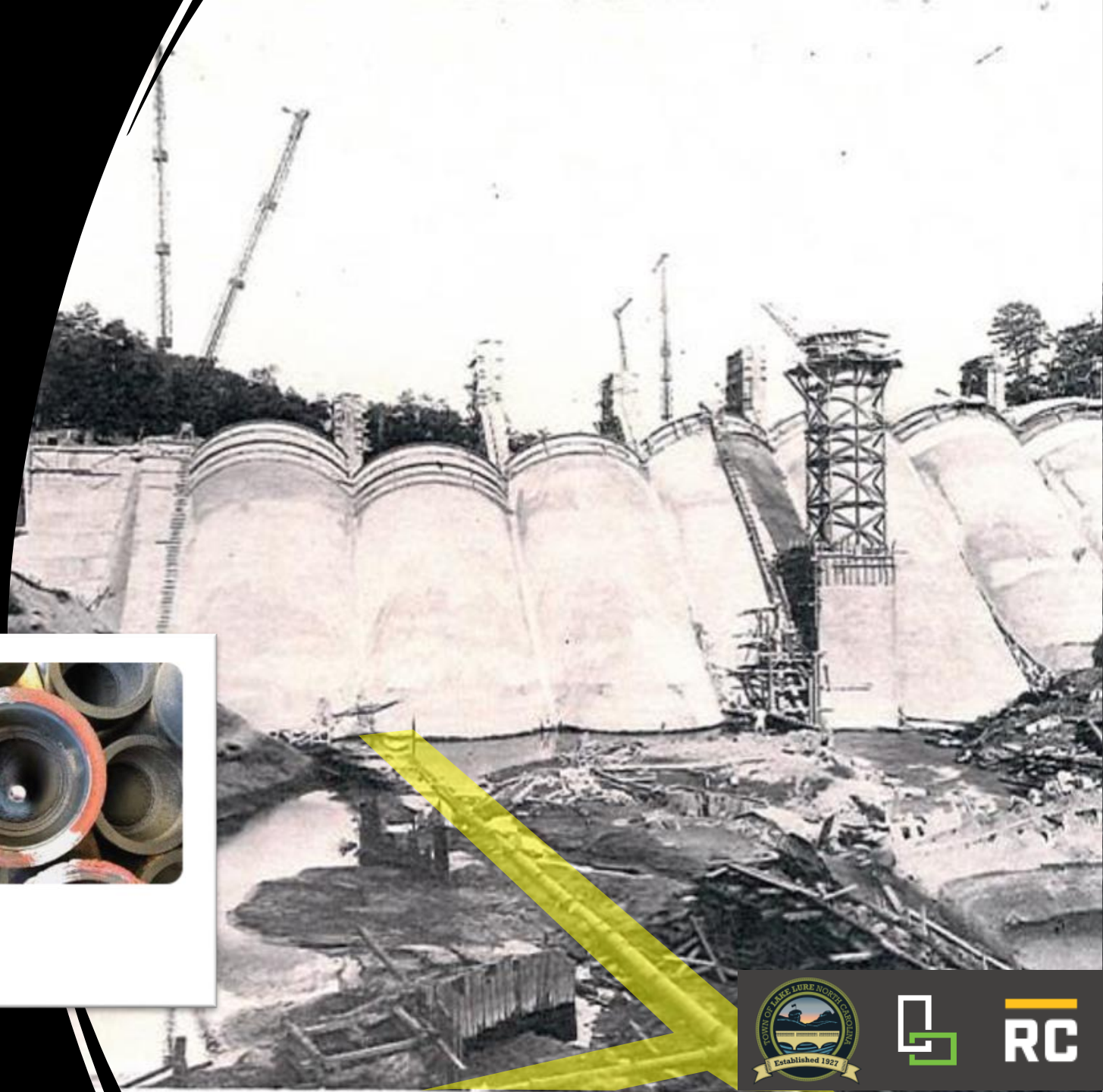


HOW DID WE GET HERE?

- The SASS is as old as the Lake ...and past its useful life

50 years to 65 years

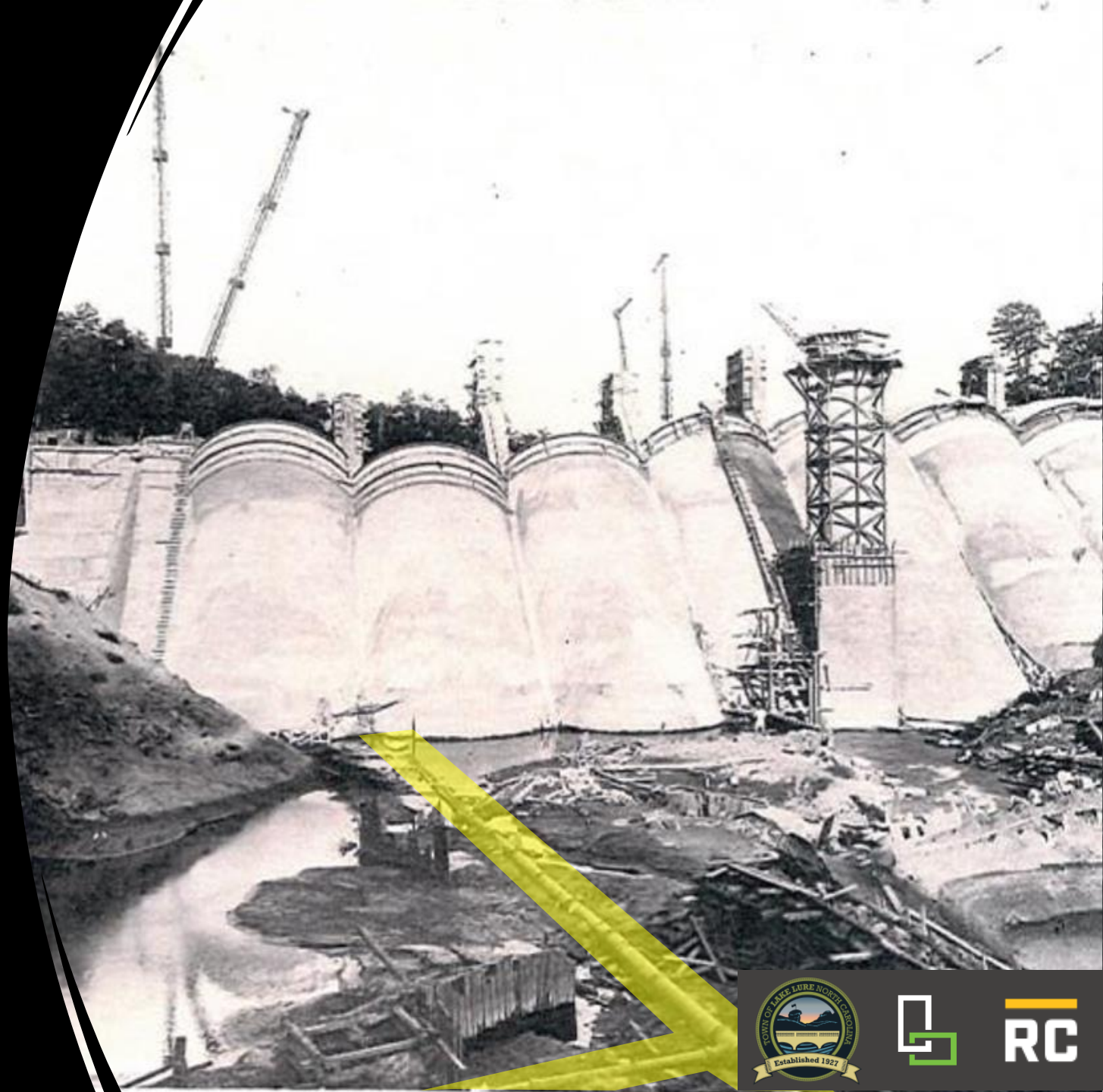
A cast iron sewer pipe can last anywhere from 50 years to 65 years. In many cases cast iron pipe can last much longer than that. Some sources believe the life expectancy can be up to 75 years, and longer. All in all, cast iron sewer pipes have been made to last for decades exclusive of certain factors.



HOW DID WE GET HERE?

- The SASS is as old as the Lake
...and past its useful life
...and inaccessible to repair

A catastrophic pipe failure would cost \$million(s) to repair, while completely shutting down all sewer service



HOW DID WE GET HERE?

- The Town and NCDEQ began negotiating a Special Order by Consent (SOC) in 2020

1. The Town and the Commission hereby stipulate the following:

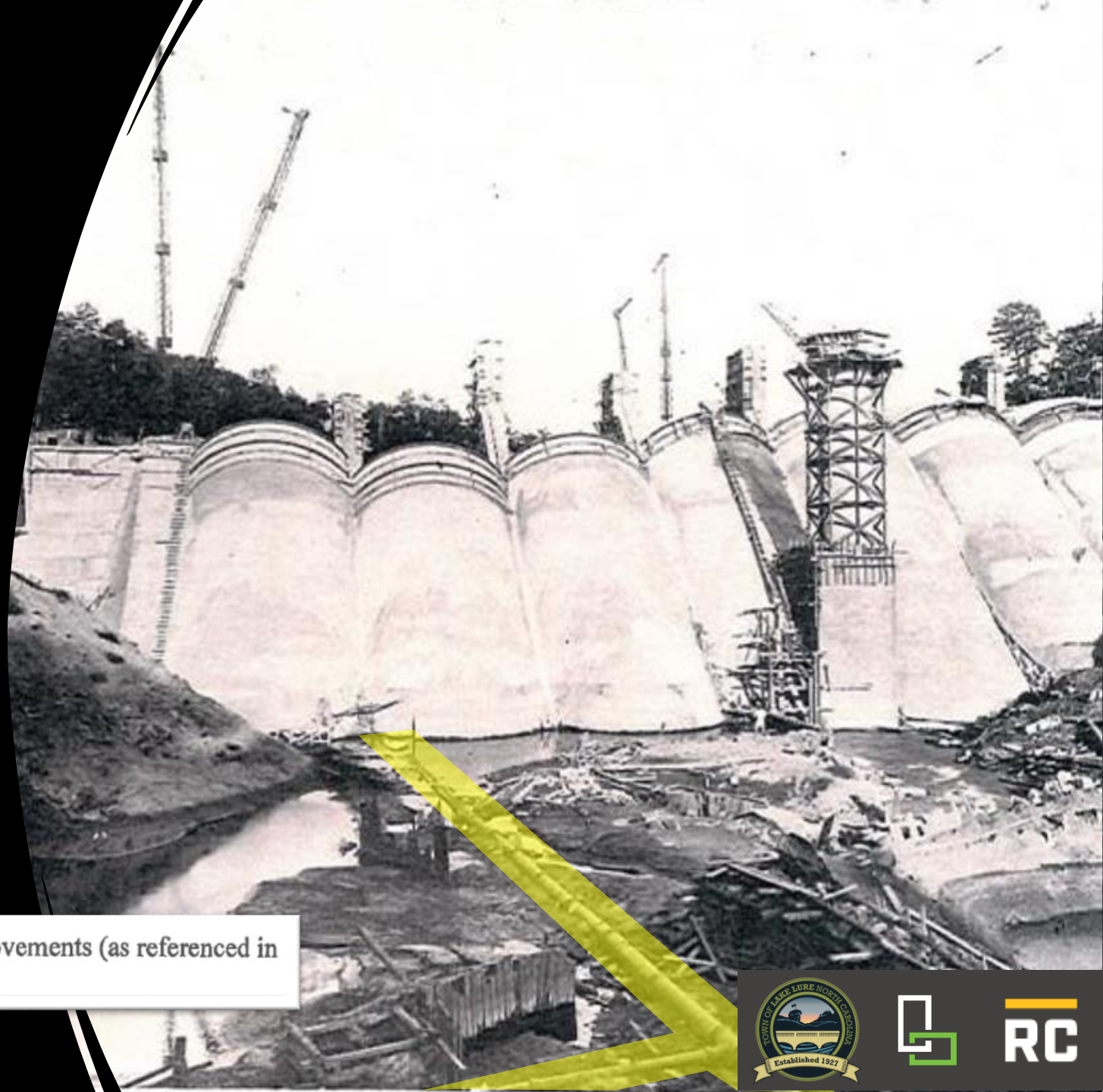
- (a) The Town holds North Carolina Non-Discharge Permit WQCS00131 for operation of an existing wastewater collection system. The Town is unable to consistently comply with Condition I.2 regarding effectively managing, maintaining and operating the system to prevent impacts to groundwater, surface water or creation of nuisance conditions. Specifically, lake inflow and infiltration continue to cause excessive interference and inadequate treatment capabilities at the Town's WWTP.



