

MEMORANDUM

TO: Board of Trustees

THROUGH: Indra Winqest
District General Manager

FROM: Brad Underwood, PE
Director of Public Works

SUBJECT: Receive a project update on the Effluent Pipeline Project, and review, discuss and possibly authorize approval of the project construction phasing plan for the Effluent Pipeline Project, Project: 2524SS1010 – Fund: Utilities; Division: Sewer.

STRATEGIC

PLAN REFERENCE: Long Range Principle #5 – Assets and Infrastructure

DATE: January 11, 2023

I. RECOMMENDATIONS

1. Receive a project update that discusses the following topics: Construction Phasing; Closure of State Route 28; 90% Opinion of Probable Construction Cost; Project Funding Plan; and GMP Contract Award Planning Schedule.
2. That the Board of Trustees make a motion to approve the Staff and Granite Constructions recommended phasing plan.

II. STRATEGIC PLAN REFERENCE(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.

- Maintain, renew, expand, and enhance District infrastructure to meet the capacity needs and desires of the community for future generations.
- Maintain, procure, and construct District assets to ensure safe and accessible operations for the public and the District's workforce.

III. BACKGROUND

On December 14, 2022 Staff provided an Effluent Pipeline Project update to the Board discussing the CMAR Process; 90% Opinion of Probable Construction Cost; Independent Cost Estimator Presentation; Granite Construction Presentation; Potential State Route 28 Road Closure; and Project Phasing. The Board also authorized the purchase of 8,500 linear feet (LF) of pipeline and appurtenances. Information regarding the potential road closure and project phasing was provided as a precursor for further discussion and decision by the Board at the January 11, 2023 meeting.

PROJECT CONSTRUCTION PHASING

On June 10, 2020, Public Works Staff presented to the Board an opportunity to explore a partnership with the Nevada Department of Transportation (NDOT) to allow for the possible replacement of up to 1,000 LF of Export Pipeline on State Route 28 in 2021. NDOT was preparing for a project on State Route 28 that would install drainage facilities and the existing Effluent Pipeline is in conflict with these improvements and requires relocation. After discussion, the Board declined pursuing this partnership with NDOT.

NDOT sent a letter July 9, 2020 to IVGID Public Works to inform of the requirement to remove the facilities that were in conflict by November 2, 2020. IVGID did not perform relocation work and the Contractor for NDOT had mobilized to construct the drainage facilities in early summer of 2022. It was at this time that current Public Works Staff became aware of the conflict with the Effluent Pipeline and met with NDOT Staff with concerns that the work may affect pipeline integrity. Staff met with NDOT to understand the design parameters and see if opportunity existed to revise the NDOT design. NDOT could not revise their design to accommodate leaving the IVGID Effluent Line in place, so relocation is necessary.

In collaborating with NDOT it was determined that IVGID would need to relocate the Effluent Pipeline by July 2023 in order to not further delay the NDOT work. Since their contractor started work on this aspect of the NDOT work in summer of 2022, IVGID could be subject to delay claims from the NDOT contractor. If the work is not complete in time for NDOT's contractor to perform the work prior to the end of their contract term, IVGID could be subject to significant delay costs.

With the NDOT work dictating a portion of the work that must be done in the 2023 construction season, staff took the opportunity to re-evaluate phasing of the

project since this work is in Segment 2. In doing so staff considered the following: Pipeline Segment 3 has been the priority, majority of the pipeline leaks have occurred at the pipeline joints, Segment 3 is within the lower pressure zone, Public Works Pipeline Maintenance team has become proficient in making repairs within Section 3, within the past 18 months, one leak has occurred within Segment 2 (high-pressure zone), the entire Segment 2 and Segment 3 will be replaced over the next three to four construction seasons. In addition Public Works Engineering and Maintenance staff have the following concerns regarding potential risks: Segment 2 is within the higher pressure zone, Segment 2 is within a close proximity to Lake Tahoe, high pressure failure could be a pin hole leak or a more significant leak, Public Works Pipeline Maintenance team does not have the ability to make a repair, should effluent reach the lake monetary fines and follow up regulatory requirements are likely, a significant leak on Segment 2 is anticipated to exceed the amount of time/storage at the plant to make the repair.

