

MEMORANDUM

TO: Board of Trustees

THROUGH: Brad Underwood, Director of Public Works

FROM: Hudson Klein, Principal Engineer

SUBJECT: Review and Discuss the Opinion of Probable Construction Cost for GMP2 of the Export Effluent Pipeline Project (CIP #2524SS1010)
(Requesting Staff Member: Director of Public Works Brad Underwood)

RELATED STRATEGIC PLAN BUDGET INITIATIVE(S):

LONG RANGE PRINCIPLE #5 – ASSETS AND INFRASTRUCTURE

The District will practice perpetual asset renewal, replacement and improvement to provide safe and superior long term utility services and recreation venues, facilities, and services.

Budgeted Initiatives D - Allocate capital expenditures to maintain services and facilities.

RELATED DISTRICT POLICIES, PRACTICES, RESOLUTIONS OR ORDINANCES

Board Policies 12.1.0 Multi-year Capital Planning; 13.2.0 Capital Planning Capital Expenditures; 21.1.0 Purchasing Policy for Public Works Contracts

DATE: May 25, 2023

I. RECOMMENDATION

Review and Discuss the Opinion of Probable Construction Cost for GMP2 of the Export Effluent Pipeline Project (CIP #2524SS1010)

II. BACKGROUND

On April 12, 2023 the first phase of the export effluent pipeline was awarded to Granite Construction as the construction manager at risk (CMAR). The initial guaranteed maximum price (GMP1) was prepared in accordance with NRS Section 338.1696 and is comprised of approximately 5,365 linear feet (LF) of pipeline. GMP1 was awarded to Granite for \$10,831,500 and includes approximately \$1.5M in risk reserve. This cost is inclusive of the competitive bidding process completed by Granite in preparation of GMP1 and represents the current material, construction, and formal subcontractor project bids. The first

year costs total approximately \$14M inclusive of GMP1, contingency, IVGID-purchased pipe, design and administration, and inspection/management costs.

The 90% opinion of probable construction cost (OPCC) for the entire project was presented to the Board of Trustees on January 11, 2023 and was estimated at approximately \$58,700,000. The 90% OPCC was prepared by the CMAR and the independent cost estimator (ICE) and the estimated costs were within 1% of each other (Attachment A). The actual costs of GMP1 do not support the overall project cost that was presented at the January Board meeting. Therefore, the Board requested staff present an updated estimate for the remainder of the effluent pipeline project at the May 25, 2023 meeting.

Granite has prepared a current total project OPCC of \$71.6M. Refer to Attachment B for a breakdown of estimated project costs for GMP2 and the resultant project total. This is an increase to the OPCC presented at the January Board meeting of approximately \$12.9M (Attachment C). Information below provides an overview of the cost increases.

Refer to Attachment A for a summary of the cost variances projected from the 90% OPCC to GMP1 and GMP2 estimates. A comparison of the OPCC components is shown in the table below:

	Jan. 2023 90% OPCC	May 2023 GMP2 OPCC	Difference
Construction Costs (incl. CMAR fee)	\$46,000,000	\$56,300,000	\$10,300,000
Risk Reserve	\$10,300,000	\$9,200,000	(\$1,100,000)
Contract Contingency & Administration Fees	\$2,400,000	\$6,100,000	\$3,700,000
Total	\$58,700,000	\$71,600,000	\$12,900,000

Construction Cost Increase:

Several factors influenced the increase in (direct) construction costs. The most significant increases resulted from:

- Shifting the estimated cost escalations (inflation allowance) from the risk reserve into the direct costs (+\$4.9M); note that \$3.7M was reallocated from risk into direct costs AND an additional industry escalation increase of \$1.2M has been included since January 2023;
- Design and construction scope changes (+\$2.3M, from 90% design to construction issue); this includes design aspect quantity increases, and construction methodology refinements,

- Additional traffic control and utilization of a DBE for SRF funding criteria (+\$1.9M); this assumes multiple, coincident work fronts in 2024 and 2026
- The proportionally increased contractor fee to account for the higher direct cost (+\$1.1M).

Risk Reserve Decrease:

Several factors influenced the increase in risk reserve costs. The most significant increases resulted from:

- The overall decrease in risk reserve is representative of the transfer of cost escalations from the risk reserve into the direct construction costs (-\$3.7M).
- An increased allowance for anticipated hard rock resulting in a decrease in productivity and requires additional rock-breaking equipment (+\$2.3M).
- NDOT will be completing improvements to SR50 and will be utilizing the staging areas for their own project in 2024 and 2025. The likely loss of NDOT staging areas at SR50/SR28 will increase construction costs as it requires the contractor to travel further for every truck trip (+\$0.6M).

The final risk reserve will be further negotiated during formal GMP2 reconciliation efforts. The 90% OPCC and GMP2 OPCC risk registers are included as Attachment D and Attachment E, respectively.

Administration and Inspection Fees Increase:

The January 2023 OPCC indicated construction-phase cost estimates only and did not include design-phase consultant, IVGID Staff-management, and regulatory permitting costs (+\$1M); this has been included in the current OPCC. The total project increase for administration is also the result of several contributing factors: actual testing & inspection contract costs versus assumed fees; increased contingencies (at 3.5% of construction cost) for the contracts based on increased direct costs. Each design, permitting, project management, and inspection item in the GMP2 OPCC is conservative due to the limited operational progress completed to date.

III. BID RESULTS

There are no bid results as part of this GMP2 OPCC. The competitive bidding process and resultant project unit rates completed by the CMAR during the preparation of GMP1 were used in preparation of the GMP2 OPCC.

IV. FINANCIAL IMPACT AND BUDGET

The current total project OPCC of \$71.6M represents an increase of approximately \$12.9M from the OPCC presented in January 2023. This amount is currently in excess of the allocated project budget. Staff is proposing an amount of \$57M for fiscal year 2023-24 to award the GMP2 construction contract for all the remaining work.

Funding currently available for the project is \$52.74M in SRF Loan Funds, \$1.6M in EPA Clean Water SRF Program Funds, and 15.463M in Utility Funds, totaling \$69.803M.

Staff continues to pursue Section 595 grant funding with the United States Army Corps of Engineers (USACE) for GMP2. Staff is currently in discussions with USACE for an amendment to the existing Project Partnership Agreement (PPA) for Effluent Pipeline project funding (Increment 2). In addition, the Nevada Senate Delegation has included a \$15M request for the Effluent Pipeline project in their FY2024 Congressionally Directed Spending Requests.

V. ALTERNATIVES

There are no alternatives as the full project OPCC has been prepared for information and discussion purposes.

VI. COMMENTS

GMP1 includes time and resources for on-site investigations (potholing and inspections) that will help further inform the actual GMP2 scope and cost profile.

Staff is beginning to work with Granite to provide their cost proposal for GMP2 which will be the remainder of the Effluent Export Pipeline work. The intent is to bring a contract before the Board for their consideration in early Fall 2023.

However, this date could change depending on the status of USACE 595 Program Funds. This is due to the requirement in the PPA for the USACE to provide written confirmation that the environmental compliance has been completed for an increment of work prior to issuing solicitation for the first construction contract.