HOW DID WE GET HERE?

- The Town and NCDEQ began negotiating a Special Order by Consent (SOC) in 2020
- The SOC paused penalties, which had already accrued to ~\$49k and would otherwise continue
- In exchange, the Town agreed to:

(3) Complete construction of the Phase I collection system improvements (as referenced in 1(d) above) on or before May 30, 2026



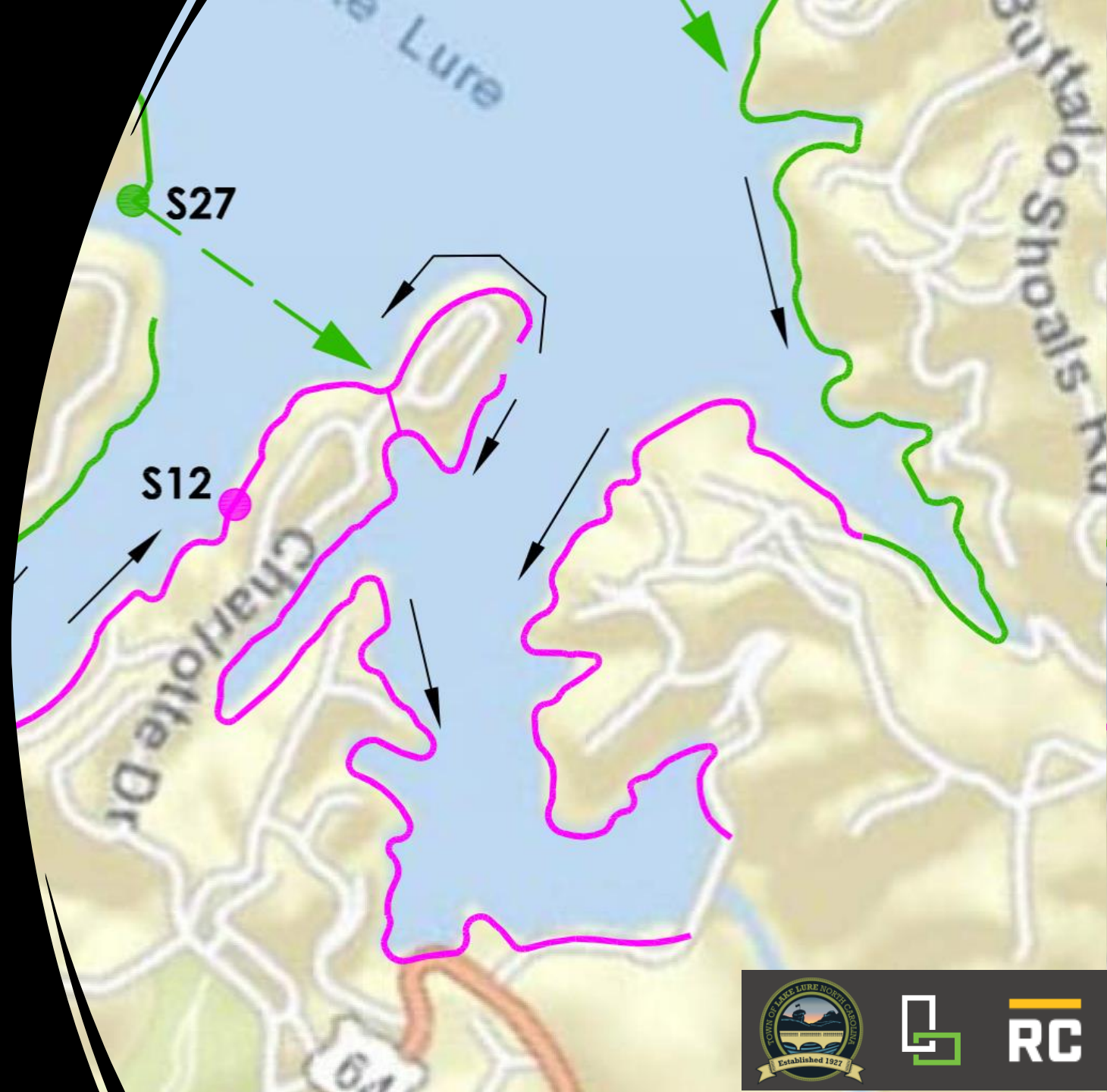
The elephant in the room



Is here the right place to be?

GLS Benefits

- Lowest total life-cycle cost (initial estimates)
- Eliminates most easements
- Eliminates property/road disruptions
- Minimizes pumping

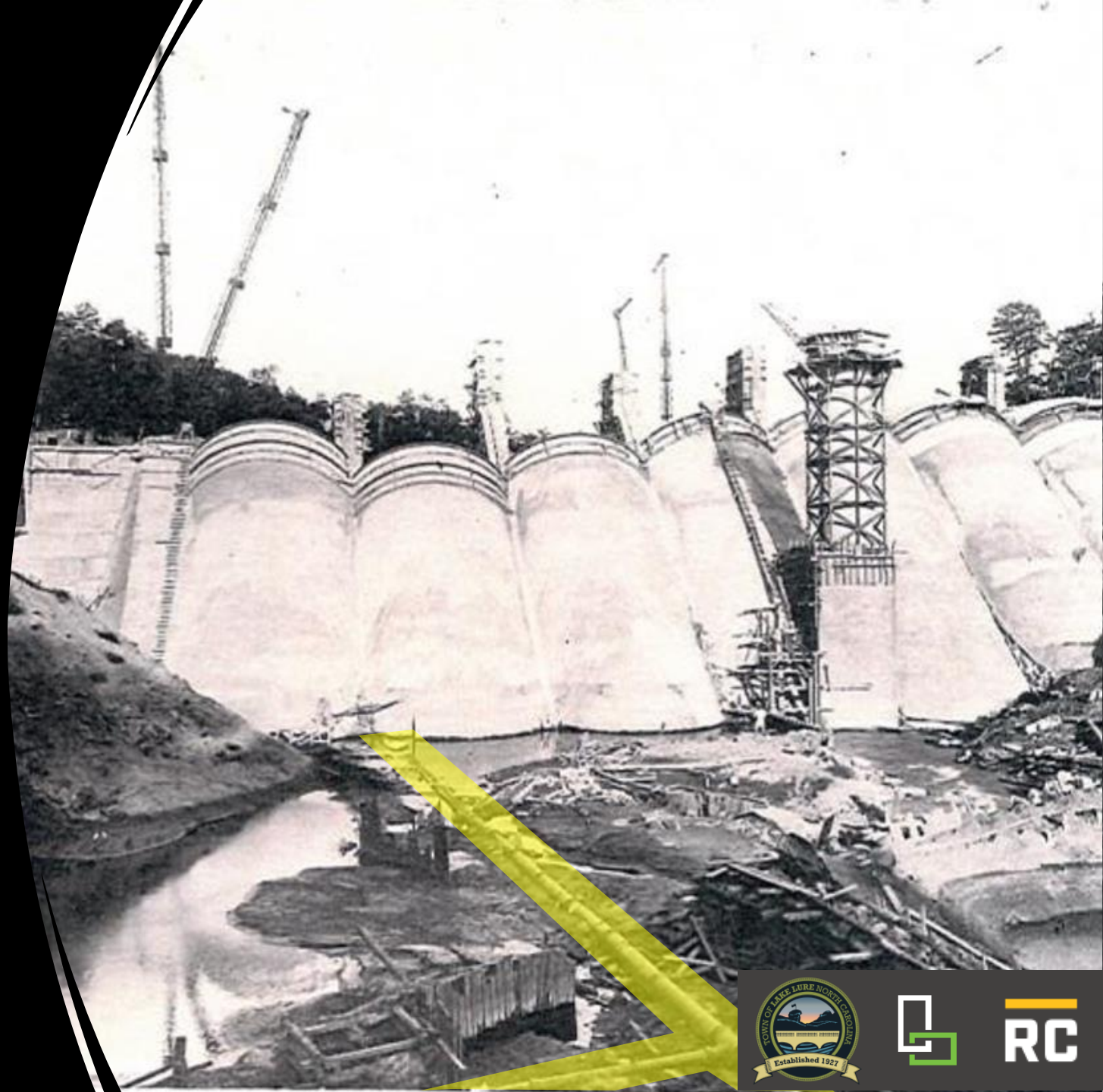


Is here the right place to be?

Prohibited by SOC: Do-Nothing

Prohibited: In-Kind Replacement

- Dam may not tolerate complete Lake emptying & refilling
- DEQ requires it to be accessible