While the Board approved 8,500 LF of pipe and appurtenances to be purchased on December 14, 2022, Staff has only ordered approximately 4,500 LF so far to await the outcome of the Board's decision. Staff has communicated with the pipeline material supplier and manufacturer and can modify the order as long as it is immediately following this meeting. Doing so will prevent delivery delay for the work which is to take place in the upcoming construction season. Staff will place an order for a total of approximately 5,500 LF of pipe and appurtenances.

Since Staff last presented this information to the Board at the December 14, 2022 meeting, an additional project coordination occurred with Granite, NDOT and the NDOT contractor. Staff and Granite have further evaluated information regarding coordination of the two projects and have determined that proceeding with effluent pipeline work as the NDOT work is occurring presents coordination challenges and difficulties that are too risky for effluent pipeline work to proceed at the same time. The NDOT contractor's work is anticipated to take 8 weeks and commencing at the beginning of July. Therefore, Granite will not be performing effluent pipeline work during the months of July and August 2023. The original intent was to work within the same segment area to avoid moving the work area to various locations, which also would minimize the needed pipeline tie-ins. However, the break in work creates a situation where the project is basically restarted in September 2023 and allowed for further construction phasing conversations between Staff and Granite. While Staff remains concerned about the potential for a significant leak in Segment 2, as explained above, there will be an opportunity to perform further investigation via video when the new pipeline is connected to the existing pipeline while completing the work in the NDOT project

area. Staff and Granite recommend that 3,500 LF of work be completed in the NDOT project area (Segment 2) during May and June 2023 and an additional 2,000 LF of work be completed in Segment 3, following the completion of the NDOT project area, as shown on the attached diagram. While the 3,500 LF exceeds the length required to clear the NDOT work it is important to get as much pipeline installed as possible in this first construction season. For the 2024 season, work will resume in Segment 3 to complete nearly all of the Segment 3 work during the second year of construction. Should the pipeline video investigation present additional concerns to staff regarding the pipeline condition in Segment 2, Staff will return to the Board to discuss the potential for modifying the project construction phasing.

POTENTIAL STATE ROUTE 28 ROAD CLOSURE

During the facilitated partnering workshops between IVGID and Granite, key stakeholders were invited to participate. Key stakeholders included NDOT, TRPA, USACE, NDEP, and Nevada Department of Water Resources – Dam Safety. Through open communication and collaboration across various workshops, conversations have developed regarding permit conditions, the potential for road closures, and proven successes regarding construction on SR 28. The CMAR Team is in process of developing a cost and time-saving innovation, which mutually benefits IVGID and NDOT through condensing the construction timeline, by closing SR28 during the shoulder seasons (prior to Memorial Day and after Labor Day). NDOT has a planned highway resurfacing project in the near future and has interest in IVGID potentially completing the pipeline project earlier.

In order to validate if this innovation is achievable, Public Works Staff has requested the NDOT to allow the contractor to close SR28 in the shoulder seasons to accommodate construction of the Effluent Pipeline Project. The request is to close the roadway beginning Sunday night through Friday noon each week. This approach would allow the roadway to be open during weekend when there are more visitors to the area, which generates additional vehicle traffic. NDOT has advised Staff that roadway closure for 2023 is not possible due to the significant traffic impacts from construction work for their project on SR28 and SR431 and the need to route trucks on SR28. Staff may bring this item to the Board for further consideration regarding the other planned construction seasons which would begin in 2024 if the request is approved by NDOT.

Closure of the roadway will provide greater worker and public safety, as there would be no conflicts during construction activities. It is also likely that IVGID

would benefit through a reduction in the overall construction timeline and potential cost savings. This would also a tool for schedule recovery from any delays such as weather. Granite Construction is currently reviewing the potential benefits to road closure for the project.

A question arose as to reopening the roadway for emergency evacuations and as part of the CMAR delivery, regardless of whether State Route 28 is closed, Granite Construction will be preparing an Emergency Action Plan (EAP) which will be submitted to the necessary emergency agencies for their review and comment. The EAP will address emergency evacuation measures should the need arise. Since only one lane will be disrupted from construction activities, Granite could immediately allow for traffic in the other traffic lane in cooperation with emergency services. Granite would then work to backfill any existing open trench and remove other obstacles from the roadway to allow use of both roadway lanes. It is estimated that Granite would accomplish full roadway opening within four to six hours.

