MINUTES OF THE SPECIAL MEETING OF THE
BOARD OF DIRECTORS OF
VISTA IRRIGATION DISTRICT

September 20, 2022

A Special Meeting of the Board of Directors of Vista Irrigation District was held on Tuesday, September 20, 2022 at the offices of the District, 1391 Engineer Street, Vista, California.

1. CALL TO ORDER

President Miller called the meeting to order at 9:02 a.m.

2. ROLL CALL

Directors present: Miller, Vásquez, Kuchinsky, Sanchez, and MacKenzie.

Directors absent: None.

Staff present: Brett Hodgkiss, General Manager; Lisa Soto, Secretary of the Board; Don Smith, Director of Water Resources; Randy Whitmann, Director of Engineering; Greg Keppler, Engineering Project Manager; and Shallako Goodrick, Finance Supervisor. General Counsel Elizabeth Mitchell of Burke, Williams & Sorensen was also present.

Other attendees: Holly Roberson of Kronick; J.P. Semper and Paige Russell, Brown and Caldwell; Doug Gillingham, Gillingham Water; John Bekmanis, Black & Veatch; Cari Dale, Hoch Consulting; Angela Morrow, Reed Harlan, and Don Lincoln, City of Escondido; and Richard Williamson, San Luis Rey Indian Water Authority.

3. PLEDGE OF ALLEGIANCE

Director MacKenzie led the Pledge of Allegiance.

4. APPROVAL OF AGENDA

22-09-91	***Upon motion by Director Vásquez, seconded by Director Kuchinsky and unanimously carried (5 ayes: Vásquez, Kuchinsky, Sanchez, MacKenzie and Miller), the Board of Directors approved the agenda as presented.***

5. ORAL COMMUNICATIONS

No public comments were presented on items not appearing on the agenda.

6. VISTA FLUME REPLACEMENT ALIGNMENT STUDY

See staff report attached hereto.

Engineering Project Manager Greg Keppler stated that it has been three years since the District completed its Water Supply Planning Study (WSPS), which evaluated whether the Flume should be replaced or retired. The results of the WSPS indicated that replacement of the Flume would be the least costly option for the District. At that time, the Board authorized staff to move forward with planning efforts for the Flume replacement project, beginning with the Vista Flume Replacement Alignment Study.

Mr. Keppler recapped what was discussed in the first workshop held on August 2021. He stated that since the first workshop the issue of Harmful Algal Blooms (HABs) in Lake Henshaw was discovered, which warranted an updated evaluation of project affordability. Mr. Keppler stated the updated evaluation of project affordability still showed that replacing the Flume remains the District's least costly water supply alternative inclusive of estimated costs for long-term solutions to mitigate and manage HABs at Lake Henshaw.

Mr. J.P. Semper of Brown and Caldwell started the PowerPoint Presentation that would be used throughout the workshop (attached hereto as Exhibit A). He briefly reviewed what was covered in the previous workshop and introduced the agenda and objectives for the day. He noted that this workshop will complete Phase 3 (Coarse Screening) of the Flume Replacement Alignment Study (Study). Mr. Semper stated that the workshop will provide a preliminary review of project funding scenarios and updates the continued investigation into project affordability and afford the Board the opportunity to provide input on these elements prior to advancing the 'short-list' of Flume alignment alternatives to the final fine screening process.

Ms. Paige Russell of Brown and Caldwell reviewed six of the alignment alternatives. She discussed phasing options for each alignment, noting that with the Flume having already exceeded its service life, phasing would defer completion of the Project and increase the level of risk for the District. She clarified that not all of the alignment alternatives include a connection to the Rincon del Diablo Municipal Water District (Rincon) or the VID 12 connection the San Diego County Water Authority's (Water Authority's) First Aqueduct, and this was taken into consideration in the alignment rankings. She reviewed the shortlist (Alt 1 - South Central, beginning and ending portions of Alt 2 – Hybrid A, and Alt 6 – Southern) recommended for further evaluation in Phase 4 (Fine Screening).

Ms. Russell reviewed the comprehensive dataset that was considered for each alignment alternative during the Coarse Screening. She discussed how the feasibility review focused on key stakeholder engagements, hydraulics and permitting. The Board discussed the Rincon connection, and Rincon's interests as a stakeholder. Director of Engineering Randy Whitmann stated that the Rincon connection is not a vital requirement for the District's system, but is for Rincon during First Aqueduct shutdowns. Alignment alternatives that do not maintain the existing Rincon connection would need additional facilities to connect to the District's system, and those facilities and costs are not included in the Coarse Screening analysis. Additionally, the VID 12 connection is also not essential for the District; VID 12 serves as a backup feed to the Flume and service to the Boot and Bennet areas when water is not being delivered from the Escondido-Vista Water Treatment Plant (EVWTP). The VID 3 connection to the Water Authority's Second Aqueduct near Pechstein Reservoir will be able to back-feed the Boot and Bennett areas once the Flume is replaced with a pressurized pipeline.

Mr. John Bekmanis of Black & Veatch reviewed the process and objectives during the Coarse Screening phase of the Study. He provided an in-depth review of the alignment alternatives evaluation, which focused on three main categories: 1) Project Delivery; 2) Stakeholder Coordination; and 3) System Reliability. Mr. Bekmanis reviewed the evaluation matrix, which assigned and calculated numerical results for all six of the alignment alternatives.

Ms. Cari Dale of Hoch Consulting presented Project funding scenarios, stating that updated Project cost estimates range between $154 million to $184 million. She stated these costs include construction, taxes plus overhead and profit, soft costs (i.e. deign, easements, etc.), insurance and bonds, and contingencies. Ms. Dale stated that pay as you go (PAYGO) would not be a suitable pathway to funding the replacement of the Flume, as it would consume the District's capital reserves within two years (if significant rate increases were not approved and implemented). She reviewed capital financing and

plausible funding scenarios. Ms. Dale stated that phasing would mitigate rate increases, but with a significant increase to project costs.

Mr. Doug Gillingham of Gillingham Water discussed Project affordability including the added costs associated with HABs mitigation and management. He stated that Flume replacement ("To Flume"), rather than decommissioning of the Flume ("Not to Flume"), is still the most cost effective option. He added that since the Flume has already exceeded its service life, "No Project" is not an option and considerable capital costs are still required in the "Not to Flume" option. He reviewed the economic analysis including non-cost factors such as supply reliability, local control, and reduced reliance on other sources as well as Projects costs and benefits over time (30-40 years). Mr. Gillingham concluded that the District's investments in its local water system will ultimately result in a significant economic advantage to the District and its ratepayers.

Mr. Semper provided a summary of conclusions and reviewed the next steps in the Fine Screening Phase. He stated that the analyses thus far supports the District's continued investment in Project planning for the replacement of the Flume.

The Board and Mr. Hodgkiss thanked the Project team for an excellent report and presentation.

7. COMMENTS BY DIRECTORS

Director MacKenzie requested that the Project team prepare their next presentation keeping in mind the non-technical people that will be reviewing and receiving the information.

8. COMMENTS BY GENERAL COUNSEL

None were presented.

9. COMMENTS BY GENERAL MANAGER

None were presented.

10. ADJOURNMENT

There being no further business to come before the Board, at 12:23 p.m. President Miller adjourned the meeting.

Marty Miller, President

ATTEST:

Lisa R. Soto, Secretary
Board of Directors
VISTA IRRIGATION DISTRICT

VISTA IRRIGATION DISTRICT

STAFF REPORT

Agenda Item: 6

Board Meeting Date:	**September 20, 2022**
Prepared By:	**Greg Keppler**
Reviewed By:	**Randy Whitmann**
Approved By:	**Brett Hodgkiss**

SUBJECT: VISTA FLUME REPLACEMENT ALIGNMENT STUDY

RECOMMENDATION: Conduct Vista Flume Replacement Alignment Study workshop.

PRIOR BOARD ACTION: On October 7, 2020, the Board approved the Request for Proposal for the Flume Replacement Alignment Study (Study), and on February 17, 2021, authorized the General Manager to enter into Agreements for Professional Services with Brown and Caldwell, Helix Environmental Planning, Inc., and Gillingham Water for the Study in total amounts not-to-exceed $2,018,213. On August 24, 2021, the Board participated in the first workshop to review and provide input on the project objectives, development of the 'long-list' of alignment alternatives, evaluation criteria, project costs and project affordability.

FISCAL IMPACT: The coarse screening level estimated costs for the two preferred alignments range between $154,000,000 and $167,000,000 (the two least costly alternatives); the estimated cost of the other four alignments range between $169,000,000 and $184,000,000. An updated evaluation of project affordability indicates that replacing the Flume remains the District's least costly water supply alternative inclusive of estimated costs for long-term solutions to mitigate Harmful Algal Blooms (HABs) at Lake Henshaw. Review of project funding scenarios confirms that financing (e.g., low interests loans, municipal bonds, and grants) will be required in order to reduce the burden on the District and maximize ratepayer dollars. Initial rate modeling indicates that a single-phased construction approach to Flume replacement is the best option for the District with the least long-term cost and exposure to risks.

SUMMARY: At roughly 95 years old, the Flume has exceeded its usable service life, is unsuitable for reuse and should be retired. The Study is designed to support a decision by the District as to the preferred replacement alignment. Many factors weigh in the comparison of alternative alignments, and the Study is designed to select a preferred alignment through a risk versus cost evaluation based on key criteria including project affordability and implementation, schedule, constructability, community impacts, land ownership, environmental, permitting, system hydraulics, and operations and maintenance.

DETAILED REPORT: The attached review package summarizes the coarse screening analysis performed on the 'long-list' of Flume alignment alternatives. It also provides a preliminary review of project funding scenarios and updates the continued investigation into project affordability. The workshop will afford the Board the opportunity to provide input on these elements prior to advancing the 'short-list' of Flume alignment alternatives to the final fine screening process.

ATTACHMENT: Workshop Reference Materials

Flume Replacement Alignment Study
Workshop No. 2
Coarse Screening Phase

Prepared for
Vista Irrigation District
Vista, California
September 20, 2022

John P. Semper, P.E.
Project Manager

Brown AND Caldwell

451 A Street, Suite 1500
San Diego, CA 92101

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List of Abbreviations

AFY	Acre-feet per Year	HABs	Harmful Algal Blooms
BC	Brown and Caldwell	lf	linear feet
CEQA	California Environmental Quality Act	NEPA	National Environmental Policy Act
CIP	Capital Improvement Plan	NPV	Net Present Value
DDW	Division of Drinking Water; CA Water Board	O&M	Operations and Maintenance
DFC	Downstream Flow Control	PAYGO	Pay As You GO
DFW	Department of Fish and Wildlife	Project	Flume Replacement Project
District	Vista Irrigation District	ROW	Right-of-Way
DSOD	Division of Safety of Dams	PS	Pumping Station
ENR	Engineering News Record	SRF	State Revolving Fund
EVWTP	Escondido-Vista Water Treatment Plant	SQMP	Stormwater Quality Management Plan
Flume	Vista Flume	Study	Flume Replacement Alignment Study
FY	Fiscal Year	UAS	Unmanned Aerial System
GIS	geographical information system	UFC	Upstream Flow Control

USACE	United States Army Corp of Engineers
VID	Vista Irrigation District
WIFIA	Water Infrastructure Finance & Innovation Act
WSPS	Water Supply Planning Study

Section 1

Introduction & Objectives

Summary:

- **Alternatives Shortlist:** The Course Screening evaluation recommends Alternatives 1 and 6 advance to Fine Screening, along with the "Beginning" and "End" corridors of Alternative 2.
- **Funding:** Initial rate modeling determines PAYGO is not a sustainable option and capital financing will be required.
- **Affordability Check-in:** Despite escalating costs, the need for financing, and the future investments required to continue operating the local water system, the decision To Flume still maintains a $130 million 30-year Net Present Value economic advantage over Not to Flume.
- **Next Steps:** Should the District elect to proceed with Fine Screening, formal financial planning, inclusive of establishing a rate design and preparing applications for loans and grants, should begin immediately.

In 2019 Vista Irrigation District (District) contracted Gillingham Water to conduct the District's Water Supply Planning Study (WSPS), which evaluated options for either replacing or retiring the Vista Flume (Flume), known then as the ***"To Flume or Not to Flume"*** evaluation. By March 2020, the WSPS presented to the District's Board found that the To Flume option was the more favorable long-term solution, being the least costly option to the District, providing superior supply reliability and affording the opportunity for continued regional cooperation with neighboring agencies.

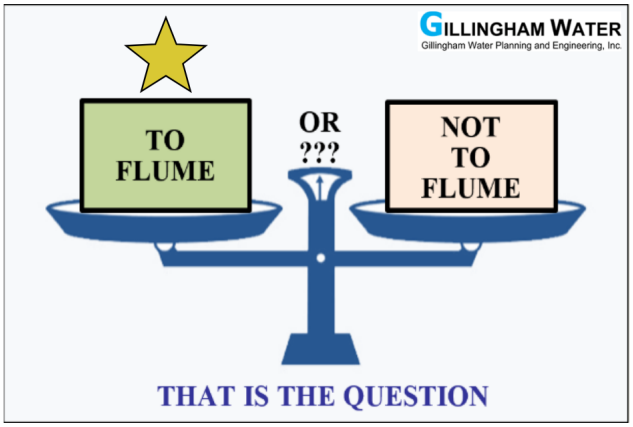


Figure 1-1 – To Flume or Not To Flume Scale; WSPS Workshop #3

Following the recommendations from the WSPS, the District contracted the Brown and Caldwell (BC) team to conduct the Flume Replacement Alignment Study (Alignment Study) in April 2021. The Alignment Study seeks to answer the question, ***"How to Flume?"***. The Alignment Study team has thus far:

1. evaluated a reasonable range of corridors for the Flume replacement project,
2. found a total of six alignments recommended for alternatives evaluation,
3. generated planning level cost estimates for each alignment,
4. developed evaluation criteria and performed an initial coarse screening of the six alignments,
5. shortlisted the alignments recommended for advancement to fine screening, and
6. completed affordability check-in confirming the decision To Flume is still the more favorable long-term decision.

1.1 Background and Purpose

The Flume, as shown in red in **Figure 1-2**, is an integral component of the District's water supply system, conveying the District's local (Lake Henshaw) and purchased (Water Authority) raw water treated at the Escondido-Vista Water Treatment Plant (EVWTP) to Pechstein Reservoir. The Flume consists of above-grade unpressurized gunite bench structures (benches), buried pressurized steel or concrete pipelines (siphons), and an unpressurized rock tunnel. The Flume has provided multiple generations of District customers with local water over its impressive nearly 100 years of service; however, it has reached the end of its useful life.

The purpose of the Alignment Study is to identify, from among a broad range of alternatives, a preferred alignment and configuration for a project to replace the Flume and provide reliable service for the next 100-years.

The Alignment Study evaluates multiple alignment alternatives for replacing the existing Flume, guiding the selection of a preferred alignment and preparation conceptual design documents describing the approach for implementing the future Flume Replacement Project (Project). It is focused on addressing:

- feasibility and cost-effective construction,
- reliability,
- environmental effects,
- long-term operations and maintenance (O&M), as well as
- affordability, impacts to rates, and funding options.

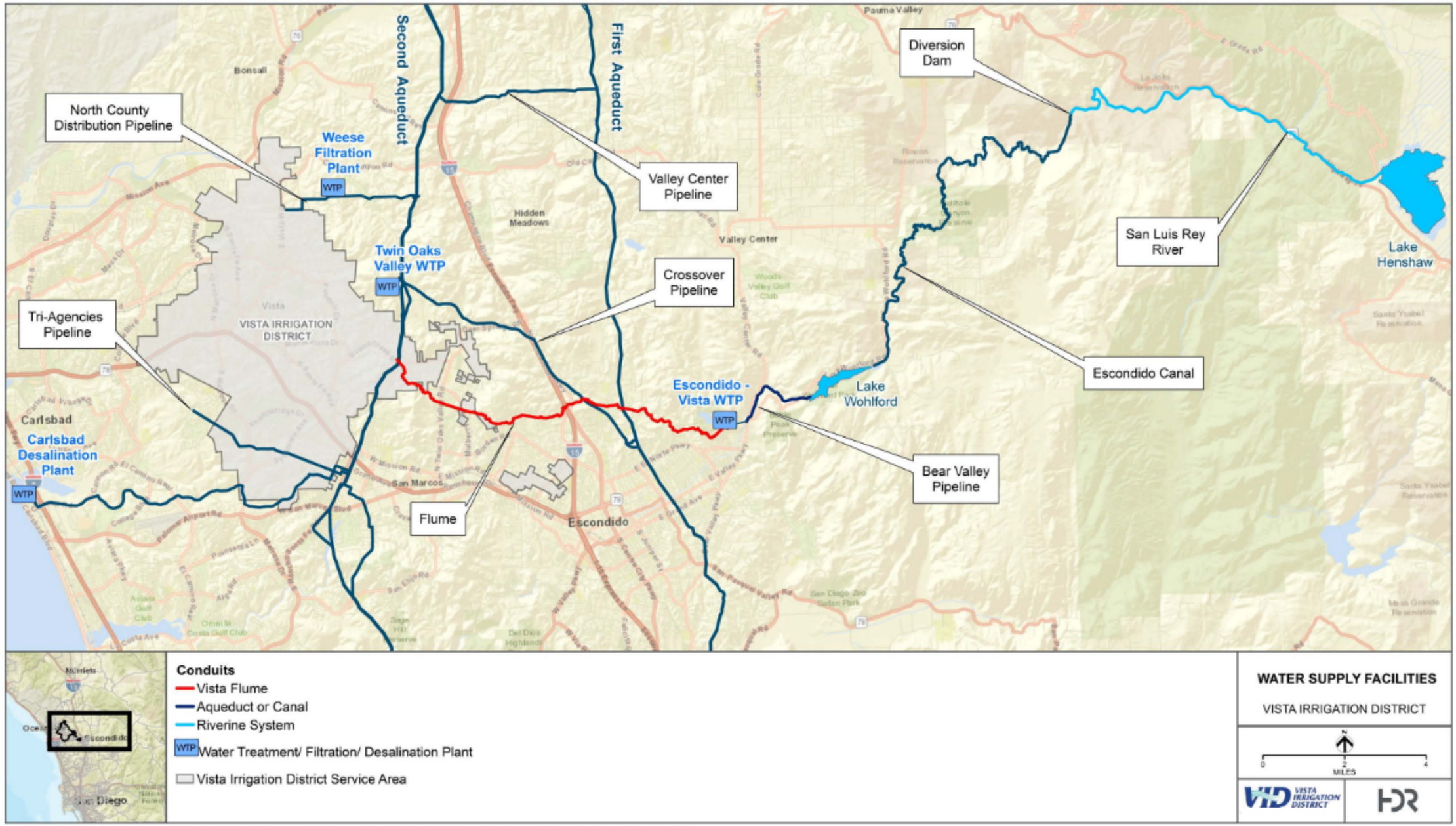


Figure 1-2 – Regional Water Supply Facilities; 2016 VID Master Plan

1.2 Planning Objectives

The Alignment Study's goal is to develop a plan to identify the future Project that will convey high quality water from the District's local water resources to its customers in an economically (highest reliability at the lowest cost) and environmentally responsible way. To meet this goal, the following success factors and planning objectives were created to guide the Alignment Study team:

Success Factors

Critical factors for the success of this Alignment Study include:

- Consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation, per California Environmental Quality Act (CEQA) Guidelines, through a comprehensive alternatives evaluation process.
- Avoid surprises related to feasibility or cost that unexpectedly tips the scale on the "To Flume or Not to Flume" decision by regularly tracking pertinent cost data and preparing more detailed construction cost estimates.
- Support the District's decision to replace the Flume by presenting a clear project roadmap in a preliminary design report that includes a project funding plan for the preferred alignment.

Planning Objectives

The Alignment Study's planning objectives serve as the roadmap for delivering a successful plan, and are as follows:

1. **Alignment Criteria and Alternatives Evaluation:** Develop custom criteria to aid in alignment preference, including cost, reliability, water quality, environmental protection, constructability, accessibility, existing water supply obligations and assets, EVWTP operations, phasing and funding opportunities, regulatory compliance, and hydraulic constraints. Using the established criteria, develop and evaluate multiple project alignment alternatives for replacing the Flume.
2. **Funding Support:** Accurately estimate the cost of construction and identify funding opportunities available to the District. Then link costs and funding (i.e., low-interest loans, grants, and cash funding) to quantify the true cost that the Project will have on the District's ratepayers.
3. **Project Affordability Checks:** Continue testing the affordability of the "To Flume" project against the "Not To Flume" option. Periodically check the "To Flume or Not To Flume" balance scale has not tipped during the course of this Alignment Study in a manner that reverses the decision made during the WSPS. This work will account for the changing capital cost of the project, ongoing work associated with restoring the local water system at Lake Henshaw and the Warner Basin Wellfield, as well as changing climate trends impacting the long-term sustainable yield and local water deliveries. If the scale ever does tip, the Board may wish to consider an off-ramp.
4. **Assess Potential Environmental Effects:** Throughout the Alignment Study, evaluate potential environmental effects alignment alternatives may have and the necessary mitigation measures needed to recommend the appropriate CEQA/National Environmental Policy Act (NEPA) documentation for the Project.
5. **Convene Multiple Workshops with the Board:** Present clear and transparent information to the Board and the public for their consideration at significant milestones during the Alignment Study. Each workshop represents an important building block, which will form consensus for later workshops throughout the course of the Alignment Study.

1.3 Study Phases and Current Phase Objective

The Alignment Study's scope of services is structured into five phases with four Board workshops, as listed below. The study is currently in *Phase 3 – Coarse Screening*, where a high-level approach will be taken to evaluate six alternative alignments and make recommendations to advance select alignments to the more detailed *Phase 4 – Fine Screening*. During fine screening, any of the unknowns identified during coarse screening will be vetted and a preferred alignment will then be recommended for *Phase 5 – Conceptual Design and Affordability Review*. The following is a listing of the study's phases and Board workshops; the *blue* text indicates the current phase of work being presented herein.

- Phase 1: Project Initiation
- Phase 2: Long-list of Alternatives and Evaluation Criteria Development (Board Workshop No. 1)
- *Phase 3: Coarse Screening Results and Recommended Short-list (Board Workshop No. 2)*
- Phase 4: Fine Screening Results and Proposed Project Selection (Board Workshop No. 3)
- Phase 5: Conceptual Design and Affordability Review (Board Workshop No. 4)

1.4 Recap of Board Workshop No. 1

Board Workshop No. 1 was held on August 24, 2021 and presented the Phase 2 results of the Alignment Study to the Board. During the workshop, the Alignment Study team reviewed the process for developing a long-list of project alternatives, establishing the six alignments recommended for *Phase 3 – Coarse Screening*, provided an update on Flume replacement project costs, shared findings from external condition assessments performed on the Flume, and checked the updated project affordability using the WSPS's To Flume vs. Not To Flume analysis.

Consensus was reached with the Board to advance the recommended six alignments to Coarse Screening. The Board also provided the Alignment Study team with feedback on the draft evaluation criteria proposed for use during Coarse Screening, as well as offering discussion pertaining to the changes observed in the overall affordability of the Flume's replacement since the completion of the WSPS. Below is a list of the conclusions and next steps taken from Workshop No. 1.

Workshop No. 1 Conclusions

The following list of conclusions were presented at Board Workshop No. 1, and received the Board's consensus:

1. **Six alignments have been developed** which define a reasonable range of project alternatives and are recommended for Coarse Screening.
2. Costs have risen since the WSPS and there is no sign of decline; however, the decision **"To Flume" continues to be the economically preferred** alternative than "Not To Flume."
3. More condition assessment confirms **retiring the Flume remains a high priority** and establishes a recommended order of priority for its replacement.
4. As costs continue to increase, and the priority of replacing the Flume heightens, so does the likelihood of requiring financing; **advancing financial planning efforts for this project would be prudent.**

Workshop No. 1 Next Steps

The following list of next steps were presented at Board Workshop No. 1 and earned the Board's support for progressing the Alignment Study into *Phase 3 – Coarse Screening*. The green text denotes the status of these next steps as of August 2022.

1. Collect detailed data for the six alignments – completed and used in the Coarse Screening alternative evaluation presented herein under **Section 3**.
2. Develop estimated capital costs for all six alignments – completed and included herein under **Section 2**.
3. Conduct coarse screening and shortlist the top 2-3 alignments – completed and presented herein under **Section 3**.
4. Begin preliminary financial planning to understand the cost of funding – completed and presented herein under **Section 4**.
5. Repeat the affordability check with refined information – completed and presented herein under **Section 5**.
6. Report back to the Board after Phase 3 is complete – planned for presentation at Board Workshop No. 2 scheduled on September 20th, 2022.

Workshop No. 1 Briefing Packet Closing Statement

The briefing packet prepared for Board Workshop No. 1 closed on a statement pertaining to the next steps needed to assess the potential financing and affordability of the future Flume replacement project. The closing statement said:

> *"For Workshop No. 2, we will prepare a discussion related to project affordability, funding opportunities, prioritization within the District's Capital Improvement Plan (CIP), and next steps for preparing the District in securing financial assistance may it be through grants or loans."*

The work conducted during *Phase 3 – Coarse Screening* of this Alignment Study resulting from the above statement may be found under **Section 4**.

1.5 Purpose of Board Workshop No. 2

The purpose of Board Workshop No. 2 is to present the Coarse Screening results of the six alternative alignments evaluated, review the short-listed alternatives recommended for Fine Screening, and reach preliminary consensus to advance the Alignment Study to Phase 4. Discussions will focus on the current estimated project costs, preliminary rate analyses performed, and an updated To Flume affordability check-in, which now includes the recent planning efforts pertaining to Lake Henshaw and the Warner Basin Wellfield.

Section 2

Overview of Alternatives

Summary:

- All six alignments developed in the previous phase of this study remain as viable alternatives; no fatal flaws were discovered during coarse screening.
- All six alignments continue to represent a broad range of alternatives needed for alternatives evaluations as well as future environmental documentation.
- Costs continue to escalate above industry norms; and as of July 2022, the Flume's replacement is estimated in the order of $170 million.
- Phasing opportunities exist for all six alignments, which can mitigate cashflow concerns, but there are added costs and risks incurred when extending the overall project schedule.

2.1 Alternative Alignments

The WSPS conceptualized two alternatives, which serves as "bookends" to the wide range of Flume replacement opportunities. This Alignment Study expanded those two alternatives to six conceptual alignments known as the "Long-list of Alternatives".

The WSPS developed two alignment alternatives, "All-new" and "Hybrid." These alternatives needed to span a wide range of possible Flume replacement projects, which included an entirely new pipeline, referred to then as All-new, versus a project that would rehabilitate portions of the existing Flume as well as install new pipeline, Hybrid. These two alternatives established a reasonable baseline for assessing the high-level feasibility and economic viability of a Flume replacement project, To Flume, versus a sole Flume retirement project, Not to Flume. However, when evaluating the implementation of a To Flume project, more than two project alternatives reasonably exist and should be explored.

In exploring other alternatives, six unique alignments were conceptualized during *Phase 2 – Long-list of Alternatives* of this Alignment Study. The alternative alignments were presented at Workshop No. 1, where consensus was reached with the District's Board to advance the proposed alignments to *Phase 3 – Coarse Screening*. See **Figure 2-1** for a map showing all six alternative alignments being evaluated.

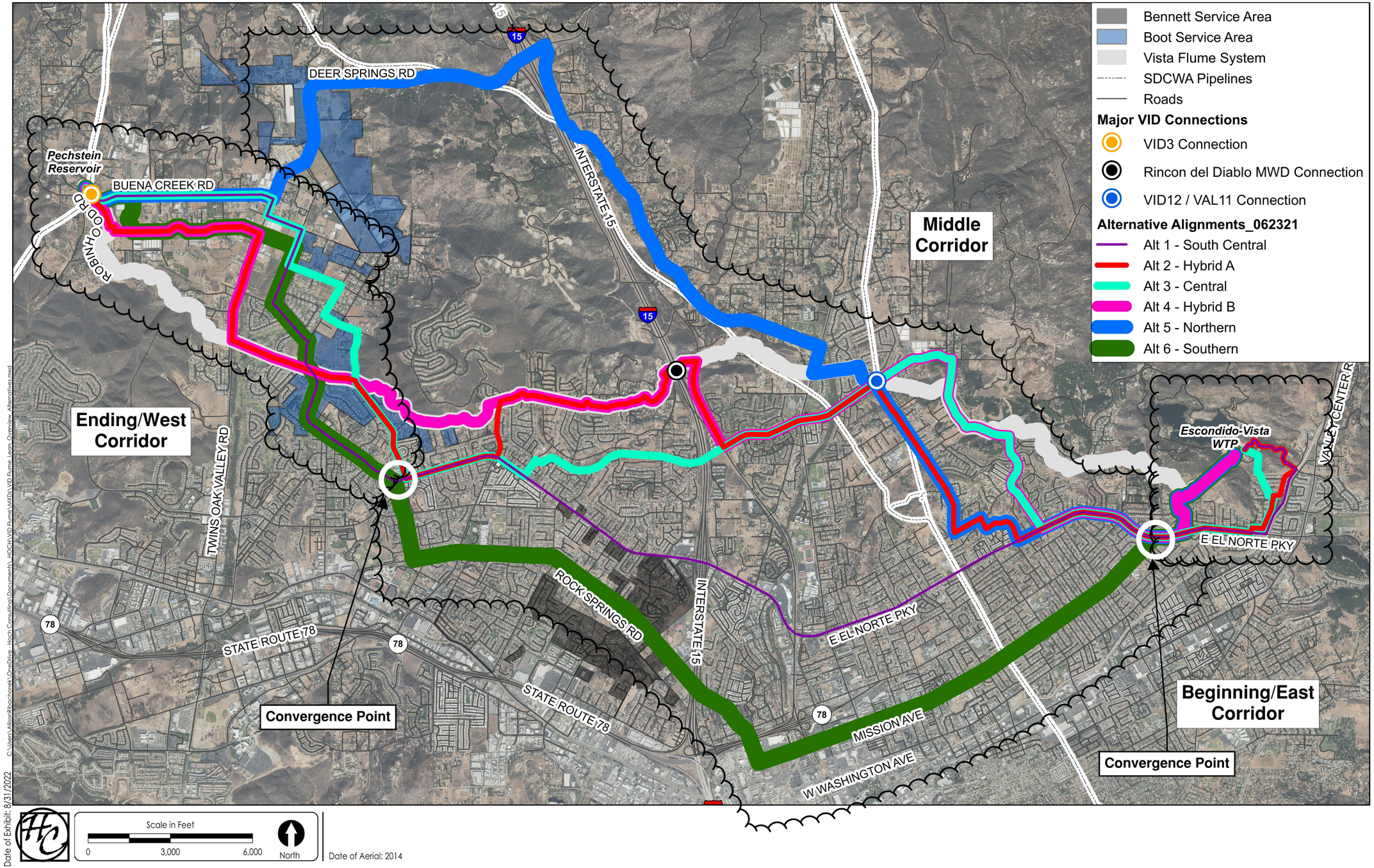


Figure 2-1 – Proposed Alternative Alignments

Phase 3 of this Alignment Study more closely examined the feasibility of the six alternative alignments which informed the risk and cost factors used in Coarse Screening.

At the initiation of *Phase 3 – Coarse Screening* each of the six alternative alignments were refined and developed to a greater level of detail, as presented in **Figure 2-1** above. Then, additional data was collected from stakeholder agencies and engineering analyses were performed to evaluate the permitting feasibility, construction complexity, as well as the future operations and maintenance of each alternative alignment. This work informed the risk versus cost analyses presented in **Section 3**, which was the basis for the Coarse Screening evaluation of all six alternatives.