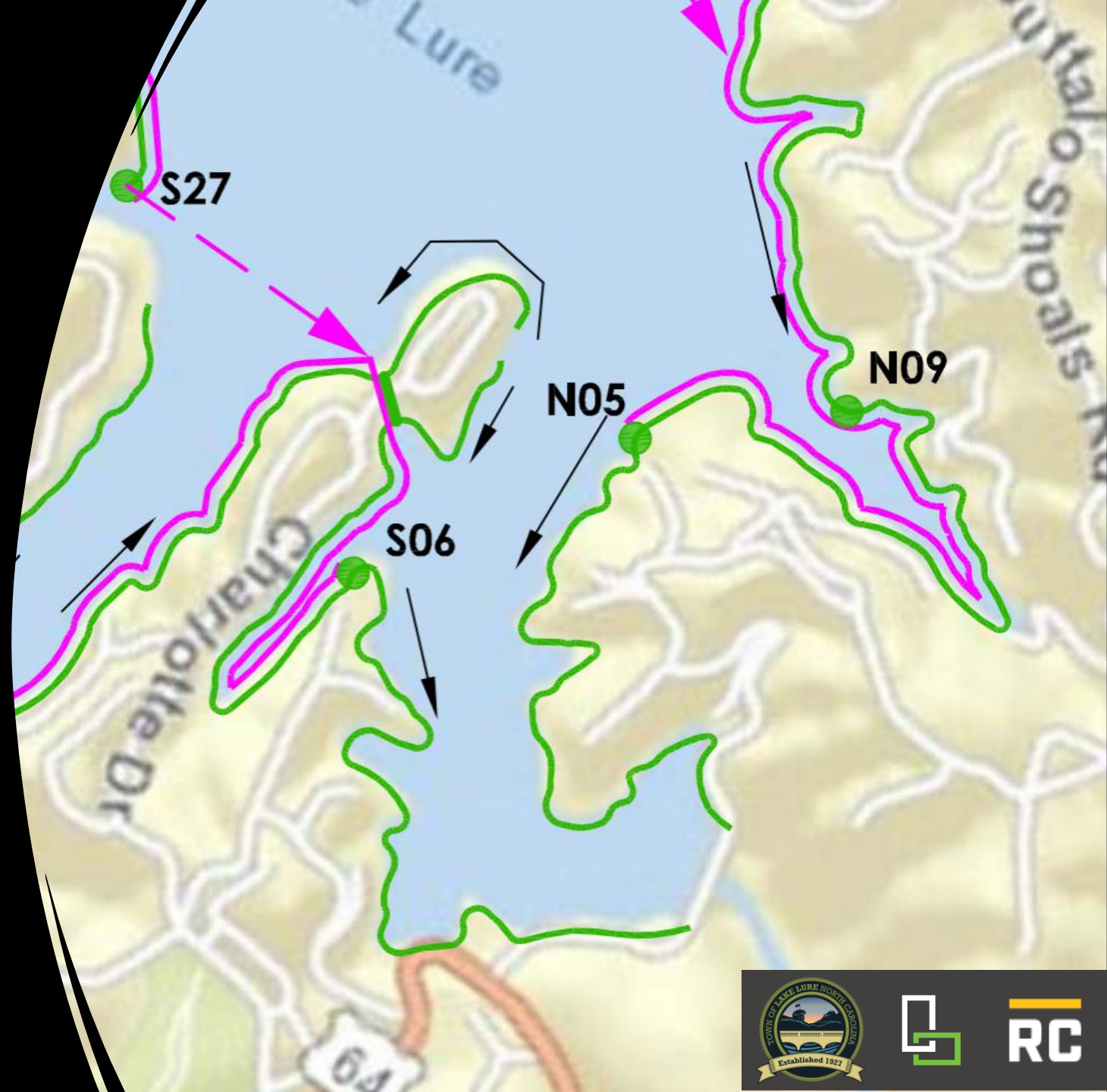


Is here the right place to be?

Other Options Investigated

- Backshore Pump Stations

- Shallower / smaller gravity sewers
- Pump stations collect and pump into separate, parallel force mains
- Backshore work the same
- More pump stations
- Nearly twice the linework



Is here the right place to be?

Other Options Investigated

- Backshore Pump Stations
- Backshore Low Pressure System
 - Only force mains in backshore
 - Each lot pumps into system
 - Easements on every parcel
 - Construction on every parcel
 - Pumps on every parcel



Is here the right place to be?

Other Options Investigated

- Backshore Pump Stations
- Backshore Low Pressure System
- Land-Based Low Pressure System
 - Easements on every parcel
 - Construction on every parcel
 - Pumps on every parcel
 - Force main construction on every road



Can ruby build the GLS?

- Clearly Yes (based on experience), *but:*
 - Difficulty is greater than hoped;



Can ruby build the GLS?

January 16, 2023



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January 16, 2023



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Can ruby build the GLS?

~January 25, 2023

- Clearly Yes
(based on experience), *but:*

- Difficulty is greater than hoped;

We're learning how to build in the Backshore (never been done before)



Why are we only this far?

- *We thought we would be able to start in earnest two years ago,*

*and we'd have 5 months each year, **but instead:***

We had only one half-season (75 days in 2022-23) so far



As the Town is now anticipating receiving total Project funding in an amount of approximately \$20.5 million, Phase 1 is anticipated to encompass a larger portion of the ultimate system than is described as Phase 1 in the ER/EID. The Town is anticipating the Project to be constructed during the lake drawdown seasons of 2022-23, 2023-24 and if required, also 2024-25. Drawdown seasons are generally mid-November to mid-April. The Design-Builder will be responsible for design, obtaining all necessary permitting approvals, and constructing the Project within the allotted timeframe. Future funding obtained during the course of completion of the currently-defined Phase 1 may be applied to increase the portion of the ultimate system constructed by the selected Design-Builder via change order(s).

Issued: October 13, 2021

REQUEST FOR QUALIFICATIONS (RFQ)

DESIGN-BUILD SERVICES

Subaqueous Sanitary Sewer Replacement

Statements of Qualifications Due

October 25, 2021, 2:00 PM



Why are we only this far?

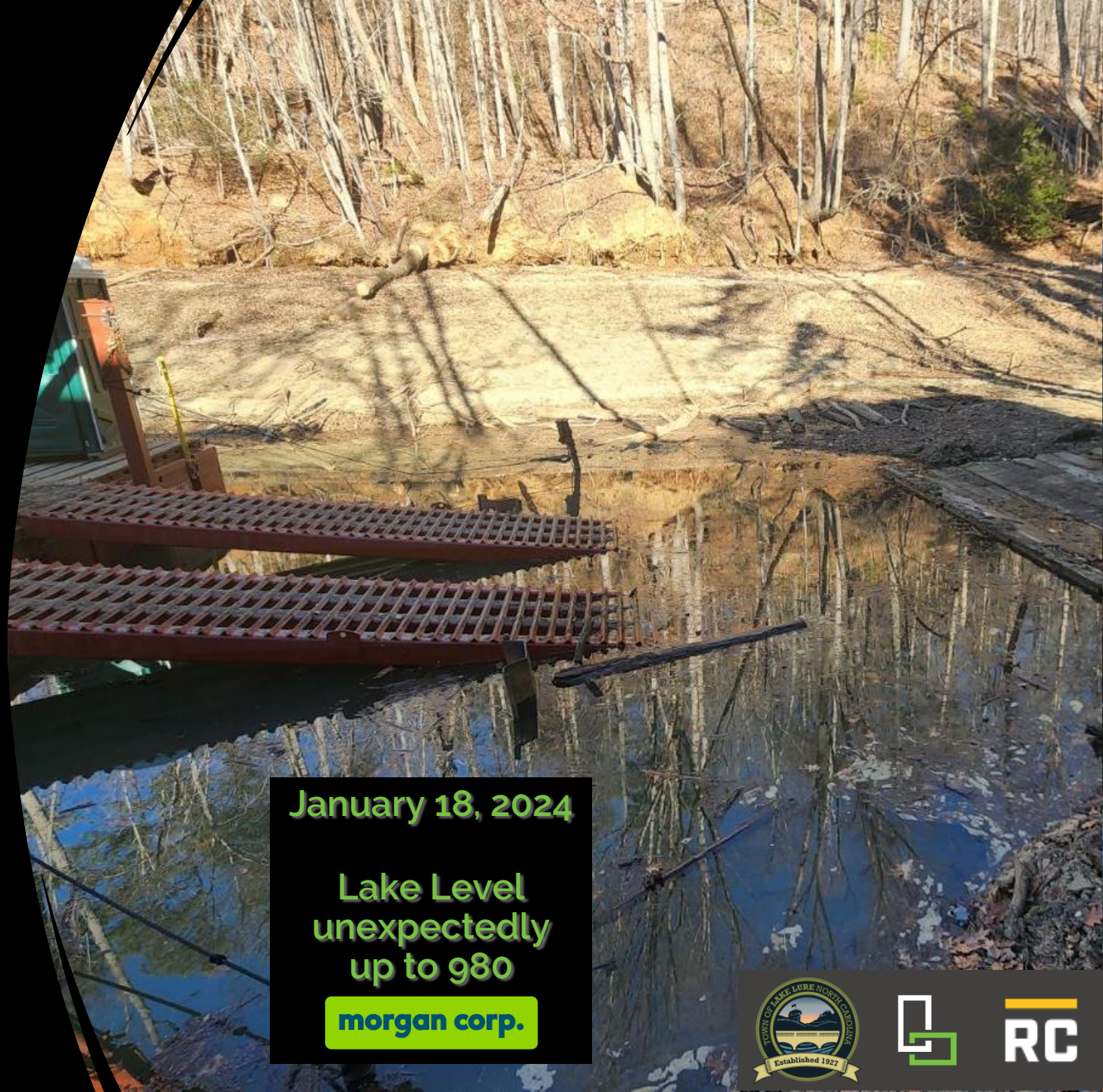
- Then, we *thought* we would be able to use another half-season (75 days) this year

January 2 – mobilization / prep

January 15 – barge into Sunset Cove

January 22 – met with Town & Morgan

January 24 – met with Council



January 18, 2024

Lake Level unexpectedly up to 980

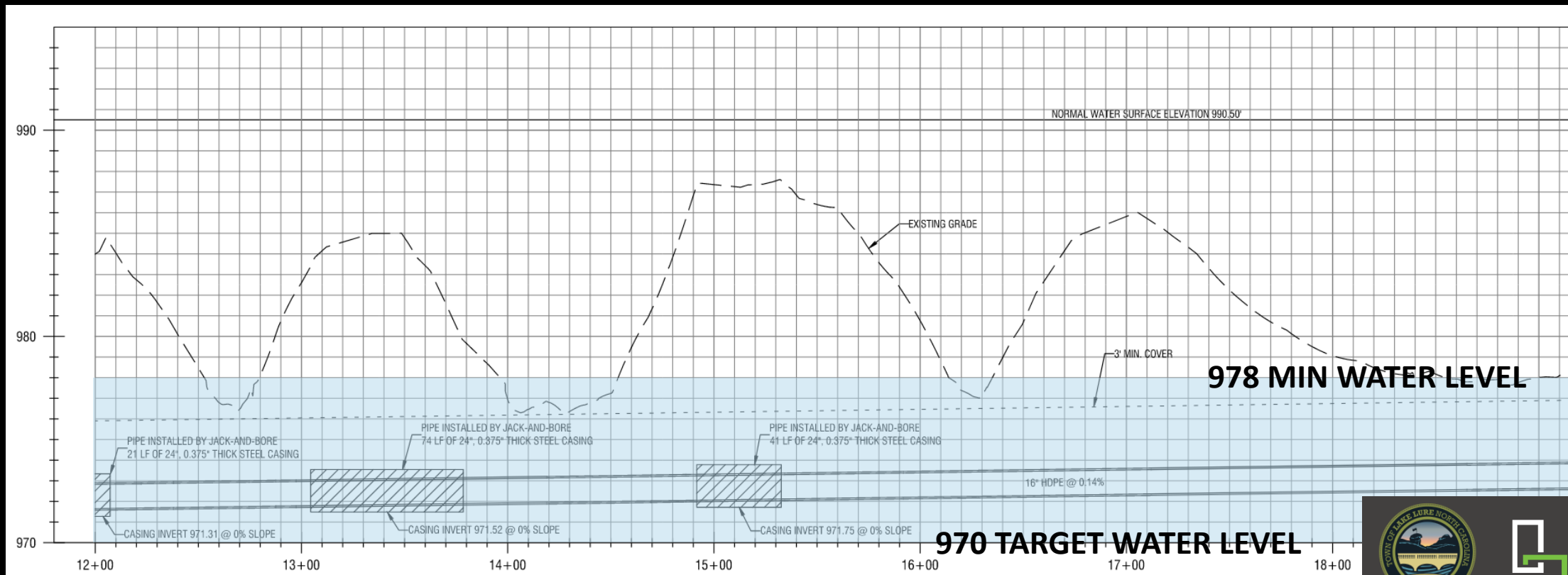
morgan corp.



Why are we only this far?

- Furthermore... We *thought* the Lake would be lowerable to 970 two years ago, but *instead*:

We haven't been able to work (or even see!) below 978. *Can't work underwater*



Can ruby build the GLS?