90% OPINION OF PROBABLE CONSTRUCTION COST (OPCC)

The 90% OPCC as estimated by Granite is \$56,333,920, and as estimated by Rock Solid Solutions is \$55,988,477. Using the higher of the two OPCC's results in a reduction of \$7,715,433 from the 60% OPCC provided by Granite (\$64,049,353). The major factors contributing to this reduction are:

- Change from multiple size classes of HDPE to DIP
 - Increased installation efficiencies and productions
- Shallowing the Pipe Excavation Depth thus reducing:
 - Quantity of excavation
 - Onsite material processing quantities
- Elimination of imported Intermediate Granular Backfill by processing native excavation materials onsite for backfill

The two submitted OPCC's are within 1.0% of each other, demonstrating that pricing is in alignment with current construction costs. With HDR delivering the 100% (bid set) drawings, Granite and Rock Solid Solutions will commence refining the risk register and developing the 100% OPCC.

With other costs such as design, administration, inspection, etc. estimated at \$2,400,000 the total project cost is now estimated to be \$58,733,920.

The risk register has items remaining such as securing staging areas within NDOT right of way that would eliminate associated costs from the OPCC risk line item. Additional investigation along the roadway using ground penetrating radar can assist to gain more confidence in the risk associated with rock excavation.

PROJECT FUNDING PLAN

Staff continues to advance work on Effluent Pipeline Replacement project financing plan.

- The District was advised that our CWSRF loan has been pre-approved by the State Treasurer's Office. The recent monthly status meeting with NDEP discussion centered on preparation of formal loan documents and financing timeline(s).
- The recently passed Federal Omnibus Spending Bill includes a \$1.6 million grant through the EPA Clean Water SRF Program for the Effluent Pipeline project. These funds are being channeled through the state's CWSRF program.
- The Federal Congress has raised the authorization ceiling for the USACE Section 595 program to \$800 million. The previous ceiling was \$435 million. When this money becomes available to the USACE we anticipate receiving some funding for the pipeline project.
- Public Works Staff continues to work with the USACE to receive Section 595 Grant Funds. Funding must be secured by the USACE prior to moving forward with the Model Agreement.

Staff is prioritizing grant opportunities and remaining flexible in developing the final funding approach. Decisions will be made with the goal of minimizing impact to ratepayers. Construction timing for the NDOT work area will dictate a portion of the funding approach.

GMP CONTRACT AWARD PLANNING SCHEDULE

With the need to begin construction early in the construction season in order to complete work associated with the NDOT conflict by July 2023, Staff is pursuing the following schedule:

- March 8, 2023 – GMP 1a – This contract will be for the work within the approximately 2,500 LF NDOT conflict area and an additional 1,000 LF. Awarding a contract on this date will allow construction to begin May 1, 2023 or potentially earlier. By limiting the amount of work in this GMP 1a

the remainder of the work continues to be eligible for Army Corp Section 595 funding.

- April 26, 2023 – GMP 1b – This contract will be for the remainder of the work scheduled for the 2023 construction season (2,000 LF). Awarding this contract at a later date allows for the necessary Environmental Documentation to be completed for USACE approval which means this work can be covered by USACE Section 595 funding.
- Fall 2023 – GMP 2 – Awarding this contract in the fall will allow pipe to be purchased in advance of the 2024 construction season. Staff is considering the potential for completing the remainder of the work for the Effluent Pipeline Project under this GMP.

IV. BID RESULTS

There are no bid results to report for this item.

V. FINANCIAL IMPACT AND BUDGET

There is no financial impact regarding the decision of the project construction phasing.

The 90% Design and corresponding 90% OPCC has resulted in a reduction of \$7,715,433 in the overall project cost from the 60% OPCC. There still remain opportunities to reduce the estimated cost by better defining or resolving some of the identified risk items.

While the project funding remains in flux, Staff has developed multiple paths to ensure that there will be project funding for the entire project.

VI. ALTERNATIVES

The Board approve an alternative project construction phasing plan returning to construction on Segment 2 beginning in the 2024 season and following the completion of this segment proceed to Segment 3.