VII. BUSINESS IMPACT/BENEFIT

This item is not a "rule" within the meaning of Nevada Revised Statutes, Chapter 237, and does not require a Business Impact Statement.

VIII. ATTACHMENTS

1. ATTACHMENT A - 90% OPCC - CMAR & ICE_Dec2022
2. ATTACHMENT B - GMP2-90% OPCC Comparison Form_20230517
3. ATTACHMENT C - Board-Variance Summary (Total Program Cost)R1
4. ATTACHMENT D - IVGID CMAR - 90% OPCC Risk Register (12.06.22)
5. ATTACHMENT E - IVGID CMAR - GMP2 OPCC - Risk Register (05.10.23)

IX. DECISION POINTS NEEDED FROM THE BOARD OF TRUSTEES

Review and Discuss the Opinion of Probable Construction Cost for GMP2 of the Export Effluent Pipeline Project (CIP #2524SS1010).

Granite 90% OPCC

90% Opinion Of Probable Construction Cost (OPCC)					
<i>Project</i> IVGID Effluent Pipeline Project		<i>By</i> Granite			
<i>Subject</i> 90% Opinion Of Probable Construction Cost (OPCC) Reconciliation 2		<i>Date</i> 12/14/2022			
		QUANTITY	UNITS	UNIT PRICE	TOTAL COST
1	GENERAL REQUIREMENTS				
2	Mobilization/Demobilization	1.00	EACH	\$ 152,591.02	\$ 152,591.02
	General Conditions	1.00	LS	\$ 7,094,392.96	\$ 7,094,392.96
3	Insurance and Bonds	1.00	LS	\$ 246,633.09	\$ 246,633.09
4	SUBTOTAL				\$ 7,493,617.07
5	PIPE WORK				
10	Mitigation & Environmental Controls	1.00	LS	\$ 382,624.89	\$ 382,624.89
11	12" Asphalt Cutting	59,496.00	LF	\$ 2.40	\$ 142,790.40
12	16" Welded Steel Pipe - WSP	5,011.00	LF	\$ 1,198.87	\$ 6,007,537.57
13	16" Ductile Iron Pipe - DIP	24,737.00	LF	\$ 806.55	\$ 19,951,627.35
14	Cathodic Protection (14 Test Stations)	29,748.00	LF	\$ 15.69	\$ 466,746.12
15	Jack and Bore - Secret Creek RCB 389+00	50.00	LF	\$ 2,000.00	\$ 100,000.00
16	Tie-Ins (Every Season)	12.00	EACH	\$ 7,734.00	\$ 92,808.00
17	Concrete Pipe Cover	-	CY	\$ -	\$ -
18	Concrete Plug - Dormant Pipe	12.00	EACH	\$ 721.65	\$ 8,659.80
19	Utility Marker	60.00	EACH	\$ 640.37	\$ 38,422.20
20	3" Air Release/Vacuum ARV Assembly	3.00	EACH	\$ 10,824.41	\$ 32,473.23
21	60" ARV Manhole - W/ Frame & Cover	3.00	EACH	\$ 4,898.84	\$ 14,696.52
22	4" Blow-Off Valve BOV Assembly	4.00	EACH	\$ 7,901.13	\$ 31,604.52
23	BOV Valve Extension Assembly	4.00	EACH	\$ 4,302.44	\$ 17,209.76
24	16" Butterfly Valves	2.00	EACH	\$ 18,538.61	\$ 37,077.22
25	Valve Box & Cover	10.00	EACH	\$ 1,631.31	\$ 16,313.10
26	2" Coldmill & 2" Overlay	475,968.00	SF	\$ 2.63	\$ 1,251,795.84
27	Asphalt Striping - Waterborne	59,496.00	LF	\$ 0.63	\$ 37,482.48
28	Traffic Control - (4 Seasons 22 Months)	1.00	LS	\$ 3,440,316.86	\$ 3,440,316.86
29	TC Temporary Precast Barrier Rail	600.00	LF	\$ 1,085.27	\$ 651,162.00
30	Allowance for steel plates	18.00	MO	\$ 1,627.68	\$ 29,298.24
	SUBTOTAL				\$ 32,750,646.10
31					
32	INCIDENTAL WORK				
33	Tap Dormant Pipe - SEE LINE 7	4.00	EACH	\$ 5,665.40	\$ 22,661.60
34	Temporary Blow Off Valves	4.00	EACH	\$ 4,246.95	\$ 16,987.80
35	Drain Dormant Pipe - 4 Locations	183,989.00	GAL	\$ 0.25	\$ 45,997.25
36	Remove & Dispose Asbestos Pipe	300.00	LF	\$ 131.27	\$ 39,381.00
37	Remove & Replace Guardrail	-	LF	\$ -	\$ -
38	Grout Dormant Pipeline	-	CY	\$ -	\$ -
51	SUBTOTAL				\$ 125,027.65
52					
66					
67	TOTAL CONSTRUCTION COST				
68					
69					
70	SUBTOTAL 1				\$ 40,369,290.82
71	Contractor Overhead and Profit (14% of Subtotal 1)				\$ 5,651,700.71
72	SUBTOTAL 2				\$ 46,020,991.53
74	Construction Contingency (See Risk Register 12-6-22)				\$ 10,312,928.60
75	SUBTOTAL 3				\$ 56,333,920.13
77	TOTAL ESTIMATED PROJECT CONSTRUCTION COST				\$ 56,333,920.13

Basis of Estimate

IVGID Effluent Pipeline Replacement - Segment 2 - Specifications

IVGID Effluent Pipeline Replacement - Segment 2 - Revised Drawing Set Dated 11/21/22

IVGID Pipeline 90% OPCC Assumptions - Granite

100% OPCC development - Pipeline material change

- Email correspondence via Raquel Floyd stating, "...to proceed with substitution of PC350 DIP for all the HDPE sections for development of the OPCC."

Reconciliation meeting that took place 12/5/22 amongst all three parties. Estimate to reflect.

Exclusions and Assumptions

We have carried the following below line percentage markups:

General Conditions	LS
Construction Contingency	10.0%
Design Contingency	8.0%
Bond	1.0%
GL Insurance	2.5%
Design Build Fee	0.0%
Permits	1.2%
Fee	14.0%
Escalation	16.1%

General

- The following estimate is priced as a union job/prevaling wage. This estimate is to reflect the revised drawing set dated 11/21/22.
- The estimate is to reflect item revisions discussed at the the reconciliation meeting that took place on 11/21/22. Parties present were client 'Rock Solid Solutions', owner representatives, and the general contractor.
- As instructed by client 'Rock Solid Solutions', we carry similar assumptions as the contractor (Granite) for comparative purposes.
- Though we feel the contractor's daily work production is ambitious, we have been instructed by the client to carry similar working days assumptions with the general contractor (Granite). This estimate has been adjusted for work to be performed 24 hours per day, five days per week, Sunday night through Friday noon, during the months of May 1st through October 15th for a total of 5-1/2 months or approximately 23 weeks. Note that TRPA will have to approve work on Sunday's according to the documents.*
- Considering the above, we highly recommend potholing efforts in an effort to avoid as many unforeseen issues as possible and help in meeting the four season construction schedule.
- All new piping to be installed in a parallel alignment to the existing pipeline in the middle of both wheel tracks of the southbound lane of SR-28.
- Escalation has been carried at the following percentages to meet current market escalation rates: 10% for 2022, 6% for 2023, and 5% for years 2024-2026.