~January 25, 2023

- Clearly Yes
(based on experience), *but:*

- Difficulty is greater than hoped;

We're learning how to build in the Backshore (never been done before)

AND

- A lot is still unknown;

More things will undoubtedly change



Is here the right place to be?

Now That We Know More...

Would Options comparison yield a different selection now?

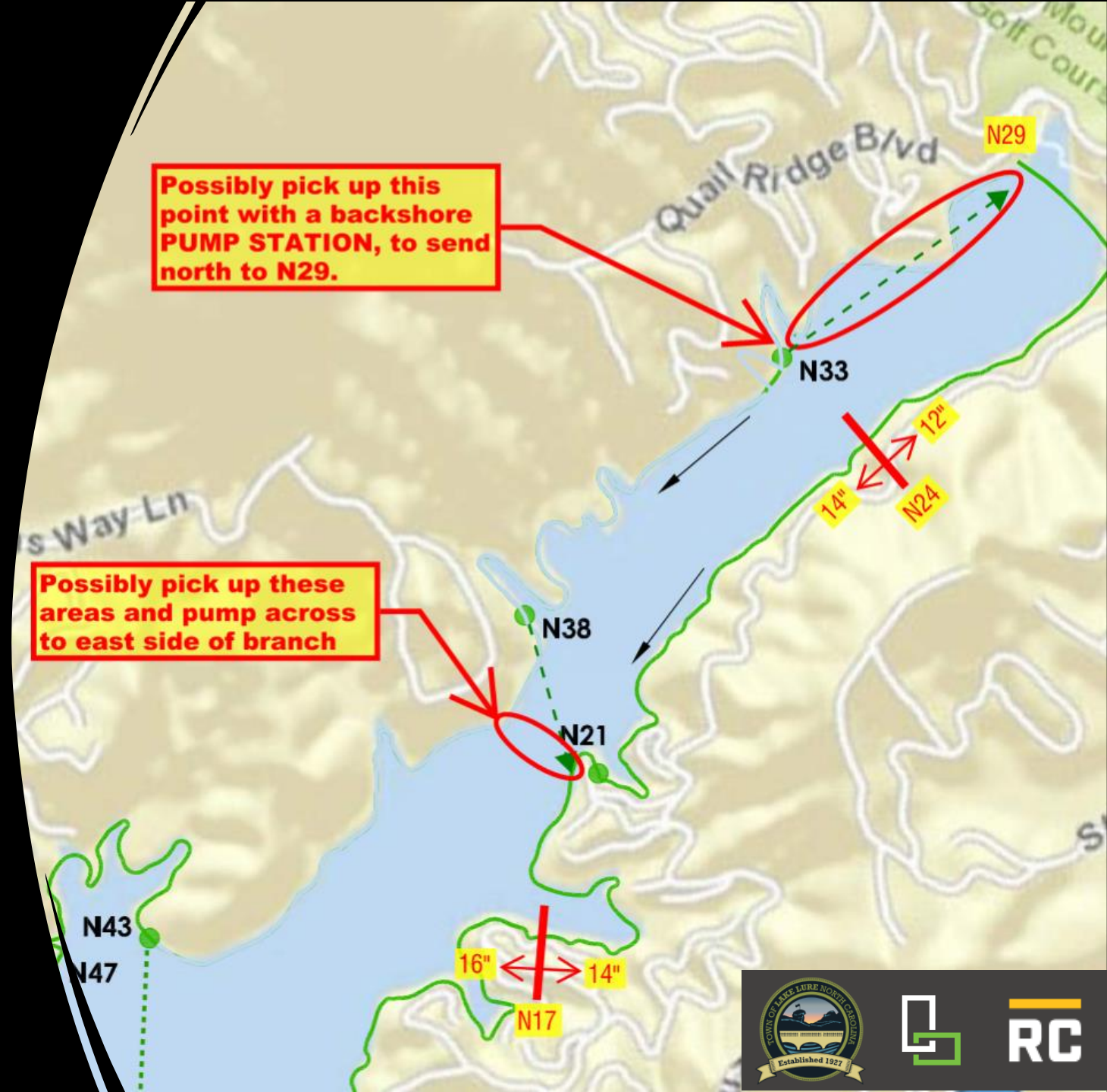


Is here the right place to be?

Now That We Know More...

Would Options comparison yield a different selection now?