Below is a summary of the Phase 3 work performed in further studying the six alignments, including engagement with multiple key stakeholders, hydraulic analysis that established the possible operating conditions, and the overall review of project feasibility.

KEY STAKEHOLDER ENGAGEMENTS

Division of Drinking Water (DDW): In February 2022, District staff along with the Alignment Study team conducted a project initiation meeting with DDW. The objectives of the meeting were to introduce the possible Flume replacement project to DDW staff, define the pertinent hydraulic criteria required for permitting the future Flume's replacement as a fully pressurized system, and determine if any specific exceptions may apply. Outcomes of this meeting, which shaped the conceptual hydraulic analyses, included:

- a minimum pressure of 20-psi across the entire system is the initial basis used for permitting a fully pressurized system,
- exceptions are granted case-by-case for systems operating between 5- and 20-psi where additional public safety measures are taken, and
- systems cannot operate below 5-psi unless the low-pressure section of the main is on a District control property and additional public safety measures are taken.

City of Escondido: In March 2022, a utility coordination and alignment review meeting was held with the City of Escondido's (Escondido's or Escondido) Public Utilities and Engineering Departments. This meeting reviewed the six alternative alignments with Escondido, received feedback pertaining to any missing or useful information to be considered during the Coarse Screening evaluation, and discussed Escondido's general preferences between the alternative alignments. During this meeting, Escondido expressed their preference toward the El Norte Pkwy alignment (Alternative #1). They noted that although the corridor contains several utilities, the alignment has larger rights-of-ways with open corridors available for the future Flume replacement pipeline.

EVWTP Operations Staff: Also in March 2022, an initial hydraulics discussion was held with the EVWTP's operations staff to discuss existing plant configurations and operations, conceptual flume hydraulics, and Escondido's possible interest in receiving treated water from the District. A second meeting was conducted in May 2022, which advanced the previous discussions by reviewing more detailed hydraulic calculations and establishing the operators' preferences for potentially modifying EVWTP, operating the future Flume replacement pipeline, and receiving treated water via backfeed from the future pipeline. Key takeaways from these meetings included:

- their strong preference that flow control remain at the EVWTP site,
- pressure may be sustained downstream at Pechstein to maintain adequate Flume pressures, and
- a treated water connection backfeeding from the District's system would be of interest to Escondido for redundancy.

Other Agencies: During Phase 3, the Alignment Study team contacted the stakeholder agencies listed below to gather more information on all six alternative alignments. The data collected for Coarse Screening included, but was not limited to, capital improvement plans, environmental reports and maps, geotechnical studies, existing utility information, traffic data, operational flow data, as well as physical mapping and topographic information.

- CALTRANS
- City of Escondido – Public Utilities, Engineering, and Planning Departments
- City of San Marcos
- County of San Diego
- San Diego County Water Authority (Water Authority)
- San Diego Gas and Electric (SDG&E)
- Vallecitos
- Vista Irrigation District – Operations, Water Resources, and Finance Departments

HYDRAULIC ANALYSIS

Three hydraulic conditions meet DDW's pressurization requirements: The above-mentioned meetings with DDW and the EVWTP operations staff informed the preferred hydraulic operating parameters. The horizontal alignment and vertical profile of each alternative, along with the District's historical and projected water demands, defined the basis for the hydraulic analyses. This work defined the following three hydraulic approaches which meet DDW's requirements for pressurization and satisfies Escondido's and the District's general operating preferences:

- Upstream Flow Control (UFC) – flows are controlled from the EVWTP,
- Downstream Flow Control (DFC) – pressure is sustained downstream at Pechstein to maintain adequate Flume pressures, and
- Pump Station (PS)/Tunneling – the pipeline is mechanically pressurized using a pumping station or tunneling to maintain adequate pressures over/through localized high points (avoidance of these methods is preferred).

The hydraulic approach is dictated by each alignment's vertical profile: For example, in **Figure 2-2** the hydraulic profile for Alternative 1, a combination UFC/DFC gravity system, is shown side-by-side with the hydraulic profile for Alternative 5, a PS mechanically pressurized system for comparison. The vertical profile (orange line) for Alternative 1 is lower and flatter than that of Alternative 5, with no major highpoints along its alignment. This vertical profile dictates that Alterative 1 may flow by gravity using both UFC and DFC while maintaining adequate Flume pressures.

Conversely, Alternative 5 has a major highpoint near the center of its alignment. The impact this highpoint has is two-fold;

1. it requires a pumping station to deliver water downstream of the highpoint or constructing 4-miles of deep hard rock tunnel under the highpoint, and
2. back feed treated water from the Water Authority's treated water connection VID 3, which can reach beyond the Boot service area but not the Bennett service area or Escondido (without another pump station or additional tunneling). These impacts require additional capital for the system to feasibly operate while maintaining adequate Flume pressures. The additional cost and complexity to construct, operate, and maintain Alternative 5 does not produce the benefit of additional system reliability, and therefore was deemed impractical through this analysis.

Noteworthy operational changes considered during the Course Screening evaluation: Each alignment affects the District's ability to supply water to neighboring agencies differently; see **Figure 2-1** for a map of all six alternative alignments in relation to the District's existing service connections. For example, Rincon del Diablo Municipal Water District's backup connection to the Flume may be preserved as-is only if Alternatives 2 or 4 are implemented; Alternatives 1, 3, 5, and 6 would require extending a new pipeline/pump station to maintain a feed to their system. Similarly, the VAL11/VID12 connection will likely be abandoned if Alternatives 1 or 6 are constructed; however, to replace this service reliability, Alternatives 1 and 6 both have a vertical profile which will allow for the pressure from VID3 to backfeed the pipeline and supply treated water to Boot, Bennett, and possibly the City of Escondido. See the green line on **Figure 2-2**. These pros and cons have been included for evaluation in the Coarse Screening evaluation criteria presented under **Section 3**.

OVERALL FEASIBILITY & PERMISSIBILITY

In summary, no fatal flaws were discovered of the six alignment alternatives evaluated during *Phase 3 – Coarse Screening*. Many stakeholder preferences and engineering considerations, however, were identified which supported an informed Coarse Screening evaluation process.

The preferrable "wholistic" approach to hydraulics, which earned the EVWTP Operations staff's concurrence, is a combined UFC/DFC approach where the system is gravity fed from the EVWTP site and pressure is sustained at Pechstein Reservoir. Preliminary hydraulic analyses determined that adequate Flume pressures can be met by all six alternatives; however, the alternatives using a combined UFC/DFC approach provide greater reliability through more practical long-term operation and maintenance.

Informing a "wholistic" approach to evaluating project feasibility that focuses on securing the stakeholder permits needed to build the project (i.e., DDW, Escondido, County of San Diego, CALTRANS, and the necessary environmental agencies). For example, environmental challenges affect some alignments more than others, CALTRANS however affects all alignments almost the same, new pipelines within right-of-way versus in easements with prior rights have varying benefits, and community impacts caused by traffic disruption and noise also vary across the alternatives. These considerations, combined with many others, support a holistic approach to Coarse Screening which equitably evaluates project feasibility across all alternatives. A description of the Coarse Screening evaluation process and its results are presented under **Section 3**.

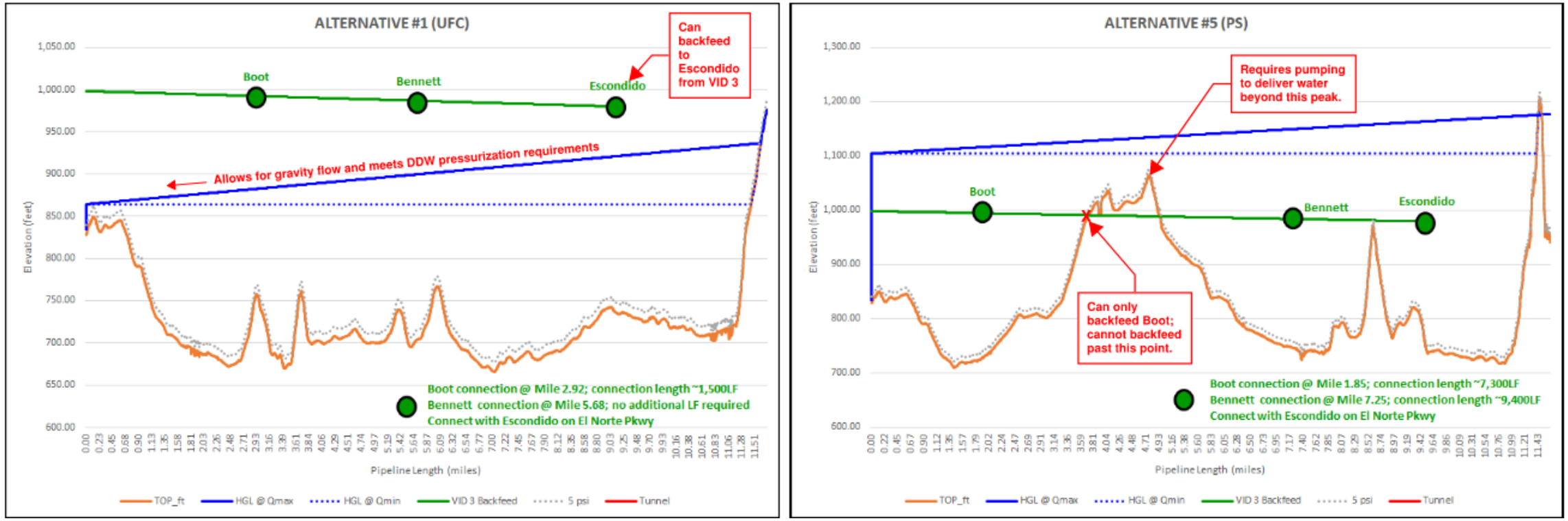


Figure 2-2 – Comparison of Hydraulic Profiles

Six viable alternative alignments remain, which support a reasonable range of project alternatives for informed decision making and public participation.

The refined alternative alignments shown previously on **Figure 2-1** are compared side-by-side in **Table 2-1** below. The figure also includes boundaries delineating the Beginning/East, Middle, and End/West corridors. Portions of the full alignments within the Eastern and Western corridors are considered interchangeable as they intersect at common convergence points, as indicated on **Figure 2-1** by the white circles. Therefore, although six individual alignments are depicted on **Figure 2-1**, alignment sections within a corridor may be interchanged to optimize the alignments as more information becomes available in the next phase of this study.

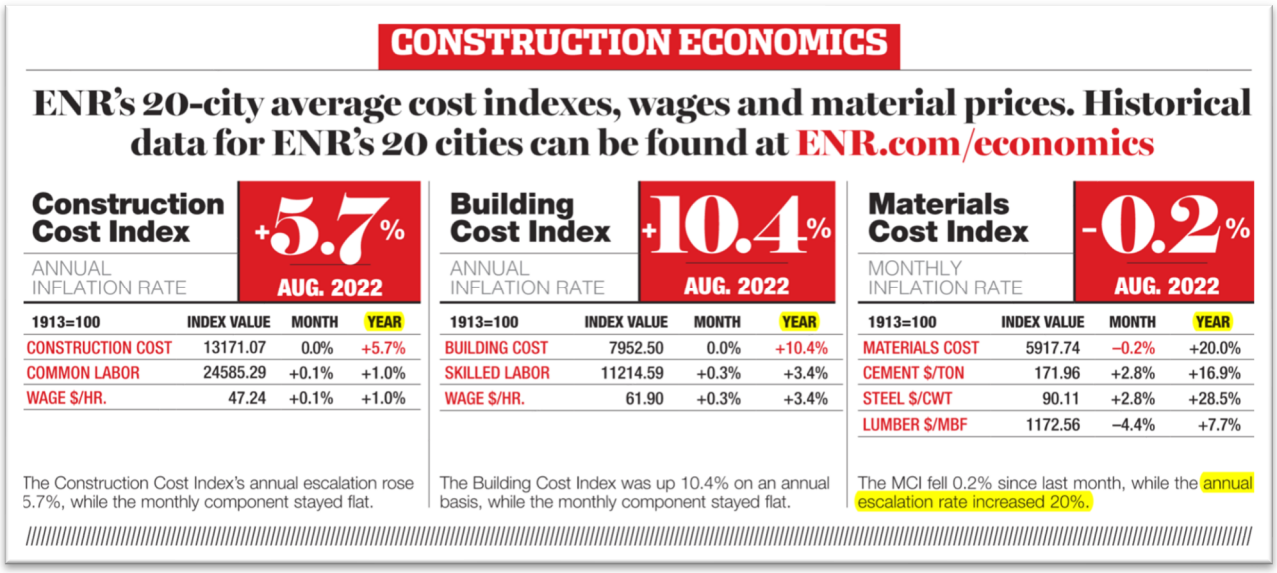
Table 2-1. Alternative Alignments Summary

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Length (mi)	11.7	13.0	12.0	11.9	11.6	11.7
Pumping or Tunneling Required	No	Tunneling	Tunneling	Tunneling	Pumping	No
Direct Connection to: -VAL11/VID12 -Rincon del Diablo MWD -Boot/Bennett	 -No -No -Yes	 -Yes -Yes -Yes	 -Yes -No -Yes	 -Yes -Yes -Yes	 -Yes -No -No	 -No -No -Yes
Phasing Potential	Low	High	Medium	High	Low	Low
Takeaway	A direct route in ROW that pressurizes the Flume and avoids risky & difficult hillsides; avoids Big Tunnel but uses more trafficked corridors	Keeps easements in low-risk areas and entirely avoids easements in risky & difficult hillsides; provides more phasing opportunities	Option entirely in ROW using less congested streets with better options for phasing	Maximizes use of existing easements wherever feasible; provides the most phasing opportunities	Option that minimizes traffic & utility conflicts inherent in other alternatives; requires a new pumping station and construction through adverse geology	A direct route in ROW that pressurizes the Flume and avoids risky & difficult hillsides; uses Big Tunnel and less-trafficked corridors
Pros	• One of shortest alignments • Pressurization without pumping or tunneling • Avoids all hillsides • Connection to Boot/Bennett	• Utilizes low-risk easements • Connection to VID12/VAL11, Rincon del Diablo MWD, Boot/Bennett • Reuses I-15 crossing • High phasing	• All in ROW but less congested streets than Alt 1 • Connection to VID12/VAL11, Boot/Bennett • Good pressurization & phasing • Reuses Baumgartner Siphon	• Maximizes use of existing easements • Connection to VID12/VAL11, Rincon del Diablo MWD, Boot/Bennett • Most phasing • Reuses Baumgartner Siphon & I-15 crossing	• Shortest alignment • Fully pressurized • Minimizes some traffic & utility conflicts (east of I-15) • Connection to VID12/VAL11	• One of shortest alignments • Lowest elevation – pressurization without tunneling or pumping • Avoids hillsides • Connection to Boot/Bennett
Cons	• Uses more heavily trafficked corridors • New I-15 crossing • Low phasing • No VID12/VAL11, Rincon del Diablo MWD connection	• Longest alignment • Tunneling req'd thru high points • Low head system	• Tunneling req'd thru high points • New I-15 crossing • No Rincon del Diablo MWD connection	• Tunneling req'd thru high points • Low head system	• Highest grade – pumping req'd • Adverse geology • Low phasing • New I-15 crossing • Traffic concerns on Deer Springs Rd • No Rincon del Diablo MWD, Boot/Bennett connection	• No VID12/VAL11, Rincon del Diablo MWD connection • New I-15 and SR-78 crossing • Low phasing

2.2 Current Updated Construction Costs

Construction industry costs continue to escalate above industry norms; costs have escalated by approximately 8-10% since last year's Board Workshop No. 1.

Both construction materials and labor prices have continued to increase significantly due to the supply chain disruptions initiated by the COVID-19 pandemic and exacerbated by the current geopolitical climate. Below is an excerpt from Engineering News Record's (ENR's) July 2022 publication on Construction Economics. ENR reported monthly variabilities in construction costs resulting in observed annual escalation rates ranging from 5.7 percent to 20 percent. This has increased from the 3.8 percent to 14 percent range presented during last year's Board Workshop No. 1, which referenced ENR's April 2021 publication.



CONSTRUCTION ECONOMICS

ENR's 20-city average cost indexes, wages and material prices. Historical data for ENR's 20 cities can be found at ENR.com/economics

Construction Cost Index — ANNUAL INFLATION RATE +5.7% AUG. 2022

1913=100	INDEX VALUE	MONTH	YEAR
CONSTRUCTION COST	13171.07	0.0%	+5.7%
COMMON LABOR	24585.29	+0.1%	+1.0%
WAGE $/HR.	47.24	+0.1%	+1.0%

The Construction Cost Index's annual escalation rose 5.7%, while the monthly component stayed flat.

Building Cost Index — ANNUAL INFLATION RATE +10.4% AUG. 2022

1913=100	INDEX VALUE	MONTH	YEAR
BUILDING COST	7952.50	0.0%	+10.4%
SKILLED LABOR	11214.59	+0.3%	+3.4%
WAGE $/HR.	61.90	+0.3%	+3.4%

The Building Cost Index was up 10.4% on an annual basis, while the monthly component stayed flat.

Materials Cost Index — MONTHLY INFLATION RATE -0.2% AUG. 2022

1913=100	INDEX VALUE	MONTH	YEAR
MATERIALS COST	5917.74	–0.2%	+20.0%
CEMENT $/TON	171.96	+2.8%	+16.9%
STEEL $/CWT	90.11	+2.8%	+28.5%
LUMBER $/MBF	1172.56	–4.4%	+7.7%

The MCI fell 0.2% since last month, while the annual escalation rate increased 20%.

In July 2021, during Phase 2 of the Alignment Study, the cost estimates prepared during the WSPS were updated using then 2021 market pricing. Total project costs had increased significantly since the final WSPS Board Workshop was held on March 2020, by approximately:

- 18 percent over the $120M estimate (2020 dollars) for the All-new Pipeline option, and
- 28 percent over the $130M estimate (2020 dollars) for the Hybrid option, rehabilitate existing siphons and all-new pipeline for bench sections.

In July 2022, the Alignment Study team updated the cost estimates once again using current year market pricing. Estimated construction quantities were also refined as the six alternative alignments had been further developed since Phase 2 of the Alignment Study. Although the individual unit price increases have escalated by approximately 12-percent on average, the total impact to the estimated project cost was mitigated to within 8- and 10-pecent. This mitigated impact to costs is a product of further developing the alignments to a point where more precise construction quantities could be calculated.

The planning level estimates prepared for all six alignments yield a possible range of project costs between $154 million to $184 million in 2022 dollars. See **Table 2-2** below for a summary of the estimated Flume replacement costs per alignment.

Table 2-2. Planning Level Estimated Costs						
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Construction Costs (1,2)	$110 M	$128 M	$122 M	$121 M	$132 M	$119 M
Soft Costs (3)	$44 M	$51 M	$48 M	$48 M	$52 M	$48 M
Total	**$154 M**	**$179 M**	**$170 M**	**$169 M**	**$184 M**	**$167 M**

(1) All costs presented herein are in 2022 dollars and have been rounded to the nearest $1 million.
(2) Includes labor, materials, subcontracts, equipment, and contractor overhead and profit.
(3) Includes environmental permitting, easements, design, administration, third party construction management, and onsite environmental and cultural monitoring.

2.3 Options for a Phased Approach

All six alternative alignments can feasibly be phased, but there are financial consequences for extending the project schedule and added risks of delaying the replacement of the Flume.

A preliminary phasing plan was developed for each of the six alternatives evaluated in this study. The intent was to determine if options existed for reducing the cash flow burden on the District when implementing a Flume replacement project over an extended period. All alignments have the potential for phasing, with options ranging from a single phase to as many as six phases depending on the alignment. Table 2-3 below shows the number of phasing options available for each alternative alignment.

Table 2-3. Options for Phasing per Alignment						
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Single Phase						
Two Phase						
Three Phase						
Four Phase						
Five Phase						
Six Phase						

Although all alternatives can be implemented over multiple phases, significant escalation and financing costs are incurred when extending the overall duration of the Flume's replacement; see Section 4 for more detail, including a comparison of costs in Table 4-3. Additionally, extending the time the existing Flume, which has exceeded its useful life, is in service while managing multiple phases of construction will expose the District to significant risks. The costs, risks, and their impacts

to the District's ratepayers associated with phasing the Flume replacement project will continue to be evaluated in *Phase 4 – Fine Screening*.

Section 3

Alternatives Evaluation – Coarse Screening

Summary:

- Coarse Screening comprehensively evaluated six viable alignment alternatives but did not select a specific alignment; there is still much to learn.
- Coarse Screening shortlisted the higher-ranking alternatives for advancement to Fine Screening, while keeping options open for adjusting to future challenges which may arise.
- A clear distinction exists between the top two alternatives and the remaining four.
- Alternatives 1 and 6 are recommended for Fine Screening, along with the "Beginning" and "End" corridors of Alternative 2.

3.1 Risk vs. Cost Evaluation Approach and the Evaluation Criteria

Feedback received from Board Workshop No. 1 was incorporated into the final set of Coarse Screening criteria, and sensitivity analyses were performed to remove inherent biases while fairly accounting for District preferences.

The *Phase 3 – Coarse Screening* process assigned weighting factors and scores to a customized set of criteria used to evaluate the Beginning, Middle, and End corridors of each alternative alignment. See **Figure 2-1** for a map delineating the alignment corridors. Utilizing both geospatial data and standard engineering practices, the Alignment Study ranked the alternatives, by corridor, against a set of cost versus risk-based evaluation criteria. The resulting scores facilitated the decision process in determining which alignment alternatives should advance to *Phase 4 – Fine Screening*.

At the end of Coarse Screening, a sensitivity analysis was conducted to verify that the weighting factors and criteria scores were applied consistently. Additionally, particular attention was paid to any evaluation criteria having overlapping results which inadvertently double-counted for, or against, a particular alignment. The intent was to remove unintended bias in the evaluation process while fairly accounting for the District's preferences by leveraging the institutional knowledge of District staff.

The draft evaluation criteria were presented to the Board in Workshop No. 1, and the Board's feedback was incorporated in the final set of Coarse Screening criteria, which are provided below in **Table 3-1**.

Table 3-1. Coarse Screening Evaluation Criteria		
Categories	**Criteria Groups**	**Criteria**
Project Delivery	Project Affordability and Implementation	Boot and Bennett Serviceability Mitigating Revenue Reduction (purchase from another agency) Financial Exposure to Construction Costs Grant/Funding Opportunities
	Schedule and Risk	Schedule Factors Phasing/Sequencing
	Constructability	Geology Utility Congestion Alignment Length Tunneling Length
Stakeholder Coordination	Community Impacts	Traffic Impacts Future Agency Projects Impacts to Critical Facilities
	Land Ownership	Easements/ROWs Land Acquisition
	Environmental	Biological Resources Areas of Potential Soil Contamination Cultural Resources Other CEQA Considerations
	Permitting	Interagency Coordination Cal DFW/USACE Coordination DDW Coordination
System Reliability	System Hydraulics	Pressurization vs Low-Head Impacts to Transient Flow Impacts to EVWTP Operations Offsite Improvements (Pumping Stations and Flow Control)
	Operations and Maintenance	Accessibility Long-Term Vulnerability Agency Service Connections Operational (Hydraulics) Future Adaptability/Redundancy

During Phase 4 – Fine Screening, the evaluation criteria will be revised to focus on the specific cost and risk factors differentiating the shortlisted alternatives.

3.2 Coarse Screening Results and Recommended Shortlist

The risk vs. cost analysis shows a clear advantage towards Alternatives 1 & 6 but highlights possible advantages may exist within select portions of the other alternatives.

Out of a total numeric risk score of 53 points (higher scores equal less risk), the lowest risk score was 37.2 (Alternative 1), while the highest risk alignment scored of 29.0 (Alternative 4). Although the difference between these risk scores may not seem stark, their contrast becomes apparent when considering their capital costs. Table 3-2 below presents the numerical risk results for each alignment as well as their capital costs and ranking. When these risk scores are plotted against their capital costs, as shown in Figure 3-1, we see that Alternatives 1 and 6 represent the lowest risk and lowest cost options, while Alternative 5 provides no real advantage in trading risks for cost.

However, a "Decision Making Zone" does exist in the middle of the cost/risk plot. Within this zone we recognize that although the overall alignment may not be favorable, there may be attributes (i.e., in the beginning, middle, or end corridors) which offer a better risk/cost balance to be considered when recommending a shortlisted set alternatives for Fine Screening.

Table 3-2. Risk Ranking per Segment

Corridors		Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
		South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Beginning	Rank [A]	#2	#4	#3	#5	#6	#1
	Score [B]	11.0	10.6	10.7	10.1	9.1	11.8
Middle	Rank	#1	#4	#3	#5	#5	#2
	Score	13.9	9.5	10.5	9.4	9.4	13.3
End	Rank	#1	#5	#2	#6	#4	#3
	Score	12.3	9.6	11.9	9.5	10.9	11.3
Total	Rank	***#1***	***#4***	***#3***	***#6***	***#5***	***#2***
	Score	***37.2***	***29.7***	***33.1***	***29.0***	***29.4***	***36.4***
Capital Costs	Rank	***#1***	***#5***	***#4***	***#3***	***#6***	***#2***
	Cost [C]	***$154 M***	***$179 M***	***$170 M***	***$169 M***	***$184 M***	***$167 M***

A) Ranking:
Green = Top two ranking alternatives
Yellow = Middle two ranking alternatives
Red = Lowest two ranking alternatives

B) Score = Risk Score as shown on the y-axis of the Risk/Cost Plot on **Figure 3-1** below.

C) Cost = Capital costs are rounded to the nearest million and represented in 2022 dollars. These as shown on the x-axis of the Risk/Cost Plot on **Figure 3-1** below.

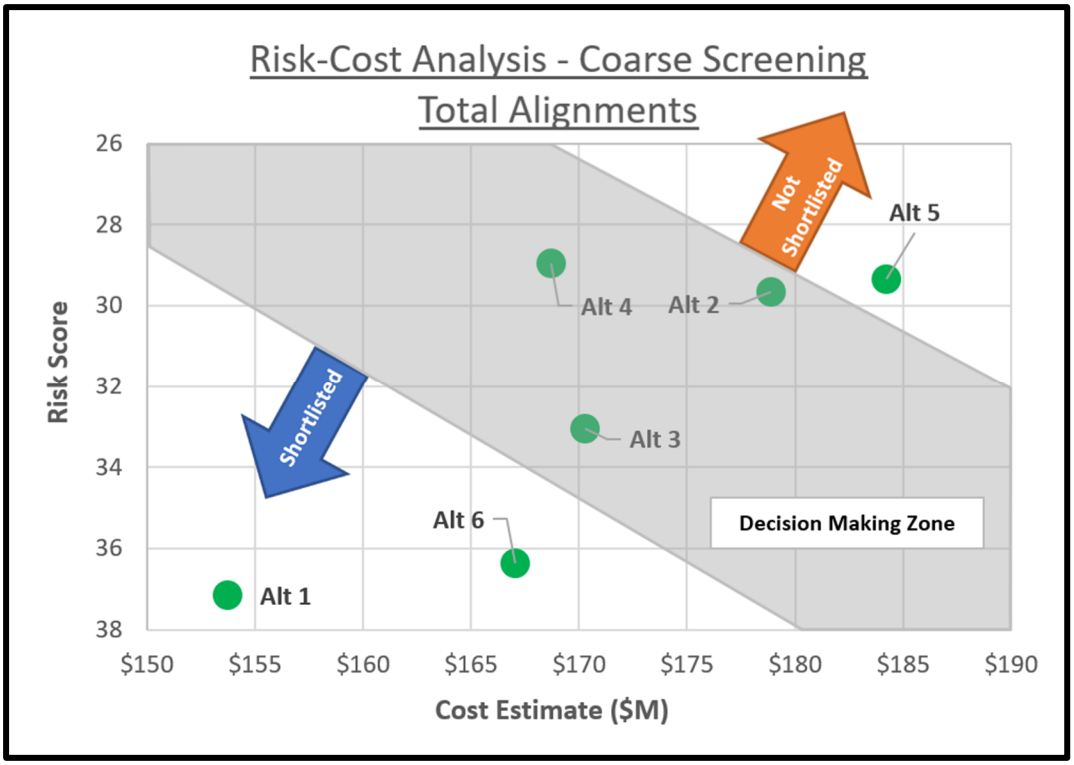


Figure 3-1 – Risk vs Cost Results

Shortlist: Alternatives 1 & 6 as well as the Beginning and End Corridors of Alternative 2 are recommended for Fine Screening.

From **Figure 3-1**, the two alternatives having the best cost vs. risk rating are Alternatives 1 and 6, which are being recommended for Fine Screening. Conversely, Alternative 5 is being excluded from the shortlist as its hydraulics, constructability, and operational challenges that are impractical and too costly to overcome. The Beginning and End Corridors, however, for Alternatives 2, 3, and 4 intersect Alternatives 1 and 6 at convenient locations (see **Figure 2-1**). These corridors may be considered separately as they fall within the highlighted "Decision Making Zone". The following considerations were applied to these corridors when examining Alternatives 2, 3, and 4 more closely:

- Would the vertical profile of the corridor negatively impact the hydraulics of either Alternative 1 or 6?
- Are there opportunities to reduce risk or cost that beneficially improve the overall alignment of either Alternatives 1 or 6?

The unfavorable risk scores assigned to Alternatives 2, 3, and 4 were attributed to the hydraulic conditions and construction costs affecting their overall alignments. Alternatives 3 and 4 specifically had characteristics along multiple corridors, which were contributing to these unfavorable risk scores. Conversely, Alternative 2's unfavorable risk score was mostly a product of its Middle Corridor. This review found that linking the Beginning and End Corridors of Alternative 2 to the Middle Corridors of either Alternatives 1 or 6 would offer possible benefits to improve the overall alignment. Therefore, it is recommended the Beginning and End Corridors of Alternative 2 be added to the shortlist such that additional options to match the best Beginning, Middle, and End Corridors during Fine Screening may be possible. See **Table 3-3** below for a summary of the recommended shortlist, and **Figure 3-2** for a map showing the shortlisted alignments.