- 8 Some unit rates were based on the assumption that crews have limited access and egress given the location of the proposed sewer line. Therefore, some crew production rates have been adjusted to factor average to slower productivity.
- 9 Per last reconciliation meeting 11/21/22, Granite and IVGID stated 70% of the trench will be under 5 foot, we have carried that assumption in our estimate.

Bid Item Assumptions & Clarifications

- 10 We have assumed surveying will be a split cost between the owner and contractor; Owner to hire surveyor for initial control and benchmark, and contractor to hire for daily staking, our estimate to reflect.
- 12 Per CM's assumptions, we have carried cost to remove 300 LF of asbestos contaminated pipe.
- 13 Per CM's assumptions, we have carried an allowance to drain any trapped effluent waste, and to reintroduce to the effluent pipeline flowing towards Carson Valley.
- 14 Pipe unit cost rates to reflect demolition and disposal of pavement, excavation, hauling/trucking disposal of initial backfill zone only, shoring and trench protection, 4" bedding material at base of pipe, pipe lay and weld, pipe pressure testing, backfill and compaction both screened native soils (intermediate zone), new import soils (initial fill zone), 12" aggregate base below pavement, and 8" bituminous pavement. Sawcutting is captured as a separate line item to reflect CM format (see estimate breakout).
- 15 Per client communication, the 6" lean concrete cover to go over the proposed utility has been deleted by owner. We have assumed additional backfill quantities in lieu of deleted scope.
- 16 Repaving trench areas are to include both initial patching of 8 inch full-depth, as well as asphalt overlay (2 inch grind and overlay).
- 17 Traffic control includes 22 months to complete the project, and assumes single lane flagger controlled closure, 24 hours per day, Sunday night at 8 PM through the following Friday afternoon.
- 18 3 inch air/vacuum assembly has been priced to reflect new construction and not to modify existing, see details within drawing G007 of the 'Effluent Pipeline CMAR Project Segment 2 - 100% Design' drawing set.
- 19 Blowoff valve assembly has been priced to reflect new construction and not to modify existing, see details within drawing G007 of the 'Effluent Pipeline CMAR Project Segment 2 - 100% Design' drawing set.

Exclusions

- 20 As instructed by client 'Rock Solid Solutions', we have carried similar exclusions as stated in 'IVGID Pipeline 90% OPCC Assumptions - Granite' construction document.

DRAFT - Effluent Export Pipeline Project (90% OPCC Assumptions)

		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
1	GENERAL REQUIREMENTS				
2	Mobilization/Demobilization	1	EA	\$ 3,733,550.77	\$ 3,733,551
3	General Conditions	1	LS	\$ 5,221,180.08	\$ 5,221,180
4	Insurance and Bonds	1	LS	\$ 1,431,826.26	\$ 1,431,826
5	SUBTOTAL				\$ 10,386,557
6	PIPE WORK				
7	Mitigation & Environmental Controls	1	LS	\$ 300,000.00	\$ 300,000
8	12" Asphalt Cutting	59,567	LF	\$ 5.00	297,837
9	16" Welded Steel Pipe - WSP	5,011	LF	\$ 962	\$ 4,820,582
10	16" Ductile Iron Pipe - DIP	24,737	LF	\$ 751	\$ 18,577,487
11	Cathodic Protection (14 Test Stations)	29,748	LF	\$ 9.41	\$ 280,000
12	Jack and Bore - Secret Creek RCB 389+00	50	LF	\$ 300.00	\$ 15,000
13	Tie-Ins (Every Season)	12	EA	\$ 5,000.00	\$ 60,000
14	Concrete Pipe Cover	25	CY	\$ 240.00	\$ 6,000
15	Concrete Plug - Dormant Pipe	12	EACH	\$ 1,500.00	\$ 18,000
16	Utility Marker	60	EACH	\$ 75.00	\$ 4,500
17	3" Air Release/Vacuum ARV Assembly & Vault - Unit cost to include entire assembly	3	EACH	\$ 40,000.00	\$ 120,000
18	60" ARV Manhole - W/ Frame & Cover	3	EACH	-	Included in above
19	4" Blow-Off Valve BOV Assembly	4	EACH	\$ 12,300.00	\$ 49,200
20	BOV Valve Extension Assembly	4	EACH	\$ 2,500.00	\$ 10,000
21	16" Butterfly Valves	2	EACH	\$ 10,000.00	\$ 20,000
22	Valve Box & Cover	10	EACH	\$ 950.00	\$ 9,500
23	Asphalt Overlay - 2" Cold mill & 2" Overlay	475,968	SF	\$ 2.00	\$ 951,936
24	Asphalt Striping - Waterborne	59,496	LF	\$ 1.00	\$ 59,496
25	Traffic Control - (4 Seasons 22 Months)	1	LS	\$ 2,323,200.00	\$ 2,323,200
26	TC Temporary Precast Barrier Rail	600	LF	\$ 907.42	\$ 544,451
27	Allowance for steel plates rental	67	MO	\$ 6,000.00	\$ 402,433
28	SUBTOTAL				\$ 28,569,621
29	INCIDENTAL WORK				
30	Tap Dormant Pipe	4	EACH	\$ 5,000.00	\$ 20,000
31	Temporary Blow Off Valves - 4"	4	EACH	\$ 4,500.00	\$ 18,000
32	Drain Dormant Pipe - 4 Locations	183,989	GAL	\$ 2.50	\$ 459,973
33	Remove & Dispose Asbestos Pipe	300	LF	\$ 30.00	\$ 9,000
34	Grout Dormant Pipeline	1,536	CY	\$ 295	\$ 453,120
35	SUBTOTAL				\$ 960,093
36					
37	TOTAL CONSTRUCTION COST				\$ 40,066,271
38					
39	SUBTOTAL 1				\$ 40,066,271
40	Contractor Overhead and Profit				\$ 5,609,278
41	SUBTOTAL 2				\$ 45,675,549
42	Construction Contingency (Risk Register Place Holder)				\$ 11,393,923.21
43	SUBTOTAL 3				\$ 57,069,472
44	TOTAL ESTIMATED PROJECT CONSTRUCTION COST				\$57,069,472