The final System is likely to be a **hybrid** of Option elements



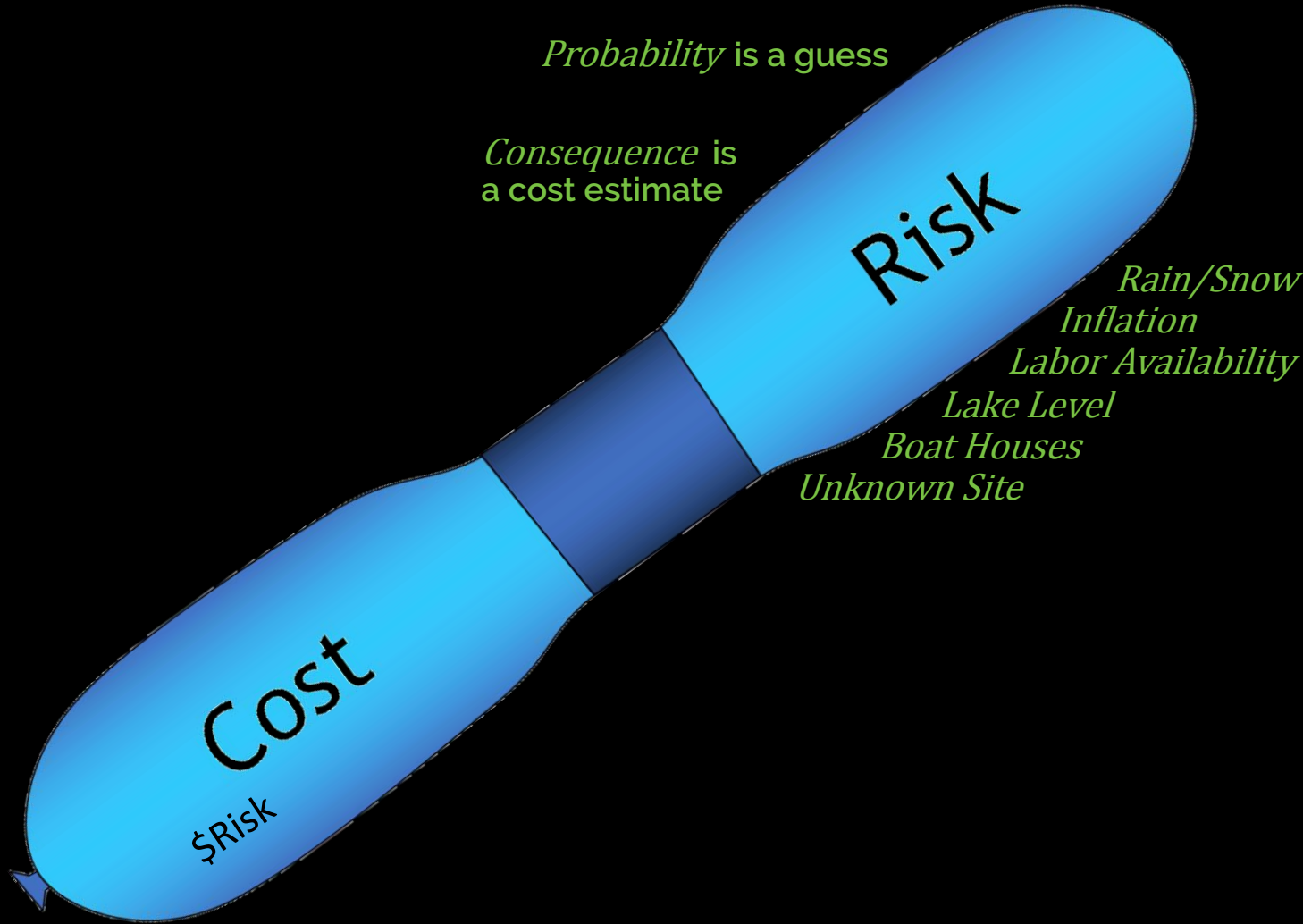
Risk, COST, & gmp



$$Risk = \sum_1^n Probability * Consequence$$

Probability is a guess

Consequence is a cost estimate

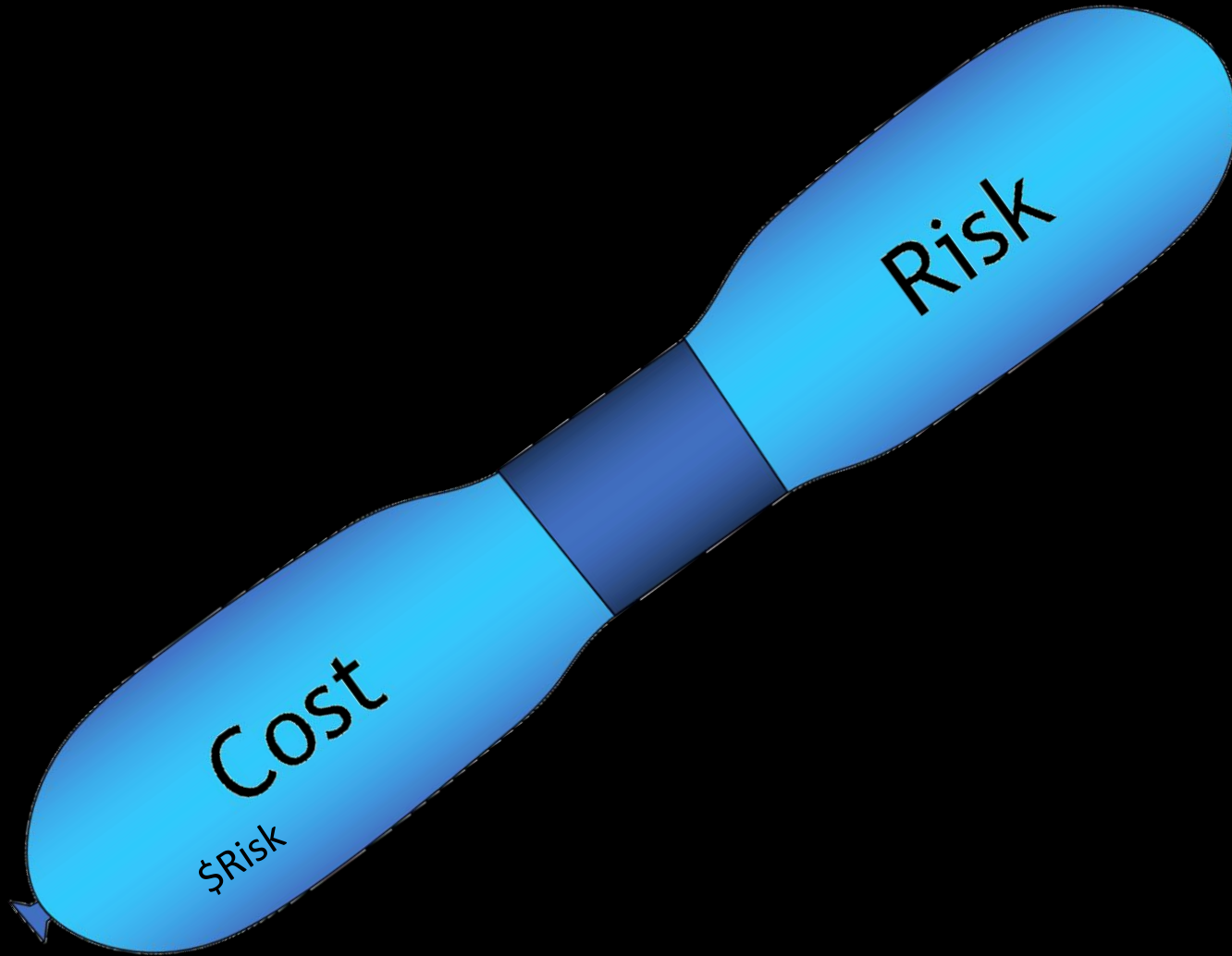


Risk cost &gmp

Owners' Cost & Risk
are always RELATED,
and ideally BALANCED

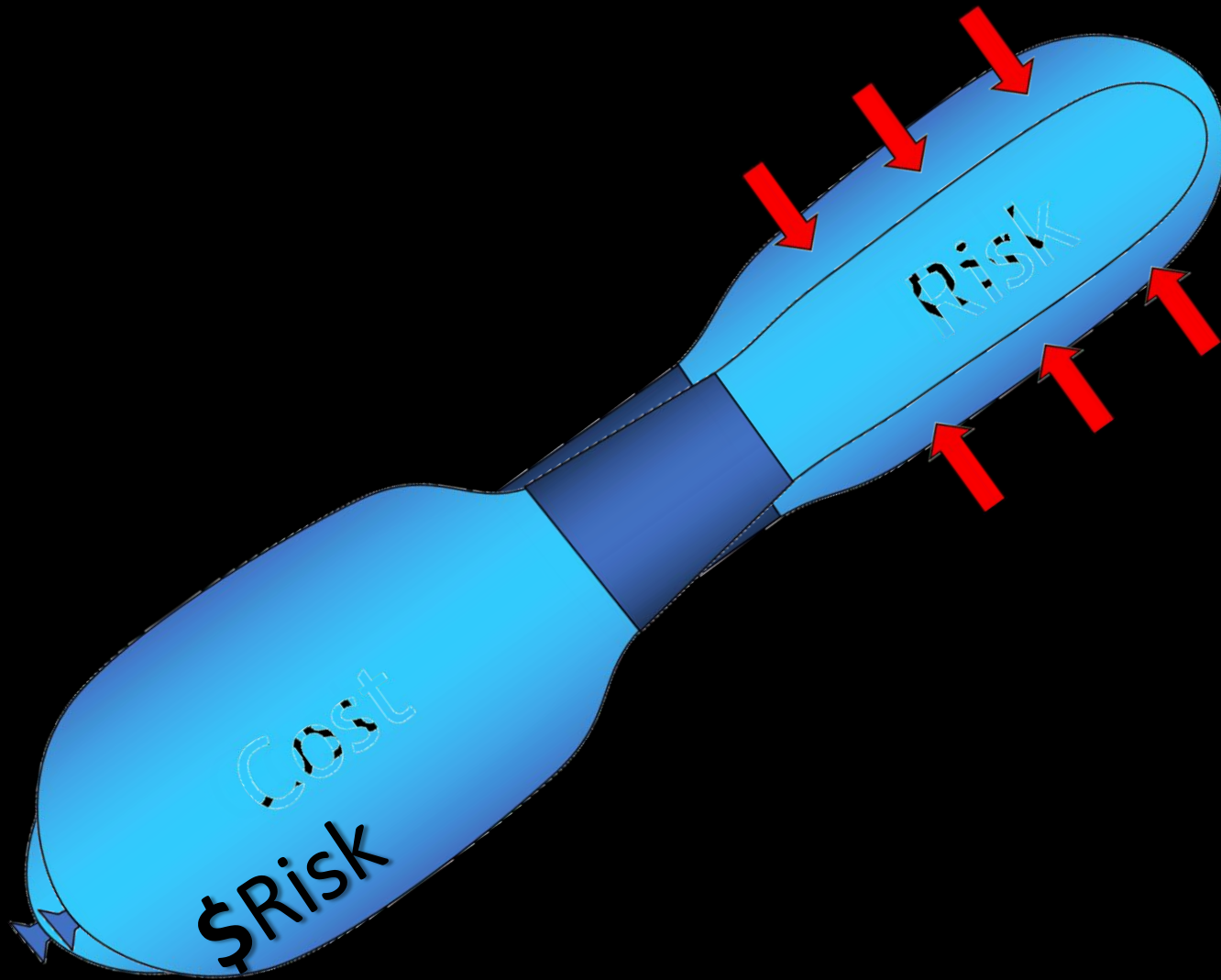
The Project has an inherent
amount of Risk & Cost





Risk cost &gmp

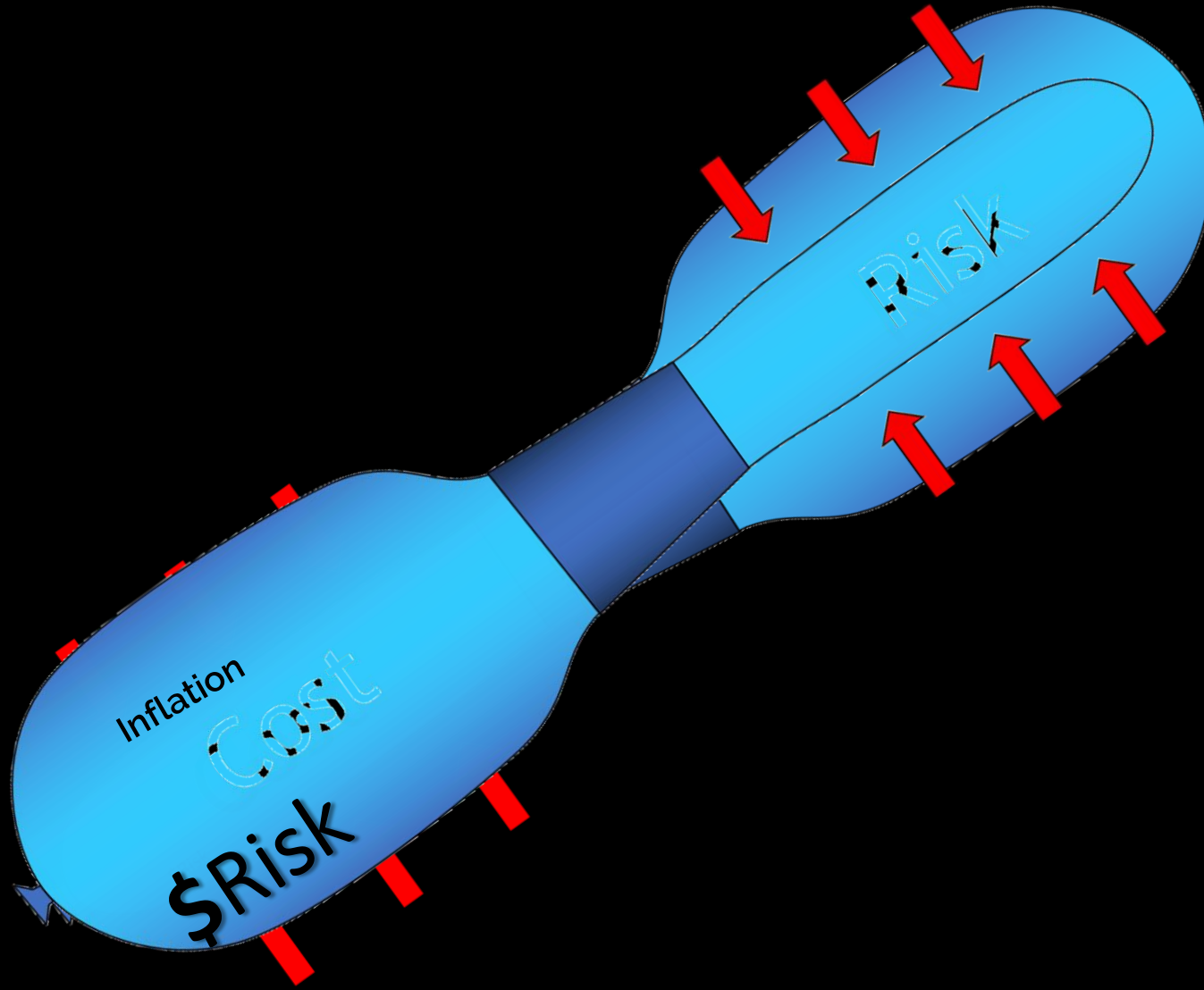
No one brings money to the Project except the Owner, so the Owner bears both the Cost and \$Risk



Risk cost &gmp

You can choose to
squeeze your Risk

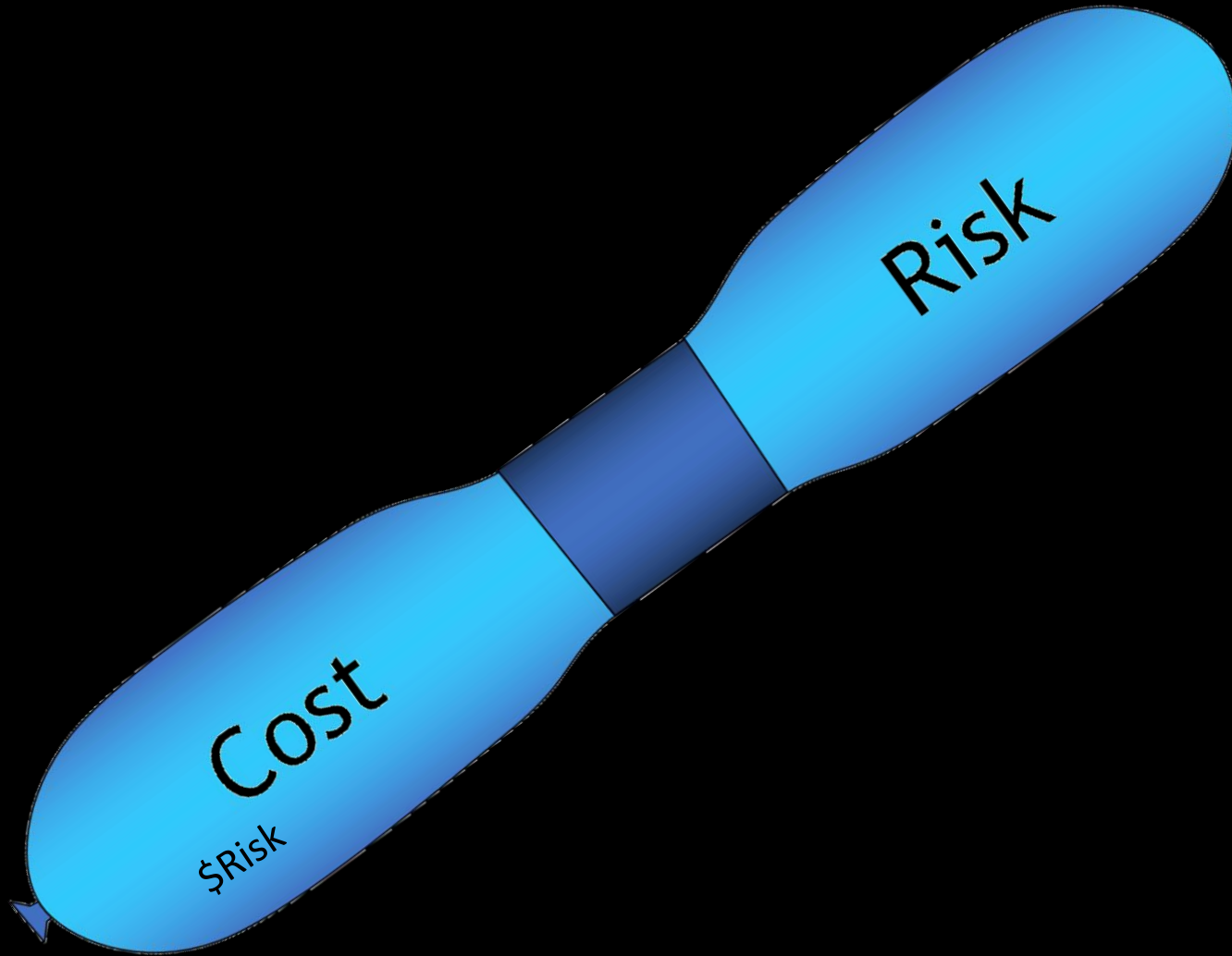
But doing so
increases your Cost
(that Risk doesn't go away –
it has to go somewhere)