Table 3-3. Shortlisted Corridors Recommended for Fine Screening						
Corridors	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Beginning	Yes	Yes	No	No	No	Yes
Middle	Yes	No	No	No	No	Yes
End	Yes	Yes	No	No	No	Yes

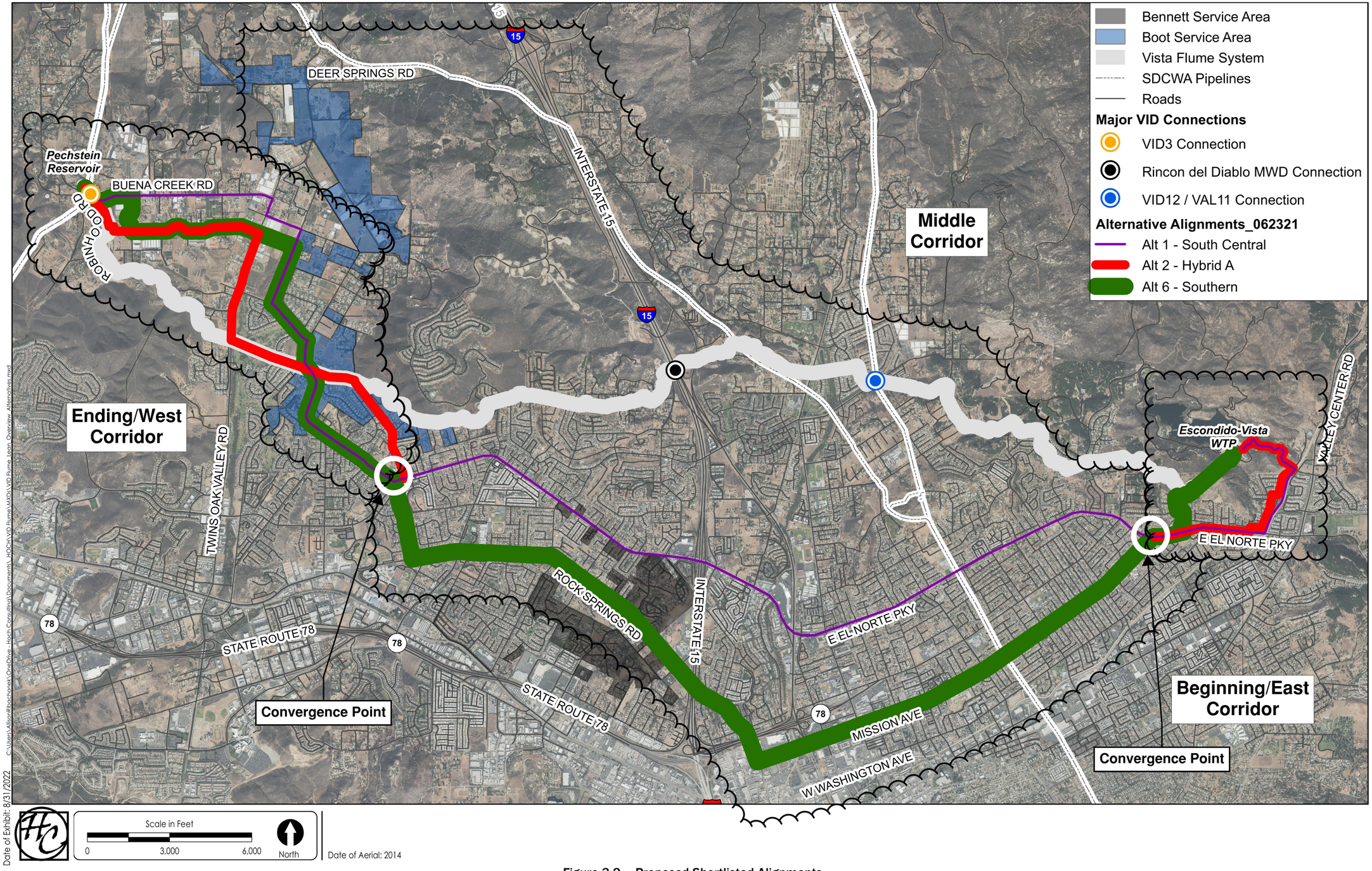


Figure 3-2 – Proposed Shortlisted Alignments

Section 4

Project Funding Scenarios

- Implementing the Flume Replacement project within the District's current capital plan creates a financial deficit that depletes the Capital Improvement Reserves within 2-years.
- Regardless of the phasing approach, single-phase or six-phase, funding the project via PAYGO will require a total water rate increase of up to 68-percent.
- Since PAYGO is not a sustainable option, a financial strategy inclusive of low interest loans, grants, and cash funds is needed to offset the deficit created by the Flume.
- An approach that partially finances a single-phased project has the lowest overall capital cost, financing costs, and risk profile with a relatively modest impact to water rates.
- It is recommended the District secure the financial assistance needed to determine a strategic rate design, obtain a bond rating, and apply for loans and grants.

4.1 Evaluating Project Affordability using PAYGO

The Flume replacement project is a priority project which creates a financial deficit that can deplete the District's Capital Improvement Reserves within 2-years.

The Flume has reached the end of its useful life and its replacement should be managed as a priority project executed in a timely manner. The refined scope and respective capital costs for the alternatives shortlisted in Section 3 have an estimated capital cost in the order of $170 million. Adding a Flume replacement project of this magnitude to the District's ongoing CIP creates a financial deficit when factoring the District's current working capital plus its current and future capital improvement needs. This imbalance is estimated to consume the District's Capital Improvement Reserves within the first two years of implementing the Flume replacement project unless additional funds are secured.

Total water rate (rate) increases up to 68-percent assessed over three years will be required to fund the Flume project via PAYGO without incurring debt, which places an undue burden on the District's current ratepayers.

District Finance staff prepared a coarse screening level rate model to estimate the rate increases needed to fund the project using PAYGO while not incurring debt. The rate model was run for two different scenarios, which established the reasonable bookends for implementing the Flume's replacement. The two scenarios considered were: 1) implementing the Flume replacement as a single-phased project, versus 2) implementing the Flume replacement as a six-phased project. The baseline assumptions input into the District's rate model included:

- Year 1 of the model was Fiscal Year (FY) 2022, when the model was prepared.
- The Flume replacement project is set to begin design in FY 2025.
- A single-phase project has a total project duration of eight years; based on a three-year design schedule followed by five years of construction.

- A two-phase project has a total project duration of nine years; based on two sequential phases where each phase is comprised of two years for design and two and a half years for construction with one quarter of fiscal year overlap between phases.
- A six-phase project has a total project duration of 23 years; based on six sequential phases where each phase is comprised of two years for design and two years for construction with one quarter of fiscal year overlap between phases.
- The rate model studies capital planning and cash flow over a 20-year period (FY 2022 to FY 2042) for a single-phase project and 29 years (FY 2022 to FY 2051) for a six-phase project.
- The Flume Replacement Project will be prioritized along with the following on-going and near-term projects in the District's capital plan including:
  - Main Replacement Program ($52.5M)
  - Pechstein Rehabilitation ($15.2M)
  - San Pasqual Undergrounding ($25M)
  - Wellfield Repair ($7M)
  - Pechstein II Reservoir ($10.4M)
  - E Reservoir Replacement ($11.6M)
  - PS 10 & 12 Replacement ($4.9M)
  - Deodar Reservoir ($2M)
  - A Reservoir ($5.7M)
  - C Reservoir Demo and PRV Feed ($1M)
- Inflation (between 2.6 and 3.3 percent) is applied consistent with the District's prior methodology used for cash flow modeling and rate studies.

Applying the above assumptions, the initial rate modeling determined that funding the Flume replacement project using a PAYGO strategy would require a total rate increase between 45 to 68 percent assessed over a three-year period. Table 4-1 below summarizes the rate increases required to offset the financial deficit created by the Flume replacement project and preserve the District's Capital Improvement Reserve.

The rate increases presented in Table 4-1 below are those required to fund the Flume replacement project and are not inclusive of other typical rate increases such as Water Authority pass-through costs and inflationary adjustments. This approach isolates the effects the Flume replacement project will have on the District's current capital plan, which supports more targeted side-by-side comparisons of various funding and timing scenarios.

Table 4-1. Possible Rate Increases Needed to fund using PAYGO

	Single-Phase	Six-Phase
Capital Cost (1)	$170 M	$170 M
Total Rate Increase Over Time (2,3)	68%	45%
Total Rate Increase per Unit (3,4)	$4.11	$2.55
Rate Ramp (5)	3 yrs	3 yrs
Max Rate Increase in Single Year (2,3)	28%	17%
Average Annual Rate Increase (2,3)	23%	15%

1) Costs are presented in 2022 dollars and are based on Alternative #6 ($167M) rounded to the nearest $10M.
2) Rate increases are rounded to the nearest percent.
3) Rate increases presented herein are only those required to fund the Flume project and are not inclusive of other typical rate increases such as annual Water Authority pass-through costs and the inflationary adjustment to the Service Charge.
4) Defined as the period of time in years the rate increases are assessed to the District's ratepayers.

Rate increases of this magnitude could allow the District to implement the Flume replacement project using PAYGO without depleting its Capital Improvement Reserve while still affording its ongoing and future capital improvement projects per plan. However, this magnitude of rate increases places an undue burden on the current ratepayers, who will pay the full cost of the Flume replacement project within the earlier portion of its 75 to 100-year service life.

4.2 Funding Opportunities and Conceptual Approach

Prioritizing a project of the Flume's magnitude requires a diversified funding portfolio inclusive of low interest loans, grants, and cash funds.

The future Flume Replacement Project is a good candidate for accessing to both federal and state loan programs. The project is also expected to be competitive for winning select grants, which the Alignment Study team is anticipating will be on the order of $1 million. This Alignment Study has been monitoring various funding mechanisms and has identified the sources most applicable to the future Flume replacement project. **Table 4-2** located on the next page summarizes the funding mechanisms identified thus far and provides the details associated with each opportunity the District should consider before pursuing.

A plausible funding strategy was developed to support initial rate modeling, in order to project a possible range of financing costs and associated rate increases.

Defining a diversified funding strategy inclusive of low-interest loans, grants, and cash funds was needed to estimate the range of rate increases required to afford the Flume replacement project. From the funding options presented in **Table 4-2**, the Alignment Study team defined a conceptual funding strategy based on a portfolio of the most plausible funding sources available to the Flume replacement project. This conceptual funding strategy, as listed below, served as a starting point for the initial rate model to estimate the associated financing and debt servicing costs to be afforded by future rate increases.

Plausible Funding Strategy for a Single-Phased Project:

Design

- Cash fund for approximately 14% of the total costs
- State Revolving Fund (SRF) Loan (interest rate = 1.1%) for approximately 86% of the total costs

Construction

- Water Infrastructure Finance and Innovation Act (WIFIA) (interest rate = 3.5%) for approximately 49% of the total costs
- Municipal Bonds (interest rate = 3.5%) for approximately 50% of the total costs
- Grant Funding for approximately 1.0% of the total construction costs

Plausible Funding Strategy for a Two-Phased Project:

Design

- Cash fund for approximately 39% of the total costs
- SRF Loan (interest rate = 1.1%) for approximately 61% of the total costs

Construction

- WIFIA (interest rate = 3.5%) for approximately 49% of the total costs

- Municipal Bonds (interest rate = 3.5%) for approximately 50% of the total costs
- Grant Funding for approximately 1.0% of the total construction costs

Plausible Funding Strategy for a Six-Phased Project:

Design

- Cash fund for approximately 33% of the total costs
- SRF Loan (interest rate = 1.1%) for approximately 67% of the total costs

Construction

- WIFIA (interest rate = 3.5%) for approximately 49% of the total costs
- Municipal Bonds (interest rate = 3.5%) for approximately 50% of the total costs
- Grant Funding for approximately 1.0% of the total construction costs

Although the actual funding portfolio will likely vary, in both sources and terms, the above strategy served as a plausible baseline for modeling the financial impacts associated with partially financing the Flume's replacement. The intent of conducting the preliminary rate modeling during Coarse Screening was to:

a) estimate a range of costs associated with partially financing the Flume's replacement, and

b) determine the possible range of rate increases required to fund a partially financed project.

The results of the initial rate modeling work inclusive of financing are presented below in **Section 4.3**.

Table 4-2. Possible Funding Sources Available to the Flume

Funding Source	Funding Agency	Administering Entity	Type	Term (yrs)	Interest Rate (I)	Application Fee ($)	When to Apply	Timeframe (yrs)	Probable Likelihood	Special Criteria & Shovel Ready Requirements	Notes & Limitations
Drinking Water State Revolving Fund (DWSRF)	California State Water Resources Control Board	State	Loan	30	1.1% (2022 Rate)	$100,000	Design Phase	2	Medium	• Allows for phased projects • SRF will be subject to Build America, Buy America (BABA) Act • There are four packages total (general, financial, technical, and environmental package) and they do not need to be submitted concurrently • Recommend a General Package be submitted, as soon as possible (this is a 4-page document with basic information (i.e., agency background, project description)	• Eligible for loan only • The estimated timeframe between general package submittal (step 1) to final agreement execution is 1-2 years • Bipartisan Infrastructure Law (BIL) funding is reserved for DAC small systems, PFAS contamination and lead line replacement • Example of timing -Applying in Summer/Fall 22 would get the project on the fundable list for next year (Fiscal Year or FY 2023)
Water Infrastructure Finance and Innovation Act (WIFIA)	Environmental Protection Agency	Federal	Loan	up to 35	3.5%	$100,000	Planning or Design Phase	Letter of Interest evaluation: 90 days. Applications due 1 year from invitation	High	• Allows for phased projects • NEPA, AIS, Davis-Bacon, Build America, Buy America (BABA) Act and all other federal provisions apply • Very flexible/favorable in structuring financing • Do not pay interest unless borrowed • 5-year completion requirement is preferred by WIFIA, requests for extensions are allowed • Bond rating required; preliminary rate opinion letter needed before closing. Financial outlook and financial planning needed to obtain bond rating.	• Can fund up to 49% of project costs • Total federal assistance cannot exceed 80% of project's eligible costs • 35 years is maximum maturity after substantial completion • Repayment deferral 5-year maximum after substantial completion • Interest rates are in flux, highly variable based on market conditions at time of close; based on treasury rate. Even projects from last year would be very different than today. Could use a rate range of 2.25%, 3%, and 3.5% • Planning level projects are eligible for WIFIA; WIFIA's goal is to accelerate construction projects
Infrastructure State Revolving Fund (ISRF) Program	California Infrastructure and Economic Development Bank (CA IBank)	State	Loan	30	2.3% (67% of A-rated municipal bond)	$10,000	Design or Construction Phase	ISRF applications are continuously accepted	Medium	• No matching fund requirement, and ISRF financing may serve as matching funds for other financing.	• Intended mainly for construction costs
Municipal Bonds	Vista Irrigation District	District / Investment Bank	Bonds	up to 30	3.5%	Other fees apply	Planning Phase	Any	High - upon completion of rate study, etc.	• Requires District obtains a bond rating; higher ratings allow for lower interest rates • Recommend completion of a robust rate/cost of service study and development of a financing plan for the project	• Most expensive form of loan/debt included on this list. • Allow 6-8 months for bonding process
Building Resilient Infrastructure and Communities (BRIC)	Federal Emergency Management Agency (FEMA)	Federal	Grant	3	NA	NA	Annual solicitations; applications due winter.	1	Medium	• BRIC funds hazard mitigation projects, reducing risks communities face from disasters and natural hazards • Incorporation of nature-based solutions for hazard mitigation is a heavily weighted criterion	• The federal share requested can be no more than 70% (to received full criteria points) • Projects receiving funding must result in a reduced risk of natural disaster. • VID would not be directly eligible because they do not participate in National Flood Insurance Program (NFIP). A special district can apply as a sub-applicant with certain conditions.
Hazard Mitigation Grant Program - Flood Mitigation Assistance	Federal Emergency Management Agency (FEMA) via California Governor's Office of Emergency Services (CalOES)	Federal / State	Grant	3	NA	NA	Annual solicitations; applications due winter.	1	Low	• The current available funding opportunity under the HMGP is for Flood Mitigation Assistance (FMA) and is being rolled out along with BRIC • FEMA requires state, local, tribal and territorial governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance	• This program seeks projects that will reduce the risk of flood damage to National Flood Insurance Program (NFIP)-insured buildings. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to NFIP buildings. • Determine whether the project will reduce any flood risk to NFIP buildings • VID would not be directly eligible because they do not participate in National Flood Insurance Program (NFIP). A special district can apply as a sub-applicant with certain conditions.
WaterSMART Water and Energy Efficiency Grants (WEEG)	U.S. Bureau of Reclamation (USBR)	Federal	Grant	2-3	NA	NA	Annual solicitations.	1-2	Low - Medium	• WEEG supports projects that result in quantifiable and sustained water savings, implement renewable energy components, and support broader sustainability benefits. • Requires a case be made on how the project will provide water conservation & renewable energy benefits	• Project must provide quantifiable water savings, renewable energy and/or sustainability benefits • Maximum award is $5,000,000 • 50/50 Cost-share requirement • FY 2023 solicitation recently closed (7/26)

4.3 Initial Rate Modeling Inclusive of Financing

Initial rate modeling found that implementing the project within a shorter period of time with a disciplined rate ramp would save the District's ratepayers millions of dollars.

Modeling the conceptual funding strategy described above allowed the District to estimate the total rate increases needed to afford a partially financed Flume replacement project. Initial rate modeling projected rate increases ranging between eight and 29 percent assessed over a two to four year period. The variability in the estimated rate increases was primarily due to the implementation schedule of the project (i.e., phasing) as well as the time over which the rates are assessed (i.e., rate ramp).

Future decisions pertaining to implementation and timing have considerable effects on the total cost of capital and financing incurred by the District and its ratepayers. **Table 4-3** quantifies the effect different phasing strategies can have on the bottom-line financing costs, as well as the effect ramping rates over a two versus four year period will have on the overall total rate increase.

Note, the rate increases presented in **Table 4-3** are those required to fund the Flume replacement project and are not inclusive of other typical rate increases such as Water Authority pass-through costs and CPI adjustments. This approach isolates the effects the Flume replacement project will have on the District's current CIP, which supports more targeted side-by-side comparisons of various funding and timing scenarios.

Table 4-3. Summary of Potential Impacts to Rates vs. Financing Costs						
	2-year Rate Ramp			4-year Rate Ramp		
	Single-Phase	Two-Phase	Six-Phase	Single-Phase	Two-Phase	Six-Phase
Capital Cost [1]	$170 M			$170 M		
Total Rate Increase Over Time [2,3]	23%	15%	9%	31%	16%	12%
Avg. Annual Rate Increase [3,4]	12%	7%	5%	8%	4%	3%
Total Rate Increase per Unit [3,4]	$1.20	$0.76	$0.46	$1.68	$0.81	$0.64
TOTAL COSTS WITH FINANCING						
Cash Out of Pocket	*$7 M*	*$9 M*	*$37 M*	*$7 M*	*$9 M*	*$37 M*
Application Costs	*$2 M*	*$3 M*	*$5 M*	*$2 M*	*$3 M*	*$5 M*
Grants	*$2 M*	*$ 1M*	*$1 M*	*$2 M*	*$ 1M*	*$1 M*
Principal & Interest [6]	*$315 M*	*$326 M*	*$364 M*	*$315 M*	*$326 M*	*$364 M*
Total Project Cost w/ Financing	**$326 M**	**$339 M**	**$408 M**	**$326 M**	**$339 M**	**$408 M**
Additional Costs Incurred [7]	-	**$13 M**	**$82 M**	-	**$13 M**	**$82 M**
Debt Balance FY2047	**$93 M**	**$113 M**	**$166 M**	**$93 M**	**$113 M**	**$166 M**

1) Costs are presented in 2022 dollars and are based on Alternative #6 rounded to the nearest $10M.
2) Rate increases are rounded to the nearest percent
3) Rate increases presented herein are only those required to fund the Flume project and are not inclusive of other typical rate increases such as annual Water Authority pass-through costs and the CPI adjustment to the Service Fee.
4) Rate increases are rounded to the nearest cent.
5) Defined as the period of time in years the rate increases are assessed to the District's ratepayers.
6) Defined as the total principal and interest paid on the amount of the project financed over the life of the loans.
7) Defined as additional costs for financing a project over a longer duration by extending the schedule beyond a single-phase.

Table 4-3 shows the contrast between implementing the project over shorter versus longer durations (i.e., single-phase, 8-years versus six-phase, 23-years). The above also compares raising rates more aggressively (larger increases over a shorter period) versus less aggressively (lesser increases over a longer period).

The above results show that the least costly option is a single-phased approach. Extending the overall duration of the project with a multi-phased approach was found to increase the bottom-line cost of the project by up to $82 million, which has a corresponding increase to the District's Debt Balance in FY 2047of $166 million. Meaning that the District will incur more costs as well as carry the debt and financial liability of those costs over a longer period.

Also worth considering is the concept of mitigating individual rate increases by extending the period over which rates are assessed. For example, Table 4-3 shows that extending the rate ramp period from two years (green cells) to four years (blue cells) will have no bearing on the bottom-line cost; however, it will increase the total rate increases by three to eight percent ($0.18 to $0.48) to preserve the District's working Capital Improvement Reserve.

In summary, a single-phased project implementation keeps the overall schedule shorter. The benefit to the District is a reduced overall project cost, realized by mitigating the escalation and interest incurred over time, in exchange the District will need to assess higher rate increases to its ratepayers. When evaluating this cost/benefit, the reduced exposure to risks must also be considered. A single-phased project reduces potential liabilities and lowers risks by removing the existing Flume from operation sooner and mitigates exposure to changed conditions by eliminating

multiple phases of contracting, award, financing, and execution. For the Flume's replacement, this suggests that the additional costs and risks incurred through multi-phased implementation are not offset by the reduction in rate increases shown in **Table 4-3**.

4.4 Financing Next Steps

The District should secure the financial assistance needed to obtain a bond rating, continue to evaluate future impacts to rates, as well as apply for loans and grants.

It is prudent for the District to begin formal financial planning now by soliciting the services of a specialty rate consultant. The consultant would work with District Finance staff as the lead, supported by the Alignment Study team as well as District Engineering staff, to study more closely the funding needs and financial impacts associated with implementing the Flume replacement project. The financial planning scope of services should include, but may not be limited to, the following:

- establishing a bond rating for the District,
- develop a funding portfolio and financing strategy,
- model impacts to water rates with refined interest rates and financing costs,
- design a strategic rate schedule appropriate for funding the Flume replacement project,
- plan for the local water system (i.e., at Lake Henshaw and Warner Basin) capital investments currently being considered, and
- begin pre-requisite process required to for application; including but not limited to: project selection, investment strategy development, implementing initial rate increase(s), conduct required public hearing(s), etc.
- apply for low interest loans and grants.

The need for external funding and financial planning presented above is specific to implementing a Flume replacement project (i.e., To Flume). Alternatively, simply retiring the Flume without replacement (i.e., Not to Flume) will also require significant capital investments. The Not to Flume capital investments are in the order of magnitude that will create a similar financial deficit within the District's capital plan. Therefore, it would be prudent for the District to begin financial planning, inclusive of performing the pre-requisite processes, required for securing external funding regardless of the eventual decision To Flume or Not to Flume. **Section 5** provides the most recent affordability check-in on the topic of To Flume or Not To Flume.

In addition, bond rating agencies will consider the District's past record of rate increases when determining the District's investment grade rating. WIFIA and SRF require an investment grade rating for the loan application process, using this rating to establish the loan's interest rate and terms. Up until the recent April 1, 2022 rate adjustment, which funded both capital needs as well as operating costs, the District's past record of rate increases have generally been limited to Water Authority pass-through costs and inflationary adjustments. As a result, the District's past record is expected to yield a less than favorable investment grade rating unless future adjustments are designed to change the District's current standing.

To improve the District's financial position, it is important to prioritize developing a strategic rate design and advance it through the financial planning and Board adoption process in a timely manner. Committing to passing multi-year increases of a size needed to fund the project will help obtain a more favorable investment grade rating and minimize the total cost of financing to the District and its ratepayers.

Section 5

Project Affordability Including the HABs Plan

- Minimum investments at Lake Henshaw may be needed to maintain the District's public trust responsibilities.
- Planning efforts at Lake Henshaw and Warner Basin determined a wider range of possible projects exists, each having varying impacts on the Balance Scale economics.
- Adding the capital costs of local water system improvements does not tip the scale on the decision To Flume so long as local yield is maintained above 2,200 acre-feet per year (afy).
- Sensitivity analyses show that the only reasonable To Flume options also include long-term Harmful Algal Blooms (HABs) mitigation; and the added expenditures are negligible compared to the economic benefits generated by the increased local yield.

5.1 Considering the Range of Future Investments in the Local Water System

Continued investments at Lake Henshaw may be needed independent of the Flume replacement project to maintain the District's public trust responsibilities.

The upper portion of the local water system, managed by the District, is comprised of the Warner Basin wellfield, the ditch system that delivers wellfield water to Lake Henshaw, and the Lake Henshaw Dam. See **Figure 5-1** below for a schematic of the Local Water System.

Continued investments by the District at Lake Henshaw and the Henshaw Dam may be needed independent of implementing the Flume replacement project. These minimum capital expenditures are anticipated in part to maintain the District's obligations to the State's Division of Safety of Dams (DSOD). This constitutes the minimum investment required by the District to maintain its responsibilities to the public trust. This is presented as the "Low Range" project scenario under **Table 5-1.**

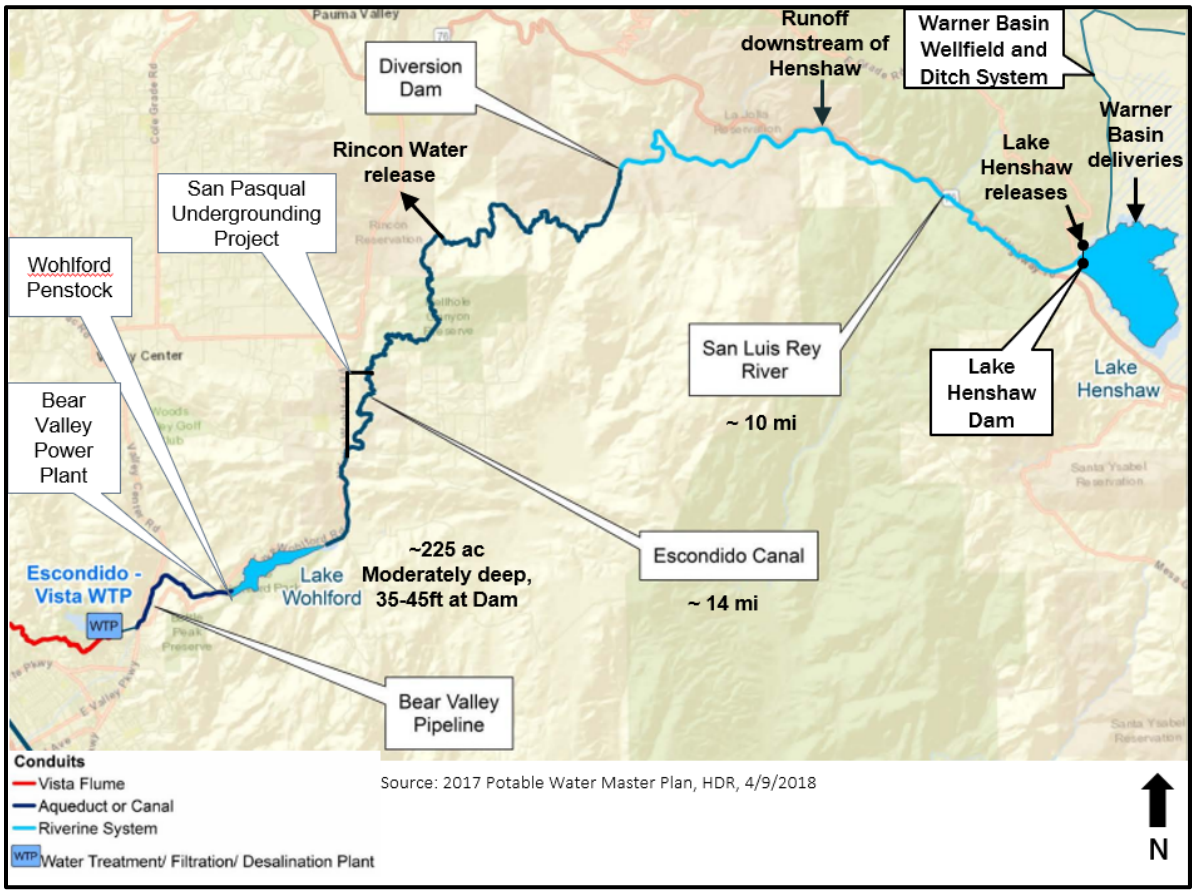


Figure 5-1 – VID's Local Water System Schematic

Planning efforts at Lake Henshaw and Warner Basin determined a wider range of possible project scenarios exists, each having varying impacts on the To Flume Balance Scale economics.

In recent years, particularly since 2018, reoccurrences of HABs in Lake Henshaw have reduced lake releases to historic lows. Additionally, the Warner Basin wellfield operations have also experienced reduced deliveries to Lake Henshaw caused by suboptimal wellhead production rates and failures in the Warner Basin ditch system, both a result of an aging system (i.e., wellheads and ditch systems are exceeding 30-years in age). These issues compounded with the most recent drought have caused the District's share of local yield to fall from a historical 30-year average of approximately 5,000 afy to a recent 3-year average (2018-2021) of approximately 2,000 afy. While the recent low average yields are not statistically representative of a true hydrologic cycle, they are indicative of a local water system that would benefit from strategic investments in restoring its historical operational reliability.

On August 9, 2022, District staff along with consultant Stillwater Sciences conducted a Board workshop to present the findings of the *Lake Henshaw and Lake Wohlford Harmful Algal Blooms Management and Mitigation Plan (HABs Plan)*, dated May 2022. During the Board workshop, the HABs Plan team presented short-term and long-term solutions along with their associated range of costs. District staff stated that a key component to preserving the District's historical yield relies on maintaining the water quality in Lake Henshaw, which in turn allows full access to the runoff it receives. Achieving restored water quality conditions at Lake Henshaw requires implementing multiple HABs solutions in the lake as well as at the wellfield. Additional investments in optimizing

the wellfield also offers the upside benefit of augmenting local yield with the additional sustainable yield produced by the Warner Basin. The range of projects and costs to restore the water quality in Lake Henshaw and optimize the wellfield are presented below in Table 5-1 as the "Baseline" and "High-range" possible project scenarios.

Table 5-1. Possible Range of Local Water System Projects

Local Water System Project Scenario	Range of Capital Costs [1]	Anticipated Range of Average Annual Local Yield [2,3]		
		Pessimistic	Mid-range	Optimistic
Low-range: - Replace wellheads as needed to preserve historical yield - No long-term in-lake HABs solution - Respond to HABs using algaecide when needed - No lake bypass pipeline or additional operational flexibility	$6M	1,600	1,800	3,000
Baseline: - Optimize wellfield to achieve allowable sustainable yield [4,5] - Implement long-term in-lake HABs solution - Preventative HABs control using chemical treatment - No lake bypass pipeline or additional operational flexibility	$17M	3,200	4,500	5,500
High-range: - Maximize wellfield to achieve allowable sustainable yield more quickly [4,5] - Implement long-term in-lake HABs solution - Preventative HABs control using chemical treatments - Install a lake bypass pipeline for additional operational flexibility	$56M	4,300	6,000	6,300

1) Capital costs presented are in 2022 dollars
2) District's share of the anticipated average annual yield produced by the corresponding scenario
3) Yield was approximated based on historical averages, calculated optimized wellfield production, plus the projected effectiveness of HABs mitigation measures
4) Warner Basin's historical yield is ~7,100 afy which equates to a District share of ~1,750 afy
5) Warner Basin's maximum allowable sustainable yield is 9,125 afy, which equates to a District share of ~2,400 afy

Table 5-1 above provides estimated costs, which are based on the cost ranges presented in the HABs Plan plus estimated costs for wellfield improvements prepared by the Alignment Study team. The above effort conceptualizes a range of local water system projects, their probable costs, and the plausible corresponding impacts they might have on the District's share of average annual local yield. In doing so, Table 5-1 shows the cost/benefit correlation that local water system investments would have in augmenting the District's share of average annual local yield.

The above capital cost investments and resulting annual local yield served as inputs into the To Flume or Not to Flume Balance Scale Model. Results of the most recent To Flume or Not to Flume affordability check-in are presented below in Section 5.2.

5.2 Affordability Check-In: To Flume or Not to Flume?

Adding the local water system expenditures at Lake Henshaw and Warner Basin does not tip the scale on the decision To Flume; so long as the District's share of average annual local yield is above 2,200 afy.

The additional capital expenditures needed at Lake Henshaw and the Warner Basin wellfield have tangible effects on the economic viability of the Flume replacement project. These expenditures in

the District's local water system, as described above in **Section 5.1**, add varying degrees of capital costs to both sides of the To Flume or Not to Flume Balance Scale Model (Balance Scale Model). The resulting benefit in each case is an increase to the District's average annual local yield. However, when those local water system costs are combined with a $170 million Flume replacement project, is the resulting increased local yield enough to keep the balance scale from tipping?