CMAR OPCC - IVGID Effluent Pipeline Remaining Scope

Item	Description	UoM	GMP1 - 2023			CMAR OPCC Remaining Scope			2024 (estimated spend)			2025 (estimated spend)			2026 (estimated spend)			TOTAL PROJECT COST CMAR OPCC
			Qty	Unit Price	2023 Total	Qty	Unit Price	GMP 2 Total	Qty	Unit Price	2024 Total	Qty	Unit Price	2025 Total	Qty	Unit Price	2026 Total	
1	Mobilization and Demobilization	LS	1.0	\$ 163,323.00	\$ 163,323.00				1.0	\$ 148,696.50	\$ 148,696.50	1.0	\$ 108,743.60	\$ 108,743.60	1.0	\$ 135,929.50	\$ 135,929.50	\$ 551,693.00
2	Mitigation & Environmental Controls	LS	1.0	\$ 105,434.00	\$ 105,434.00				1.0	\$ 165,229.20	\$ 165,229.20	1.0	\$ 123,524.80	\$ 123,524.80	1.0	\$ 154,406.00	\$ 154,406.00	\$ 546,594.00
3	12" Asphalt Cutting	LF	11,440.0	\$ 5.24	\$ 59,773.60				19,000.0	\$ 6.44	\$ 122,360.00	13,400.0	\$ 6.44	\$ 86,296.00	18,930.0	\$ 6.44	\$ 121,909.20	\$ 388,518.80
4	16" Ductile Iron Pipe - DIP (Install Only)	LF	5,365.0	\$ 716.25	\$ 3,896,311.25													\$ 3,896,311.25
5	16" Ductile Iron Pipe - DIP (Procure and Install) - \$795 C/E Est.	n/a							9,500.0	\$ 964.93	\$ 9,166,835.00	6,700.0	\$ 964.93	\$ 6,465,031.00	3,424.0	\$ 964.93	\$ 3,309,320.32	\$ 18,935,796.32
6	16" Welded Steel Pipe (Procure and Install)	n/a																
7	Cathodic Protection Test Stations	n/a																
8	Ties	EACH	5.0	\$ 35,870.00	\$ 179,350.00													
9	WH/IN Marker	EACH	12.0	\$ 856.00	\$ 10,272.00													
10	3" Air Release/Vacuum RW Assembly	EACH	2.0	\$ 27,966.00	\$ 55,932.00				2.0	\$ 29,580.00	\$ 59,160.00	3.0	\$ 29,580.00	\$ 88,740.00	1.0	\$ 29,580.00	\$ 29,580.00	\$ 233,412.00
11	60" RW Manhole - W/ Frame & Cover	EACH	2.0	\$ 11,449.00	\$ 22,898.00				2.0	\$ 11,629.00	\$ 23,258.00	3.0	\$ 11,629.00	\$ 34,887.00	1.0	\$ 11,629.00	\$ 11,629.00	\$ 92,072.00
12	8" Blow-Off Valve BOV Assembly	EACH	1.0	\$ 18,920.00	\$ 18,920.00				1.0	\$ 19,920.00	\$ 19,920.00	1.0	\$ 19,920.00	\$ 19,920.00	-	\$ -	\$ -	\$ 58,760.00
13	Valve Box & Cover	EACH	2.0	\$ 2,800.00	\$ 5,600.00				2.0	\$ 3,035.00	\$ 6,070.00	1.0	\$ 3,035.00	\$ 3,035.00	-	\$ -	\$ -	\$ 1,401,110.00
14	2" Corbimil & 2" Overlay	SF	85,840.0	\$ 3.15	\$ 270,296.00				153,200.0	\$ 2.87	\$ 438,484.00	109,720.0	\$ 2.87	\$ 313,016.40	134,784.0	\$ 2.87	\$ 386,830.08	\$ 1,401,110.00
15	Asphalt Stripping - Maintenance	LF	107,800.0	\$ 0.88	\$ 94,464.00				19,000.0	\$ 0.96	\$ 18,240.00	14,400.0	\$ 0.96	\$ 13,824.00	16,848.0	\$ 0.96	\$ 16,174.08	\$ 56,730.48
17	Traffic Control	LS	1.0	\$ 1,461,540.00	\$ 1,461,540.00				1.0	\$ 1,872,513.02	\$ 1,872,513.02	1.0	\$ 1,417,036.88	\$ 1,417,036.88	1.0	\$ 1,771,296.10	\$ 1,771,296.10	\$ 6,522,395.00
18	Remove & Dispose Asbestos	LF	475.0	\$ 610.00	\$ 289,750.00				30.0	\$ 1,164.00	\$ 34,920.00	30.0	\$ 1,164.00	\$ 34,920.00	60.0	\$ 1,164.00	\$ 69,840.00	\$ 429,430.00
19	Gunot Boronant Pipeline	LF	530.0	\$ 66.00	\$ 34,980.00													\$ 34,980.00
20	Rock Excavation	CY	-	\$ -	\$ -													\$ -
21	Trenchless Installation	LF	-	\$ -	\$ -				50.0	\$ 2,204.80	\$ 110,240.00	-	\$ -	\$ -	-	\$ -	\$ -	\$ -
22	General Conditions	LS	1.0	\$ 1,544,571.00	\$ 1,544,571.00				1.0	\$ 1,800,212.18	\$ 1,800,212.18	1.0	\$ 1,422,795.92	\$ 1,422,795.92	1.0	\$ 1,776,494.90	\$ 1,776,494.90	\$ 110,240.00
23	Insurance and Bonds	LS	1.0	\$ 89,633.00	\$ 89,633.00				1.0	\$ 102,568.88	\$ 102,568.88	1.0	\$ 77,619.70	\$ 77,619.70	1.0	\$ 97,024.62	\$ 97,024.62	\$ 366,846.40
Subtotal					\$ 9,315,315.25				14%	\$ 1,305,114.63	\$ 10,620,430.00	14%	\$ 1,496,214.63	\$ 12,116,645.00	14%	\$ 15,838,827.27	\$ 27,955,467.27	\$ 48,441,961.25
Contractor Fee					\$ 1,305,114.63						\$ 1,305,114.63				\$ 1,305,114.63			\$ 6,718,745.32
Subtotal					\$ 9,465,459.29						\$ 11,921,544.63				\$ 13,421,759.63			\$ 55,223,835.83
CMAR Risk Register					\$ 1,466,000.00				1.0	\$ 7,784,516.00	\$ 9,250,516.00	1.0	\$ 2,165,669.80	\$ 11,416,185.80	1.0	\$ 2,707,087.25	\$ 14,123,273.05	\$ 9,200,515.00
NGD mgmt					\$ 175,000.00				1.0	\$ 742,853.12	\$ 917,853.12	1.0	\$ 248,371.20	\$ 1,166,224.32	1.0	\$ 262,279.99	\$ 1,428,504.31	\$ 919,851.19
Designer Contr. Services					\$ 46,668.00				1.0	\$ 100,000.00	\$ 146,668.00	1.0	\$ 30,000.00	\$ 176,668.00	1.0	\$ 40,000.00	\$ 216,668.00	\$ 216,668.00
Inspection & testing					\$ 311,517.00				1.0	\$ 1,413,917.70	\$ 1,725,434.70	1.0	\$ 470,510.14	\$ 2,195,944.84	1.0	\$ 496,858.71	\$ 2,692,803.55	\$ 1,744,444.70
Project Funding Administration					\$ 193,600.00				1.0	\$ 50,000.00	\$ 243,600.00	1.0	\$ 50,000.00	\$ 293,600.00	1.0	\$ 50,000.00	\$ 343,600.00	\$ 343,600.00
Contract contingency					\$ 361,150.00				1.0	\$ 496,036.16	\$ 857,186.16	1.0	\$ 357,553.48	\$ 1,214,739.64	1.0	\$ 554,344.97	\$ 1,769,084.61	\$ 1,769,084.61
NGD purchased material					\$ 1,020,000.00				1.0	\$ 1,500,000.00	\$ 2,520,000.00	1.0	\$ 50,000.00	\$ 2,570,000.00	1.0	\$ 50,000.00	\$ 2,620,000.00	\$ 1,690,000.00
Project Start-up Design/Permitting					\$ 4,591,002.00				1.0	\$ 5,000,000.00	\$ 9,591,002.00	1.0	\$ 3,372,102.62	\$ 12,963,104.62	1.0	\$ 4,160,570.92	\$ 17,123,675.54	\$ 16,864,490.00
Subtotal					\$ 13,956,461.39						\$ 20,396,179.21				\$ 22,216,978.58			\$ 71,586,084.33
Budget Total					\$ 13,956,461.39						\$ 20,396,179.21				\$ 22,216,978.58			\$ 71,586,084.33