Risk cost &gmp

You can choose to
squeeze your Cost

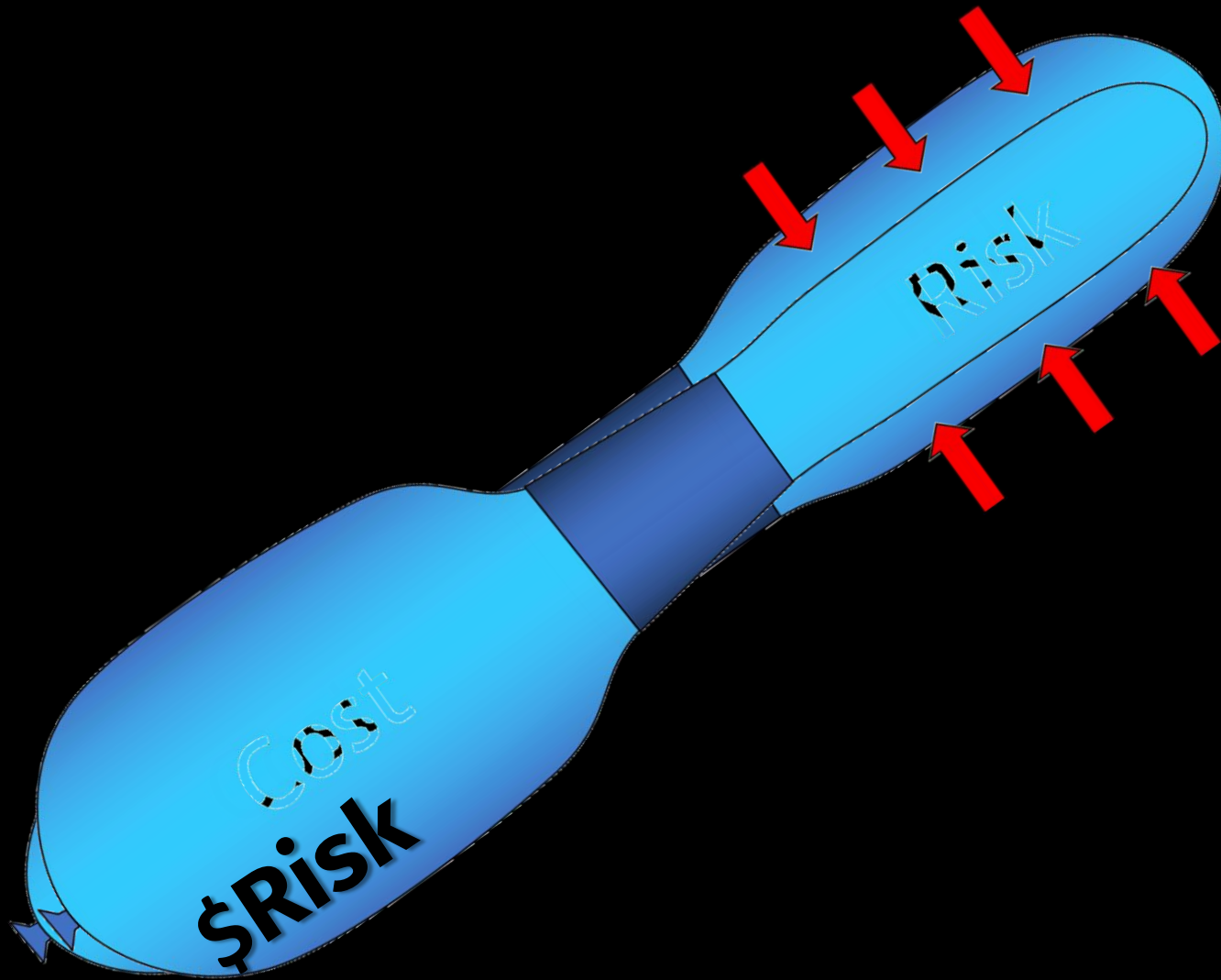
But doing so
increases your Risk
(The \$Risk that was included
in the original BALANCED cost
has to go somewhere)



Risk cost &gmp

'BALANCED' is typically understood to mean that the party that owns or can best control the Risk assumes it

Risk that a party can't control is more costly to that party



Risk cost &gmp

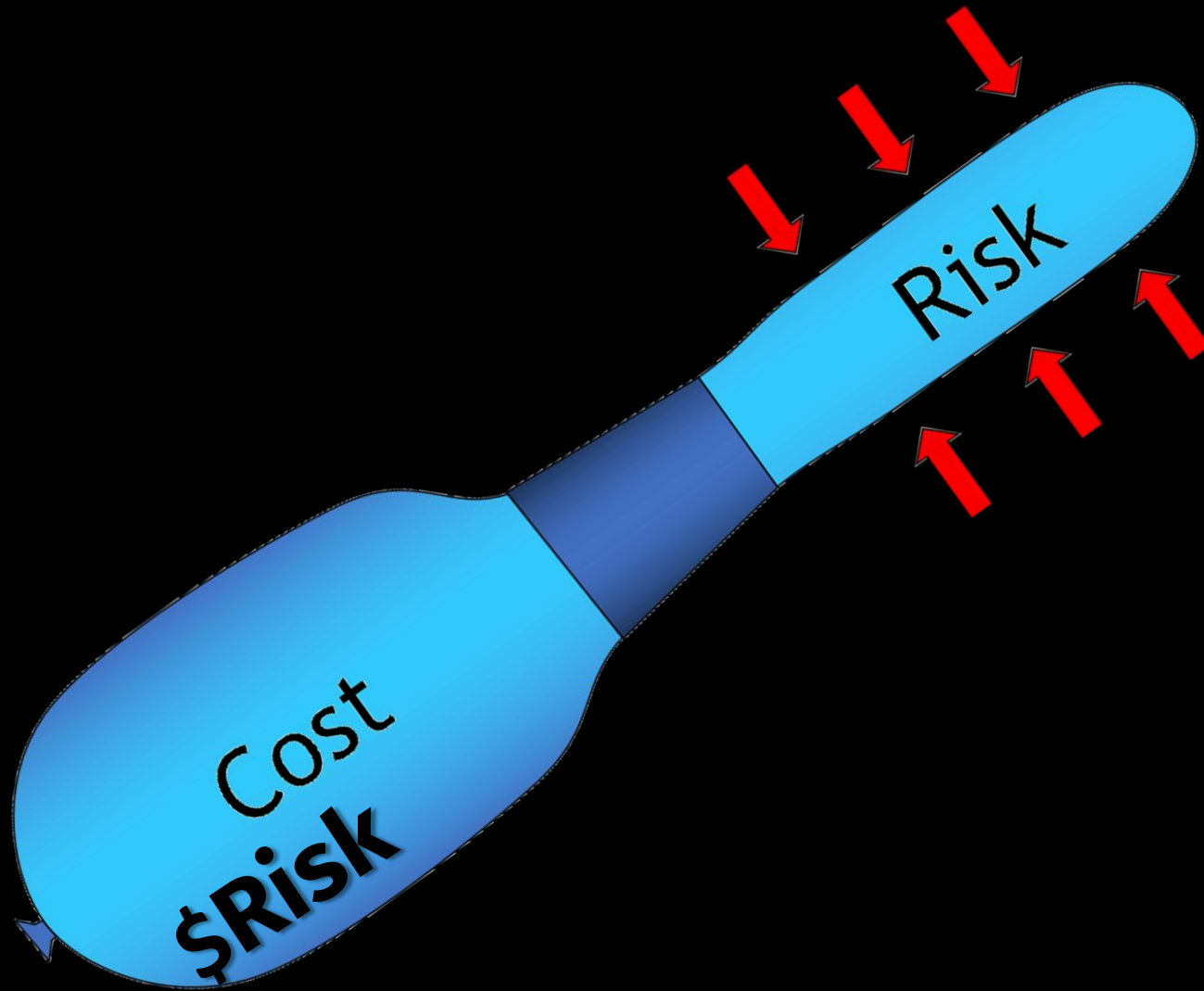
So if you squeeze your Risk
onto your Project Delivery Team
your cost is more like:

(Balanced) Cost + '1.5' × \$Risk

...and because the Team has few
resources to bear \$Risk, the '1.5'
could be substantially higher