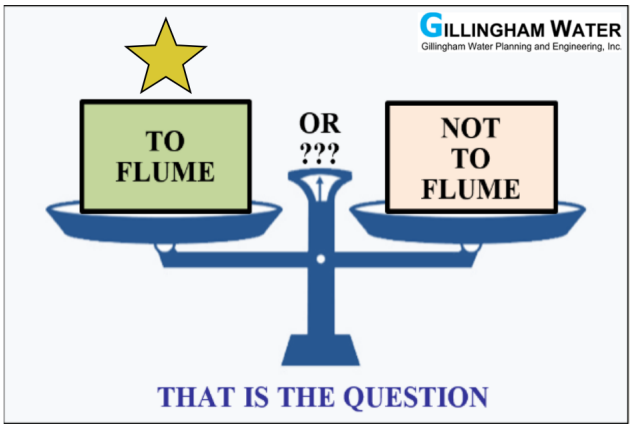


Figure 5-2 – To Flume or Not To Flume Balance Scale

The Balance Scale Model was originally developed by Gillingham Water during the WSPS. The purpose of the model was to find the more favorable long-term solution; being the least costly option to the District, for providing superior supply reliability to is ratepayers and affording the opportunity for continued regional cooperation with neighboring agencies. In doing so, the Balance Scale Model compared the following two scenarios:

- To Flume = Replace the existing Flume and continue to fully operate the local water system to the benefit of the District and its neighboring agencies.
- Not to Flume = Retire the existing Flume, the District purchases 100% imported treated water, and operates the local water system at a limited capacity, continuing to sell water from Lake Henshaw and Warner Basin to Escondido. In addition, the District will transfer the Boot and Bennett service areas and distribution facilities to Vallecitos Water District, as well as construct additional tank storage at Pechstein needed to accommodate Water Authority aqueduct shut downs.

Its results were presented to the Board in March 2020 and concluded that there was a significant economic advantage To Flume over Not to Flume. Gillingham Water updated the Balance Scale Model during Phase 2 of this Alignment Study and presented updated results at Board Workshop No. 1 (August 2021). Sensitivity analyses were run on the Balance Scale Model by reducing the District's share of average annual local yield from 5,000 afy down to 4,000 afy. This 20 percent reduction in average annual local yield was intended to account for the effects HABs might have on future yield. At the time, the assumption was conservative, but reasonable, given the unknowns pertaining to the effectiveness of future HABs solutions as the HABs Plan was just underway. The results presented to the Board during Workshop No. 1 of this Alignment Study, which were based on a reduced share of average annual local yield at 4,000 afy, showed a 30-year net present value (NPV) economic advantage To Flume of approximately $70 million, see **Figure 5-3** below.

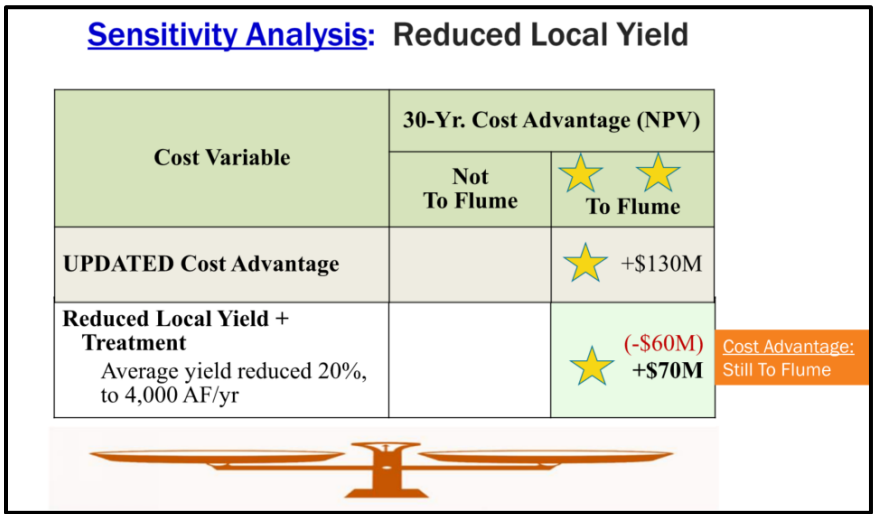


Figure 5-3 – Board Workshop No. 1 Slide Showing To Flume with a Reduced Local Yield

Since Board Workshop No. 1, of this Alignment Study, Stillwater Sciences has completed the initial phase of the HABs Plan and presented its recommendations to the Board. This work has provided more context for better understanding the costs and effectiveness of future HABs mitigation and important inputs in the Balance Scale Model. During the current phase of this Alignment Study (Phase 3), the Balance Scale Model was updated once again to match current knowledge. A listing of the most recent updates made to the Balance Scale Model are listed below in Table 5-2.

Table 5-2. To-Flume vs. Not-to-Flume Balance Scale Model Updates

Category	To-Flume	Not-to-Flume
Flume Capital Costs	- Updated to July 2022 market values - Used $170M based on the shortlisted alternatives	- Same as To Flume - Used updated Flume demolition costs
System Improvement	- Additional treatment costs at EVWTP - San Pasqual Undergrounding is now a sunk cost	- Larger Pechstein II w/ additional storage during Water Authority Shutdowns - Purchase supply capacity from Oceanside's Weese WTP - Increased Boot & Bennett transfer costs - San Pasqual Undergrounding is now a sunk cost
Local Water System Investments	- New costs added for Lake Henshaw long-term HABs mitigation - Accelerated pace of Warner Basin well replacements; six new wells up front	- New costs added for Lake Henshaw long-term HABs mitigation - Accelerated pace of Smaller Warner Basin well replacements; three new wells up front
Other Input Values	- Water Authority Rates - Financial Terms (Inflation rate, discount rate, melded cost of funds) - Local yield per "Mid-range" shown in Table 5-1 above	- Same as To Flume

When applying the above considerations to the Balance Scale Model the 30-year NPV cost advantage continues to tip the scale To Flume by approximately $130 million at an anticipated local yield of 4,500 afy. Only under circumstances when the District's share of average annual local yield is below 2,200 afy would the cost advantage breakeven with the Not to Flume option. However, there are more details to consider, and important takeaways to learn, from the Balance Scale Model sensitivity analyses presented below.

Sensitivity analyses show that the only reasonable To Flume options also include long-term HABs mitigation; and the added expenditures in the local water system are negligible compared to the economic benefits generated by the increased local yield.

Since future local water system projects are in the early stages of planning, a reasonable range of project costs and estimated local yields were needed for Balance Scale Model sensitivity analyses. The range of projects used were as defined above in **Table 5-1**. Those varying local water system costs and corresponding local yields were applied to a "baseline" condition in the Balance Scale Model. The model inputs, which comprise this baseline condition, are listed below in **Table 5-3**.

Table 5-3. Baseline Condition Summary – To Flume		
Component	**Assumption**	**Description / Detail**
Costs	Costs for all line items set at Mid-Range estimates	• Flume replacement costs based on Alignment Alt. 1 • San Pasqual Undergrounding costs removed (these are now sunk costs)
Finance	Capital costs financed via revenue bonds and WIFIA loans	• Planning costs up through EIR certification are PAYGO • Construction and all construction-related costs are FINANCED • Option to set Engineering Final Design costs as PAYGO or FINANCED
HABs	Adverse effects minimized via cost-effective prevention and mitigation measures	• Use middle of Stillwater cost estimates • No bypass pipeline • Escondido pays 50% of costs
Wellfield	Restored to historical production levels	• New wells up front, 6 for To Flume and 3 for Not To Flume • Sinking fund for OMRR sufficient to maintain well capacity over long-term • Escondido pays ~35% of costs
Delivery Reliability Mitigation	$60M cost allowance for new treated water storage and/or other delivery reliability improvements	• Costs moderated by the potential for one or more of ○ Desal to P3; P4 Isolation Valve; or Supply from Weese
Average Annual Local Yield (to District) [1]	4,500 AF/yr (Baseline) [2]	• Hydrology: Long-term average • Well-Field Capacity: Restored (to historical average) • HABs Mitigation and Effect: Baseline mitigation; still results in 5-10% reduction in average yield • Climate Change: Results in 0-10% reduction in average yield • EVWTP Local Water Blend Ratio: Same as current • Wohlford Storage Capacity: Restored via new dam
SDCWA Rate Escalation	Per SDCWA Long-Range Finance Plan	• Mid-Range of SDCWA long-range forecast through CY22 • Thereafter, 0.5% above Water System Base Inflation rate
Exchange Benefits	Escondido purchases portion, but not all, of District supply	• Escondido ability to utilize District share of local water constrained by demands and by the Local Water Blend Ratio of 40% • Escondido able to purchase on average 2,500 AF/yr • Unit sales price represents discount in comparison to Escondido purchase of raw water from SDCWA

Boot and Bennet Transfer	District pays most of the Vallecitos list-price costs	• Absent the Flume, District will need to transfer these service areas to Vallecitos
		• District pays transfer costs to Vallecitos as follows:
		  ○ Annexation Fees: in full
		  ○ Capacity Fees: in full
		  ○ Infrastructure transfer fee: split 50/50 with Vallecitos

1) Sensitivity analysis presented below adjusted this value using the ranges of projects, costs, and yields shown in **Table 5-1**
2) Per "Mid-range" value shown in **Table 5-1**

Table 5-4 below shows the results of the sensitivity analysis performed using the Balance Scale Model. Under all scenarios where long-term HABs mitigation is implemented, the cost advantage continues to favor the To Flume option. However, when long-term HABs mitigations are not implemented, the resulting reduction in local yield can tip the scale toward Not to Flume.

Table 5-4. Balance Scale Model Sesitivity Analysis					
Possible Investment Strategies	**To Flume ($M) [3]**	**Not to Flume ($M) [3, 4]**	**Cost Advantage ($M) [3, 4, 5]**	**Anticipated Yield (afy) [5, 6]**	**Break-even Yield (afy) [7]**
Baseline Condition[1] without HABs mitigation (Low-range[2])	$260M	$240M	Not To Flume $20M	2,000 afy	2,200 afy
Baseline Condition[1] with HABs mitigation (Baseline[2])	$280M	$410M	To Flume $130M	4,500 afy	2,200 afy
Baseline Condition[1] with HABs mitigation plus optimized wellfield and bypass pipeline (High-range[2])	$310M	$500M	To Flume $190M	6,000 afy	2,200 afy

1) See **Table 5-3** for definition
2) See **Table 5-1** for definition
3) Costs are 30-year net present value and are rounded to the nearest $10M
4) Not to Flume assumes District retires the Flume and continues to sell local water to Escondido to help offset costs of retirement
5) Costs presented are a function of average annual local yield; note, as anticipated local yield increases so does the cost advantage To Flume.
6) District's share of anticipated average annual yield produced by the corresponding scenarios shown on **Table 5-1**
7) District's share of average annual local yield needed for there to be no cost advantage between To Flume and Not to Flume

This analysis has quantified the value the ecologic health of Lake Henshaw has on the economic viability of the Flume replacement project. It also found that the anticipated local water system expenditures are relatively small compared to the economic advantage gained by the increased local yield.

For example, from **Table 5-4** above, the "Low-range" expenditure estimated to produce an average annual local yield of 2,000 afy, which results in a To Flume project cost of $260 million and a Not To Flume project cost of $240 million on a 30-year NPV basis. At this specific yield-to-cost relationship, the Not To Flume option has a 30-year NPV cost advantage over To Flume by approximately $20 million. Now, if the District continues to fully operate and maintain its local water system, the "Baseline" option's 30-year NPV cost To Flume would increase to $280 million while Not to Flume would increase more greatly to $410M. The corresponding increase in local yield and resulting avoided cost of purchasing treated water, achieved by these investments effectively tips the scales toward the To Flume option. At this specific yield-to-cost relationship, To Flume is estimated to have a 30-year NPV cost advantage of $130 million over Not to Flume. The key difference between these two scenarios is the implementation of long-term HABs mitigation measures.

The District may move forward with confidence that investments in the local water system resulting in improved local yield will have significant economic advantage to the District and its ratepayers.

From the above analysis, it was estimated that for every 100 afy the District adds to its share of local yield the corresponding cost advantage To Flume increases by $6.7 million on a 30-year NPV basis. This metric supports the notion that investing in the local water system pays in dividends, as the additional costs for improvements are low compared to the economic advantages gained by the increased local yield. Since the economic advantages of To Flume are so tightly connected to local yield, it would be prudent to consider implementing the improvements to Lake Henshaw and the Warner Basin wellfield within the same CIP window as the Flume's replacement. However, the projects are complex and packaging them together as one large capital project is not recommended without further consideration and closer study.

5.3 Considering Divestment Options Is Underway

Previous versions of the Balance Scale Model limited the Not to Flume option to retiring the Flume while continuing to sell local water to Escondido, but other variations of Not to Flume exist and are currently being considered.

The work presented in **Section 5.2** compares the To Flume option against Not to Flume, in which the District continues its responsibilities for the local water system and recovers costs by selling a portion of its unused entitlement to Escondido. This begs the question, is there a cost advantage to simply walking away from these commitments? At the time this Board packet was developed the Alignment Study team began evaluating variations of the Not To Flume option which included divestment. This would consider scenarios where the District retires the Flume, exercises its contract right to walk away from the local water system, and no longer generates revenue by selling its unused entitlement of the annual local yield.

The project team will report preliminary findings of the initial sensitivity analyses pertaining to divestment at Workshop No. 2. Additionally, this work will be incorporated into the follow-on affordability check-in work, which will be conducted during Phase 4 – Fine Screening and presented at Board Workshop No. 3.

Section 6

Conclusions

The work performed in *Phase 3– Coarse Screening Results and Recommended Short-list*, as presented herein, concludes the second major step in this Alignment Study. The key findings of this work will shape the next phase of the Alignment Study, *Phase 4 – Fine Screening Results and Proposed Project Selection*. Below is a summary of the conclusions resulting from Phase 3:

1. **The Alignment Study has evaluated a broad range of alternatives during Coarse Screening. It recommends Alternatives 1 and 6 plus the Beginning and End Corridors of Alternative 2 advance to Fine Screening.**

   Alternatives 1 and 6 provide the most favorable cost vs. risk rating in comparison to the remaining four alignments. Conversely, Alternative 5 may be eliminated as its vertical profile creates hydraulic, constructability, and operational challenges that are impractical and too costly to overcome. The beginning and end corridors for Alternative 2, 3, and 4 presented options for special consideration. As a result, the Beginning and End Corridors for Alternative 2 offered potential benefits to improving the overall constructability and operations of Alternatives 1 and 6. Therefore, shortlisting them opened more options for matching the best Beginning, Middle, and End corridors during Fine Screening (Phase 4). See **Section 3.2** for more detail and **Figure 3-2** for a map of the shortlisted alignments.

2. **PAYGO is no longer a sustainable option, and capital financing will be required. Recommend hiring a specialty rate consultant to initiate the financial planning needed to prepare the District for capital financing.**

   The Flume has exceeded its useful life and construction costs continue to escalate above industry norms; time is of the essence. Although a PAYGO approach to funding would allow the District to avoid the process of acquiring loans and issuing bonds, it creates a financial deficit, which will consume the District's Capital Improvement Reserves within the first two years of implementation and unduly penalizes current ratepayers, see **Section 4.1**. Conversely, prolonging implementation of the project through a multi-phased approach adds significant costs and risks, which are expensive and impractical, see **Section 4.3**. Securing outside funding that will allow for expedient project implementation while mitigating necessary rate increases is essential. In support, the District should prepare for capital financing by initiating the formal financial planning needed to establish a rate design, obtain a bond rating, and apply for and secure external funding.

3. **The To Flume option retains significant cost advantage in comparison to the Not To Flume option, even when accounting for improvements at Lake Henshaw and Warner Basin; so long as the District's share of average annual local yield is above 2,200 afy.**

   Despite costs continuing to escalate, the To Flume option remains economically favorable. Adding local water system improvement projects to the balance scale increases yield and more favorably supports the To Flume economics. Improvements to Lake Henshaw and the Warner Basin wellfield designed to support the District's continued operation of its local water system should be done in the same capital improvement planning window. See **Section 5** for details.

4. **The District may move forward with confidence that investments in the local water system resulting in improved local yield will have in significant economic advantage to the District and its ratepayers.**

   Sensitivity analysis performed during this phase found that for every 100 afy the District adds to its share of local yield the corresponding cost advantage To Flume increases by $6.7 million on a 30-year NPV basis, see Section 5.2. This metric supports the notion that investing in the local water system pays in dividends, as the additional costs for improvements are low compared to the economic advantages gained by the increased local yield.

5. **The analyses presented herein supports the District's continued investment in project planning, for both the HABs Plan as well as this Flume Replacement Alignment Study. Recommended next steps include:**

   - Proceed with *Phase 4 - Fine Screening Results and Proposed Project Selection* of the Alignment Study
   - Continue investigating options for mitigating HABs as well as optimizing the wellfield
   - Perform a predictive model of future yield considering climate change factors to meet the requirements of funding sources such as WIFIA
   - Hire a specialty rate consultant to initiate financial planning, develop a rate design to fund the Flume's replacement, and prepare the District for capital financing
   - Continue to collect the data required to initiate environmental documentation at the conclusion of this Study
   - Conduct another affordability check-in for presentation at Board Workshop No. 3

EXHIBIT A

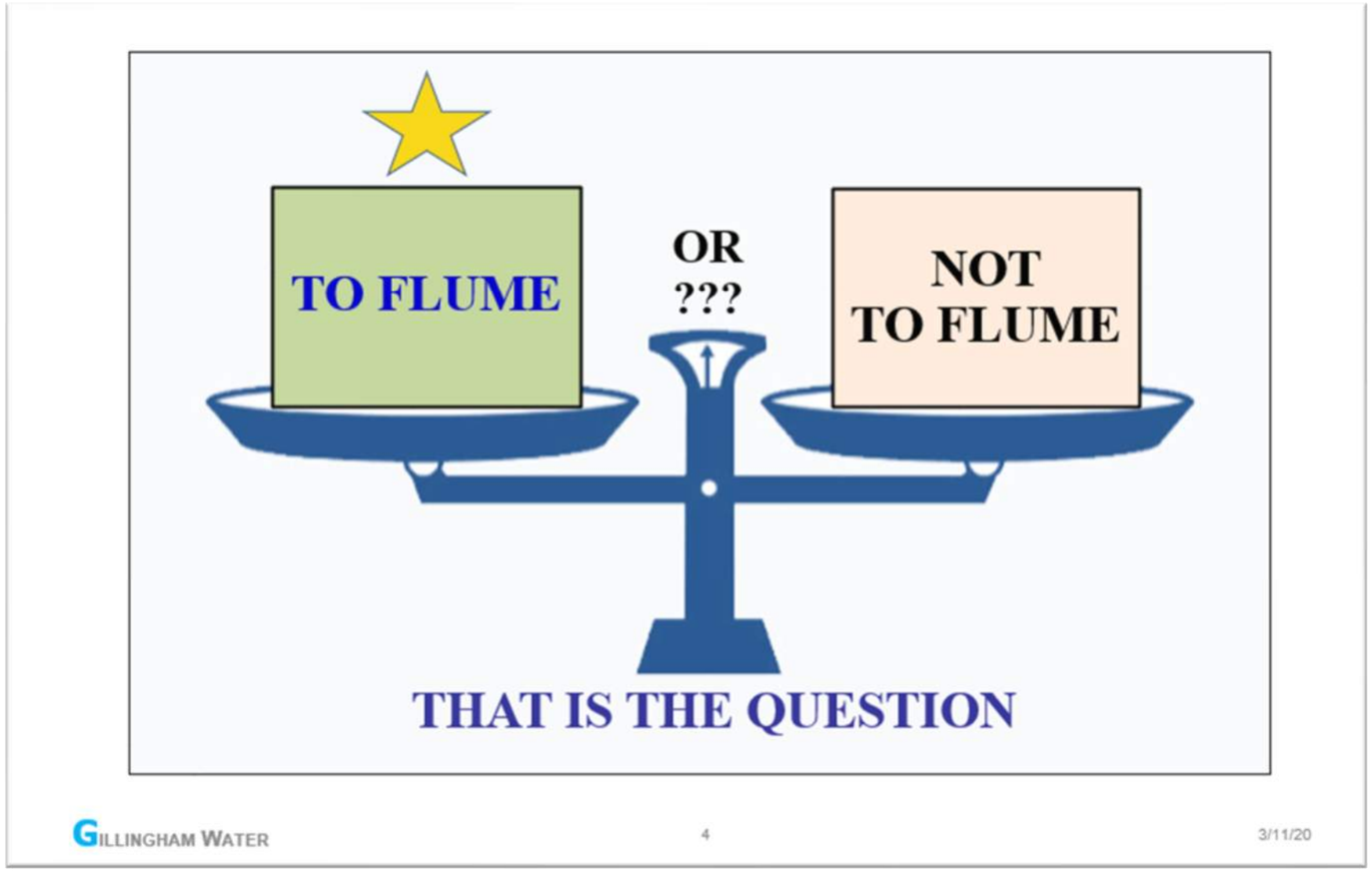
Flume Replacement Alignment Study

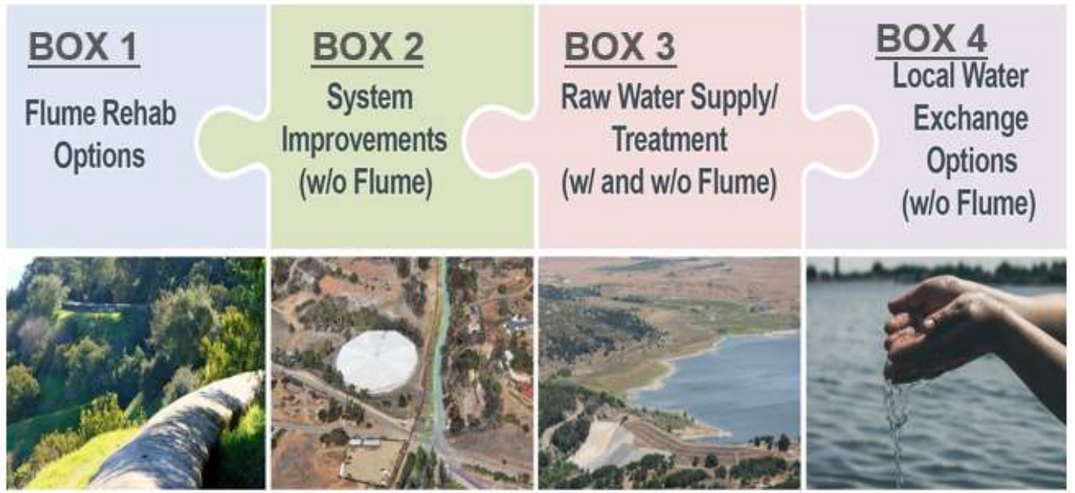
Board Workshop #2 – Coarse Screening

September 20, 2022

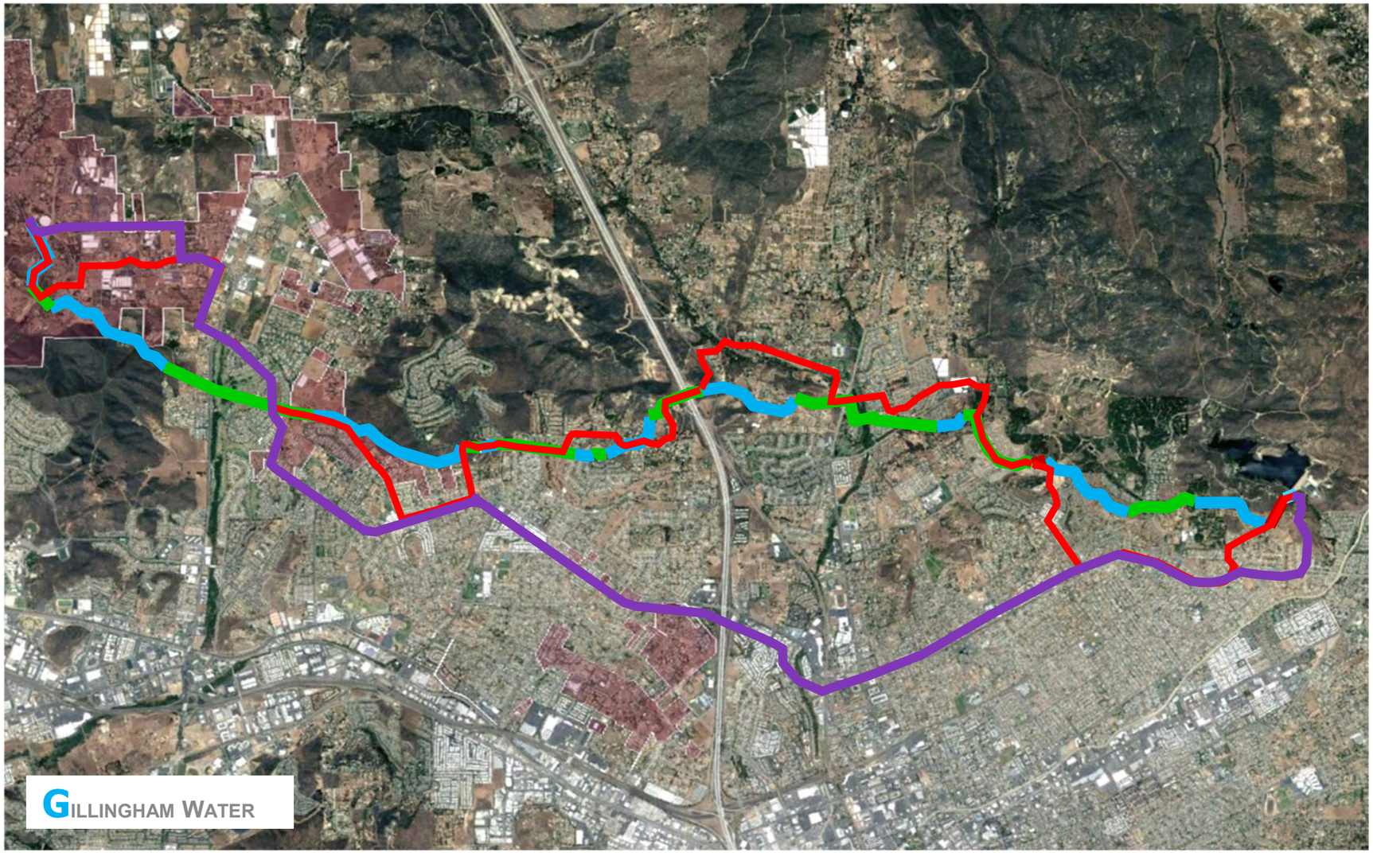
Defining the **next** legacy

Where we came from: To Flume or Not to Flume?