VII. BUSINESS IMPACT

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

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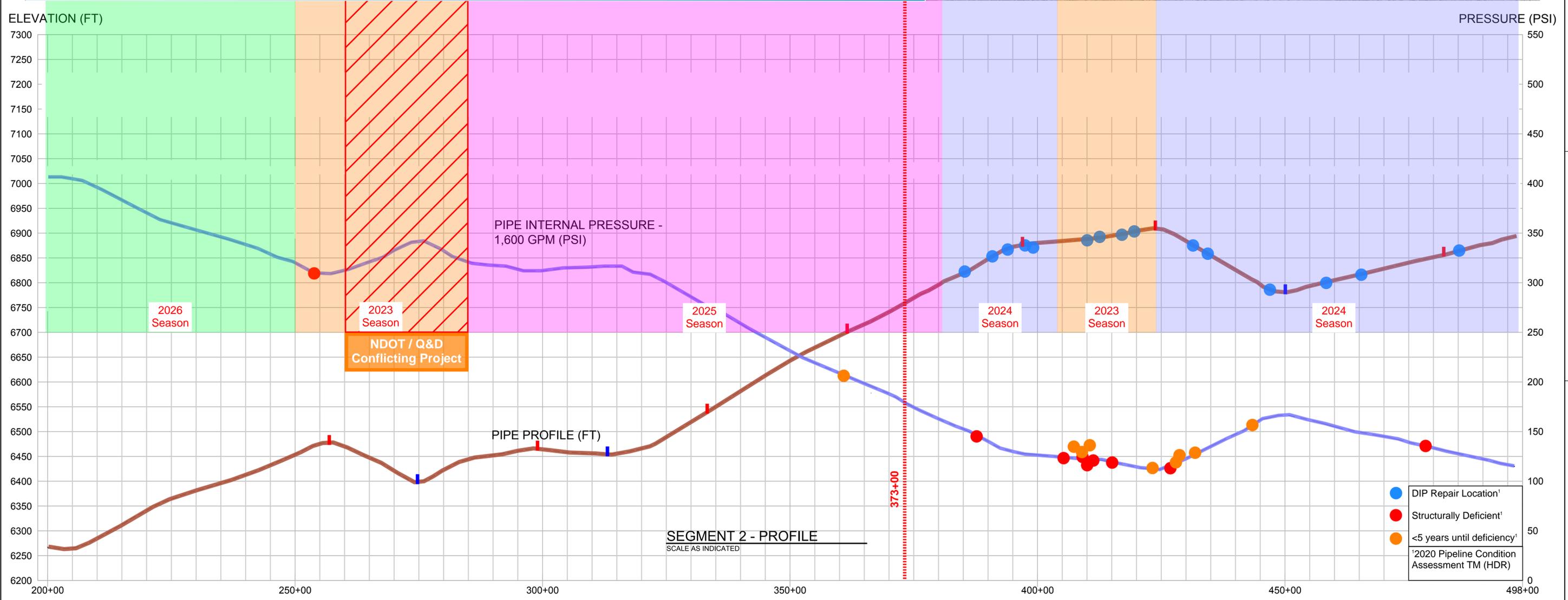
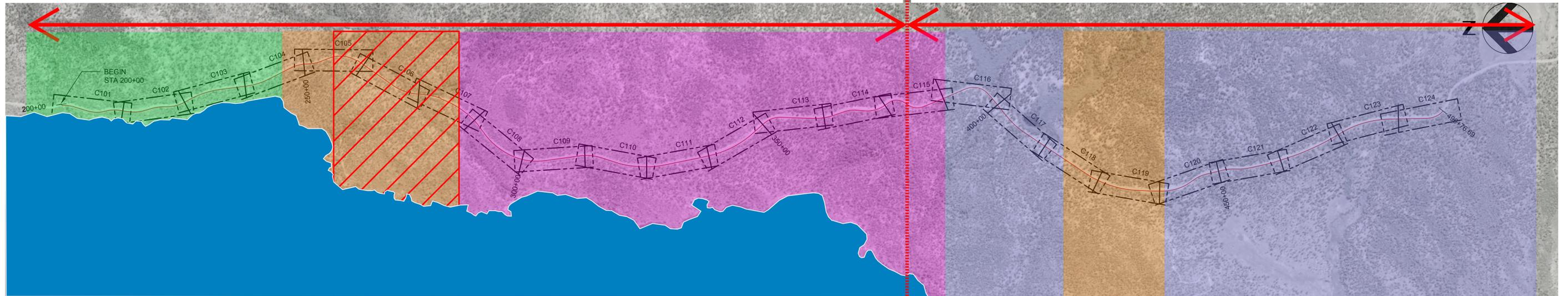
January 11, 2023