GMP2 Total Project Cost Increase Summary

CONSTRUCTION COSTS			
	90% OPCC - Jan 2023	GMP2 - May 2023	Total Variance
	\$ 40,369,290.82	\$ 49,491,961.25	\$ 9,122,670.43
14%	\$ 5,651,700.71	\$ 6,781,874.58	\$ 1,130,173.86
Largest Contributing Factors:			
mobilization	\$	\$ 399,101.98	Actual GMP1 subcontractor price vs OPCC plug price
AC cutting	\$	\$ 265,746.80	Actual GMP1 subcontractor price vs OPCC plug price
DIP supply & Install	\$	\$ 3,930,490.22	Escalation: pipe 7%+, fuel 25%
Steel pipe install	\$	\$ 1,499,040.65	Added yearly escalation and assumed plug price increase
Tie-ins	\$	\$ 441,054.00	Escalations, material costs quote
ARVs	\$	\$ 278,314.25	Increased work scope and quantity and subcontractor quote
traffic control	\$	\$ 2,401,617.90	Schedule modification (multiple workfronts), DBE utilization
general conditions	\$	\$ (468,407.00)	Agreed CMAR staff reduction
cathodic protection	\$	\$ (378,151.12)	Reduced design scope
asbestos pipe removal and NDOT work	\$	\$ 242,352.00	Increased work scope and subcontractor quote

CONTRACT CONTINGENCY & ADMINISTRATION FEES			
	90% OPCC - Jan 2023	GMP2 - May 2023	Variance
	\$ 2,400,000.00	\$ 6,100,000.00	\$ 3,700,000.00

Largest Contributing Factors:

Design Phase costs (not shown in 90%)	\$	\$ 964,849.00	CMAR, design, permitting fees 2020-2023
Contract Contingency	\$	\$ 875,500.00	Estimated contingency not included in 90% OPCC estimate
IVGID inspection	\$	\$ 920,851.19	Increased hours to cover risk items and realization of full risk reserve items
Funding administration	\$	\$ 193,800.00	Funding/grant administration fees, not previously included
Design increase	\$	\$ 218,686.00	Allowance for redesign (unknowns and GMP1 investigations) and construction phase services not previously included

RISK RESERVE			
	90% OPCC - Jan 2023	GMP2 - May 2023	Variance
	\$ 10,312,928.60	\$ 9,200,535.00	\$ (1,112,393.60)
Total risk reserve decrease			

Largest Contributing Factors:

Escalation moved to construction	\$	\$ (3,716,000.00)	escalation/inflation moved into unit rates for construction cost
Staging area	\$	\$ 585,410.72	Increased allowance based on NDOT informing IVGID staging areas may be used for NDOT project in 2024 & 2025
Overall delay/extension of time allowance	\$	\$ 403,199.00	Extra traffic control, existing pipe leakage impacts, NDOT culvert failure
Rock allowance	\$	\$ 2,269,414.80	Increase rock amount based on ground radar scan
Overbreak allowance	\$	\$ (336,250.00)	moved into the construction rates

ATTACHMENT C

CMAR OPCC - IVGID Effluent Pipeline Remaining Scope
 IVGID Effluent Pipeline - OPCC Remaining Scope

			GMP1 - 2023		GMP2 Total		TOTAL PROGRAM COST	
Item	Description	UoM	Qty	Unit Price	2023 Total	CMAR	CMAR	CMAR
	Subtotal				\$ 8,215,315.25	\$ 48,441,861.25	\$ 40,869,290.82	\$ 8,072,670.43
	Contractor Fee		1%	\$ 1,150,144.14	\$ 82,153.15	\$ 5,831,780.44	\$ 5,831,780.71	\$ 1,130,173.86
	IVGID purchased material	LS	1.0	\$ 1,050,000.00	\$ 1,050,000.00	\$ 1,050,000.00	\$ 1,050,000.00	\$ 1,050,000.00
	Subtotal				\$ 10,415,459.39	\$ 56,273,835.83	\$ 46,020,991.53	\$ 10,252,844.29
	CMEC Risk Register	LS	1.0	\$ 1,466,000.00	\$ 1,466,000.00	\$ 9,200,515.00	\$ 9,200,515.00	\$ (1,112,395.60)
	IVGID mgmt	LS	1.0	\$ 515,000.00	\$ 175,000.00	\$ 920,851.19	\$ 920,851.19	\$ 920,851.19
	Designer Constr Services	LS	1.0	\$ 548,886.00	\$ 48,686.00	\$ 218,686.00	\$ 218,686.00	\$ 218,686.00
	Inspection & Testing	LS	1.0	\$ 331,517.00	\$ 331,517.00	\$ 1,744,444.70	\$ 1,744,444.70	\$ 1,744,444.70
	Project Funding Administration	LS	1.0	\$ 193,800.00	\$ 193,800.00	\$ 343,800.00	\$ 343,800.00	\$ 343,800.00
	Contract contingency	LS	1.0	\$ 361,150.00	\$ 361,150.00	\$ 1,769,882.61	\$ 2,400,000.00	\$ (630,917.39)
	Project Start-up Design/Permitting	LS	1.0	\$ 964,849.00	\$ 964,849.00	\$ 15,312,248.50	\$ 15,312,248.50	\$ 2,599,319.50
	Subtotal				\$ 3,541,002.00	\$ 71,586,084.33	\$ 58,733,920.13	\$ 12,852,164.19
	Budget Total				\$ 13,956,461.39			

			GRANITE PREVIOUS	
Item	Description	CMAR	CMAR	CMAR
	Subtotal		\$ 40,869,290.82	\$ 8,072,670.43
	Contractor Fee		\$ 5,831,780.71	\$ 1,130,173.86
	IVGID purchased material		\$ 1,050,000.00	\$ 1,050,000.00
	Subtotal		\$ 46,020,991.53	\$ 10,252,844.29
	CMEC Risk Register		\$ 9,200,515.00	\$ (1,112,395.60)
	IVGID mgmt		\$ 920,851.19	\$ 920,851.19
	Designer Constr Services		\$ 218,686.00	\$ 218,686.00
	Inspection & Testing		\$ 1,744,444.70	\$ 1,744,444.70
	Project Funding Administration		\$ 343,800.00	\$ 343,800.00
	Contract contingency (IVGID Allowance)		\$ 2,400,000.00	\$ (630,917.39)
	Project Start-up Design/Permitting		\$ 15,312,248.50	\$ 2,599,319.50
	Subtotal		\$ 12,712,928.60	\$ 2,599,319.50
	Budget Total		\$ 58,733,920.13	\$ 12,852,164.19