Where we came from: Two Alternatives Captured the Range of Possibilities



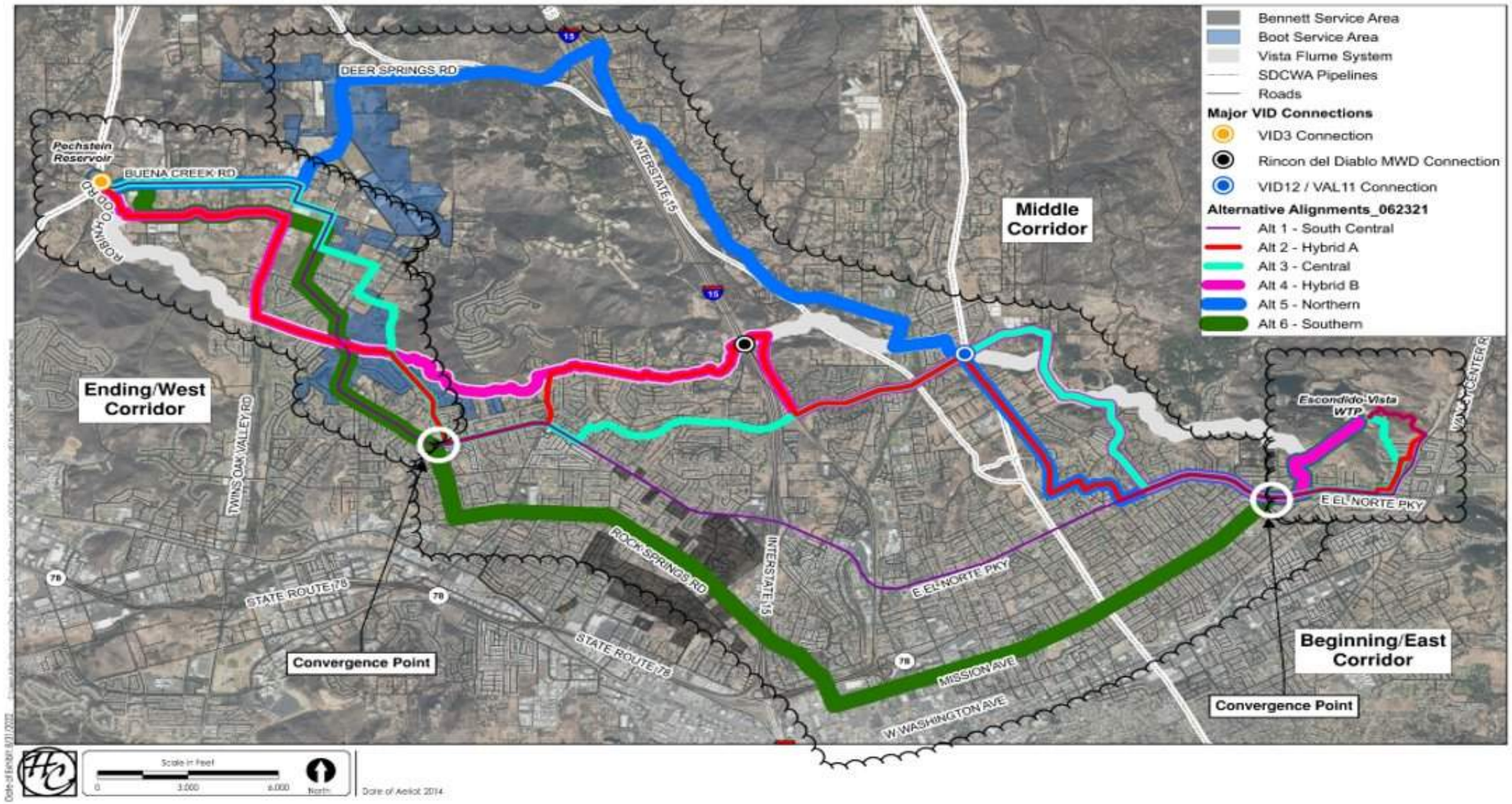
Defining the **next** legacy

RELIABLE

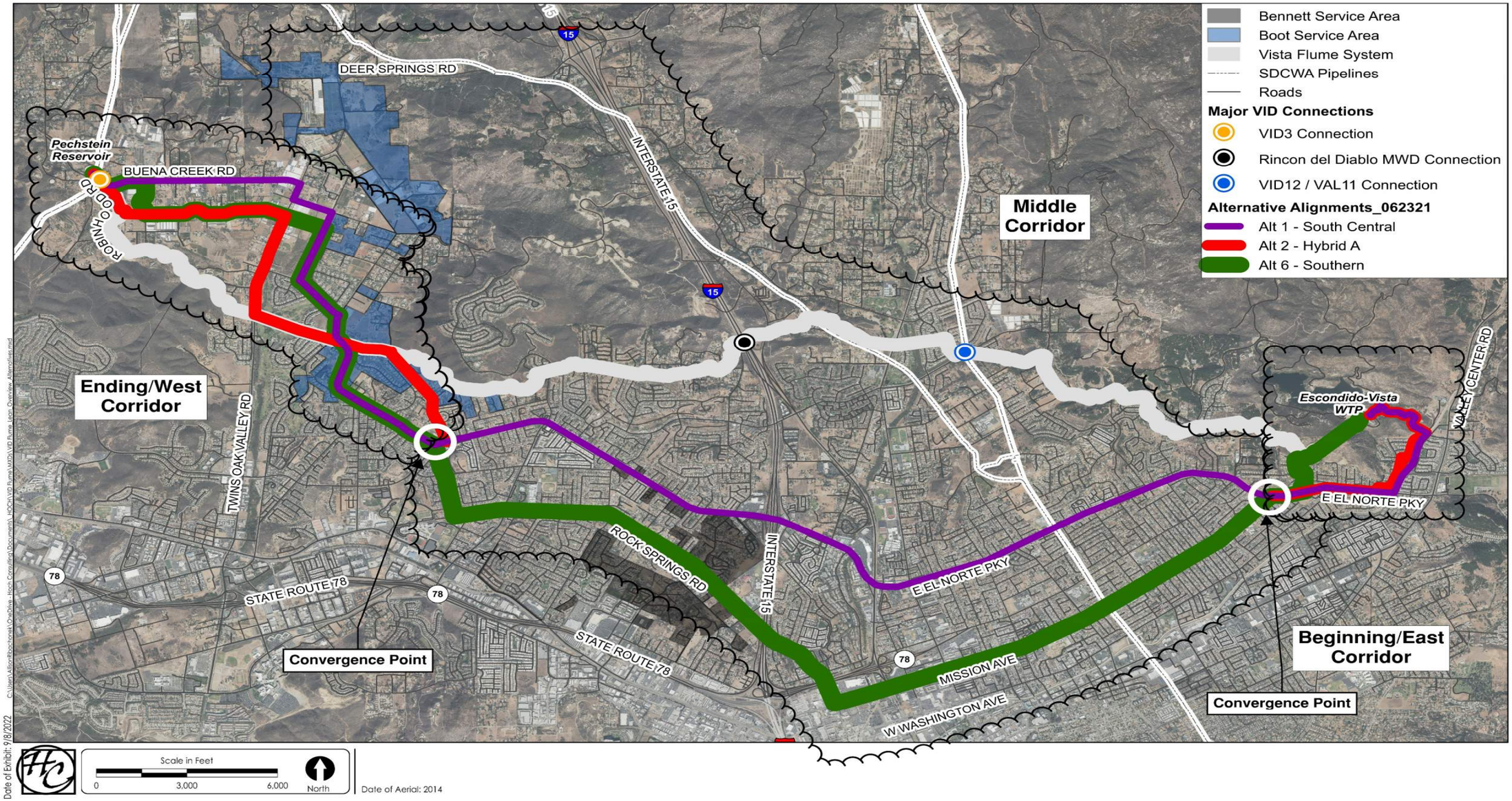
AFFORDABLE

RESPONSIBLE

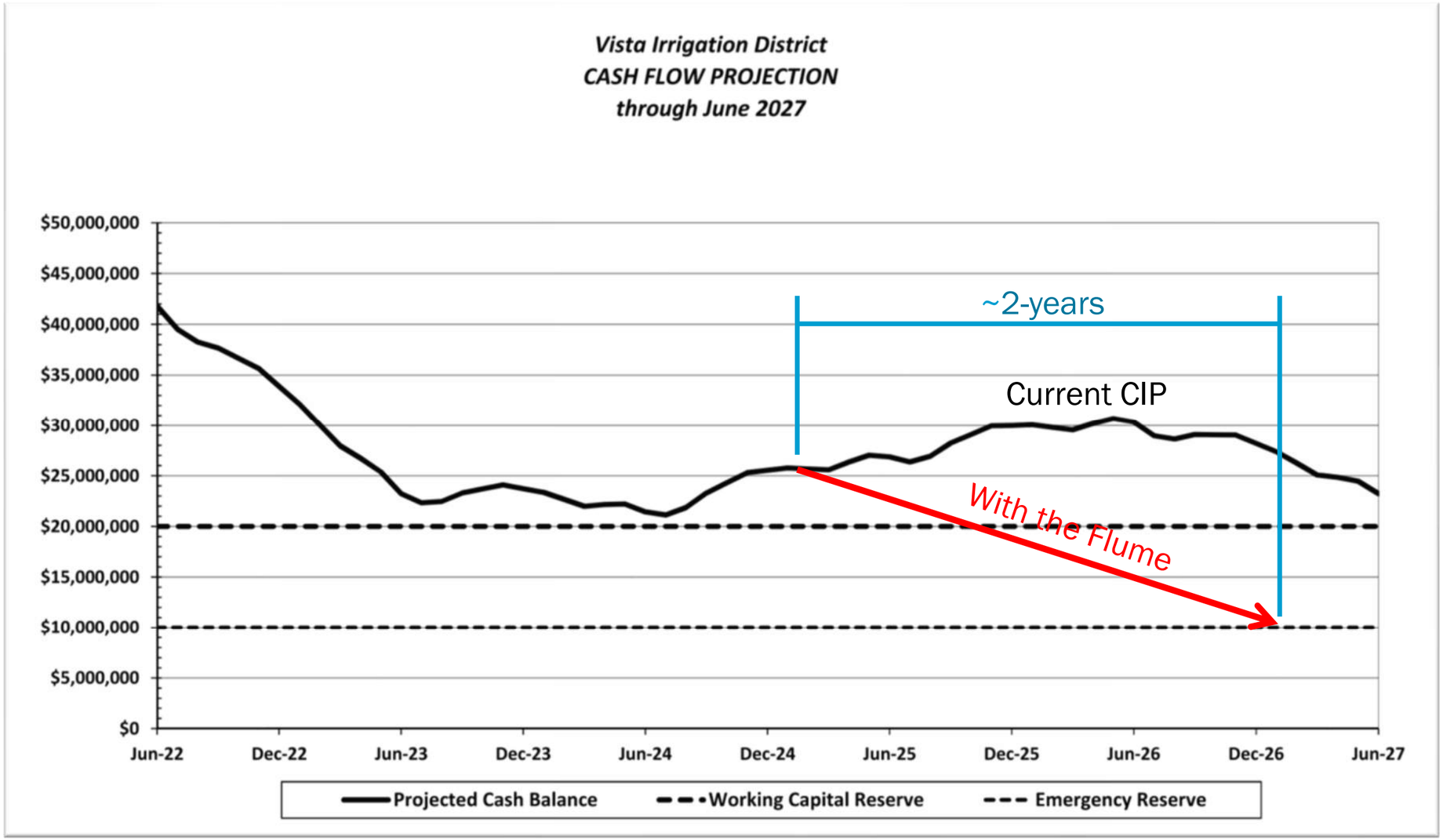
All six alignments alternatives remain as viable options.



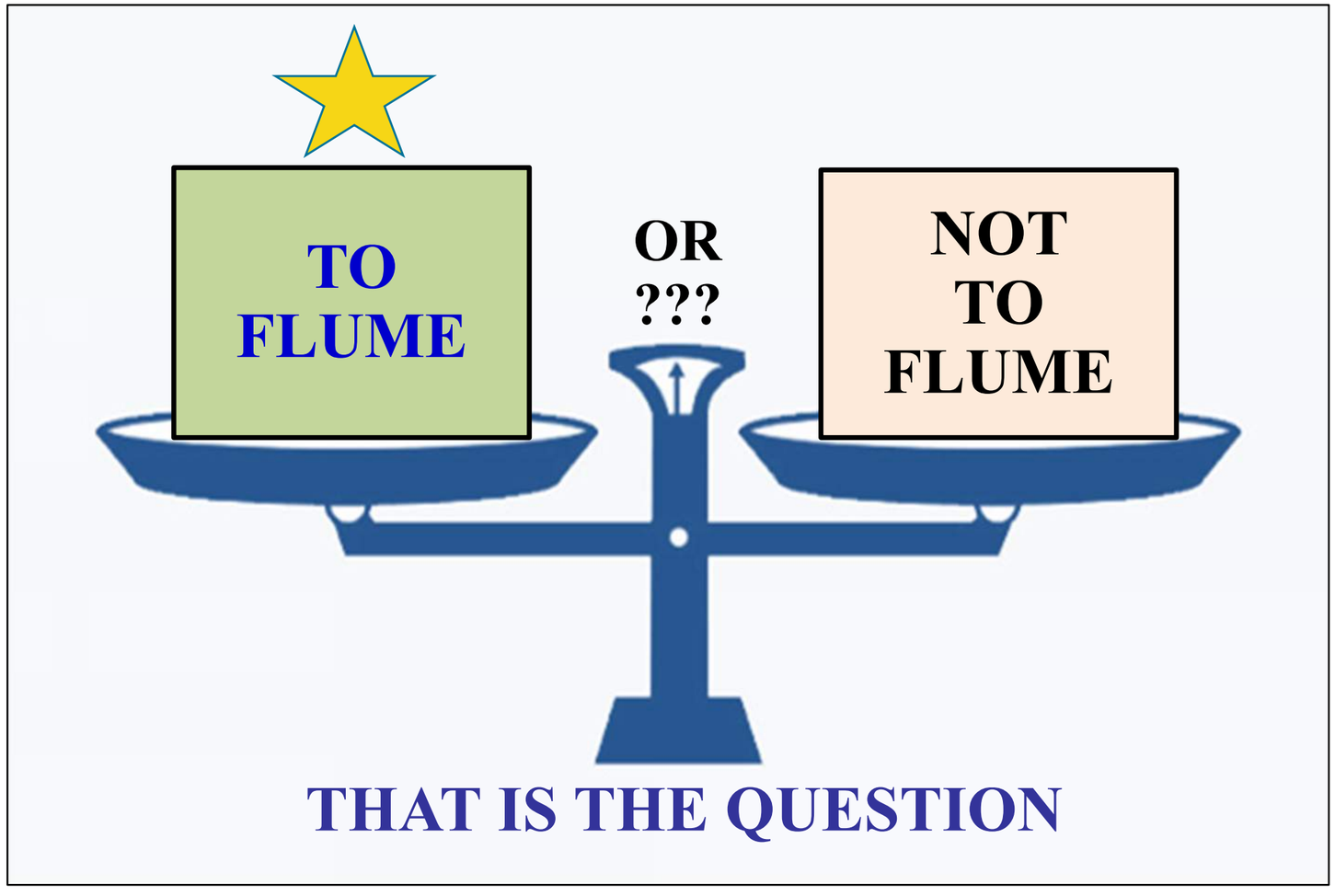
Recommended shortlist; Two Alignments plus Two Corridors



Initial rate modeling determined PAYGO is not a sustainable option, and the District should prepare for capital financing



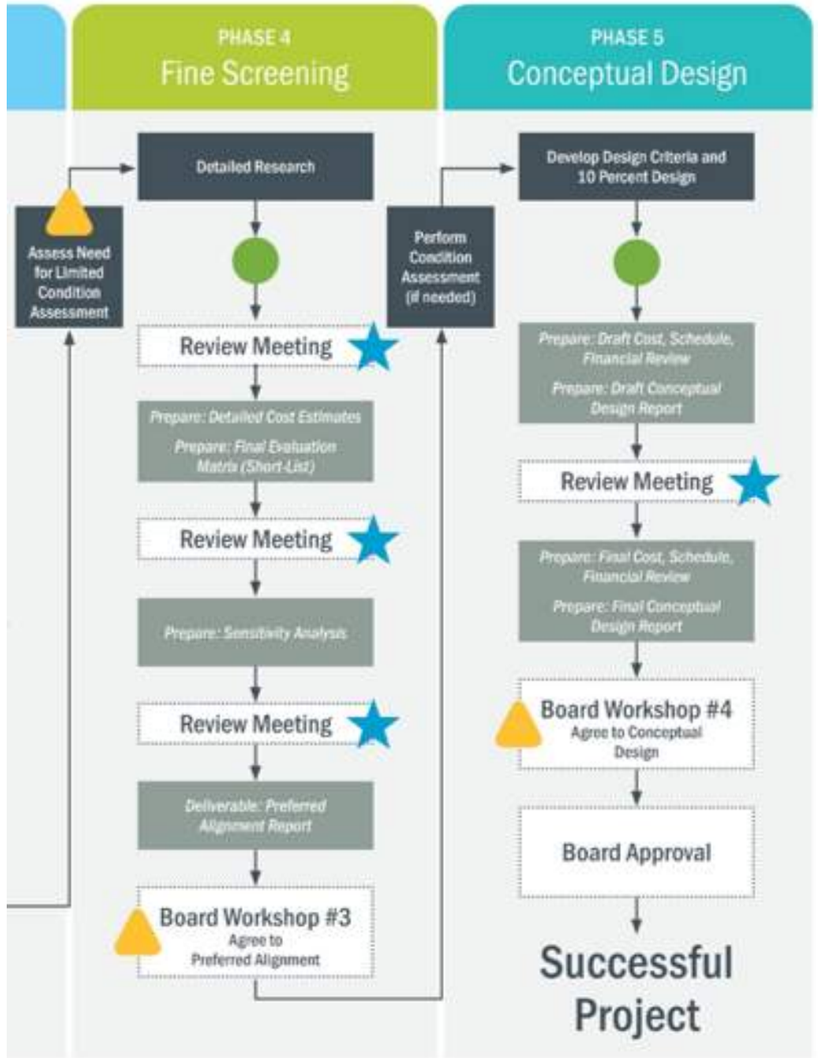
Despite escalating costs, need for financing, and future local water system investments, the decision To Flume still maintains the economic advantage.



Study Process: Preparing to move into Phase 4.

Workshop Objectives

- **Report** on work completed to-date
  - alignment alternatives analysis
  - coarse screening evaluation results and shortlist
  - plausible funding strategy & preliminary rate modeling
  - cost & affordability check
- **Obtain Board's feedback** on work performed and recommended next steps
- **Reach consensus** on:
  - advancing study to Phase 4 – Fine Screening
  - beginning formal financial planning



Agenda

1. Introduction and Purpose
2. Overview of Alignments
3. Alternatives Evaluation – Coarse Screening
4. Project Funding Scenarios
5. Project Affordability Including the HABs Plan
6. Conclusions

Brown AND Caldwell

Defining the **next** legacy

1. Introduction and Purpose

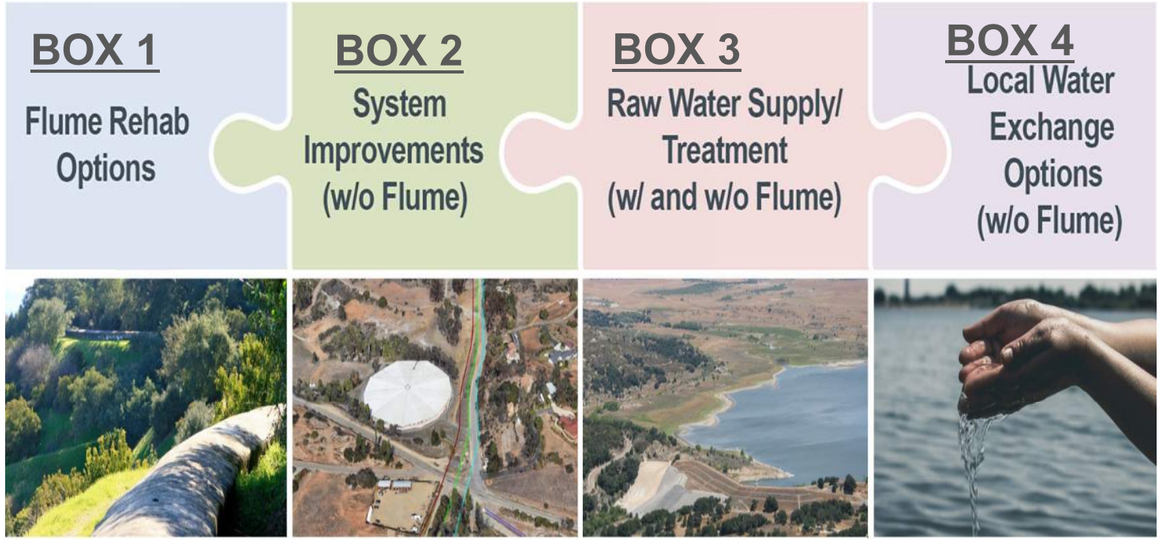
Speaker: J.P. Semper, P.E.

Brown AND Caldwell

Defining the **next** legacy

Where we came from: To Flume or Not To Flume?

- WSPS, which concluded in Jan. 2020, Four “Boxes” were evaluated
- 2 alignment alternatives defined the range of the “To Flume” project
- Determined “To Flume” was most favorable option



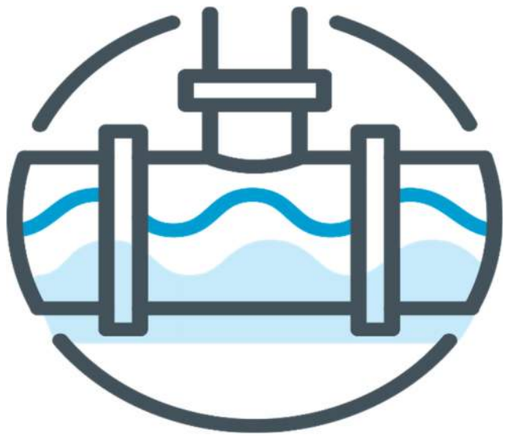
Next Steps: To Flume

Action	Schedule / Budget
1. Alignment Study	18-24 months $0.75M - $1.25M
2. Environmental Documentation	18-24 months $0.75M - $1.25M
3. Financial Planning	12-18 months $0.1M - $0.25M
4. Miscellaneous • Average Local Yield: Refine estimates	12-18 months $0.1M - $0.25M
TOTAL	24-36 months $1.7M - $3M

Where are we headed: How to Flume?

PLANNING FACTORS:

- feasibility and cost-effective construction,
- reliability,
- environmental effects,
- long-term operations and maintenance (O&M), as well as
- affordability, impacts to rates, and funding options.



RELIABLE

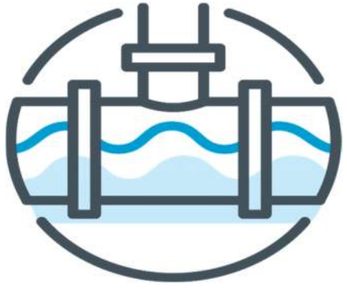
AFFORDABLE

RESPONSIBLE

Where are we headed: How to Flume?

SUCCESS FACTORS:

- Consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation, per CEQA,
- Avoid surprises related to feasibility or cost that unexpectedly tips the scale on the “To Flume or Not to Flume” decision by regularly tracking pertinent cost data and preparing more detailed construction cost estimates,
- Support the District’s decision to replace the Flume by presenting a clear project roadmap in a preliminary design report that includes a project funding plan for the preferred alignment.



RELIABLE

AFFORDABLE

RESPONSIBLE

Where are we headed: How to Flume?

PLANNING OBJECTIVES:

1. Alignment Criteria and Alternatives Evaluation
2. Funding Support
3. Project Affordability Checks
4. Assess Potential Environmental Impacts
5. Convene Multiple Workshops with the Board

Defining the **next** legacy



Recap of Board Workshop #1

CONCLUSIONS:

1. Six alignments have been developed
2. To Flume continues to be economically preferred
3. Retiring the Flume remains a high priority
4. Advancing financial planning for this project would be prudent

"For Workshop No. 2, we will prepare a discussion related to project affordability, funding opportunities, prioritization within the District's Capital Improvement Plan (CIP), and next steps for preparing the District in securing financial assistance may it be through grants or loans."

NEXT STEPS:

1. Collect detailed data for the six alignments
2. Develop capital costs for the six alignments
3. Conduct Coarse Screening and shortlist top 2-3 alignments
4. Begin preliminary financial planning to understand the cost of funding
5. Repeat the affordability check with refined information
6. Report back to the Board at Workshop #2

Where are we today: Phase 3 – Coarse Screening

1. evaluated a reasonable range of corridors for Flume replacement,
2. found six alignments for coarse screening,
3. generated planning level cost estimates for each alignment,
4. developed evaluation criteria and performed initial Coarse Screening,
5. shortlisted the alignments recommended for Fine Screening,
6. completed an affordability check-in confirming the <u>To Flume</u> decision.

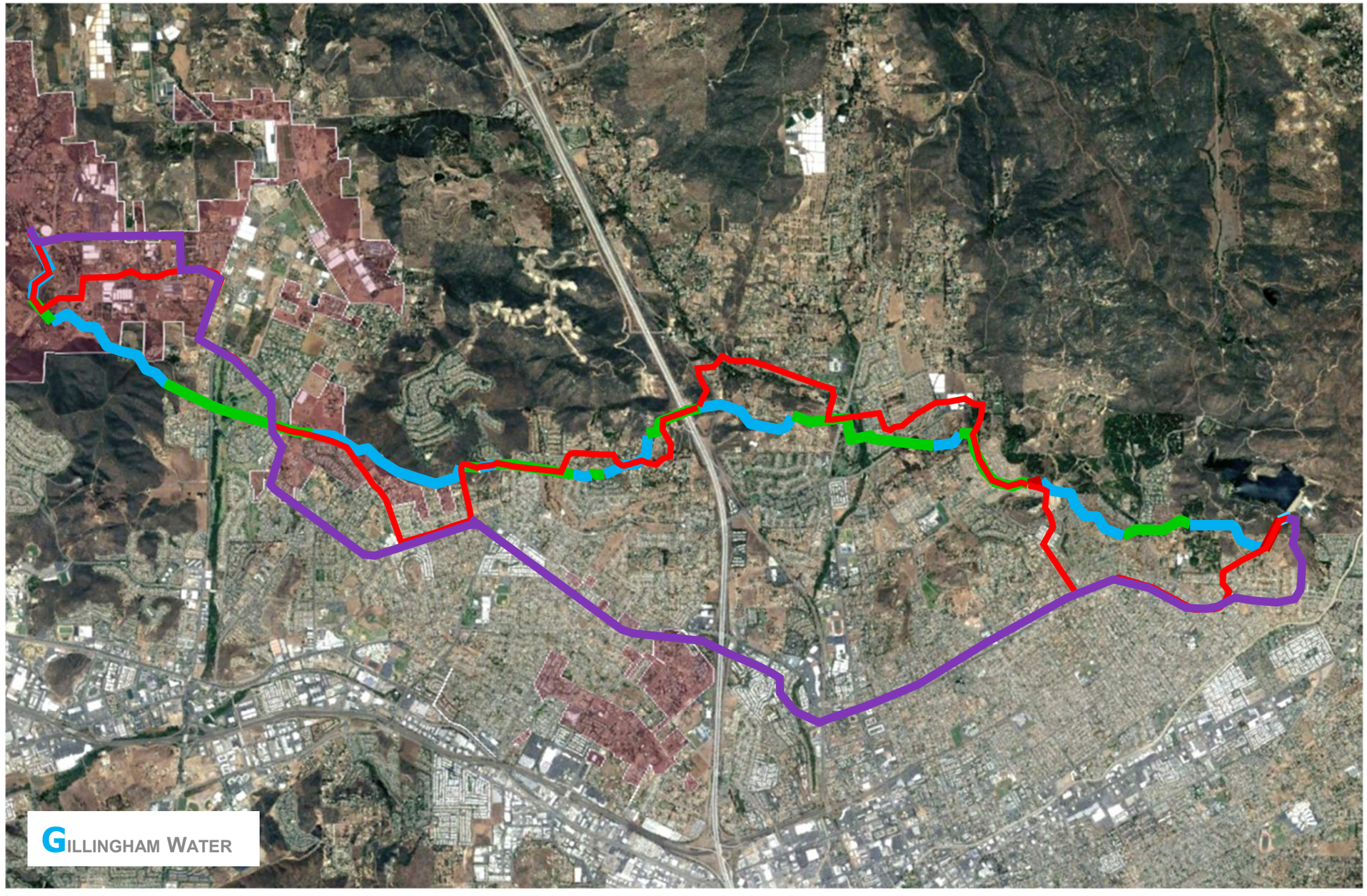
2. Overview of Alignments

Speaker: Paige Russell, P.E.

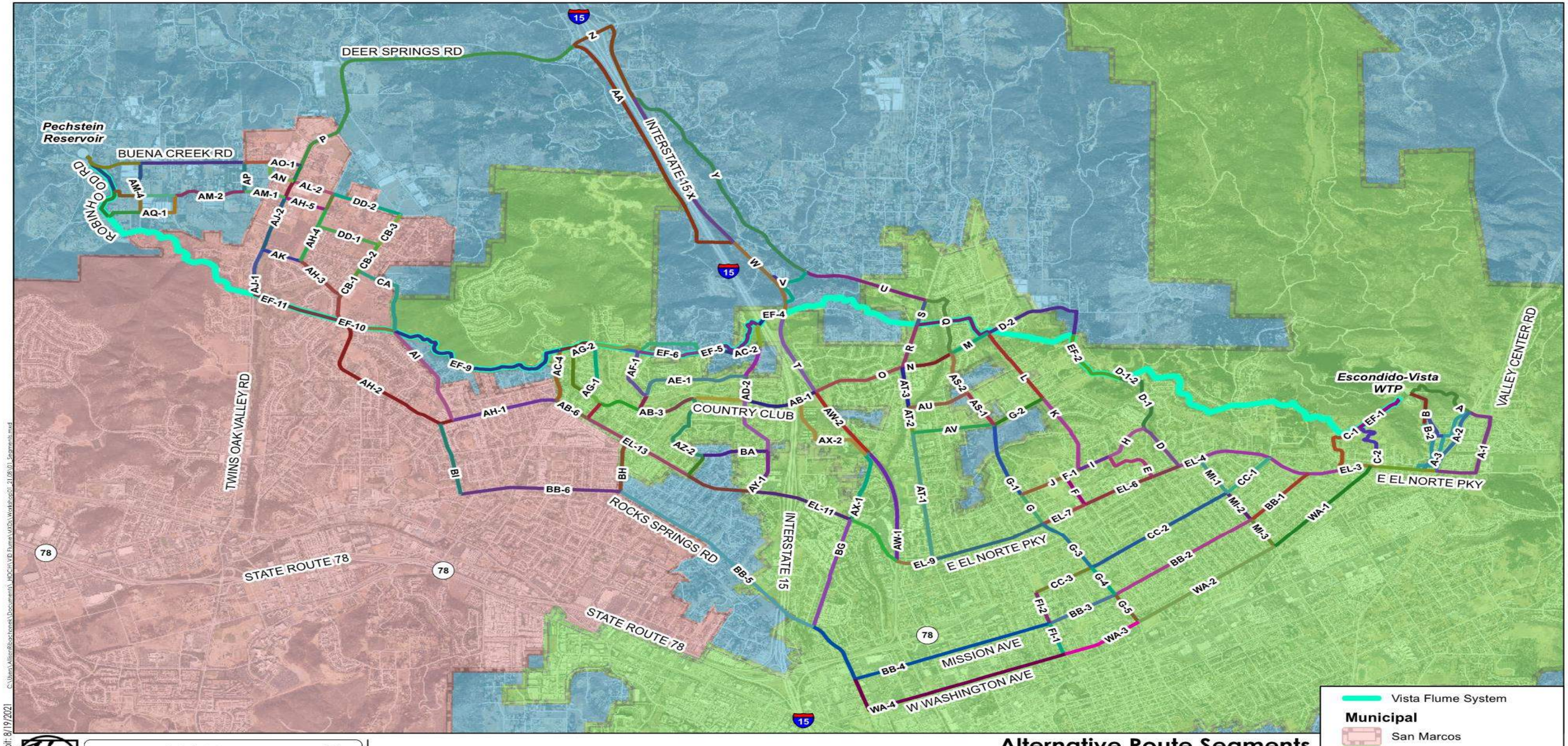
Brown AND Caldwell

Defining the **next** legacy

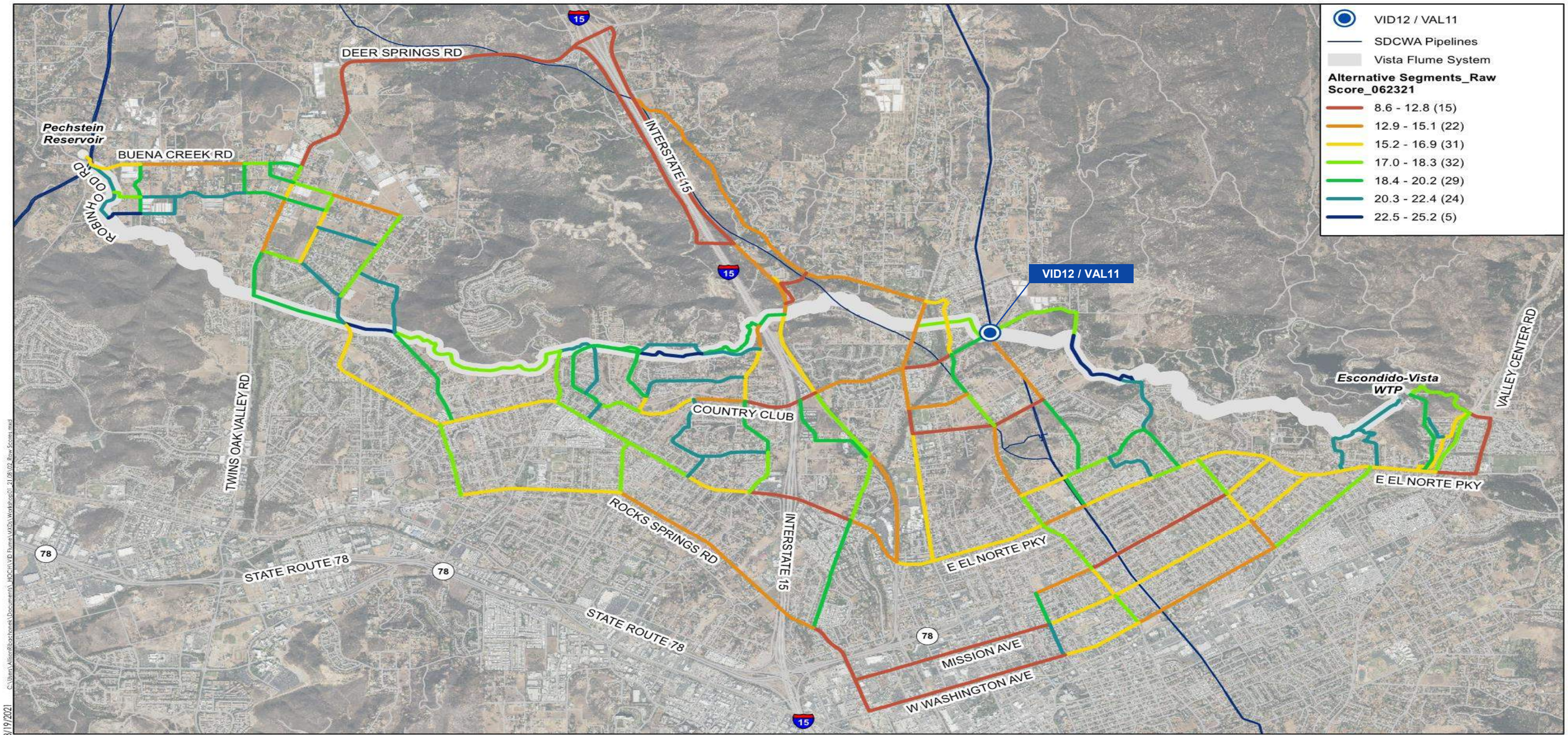
WSPS Alternatives: captured a wide-range of “replacement” costs