$$\text{\$Risk} = \sum_1^n \%Probability * \text{\$Consequence}$$





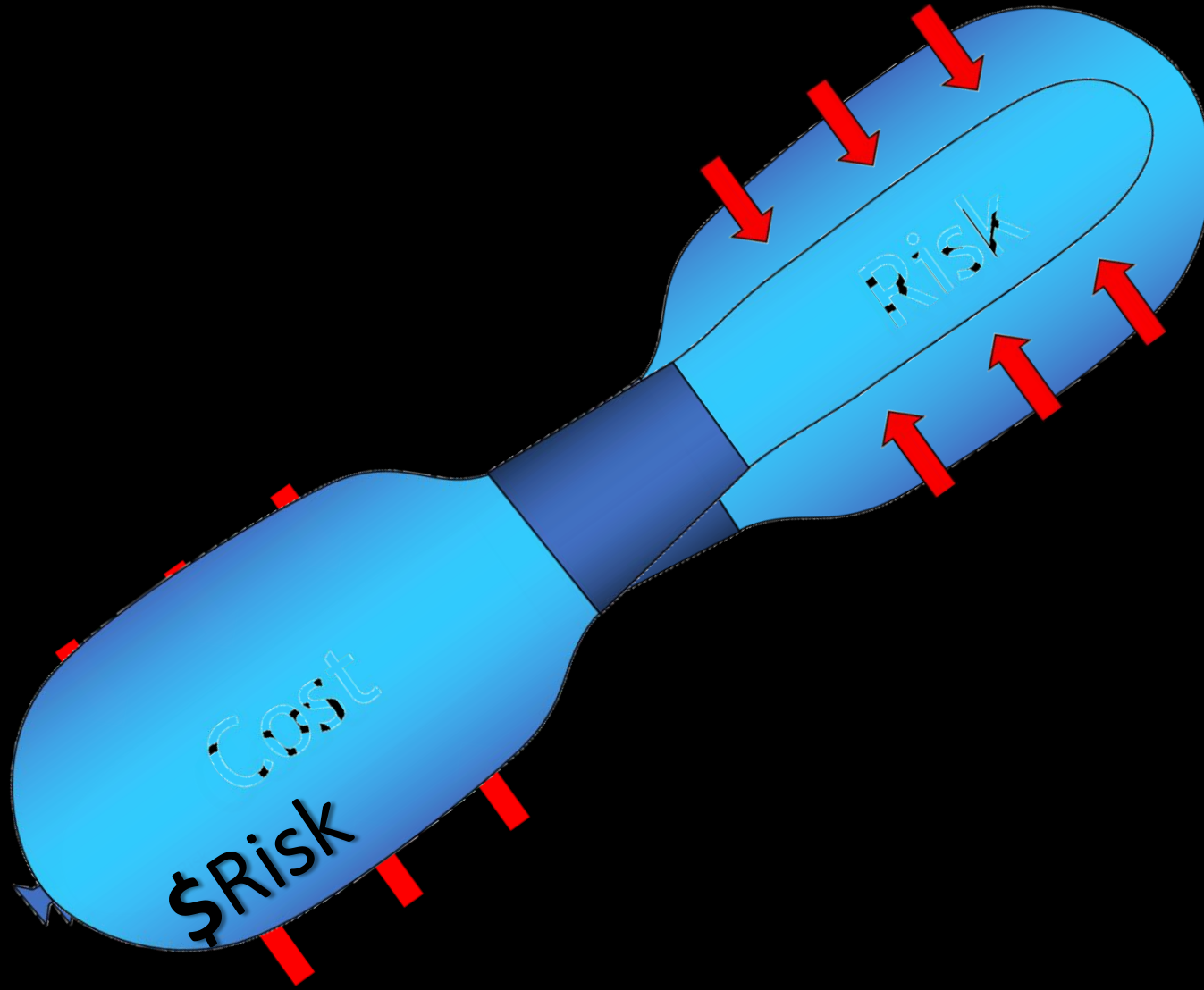
Risk cost &gmp

'Guaranteed Maximum Price'
(GMP) includes Costs of:

- Materials
- Equipment / Rentals
- Labor
- Fees
- \$Risk ('1.5' × \$Risk or \$Risk)

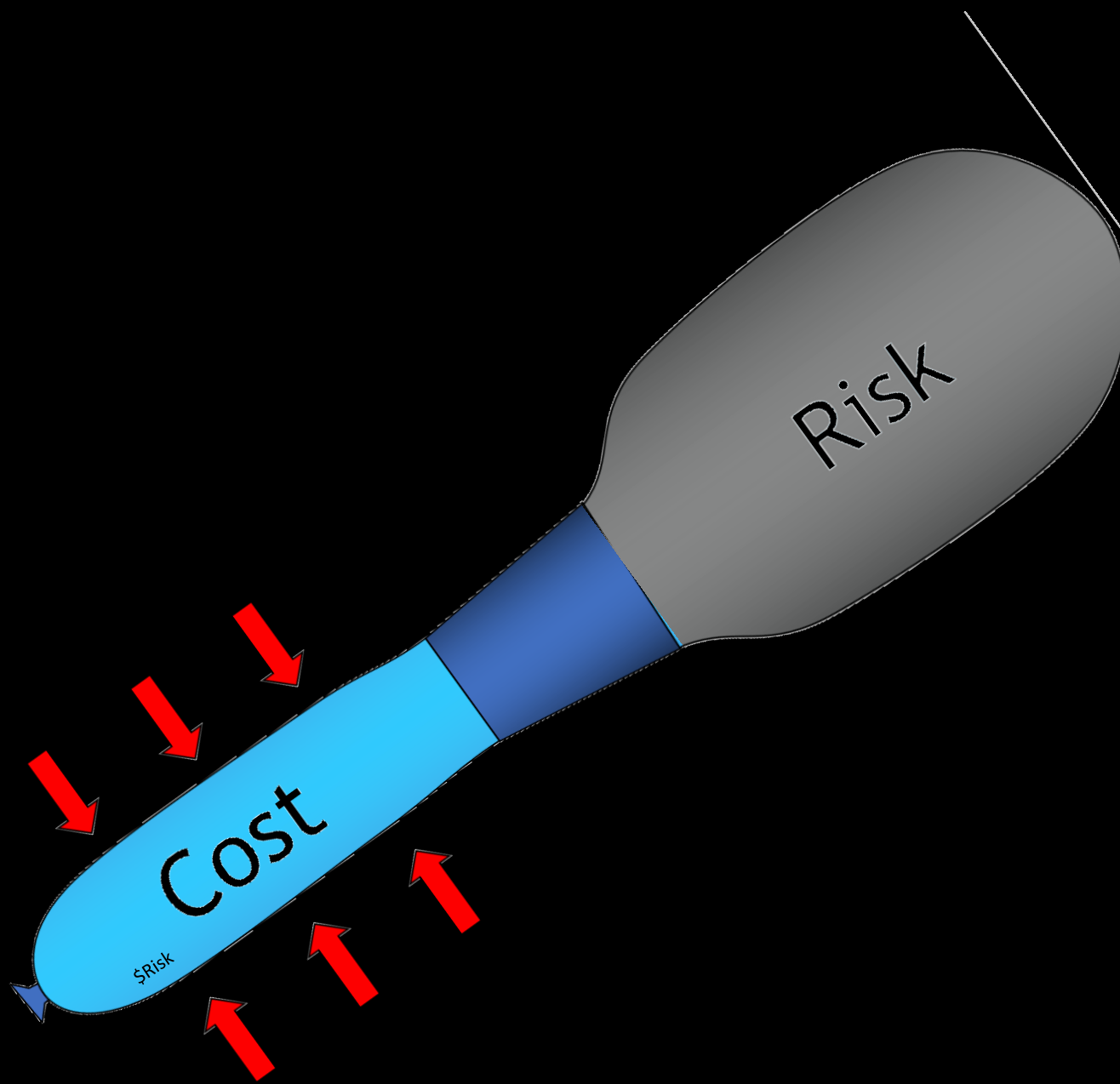
$$\text{\$Risk} = \sum_1^n \%Probability * \text{\$Consequence}$$





Risk cost &gmp

In effect, the agreed approach thus far has sought to minimize cost, recognizing that the Project's magnitude requires efficient use of \$capital



Risk cost &gmp

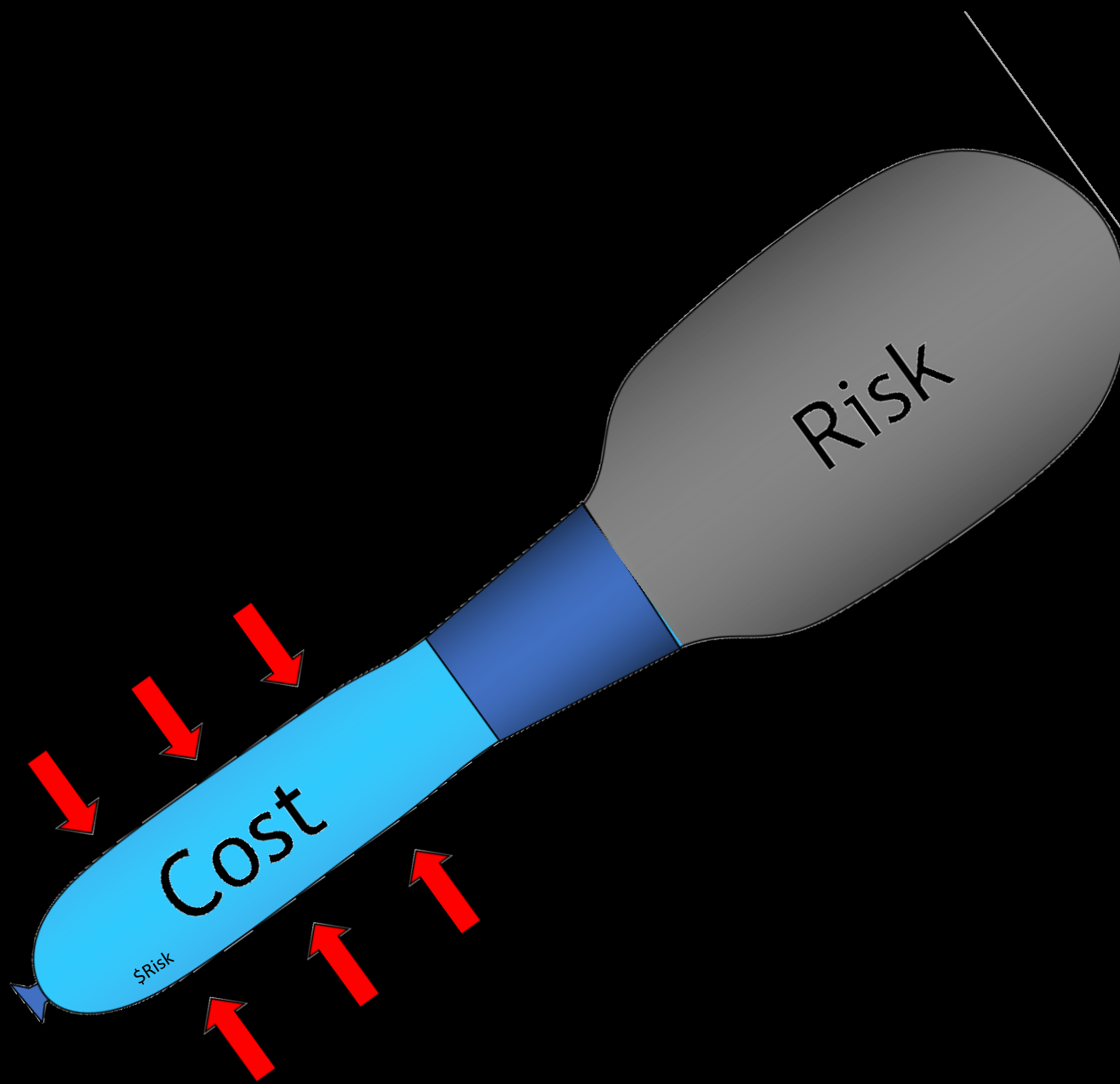
So 'GMPs' have not factored in any significant Risk, and *we believe this is in the Town's best interests for now*

Risk the Owner bears costs \$ZERO unless the risky event occurs. (But the Contractor must price it if they are to bear it, *like an insurance carrier*)

Costs to date

	Original	Amend 1	Amend 2	Amend 3	Total
<u>Already Incorporated Into the Work</u>					<u>\$1,034K</u>
Engineering, Permitting & Planning	\$320K	\$75K			\$395K
Labor, Materials, & Equipment		\$639K			\$639K
Totals	\$640K	\$850K	\$1,099K	\$550K	\$3,139K





Risk cost &gmp

Is it 'GMP', or *Time & Materials*?

With significant *unknowns*, the associated \$Risk remains high.