VIII. ATTACHMENTS

1. Proposed Project Phasing Diagram
2. Granite 90% OPCC
3. Rock Solid Solutions 90% OPCC
4. Project Risk Register

**Segment 2
(High-Pressure Zone)**

**Segment 3
(Low-Pressure Zone)**



ATTACHMENT 1

DRAFT - Project Phasing Diagram

All phasing is approximate and subject to change.



ISSUE	DATE	DESCRIPTION
C	12/2022	ISSUED FOR BID

PROJECT MANAGER KEVIN CALDERWOOD	
DESIGNED	T. HOFFMAN
CHECKED	
DRAWN	P. VAN MEURS
DATE	DECEMBER 2022
PROJECT NUMBER	10309331



**EFFLUENT PIPELINE CMAR PROJECT
SEGMENT 2**

**CIVIL
OVERALL PROJECT PLAN AND PROFILE**

0 1" 2"

FILENAME | seg2_C001.dwg
SCALE | AS NOTED

SHEET
C001



Draft - Effluent Export Pipeline Project
100% Construction Design
January 4, 2023



CONSTRUCTION COST
& RISK CONSULTANTS

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 (Plug number per 12/06/22 RR)	\$10,312,928.60
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

- 1 The following estimate is priced as a union job/prevaling wage. This estimate is to reflect the revised drawing set dated 11/21/22.
- 2 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.
- 3 As instructed by client 'Rock Solid Solutions', we carry similar assumptions as the contractor (Granite) for comparative purposes.
- 4 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.*
- 5 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.
- 6 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.
- 7 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.

Draft - Effluent Export Pipeline Project

QUALIFICATIONS

04-Jan-23

- 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.



Effluent Export Pipeline Project

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)				\$ 10,312,928.60
43	SUBTOTAL 3				\$ 55,988,477
44	TOTAL ESTIMATED PROJECT CONSTRUCTION COST				\$55,988,477



90% OPCC (post cost reconciliation meeting)

12/6/2022

DRAFT IVGID Effluent Export Pipeline CMAR CONSTRUCTION 90% - Risk Register							Quantitative Analysis				Comments
No.	Functional Assignment	Status	Description Of Risk	Mitigation Strategy	Type of Risk	Probability	Cost Impacts (\$)		Schedule Impacts (Working Days)		
							Cost (\$)	Estimated Risk Amount	Time Impact	Estimated Time Impact	
1	Design	Open	Frequency and method of pressure testing - Welded Steel / DIP <i>(Would precast square vaults be beneficial for presure testing operations?)</i>	- 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, place 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, 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
4	Design	Open	GC 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 purchase	Cost	8%	\$ 342,000.00	\$ 27,360.00	0	0	72 each x \$4,750 per each (fitting & multi-bead closure)
5	Design	Open	NDOT 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 purchase Decrease as GMP's are released and acutal 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	Enviornmental	Open	IVGID 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	GC Encounter hard rock that needs to be excavated	- Improved quantification of known hard rock locations (to idenfify 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	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

Cost (\$) is currently included in the 90% OPCC. The estimated Risk Amount is added cost based on probality of extra testing being required.

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

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 properly	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 Skunk 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 as 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 factors	Cost	0%	\$ 240,741.00	\$ -	0	0	24,707 LF x .05 = 1,235 LF @ \$180 / LF = \$222,363 x 1.08265 = \$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 1.08265 = \$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	IVGID	Emergency reposnse - 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 \$875/LF Traffic Control = \$7,800/day x 10 days GCs = \$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 days GCs = \$18k x 20 days
28	Weather	Open	GC	Weather (Thunderstorms / Freak 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	GC	Construction Water Purchase		Cost	0%	\$ -	\$ -	0	0	0
Totals									\$ 10,312,928.60	128.45		