Constructible Corridors: total of 158 segments evaluated



Constructible Corridors: preferred segments identified



Date of Exhibit: 8/19/2021

Scale in Feet
0 3,000 6,000
North

Date of Aerial: 2014

Alternative Segments: Raw Scores
VID Flume Replacement Alignment Study
210006

Six alignments developed: Alternative #1 – South Central

Phase 1

Phase 2

Length (mi)	11.7
Pumping or Tunneling Required	No
Direct Connection to: -VAL11/VID12 -Rincon del Diablo MWD -Boot/Bennett	 -No -No -Yes
Phasing Potential	Low
Takeaway	A direct route in ROW that pressurizes the Flume and avoids risky & difficult hillsides; avoids Big Tunnel but uses more trafficked corridors
Pros	• One of shortest alignments • Pressurization without pumping or tunneling • Avoids all hillsides • Connection to Boot/Bennett
Cons	• Uses more heavily trafficked corridors • New I-15 crossing • Low phasing • No VID12/VAL11, Rincon del Diablo MWD connection

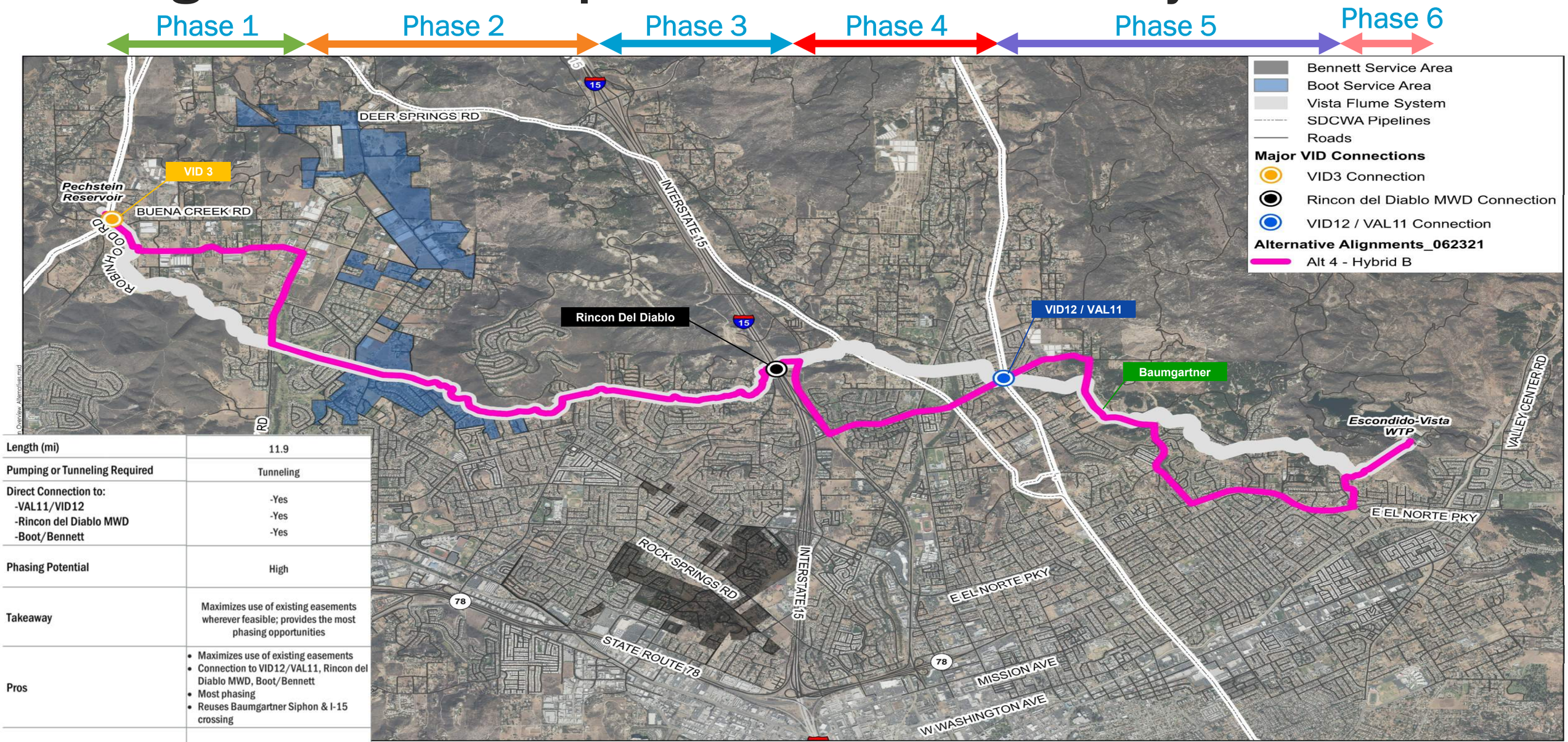
Six alignments developed: Alternative #2 – Hybrid A

Length (mi)	13.0
Pumping or Tunneling Required	Tunneling
Direct Connection to: -VAL11/VID12 -Rincon del Diablo MWD -Boot/Bennett	 -Yes -Yes -Yes
Phasing Potential	High
Takeaway	Keeps easements in low-risk areas and entirely avoids easements in risky & difficult hillsides; provides more phasing opportunities
Pros	• Utilizes low-risk easements • Connection to VID12/VAL11, Rincon del Diablo MWD, Boot/Bennett • Reuses I-15 crossing • High phasing
Cons	• Longest alignment • Tunneling req'd thru high points • Low head system

Six alignments developed: Alternative #3 – Central

Length (mi)	12.0
Pumping or Tunneling Required	Tunneling
Direct Connection to: -VAL11/VID12 -Rincon del Diablo MWD -Boot/Bennett	-Yes -No -Yes
Phasing Potential	Medium
Takeaway	Option entirely in ROW using less congested streets with better options for phasing
Pros	• All in ROW but less congested streets than Alt 1 • Connection to VID12/VAL11, Boot/Bennett • Good pressurization & phasing • Reuses Baumgartner Siphon
Cons	• Tunneling req'd thru high points • New I-15 crossing • No Rincon del Diablo MWD connection

Six alignments developed: Alternative #4 – Hybrid B



Length (mi)	11.9
Pumping or Tunneling Required	Tunneling
Direct Connection to: -VAL11/VID12 -Rincon del Diablo MWD -Boot/Bennett	 -Yes -Yes -Yes
Phasing Potential	High
Takeaway	Maximizes use of existing easements wherever feasible; provides the most phasing opportunities
Pros	• Maximizes use of existing easements • Connection to VID12/VAL11, Rincon del Diablo MWD, Boot/Bennett • Most phasing • Reuses Baumgartner Siphon & I-15 crossing
Cons	• Tunneling req'd thru high points • Low head system

Six alignments developed: Alternative #5 – Northern

Phase 2

Phase 1

Length (mi)	11.6
Pumping or Tunneling Required	Pumping
Direct Connection to: -VAL11/VID12 -Rincon del Diablo MWD -Boot/Bennett	 -Yes -No -No
Phasing Potential	Low
Takeaway	Option that minimizes traffic & utility conflicts inherent in other alternatives; requires a new pumping station and construction through adverse geology
Pros	• Shortest alignment • Fully pressurized • Minimizes some traffic & utility conflicts (east of I-15) • Connection to VID12/VAL11
Cons	• Highest grade – pumping req'd • Adverse geology • Low phasing • New I-15 crossing • Traffic concerns on Deer Springs Rd • No Rincon del Diablo MWD, Boot/Bennett connection

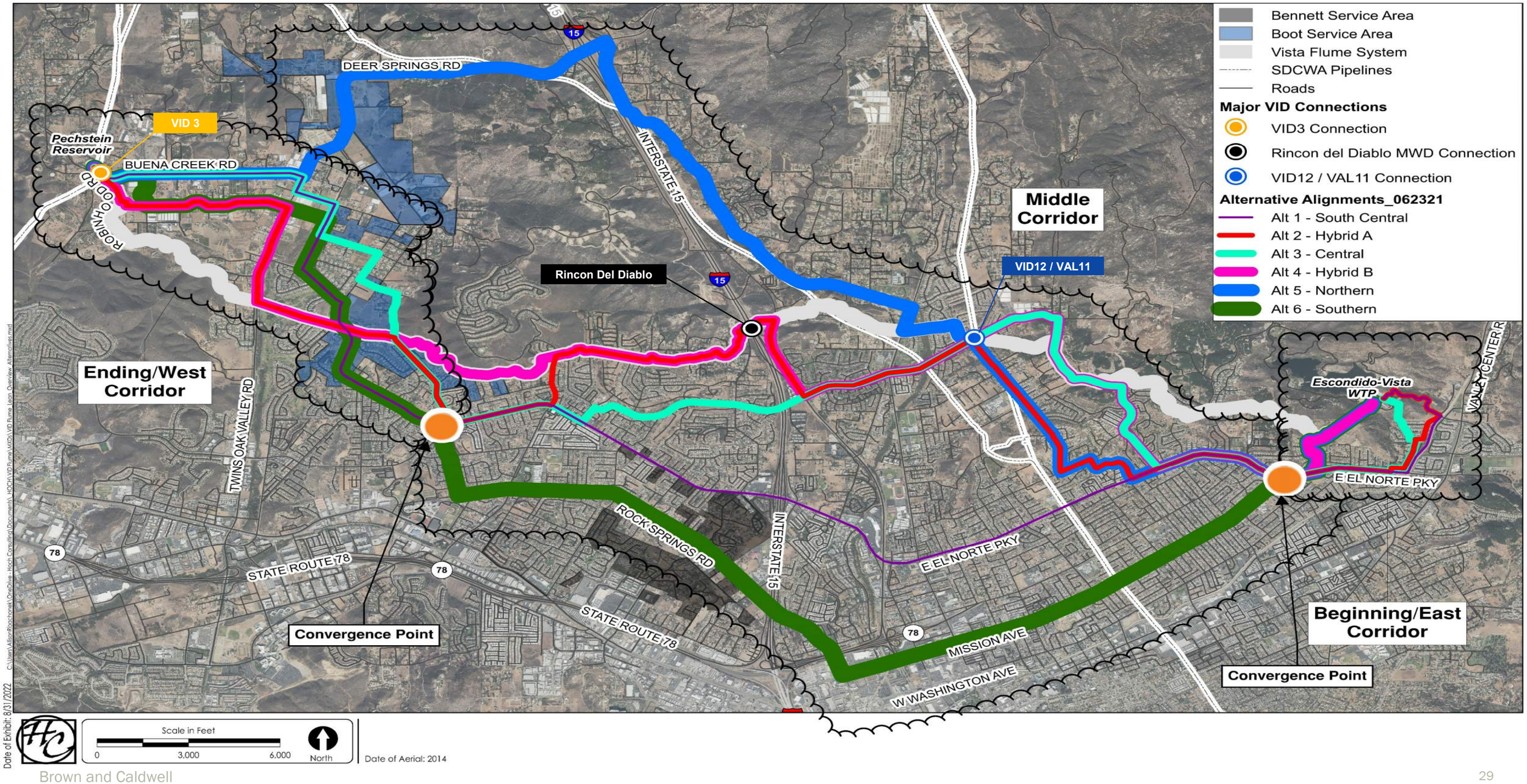
Six alignments developed: Alternative #6 – Southern

Phase 1

Phase 2

Length (mi)	11.7
Pumping or Tunneling Required	No
Direct Connection to: -VAL11/VID12 -Rincon del Diablo MWD -Boot/Bennett	 -No -No -Yes
Phasing Potential	Low
Takeaway	A direct route in ROW that pressurizes the Flume and avoids risky & difficult hillsides; uses Big Tunnel and less-trafficked corridors
Pros	• One of shortest alignments • Lowest elevation – pressurization without tunneling or pumping • Avoids hillsides • Connection to Boot/Bennett
Cons	• No VID12/VAL11, Rincon del Diablo MWD connection • New I-15 and SR-78 crossing • Low phasing

Keeping our options open with a Beginning, Middle, and End



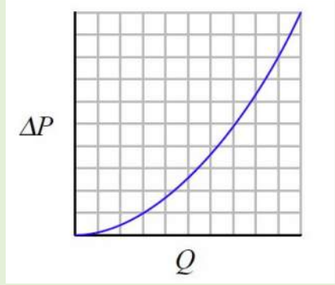
A comprehensive dataset to support Coarse Screening

- Site/Community Characteristics
  - Schools
  - Fire Department
  - Parcel/Property owners
  - Existing utility records
  - ROWs and Easements
  - Phaseability
- Traffic
  - Routing studies
  - Road classification
  - Speed limits
  - Traffic counts
- Environmental
  - Vegetation maps
  - Conserved lands
  - Cultural
  - Draft MSCP
- Geology
  - Groundwater maps
  - Liquefaction maps
  - USGS Rock Classifications
  - USGS Hydrologic Data
  - Fault maps
  - Creeks
  - Flood maps
- Interagency
  - CIP plans
  - CWA aqueduct maps
  - Freeway crossings
- Permitting
  - DDW Regulations
  - Jurisdictional areas
  - Wetlands
  - Waters of the U.S.
  - Sensitive/protected species & vegetation
- Hydraulics
  - Existing VID system
  - Pechstein Reservoir
  - EVWTP
  - New facilities
- O&M
  - WTP Operations
  - Site access
  - Agency connections
  - Local agreements
  - Boot & Bennet service areas
- Cost/Affordability
  - Funding Sources

Feasibility review shows all 6 Alignments are still viable

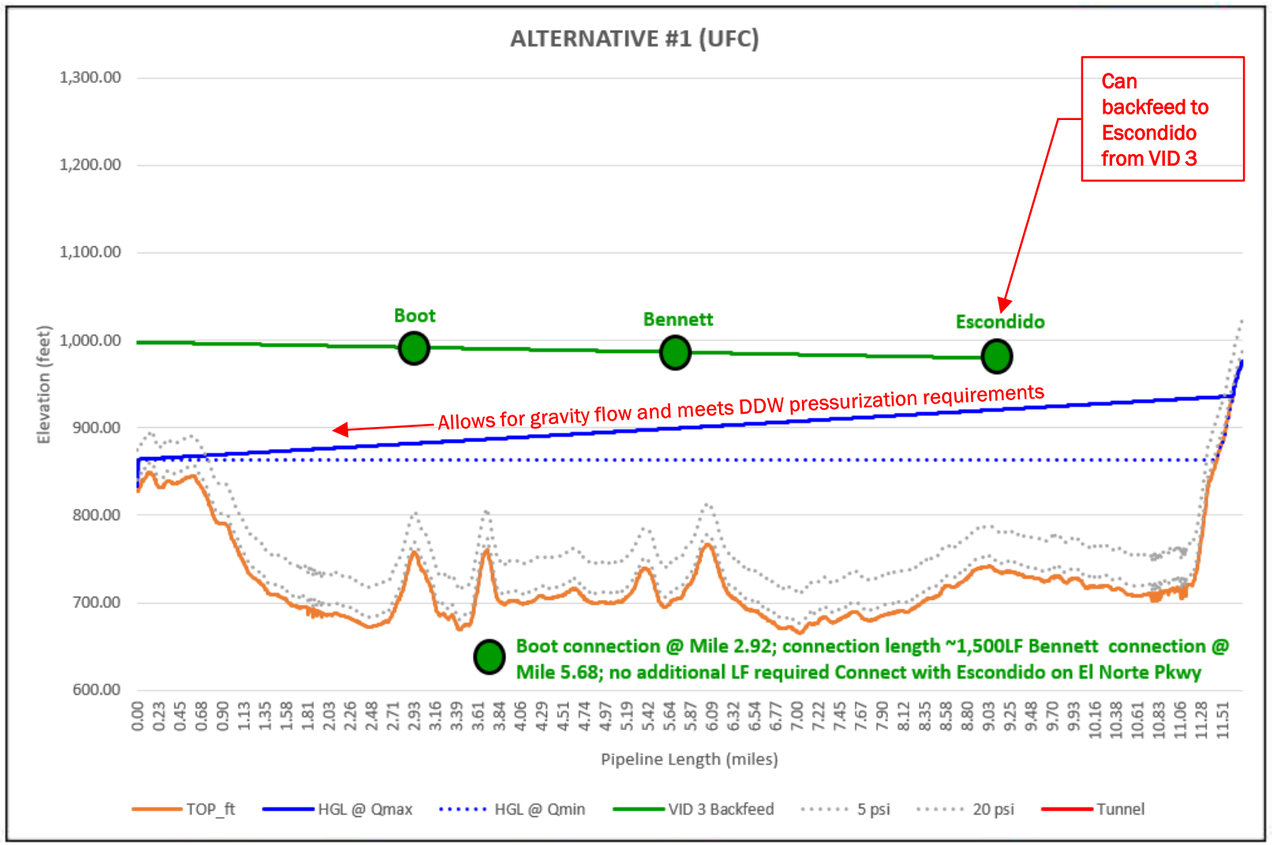
- **Key stakeholder engagements**
  - DDW
  - City of Escondido Public Utilities & Engineering
  - EVWTP operations staff
  - Other agencies (e.g., Caltrans, County of SD, SDG&E, etc.)

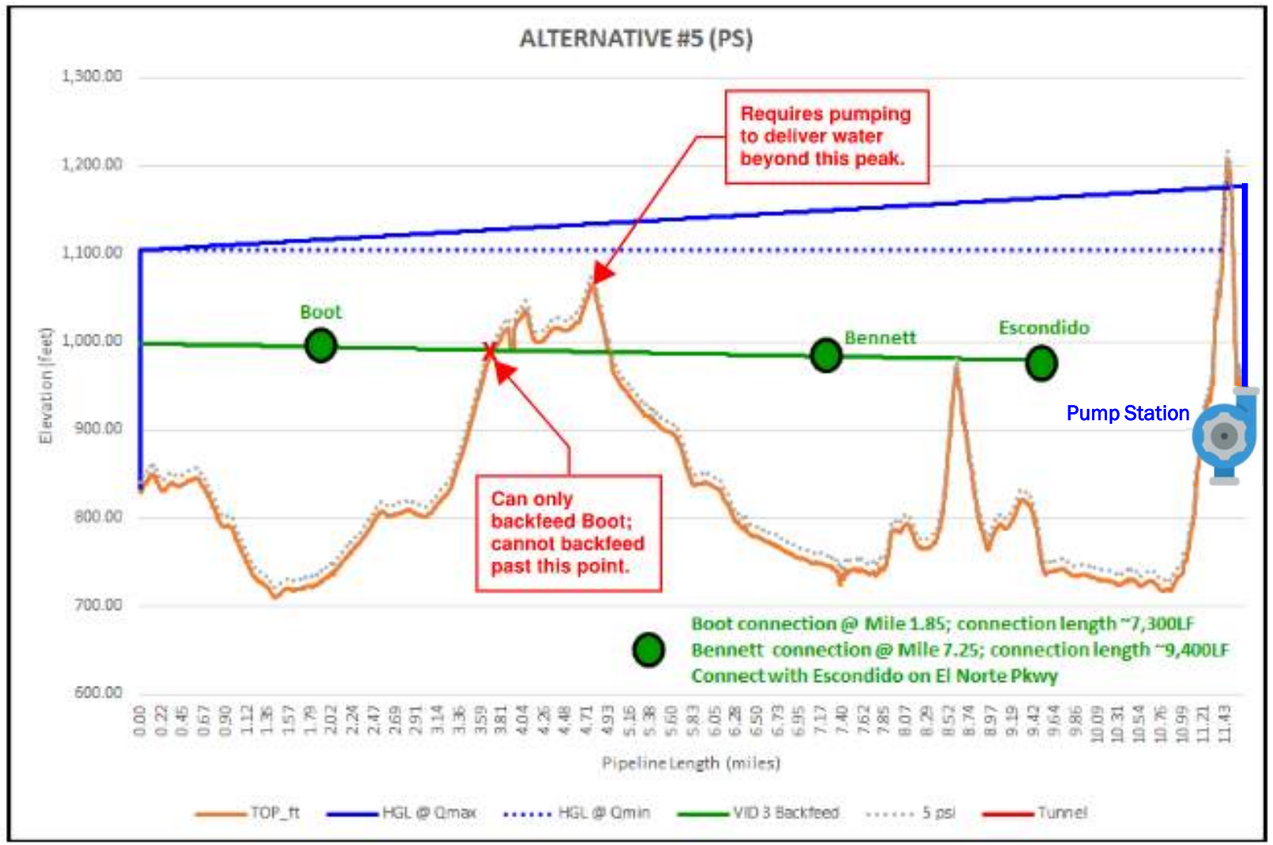
- **Hydraulics**
  - Meeting regulatory requirements
  - Dictates capital infrastructure needed



- **Permitting**
  - Environmental – CEQA
  - Construction – County, City, etc.
  - Operating – DDW

Hydraulics dictates capital cost and project permissibility





- Fully pressurized by gravity
- Backfeed to Boot, Bennet, and Escondido

- Fully pressurized by pump station
- Backfeed to Boot only

Industry costs are still escalating above historical norms

CONSTRUCTION ECONOMICS

ENR's 20-city average cost indexes, wages and material prices. Historical data for ENR's 20 cities can be found at ENR.com/economics

Construction Cost Index — ANNUAL INFLATION RATE **+5.7%** AUG. 2022

1913=100	INDEX VALUE	MONTH	YEAR
CONSTRUCTION COST	13171.07	0.0%	+5.7%
COMMON LABOR	24585.29	+0.1%	+1.0%
WAGE $/HR.	47.24	+0.1%	+1.0%

The Construction Cost Index's annual escalation rose 5.7%, while the monthly component stayed flat.

Building Cost Index — ANNUAL INFLATION RATE **+10.4%** AUG. 2022

1913=100	INDEX VALUE	MONTH	YEAR
BUILDING COST	7952.50	0.0%	+10.4%
SKILLED LABOR	11214.59	+0.3%	+3.4%
WAGE $/HR.	61.90	+0.3%	+3.4%

The Building Cost Index was up 10.4% on an annual basis, while the monthly component stayed flat.

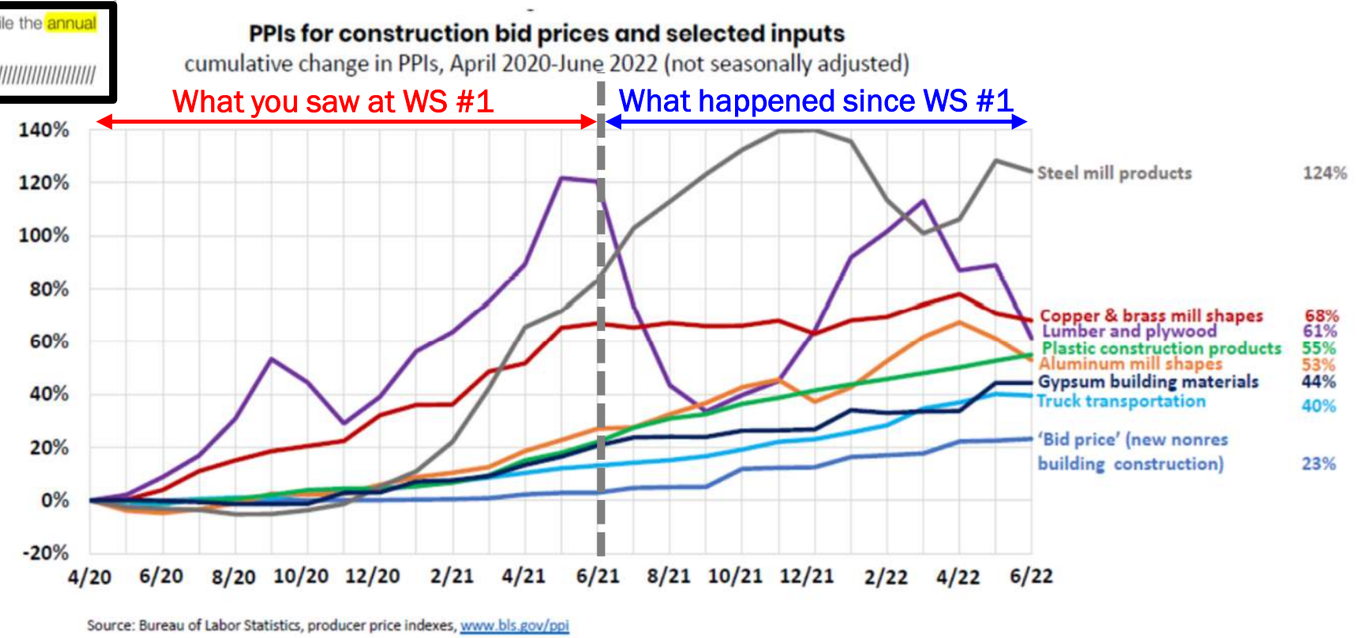
Materials Cost Index — MONTHLY INFLATION RATE **-0.2%** AUG. 2022

1913=100	INDEX VALUE	MONTH	YEAR
MATERIALS COST	5917.74	–0.2%	+20.0%
CEMENT $/TON	171.96	+2.8%	+16.9%
STEEL $/CWT	90.11	+2.8%	+28.5%
LUMBER $/MBF	1172.56	–4.4%	+7.7%

The MCI fell 0.2% since last month, while the annual escalation rate increased 20%.

The MCI fell 0.2% since last month, while the annual escalation rate increased 20%.

- MARKET
  - 20% annual escalation
- FRAS
  - Now 8-10% with project refinements



Source: Bureau of Labor Statistics, producer price indexes, www.bls.gov/ppi

More Defined Project Details Yielded better Costs

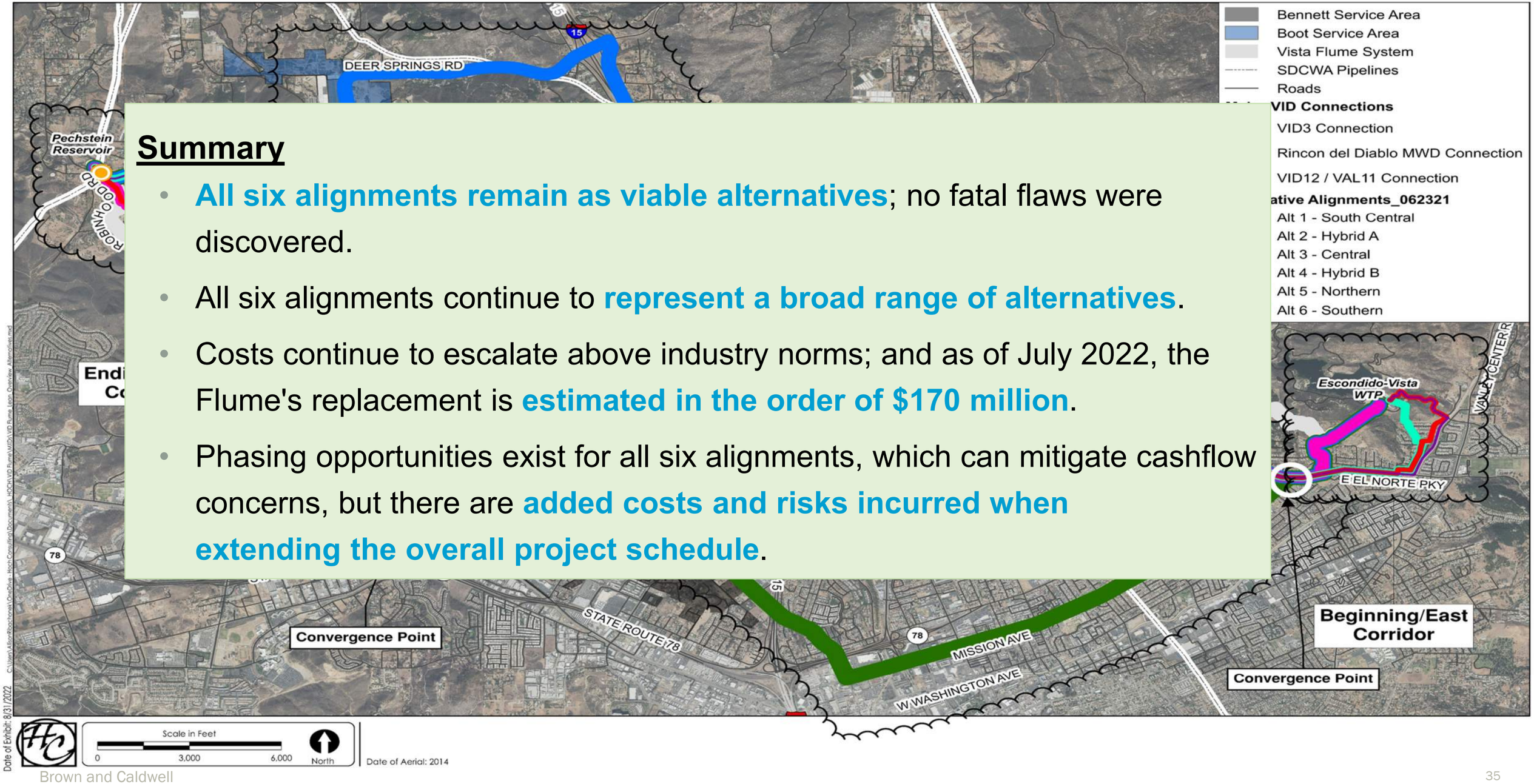
Table 2-2. Planning Level Estimated Costs						
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Construction Costs (1,2)	$110 M	$128 M	$122 M	$121 M	$132 M	$119 M
Soft Costs (3)	$44 M	$51 M	$48 M	$48 M	$52 M	$48 M
Total	$154 M	$179 M	$170 M	$169 M	$184 M	$167 M

(1) All costs presented herein are in 2022 dollars and have been rounded to the nearest $1 million.
(2) Includes labor, materials, subcontracts, equipment, and contractor overhead and profit.
(3) Includes environmental permitting, easements, design, administration, third party construction management, and onsite environmental and cultural monitoring.

- Green: mods at Pechstein only
- Orange: mods at Pechstein & EVWTP
- Red: mods at Pechstein & EVWTP + Pumping

- AVERAGE: $170.5 M
- MEDIAN: $169.5 M

Alignment Evaluation Takeaways



Summary

- **All six alignments remain as viable alternatives**; no fatal flaws were discovered.
- All six alignments continue to **represent a broad range of alternatives**.
- Costs continue to escalate above industry norms; and as of July 2022, the Flume's replacement is **estimated in the order of $170 million**.
- Phasing opportunities exist for all six alignments, which can mitigate cashflow concerns, but there are **added costs and risks incurred when extending the overall project schedule**.