T&M turns \$Risk into Risk

The Town will always need to carry Risks you control (e.g., Lake Level)

A closing word



November 2019 Town RFQ for On-Call Engineering Services

EXHIBIT A

PROJECT TRACKER TOWN OF LAKE LURE, NC

Projects are Listed by Priority (C, H, H-M, L-M, L, PL)

NUMBER	PRIORITY	DESCRIPTION	COST	DURATION (Years)	OWNER
Critical (C)					
1		Dam - Structural Renovation	\$45,000,000	5	
2		Sewer - Subaqueous Collection System Repair	\$10,000,000	3	
3		Sewer - Subaqueous Collection System Replacement	\$20,000,000	10	
4		Sewer - Waste Water Treatment Plant Replacement	\$6,000,000	3	
5		Sewer - Waste Water Treatment Plant Rehab	\$3,000,000	3	
6		Lake Dredging - Annual	\$500,000	ongoing	
			Subtotal		
			\$84,500,000		
High (H)					
7		Dam - Hydro Electric Rebuild	\$4,000,000	1	
8		Dam - Hydro Electric Repairs (Starts Operations)	\$750,000	0.5	
9		Dam - Bridge	\$25,000,000	2	
10		Town Center Main Street - CRSP Egress	\$3,000,000	3	
11		Telecom - Cellular	\$5,000	1	
12		Telecom - High Speed Internet Around Lake	\$500,000	2	
13		Water - Supply (Interconnect w/BRWA)	\$500,000	2	
14		Water - Distribution	\$500,000	2	
15		Marina (Phase 1) & Boardwalk	\$1,500,000	2	
			Subtotal		
			\$35,755,000		
High - Medium (H-M)					
16		Refine & Fund Spot Dredging Program	\$100,000	ongoing	
17		Dredging - Big Dig (One & Done)	\$5,000,000	1	
18		Sedimentation Mitigation in Tributaries - UBRW			
19		Telecom - WiFi in Town Center			
20		Asset Management Program			
21		Street Paving Program (Intense) - Annual			
22		Westside Connector			
23		Risk Management Program			
24		Computer Software Package			
25		Employee Position & Salary Study			
Low - Medium (L-M)					
26		Morse Park Welcome Center Restrooms			
27		Morse Park Event Lawn			
28		Trail Maintenance Program			
29		Staff Succession Plan			
30		Boys Camp Road Campground			
31		Public Works Facilities Relocation			
32		The Highlinds Mitigation			
Low (L)					
33		Public Safety Building			
34		Fire Department Façade Rehab			
35		Fire Department Generator Replacement			
36		Marina (Phase II)			
37		Fleet Management Program			
38		Fleet Service Facility			
39		Employee Position & Salary Study			
Parking Lot (PL)					
40		Riverwalk to Chimney Rock Village	\$500,000	5	
41		Pedestrian Plan	\$7,000	1	
42		County Outreach/Goodwill Plan			
43		Urgent Care - Possible Ingles Extension		TBD	CHNG
44		Ace Hardware - Possible Ingles Extension		TBD	CHNG
			Subtotal		
			\$510,500		
			GRAND TOTAL		
			\$155,876,000		

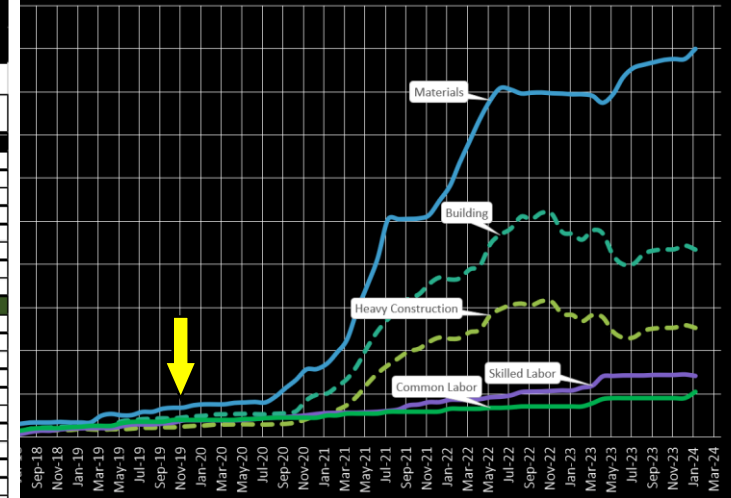
Sewer - \$39M

Dam - \$75M

Subtotal \$510,500

GRAND TOTAL \$155,876,000

ENR Cost Indices - increase Jan-2018 thru Present



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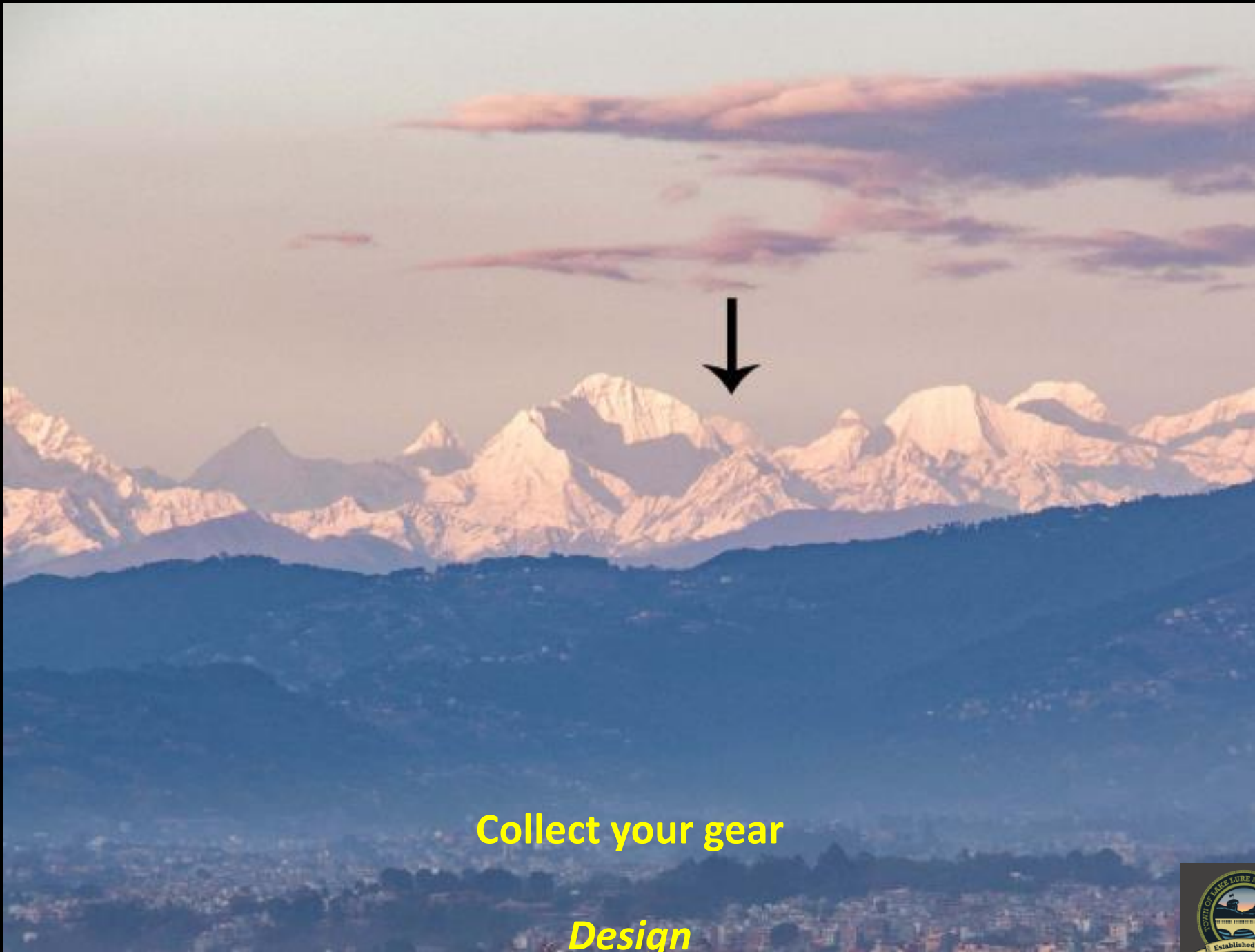




Chart your course

Planning

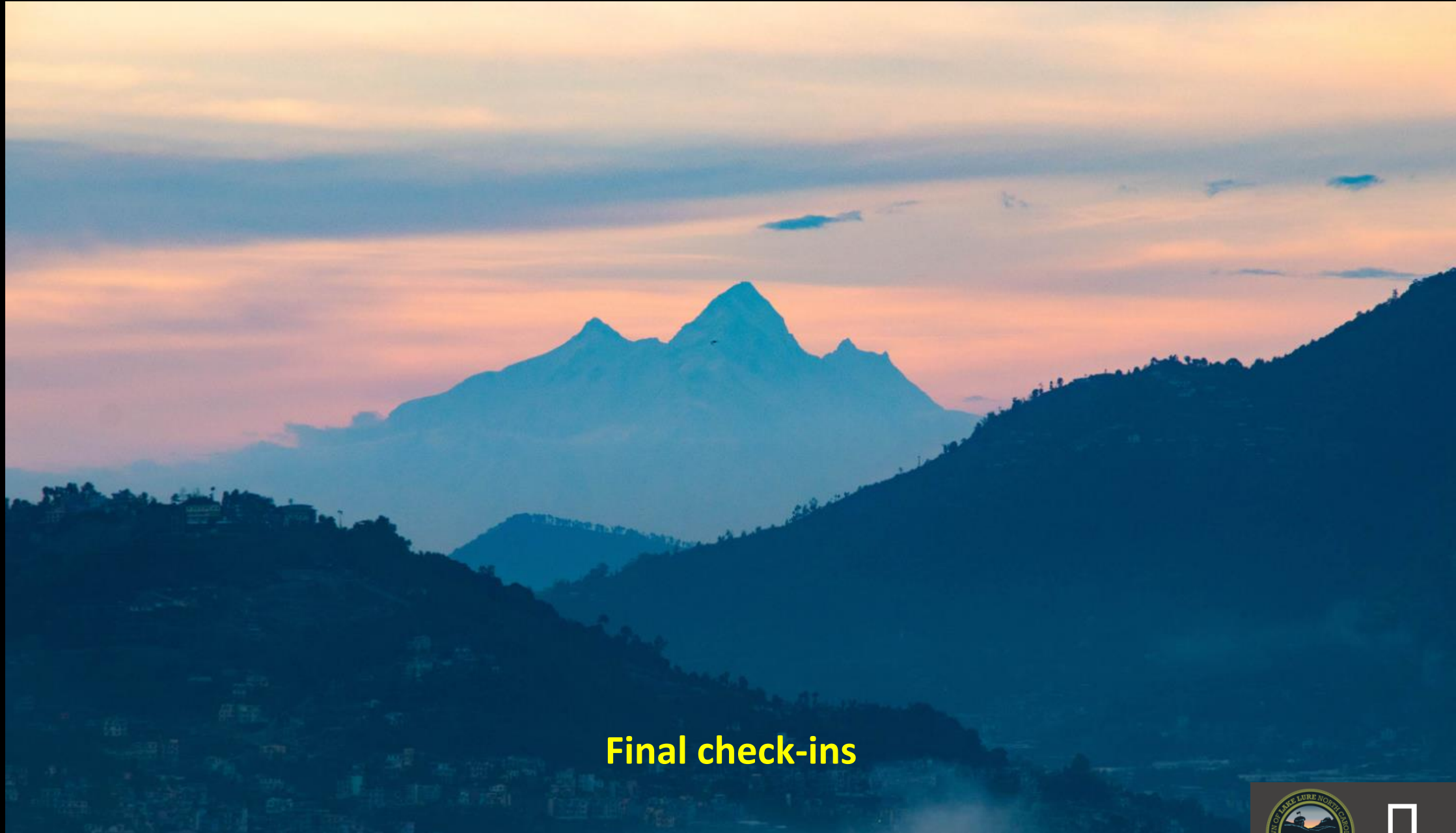




Collect your gear

Design





Final check-ins

Approvals



RC



Test your gear

2022/23 Casing Installations





Decision Time

2024/25 GLS Installation



SASS Replacement update

March 25, 2024