			GRANITE CURRENT	
Item	Description	CMAR	CMAR	CMAR
	Subtotal		\$ 40,869,290.82	\$ 8,072,670.43
	Contractor Fee		\$ 5,831,780.71	\$ 1,130,173.86
	IVGID purchased material		\$ 1,050,000.00	\$ 1,050,000.00
	Subtotal		\$ 46,020,991.53	\$ 10,252,844.29
	CMEC Risk Register		\$ 9,200,515.00	\$ (1,112,395.60)
	IVGID mgmt		\$ 920,851.19	\$ 920,851.19
	Designer Constr Services		\$ 218,686.00	\$ 218,686.00
	Inspection & Testing		\$ 1,744,444.70	\$ 1,744,444.70
	Project Funding Administration		\$ 343,800.00	\$ 343,800.00
	Contract contingency (IVGID Allowance)		\$ 2,400,000.00	\$ (630,917.39)
	Project Start-up Design/Permitting		\$ 15,312,248.50	\$ 2,599,319.50
	Subtotal		\$ 12,712,928.60	\$ 2,599,319.50
	Budget Total		\$ 58,733,920.13	\$ 12,852,164.19

NOTES ABOUT VARIANCE:
 - Direct Costs are +\$8.1MM
 - Associated Fee is +\$1.1MM
 - Risk Register is -\$1.1MM+ Less
 - Owner Controlled Items (e.g. Design, Admin, etc...) is +\$3.7MM
See Variance Sheet to explain \$8MM Delta of Direct Cost/Risk Register Costs



12/16/2022

90% OPCC (post cost reconciliation meeting)

DRAFT IVGID Effluent Export Pipeline CMAR CONSTRUCTION 90% - Risk Register

No.	Functional Assignment	Status	Description Of Risk	Mitigation Strategy	Type of Risk	Probability	Quantitative Analysis			Comments	
							Cost (\$)	Estimated Risk Amount	Schedule Impacts (Working Days) Estimator		
1	Design	Open	Frequency and method of pressure testing - Welded Steel / DIP (Would precast square vaults be beneficial for pressure testing operations?)	Develop Testing Procedure and Plan, details of testing connections. - Consult outside testing firms (MilBar) for recommended testing procedures and pressures. - Consult pipe manufacturers for recommended testing procedures - Conduct task force meeting, establish procedure, phase in DIRECT COSTS	Cost & Schedule	25%	1,064,000.00 \$	266,000.00	23	5.75	Scope gap potential due to specification development and owner requirements (i.e. pressure testing against valves, segment lengths, and exposed joints). Pipe manufacturers have expressed concerns over the testing pressures exceeding their rated pipe pressures. Testing = \$20k x 23 days. Traffic Control = \$7,800/day x 23 days GCs = \$18k x 23 days
2	Design	Open	Impact to production based on frequency and method of weld testing - Steel pipe (X-ray)	Develop Testing Procedure and Plan Frequency of Xray inspection to be determined and impact	Cost & Schedule	50%	851,400.00 \$	425,700.00	33	16.5	Assumed to be Owner provided third party QA inspection. Approximately 167 joints to inspect @ 2 hours per each = 334 hours Traffic Control = \$7,800/day x 33 days GCs = \$18k x 33 days
3	Design	Open	New pipeline alignment conflicts with existing improvements	GPR, Potheole, Design out, survey existing conditions, purchase additional fittings	Cost & Schedule	25%	1,816,860.00 \$	454,215.00	20	5	Conflict with existing pipeline alignment creating additional crossings or tie-in connection points Encounter unknown culvert crossings or other utilities (Guardrail, Concrete Curb & Gutter, AC Curb Removal and Replacement) 5% of overall length = 1,485 LF x \$876/LF Traffic Control = \$7,800/day x 20 days GCs = \$18k x 20 days
4	Design	Open	90% Design Plans do not specify number of Fittings & Degree of Angle per fitting.	Fittings adequately detailed on plan sheets, Have Additional Fittings On Hand Have Pipe Manufacturer (US Pipe) engineer lay sheets (mark sheets) to clarify materials	Cost	8%	342,000.00 \$	27,360.00	0	0	72 each x \$4,750 per each (fitting & multi-bead closure)
5	Design	Open	Eliminate new pipeline joints at NDOT culvert crossings	Purchase additional pipe to make adjustments to joint locations (i.e. Multi-bead sections of pipe) Have Pipe Manufacturer (US Pipe) engineer lay sheets (mark sheets) to clarify materials Decrease as GMP's are released and actual pipe purchases are made	Cost	100%	246,240.00 \$	246,240.00	5	5	Could occur at each crossing - Total of 38 crossings 38 sticks x 2 each x 18 LF = 1,368 LF x \$180 2 hours per joint adjustment
6	Environmental	Open	Existing pipe discharge due to break or pipe failure (flooded trench, enviro release, etc)	Emergency Response Plan, Repair parts on hand (in-stock) at local supply, etc. GC to make repairs and coordinate with IVGID operations throughout construction	Cost & Schedule	25%	1,016,000.00 \$	254,000.00	20	5	Assume crew cost = \$25,000/day Traffic Control = \$7,800/day x 1 week x 4 seasons GCs = \$18k x 1 week x 4 seasons
7	Excavation	Open	Encounter hard rock that needs to be excavated	Improved quantification of known hard rock locations (to identify LF of trench) via GPR (nel, followed up with pre-work package to include potholing (conventional or track drilling). - Estimate includes Hammer Hoe attachment for nuisance rock - Rock-splitting to remove rock. - Correlate HDR PDR (June 2012) Rock excavation limits to current plan set	Cost & Schedule	50%	2,874,700.00 \$	1,437,350.00	89	44.5	East Shore Trail = \$1.2 Million 30% of alignment = 8,900 LF 100 LF per day = 89 days x \$6,500/day Traffic Control = \$7,800/day x 89 days GCs = \$18k x 89 days