3. Alternatives Evaluation – Coarse Screening

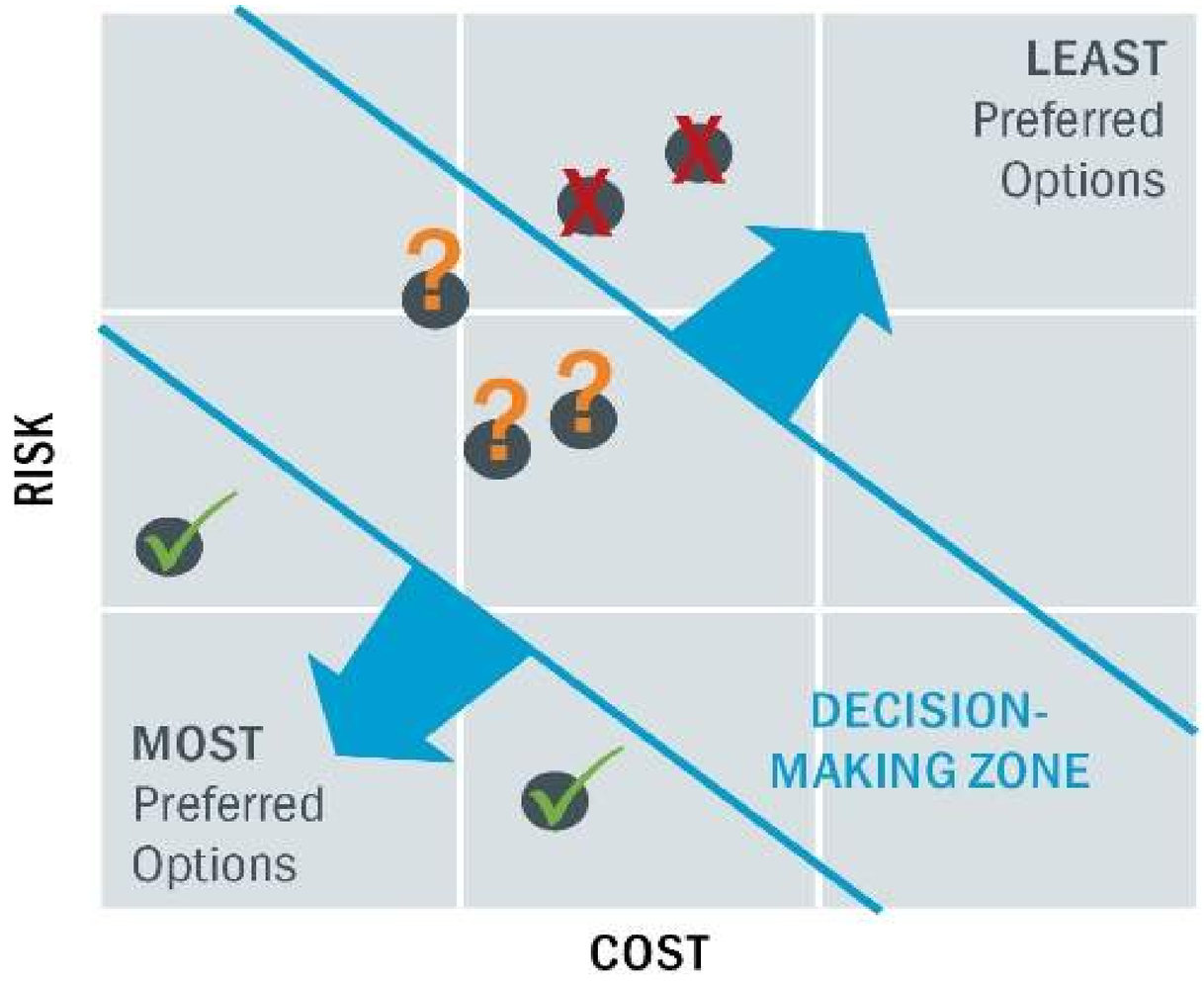
Speaker: John Bekmanis, P.E.

Brown AND Caldwell

Defining the **next** legacy

Coarse Screening: Process and Objectives

- Goal: rank & shortlist 2-3 alignments
- Normalize evaluation over lifecycle:
  - Risks – constructability, O&M, etc.
  - Costs – capital and soft costs
- Risks - Assigned weighting factors and scores to custom set of criteria
- Conducted sensitivity analysis
- Risk/Cost boundaries may change in Phase 4 – Fine Screening



Coarse Screening: Evaluation Criteria (Part 1/3)

CATEGORIES	CRITERIA GROUPS	CRITERIA
Project Delivery	Project Affordability and Implementation	• Boot and Bennet Serviceability • Mitigating Revenue Reduction (purchase from other agency) • Financial Exposure to Construction Costs • Grant Funding Opportunities
	Schedule and Risk	• Schedule Factors • Phasing/Sequencing
	Constructability ★	• Geology • Utility Congestion • Alignment Length • Tunneling Length ★

Coarse Screening: Evaluation Criteria (Part 2/3)

CATEGORIES	CRITERIA GROUPS	CRITERIA
Stakeholder Coordination	Community Impacts	• Traffic Impacts • Future Agency Projects • Impacts to Critical Facilities
	Land Ownership	• Easements/ROWs • Land Acquisition
	Environmental	• Biological Resources • Areas of potential Soil Contamination • Cultural Resources • Other CEQA Considerations
	Permitting	• Interagency Coordination • CaI DFW/USACE Coordination • DDW Coordination

Coarse Screening: Evaluation Criteria (Part 3/3)

CATEGORIES	CRITERIA GROUPS	CRITERIA
System Reliability	System Hydraulics	• Pressurization vs Low-Head • Impacts to Transient Flow • Impacts to EVWTP Operations • Offsite Improvements (Pumping Stations and Flow Control Facilities)
	Operations and Maintenance	• Accessibility • Long-Term Vulnerability • Agency Service Connections • Operational (Hydraulics) • Future Adaptability/Redundancy

Coarse Screening: Evaluation Matrix

Categories	Criteria Groups	Criteria	Alternative Alignments Beginning Corridor						Alternative Alignments Middle Corridor						Alternative Alignments End Corridor					
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
			Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	Raw Score
System Reliability	System Hydraulics	Pressurization vs Low-Head	5	5	5	5	5	5	5	1	1	1	5	5	1	5	5	5	5	1
		Impacts to Transient Flow	5	3	3	3	1	5	5	3	3	3	1	5	5	3	3	3	1	5
		Impacts to EVWTP	5	1	1	1	1	5	5	1	1	1	1	5	5	1	1	1	1	5
		Offsite Improvements	5	3	3	3	1	5	5	3	3	3	1	5	5	3	3	3	1	5
	SUBTOTAL - System Hydraulics		**2**	**1.2**	**1.2**	**1.2**	**0.8**	**2**	**2**	**0.8**	**0.8**	**0.8**	**0.8**	**2**	**1.6**	**1.2**	**1.2**	**1.2**	**0.8**	**1.6**
	Operations and Maintenance	Accessibility	1	5	3	1	1	1	5	1	5	1	3	5	5	1	5	3	5	3
		Long-Term Vulnerability	5	3	3	5	5	5	3	1	1	1	1	1	3	3	3	3	5	3
		Agency Service Connections	3	5	3	5	1	3	3	5	3	5	1	3	3	5	3	5	1	3
		Operational (Hydraulics)	3	3	3	3	5	1	5	3	1	1	1	5	1	3	1	3	5	1
		Future Adaptability/Redundancy	3	5	5	5	5	5	3	5	5	5	5	3	3	5	5	5	5	3
	SUBTOTAL - Operations and Maintenance		**1.5**	**2.1**	**1.7**	**1.9**	**1.7**	**1.5**	**1.9**	**1.5**	**1.5**	**1.3**	**1.1**	**1.7**	**1.5**	**1.7**	**1.7**	**1.9**	**2.1**	**1.3**
CATEGORY SUBTOTAL - System Reliability			**3.5**	**3.3**	**2.9**	**3.1**	**2.5**	**3.5**	**3.9**	**2.3**	**2.3**	**2.1**	**1.9**	**3.7**	**3.1**	**2.9**	**2.9**	**3.1**	**2.9**	**2.9**
TOTAL			**11**	**10.6**	**10.7**	**10.1**	**9.1**	**11.8**	**13.85**	**9.45**	**10.45**	**9.35**	**9.35**	**13.3**	**12.3**	**9.6**	**11.9**	**9.5**	**10.9**	**11.25**

Coarse Screening: Summary of Numerical Results

- Alternatives 1 and 6 represent lowest risk and costs
- Alternative 5 highest risk and costs
- Attributes of Alts 2, 3 and 4 required further analysis

Table 3-2. Risk Ranking per Segment

Corridors		Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
		South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Beginning	Rank [A]	#2	#4	#3	#5	#6	#1
	Score [B]	11.0	10.6	10.7	10.1	9.1	11.8
Middle	Rank	#1	#4	#3	#5	#5	#2
	Score	13.9	9.5	10.5	9.4	9.4	13.3
End	Rank	#1	#5	#2	#6	#4	#3
	Score	12.3	9.6	11.9	9.5	10.9	11.3
Total	Rank	*#1*	*#4*	*#3*	*#6*	*#5*	*#2*
	Score	*37.2*	*29.7*	*33.1*	*29.0*	*29.4*	*36.4*
Capital Costs	Rank	*#1*	*#5*	*#4*	*#3*	*#6*	*#2*
	Cost [C]	*$154 M*	*$179 M*	*$170 M*	*$169 M*	*$184 M*	*$167 M*

A) Ranking:
Green = Top two ranking alternatives
Yellow = Middle two ranking alternatives
Red = Lowest two ranking alternatives

Coarse Screening: Risk vs. Cost and the Decision-Making Zone

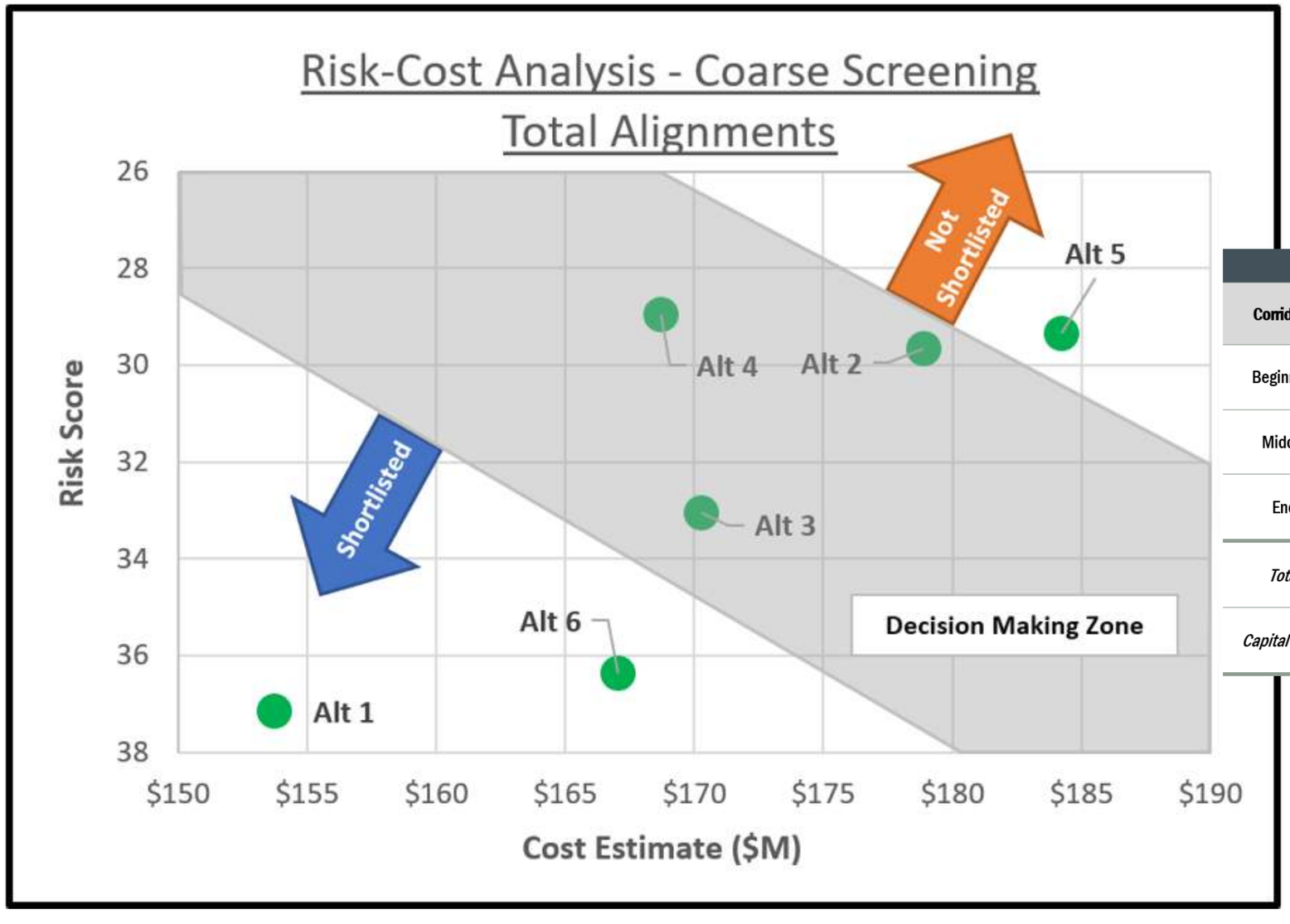


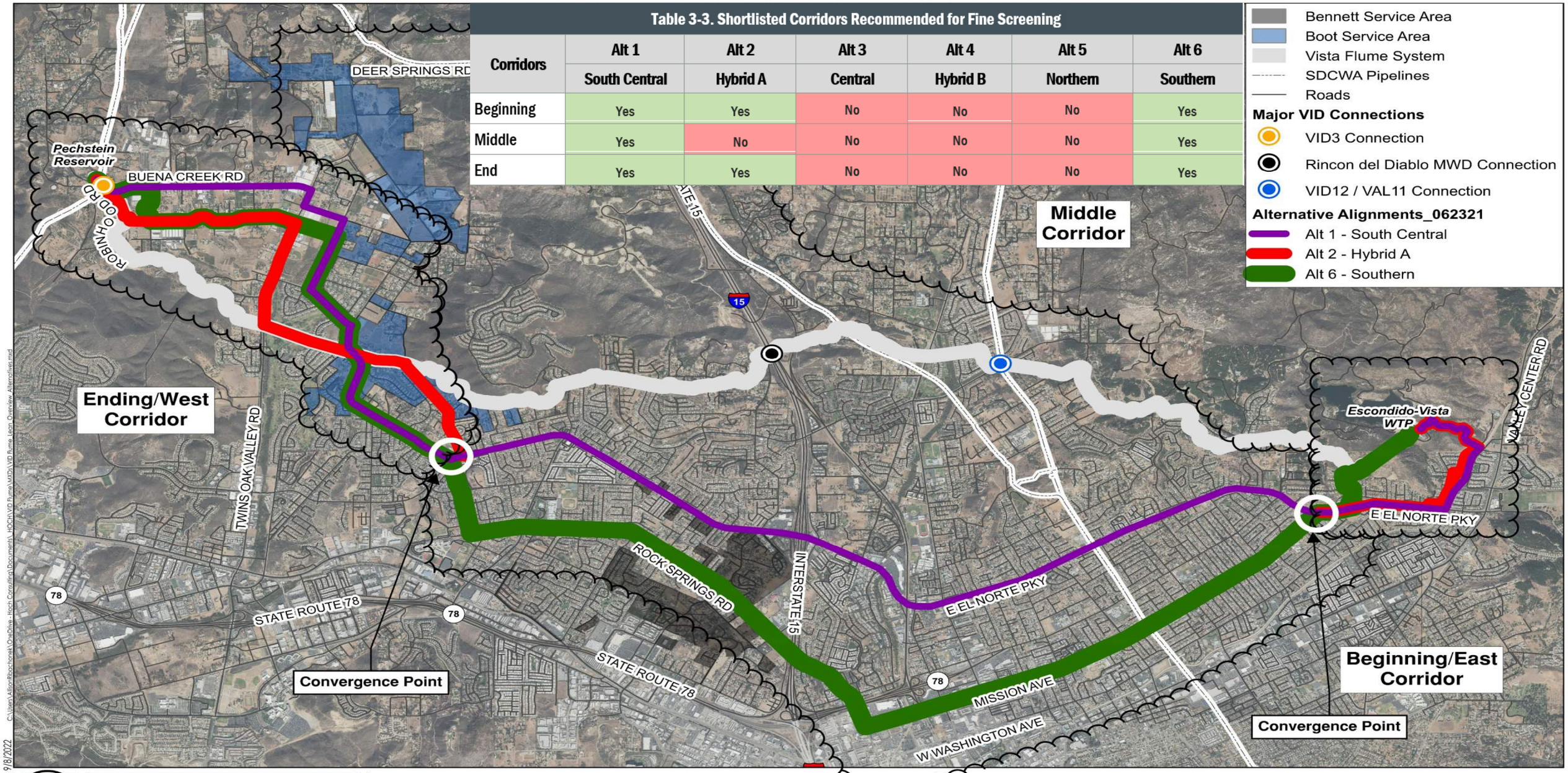
Table 3-2. Risk Ranking per Segment

Corridors		Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
		South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Beginning	Rank [A]	#2	#4	#3	#5	#6	#1
	Score [B]	11.0	10.6	10.7	10.1	9.1	11.8
Middle	Rank	#1	#4	#3	#5	#5	#2
	Score	13.9	9.5	10.5	9.4	9.4	13.3
End	Rank	#1	#5	#2	#6	#4	#3
	Score	12.3	9.6	11.9	9.5	10.9	11.3
Total	Rank	***#1***	***#4***	***#3***	***#6***	***#5***	***#2***
	Score	***37.2***	***29.7***	***33.1***	***29.0***	***29.4***	***36.4***
Capital Costs	Rank	***#1***	***#5***	***#4***	***#3***	***#6***	***#2***
	Cost [C]	***$154 M***	***$179 M***	***$170 M***	***$169 M***	***$184 M***	***$167 M***

Recommended Shortlist

Table 3-3. Shortlisted Corridors Recommended for Fine Screening

Corridors	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Beginning	Yes	Yes	No	No	No	Yes
Middle	Yes	No	No	No	No	Yes
End	Yes	Yes	No	No	No	Yes



4. Project Funding Scenarios

Speaker: Cari Dale, MPA

Brown AND Caldwell

Defining the **next** legacy

Forecasting Costs: Plan for $170 Million in Capital

Table 2-2. Planning Level Estimated Costs						
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Construction Costs (1,2)	$110 M	$128 M	$122 M	$121 M	$132 M	$119 M
Soft Costs (3)	$44 M	$51 M	$48 M	$48 M	$52 M	$48 M
Total	$154 M	$179 M	$170 M	$169 M	$184 M	$167 M

(1) All costs presented herein are in 2022 dollars and have been rounded to the nearest $1 million.
(2) Includes labor, materials, subcontracts, equipment, and contractor overhead and profit.
(3) Includes environmental permitting, easements, design, administration, third party construction management, and onsite environmental and cultural monitoring.

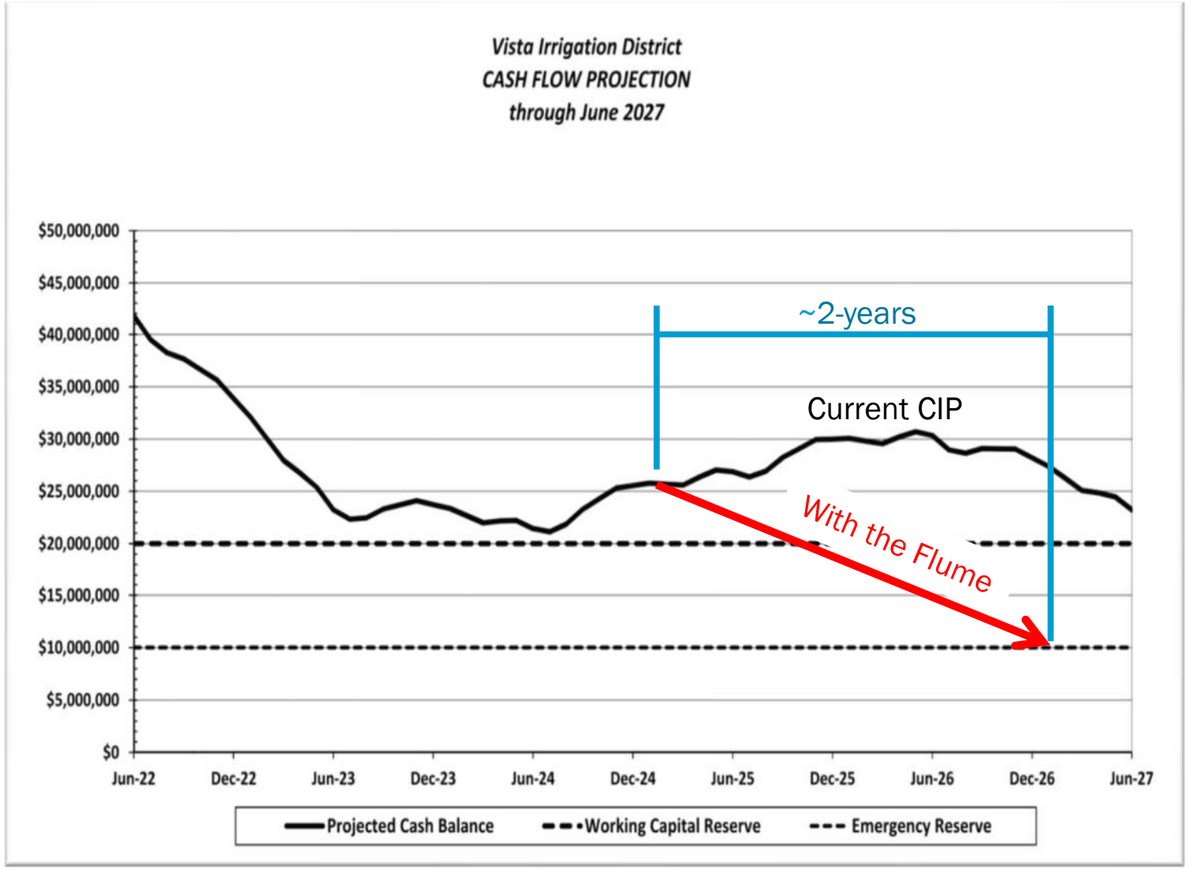
Basis of capital costs in WSPS:

- Construction costs
- Taxes plus overhead, and profit
- Soft costs (i.e. design, easements, etc.)
- Insurances and bonds
- Contingencies

- AVERAGE: $170.5 M
- MEDIAN: $169.5 M

A $170 million creates a deficit that will consume the capital reserves within 2-years without raising rates

- PAYGO will require rate increases of up to 68 percent
- A Financial Strategy is needed which includes low interest loans, grants as well as cash funds
- An approach that partially finances a single-phased project has the lowest overall capital cost, financing costs, and risk profile with a relatively modest impact to water rates
- It is recommended that the District secure the financial assistance needed to determine a strategic rate design, obtain a bond rating, and apply for loans and grants.



PAYGO is not a suitable pathway to funding

Table 4-1. Possible Rate Increases Needed to fund using PAYGO		
	Single-Phase	Six-Phase
Capital Cost (1)	$170 M	$170 M
Total Rate Increase Over Time (2,3)	68%	45%
Total Rate Increase per Unit (3,4)	$4.11	$2.55
Rate Ramp (5)	3 yrs	3 yrs
Max Rate Increase in Single Year (2,3)	28%	17%
Average Annual Rate Increase (2,3)	23%	15%

1) Costs are presented in 2022 dollars and are based on Alternative #6 ($167M) rounded to the nearest $10M.
2) Rate increases are rounded to the nearest percent.
3) Rate increases presented herein are only those required to fund the Flume project and are not inclusive of other typical rate increases such as annual Water Authority pass-through costs and the inflationary adjustment to the Service Charge.
4) Rate increases are rounded to the nearest cent.
5) Defined as the period of time in years the rate increases are assessed to the District's ratepayers.

Assumptions include capital costs for the following:

- $52.5M Main Replacement
- $15.2M Pechstein Rehab
- $25M San Pasqual Undergrounding
- $7M Wellfield Repair
- $10.4M Pechstein II Reservoir
- $11.6M E Reservoir Replacement
- $4.9M PS 10 & 12 Replacement
- $2M Deodar Reservoir
- $5.7M A Reservoir
- $1M C Reservoir Demo and PRV Feed

Capital Financing & Plausible Funding Scenarios

Table 4-2. Possible Funding Sources Available to the Flume

Funding Source	Funding Agency	Administering Entity	Type	Term (yrs)	Interest Rate (I)	Application Fee ($)	When to Apply	Timeframe (yrs)	Probable Likelihood	Special Criteria & Shovel Ready Requirements	Notes & Limitations
Drinking Water State Revolving Fund (DWSRF)	California State Water Resources Control Board	State	Loan	30	1.1% (2022 Rate)	$100,000	Design Phase	2	Medium	• Allows for phased projects • SRF will be subject to Build America, Buy America (BABA) Act • There are four packages total (general, financial, technical, and environmental package) and they do not need to be submitted concurrently • Recommend a General Package be submitted, as soon as possible (this is a 4-page document with basic information (i.e., agency background, project description)	• Eligible for loan only • The estimated timeframe between general package submittal (step 1) to final agreement execution is 1-2 years • Bipartisan Infrastructure Law (BIL) funding is reserved for DAC small systems, PFAS contamination and lead line replacement • Example of timing -Applying in Summer/Fall 22 would get the project on the fundable list for next year (Fiscal Year or FY 2023)
Water Infrastructure Finance and Innovation Act (WIFIA)	Environmental Protection Agency	Federal	Loan	up to 35	3.5%	$100,000	Planning or Design Phase	Letter of Interest evaluation: 90 days. Applications due 1 year from invitation	High	• Allows for phased projects • NEPA, AIS, Davis-Bacon, Build America, Buy America (BABA) Act and all other federal provisions apply • Very flexible/favorable in structuring financing • Do not pay interest unless borrowed • 5-year completion requirement is preferred by WIFIA, requests for extensions are allowed • Bond rating required; preliminary rate opinion letter needed before closing. Financial outlook and financial planning needed to obtain bond rating.	• Can fund up to 49% of project costs • Total federal assistance cannot exceed 80% of project's eligible costs • 35 years is maximum maturity after substantial completion • Repayment deferral 5-year maximum after substantial completion • Interest rates are in flux, highly variable based on market conditions at time of close; based on treasury rate. Even projects from last year would be very different than today. Could use a rate range of 2.25%, 3%, and 3.5% • Planning level projects are eligible for WIFIA; WIFIA's goal is to accelerate construction projects
Infrastructure State Revolving Fund (ISRF) Program	California Infrastructure and Economic Development Bank (CA IBank)	State	Loan	30	2.3% (67% of A-rated municipal bond)	$10,000	Design or Construction Phase	ISRF applications are continuously accepted	Medium	• No matching fund requirement, and ISRF financing may serve as matching funds for other financing.	• Intended mainly for construction costs
Municipal Bonds	Vista Irrigation District	District / Investment Bank	Bonds	up to 30	3.5%	Other fees apply	Planning Phase	Any	High - upon completion of rate study, etc.	• Requires District obtains a bond rating; higher ratings allow for lower interest rates • Recommend completion of a robust rate/cost of service study and development of a financing plan for the project	• Most expensive form of loan/debt included on this list. • Allow 6-8 months for bonding process
Building Resilient Infrastructure and Communities (BRIC)	Federal Emergency Management Agency (FEMA)	Federal	Grant	3	NA	NA	Annual solicitations; applications due winter.	1	Medium	• BRIC funds hazard mitigation projects, reducing risks communities face from disasters and natural hazards • Incorporation of nature-based solutions for hazard mitigation is a heavily weighted criterion	• The federal share requested can be no more than 70% (to received full criteria points) • Projects receiving funding must result in a reduced risk of natural disaster. • VID would not be directly eligible because they do not participate in National Flood Insurance Program (NFIP). A special district can apply as a sub-applicant with certain conditions.
Hazard Mitigation Grant Program - Flood Mitigation Assistance	Federal Emergency Management Agency (FEMA) via California Governor's Office of Emergency Services (CalOES)	Federal / State	Grant	3	NA	NA	Annual solicitations; applications due winter.	1	Low	• The current available funding opportunity under the HMGP is for Flood Mitigation Assistance (FMA) and is being rolled out along with BRIC • FEMA requires state, local, tribal and territorial governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance	• This program seeks projects that will reduce the risk of flood damage to National Flood Insurance Program (NFIP)-insured buildings. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to NFIP buildings. • Determine whether the project will reduce any flood risk to NFIP buildings • VID would not be directly eligible because they do not participate in National Flood Insurance Program (NFIP). A special district can apply as a sub-applicant with certain conditions.
WaterSMART Water and Energy Efficiency Grants (WEEG)	U.S. Bureau of Reclamation (USBR)	Federal	Grant	2-3	NA	NA	Annual solicitations.	1-2	Low - Medium	• WEEG supports projects that result in quantifiable and sustained water savings, implement renewable energy components, and support broader sustainability benefits. • Requires a case be made on how the project will provide water conservation & renewable energy benefits	• Project must provide quantifiable water savings, renewable energy and/or sustainability benefits • Maximum award is $5,000,000 • 50/50 Cost-share requirement • FY 2023 solicitation recently closed (7/26)

Capital Financing & Plausible Funding Scenarios

- DWSRF (State Revolving Fund)
  - 1.1% interest rate, $100,000 fee, Build America, Buy America Act (BABA), 2-year timeframe
- WIFIA (Water Infrastructure Funding and Innovation Act)
  - 3.5% interest rate, $100,000 fee, several phases, Davis-Bacon, BABA and all other federal provisions, no interest unless borrowed, *Bond Rating required*
- Bonds
  - 3.5% interest rate, fees, *Bond Rating required, robust rate/cost of service study and financing plan*
- Grants
  - Requires quantifiable water savings. Max award $5M. 50/50 cost share.

Capital Financing & Plausible Funding Scenarios

Near Term Actions

- Establish a bond rating,
- Develop a funding portfolio and financing strategy,
- Model impacts to water rates with refined interest rates and financing costs,
- Design a strategic rate schedule,
- Plan for the local water system capital investments,
- Begin process required for application, and
- Apply for low interest loans and grants.

Clean Water State Revolving Fund

WIFIA PROGRAM

BUREAU OF RECLAMATION

Can phasing reduce the financial burden?

Table 2-3. Options for Phasing per Alignment						
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
	South Central	Hybrid A	Central	Hybrid B	Northern	Southern
Single Phase						
Two Phase						
Three Phase						
Four Phase						
Five Phase						
Six Phase						

Weighing the Costs and Risks of Phasing

Table 4-3. Summary of Potential Impacts to Rates vs. Financing Costs						
	2-year Rate Ramp [5]			4-year Rate Ramp [5]		
	Single-Phase	Two-Phase	Six-Phase	Single-Phase	Two-Phase	Six-Phase
Capital Cost [1]	$170 M			$170 M		
Total Rate Increase Over Time [2,3]	23%	15%	9%	31%	16%	12%
Avg. Annual Rate Increase [2,3]	12%	7%	5%	8%	4%	3%
Total Rate Increase per Unit [3,4]	$1.20	$0.76	$0.46	$1.68	$0.81	$0.64
TOTAL COSTS WITH FINANCING						
Cash Out of Pocket	*$7 M*	*$9 M*	*$37 M*	*$7 M*	*$9 M*	*$37 M*
Application Costs	*$2 M*	*$3 M*	*$5 M*	*$2 M*	*$3 M*	*$5 M*
Grants	*$2 M*	*$ 1M*	*$1 M*	*$2 M*	*$ 1M*	*$1 M*
Principal & Interest [6]	*$315 M*	*$326 M*	*$364 M*	*$315 M*	*$326 M*	*$364 M*
Total Project Cost w/ Financing	**$326 M**	**$339 M**	**$408 M**	**$326 M**	**$339 M**	**$408 M**
Additional Costs Incurred [7]	-	**$13 M**	**$82 M**	-	**$13 M**	**$82 M**
Debt Balance FY2047	**$93 M**	**$113 M**	**$166 M**	**$93 M**	**$113 M**	**$166 M**

1) Costs are presented in 2022 dollars and are based on Alternative #6 rounded to the nearest $10M.
2) Rate increases are rounded to the nearest percent
3) Rate increases presented herein are only those required to fund the Flume project and are not inclusive of other typical rate increases such as annual Water Authority pass-through costs and the inflationary adjustment to the Service Charge.
4) Rate increases are rounded to the nearest cent.
5) Defined as the period of time in years the rate increases are assessed to the District's ratepayers.
6) Defined as the total principal and interest paid on the amount of the project financed over the life of the loans.
7) Defined as additional costs for financing a project over a longer duration by extending the schedule beyond a single-phase.

Take-aways of Preliminary Financial Modeling

Conclusions

- Flume creates a deficit; rate increases will be required
- PAYGO is an unsustainable path to funding
- Phasing mitigates rate increases with significant increase to costs

Next Steps

- Establish a bond rating,
- Develop a funding portfolio and financing strategy,
- Model impacts to water rates with refined interest rates and financing costs,
- Design a strategic rate schedule,
- Plan for the local water system capital investments,
- Begin process required for application, and
- Apply for low interest loans and grants.

5. Project Affordability Including the HABs Plan

Speaker: Doug Gillingham, P.E.

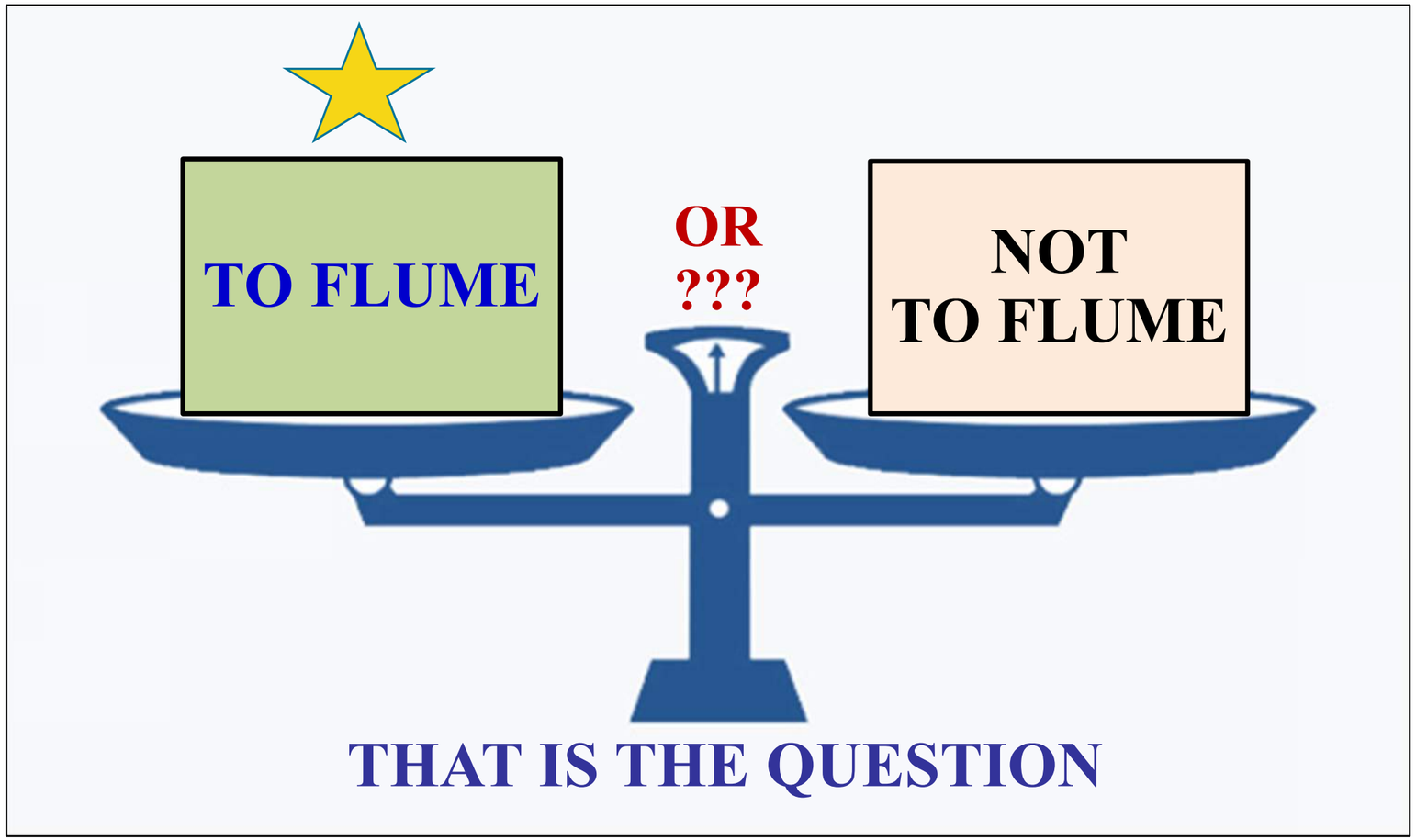
GILLINGHAM WATER
Gillingham Water Planning and Engineering, Inc.

Brown AND Caldwell

Defining the **next** legacy

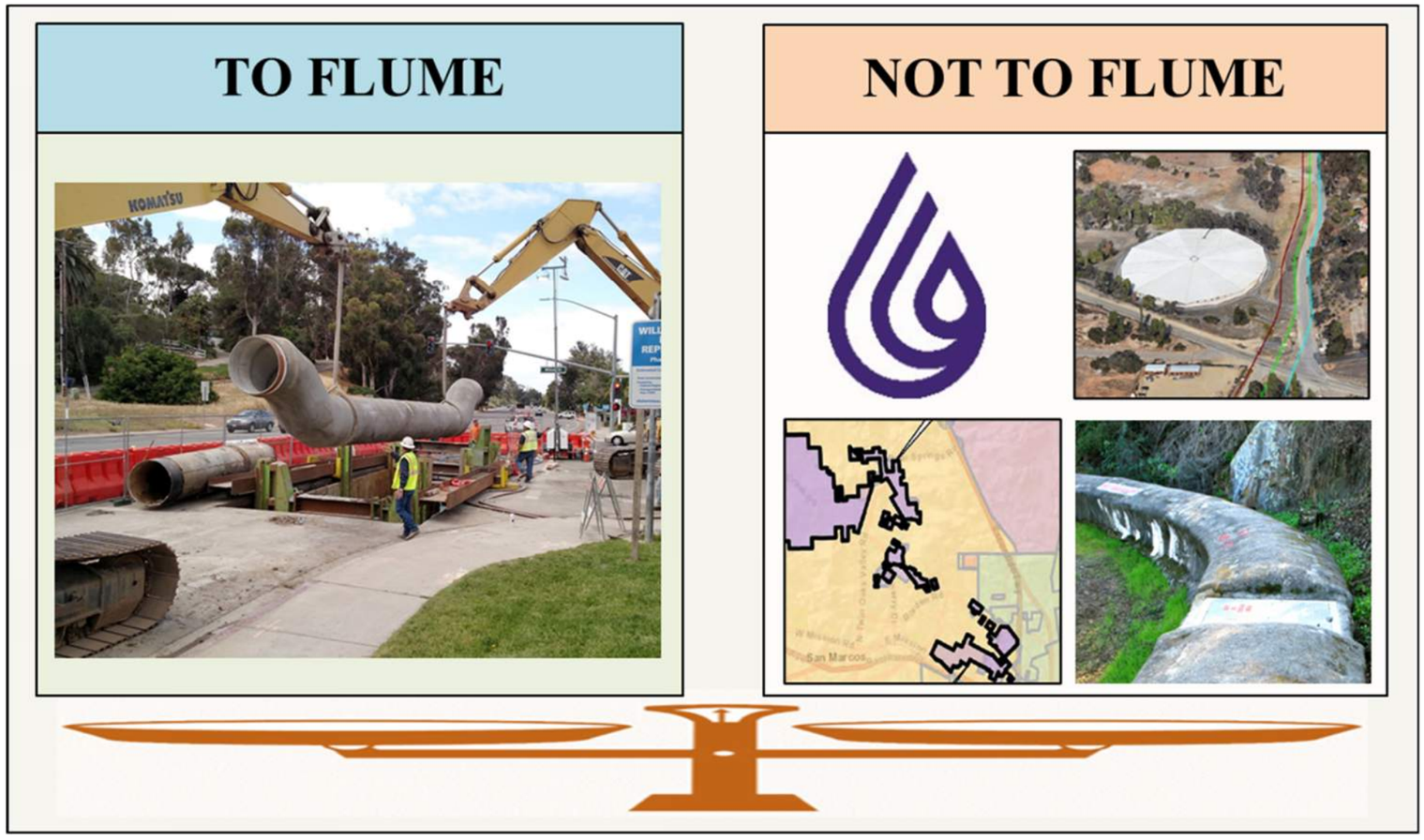
FLUME BALANCE SCALE INTERIM REVIEW

The balance scale continues to favor To Flume



BACKGROUND: There is not a No Project option.

The Not To Flume option has many components, and costs



BACKGROUND: There is not a No Project option.

The Not To Flume option has many components, and costs

To Flume Capital Cost	~$170M
Not To Flume Capital Cost	~$100M

Upfront costs for Delivery Reliability, B&B, Demo.

30-Year NPV Cost Comparison

Net Present Value (NPV) Analysis, in FY 2023 Dollars

NPV Cost Summary -- To Flume vs. Not To Flume

★ TO FLUME ★	
Cost Component	**30-Year NPV**
Flume Replacement	$153M
Local Water System	**$117M**
-- Wells	*$30M*
-- HABs Management	*$21M*
-- All Other LWS Items	*$66M*
Water Treatment	$34M
Flume O&M	$13M
Self-Treatment Benefit	-$20M
TOTAL	**$296M**

PARTNER ▼ NOT TO FLUME	
Cost Component	**30-Year NPV**
Addtl. SDCWA Purchases	$291M
Local Water System	**$112M**
-- Wells	*$25M*
-- HABs Management	*$21M*
-- All Other LWS Items	*$66M*
Exchange Benefit	**-$92M**
Delivery Reliability	$70M
Boot & Bennett Transfer	$30M
Flume Demolition	$10M
Reduced Pumping Costs	-$12M
TOTAL	**$408M**

"To Flume" Cost Advantage = **$112M**

GILLINGHAM WATER
Gillingham Water Planning and Engineering, Inc.

Divestment does not reduce costs of the Not to Flume option.
Costs increase relative to Partnership

Net Present Value (NPV) Analysis, in FY 2023 Dollars

NPV Cost Summary -- To Flume vs. Not To Flume

PARTNER ▼ NOT TO FLUME	
Cost Component	**30-Year NPV**
Local Water System	**$112M**
-- Wells	*$25M*
-- HABs Management	*$21M*
-- All Other LWS Items	*$66M*
Exchange Benefit	**-$92M**
NET	**$20M**

DIVEST ▼ NOT TO FLUME	
Cost Component	**30-Year NPV**
Local Water System	**$28M**
-- Wells	*$0M*
-- HABs Management	*$11M*
-- All Other LWS Items	*$17M*
Exchange Benefit	**$0M**
NET	**$28M**

Non-Cost Factors: To Flume fares very well

CRITERIA	To Flume vs. Not To Flume
• Supply Reliability	↑
• Drinking Water Quality	→
• Local Control	↑↑
• Reduced Bay-Delta Reliance	↑
• Reduced Colorado River Reliance	↑
• Reduced Energy Footprint / GHG	↑

Legend: Better: ↑ Neutral: → Worse: ↓

Economic Analysis: Costs and Benefits Over Time

Avg. Local Yield	SDCWA Escalation	NPV / Ops. Term	District Discount Rate:
4,500 AF/yr	Mid-Range	30 Yrs	3.50%

Net Present Value (NPV) Analysis, in FY 2023 Dollars

NPV Cost Summary -- To Flume vs. Not To Flume

★ TO FLUME ★	
Cost Component	**30-Year NPV**
Flume Replacement	$153M
Local Water System	**$117M**
-- Wells	*$30M*
-- HABs Management	*$21M*
-- All Other LWS Items	*$66M*
Water Treatment	$34M
Flume O&M	$13M
Self-Treatment Benefit	-$20M
TOTAL	**$296M**

PARTNER	NOT TO FLUME
Cost Component	**30-Year NPV**
Addtl. SDCWA Purchases	$291M
Local Water System	**$112M**
-- Wells	*$25M*
-- HABs Management	*$21M*
-- All Other LWS Items	*$66M*
Exchange Benefit	**-$92M**
Delivery Reliability	$70M
Boot & Bennett Transfer	$30M
Flume Demolition	$10M
Reduced Pumping Costs	-$12M
TOTAL	**$408M**

"To Flume" Cost Advantage = **$112M**

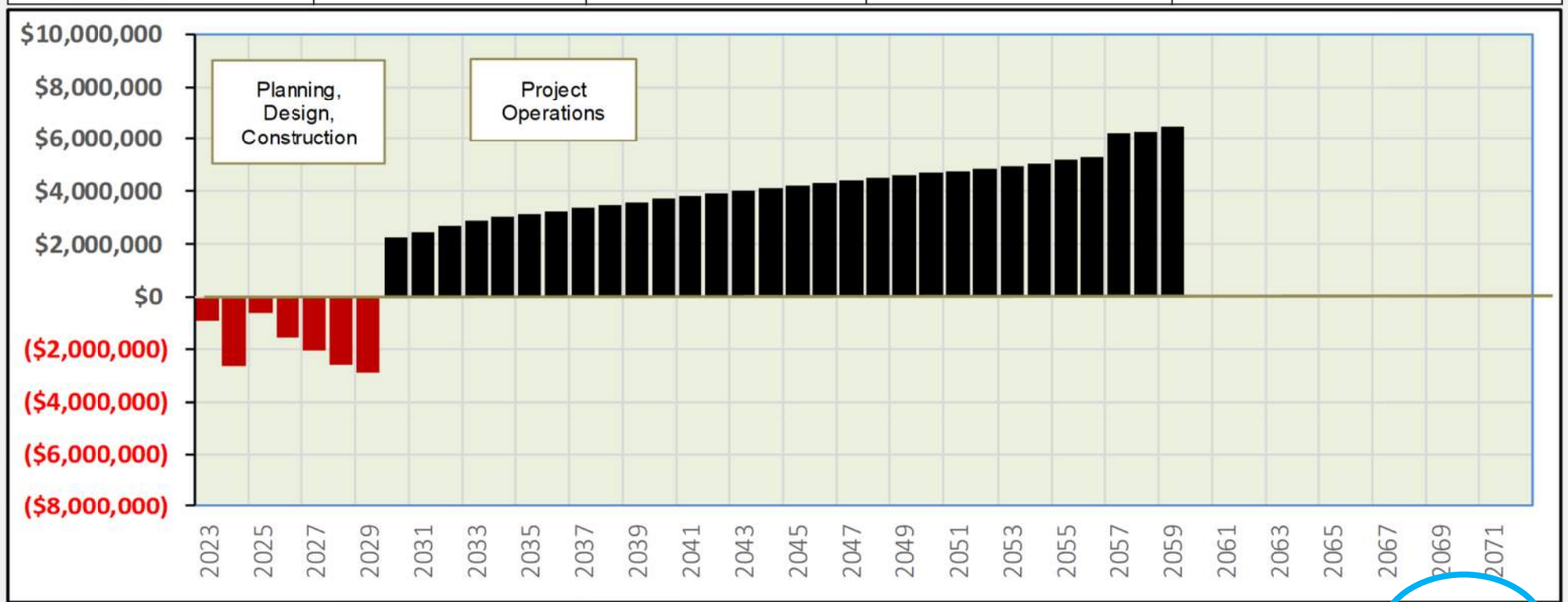
Economic Analysis: Costs and Benefits Over Time

Avg. Local Yield	SDCWA Escalation	NPV / Ops. Term	District Discount Rate:
4,500 AF/yr	Mid-Range	30 Yrs	3.50%

Net Present Value (NPV) Analysis, in FY 2023 Dollars

Annual NPV Cost Differential -- To Flume vs. Not To Flume

Finance Start Mid-Point:	Ops. Start:	Crossover:	Break-Even:	Payback Period:
2028	2030	2030	2035	7 Yrs



Total Red:	Total Black:	Advantage:
$13M	$125M	$112M

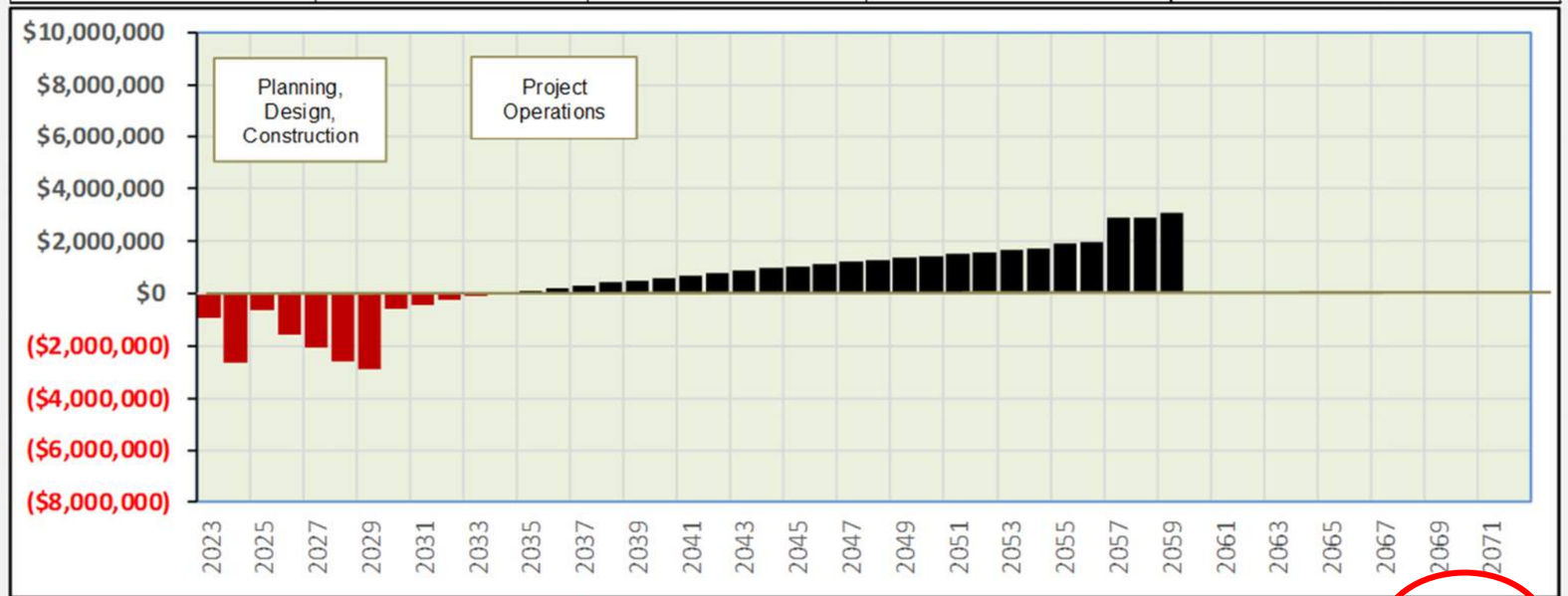
Economic Analysis: Costs and Benefits Over Time

Avg. Local Yield	SDCWA Escalation	NPV / Ops. Term	District Discount Rate:
3,000 AF/yr	Mid-Range	30 Yrs	3.50%

Net Present Value (NPV) Analysis, in FY 2023 Dollars

Annual NPV Cost Differential -- To Flume vs. Not To Flume

Finance Start Mid-Point:	Ops. Start:	Crossover:	Break-Even:	Payback Period:
2028	2030	2035	2052	24 Yrs



Total Red:	Total Black:	Advantage:
$15M	$32M	$17M

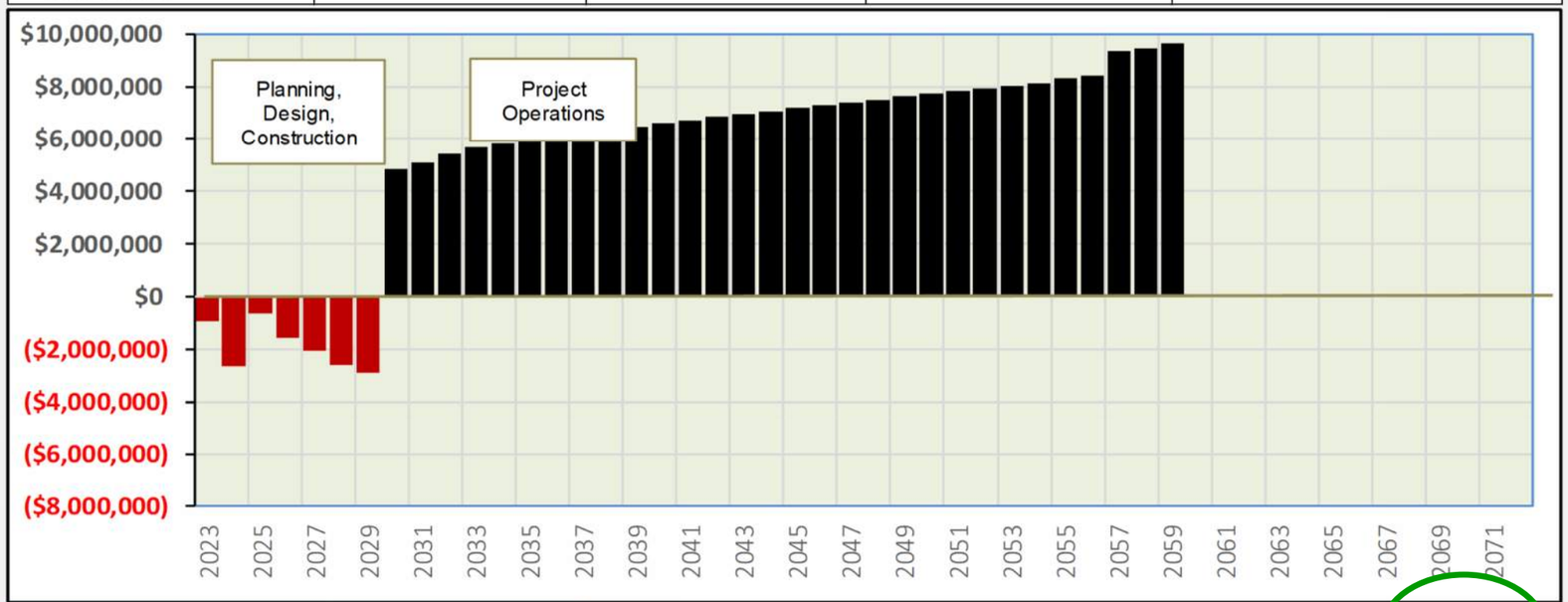
Economic Analysis: Costs and Benefits Over Time

Avg. Local Yield	SDCWA Escalation	NPV / Ops. Term	District Discount Rate:
6,000 AF/yr	Mid-Range	30 Yrs	3.50%

Net Present Value (NPV) Analysis, in FY 2023 Dollars

Annual NPV Cost Differential -- To Flume vs. Not To Flume

Finance Start Mid-Point:	Ops. Start:	Crossover:	Break-Even:	Payback Period:
2028	2030	2030	2032	4 Yrs



Total Red:	Total Black:	Advantage:
$13M	$214M	$201M

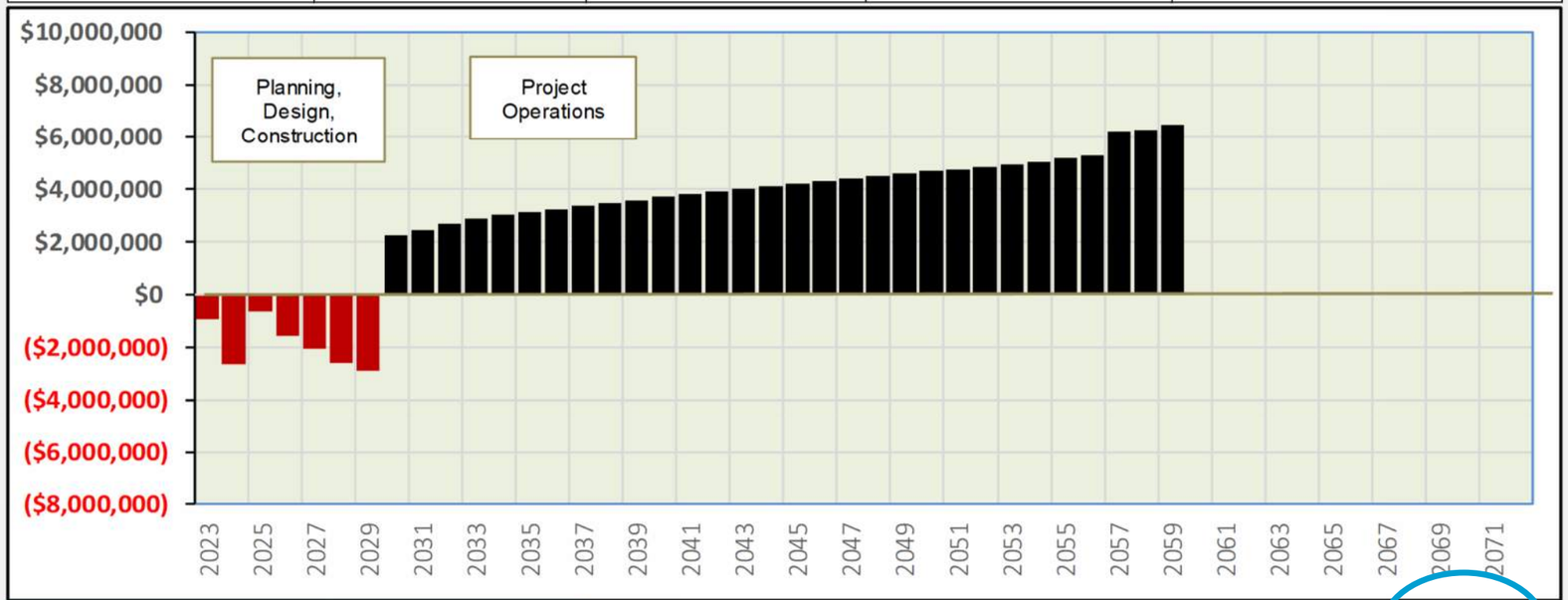
Economic Analysis: Costs and Benefits Over Time

Avg. Local Yield	SDCWA Escalation	NPV / Ops. Term	District Discount Rate:
4,500 AF/yr	Mid-Range	30 Yrs	3.50%

Net Present Value (NPV) Analysis, in FY 2023 Dollars

Annual NPV Cost Differential -- To Flume vs. Not To Flume

Finance Start Mid-Point:	Ops. Start:	Crossover:	Break-Even:	Payback Period:
2028	2030	2030	2035	7 Yrs



Total Red:	Total Black:	Advantage:
$13M	$125M	$112M

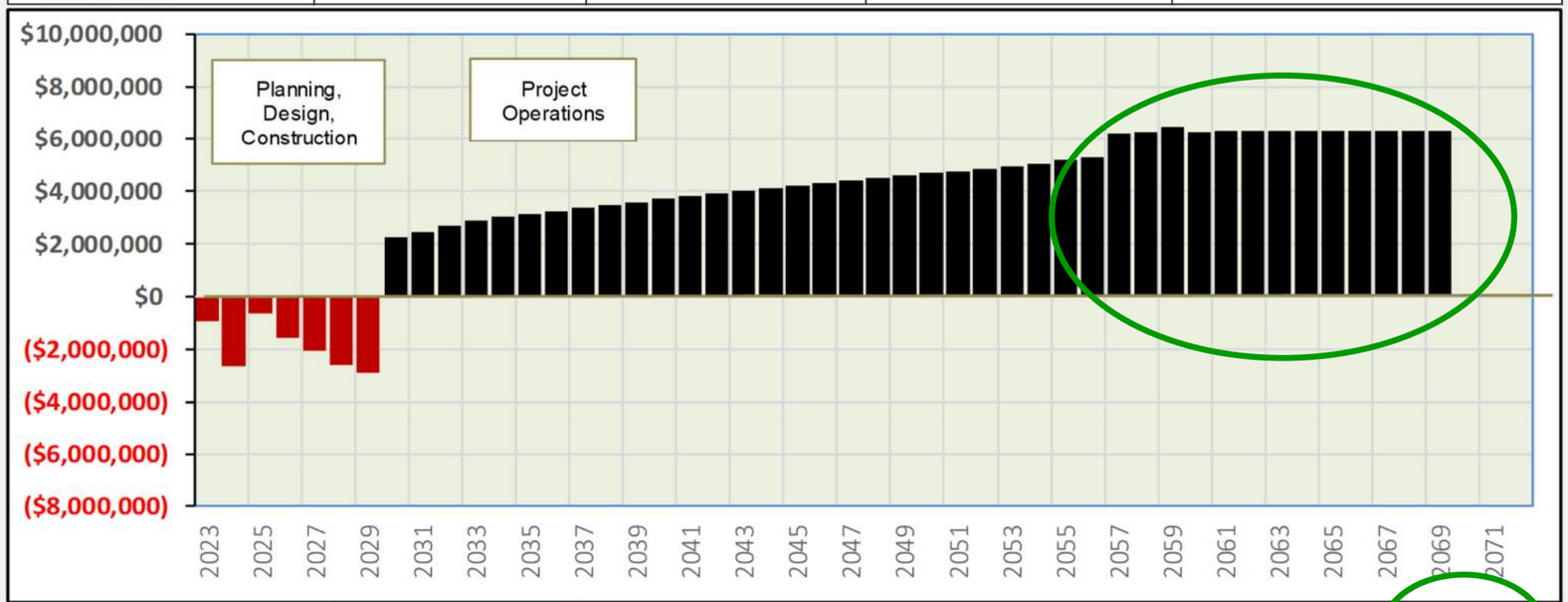
Economic Analysis: Costs and Benefits Over Time

Avg. Local Yield	SDCWA Escalation	NPV / Ops. Term	District Discount Rate:
4,500 AF/yr	Mid-Range	40 Yrs	3.50%

Net Present Value (NPV) Analysis, in FY 2023 Dollars

Annual NPV Cost Differential -- To Flume vs. Not To Flume

Finance Start Mid-Point:	Ops. Start:	Crossover:	Break-Even:	Payback Period:
2028	2030	2030	2035	7 Yrs



Total Red:	Total Black:	Advantage:
$13M	$188M	$175M

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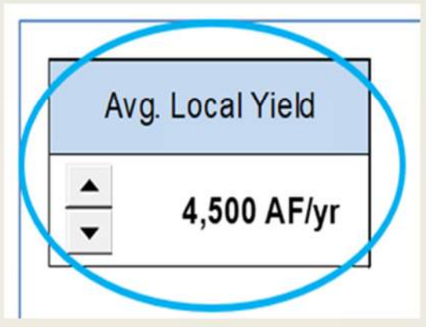
FINDINGS AND RECOMMENDATIONS

1. **The To Flume option retains significant economic advantage.** The analysis remains subject to further refinement, but supports advancing the work to the next phase.

2. **Partnership appears <u>economically</u> preferable to Divestment.** We will continue to update the analysis as conditions evolve.



3. **Next Steps:** Advance the Alignment Study. Also, refine key inputs (including Financing, Yield, HABs, Delivery Reliability, and Exchange Benefits); report back at next Board workshop!

6. Conclusions

Speaker: J.P. Semper, P.E.

Brown AND Caldwell

Defining the **next** legacy

Summary of Conclusions: Phase 3 – Coarse Screening

1. The Alignment Study has evaluated a broad range of alternatives during Coarse Screening. It recommends Alternatives 1 and 6 plus the Beginning and End Corridors of Alternative 2 advance to Fine Screening.
2. PAYGO is no longer a sustainable option, and capital financing will be required. Recommend hiring a specialty rate consultant to initiate the financial planning needed to prepare the District for capital financing.
3. The To Flume option retains significant cost advantage in comparison to the Not To Flume option, even when accounting for improvements at Lake Henshaw and Warner Basin; so long as the District's share of average annual local yield is above 2,200 afy.
4. The District may move forward with confidence that investments in the local water system resulting in improved local yield will have a significant economic advantage to the District and its ratepayers.

Final Conclusion & Next Steps

5. The analyses presented herein supports the District's continued investment in project planning, for both the HABs Plan as well as this Flume Replacement Alignment Study. Recommended next steps include:

A. Proceed with Phase 4 – Fine Screening and Proposed Selection
B. Continue investigating HABs mitigation and wellfield optimization
C. Perform predictive modeling of future yield
D. Hire specialty rate consultant to initiate formal financial planning
E. Continue collecting data required to initiate environmental documentation
F. Conduct another Affordability Check-in and report findings at Workshop No. 3

Thank you.

Questions?

Brown AND Caldwell