8	Excavation	Open	GC	Undermining or Overexcavation due to overbreak of Trench due to encountering unsuitable materials creates increased materials quantities required for trench backfill, and patching.	As needed	Cost	10%	\$ 3,362,500.00	\$ 336,250.00	5	0.5	Use established unit prices to establish Risk \$\$ 25% of excavated volume = 6,725 CY x \$500/CY (excavation, hauling & disposal, backfill with screened native).
9	Excavation	Open	GC	If ground water (in excess of nuisance) is encountered in low lying areas, we will need to de-watering, treat and dispose of property	Proper Permits & Dewatering Equip, coordinate with local agencies	Cost & Schedule	25%	\$ 50,000.00	\$ 12,500.00	4	1	Account for 500LF of overall pipeline length (near Bliss, Secret Creek, and Stunk Harbor) 500 LF = 1 months rent (de-watering system) x \$50,000 per month
10	Excavation	Open		Procuring de-watering tanker trucks during construction season for removal of residual water in Dormant pipeline sections	Advanced scheduling	Cost & Schedule	25%	\$ 512,000.00	\$ 128,000.00	20	5	Waters, Hero, EPS, Clean Harbors Traffic Control = \$7,800/day x 5 days x 4 seasons GCs = \$18k x 5 days x 4 seasons
11	Excavation	Open	IVGID	Trench alignment crosses centerline (into live lane)	Design out	Cost & Schedule			\$	0	0	Believe this has been accounted for in current 90% parallel alignment
12	Materials	Open	GC	Delay start of construction due to availability of materials, weather delay, funding, permitting.	Identify & Order Early/Separate GMP	Cost & Schedule	25%	\$ 125,000.00	\$ 31,250.00	22	5.5	Delay start of a single season by 1 month causing an additional 5th season. Mob, Rent, Permits = \$125k
13	Materials	Open	GC	Escalations (Labor, materials, fuel (currently, to be broken out separately into individual items).	Order Early/Separate GMPs/Identify Stockpile storage location options At for Construction Design, GC includes Labor and Equipment (less fuel) escalations. Materials escalations to remain at Risk	Cost	75%	\$ 4,660,000.00	\$ 3,495,000.00	0	0	5% year over year
14	Materials	Open	GC	Fuel Escalations	Owner Allowance Item Develop indexing metric	Cost	100%		\$	0	0	TBD. Currently accounted for in above Escalations item.
15	Materials	Open	GC	5% additional Waste on Ductile Iron Pipe Purchase	Fittings adequately detailed on plan sheets, Have Additional Fittings On Hand Deliver 100% Design Plans to Pipe Manufacturers - develop expected waste factor	Cost	0%	\$ 240,741.00	\$	0	0	24,707 LF x .05 = 1,235 LF @ \$180 / LF = \$222,363 x 1.09265 = \$240,741 Moved \$120k to Item #5
16	Materials	Open	GC	7% Pipe Escalations (Beginning in 2023)	Order Early/Separate GMP/Identify Stockpile storage location options Remove this amount from above 5% escalations	Cost	100%	\$ 221,086.00	\$ 221,086.00	0	0	24,707 LF - 8,500 = 16,207 @ \$12.60 / LF = \$204,208 x 1.08365 = \$221,086
17	Materials	Open	GC	Encounter unsuitable material during screening native material for Intermediate Backfill. Cost to offhaul and import new material		Cost	25%	\$ 332,150.00	\$ 83,037.50	0	0	Intermediate Backfill = 5,643 CY x \$50/CY Buy/Haul added allowance for offhaul / disposal of unsuitable material = \$50k
18	NDOT	Closed		Parking 30' from E.O.P. or required use of K-rail	Identify potential pullouts / cost Temp Rail	Cost	0%	\$	\$	0	0	Included in 90% OPCC
19	NDOT	Open		Conflict with Adjacent Q&D/NDOT project	Coordinate with Q&D / NDOT	Cost & Schedule	0%		\$	0	0	Included in 90% OPCC
20	NDOT	Open		Upon excavating for new pipeline to cross under existing CMP culvert, we determine the condition of existing culverts not satisfactory (i.e. Corrosion). What method of repair would NDOT require?	Coordinate with NDOT. Potential slip-lining, NDOT or IVGID issue? NDOT evaluation report upcoming (clarifying conditions of existing culverts). Verifying the NDOT provided condition assessment report is accurate. Develop strategy for repair & compensation	Cost & Schedule	20%	\$ 665,000.00	\$ 133,000.00	1	0.2	38 crossings x 50 LF/Each = 1,900 LF
21	NDOT	Open	GC	Can we use existing culvert to host NEW fiber optic utilities?	VEP Opportunity?				\$		0	
21	NDOT	Open		Full closure of Hwy 28 during shoulder season	VEP Opportunity?	Cost & Schedule	0%	\$ (3,000,000.00)	\$		0	Plugged assumed opportunity cost. (Double productions, reduced TC, reduced per week patching required, Open-Grade efficiencies)

22	NDOT	Open		NDOT right-of-way staging areas available for project use at time of construction?	Use IVGID property or other location outside of basin (i.e. bottom of US 50)	Cost	25% \$ 7,317,634.00	\$ 1,829,408.50		0	Potential to double trucking cost. One season of not having access to yards. ***Analysis in progress***	
23	NDOT	Open		NDOT needing to perform maintenance on some existing culverts (Bliss Creek)	NDOT to perform culvert cleaning??	Schedule		\$		0	Unknown risk. More details needed	
24	Public	Open		Emergency response - Wildfire / Traffic accident	Emergency Response Plan	Cost & Schedule	25% \$ 1,584,000.00	\$ 396,000.00	88	22	GCS = \$18,000/day x 1 month x 4 seasons	
25	Public	Open		Added requirement to modify traffic control plan/system	Add Pilot Car	Cost	10% \$ 1,234,066.00	\$ 123,406.60		0	Pilot Car: 4 Seasons	
26	Quality	Open		IVGID Failed pressure test and leak detected in new pipeline	Develop Testing Procedure and Plan	Cost & Schedule	25% \$ 520,500.00	\$ 130,125.00	10	2.5	1% of overall pipe length = 300 LF x \$975/LF Traffic Control = \$7,800/day x 10 dchs GC = \$18k x 10 days	
27	Stakeholders	Open		GC Unforeseen Special Events (Races & Marathons)	Consult Stakeholders Early & Often	Cost & Schedule	25% \$ 516,000.00	\$ 129,000.00	20	5	4 Seasons X 5 Days = 20 Days Traffic Control = \$7,800/day x 20 dchs GC = \$18k x 20 days	
28	Weather	Open		GC Weather (Thunderstorms / Fresh Rain Events / Average Rainfall)	Account for additional days in CPM Schedule	Cost & Schedule	25% \$ 516,000.00	\$ 129,000.00	20	5	5 Days/Season accounted for in CPM. Additional 5 Days/Season Traffic Control = \$7,800/day x 5 days x 4 seasons GCS = \$18k x 5 days x 4 seasons	
29	Stakeholders			Unforeseen TRPA required remediation measures at staging yards		Cost	25% \$ 100,000.00	\$ 25,000.00	0	0		
30	Design			Clarification of Cathodic protection system (locations, offsets, and depths of anodes)	Design detail clarification	Cost	0% \$ [350,000.00]	\$				
31	Weather	Open		Construction Water Purchase		Cost	0% \$	\$	0	0		
Totals									\$ 10,312,928.60	128.45	0	

ATTACHMENT E



DRAFT Risk Register Breakdown of Estimated Costs										
Item	Description Of Risk	Mitigation Strategy	Type of Risk	Probability	Quantitative Analysis				Comments	
					Cost (\$)	Estimated Risk Amount	Time Impact	Schedule Impacts (Working Days)	Original Comments	Additional Comments (Remaining Scope)
2	Impact to production based on frequency and method of weld testing - Steel pipe (X-ray)	Develop Testing Procedure and Plan Frequency of Xray inspection to be determined and Impact	Cost & Schedule	50%	851,400.00 \$	425,700.00 \$	33	16.5	Assumed to be Owner provided third party QA inspection. Approximately 167 joints to inspect @ 2 hours per each = 334 hours Traffic Control = \$7,800/day x 33 days GCS = \$18k x 33 days	
3	New pipeline alignment conflicts with existing improvements (needs to include existing pipeline crossing alignment of new pipeline for future GMPs)	GPR, Pothole, Design out, survey existing conditions, purchase additional fittings	Cost & Schedule	25%	1,816,860.00 \$	454,215.00 \$	20	5	Conflict with existing pipeline alignment creating additional crossings or tie-in connection points Encounter unknown culvert crossings or other utilities (Guardrail, Concrete Curb & Gutter, AC Curb Removal and Replacement) 5% of overall length = 1,485 LF x \$876/LF Traffic Control = \$7,800/day x 20 days GCS = \$18k x 20 days	
6	Existing pipe discharge due to break or pipe failure (flooded trench, enviro release, etc) - outside of GC negligence	Emergency Response Plan, Repair parts on hand (in-stock) at local supply, etc. GC to make repairs and coordinate with IVGID operations throughout construction	Cost & Schedule	33%	1,016,000.00 \$	335,280.00 \$	20	6.6	Assume crew cost = \$25,000/day Traffic Control = \$7,800/day x 1 week x 4 seasons GCS = \$18k x 1 week x 4 seasons	GMP 1 x 3 seasons

<p>Encounter hard rock that needs to be excavated in excess of what is included in budget which triggers T&M tracking and payment over 8-hours of hydraulic hammering at a given location. Anticipated hard rock that may trigger this could include bedrock and/or large non-excavatable boulders.</p> <p>One trigger would be in excess of 8 hours of hammering per week that affects the pipe crew's production.</p> <p>Another would be if production begins to be affected when the lay crew catches up to the hammer hoe and is unable to install additional pipe.</p> <p>Pipe crew is considered labor, equipment, hauling, and subcontractors necessary to complete typical pipe installation.</p>	<ul style="list-style-type: none"> - Improved quantification of known hard rock locations (to identify LF of trench) via GPR intel, followed up with pre-work package to include potholing (conventional or track-drilling). - Estimate includes Hammer Hoe attachment for nuisance rock - Rock-splitting to remove rock. - Correlate HDR PDR (June 2012) Rock excavation limits to current plan set 	<p>Cost & Schedule</p>	<p>33%</p>	<p>\$ 8,826,560.00</p>	<p>\$ 2,912,764.80</p>	<p>89</p>	<p>29.37</p>	<p>East Shore Trail = \$1.2 Million 30% of alignment = 8,900 LF 100 LF per day = 89 days x \$6,500/day Traffic Control = \$7,800/day x 89 days GCs = \$18k x 89 days</p>
<p>7</p>								
<p>9</p>	<p>This is risk associated with ground water in excess of what GC can pump with a 2" sump pump and discharge onsite (Granite is considering this nuisance water). This will be triggered if Granite needs to upsize the pump, treat the water that is in the work zone, and/or offhaul water in water trucks.</p>	<p>Proper Permits & Dewatering Equip, coordinate with local agencies</p>	<p>25%</p>	<p>\$ 50,000.00</p>	<p>\$ 12,500.00</p>	<p>4</p>	<p>1</p>	<p>Account for 500LF of overall pipeline length (near Bliss, Secret Creek, and Skunk Harbor) 500 LF = 1 months rent (de-watering system) x \$50,000 per month</p>
<p>12</p>	<p>Delay start of construction due to availability of materials, weather delay, funding, permitting.</p>	<p>Identify & Order Early/Separate GMP</p>	<p>33%</p>	<p>\$ 125,000.00</p>	<p>\$ 41,250.00</p>	<p>22</p>	<p>7.26</p>	<p>Delay start of a single season by 1 month causing an additional 5th season. Mob, Rent, Permits = \$125k</p>
<p>13</p>	<p>Escalators (Labor, equipment, materials, fuel) (currently, to be broken out separately into individual items).</p>	<p>Order Early/Separate GMPs/Identify Stockpile storage location options At for Construction Design, GC includes Labor and Equipment (less fuel) escalators. Materials escalators to remain as Risk</p>	<p>50%</p>	<p>\$ 1,000,000.00</p>	<p>\$ 500,000.00</p>	<p>0</p>	<p>0</p>	<p>5% year over year Direct Cost less GCCO Labor & Equipment = \$20,310,000 At 5% = \$1,000,000</p>
<p>17</p>	<p>Encounter unsuitable material during screening native material for Intermediate Backfill. Cost to offhaul and import new material</p>	<p>Cost</p>	<p>0%</p>	<p>\$ 332,150.00</p>	<p>\$ -</p>	<p>0</p>	<p>0</p>	<p>Intermediate Backfill = 5,643 CY x \$50/CY Buy/Haul added allowance for offhaul / disposal of unsuitable material = \$50k</p>

22	IF NDOT right-of-way staging areas at Spooner Summit are not available for project use at time of construction.	Use WQID property or other location outside of basin (i.e. bottom of US 50)	Cost	33%	\$ 7,317,634.00	\$ 2,414,819.22	0	Risk Associated with losing our yard access. Lowering risk probability for GMP 1 due to preliminary occupancy permit discussed with NDOT for this season. Schedule impacts are significant. Without a yard, there can be no night shift. This would double our pipe install durations, schedule impacts from potholing, sawcutting, rail shifting, stringing pipe, etc. 70 added days of pipe, rail shifting, patch back. 70 x TC \$9,125 = \$638,750 70 x GC \$16,000 = \$1,120,000	Per recent discussions with NDOT permits regarding upcoming NDOT projects on US 50 and SR 28, the current yard use at SR 28 and US 50 "Spooners" summit is not guaranteed for IVGID's projects.	
24	Emergency response - Wildfire / Traffic accident	Emergency Response Plan	Cost & Schedule	25%	\$ 1,584,000.00	\$ 396,000.00	88	GCs = \$18,000/day x 1 month x 4 seasons	GMP 1 x 3 seasons	
25	Added requirement to modify traffic control plan/system	Add Pilot Car	Cost	10%	\$ 1,234,066.00	\$ 123,406.60	0	Pilot Car: 4 Seasons	GMP 1 x 3 seasons	
27	Unforeseen Special Events (Races & Marathons)	Consult Stakeholders Early & Often	Cost & Schedule	10%	\$ 516,000.00	\$ 51,600.00	20	4 Seasons X 5 Days = 20 Days Traffic Control = \$7,800/day x 20 days GCs = \$18k x 20 days		
29	Unforeseen TRPA required remediation measures at staging yards and/or areas in project limits.		Cost	67%	\$ 100,000.00	\$ 67,000.00	0			
35	Traffic Control Days - Additional Days for Schedule Delays		Cost	33%	\$ 818,786.25	\$ 270,195.46	380	Separate line item that will be used to track additional TC days due to unforeseen field conditions and other risks. TC per day = \$9,125 Potential risk of days = 10 days	GMP 1 x 3 seasons	
Totals							\$ 7,734,535.62	89.73		